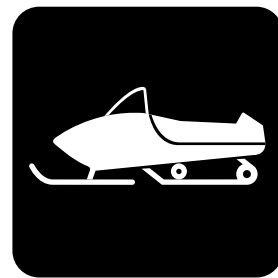


YAMAHA

SERVICE MANUAL



PZ500C VT500XLC

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:

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.

**PZ500, VT500XL
SERVICE MANUAL**
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ILLUSTRATED SYMBOLS**(Refer to the illustration)**

Illustrated symbols ① to ⑧ are designed as thumb tabs to indicate the chapter's number and content.

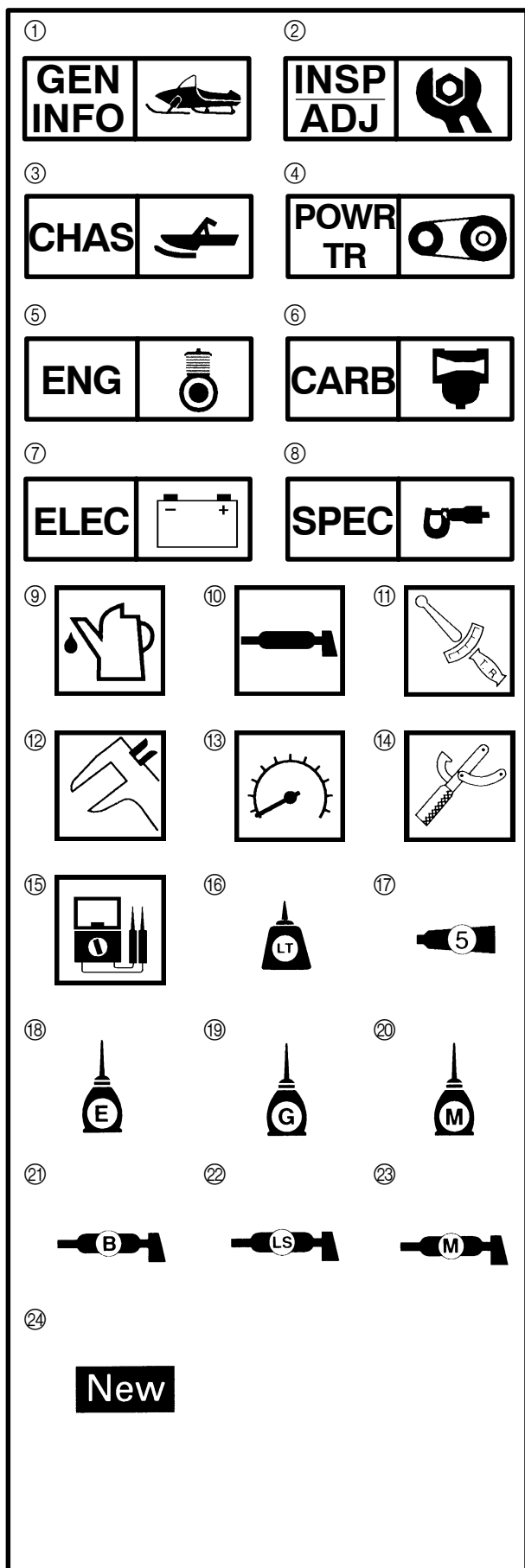
- ① General information
- ② Periodic inspection and adjustment
- ③ Chassis
- ④ Power train
- ⑤ Engine overhaul
- ⑥ Carburetion
- ⑦ Electrical
- ⑧ Specifications

Illustrated symbols ⑨ to ⑮ are used to identify the specifications which appear.

- ⑨ Filling fluid
- ⑩ Lubricant
- ⑪ Tightening
- ⑫ Wear limit, clearance
- ⑬ Engine speed
- ⑭ Special tool
- ⑮ Ω , V, A

Illustrated symbols ⑯ to ⑳ in the exploded diagram indicate grade of lubricant and location of lubrication point.

- ⑯ Apply locking agent (LOCTITE®)
- ⑰ Apply Yamabond No.5®
- ⑱ Apply engine oil
- ⑲ Apply gear oil
- ⑳ Apply molybdenum disulfide oil
- ㉑ Apply wheel bearing grease
- ㉒ Apply low - temperature lithium - soap base grease
- ㉓ Apply molybdenum disulfide grease
- ㉔ Use new one



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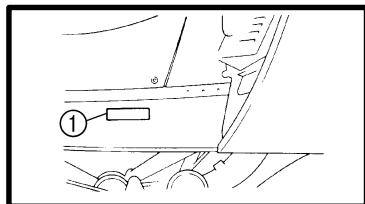
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1E001

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).

1

ENGINE SERIAL NUMBER

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

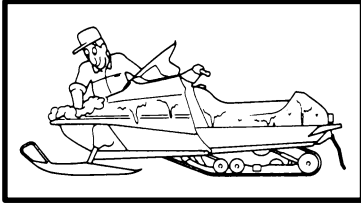
NOTE:

Designs and specifications are subject to change without notice.

1E011

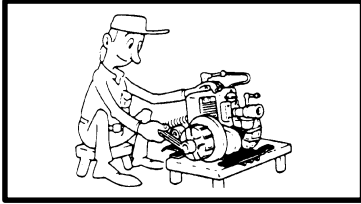
IMPORTANT INFORMATION

PREPARATION FOR REMOVAL AND DISASSEMBLY



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

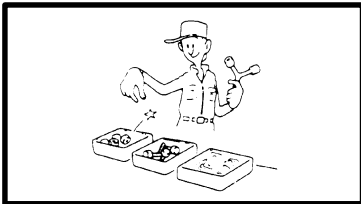
While cleaning, take care to protect the electrical parts, such as relays, switches, motor, resistors, controllers, etc., from high pressure water splashes.



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

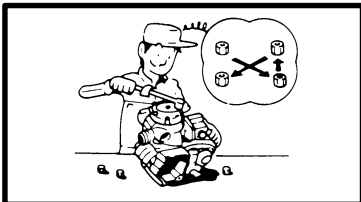


3. When disassembling the machine, keep mated parts together. This includes gears, cylinders, pistons, and other parts that have been "mated" through normal wear. Mated parts must be reused or replaced as an assembly.



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.

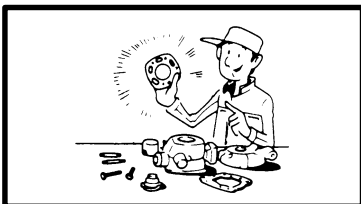
5. Keep all parts away from any source fire.



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.

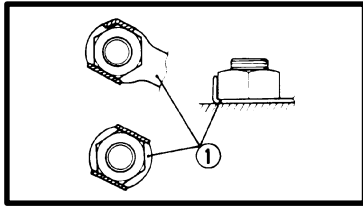
ALL REPLACEMENT PARTS

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



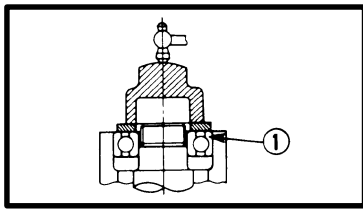
GASKETS, OIL SEALS, AND O-RINGS

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.



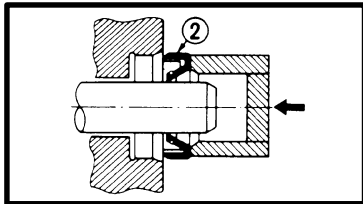
LOCK WASHERS/PLATES AND COTTER PINS

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.



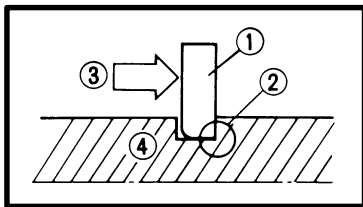
BEARINGS AND OIL SEALS

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.

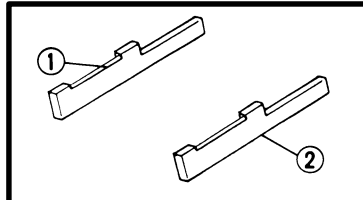
1E021

SPECIAL TOOLS

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

NOTE:

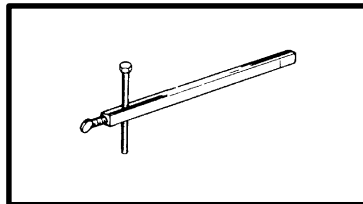
Be sure to use the correct part number when ordering the tool, since the part number may differ according to country.

**FOR TUNE UP**

- Sheave gauge

P/N: YS-42421-1 ① (15 mm offset), YS-42421-2 ② (20 mm offset)

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

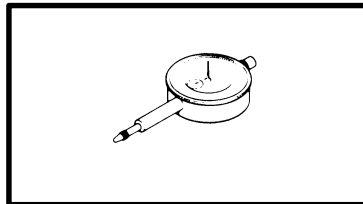


- Distance gauge

P/N: YS-91047-3 (for U.S.A./Canada)

90890-01702 (for Europe)

This gauge is used to measure the distance of clutch center to center.



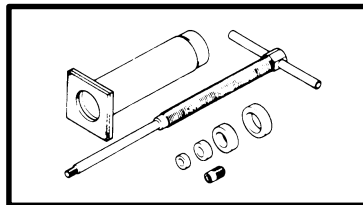
1E041

- Dial gauge

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

90890-03097 (for Europe)

This gauge is used for run out measurement.



1E071

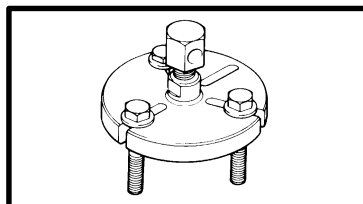
FOR ENGINE SERVICE

- Piston pin puller

P/N: YU-01304 (for U.S.A./Canada)

90890-01304 (for Europe)

This tool is used to remove the piston pin.



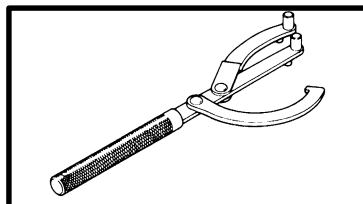
1E081

- Rotor holding puller

P/N: YU-33270 (for U.S.A./Canada)

90890-01362 (for Europe)

This tool is used to remove the magneto rotor.

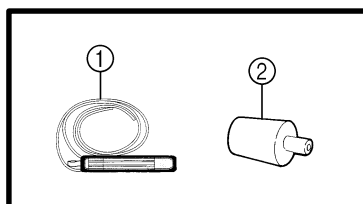


- Rotor holding tool

P/N: YU-01235 (for U.S.A./Canada)

90890-01235 (for Europe)

This tool is used to remove the starter pulley.

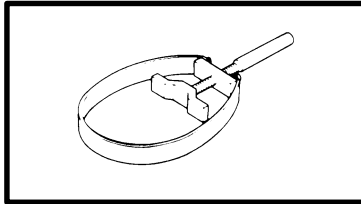


- Vacuum gauge ①

P/N: YS-33275 (for U.S.A./Canada)

This gauge is used for carburetor synchronization.

- Carb Sync Adapters ② (Use with YS-33275) (for U.S.A./Canada)

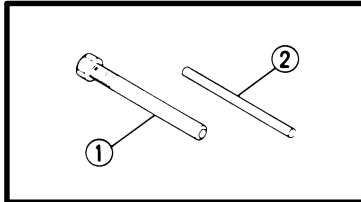


1E101

FOR POWER TRAIN SERVICE

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

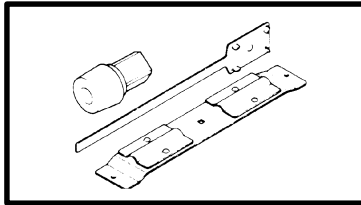
This tool is used to hold the primary sheave.



1E111

- Primary sheave puller (18 mm)
P/N: YS-01881-1 ①, YS-01882-1 ②

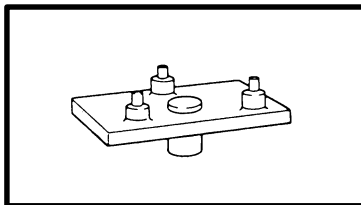
This tool is used for removing the primary sheave.



1E121

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

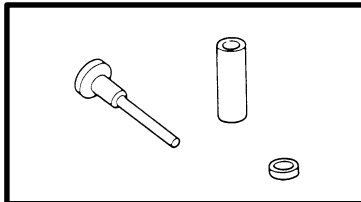
This tool is used when disassembling and assembling the primary sheave.



1E131

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

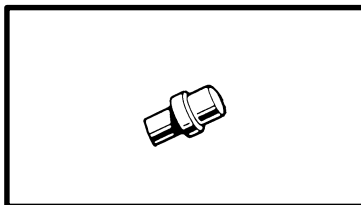
This tool is used when disassembling and assembling the primary sheave.



1E171

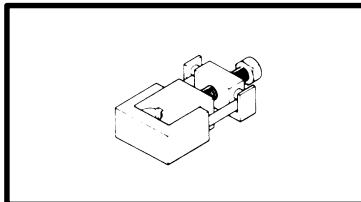
- Clutch bushing jig kit
P/N: YS-39752

This tool is used when removing and installing the primary sheave bushing.



- Clutch bushing press
P/N: YS-42424

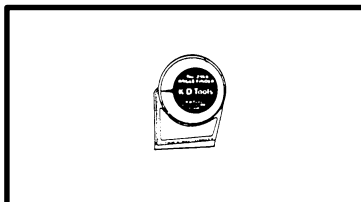
This tool is used for removing and installing the post bushings (primary sheave cap bush, sliding sheave bush and torque cam bush).



1E141

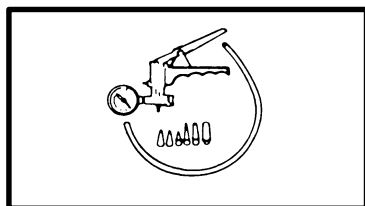
- Track clip installer
P/N: YS-91045-A (for U.S.A./Canada)
90890-01721 (for Europe)

This tool is used for installing the track clip.



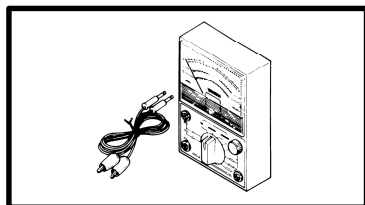
- Angle finder
P/N: YS-42422

This tool is used for checking and adjusting the ski spindle camber.

**FOR CARBURETION SERVICE**

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

This tool is used to check the fuel pump.

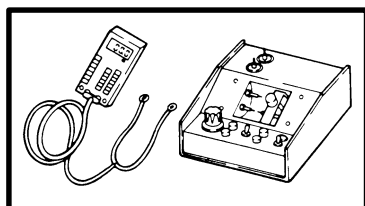


1E151

FOR ELECTRICAL SERVICE

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

This instrument is necessary for checking the electrical components.



1E161

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

This instrument is invaluable for checking the electrical system.



PERIODIC INSPECTIONS AND ADJUSTMENTS

INTRODUCTION

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

PERIODIC MAINTENANCE TABLE

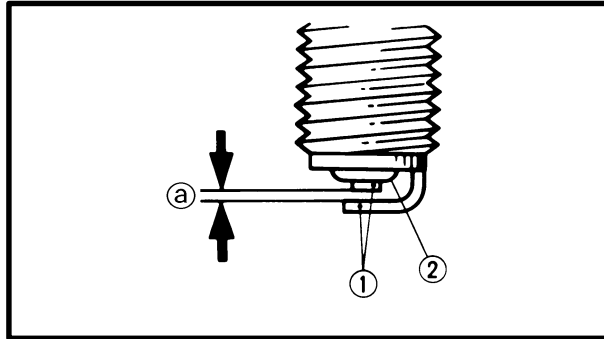
Item	Remarks	Pre-operation check (daily)	First month or first 800 km (500 mi) (40 hr)	Every season or every 3,200 km (2,000 mi) (160 hr)
Spark plugs	Check the condition. Adjust the gap and clean. Replace if necessary.			●
Engine oil	Check the oil level.	●		
	Air bleed the oil pump, if necessary.			●
Fuel	Check the fuel level.	●		
Fuel filter	Check the condition. Replace if necessary.			●
Fuel lines	Check the fuel hose for cracks or damage. Replace if necessary.			●
Oil line	Check the oil hose for cracks or damage. Replace if necessary.			●
Carburetor	Check throttle lever operation.	●		
	Adjust the jets.	Whenever operation condition (elevation/temperature) is changed		
Fan belt	Check wear and damage. Replace if necessary.			●
	Adjust fan belt if necessary.			●
Manual starter	Check the operation and rope damage. Replace if necessary.	●		
Engine stop switch	Check the operation. Repair if necessary.	●		
Throttle override system	Check the operation. Repair if necessary.	●		
Throttle lever	Check the operation. Repair if necessary.	●		
Exhaust system	Check for leakage. Retighten or replace gasket if necessary.			●
Decarbonization	More frequently if necessary.			●
Drive V-belt guard	Check cracks, bends or damage. Replace if necessary.	●		
Drive V-belt	Check wear and damage. Replace if necessary.	●		
Drive track/idler wheels	Check deflection, wear and damage. Adjust/replace if necessary.	●		

Item	Remarks	Pre-operation check (daily)	First month or first 800 km (500 mi) (40 hr)	Every season or every 3,200 km (2,000 mi) (160 hr)
Side runner	Check wear and damage.	●		
	Replace if necessary.			●
Brake/parking brake	Check operation and fluid leakage.	●		
	Adjust free play and/or replace pads if necessary.			●
	Replace brake fluid.	See NOTE.		
Drive chain oil	Check oil level.		●	
	Replace.			●
Drive chain	Check deflection. Adjust if necessary.	Initial at 80 km (50 Mi) and every 800 km (500 Mi) thereafter.		
Ski/ski runner	Check wear and damage.	●		
	Replace if necessary.			●
Steering system	Check operation.	●		
	Adjust toe-out if necessary.			●
Lights	Check operation. Replace bulbs if necessary.	●		
Battery	Check fluid level.	●		
	Check specific gravity and breather pipe operation. Charge/Correct if necessary.			●
Primary sheave	Check engagement and shift speed.			●
	Adjust if necessary.	Whenever operating elevation is changed.		
	Check wear and damage. Replace if necessary.			●
	Lubricate with specified grease.			●
Secondary sheave	Lubricate with specified grease.			●
	Adjust if necessary.	Whenever operating elevation is changed.		
Steering column bearing	Lubricate with specified grease.			●
Ski and front suspension	Lubricate with specified grease.			●
Suspension component	Lubricate with specified grease.			●
Parking brake cable end and lever end/throttle cable end	Lubricate with specified grease.			●
	Check cable damage. Replace if necessary.			●
Shroud latches	Make sure the shroud latches are hooked.	●		
Fittings/fasteners	Check tightness. Repair if necessary.	●		
Service tools/spare parts	Check proper placement.	●		

NOTE:

Brake fluid replacement:

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



2E011

ENGINE

SPARK PLUGS

1. Remove:

- Spark plug caps
- Spark plugs

2. Inspect:

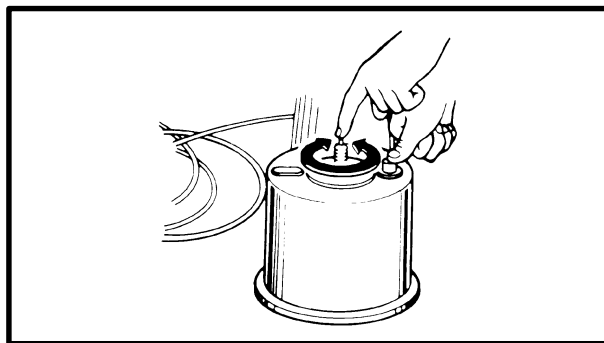
- Electrodes ①
Damage/wear → Replace the spark plug.
- Insulator color ②

3. Measure:

- Spark plug gap ③
Out of specification → Regap.
Use a wire thickness gauge.



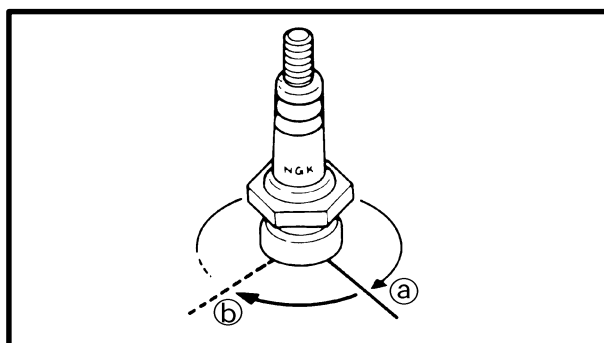
Spark plug gap ③:
0.7 ~ 0.8 mm (0.028 ~ 0.031 in)



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

Standard spark plug:
BR9ES (NGK)

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



4. Install:

- Spark plugs



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

NOTE:

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

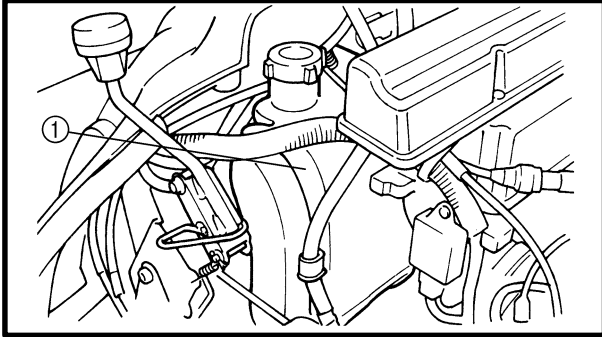


2E021

OIL PUMP**Air bleeding****CAUTION:**

The oil pump and oil delivery line must be bled in the following cases:

- Any portion of the oil system has been disconnected.
- The machine has been turned on its side.
- The oil tank has been run empty.
- As part of the pre-delivery service.



1. Fill:

- Oil tank ①

**Recommended oil:****YAMALUBE 2-cycle oil****Oil tank capacity:****3.3 L (2.9 Imp qt, 3.5 US qt)**

2. Remove:

- Carburetors

Refer to "CARBURETORS" in CHAPTER 6.

3. Place a rag under the oil pump assembly to soak up any spilled oil.

4. Disconnect:

- Oil hose

5. Drain the oil until no more air bubbles appear in the oil hose.

6. Connect:

- Oil hose

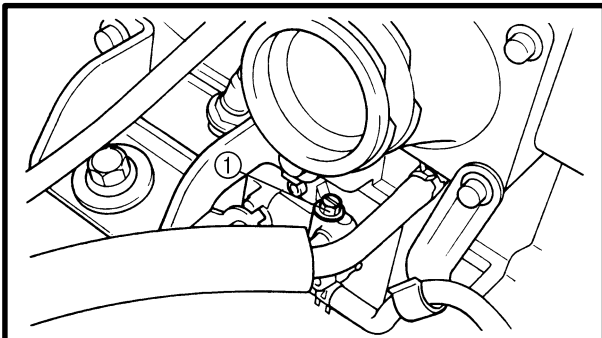
7. Disconnect:

- Oil delivery hose

8. Feed the "YAMALUBE 2-cycle oil" into the oil delivery hose using an oil can for complete air bleeding.

9. Connect:

- Oil delivery hose



10. Remove:

- Bleed bolt ①
- Gasket (bleed bolt)

11. Drain the oil until no more air bubbles appear from the bleed hole.

12. Inspect:

- Gasket (bleed bolt)
Damage/wear → Replace.

13. Install:

- Gasket (bleed bolt)
- Bleed bolt

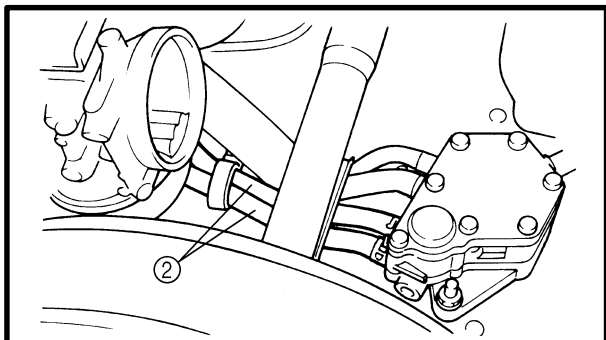
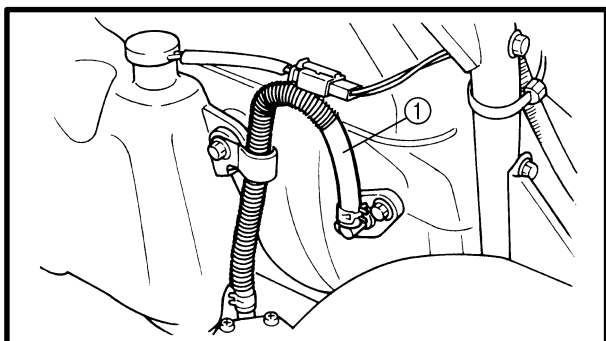
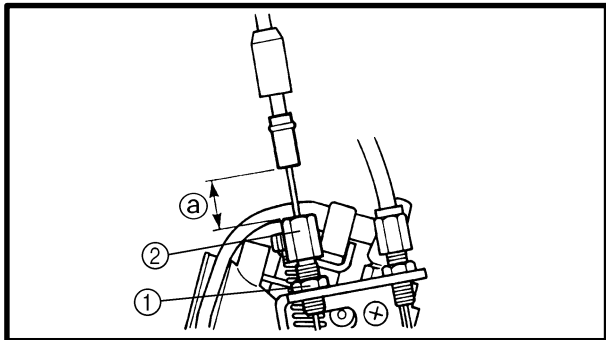
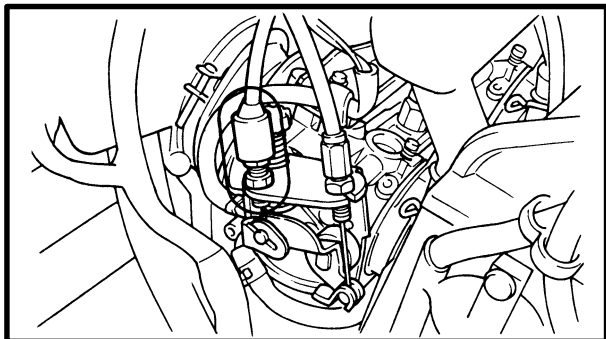
14. Install:

- Carburetors

Refer to "CARBURETORS" in CHAPTER 6.

Cable adjustment**NOTE:**

Before adjusting the oil pump cable, the throttle cable distance should be adjusted.

**Adjustment steps:**

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



Oil pump cable adjusting length ③:
18 ~ 20 mm (0.71 ~ 0.79 in)

Turning in → Length ③ is increased.

Turning out → Length ③ is decreased.

- Tighten the locknut and push in the adjuster cover.



Locknut:
0.8 Nm (0.08 m • kg, 0.58 ft • lb)

FUEL LINE INSPECTION

1. Remove:

- Intake silencer

Refer to "FUEL PUMP" in CHAPTER 6.

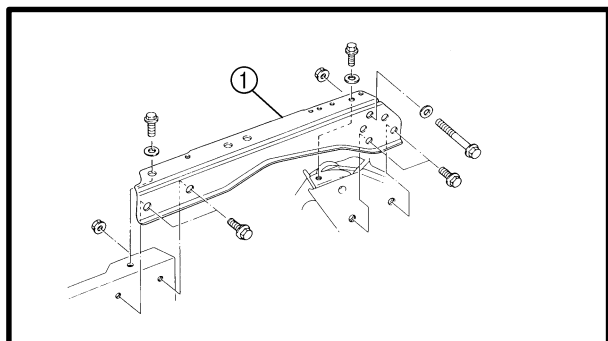
2. Inspect:

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

3. Install:

- Intake silencer

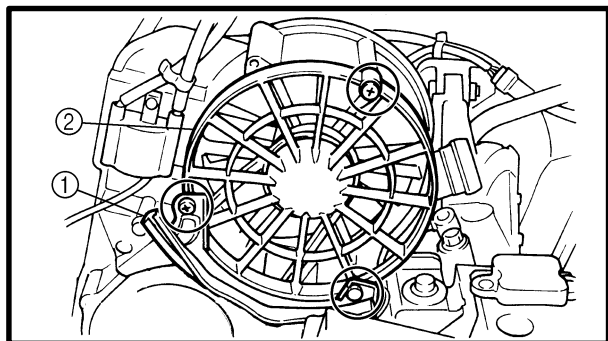
Refer to "FUEL PUMP" in CHAPTER 6.



COOLING FAN BELT INSPECTION

1. Remove:

- Frame cross member ①



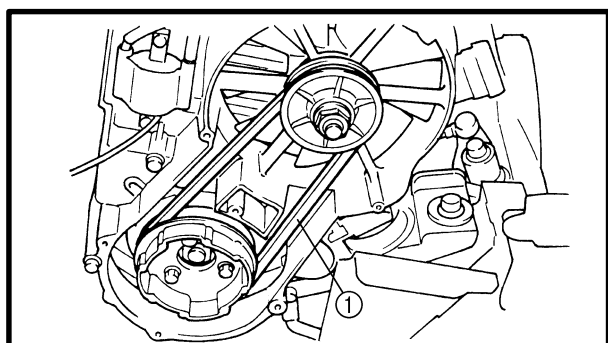
2. Remove:

- Air duct stopper ①
- Cooling fan grill ②

3. Remove:

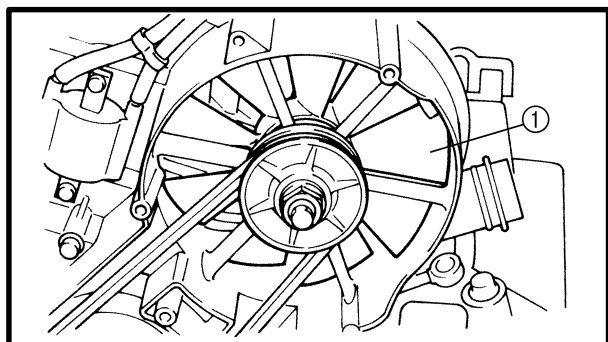
- Recoil starter

Refer to "RECOIL STARTER" in CHAPTER 5.



4. Inspect:

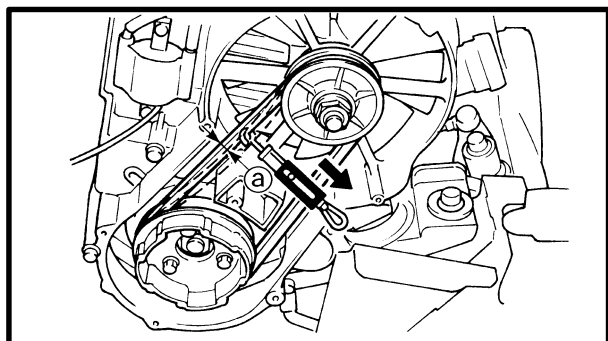
- Cooling fan belt ①
- Wear/cracks/damage → Replace.



5. Inspect:

- Cooling fan ①
- Cracks/damage → Replace.
Refer to "ENGINE COOLING FAN" in CHAPTER 5.

COOLING FAN BELT INSPECTION



6. Measure:

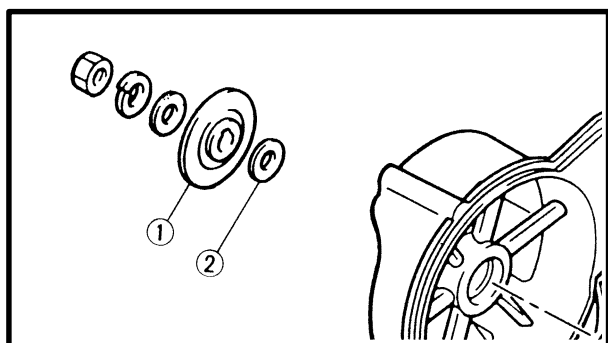
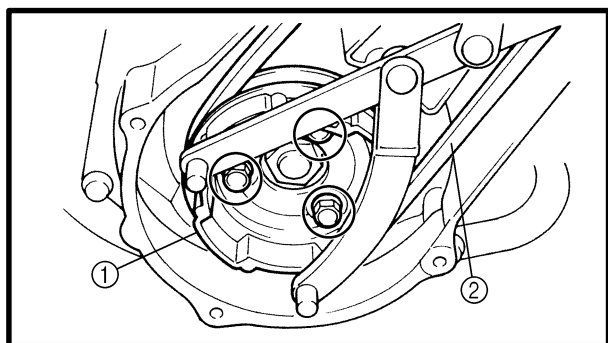
- Cooling fan belt deflection ①
Out of specification → Adjust.

NOTE:

Attach a spring scale to the center of the cooling fan belt and apply a force of 4 ~ 6 kg (8.8 ~ 13.2 lb) to the belt.



Cooling fan belt deflection ①:
8 mm (0.31 in)/4 ~ 6 kg (8.8 ~ 13.2 lb)



7. Adjust:

- Cooling fan belt deflection

Adjustment steps:

- Remove the drive pulley ① and cooling fan belt ② using the rotor holding tool.



Rotor holding tool:
90890-01235, YU-01235

- Remove the driven pulley (outer sheave) ① and shim(s) ②.
- Adjust the cooling fan belt tension by adding or removing a shim(s) ② on the inside of the outer sheave.

NOTE:

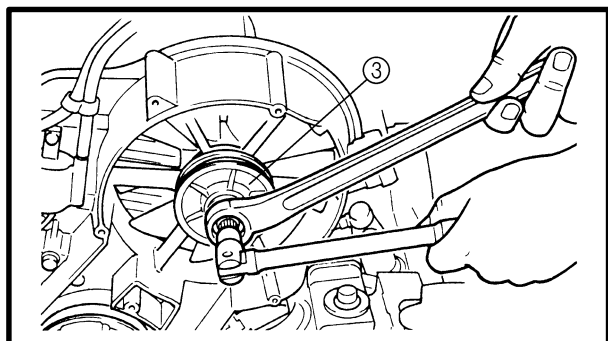
Always use at least one shim with part number 90214-17017 when adjusting the cooling fan belt deflection.

Adding a shim → Belt tension decreases.

Removing a shim → Belt tension increases.

Shims	
Part Number	Shim thickness
90214-17017	0.5 mm (0.02 in)
90214-17018	1.0 mm (0.04 in)

COOLING FAN BELT INSPECTION



- Install the driven pulley outer sheave (3).

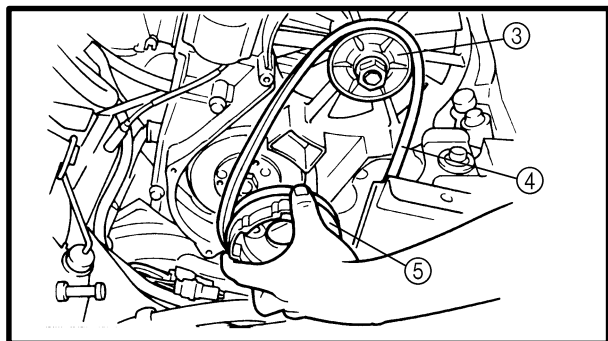


Nut (driven pulley):
43 Nm (4.3 m • kg, 31 ft • lb)

- Install the cooling fan belt (4) and drive pulley (5).

NOTE:

Install the cooling fan belt (4) onto the drive pulley (5) and driven pulley (3). Then install the drive pulley and tighten the bolts to the specified torque.

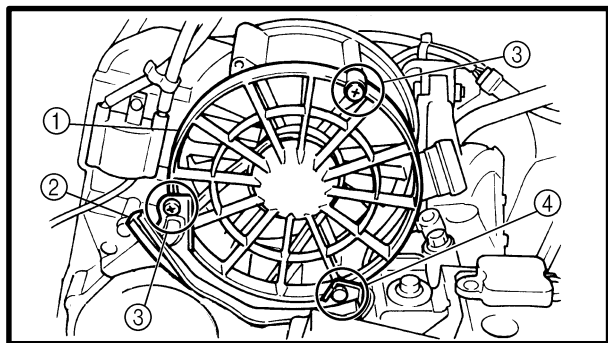


Rotor holding tool:
90890-01235, YU-01235



Bolt (drive pulley):
23 Nm (2.3 m • kg, 17 ft • lb)

Recheck the cooling fan belt deflection.
If the deflection is out of specification, repeat the above procedure.



8. Install:

- Recoil starter

Refer to "RECOIL STARTER" in CHAPTER 5.

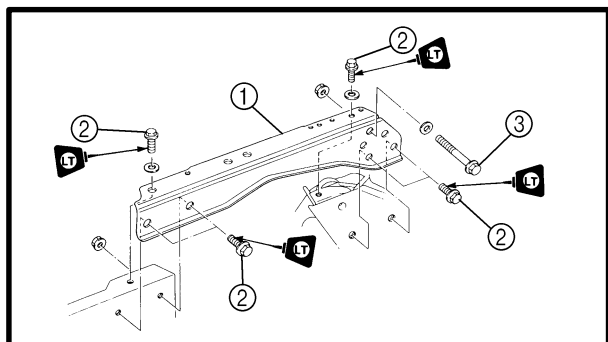
9. Install:

- Cooling fan grill (1)
- Air duct stopper (2)



Screw (3) (cooling fan grill):
7 Nm (0.7 m • kg, 5.1 ft • lb)

Bolt (4) (cooling fan grill):
7 Nm (0.7 m • kg, 5.1 ft • lb)



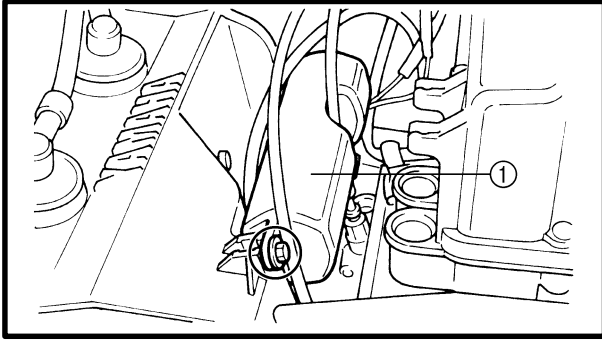
10. Install:

- Frame cross member (1)



Bolt (frame cross member) (2):
48 Nm (4.8 m • kg, 35 ft • lb)
LOCTITE®

Bolt (frame cross member) (3):
85 Nm (8.5 m • kg, 61 ft • lb)



CARBURETOR SYNCHRONIZATION

1. Remove:

- Y.E.I.S. chamber ①

2. Insert:

- Carb sync adapters
(into the intake manifold opening)



Carb sync adapters:
YM-33973

3. Attach:

- Vacuum gauge ①
(to the carb sync adapters)



Vacuum gauge:
YS-33275

4. Start the engine and let it warm up.

⚠ WARNING

Do not move the throttle lever more than necessary so the engine will not run faster than the revolutions at which the snowmobile starts to move.

Engine revolutions: 3,500 r/min

5. Adjust:

- Engine idel speed
Refer to "ENGINE IDLE SPEED ADJUSTMENT".



Engine idle speed:
1,300 ± 100 r/min

6. Adjust:

- Carburetor synchronization

Adjustment steps:

- Synchronize the carburetor (left) with the carburetor (right) by turning synchronizing screw ① until both gauges read the same.
- Race the engine for less than a second, two or three times, and check the synchronization again.

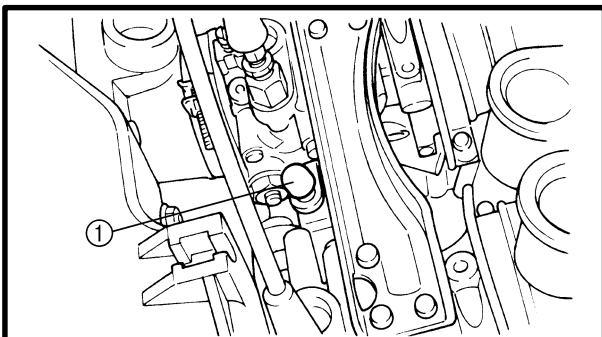
Vacuum pressure at idle speed:

26.06 ~ 27.26 kPa

(195 ~ 205 mmHg, 7.67 ~ 8.07 inHg)

Vacuum synchronous difference:

1.33 kPa (10 mmHg, 0.4 inHg)





7. Remove:

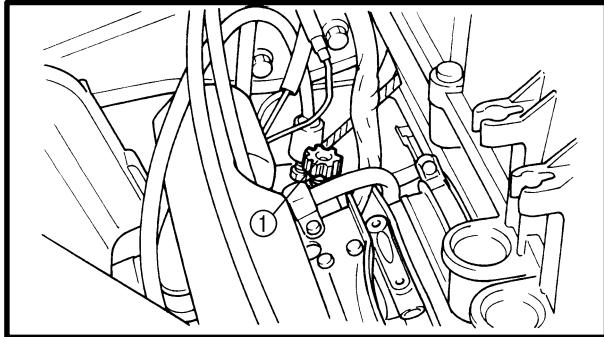
- Vacuum gauge

8. Install:

- Y.E.I.S. chamber



Bolt (Y.E.I.S. chamber):
2 Nm (0.2 m • kg, 1.4 ft • lb)



2E101

ENGINE IDLE SPEED ADJUSTMENT

1. Adjust:

- Engine idle speed

Adjustment steps:

- Start the engine and let it warm up.
- Turn the throttle stop screw ① in or out until the specified engine idle speed is obtained.

Turning in → Idle speed is increased.

Turning out → Idle speed is decreased.



Engine idle speed:
1,300 ± 100 r/min

NOTE:

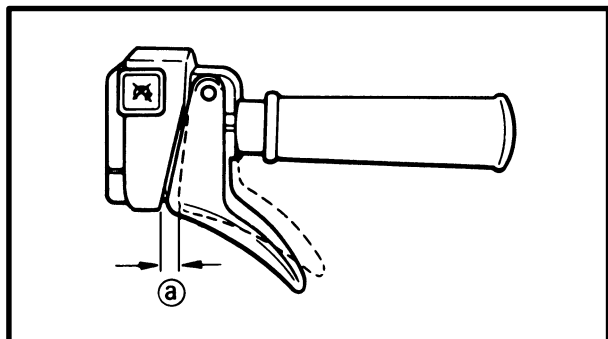
After adjusting the engine idle speed, the throttle cable freeplay should be adjusted.

2E131

THROTTLE CABLE FREEPLAY ADJUSTMENT

NOTE:

Before adjusting the throttle cable freeplay, the engine idle speed should be adjusted.

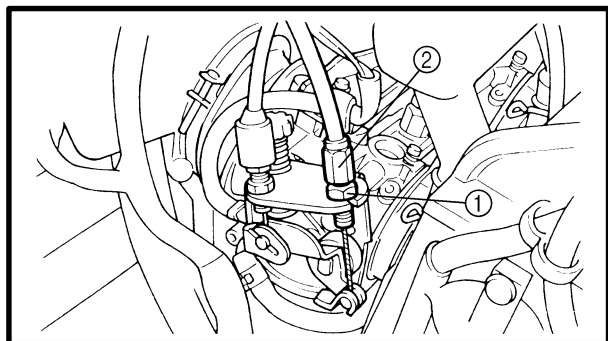


1. Measure:

- Throttle cable freeplay ①
- Out of specification → Adjust.



Throttle cable freeplay ①:
1.0 ~ 2.0 mm (0.040 ~ 0.078 in)



2. Adjust:

- Throttle cable freeplay

Adjustment steps:

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

Turning in → Freeplay is increased.

Turning out → Freeplay is decreased.

- Tighten the locknut.



Lock nut:
0.8 Nm (0.08 m • kg, 0.58 ft • lb)

NOTE:

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

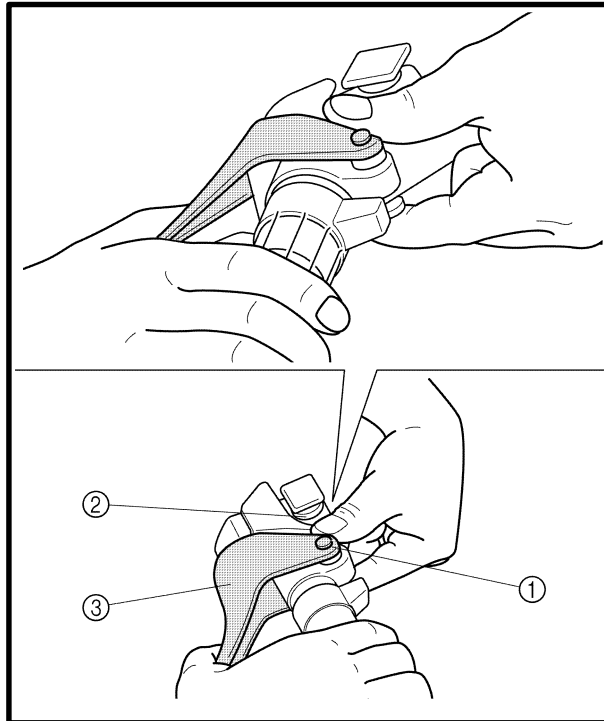
2E122

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 thumb (above) and fore finger (below) between throttle lever pivot ① and switch housing ②.

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

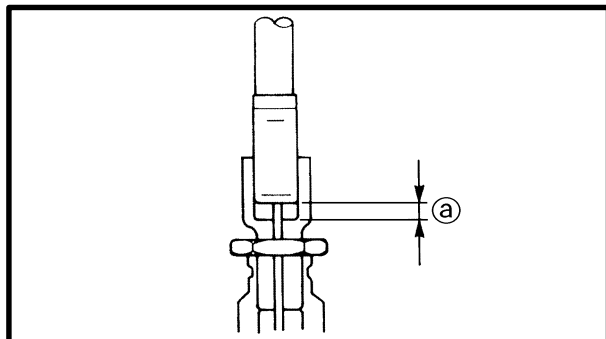
The engine should stop immediately.

⚠ WARNING

If the engine does not stop, stop the engine by turning the main switch to the “OFF” position and check the electrical system.

STARTER (CHOKE) CABLE FREEPLAY ADJUSTMENT/ EXHAUST SYSTEM INSPECTION

**INSP
ADJ**



2E131

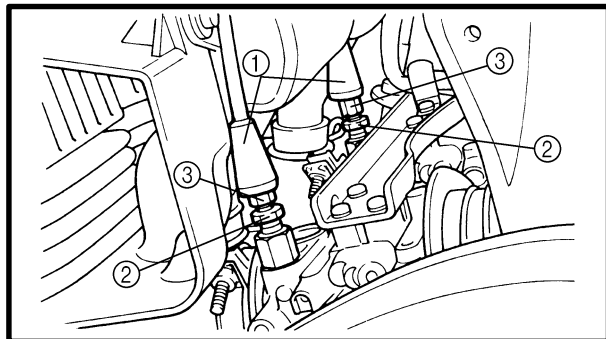
STARTER (CHOKE) CABLE FREEPLAY ADJUSTMENT

1. Measure:

- Starter cable freeplay ①
Out of specification → Adjust.



Starter cable freeplay ①:
0.5 ~ 1.5 mm (0.020 ~ 0.059 in)



2. Adjust:

- Starter cable freeplay

Adjustment steps:

- Pull back the adjuster cover ①
- Loosen the locknut ②.
- Turn the adjuster ③ in or out until the specified freeplay is obtained.

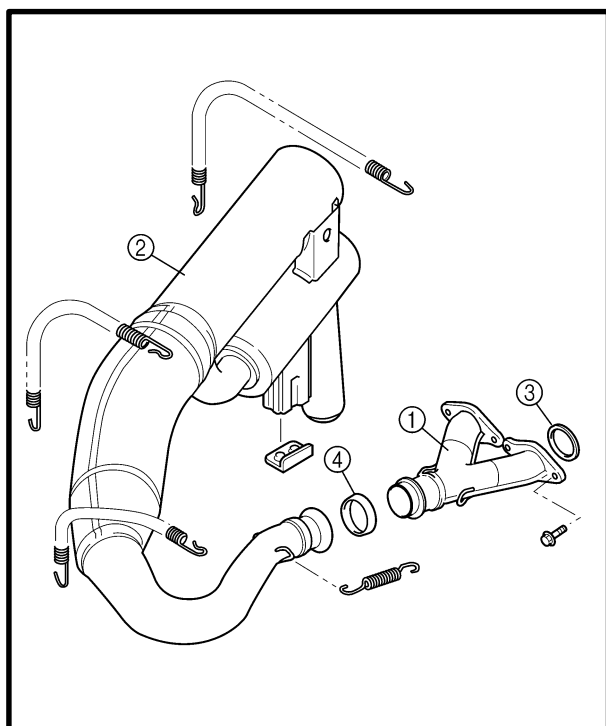
Turning in → Freeplay is increased.

Turning out → Freeplay is decreased.

- Tighten the locknut and push in the adjuster cover.



Locknut:
0.8 Nm (0.08 m • kg, 0.58 ft • lb)



EXHAUST SYSTEM INSPECTION

1. Open the shroud.

2. Remove:

- Springs (exhaust joint and silencer)

3. Inspect:

- Exhaust joint ①
- Exhaust silencer ②
Cracks/damage → Replace.
- Exhaust gaskets ③
- Exhaust gasket ④
Exhaust gas leaks → Replace.

4. Check:

- Tightening torque



Bolt (exhaust joint):
30 Nm (3.0 m • kg, 22 ft • lb)

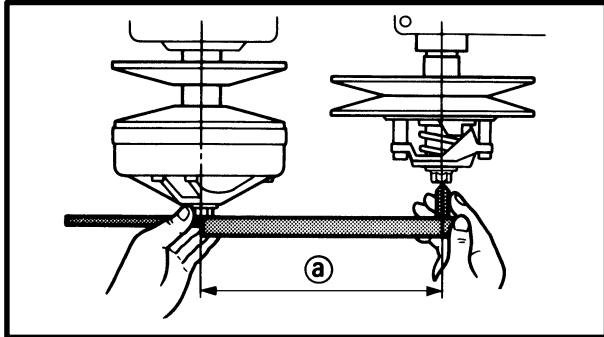
5. Install:

- Springs (exhaust joint and silencer)
Refer to "EXHAUST ASSEMBLY" in CHAPTER 5.

POWER TRAIN

SHEAVE DISTANCE AND OFFSET ADJUSTMENT

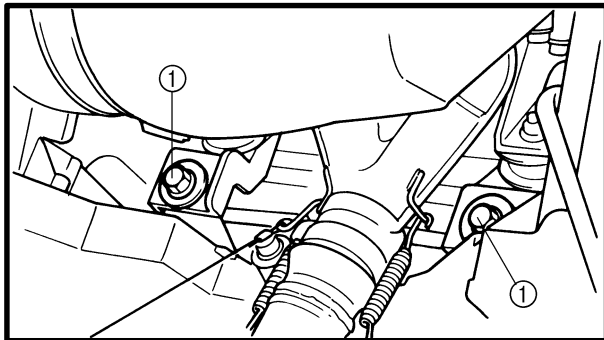
1. Open the shroud
2. Remove:
 - Drive V-belt guard
 - Drive V-belt



3. Measure:
 - Sheave distance (a)
Use the sheave gauge.
Out of specification → Adjust.

Sheave distance (a):
267 ~ 270 mm (10.52 ~ 10.62 in)

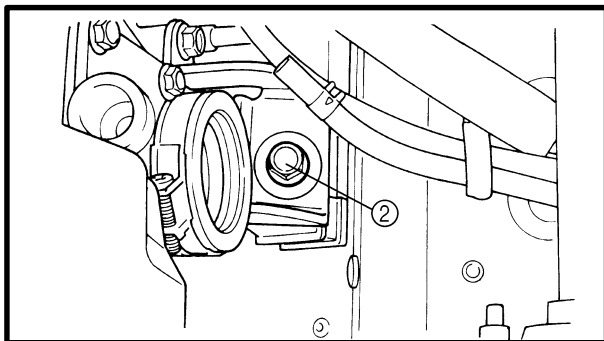
Sheave gauge:
YS-91047-3, 90890-01702



4. Adjust:
 - Sheave distance

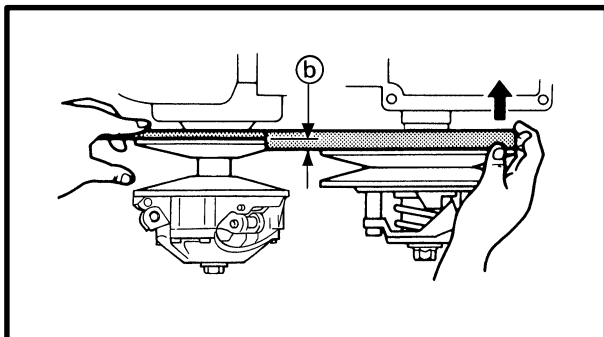
Adjustment steps:

- Loosen the engine mounting bolts.
- Adjust the position of the engine so that the sheave distance is within the specification.
- Tighten the engine mounting bolts.



Mounting bolt (front) (1):
90 Nm (9.0 m • kg, 65 ft • lb)
Mounting bolt (rear) (2):
57 Nm (5.7 m • kg, 41 ft • lb)

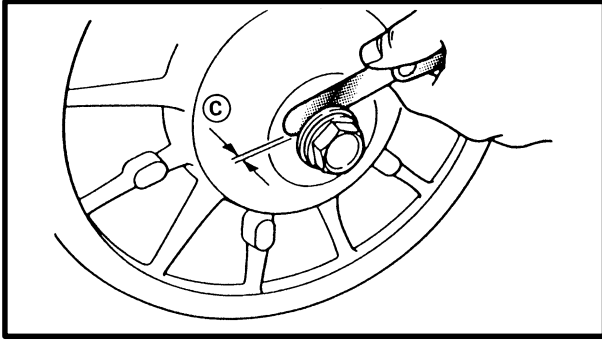
5. Measure:
 - Sheave offset (b)
Use the sheave gauge.
Out of specification → Adjust.



Sheave offset (b):
PZ500:
13.5 ~ 16.5 mm (0.53 ~ 0.64 in)
VT500XL:
18.5 ~ 21.5 mm (0.73 ~ 0.84 in)

Sheave gauge:
YS-42421-1 (15 mm offset)
YS-42421-2 (20 mm offset)

SHEAVE DISTANCE AND OFFSET ADJUSTMENT



6. Measure:

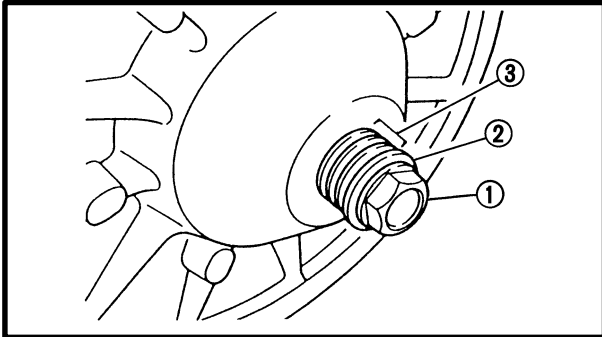
- Secondary sheave freeplay (clearance) ©
Use a feeler gauge.
Out of specification → Adjust.



Secondary sheave freeplay (clearance)

©:

1.0 ~ 2.0 mm (0.0394 ~ 0.0787 in)



7. Adjust:

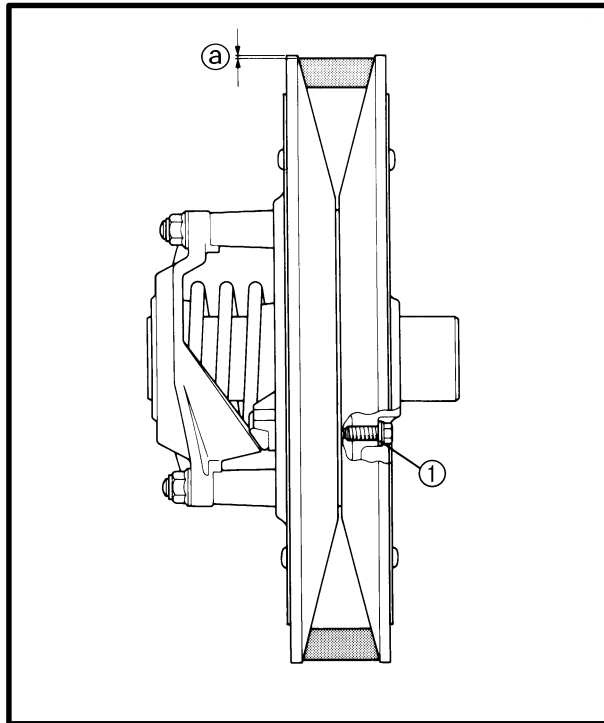
- Secondary sheave freeplay (clearance)

Adjustment steps:

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

Shim size:

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



DRIVE V-BELT

⚠ WARNING

When installing the new belt, be sure the V-belt is positioned 0 ~ 2 mm (0 ~ 0.08 in) below the edge ① of the secondary sheave.

If the V-belt is not properly installed, the clutch engagement speed will be changed and the machine may move unexpectedly when the engine is started.

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

CAUTION:

As the V-belt wears, adjustment may be necessary to ensure proper clutch performance. When the V-belt position reaches 3 mm (0.12 in), adjust its position by adding a spacer onto each adjusting bolt.

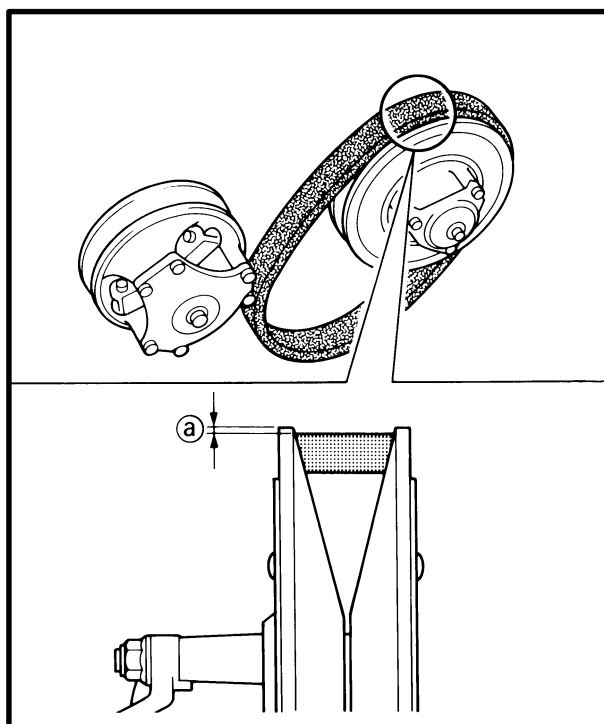


New belt width:

35.0 mm (1.38 in)

Belt wear limit width:

32.0 mm (1.26 in)



1. Measure:

- V-belt position ①

NOTE:

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

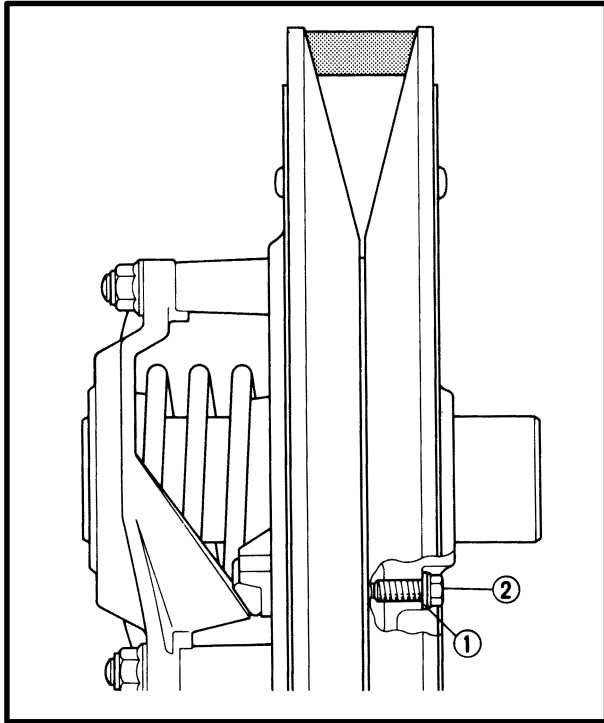


Standard V-belt height ①:

0 ~ 2 mm (0 ~ 0.08 in)

(below the edge of the sheave)

DRIVE V-BELT



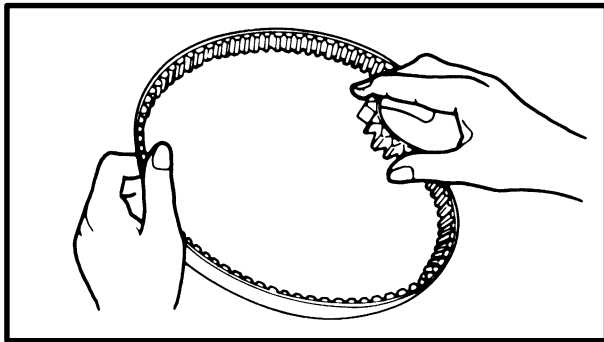
2. Adjust the position of the V-belt by removing or adding a spacer ① on each adjusting bolt ②.

V-belt position	Adjustment
Above the edge	Remove a spacer
Below the edge 0 ~ 2 mm (0 ~ 0.08 in)	Not adjustment is necessary
Below the edge more than 2 mm (0.08 in)	Add spacer

3. Tighten:

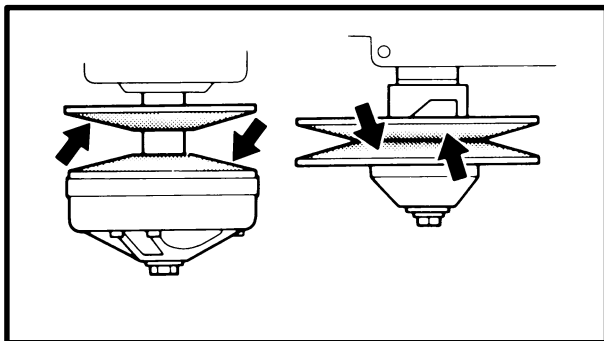
- Adjusting bolt

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



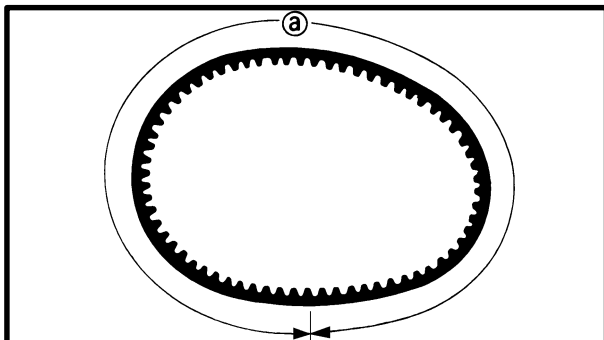
4. Inspect:

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



5. Inspect:

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



6. Measure:

- Drive V-belt length ②
Out of specification → Replace the drive V-belt.

	Drive V-belt length ②: 1,119 ~ 1,129 mm (44.063 ~ 44.437 in)
--	--



2E201

ENGAGEMENT SPEED CHECK

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

Checking 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.



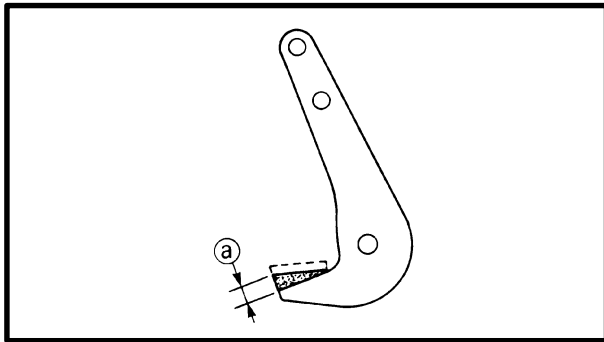
Engagement speed:

PZ500:

3,800 ± 200 r/min

VT500XL:

3,700 ± 200 r/min



PARKING BRAKE PAD INSPECTION

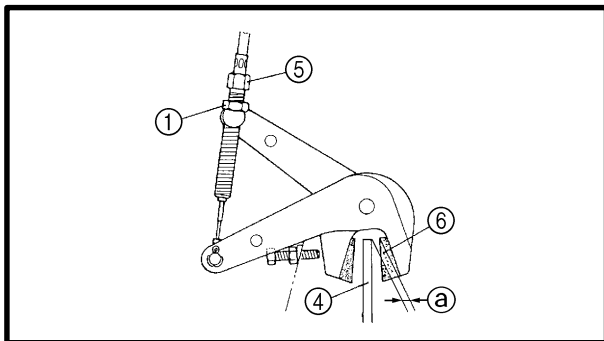
1. Measure:
 - Parking brake pad thickness (a)

Out of specification → Replace the parking brake pads as a set.



Wear limit (a):

6 mm (0.24 in)



PARKING BRAKE ADJUSTMENT

1. Measure:
 - Clearance (a)

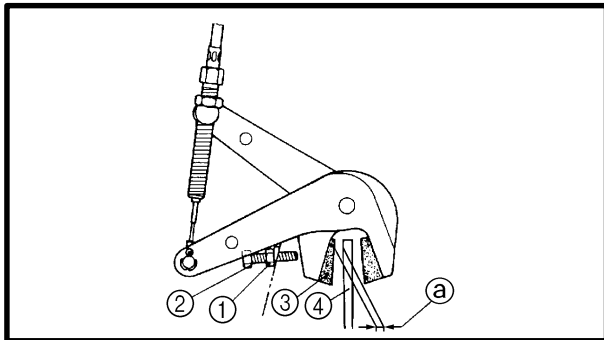
Out of specification → Adjust.



Clearance (a):

1.2 ~ 1.3 mm (0.047 ~ 0.051 in)

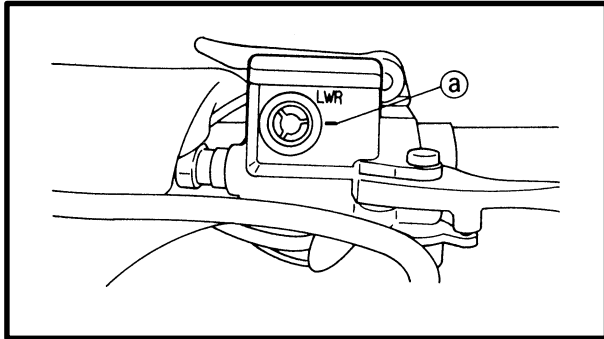
2. Adjust:
 - Clearance (a)



Adjustment steps:

- Loosen the locknut (1).
- Turn the cable adjuster (5) in or out to until the specified clearance between the brake pad (6) and disc (4) is obtained.
- Turn the brake pad adjusting bolt (2) in or out until the specified clearance between the brake pad (3) and disc (4) is obtained.
- Tighten the locknut.

BRAKE FLUID LEVEL INSPECTION/ BRAKE PAD INSPECTION



BRAKE FLUID LEVEL INSPECTION

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



Recommended brake fluid:
DOT 4

NOTE:

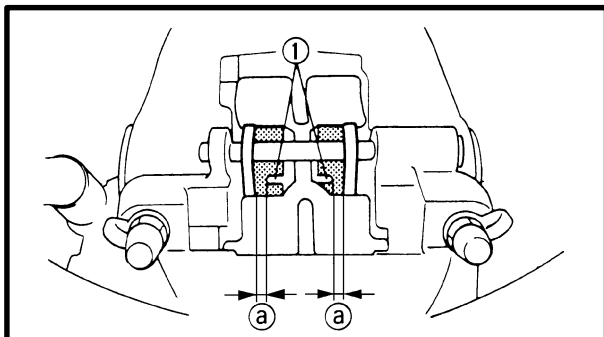
For a correct reading of the brake fluid level, make sure that the top of the handlebar brake master cylinder reservoir is horizontal.

CAUTION:

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

⚠ WARNING

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



BRAKE PAD INSPECTION

1. Apply the brake lever.
2. Inspect:
 - Brake pads
Wear indicator ① nearly contacts the brake disc → Replace the brake pads as a set.



Wear limit ①:
1.5 mm (0.06 in)



BRAKE HOSE INSPECTION

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

AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

⚠ WARNING

Bleed the brake system in the following cases:

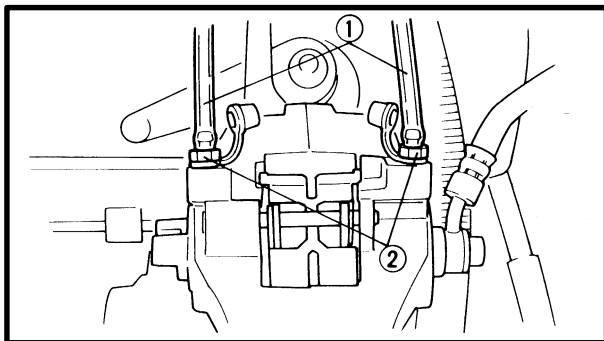
- The system has been disassembled.
- A brake hose is loosened or removed.
- The brake fluid has been very low.
- Brake operation is faulty.

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

1. Bleed:
 - Brake system

Air bleeding steps:

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

- Add brake fluid to the proper level.
Refer to “BRAKE FLUID LEVEL INSPECTION”.

⚠ WARNING

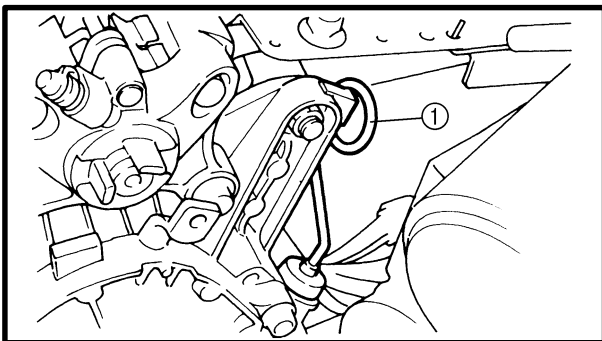
After bleeding the brake system, check the brake operation.

DRIVE CHAIN

Oil level inspection

⚠ WARNING

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



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

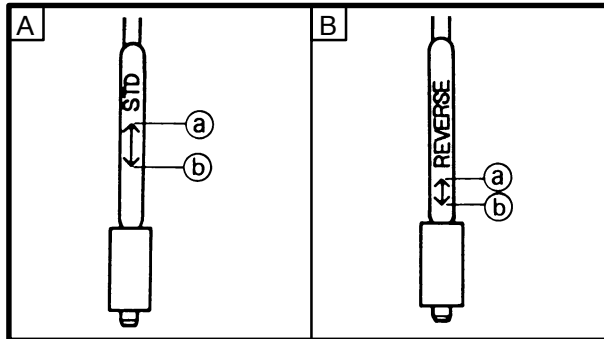
Checking steps:

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

CAUTION:

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

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



- Remove the dipstick and check that the oil is between the upper ① and lower ② levels. If not, add oil to the upper level.

A For models without reverse transmissions.

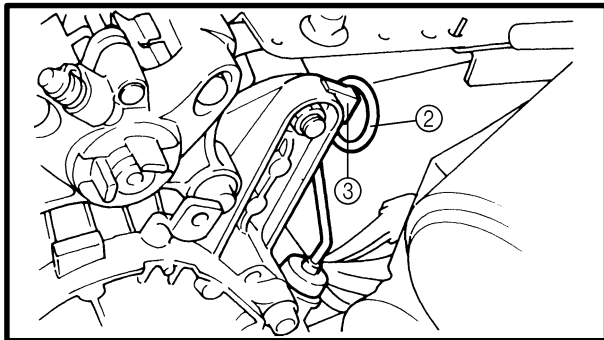
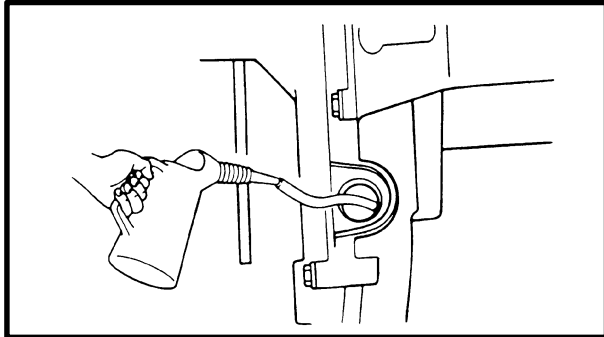
B For models with reverse transmissions.



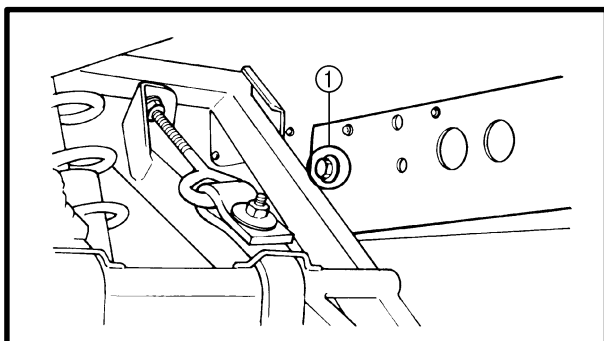
Recommended oil:
Gear oil API GL-3
SAE #75 or #80

CAUTION:

Make sure that no foreign material enters the gear case.



- Reinsert the dipstick and fit the loop ② of the dipstick handle onto the projection ③ of the gear case.



Oil replacement

Oil replacement steps:

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

CAUTION:

Be sure to remove any oil from the heat protector.

- Install the oil drain bolt ①.

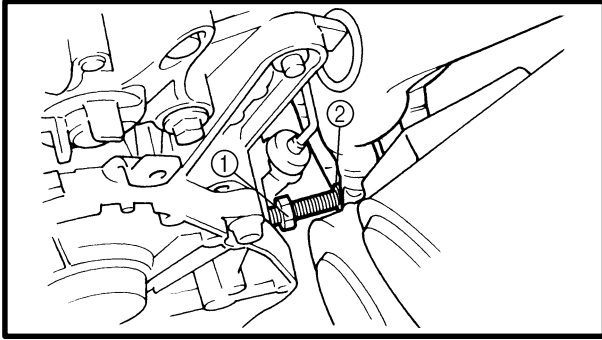


Oil drain bolt:
16 Nm (1.6 m • kg, 11 ft • lb)



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

DRIVE CHAIN/ TRACK TENSION ADJUSTMENT



2E182

Chain slack adjustment

1. Adjust:

- Drive chain slack

Adjustment steps:

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

2E151

TRACK TENSION ADJUSTMENT

⚠ WARNING

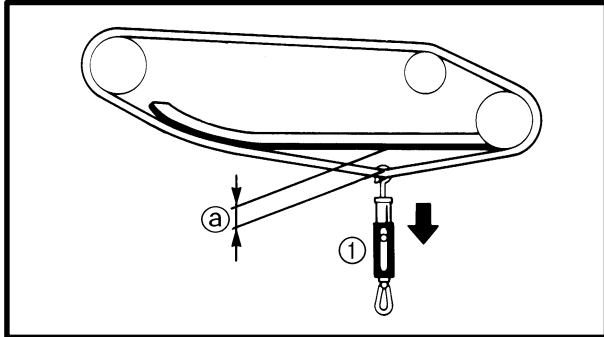
A broken track or track fittings, and debris thrown by the track could be dangerous to an operator or bystanders. Observe the following precautions.

- 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.
- Never install studs (cleats) closer than three inches to the edge of the track.

1. Place the machine with the right side facing down.

CAUTION:

If the machine is left on its left side for more than 80 minutes, the fuel may leak out from the fuel breather hose.



2. Measure:

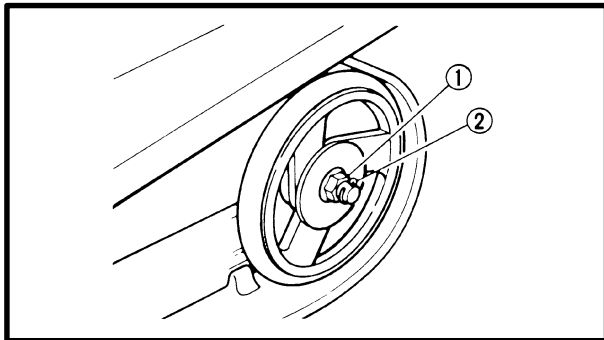
- Track deflection ①

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

Out of specification → Adjust.



Track deflection ①:
25 ~ 30 mm (0.98 ~ 1.18 in)



3. Adjust:

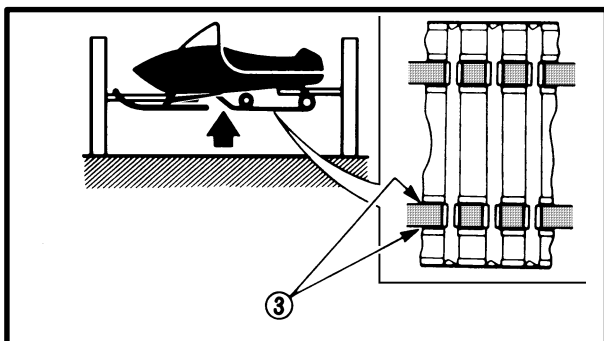
- Track deflection

Adjustment steps:

- Place the machine onto a suitable stand to raise the track off of the ground.
- Loosen the rear axle nut ①.

NOTE:

It is not necessary to remove the cotter pin ②.



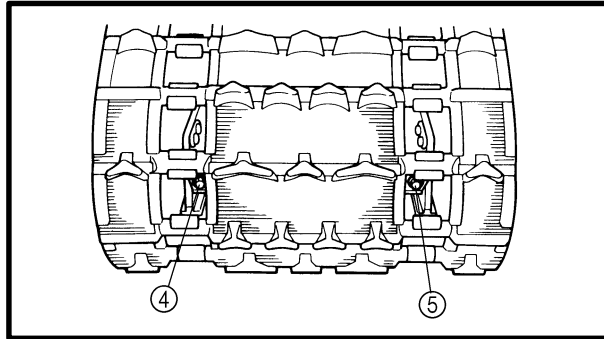
- a. Start the engine and rotate the track once or twice. Stop the engine.

- b. Check the track alignment with the slide runner ③.

If the alignment is incorrect, turn the left and right adjusters to adjust.

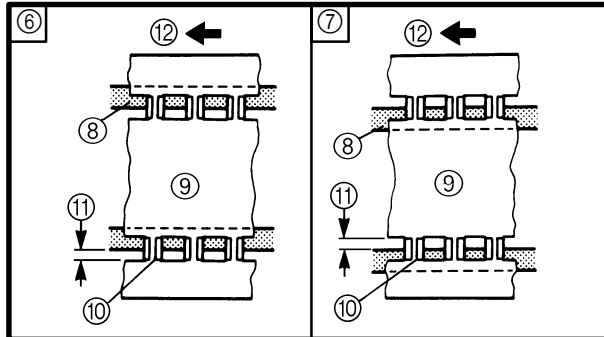
TRACK TENSION ADJUSTMENT/ SLIDE RUNNER INSPECTION

INSP
ADJ



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

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



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

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

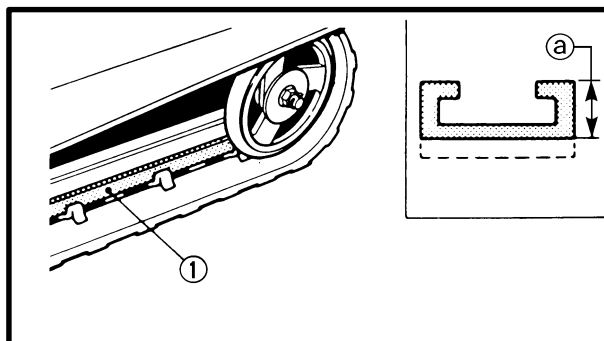
CAUTION:

The adjusters should be turned an equal amount.

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



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



SLIDE RUNNER INSPECTION

1. Inspect:

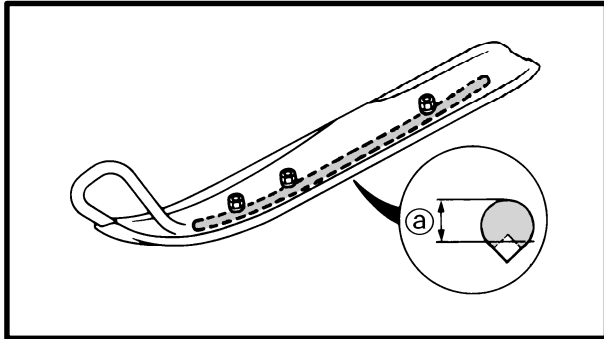
- Slide runner ①
Cracks/damage/wear → Replace the slide runner.

2. Measure:

- Slide runner thickness ②
Out of specification → Replace the slide runner.



Slide runner wear limit ②:
10 mm (0.39 in)



2E212

CHASSIS

SKI/SKI RUNNER

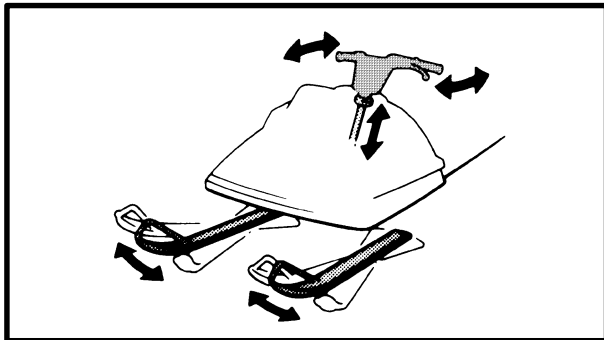
1. Inspect:

- Ski
- Ski runner

Damage/wear → Replace.



Ski runner wear limit (a):
8 mm (0.31 in)



2E221

STEERING SYSTEM

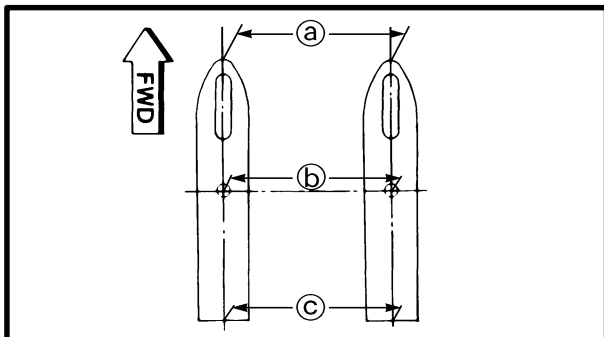
Freeplay check

1. Check:

- Steering system freeplay

Move the handlebar up and down and back and forth.

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



2E232

Toe-out adjustment

1. Place the machine on a level surface.

2. Check:

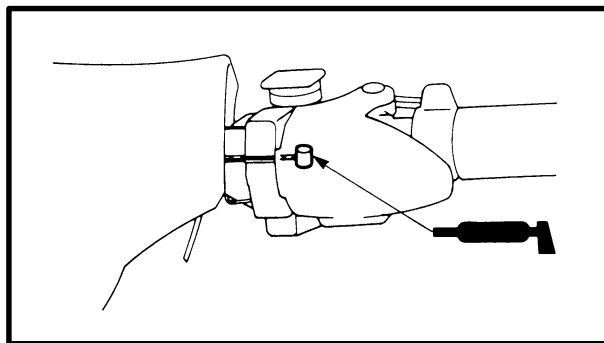
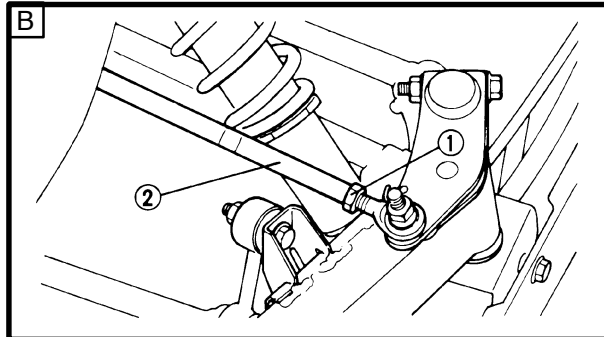
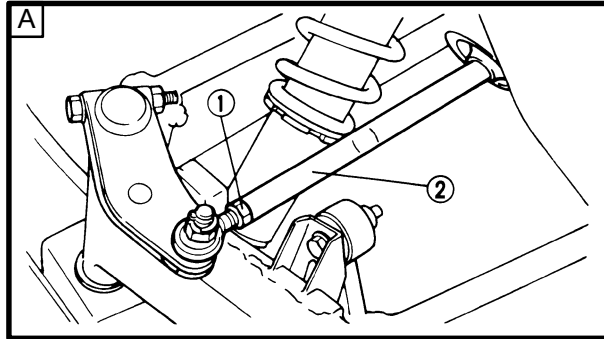
- Ski toe-out

Point the skis forward.

Out of specification → Adjust.



Ski toe-out (a - c):
0 ~ 15 mm (0 ~ 0.59 in)
Ski stance (b) (center to center):
1,070 mm (42.1 in)



3. Adjust:

- Ski toe-out

Adjustment steps:

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



Locknut (rod end):

25 Nm (2.5 m • kg, 18 ft • lb)

LOCTITE®

A Left side

B Right side

2E251

LUBRICATION

Brake lever, throttle lever and throttle cable end

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



Recommended lubricant:

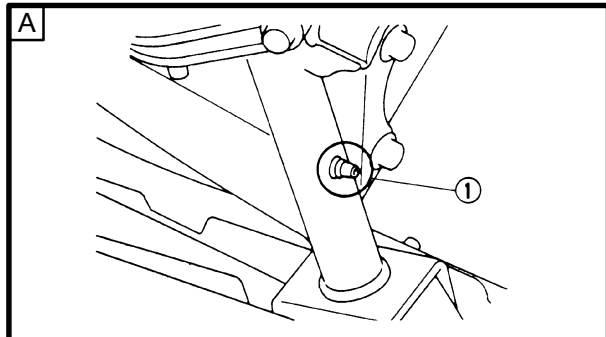
ESSO Beacon 325 Grease

⚠ WARNING

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

Do not grease the throttle cables.

They could freeze and cause a loss of control.

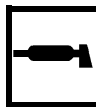


2E261

Front and rear suspension

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

①.

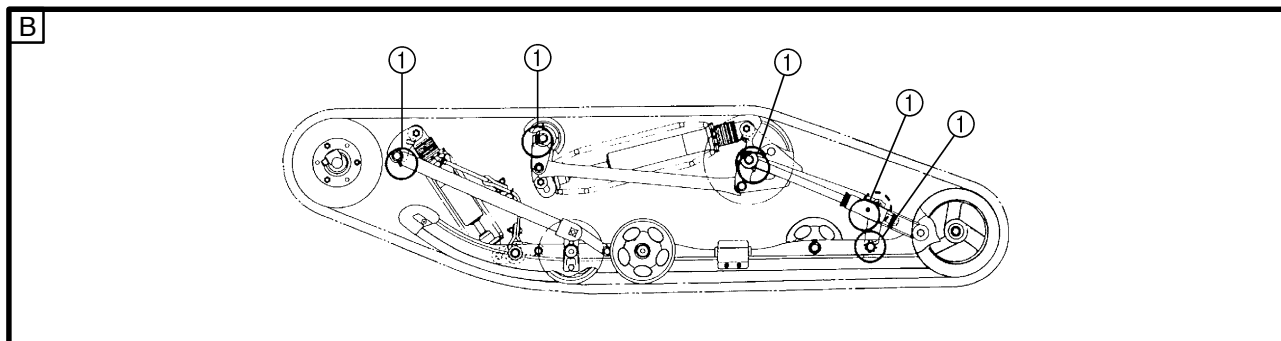
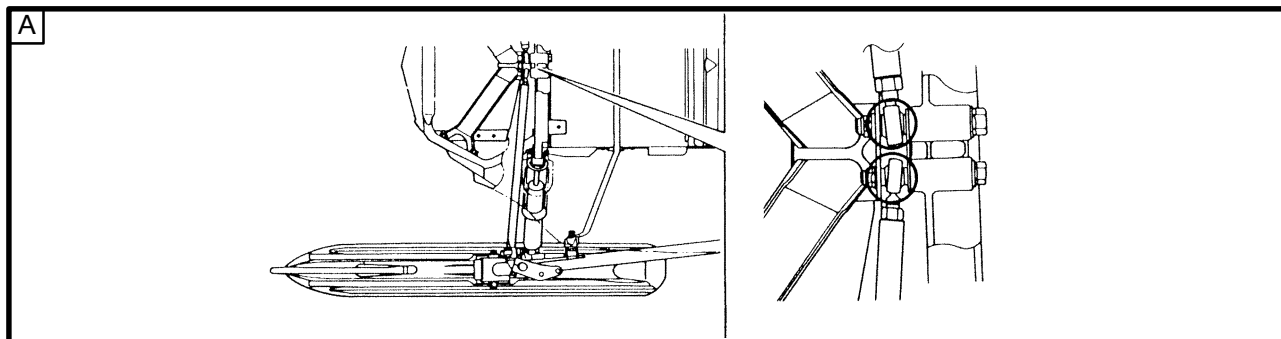


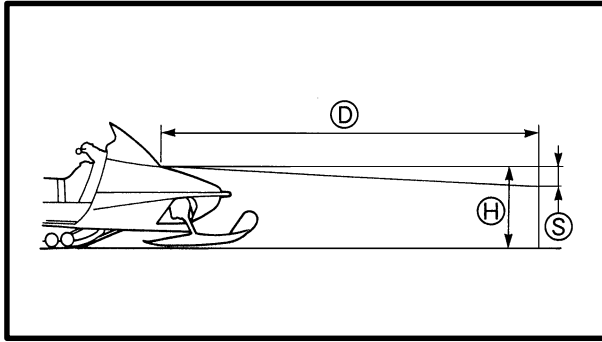
Recommended lubricant:

**Esso Beacon 325 Grease or
Aeroshell Grease #7A**

A Front

B Rear





ELECTRICAL

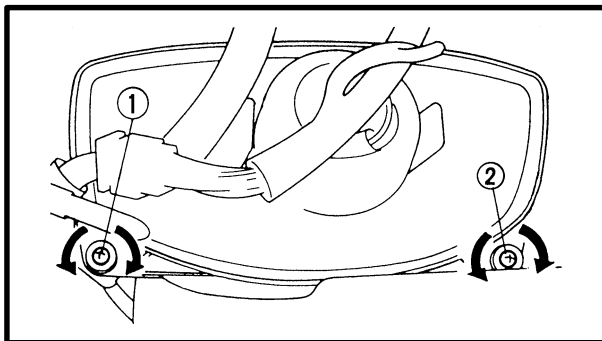
2E241

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 (distance $\textcircled{S}$).

$\textcircled{D}$	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 $\textcircled{S}$: Set range



6. Adjust:

- Headlight beam (vertically)

Vertical adjustment

- Higher** Turn the adjusting screw $\textcircled{1} + \textcircled{2}$ clockwise.
- Lower** Turn the adjusting screw $\textcircled{1} + \textcircled{2}$ counterclockwise.

7. Adjust:

- Headlight beam (horizontally)

Horizontal adjustment

- Right** Turn the adjusting screw $\textcircled{1}$ counterclockwise.
- Left** Turn the adjusting screw $\textcircled{2}$ counterclockwise.

BATTERY INSPECTION

For VT500XL models

⚠ WARNING

Battery-fluid is poisonous and dangerous, causes severe burns, etc. Contains sulfuric acid. Avoid contact with skin, eyes or clothing.

Antidote: EXTERNAL - Flush with water.

INTERNAL - Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg or vegetable oil. Call a physician immediately.

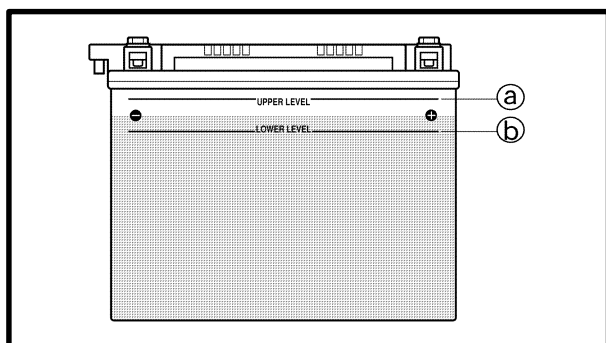
Eyes: Flush with water for 15 minutes and get prompt medical attention.

Batteries produce explosive gases. Keep sparks, flames, cigarettes, etc. away. Ventilate when charging or using in enclosed space. Always shield eyes when working near batteries.

KEEP OUT OF REACH OF CHILDREN.

1. Remove:

- Battery



2. Inspect:

- Fluid level should be between upper (a) and lower (b) level marks.

Incorrect → Refill.

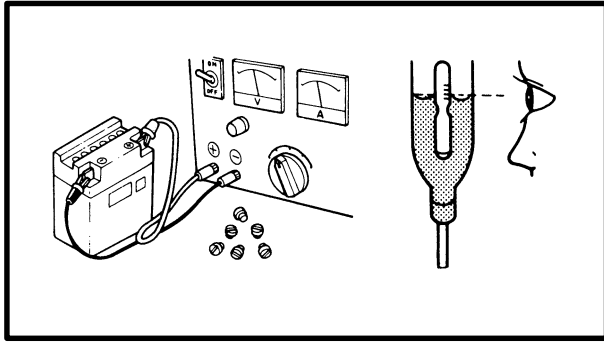
CAUTION:

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

3. Check:

- Specific gravity.
Less than 1.28 → Recharge battery.

Specific gravity:
1.280 at 20°C (68°F)

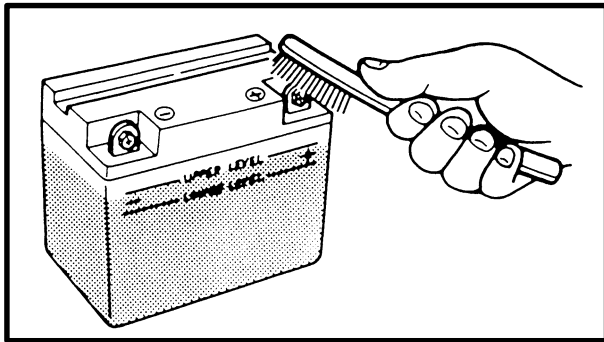


Replace the battery if:

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

CAUTION:

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



4. Inspect:

- Battery terminal
Dirty terminal → Clean with a wire brush.
Poor connection → Correct.

NOTE:

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

5. Install:

- Battery

BATTERY CHARGING**For VT500XL models**

The battery must be charged properly before using for the first time. This initial charge will prolong the life of the battery.

1. Remove:

- Battery

Battery charging step:

- Remove all filler caps from the battery.

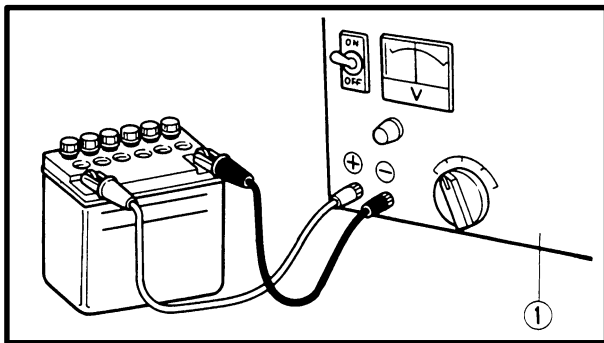
NOTE:

Place the battery on a level place.

- Cool the electrolyte down to below 30°C (86°F).
- Pour electrolyte into each cell little by little up to the upper level line, and leave it for a while. When the battery fluid permeates the plates and separators, the fluid level begins to lower. Add electrolyte and bring back to upper level line.

NOTE:

Fill the battery with diluted sulfuric acid (electrolyte).



- Connect the battery to a battery charger ①.
- Set the battery charger rate at 1/10 the battery capacity and charge the battery for 10 hours.

Charging Rate:

1.6 Ah × 10 hours

- Turn the battery charger off then disconnect it from the battery.
- Check the specific gravity of each cell with a hydrometer. If the hydrometer readings is below the specification, additional charging is necessary.
- Install the filler caps, and thoroughly wipe off the fluid around the filler caps.

2. Install:

- Battery

2E271

TUNING

CARBURETOR TUNING

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

CAUTION:

Engine oil is mixed with fuel just before the fuel enters the carburetors. During initial fuel flow to the carburetors, it is not always possible to supply the optimum fuel/oil mixture depending on the throttle opening. Therefore, after the carburetors have been tuned or maintained, or after the float chambers are removed for cleaning or jet replacement, be sure to idle the engine for about three minutes in order to avoid engine trouble.

CAUTION:

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

- Engine idle speed
- Throttle cable freeplay
- Carburetor synchronization
- Starter cable freeplay
- Oil pump cable freeplay

Carburetor tuning data

1. Standard specifications

A Type	B38-32
B Manufacturer	MIKUNI
C I.D. Mark	L: 8DJ100L R: 8DJ100R
D Main jet (M.J.)	L: 143.8, R: 142.5
E Pilot jet (P.J.)	#70
F Pilot screw (P.S.)	1 turn out
G Float height	9.5 ~ 13.5 mm (0.37 ~ 0.53 in)
H Idle speed	1,300 ± 100 r/min

2E281

Mid-range and high speed tuning

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

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

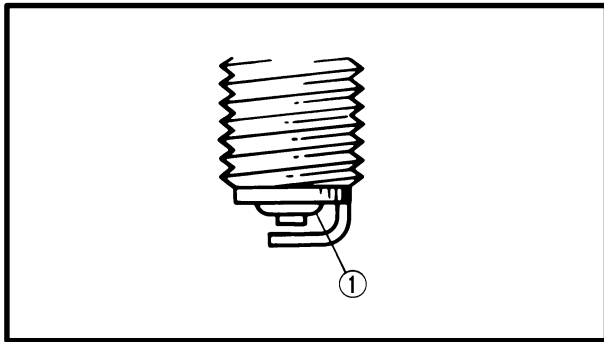
CAUTION:

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

1. Start the engine and operate the machine under normal conditions to make sure that the engine operates smoothly. Stop the engine.
2. Remove:
 - Spark plugs
3. Check:
 - Spark plug insulator ① color
A medium to light tan color indicates normal conditions.
Distinctly different color → Replace the main jet.
4. The main jet should be adjusted on the basis of the "Main jet selection chart".

NOTE:

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



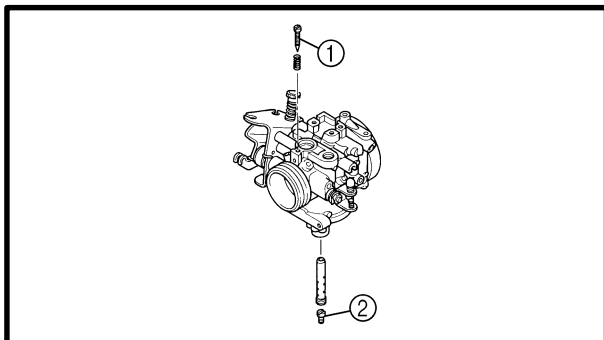
2E291

High altitude tuning

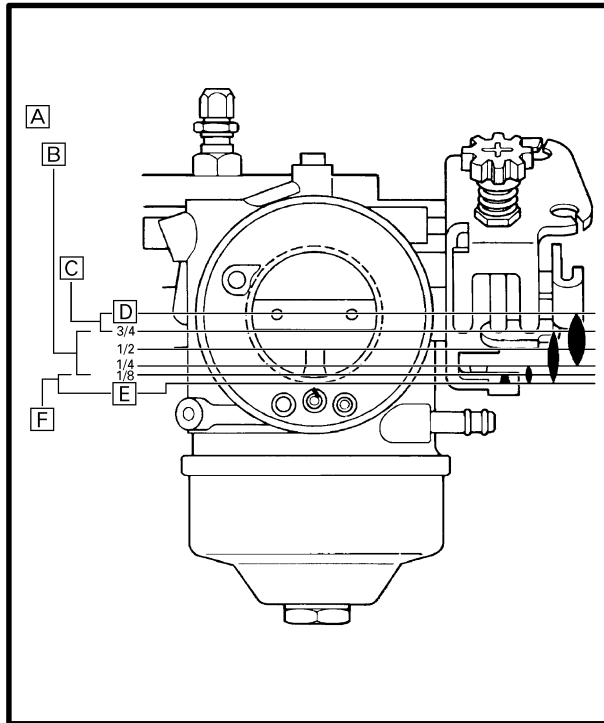
Use the chart in CHAPTER 8 to select main jets according to variations in elevation and temperature.

NOTE:

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



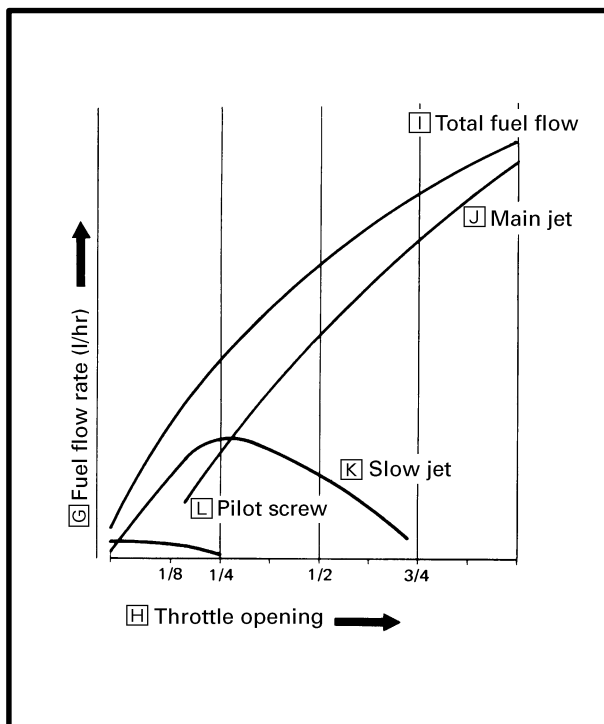
- ① Pilot mixture screw
- ② Main jet



2E302

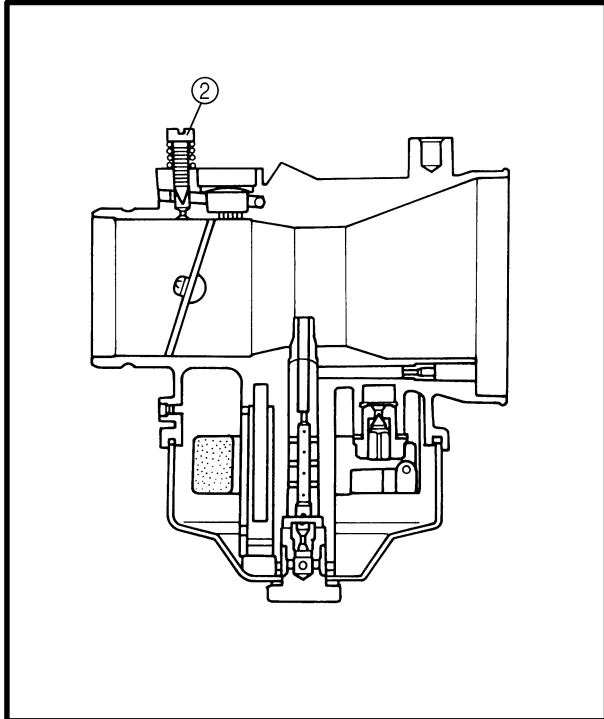
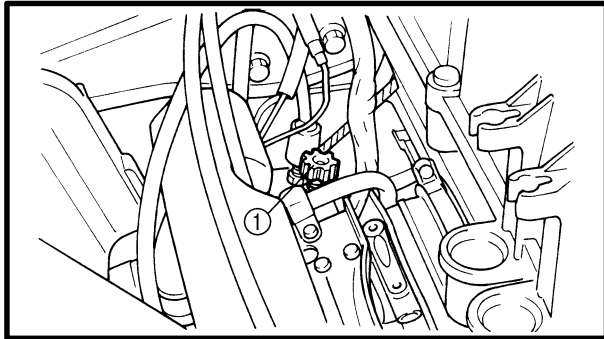
Guide for carburetion

- A Throttle valve opening
- B Mid-range speed tuning
- C High speed tuning
- D Fully opened
- E Low speed tuning



CAUTION:

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



2E391

Low speed tuning

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

CAUTION:

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

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

Pilot mixture screw ②:
1 turn out

Pilot mixture screw effects:

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

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



Standard idle speed:
1,300 ± 100 r/min

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

NOTE:

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

Standard pilot jet:
#70

2E311

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

2E321

Troubleshooting

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

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

CLUTCH
High altitude

W	White	S	Silver	L	Blue
P	Pink	R	Red	O	Orange
Y	Yellow	G	Green		

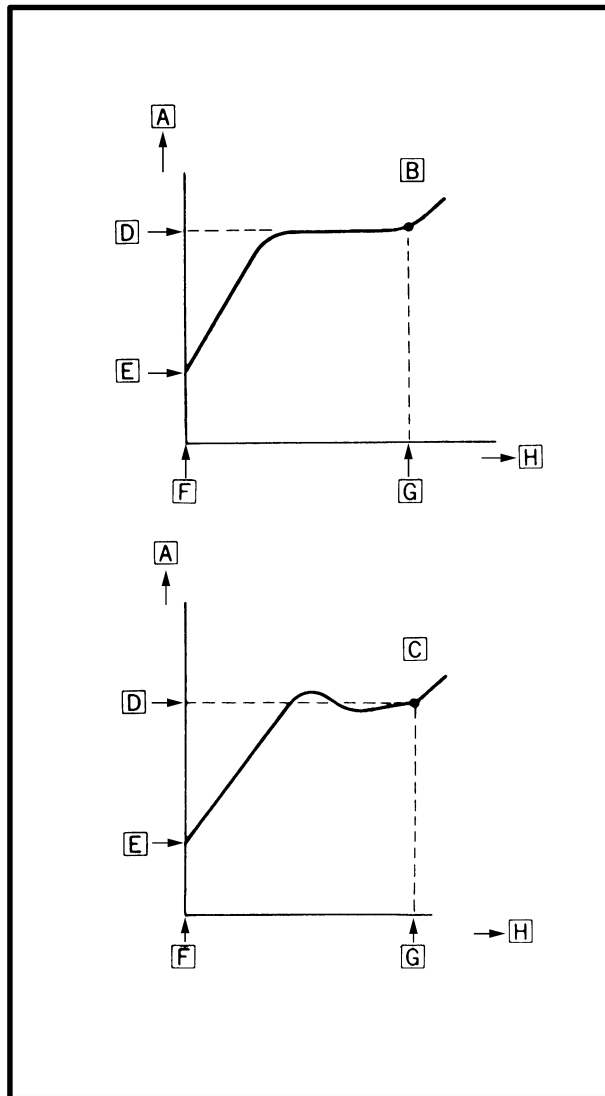
Specifications Model: PZ500

[A] Elevation	~ 1,000 m (~ 3,500 ft)	900 ~ 1,500 m (3,000 ~ 5,000 ft)	1,400 ~ 2,100 m (4,500 ~ 7,000 ft)	2,000 ~ 3,000 m (6,500 ~ 10,000 ft)
[B] Idle speed	Approx. 1,300 r/min	←	←	←
[C] Clutch engagement	Approx. 3,800 r/min	Approx. 3,900 r/min	Approx. 4,000 r/min	Approx. 4,200 r/min
[D] Shift speed	Approx. 7,250 r/min	←	←	←
[E] Main jet	[C] Refer to the "High-altitude settings" in "MAINTENANCE SPECIFICATIONS".			
[F] Pilot (slow) jet				
[G] Idle mixture screw				
[H] Gearing	21/39 (68 links)	20/39 (68 links)	19/39 (68 links)	18/39 (68 links)
[I] Primary spring				
[J] Color	G-P-G	←	←	←
[K] Length	76.3 mm (3.00 in)	←	←	←
[L] Preload rate	30 kg - 2.75 kg/mm	←	←	←
[M] Wire diameter	5.8 mm (0.23 in)	←	←	←
[N] Outside diameter	59.6 mm (2.34 in)	←	←	←
[O] Weight (1D)	8DJ00	←	←	←
[P] Weight rivet	Steel 13.9 (OUT) Steel 17.2 (IN)	Steel 10.3 (OUT) Steel 13.9 (IN)	Aluminum 10.3 (OUT) Steel 13.3 (IN)	None (OUT) Steel 10.3 (IN)
[Q] Weight bushing	Duralon	←	←	←
[R] Roller outer dia.	16.0 mm (0.63 in)	←	15.0 mm (0.59 in)	←
[S] Roller bushing	Duralon	←	←	←
[T] Pri. clutch shim	None	←	←	←
[U] Secondary spring		←	←	←
[V] Color	R	←	←	←
[W] Length	75 mm (2.95 in)	←	←	←
[X] Preload rate	70° (1-6) 729 kgmm/rad	←	←	←
[Y] Wire diameter	5.3 mm (0.21 in)	←	←	←
[Z] Outside diameter	69.5 mm (2.74 in)	←	←	←
[a] Sec. torque cam	43°	←	←	←
[b] Sec. clutch shim	1.0 mm (0.04 in)	←	←	←

W	White	S	Silver	L	Blue
P	Pink	R	Red	O	Orange
Y	Yellow	G	Green		

Specifications Model: VT500XL

[A] Elevation	~ 1,000 m (~ 3,500 ft)	900 ~ 1,500 m (3,000 ~ 5,000 ft)	1,400 ~ 2,100 m (4,500 ~ 7,000 ft)	2,000 ~ 3,000 m (6,500 ~ 10,00 ft)
[B] Idle speed	Approx. 1,300 r/min	←	←	←
[C] Clutch engagement	Approx. 3,700 r/min	Approx. 3,800 r/min (for U.S.A. / Canada) Approx. 3,700 r/min (for Europe)	Approx. 3,900 r/min	Approx. 4,100 r/min
[D] Shift speed	Approx. 7,250 r/min	←	←	←
[E] Main jet	[C] Refer to the "High-altitude settings" in "MAINTENANCE SPECIFICATIONS".			
[F] Pilot (slow) jet				
[G] Idle mixture screw				
[H] Gearing	21/39 (68 links) (for U.S.A. / Canada) 18/39 (68 links) (for Europe)	20/39 (68 links) (for U.S.A. / Canada) 18/39 (68 links) (for Europe)	19/39 (68 links)	18/39 (68 links)
[I] Primary spring				
[J] Color	P-P-P	←	←	←
[K] Length	75.4 mm (2.97 in)	←	←	←
[L] Preload rate	30 kg - 3.0 kg/mm	←	←	←
[M] Wire diameter	6.0 mm (0.24 in)	←	←	←
[N] Outside diameter	60.0 mm (2.36 in)	←	←	←
[O] Weight (1D)	8DJ00	←	←	←
[P] Weight rivet	Steel 13.3 (OUT) (for U.S.A. / Canada) Steel 17.2 (OUT) (for Europe) Steel 17.2 (IN)	Steel 10.3 (OUT) (for U.S.A. / Canada) Steel 13.3 (OUT) (for Europe) Steel 13.3 (IN) (for U.S.A./Canada) Steel 13.9 (IN) (for Europe)	Aluminum 10.3 (OUT) Steel 13.3 (IN)	None (OUT) Steel 10.3 (IN)
[Q] Weight bushing	Duralon	←	←	←
[R] Roller outer dia.	15.6 mm (0.61 in)	←	←	←
[S] Roller bushing	Duralon	←	←	←
[T] Pri. clutch shim	None	←	←	←
[U] Secondary spring				
[V] Color	R	←	←	←
[W] Length	75 mm (2.95 in)	←	←	←
[X] Preload rate	80° (2-6) (for U.S.A. / Canada) 70° (1-6) (for Europe) 729 kgmm/rad	←	←	←
[Y] Wire diameter	5.3 mm (0.21 in)	←	←	←
[Z] Outside diameter	69.5 mm (2.74 in)	←	←	←
[a] Sec. torque cam	43° (for U.S.A. / Canada) 41° (for Europe)	←	←	←
[b] Sec. clutch shim	1.0 mm (0.04 in)	←	←	←



2E331

The clutch may require tuning depending upon where it 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 200 ~ 300 m (650 ~ 1,000 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] Bad condition
- [D] Clutch shifting speed
- [E] Clutch engagement speed
- [F] Starting position
- [G] 200 ~ 300 m (650 ~ 1,000 ft)
- [H] Distance travelled

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] Part name	[B] Teeth & links	[C] Part no.	[D] Standard
[E] Drive sprocket	18 teeth	88F-17682-80	
	18 teeth	89J-17682-80	VT500XL for Europe
	19 teeth	88F-17682-90	
	19 teeth	89J-17682-91	
	20 teeth	88F-17693-00	
	20 teeth	89J-17682-00	
	21 teeth	88F-17693-10	PZ500
	21 teeth	89J-17682-10	VT500XL for U.S.A.
	22 teeth	88F-17693-20	
	22 teeth	89J-17682-20	
	23 teeth	89J-17682-30	
[F] Driven sprocket	39 teeth	88F-47587-90	PZ500
	39 teeth (reverse)	8CW-47587-90	VT500XL
[G] Chain	68 links	94860-01068	PZ500
	68 links	94860-02068	VT500XL
	70 links	94860-01070	
	70 links	94860-02070	

② Gear ratio

[A] Drive gear \ [B] Driven gear	18 teeth	19 teeth	20 teeth	21 teeth	22 teeth	[D] 23 teeth
39 teeth	2.167 68 links	2.053 68 links	1.950 68 links	1.857 68 links	1.773 70 links	1.696 70 links
40 teeth [C]	2.222 68 links	2.105 68 links	2.000 68 links	1.905 70 links	1.818 70 links	1.739 70 links

[C] Not for reverse models

[D] Not for PZ500

③ Secondary spring

[A] Part no.	[B] Spring rate N•mm/rad (kg•mm/rad)	[C] Preload N/m (kg/mm) (lb/in)	[D] Color	[E] Wire gauge mm (in)	[F] No. of coils	[G] Free length mm (in)	[H] Out side diameter mm (in)	[I] Standard
90508-500B1	6003 (612.6)	6.19 (0.631), 34.664	Brown	5.0 (0.196)	5.19	75 (2.95)	69.5 (2.736)	
90508-536A9	7147 (729.3)	7.25 (0.740), 40.6	Red	5.3 (0.208)	5.53	75 (2.95)	69.5 (2.736)	PZ500, VT500XL
90508-556A2	8314 (848.4)	8.49 (0.866), 47.544	Green	5.5 (0.216)	5.53	75 (2.95)	69.5 (2.736)	
90508-556A7	9460 (965.3)	10.18 (1.039), 57.008	Silver	5.5 (0.216)	4.86	75 (2.95)	69.5 (2.736)	

④ Secondary spring twist angle

90508-536A9 (red) / 90508-556A2 (green) / 90508-500B1 (brown) / 90508-556A7 (silver)

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

⑤ Torque cam (secondary spring seat)

[A] Part no.	[B] Cam angle	[C] Standard
8BV-17684-10	41°	VT500XL for Europe
8BV-17684-30	43°	PZ500, VT500LT for U.S.A.
8BV-17684-50	45°	
8BV-17684-70	47°	
8BV-17684-90	39°	

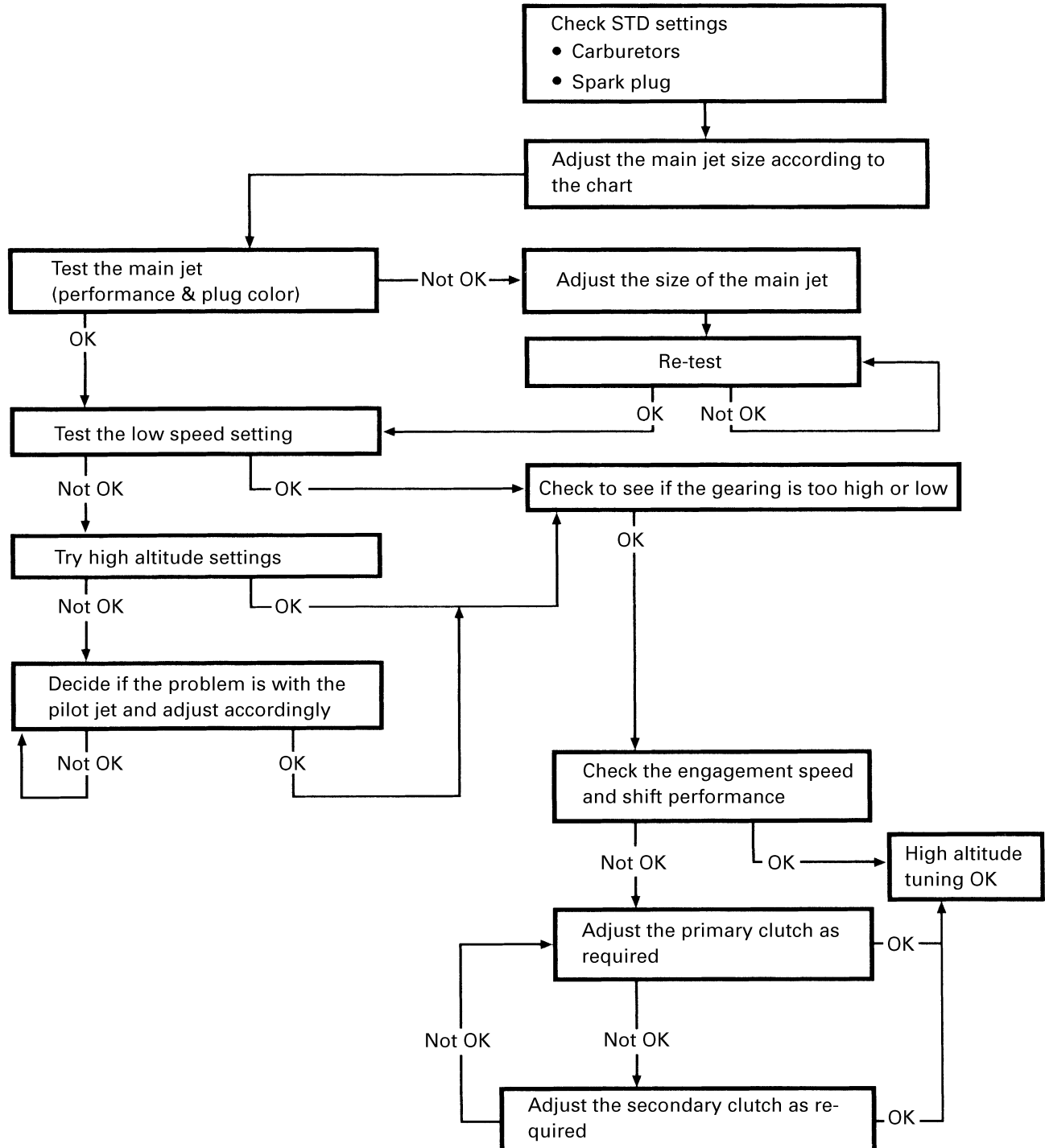
⑥ Primary spring

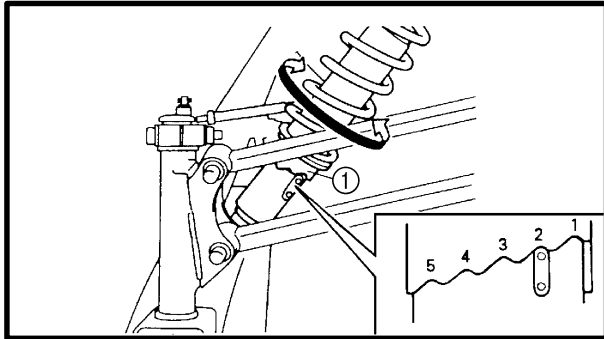
[A] Parts No.	[B] Spring rate N/mm (kg/mm)	[C] Preload N/mm (kg)	[D] Color	[E] Wire gauge mm (in)	[F] Outside diameter mm (in)	[G] No. of coils	[H] Free length mm (in)	[I] Standard
90501-481J1	9.8 (1.0)	196.1 (20)	Silver-Blue-Silver	4.8 (0.188)	60 (2.362)	5.16	85.4 (3.362)	
90501-487G8	14.7 (1.5)	147 (15)	Gold	4.8 (0.188)	60 (2.362)	4.19	75.4 (2.968)	
90501-507G2	14.7 (1.7)	196.1 (20)	Gold-Blue-Gold	5.0 (0.196)	60 (2.362)	4.61	78.7 (3.098)	
90501-507G7	17.1 (1.75)	147 (15)	Red-Gold-Red	5.0 (0.196)	60 (2.362)	4.24	74.0 (2.913)	
90501-521J6								
90501-524G4	17.1 (1.75)	245 (25)	Red-Yellow-Red	5.2 (0.204)	60 (2.362)	4.64	79.7 (3.137)	
90501-524G5	14.7 (1.5)	245 (25)	Gold-Yellow-Gold	5.2 (0.204)	60 (2.362)	5.08	82.1 (3.232)	
90501-525J8	19.6 (2.0)	294 (30)	Blue-Pink-Blue	5.2 (0.204)	48 (1.889)	4.43	80.4 (3.165)	
90501-526G4	19.6 (2.0)	147 (15)	Blue-Gold-Blue	5.2 (0.204)	60 (2.362)	4.32	72.9 (2.87)	
90501-526J9	17.2 (1.75)	294 (30)	Red-Pink-Red	5.2 (0.204)	48 (1.889)	4.77	82.5 (3.248)	
90501-527G1	17.2 (1.75)	196.1 (20)	Red-Blue-Red	5.2 (0.204)	60 (2.362)	4.65	76.8 (3.023)	
90501-550J8	22 (2.25)	294 (30)	White-Pink-White	5.5 (0.216)	60 (2.362)	4.62	78.7 (3.098)	
90501-553G0	19.6 (2.0)	245 (25)	Blue-Yellow-Blue	5.5 (0.216)	60 (2.362)	5.10	78.0 (3.07)	
90501-553G6	22 (2.25)	245 (25)	White-Yellow-White	5.5 (0.216)	60 (2.362)	4.61	76.5 (3.011)	
90501-555J9	22 (2.25)	343 (35)	White-Silver-White	5.5 (0.216)	48 (1.889)	4.66	81.0 (3.118)	
90501-556G5	22 (2.25)	196.1 (20)	White-Blue-White	5.5 (0.216)	60 (2.362)	4.62	74.3 (2.925)	
90501-556G6	19.6 (2.0)	196.1 (20)	Blue	5.5 (0.216)	60 (2.362)	4.95	75.4 (2.968)	
90501-556G7	24.5 (2.5)	196.1 (20)	Yellow-Blue-Yellow	5.5 (0.216)	60 (2.362)	4.36	73.4 (2.889)	
90501-557G5	24.5 (2.5)	147 (15)	Yellow-Gold-Yellow	5.5 (0.216)	60 (2.362)	4.36	71.4 (2.811)	
90501-557G6	22 (2.25)	147 (15)	White-Gold-White	5.5 (0.216)	60 (2.362)	4.62	72.1 (2.838)	
90501-581J7	24.5 (2.5)	245 (25)	Yellow	5.8 (0.228)	60 (2.362)	4.96	75.4 (2.968)	
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 (2.75)	294 (30)	Green-Pink-Green	5.8 (0.228)	59.6 (2.346)	4.64	76.3 (3.023)	PZ500
90501-586J0	24.5 (2.5)	343 (35)	Yellow-Silver-Yellow	5.8 (0.228)	48 (1.889)	4.91	79.4 (3.125)	
90501-602J0	29.4 (3.0)	294 (30)	Pink-Pink-Pink	6.0 (0.236)	60 (2.362)	4.74	75.4 (2.968)	VT500XL
90501-604G0	29.4 (3.0)	235 (24)	Pink-Yellow-Pink	6.0 (0.236)	60 (2.362)	4.80	73.3 (2.885)	
90501-605G7	26.8 (2.74)	235 (24)	Green-Yellow-Green	6.0 (0.236)	60 (2.362)	5.00	74.1 (2.917)	
90501-605J5	31.9 (3.25)	294 (30)	Orange-Pink-Orange	6.0 (0.236)	48 (1.889)	4.53	74.6 (2.937)	
90501-606G9	29.4 (3.0)	196.1 (20)	Pink-Blue-Pink	6.0 (0.236)	60 (2.362)	4.86	72.1 (2.838)	
90501-607G0	27 (2.75)	196.1 (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 (2.771)	
90501-607G4	27 (2.75)	147 (15)	Green-Gold-Green	6.0 (0.236)	60 (2.362)	5.12	70.9 (2.791)	

2E341

HIGH ALTITUDE TUNING

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





FRONT SUSPENSION

Spring preload

1. Adjust:
 - Spring preload

Adjustment steps:

- Turn the adjusting ring ① to the proper position.

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

CAUTION:

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

REAR SUSPENSION

Stopper band

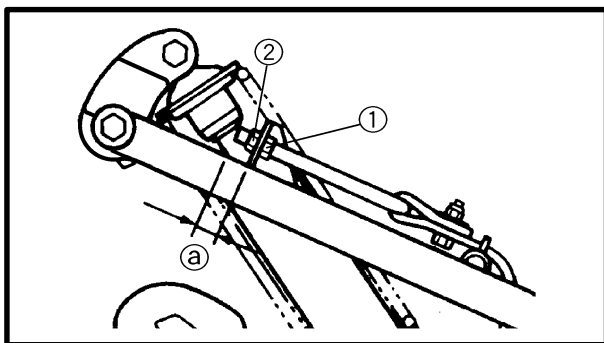
1. Adjust:
 - Stopper band tension

CAUTION:

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

NOTE:

This adjustment affects the handling characteristics of the machine.



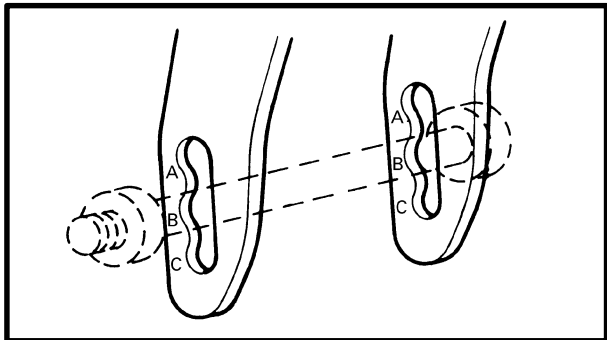
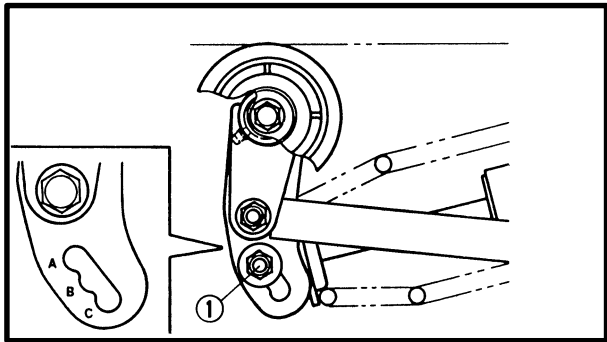
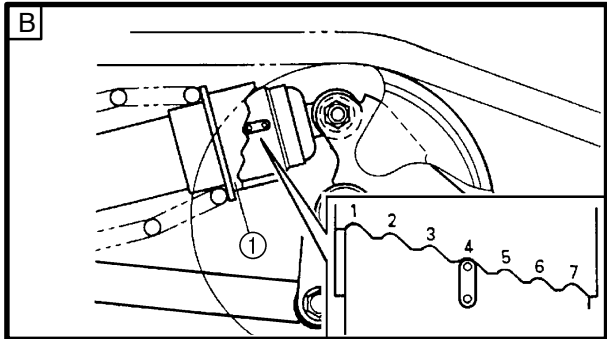
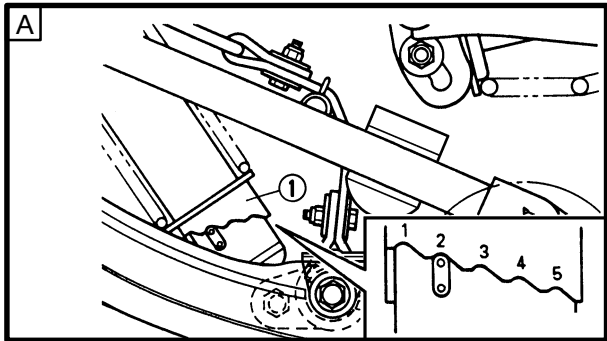
Adjustment steps:

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

Adjuster thread length ②	PZ500:	15mm (0.59 in)
	VT500XL:	15mm (0.59 in)
	Longer (Maximum)	Shorter (Minimum)
Effects	More weight on skis; less weight transfer	Less weight on skis; more weight transfer

- Tighten the locknut.

	Lock nut: 16 Nm (1.6 m • kg, 11 ft • lb)
---	--



Spring preload

1. Adjust:
- Spring preload

Adjustment steps:

- Turn the adjusting ring ① to the proper position.

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

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

Rear suspension -full rate

1. Adjust:
- Full rate adjuster

Adjustment steps:

- Loosen the nut ①.
- Move the end of the shock absorber assembly to the desired position.

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

NOTE:

Rotating the track will help to move the shock absorber assembly.

CAUTION:

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

- Tighten the nut.

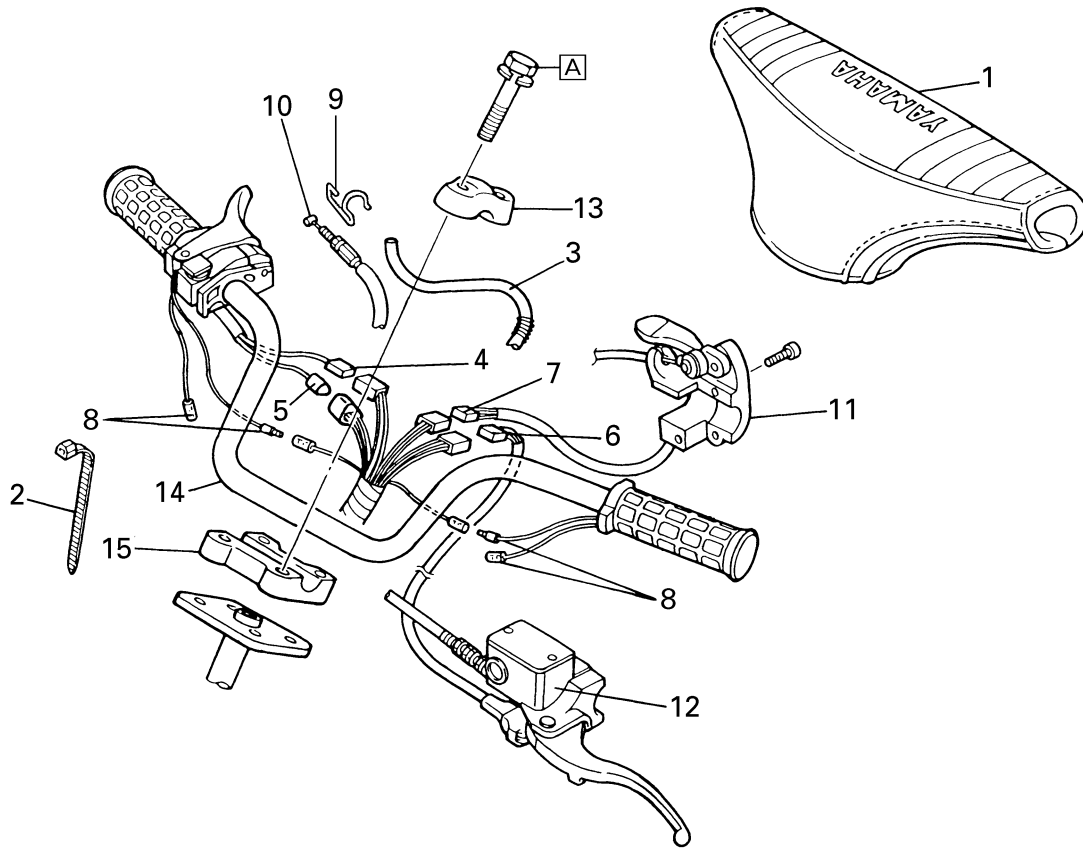
	Nut (full rate adjuster): 49 Nm (4.9 m • kg, 35 ft • lb)
--	--



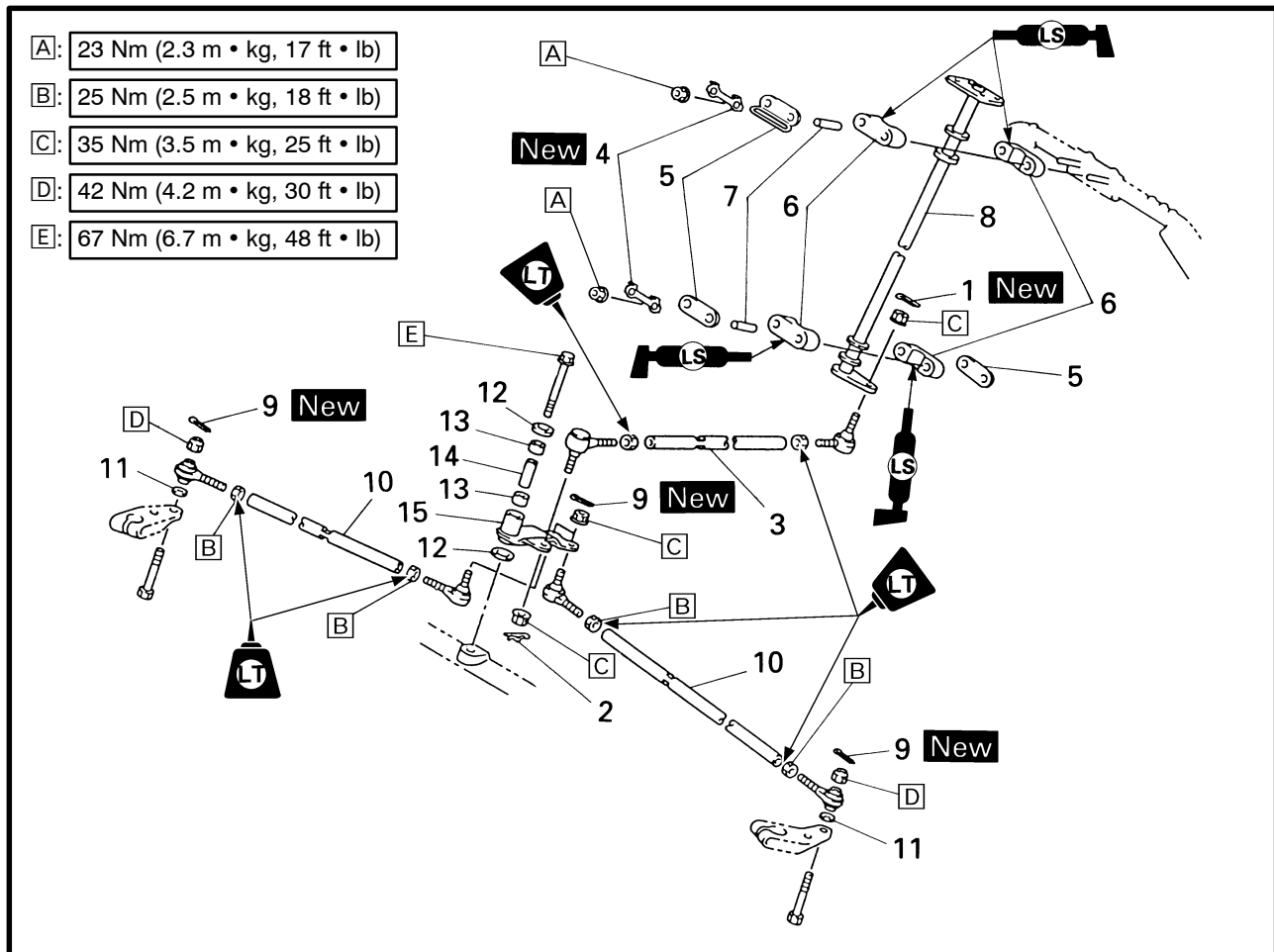
CHASSIS

STEERING

A: 15 Nm (1.5 m • kg, 11 ft • lb)

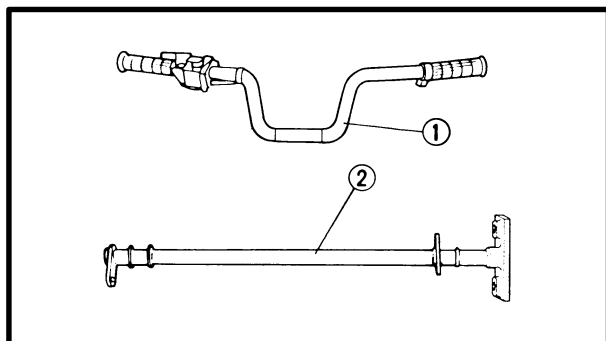


Order	Job name/Part name	Q'ty	Remarks
	Handlebar removal		Remove the parts in the order listed.
1	Handlebar cover	1	
2	Band	5	
3	Oil tank breather hose	1	
4	Thumb warmer coupler	1	
5	Engine stop switch coupler	1	
6	Brake switch coupler	1	
7	Headlight beam switch coupler	1	
8	Grip warmer lead	4	
9	Throttle cable holder	1	
10	Throttle cable	1	
11	Brake lever holder	1	
12	Master cylinder assembly	1	
13	Handlebar holder (upper)	2	
14	Handlebar	1	
15	Handlebar holder (lower)	1	
			NOTE: _____ After installing all parts, refer to "CABLE ROUTING" in CHAPTER 8, to check the cable, lead and hose routings.
			For installation, reverse the removal procedure.



3

Order	Job name/Part name	Q'ty	Remarks
	Steering column and tie rod removal		
	Engine assembly		Remove the parts in the order listed. Refer to "ENGINE ASSEMBLY" in CHAPTER 5.
	Handlebar		Refer to "HANDLEBAR".
1	Cotter pin	1	
2	Clip	1	
3	Relay rod	1	
4	Lock washer	2	
5	Bearing holder	3	
6	Bearing	4	
7	Collar	4	
8	Steering column	1	
9	Cotter pin	4	
10	Tie rod	2	
11	Washer	2	
12	Washer	2	
13	Bushing	2	
14	Collar	1	
15	Relay arm	1	
			For installation, reverse the removal procedure.

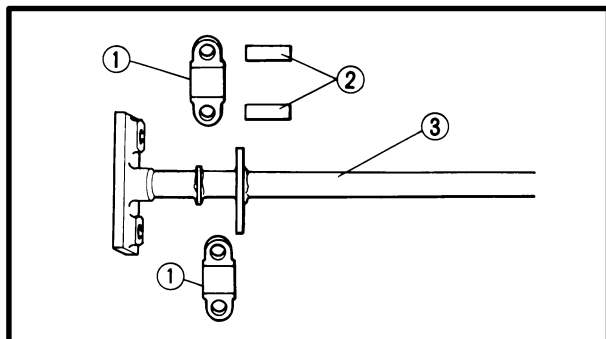
**INSPECTION**

1. Inspect:

- Handlebar ①
 - Steering column ②
- Bends/cracks/damage → Replace.

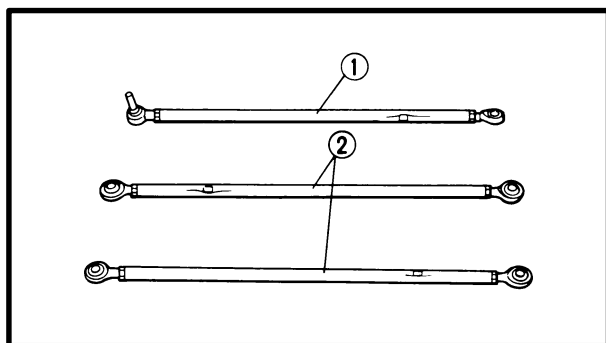
⚠ WARNING

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



2. Inspect:

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

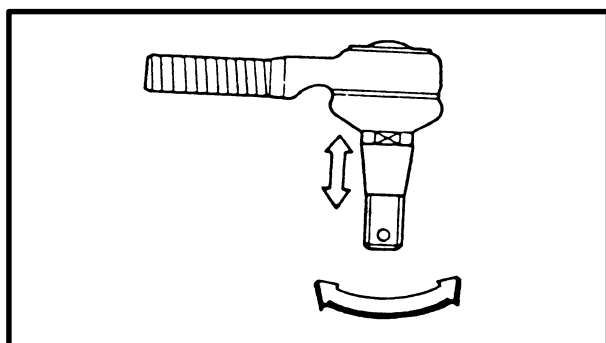


3. Inspect:

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

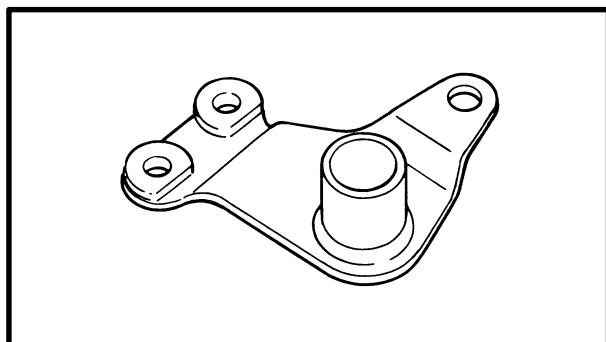
⚠ WARNING

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



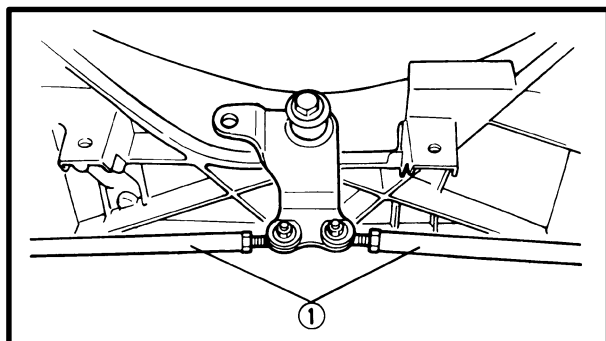
4. Check:

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



5. Inspect:

- Relay arm
- Cracks/damage → Replace.

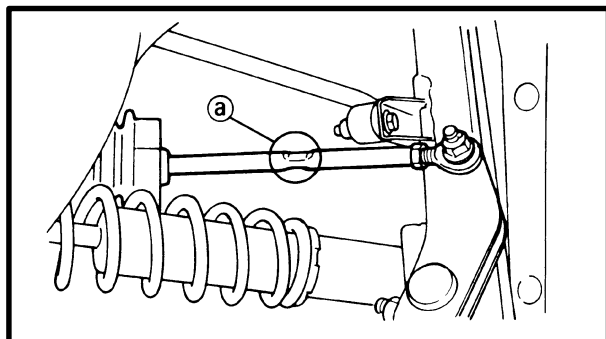
**INSTALLATION**

1. Install:

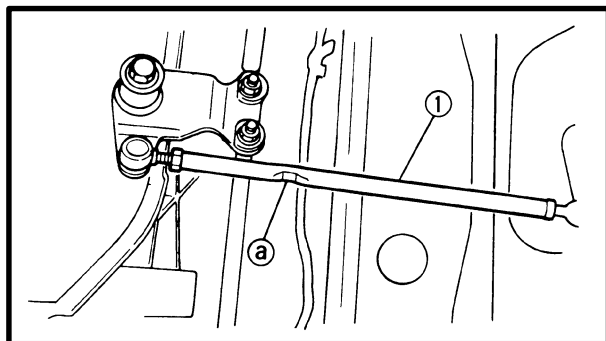
- Tie rods ①

NOTE:

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

**CAUTION:**

Always use new cotter pins.

**Locknut (rod end):****25 Nm (2.5 m • kg, 18 ft • lb)****LOCTITE®****Nut (tie-rod relay arm):****35 Nm (3.5 m • kg, 25 ft • lb)****Nut (tie-rod steering arm):****42 Nm (4.2 m • kg, 30 ft • lb)**

2. Install:

- Relay rod ①

NOTE:

Make sure that the end of the relay rod with the indentation (a) is connected to the relay arm.

CAUTION:

Always use new cotter pins.

**Nut (relay rod):****35 Nm (3.5 m • kg, 25 ft • lb)**

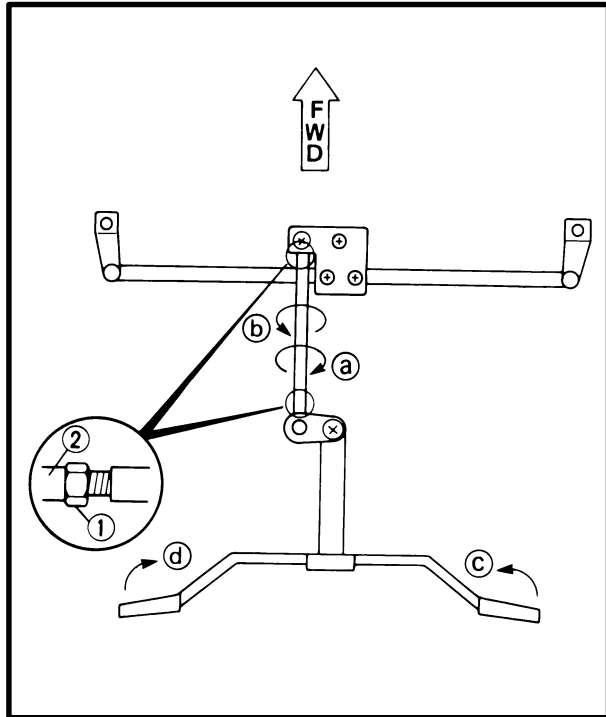


3. Adjust:

- Skis

Adjustment steps:

- Temporarily install the handlebar.
- Hold the handlebar straight and check that the skis are at right angles to the handlebar.
- Loosen the locknuts (relay rod) ①.
- Position the skis parallel in the riding direction.
- With the skis in this position, turn the relay rod ② in either direction until the handlebars at right angles with respect to the direction of movement.

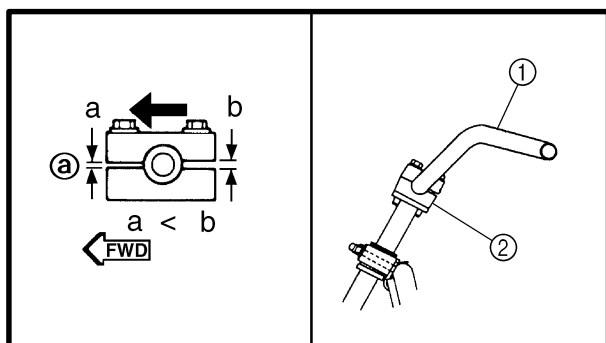


Turning the relay rod in direction (a)	Turning the handlebar in direction (c)
Turning the relay rod in direction (b)	Turning the handlebar in direction (d)

- Tighten the locknuts (relay rod) ①.



Locknut (relay rod):
 25 Nm (2.5 m • kg, 18 ft • lb)
 LOCTITE®



4. Install:

- Handlebar

CAUTION:

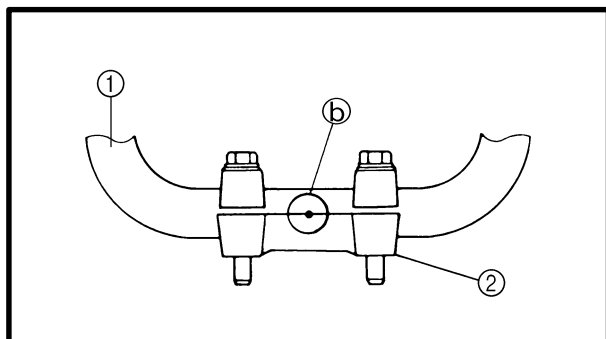
- Be sure the side of the holder with the small gap (a) faces forward.
- Center the match mark (b) on the handlebar (1) between the handlebar holders (lower) (2).



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

CAUTION:

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



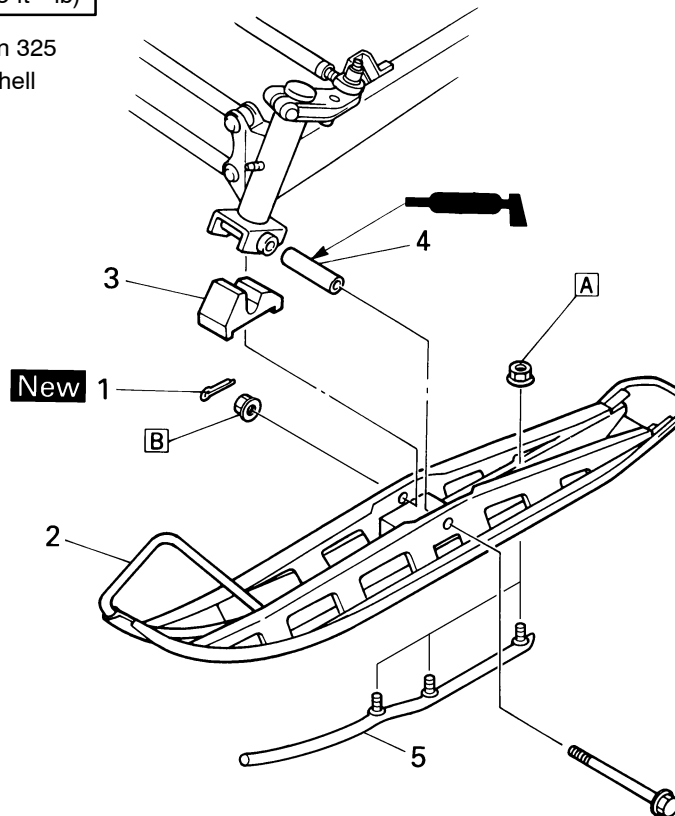


SKI

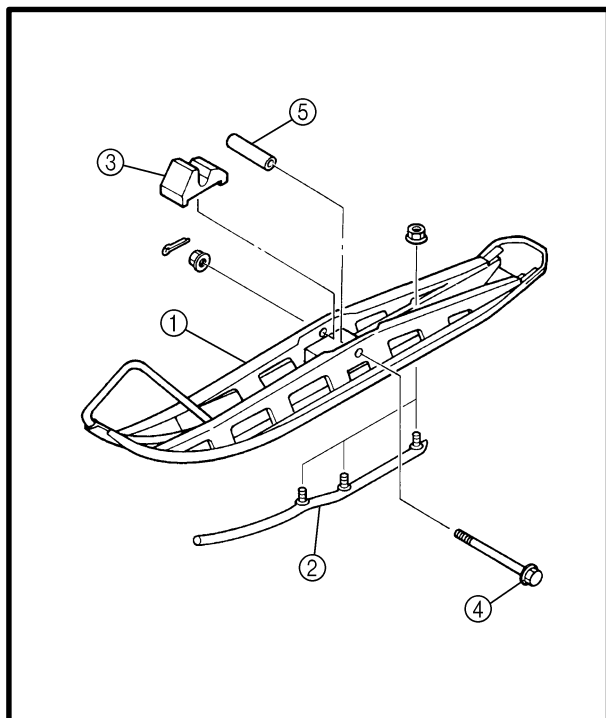
[A]: 26 Nm (2.6 m • kg, 19 ft • lb)

[B]: 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.
1	Cotter pin	1	
2	Ski	1	
3	Ski stopper	1	
4	Collar	1	
5	Ski runner	1	
			For installation, reverse the removal procedure.



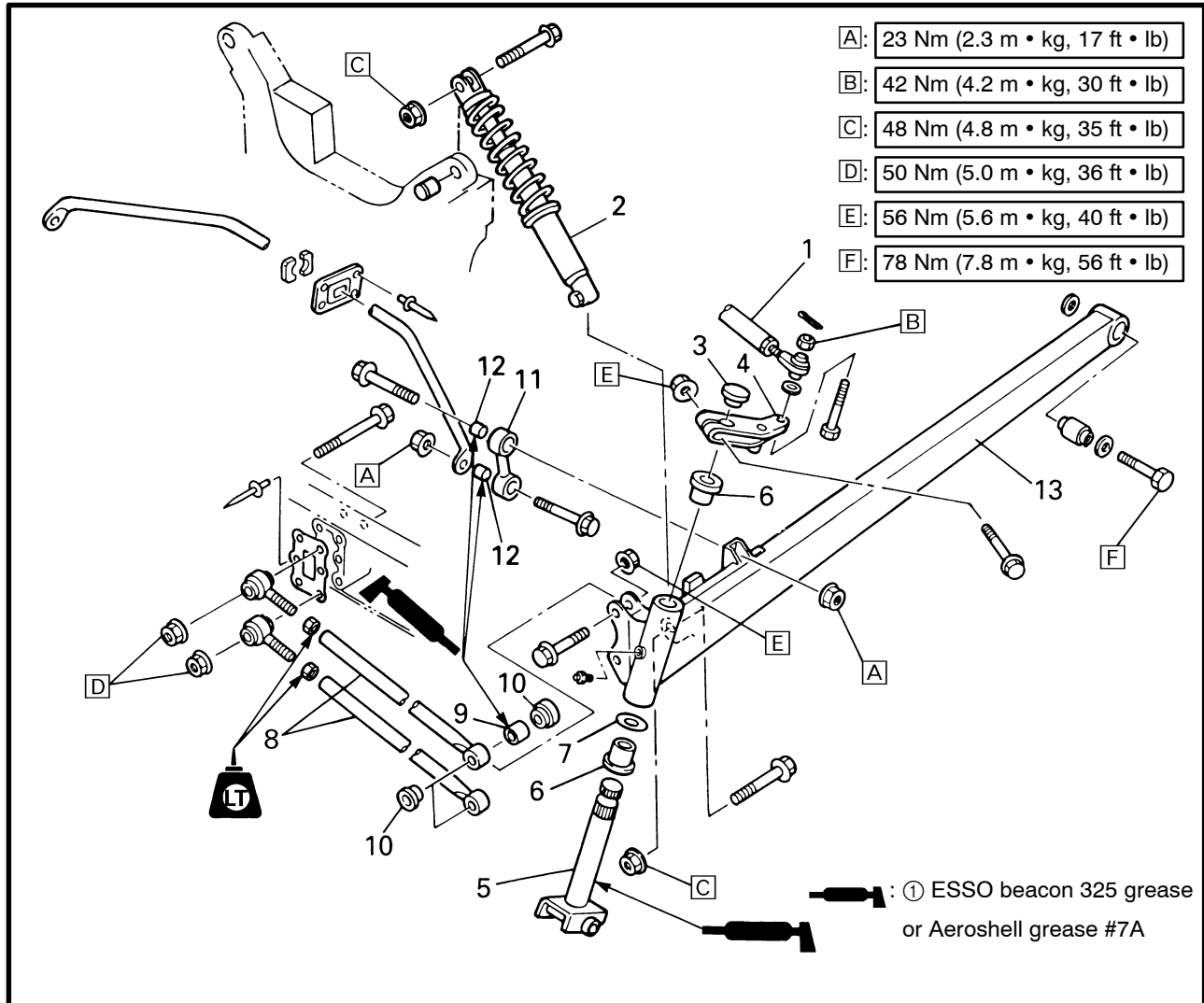
INSPECTION

1. Inspect:

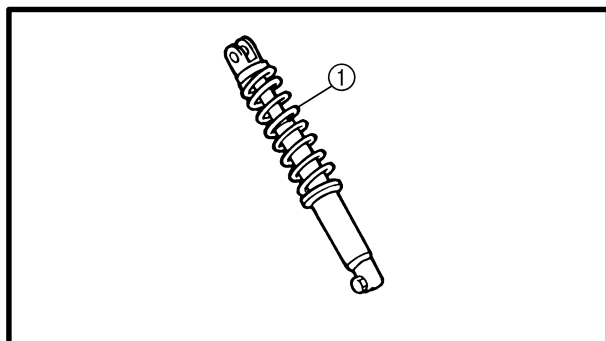
- Ski ①
- Ski runner ②
- Ski stopper ③
Wear/cracks/damage → Replace.
- Mounting bolt ④
- Collar ⑤
Wear/damage → Replace.



FRONT SUSPENSION



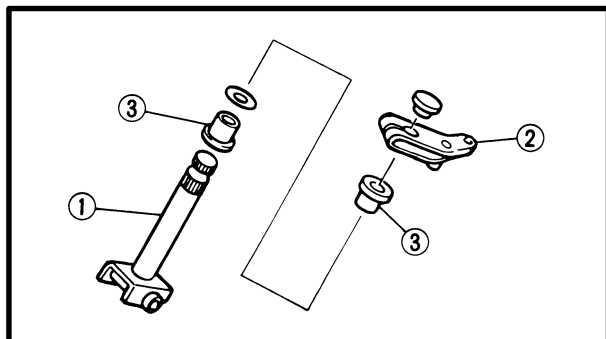
Order	Job name/Part name	Q'ty	Remarks
	Front suspension removal		
	Ski		Remove the parts in the order listed.
			Refer to "SKI".
1	Tie rod	1	
2	Shock absorber	1	
3	Cap	1	
4	Steering arm	1	
5	Ski column	1	
6	Bushing	2	
7	Washer	1	
8	Control rod	2	
9	Collar	2	
10	Bushing	4	
11	Connecting rod	1	
12	Collar	2	
13	Front arm	1	
			For installation, reverse the removal procedure.



INSPECTION

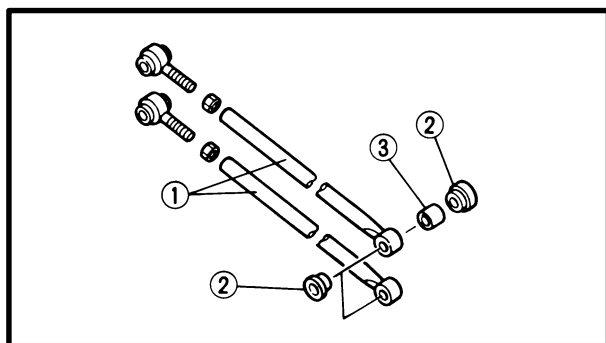
1. Inspect:

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



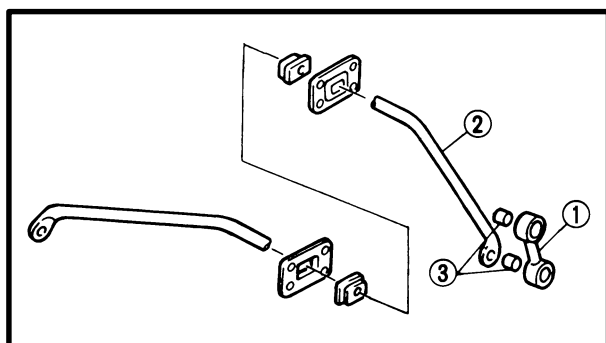
2. Inspect:

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



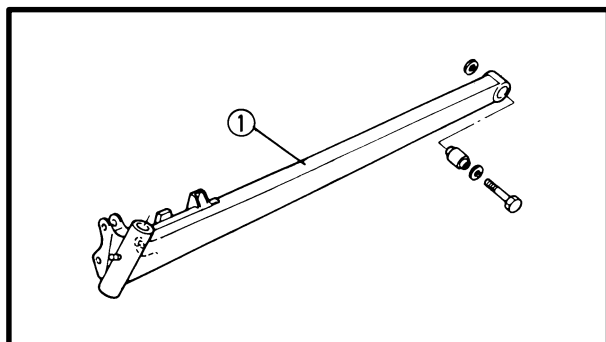
3. Inspect:

- Control rod ①
Cracks/bends/damage → Replace.
- Bushing ②
- Collar ③
Wear/scratches/damage → Replace.



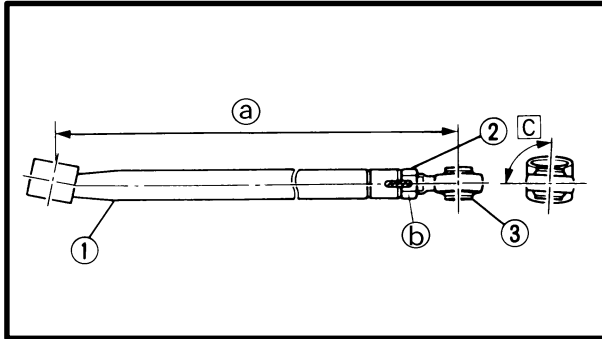
4. Inspect:

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



5. Inspect:

- Front arm ①
Cracks/bends/damage → Replace.



INSTALLATION

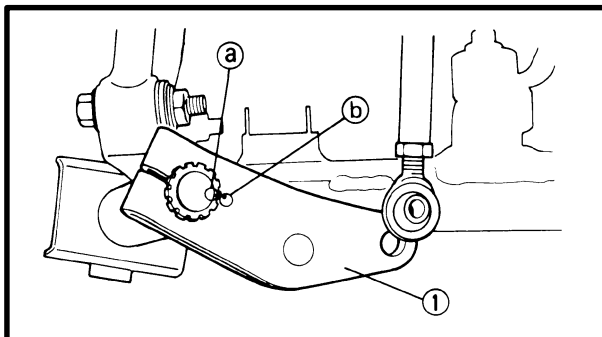
1. Install:

- Control rod ①
- Nut ②
- Joint ③
- ① Set length

	A Left hand	
	B Set length ① (mm)	C Set angle (°)
E Upper	475.5 ± 0.5 mm (18.7204 ± 0.0197 in)	93 ± 1
F Lower	472.6 ± 0.5 mm (18.6062 ± 0.0197 in)	93 ± 1

	D Right hand	
	B Set length ① (mm)	C Set angle (°)
E Upper	475.5 ± 0.5 mm (18.7204 ± 0.0197 in)	87 ± 1
F Lower	472.6 ± 0.5 mm (18.6062 ± 0.0197 in)	87 ± 1

- ② 12 mm = 48 ~ 64 Nm (4.8 ~ 6.4 m • kg, 35 ~ 46 ft • lb)
 14 mm = 62 ~ 84 Nm (6.2 ~ 8.4 m • kg, 45 ~ 60 ft • lb)



2. Install:

- Steering arm ①

NOTE:

Align the punch mark ① on the ski column with the punch mark ② on the steering arm.

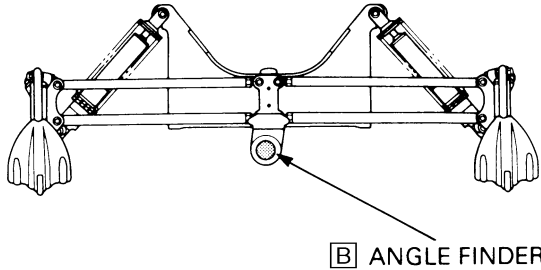
	Nut (steering arm):
	56 Nm (5.6 m • kg, 40 ft • lb)



Ski spindle camber

Place the unit on a level surface and check the ski spindle camber. DO NOT elevate the front-end.

- ① Using an angle finder, be sure that the unit sits parallel with the floor. Place the angle finder up against the flat aluminum part of the belly pan.



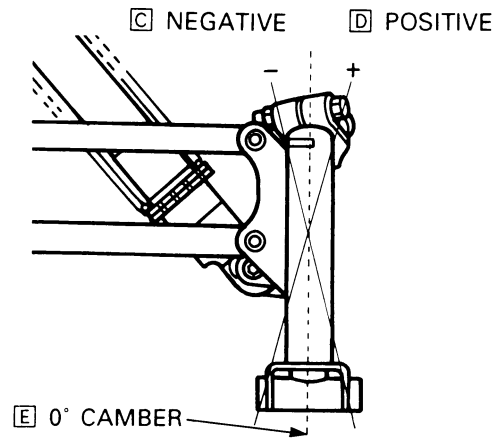
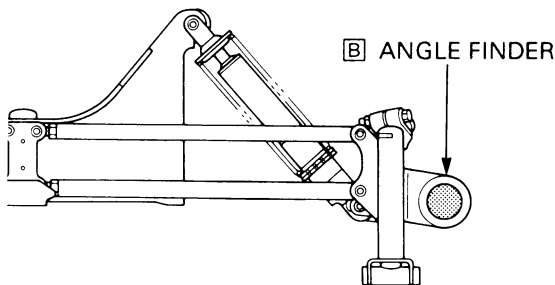
- USE AN ANGLE FINDER TO CHECK THAT THE UNIT IS LEVEL.



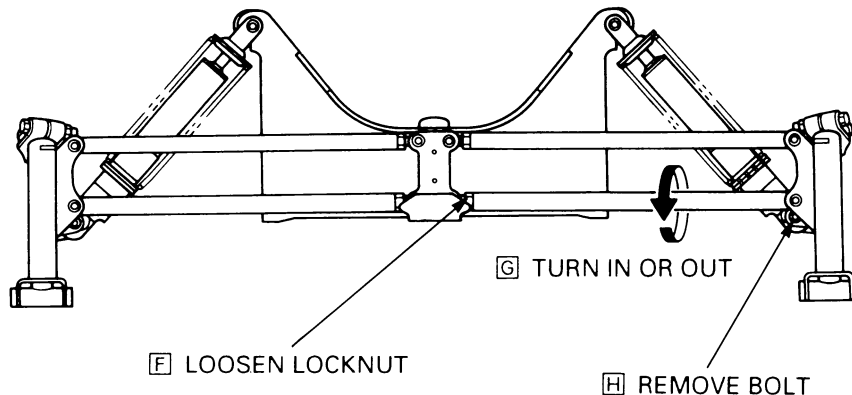
Angle finder:
YS-42422

- ② Place the angle finder up against the vertical flat surface on the trailing arm just behind the spindle weld and check the spindle camber.

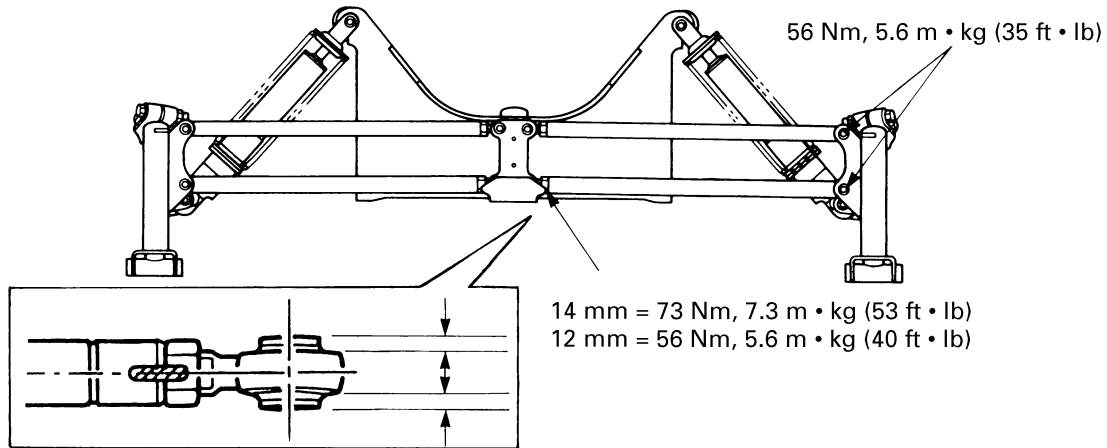
Ski spindle camber:
-0.5° to +0.5°



- ③ To adjust the camber, loosen the lower radius rod ball joint locknut and remove the bolt securing the radius rod to the trailing arm. Turn the rod in or out as necessary until the proper camber angle is obtained.



- ④ Install the radius rod onto the trailing arm and tighten the bolt. Tighten the ball joint locknut and apply grease to the ball joint. Repeat the procedure for the other side.



CAUTION:

When tightening the ball joint locknut, be sure to keep the ball joint outer housing centered with the ball to prevent binding.

Ski alignment

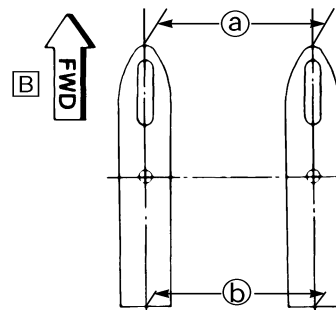
NOTE:

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

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

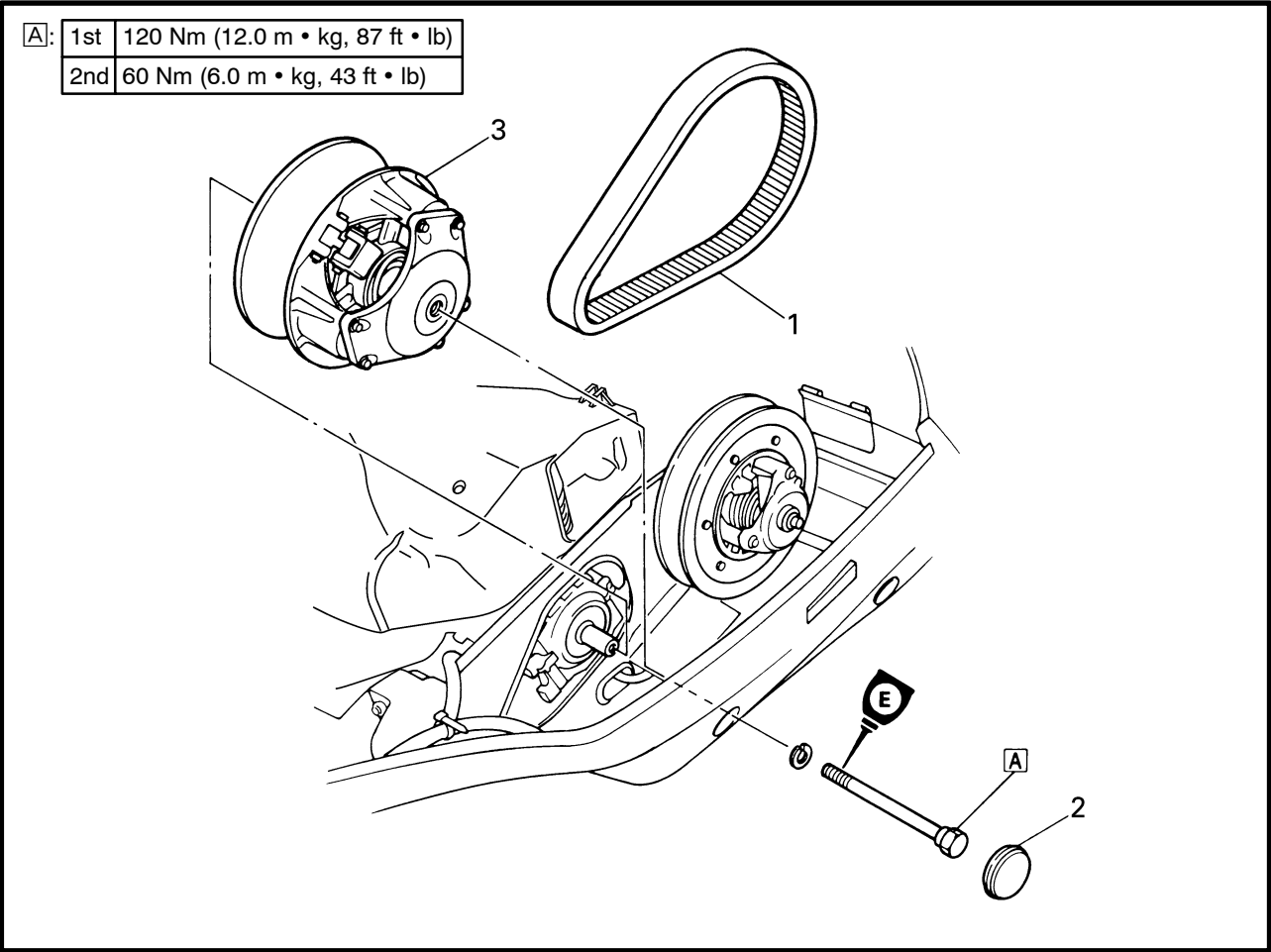
A Ski toe out:
0 ~ 15 mm (0 ~ 0.59 in)

① - ② = Toe out

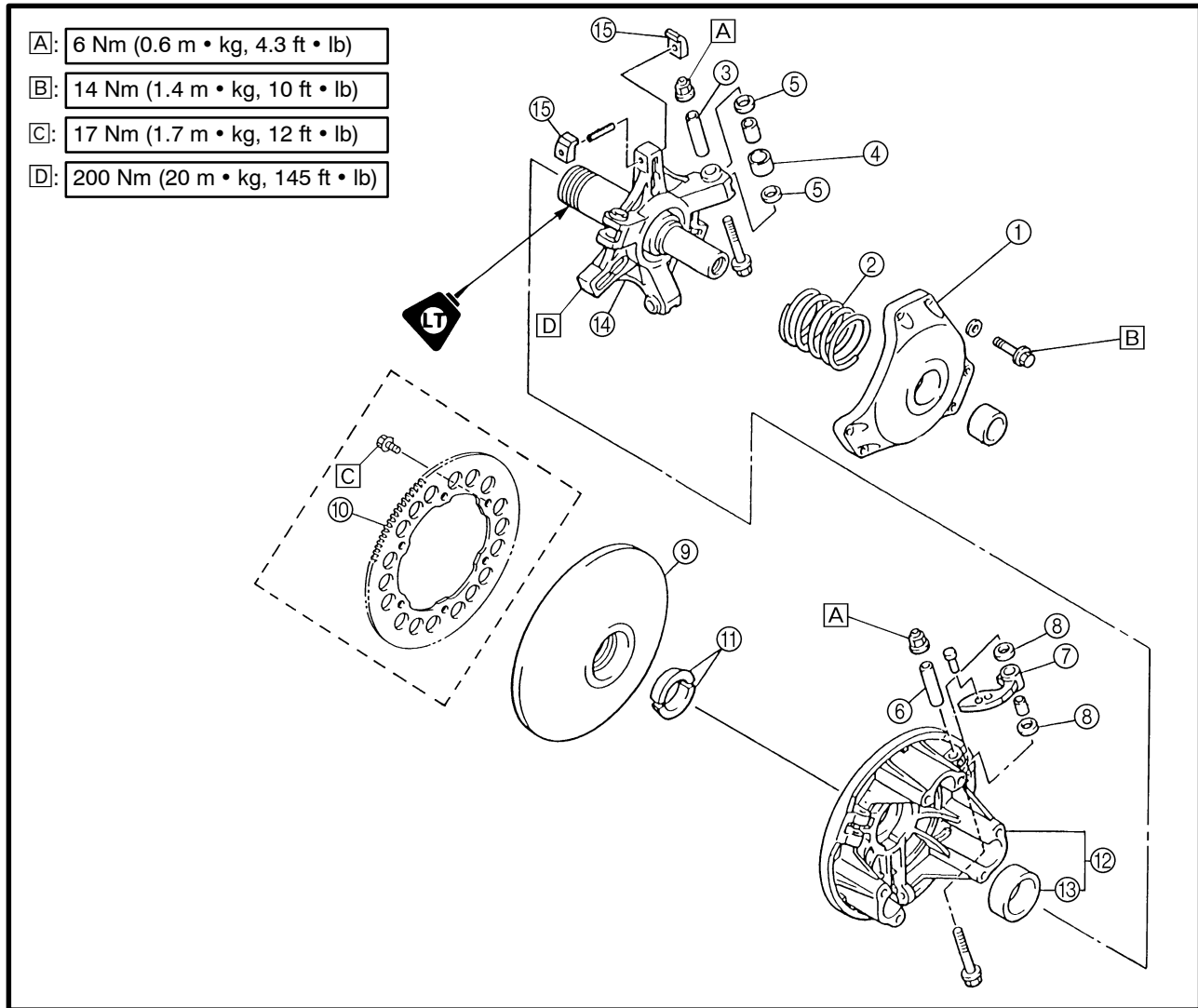


POWER TRAIN

PRIMARY SHEAVE AND DRIVE V-BELT

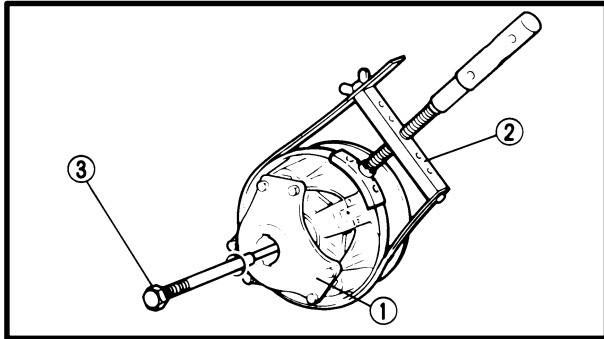


Order	Job name/Part name	Q'ty	Remarks
	Primary sheave removal		
1	V - belt	1	Remove the parts in the order listed.
2	Blind cap	1	
3	Primary sheave assembly	1	
			For installation, reverse the removal procedure.



4

Order	Job name/Part name	Q'ty	Remarks
	Primary sheave disassembly		Remove the parts in the order listed.
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	Starter motor driven gear	1	(VT500XL)
⑪	Stopper	1	
⑫	Sliding sheave	1	
⑬	Bushing	1	
⑭	Spider	1	
⑮	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.

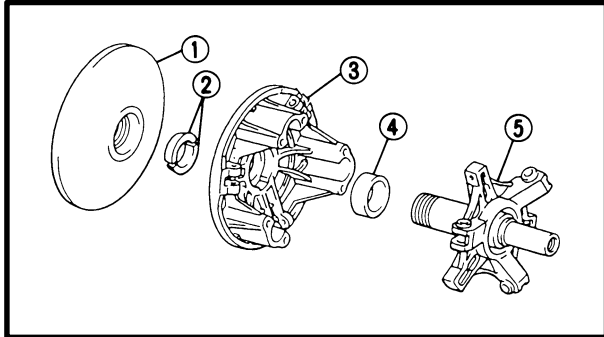


Primary sheave holder:

90890-01701, YS-01880

Primary sheave puller:

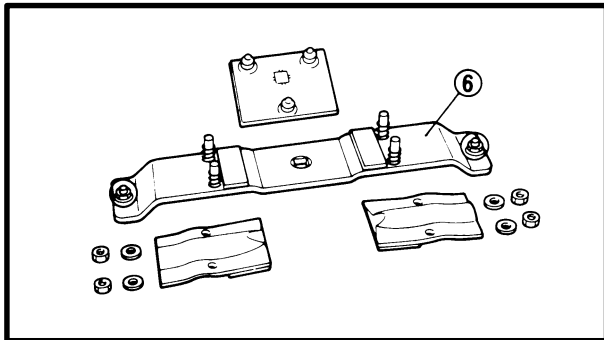
YS-01881-1, YS-01882-1



DISASSEMBLY

1. Remove:

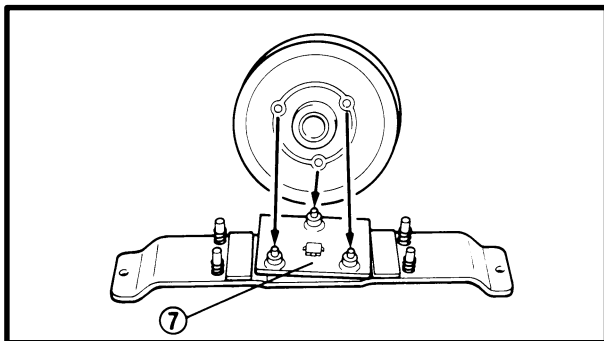
- Fixed sheave ①
- Stopper ②
- Sliding sheave ③
- Bushing ④
- Spider ⑤



Removal steps:

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

Then, install the clutch separator adapter ⑦ onto the separator.



Clutch spider separator:

90890-01711, YS-28890-B

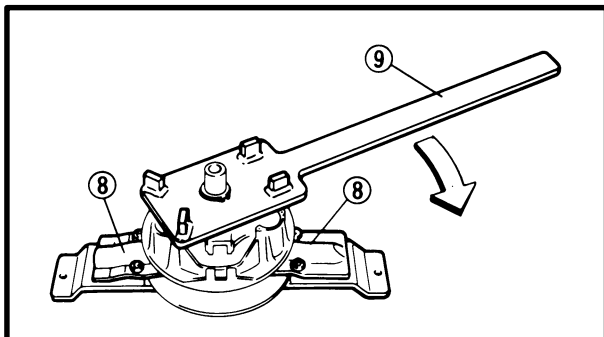
Clutch separator adapter:

90890-01740, YS-34480

- 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.



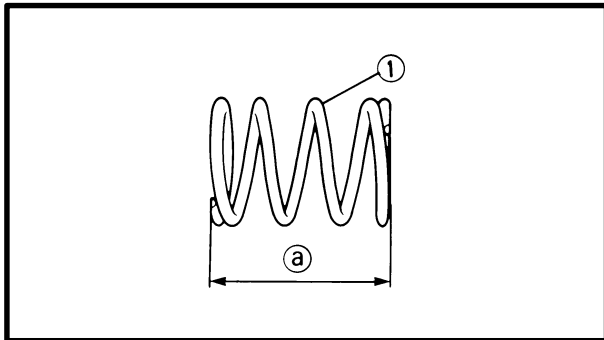
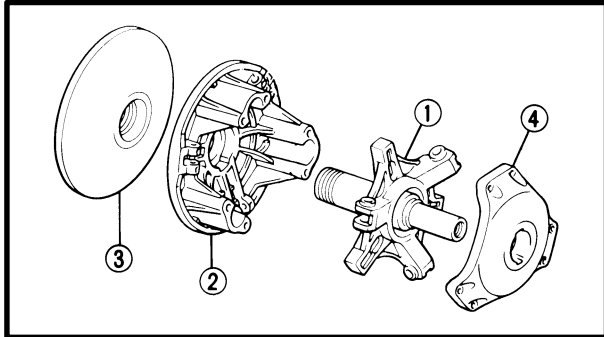
Clutch spider separator (bar wrench):

90890-01711, YS-28890-B

CAUTION:

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

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



INSPECTION

1. Inspect:

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

2. Inspect:

- Primary sheave spring ①
- Cracks/damage → Replace.

3. Measure:

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



Primary sheave spring free length ①:

PZ500:

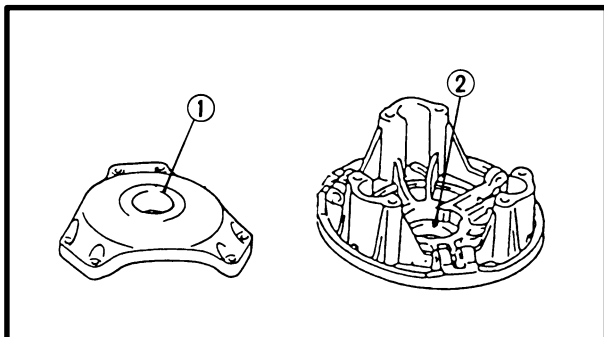
76.3 mm (3.023 in)

VT500XL:

75.4 mm (2.968 in)

NOTE:

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



4. Inspect:

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

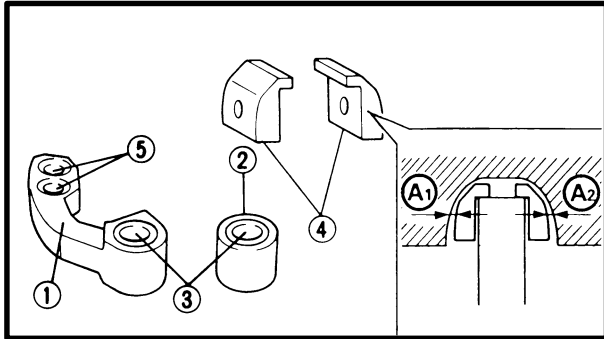


Clutch bushing press:

YS-42424

PRIMARY SHEAVE AND DRIVE V-BELT

**POWER
TR**



5. Inspect:

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

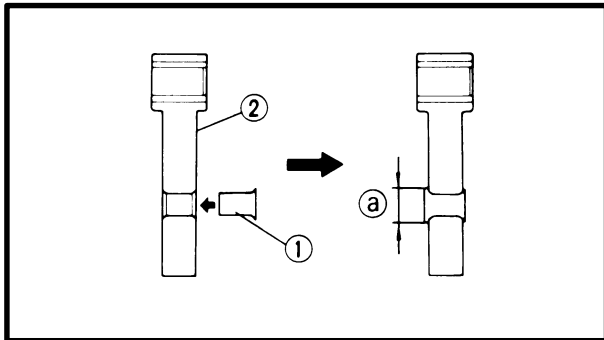
Wear/scratches/damage → Replace.



Slider inside clearance (A₁) + (A₂):

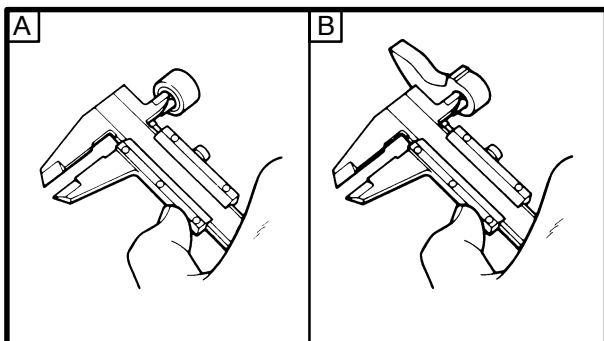
Min. 0.0 mm (0.0000 in)

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.



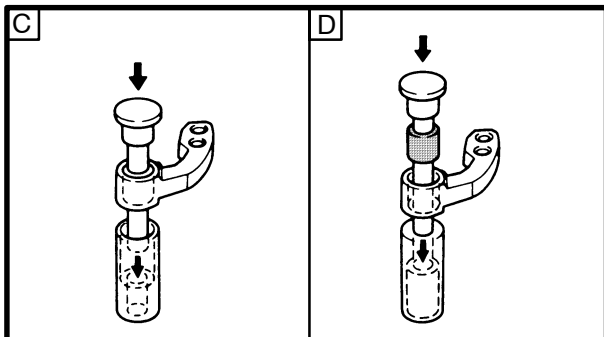
6. Measure:

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

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

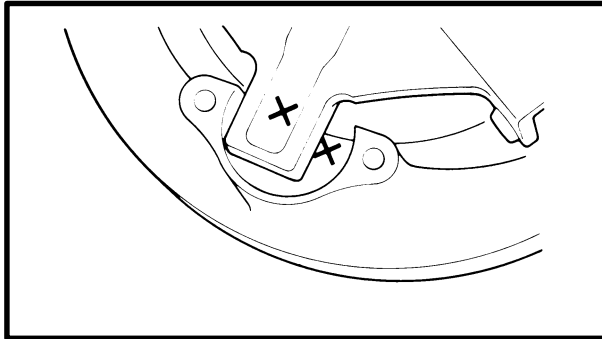
NOTE:

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



**YXR clutch bushing jig kit:
YS-39752**

- ☐ Removing
- ☐ Installing

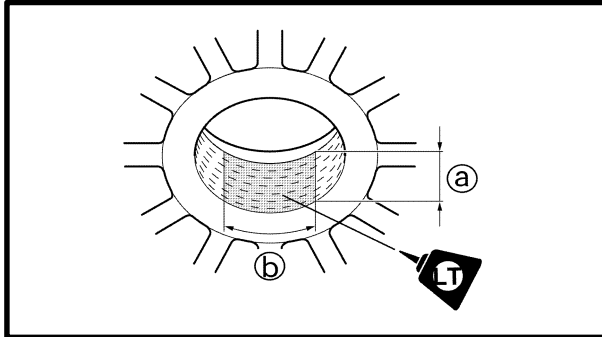


ASSEMBLY

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)

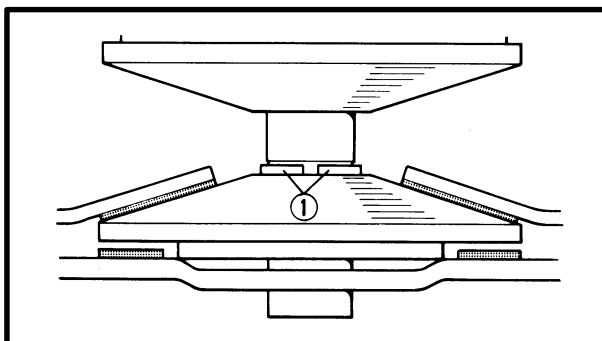
NOTE:

Apply LOCTITE® to the fixed sheave as shown.

CAUTION:

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

- ① 16 mm (0.63 in)
- ② 30 ~ 35 mm (1.18 ~ 1.38 in)



3. Install:
 - Fixed sheave stoppers ①

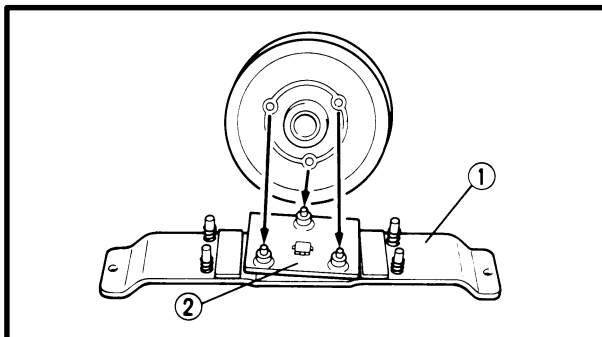
NOTE:

Stopper tapered portion should face fixed sheave.

4. Tighten:
 - Spider

Tightening steps:

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



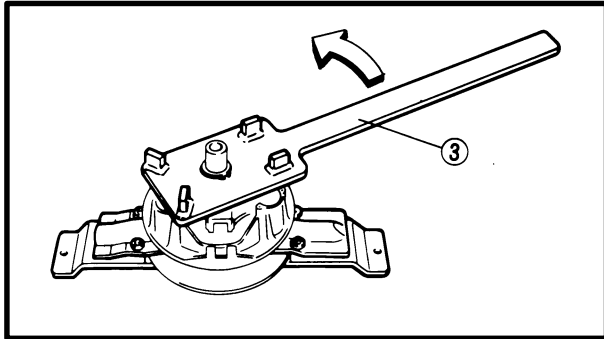


Clutch spider separator:
90890-01711, YS-28890-B

NOTE:

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

PRIMARY SHEAVE AND DRIVE V-BELT



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



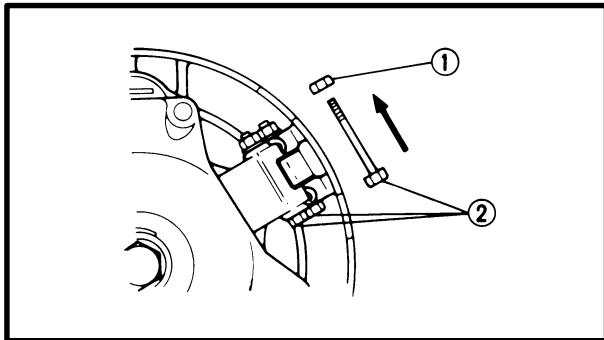
Spider:
200 Nm (20 m • kg, 145 ft • lb)

CAUTION:

The spider has a left-handed thread.

⚠ WARNING

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



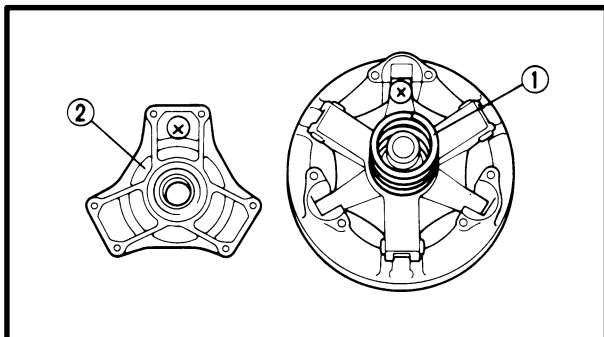
5. Install:
- Weight



Nut (1):
6 Nm (0.6 m • kg, 4.3 ft • lb)

NOTE:

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



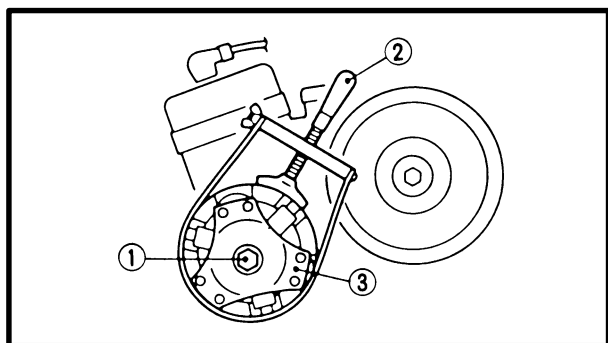
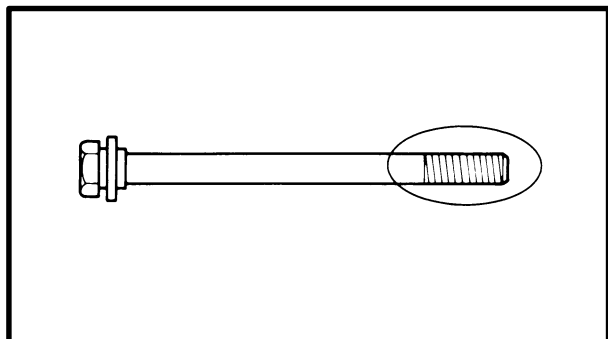
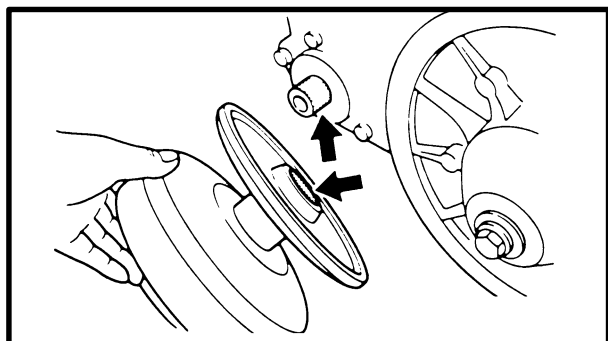
6. Install:
- Primary sheave spring (1)
 - Primary sheave cap (2)

NOTE:

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



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



INSTALLATION

1. Install:

- Primary sheave assembly

CAUTION:

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

2. Apply:

- YAMALUBE 2-cycle oil or an equivalent grease (to threads of primary sheave bolt)

3. Tighten:

- Bolt (primary sheave) ①

Tightening steps:

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



Primary sheave holder:
90890-01701, YS-01880



Bolt (primary sheave):
(initial tightening)
120 Nm (12 m • kg, 87 ft • lb)

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



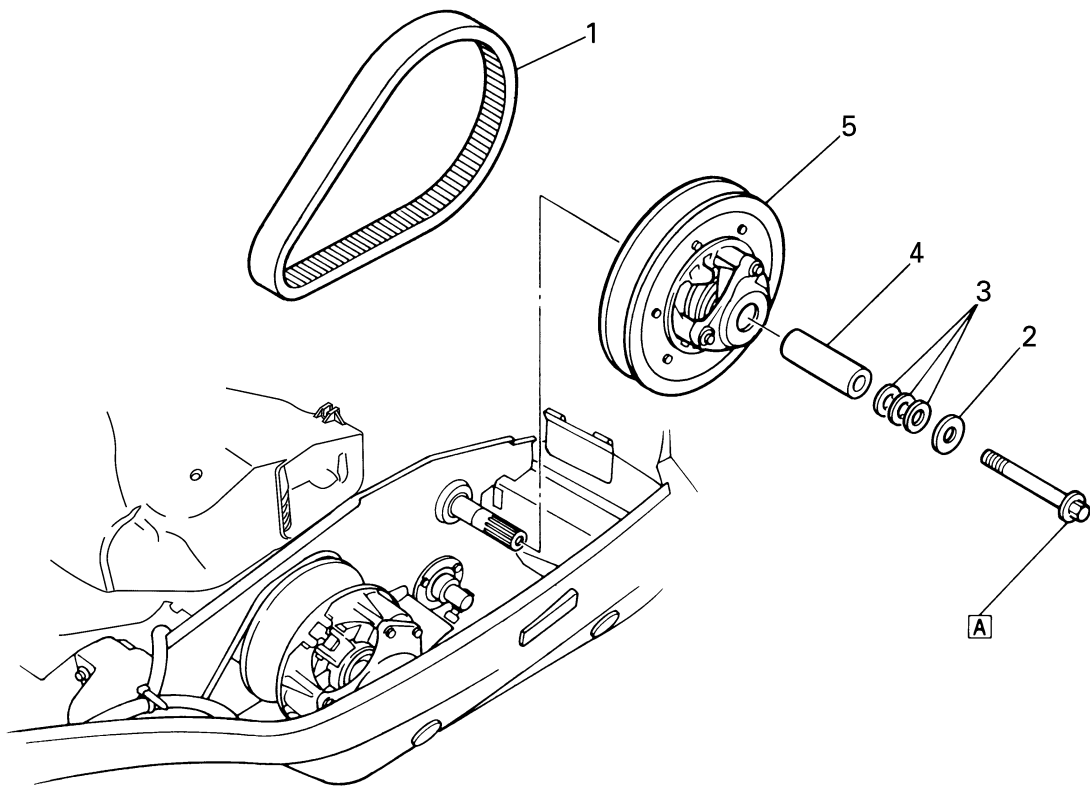
Bolt (primary sheave):
60 Nm (6.0 m • kg, 43 ft • lb)

4. Adjust:

- V-belt position
Refer to "DRIVE V-BELT" in CHAPTER 2.
- Sheave distance
- Sheave offset
- Secondary sheave freeplay (clearance)
Refer to "SHEAVE DISTANCE AND OFFSET ADJUSTMENT" in CHAPTER 2.

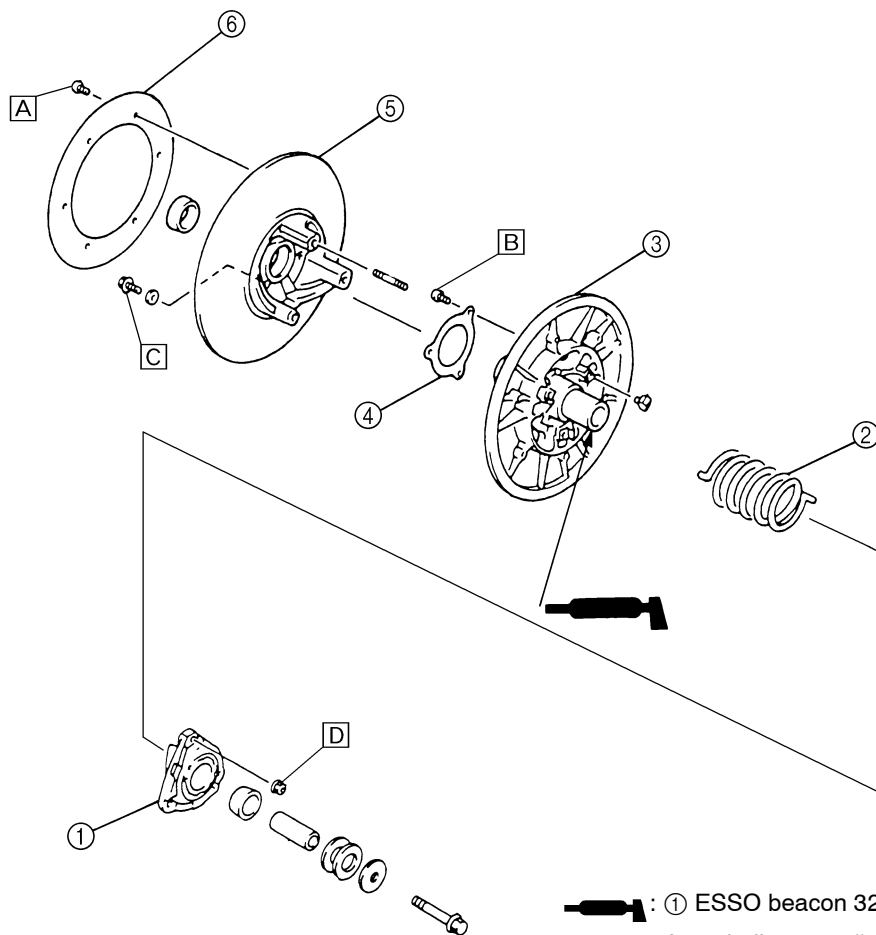
SECONDARY SHEAVE

A: 64 Nm (6.4 m • kg, 46 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Secondary sheave removal		Remove the parts in the order listed.
1	V - belt	1	
2	Washer	1	
3	Shim	3	
4	Collar	1	
5	Secondary sheave assembly	1	
			For installation, reverse the removal procedure.

- [A]: 4 Nm (0.4 m • kg, 2.9 ft • lb)
- [B]: 6.5 Nm (0.65 m • kg, 4.6 ft • lb)
- [C]: 10 Nm (1.0 m • kg, 7.2 ft • lb)
- [D]: 23 Nm (2.3 m • kg, 17 ft • lb)

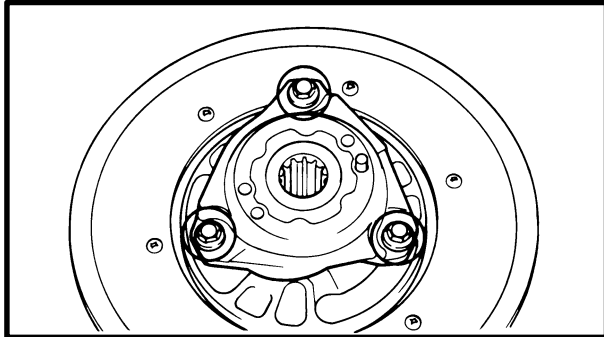


Order	Job name/Part name	Q'ty	Remarks
	Secondary sheave disassembly		Remove the parts in the order listed.
①	Spring seat	1	
②	Secondary sheave spring	1	
③	Fixed sheave	1	
④	Stopper	1	
⑤	Sliding sheave	1	
⑥	Secondary sheave plate	1	
			For assembly, reverse the disassembly procedure.

DISASSEMBLY

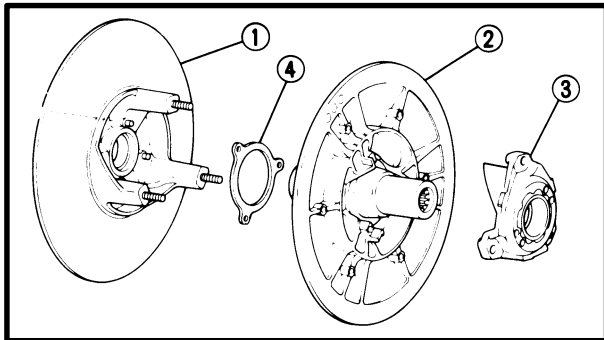
⚠ WARNING

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



1. Remove:

- Nuts (spring seat)



INSPECTION

1. Inspect:

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

2. Inspect:

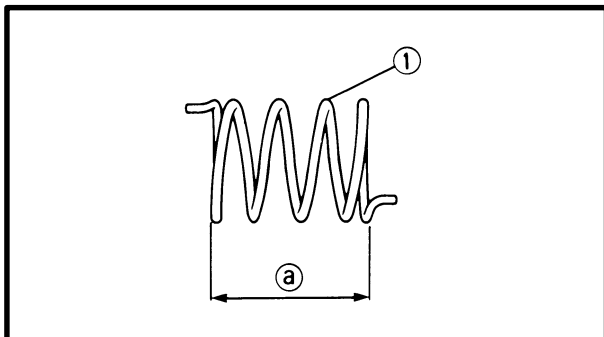
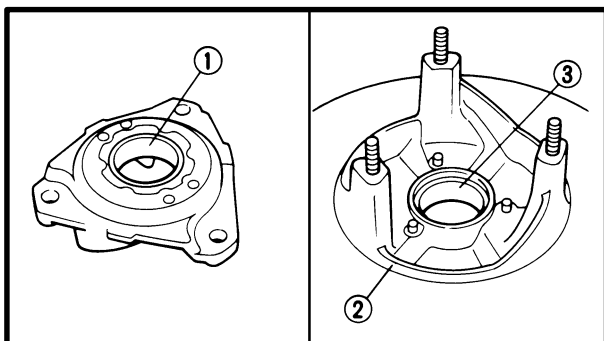
- Bushing (spring seat) ①
- Sliding sheave (V-belt contact surface) ②
Scratches/wear/damage → Replace.
- Sliding bushing ③
Unsymmetrical wear/damage → Replace.

3. Inspect:

- Secondary sheave spring ①
Cracks/damage → Replace.

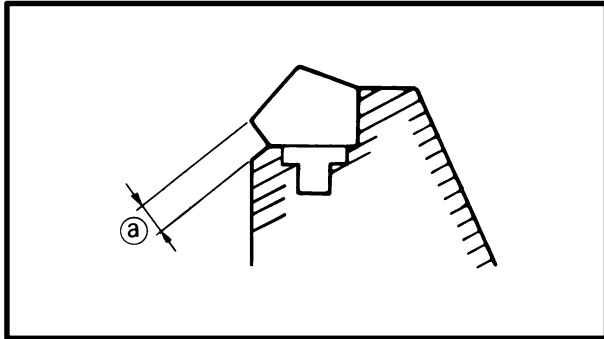
4. Measure:

- Secondary sheave spring free length ②
Below specification → Replace the secondary sheave spring.



Free length limit ②:
75 mm (2.95 in)

SECONDARY SHEAVE



5. Measure:

- Ramp shoe thickness (a)
- Out of specification → Replace the ramp shoe.



Wear limit (a):
1.0 mm (0.04 in)

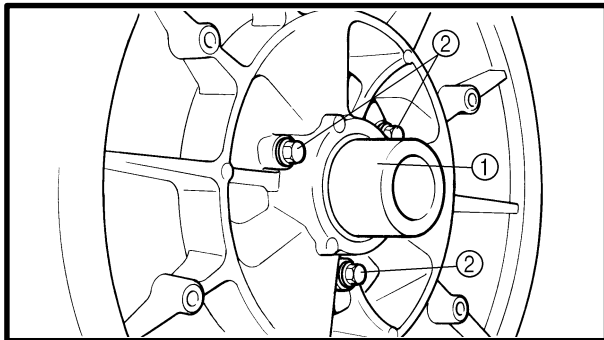
ASSEMBLY

1. Install:

- Stopper
- Sliding sheave



Screw (stopper):
6.5 Nm (0.65 m • kg, 4.6 ft • lb)

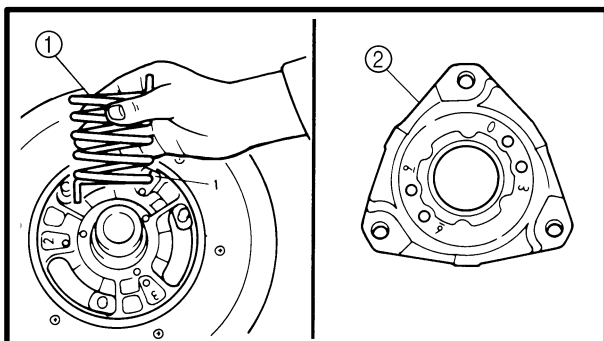


2. Install:

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



Bolt:
10 Nm (1.0 m • kg, 7.2 ft • lb)



3. Install:

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

NOTE:

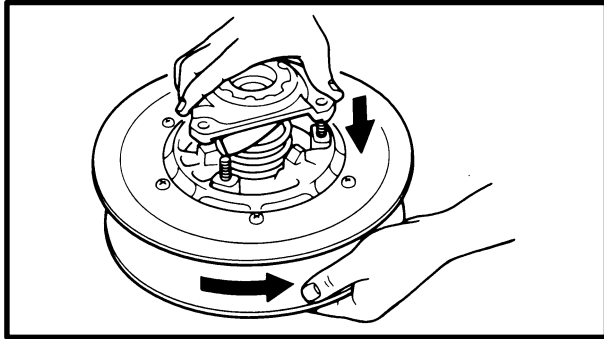
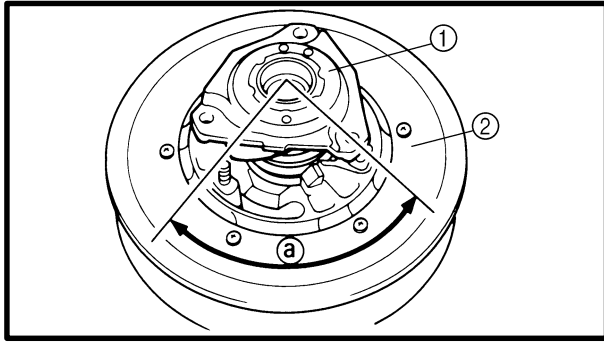
Hook the end of the secondary sheave spring into the spring holes in the fixed sheave. Hook the other end of the spring into the holes in the spring seat.

Standard spring position:

- 1-6 (PZ500, VT500XL for Europe)
- 2-6 (VT500XL for U.S.A./Canada)

SECONDARY SHEAVE

**POWER
TR**



Installation steps:

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

NOTE:

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

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



Standard angle ③:

70° (PZ500,
VT500XL for Europe)

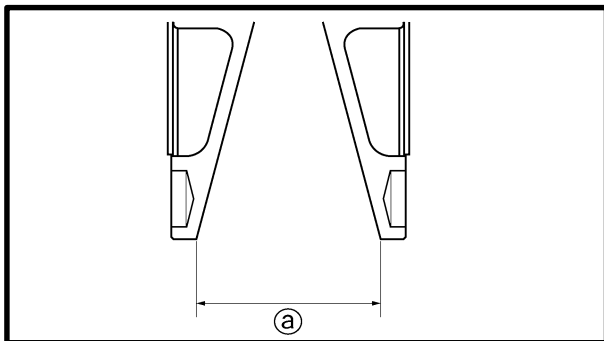
80° (VT500XL for U.S.A./Canada)

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



Nut (spring seat):

23 Nm (2.3 m • kg, 17 ft • lb)



4. Measure:

- Secondary sheave clearance ③
- Out of specification → Adjust.



Secondary sheave clearance ③:

35.0 ~ 35.8 mm (1.38 ~ 1.41 in)

5. Calculate:

- Shim thickness

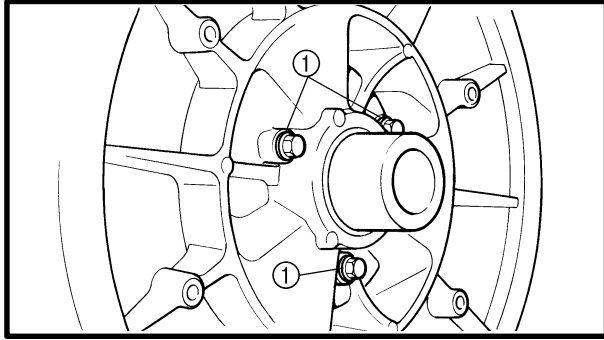
NOTE:

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

6. Adjust:

- Secondary sheave clearance

SECONDARY SHEAVE



Adjustment steps:

- Disassemble the secondary sheave.
- Remove the bolts and original shims ① 1.0 mm (0.04 in).
- Install new shims of the proper thickness and re-assemble the secondary sheave.
- Measure the secondary sheave clearance again.
Repeat these steps until the clearance is within specification.

NOTE:

Yamaha recommends keeping the original shims.

Shims:

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

INSTALLATION

1. Lubricate:

- Splines (fixed sheave)

	Recommended grease: Esso beacon 325 grease or Aeroshell grease #7A
---	---

2. Tighten:

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

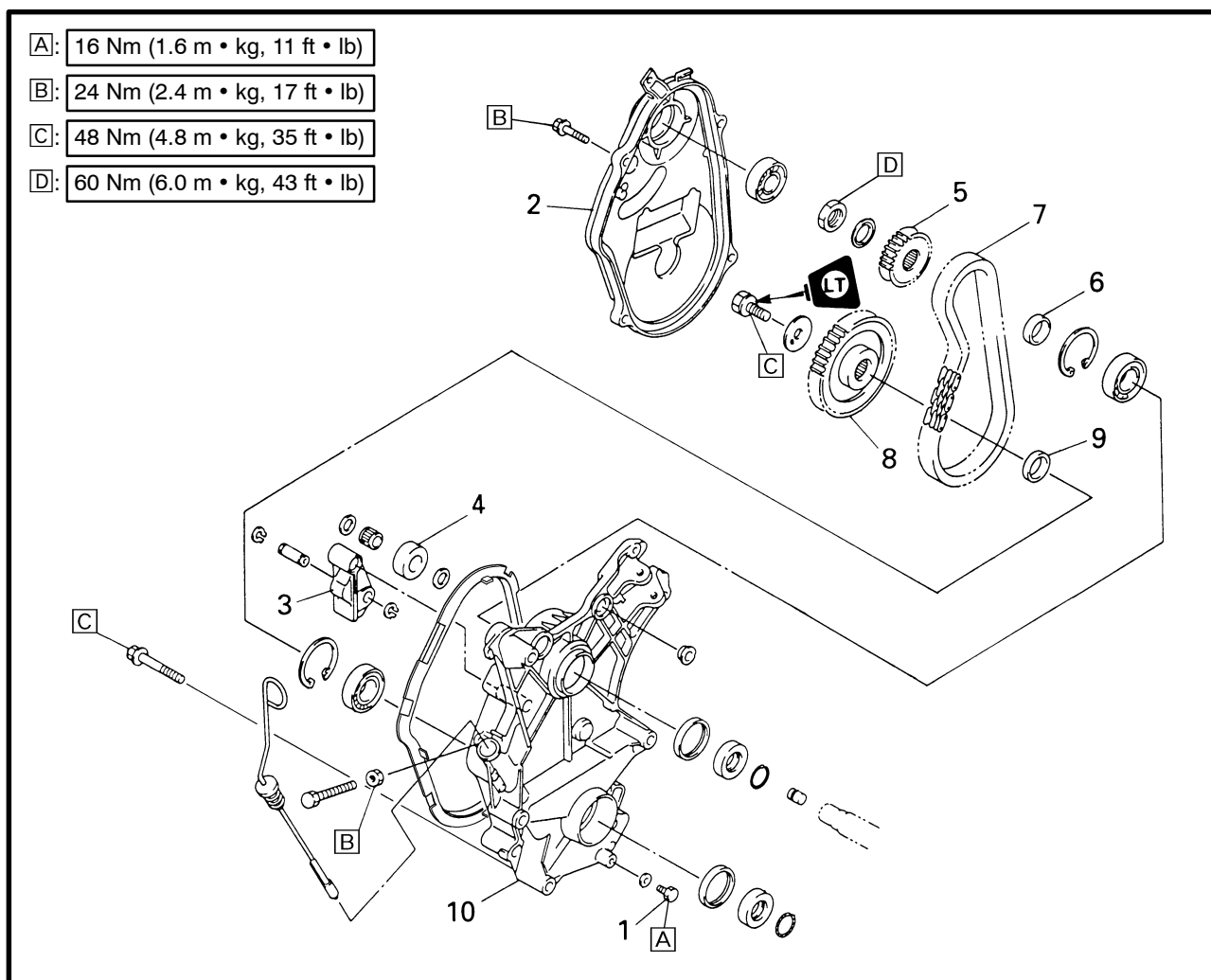
3. Adjust:

- V-belt position
Refer to "DRIVE V-BELT" in CHAPTER 2.
- Sheave distance
- Sheave offset
- Secondary sheave freeplay (clearance)
Refer to "SHEAVE DISTANCE AND OFFSET ADJUSTMENT" in CHAPTER 2.

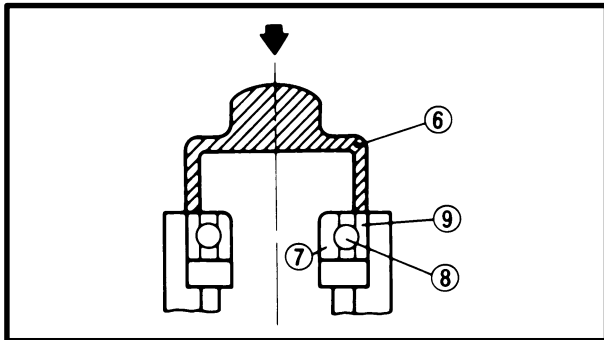
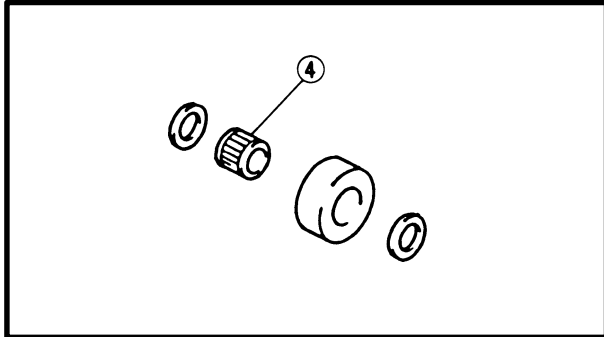
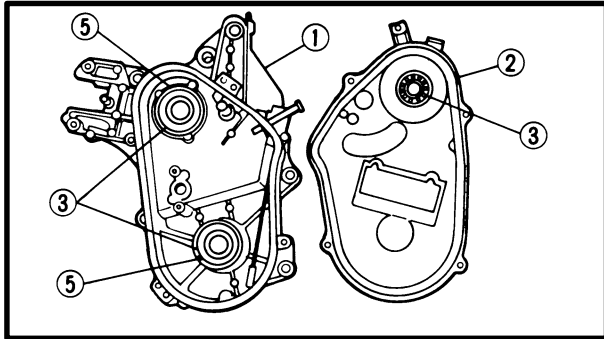
POWER
TR



DRIVE CHAIN HOUSING WITHOUT REVERSE MODEL



Order	Job name/Part name	Q'ty	Remarks
	Drive chain housing removal		Remove the parts in the order listed. Refer to "BRAKE".
	Brake caliper		
	Parking brake		
	Tension adjuster		Loosen. Refer to "SLIDE RAIL SUSPENSION".
1	Bolt	1	Drain the oil.
2	Drive chain housing cover	1	
3	Chain tensioner	1	
4	Roller	1	
5	Drive sprocket	1	
6	Collar	1	
7	Drive chain	1	
8	Driven sprocket	1	
9	Collar	1	
10	Drive chain housing	1	
			For installation, reverse the removal procedure.



INSPECTION

1. Inspect:

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

Replacement steps:

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

NOTE:

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

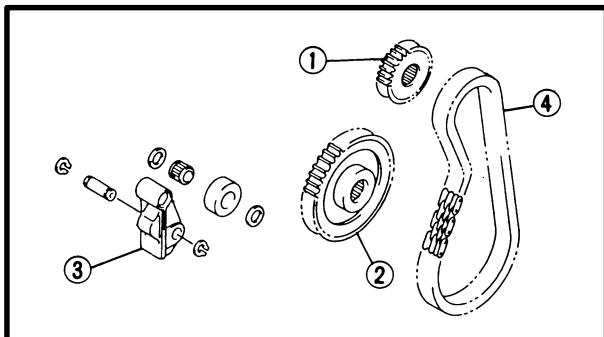
CAUTION:

Do not strike the inner race ⑦ or ball bearings ⑧. Contact only the outer race ⑨.

- Install a new circlip (drive chain housing).

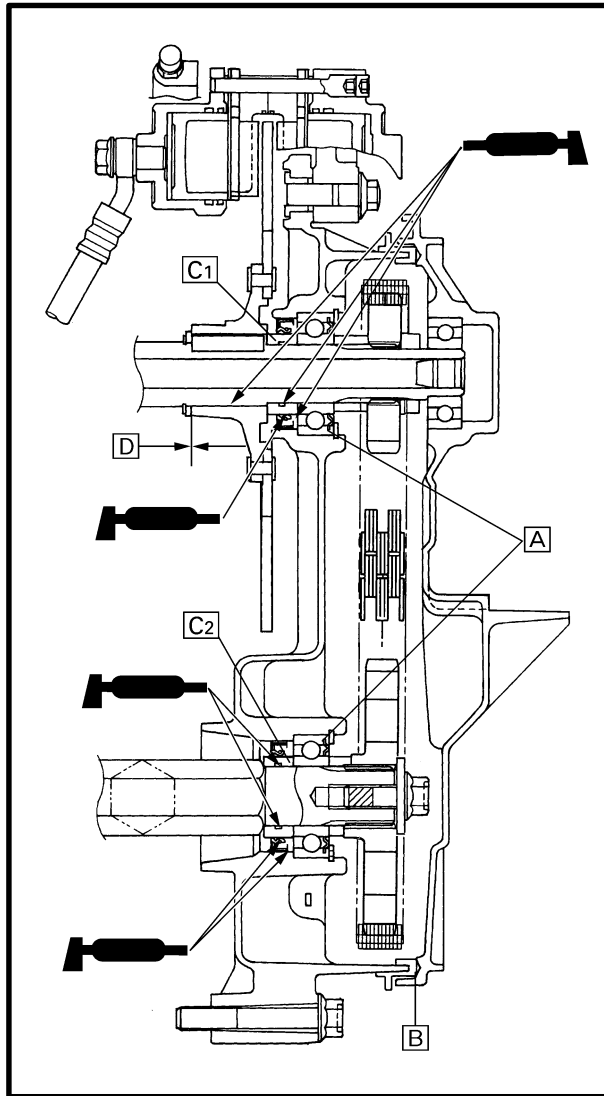
CAUTION:

Always use new circlips.



2. Inspect:

- Drive sprocket teeth ①
- Driven sprocket teeth ②
- Chain tensioner ③
Pitting/wear/damage → Replace.
- Drive chain ④
Wear/damage → Replace.
Stiff → Clean or replace.



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

[D] 0.1 ~ 0.5 mm (0.004 ~ 0.020 in)

: Esso beacon 325 grease or Aeroshell grease #7A

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

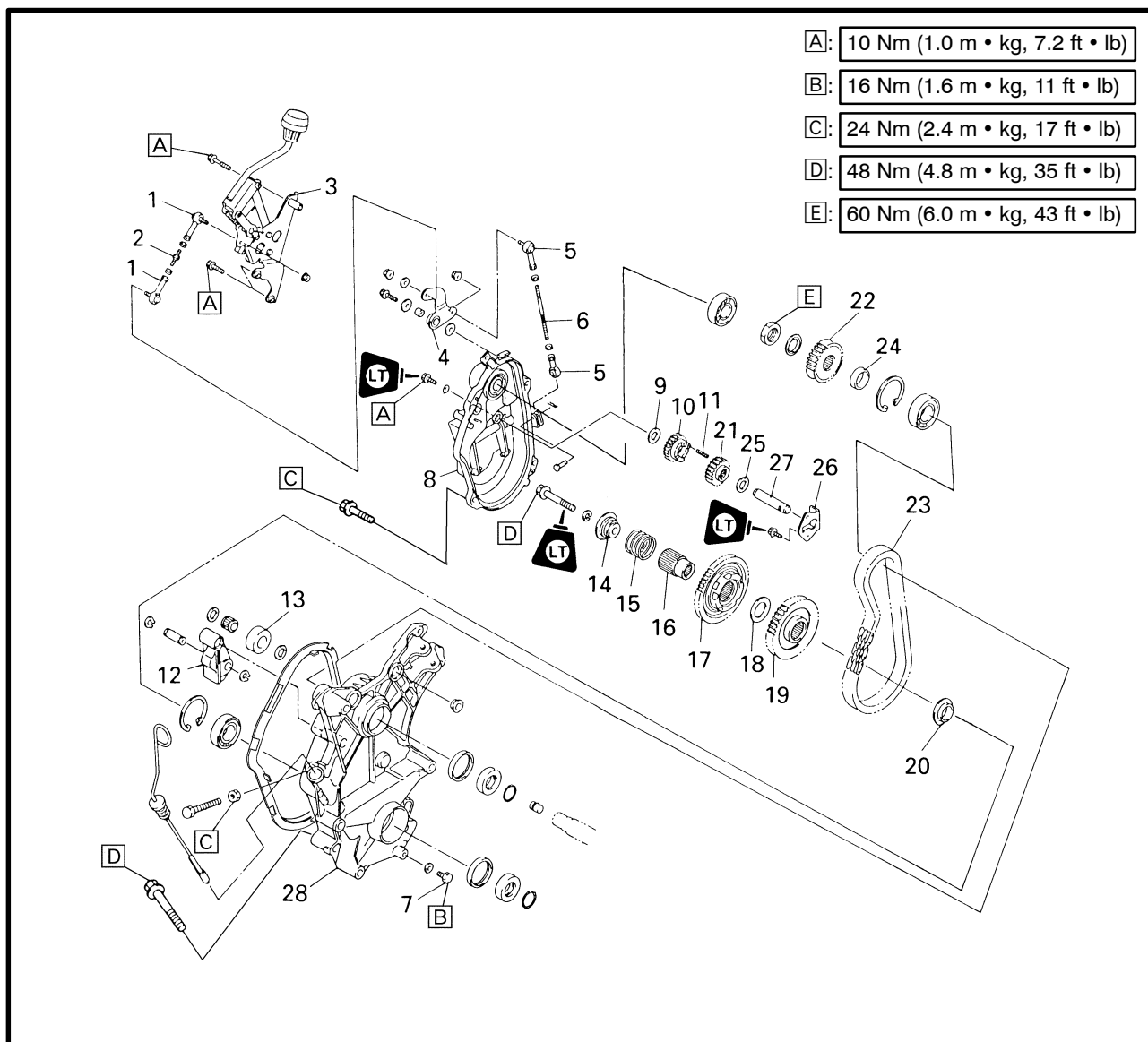
2. Fill:

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

3. Adjust:

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

WITH REVERSE MODEL

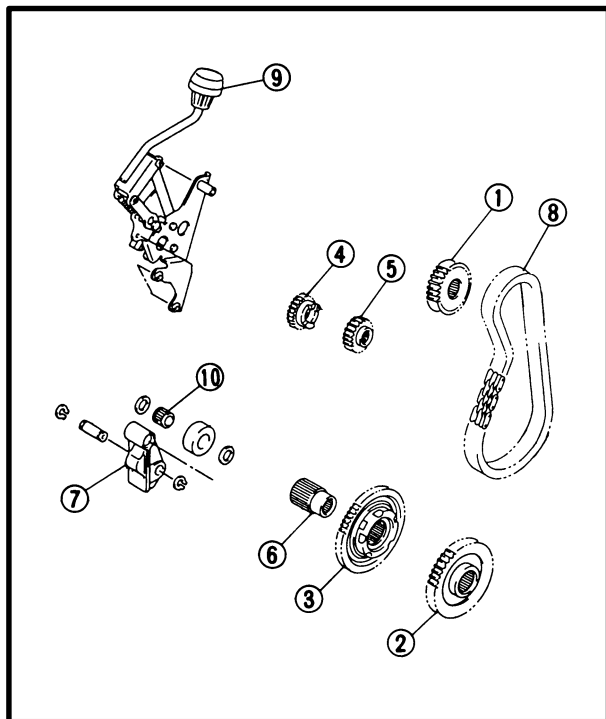
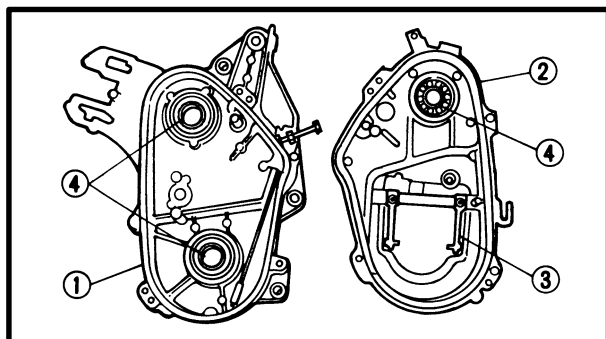


Order	Job name/Part name	Q'ty	Remarks
	Drive chain housing removal		Remove the parts in the order listed.
	Battery		
	Battery bracket		
	Brake caliper		Refer to "BRAKE".
	Parking brake		
	Tension adjuster		Loosen. Refer to "SLIDE RAIL SUSPENSION".
1	Joint	2	
2	Shift rod	1	
3	Shift lever assembly	1	
4	Lever	1	
5	Joint	2	
6	Lever rod	1	
7	Bolt	1	Drain the oil.
8	Drive chain housing cover	1	
9	Washer	1	

DRIVE CHAIN HOUSING



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



INSPECTION

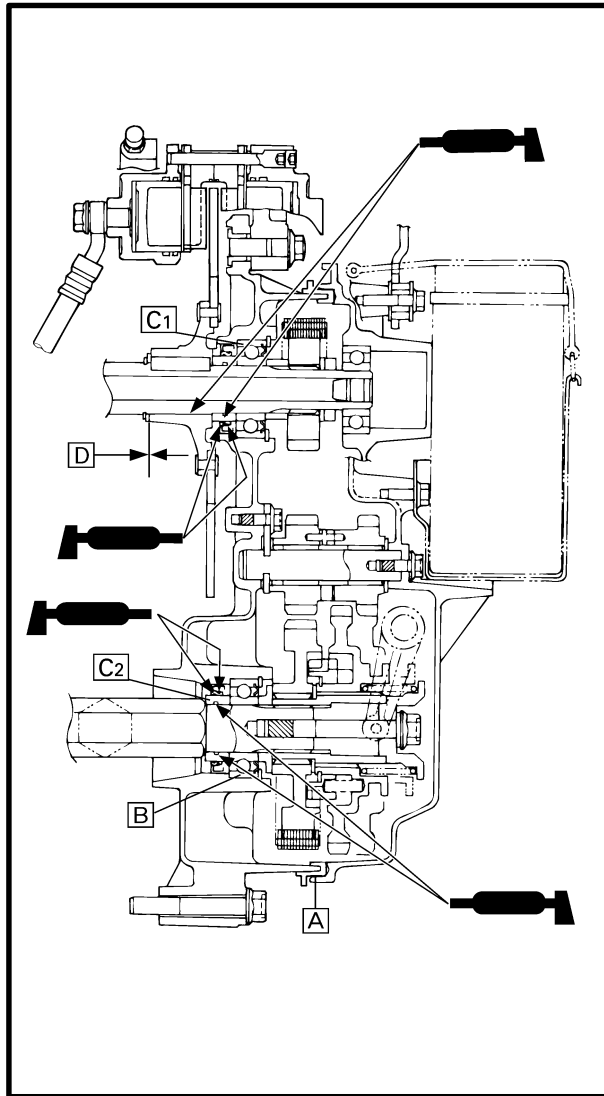
1. Inspect:

- Drive chain housing ①
- Cover (drive chain housing) ②
Cracks/damage → Replace.
- Shift fork ③
Pitting/wear/damage → Replace.
- Oil seals
Damage/wear → Replace.
- Bearing ④
Pitting/damage → Replace.

2. Inspect:

- Drive sprocket ①
- Forward driven sprocket ②
- Reverse driven gear ③
- Reverse drive gear ④
- Counter gear ⑤
- Journal ⑥
- Chain tensioner ⑦
Pitting/wear/damage → Replace.
- Drive chain ⑧
Wear/damage → Replace.
Stiff → Clean or replace.
- Shift lever assembly ⑨
- Bearing ⑩
Pitting/damage → Replace.

For the bearing replacement, refer to "WITHOUT REVERSE MODEL".



INSTALLATION

1. During installation, pay attentions to the following point.

- [A] Properly install the rubber seal onto the drive chain housing, make sure that these are no gaps.
- [B] Make sure that the bearing seals face towards the drive chain, as shown.
- [C1] [C2] Be sure to install the spacers in their original positions of the brake disc and jackshaft will stick.
- [D] 0.1 ~ 0.5 mm (0.004 ~ 0.020 in)

 : Esso beacon 325 grease or Aeroshell grease #7A

For the drive chain housing and jackshaft installation, refer to “WITHOUT REVERSE MODEL”.

2. Fill:

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

3. Adjust:

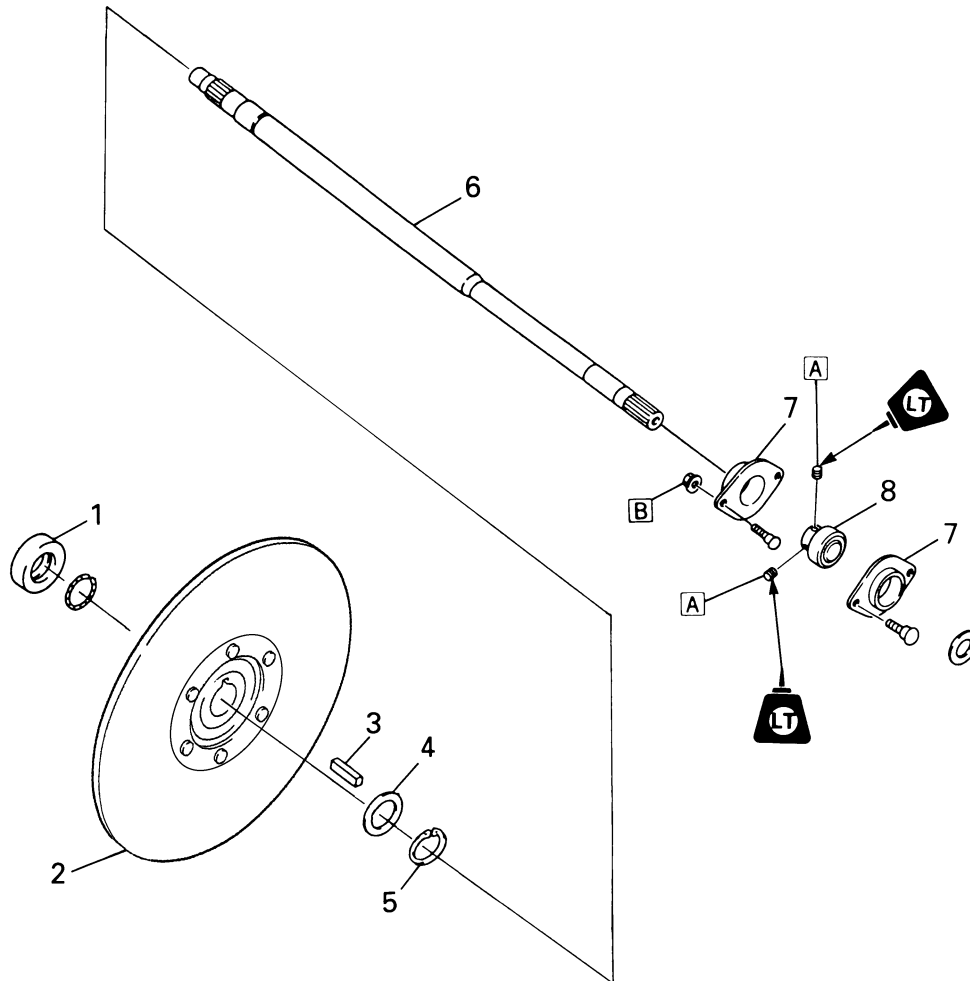
- Drive chain slack
Refer to “DRIVE CHAIN” in CHAPTER 2.



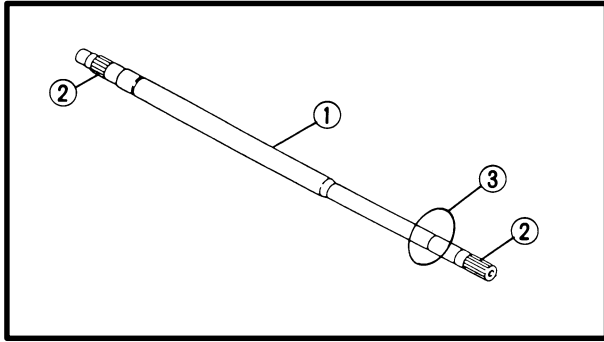
JACKSHAFT

[A]: 8.5 Nm (0.85 m • kg, 6.1 ft • lb)

[B]: 23 Nm (2.3 m • kg, 17 ft • lb)



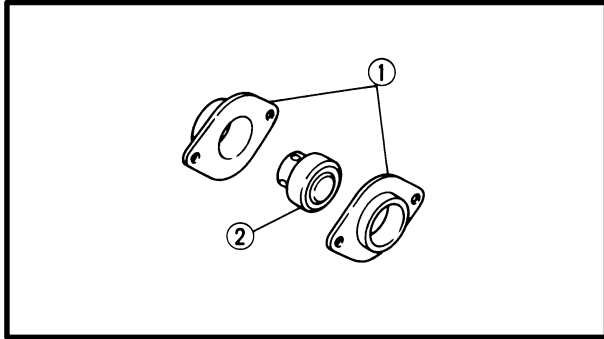
Order	Job name/Part name	Q'ty	Remarks
	Jackshaft removal		Remove the parts in the order listed.
	Secondary sheave		Refer to "SECONDARY SHEAVE".
	Intake silencer		Refer to "FUEL PUMP" in CHAPTER 6.
	Drive chain housing		Refer to "DRIVE CHAIN HOUSING".
1	Collar	1	
2	Brake disc	1	
3	Key	1	
4	Washer	1	
5	Circlip	1	
6	Jackshaft	1	
7	Bearing holder	2	
8	Bearing	1	
			For installation, reverse the removal procedure.



INSPECTION

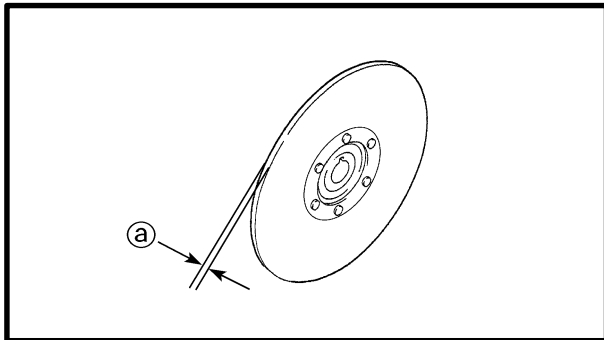
1. Inspect:

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



2. Inspect:

- Bearing holder ①
Cracks/damage → Replace.
- Bearing ②
Pitting/damage → Replace.



3. Measure:

- Brake disc thickness ①
Out of specification → Replace the brake disc.



**Minimum thickness ①:
4.5 mm (0.18 in)**

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



JACKSHAFT AND DRIVE CHAIN HOUSING INSTALLATION

1. Install:

- Drive chain housing
- Jackshaft

Installation steps:

- Install the drive chain housing ①.
- Tighten the bolts ②.



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

- Temporarily tighten the nuts ③.
- Tighten the nut ④.



Nut (jackshaft):
60 Nm (6.0 m • kg, 43 ft • lb)

- Retighten the nuts ③.



Nut (bearing holder):
23 Nm (2.3 m • kg, 17 ft • lb)

- Tighten the set screws ⑤.



Set screw (bearing):
8.5 Nm (0.85 m • kg, 6.1 ft • lb)

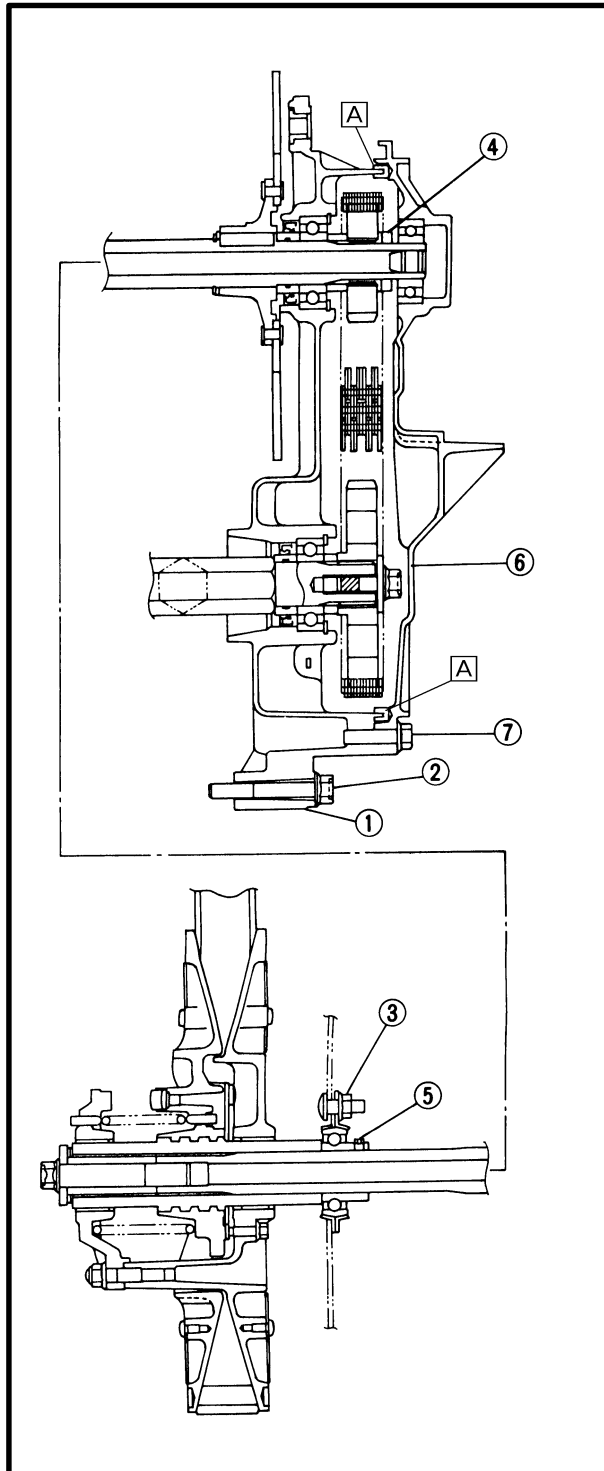
- Install the drive chain housing cover ⑥.

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

- Tighten the bolts ⑦.

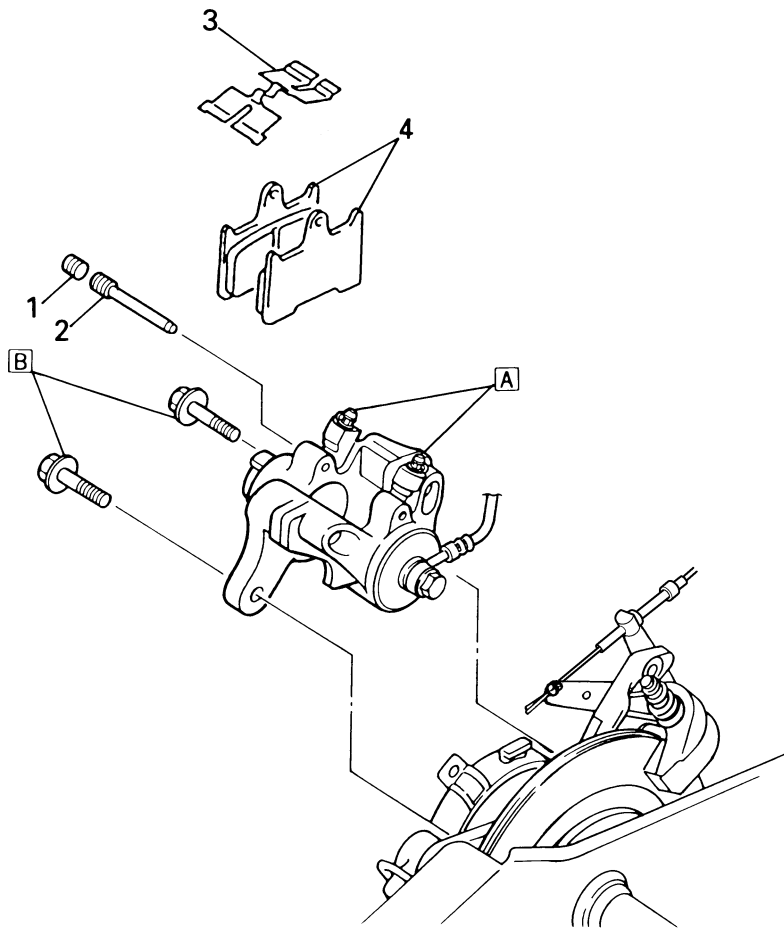


Bolt (drive chain housing cover):
24 Nm (2.4 m • kg, 17 ft • lb)



BRAKE

- [A]: 6 Nm (0.6 m • kg, 4.3 ft • lb)
- [B]: 48 Nm (4.8 m • kg, 35 ft • lb)



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

**CAUTION:**

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

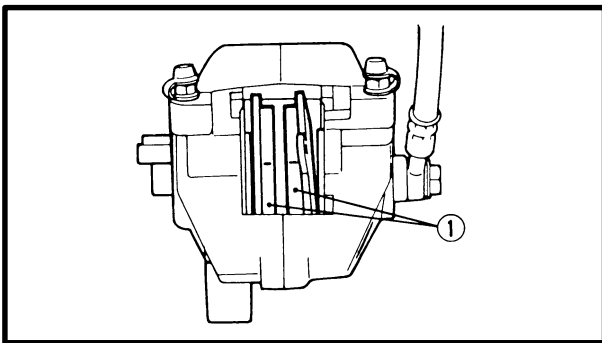
- Do not disassemble components unless absolutely necessary.
- Do not use solvents on internal brake components.
- Do not use contaminated brake fluid for cleaning.

Use only clean brake fluid.

- Do not allow brake fluid to contact the eyes, otherwise eye injury may occur.
- Do not allow brake fluid to contact painted surfaces or plastic parts otherwise damage may occur.
- Do not disconnect any hydraulic connection, otherwise the entire system must be disassembled, drained, cleaned, and then properly filled and bled after reassembly.

BRAKE PAD REPLACEMENT**NOTE:**

It is not necessary to disassemble the brake caliper and brake hose in order to replace the brake pads.

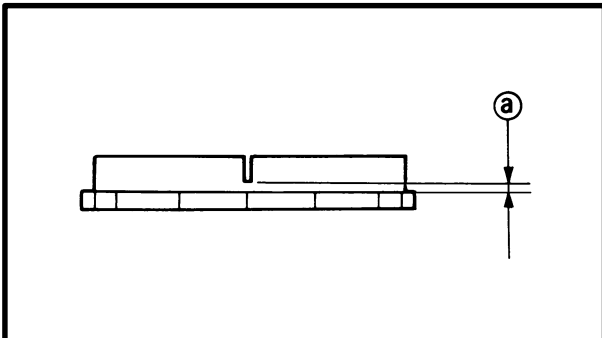


1. Remove:

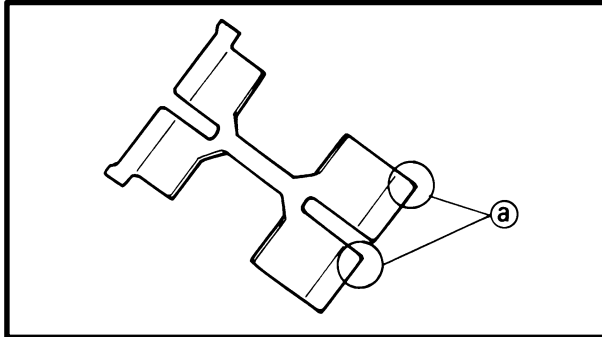
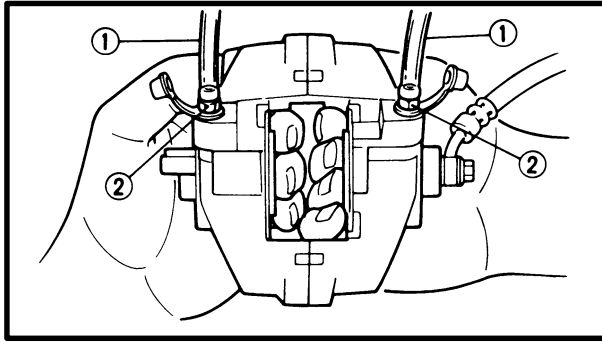
- Brake pads ①

NOTE:

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



Wear limit ②:
1.5 mm (0.06 in)



2. Install:

- Brake pads
- Pad spring

Installation steps:

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

**Bleed screw:**

6 Nm (0.6 m • kg, 4.3 ft • lb)

- Install the brake pads and pad spring.

NOTE:

The tangs ① of the pad spring must point in the direction of the disc rotation.

3. Inspect:

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

4. Check:

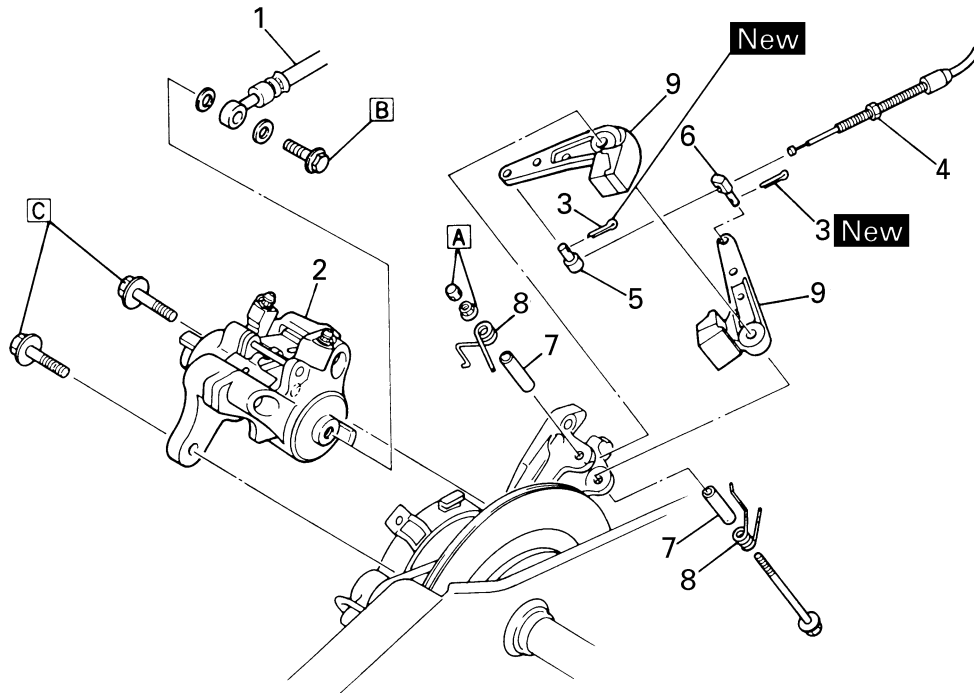
- Brake lever operation
A soft or spongy feeling → Bleed brake system.
Refer to "AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)" in CHAPTER 2.



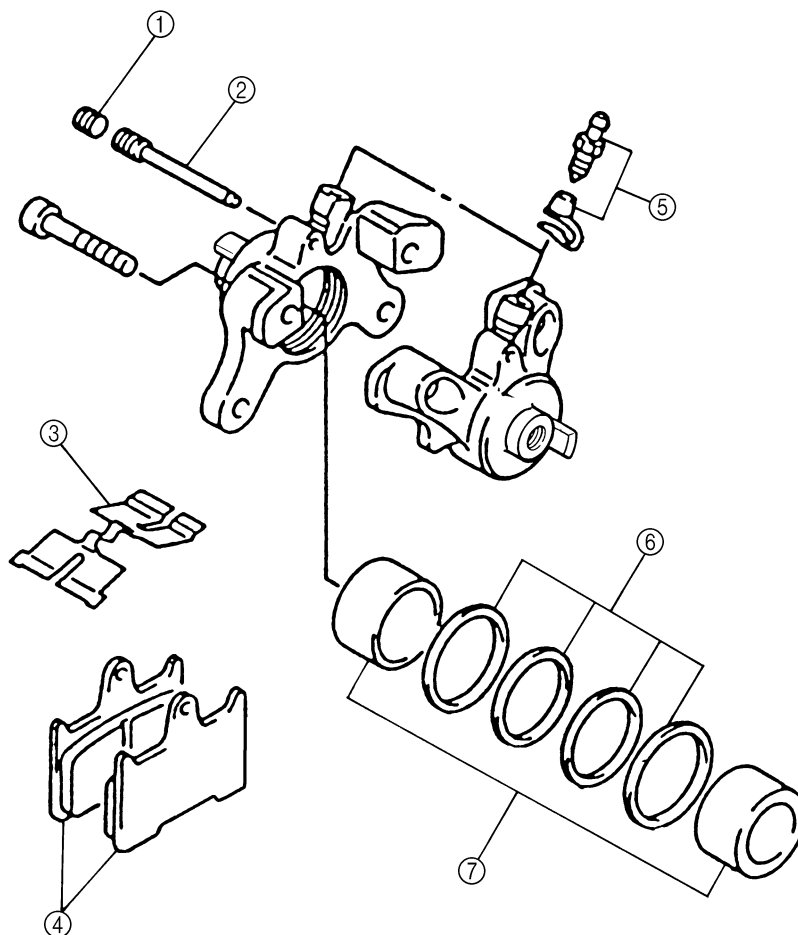
[A]: 10 Nm (1.0 m • kg, 7.2 ft • lb)

[B]: 23 Nm (2.3 m • kg, 17 ft • lb)

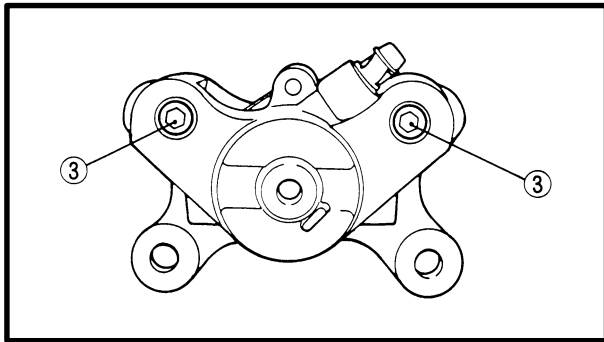
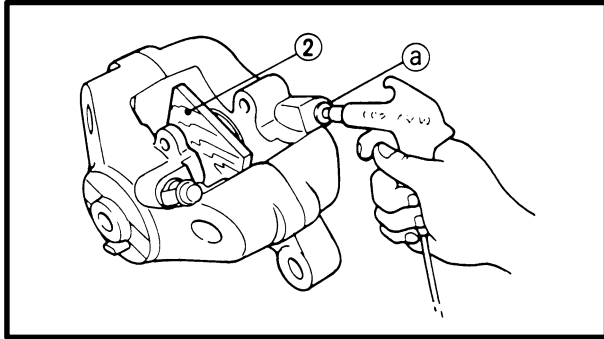
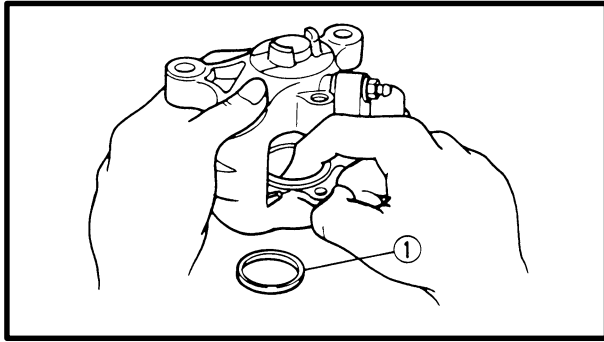
[C]: 48 Nm (4.8 m • kg, 35 ft • lb)



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



Order	Job name/Part name	Q'ty	Remarks
	Brake caliper disassembly		Remove the parts in the order listed.
①	Cap bolt	1	
②	Retaining pin	1	
③	Pad spring	1	
④	Brake pad	2	
⑤	Bleed screw	2	
⑥	Oil seal	4	
⑦	Piston	2	
			For assembly, reverse the disassembly procedure.



BRAKE CALIPER DISASSEMBLY

NOTE:

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

1. Remove:

- Pistons
- Piston oil seals ①

Removal steps:

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

⚠ WARNING

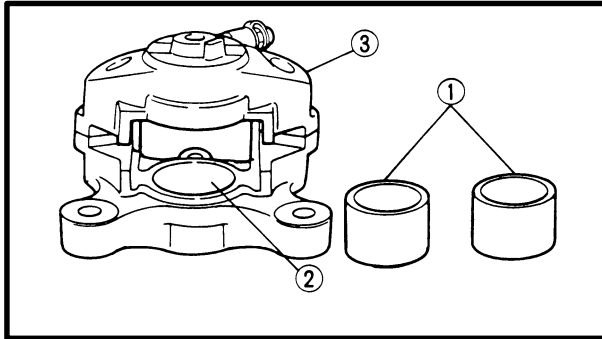
- Never try to pry out the pistons.
- Do not loosen the retaining pin ③.

BRAKE CALIPER INSPECTION AND REPAIR

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

⚠ WARNING

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



1. Inspect:

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

⚠ WARNING

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

BRAKE CALIPER ASSEMBLY

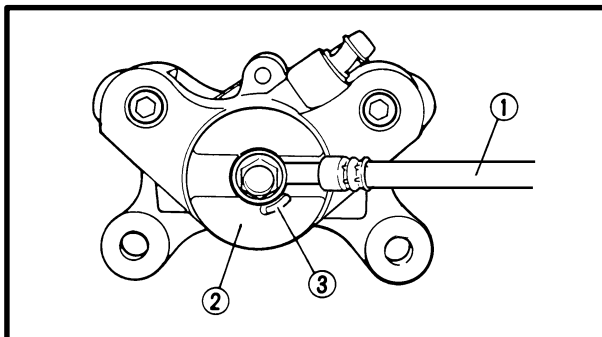
⚠ WARNING

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



Recommended brake fluid:
DOT 4

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



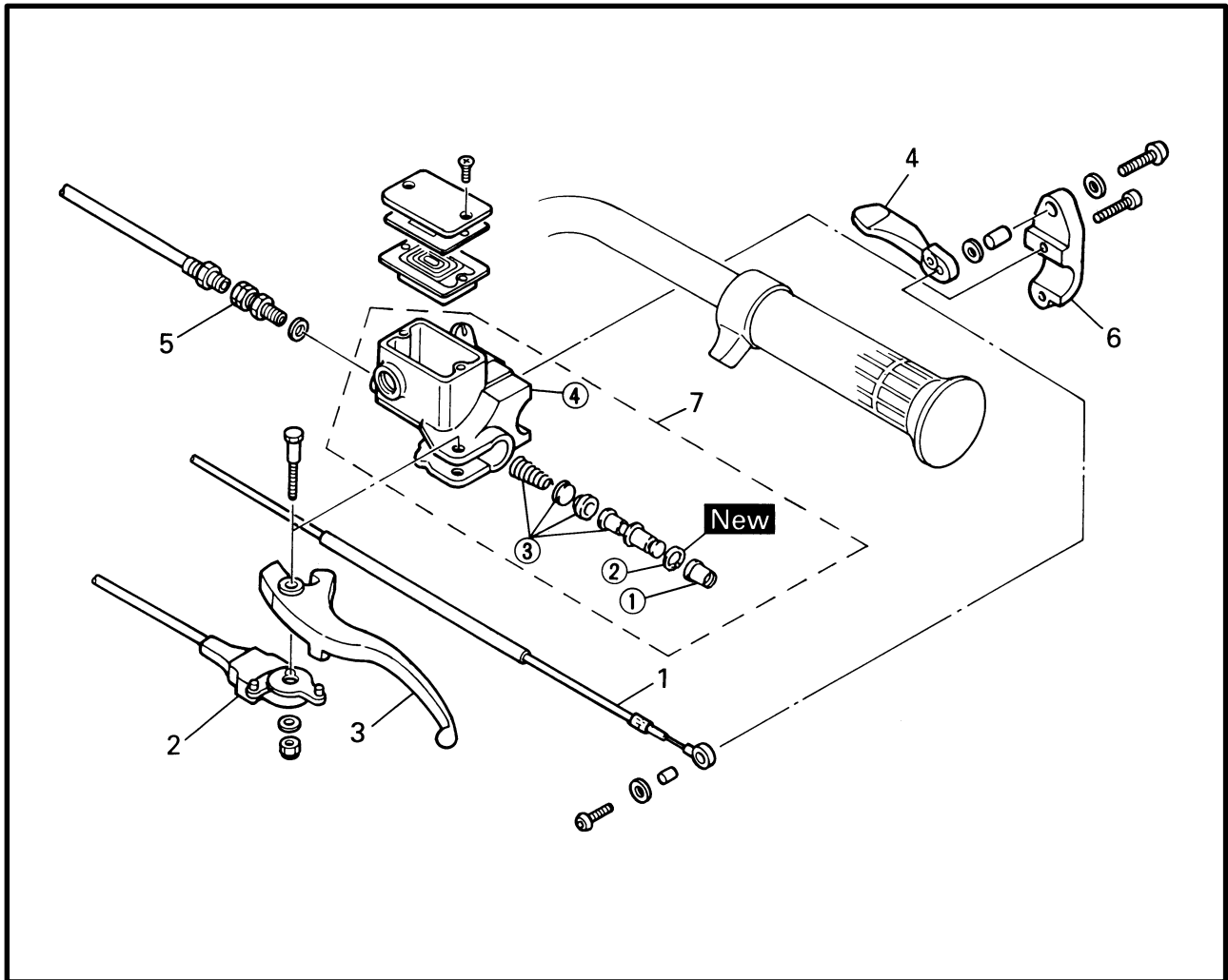
BRAKE CALIPER INSTALLATION

1. Install:

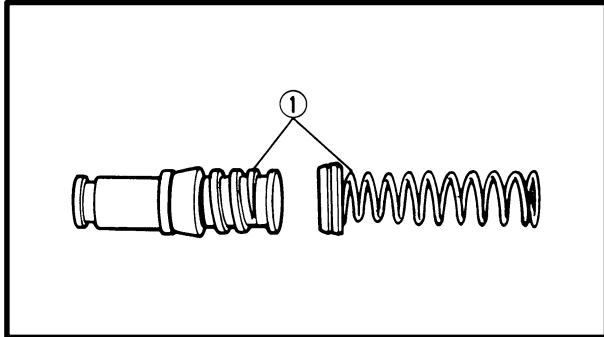
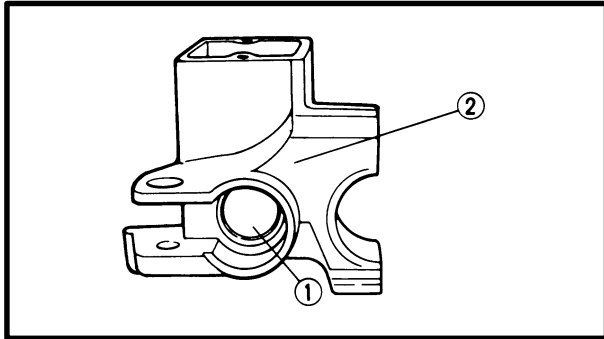
- Brake hose ①

CAUTION:

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



Order	Job name/Part name	Q'ty	Remarks
	Brake master cylinder removal		Remove the parts in the order listed. Drain.
1	Brake fluid	1	
2	Parking brake cable	1	
3	Brake switch	1	
4	Brake lever	1	
5	Parking brake lever	1	
6	Brake hose joint	1	
7	Holder	1	
	Master cylinder assembly	1	
			For installation, reverse the removal procedure.
	Brake master cylinder disassembly		Remove the parts in the order listed.
①	Boot	1	
②	Circlip	1	
③	Master cylinder kit	1	
④	Master cylinder body	1	
			For assembly, reverse the disassembly procedure.



INSPECTION

1. Inspect:

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

2. Inspect:

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

BRAKE MASTER CYLINDER ASSEMBLY

⚠ WARNING

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



Recommended brake fluid:
DOT 4

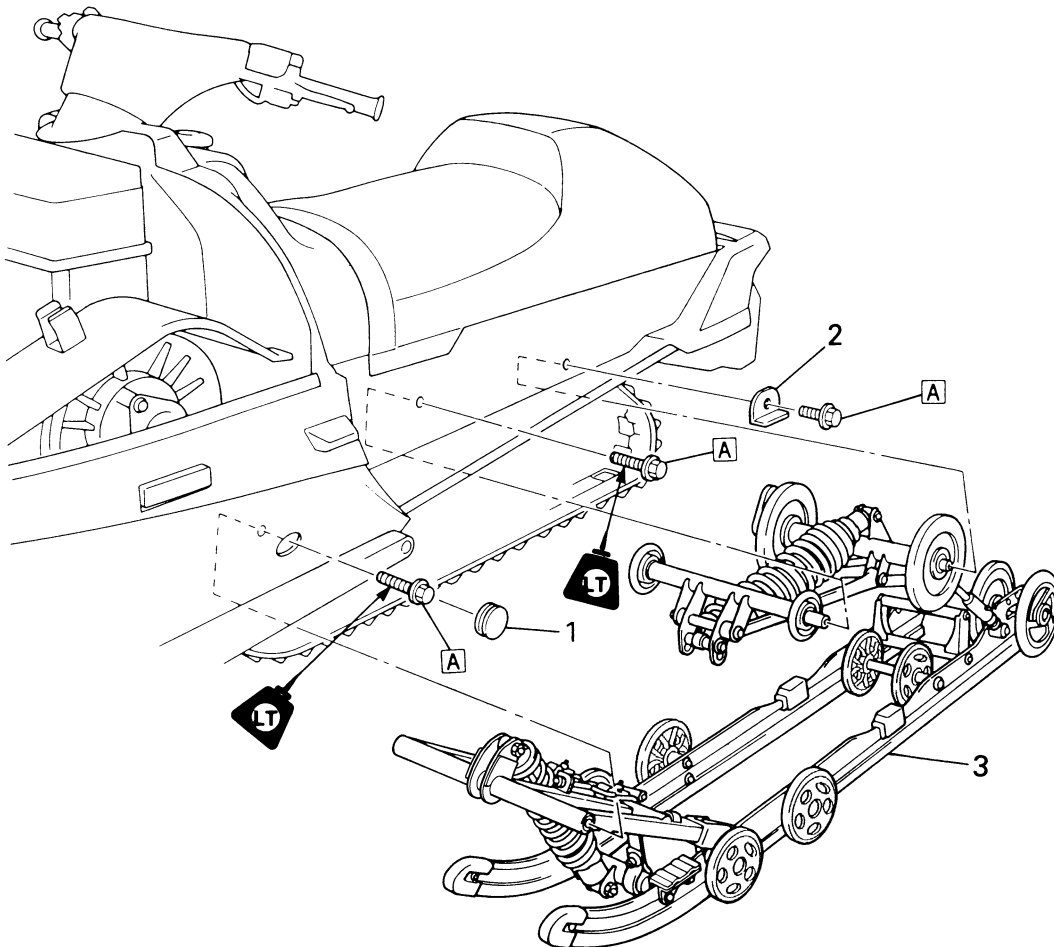
- Replace the piston seals and dust seals whenever a caliper is disassembled.



SLIDE RAIL SUSPENSION

PZ500

A: 72 Nm (7.2 m • kg, 52 ft • lb)

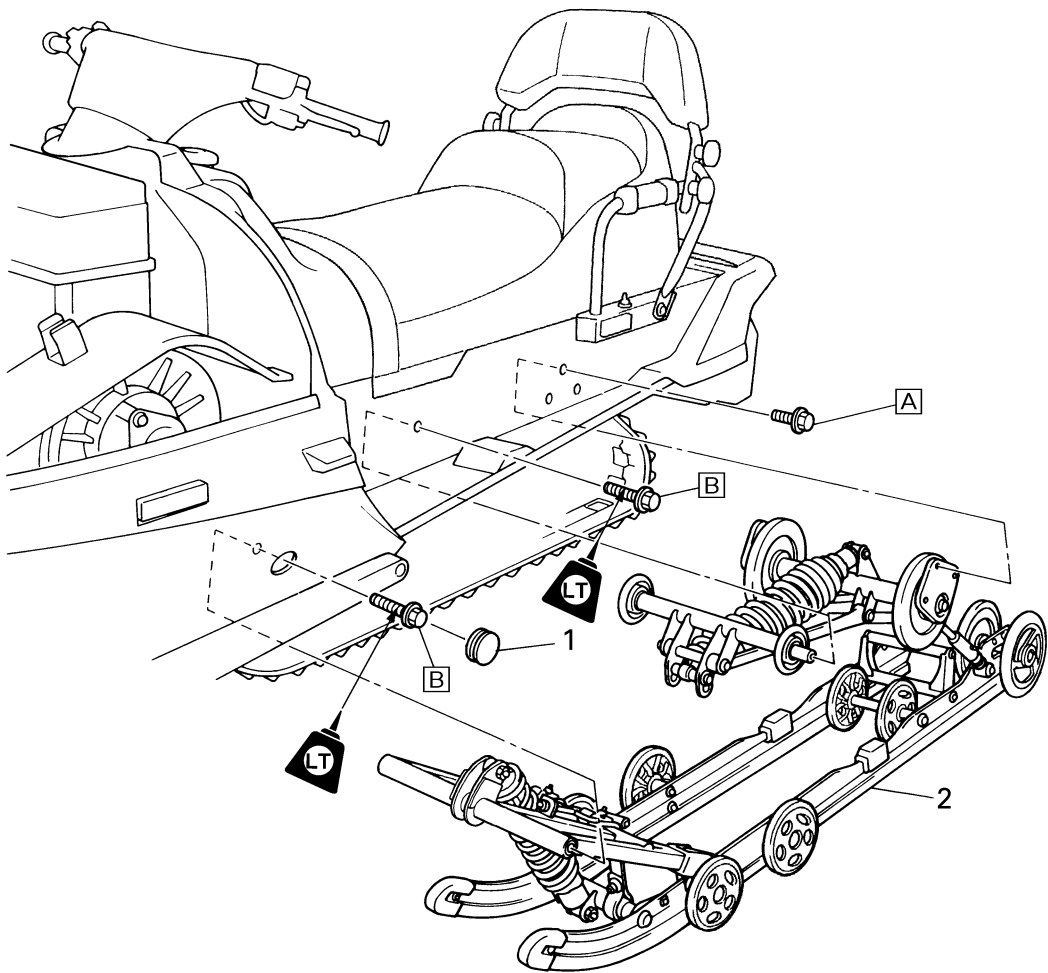


Order	Job name/Part name	Q'ty	Remarks
	Slide rail suspension removal		
	Tension adjuster		Remove the parts in the order listed.
1	Blind cap	2	Loosen.
2	Suspension rear plate	2	
3	Slide rail suspension	1	
			For installation, reverse the removal procedure.



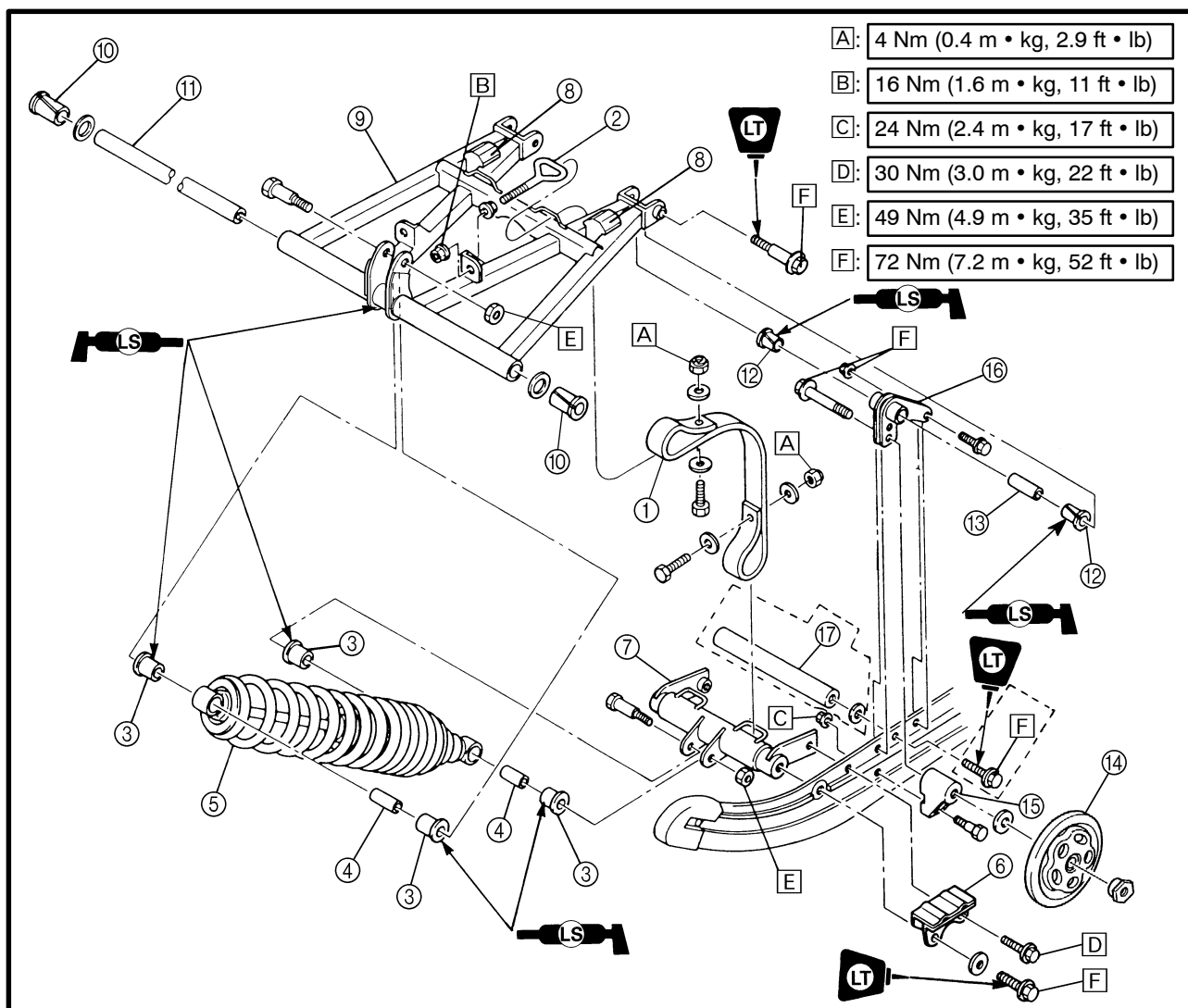
VT500XL

- [A]: 24 Nm (2.4 m • kg, 17 ft • lb)
[B]: 72 Nm (7.2 m • kg, 52 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Slide rail suspension removal		
	Tension adjuster		Remove the parts in the order listed.
1	Blind cap	2	Loosen.
2	Slide rail suspension	1	
			For installation, reverse the removal procedure.

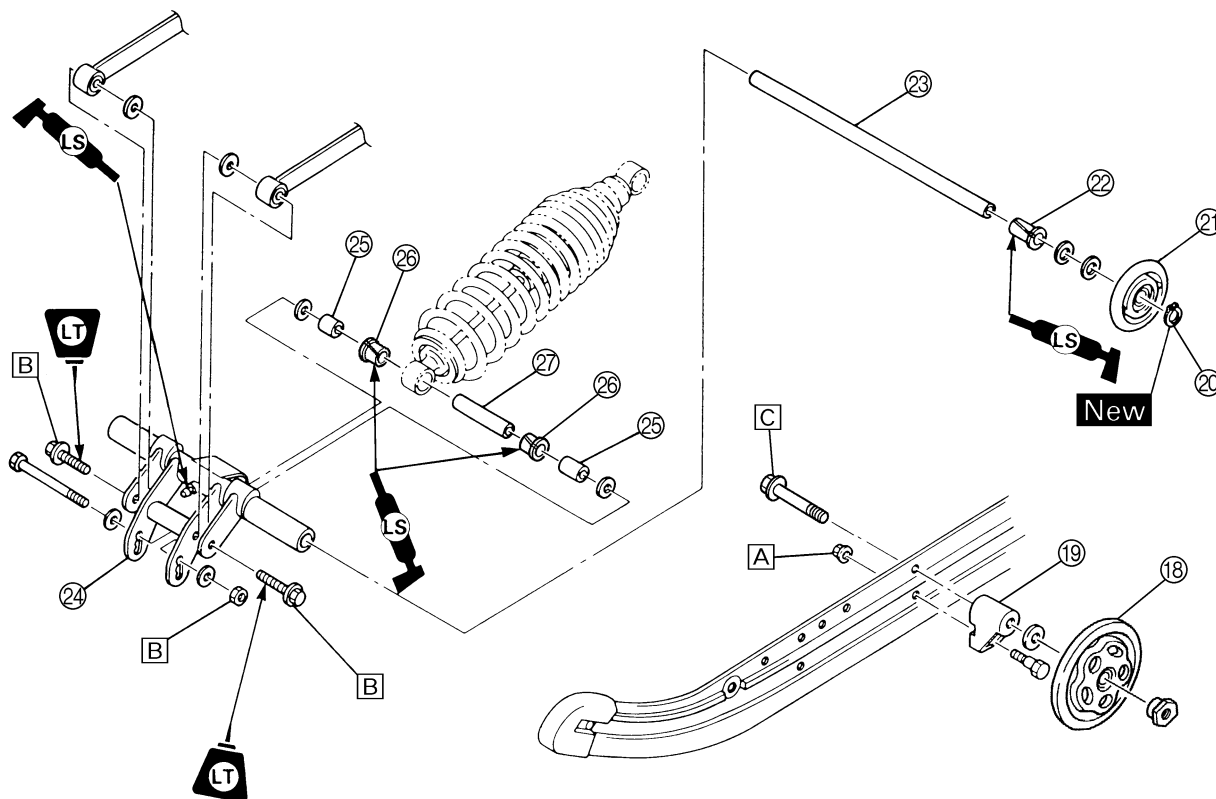
SLIDE RAIL SUSPENSION



Order	Job name/Part name	Q'ty	Remarks
	Slide rail suspension disassembly		Remove the parts in the order listed.
①	Stopper band	2	
②	Hook	2	
③	Bushing	4	
④	Collar	2	
⑤	Front shock absorber	1	
⑥	Bracket	2	(PZ500)
⑦	Front suspension bracket	1	
⑧	Rubber damper	2	(PZ500)
⑨	Front pivot arm	1	
⑩	Bushing	2	
⑪	Collar	1	
⑫	Bushing	4	
⑬	Collar	2	
⑭	Suspension wheel	2	
⑮	Wheel bracket	2	
⑯	Front pivot arm bracket	2	
⑰	Shaft	1	(VT500XL)



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

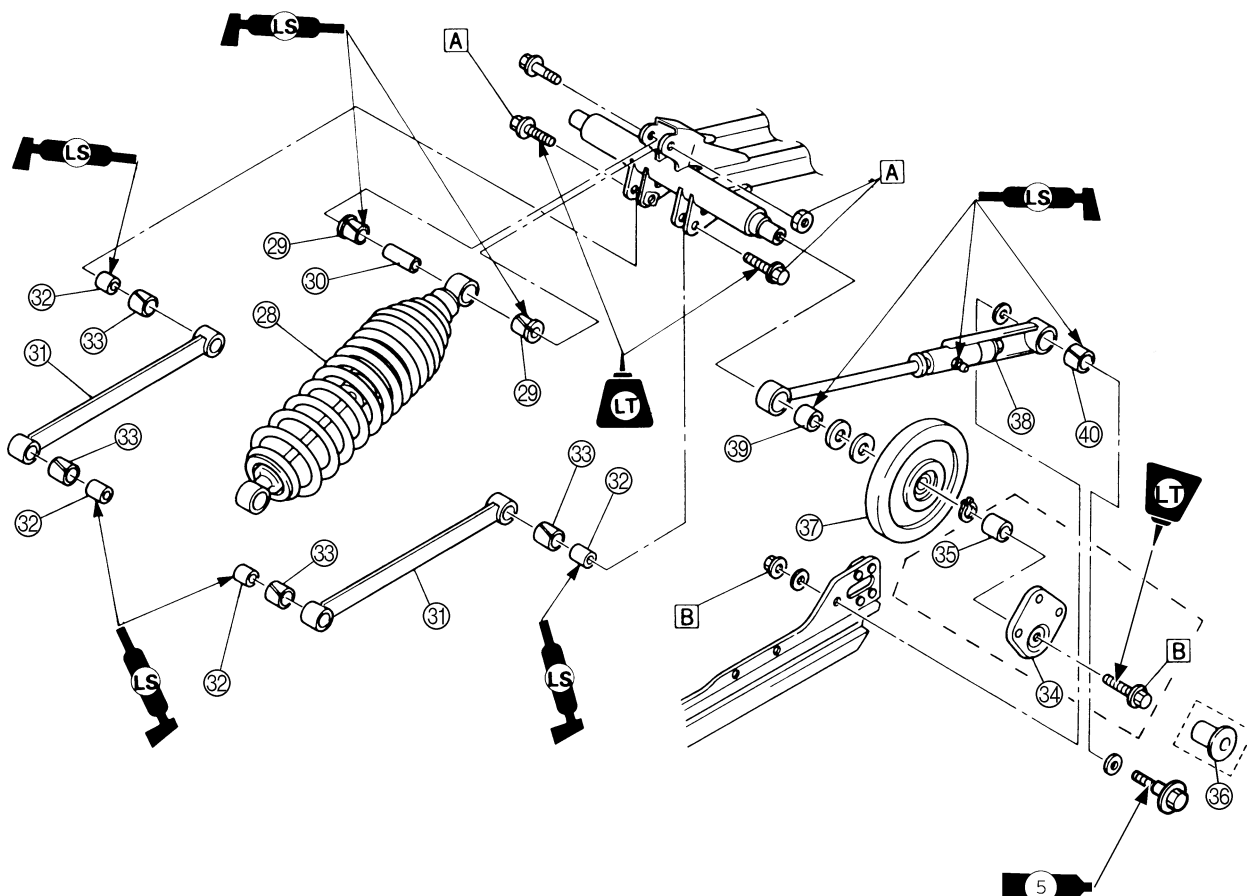


Order	Job name/Part name	Q'ty	Remarks
⑱	Suspension wheel	2	
⑲	Wheel bracket	2	
⑳	Circlip	2	
㉑	Suspension wheel	2	
㉒	Bushing	2	
㉓	Collar	1	
㉔	Rear suspension bracket	1	
㉕	Spacer	2	
㉖	Bushing	2	
㉗	Collar	1	



[A]: 49 Nm (4.9 m • kg, 35 ft • lb)

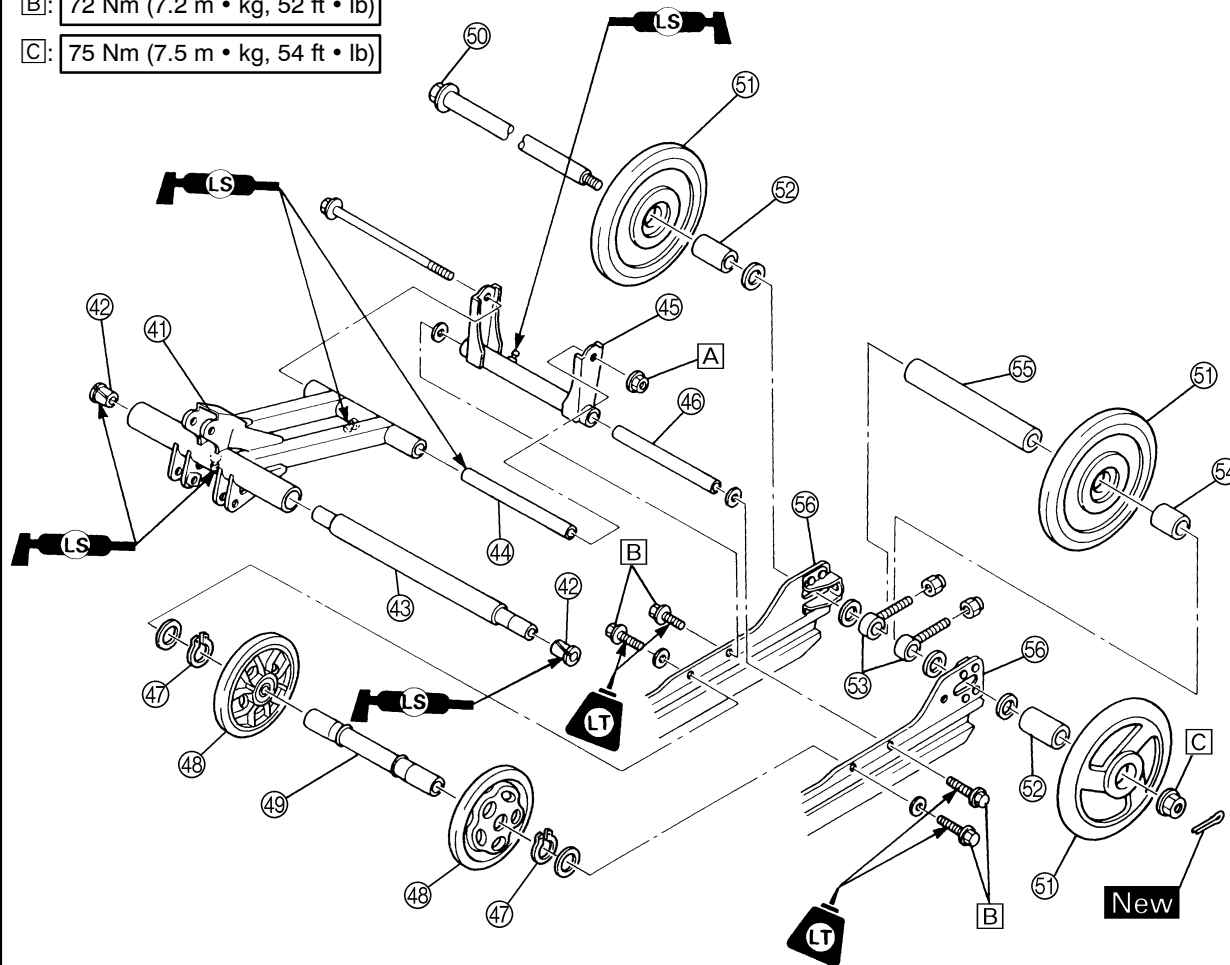
[B]: 72 Nm (7.2 m • kg, 52 ft • lb)



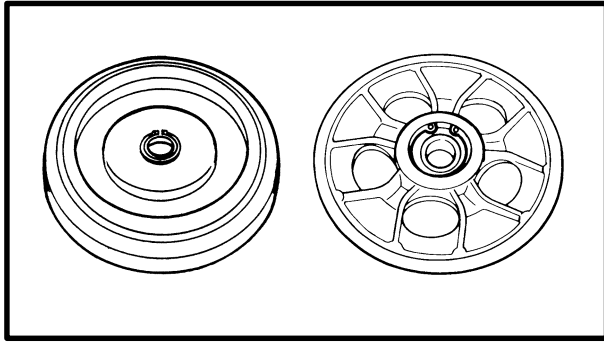
Order	Job name/Part name	Q'ty	Remarks
②⑧	Rear shock absorber	1	
②⑨	Bushing	2	
③①	Pull rod	2	
③②	Collar	4	
③③	Bushing	4	
③④	Rear bracket	2	(VT500XL)
③⑤	Collar	2	(VT500XL)
③⑥	Collar	2	(PZ500)
③⑦	Suspension wheel	2	
③⑧	Control rod	2	
③⑨	Bushing	2	
④①	Bushing	2	



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



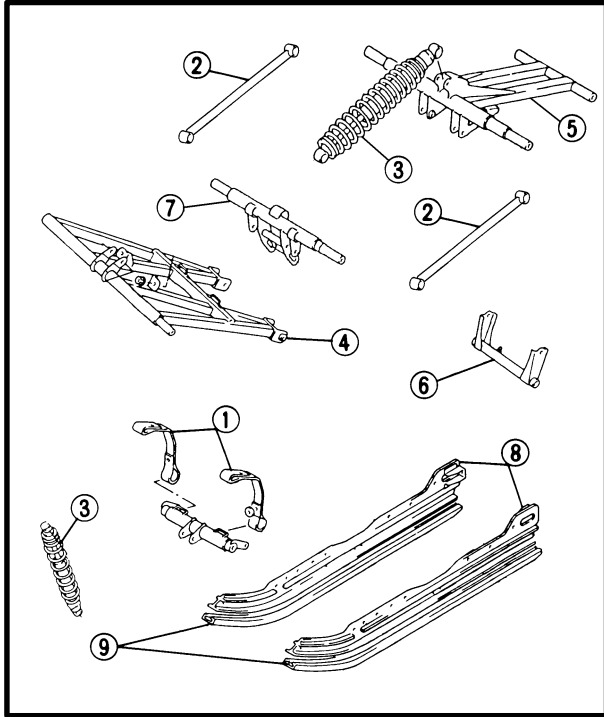
Order	Job name/Part name	Q'ty	Remarks
41	Rear pivot arm	1	
42	Bushing	2	
43	Collar	1	
44	Collar	1	
45	Rear pivot arm bracket	1	
46	Collar	1	
47	Circlip	2	
48	Suspension wheel	2	
49	Wheel bracket	1	
50	Rear axle	1	
51	Guide wheel	3	
52	Collar	2	
53	Tension adjuster	2	
54	Collar	1	
55	Collar	1	
56	Sliding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



INSPECTION

1. Inspect:

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

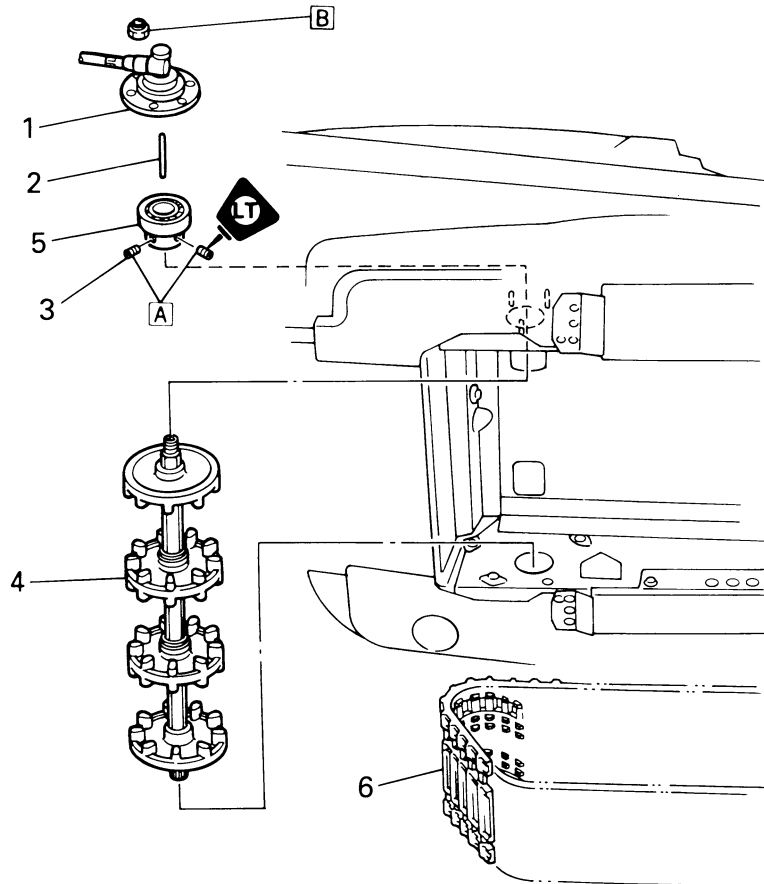


2. Inspect:

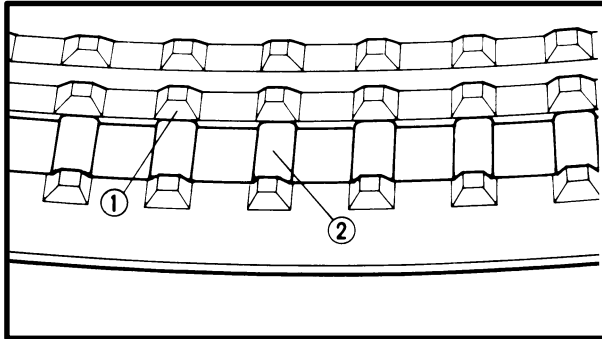
- Stopper band ①
- Frayed/damage → Replace.
- Pull rods ②
- Bends/damage → Replace.
- Shock absorbers ③
- Oil leaks/damage → Replace.
- Bushings
- Wear/cracks/damage → Replace.
- Front pivot arm ④
- Rear pivot arm ⑤
- Rear pivot arm bracket ⑥
- Suspension wheel bracket ⑦
- Sliding frame ⑧
- Cracks/damage → Replace.
- Slide runner ⑨
- Wear/damage → Replace.

FRONT AXLE AND TRACK

- [A]: 6 Nm (0.6 m • kg, 4.3 ft • lb)
- [B]: 20 Nm (2.0 m • kg, 14 ft • lb)



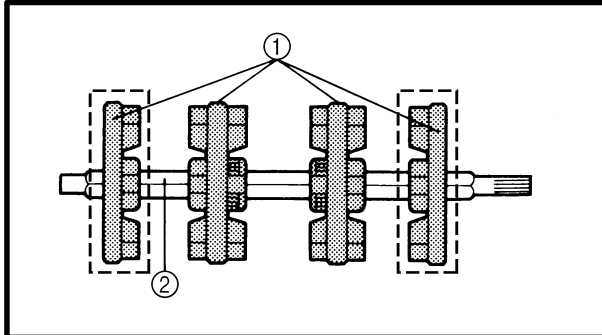
Order	Job name/Part name	Q'ty	Remarks
	Front axle and track removal		Remove the parts in the order listed.
	Drive chain housing		Refer to "DRIVE CHAIN HOUSING".
	Slide rail suspension		Refer to "SLIDE RAIL SUSPENSION".
	Secondary sheave		Refer to "SECONDARY SHEAVE".
1	Speedometer gear assembly	1	
2	Cable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



INSPECTION

1. Inspect:

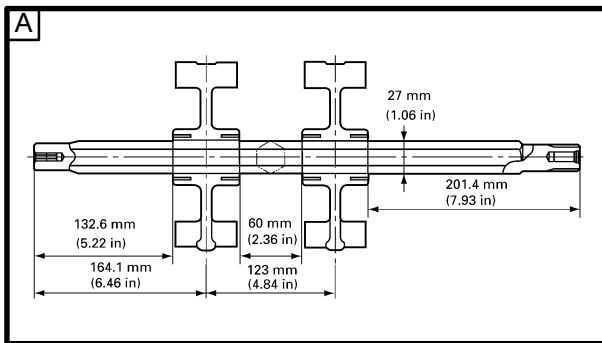
- Track ①
 - Slide metal ②
- Wear/cracks/damage → Replace.



2. Inspect:

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

VT500XL



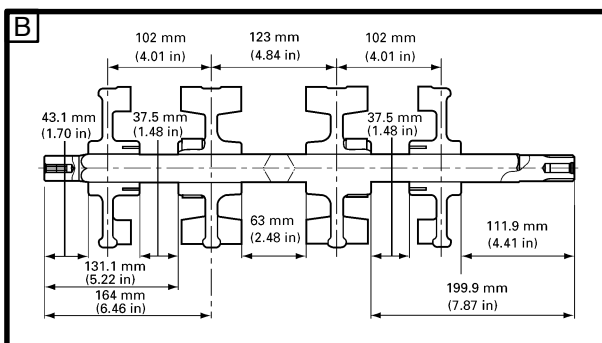
INSTALLATION

1. Install:

- Sprocket wheels
- Guide wheels

NOTE:

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

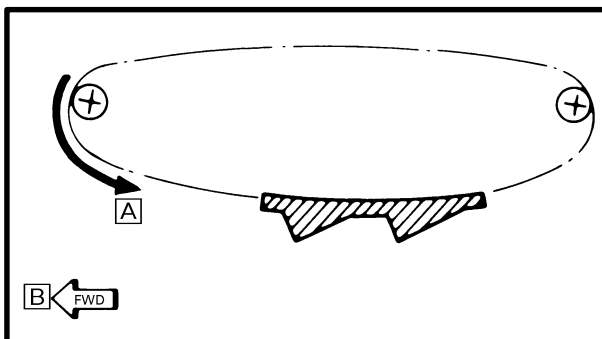


- [A] PZ500
- [B] VT500XL

2. Place the track in the chassis.

NOTE:

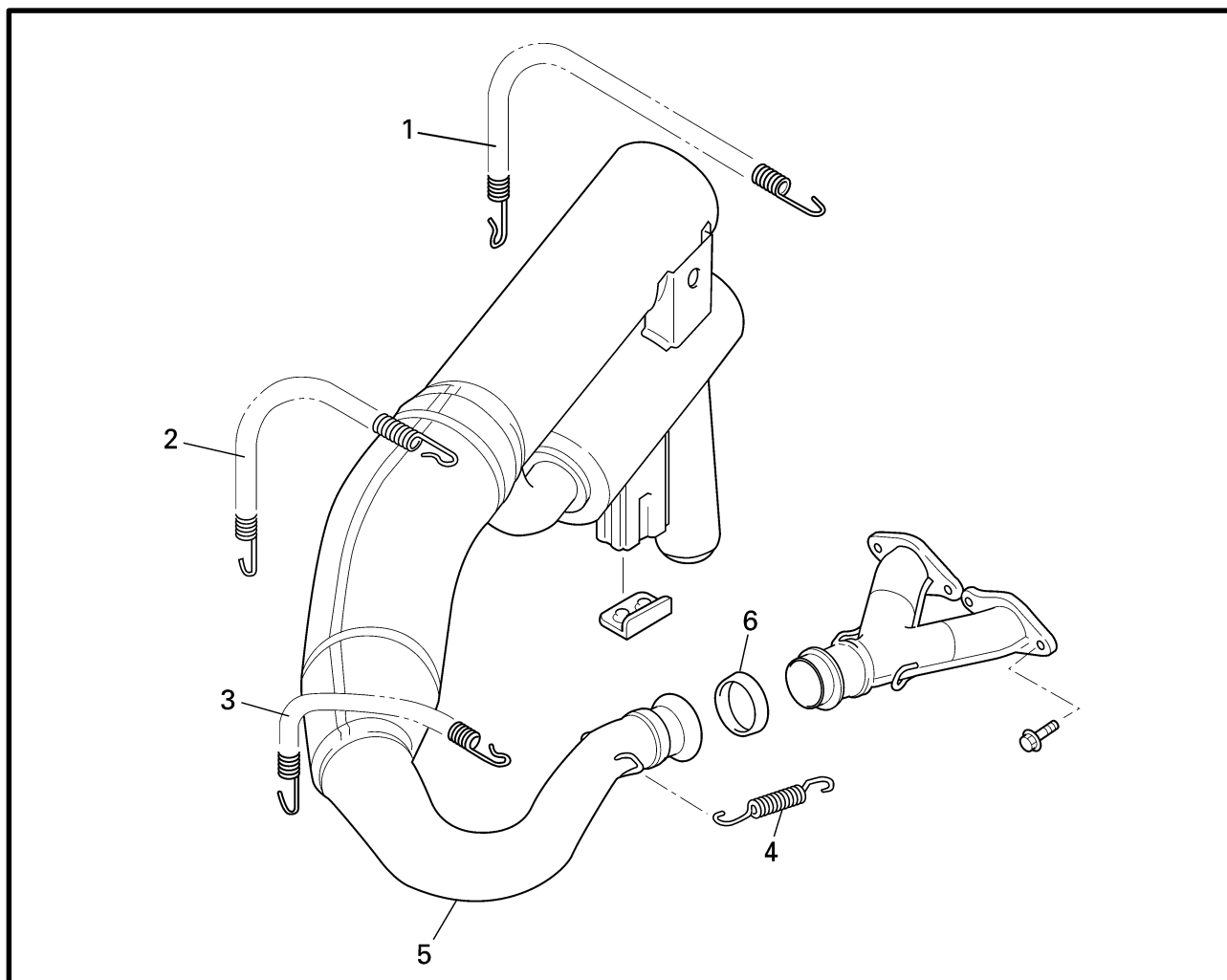
Be sure it is positioned as shown in the illustration.





ENGINE

EXHAUST ASSEMBLY



5

Order	Job name/Part name	Q'ty	Remarks
	Exhaust assembly removal		Remove the parts in the order listed.
	Shroud's stopper wire		
1	Spring 1	1	
2	Spring 2	1	
3	Spring 3	1	
4	Spring 4	2	
5	Exhaust silencer	1	
6	Exhaust gasket	1	
			For installation, reverse the removal procedure.

**INSPECTION**

1. Inspect:

- Exhaust silencer
Cracks/damage → Replace.
- Exhaust gasket
Exhaust gas leaks → Replace.
Refer to “EXHAUST SYSTEM INSPECTION”
in CHAPTER 2.

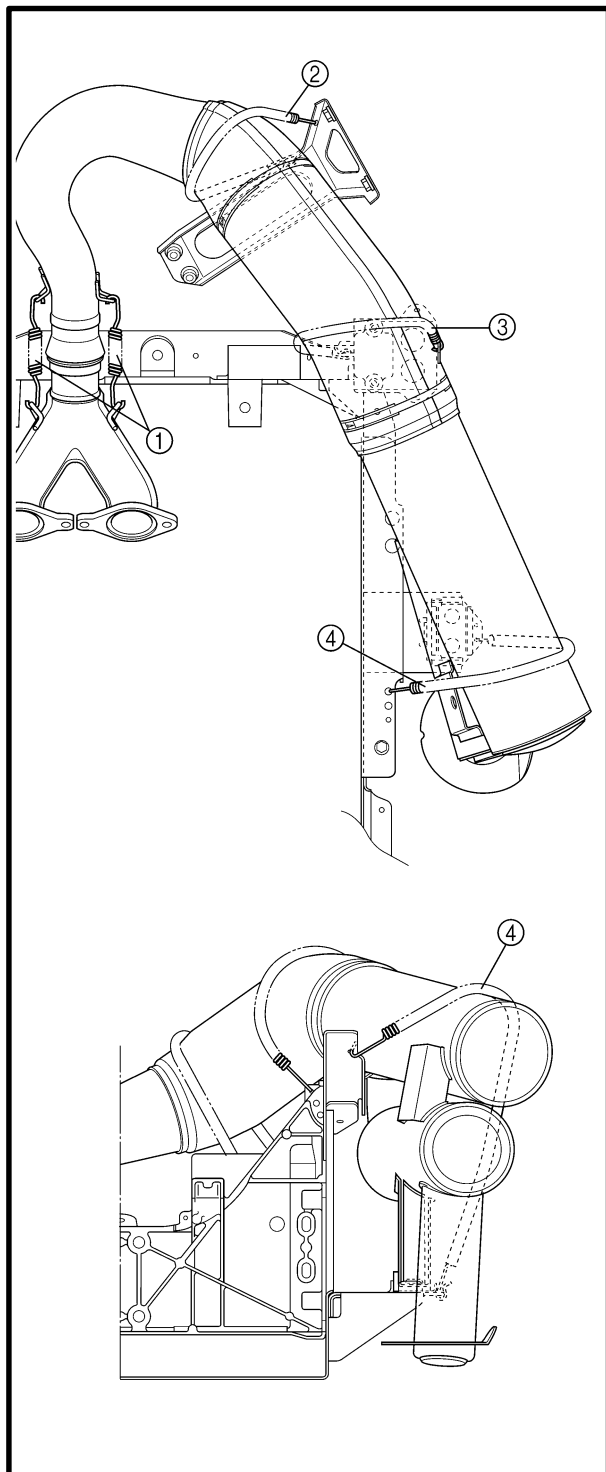
INSTALLATION

1. Install:

- Spring 4 ①
- Spring 3 ②
- Spring 2 ③
- Spring 1 ④

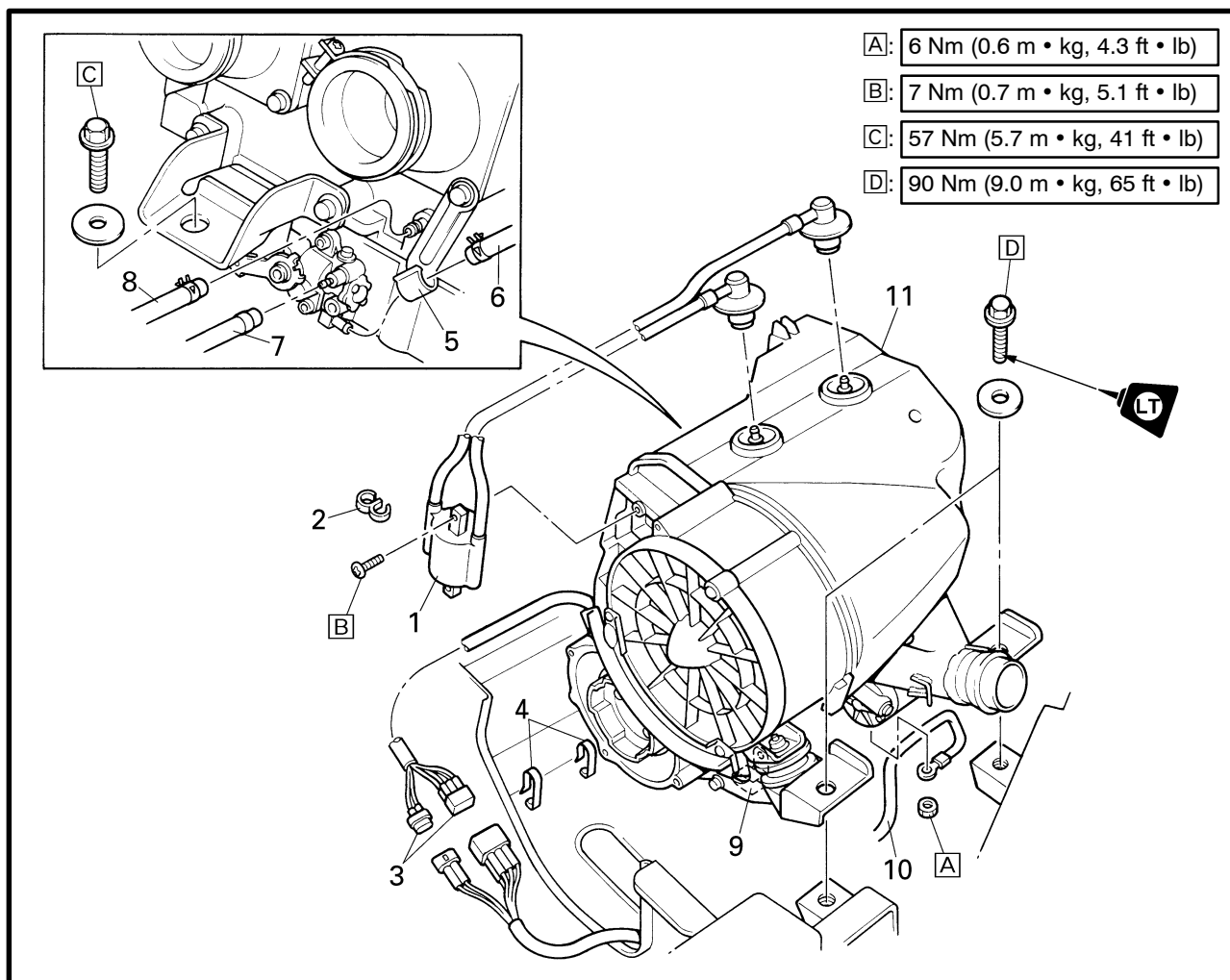
NOTE:

Install the springs as shown.





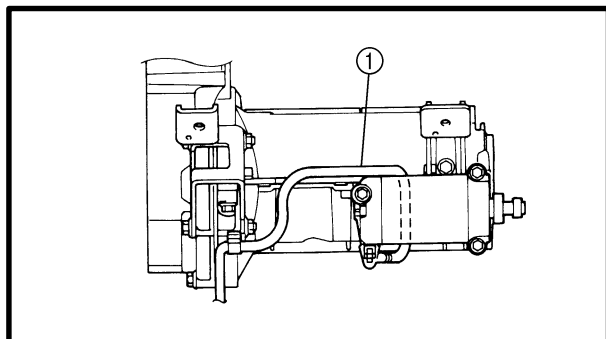
ENGINE ASSEMBLY



Order	Job name/Part name	Q'ty	Remarks
	Engine removal		Remove the parts in the order listed.
	Exhaust assembly		Refer to "EXHAUST ASSEMBLY".
	Carburetors		Refer to "CARBURETORS" in CHAPTER 6.
	Recoil starter		Refer to "RECOIL STARTER".
	Primary sheave		Refer to "PRIMARY SHEAVE AND DRIVE V-BELT" in CHAPTER 4.
1	Ignition coil	1	
2	Clamp	1	
3	CDI magneto coupler	2	
4	Clamp	2	Unfasten.
5	Clamp	1	Unfasten.
6	Oil hose	1	
7	Oil delivery hose	1	
8	Vacuum hose	1	
9	Clamp	1	Unfasten. (VT500XL)
10	Starter motor lead	1	(VT500XL)
11	Engine assembly	1	
			For installation, reverse the removal procedure.

**INSTALLATION****NOTE:**

After installing all parts, refer to “CABLE ROUTING” in CHAPTER 8, to check the cable, lead and hose routings.

**1. Connect:**

- Starter motor lead ①

NOTE:

Route the starter motor lead as shown.

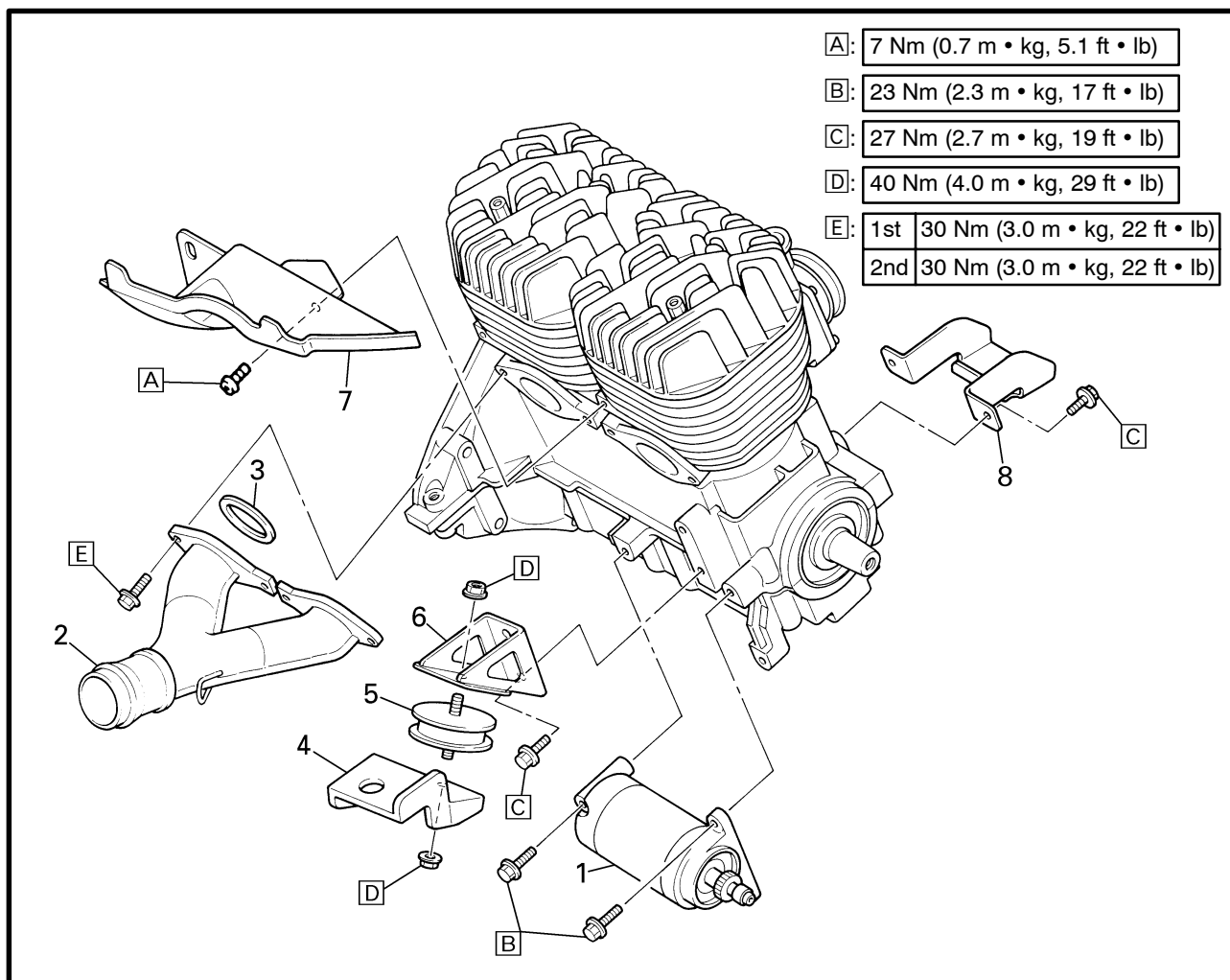
2. Bleed:

- Oil system

Refer to “OIL PUMP” in CHAPTER 2.



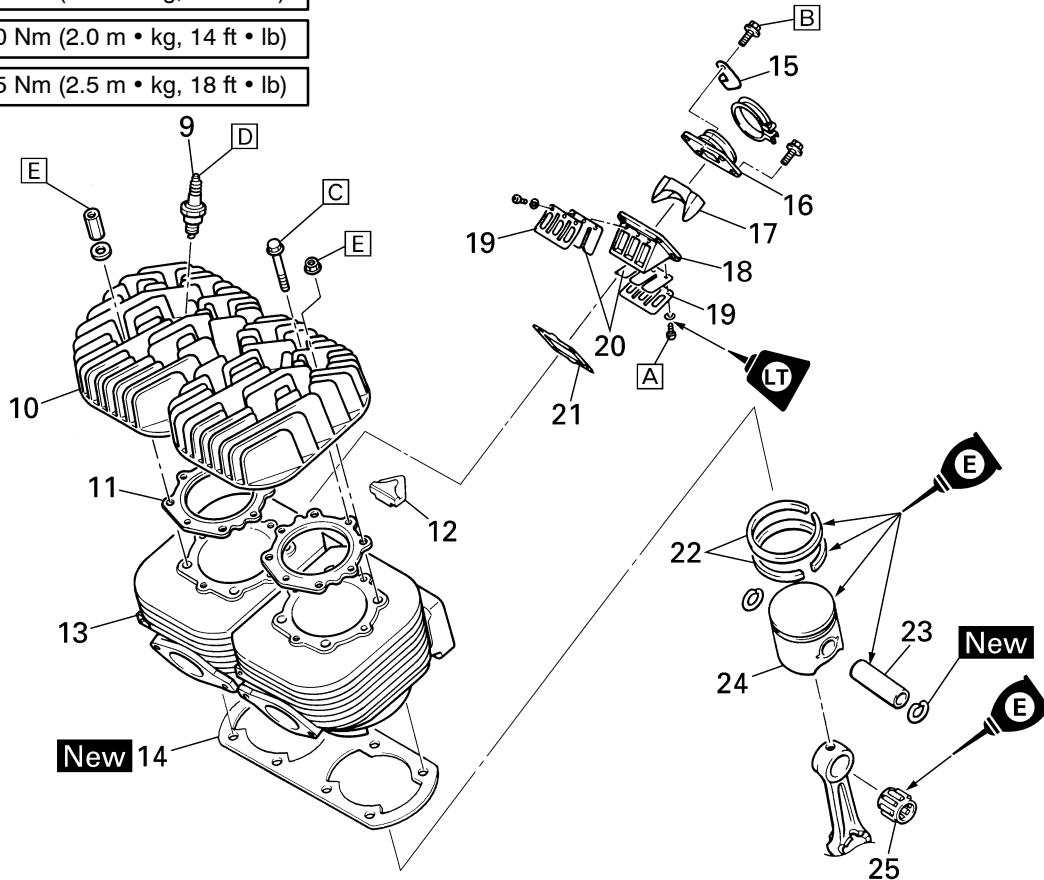
CYLINDER HEAD AND CYLINDER



Order	Job name/Part name	Q'ty	Remarks
	Cylinder head and cylinder removal		Remove the parts in the order listed. Refer to "ENGINE COOLING FAN". (VT500XL)
1	Engine cooling fan	1	
2	Starter motor	1	
3	Exhaust joint	1	
4	Exhaust gasket	2	
5	Front lower bracket (right)	1	
6	Damper	1	
7	Front upper bracket (right)	1	
8	Lower air shroud	1	
	Rear bracket	1	

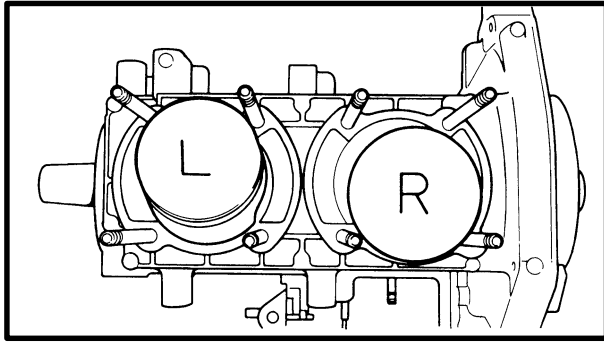


- [A]: 1 Nm (0.1 m • kg, 0.7 ft • lb)
 [B]: 14 Nm (1.4 m • kg, 10 ft • lb)
 [C]: 15 Nm (1.5 m • kg, 11 ft • lb)
 [D]: 20 Nm (2.0 m • kg, 14 ft • lb)
 [E]: 25 Nm (2.5 m • kg, 18 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
9	Spark plug	2	
10	Cylinder head	2	
11	Gasket	2	
12	Rubber seal	1	
13	Cylinder	2	
14	Gasket	1	
15	Clamp	1	
16	Intake manifold	2	
17	Spacer	2	
18	Reed valve seat	2	
19	Reed valve stopper	4	
20	Reed valve	4	
21	Gasket	2	
22	Piston ring	4	
23	Piston pin	2	
24	Piston	2	
25	Bearing	2	

For installation, reverse the removal procedure.

**REMOVAL**

1. Remove:

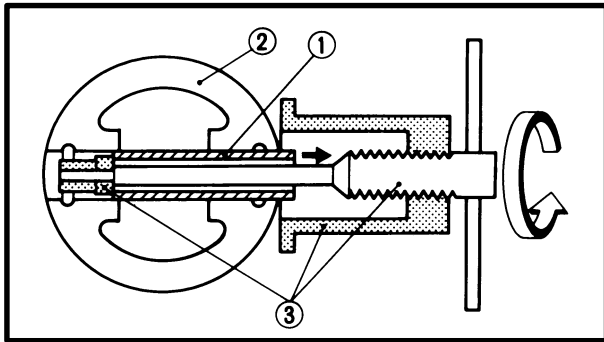
- Piston pin clips
- Piston pins
- Pistons
- Small end bearings

NOTE:

- Before removing the piston pin clip, cover the crankcase with a clean rag so that you will not accidentally drop the clip into the crankcase.
- Before removing the piston pin, deburr the clip groove and pin hole area. If the piston pin groove is deburred and the piston pin is still difficult to remove, use the piston pin puller.
- Put identification marks on each piston head for reference during reinstallation.

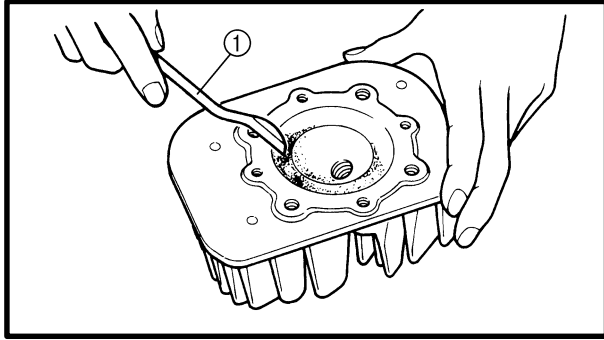


Piston pin puller:
90890-01304, YU-01304

**CAUTION:**

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

- ① Piston pin
- ② Piston
- ③ Piston pin puller



5E011

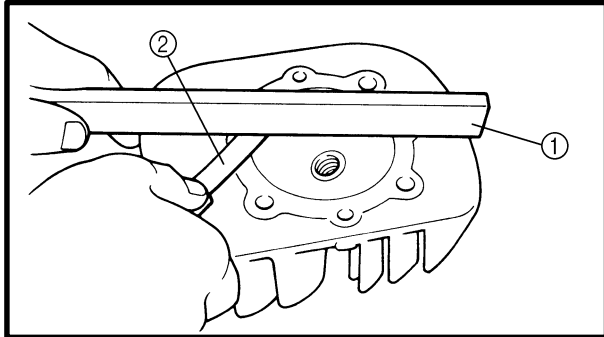
INSPECTION

1. Eliminate:

- Carbon deposits
(from the combustion chamber)
Use the rounded scraper ①.

CAUTION:

Do not use a sharp instrument. Avoid damaging or scratching the surface.



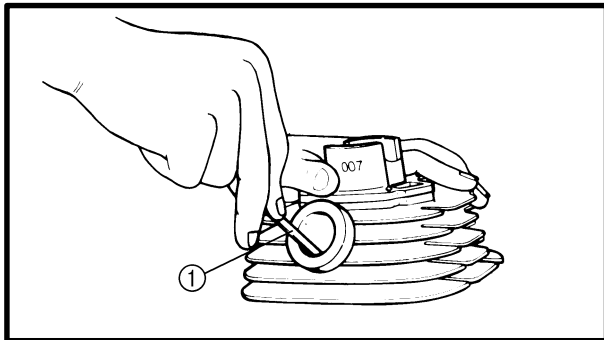
2. Measure:

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



Warpage limit:
0.03 mm (0.0012 in)

- Straight edge ①
- Thickness gauge ②

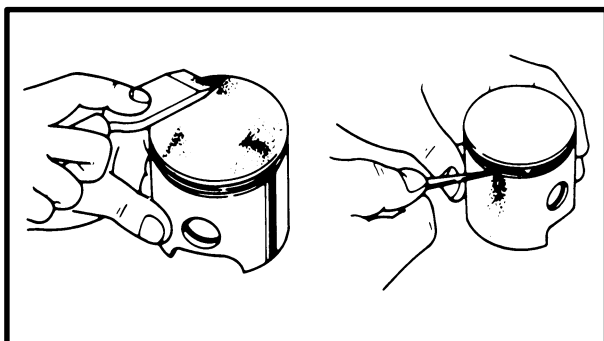


3. Eliminate:

- Carbon deposits
(from the cylinders)
Use the rounded scraper ①.

CAUTION:

Do not use a sharp instrument. Avoid damaging or scratching the surface.



4. Eliminate:

- Carbon deposits
(from the piston crown and ring grooves)

5. Inspect:

- Piston crown
Burrs/nicks/damage → Replace.

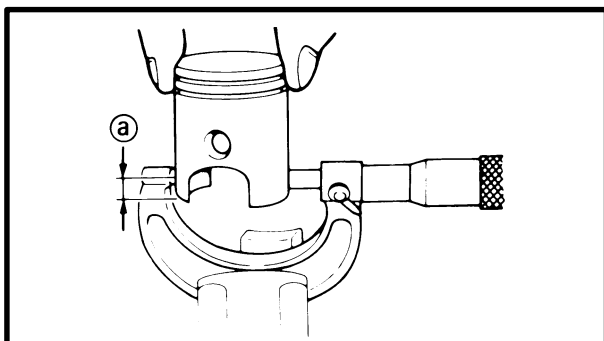
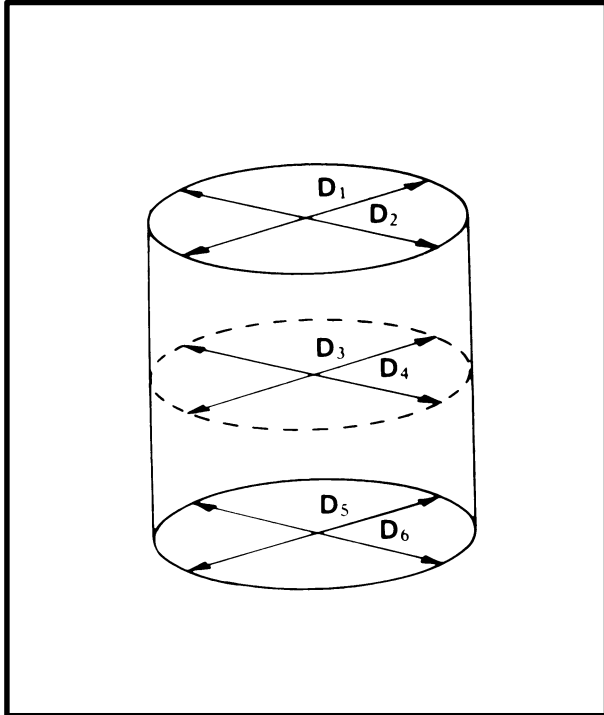
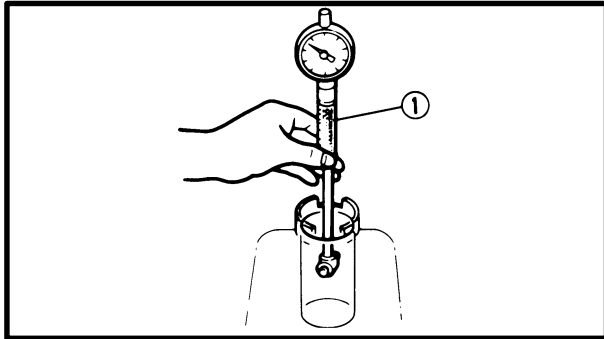


6. Eliminate:

- Score marks and lacquer deposits
(from the piston wall)
Use 600 ~ 800 grit wet sandpaper.

NOTE:

Sand in a crisscross pattern. Do not sand excessively.



7. Measure:

- Piston-to-cylinder clearance

Measurement steps:

1st step:

- Measure the cylinder bore (C) with a cylinder bore gauge ①.

NOTE:

Measure the cylinder bore (C) parallel to and at right angles to the crankshaft. Then find the average of the measurements.

	Standard	Wear limit
Cylinder bore (C)	72.000 ~ 72.014 mm (2.8346 ~ 2.8352 in)	72.100 mm (2.8386 in)
Taper (T)	—	0.05 mm (0.0020 in)
Out of round (R)	—	0.01 mm (0.0004 in)
C = Maximum D 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) - (Minimum of D ₂ , D ₄ or D ₆)		

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

2nd step:

- Measure the piston skirt diameter (P) with a micrometer.
 (a) 29 mm (1.14 in) from the bottom edge of the piston

	Piston size (standard) (P): 71.942 ~ 71.957 mm (2.8324 ~ 2.8329 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:

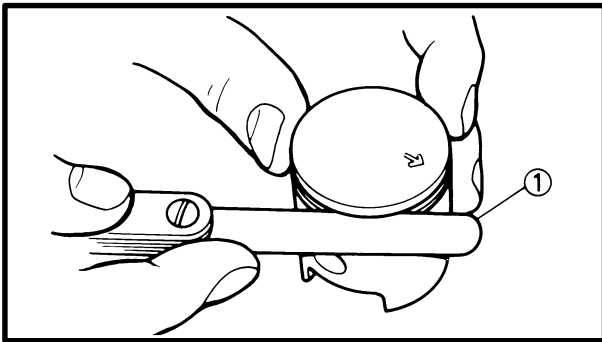


Piston-to-cylinder clearance =
Cylinder bore (C) - Piston skirt diameter (P)

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



Piston-to-cylinder clearance:
0.045 ~ 0.050 mm
(0.0018 ~ 0.0020 in)
Limit 0.1 mm (0.004 in)



8. Measure:

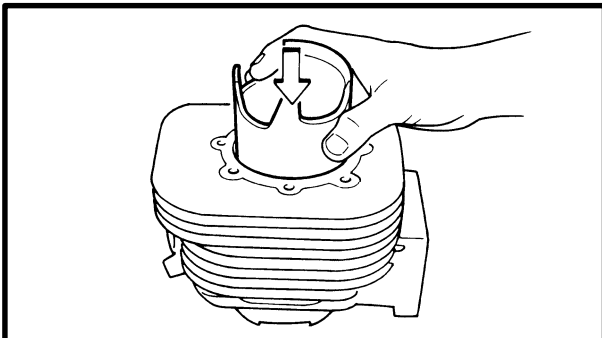
- Side clearance (piston rings)
 Use the feeler gauge ①.
 Out of specification → Replace the piston and/or rings.

NOTE:

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



Side clearance (top):
0.02 ~ 0.06 mm
(0.0008 ~ 0.0024 in)
Side clearance (2nd):
0.02 ~ 0.06 mm
(0.0008 ~ 0.0024 in)

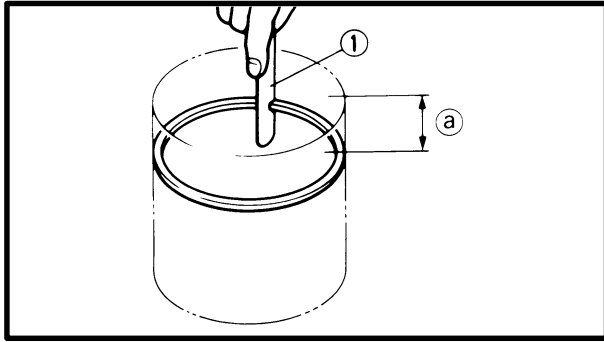


9. Install:

- Piston ring
 (into the cylinder)
 Push in the ring with the piston crown.

NOTE:

Insert the ring into the cylinder, and push it approximately 20 mm (0.8 in) into the cylinder. Push in the ring with the piston crown so that the ring is at right angles to the cylinder bore.



10. Measure:

- End gap (piston rings)

Use the feeler gauge ①.

Out of specification → Replace the rings as a set.

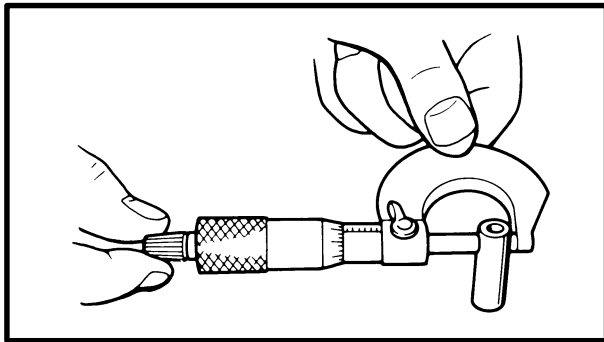
**End gap (top):**

0.35 ~ 0.55 mm
(0.014 ~ 0.022 in)

End gap (2nd):

0.35 ~ 0.55 mm
(0.014 ~ 0.022 in)

② 20 mm (0.8 in)



11. Measure:

- Piston pin outside diameter

Out of specification → Replace the piston pin.

**Outside diameter (piston pin):**

17.995 ~ 18.000 mm
(0.7085 ~ 0.7087 in)

12. Measure:

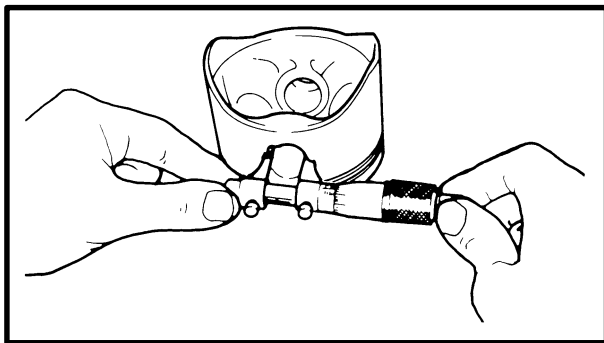
- Piston pin-to-piston clearance

Out of specification → Replace the piston.

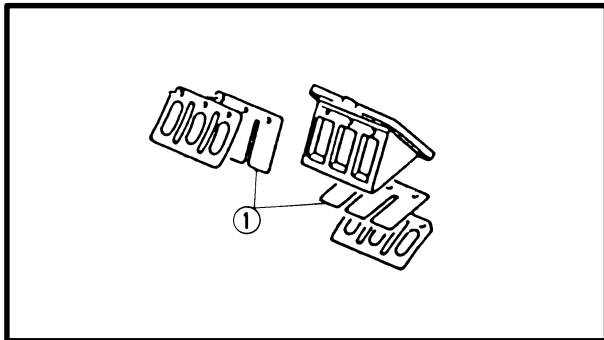
Piston pin-to-piston clearance =

Piston pin bore size -

Piston pin outside diameter

**Piston pin-to-piston clearance =**

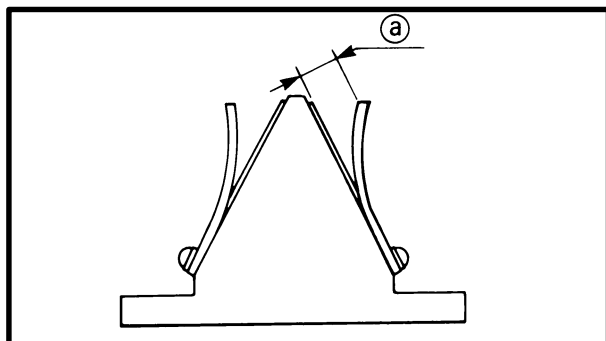
0.009 ~ 0.015 mm
(0.000354 ~ 0.000591 in)



13. Inspect:

- Reed valves ①

Bends/cracks/damage → Replace.

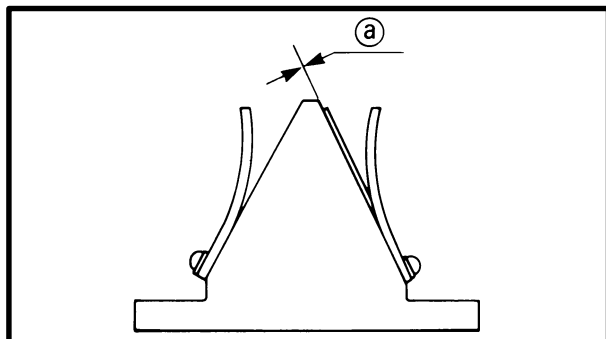


14. Measure:

- Valve stopper height (a)
Out of specification → Replace the valve stopper.



Valve stopper height (a):
10.4 ~ 10.8 mm (0.41 ~ 0.43 in)

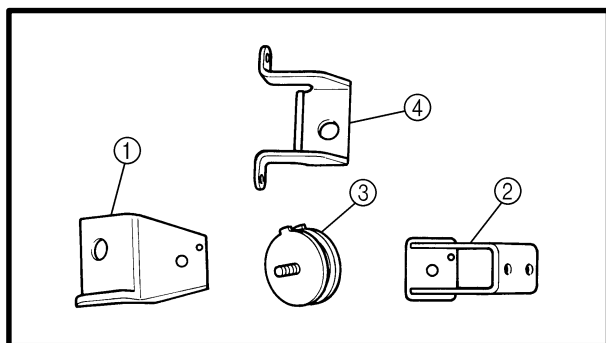


15. Measure:

- Reed valve bending limit (a)
Out of specification → Replace the reed valve.



Reed valve bending limit (a):
less than 0.3 mm (0.0118 in)

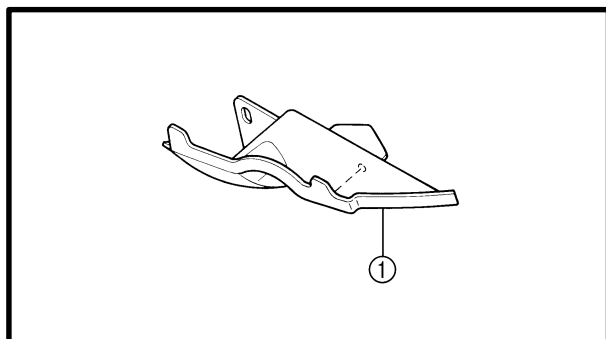


16. Inspect:

- Front lower bracket (right) (1)
- Front upper bracket (right) (2)
- Damper (3)
- Rear bracket (4)
Cracks/damage → Replace.

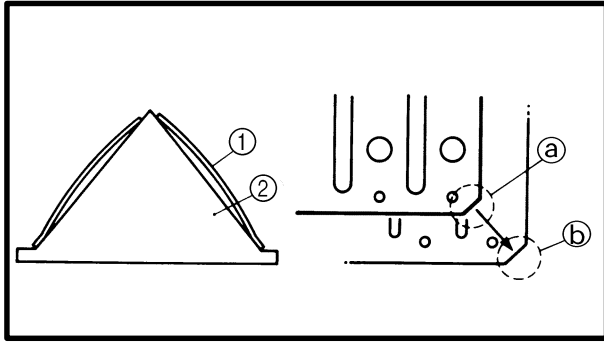
17. Inspect:

- Exhaust joint
Cracks/damage → Replace.
- Exhaust gasket
Exhaust gas leaks → Replace
Refer to "EXHAUST SYSTEM INSPECTION" in CHAPTER 2.



18. Inspect:

- Lower air shroud (1)
Cracks/damage → Replace.

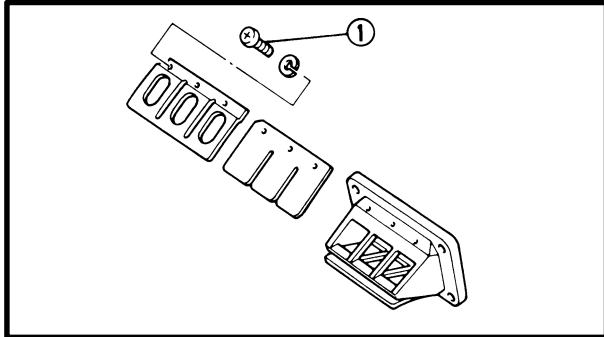
**INSTALLATION**

1. Install:

- Reed valves
- Reed valve stoppers

NOTE:

- Place the reed valve ① with its concave surface facing toward the reed valve seat ②.
- Fit the reed valve stopper cut ③ into the corresponding cut ④ on the reed valve.



2. Tighten:

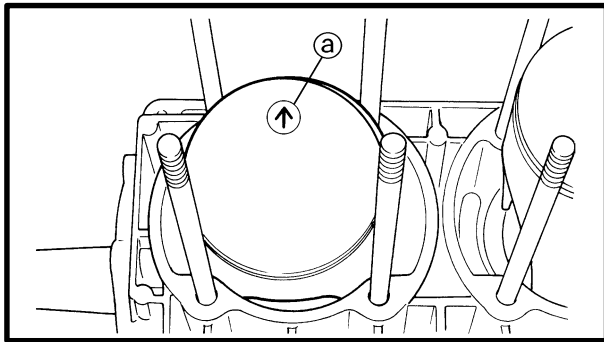
- Screws (reed valve) ①

**Screws (reed valve):**

1 Nm (0.1 m • kg, 0.7 ft • lb)

LOCTITE®**NOTE:**

Tighten each screw gradually to avoid warping.

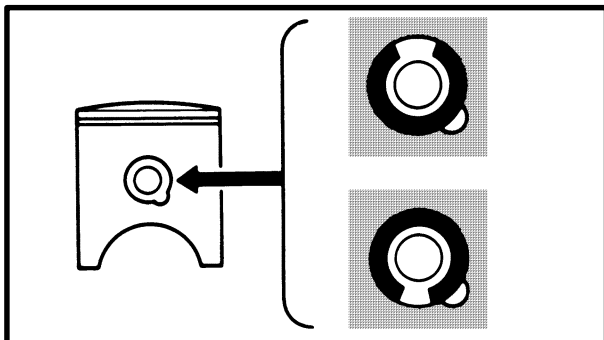


3. Install:

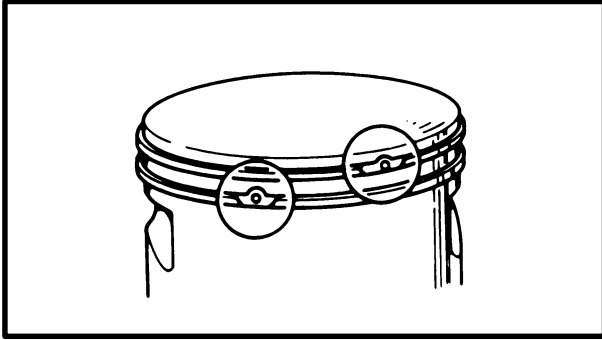
- Small end bearings
- Pistons
- Piston pins
- Piston pin clips
- Piston rings

NOTE:

- The arrow ③ on the piston must point toward to the front of the engine.
- Before installing the piston pin clip, cover the crankcase with a clean rag so that you do not accidentally drop the pin clip and other material into the crankcase.
- Position each piston very carefully in its original place.

**CAUTION:**

- Always use new piston pin clips.
- Do not allow the clip gap to align with the piston pin slot.

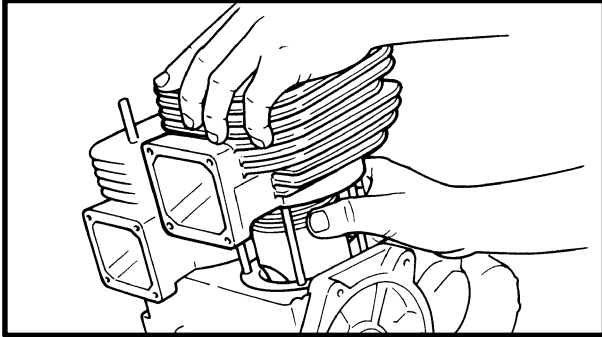


4. Check:

- Piston ring position

CAUTION:

- Make sure that the ring ends are properly fitted around the ring locating pins in the piston grooves.
- Be sure to check that the manufacturer's marks or numbers stamped on the rings face upward.

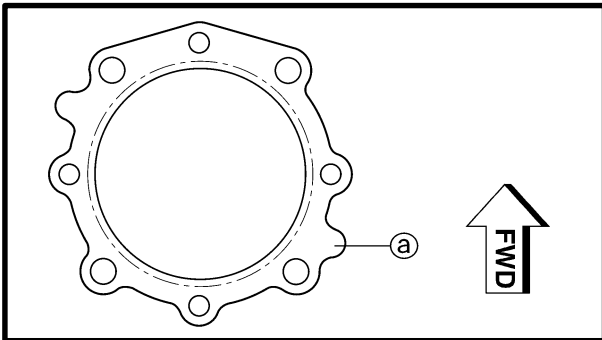


5. Install:

- Gasket
- Cylinder

NOTE:

Install the cylinder with one hand while compressing the piston rings with the other hand.



6. Install:

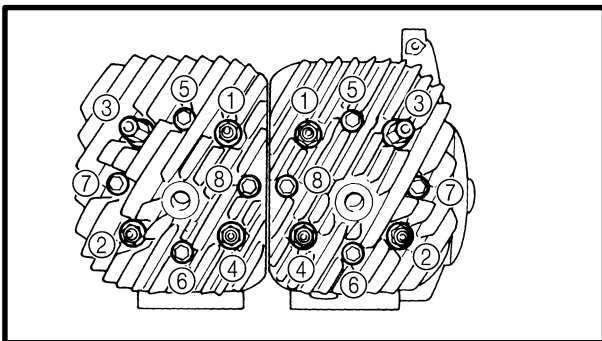
- Gaskets (cylinder head)

NOTE:

Install the gaskets (cylinder head) with its projection (a) facing the CDI magneto side.

CAUTION:

Always use new gaskets.



7. Tighten:

- Nuts (cylinder head)
- Bolts (cylinder head)

Tightening steps:

- Temporarily tighten the cylinder head nuts (1) ~ (4) and bolts (5) ~ (8) as follows.

1st step:

- Tighten the nuts (1) ~ (4).



Nut (cylinder head):
25 Nm (2.5 m • kg, 18 ft • lb)

2nd step:

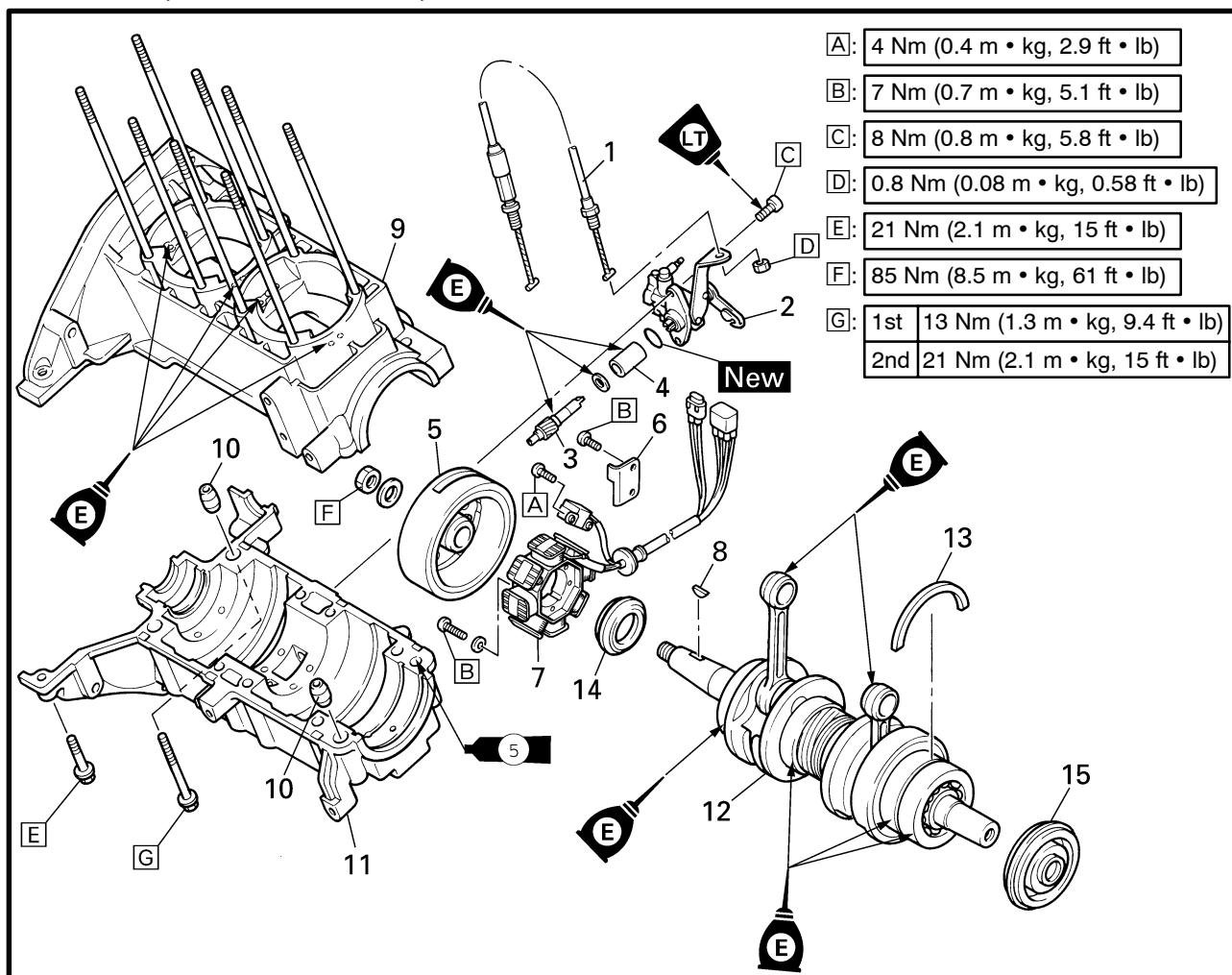
- Tighten the bolts (5) ~ (8).



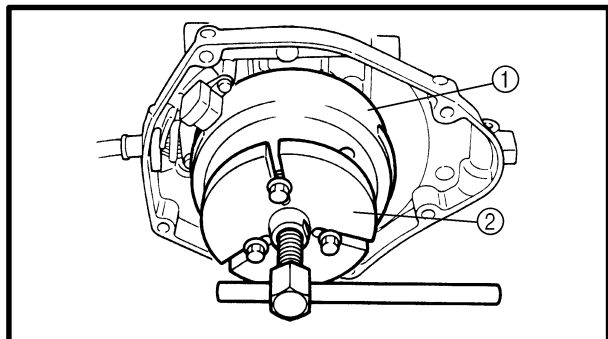
Bolt (cylinder head):
15 Nm (1.5 m • kg, 11 ft • lb)



OIL PUMP, CDI MAGNETO, CRANKCASE AND CRANKSHAFT



Order	Job name/Part name	Q'ty	Remarks
	Oil pump, CDI magneto, crankcase and crankshaft removal		Remove the parts in the order listed.
	Cylinder head and cylinder		Refer to "CYLINDER HEAD AND CYLINDER".
1	Oil pump cable	1	
2	Oil pump	1	
3	Oil pump drive gear	1	
4	Spacer	1	
5	Magneto rotor	1	
6	Plate	1	
7	Stator coil	1	
8	Woodruff key	1	
9	Upper crankcase	1	
10	Dowel pin	2	
11	Lower crankcase	1	
12	Crankshaft assembly	1	
13	Stopper ring	1	
14	Oil seal 1	1	
15	Oil seal 2	1	
			For installation, reverse the removal procedure.

**REMOVAL**

1. Remove:
 - Magneto rotor ①

NOTE:

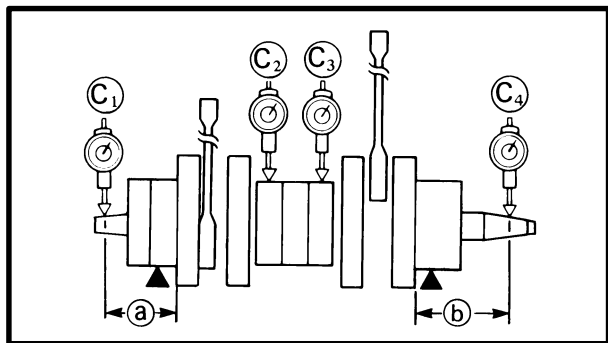
- Remove the magneto rotor using the rotor puller ②.
- Fully tighten the tool holding bolts, making sure the tool body is parallel with the magneto rotor. If necessary, one screw may be backed out slightly to level the tool body.



Rotor puller:
90890-01362, YU-33270

INSPECTION

1. Measure:
 - Runout
Use the V-blocks and a dial gauge.
Out of specification → Replace or repair the crankshaft.



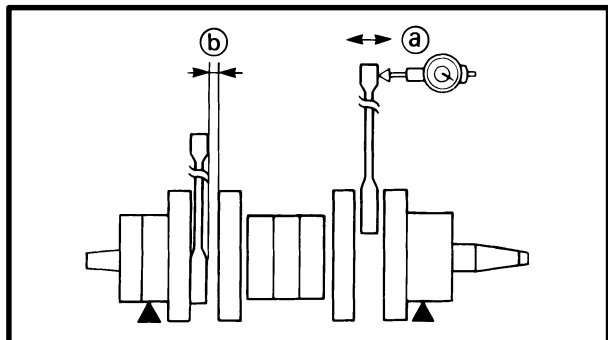
Dial gauge:
90890-03097, YU-03097



Runout limit:
C₁ : 0.03 mm (0.0012 in)
C₂, C₃ : 0.04 mm (0.0016 in)
C₄ : 0.05 mm (0.0020 in)

- ① 78 mm (3.07 in)
- ② 83 mm (3.27 in)

2. Measure:
 - Small end freeplay ③
Use the dial gauge.
Out of specification → Replace the defective parts.

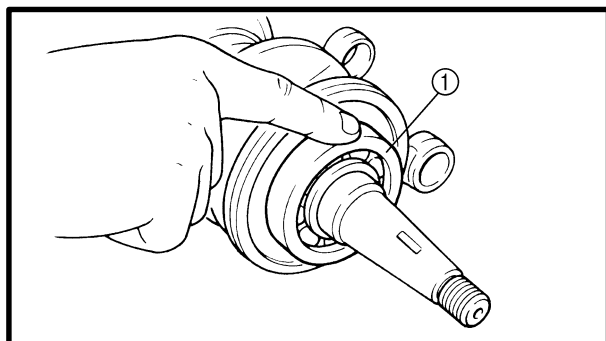


Small end freeplay ③:
0.8 ~ 1.0 mm (0.03 ~ 0.04 in)

- Big end side clearance ④
Use the feeler gauge.
Out of specification → Replace the defective parts.



Big end side clearance ④:
0.25 ~ 0.75 mm (0.01 ~ 0.03 in)

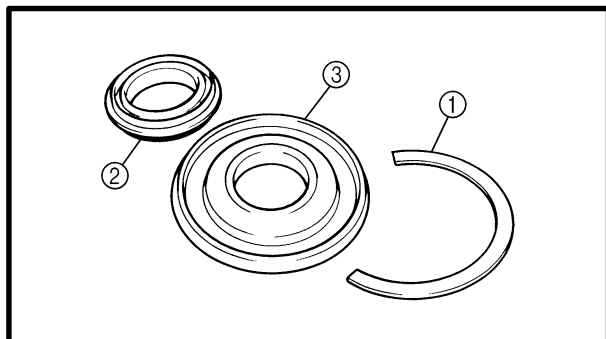


3. Inspect:

- Crankshaft bearing ①
Pitting/damage → Replace.

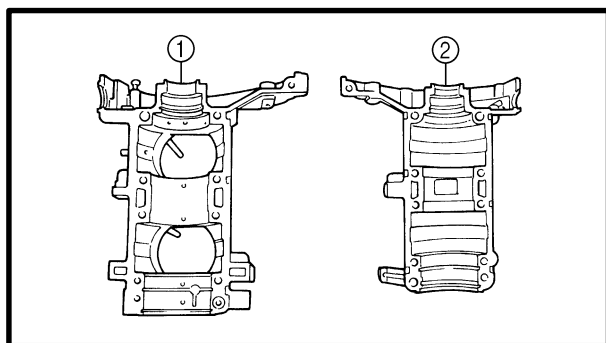
CAUTION:

Lubricate the bearings immediately after examining them in order to prevent rust.



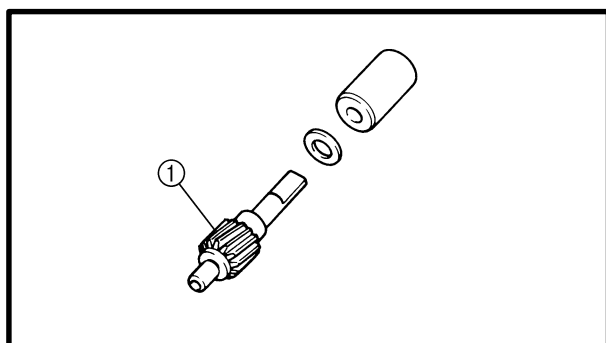
4. Inspect:

- Stopper ring ①
Bends/damage → Replace.
- Oil seal 1 ②
- Oil seal 2 ③
Wear/damage → Replace.



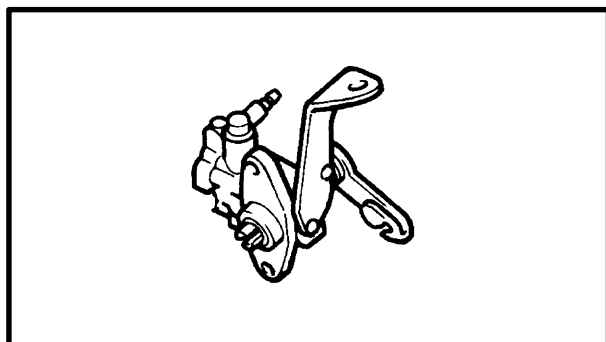
5. Inspect:

- Upper crankcase ①
- Lower crankcase ②
Cracks/damage → Replace.



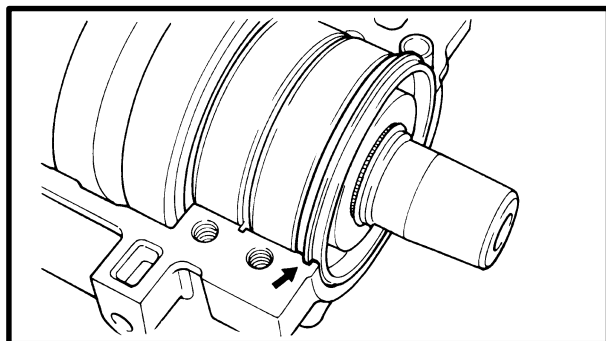
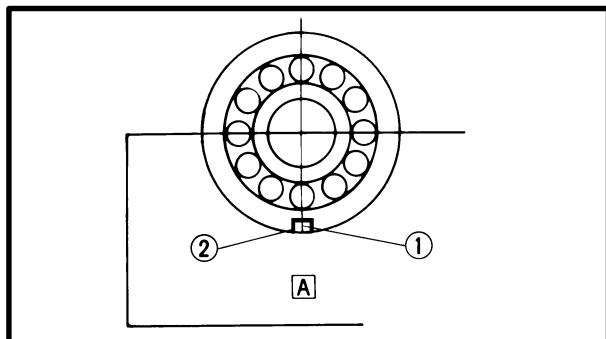
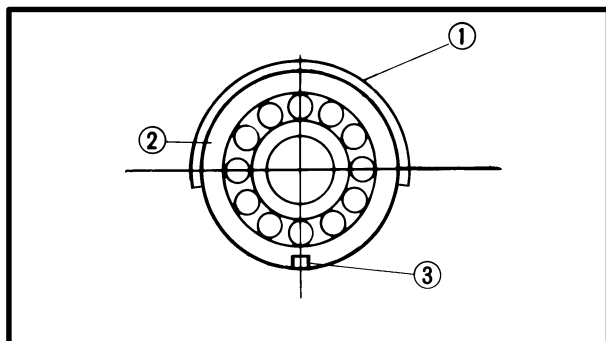
6. Inspect:

- Oil pump drive gear ①
Wear/damage → Replace.



7. Inspect:

- Oil pump
Cracks/damage → Replace.

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

- Stopper ring ①
(onto the lower crankcase bearing ② (primary sheave side) as shown)
- ③ Knock pin

2. Install:

- Crankshaft assembly
(onto the upper crankcase [A])

NOTE:

Rotate the bearings until the knock pins ① on the upper crankcase [A] and the slots ② in the bearings are aligned.

CAUTION:

The oil seal lip must fit into the crankcase groove.

CAUTION:

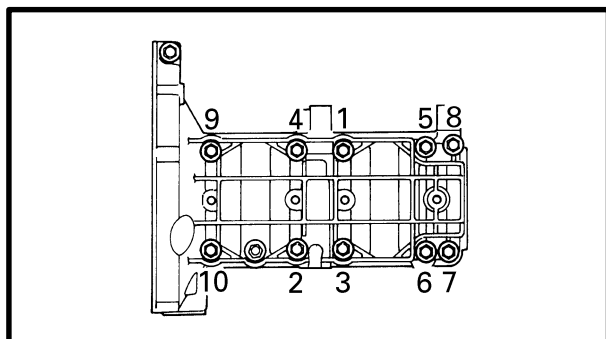
Before installing and torquing the crankcase bolts, be sure to check that the crankshaft turning smoothly.

3. Tighten:

- Bolts (crankcase)

NOTE:

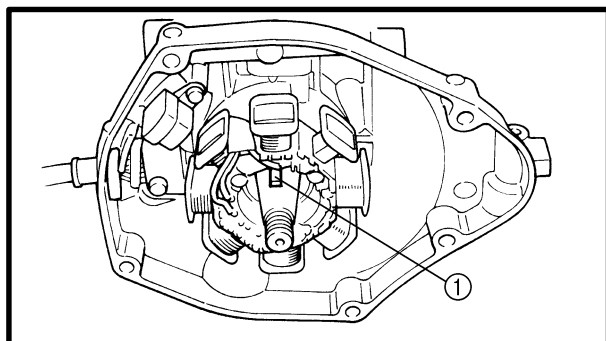
- Tighten the bolts in order, starting with the lowest number, and torque the bolts in two stages.
- Bolt 2 and 10 are different in size from the other bolts.

**Bolt (crankcase):****First:**

13 Nm (1.3 m • kg, 9.4 ft • lb)

Final:

21 Nm (2.1 m • kg, 15 ft • lb)



4. Install:

- Woodruff key ①

CAUTION:

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

5. Install:

- Magneto rotor
- Washer
- Nut (magneto rotor)

CAUTION:

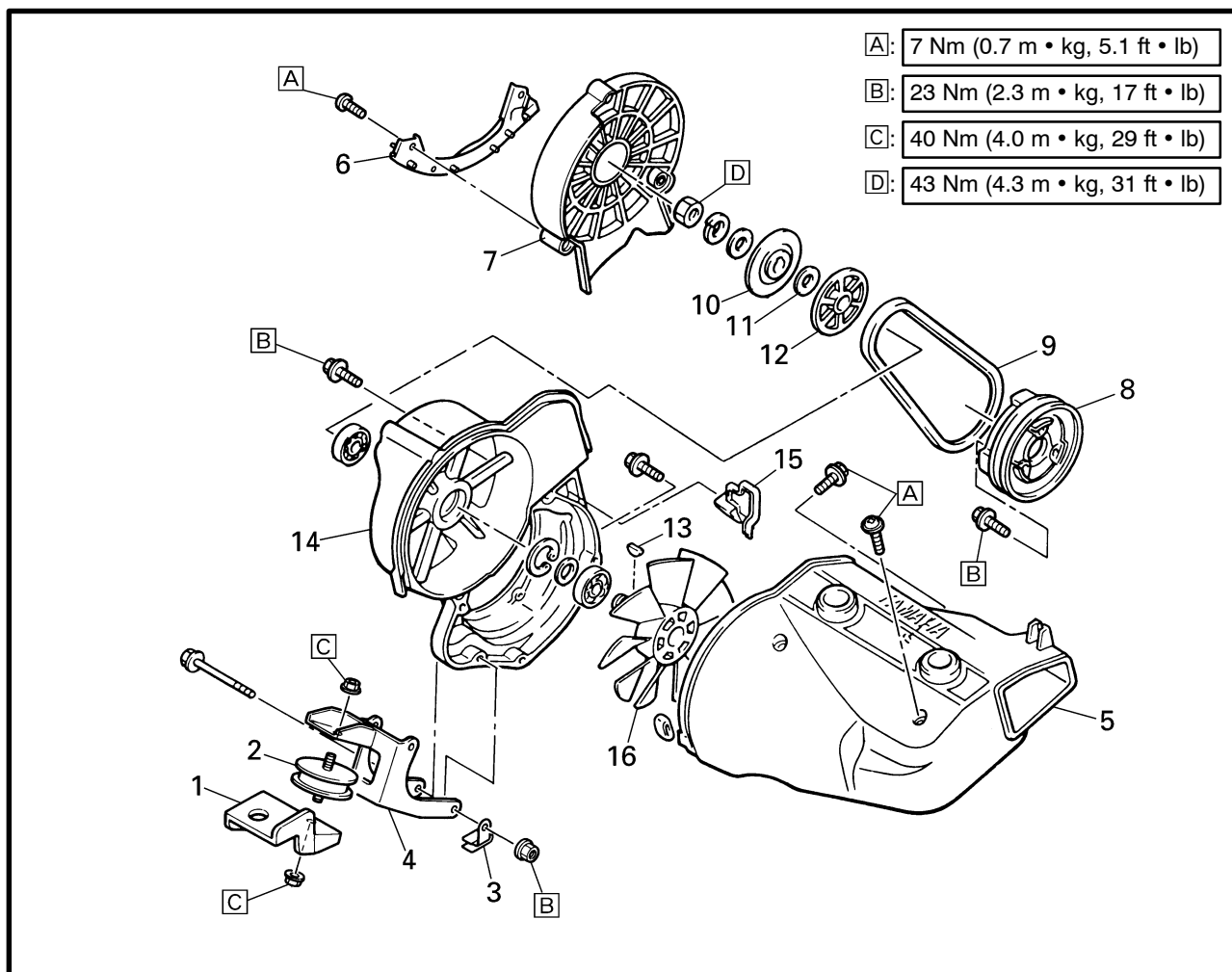
Be sure to remove any oil or grease from the tapered portion of the magneto rotor using a cloth dampened with thinner.

NOTE:

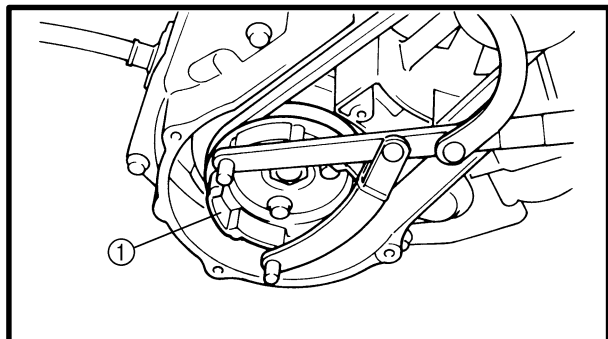
When installing the magneto rotor, make sure the woodruff key is properly seated in the keyway of the crankshaft.



ENGINE COOLING FAN



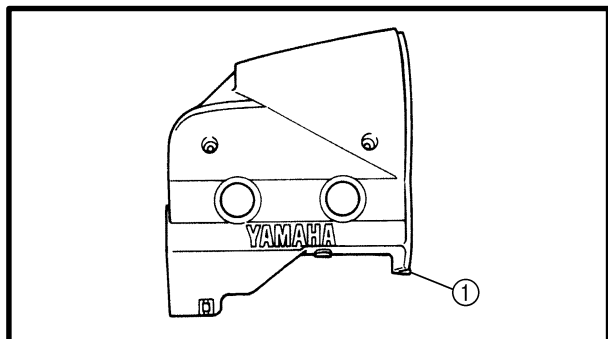
Order	Job name/Part name	Q'ty	Remarks
	Engine cooling fan removal		Remove the parts in the order listed. Refer to "ENGINE ASSEMBLY".
	Engine assembly		
1	Front lower bracket (left)	1	
2	Damper	1	
3	Clamp	1	(VT500XL)
4	Front upper bracket (left)	1	
5	Upper air shroud	1	
6	Air duct stopper	1	
7	Cooling fan grill	1	
8	Drive pulley	1	
9	Cooling fan belt	1	
10	Driven pulley (outer sheave)	1	
11	Shim	3	
12	Driven pulley (inner sheave)	1	
13	Woodruff key	1	
14	Cooling fan housing	1	
15	Damper	1	
16	Cooling fan	1	
			For installation, reverse the removal procedure.

**REMOVAL**

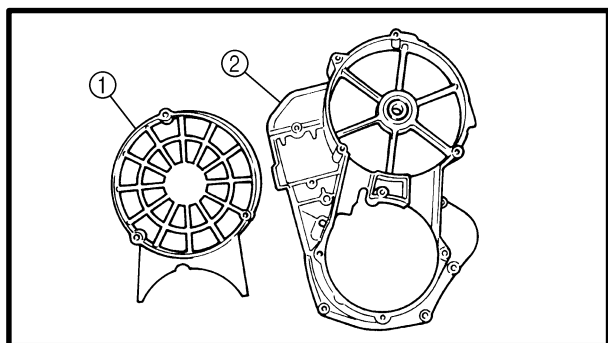
1. Remove:
 - Drive pulley ①



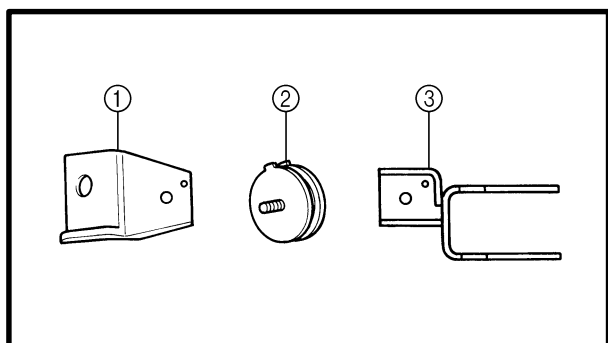
Rotor holding tool:
90890-01235, YU-01235

**INSPECTION**

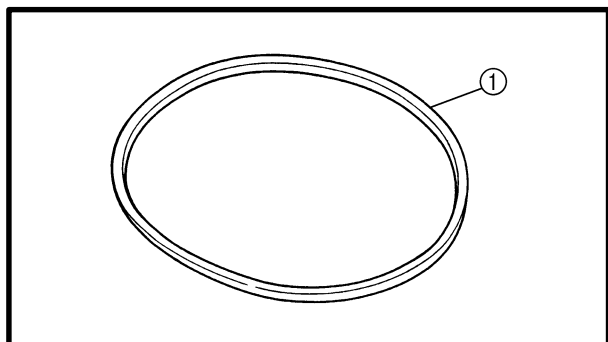
1. Inspect:
 - Upper air shroud ①
Cracks/damage → Replace.



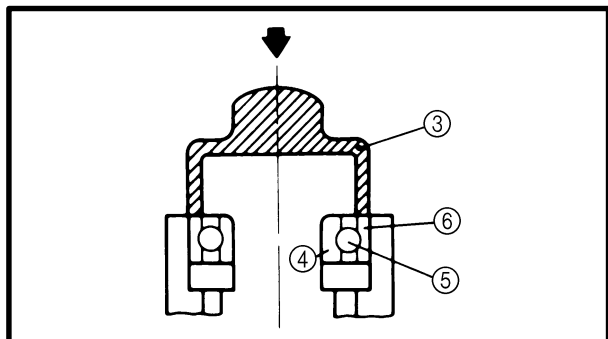
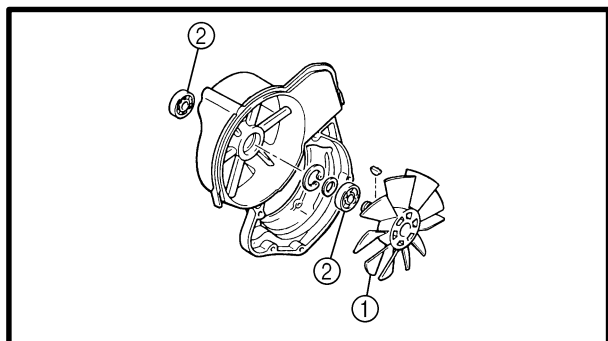
2. Inspect:
 - Cooling fan grill ①
 - Cooling fan housing ②
Cracks/damage → Replace.



3. Inspect:
 - Front lower bracket (left) ①
 - Damper ②
 - Front upper bracket (left) ③
Cracks/damage → Replace.



4. Inspect:
 - Cooling fan belt ①
Wear/cracks/damage → Replace.



5. Inspect:

- Cooling fan ①
Cracks/damage → Replace.
- Bearings (cooling fan housing) ②
Pitting/damage → Replace.

Replacement steps:

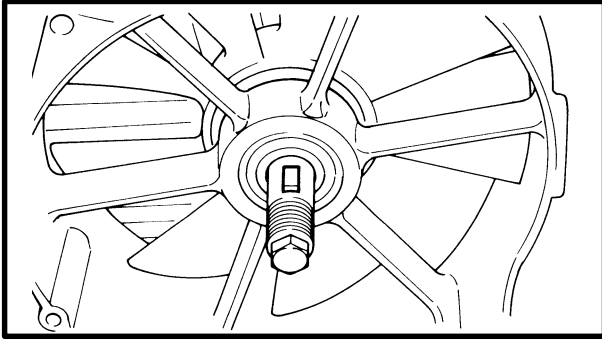
- Remove the bearing(s) ② using a general bearing puller.
- Install the new bearing(s).

NOTE:

Use a socket ③ that is the same size as the outside diameter of the race of the bearing race.

CAUTION:

Do not strike the inner race ④ or ball bearings ⑤. Contact only the outer race ⑥.

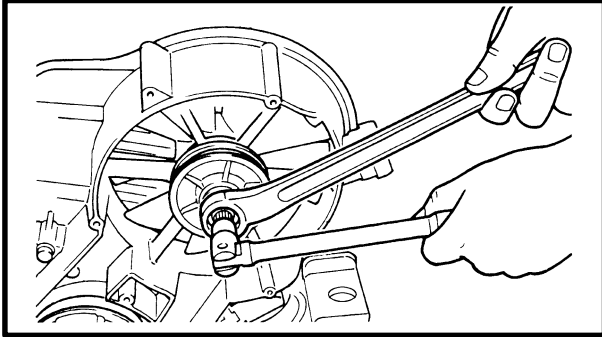
**INSTALLATION**

1. Install:

- Cooling fan
- Driven pulley (inner sheave)
- Shims
- Driven pulley (outer sheave)

NOTE:

When installing the inner sheave, shims and outer sheave, make sure the woodruff key is properly seated in the keyway of the cooling fan shaft.

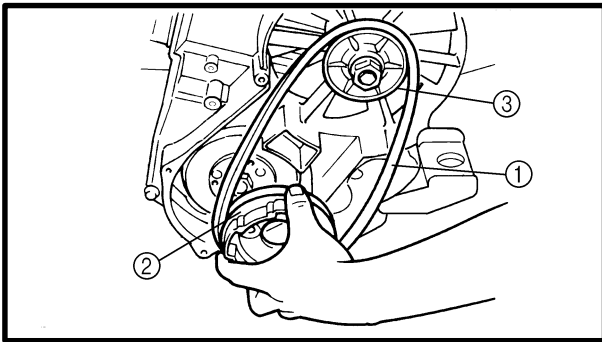


2. Tighten:

- Nut (driven pulley)



Nut (driven pulley):
43 Nm (4.3 m • kg, 31 ft • lb)



3. Install:

- Cooling fan belt
- Drive pulley

NOTE:

Install the cooling fan belt ① onto the drive pulley ② and driven pulley ③. Then, install the drive pulley and tighten the bolts to the specified torque.



Rotor holding tool:
90890-01235, YU-01235



Bolt (drive pulley):
23 Nm (2.3 m • kg, 17 ft • lb)

4. Measure:

- Cooling fan belt deflection.
Out of specification → Adjust.
Refer to "COOLING FAN BELT INSPECTION" in CHAPTER 2.



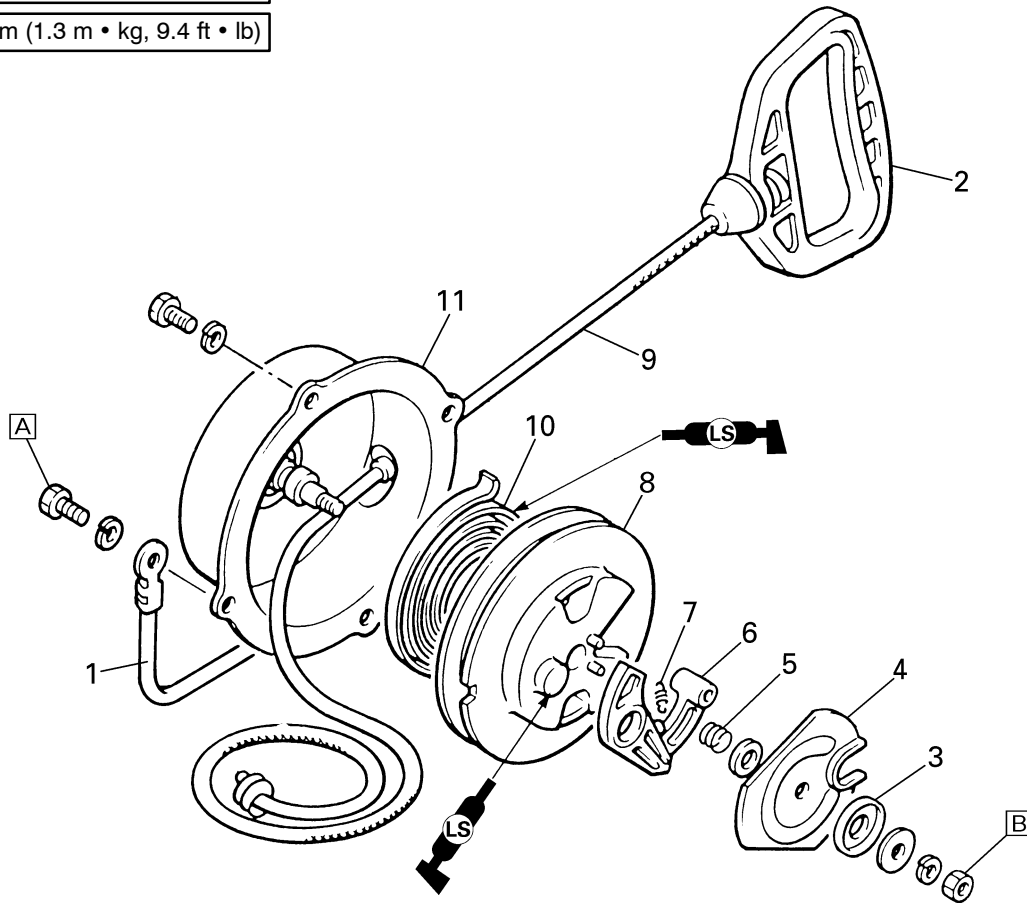
Cooling fan belt deflection:
8 mm (0.31 in)/4 ~ 6 kg (8.8 ~ 13.2 lb)



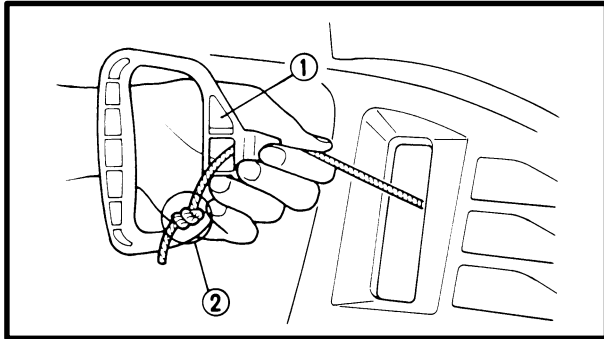
RECOIL STARTER

[A]: 7 Nm (0.7 m • kg, 5.1 ft • lb)

[B]: 13 Nm (1.3 m • kg, 9.4 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Recoil starter removal		Remove the parts in the order listed.
	Cooling fan grill		Refer to "COOLING FAN BELT INSPECTION" in CHAPTER 2.
1	Ground lead	1	(VT500XL)
2	Starter handle	1	
3	Spring seat	1	
4	Drive plate	1	
5	Drive plate spring	1	
6	Drive pawl	1	
7	Return spring	1	
8	Sheave drum	1	
9	Starter rope	1	
10	Starter spring	1	
11	Recoil starter case	1	
			For installation, reverse the removal procedure.



5E021

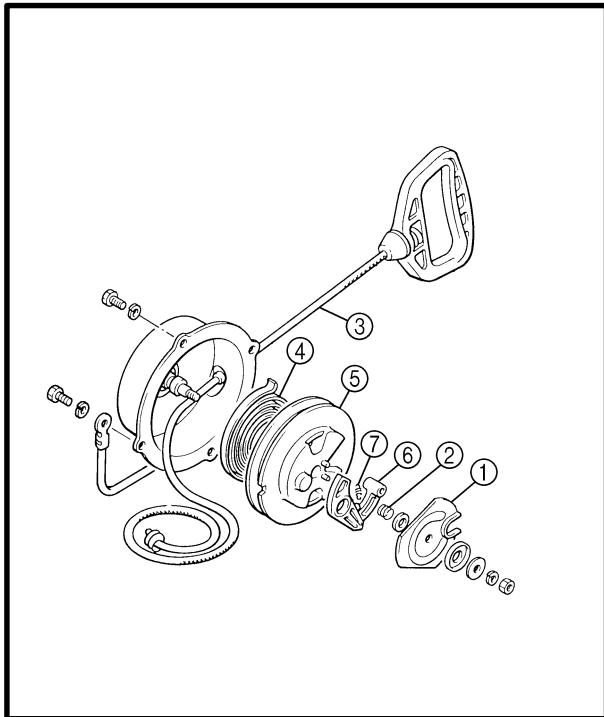
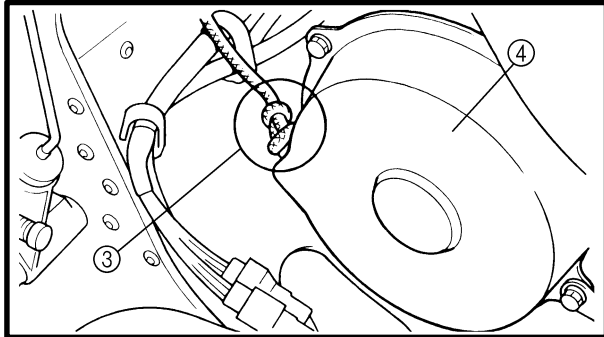
REMOVAL

1. Remove:

- Starter handle ①

NOTE:

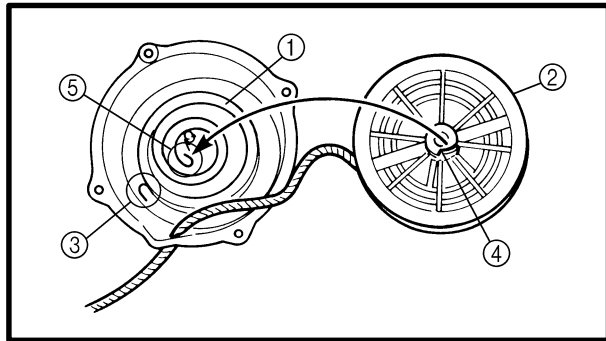
To remove the starter handle, untie the knot ② in the starter rope and then re-tie a knot ③ in the rope end so that it is not pulled into the recoil starter case ④.



INSPECTION

1. Inspect:

- Drive plate ①
Cracks/bends/damage → Replace.
- Drive plate spring ②
Wear/damage → Replace.
- Starter rope ③
Wear/breaks/damage → Replace.
- Stater spring ④
Cracks/bends/damage → Replace.
- Sheave drum ⑤
Cracks/damage → Replace.
- Drive pawl ⑥
- Return spring ⑦
Wear/cracks/damage → Replace.



INSTALLATION

1. Wind:

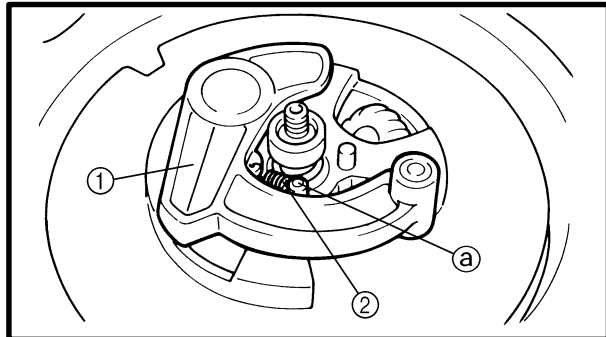
- Starter rope (2 turns counterclockwise)
(to the sheave drum)

2. Install:

- Starter spring ①
- Sheave drum assembly ②

NOTE:

- Mesh the spring hook ③ with the case slit, then wind the spring counterclockwise into the case from a larger to a smaller diameter.
- Mesh the sheave drum hook ④ with the spring hook ⑤.

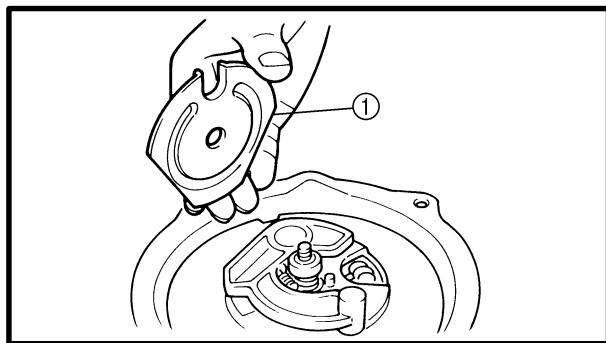


3. Install:

- Drive pawl ①
- Return spring ②

NOTE:

Hook the return spring end to the drive pawl ①. Then, hook other end of the return spring to the post @ on the sheave drum.

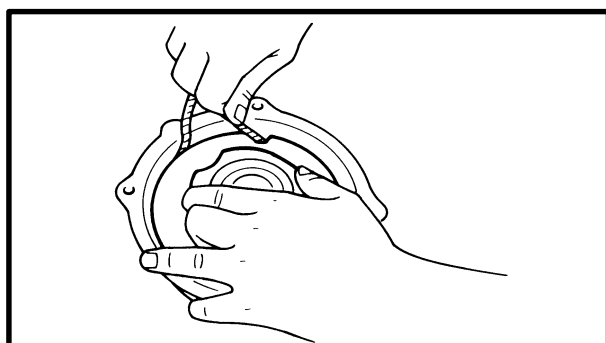


4. Install:

- Drive plate ①

NOTE:

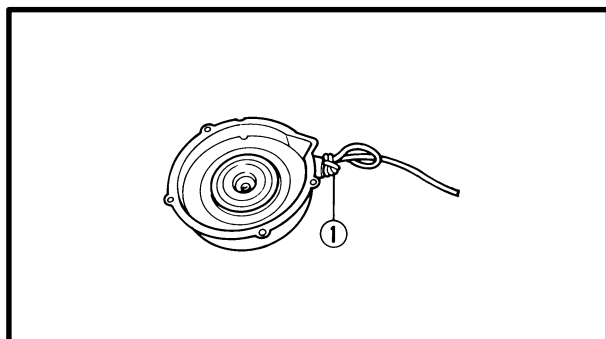
Be sure the cutout portion in the drive plate fits over the post on the drive pawl.



5. Pull about four inches of starter rope out of the cutout portion in the sheave drum and rotate the sheave drum 5 times counterclockwise to pre-load the starter spring.

NOTE:

Pass the rope through the case hole and make a knot ① in the rope so that the rope is not pulled into the case.

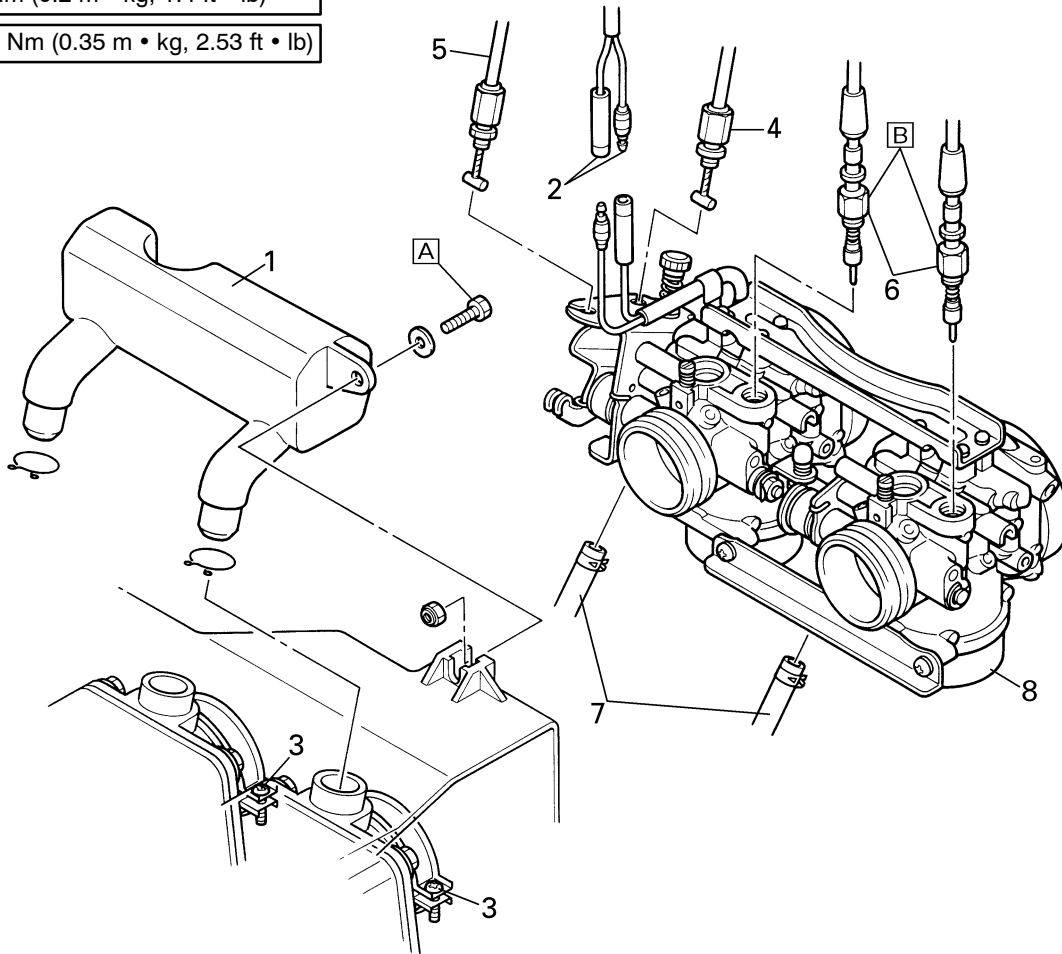




CARBURETION

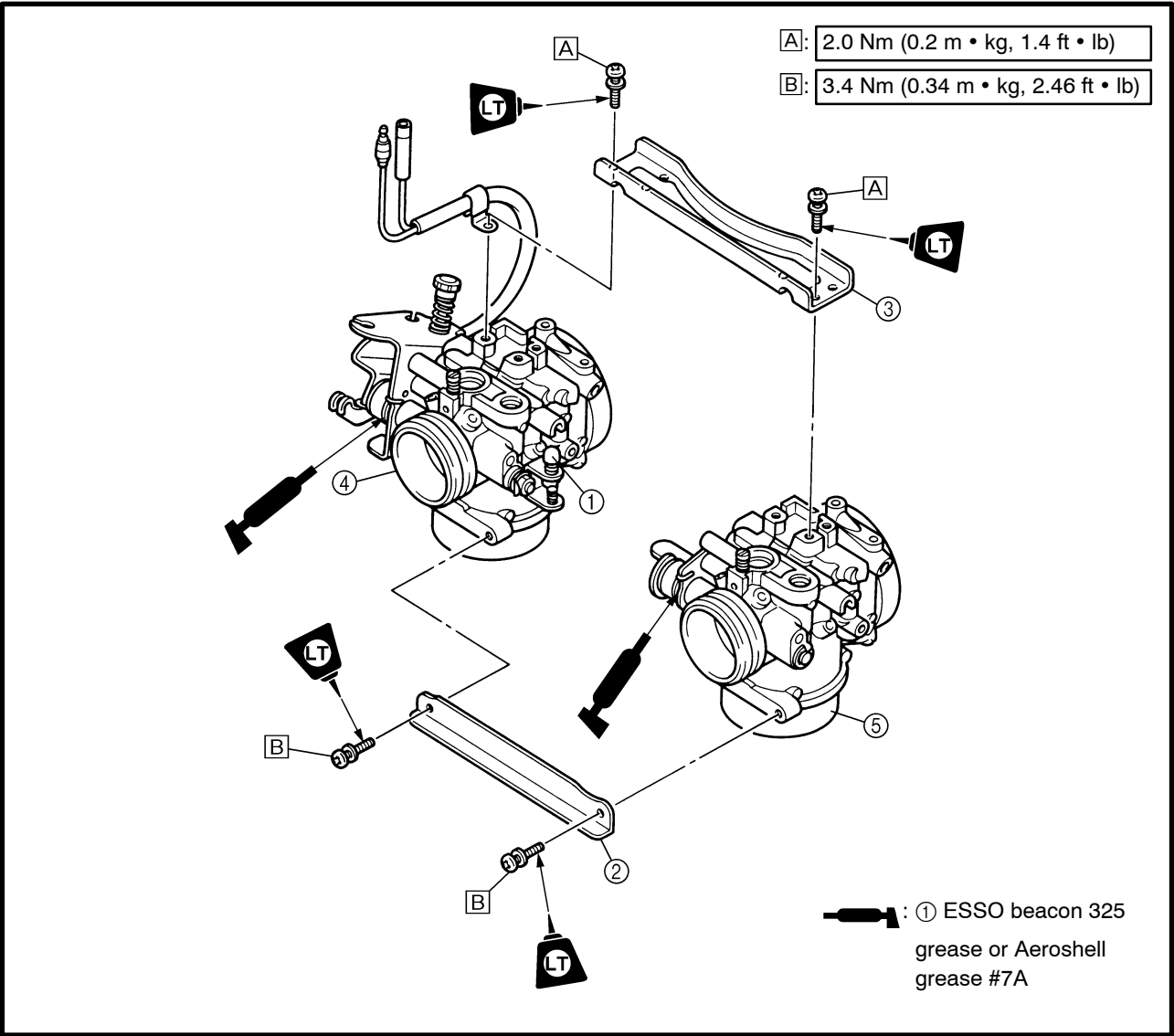
CARBURETORS

- [A]: 2 Nm (0.2 m • kg, 1.4 ft • lb)
 [B]: 3.5 Nm (0.35 m • kg, 2.53 ft • lb)

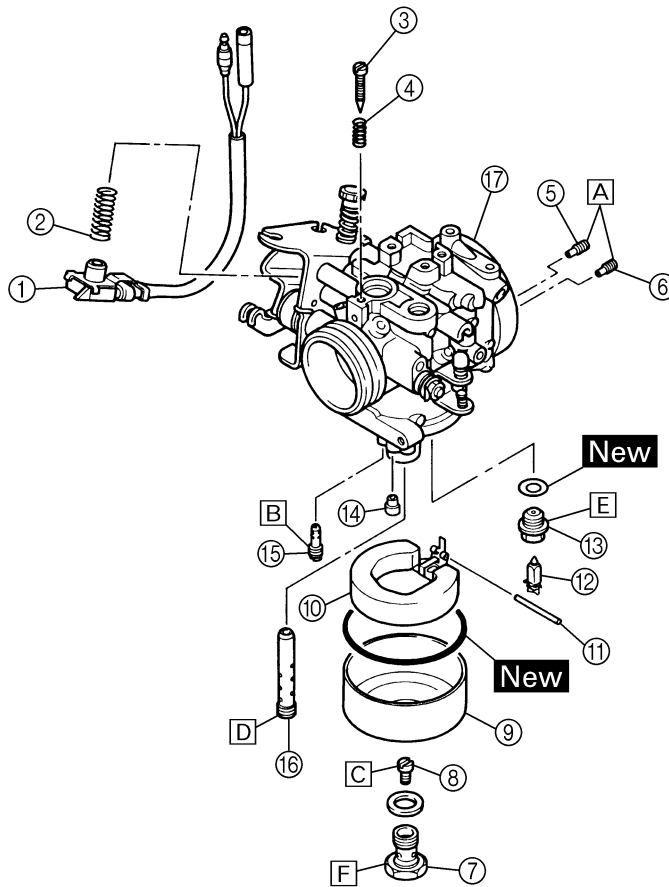


6

Order	Job name/Part name	Q'ty	Remarks
	Carburetors removal		
	Intake silencer		Remove the parts in the order listed. Refer to "FUEL PUMP".
1	Y.E.I.S. chamber	1	
2	Carburetor switch (T.O.R.S.) lead	2	
3	Clamp screw	2	
4	Oil pump cable	1	
5	Throttle cable	1	
6	Starter plunger assembly	2	
7	Fuel delivery hose	2	
8	Carburetor	2	
			For installation, reverse the removal procedure.



Order	Job name/Part name	Q'ty	Remarks
	Carburetor separation		Remove the parts in the order listed.
①	Throttle stop screw	1	Loosen.
②	Connecting plate (lower)	1	
③	Connecting plate (upper)	1	
④	Carburetor (left)	1	
⑤	Carburetor (right)	1	
			For assembly, reverse the separation procedure.



A: 0.7 Nm (0.07 m • kg, 0.51 ft • lb)

B: 0.8 Nm (0.08 m • kg, 0.58 ft • lb)

C: 1.8 Nm (0.18 m • kg, 1.3 ft • lb)

D: 2.5 Nm (0.25 m • kg, 1.81 ft • lb)

E: 4.9 Nm (0.49 m • kg, 3.54 ft • lb)

F: 8.8 Nm (0.88 m • kg, 6.36 ft • lb)

Order	Job name/Part name	Q'ty	Remarks
	Carburetor disassembly		Remove the parts in the order listed.
①	Carburetor switch (T.O.R.S.)	1	
②	Spring	1	
③	Pilot mixture screw	1	
④	Spring	1	
⑤	Pilot air jet	1	
⑥	Main air jet	1	
⑦	Main jet holder	1	
⑧	Main jet	1	
⑨	Float chamber body	1	
⑩	Float	1	
⑪	Float pin	1	
⑫	Needle valve	1	
⑬	Valve seat	1	
⑭	Plug	1	
⑮	Pilot jet	1	
⑯	Main nozzle	1	
⑰	Carburetor body	1	
			For assembly, reverse the disassembly procedure.

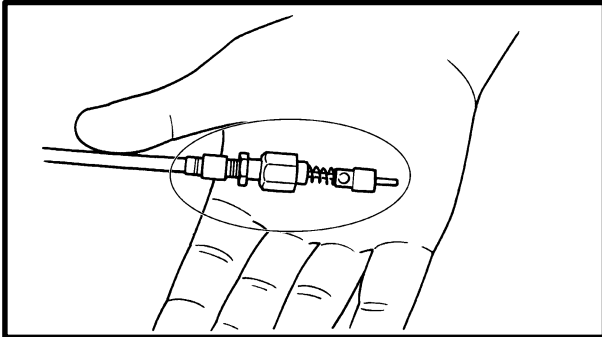


REMOVAL

NOTE:

The following parts can be cleaned and inspected without disassembly.

- Starter plunger
- Main jet
- Pilot screw



1. Remove:

- Starter plunger

CAUTION:

Take care so that the coil spring, starter cable adjuster and starter plunger do not fall off or are not lost. Also use special care not to scratch the starter plunger surface.

2. Disconnect:

- Fuel delivery hoses

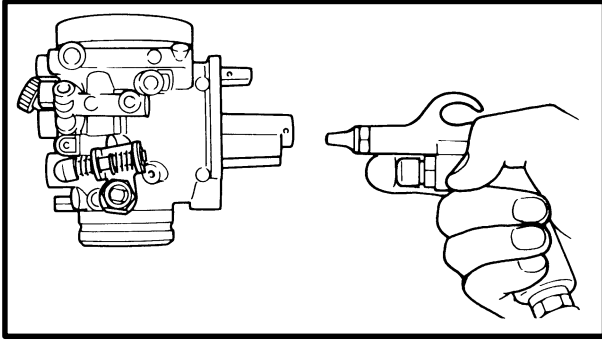
NOTE:

Plug the fuel delivery hoses so that fuel does not run out.

DISASSEMBLY

CAUTION:

- Separation of the carburetor is not recommended. Usual disassembly for cleaning and inspection is not necessary to separate the carburetors. The carburetor body support screws are locked with a locking-compound such as LOCTITE®. If the carburetors are separated, misalignment will result.
- Never attempt to disassemble the throttle valve and throttle valve shaft.



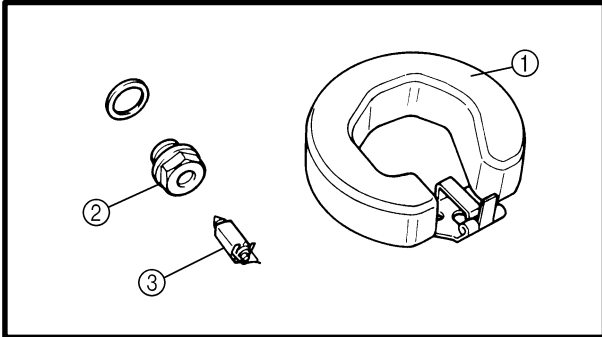
INSPECTION

1. Inspect:

- Carburetor bodys
 - Fuel passage
- Contamination → Clean.

NOTE:

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

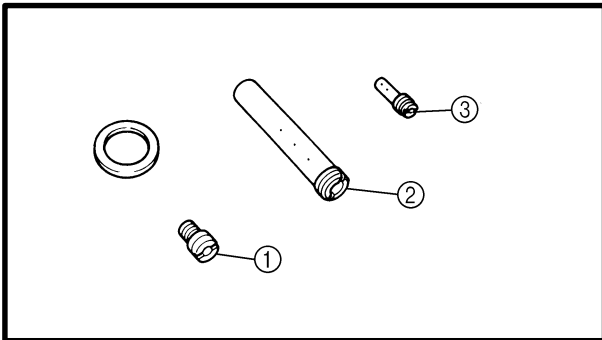


2. Inspect:

- Float ①
 - Valve seat ②
 - Needle valve ③
- Damage → Replace.
- Wear/contamination → Replace.

NOTE:

Always replace the needle valve and valve seat as a set.

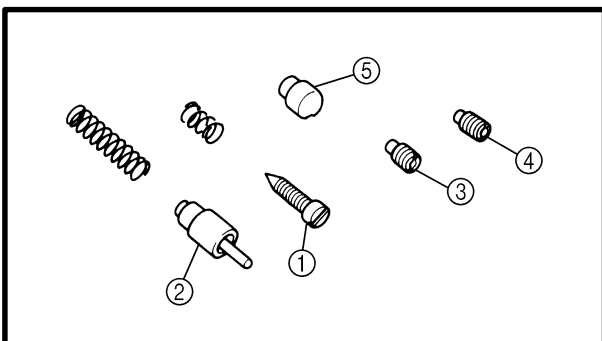


3. Inspect:

- Main jet ①
 - Main nozzle ②
 - Pilot jet ③
- Contamination → Clean or replace.

NOTE:

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

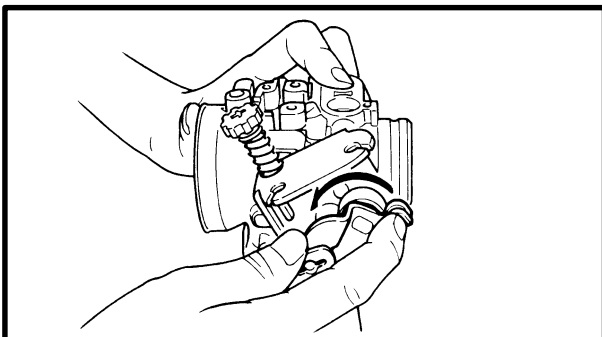


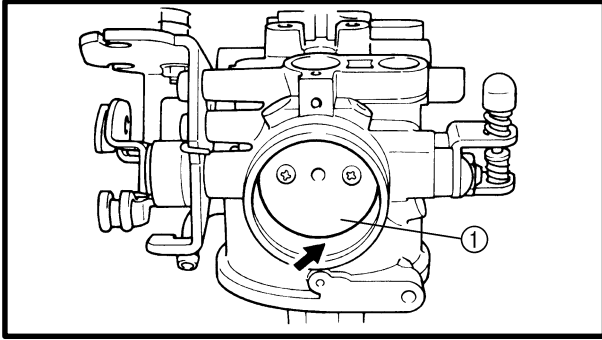
4. Inspect:

- Pilot screw ①
 - Starter plunger ②
 - Pilot air jet ③
 - Main air jet ④
 - Plug ⑤
- Wear/scratches/damage → Replace.
- Wear/damage → Replace.

5. Check:

- Throttle valve movement
- Sticks → Replace carburetor body assembly.





6. Check:

- Throttle valve ①
- Throttle bore

Scratches/damage → Replace carburetor body assembly.

7. Check:

- Carburetor switch (T.O.R.S.)

Refer to "IGNITION SYSTEM" in CHAPTER 7.

ASSEMBLY

NOTE:

- Before reassembling, wash all parts in clean gasoline.
- Always use new gaskets and O-rings.

1. Tighten:

- Inner parts



Main nozzle:

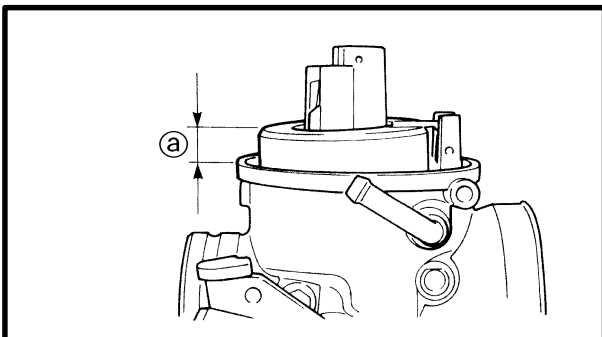
2.5 Nm (0.25 m • kg, 1.81 ft • lb)

Pilot jet:

0.8 Nm (0.08 m • kg, 0.58 ft • lb)

Valve seat:

4.9 Nm (0.49 m • kg, 3.54 ft • lb)



2. Measure:

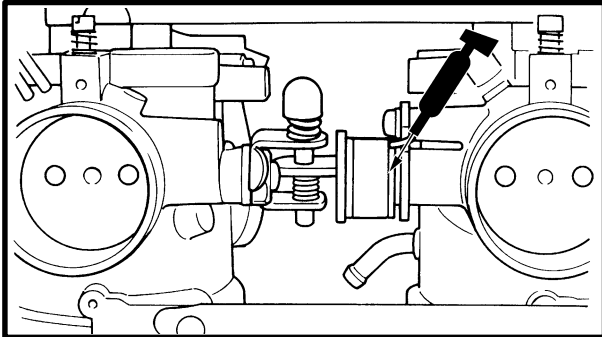
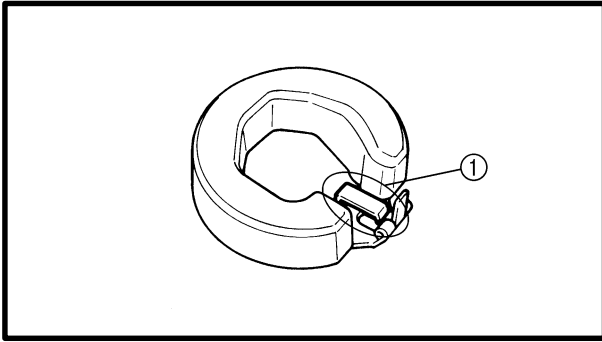
- Float height ②

Out of specification → Adjust.



Float height ②:

9.5 ~ 13.5 mm (0.37 ~ 0.53 in)



Measurement and adjustment steps:

- Hold the carburetor upside down.
- Measure the distance between the carburetor body and top of the floats.

NOTE:

The float arm should be resting on the needle valve without exerting pressure on it.

- If the float height is not within specification, inspect the valve seat and needle valve.
- If either is worn, replace them both.
- If both are fine, adjust the float height by bending the float arm tang ① on the float.
- Recheck the float height.

3. Apply:

- Grease
(as shown in photo so that the throttle shaft and spring will not freeze)



Recommended grease:

**ESSO beacon 325 grease or
Aeroshell grease #7A**

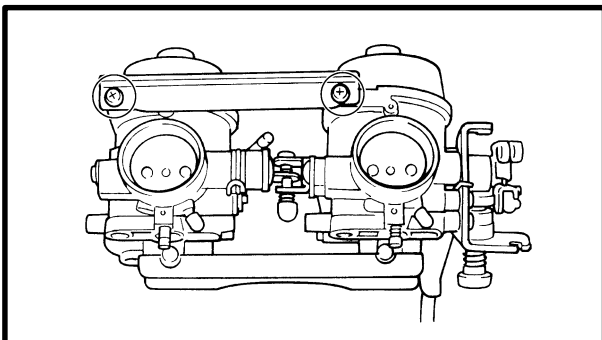
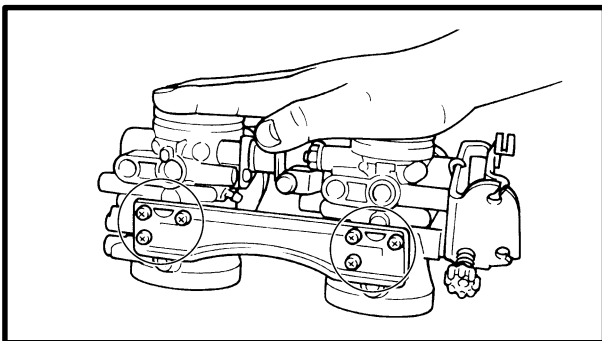
INSTALLATION

1. Install:

- Connecting plate (upper)
- Connecting plate (lower)

2. Tighten:

- Screw



Screw (connecting plate):

Upper:

2 Nm (0.2 m • kg, 1.4 ft • lb)

LOCTITE®

Lower:

3.4 Nm (0.34 m • kg, 2.46 ft • lb)

LOCTITE®

NOTE:

If the carburetors should be separated, care must be taken so that they are put together in place according to the following procedures;

- Place the carburetors on a surface plate with the intake manifold side down and install the connecting plates while pushing down the respective carburetors with an even force.
- After tightening the screws (connecting plate), check the throttle lever for smooth action.

3. Adjust:

- Engine idle speed

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



Engine idle speed:
1,300 ± 100 r/min

4. Adjust:

- Throttle cable freeplay

Refer to “THROTTLE CABLE ADJUSTMENT” in CHAPTER 2.



Throttle cable freeplay:
1.0 ~ 2.0 mm (0.040 ~ 0.078 in)

5. Adjust:

- Carburetor synchronization

Refer to “CARBURETOR SYNCHRONIZATION” in CHAPTER 2.

6. Adjust:

- Starter cable freeplay

Refer to “STARTER (CHOKE) CABLE ADJUSTMENT” in CHAPTER 2.



Starter cable freeplay:
0.5 ~ 1.5 mm (0.020 ~ 0.059 in)

7. Adjust:

- Oil pump cable freeplay

Refer to “OIL PUMP” in CHAPTER 2.



Oil pump cable adjusting length:
18 ~ 20 mm (0.71 ~ 0.79 in)



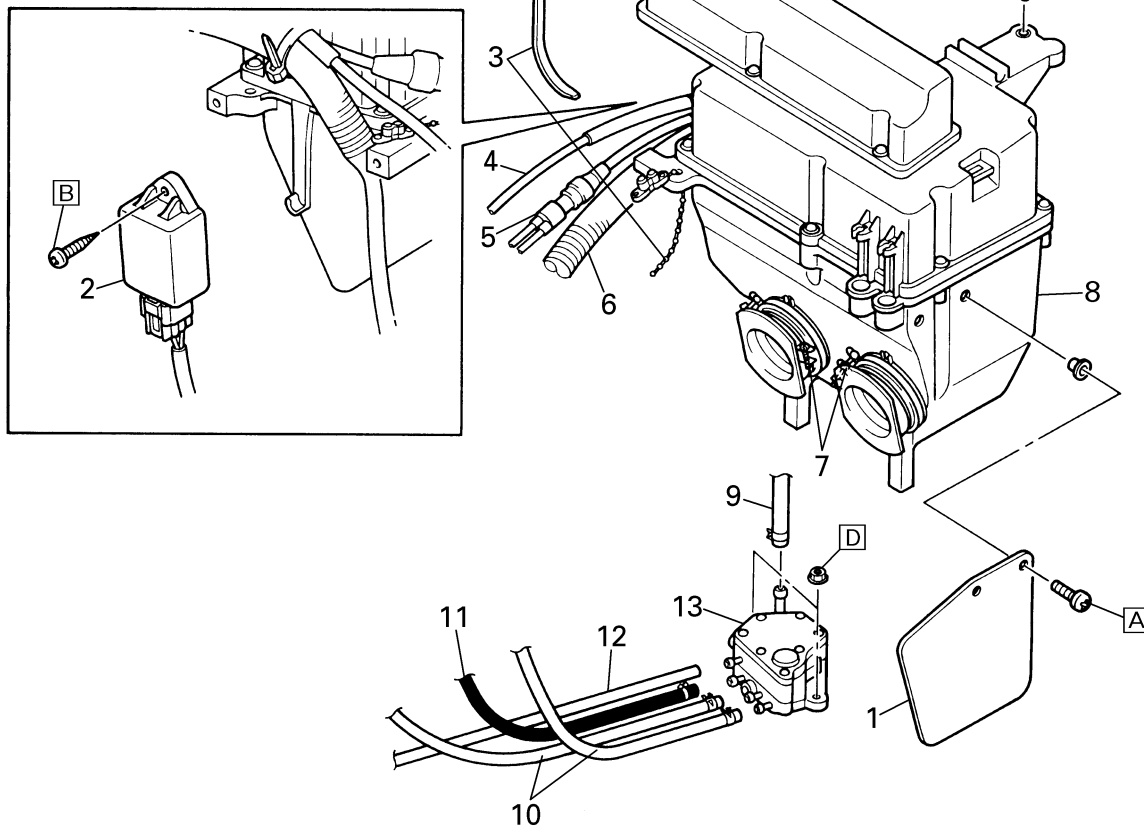
FUEL PUMP

[A]: 0.6 Nm (0.06 m • kg, 0.43 ft • lb)

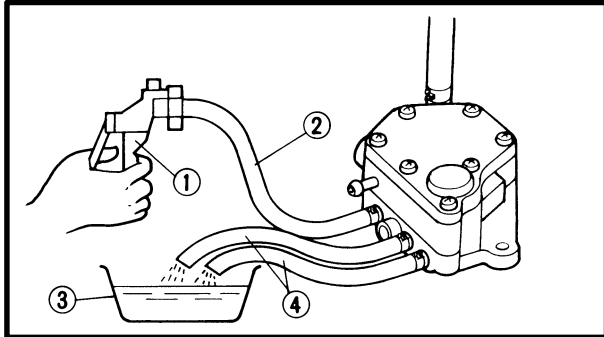
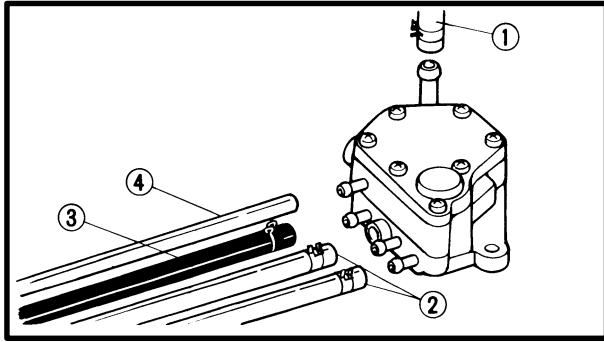
[B]: 3 Nm (0.3 m • kg, 2.2 ft • lb)

[C]: 7 Nm (0.7 m • kg, 5.1 ft • lb)

[D]: 10 Nm (1.0 m • kg, 7.2 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Fuel pump removal		Remove the parts in the order listed.
1	Heat shield	1	
2	CDI unit	1	
3	Plastic band	2	
4	Throttle cable	1	
5	Starter (choke) cable	1	
6	Wire harness	1	
7	Clamp screw	2	Loosen.
8	Intake silencer	1	
9	Fuel hose	1	
10	Fuel delivery hose	2	
11	Vacuum hose	1	
12	Oil hose	1	
13	Fuel pump	1	
			For installation, reverse the removal procedure.



INSPECTION

1. Inspect:

- Fuel hose ①
 - Fuel delivery hoses ②
 - Vacuum hose ③
 - Oil delivery hose ④
- Clogs/damage → Replace.

2. Check:

- Fuel pump operation

Checking steps:

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



Mity vac:

90890-06756, YB-35956

- Place a container ③ under the end of the fuel delivery hoses ④.
- Operate the Mity vac ① while checking that fuel flows from the fuel delivery hoses ④.
- If fuel does not flow out, replace the fuel pump.

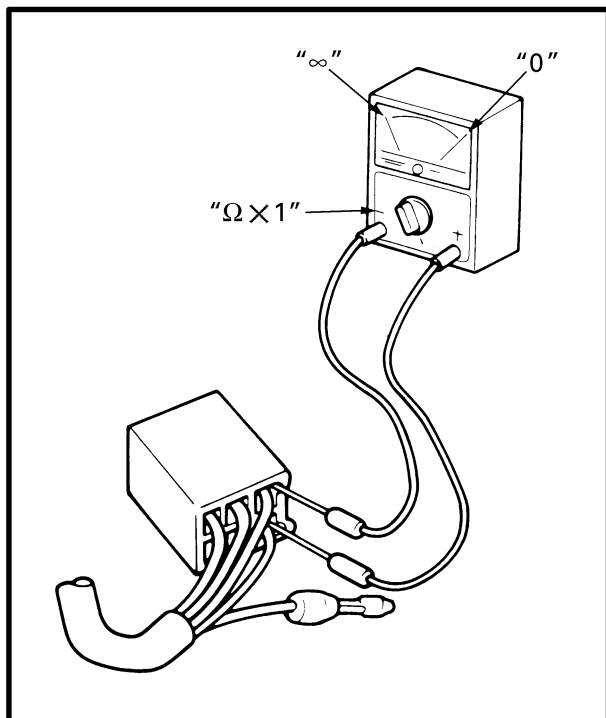
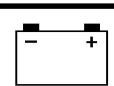
INSTALLATION

NOTE:

After installing all parts, refer to “CABLE ROUTING” in chapter 8, to check the cable, lead and hose routings.

1. Bleed:

- Oil system
- Refer to “OIL PUMP” in CHAPTER 2.



ELECTRICAL

SWITCH INSPECTION

SWITCH INSPECTION

Use a pocket tester to check the terminals for continuity. If the continuity is not as specified at any point, replace the switch.

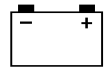


Pocket tester:

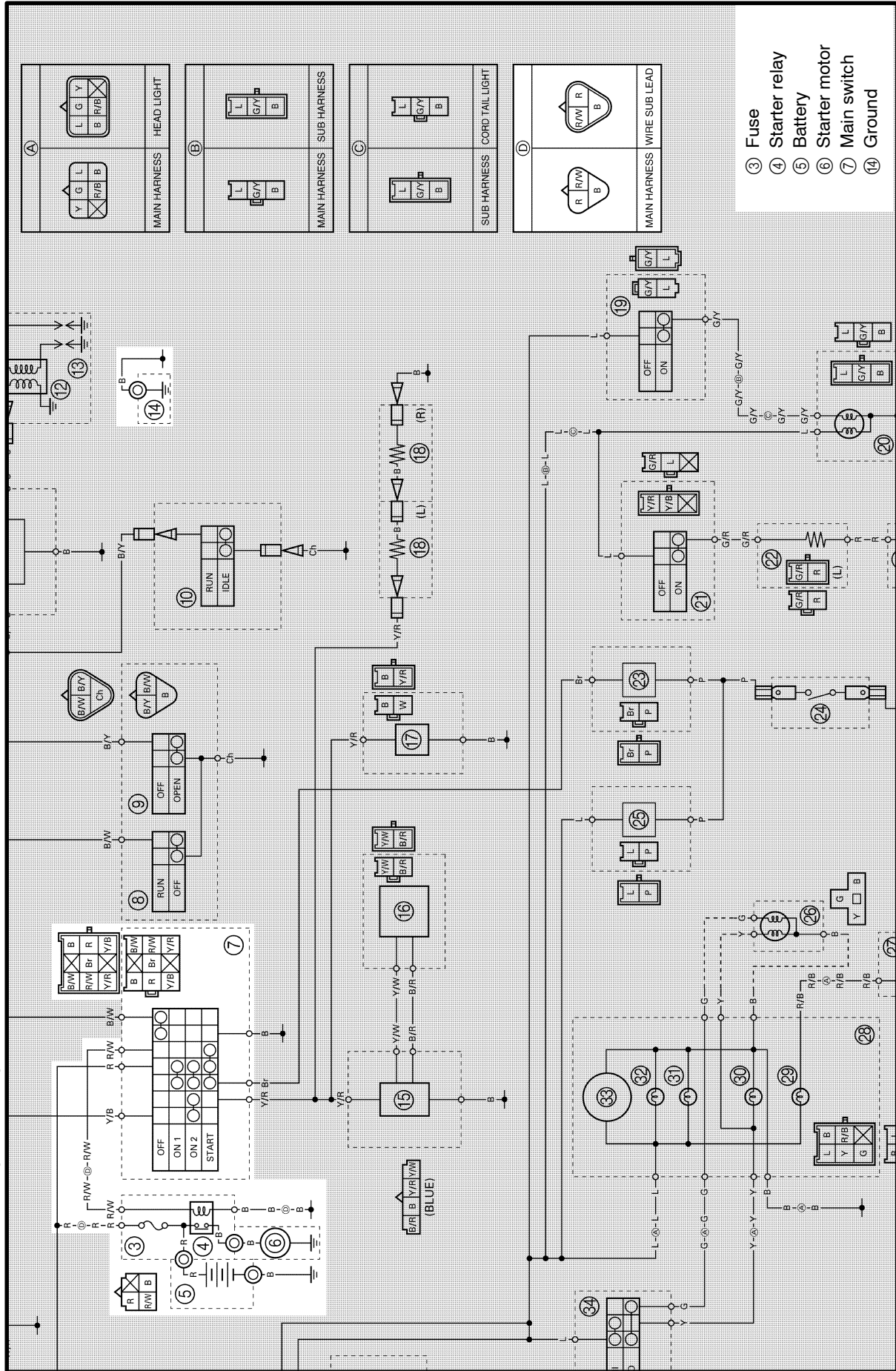
90890-03112, YU-03112

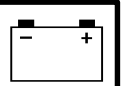
NOTE:

- Set the pocket tester to "0" before starting a test.
- When testing the switch for continuity, the pocket tester should be set to the " $\times 1\Omega$ " range.
- When checking a switch, turn it on and off a few times.



**ELECTRICAL STARTING SYSTEM
CIRCUIT DIAGRAM (VT500XL)**





TROUBLESHOOTING (VT500XL)

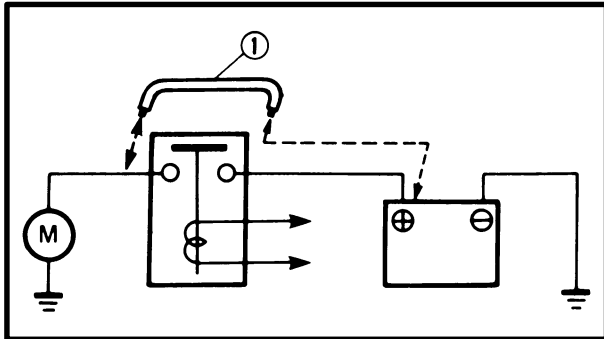
STARTER MOTOR DOES NOT OPERATE.

⚠ WARNING

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

1. Connect:

- Starter relay terminals
(battery side and starter motor side)



① Jumper lead

2. Check:

- Starter motor operation

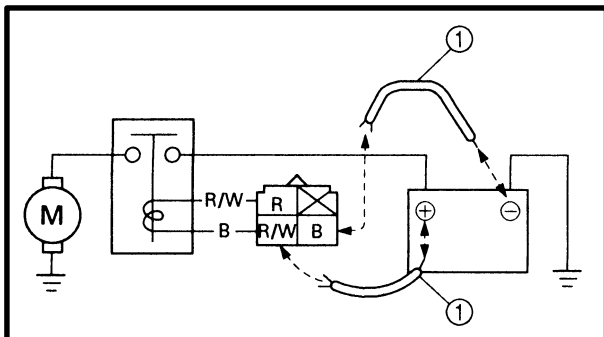


3. Disconnect:

- Starter relay coupler

4. Connect:

- Starter relay coupler terminals



① Jumper lead

5. Check:

- Starter motor operation



*

NO

Check the battery and connectors.

OK

NO

Charge and/or replace the battery.

Repair and/or replace the starter motor.

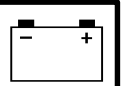
⚠ WARNING

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

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

NO

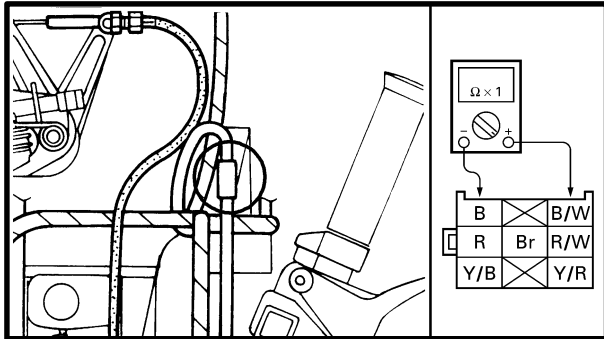
Replace the starter relay.



Check the main switch and fuse.



Correct the connection.



FAULTY

Replace the main switch and/or the fuse.

MAIN SWITCH (VT500XL)

1. Disconnect:

- Main switch coupler

2. Connect:

- Pocket tester

3. Check:

- Main switch continuity

Faulty → Replace the main switch.

Switch position	Continuity
OFF	Yes
ON	No

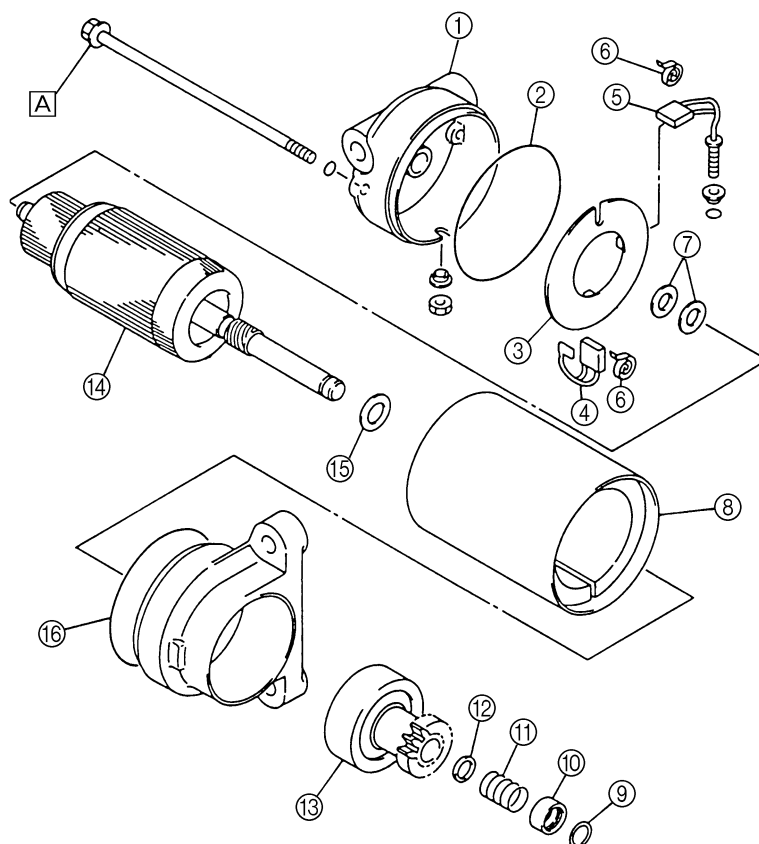
Switch position	Color code						
	Y/B	Y/R	Br	R	R/W	B	B/W
OFF						○—○	
ON1			○—○				
ON2	○—○		○—○				
START			○—○	○—○			

○—○ Continuity

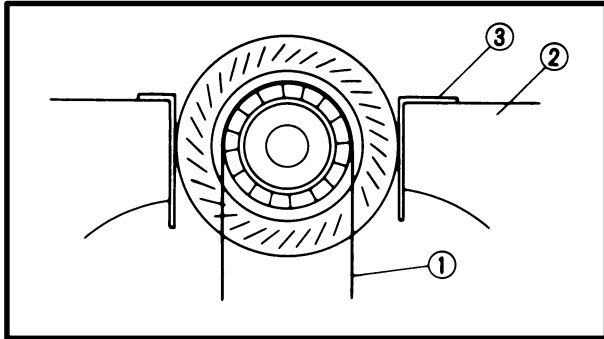
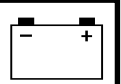


STARTER MOTOR (VT500XL)

A: 7 Nm (0.7 m • kg, 5.1 ft • lb)



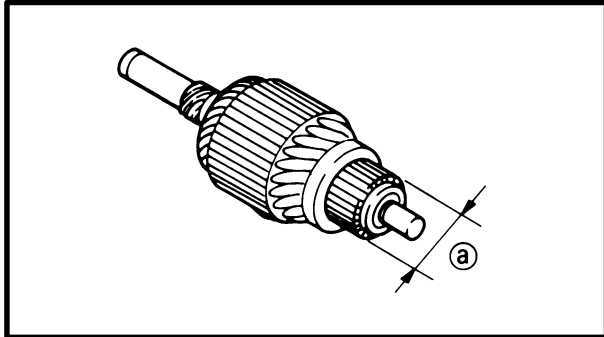
Order	Job name/Part name	Q'ty	Remarks
	Starter motor disassembly		Remove the parts in the order listed.
	Starter motor removal		Refer to "CYLINDER AND CYLINDER HEAD" in CHAPTER 5.
①	Rear bracket	1	
②	O-ring	1	
③	Brush plate	1	
④	Brush 1	1	
⑤	Brush 2	1	
⑥	Brush spring	2	
⑦	Washer	2	
⑧	Yoke	1	
⑨	Clip	1	
⑩	Pinion stopper	1	
⑪	Return spring	1	
⑫	Washer	1	
⑬	Pinion gear	1	
⑭	Armature coil	1	
⑮	Washer	1	
⑯	Front bracket	1	
			For assembly, reverse the disassembly procedure.

**INSPECTION (VT500XL)****1. Inspect:**

- Commutator (outer surface)
Dirty → Clean with #600 grit sandpaper ①.
Hold the armature in a vise ② and copper or aluminium plate ③.

CAUTION:

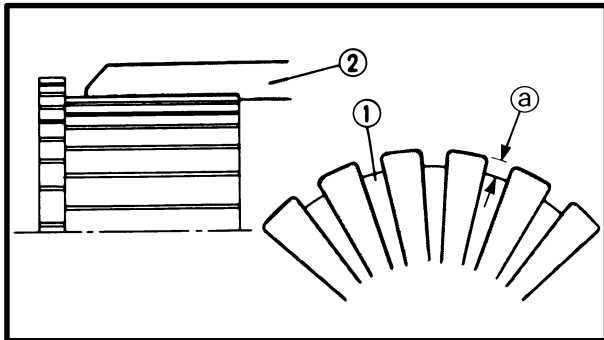
Lightly grip the armature with a vise.

**2. Measure:**

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



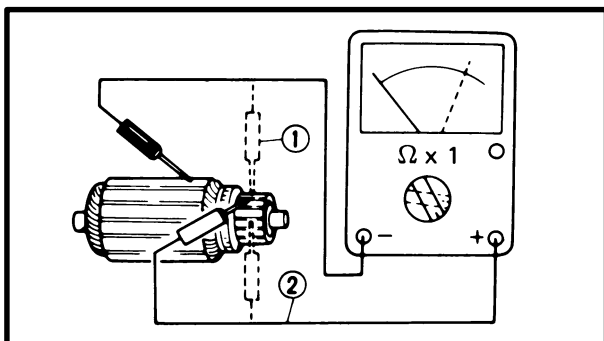
Commutator wear limit ①:
27 mm (1.06 in)

**3. Measure:**

- Mica (insulation depth) ①
(between commutator segments)
Out of specification → Scrape mica to proper limits.
Use a hacksaw blade ② that is ground to fit.



Mica undercut ①:
0.4 ~ 0.8 mm (0.016 ~ 0.031 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.

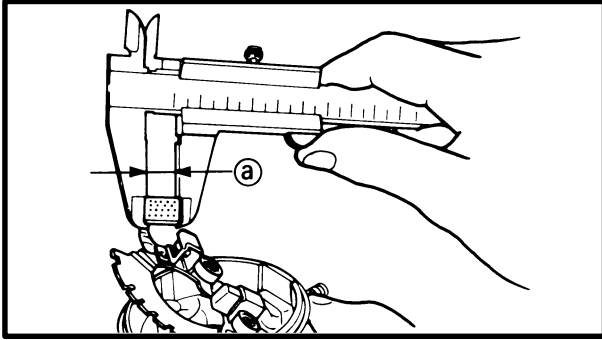
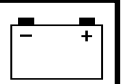
**Armature coil resistance:****Continuity check ①:**

0.014 ~ 0.018 Ω at 20°C (68°F)

Insulation check ②:

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.



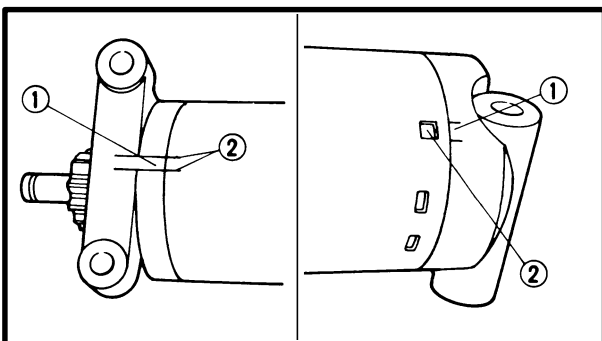
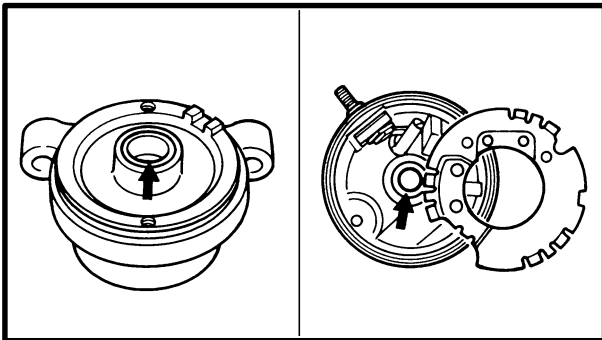
Brush length limit ①:
8.5 mm (0.33 in)

6. Measure:

- Brush spring pressure
Fatigue/out of specification → Replace as a set.



Brush spring pressure:
6.5 ~ 9.5 N (650 ~ 950 g, 22.9 ~ 33.5 oz)



ASSEMBLY (VT500XL)

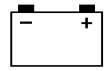
Reverse the "Disassembly" procedure.

Note the following points.

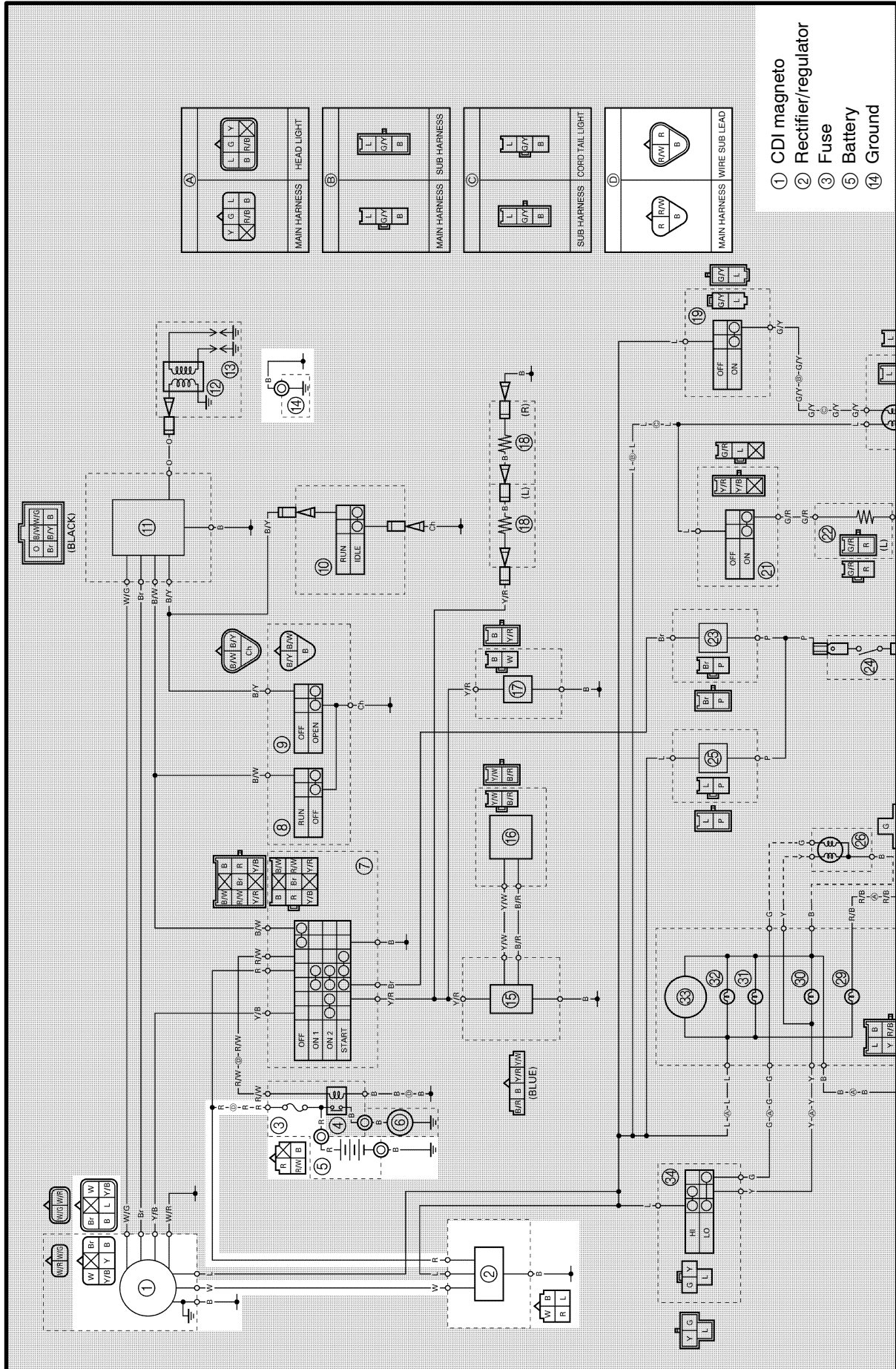
1. Before installing the front bracket and rear bracket, apply bearing grease to the bearings of the front bracket and rear bracket.
2. Make sure the front bracket and rear bracket cover are fitted with O-rings.
3. When installing the rear bracket assembly, take care not to scratch the brushes.
4. Install: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

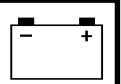
NOTE:

Align the match marks ① on the bracket with the match marks ② on the yoke.



CHARGING SYSTEM CIRCUIT DIAGRAM (VT500XL)





TROUBLESHOOTING (VT500XL)

BATTERY IS NOT CHARGED.

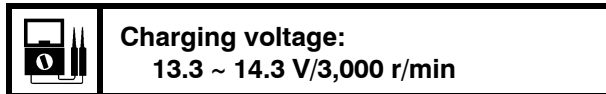
1. Connect:
 - Pocket tester
(to the battery terminals)
2. Measure:
 - Battery voltage
 - Fluid gravity



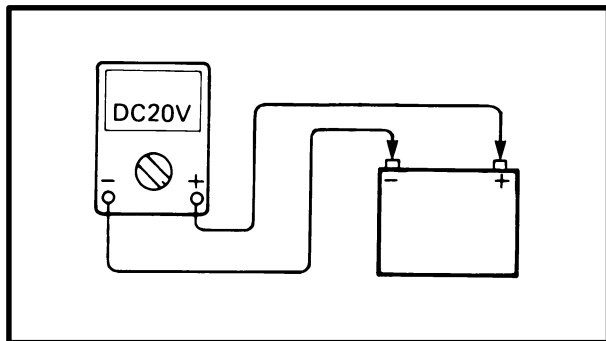
Battery voltage:
more than 12 V at 20 °C (68°F)



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



Charging voltage:
13.3 ~ 14.3 V/3,000 r/min

**CAUTION:**

Never disconnect battery cables while generator is operating or the rectifier and regulator will be damaged.



Correct connector.

OUT OF SPECIFICATIONS

- Check the battery.
- Replace and/or charge the battery.

OUT OF SPECIFICATIONS

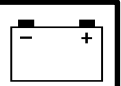
Check the fuse, rectifier/regulator and CDI magneto.

OK

FAULTY

Replace the fuse, rectifier/regulator and/or the CDI magneto.

Replace the rectifier/regulator.

**BATTERY (VT500XL)****Inspection**

1. Inspect:

- Battery fluid level

Refer to "BATTERY INSPECTION" in CHAPTER 2.

2. Check:

- Specific gravity

Less than 1.280 → Recharge battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.

Battery Storage

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

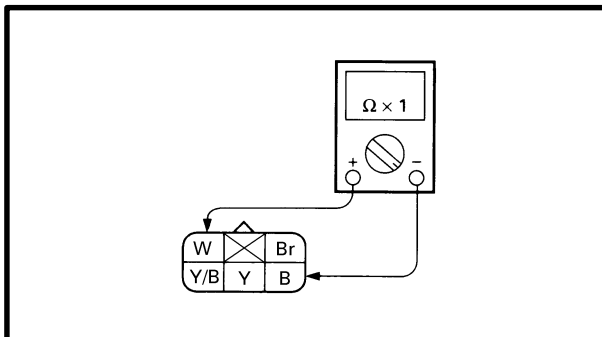
1. Remove:

- Battery

Battery storage and maintenance tips:

- Recharge the battery periodically.
- Store the battery in a cool, dry place.
- Recharge the battery before reinstalling.

Battery	
Electrolyte	Specific gravity: 1.280 at 20°C (68°F)
Initial charging rate	1.6 Amp for 10 hours (new battery)
Recharging rate	10 hours (or until specific gravity reaches 1.280)
Refill fluid	Distilled water (to maximum level line)
Refill period	Check once per month (or more often as required)

**CHARGING COIL (VT500XL)**

1. Measure:

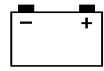
- Charging coil resistance

Out of specification → Replace CDI magneto.

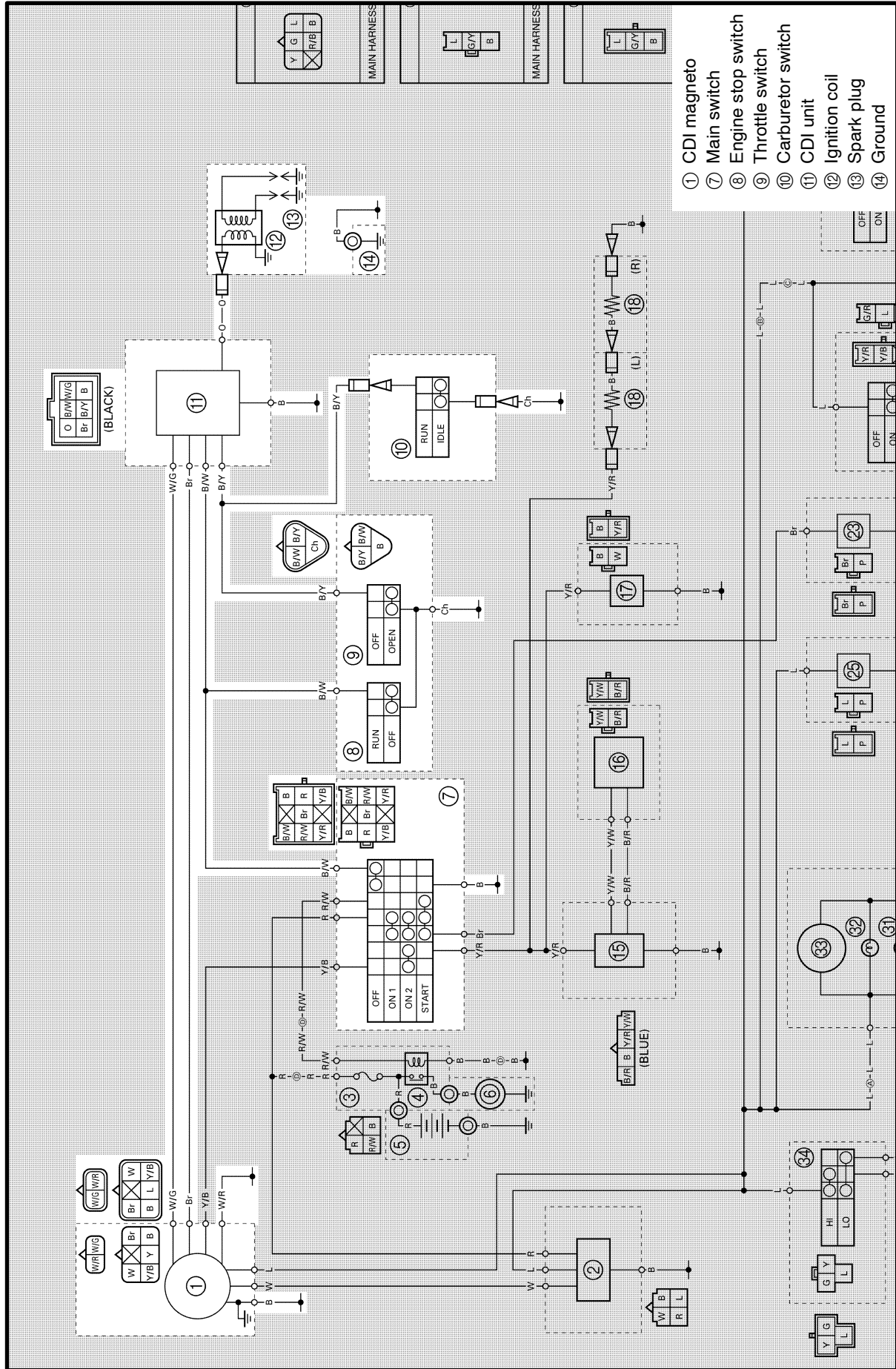


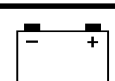
Charging coil resistance:
(White - Black)

0.29 ~ 0.35 Ω at 20° (68°F)



IGNITION SYSTEM CIRCUIT DIAGRAM





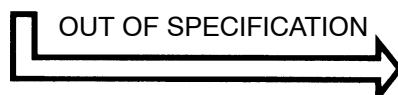
TROUBLESHOOTING

NO SPARK OR WEAK SPARK.

Check the spark plug gap.



OK

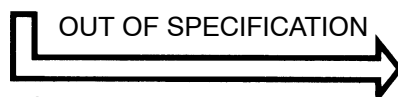


Repair or replace the spark plug.

Check the spark plug cap resistance.



OK

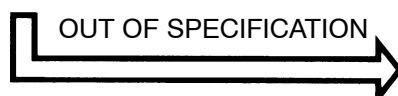


Replace the spark plug cap.

Check the ignition coil resistance.



OK

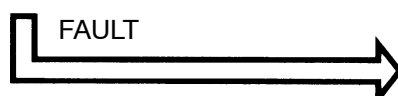


Replace the ignition coil.

Check the stator coil.



OK



Replace the CDI magneto.

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

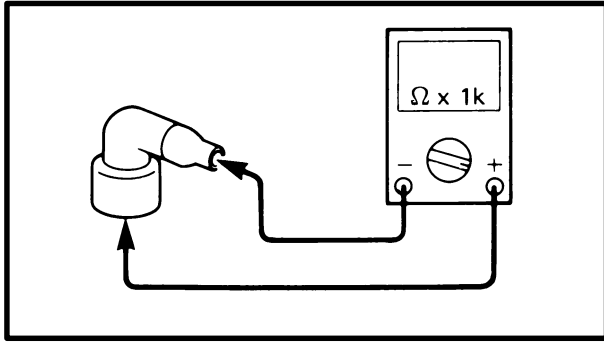
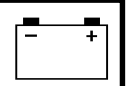


OK



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

Correct the connection and/or replace the CDI unit.

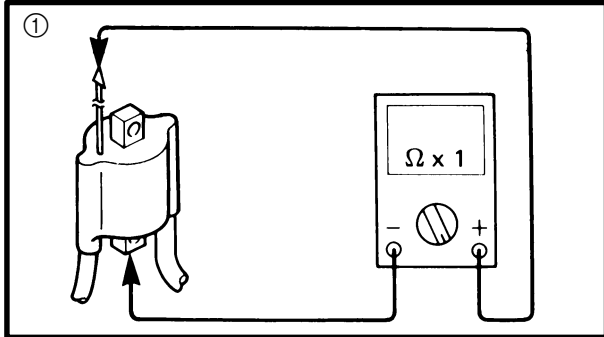


SPARK PLUG CAP

1. Remove:
 - Spark plug cap
2. Connect:
 - Pocket tester
(to the spark plug cap)
3. Measure:
 - Spark plug cap resistance
Out of specification → Replace the spark plug cap.

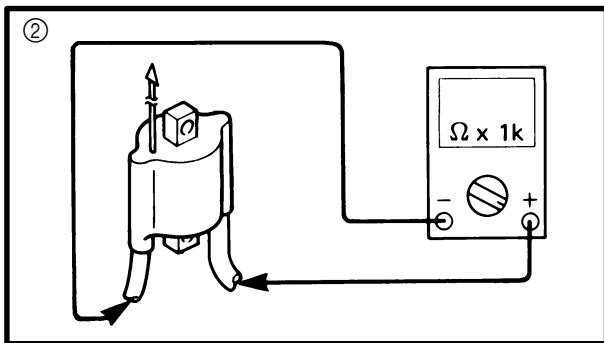


Spark plug cap resistance:
5 kΩ at 20°C (68°F)

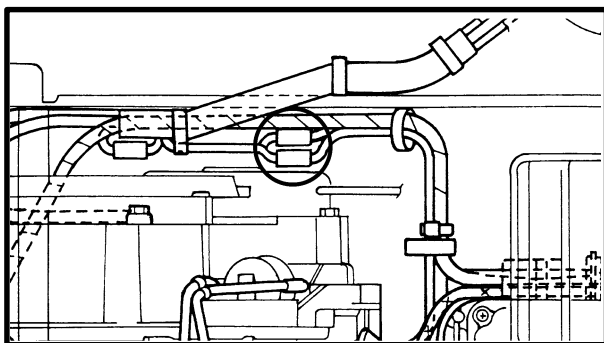


IGNITION COIL

1. Disconnect:
 - Ignition coil lead
 - Spark plug lead
2. Connect:
 - Pocket tester
(to the ignition coil and spark plug lead)
3. Measure:
 - Primary coil resistance
 - Secondary coil resistance
Out of specification → Replace the ignition coil.

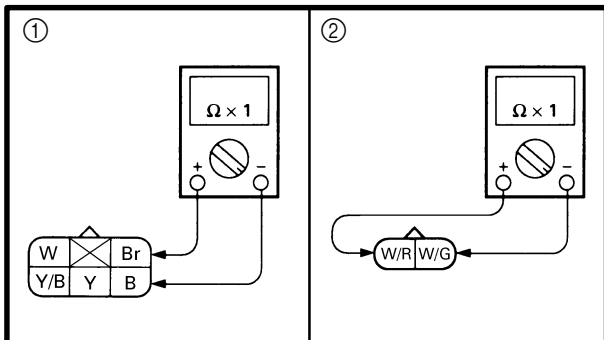


Primary coil resistance ①:
0.16 ~ 0.24 Ω at 20°C (68°F)
Secondary coil resistance ②:
3.9 ~ 5.9 kΩ at 20°C (68°F)

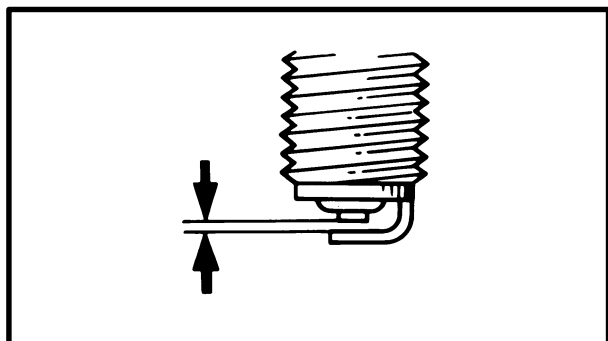
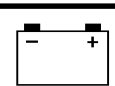


CDI MAGNETO

1. Disconnect:
 - CDI magneto coupler
2. Connect:
 - Pocket tester
(to the CDI magneto coupler)
3. Measure:
 - Source coil/pickup coil resistances
Out of specification → Replace the CDI magneto.



Source coil resistance ①:
(Brown — Black)
279 ~ 341 Ω at 20°C (68°F)
Pickup coil resistance ②:
(White/Red — White/Green)
189 ~ 231 Ω at 20°C (68°F)



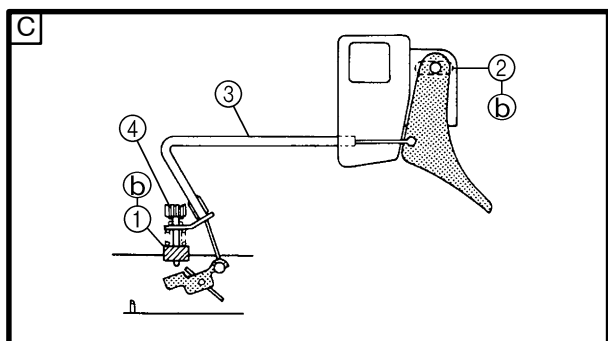
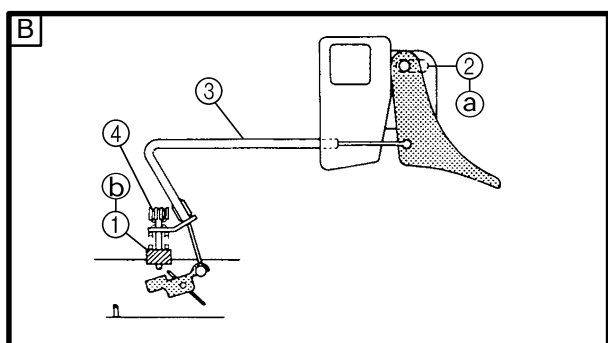
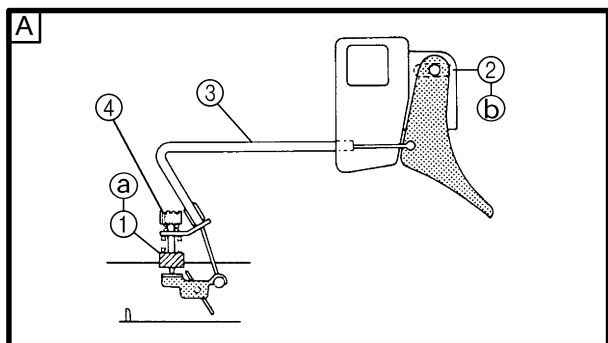
SPARK PLUG

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

Standard spark plug:
BR9ES (NGK)



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



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

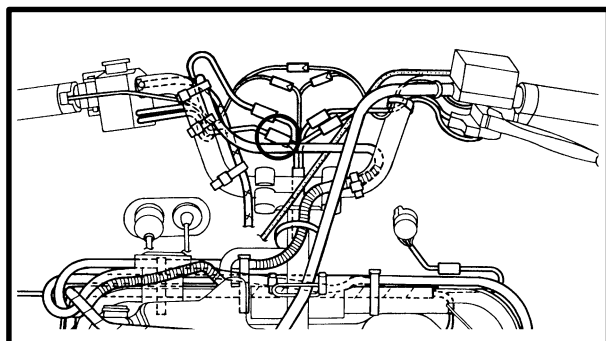
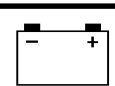
If the carburetor or throttle cable should malfunction during operation, release the throttle lever. The T.O.R.S. is designed to interrupt the ignition and stop the engine if the carburetor fails to return to idle when the lever is released.

⚠ WARNING

- If T.O.R.S. stops the engine, 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 standard resistance-type spark plug and spark plug cap. Otherwise, T.O.R.S. will not work properly.

Status	A Idling or starting	B Running	C Trouble
Throttle switch	OFF	ON	OFF
Carubretor switch	ON	OFF	OFF
Engine	Running	Running	Stop

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



HANDLEBAR SWITCH (RIGHT)

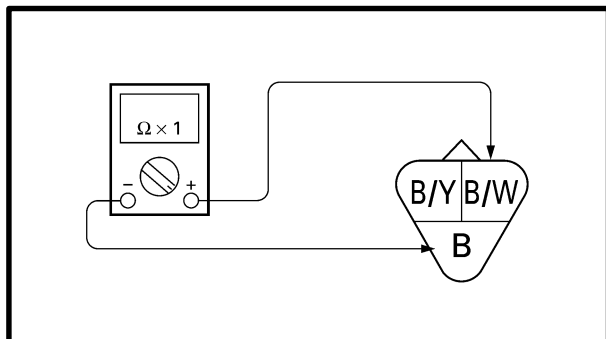
Engine stop switch and throttle switch

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

3. Check:
 - Engine stop switch continuity

Faulty → Replace the handlebar switch (right).

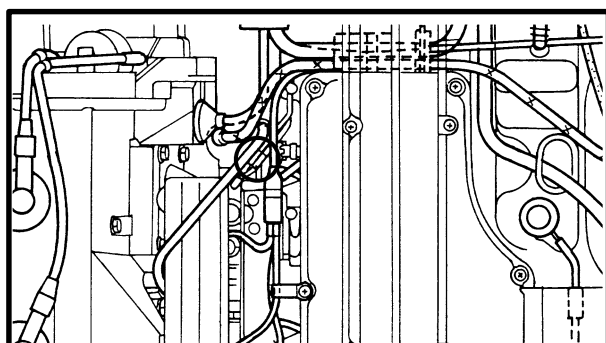
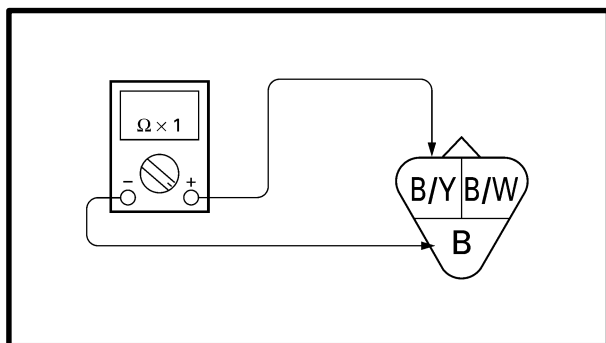
Switch position	Continuity
RUN (pulled out)	No
OFF (pushed in)	Yes



4. Check:
 - Throttle switch continuity

Faulty → Replace the handlebar switch (right).

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

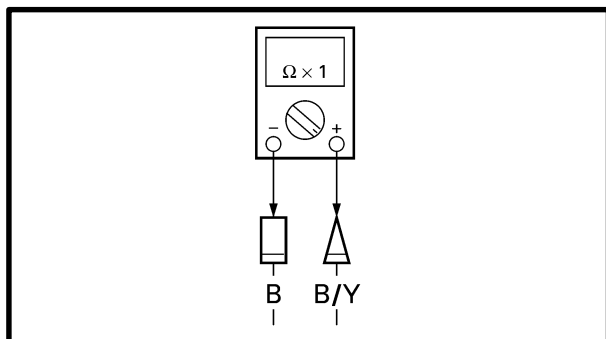


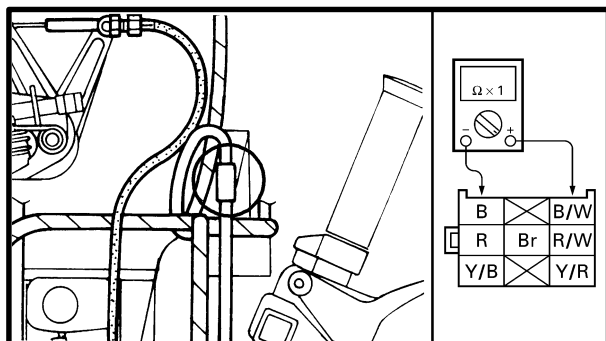
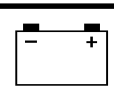
CARBURETOR SWITCH

1. Disconnect:
 - Carburetor switch leads
2. Connect:
 - Pocket tester
3. Check:
 - Carburetor switch continuity

Faulty → Replace the carburetor switch.

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





MAIN SWITCH

1. Disconnect:
 - Main switch coupler
2. Connect:
 - Pocket tester
3. Check:
 - Main switch continuity

Faulty → Replace the main switch.

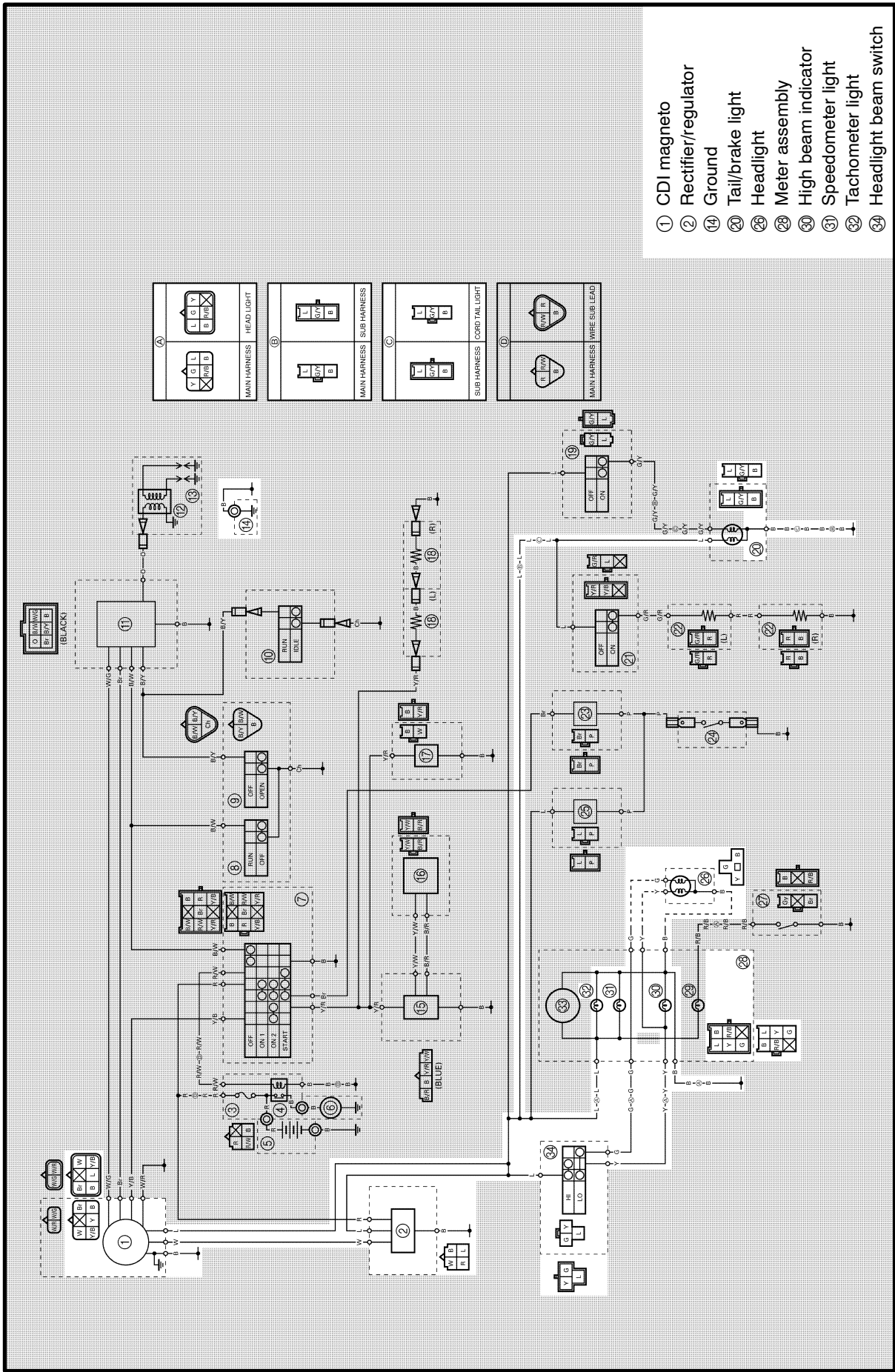
Switch position	Continuity
OFF	Yes
ON	No

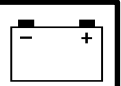
Switch position	Color code						
	Y/B	Y/R	Br	R	R/W	B	B/W
OFF						○—○	
ON1			○—○				
ON2	○—○		○—○				
START			○—○	○—○	○—○		

○—○ Continuity



LIGHTING SYSTEM
CIRCUIT DIAGRAM





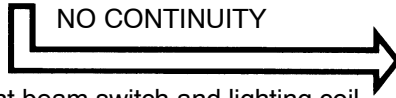
TROUBLESHOOTING

HEADLIGHT, TAIL LIGHT AND/OR METER LIGHT DO NOT COME ON.

Check the bulb(s).



OK

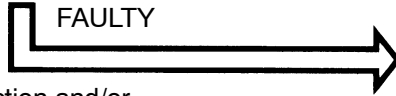


Replace the bulb(s).

Check the headlight beam switch and lighting coil.

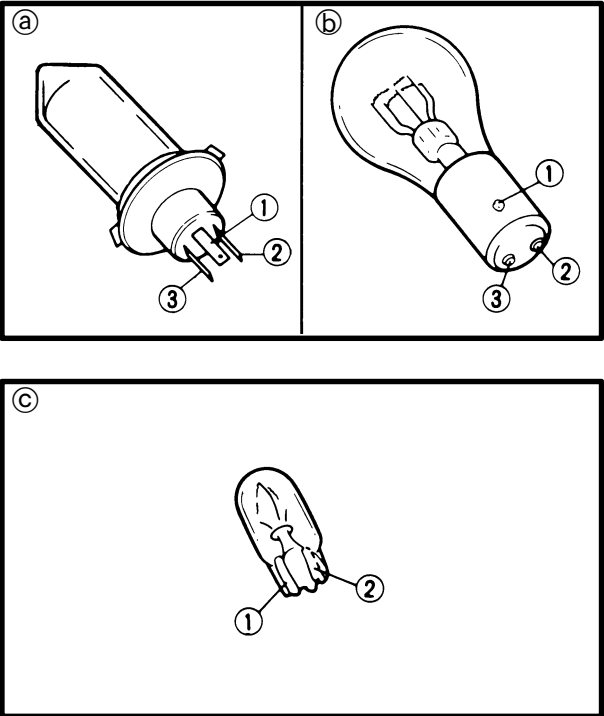
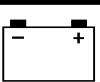


OK



Replace the headlight beam switch and/or the CDI magneto.

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



BULB(S)

1. Remove:
 - Headlight bulb ①
 - Tail/brake light bulb ②
 - Meter light bulb ③
2. Connect:
 - Pocket tester
(to the bulb terminals)

⚠ WARNING

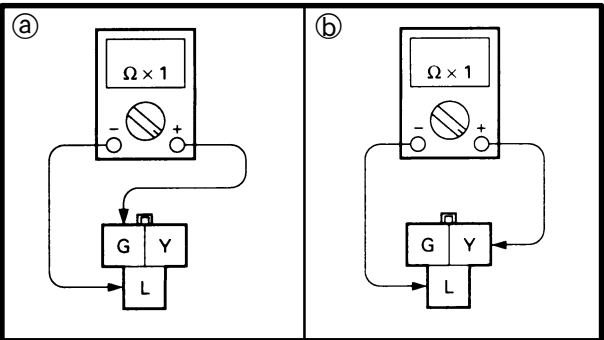
Keep flammable products and your hands away from the bulb while it is on; it will be hot. Do not touch the bulb until it cools down.

3. Check:
 - Bulb(s)

Terminal	Continuity
① — ②	Yes
① — ③	Yes

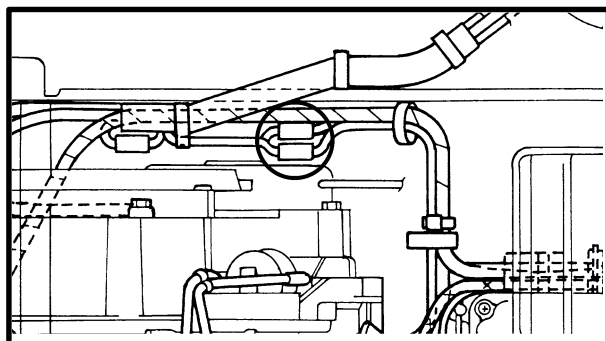
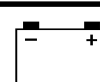
HEADLIGHT BEAM SWITCH

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



3. Check:
 - Headlight beam switch continuity
Faulty → Replace the headlight beam switch.

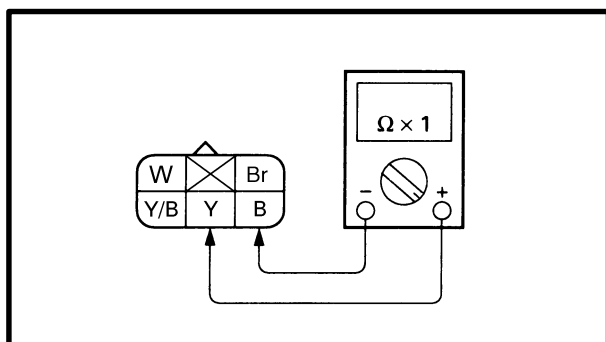
Switch position	① Continuity	② Continuity
HI	No	Yes
LO	Yes	No



CDI MAGNETO

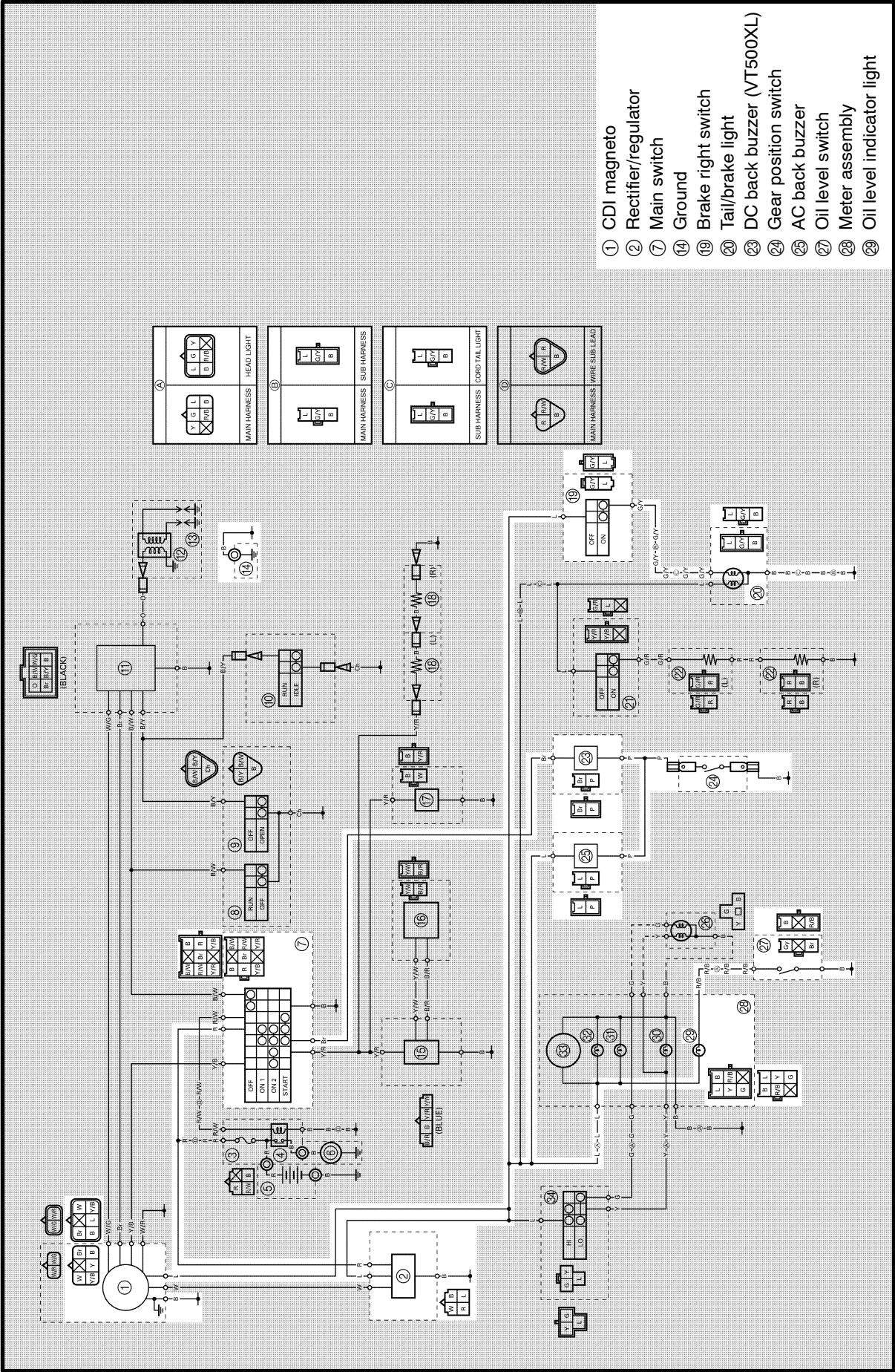
1. Disconnect:
 - CDI magneto coupler
2. Connect:
 - Pocket tester
(to the CDI magneto coupler)

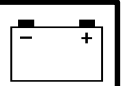
3. Measure:
 - Lighting coil resistance
Out of specification → Replace the CDI magneto.



Lighting coil resistance:
(Yellow - Black)
0.27 ~ 0.33 Ω at 20°C (68°F)

SIGNAL SYSTEM
CIRCUIT DIAGRAM





TROUBLESHOOTING

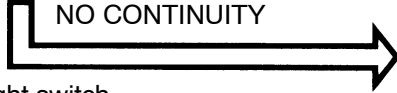
BRAKE LIGHT DOES NOT COME ON.

Check the tail/brake light bulb.



OK

NO CONTINUITY



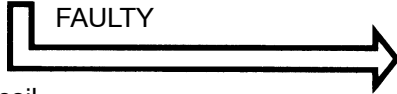
Replace the bulb.

Check the brake light switch.



OK

FAULTY



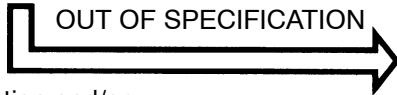
Replace the brake light switch.

Check the lighting coil.



OK

OUT OF SPECIFICATION



Replace the CDI magneto.

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

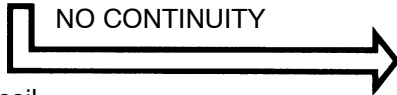
OIL LEVEL INDICATOR LIGHTS DO NOT COME ON.

Check the oil level indicator light bulb.



OK

NO CONTINUITY



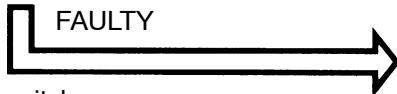
Replace the bulb.

Check the lighting coil.



OK

FAULTY



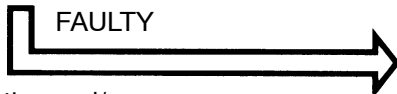
Replace the CDI magneto.

Check the oil level switch.



OK

FAULTY

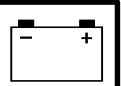


Replace the oil level switch.

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

NOTE:

The indicator lights come on for a few seconds after the engine starts. If the lights do not come on, check the indicator light circuit and bulb.

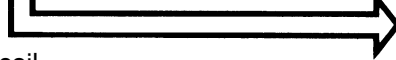
**BACK BUZZER DOES NOT SOUND.**

Check the gear position switch.



OK

FAULTY



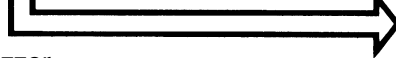
Replace the gear position switch.

Check the lighting coil.



OK

OUT OF SPECIFICATION



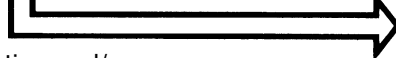
Replace the CDI magneto.

Check the back buzzer.



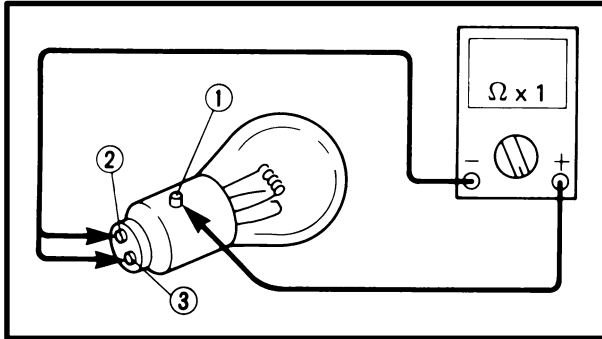
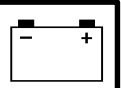
OK

DOES NOT SOUND



Adjust and/or replace the back buzzer.

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



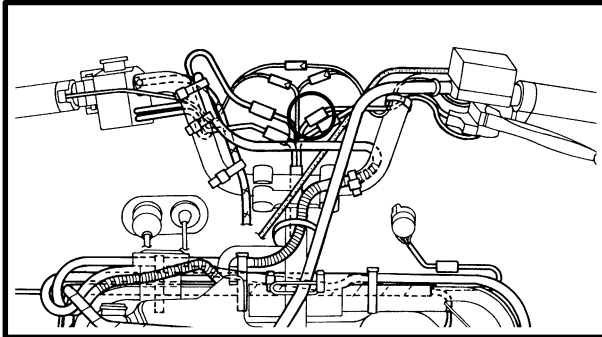
8E201

TAIL/BRAKE LIGHT BULB

1. Remove:

- Tail/brake light bulb

Terminal	Continuity
① — ②	Yes
① — ③	Yes



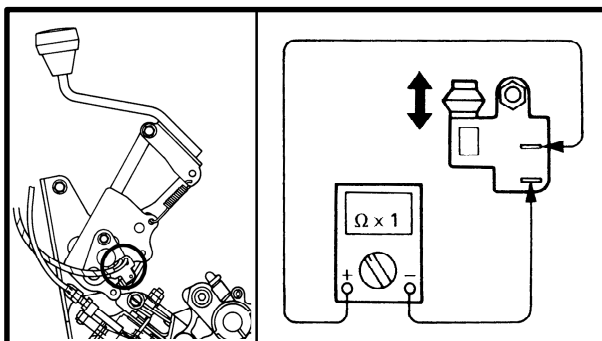
8E211

BRAKE LIGHT SWITCH

1. Check:

- Brake light switch continuity
- Faulty → Replace the brake light switch.

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



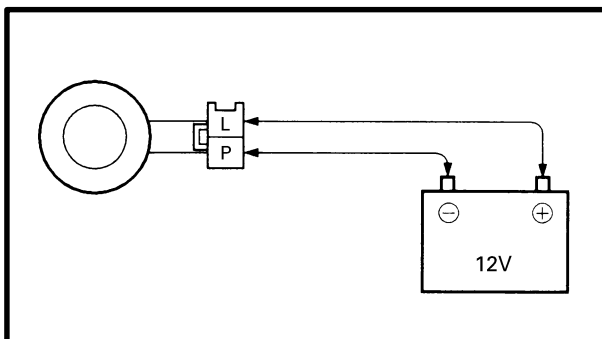
8E221

GEAR POSITION SWITCH (VT500XL)

1. Check:

- Gear position switch continuity
- Faulty → Replace the gear position switch.

Shift lever position	Continuity
FORWARD	No
REVERSE	Yes



8E231

AC BACK BUZZER

1. Disconnect:

- AC back buzzer coupler

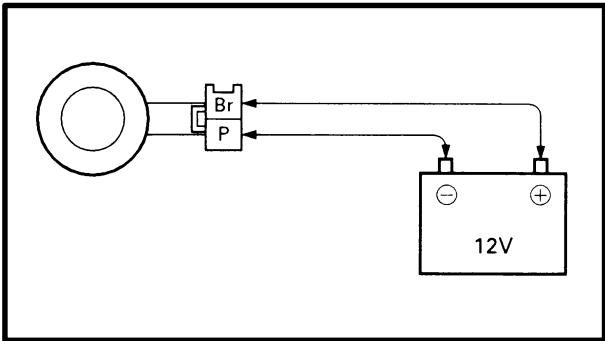
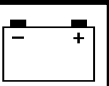
2. Connect:

- Battery

3. Check:

- AC back buzzer

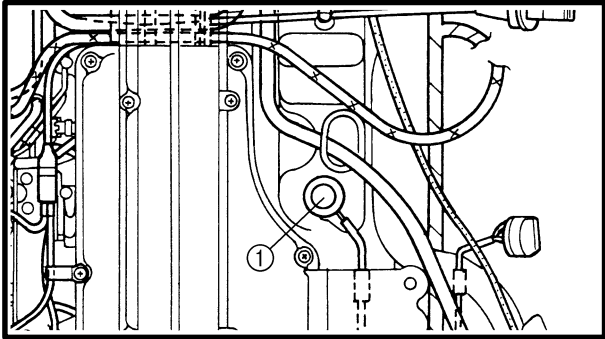
Does not sound → Replace the AC back buzzer.



8E231

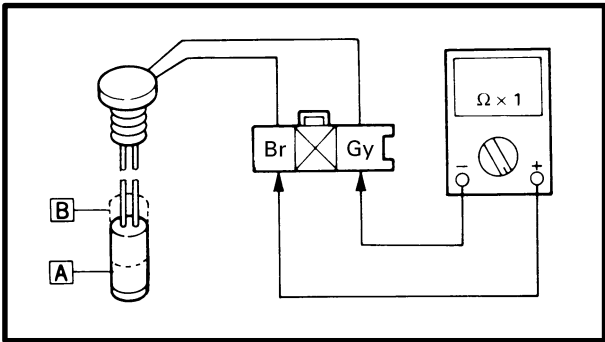
DC BACK BUZZER (VT500XL)

1. Disconnect:
 - DC back buzzer coupler
2. Connect:
 - Battery
3. Check:
 - DC back buzzerDoes not sound → Replace the DC back buzzer.



OIL LEVEL SWITCH

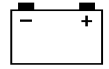
1. Remove:
 - Intake silencerRefer to “FUEL PUMP” in CHAPTER 6.
- Oil level gauge ①



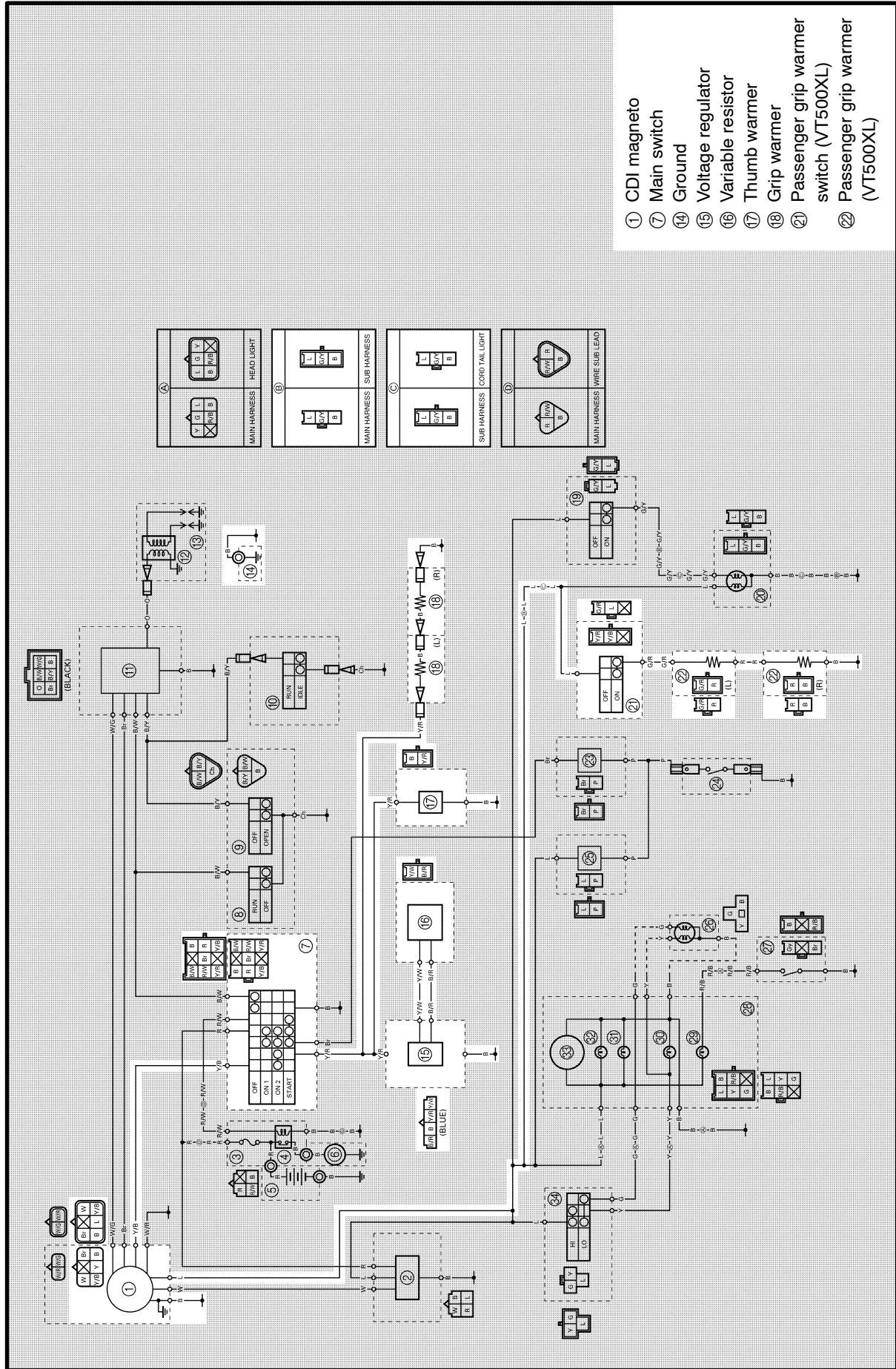
2. Connect:
 - Pocket tester(to the oil level switch coupler)
3. Check:
 - Oil level switch continuityFaulty → Replace the oil level switch.

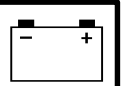
Switch position		Good condition	Bad condition		
A	Upright position	×	○	×	○
B	Upside down position	○	×	×	○

○ : Continuity × : No continuity



GRIP WARMER SYSTEM CIRCUIT DIAGRAM





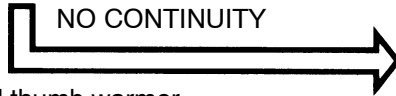
TROUBLESHOOTING

GRIP WARMER DOES NOT OPERATE.

Check the main switch.



OK

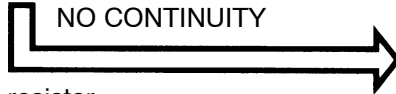


Replace the main switch.

Check the grip and thumb warmer.



OK

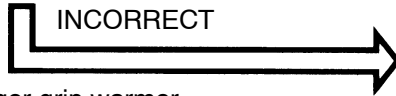


Replace the grip warmer and/or thumb warmer.

Check the variable resistor.



CORRECT

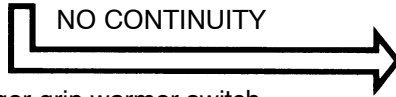


Replace the variable resistor.

Check the passenger grip warmer.



OK

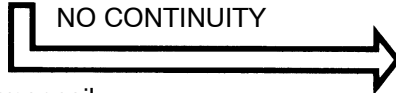


Replace the passenger grip warmer.

Check the passenger grip warmer switch.



OK

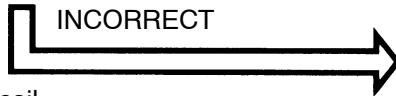


Replace the passenger grip warmer switch.

Check the grip warmer coil.



CORRECT

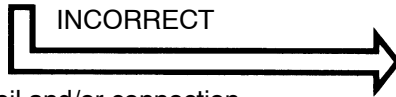


Replace the CDI magneto.

Check the lighting coil.



CORRECT

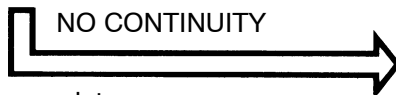


Replace the CDI magneto.

Check the stator coil and/or connection.

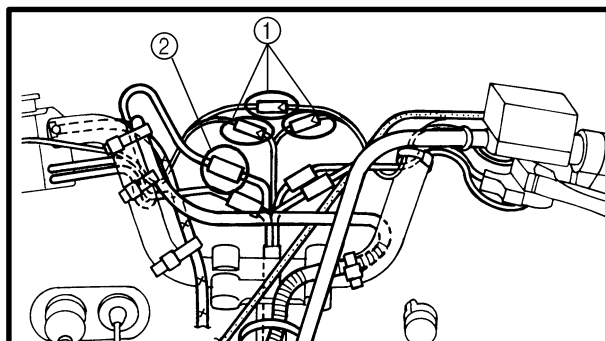
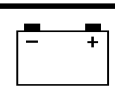


OK



Replace the CDI magneto and/or correct connection.

Replace the voltage regulator.



8E301

GRIP AND THUMB WARMER COIL

1. Disconnect:

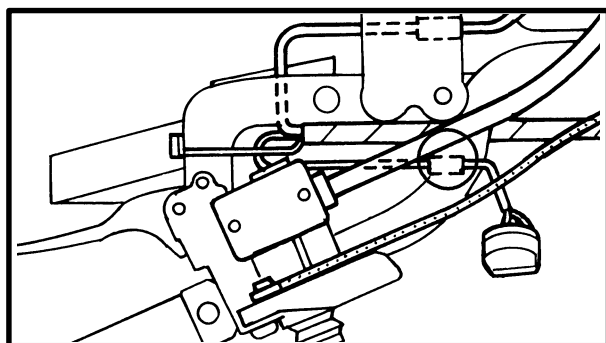
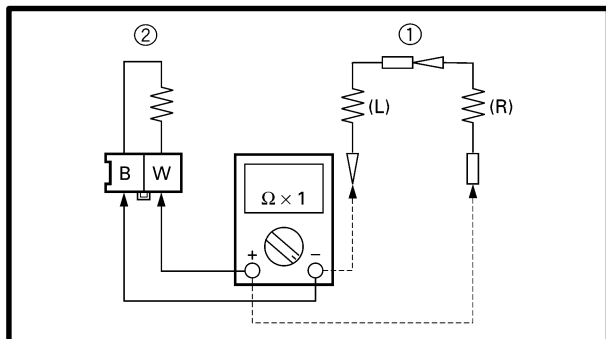
- Grip warmer leads ①
- Thumb warmer coupler ②

2. Connect:

- Pocket tester
(to the grip warmer coil leads and/or thumb warmer coil coupler)

3. Check:

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



VARIABLE RESISTOR (VT500XL)

1. Disconnect:

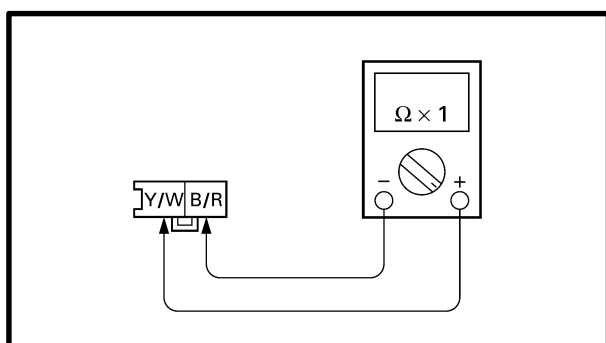
- Variable resistor coupler

2. Connect:

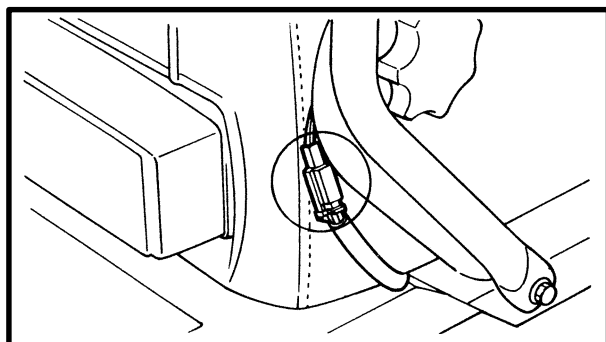
- Pocket tester
(to the variable resistor coupler)

3. Check:

- Variable resistor resistance
- When pulley is turned once.
Out of specification → Replace the variable resistor.



Variable resistor resistance:
(Yellow/White - Black/Red)
400 ~ 600 Ω at 20°C (68°F)



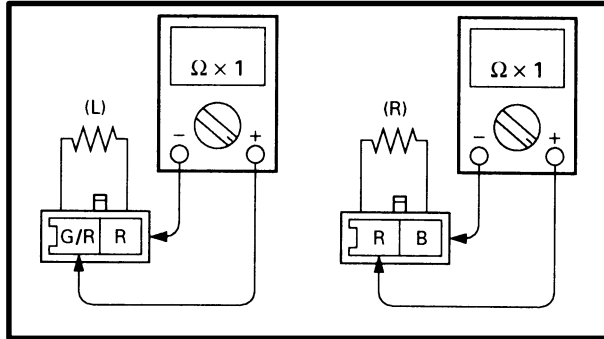
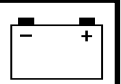
PASSENGER GRIP WARMER (VT500XL)

1. Disconnect:

- Passenger grip warmer coupler

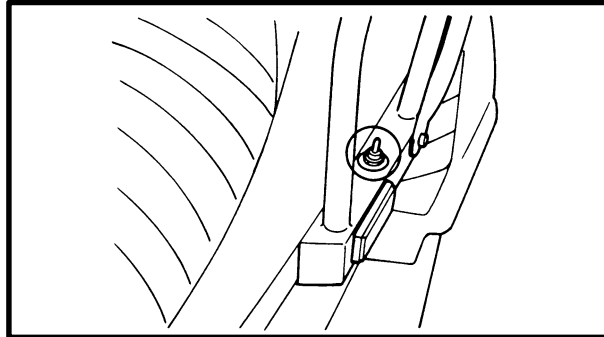
2. Connect:

- Pocket tester
(to the passenger grip warmer coupler)



3. Check:

- Passenger grip warmer continuity
No continuity → Replace both passenger grips together or separately.



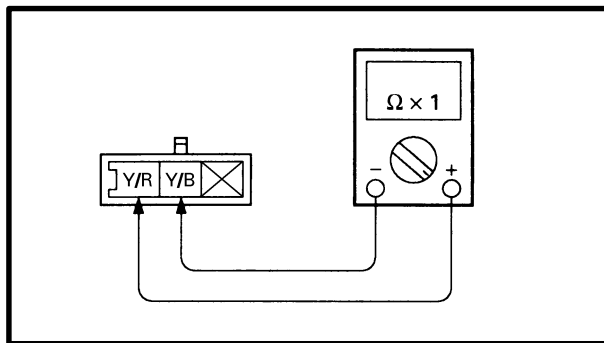
PASSENGER GRIP WARMER SWITCH (VT500XL)

1. Disconnect:

- Passenger grip warmer switch coupler

2. Connect:

- Pocket tester
(to the passenger grip warmer switch coupler)

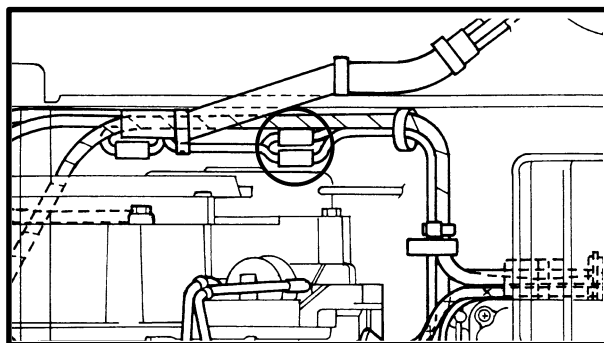


3. Check:

- Passenger grip warmer switch continuity
Faulty → Replace the passenger grip warmer switch.

	Y/B	Y/R
OFF		
ON	○	○

○—○ Continuity



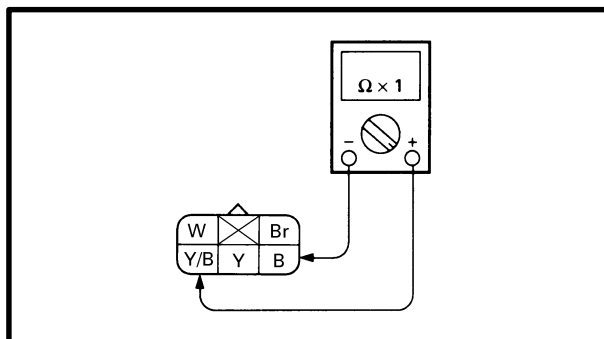
CDI MAGNETO

1. Disconnect:

- CDI magneto coupler

2. Connect:

- Pocket tester
(to the CDI magneto coupler)



3. Measure:

- Grip warmer coil resistance
Out of specification → Replace the CDI magneto.



Grip warmer coil resistance:
(Yellow/Black - Black)
1.0 ~ 1.2 Ω at 20°C (68°F)



SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	PZ500	VT500XL
Model code number	8DJ	8DX
Dimensions:		
Overall length	2,760 mm (108.7 in)	2,970 mm (116.9 in)
Overall width	1,200 mm (47.2 in)	
Overall height	1,230 mm (48.4 in)	1,300 mm (51.2 in)
Weight	211 kg (465 lb)	244 kg (538 lb)
Minimum turning radius:		
Clockwise	4.0 m (13.1 ft)	
Counterclockwise	4.0 m (13.1 ft)	
Engine:		
Engine type	Air cooled 2-stroke	
Induction system	Piston reed valve	
Cylinder arrangement	Forward inclined parallel 2-cylinder	
Displacement	485 cm ³ (29.6 cu.in)	
Bore × Stroke	72.0 × 59.6 mm (2.83 × 2.35 in)	
Compression ratio	6.7 : 1	
Maximum horse power	7,250 r/min	
Maximum torque	6,750 r/min	
Starting system (Manual model)	Recoil hand starter	
(Electric model)	Electric and recoil hand starter	
Lubrication system	Separate lubrication (YAMAHA AUTOLUBE)	
Engine oil:		
Type	YAMALUBE 2-cycle oil	
Tank capacity	3.3 L (2.9 Imp qt, 3.5 US qt)	
Drive chain housing oil:		
Type	Gear oil API "GL-3" SAE #75 or #80	
Capacity	0.25 L (8.8 Imp oz, 8.45 US oz)	
Fuel:		
Type	Regular gasoline {Pump Octane (R + M)/2 ;88} (for U.S.A./Canada)	
	Research Octan; 93 (for Europe)	
Tank capacity	44.3 L (9.7 Imp gal, 11.7 US gal)	
Carburetor:		
Type / Quantity	B38-32 / 2	
Manufacturer	MIKUNI	
Spark plug:		
Type	BR9ES	
Manufacturer	NGK	
Gap	0.7 ~ 0.8 mm (0.028 ~ 0.031 in)	

GENERAL SPECIFICATIONS

SPEC

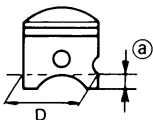
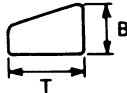
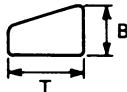


Model	PZ500	VT500XL
Transmission:	V - Belt	
Primary reduction system	3.8 ~ 1.0 : 1	
Primary reduction ratio	Automatic centrifugal engagement	
Clutch type	Chain	
Secondary reduction system	1.857 (39/21)	
Secondary reduction ratio	-	← (for U.S.A./Canada) 2.167 (39/18) (for Europe)
Reverse system	No	Yes
Chassis:	Monocoque	
Frame type	22.5°	
Caster	1,070 mm (42.1 in)	
Ski stance (center to center)		
Suspension:	Leading arm	
Front suspension type	Slide rail suspension	
Rear suspension type		
Track:	Internal drive type	
Track type	381 mm (15.0 in)	
Track width		
Length on ground	752 mm (29.6 in)	944 mm (37.2 in)
Track deflection mm/10 kg (22 lb)	25 ~ 30 mm (0.98 ~ 1.18 in)	
Brake:	Caliper type disc brake	
Brake type	Handle lever, left hand operated	
Operation method		
Electrical:	CDI / MITSUBISHI	
Ignition system / Manufacturer	Flywheel magneto	
Generator system		
Bulb wattage × Quantity:	12 V, 60 W/55 W × 1	
Headlight	12 V, 8 W/23 W × 1	
Tail/Brake light	12 V, 1.7 W × 1	
Tachometer light	12 V, 1.7 W × 1	
Speedometer light	12 V, 3.4 W	
High beam indicator light	12 V, 3.4 W	
Oil level indicator light		

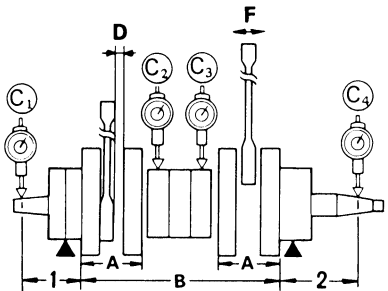


MAINTENANCE SPECIFICATIONS

ENGINE

Model	PZ500	VT500XL
Cylinder head: Volume (with spark plug) <Warp limit> 	27.4 ~ 28.0 cm ³ (1.67 ~ 1.71 cu.in) <0.03 mm (0.0012 in)> * Lines indicate straight edge measurement.	
Cylinder: Material Bore size <Taper limit> <Out-of-round limit>	Aluminum alloy with dispersion coating 72.000 ~ 72.014 mm (2.8346 ~ 2.8352 in) <0.05 mm (0.002 in)> <0.01 mm (0.0004 in)>	
Piston: Piston size (D)  Measuring point (a) Piston to-cylinder clearance <Limit> Piston off-set Piston off-set direction Piston pin bore inside diameter	71.942 ~ 71.957 mm (2.8324 ~ 2.8329 in) 29 mm (1.14 in) 0.045 ~ 0.050 mm (0.0018 ~ 0.0020 in) <0.1 mm (0.004 in)> 1 mm (0.0394 in) EX side 18.004 ~ 18.015 mm (0.7088 ~ 0.7093 in)	
Piston pin: Piston pin outside diameter Piston pin length	17.995 ~ 18.000 mm (0.7085 ~ 0.7087 in) 55.0 ~ 55.3 mm (2.165 ~ 2.177 in)	
Piston ring: Sectional sketch Top Ring  2nd Ring  End gap (installed) Side clearance Coating	Keystone B = 1.20 mm (0.047 in) T = 2.75 mm (0.108 in) Keystone B = 1.20 mm (0.047 in) T = 2.75 mm (0.108 in) 0.35 ~ 0.55 mm (0.014 ~ 0.022 in) 0.35 ~ 0.55 mm (0.014 ~ 0.022 in) 0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in) 0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in) Chrome plated/parkerrizing Chrome plated/parkerrizing	



Model	PZ500	VT500XL
Crankshaft: Crank width "A" Crank width "B" Crankshaft deflection "C": C₁ C₂, C₃ C₄ Measuring points: 1 2 Connecting rod big end side clearance "D" Connecting rod small end free play "F" 	55.95 ~ 56.00 mm (2.203 ~ 2.205 in) 173.85 ~ 174.15 mm (6.844 ~ 6.856 in) Below 0.03 mm (0.0012 in) Below 0.04 mm (0.0016 in) Below 0.05 mm (0.0020 in) 78 mm (3.07 in) 83 mm (3.27 in) 0.25 ~ 0.75 mm (0.01 ~ 0.03 in) 0.8 ~ 1.0 mm (0.03 ~ 0.04 in)	
Big end bearing: Type	Needle bearing	
Small end bearing: Type	Needle bearing	
Crank pin: Crank pin outside diameter	23.987 ~ 24.000 mm (0.9444 ~ 0.9489 in)	
Connecting rod: Small end diameter Big end diameter	21.995 ~ 22.008 mm (0.8659 ~ 0.8665 in) 31.005 ~ 31.018 mm (1.2207 ~ 1.2212 in)	
Read valve: Material Thickness <Bending limit> Stopper height	A211 0.42 mm (0.017 in) <0.3 mm (0.0118 in)> 10.4 ~ 10.8 mm (0.41 ~ 0.43 in)	

MAINTENANCE SPECIFICATIONS

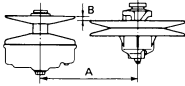
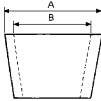
SPEC



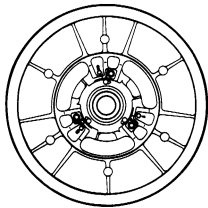
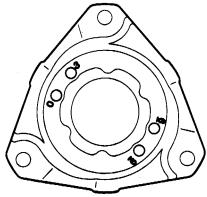
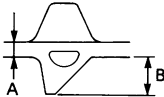
Model	PZ500	VT500XL
Carburetor: Type / Quantity Manufacturer I.D. mark Main jet (M.J) Main air jet (M.A.J) Pilot jet (P.J) Pilot air jet (P.A.J) Pilot outlet (P.O1) (P.O2) Pilot screw (P.S) Throttle valve (Th.V) Valve seat size (V.S) Starter jet (G.S) Float height (F.H) Fuel level (from the bore center) Engine idle speed	B38-32 / 2 MIKUNI LH: 8DJ100L RH: 8DJ100R L: #143.8 R: #142.5 φ0.8 #70 φ0.8 φ1.0 φ0.7 1.0 #120 φ1.5 φ2.0 9.5 ~ 13.5 mm (0.37 ~ 0.53 in) 49 ~ 51 mm (1.93 ~ 2.01 in) 1,300 ± 100 r/min	
Fuel pump: Type Manufacturer	DIAPHRAM TAIYO GIKEN	
Oil pump: Pump cable adjusting length	18 ~ 20 mm (0.71 ~ 0.79 in)	



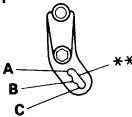
POWER TRAIN

Model	PZ500	VT500XL
Transmission:		
Type	V-belt automatic	
Range of ratio	3.8 ~ 1.0 : 1	
Engagement r/min	3,800 ± 200 r/min	3,700 ± 200 r/min
Shift r/min	7,000 ~ 7,500 r/min	
Sheave center distance "A"	267 ~ 270 mm (10.52 ~ 10.62 in)	
Sheave offset "B"	13.5 ~ 16.5 mm (0.53 ~ 0.64 in)	18.5 ~ 21.5 mm (0.73 ~ 0.84 in)
		
V-Belt:		
Part number / manufacturer	89L-17641-01 / MITSUBOSHI	
Outside circumference	1,119 ~ 1,129 mm (44.063 ~ 44.437 in)	
Width "A"	35.0 mm (1.38 in)	
Wear limit "B"	32.0 mm (1.26 in)	
		
Primary sheave spring:		
Part number	90501-585J3	90501-602J0
Color code	Green-Pink-Green	Pink-Pink-Pink
Outside diameter	59.6 mm (2.346 in)	60.0 mm (2.362 in)
Wire diameter	5.8 mm (0.228 in)	6.0 mm (0.236 in)
Preload	294 N (30 kg, 64.8 lb)	←
Spring rate	27 N/mm (2.75 kg/mm, 154 lb/in)	29.4 N/mm (3.0 kg/mm, 164 lb/in)
Number of coils	4.64	4.74
Free length	76.3 mm (3.023 in)	75.4 mm (2.968 in)
Primary sheave weight arm:		
Part number (with bushing)	8DJ-17605-00	
Weight	37.77 g (1.332 oz)	



Model	PZ500	VT500XL
Rivet: Outer Model Part number Material Size Model Part number Material Size Quantity Hole quantity Inner Part number Material Size Quantity Hole quantity	- 90261 - 06034 Steel 13.9 mm (0.55 in) - - - 3 pcs 3 pcs	For U.S.A./Canada 90261 - 06019 Steel 13.3 mm (0.52 in) For Europe 90261 - 06033 Steel 17.2 mm (0.68 in) ← ←
	90261 - 06033 Steel 17.2 mm (0.68 in) 3 pcs 3 pcs	
Secondary sheave spring: Part number Color code Outside diameter Wire diameter Hole position Sheave side - spring side (twist angle)   Spring rate Number of coils Free length Torque cam angle	90508 - 536A9 Red 69.5 mm (2.74 in) 5.3 mm (0.21 in)	
	1 - 6 (70°) -	
	← (for Europe) 2 - 6 (80°) (for U.S.A./Canada)	
	7.25 N/mm (0.74 kg/mm, 40.6 lb/in) 5.53 75 mm (2.95 in) 43° -	
Drive chain: Type Number of links	REXNORD S37TNB11	REXNORD S37TNB13
	68 L	
Track: Part number Width Length Pitch Number of links Thickness "A" Height "B" 	8DJ - 47110 - 00	8BN - 47110 - 10
	381 mm (15.0 in)	
	3,072 mm (120.9 in)	3,456 mm (136.1 in)
	64 mm (2.52 in)	
	48 5.5 mm (0.216 in) 18 mm (0.71 in)	54 6.0 mm (0.236 in) 19 mm (0.79 in)
	25 ~ 30 mm (0.98 ~ 1.18 in)	



Model	PZ500	VT500XL
Slide rail suspension:		
Rear travel	274 mm (10.79 in)	
Suspension spring rate		
Front	24.5 N/mm (2.5 kg/mm, 140 lb/in)	39 N/mm (4.0 kg/mm, 224 lb/in)
Rear	22.54 ~ 44.10 N/mm (2.3 ~ 4.5 kg/mm, 129 ~ 252 lb/in)	31.36 ~ 47.04 N/mm (3.2 ~ 4.8 kg/mm, 179 ~ 269 lb/in)
Spring wire diameter		
Front	φ7.8 mm (0.31 in)	φ8.8 mm (0.34 in)
Rear	φ10.6 mm (0.42 in)	φ11.8 mm (0.46 in)
Suspension setting position:		
Stopper band hole position (F)	No. 1	
Hook setting length *	15 mm (0.59 in)	
		
Full rate adjusting position **	B	
		
Shock absorber: Damping force		
Front		
Extension	2,569 N/0.3 m/s (262 kg/0.3 m/s, 578 lb/0.3 m/s)	
Compression	726 N/0.3 m/s (74 kg/0.3 m/s, 163 lb/0.3 m/s)	
Rear		
Extension	1,471 N/0.3 m/s (150 kg/0.3 m/s, 331 lb/0.3 m/s)	1,304 N/0.3 m/s (133 kg/0.3 m/s, 293 lb/0.3 m/s)
Compression	892 N/0.3 m/s (91 kg/0.3 m/s, 201 lb/0.3 m/s)	765 N/0.3 m/s (78 kg/0.3 m/s, 172 lb/0.3 m/s)
Slide runner:		
Thickness	17.8 mm (0.70 in)	
Wear limit	10 mm (0.39 in)	
Track sprocket wheel:		
Material	Polyethylene	
Number of teeth	9T	8T
Rear guide wheel:		
Material	Polyethylene	
Outside diameter	178 mm (7.01 in)	
Brake:		
Pad thickness	13 mm (0.51 in)	
Pad wear limit	1.5 mm (0.06 in)	
Disc outside diameter	220 mm (8.66 in)	
Disc thickness	4.5 mm (0.18 in)	



CHASSIS

Model	PZ500	VT500XL
Frame:		
Frame material	Aluminum	
Seat height	730 mm (28.7 in)	
Luggage box location	Rear side of seat	
Steering:		
Lock-to-lock angle (left)	29.4° (R ski) 34.7° (L ski)	
(right)	34.7° (R ski) 29.4° (L ski)	
Ski alignment	Toe-out	
Toe-out size	0 ~ 15 mm (0 ~ 0.59 in)	
Caster angle	22.5°	
Ski:		
Ski material	Steel	
Length	1,200 mm (47.2 in)	1,020 mm (40.1 in)
Width	140 mm (5.51 in)	
Thickness	2.0 mm (0.078 in)	
Ski ground length	178 mm (7 in)	
Ski suspension:		
Type	Proaction system	
Travel	222 mm (8.74 in)	
Spring type	Coil spring	
Spring rate	11.76 N/mm (1.2 kg/mm, 67 lb/in)	15.7 N/mm (1.57 kg/mm, 88 lb/in)
Wire diameter	7.3 mm (0.28 in)	7.5 mm (0.29 in)
Shock absorber: damping force		
Extension	1,755 N/0.3 m/s 179 kg/0.3 m/s, 395 lb/0.3 m/s)	1,520 N/0.3 m/s (155 kg/0.3 m/s, 342 lb/0.3 m/s)
Compression	510 N/0.3 m/s (52 kg/0.3 m/s, 115 lb/0.3 m/s)	588 N/0.3 m/s (60 kg/0.3 m/s, 132 lb/0.3 m/s)



ELECTRICAL

Model	PZ500	VT500XL
Voltage	12 V	
Ignition system: Ignition timing (B.T.D.C.) Advanced type	16° at 1,000 r/min Electrical type	
Ignition coil: Model / Manufacturer Minimum spark gap Primary coil resistance Secondary coil resistance	8DJ-00 / YAMAHA 3 mm (0.118 in) or more 0.16 ~ 0.24 Ω at 20°C (68°F) 3.9 ~ 5.9 k Ω at 20°C (68°F)	
Spark plug cap: Type Model / Manufacturer Resistance	Rubber type 8K1 / NGK 5 k Ω at 20°C (68°F)	
Charging system: Type	Flywheel magneto	
CDI: Magneto model / Manufacturer Pickup coil resistance (color code) Source coil resistance (color code) Charging current - (Minimum) Charging current - (Maximum) Charging coil resistance (color code) Lighting voltage - (Minimum) Lighting voltage - (Maximum) Lighting coil resistance (color code) Grip warmer coil resistance (color code) CDI unit manufacturer	F4T331 / MITSUBISHI 189 ~ 231 Ω at 20°C (68°F) (White/Red - White/Green) 279 ~ 341 Ω at 20°C (68°F) (Brown - Black) 0.5 A at 3,000 r/min 2.5 A at 8,000 r/min 0.29 ~ 0.35 Ω at 20°C (68°F) (White - Black) 11 V at 3,000 r/min 15 V at 8,000 r/min 0.27 ~ 0.33 Ω at 20°C (68°F) (Yellow - Black) 1.0 ~ 1.2 Ω at 20°C (68°F) (Yellow/Black - Black) 8DJ-00 (MITSUBISHI)	
Rectifier/regulator: Model / manufacturer No load regulated voltage AC DC	8CR-00 / MATSUSHITA 13.8 ~ 14.8 V 14.0 ~ 15.0 V	
Battery (for electric model): Specific gravity Type	1,280 YB16AL-A2	
Electric starter system (for electric model): Type	Bendix type	

MAINTENANCE SPECIFICATIONS

SPEC



Model	PZ500	VT500XL
Starter motor: (for electric model)		
Model / manufacturer	DB4XF / DENSO	
Output	0.6 kW	
Armature coil resistance	0.014 ~ 0.018 Ω at 20°C (68°F)	
Brush		
Overall length	12 mm (0.48 in)	
Wear limit	8.5 mm (0.33 in)	
Spring pressure	6.5 ~ 9.5 N (650 ~ 950 g, 22.9 ~ 33.5 oz)	
Commutator diameter	28 mm (1.10 in)	
Wear limit	27 mm (1.06 in)	
Mica undercut	0.4 ~ 0.8 mm (0.016 ~ 0.031 in)	



HIGH ALTITUDE SETTINGS

PZ500/VT500XL

Temperature Altitude	-40°C (-40°F)	-29°C (-20°F)	-18°C (0°F)	-7°C (20°F)	4°C (40°F)	16°C (60°F)
0-500 m (0-1,700 ft)	MJ#L #146.3 MJ#R #145	PJ #70 PS 1.0		MJ#L #143.8 MJ#R #142.5	PJ #70 PS 1.0	
500-1,000m (1,700-3,300 ft)	MJ#L #142.5 MJ#R #141.3	PJ #70 PS 1-1/8		MJ#L #138.8 MJ#R #137.5	PJ #75 PS 1-1/4	
1,000-1,500 m (3,300-5,000 ft)	MJ#L #137.5 MJ#R #136.3	PJ #75 PS 1.0		MJ#L #135 MJ#R #133.8	PJ #75 PS 1-1/2	
1,500-2,000 m (5,000-6,700 ft)	MJ#L #133.8 MJ#R #132.5	PJ #75 PS 1-5/8		MJ#L #131.3 MJ#R #130	PJ #80 PS 1-3/4	
2,000-2,500 m (6,700-8,300 ft)	MJ#L #130 MJ#R #128.8	PJ #75 PS 2.0		MJ#L #126.3 MJ#R #125	PJ #80 PS 2-1/4	
2,500-3,000 m (8,300-10,000 ft)	MJ#L #126.3 MJ#R #125	PJ #80 PS 2-1/4		MJ#L #122.5 MJ#R #121.3	PJ #80 PS 2-1/2	

[Production spec] MJ#L: #143.8 MJ#R: #142.5 PJ: #70 PS: 1.0

MJ: Main jet number PJ: Pilot jet number PS: Pilot screw turns out



TIGHTENING TORQUE

Parts to be tightened	Tightening torque			Remarks
	Nm	m • kg	ft • lb	
Crankcase (first)	13	1.3	9.4	Tighten the bolts in two stages.
(final)	21	2.1	15	
Crank case	21	2.1	15	
Engine bracket (front) and frame	90	9.0	65	
Engine bracket damper (front/rear)	40	4.0	29	
Engine bracket left (front) and engine	27	2.7	19	
Engine bracket right (front) and engine	23	2.3	17	
Engine bracket (rear) and engine	27	2.7	19	
Engine bracket (rear) and frame	57	5.7	41	
Exhaust joint	30	3.0	22	Tighten the bolts in two stages.
Cylinder head nut	25	2.5	18	
Cylinder head bolt	15	1.5	11	
Spark plug	20	2.0	14	
Ignition coil	7	0.7	5.1	
Oil pump	8	0.8	5.8	
Oil pump cable	8	0.8	5.8	
Cooling fan grill	7	0.7	5.1	
Drive pulley	23	2.3	17	
Driven pulley	43	4.3	31	Apply LOCTITE®
Cooling fan housing	23	2.3	17	
Upper air shroud	7	0.7	5.1	
Lower air shroud	7	0.7	5.1	
Fuel pump	10	1.0	7.2	
Drive plate	13	1.3	9.4	
Recoil starter case	7	0.7	5.1	
Intake manifold	14	1.4	10	
Read valve assembly	1	0.1	0.7	
Carburetor				
Pilot jet	0.8	0.08	0.58	
Valve seat	4.9	0.49	3.54	
Main jet	1.8	0.18	1.3	
Main air jet	0.7	0.07	0.51	
Pilot air jet	0.7	0.07	0.51	
Main nozzle	2.5	0.25	1.81	
Main jet holder	8.8	0.88	6.36	
Connecting plate (lower)	3.4	0.34	2.46	
(upper)	2.0	0.2	1.4	
Starter plunger assembly	3.5	0.35	2.53	
Stator coil	7	0.7	5.1	
Pickup coil	4	0.4	2.9	
Plate (stator coil)	7	0.7	5.1	
Intake silencer	7	0.7	5.1	
Heat shield	0.6	0.06	0.43	
Y.E.I.S. chamber	2	0.2	1.4	
Magneto rotor nut	85	8.5	61	(With reverse model)
CDI unit	3	0.3	2.2	
Oil pump cable adjuster locknut	0.8	0.08	0.58	
Throttle cable adjuster locknut	0.8	0.08	0.58	
Starter (chock) cable adjuster locknut	0.8	0.08	0.58	
Starter motor lead	6	0.6	4.3	(With reverse model)
Starter motor	23	2.3	17	



Parts to be tightened	Tightening torque			Remarks
	Nm	m • kg	ft • lb	
Primary sheave (first)	120	12.0	85	Tighten the bolts in two stages. See NOTE. Left-hand thread. Apply LOCTITE®
(final)	60	6.0	43	
Spider and sliding sheave	200	20.0	145	
Primary sheave cap and sliding sheave	14	1.4	10	(With reverse model)
Roller and weight bolt (primary sheave)	6	0.6	4.3	
Starter motor driven gear	17	1.7	12	
Stopper	6.5	0.65	4.6	
Secondary sheave	64	6.4	46	
Secondary sheave plate	4	0.4	2.9	
Spring seat (secondary sheave)	23	2.3	17	
Bolt (secondary sheave clearance)	10	1.0	7.2	
Drive sprocket	60	6.0	43	
Locknut chain tensioner	24	2.4	17	
Chain housing and frame	48	4.8	35	Apply LOCTITE®
Driven sprocket	48	4.8	35	
Drain bolt (drive chain housing)	24	2.4	17	
Chain housing cover	24	2.4	17	(With reverse model)
Shift lever assembly	10	1.0	7.2	
Shaft (reverse drive gear)	10	1.0	7.2	(With reverse model) Apply LOCTITE®
Chain housing and brake caliper	48	4.8	35	Apply LOCTITE®
Bleed screw (brake caliper)	6	0.6	4.3	
Nut (parking brake)	10	1.0	7.2	
Brake hose	23	2.3	17	
Bearing set screw (jackshaft)	8.5	0.85	6.1	
Bearing holder (jackshaft)	23	2.3	17	
Stopper band	4	0.4	2.9	
Hook and front pivot arm	16	1.6	11	
Wheel bracket and sliding frame	24	2.4	17	
Bracket bolt (rear)	30	3.0	22	
Bracket bolt (front)	72	7.2	52	Apply LOCTITE® (VT500XL) Apply LOCTITE® Apply LOCTITE®
Shaft and sliding frame	72	7.2	52	
Front pivot arm and front pivot arm bracket	72	7.2	52	
Front pivot arm bracket and sliding frame	72	7.2	52	Apply LOCTITE® (VT500XL) Apply LOCTITE® Apply LOCTITE®
Suspension wheel	72	7.2	52	
Guide wheel	75	7.5	54	
Sliding frame and slide runner	3	0.3	2.2	
	4	0.4	2.9	
Slide rail suspension mounting bolt	72	7.2	52	
Slide rail suspension mounting bolt (rear)	24	2.4	17	
Rear pivot arm and bracket	24	2.4	17	
Shock absorber and rear pivot arm	49	4.9	35	
Rear pivot arm and rod	49	4.9	35	
Rear suspension bracket and rod	49	4.9	35	Apply LOCTITE® Apply LOCTITE® Apply LOCTITE® Apply LOCTITE® Apply LOCTITE®
Control rod and sliding frame	72	7.2	52	
Shock absorber and front pivot arm	49	4.9	35	
Shock absorber and bracket	49	4.9	35	
Rear bracket and suspension wheel	72	7.2	52	
Shock absorber and rear pivot arm	49	4.9	35	

TIGHTENING TORQUE

SPEC



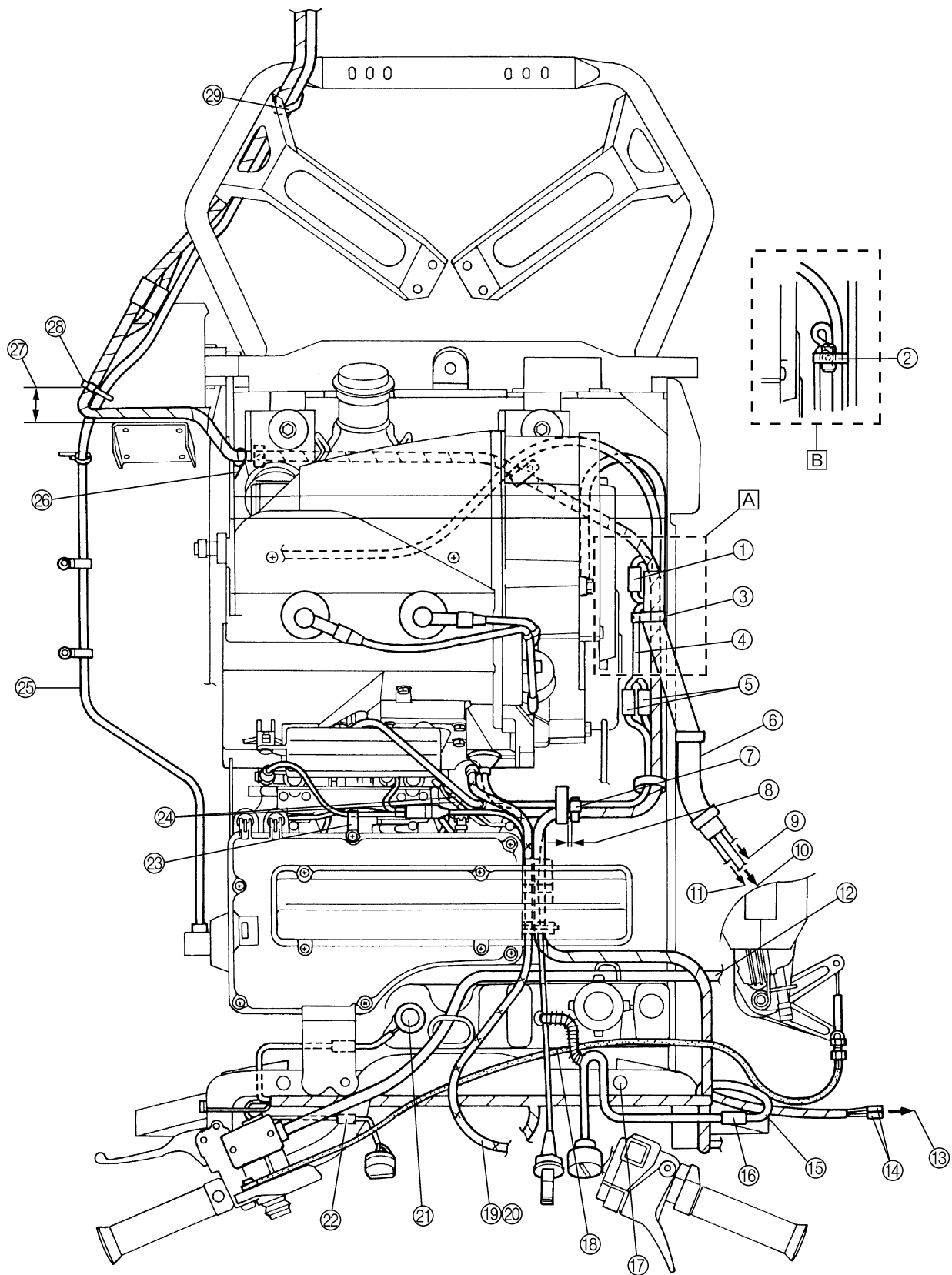
Parts to be tightened	Tightening torque			Remarks
	Nm	m • kg	ft • lb	
Wheel bracket shaft and sliding frame	72	7.2	52	
Set bolt (front axle)	6	0.6	4.3	
Speedometer gear assembly	20	2.0	14	

NOTE:

Tightening steps:

1. Tighten the bolt to 120 Nm (12 m • kg, 85 ft • lb).
2. Loosen it completely.
3. Retighten it to 60 Nm (6.0 m • kg, 43 ft • lb).

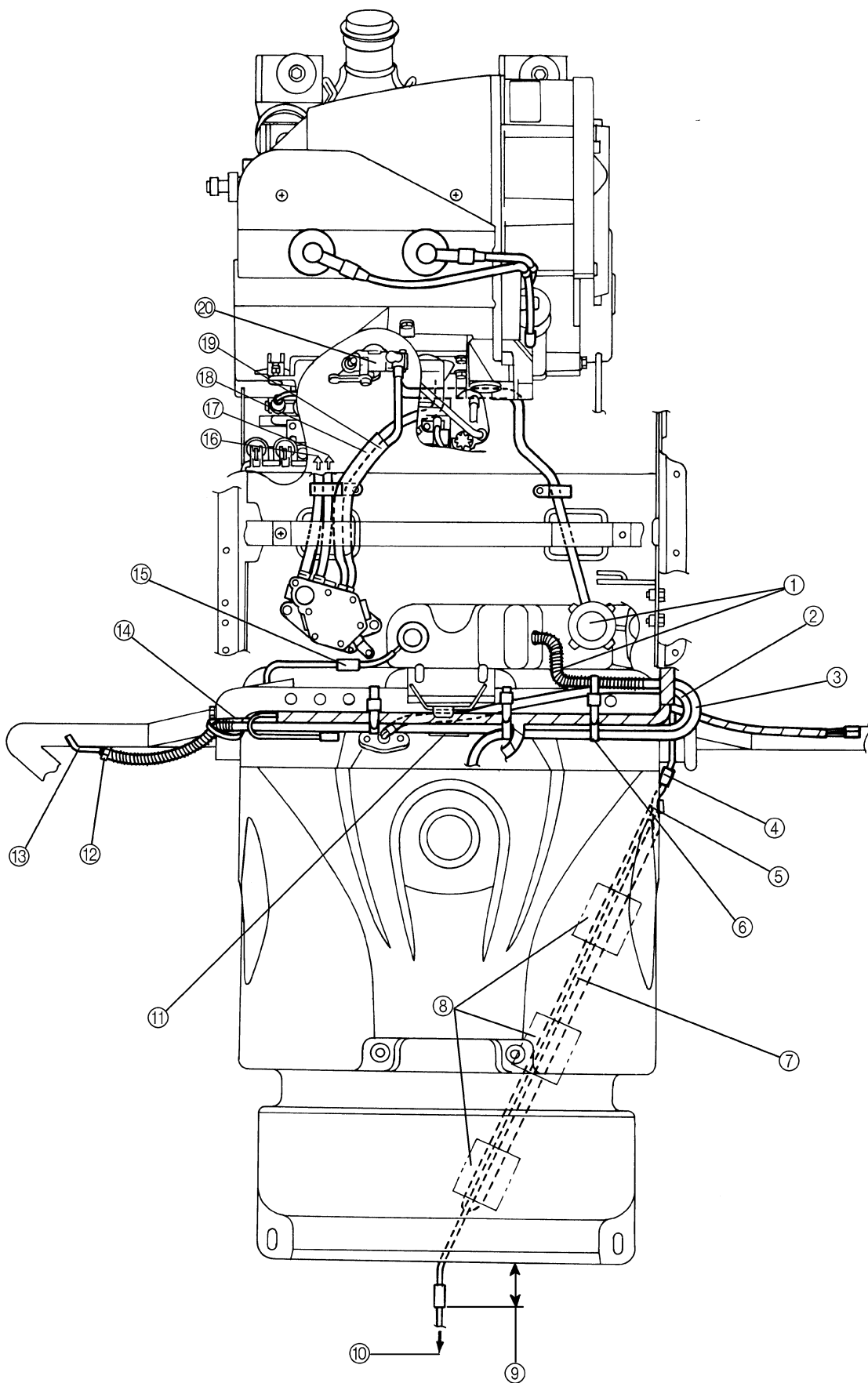
Parts to be tightened	Tightening torque			Remarks
	Nm	m • kg	ft • lb	
Handlebar holder	15	1.5	11	
Steering column				
Upper	23	2.3	17	
Lower	23	2.3	17	
Steering column and relay rod	35	3.5	25	
Relay rod and relay arm	35	3.5	25	
Relay arm and tie rod	35	3.5	25	
Tie rod and steering arm	42	4.2	30	
Locknut (relay rod)	25	2.5	18	Apply LOCTITE®
Ski runner	26	2.6	19	
Ski	48	4.8	35	
Shock absorber (upper)	48	4.8	35	
Shock absorber (lower)	48	4.8	35	
Steering arm and ski column	56	5.6	40	
Lower control rod and frame	50	5.0	36	
Upper control rod and frame	50	5.0	36	
Control rod and front arm	48	4.8	35	
Front arm pivot bolt	78	7.8	56	
Stabilizer bar and connecting rod	23	2.3	17	
Connecting rod and front arm	23	2.3	17	
Frame cross member	48	4.8	35	Apply LOCTITE®
	85	8.5	61	
Seat and frame (nut)	9	0.9	6.5	
Shroud	3	0.3	2.2	





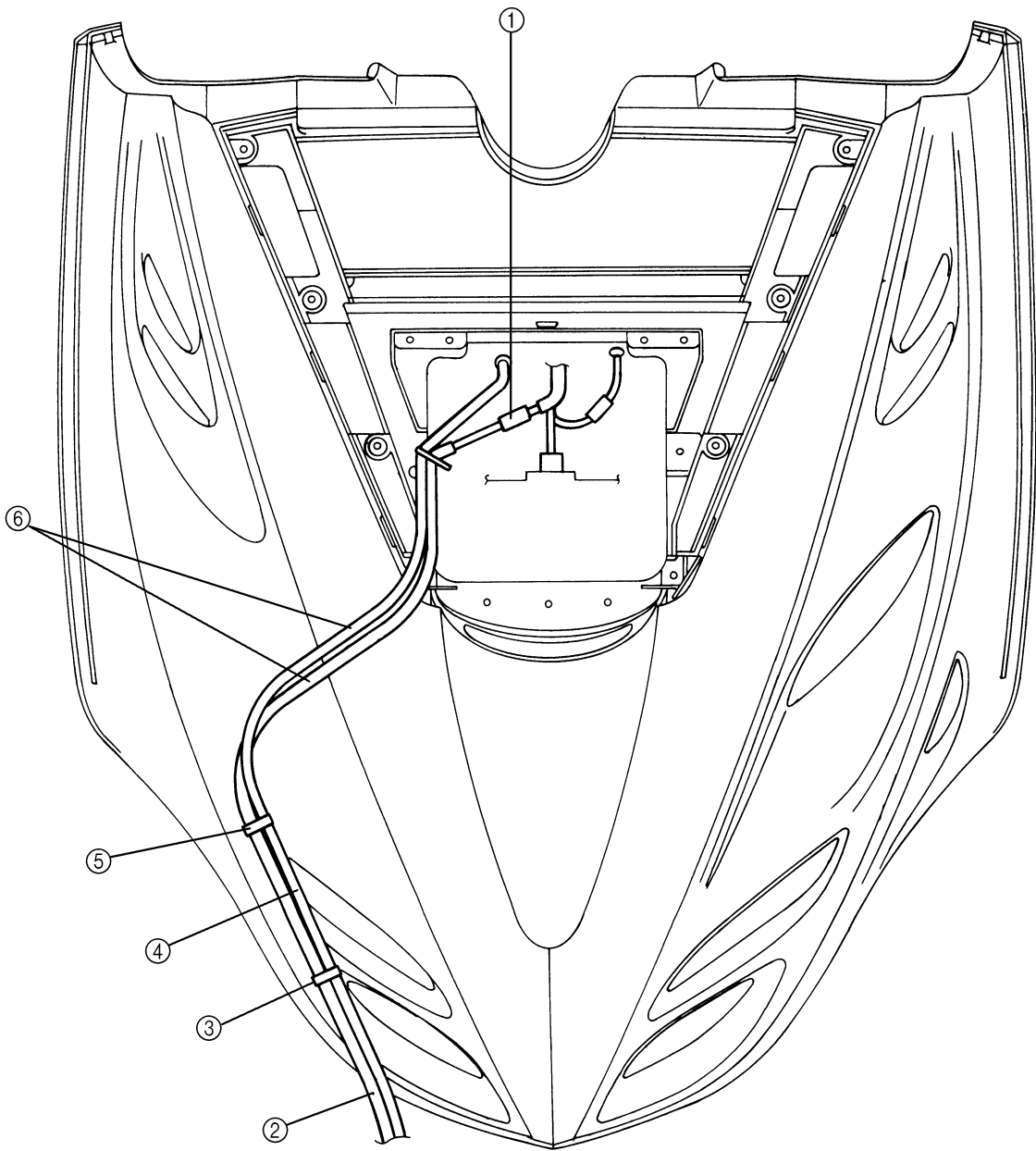
CABLE ROUTING

- ① Sub wire harness (for models with reverse)
- ② Fasten the sub wire harness coupler with the metal clamp. (for PZ500 models)
- ③ Fasten the wire harness at the white tape mark, with the metal clamp. (for models with reverse)
- ④ Do not install the CDI magneto lead loosely between the metal clamps.
- ⑤ CDI magneto couplers
- ⑥ Wire harness (for models with reverse)
- ⑦ Fasten the CDI magneto lead and wire harness with a plastic band.
- ⑧ Under 10 mm (0.39 in)
- ⑨ To the battery negative terminal (for models with reverse)
- ⑩ To the battery positive terminal (for models with reverse)
- ⑪ To the starter relay (for models with reverse)
- ⑫ Brake hose
- ⑬ To reverse gear (for models with reverse)
- ⑭ Connectors of the gear position switch (for models with reverse)
- ⑮ Route the main switch wire harness under the oil tank breather hose and fuel tank breather hose.
- ⑯ Install the main switch coupler behind the instrument panel.
- ⑰ Make sure that the main switch wire harness is on the inside of the instrument panel screw (away from the engine).
- ⑱ Route the parking brake cable under the oil tank breather hose.
- ⑲ Throttle cable
- ⑳ Attach the clip to the wire end (throttle lever side).
- ㉑ Oil level switch
- ㉒ Variable/resistor coupler (for VT500XL models)
- ㉓ Pass the starter cable through the cable guide.
- ㉔ Connectors of the carburetor switch
- ㉕ Speedometer cable
- ㉖ Securely fasten the wire harness with a metal clamp.
- ㉗ Under 50 mm (1.97 in)
- ㉘ Fasten the speedometer cable and wire harness with a plastic clamp. Install the clamp as close to the drive V-belt guard bracket, as possible (rearward).
- ㉙ When fastening the wire harness and speedometer cable with the metal clamp, bend the clamp inward.
- [A] For models with reverse
- [B] For PZ500 models



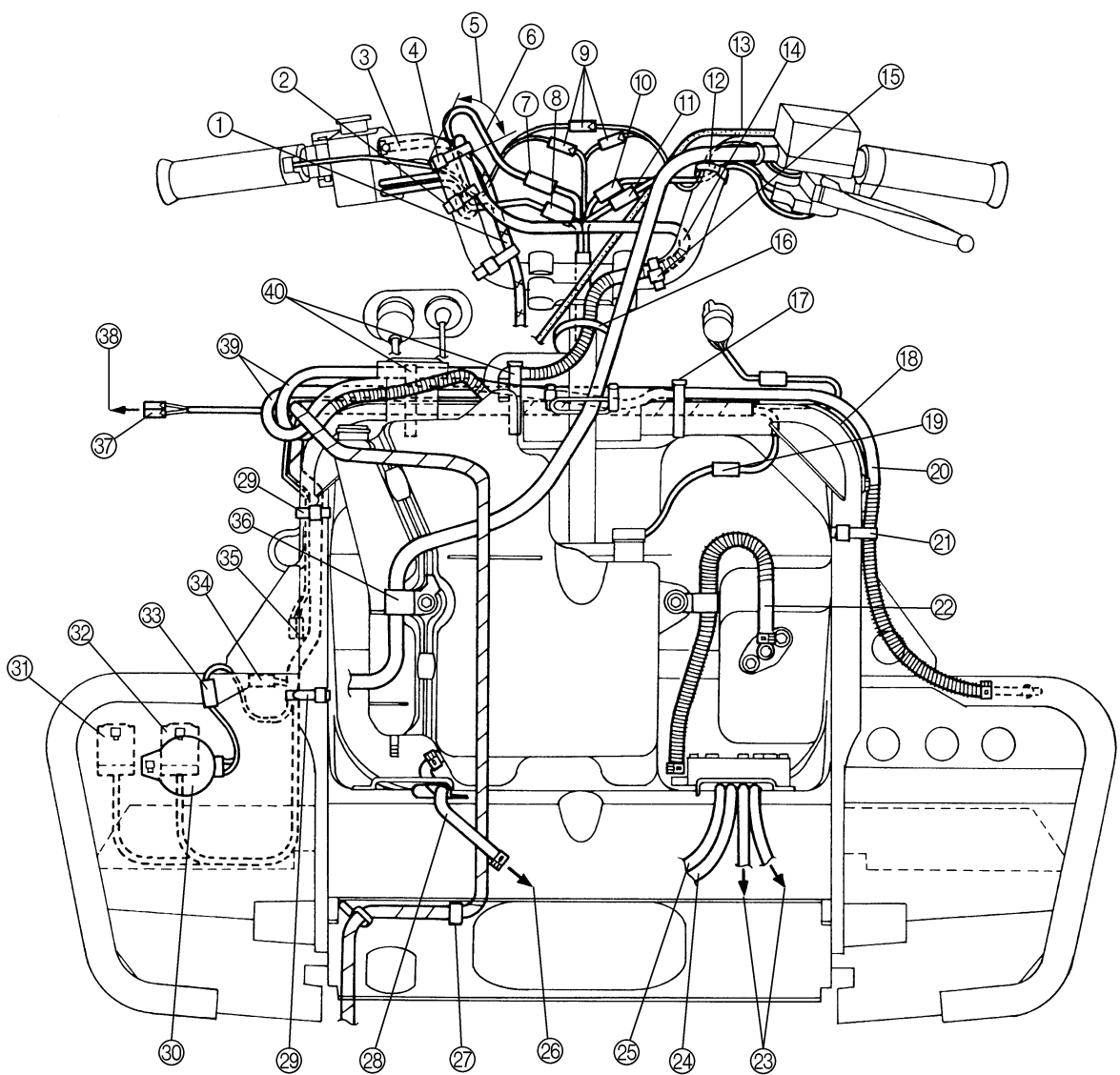


- ① Make sure that the oil tank cap and oil tank breather hose do not touch each other.
- ② Route the fuel tank breather hose along the side of the frame.
- ③ Route the oil tank breather hose along the side of the frame.
- ④ Install the tail/brake light lead behind the instrument panel.
- ⑤ Pass the tail/brake light lead through the inside of the tab on the frame. Route the tail/brake light lead behind the tab on the frame.
- ⑥ Fasten the oil tank breather hose, fuel tank breather hose and wire harness at the inside of the instrument panel screw with a plastic band.
- ⑦ Route the tail/brake light lead between the fuel tank and the snowmobile body. Make sure that the fuel tank does not crush the tail/brake light lead. Then, fasten the three pieces of adhesive tape below the fuel tank as shown.
- ⑧ Adhesive tapes
- ⑨ 50 mm (1.97 in)
- ⑩ To the tail/brake light
- ⑪ Pass the wire harness and fuel tank breather hose through the cable holder.
- ⑫ Install the metal clip facing downward.
- ⑬ Insert the fuel tank breather hose until it can not be inserted further.
- ⑭ Ground lead
- ⑮ Oil level switch coupler
- ⑯ To the carburetor (left side)
- ⑰ To the carburetor (right side)
- ⑱ Vacuum hose
- ⑲ Oil delivery hose
- ⑳ Oil pump



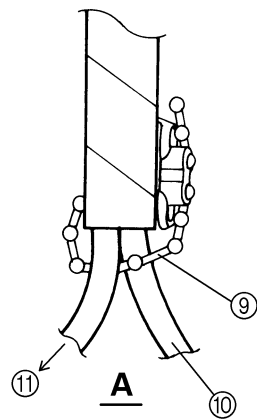
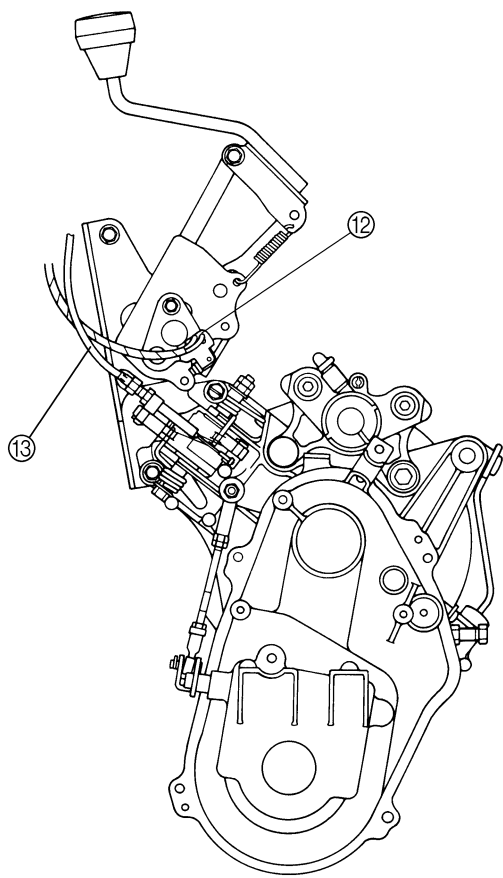
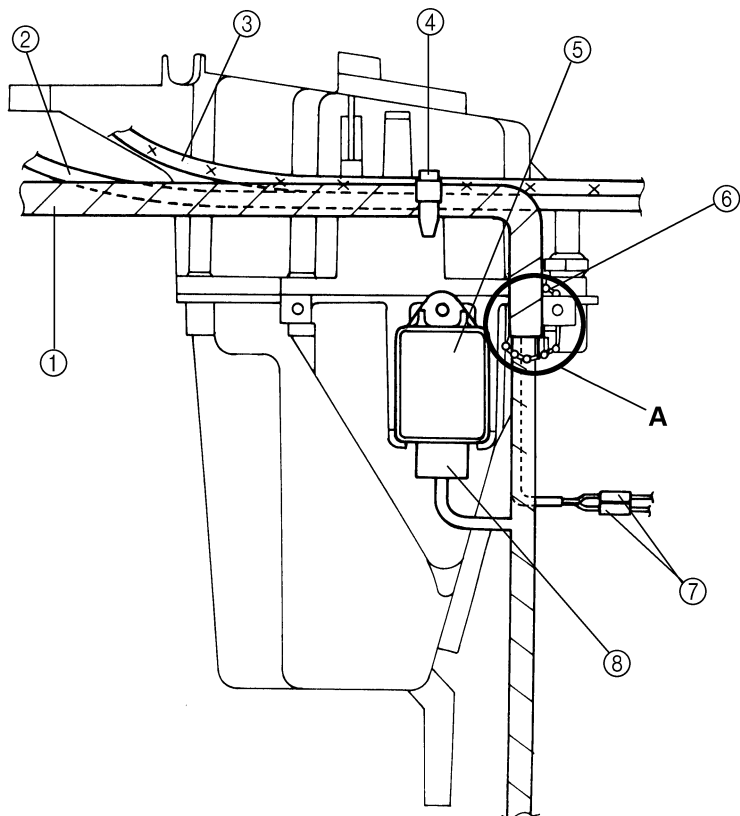


- ① Headlight coupler
- ② Headlight leads
- ③ Clamp
- ④ Speedometer cable
- ⑤ Fasten the wire harness and speedometer cable at the white tape mark, with a plastic band.
- ⑥ Route the wire harness and speedometer cable over the shroud's stopper wire.





- ① Route the throttle cable along inside of the handlebar.
- ② Do not fasten the throttle cable and oil tank breather hose.
- ③ Throttle cable
- ④ Do not fasten the throttle cable
- ⑤ Fasten the thumb warmer lead 60 ~ 70 mm from the upper handlebar holder (right) as shown.
- ⑥ Make sure the center of the thumb warmer lead (between the coupler and the right handlebar switch) is at the top of the loop as shown.
- ⑦ Thumb warmer coupler
- ⑧ Engine stop switch coupler
- ⑨ Connectors of the grip warmer
- ⑩ Brake light switch coupler
- ⑪ Headlight beam switch
- ⑫ Fasten the brake light switch lead, headlight beam switch lead and grip warmer leads with a plastic band.
- ⑬ Parking brake cable
- ⑭ Oil tank breather hose
- ⑮ Fasten the oil tank breather hose with a plastic band.
- ⑯ Fasten the left and right handlebar switch leads, and the oil tank breather hose behind the steering column, with a plastic band. Do not fasten the parking brake cable and brake hose.
- ⑰ Fasten the wire harness and fuel tank breather hose with a plastic band.
- ⑱ Ground lead
- ⑲ Oil level switch coupler
- ⑳ Fuel tank breather hose
- ㉑ Fasten the fuel tank breather hose.
- ㉒ Fuel hose
- ㉓ To the carburetor
- ㉔ Vacuum hose
- ㉕ Oil delivery hose
- ㉖ To the oil pump
- ㉗ Fasten the wire harness at the white tape mark, with a clamp.
- ㉘ Oil hose
- ㉙ Fasten the wire harness with a plastic band.
- ㉚ Back buzzer (for models with reverse)
- ㉛ Voltage/regulator (for VT500XL models)
- ㉜ Rectifier/regulator
- ㉝ Back buzzer coupler (for VT500XL models)
- ㉞ Back buzzer coupler (for PZ500 models)
- ㉟ Connectors of the gear position switch (for PZ500 models)
- ㊱ Pass the brake hose through the hose guide.
- ㊲ Connectors of the gear position switch (for models with reverse)
- ㊳ To the gear position switch
- ㊴ Does not kink.
- ㊵ Fasten the wire harness, fuel tank breather hose and oil tank breather hose with a plastic band.

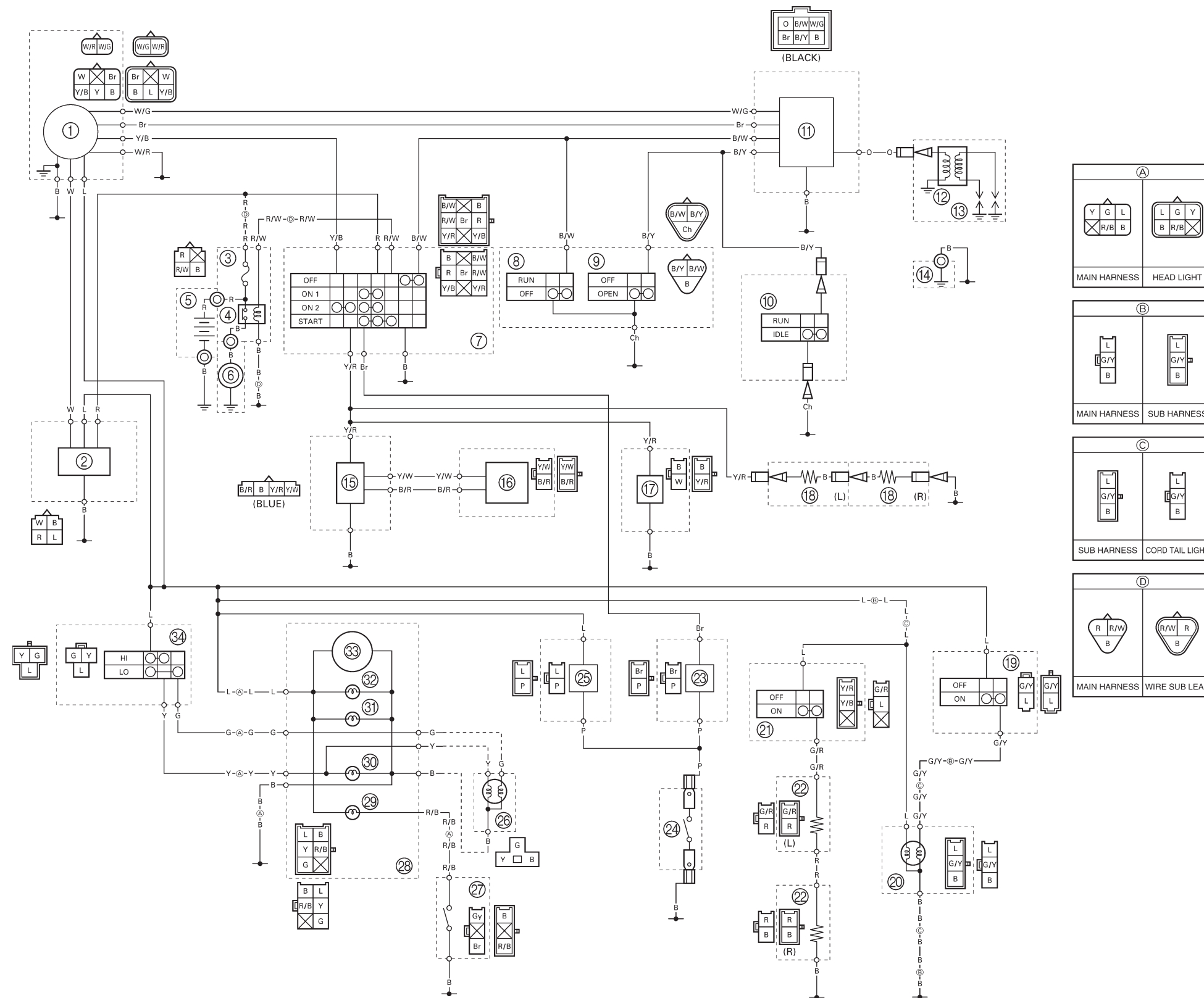




- ① Wire harness
- ② Starter cable
- ③ Throttle cable
- ④ Make sure a plastic band is routed through the projection located on the silencer, when fastening it around the wire harness, throttle cable and the starter cable.
- ⑤ CDI unit
- ⑥ Make sure a plastic-locking tie is routed through the projection located on the silencer, when fastening it around the wire harness.
- ⑦ Connectors of the carburetor switch
- ⑧ CDI unit coupler
- ⑨ Make sure a plastic-locking tie is routed through wire harnesses as shown.
- ⑩ Wire harness
- ⑪ To the carburetor switch
- ⑫ Gear position switch
- ⑬ Route the parking brake cable outside the gear position switch leads.

WIRING DIAGRAM

PZ500, VT500XL



- ① CDI magneto
- ② Rectifier/regulator
- ③ Fuse (VT500XL)
- ④ Starter relay (VT500XL)
- ⑤ Battery (VT500XL)
- ⑥ Starter motor (VT500XL)
- ⑦ Main switch
- ⑧ Engine stop switch
- ⑨ Throttle switch
- ⑩ Carburetor switch
- ⑪ CDI unit
- ⑫ Ignition coil
- ⑬ Spark plug
- ⑭ Ground
- ⑮ Voltage regulator (VT500XL)
- ⑯ Variable resistor (VT500XL)
- ⑰ Thumb warmer
- ⑱ Grip warmer
- ⑲ Brake light switch
- ⑳ Tail/brake light
- ㉑ Passenger grip warmer switch (VT500XL)
- ㉒ Passenger grip warmer (VT500XL)
- ㉓ DC back buzzer (VT500XL)
- ㉔ Gear position switch (VT500XL)
- ㉕ AC back buzzer (optional for PZ500)
- ㉖ Headlight
- ㉗ Oil level switch
- ㉘ Meter assembly
- ㉙ Oil level indicator light
- ㉚ High beam indicator light
- ㉛ Speedometer light
- ㉜ Tachometer light
- ㉝ Tachometer
- ㉞ Headlight beam switch

COLOR CODE

B Black
 Br Brown
 Ch Chocolate
 G Green
 Gy Gray
 L Blue
 O Orange
 P Pink
 R Red
 W White
 Y Yellow
 B/R Black/Red
 B/W Black/White
 B/Y Black/Yellow
 G/R Green/Red
 G/Y Green/Yellow
 R/B Red/Black
 R/W Red/White
 W/G White/Green
 W/R White/Red
 Y/B Yellow/Black
 Y/R Yellow/Red
 Y/W Yellow/White

YAMAHA