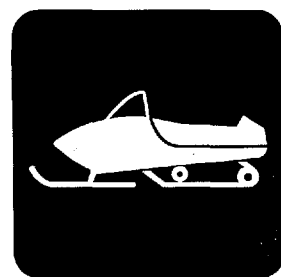


YAMAHA

SERVICE MANUAL



VT500A/600A
MM600A/700A
VX500XTA/XTCA/XTCEA/XTCRA
VX600XTA/XTCA/XTCEA/XTCRA/SXA
VX700SXA

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

VT500A, VT600A, MM600A, MM700A
VX500XTA, XTCA, XTCEA, XTCRA
VX600XTA, XTCA, XTCEA, XTCRA, SXA
VX700SXA

SERVICE MANUAL

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1st Edition, July 1996

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U.S.A is expressly prohibited.
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HOW TO USE THIS MANUAL

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



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

WARNING

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

CAUTION:

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

NOTE:

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

MANUAL FORMAT

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

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

- Bearings
Pitting/Damage → Replace.

EXPLODED DIAGRAM

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

ILLUSTRATED SYMBOLS

(Refer to the illustration)

Illustrated symbols ① to ⑩ are designed as thumb tabs to indicate the chapter's number and content.

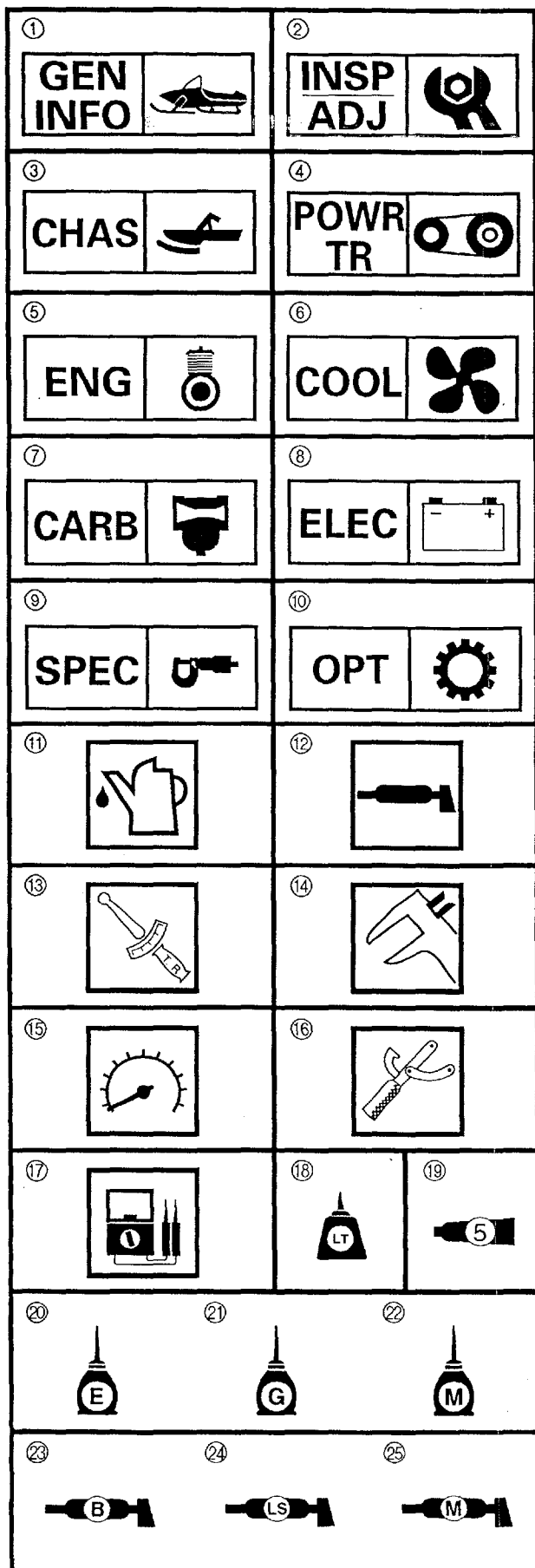
- ① General information
- ② Periodic inspection and adjustment
- ③ Chassis
- ④ Power train
- ⑤ Engine overhaul
- ⑥ Cooling system
- ⑦ Carburetion
- ⑧ Electrical
- ⑨ Specifications
- ⑩ Optional kit

Illustrated symbols ⑪ to ⑰ are used to identify the specifications which appear.











- ⑪ Filling fluid
- ⑫ Lubricant
- ⑬ Tightening
- ⑭ Wear limit, clearance
- ⑮ Engine speed
- ⑯ Special tool
- ⑰ Ω , V, A

Illustrated symbols ⑱ to ⑳ in the exploded diagram indicate grade of lubricant and location of lubrication point.

- ⑱ Apply locking agent (LOCTITE®)
- ⑲ Apply Yamabond No.5®
- ㉔ Apply engine oil
- ㉕ Apply gear oil
- ㉖ Apply molybdenum disulfide oil
- ㉗ Apply wheel bearing grease
- ㉘ Apply low-temperature lithium-soap base grease
- ㉙ Apply molybdenum disulfide grease

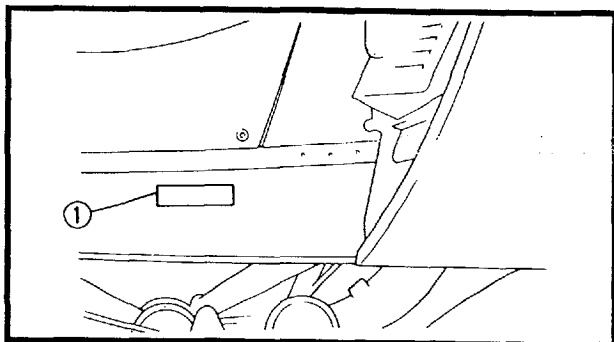


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ENGINE OVERHAUL	 ENG 5
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ELECTRICAL	 ELEC 8
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CHAPTER 1. GENERAL INFORMATION

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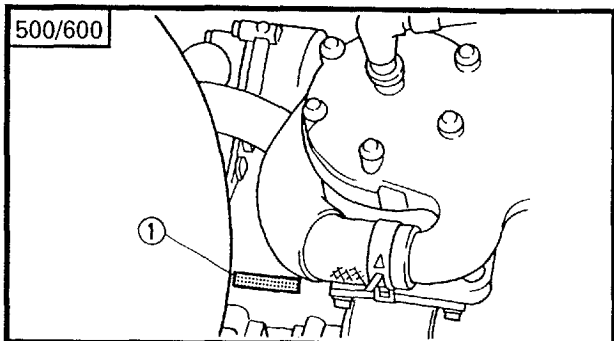
1E001

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).

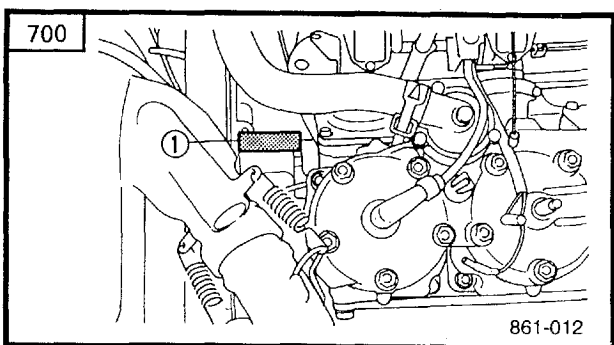


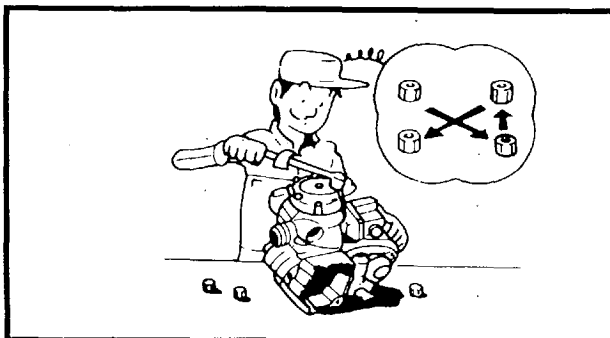
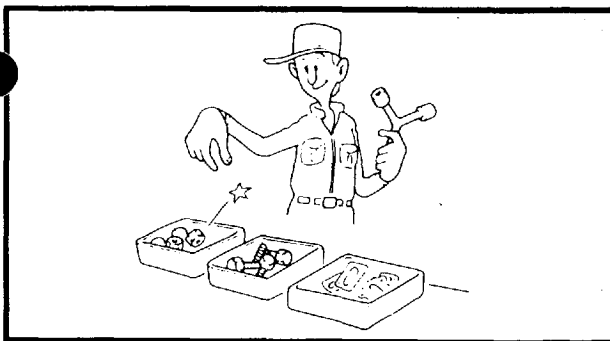
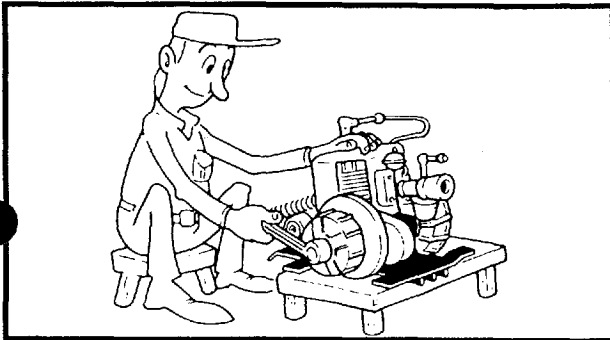
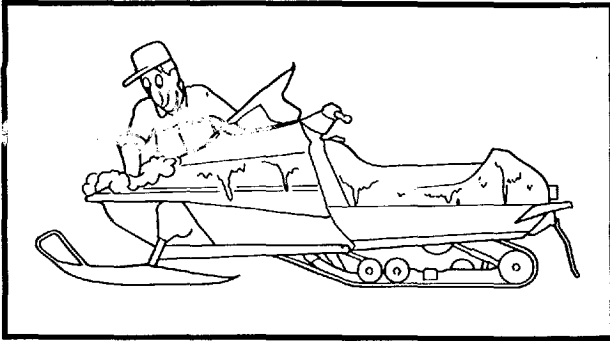
ENGINE SERIAL NUMBER

The engine serial number ① 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 DIS-ASSEMBLY

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.

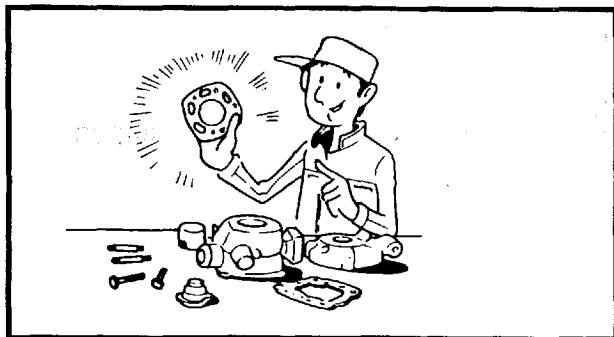
2. Use proper tools and cleaning equipment. Refer to "SPECIAL TOOLS" .

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 as an assembly or replaced.

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 away from fire.

6. Be sure to keep to tightening torque specifications. When tightening bolts, nuts, and screws, start with larger-diameter pieces, and proceed from an inner-positioned one to an outer-positioned one in a criss-cross pattern.

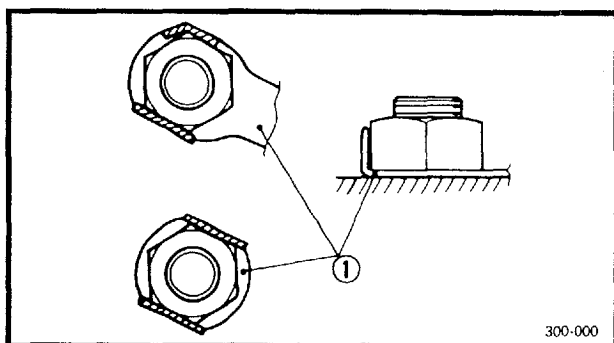


ALL REPLACEMENT PARTS

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

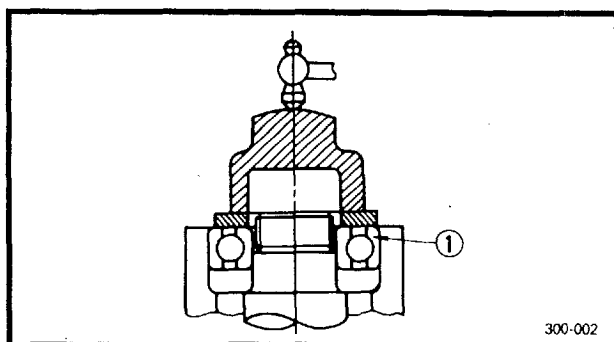
GASKETS, OIL SEALS, AND O-RINGS

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



LOCK WASHERS/PLATES AND COTTER PINS

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

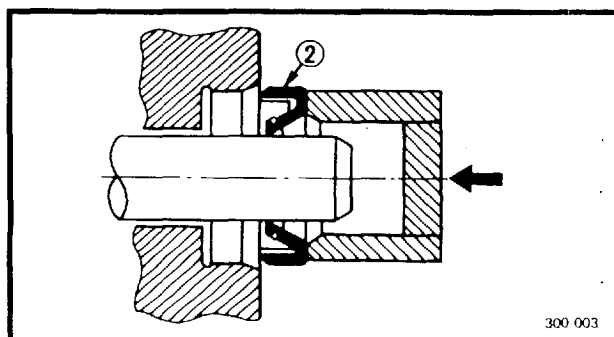


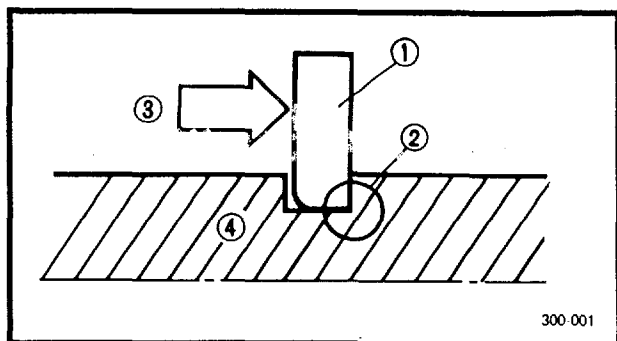
BEARINGS AND OIL SEALS

1. Install the bearing(s) ① and oil seal(s) 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 seal(s), apply a light coating of lightweight lithium base grease to the seal lip(s). Oil the bearings liberally when installing.

CAUTION:

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





CIRCLIPS

1. 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

1E021

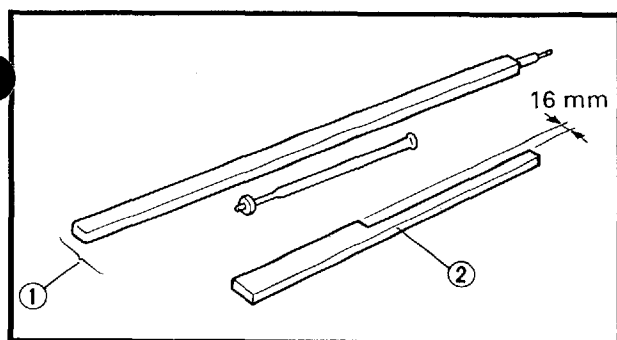
SPECIAL TOOLS

Some special tools are necessary for 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 differs according to the area as shown below. The first part number is for Europe, and the second part is for the U.S.A. and Canada.

e.g. 90890 - ***** , YU- *****



FOR TUNE UP

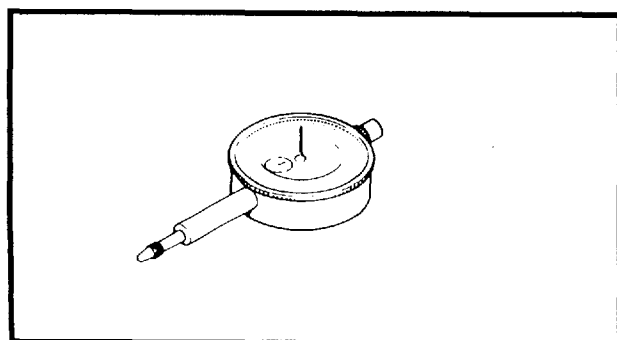
- Sheave gauge
P/N YS-91047-3 ①, YS-39506-5 ②

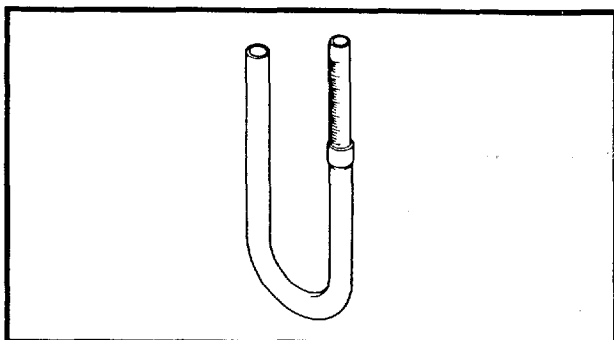
This gauge is used to measure sheave distance and for offset adjustment.

1E041

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

This gauge is used for run out measurement.

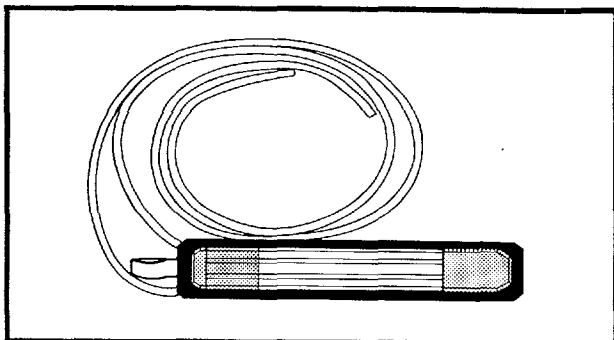




1E051

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

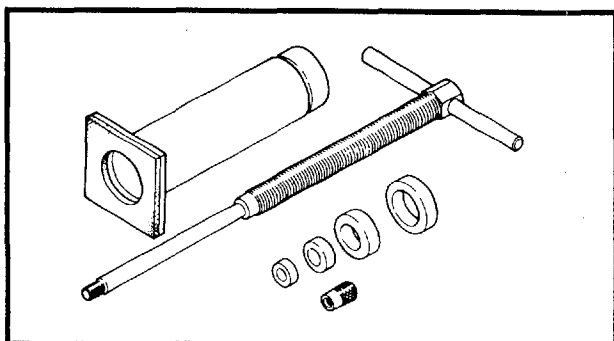
This gauge is used to measure the fuel level in the float chamber.



1E061

- Vacuum gauge
P/N —, YS-33275

This gauge is used for carburetor synchronization.

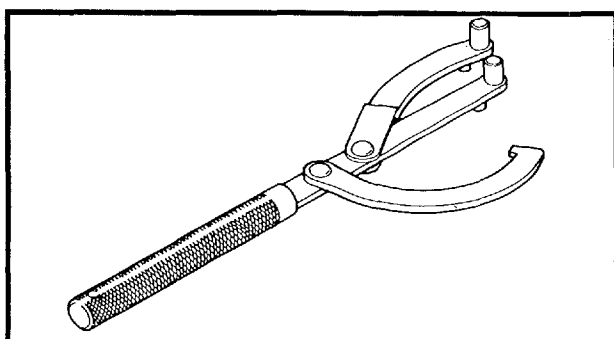


1E071

FOR ENGINE SERVICE

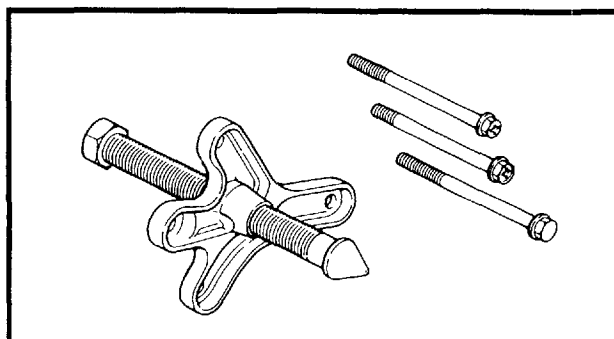
- Piston pin puller
P/N 90890-01304, YU-01304

This tool is used to remove the piston pin.



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

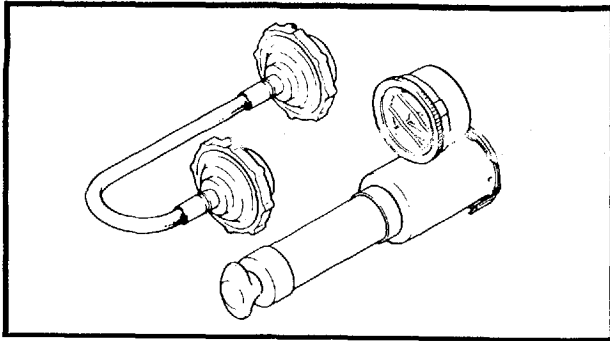
This tool is used to remove the starter pulley.



1E081

- Rotor holding puller
P/N 90890-01362, YU-33270

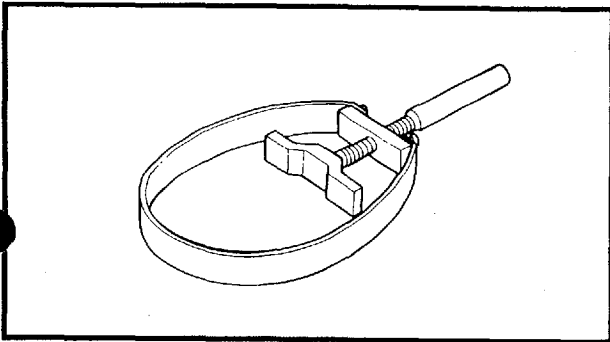
This tool is used to remove the magneto rotor.



1E091

- Cooling system tester
P/N 90890-01325, YU-24460-01

This tester is used for checking cooling system.

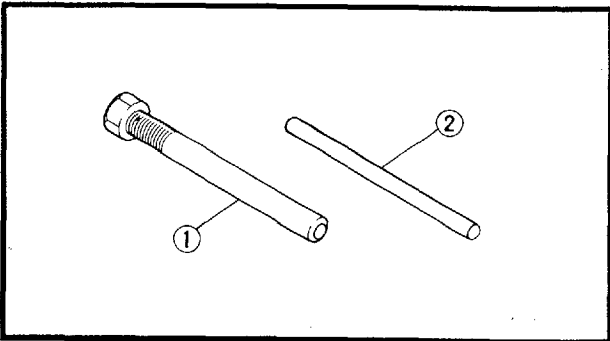


1E101

FOR POWER TRAIN SERVICE

- Primary sheave holder
P/N 90890-01701, YS-01880

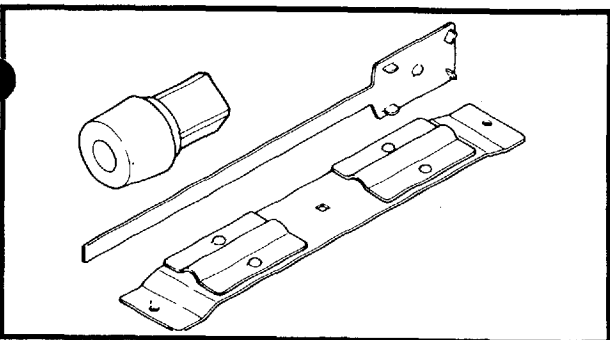
This tool is used to hold the primary sheave.



1E111

- Primary sheave puller (18 mm)
P/N YS-01881-1①, YS-01882-1②

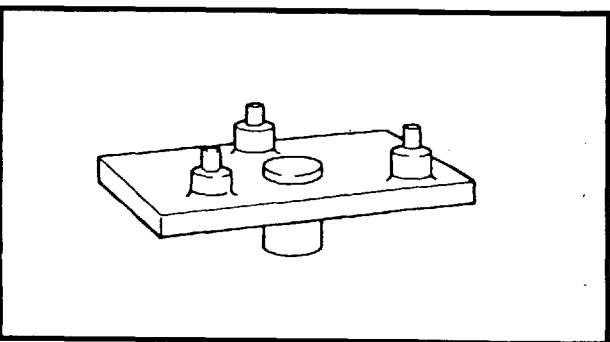
This tool is used for removing the primary sheave.



1E121

- Clutch spider separator
P/N 90890-01711, YS-28890-B

This tools are used when disassembling and assembling the primary sheave.

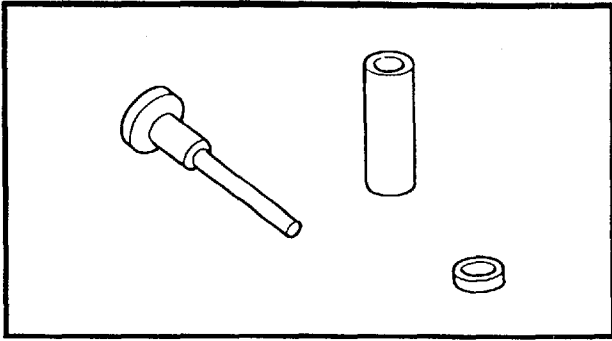


1E131

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

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

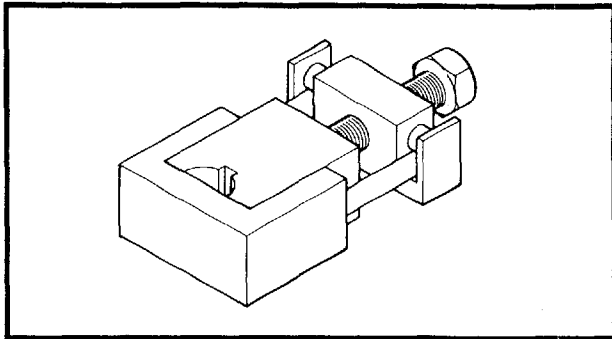
SPECIAL TOOLS



1E171

- Clutch bushing jig kit
P/N YS-39752

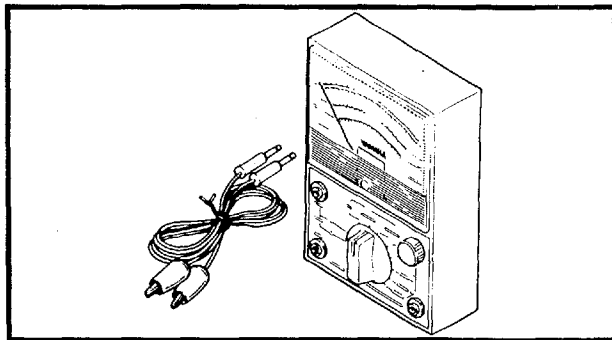
This tool is used when removing and installing the primary sheave bushing.



1E141

- Track clip installer
P/N 90890-01721, YS-91045-A

This tool is used for installing the track clip.

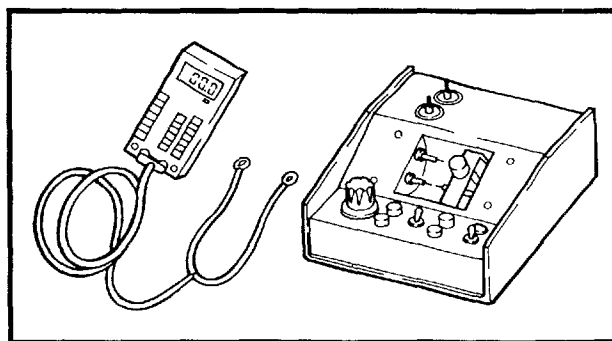


1E151

FOR ELECTRICAL SERVICE

- Pocket tester
P/N 90890-03112, YU-03112

This instrument is necessary for checking the electrical components.



1E161

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

This instrument is invaluable for checking the electrical system.

CHAPTER 2.

PERIODIC INSPECTIONS AND ADJUSTMENTS

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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 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.			•
Oil filter	Check the condition. Replace 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.			•
Engine coolant	Check the coolant level.	•		
	Air bleed the cooling system, if necessary.			•
Carburetors	Check the operation of the throttle lever.	•		
	Adjust the jets.	Whenever operating condition (elevation/temperature) is changed.		
Water pump belt (500/600)	Check for wear and damage. Replace if necessary.			•
	Adjust the water pump belt, if necessary.			•
Manual starter	Check the operation. Check for 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 the gasket, if necessary.			•
Decarbonization	More frequently if necessary.			•
Drive V-belt guard	Check for cracks, bends or damage. Replace if necessary.	•		
Drive V-belt	Check for wear and damage. Replace if necessary.	•		
Drive track/idler wheels	Check deflection, wear and damage. Adjust/replace if necessary.	•		

PERIODIC MAINTENANCE TABLE



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

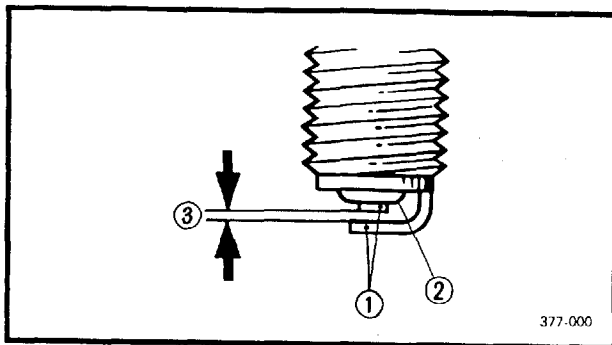
NOTE:

Brake fluid replacement:

1. When disassembling the master cylinder or caliper, replace the brake fluid. Regularly check the brake fluid level and add the 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.

SPARK PLUGS


INSP
ADJ



2E011

ENGINE SPARK PLUGS

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




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

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

Standard spark plug:
BR9ES (NGK)

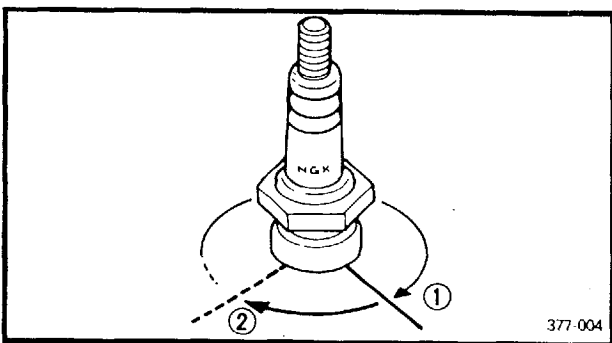
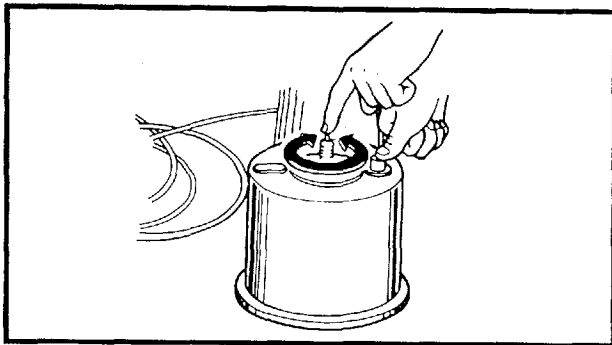
Before installing a spark plug, clean the gasket surface and spark plug surface.

4. Install:
 - Spark plugs



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

NOTE: _____
Finger-tighten ① the spark plug before torquing ② to specification.

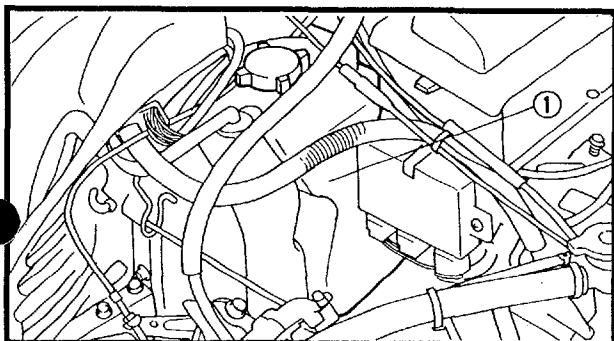


2E021

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

The oil pump and oil delivery line must be bled on the following occasions:

- When any portion of the oil system has been disconnected.
- When the machine has been turned on its side.
- Whenever the oil tank has been run empty.
- During pre-delivery.



1. Fill:

- Oil tank ①



Oil tank capacity:

2.4 L (2.1 Imp qt, 2.5 US qt)

Recommended oil:

YAMALUBE 2-cycle oil or equivalent

2. Remove:

- Carburetor (700)

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

4. Disconnect:

- Oil hose

5. Keep the oil running out until air bubbles disappear from the oil hose.

6. Connect:

- Oil hose

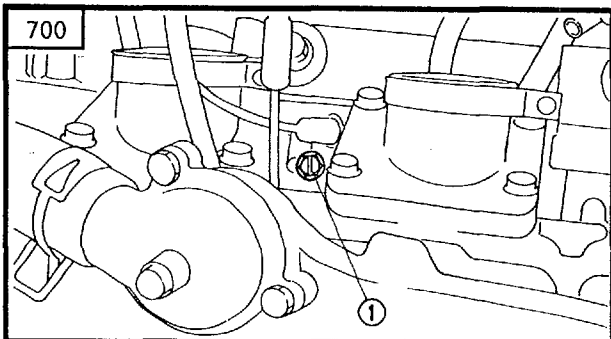
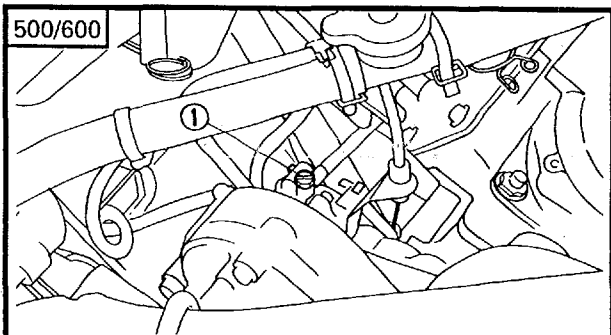
7. Disconnect:

- 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 screw ①
- Gasket (bleed screw)

11. Let the oil run out until all of the air bubbles disappear from the bleed hole.

12. Inspect:

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

13. Install:

- Gasket (bleed screw)
- Bleed screw

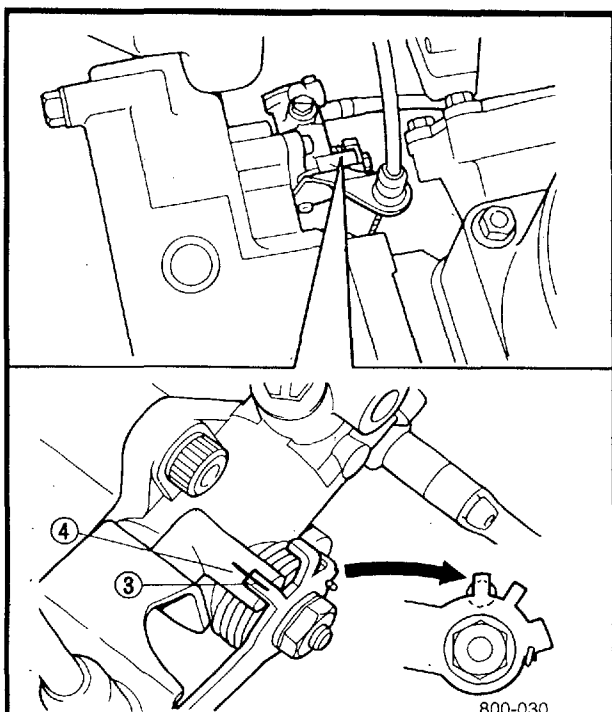
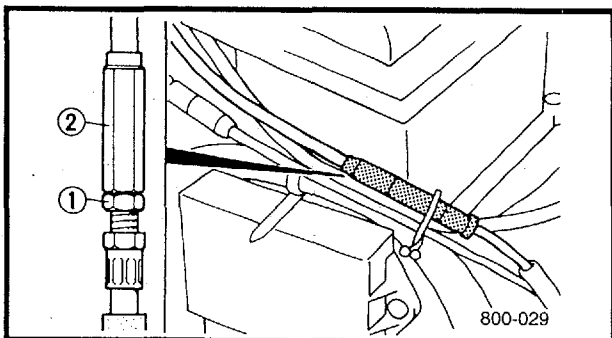
Cable adjustment (500/600)

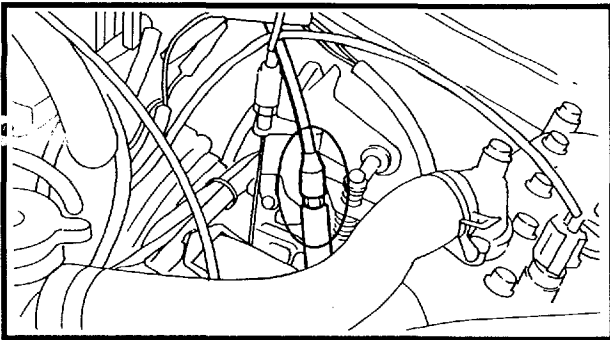
NOTE:

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

Adjustment steps:

- Loosen the locknut ①.
- With the throttle lever in the full-throttle position, turn the adjuster ② in or out to align the mark on the control lever ③ with the mark on the pump boss ④.
- Tighten the locknut ①.





Cable adjustment (700)

NOTE:

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

Adjustment steps:

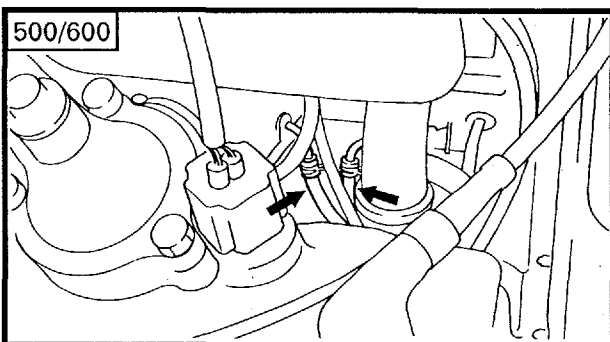
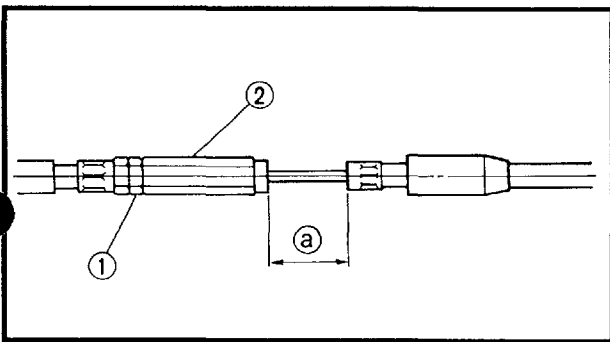
- Loosen the locknut ①.
- Turn the adjuster ② in or out until the specified distance is obtained.



Distance ③ :
19 ~ 21 mm (0.75 ~ 0.83 in)

Turning in	Distance ③ is increased.
Turning out	Distance ③ is decreased.

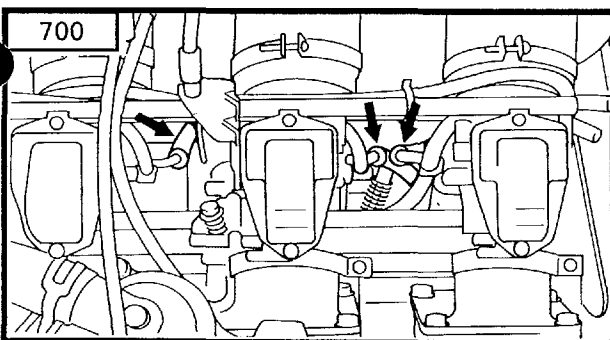
- Tighten the locknut and push in the adjuster cover.



FUEL LINE INSPECTION

1. Inspect:

- Fuel hoses
 - Fuel delivery hoses
- Cracks/damage → Replace.



2E061

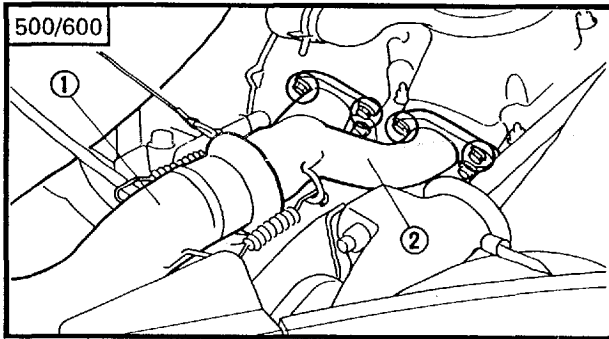
COOLING SYSTEM

Coolant replacement

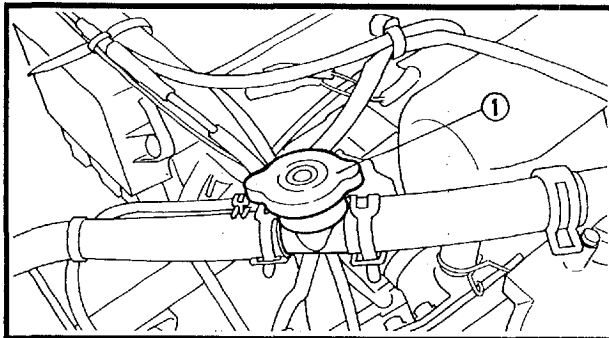
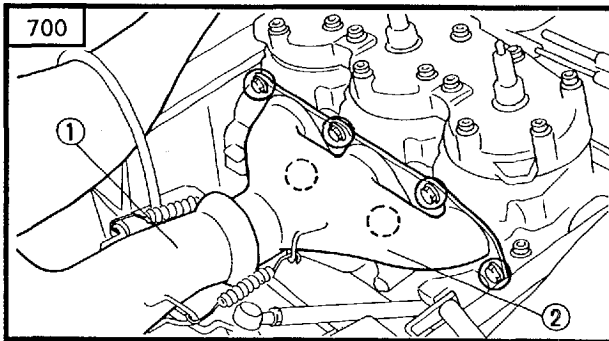
NOTE:

The coolant should be changed at least every season.

1. Place the machine on a level surface.



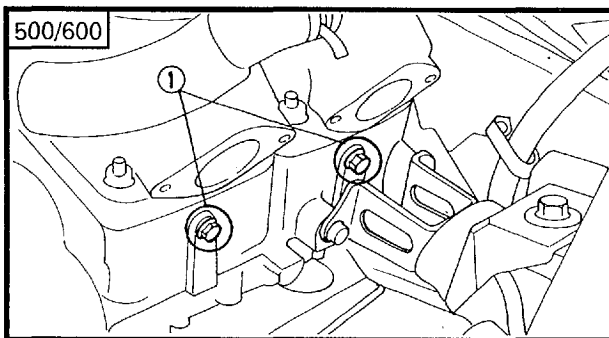
2. Remove:
- Muffler ①
 - Exhaust pipe ②



3. Remove:
- Coolant filler cap ①

⚠ WARNING

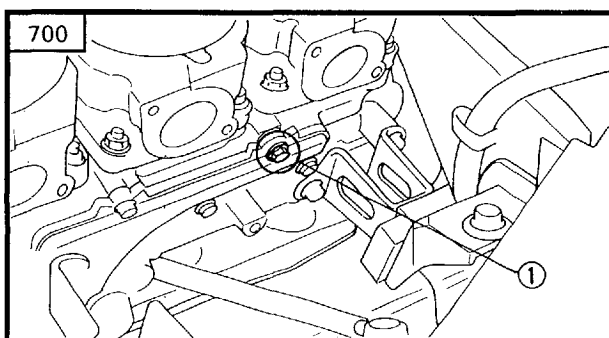
Do not remove the coolant filler cap ① when the engine is hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. When the engine has cooled, place a thick rag or a towel over the coolant filler cap. Slowly rotate the cap counterclockwise to the detent. This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



4. Place an open container under the coolant drain bolts ①.

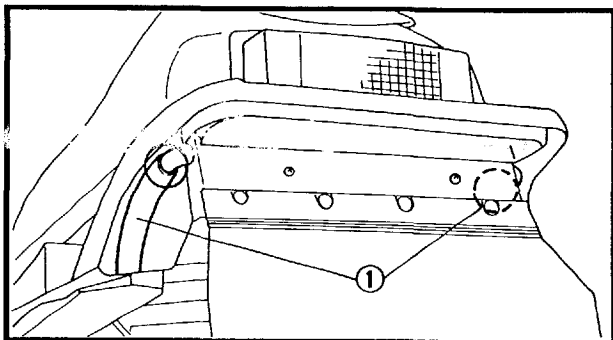
5. Remove:
- Coolant drain bolts

6. Drain the coolant.



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

COOLING SYSTEM



7. Disconnect:

- Coolant hoses (rear) ①

8. Drain the coolant.

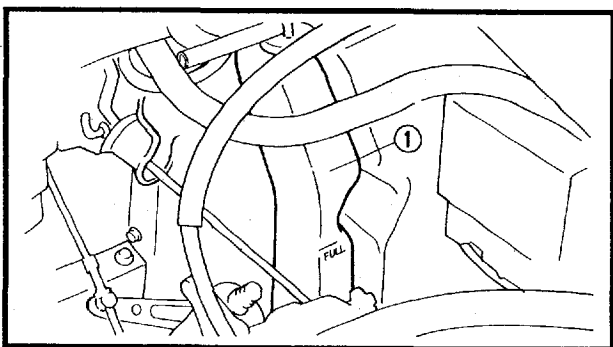
NOTE:

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

⚠ WARNING

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

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



9. Remove the reservoir tank ① and drain the coolant.

10. Install:

- Reservoir tank

11. Inspect:

- Gaskets (coolant drain bolts)
Damage → Replace.

12. Install:

- Gaskets
- Coolant drain bolts
- Exhaust pipe/gaskets
- Muffler



Coolant drain bolt:

23 Nm (2.3 m • kg, 17 ft • lb) (500/600)

13 Nm (1.3 m • kg, 9.4 ft • lb) (700)

Bolt (exhaust pipe):

30 Nm (3.0 m • kg, 22 ft • lb) (500/600)

27 Nm (2.7 m • kg, 19 ft • lb) (700)



13. Fill:

- Cooling system

**Recommended coolant:**

High quality ethylene glycol
anti-freeze containing
corrosion inhibitor

Coolant and water mixed ratio:

60% : 40%

Total amount:

3.4 L (2.99 Imp qt, 3.59 US qt)
(VT500/600, MM600)

3.3 L (2.90 Imp qt, 3.49 US qt)
(VX500XT/XTC/XTC/XTCR,
VX600XT/XTC/XTC/XTCR,
VX600SX)

4.2 L (3.70 Imp qt, 4.44 US qt)
(VX700SX)

4.5 L (3.96 Imp qt, 4.76 US qt)
(MM700)

Reservoir tank capacity:

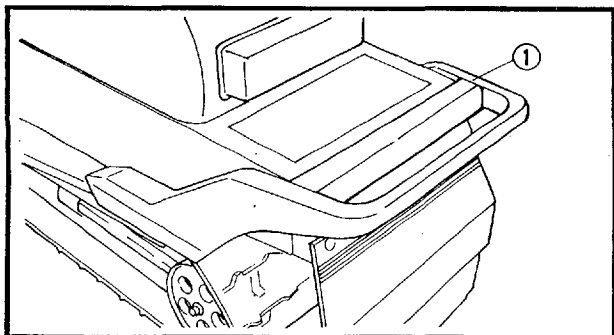
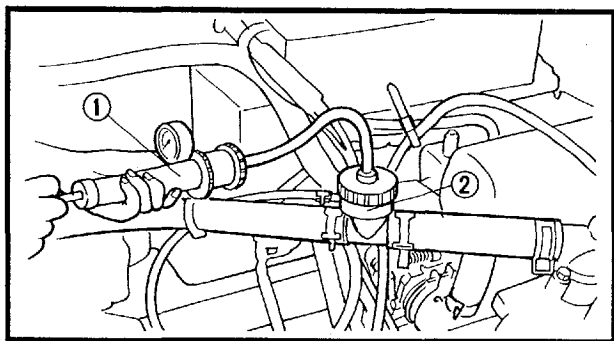
0.17 L (0.15 Imp qt, 0.18 US qt)

From LOW to FULL level:

0.13 L (0.11 Imp qt, 0.14 US qt)

CAUTION:

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



14. Bleed the air from the cooling system.

15. Inspect:

- Cooling system

Decrease of pressure (leaks) → Repair as required.

Inspection steps:

- Attach the cooling system tester ① (90890-01325, YU-24460-01) to the coolant filler ②.
- Apply 100 kPa (1.0 kg/cm², 14 psi).
- Measure the pressure with gauge.

2E071

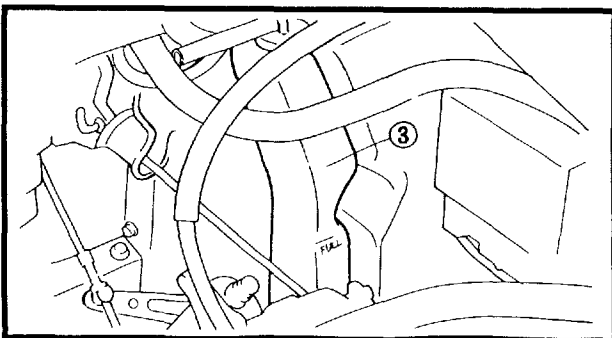
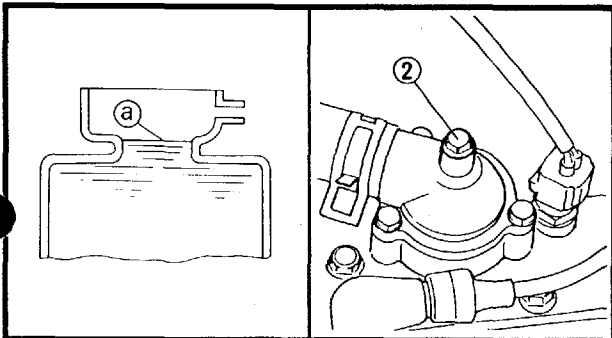
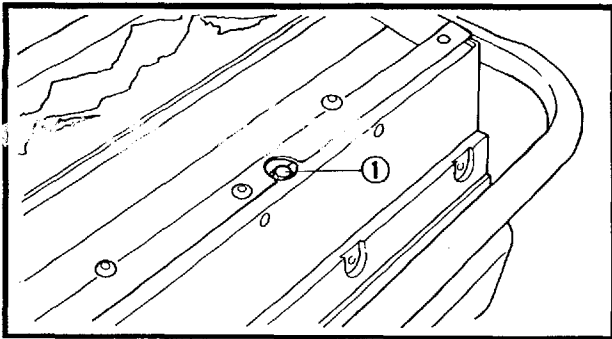
Air bleeding

1. Remove:

- Seat (except for VT500/600, MM600/700)
- Rear bumper cover ①

COOLING SYSTEM

**INSP
ADJ**



2. Bleed air from the cooling system.

Air bleeding steps:

- Lift up the tail of the machine.
- Remove the bleed bolt ① on the heat exchanger.
- While slowly adding coolant to the radiator, allow the coolant to drain until all of the air bubbles disappear.
- Tighten the bleed bolt.



Bleed bolt:

13 Nm (1.3 m • kg, 9.4 ft • lb)

- Add coolant to the specified level (a).
- Loosen the bleed bolt ② on the water pump housing.
- Keep the coolant running out until all of the air bubbles disappear.
- Tighten the bleed bolt.



Bleed bolt:

7 Nm (0.7 m • kg, 5.1 ft • lb)

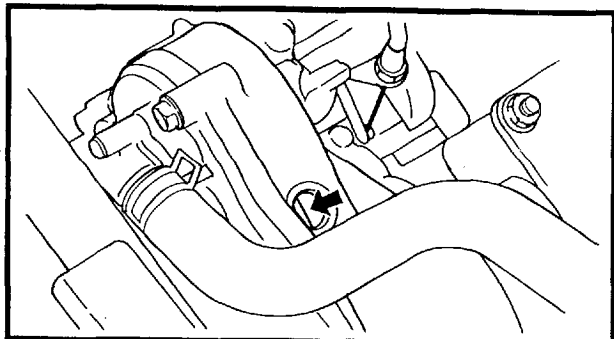
- Install the coolant filler cap.
- Apply and lock the parking brake. Start the engine and run it at approximately 2500 ~ 3000 rpm until the thermostat opens and the coolant circulates (approximately 3 ~ 5 minutes). The rear heat exchanger will be warm to the touch.

⚠ WARNING

To avoid severe injury or death:

- Make sure the machine is securely supported with a suitable stand.
- Do not exceed 3000 rpm. The machine could unexpectedly move forward if the clutch engages, or drive line damage and excessive V-belt wear could occur.
- Operate the engine only in a well-ventilated area.

- Remove the coolant filler cap and bleed air from the cooling system again, as shown in the steps above .
No air bubbles → OK.
- Add coolant to the specified level.
- Pour coolant into the reservoir tank ③ until the coolant level reaches the "FULL" level mark.



2E081

Water pump belt deflection adjustment (500/600)

1. Remove:
 - Muffler
2. Check:
 - Drive belt deflection
 Out of specification → Adjust.



Drive belt deflection

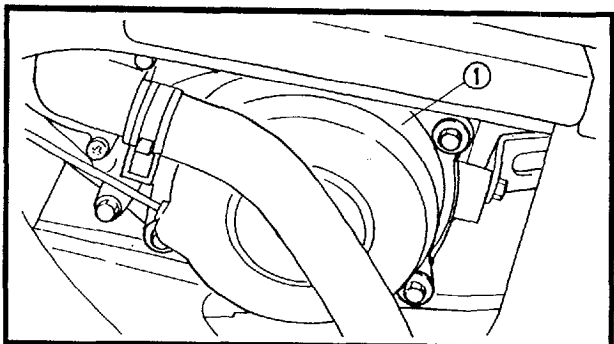
8 mm (0.31 in)

100 ~ 140 N (10~14 kg, 22.1 ~ 30.9 lb)

(NEW BELT)

8 mm (0.31 in)

130 ~ 220 N (13 ~ 20 kg, 28.7 ~ 44.1 lb)



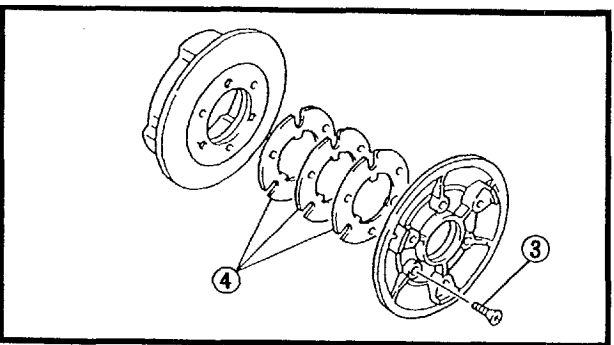
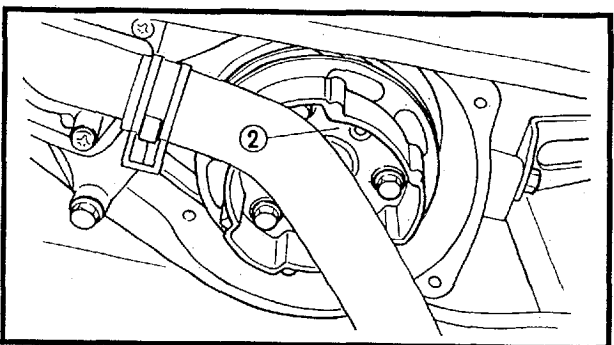
3. Adjust:
 - Drive belt deflection

Adjustment steps:

- Remove the recoil starter ①.
- Use a primary sheave holder (90890-01701, YS-01880) to hold the primary sheave.
- Remove the starter pulley ②.
- Remove the screws ③ of the starter pulley.
- Adjust the drive belt deflection by adding or removing a shim ④.

Add shim	Tension decreases.
Remove shim	Tension increases.
Shim size	
Part number	Thickness
8CA-15721-00	0.5 mm (0.02 in)
8CA-15722-00	1.0 mm (0.04 in)

- Install the starter pulley and drive belt.
- Recheck the drive belt deflection. If out of specification, readjust the drive belt deflection.
- Install the recoil starter.



4. Tighten:



Starter pulley bolt:

23 Nm (2.3 m • kg, 17 ft • lb)

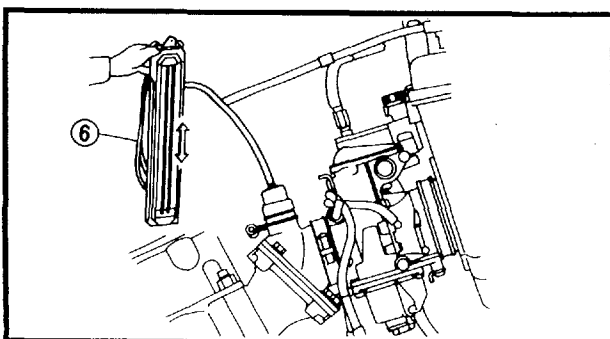
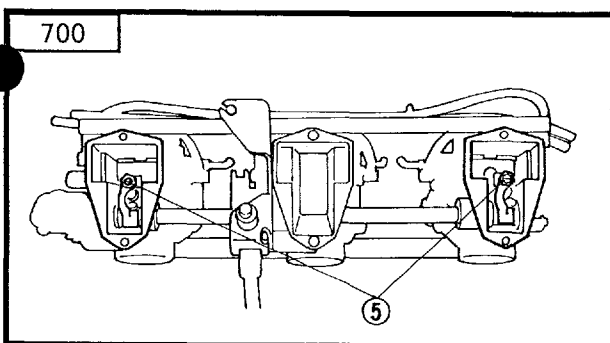
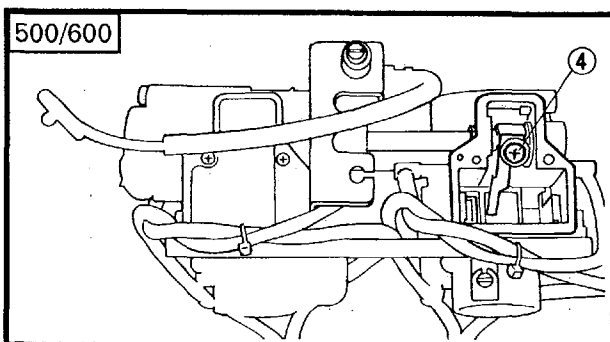
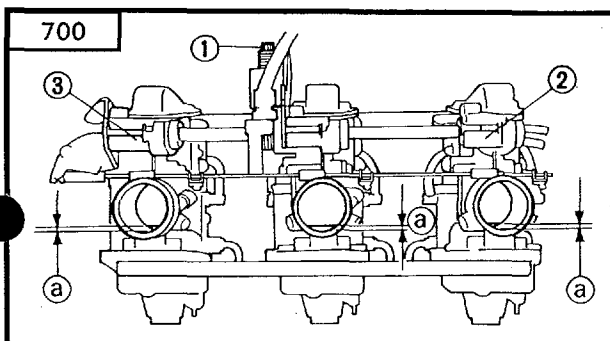
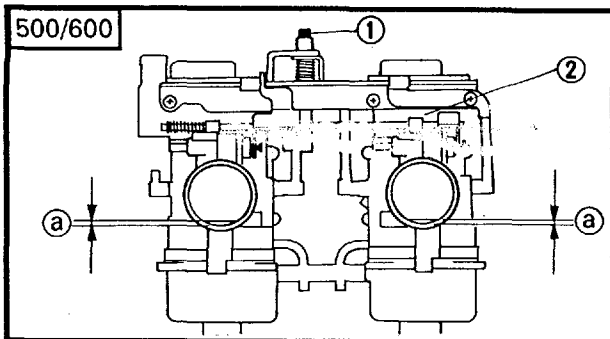
Starter pulley screw:

7 Nm (0.7 m • kg, 5.1 ft • lb)

Recoil starter bolt:

10 Nm (1.0 m • kg, 7.2 ft • lb)
(500,600)

12 Nm (1.2 m • kg, 8.7 ft • lb) (700)



2E094

CARBURETOR SYNCHRONIZATION

1. Remove:
 - Carburetor assembly
2. Adjust:
 - Carburetor synchronization

Adjustment steps:

- First, turn the throttle stop screw ① of carburetor #2 until the specified throttle valve height ③ is obtained.



Throttle valve height:

1.5 mm (0.059 in) (500/600)
1.3 mm (0.051 in) (700)

- Second adjust the throttle valve height ③ on carburetor #1 ② and #3 ③ (700) with the adjusting eccentric nut ④ (500/600) or adjusting screw ⑤ (700).
- Move the throttle lever 2 ~ 3 times.
- Make sure that all of the carburetor throttle valves are at the same height.
- Install the carburetor.
- Remove the air chamber, plug the hole in the carburetor joint, and connect the vacuum gauge ⑥ (YS-33275) to the fitting. (500/600)
- Start the engine and let it warm up.
- If the vacuum readings are not the same, turn the adjusting eccentric nut ④ (500/600) or adjusting screw ⑤ (700) in or out so that the readings are equal.

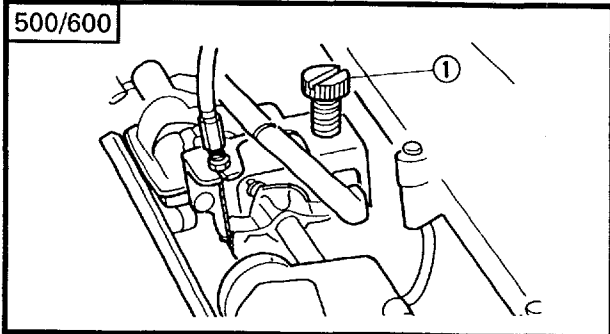
NOTE:

When reading the vacuum gauge, make sure that the carburetor covers are installed.

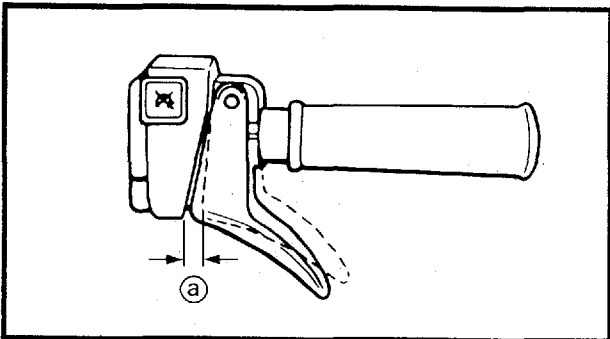
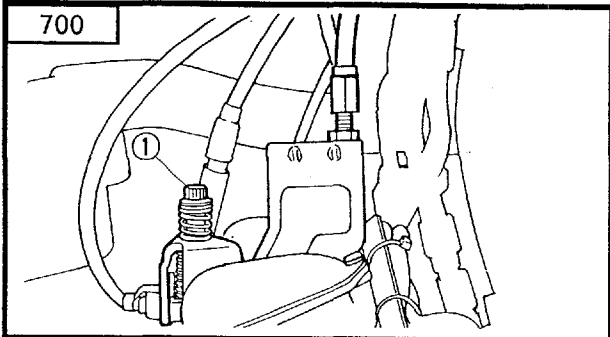
ENGINE IDLE SPEED ADJUSTMENT/ THROTTLE CABLE ADJUSTMENT



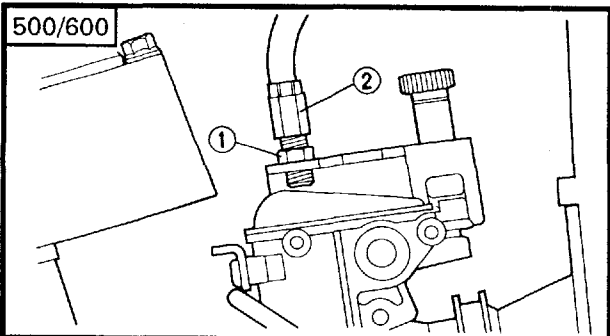
500/600



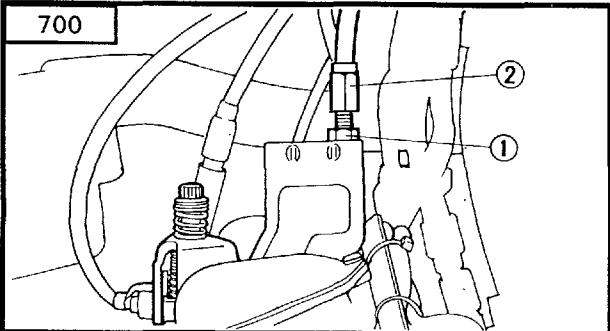
700



500/600



700



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 to adjust the engine idle speed.

Turning in	Idle speed increases.
------------	-----------------------

Turning out	Idle speed decreases.
-------------	-----------------------



Engine idle speed:

1,450 ~ 1,650 r/min (600)
1,500 ~ 1,700 r/min (500, VT600, MM600)
1,500 ~ 1,700 r/min (700)

NOTE:

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

2E131

THROTTLE CABLE ADJUSTMENT

NOTE:

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

1. Measure:

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



Throttle cable free play:

1.0 ~ 2.0 mm (0.04 ~ 0.08 in)

2. Adjust:

- Throttle cable free play

Adjustment steps:

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

Turning in	Free play is increased.
------------	-------------------------

Turning out	Free play is decreased.
-------------	-------------------------

- Tighten the locknut.

THROTTLE OVERRIDE SYSTEM (T.O.R.S.) CHECK/ STARTER (CHOKE) CABLE ADJUSTMENT

**INSP
ADJ**



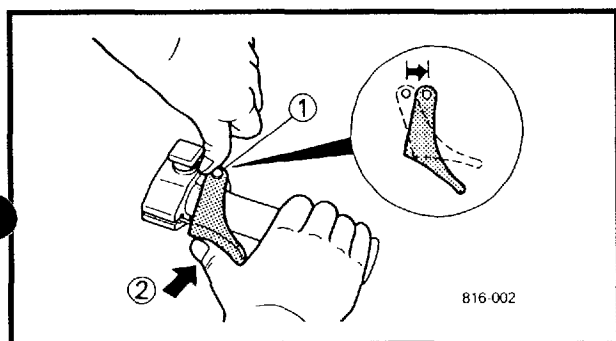
2E122

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 clutch engagement rpm. 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 (1).

3. Press (2) the throttle lever gradually.

The water temperature warning light (VX600XT/XTC/XTCR/SX) or diagnosis indicator light (VT600, MM600) should turn on and off and the engine should run between 2,800 and 3,000 rpm.

⚠ WARNING

If the engine does not run between 2,800 and 3,000 rpm, stop the engine by turning the main switch to the "OFF" position and check the electrical system.

2E131

STARTER (CHOKE) CABLE ADJUSTMENT

1. Pull the outer tube of the starter cable (1) up.
2. Measure:
 - Starter cable free play (a)
 Out of specification → Adjust.



Starter cable free play (a):
0.5 ~ 1.5 mm (0.02 ~ 0.06 in)

3. Adjust:
 - Starter cable free play

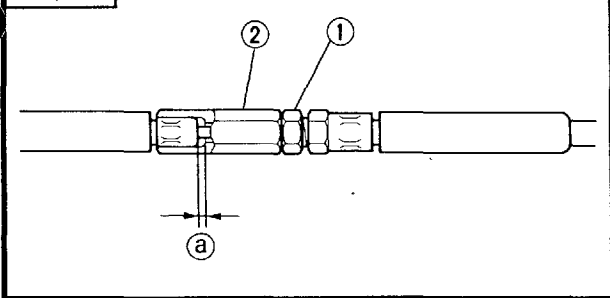
Adjustment steps:

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

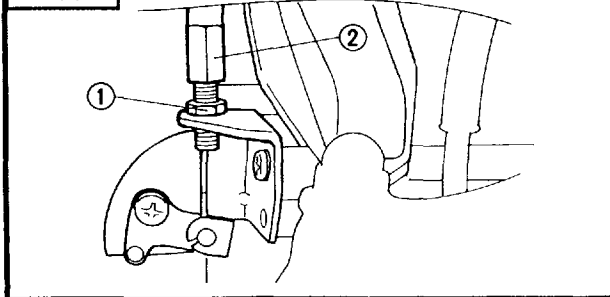
Turning in	Free play is increased.
Turning out	Free play is decreased.

- Tighten the locknut and push in the adjuster cover.

500/600



700

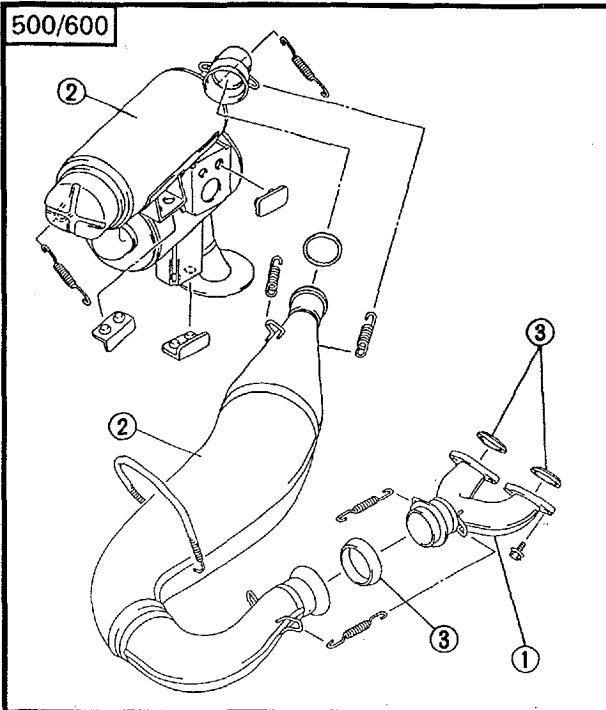


EXHAUST SYSTEM INSPECTION

INSP
ADJ



500/600



EXHAUST SYSTEM INSPECTION

1. Open the shroud.
2. Remove:
 - Springs (exhaust pipe and muffler)
3. Inspect:
 - Exhaust pipes ①
 - Muffler ②
 - Cracks/damage → Replace.
 - Gaskets ③
 - Exhaust gas leaks → Replace.
4. Inspect:
 - Tightening torque

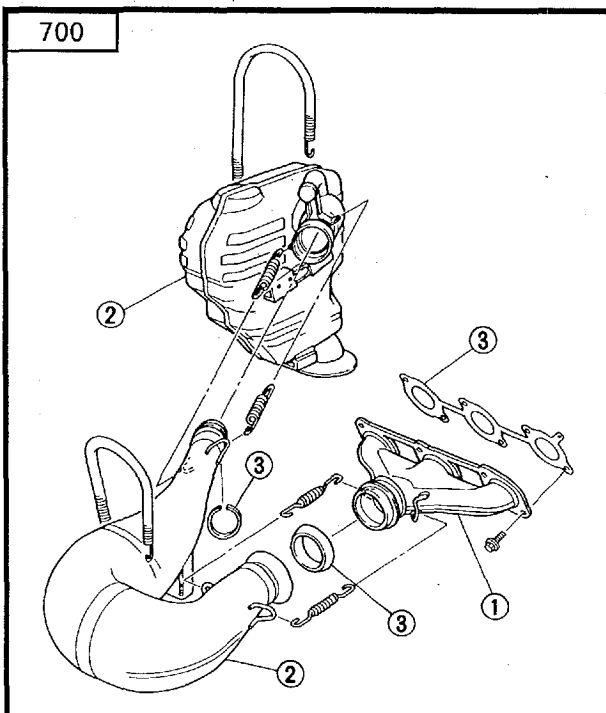


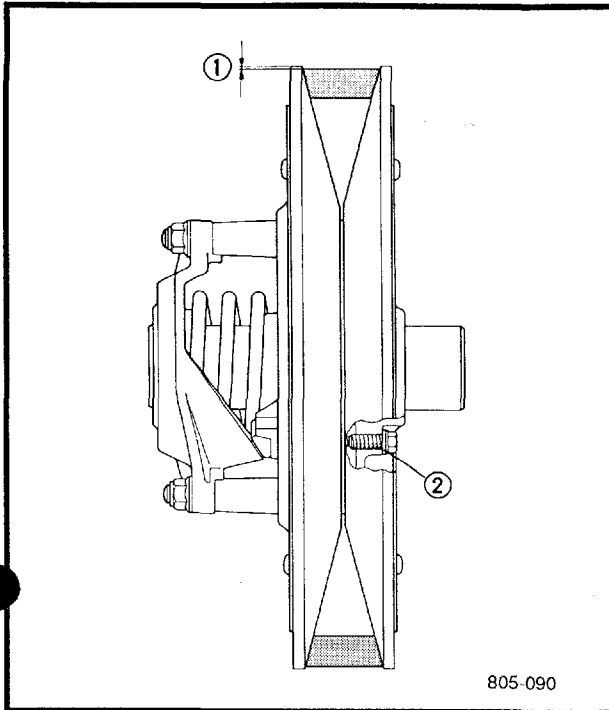
Bolt (exhaust pipe):

30 Nm (3.0 m • kg, 22 ft • lb) (500/
600)

27 Nm (2.7 m • kg, 19 ft • lb) (700)

700





POWER TRAIN 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.

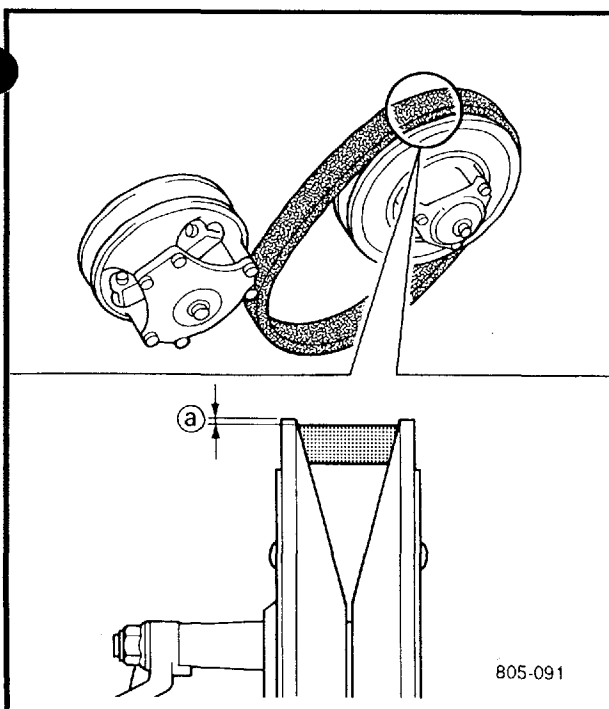
If the V-belt is not properly installed, the clutch engagement speed will be changed and the machine may move unexpectedly when the engine is started.

Adjust the V-belt position by removing or adding a spacer ② 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 mm (1.38 in)
Belt wear limit width	32 mm (1.26 in)



1. Measure:

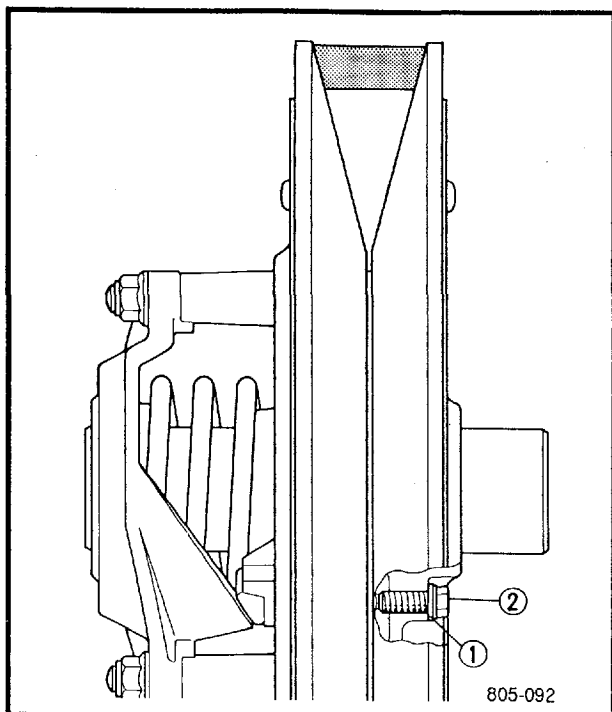
- V-belt position ②

NOTE:

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




Standard V-belt position:
0 ~ 2 mm (0 ~ 0.08 in)
(below the edge of the sheave)

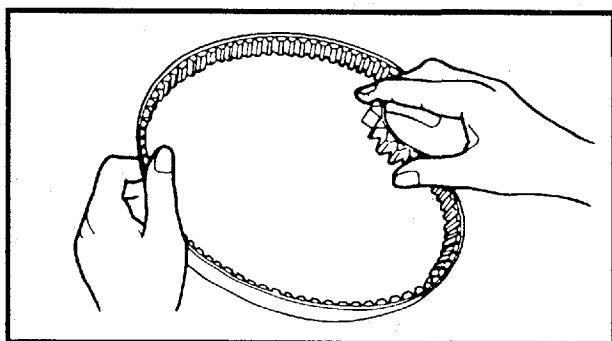


2. Adjust the position of the V-belt by removing or adding a spacer ① on each adjusting bolt ②.

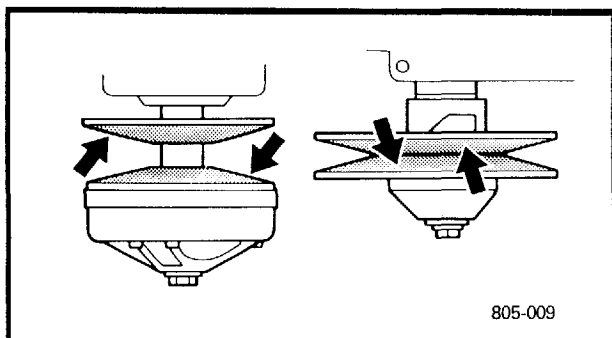
V-belt position	Adjustment
Above the edge	Remove a spacer
Below the edge 0 ~ 2 mm (0 ~ 0.08 in)	Not adjustment is necessary
Below the edge more than 2 mm (0.08 in)	Add a spacer

3. Tighten:
 - Adjusting bolt

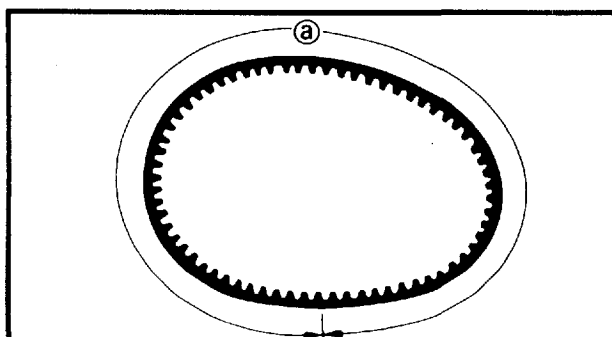
	Adjusting bolt: 10 Nm (1.0 m • kg, 7.2 ft • lb)
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4. Inspect:
 - Drive V-belt
Cracks/damage/wear → Replace.
Oil or grease on the V-belt → Check the primary and secondary sheaves.



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 ①
Out of specification → Replace.

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

ENGAGEMENT SPEED CHECK/PARKING BRAKE PAD INSPECTION/PARKING BRAKE ADJUSTMENT

INSP
ADJ



2E201

ENGAGEMENT SPEED CHECK

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

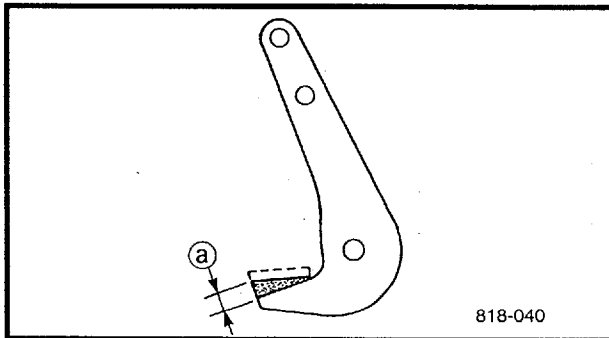
Checking steps:

- 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:

3,800 ~ 4,200 r/min (500/600/700)
4,000 ~ 4,400 r/min (MM600)
3,700 ~ 4,100 r/min (VX600SX)



PARKING BRAKE PAD INSPECTION

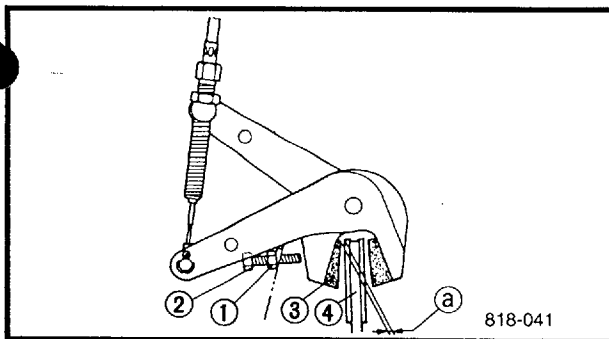
1. Measure:
 - Parking brake pad thickness ①

Out of specification → Replace as a set.



Wear limit:

5.0 mm (0.2 in)



PARKING BRAKE ADJUSTMENT

1. Measure:
 - Clearance ①

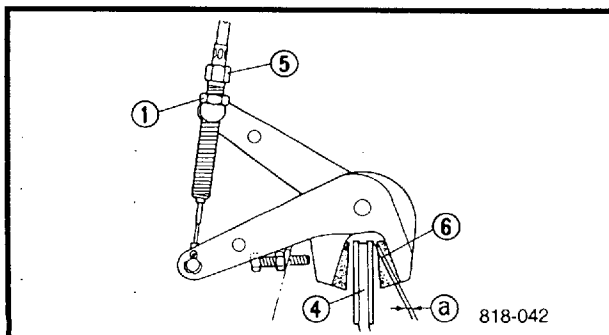
Out of specification → Adjust.



Clearance ①:

1.2 ~ 1.3 mm (0.047 ~ 0.051 in)

2. Adjust:
 - Clearance ①

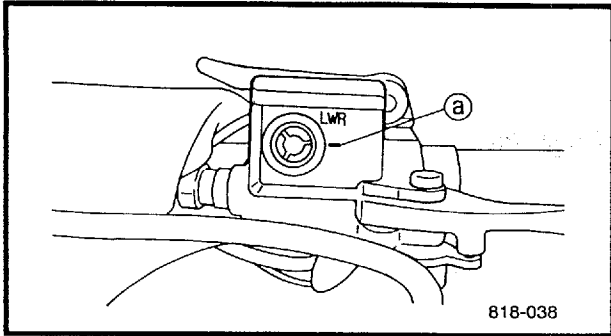


Adjustment steps:

- Loosen the locknut ①.
- Turn the brake pad adjusting bolt ② in or out to adjust the clearance between the brake pad ③ and disc ④.
- Turn the cable adjusting nut ⑤ in or out to adjust the clearance between the brake pad ⑥ and disc ④.
- Tighten the locknut.

BRAKE FLUID LEVEL INSPECTION/ BRAKE PAD INSPECTION

INSP
ADJ



BRAKE FLUID LEVEL INSPECTION

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



Recommended fluid:
DOT 4

NOTE:

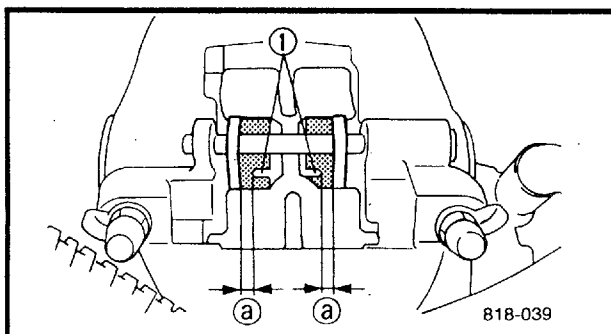
For a correct reading of the brake fluid level, make sure that the top of the handlebar brake master cylinder reservoir is horizontal.

CAUTION:

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

⚠ WARNING

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



BRAKE PAD INSPECTION

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



Wear limit ①:
1.0 mm (0.04 in)

BRAKE HOSE INSPECTION/ AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

INSP
ADJ



BRAKE HOSE INSPECTION

1. Inspect:

- Brake hose
- Cracks, damage/wear → Replace.

2. Check:

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

AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

⚠ WARNING

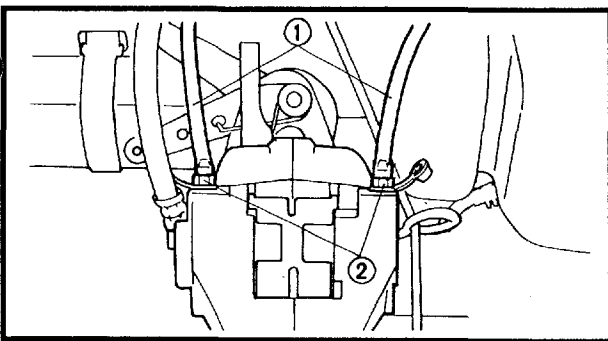
Bleed the brake system whenever:

- 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 into a container.
- Slowly apply the brake lever several times.
- Pull the lever in. Hold the lever in position.
- Loosen the bleed screw and allow the brake lever to travel towards its limit.
- Tighten the bleed screw when the brake lever limit has been reached, then release the lever.
- Repeat steps (e) to (h) until all of the air bubbles have disappeared from the fluid.
- Tighten the bleed screw.

AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)/ DRIVE CHAIN

INSP
ADJ



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

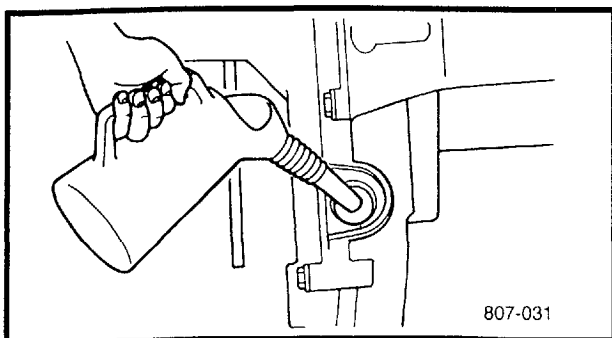
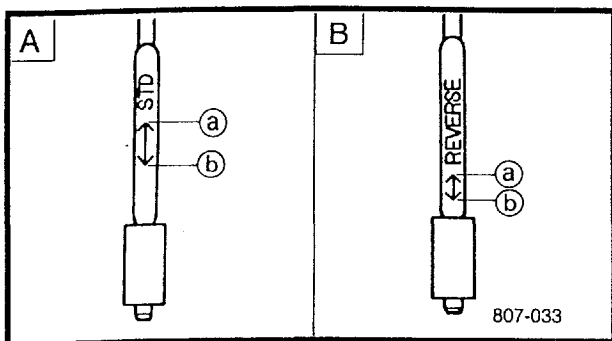
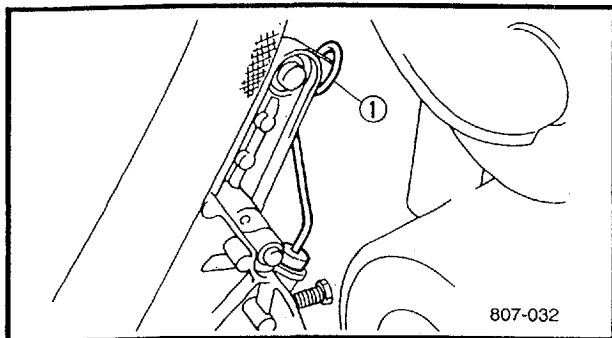
NOTE:

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

- k. Add brake fluid to the proper level.
Refer to "BRAKE FLUID LEVEL INSPECTION".

⚠ WARNING

After bleeding the brake system check the brake operation.



DRIVE CHAIN

Oil level Inspection

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.
Reinstall the dipstick.

NOTE:

The end of the dipstick is equipped with a magnet. Be sure to wipe off the magnet to remove any metal particles.

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

Ⓐ Upper level

Ⓑ Lower level

Ⓐ For models without reverse transmissions.

Ⓑ For models with reverse transmissions.



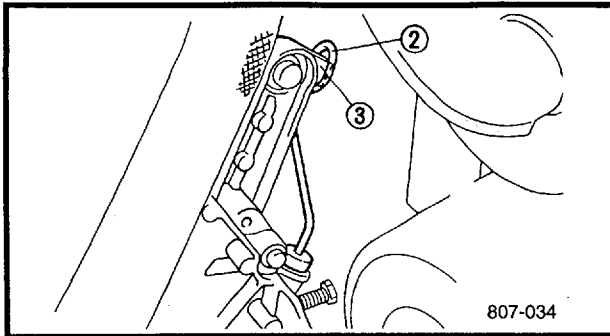
Recommended oil:
Gear oil API GL-3 SAE #75 or #80

CAUTION:

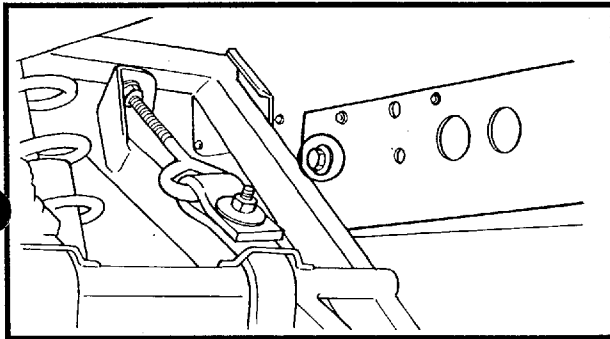
Make sure that no foreign material enters the gear case.

DRIVE CHAIN

INSP
ADJ



- Reinstall 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 and drain the oil.

CAUTION:

Be sure to remove any oil from the heat protector.

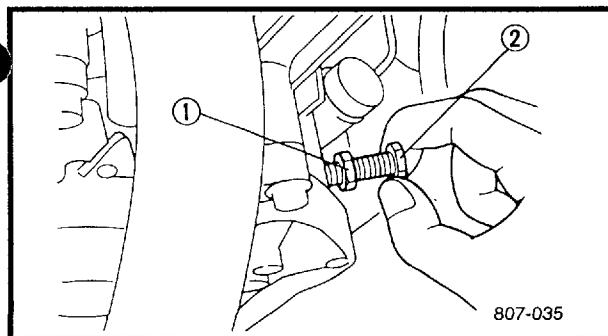
- Install the oil drain bolt.



Oil drain bolt:
16 Nm (1.6 m • kg, 1.1 ft • lb)



Recommended oil:
Gear oil API GL-3 SAE #75 or #80
Oil capacity:
250 cm³ (8.8 Imp oz, 8.5 US oz)



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

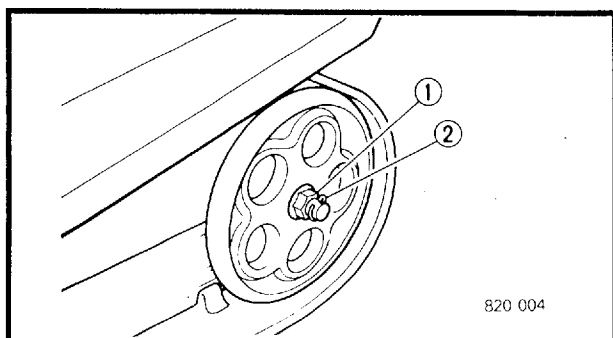
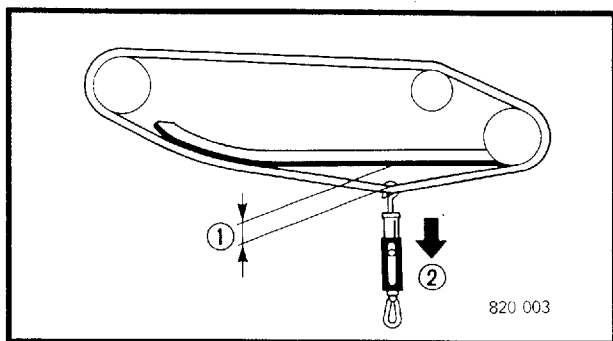
A broken track, track fittings, or debris thrown by the track could be dangerous to an operator or bystanders. Observe the following precautions.

- 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 ② pull down on the center of the track. Use 10 kg (22 lb) of force. Out of specification → Adjust.

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

3. Adjust:

- Track deflection

Adjustment steps:

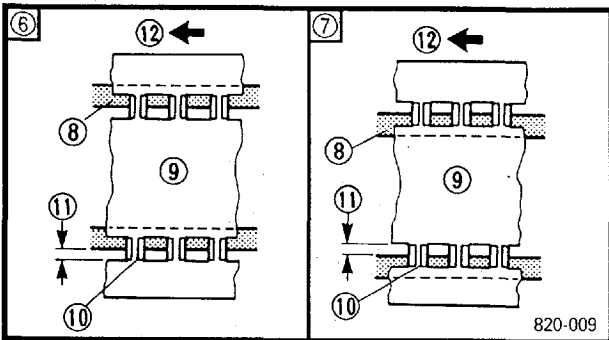
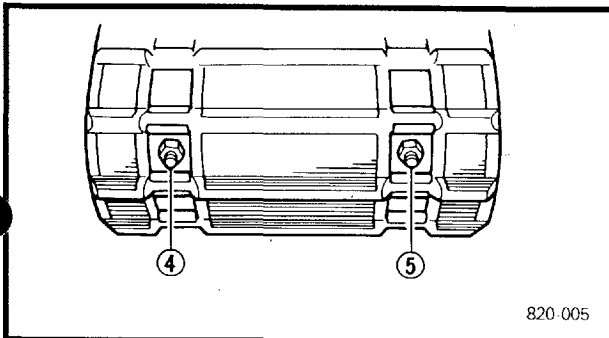
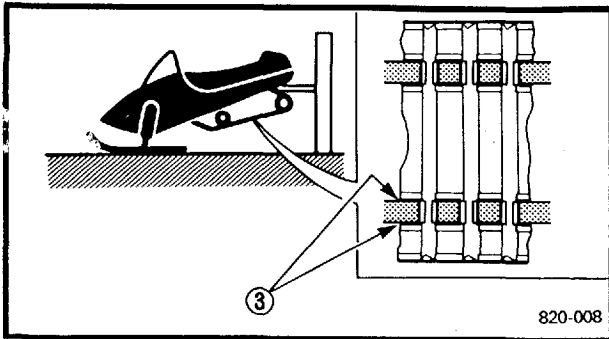
- Place the machine onto a suitable stand to raise the track off of the ground.
- Loosen the rear axle nut ①.

NOTE:

It is not necessary to remove the cotter pin ②.

TRACK TENSION ADJUSTMENT/ SLIDE RUNNER INSPECTION

INSP
ADJ



- a. Start the engine and rotate the track one or two turns. 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 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 to the specified amount.

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

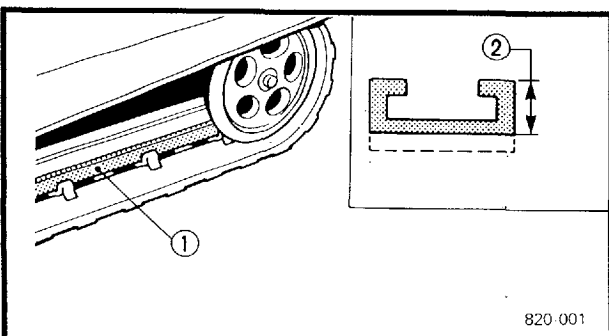
CAUTION:

The adjusters should be turned an equal amount.

- Recheck the alignment and deflection. If necessary, repeat steps a to c until the proper adjustment is achieved.
- Tighten the rear axle nut.



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

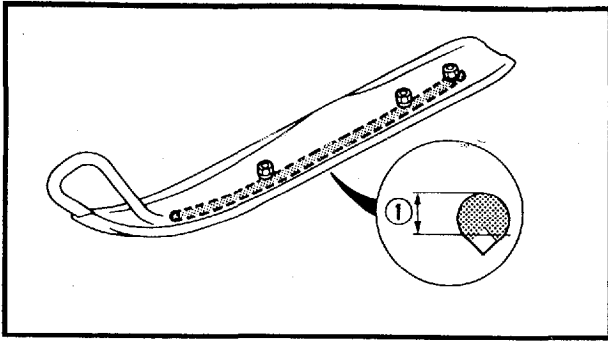


SLIDE RUNNER INSPECTION

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



Slide runner wear limit:
10 mm (0.39 in)



2E212

CHASSIS

SKI/SKI RUNNER

1. Check:

- Ski
- Ski runner
- Ski cover

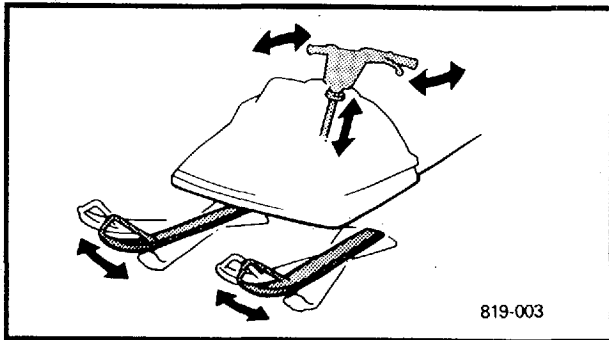
Damage/wear → Replace.



Ski runner wear limit ①:
8 mm (0.31 in)

CAUTION:

Do not operate the machine without the ski cover to prevent ski wear and damage.



2E221

STEERING SYSTEM

Free play check

1. Check:

- Steering system free play
Move the handlebar up and down and back and forth.
Turn the handlebar slightly to the right and left.

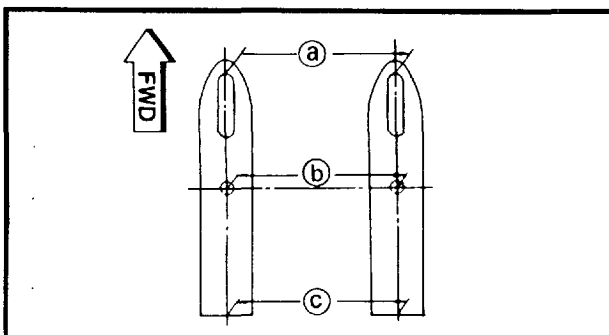
Excessive free play → Check to be sure the handlebar, tie rod ends and relay rod ends are installed securely in position. If free play still exists, check the steering bearing, front suspension links and ski mounting area for wear. Replace if necessary.

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.



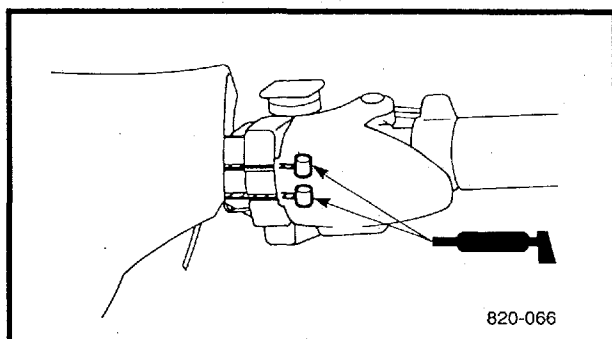
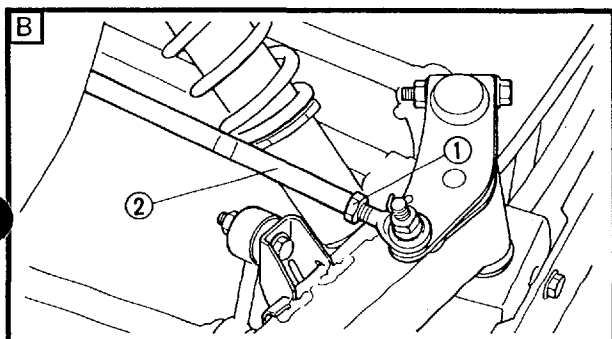
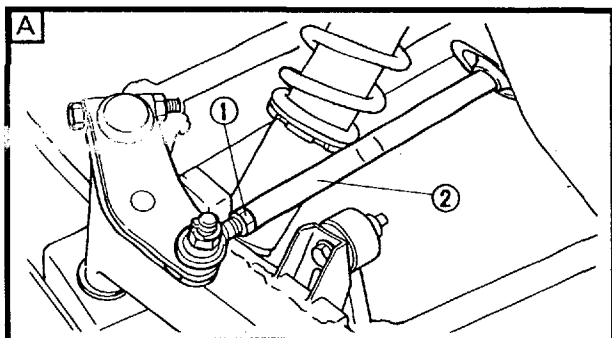
Ski toe-out (a - c):

5 ~ 20 mm (0.20 ~ 0.79 in) (500, 600)
3 ~ 18 mm (0.12 ~ 0.71 in)
(VT600X/VX700SX, MM600/700)

Ski stance (b) (center to center):

1,070 mm (42.1 in) (500/600)
1,040 mm (40.9 in) (VX600SX/
VX700SX)
980 mm (38.6 in) (MM600/700)

STEERING SYSTEM/LUBRICATION



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

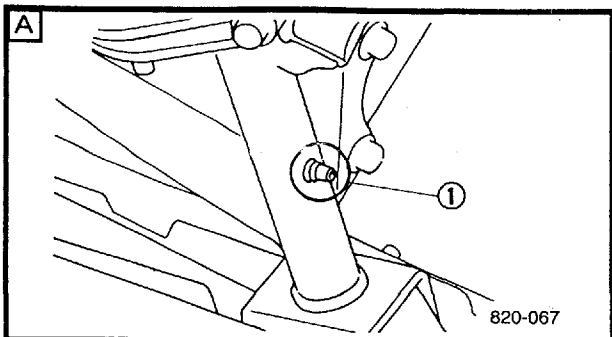
⚠ WARNING

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.

LUBRICATION



2E261

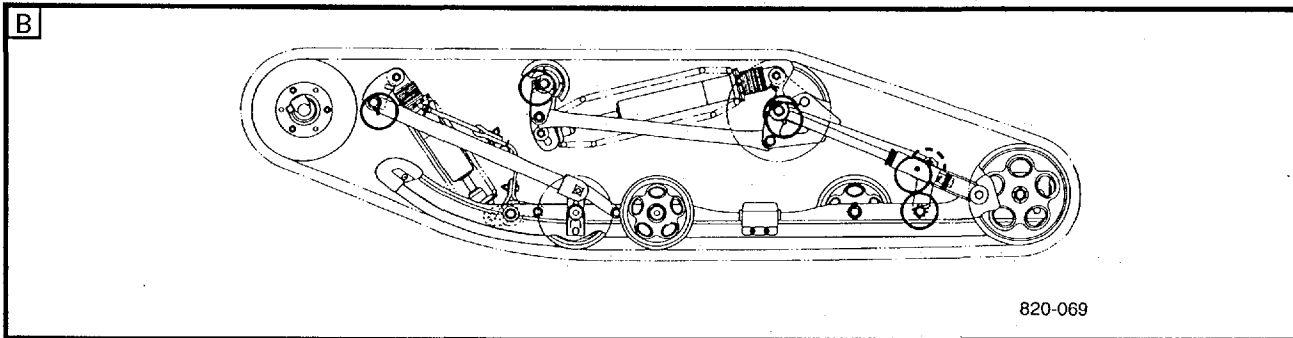
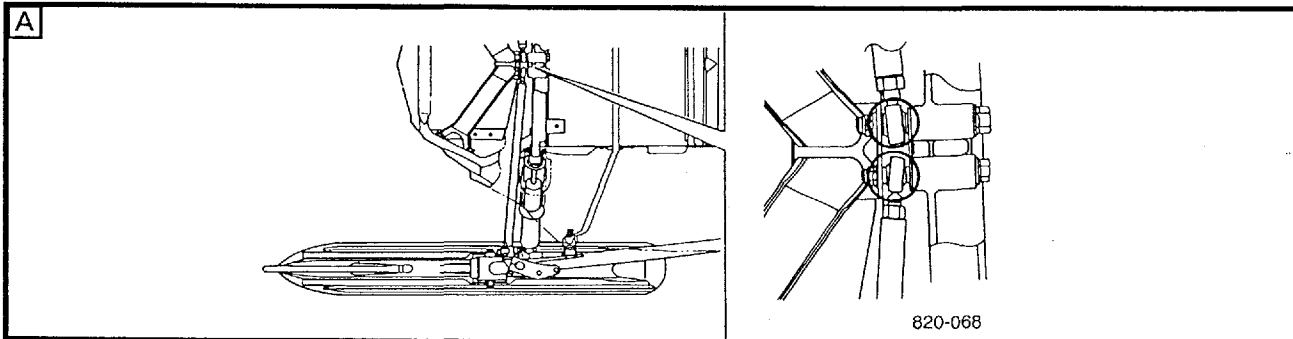
Front and rear suspension

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



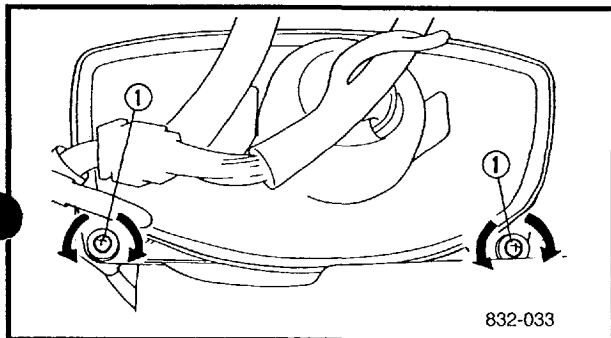
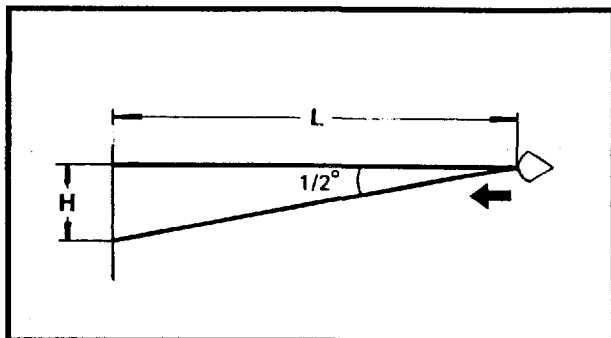
Recommended lubricant:
Esso Beacon 325 Grease or
Aeroshell Grease #7A.

- ☐ A Front
- ☐ B Rear



HEADLIGHT BEAM ADJUSTMENT

INSP
ADJ



ELECTRICAL

2E241

HEADLIGHT BEAM ADJUSTMENT

1. Place the machine on a level surface.

2. Inspect:

- Headlight beam

The high beam should be aimed down ($1/2^\circ$ below horizontal). Adjust the headlight beam if the angle is incorrect.

L	3.0 m (10 ft)	7.6 m (25 ft)
H	26 mm (1.0 in)	66 mm (2.6 in)

3. Adjust:

- Headlight beam

Adjust the headlight beam by tightening or loosening the adjusting screws ①.

2E271

TUNING**CARBURETOR TUNING (Except for VT600, MM600)**

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

CAUTION

The engine oil is mixed with the fuel just before the fuel enters the carburetors. During initial fuel flow to the carburetor 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 adjustment
- Throttle cable free play adjustment
- Carburetor synchronization
- Starter cable adjustment
- Oil pump cable free play adjustment

CARBURETOR TUNING



Carburetor tuning data

1. Standard specifications

MODEL	500	600	VT600, MM600	VY700SX, MM700
Type	TM36	←	←	TM33
Manufacturer	MIKUNI	←	←	←
I.D. Mark	8CJ00	8CR00	8CW00	8CH00
Main jet (M.J.)	#151.3	←	#160	#1:#145, #2,3:#143.8
Pilot jet (P.J.)	#45	←	#65	#45
Main airjet (M.A.J.)	Ø2.5	←	←	—
Pilot screw (P.S.)	1-3/4 turns out	1-1/2 turns out	2 turns out	1-1/2 turns out
Float height	20.3 ~ 24.3 mm (0.8 ~ 0.96 in)	←	←	11.3 ~ 15.3 mm (0.44 ~ 0.60 in)
Idle speed	1,500 ~ 1,700 r/min	1,450 ~ 1,650 r/min	1,500 ~ 1,700 r/min	1,500 ~ 1,700 r/min

2E281

Mid-range and high speed tuning

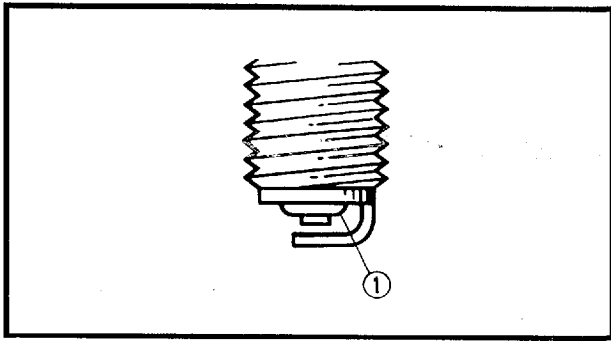
No adjustment is normally required, but adjustments may sometimes be necessary, depending on temperatures, altitude or both.

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

CAUTION:

The engine should never be run without the air intake silencer and air chamber 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".

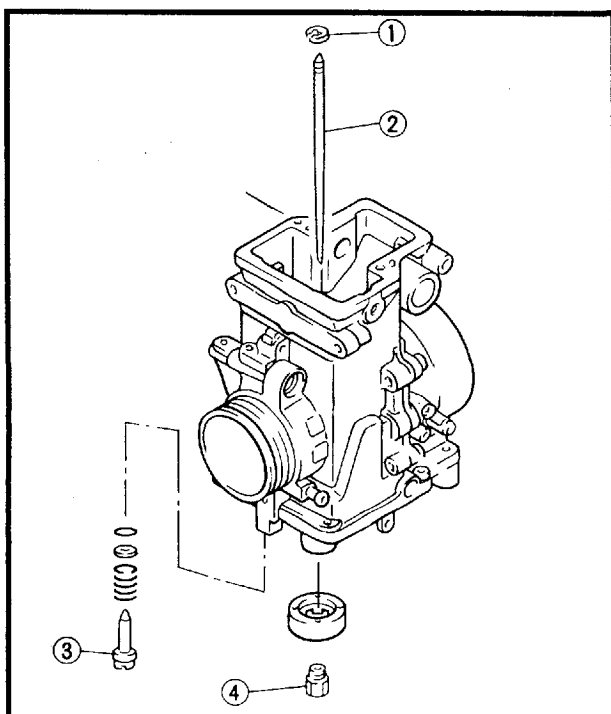
NOTE: _____

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 9 to select main jets according to variations in elevation and temperature.



NOTE: _____

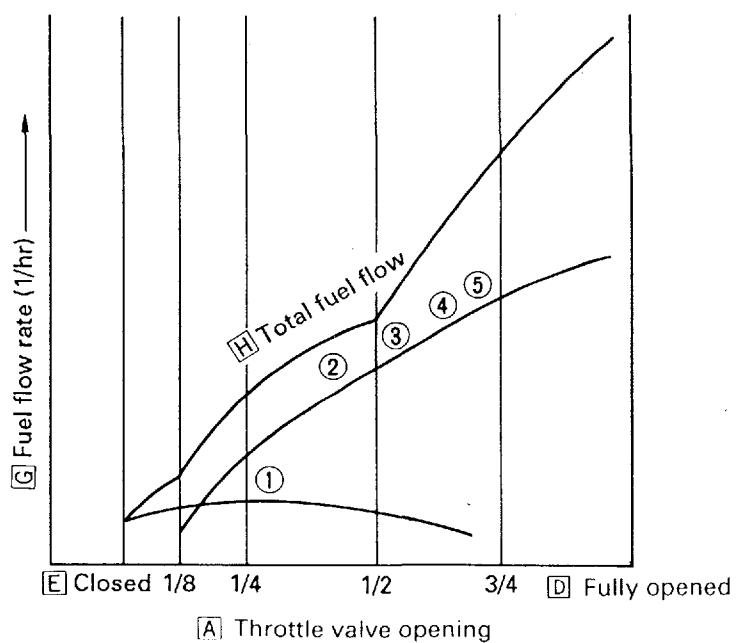
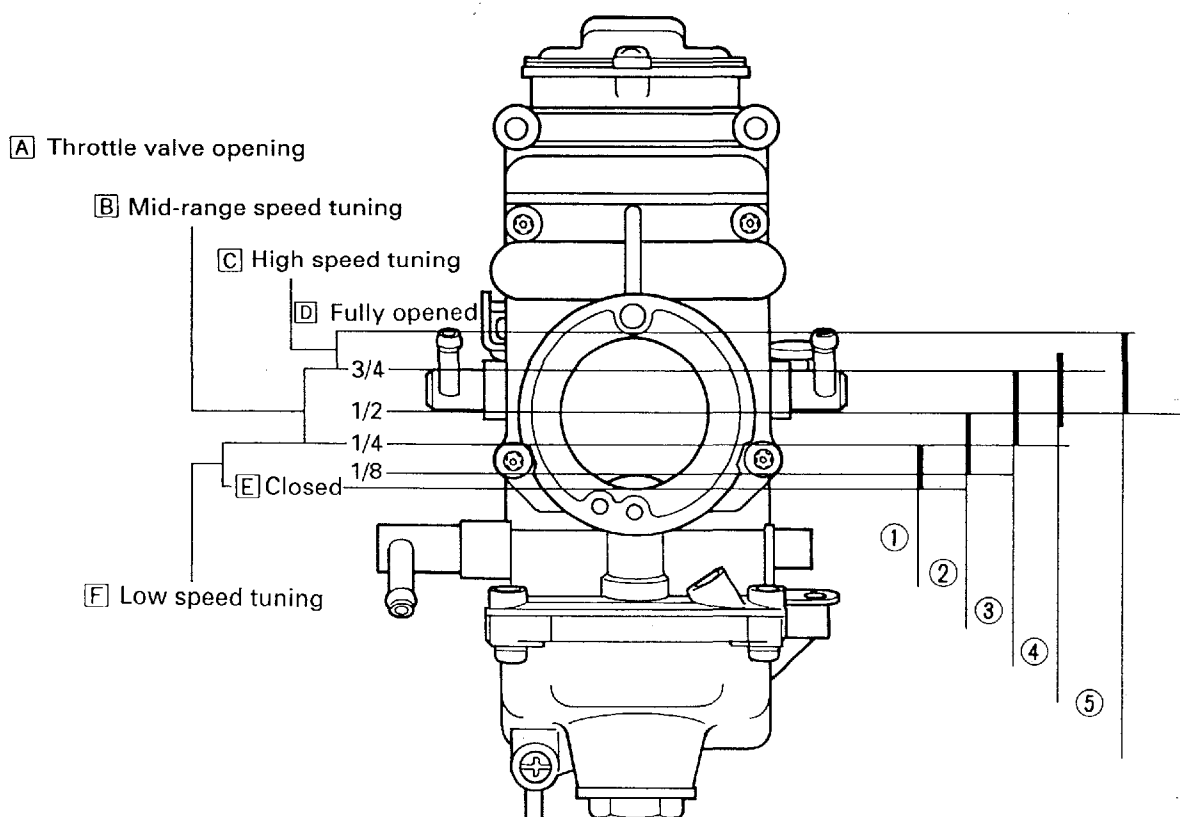
These jetting specifications are subject to change. Consult the latest technical information from Yamaha to be sure you have the most up-to-date jetting specifications.

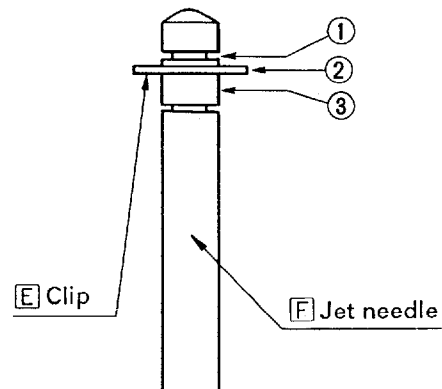
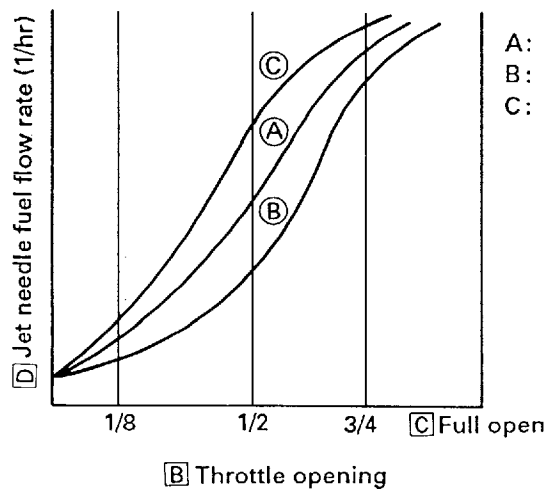
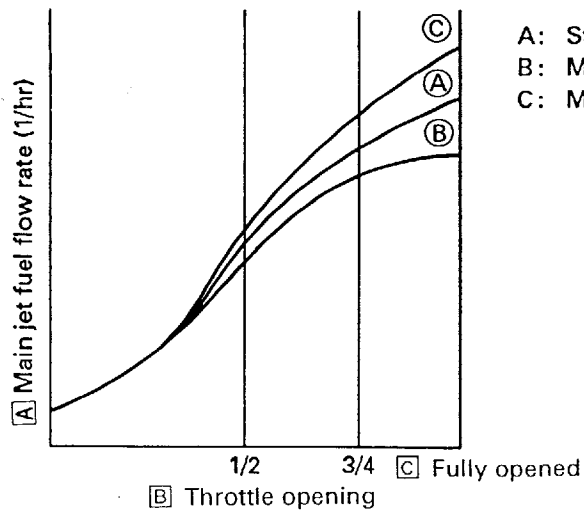
- ① Clip
- ② Jet needle
- ③ Pilot mixture screw
- ④ Main jet



2E302

Guide for carburetion





CAUTION:

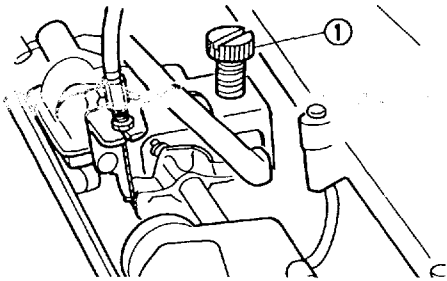
If the air silencer box is removed from the carburetors, the change in pressure in the intake will create a lean mixture that may cause severe engine damage. The air silencer box has no effect on performance characteristics and must be secured to the carburetor during carburetor tuning and adjustment.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

CARBURETOR TUNING

INSP
ADJ



500/600



2E391

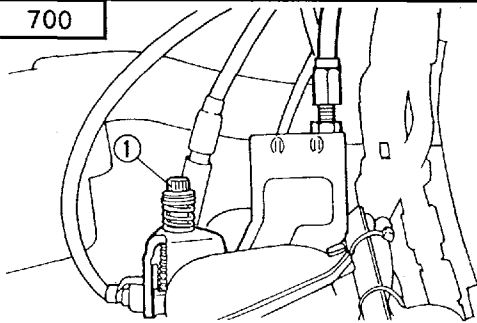
Low speed tuning

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

CAUTION:

The engine should never be run without the air intake silencer and air chamber installed. Severe engine damage may result.

700



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:

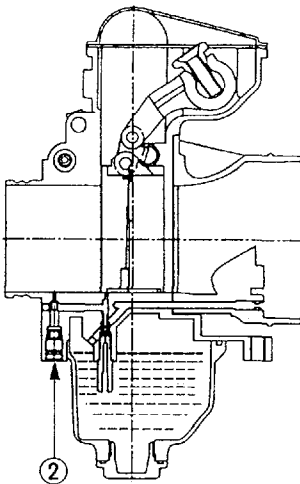
1-3/4 (500) turns out

1-1/2 (600, 700) turns out

2 (VT600, MM600) turns 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:**

1,450 ~ 1,650 r/min (600)

1,500 ~ 1,700 r/min (500/VT600/
MM600, 700)

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

NOTE:

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

Standard pilot jet:

#45 (500/600/700)

#60 (VT600/MM600)

CARBURETOR TUNING



2E311

Main jet selection chart		
Spark plug color	Diagnosis	Remedy
Light tan or gray.	Carburetor is 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 gray 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 carburetor 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 carburetor again. Begin with low-speed tuning.



2E321

Troubleshooting

Trouble	Diagnosis	Adjustment
Hard starting	Insufficient fuel	Add gasoline.
	<ul style="list-style-type: none"> • Excessive use of the starter • Excessive use of the choke 	Return the starter lever to its seated position so that the starter valve is fully closed.
	Fuel passage is clogged or frozen	<ul style="list-style-type: none"> • Check, and if necessary, clean the fuel tank air vent, the fuel filter and all of the fuel passages. • Check, and if necessary, clean the carburetor air vents, fuel passages and the float valve. • Clean the float chamber of any ice or water.
	Overflow	Adjust the fuel level.
Poor idling: <ul style="list-style-type: none"> • Poor performance at low speeds • Poor acceleration • Slow response to throttle • Engine tends to stall 	Improper idling speed adjustment	<ul style="list-style-type: none"> • Adjust the engine idle speed. Refer to "Low speed tuning".
	Damaged pilot screw	Replace the pilot screw.
	Clogged bypass hole	Clean the bypass hole.
	Clogged or loose pilot jet	<ul style="list-style-type: none"> • Remove the pilot jet, clean it with compressed air and then install it. • Make sure that the pilot jet is fully tightened.
	Air leaking into the carburetor joint	Retighten the clamp screws on the carburetor joints.
	Defective starter valve seat	Clean or replace the starter valve seat.
	Overflow	Adjust the fuel level.
Poor performance at mid-range speeds: <ul style="list-style-type: none"> • Momentary slow response to the throttle • Poor acceleration 	Clogged or loose pilot jet	<ul style="list-style-type: none"> • Remove the pilot jet, clean it with compressed air and then install it. • Make sure that the pilot jet is fully tightened.
	Lean mixture	Overhaul the carburetor.
Poor performance at normal speeds: <ul style="list-style-type: none"> • Excessive fuel consumption • Poor acceleration 	Clogged air vent	Remove the air vent hose and clean it.
	Clogged or loose main jet	<ul style="list-style-type: none"> • 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.

CARBURETOR TUNING



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

CLUTCH TUNING



CLUTCH TUNING High altitude tuning

Clutch setting data

W	White	S	Silver	L	Blue
P	Pink	R	Red	Go	Gold
Y	Yellow	G	Green	Sb	Sky blue

VX500XT/XTC/XTCR/VT500				
[A] Item	0 ~ 1,000 m 0 ~ 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. 1,600 r/min	←	←	←
[C] Clutch engagement:	Approx. 4,000 r/min	4,100 r/min	4,200 r/min	←
[D] Shift speed:	Approx. 7,800 r/min	←	←	←
[E] Gearing:	22/39 21/39 (VT500) 19/39 (VT500 EUR)	21/39 20/39 (VT500)	20/39 19/39 (VT500)	19/39 18/39 (VT500)
[F] Primary spring: [G] Color	W - P - W T - P - Y (VT500 EUR)	←	Y - P - Y	O - P - O
[H] Length	78.7 mm 77.4 mm (VT500 EUR)	←	← 77.4 mm	74.6 mm
[I] Pre-load rate	30 kg - 2.25 kg/mm 30 kg - 2.5 kg/mm (VT500 EUR)	←	30 kg - 2.5 kg/mm	30 kg - 3.25 kg/mm
[J] Wire diameter	ø5.5 mm ø5.8 mm (VT500 EUR)	←	ø5.8 mm	ø6.0 mm
[K] Outside diameter	ø60 mm	←	←	←
[L] Weight:	8AB		←	← ←
[M] Weight rivet:	8CR (VT500 EUR) Steel 13.3 (OUT) None (IN) Aluminum 10.3 (OUT) (VT500 EUR) Steel 17.2 (IN) (VT500 EUR)	Aluminum 10.3 (OUT) None (IN)	None (OUT) None (IN)	None (OUT) None (IN)
[N] Weight bushing:	Duralon	←	←	←
[O] Roller bushing:	Duralon	←	←	←
[P] Pri. clutch shim:	None	←	←	←
[Q] Secondary spring: [G] Color	R	←	←	←
[H] Length	75 mm	←	←	← ←
[I] Pre-load rate	40° (1-3)	←	←	←
[J] Wire diameter	ø 5.3 mm	←	←	←
[K] Outside diameter	ø69.5 mm	←	←	←
[R] Sec. torque cam:	45° 43° (VT500)	←	←	←
[S] Sec. clutch shim:	1.0 mm 0.5 mm (VT500)	←	←	←

CLUTCH TUNING



	VX600XT/XTC/XTCE/XTCR/SX			
[A] Item	0 ~ 1,000 m 0 ~ 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. 1,500 r/min	←	←	←
[C] Clutch engagement:	Approx. 4,000 r/min Approx. 3,800 r/min (VX600SX)	4,100 r/min ←	4,200 r/min 4,000 r/min	← 4,200 r/min
[D] Shift speed:	Approx. 7,800 r/min Approx. 7,850 r/min (VX600SX)	← ←	← ←	← ←
[E] Gearing:	23/39 22/39 (VX600SX)	22/39	21/39	20/39
[F] Primary spring:				
[G] Color	W - S - W	←	←	←
[H] Length	81.0 mm		←	← ←
[I] Pre-load rate	35 kg - 2.25 kg/mm	←	←	←
[J] Wire diameter	ø5.5 mm	←	←	←
[K] Outside diameter	ø59.0 mm	←	←	←
[L] Weight:	8AB		←	← ←
8CR (VX600SX)	←	←	←	
[M] Weight rivet:	Steel 13.9 (OUT) Steel 17.2 (IN) Steel 13.9 (OUT) (VX600SX) Steel 13.9 (IN) (VX600SX)	Steel 10.3 (OUT) Steel 13.9 (IN) Steel 10.3 (OUT) (VX600SX) Steel 13.3 (IN) (VX600SX)	Aluminum 10.3 (OUT) ← Aluminum 10.3 (OUT) (VX600SX) Fe 13.9 (IN) (VX600SX)	← Aluminum 10.3 (IN) ← Aluminum 10.3 (IN) (VX600SX)
[N] Weight bushing:	Duralon	←	←	←
[O] Roller bushing:	Duralon	←	←	←
[P] Pri. clutch shim:	None	←	←	←
[Q] Secondary spring:				
[G] Color	R G (VX600SX)	← ←	← ←	← ←
[H] Length	75 mm	←	←	←
[I] Pre-load rate	50° (2-3) 60° (3-3) (VX600SX)	← ←	← 50° (2-3)	← 60° (3-3)
[J] Wire diameter	ø5.3 mm ø5.5 mm (VX600SX)	← ←	← ←	← ←
[K] Outside diameter	ø69.5 mm	←	←	←
[R] Sec. torque cam:	47° 43° (VX600SX)	← ←	← ←	← ←
[S] Sec. clutch shim:	1.0 mm	←	←	←

CLUTCH TUNING

INSP
ADJ

[A] Item	VT600/MM600			
	0 ~ 1,000 m 0 ~ 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. 1,600 r/min	←	←	←
[C] Clutch engagement:	Approx. 4,000 r/min	4,100 r/min	4,200 r/min	←
[D] Shift speed:	Approx. 7,800 r/min	←	←	←
[E] Gearing:	22/39 20/39 (VT600 EUR)	21/39	20/39	19/39
[F] Primary spring:	W - S - W Y - P - Y (VT600 EUR) 81.0 mm 77.4 mm (VT600 EUR) 35 kg - 2.25 kg/mm 30 kg - 2.5 kg/mm (VT600 EUR) ø5.5 mm ø5.8 mm (VT600 EUR) ø59.0 mm ø60.0 mm (VT600 EUR)	←	← Y - P - Y (MM600) ← 77.4 mm (MM600) ← 30 kg - 2.5 kg/mm (MM600) ← ø5.8 mm (MM600) ← ø60.0 mm (MM600)	← ← ← ← ← ←
[G] Color				
[H] Length				
[I] Pre-load rate				
[J] Wire diameter				
[K] Outside diameter				
[L] Weight:	8CR	None (OUT) (VT600) ← ← ←	← ← Steel 10.3 (IN) (VT600) None (OUT) (MM600) ←	← ← Aluminum 10.3 (IN) (VT600) ← Steel 10.3 (IN) (MM600)
[M] Weight rivet:	Steel 10.3 (OUT) (VT600)			
	Steel 17.2 (IN) (VT600)			
	Steel 13.3 (OUT) (MM600)			
	Steel 13.9 (IN) (MM600)			
[N] Weight bushing:	Duralon	←	←	←
[O] Roller bushing:	Duralon	←	←	←
[P] Pri. clutch shim:	None	←	←	←
[Q] Secondary spring:	Br R (VT600 EUR) 75 mm 50° (2-3) (VT600, MM600) 80° (2-6) (VT600 EUR) ø5.0 mm ø5.3 mm (VT600 EUR) ø69.5 mm	←	R ← 60° (3-3) ø5.3 mm ←	← ← ← ←
[G] Color				
[H] Length				
[I] Pre-load rate				
[J] Wire diameter				
[K] Outside diameter				
[R] Sec. torque cam:	47° 43° (VT600 EUR)	←	←	←
[S] Sec. clutch shim:	1.0 mm	←	←	←

CLUTCH TUNING

INSP
ADJ



[A] Item	VX700SX/MM700			
	0 ~ 1,000 m 0 ~ 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. 1,600 r/min	←	←	←
[C] Clutch engagement:	Approx. 4,000 r/min	←	←	←
[D] Shift speed:	Approx. 8,300 r/min	←	←	←
[E] Gearing:	23/40 (VX700SX) 22/40 (MM700)	← ←	← ←	← ←*(21/40)
[F] Primary spring:	W - S - W (VX700SX) G - P - G (MM700) 81.0 mm (VX700SX) 76.3 mm (MM700) 35 kg - 2.25 kg/mm (VX700SX) 30 kg - 2.75 kg/mm (MM700) ø5.5 mm (VX700SX) ø5.8 mm (MM700) ø60.0 mm (VX700SX) ø59.6 mm (MM700)	←	G - P - G	←
[G] Color		←	←	O - P - O
[H] Length		←	← 76.3 mm	←
[I] Pre-load rate		←	←	76.4 mm
		←	30 kg - 2.75 kg/mm	←
		←	←	30 kg - 3.25 kg/mm
[J] Wire diameter		←	ø5.8 mm	←
[K] Outside diameter		←	←	ø6.0 mm
		←	ø59.6 mm	←
		←	←	ø60.0 mm
[L] Weight:	8CH-00		←	←
[M] Weight rivet:	Steel 10.3 (OUT) (OUT) (VX700SX) Steel 13.3 (IN)	8CR-00 (MM700) Aluminum 10.3 (VX700SX) Steel 10.3 (IN) (VX700SX) Aluminum 10.3 (OUT) (MM700) Steel 13.3 (IN) (MM700)	← None (OUT) ← ← None (IN) (MM700)	← Aluminum 10.3 (IN) (VX700SX) None (OUT) (MM700) ←
[N] Weight bushing:	Duralon	←	←	←
[O] Roller bushing:	Duralon	←	←	←
[P] Pri. clutch shim:	None	←	←	←
[Q] Secondary spring:	G 75 mm 60° (3-3) (MM700) 70° (1-6) (VX700SX) ø5.5 mm ø69.5 mm	← G (MM700)	R (VX700SX) ←	←
[G] Color		←	←	←
[H] Length		←	←	←
[I] Pre-load rate		←	←	←
[J] Wire diameter		← ← (VX700SX)	← ø 5.3 mm	←
[K] Outside diameter		←	ø 5.5 mm (MM700)	←
		←	←	←
[R] Sec. torque cam:	45°	←	← (VX700SX) 43° (MM700)	←
[S] Sec. clutch shim:	0.5 mm	←	←	←

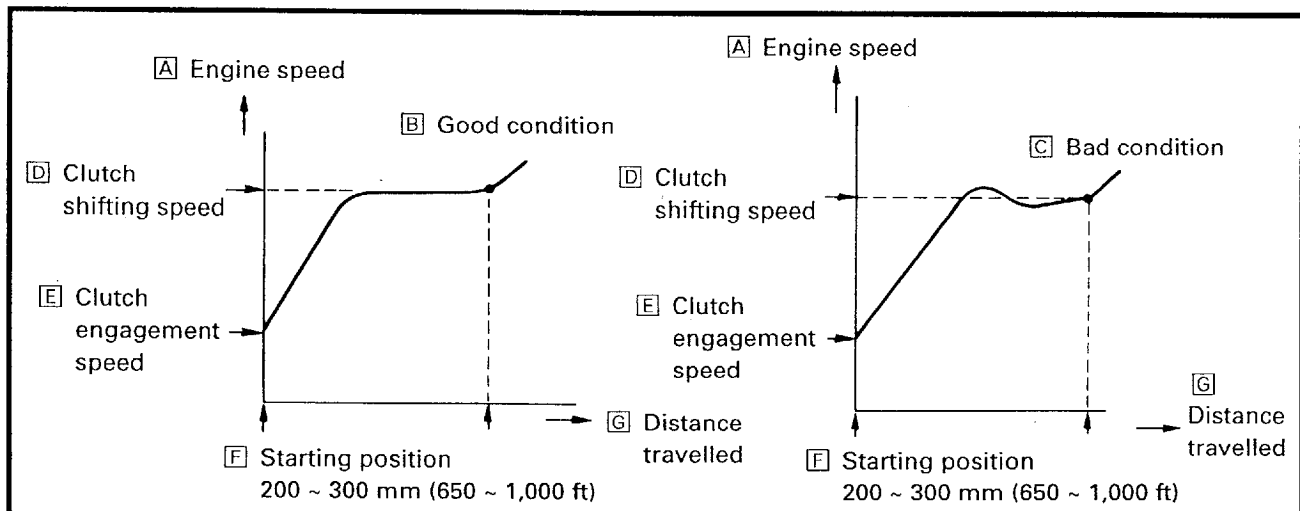
*More than 2,700 m (9,000 ft)

2E331

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

Shifting speed is when the machine has been started at full-throttle from a dead stop and has traveled 200 ~ 300m (650 ~ 1,000 ft).

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.



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 following drive and driven gears and chains are available as options. The figures in the upper lines represent the drive/driven gear ratios, while the number on the following line, followed by an "L", designates the number of chain links.

NOTE:

Do not set the gearing to any of the indicated (x) settings.

GEAR SELECTION



① Chain and sprocket parts number:

[A] Parts name	[B] Teeth&Links	[C] Parts No.	[D] Standard
[E] Drive sprocket	18T	89J-17682-80	
	19T	89J-17682-90	
	20T	89J-17682-00	
	21T	89J-17682-10	VT500
	22T	89J-17682-20	500, VX600SX, VT600, MM600, MM700
	23T	89J-17682-30	600, VX700SX
[F] Driven sprocket	39T	89J-47587-90	500, 600
	40T	89J-47587-00	700
	39T (REVERS)	8CW-47587-90	Reverse model
[G] Chain (links)	68L	94860-02068	VT500
	70L	94860-02070	500, 600, 700

② Gear ratio

[H] Drive gear \ [I] Driven gear	18T	19T	20T	21T	22T	23T
39T	2.167 70L	2.053 70L	1.950 70L	1.857 *68L/70L	1.773 70L	1.696 70L
40T	2.222 70L	2.105 70L	2.000 70L	1.905 70L	1.818 70L	1.739 70L

* VT500

③ Secondary spring

[J] Parts No.	[K] Spring rate N•mm/rad (kgmm/rad)	[L] No. of coils	[M] Color	[N] Wire gauge (mm)	[O] Free length (mm)	[D] Standard
90508-536A9	7290 (729)	5.5	R	5.3	75	500, 600
90508-556A2	8480 (848)	5.5	G	5.5	75	VX600SX, 700
90508-500B1	6130 (613)	5.2	Br	5.0	75	VT600, MM600

④ Torque cam (secondary spring seat)

[P] Parts No.	[Q] Cam angle	[D] Standard
8BV-17604-50	45°	500, VX700SX, MM700
8BV-17604-30	43°	VT500, VX600SX
8BV-17604-70	47°	600, VT600, MM600

GEAR SELECTION



① Secondary spring twist angle
90508-536A9 (R)/90508-556A2 (G)/90508-500B1(Br)

Sheave	Seat	0	3	6	9
1		10°	40° *3	70°*1*2	100°
2		20°	50°	80°*4	110°
3		30°	60°	90°	120°

② Primary spring

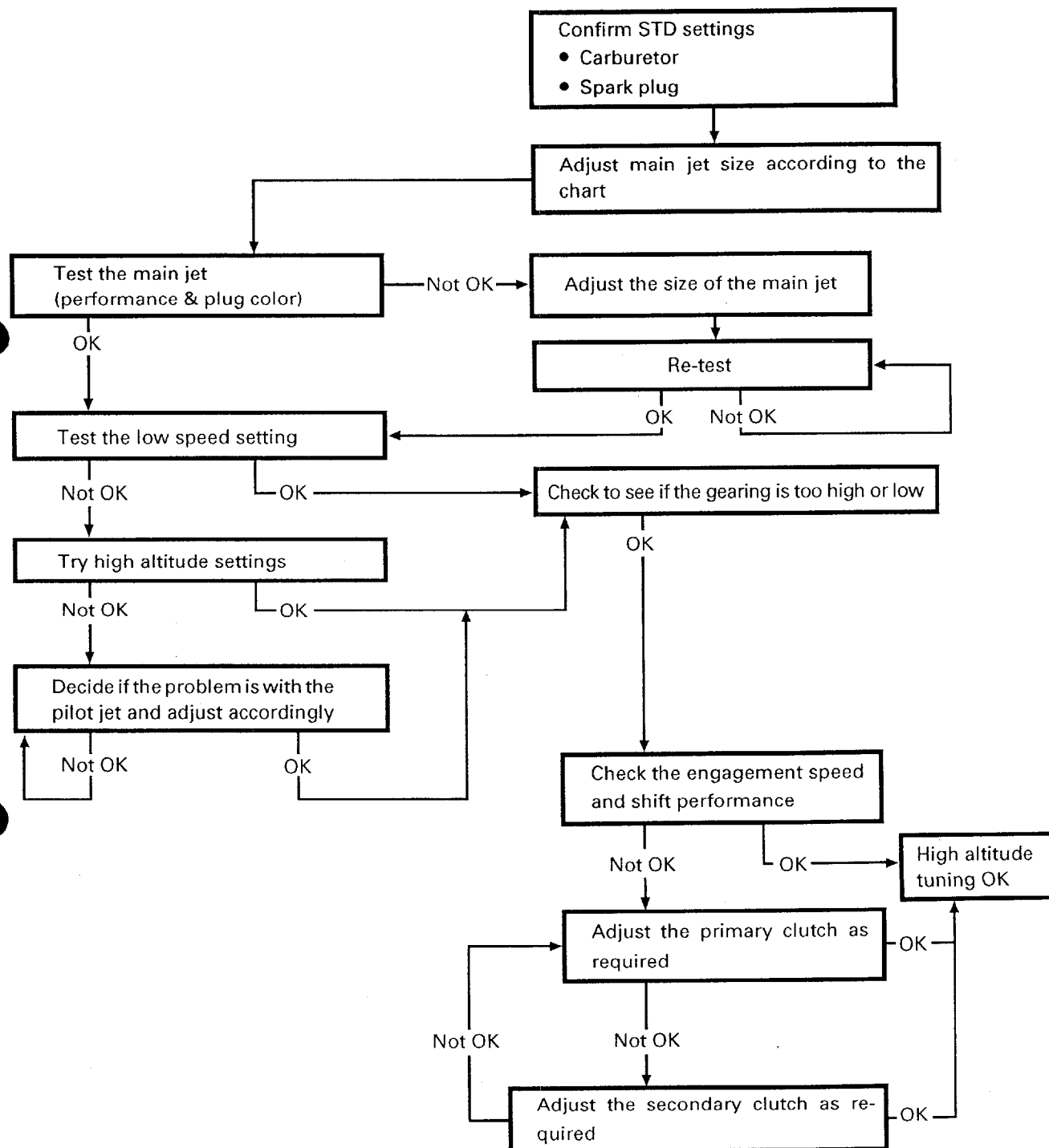
C Parts No.	D Spring rate N/mm (kg/mm)	E Preload (kg)	F Color	G Wire gauge (mm)	H Outside diameter (mm)	I No. of coils	J Free length (mm)	K Remarks
90501-481J 1	10(1.0)	20.0	S-L-S	4.8	60.0	5.16	85.4	
90501-487G 8	15(1.5)	15.0	Go	4.8	60.0	4.19	75.4	
90501-507G 2	15(1.5)	20.0	Go-L-Go	5.0	60.0	4.61	78.7	
90501-524G 5	15(1.5)	25.0	Go-Y-Go	5.2	60.0	5.08	82.1	
90501-501G 7	15(1.5)	25.0	Go-Y-Go	5.0	59.0	4.65	81.7	
90501-521J 6	15(1.5)	30.0	Go-P-Go	5.2	60.0	5.09	85.4	
90501-507G 7	17.5(1.75)	15.0	R-Go-R	5.0	60.0	4.24	74.0	
90501-527G 1	17.5(1.75)	20.0	R-L-R	5.2	60.0	4.65	76.8	
90501-524G 4	17.5(1.75)	25.0	R-Y-R	5.2	60.0	4.64	79.7	
90501-526G 4	20(2.0)	15.0	L-Go-L	5.2	60.0	4.32	72.9	
90501-556G 6	20(2.0)	20.0	L	5.5	60.0	4.95	75.4	
90501-553G 0	20(2.0)	25.0	L-Y-L	5.5	60.0	5.10	78.0	
90501-557G 6	22.5(2.25)	15.0	W-Go-W	5.5	60.0	4.62	72.1	
90501-556G 5	22.5(2.25)	20.0	W-L-W	5.5	60.0	4.62	74.3	
90501-553G 6	22.5(2.25)	25.0	W-Y-W	5.5	60.0	4.61	76.5	
90501-550J 8	22.5(2.25)	30.0	W-P-W	5.5	60.0	4.62	78.7	500
90501-557G 5	25(2.5)	15.0	Y-Go-Y	5.5	60.0	4.36	71.4	
90501-556G 7	25(2.5)	20.0	Y-L-Y	5.5	60.0	4.36	73.4	
90501-584G 2	25(2.5)	24.0	Y	5.8	60.0	4.95	75.0	
90501-555G 8	24.6(2.46)	24.0	Y	5.8	60.0	4.43	75.2	
90501-581J 7	25(2.5)	25.0	Y	5.8	60.0	4.96	75.4	
90501-582J 1	25(2.5)	30.0	Y-P-Y	5.8	60.0	4.96	77.4	
90501-607G 4	27.5(2.75)	15.0	G-Go-G	6.0	60.0	5.12	70.9	
90501-607G 0	27.5(2.75)	20.0	G-L-G	6.0	60.0	5.12	72.7	
90501-584G 1	27.5(2.75)	24.0	G-Y-G	5.8	60.0	4.70	74.1	
90501-605G 7	27.5(2.75)	25.0	G-Y-G	6.0	60.0	5.00	74.1	
90501-585J 3	27.5(2.75)	30.0	G-P-G	5.8	59.6	4.64	76.3	MM700
90501-607G 3	30(3.0)	15.0	P-Go-P	6.0	60.0	4.86	70.4	
90501-606G 9	30(3.0)	20.0	P-L-P	6.0	60.0	4.86	72.1	
90501-604G 0	30(3.0)	24.0	P-Y-P	6.0	60.0	4.80	73.3	
90501-602J 0	30(3.0)	30.0	P	6.0	60.0	4.74	75.4	
90501-605J 5	32.5(3.25)	30.0	O-P-O	6.0	60.0	4.53	74.6	
90501-555J 9	22.5(2.25)	35.0	W-S-W	5.5	59.0	4.66	81.0	600, VX700SX



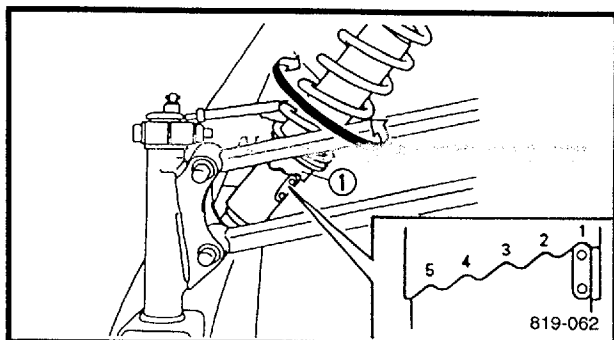
2E341

HIGH ALTITUDE TUNING

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



FRONT SUSPENSION



FRONT SUSPENSION

Spring preload

1. Adjust:

- Spring preload (VX500XT, VT500, VX600XT, VT600, MM600, MM700)

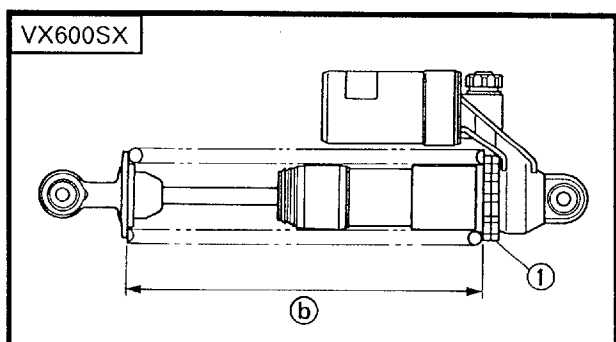
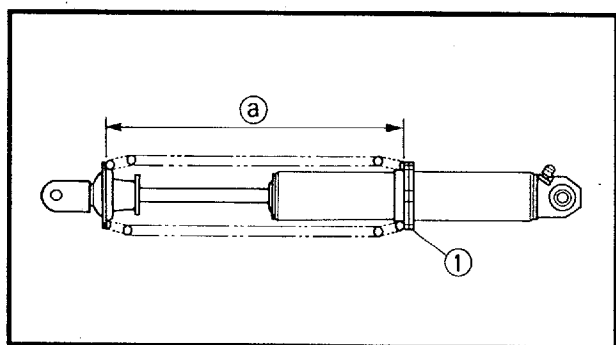
Adjustment steps:

- Turn the adjusting ring ① to the proper position.

Spring adjuster Position	1	2	3	4	5
Preload	Softer ← → Harder				
Standard	1 (VX500XT, VT500/600, VX600XT, MM600/700)				

CAUTION:

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



- Spring preload (VX500XTC/XTCE/XTCR, VX600XTC/XTCE/XTCR/SX, VX700SX)

Adjustment steps:

- Turn the spring seat ① in or out.

Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ← → Softer		
① Length	Max.		Min.
	243 mm (9.57 in)	253 mm (9.96 in)	263 mm (10.35 in)
① Length (VX700SX)	Max.		Min.
	213 mm (8.39 in)	223 mm (8.78 in)	233 mm (9.17 in)
② Length (VX600SX)	Max.		Min.
	196 mm (7.72 in)	211 mm (8.31 in)	219 mm (8.62 in)

CAUTION:

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

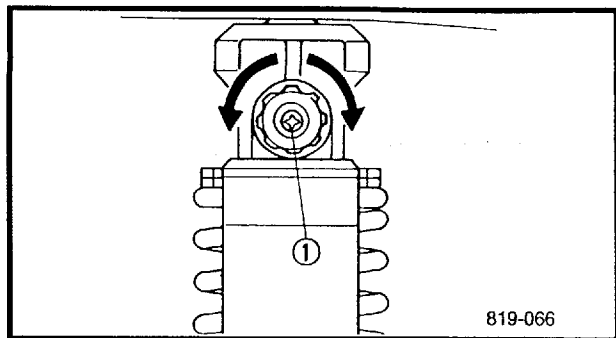
⚠ WARNING

This shock absorber contains highly pressurized nitrogen gas.

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

Do not subject the shock absorber assembly to an open flame or high temperature, as this could cause it to explode.

FRONT SUSPENSION/REAR SUSPENSION



Damping force (VX600SX)

1. Adjust:

- Damping force

Adjustment steps:

- Turn the adjusting knob ① in or out.

Standard 7 Clicks out*

Minimum (hard) 1 Clicks out*

Maximum (soft) 16 Clicks out*

*:From the fully turned-in position

CAUTION:

- Never attempt to turn an adjuster beyond the maximum or minimum setting.
- Be sure the left and right damping force is the same.

REAR SUSPENSION

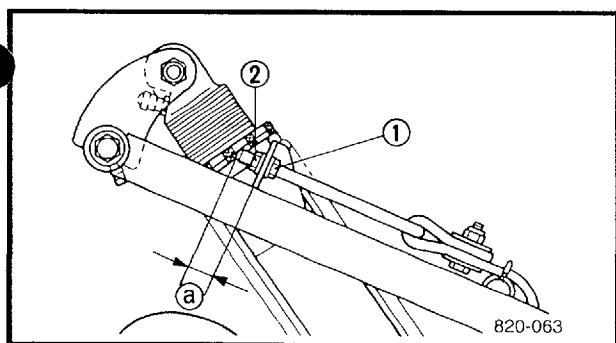
Stopper band

1. Adjust:

- Stopper band tension

NOTE:

This adjustment affects the handling characteristics of the machine.



Adjustment steps:

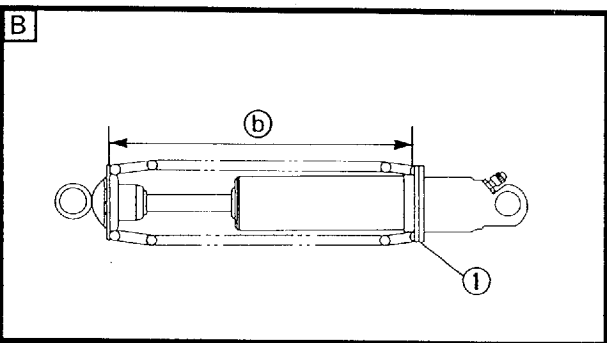
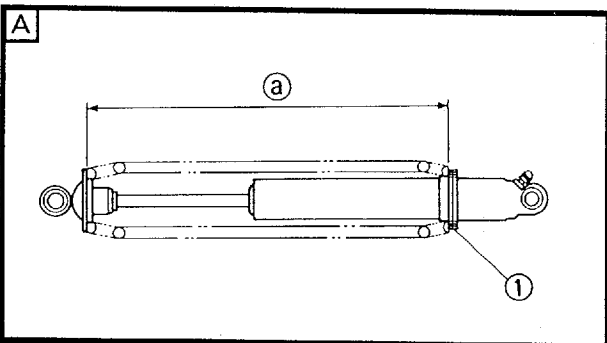
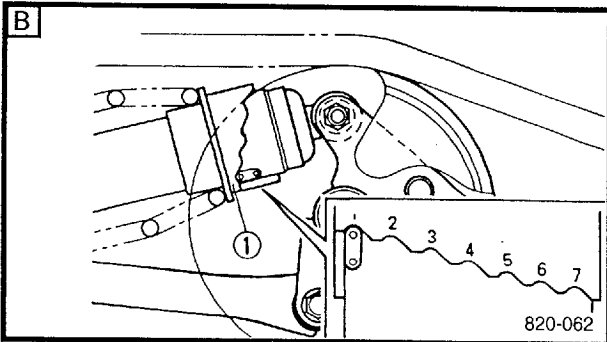
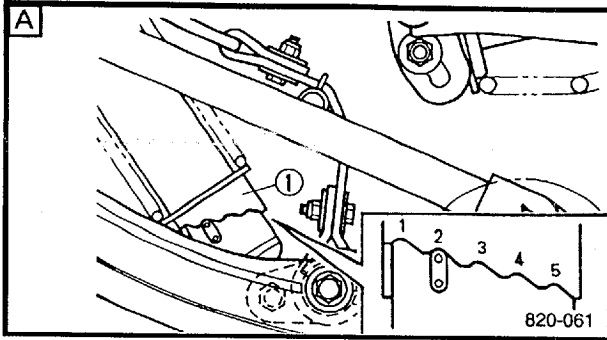
- Loosen the locknut ①.
- Turn the adjusting nut ② in or out to adjust the stopper band tension.

Adjuster Thread length ②	Longer ← maximum	→ Shorter minimum
		10 mm 0.394 in (STD)

Effects	More weight on skis. Less weight transfer	Less weight on skis. More weight transfer
---------	---	---

- Tighten the locknut.

REAR SUSPENSION



Spring preload

1. Adjust:

- Spring preload (VX500XT, VT500, VX600XT, VT600, MM600, MM700)

Adjustment steps:

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

Spring Adjuster position	1	2	3	4	5
Preload	Softer ← → Harder				
A Standard (front)	2 (VX500XT, VX600XT) 3 (VT500/600, MM600/700)				

Spring Adjuster position	1	2	3	4	5	6	7
Preload	Softer ← → Harder						
B Standard (rear)	1 (VX500XT, VX600XT) 4 (VT500/600, MM600/700)						

- Spring preload (VX500XTC/XTCE/XTCR, VX600XTC/XTCE/XTCR/SX, VX700SX)

Adjustment steps:

- Turn the spring seat (1) in or out.

Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ← → Softer		
A Length (a) (front)	Max. 210 mm (8.27 in)	220 mm (8.66 in)	Min. 230 mm (9.06 in)
A Length (a) (front) (VX600, 700SX)	Max. 175 mm (6.89 in)	185 mm (7.28 in)	Min. 195 mm (7.68 in)
B Length (b) (rear)	Max. 358.5 mm (14.11 in)	368.5 mm (14.51 in)	Min. 378.5 mm (14.90 in)
B Length (b) (rear) (VX600, 700SX)	Max. 298 mm (11.73 in)	308 mm (12.13 in)	Min. 318 mm (12.52 in)

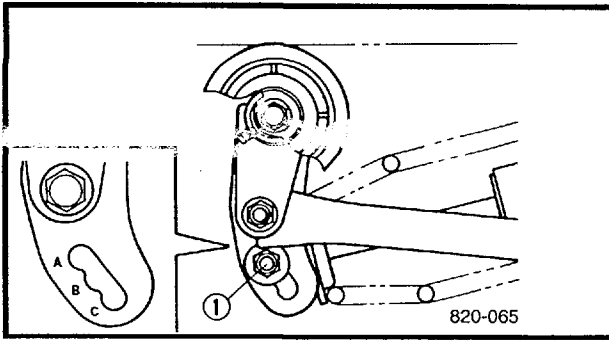
⚠ WARNING

This shock absorber contains highly pressurized nitrogen gas.

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

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

REAR SUSPENSION



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	C	B	A
Spring rate and Damping	Hard	Medium	Soft
Standard	B		

NOTE:

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

- Tighten the nut.



CHAPTER 3.
CHASSIS

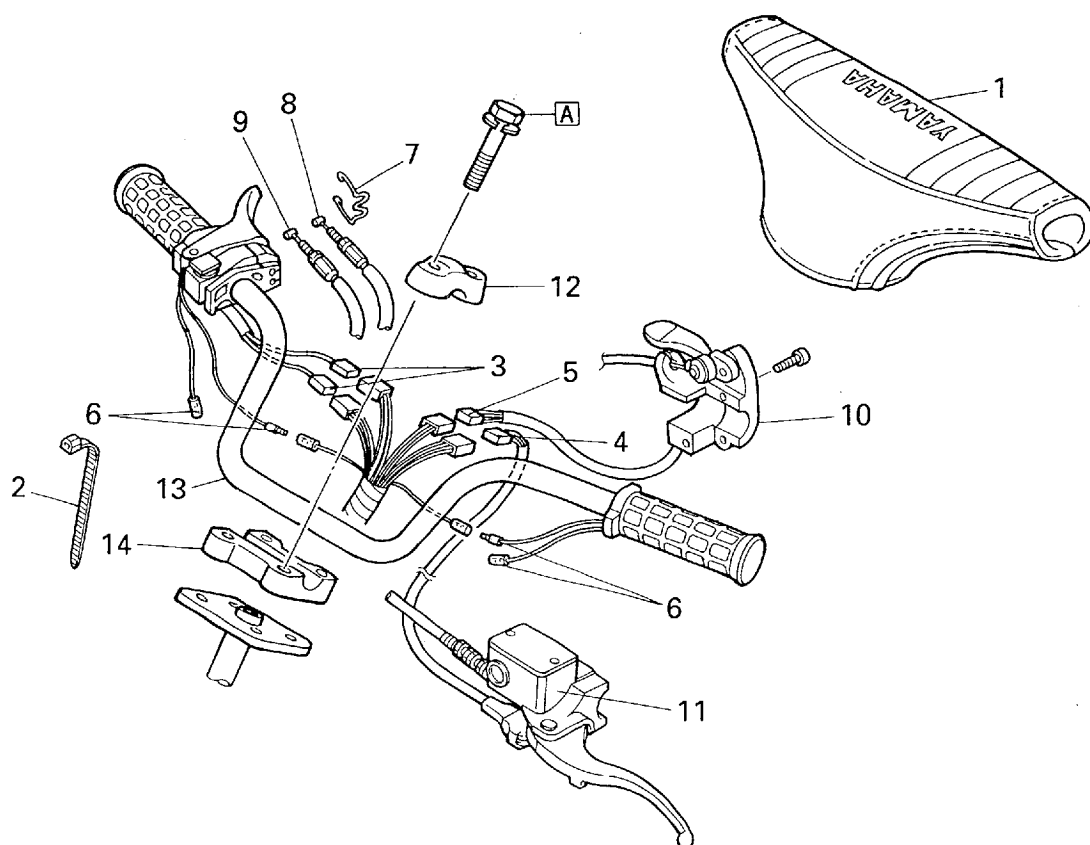
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INSPECTION	3-9
INSTALLATION	3-10



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 below.
1	Handlebar cover	1	
2	Band	3	
3	Handlebar switch couplers (right)	2	
4	Brake switch coupler	1	
5	Headlight beam switch coupler	1	
6	Grip warmer leads	4	
7	Throttle cable holder	1	
8	Throttle cable	1	
9	Oil pump cable	1	
10	Brake lever holder	1	
11	Master cylinder assembly	1	
12	Handlebar holders (upper)	2	
13	Handlebar	1	
14	Handlebar holder (lower)	1	
			For installation, reverse the removal procedure.



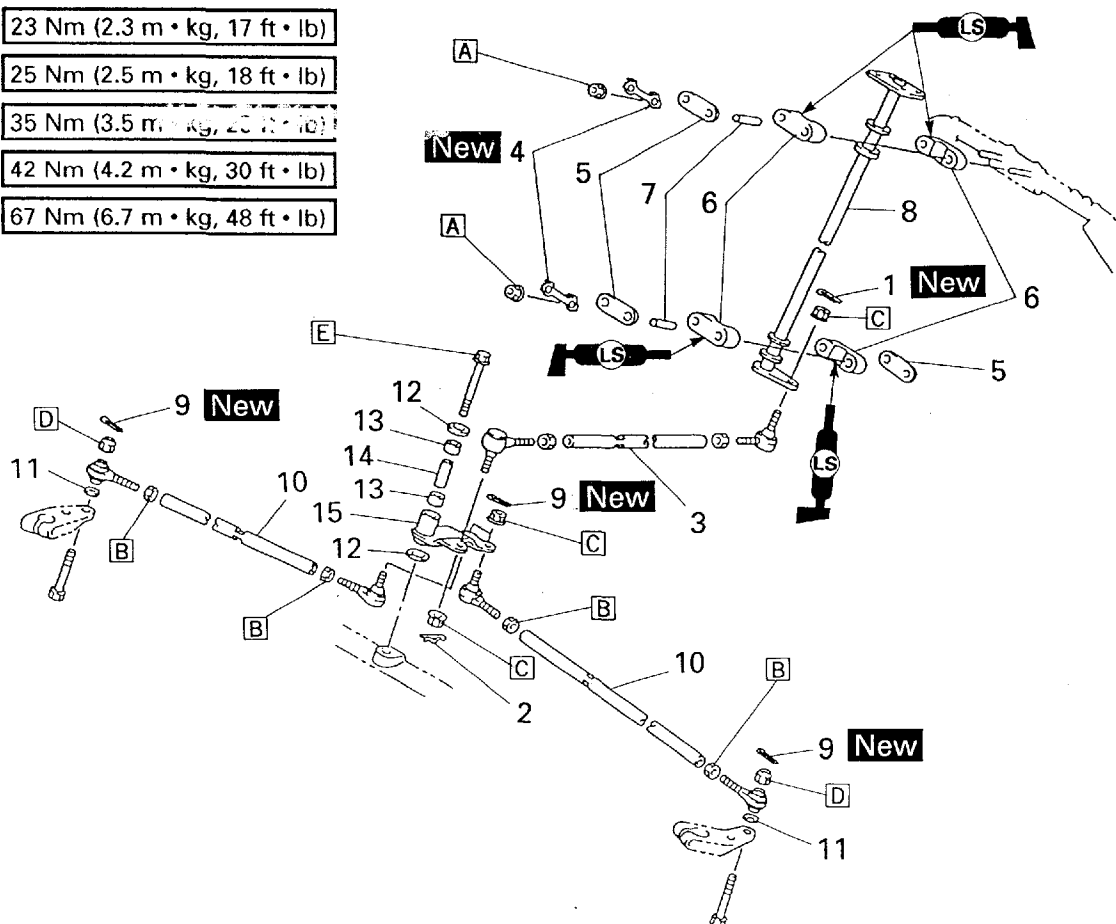
[A] : 23 Nm (2.3 m • kg, 17 ft • lb)

[B] : 25 Nm (2.5 m • kg, 18 ft • lb)

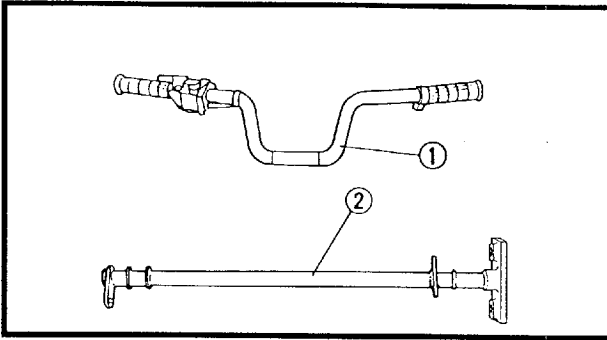
[C] : 35 Nm (3.5 m • kg, 25 ft • lb)

[D] : 42 Nm (4.2 m • kg, 30 ft • lb)

[E] : 67 Nm (6.7 m • kg, 48 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Steering column and tie rod removal		Remove the parts in the order below. Refer to "CARBURETOR". Refer to "FUEL PUMP". Refer to "ENGINE REMOVAL".
	Carburetors		
	Intake silencer		
	Engine assembly		
	Handlebar		
1	Cotter pin	1	
2	Clip	1	
3	Relay rod	1	
4	Lock washers	2	
5	Bearing holders	3	
6	Bearings	4	
7	Collars	4	
8	Steering column	1	
9	Cotter pins	4	
10	Tie rods	2	
11	Washers	2	
12	Washers	2	
13	Bushings	2	
14	Collar	1	
15	Relay arm	1	
			For installation, reverse the removal procedure.

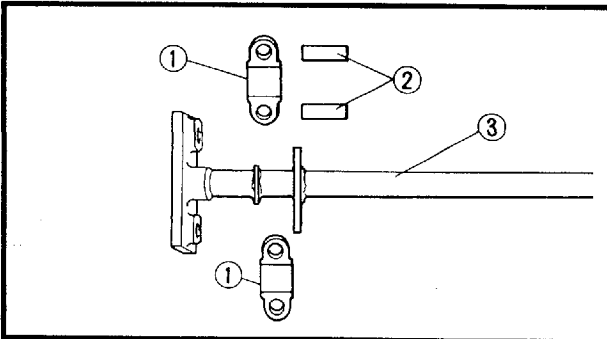
**INSPECTION**

1. Inspect:

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

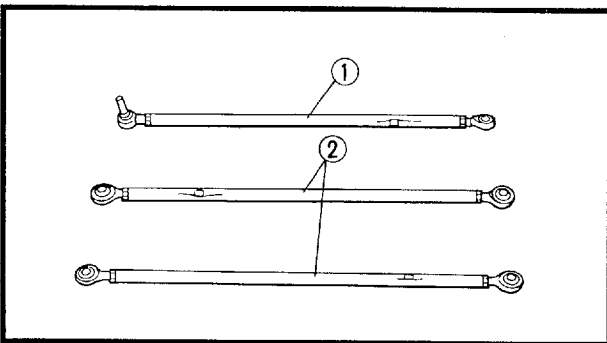
⚠ WARNING

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

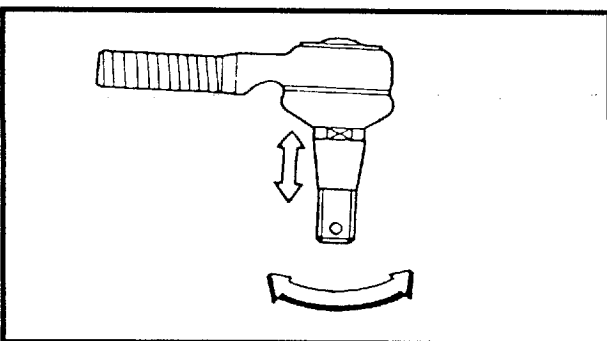


3. Inspect:

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

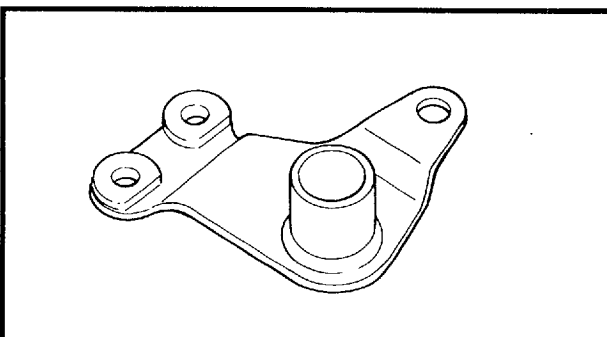
⚠ WARNING

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



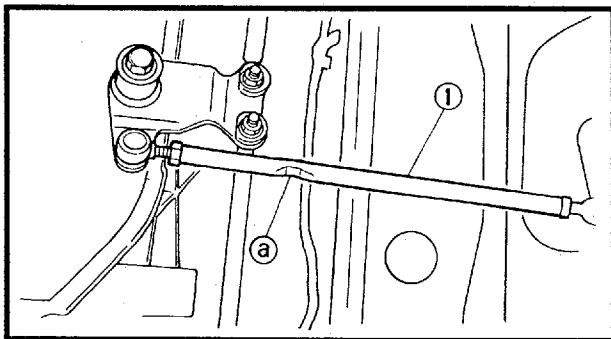
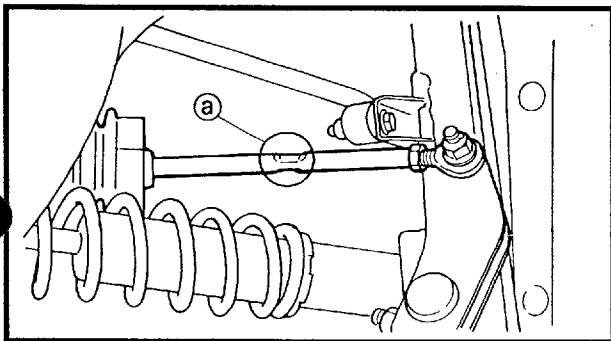
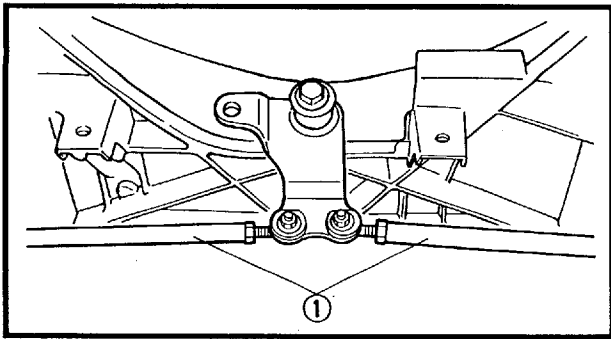
4. Check:

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



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 a new cotter pin.

**Lock nut (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 a new cotter pin.

**Nut (relay rod):**

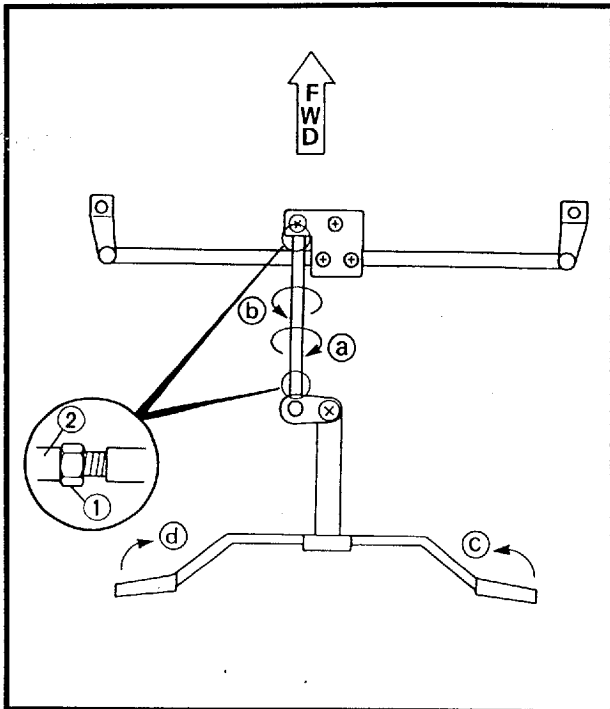
35 Nm (3.5 m • kg, 25 ft • lb)

3. Adjust:

- Skis

Adjustment steps:

- Temporarily install the handlebar.
- Hold the handlebar straight, and check to see that the skis are at right angles to the handlebar.



- Loosen the locknuts (relay rod) ①.
- Direct the skis in parallel to the moving direction.
- With the skis thus, turn the relay rod ② either way to adjust the handlebars at right angles with respect to the direction of movement.

Turning the relay rod
in direction ③

Turning the relay rod
in direction ④

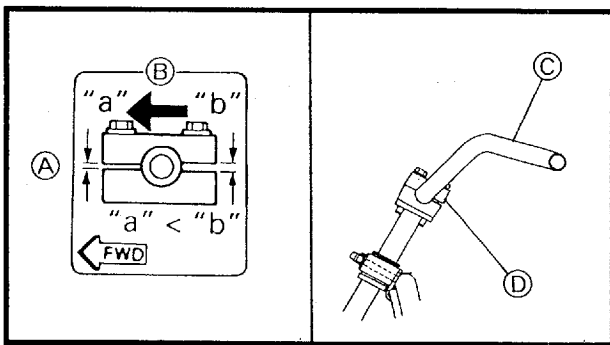
Turning the relay rod
in direction ⑤

Turning the relay rod
in direction ⑥

- Tighten the locknuts (relay rod) ①.



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



4. Install:

- Handlebar

CAUTION:

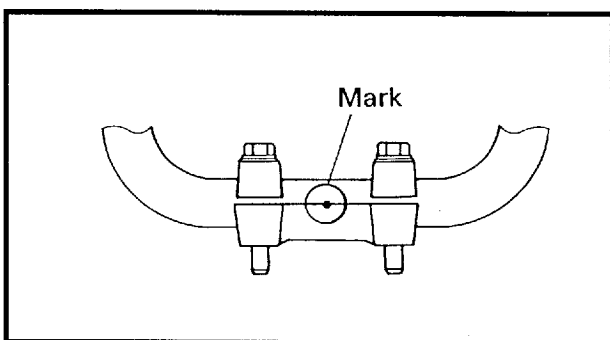
- Be sure the small gap ① side of the holder faces forward ②.
- Center the match mark on the handlebar ③ between the handlebar holders (upper) ④.



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.




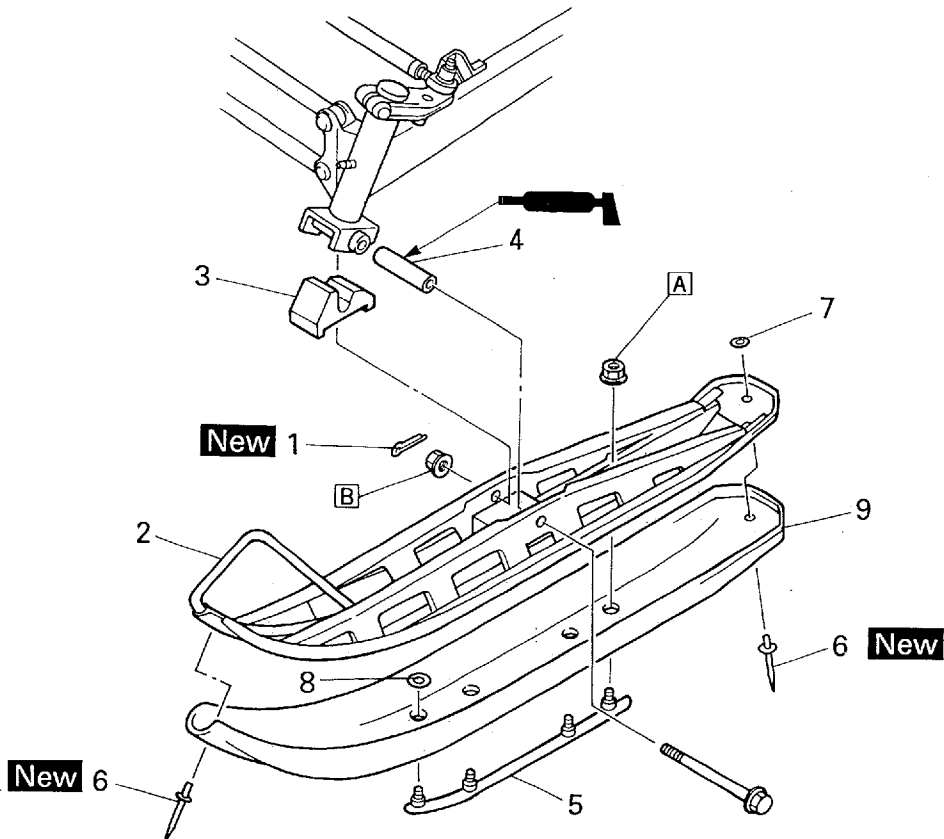


SKI

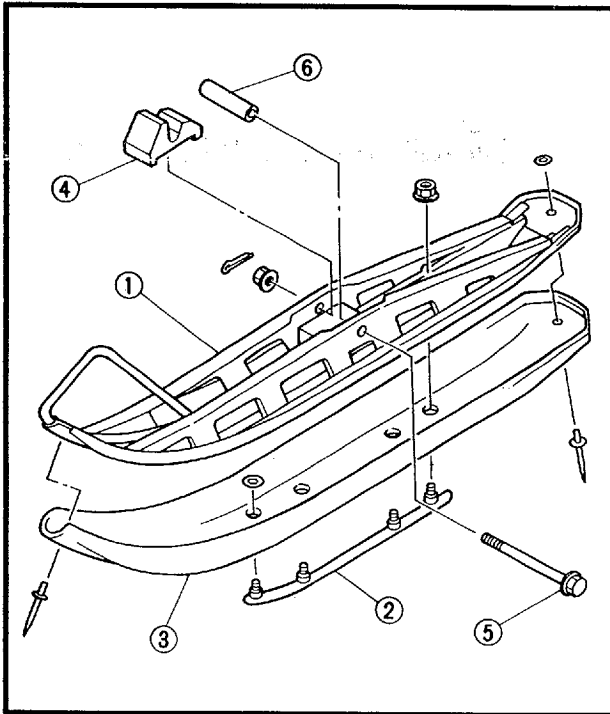
[A] : 26 Nm (2.6 m • kg, 19 ft • lb)

[B] : 48 Nm (4.8 m • kg, 35 ft • lb)

 : ESSO beacon 325
grease or Aeroshell
grease #7A



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



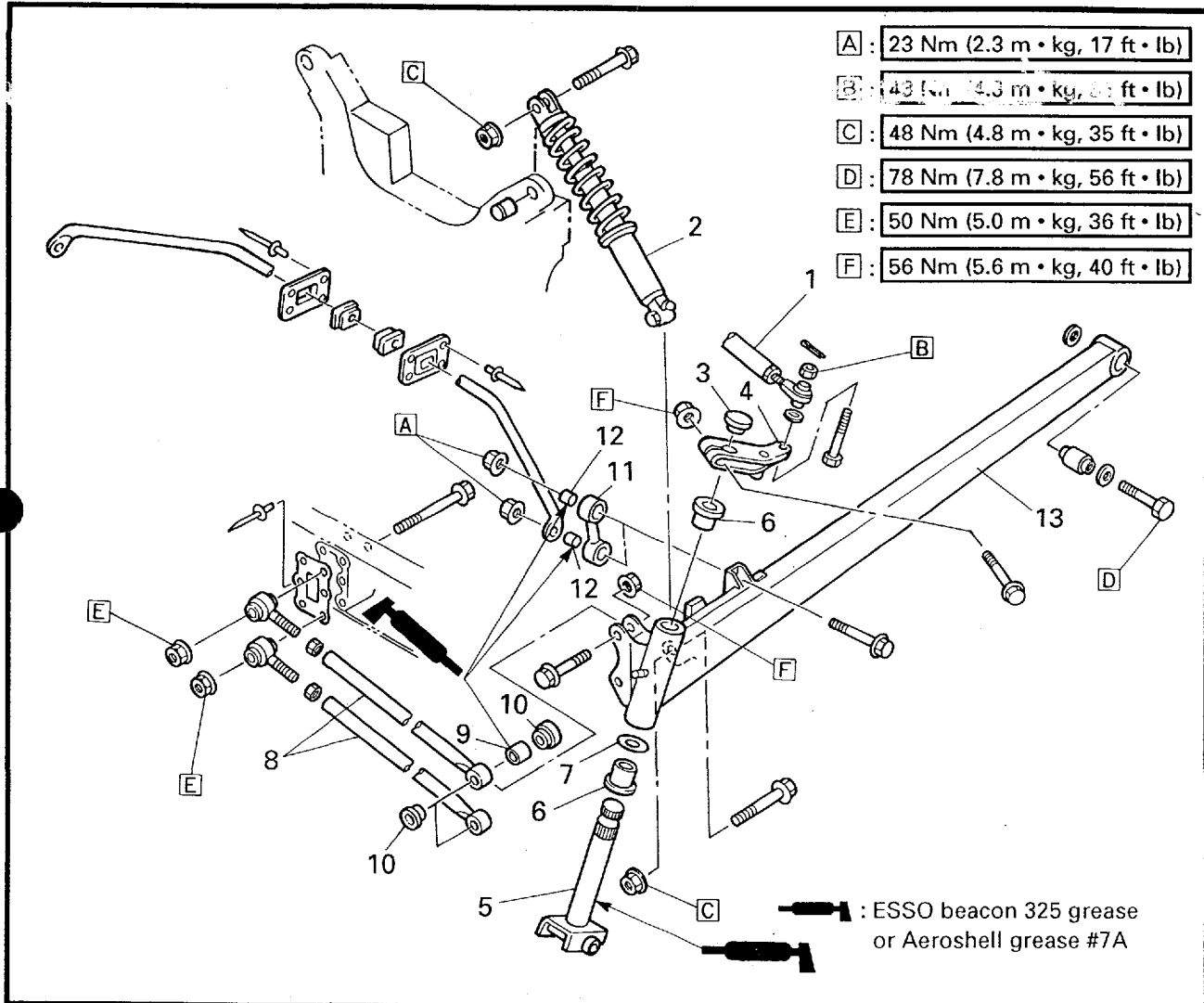
INSPECTION

1. Inspect:

- Ski ①
- Ski runner ②
- Ski cover ③
- Ski stopper ④
- Wear/cracks/damage → Replace.
- Mounting bolt ⑤
- Collar ⑥
- Wear/damage → Replace.



FRONT SUSPENSION



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

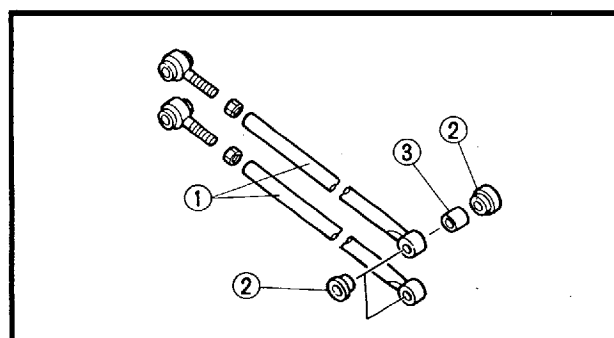
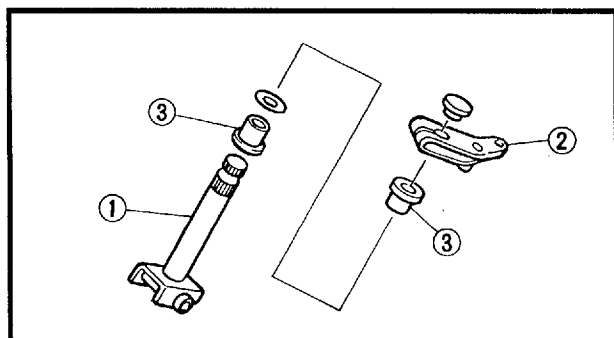
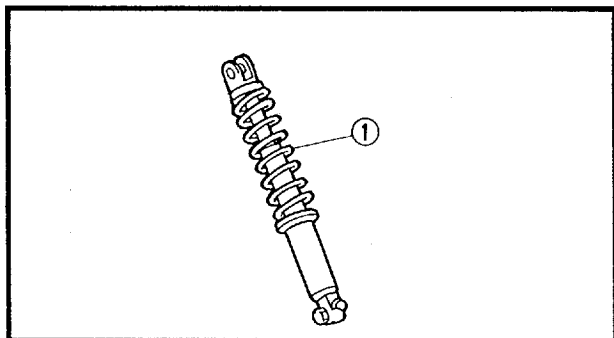
**HANDLING NOTES**

(VX500XTC/XTC/XTCE/XTCE, VX600XTC/
XTCE/XTCE/SX, VX700SX)

⚠ WARNING

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

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

**INSPECTION****1. Inspect:**

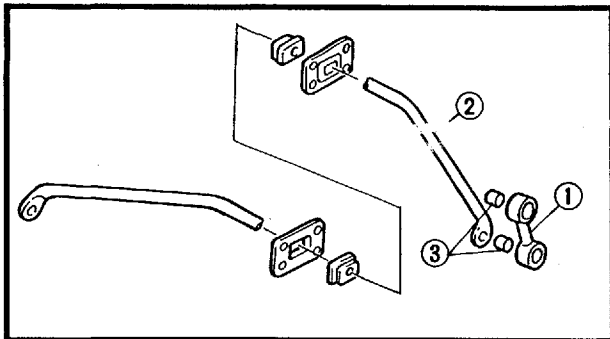
- Shock absorber ①
Oil (gas) leaks/bending/damage → Replace.

2. Inspect:

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

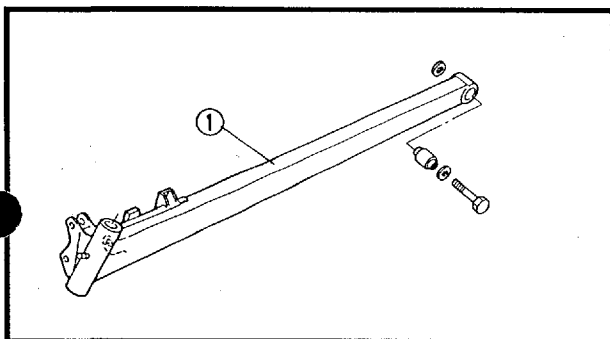
3. Inspect:

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



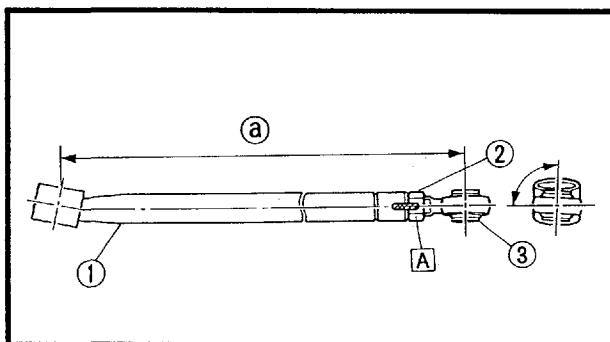
4. Inspect:

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



5. Inspect:

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



INSTALLATION

1. Install:

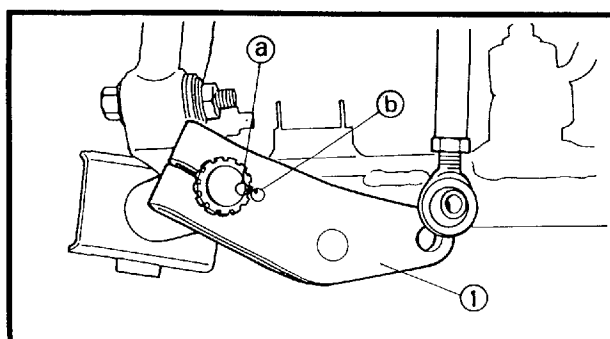
- Control rod ①
- Nut ②
- Joint ③

① Set length

- Ⓐ 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)

Ⓑ Specification

Ⓒ Model	Ⓓ Upper/Lower	Ⓔ Left hand		Ⓕ Right hand	
		Ⓕ Set length (mm)	Ⓖ Set angle (°)	Ⓕ Set length (mm)	Ⓖ Set angle (°)
XT/XTC VT500/600	Ⓘ Upper	475.5 ± 0.5 mm (18.72 ± 0.0197 in)	93 ± 1	475.5 ± 0.5 mm (18.72 ± 0.0197 in)	87 ± 1
	⓵ Lower	472.6 ± 0.5 mm (18.61 ± 0.0197 in)	93 ± 1	472.6 ± 0.5 mm (18.61 ± 0.0197 in)	87 ± 1
VX600SX VX700SX	Ⓘ Upper	460.2 ± 0.5 mm (18.12 ± 0.0197 in)	94 ± 1	460.2 ± 0.5 mm (18.12 ± 0.0197 in)	86 ± 1
	⓵ Lower	458.7 ± 0.5 mm (18.06 ± 0.0197 in)	94 ± 1	458.7 ± 0.5 mm (18.06 ± 0.0197 in)	86 ± 1
MM600 MM700	Ⓘ Upper	429.7 ± 0.5 mm (16.92 ± 0.0197 in)	93 ± 1	429.7 ± 0.5 mm (16.92 ± 0.0197 in)	87 ± 1
	⓵ Lower	428.7 ± 0.5 mm (16.88 ± 0.0197 in)	93 ± 1	428.7 ± 0.5 mm (16.88 ± 0.0197 in)	87 ± 1



2. Install:

- Steering arm ①

NOTE:

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



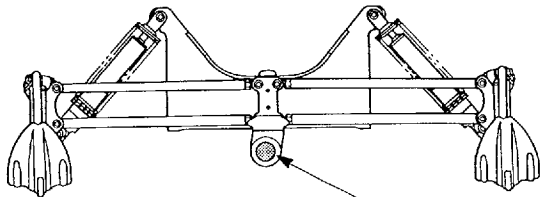
Nut (steering arm):
43 Nm (4.3 m • kg, 31 ft • lb)



Ski Spindle Camber:

Check the ski spindle camber with the unit sitting on a level surface. DO NOT elevate the front-end.

- ① Using an angle finder (Kent-Moore #YS-42422), be sure the unit is sitting parallel with the floor. Place the angle finder up against the flat aluminum part of the belly pan.



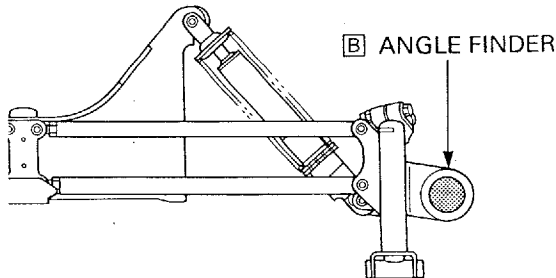
B ANGLE FINDER

- A** USE ANGLE FINDER TO VERIFY THE UNIT IS LEVEL.

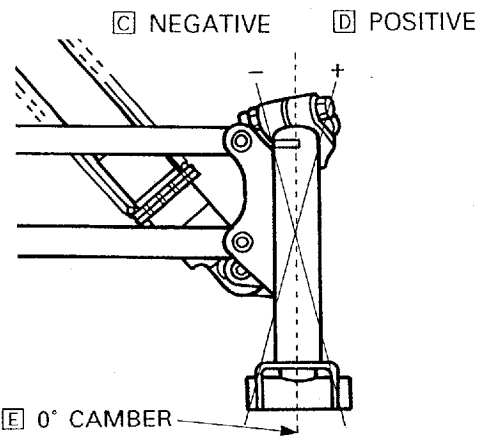
- ② Check the spindle camber by placing the angle finder up against the vertical flat surface on the trailing arm just behind the spindle weld.

SKI SPINDLE CAMBER

-0.5° to +0.5°



B ANGLE FINDER

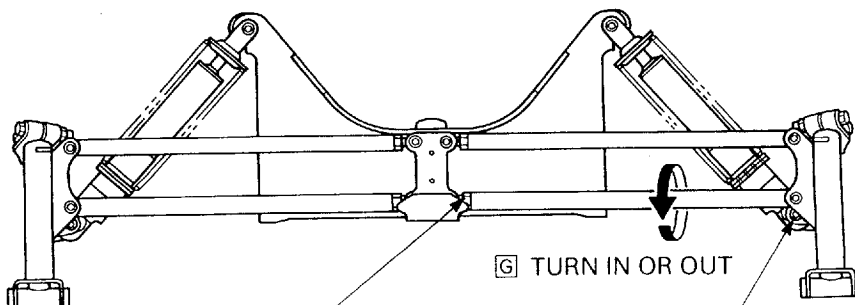


C NEGATIVE

D POSITIVE

E 0° CAMBER

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

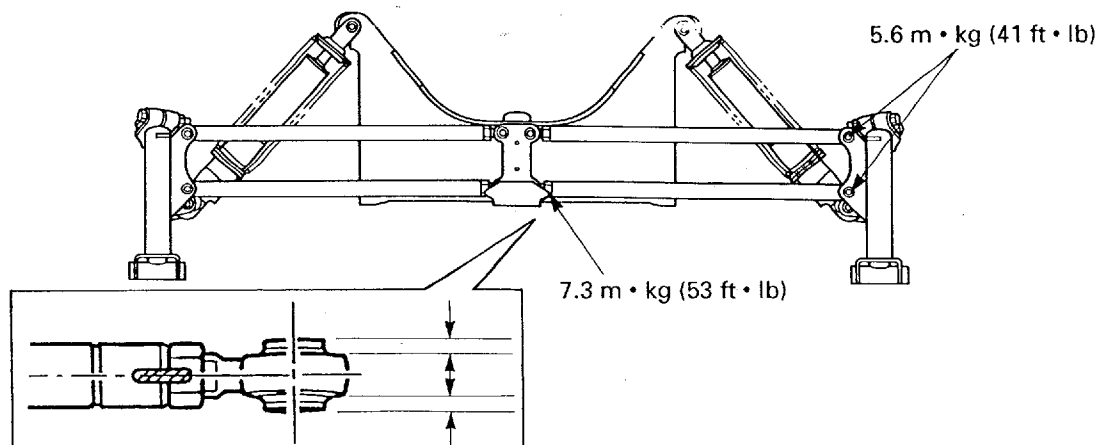


F LOOSEN LOCKNUT

G TURN IN OR OUT

H REMOVE BOLT

- 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:

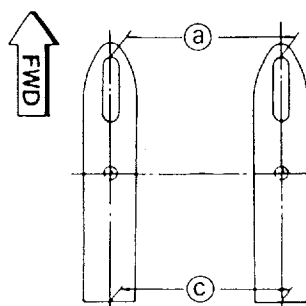
NOTE:

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

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

MODEL	SKI TOE OUT
VX500/600XT/XTC	5 to 20mm
VT500/600	5 to 20mm
MM600/700	3 to 18mm
VX600/700SX	3 to 18mm

Ⓐ - Ⓒ = Toe out



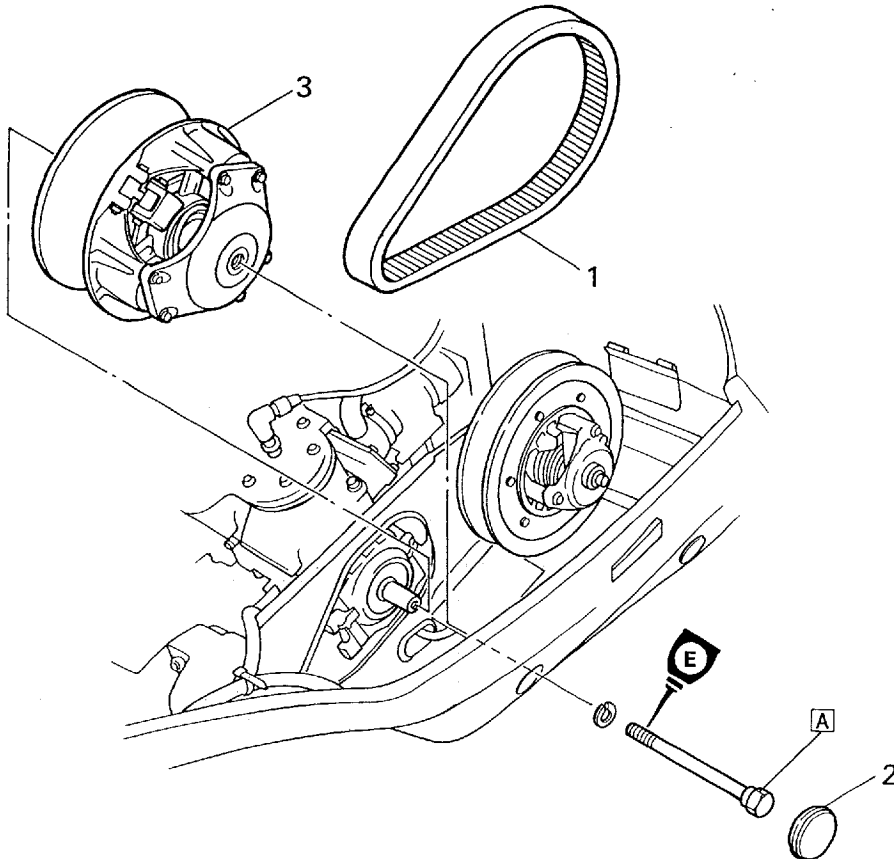
CHAPTER 4. POWER TRAIN

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POWER TRAIN

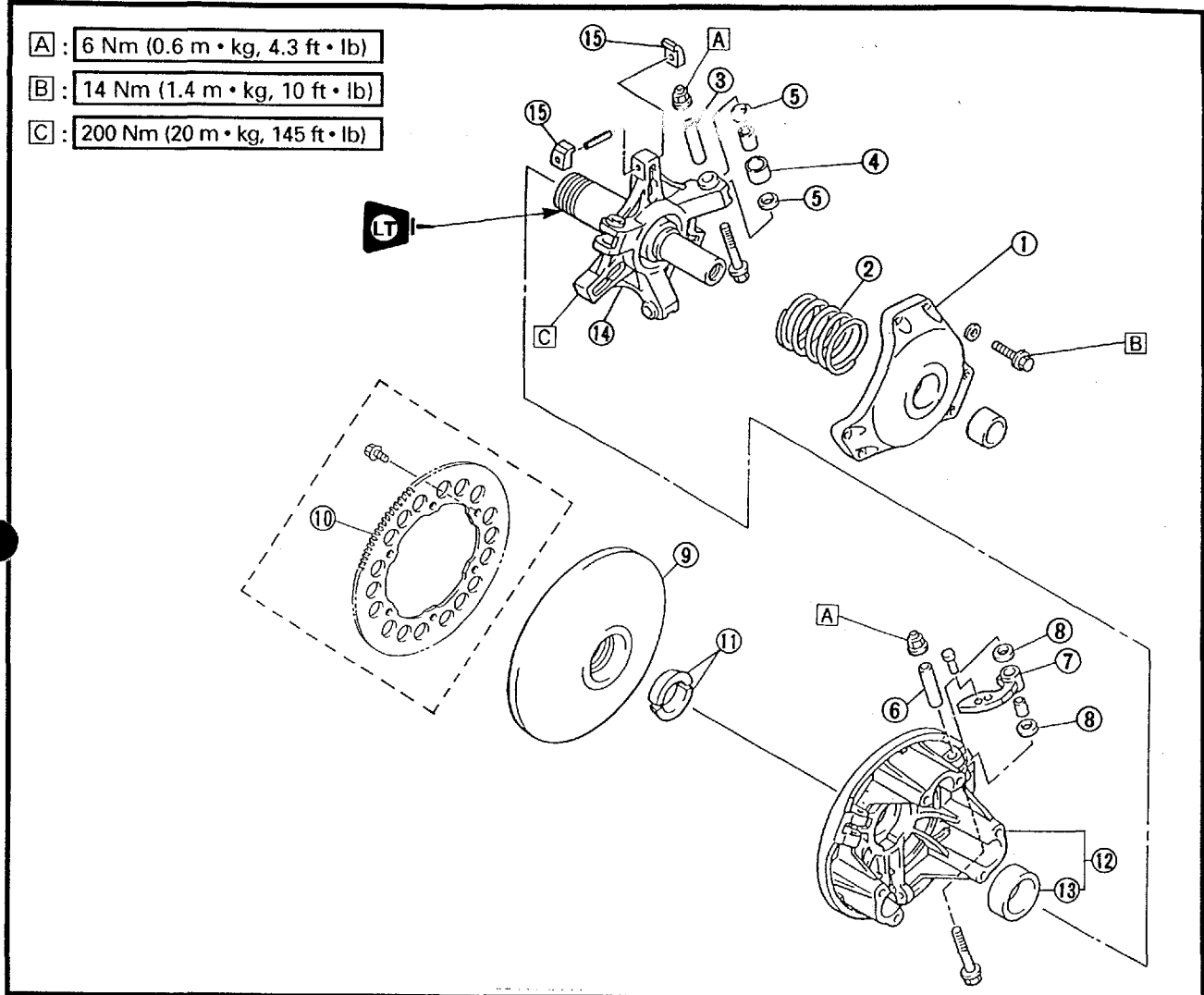
PRIMARY SHEAVE AND DRIVE V-BELT

A:	1st	120 Nm (12.0 m • kg, 87 ft • lb)
	2nd	60 Nm (6.0 m • kg, 43 ft • lb)



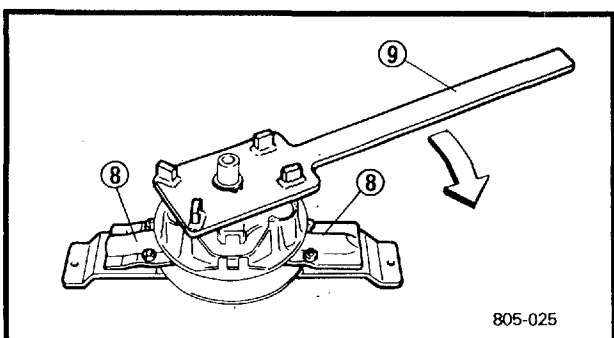
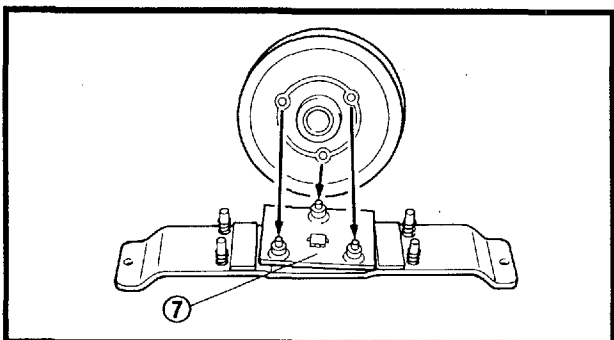
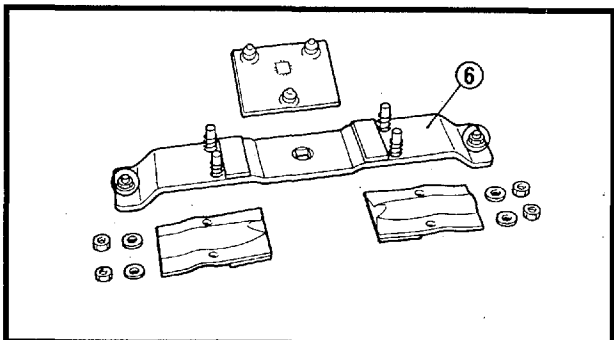
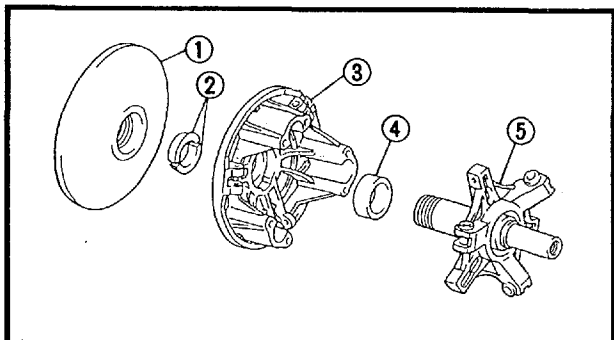
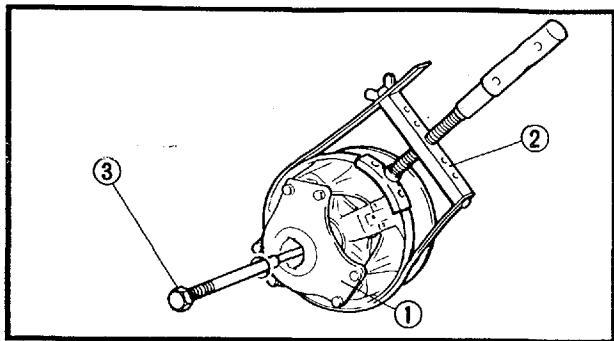
Order	Job name/Part name	Q'ty	Remarks
	Primary sheave removal		
1	V-belt	1	Remove the parts in the order below.
2	Blind cap	1	
3	Primary sheave assembly	1	
			For installation, reverse the removal procedure.

PRIMARY SHEAVE AND DRIVE V-BELT



Order	Job name/Part name	Q'ty	Remarks
	Primary sheave disassembly		Disassemble the parts in the order below.
①	Primary sheave cap	1	
②	Primary sheave spring	1	
③	Collars	3	
④	Rollers	3	
⑤	Washers	6	
⑥	Collars	3	
⑦	Weights	3	
⑧	Washers	6	
⑨	Fixed sheave	1	
⑩	Starter motor driven gear	1	(VX500/600 XTCE, XTCE, VT500/600)
⑪	Stopper	1	
⑫	Sliding sheave	1	
⑬	Bushing	1	
⑭	Spider	1	
⑮	Sliders	6	
			For assembly, reverse the disassembly procedure.

PRIMARY SHEAVE AND DRIVE V-BELT



805-025

REMOVAL

1. Remove:

- Primary sheave assembly ①

NOTE:

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



Primary sheave holder: ②
90890-01701, YS-01880

Primary sheave puller: ③
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 approximately 80° ~ 100° C (176° ~ 212° F) water for several minutes.
- Hold the lower piece of the Clutch Spider Separator (90890-01711, YS-28890-B) ⑥ on a rigid table using suitable mounting bolts. Then, install the Clutch Separator Adapter (90890-01740, YS-34480) ⑦ onto the separator.
- Fit the primary sheave assembly onto the adapter, and secure the supporting plates ⑧.

NOTE:

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

- Set the bar wrench (90890-01711, YS-28890-B) ⑨ onto the spider and turn the special tool clockwise to loosen the spider.

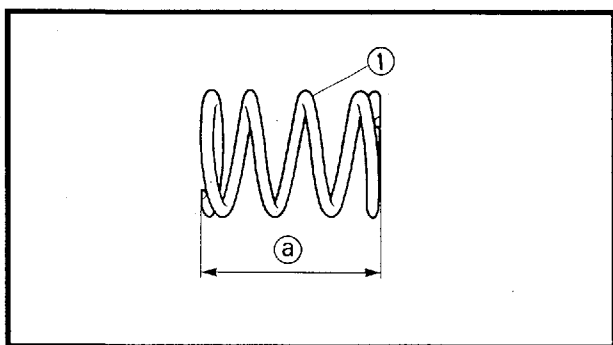
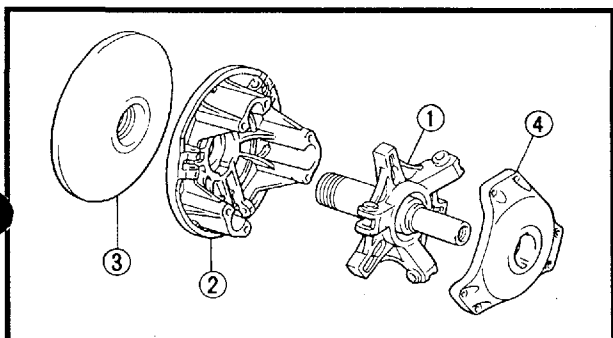
CAUTION:

- Spider has a left-hand thread.
- To loosen the spider, high torque is required so be sure that the spider, fixed sheave and special tool are placed securely. Loosen the spider carefully to prevent cracks and/or damage to the sheaves and spider.

PRIMARY SHEAVE AND DRIVE V-BELT



- 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.

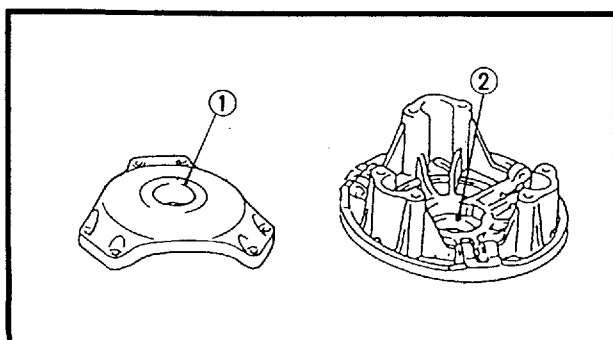
3. Measure:

- Primary sheave spring free length ②
- Out of specification → Replace.



Primary sheave spring free length:

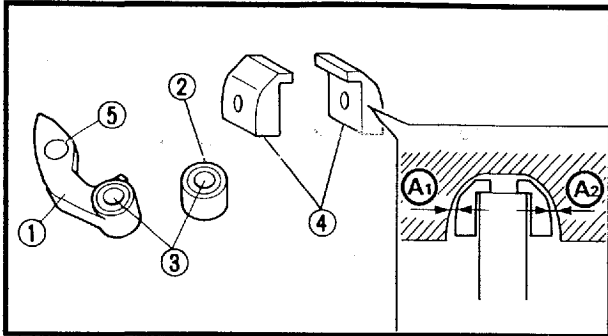
78.7 mm (3.1 in) (500)
 81.0 mm (3.19 in) (600)
 77.4 mm (3.05 in) (VX700SX)
 76.3 mm (3.00 in) (MM700)



4. Inspect:

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

PRIMARY SHEAVE AND DRIVE V-BELT



5. Inspect:

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

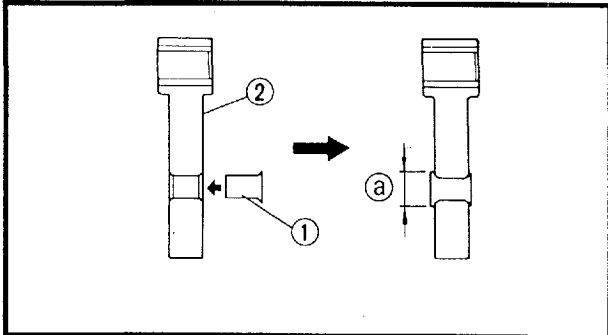
Wear/scratches/damage → Replace.



Slider inside clearance (A₁) + (A₂)

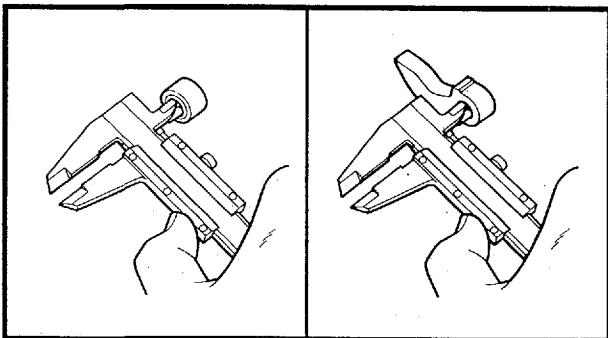
Min. 0.10 mm (0.0039 in)

Max. 0.45 mm (0.0177 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 rivet head measures to 8.2 mm (0.32 in) or larger.



6. Measure:

- Bushing inside diameter

Out of specification → Replace as a set.

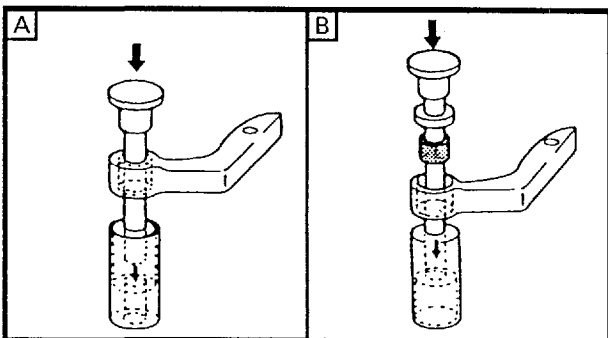


Bushing inside diameter

	Roller	Weight
New	8.0 mm (0.31 in)	←
Wear limit	8.2 mm (0.32 in)	←

NOTE:

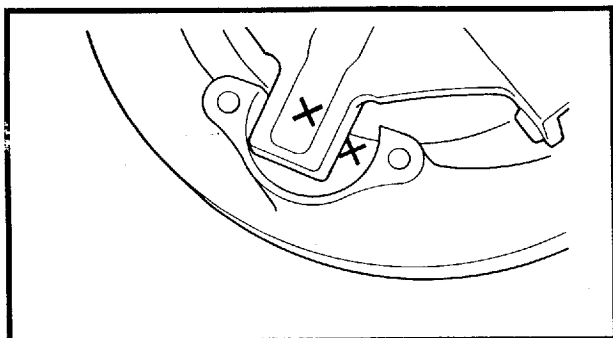
When replace the weight and roller bushings, use the YXR clutch bushing jig kit (YS-39752).



A Removing

B Installing

PRIMARY SHEAVE AND DRIVE V-BELT



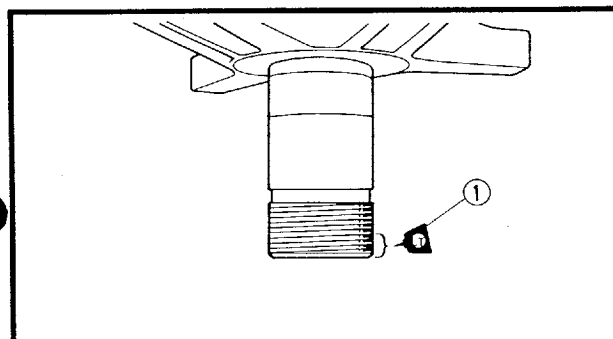
ASSEMBLY

1. Install:

- Sliding sheave
(onto spider)

NOTE:

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



2. Install:

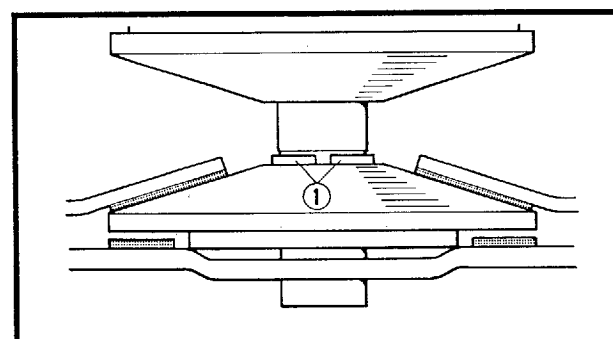
- Fixed sheave
(onto spider)

NOTE:

Apply LOCTITE® ① to the first 4 threads of the spider.

CAUTION:

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

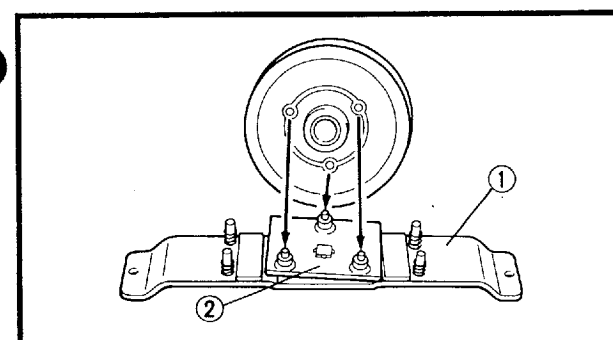


3. Install:

- Fixed sheave stoppers ①

NOTE:

Stopper tapered portion should face fixed sheave.



4. Tighten:

- Spider

Tightening steps:

- Finger-tighten the spider until it stopped by fixed sheave stopper.
- Hold the fixed sheave with the Clutch Spider Separator (90890-01711, YS-28890-B) ①.

NOTE:

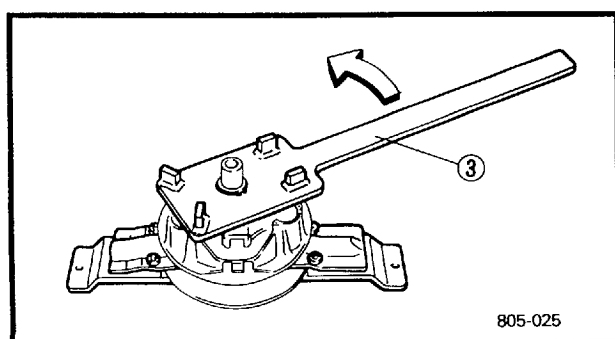
Securely fit the projections of the Clutch Separator Adapter ② into the fixed sheave holes.

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



Spider:

200 Nm (20 m • kg, 145 ft • lb)



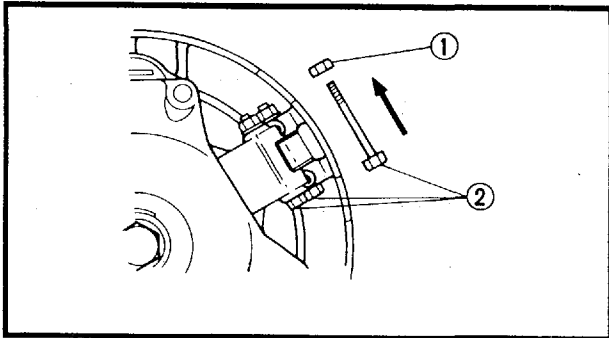
805-025

CAUTION:

Spider has a left-hand thread.

WARNING

- Do not operate the primary sheave until the LOCTITE® has dried completely. Wait 24 hours before operating primary sheave.
- Since the tightening torque is high, make sure the spider, fixed sheave, and special tool are placed securely. Tighten the spider carefully to prevent cracks and/or damage to the sheaves and spider.



5. Install:

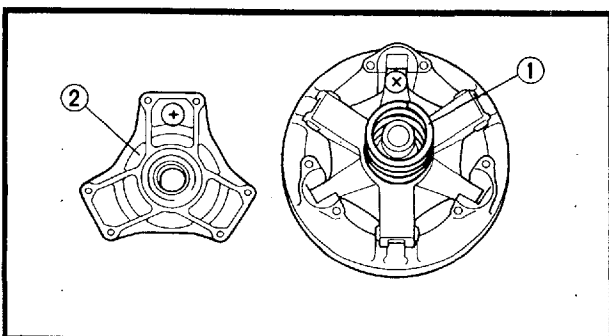
- Weight



Nut ①:
6 Nm (0.6 m • kg, 4.3 ft • lb)

NOTE:

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



6. Install:

- Primary sheave spring ①
- Primary sheave cap ②

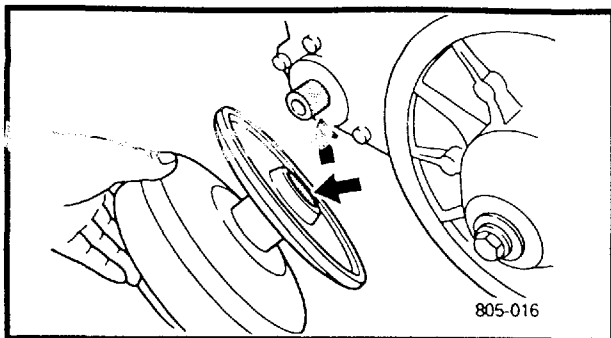
NOTE:

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)

PRIMARY SHEAVE AND DRIVE V-BELT



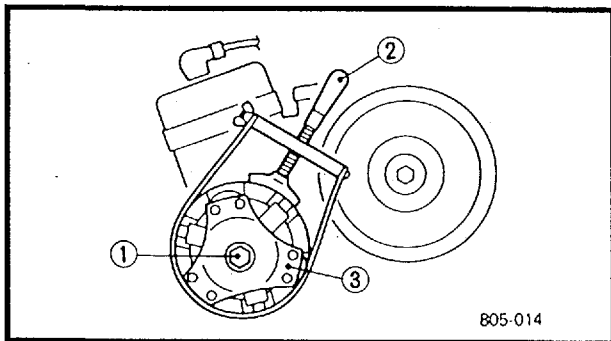
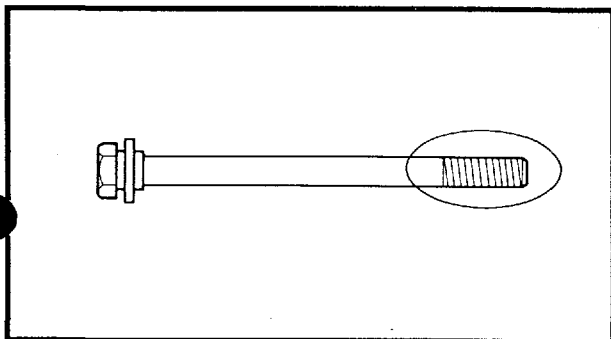
INSTALLATION

1. Install:

- Primary sheave assembly

CAUTION:

Be sure to remove any oil and/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 (90890-01701, YS-01880) ② and tighten the bolt (primary sheave) to specification.



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

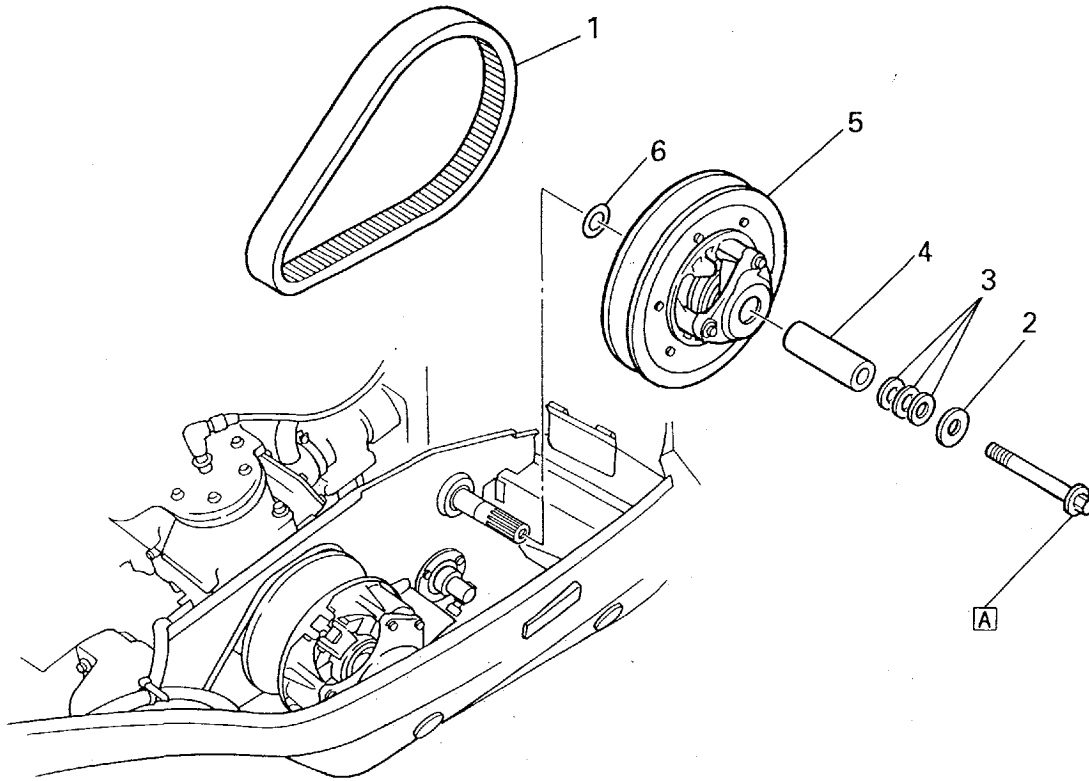
- Loosen the bolt (primary sheave) completely.
- Retighten the bolt (primary sheave) to specification.



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

SECONDARY SHEAVE

[A] : 64 Nm (6.4 m • kg, 4.6 ft • lb)

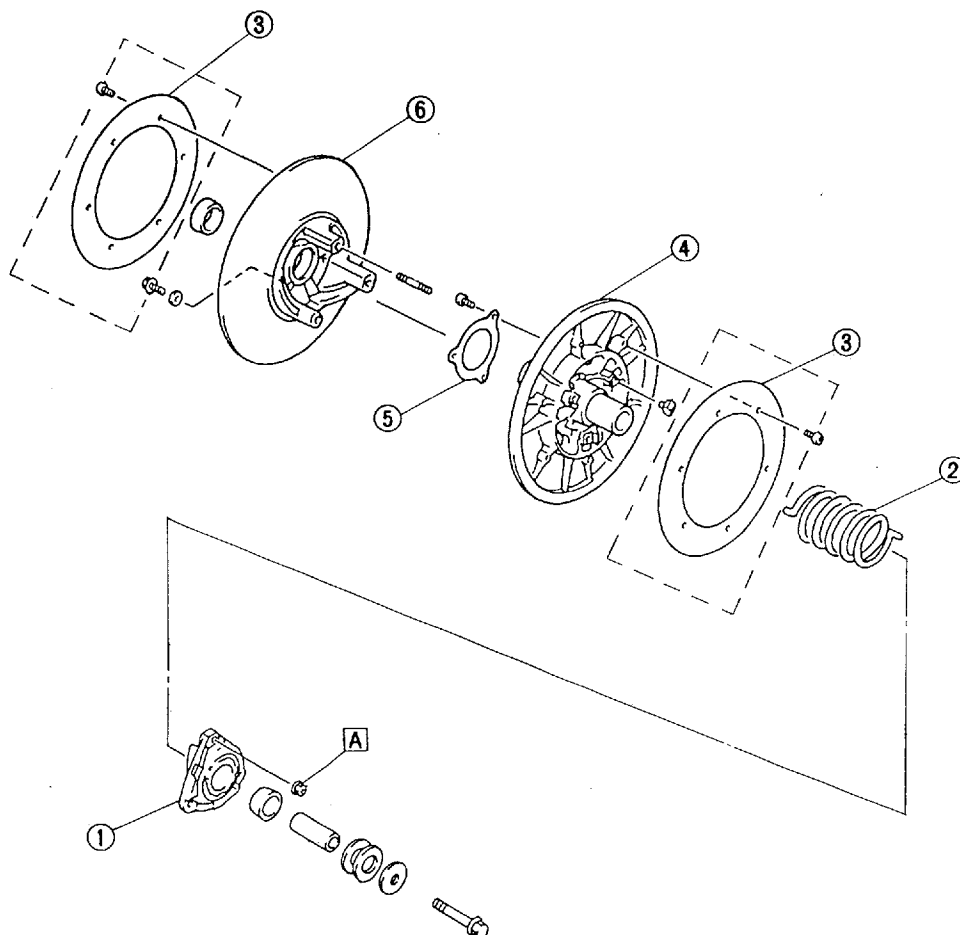


Order	Job name/Part name	Q'ty	Remarks
	Secondary sheave removal		Remove the parts in the order below.
1	V-belt	1	
2	Washer	1	
3	Shims	3	
4	Collar	1	
5	Secondary sheave assembly	1	
6	Shim	1	
			For installation, reverse the removal procedure.

SECONDARY SHEAVE



[A] : 23 Nm (2.3 m • kg, 17 ft • lb)

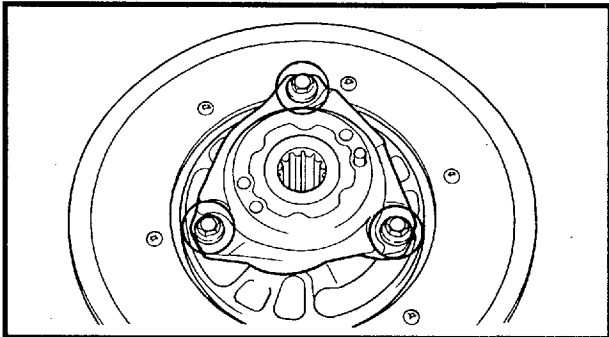


Order	Job name/Part name	Q'ty	Remarks
	Secondary sheave disassembly		Disassemble the parts in the order below.
①	Spring seat	1	VX600XTC/XTCE/XTCR/SX, VX700SX
②	Secondary sheave spring	1	
③	Secondary sheave plates	2	
④	Fixed sheave	1	
⑤	Stopper	1	
⑥	Sliding sheave	1	For assembly, reverse the disassembly procedure.

DISASSEMBLY

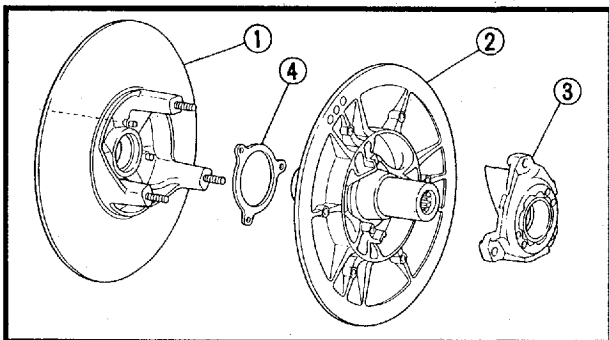
⚠ WARNING

- Use extreme **CAUTION** when disassembling the secondary sheave as serious injury can occur from the sudden release of spring tension. Use the Sheave Compressor (90890-01712, YS-28891) to contain the spring tension before removing the nut (spring seat).
- Do not attempt the 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:

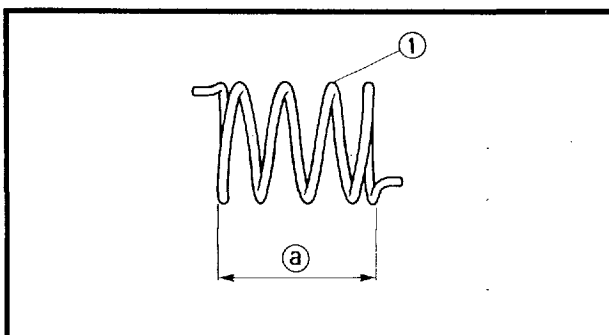
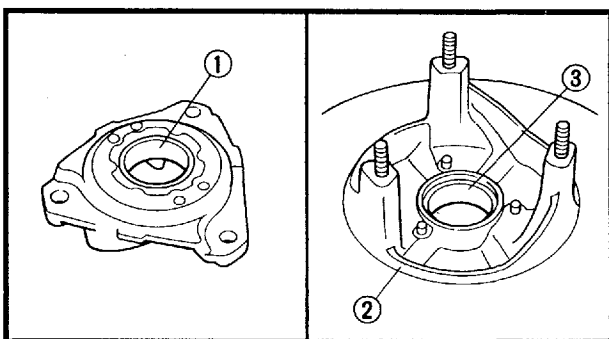
- Bushing (spring seat) ①
- Sliding sheave (V-belt contact surface) ②
Scratches/wear/damage → Replace.
- Sliding bushing ③
Unsymmetrical wear/damage → Replace.

3. Inspect:

- Secondary sheave spring ①
Cracks/damage → Replace.

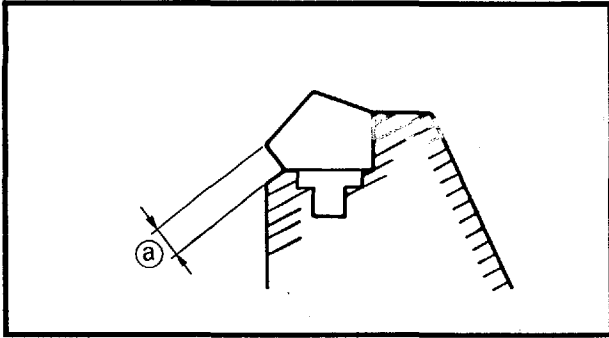
4. Measure:

- Torsion spring free length ①
Less than specification → Replace.



Free length limit:
75 mm (2.95 in)

SECONDARY SHEAVE

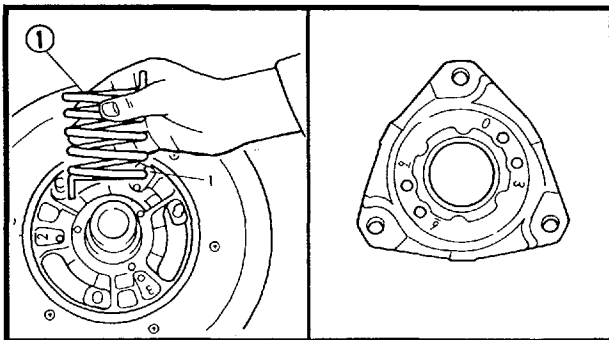


5. Measure:

- Ramp shoe thickness ②
- Out of specification → Replace.



Wear limit:
1.0 mm (0.04 in)



ASSEMBLY

1. Install:

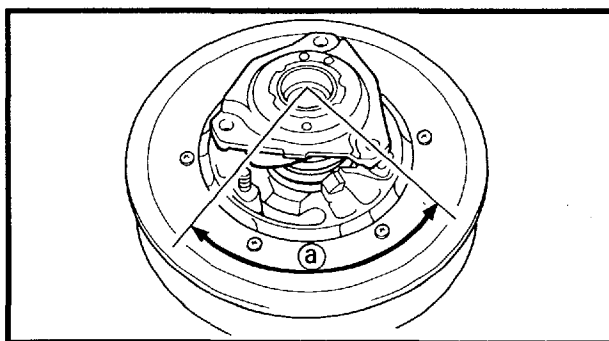
- Secondary sheave spring ①

NOTE:

Hook the end of the secondary sheave spring onto the spring holes in the fixed sheave and in the spring seat.

Standard spring position:

- 1-3 (VX500XT/XTC/XTCE/XTCR, VT500)
- 2-3 (VX600XT/XTC/XTCE/XTCR, VT600, MM600)
- 3-3 (VX600SX, MM700)
- 1-6 (VX700SX)



Installation steps:

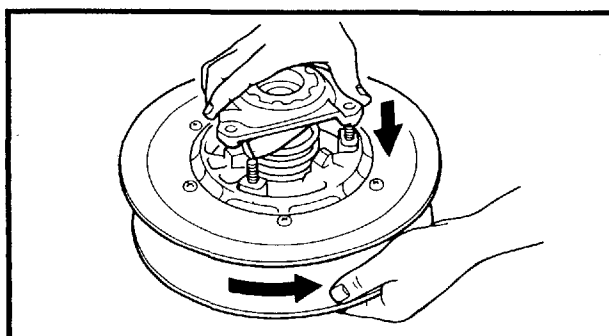
- Attach the sheave compressor.
- Turn the sliding sheave counterclockwise to the specified angle ②.
- Hold the sliding sheave and fixed sheave in this position.

Standard twist angle ②:

- 40° (VX500XT/XTC/XTCE/XTCR, VT500)
- 50° (VX600XT/XTC/XTCE/XTCR, VT600, MM600)
- 60° (VX600SX, MM700)
- 70° (VX700SX)

② = (sheave side hole number + spring seat side hole number) × 10

- Turn in the sheave compressor screw so that the spring seat engages with the fixed sheave.



SECONDARY SHEAVE



INSTALLATION

1. Lubricate:

- Splines (fixed sheave)



Recommended grease:

ESSO beacon 325 grease or
Aero shell grease #7A

2. Tighten:



Secondary sheave bolt:

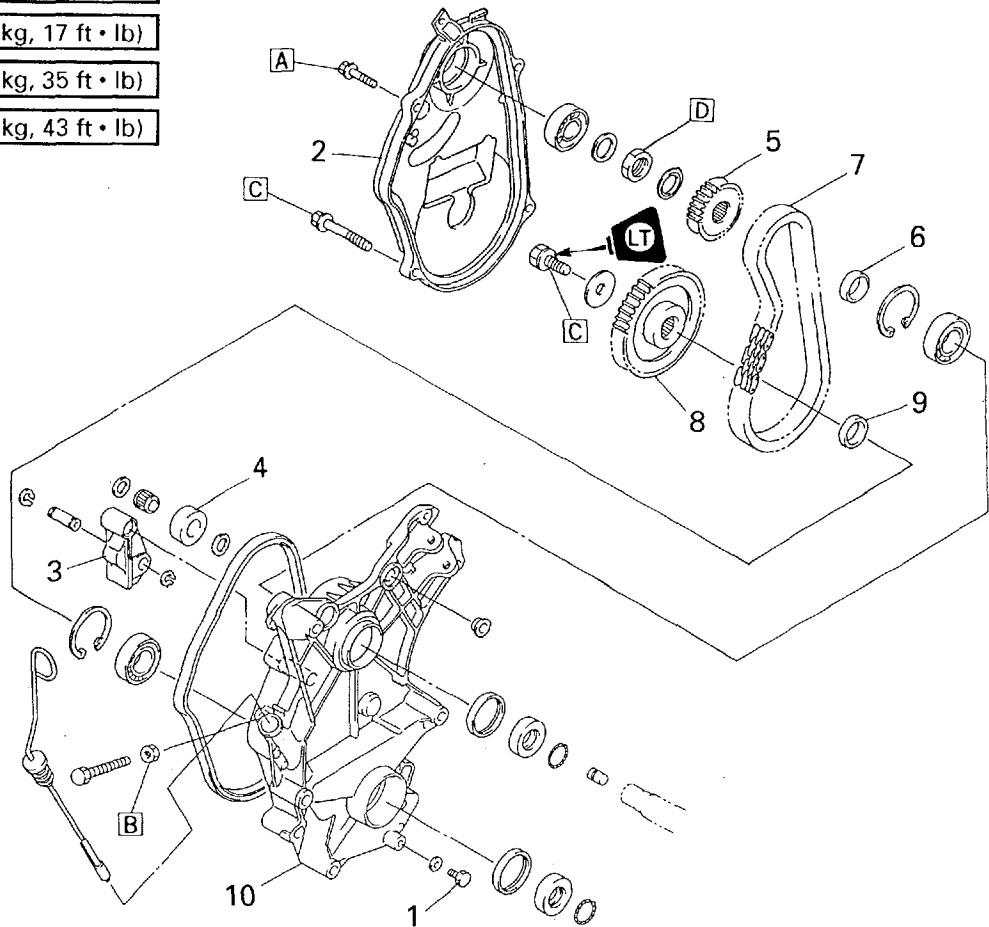
64 Nm (6.4 m • kg, 46 ft • lb)

3. Adjust:

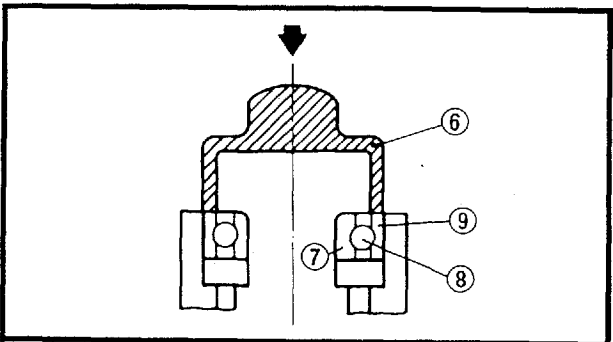
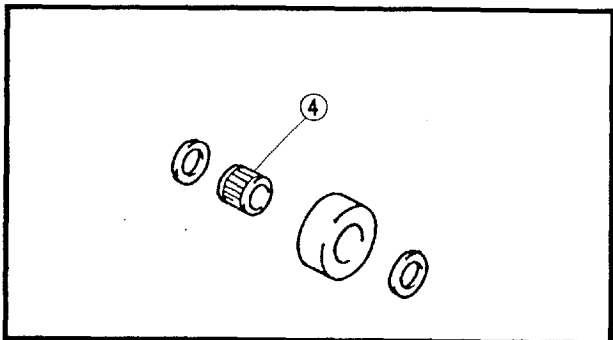
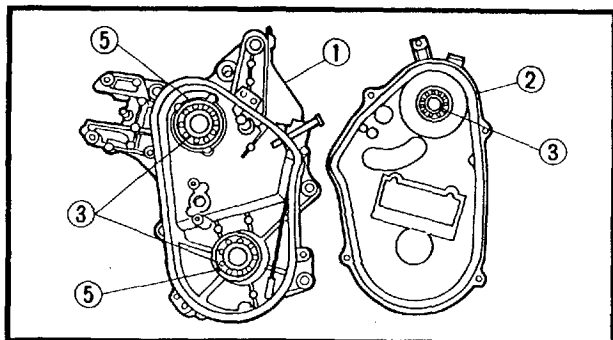
- V-belt position
- Sheave distance
- Sheave offset
- Free play (clearance)

DRIVE CHAIN HOUSING WITHOUT REVERSE MODEL

- [A] : 10 Nm (1.0 m • kg, 7.2 ft • lb)
 [B] : 24 Nm (2.4 m • kg, 17 ft • lb)
 [C] : 48 Nm (4.8 m • kg, 35 ft • lb)
 [D] : 60 Nm (6.0 m • kg, 43 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Drive chain housing removal		Remove the parts in the order below. Refer to "BRAKE".
	Brake caliper		
	Parking brake		
	Tension adjuster		Loosen. Refer to "SLIDE RAIL SUSPENSION".
1	Bolt	1	Oil drain.
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)
- Cover (drive chain housing) (2)
Cracks/damage → Replace.
- Oil seals (drive chain housing)
Wear/damage → Replace.
- Bearings (drive chain housing, cover) (3)
Pitting/damage → Replace.
- Bearing (chain tensioner) (4)
Pitting/damage → Replace bearing and 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 matches the outside diameter of the race of the bearing.

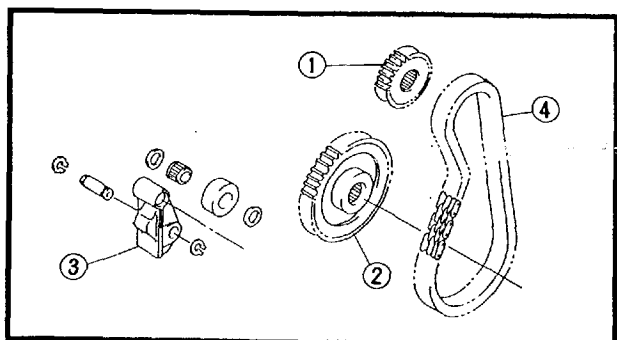
CAUTION:

Do not strike the inner race (7) or ball bearings (8). Contact should be made only with the outer race (9).

- Install the new circlip (bearing housing).

CAUTION:

Always use a new circlip.

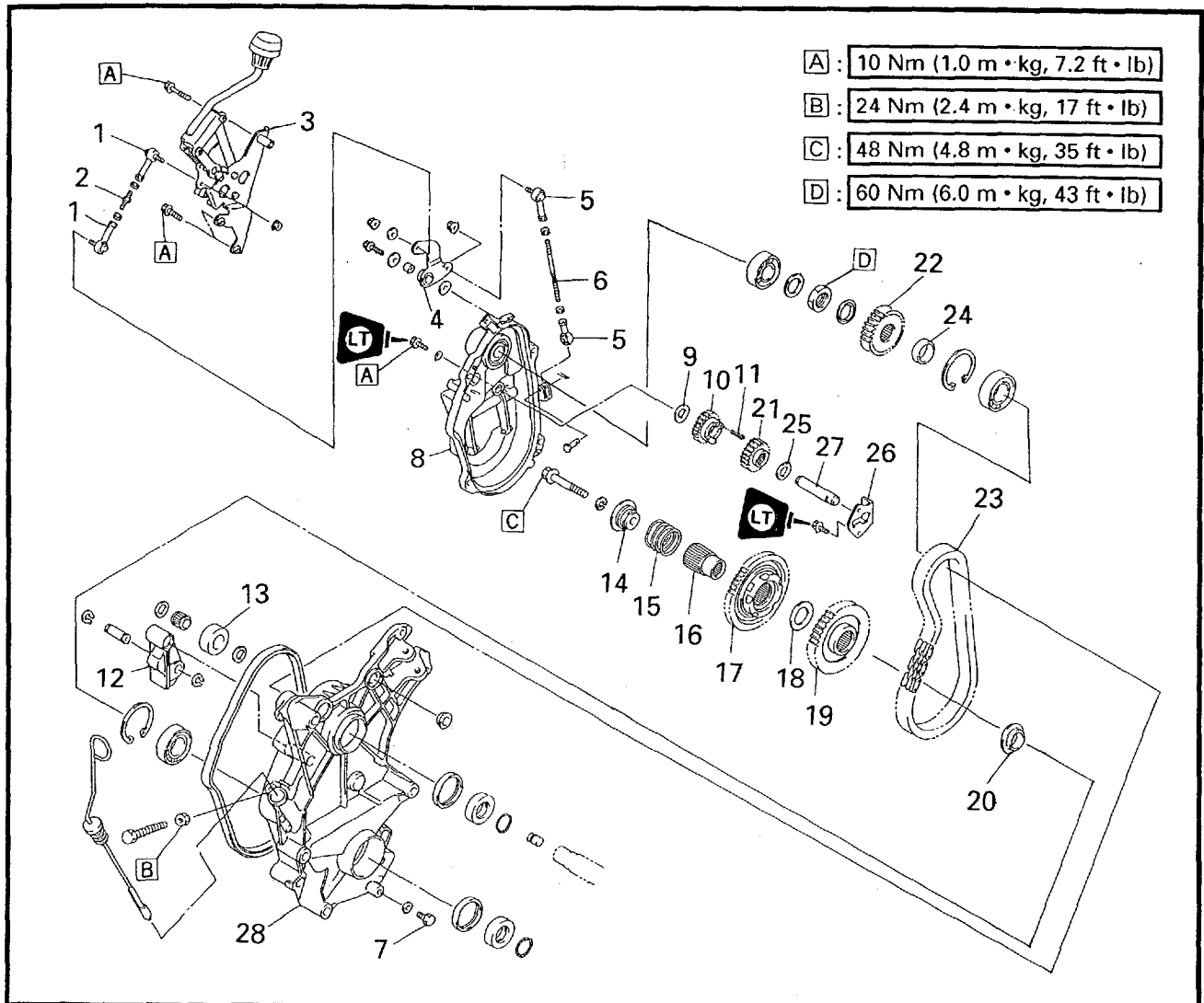


2. Inspect:

- 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.



WITH REVERSE MODEL

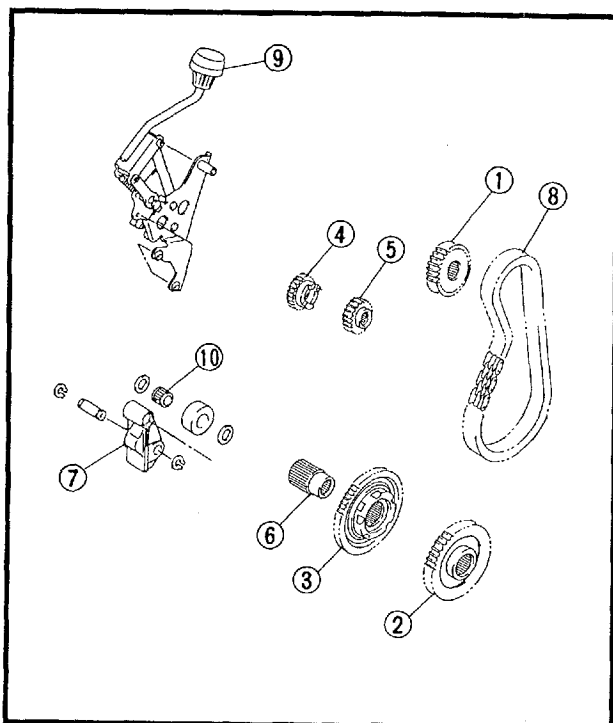
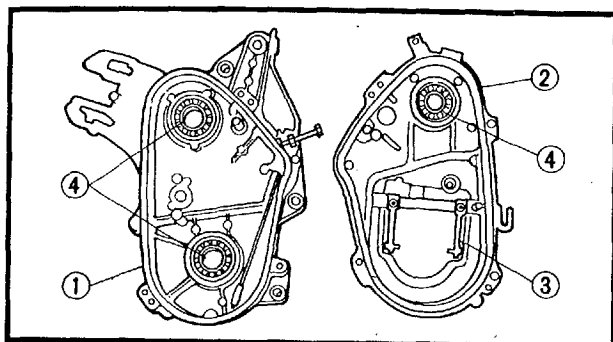


Order	Job name/Part name	Q'ty	Remarks
	Drive chain housing removal		Remove the parts in the order below.
	Battery		
	Battery bracket		
	Brake caliper		Refer to "BRAKE".
	Parking brake		
	Tension adjuster		Loosen. Refer to "SLIDE RAIL SUSPENSION".
1	Joints	2	
2	Shift rod	1	
3	Shift lever assembly	1	
4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

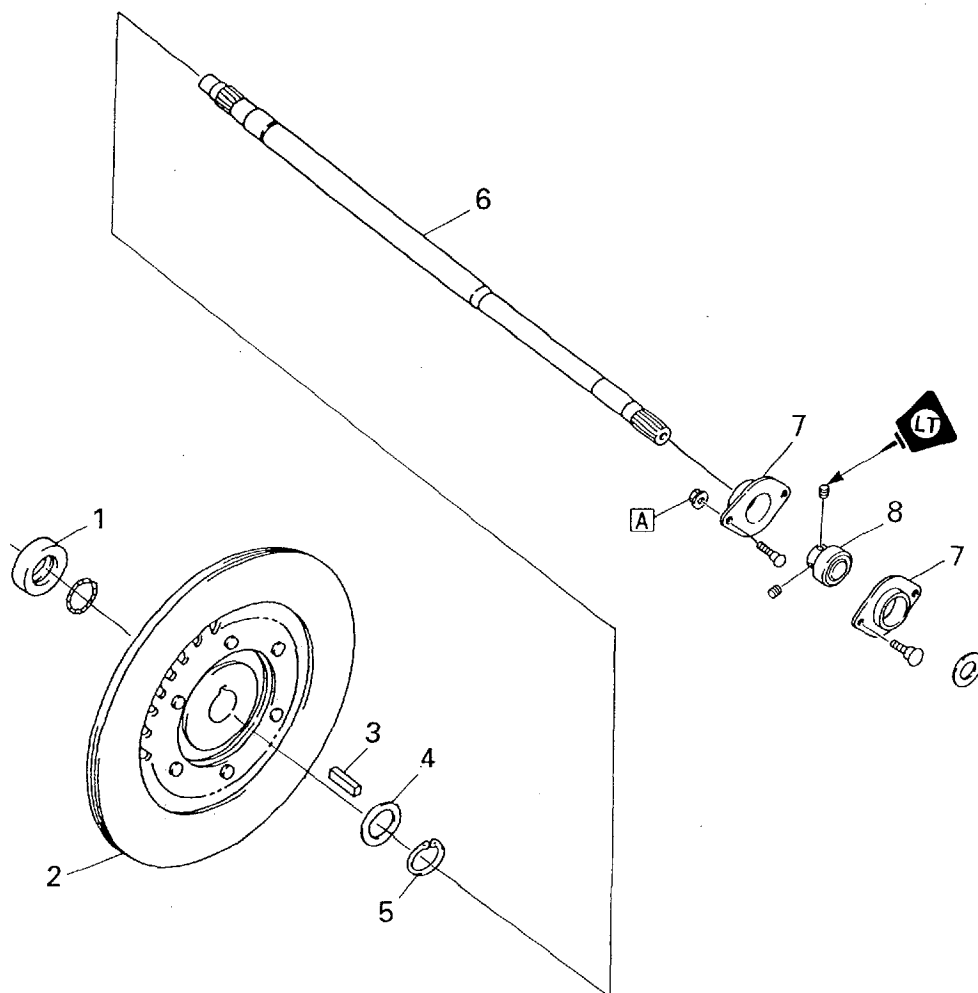
Bearing replacement steps

Refer to "WITH OUT REVERSE MODEL".

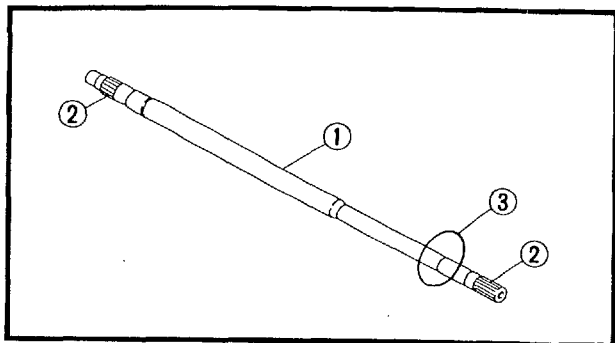


JACKSHAFT

[A] : 23 Nm (2.3 m • kg, 17 ft • lb)

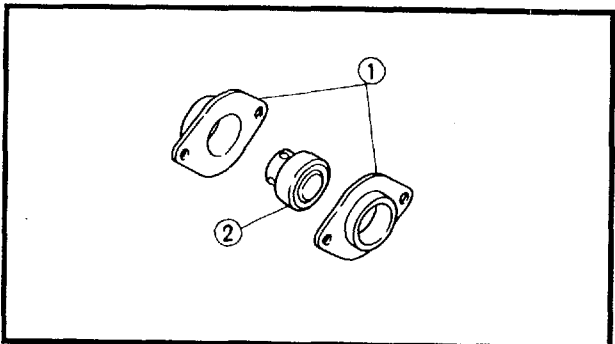


Order	Job name/Part name	Q'ty	Remarks
	Jack shaft removal		
	Secondary sheave		Remove the parts in the order below.
	Silencer		Refer to "SECONDARY SHEAVE".
	Drive chain housing		Refer to "DRIVE CHAIN HOUSING".
1	Collar	1	
2	Brake disc	1	
3	Key	1	
4	Washer	1	
5	Circlip	1	
6	Jack shaft	1	
7	Bearing holders	2	
8	Bearing	1	
			For installation, reverse the removal procedure.



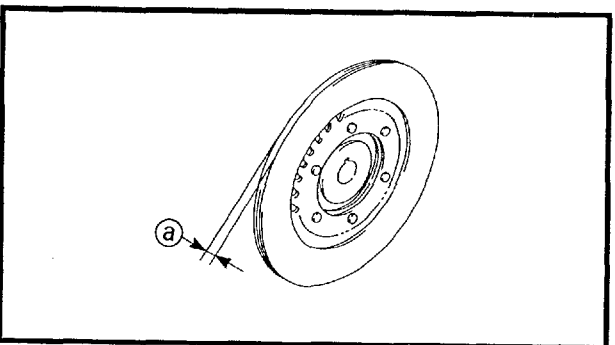
1. Inspect:

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



2. Inspect:

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



3. Measure:

- Brake disc thickness ①
Out of specification → Replace.



Minimum thickness:
9.0 mm (0.35 in)

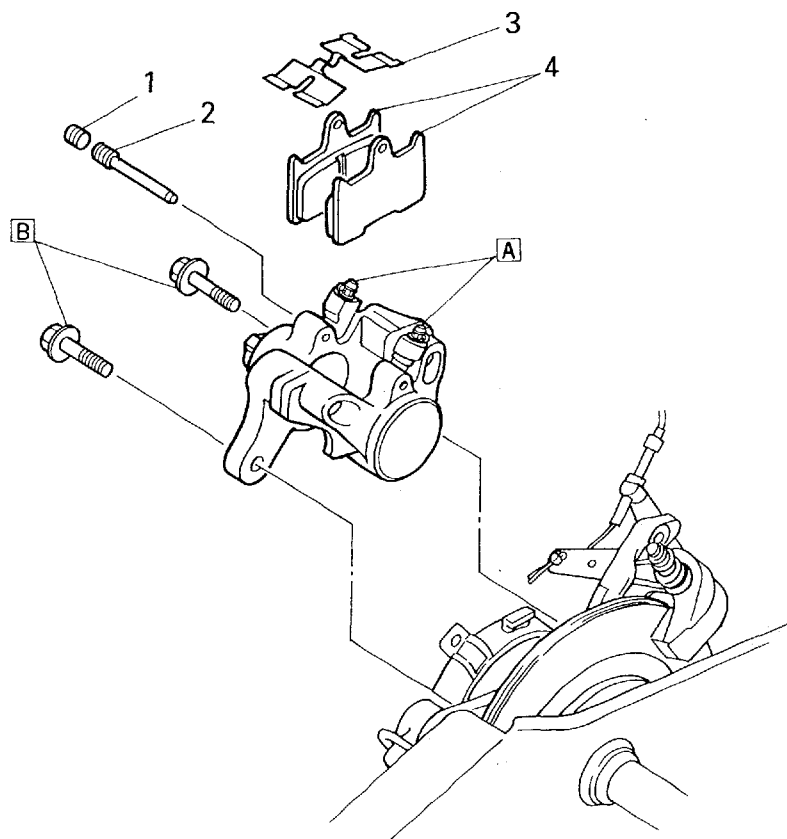
Measuring point 1 ~ 3



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 below.
2	Retaining pin	1	
3	Pad spring	1	
4	Brake pad	2	
			For installation, reverse the removal procedure.

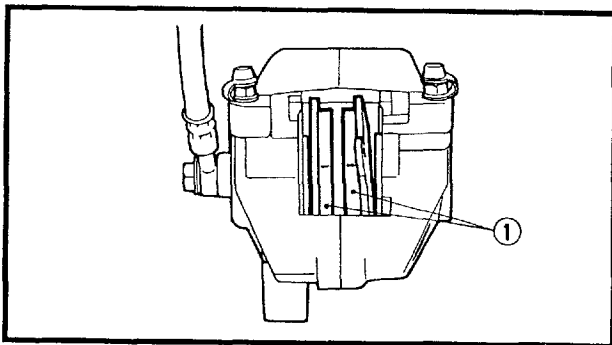
**CAUTION:**

Disc brake components rarely require disassembly. DO NOT:

- Disassemble components unless absolutely necessary.
- Use solvents on internal brake components.
- Use contaminated brake fluid for cleaning.
Use only clean brake fluid.
- Allow brake fluid to come in contact with the eyes, otherwise eye injury may occur.
- Allow brake fluid to contact painted surfaces or plastic parts otherwise damage may occur.
- Disconnect any hydraulic connection otherwise the entire system must be disassembled, drained, cleaned, and then properly filled and bled after reassembly.

BRAKE PAD REPLACEMENT**NOTE:**

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

**1. Remove:**

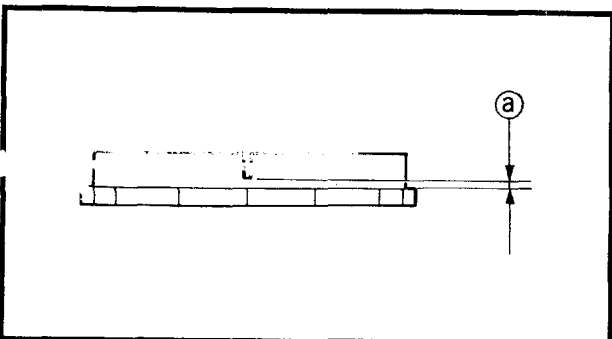
- Brake pads ①

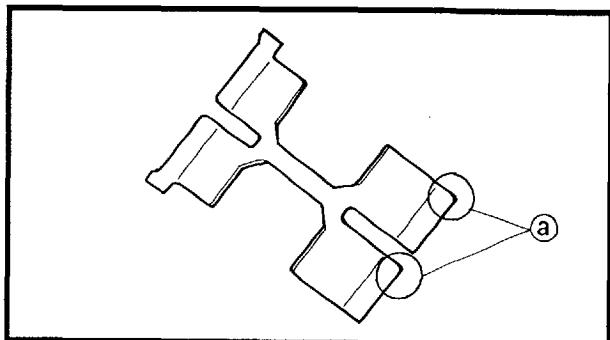
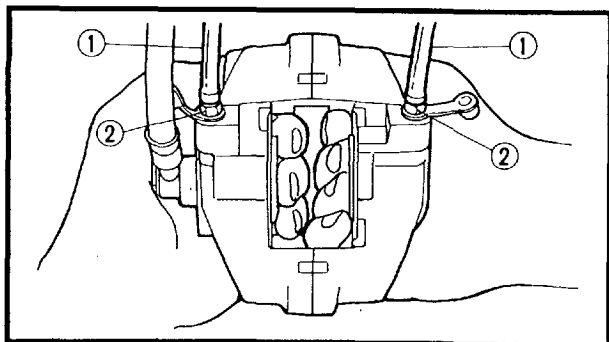
NOTE:

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



Wear limit ②:
1.0 mm (0.04 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 the 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 ③ of the pad spring must point in the direction of the disc rotation.

3. Inspect:

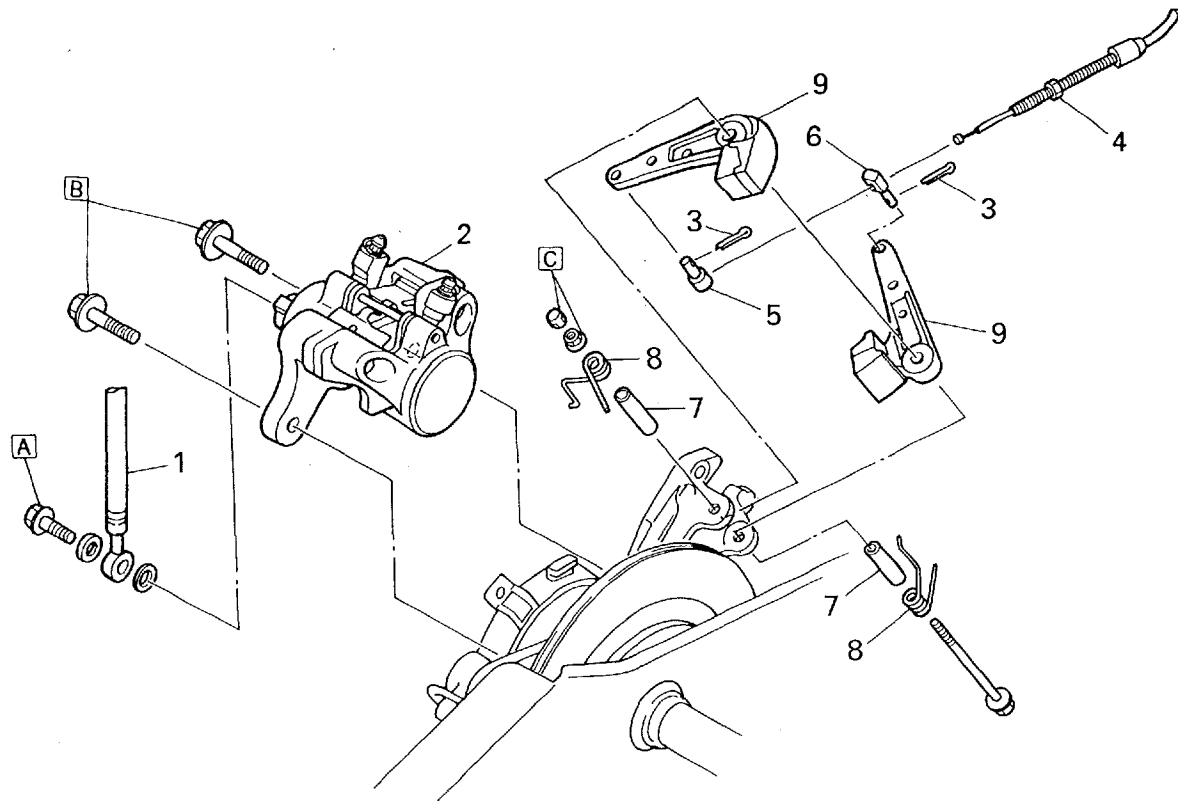
- Brake fluid level
Refer to "BRAKE FLUID LEVEL INSPECTION".

4. Check:

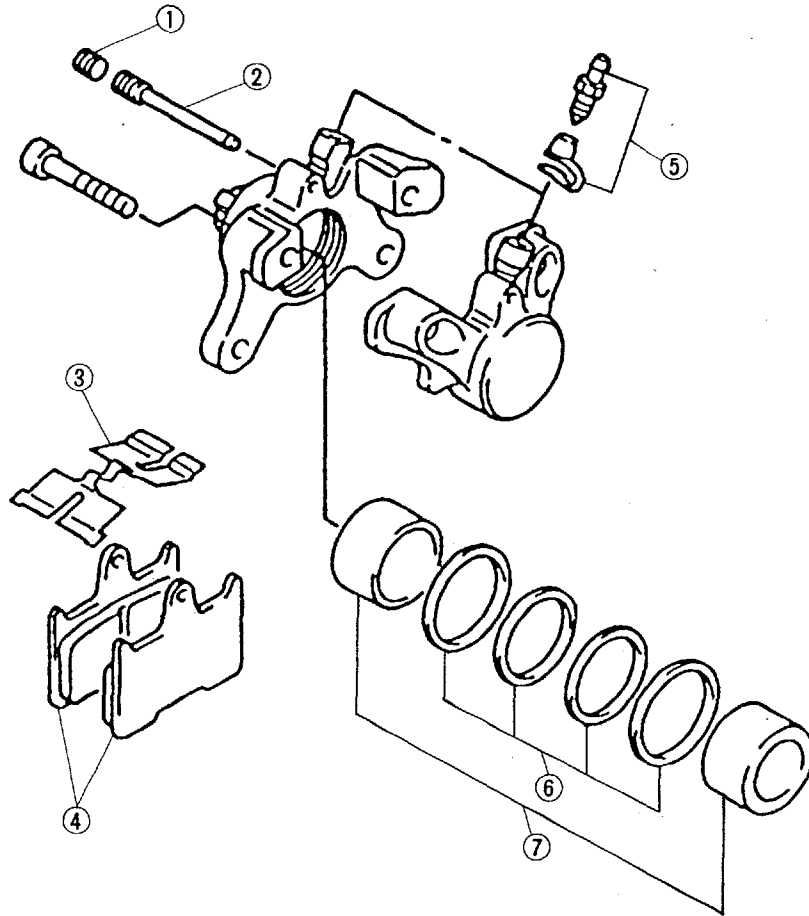
- Brake lever operation
A soft or spongy feeling → Bleed brake system.
Refer to "AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)".



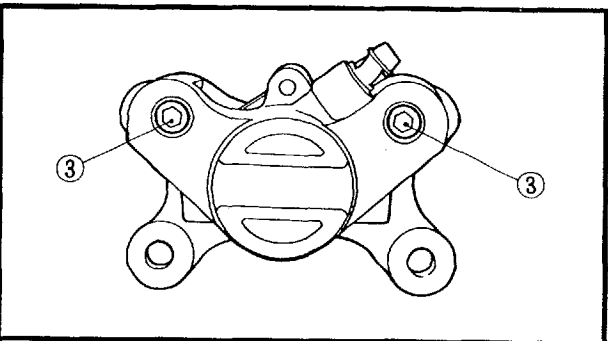
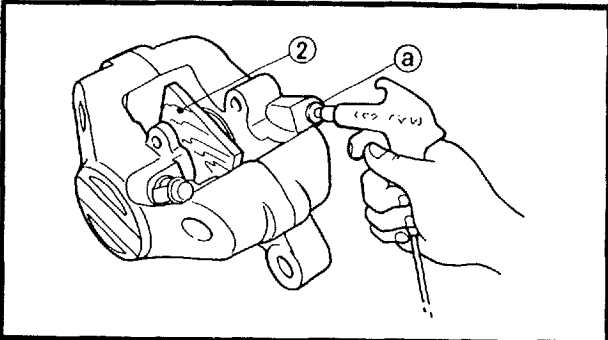
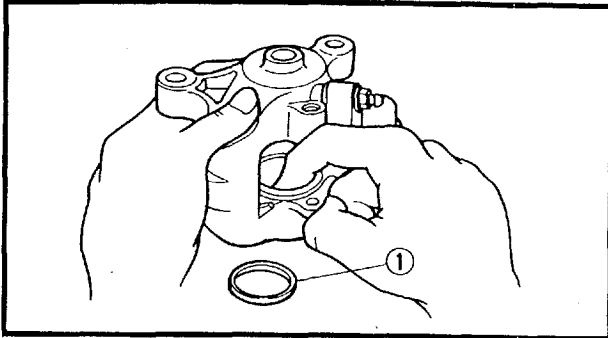
- [A] : 30 Nm (3.0 m • kg, 22 ft • lb)
 [B] : 48 Nm (4.8 m • kg, 35 ft • lb)
 [C] : 10 Nm (1.0 m • kg, 7.2 ft • lb)



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



Order	Job name/Part name	Q'ty	Remarks
	Brake caliper disassembly		Disassembly the parts in the order below.
①	Cap bolt	1	
②	Retaining pin	1	
③	Pad spring	1	
④	Brake pads	2	
⑤	Bleed screws	2	
⑥	Oil seals	4	
⑦	Pistons	2	
			For assembly, reverse the disassembly procedure.



CALIPER DISASSEMBLY

NOTE:

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

1. Remove:

- Pistons
- Piston seals ①

Removal steps:

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

⚠ WARNING

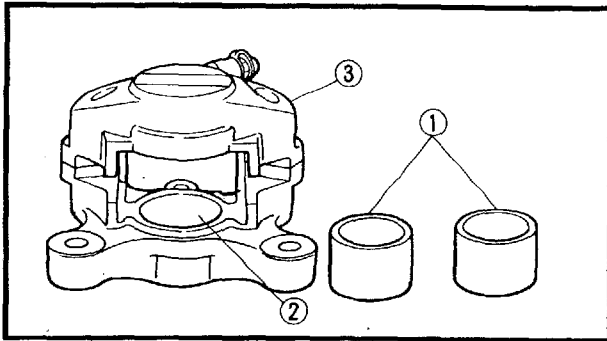
- Never try to pry out the piston.
- Do not loosen the bolts ③.

CALIPER INSPECTION AND REPAIR

Recommended brake component replacement schedule:	
Brake pads	As required
Piston seals, dust seals	Every two years
Brake hose	Every two years
Brake fluid	Replace only when brakes are disassembled.

⚠ WARNING

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



1. Inspect:

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

⚠ WARNING

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

CALIPER ASSEMBLY

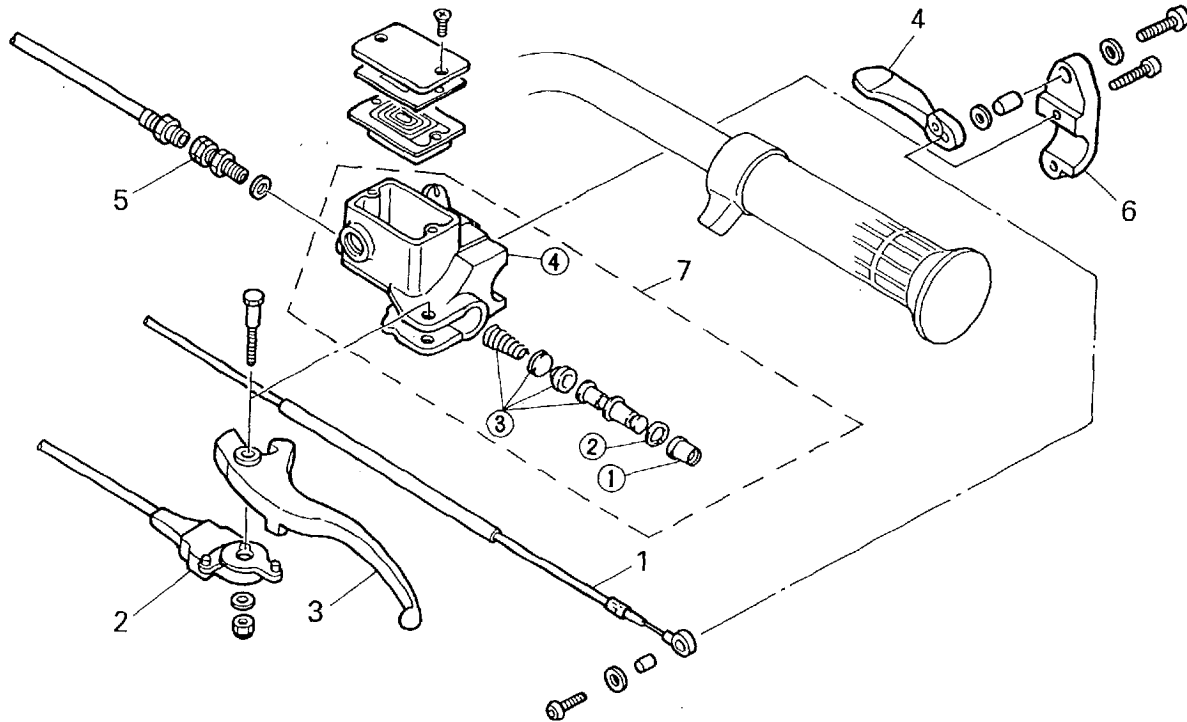
⚠ WARNING

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

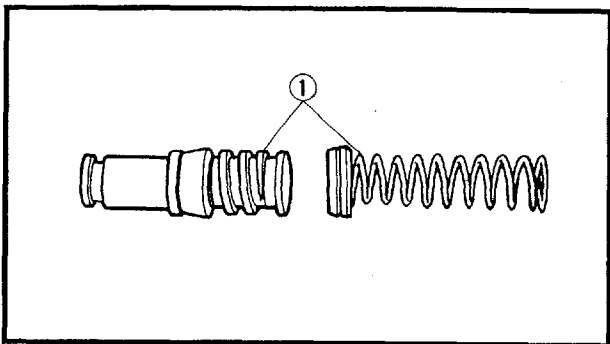
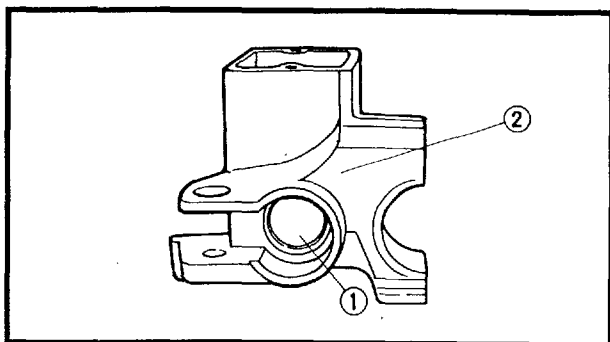


Recommended brake fluid:
DOT 4

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



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

**MASTER CYLINDER 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.

MASTER CYLINDER ASSEMBLY**⚠ WARNING**

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



Recommended brake fluid:
DOT 4

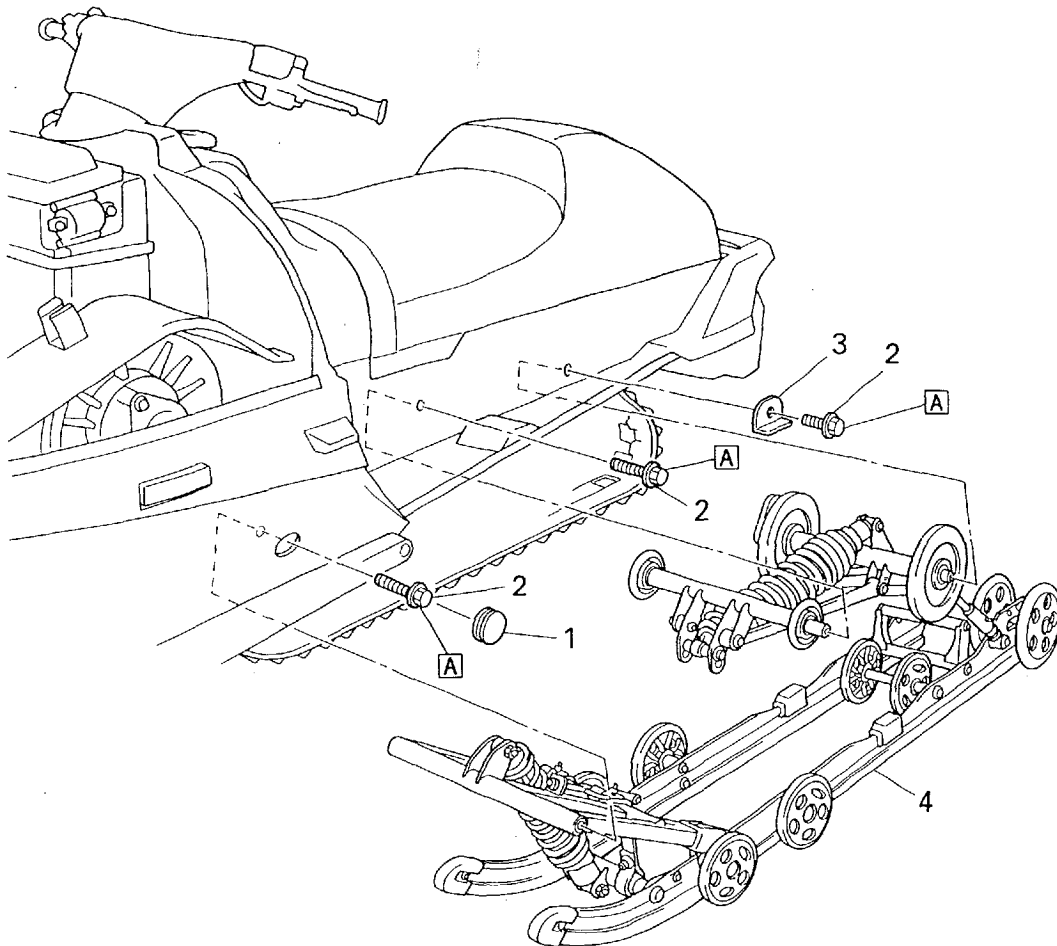
- Replace the piston seals and dust seals whenever a caliper is disassembled.



SLIDE RAIL SUSPENSION

VX500/600/700

[A] : 71 Nm (7.1 m • kg, 51 ft • lb)



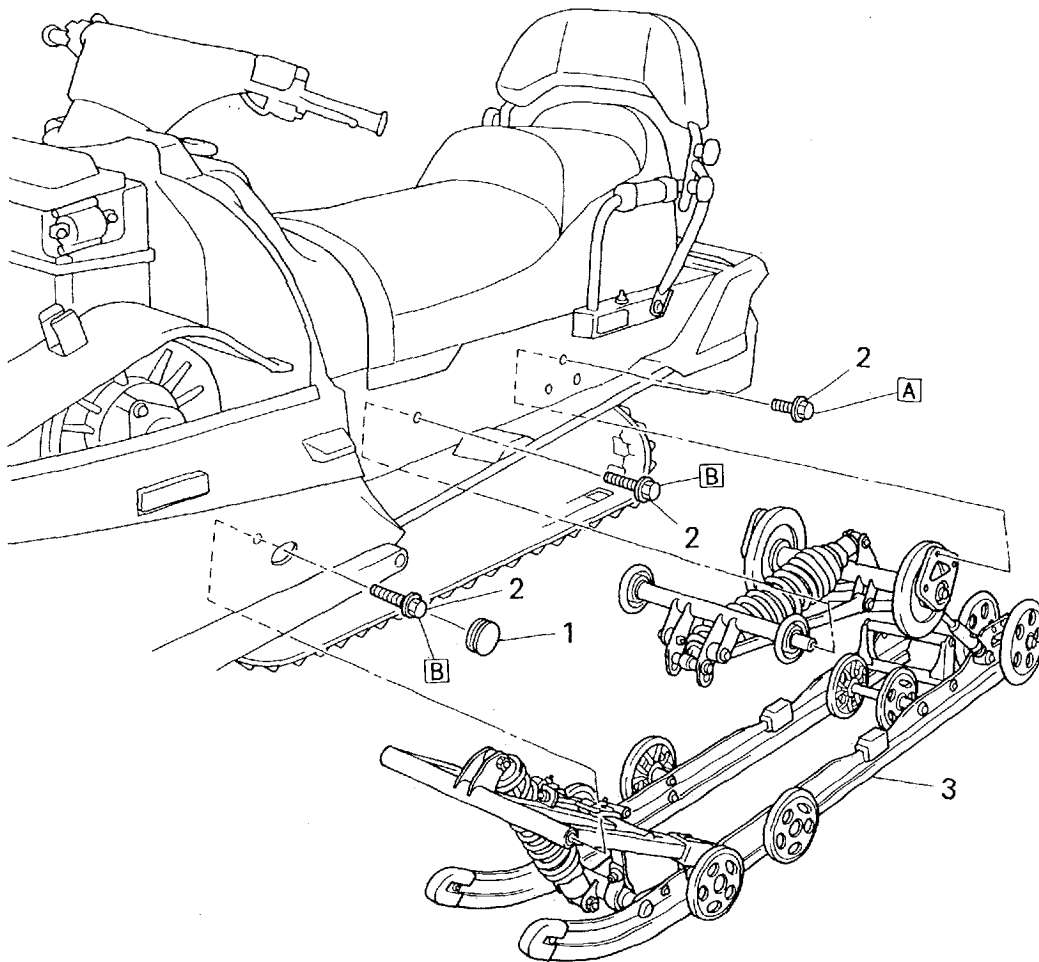
Order	Job name/Part name	Q'ty	Remarks
	Slide rail suspension removal		
	Tension adjuster		Remove the parts in the order below.
1	Blind caps	2	Loosen.
2	Bolts	6	
3	Washer	2	
4	Slide rail suspension	1	
			For installation, reverse the removal procedure.



VT500/600, MM600/700

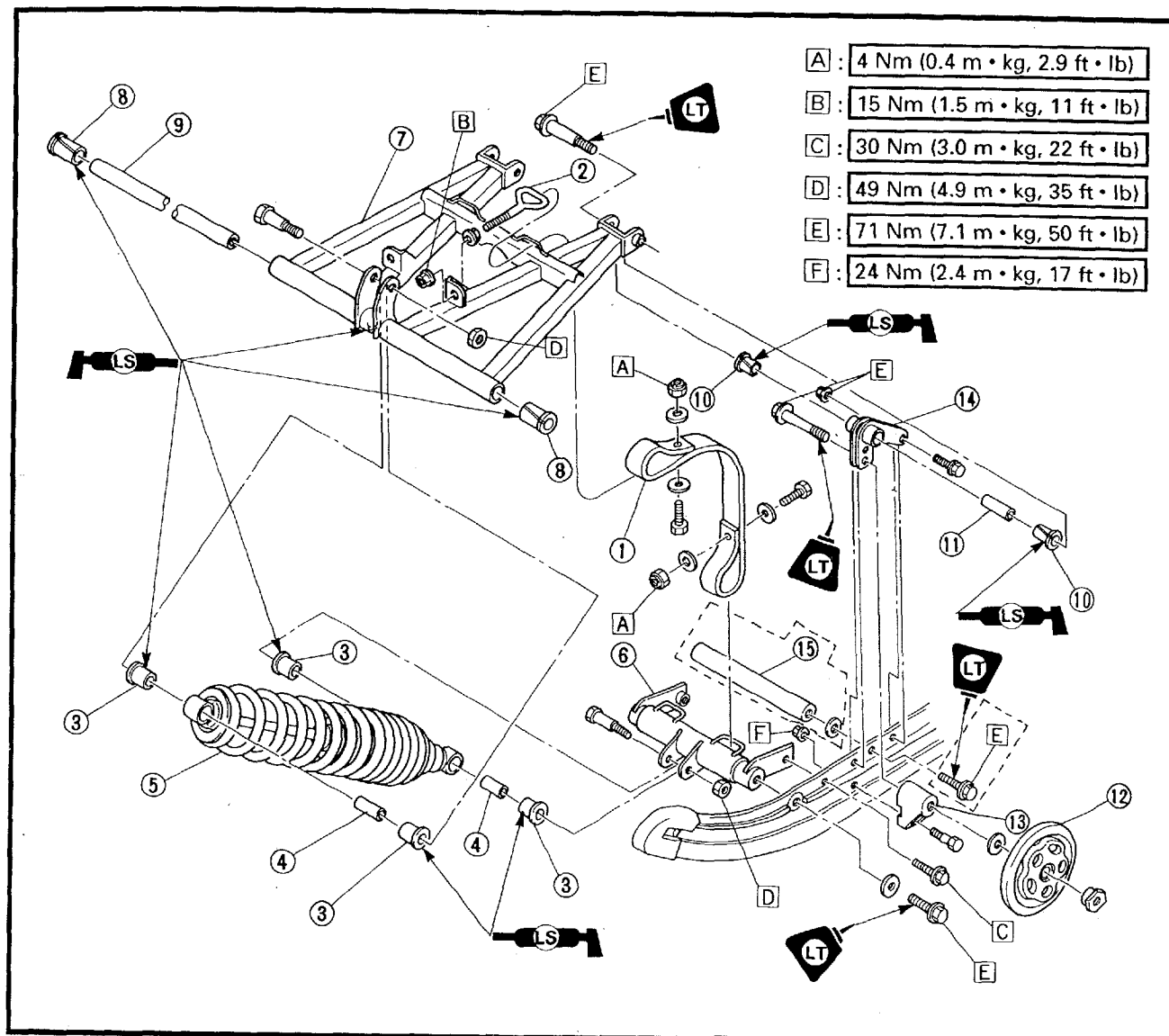
[A] : 24 Nm (2.4 m • kg, 17 ft • lb)

[B] : 71 Nm (7.1 m • kg, 51 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Slide rail suspension removal		
1	Tension adjuster	2	Remove the parts in the order below. Loosen.
2	Blind caps	10	
3	Bolts	1	
	Slide rail suspension		
			For installation, reverse the removal procedure.

SLIDE RAIL SUSPENSION



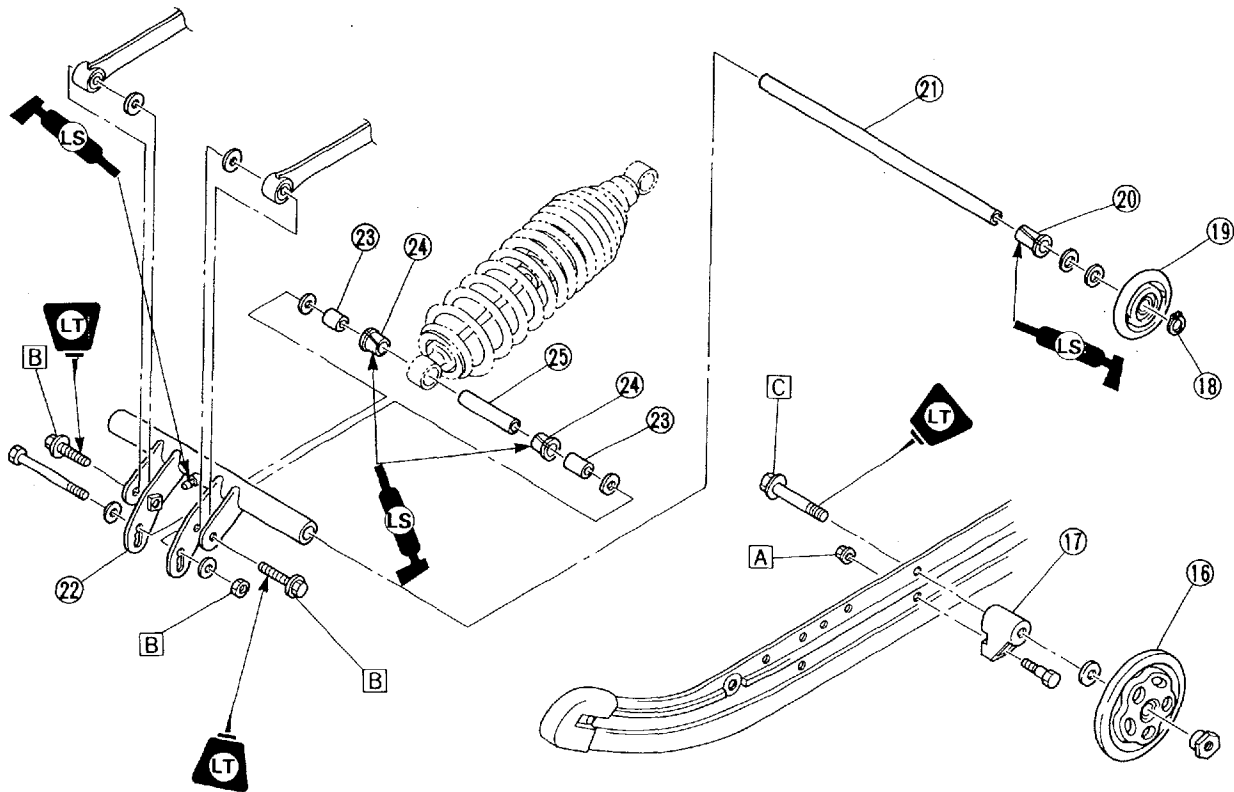
Order	Job name/Part name	Q'ty	Remarks
	Slide rail suspension disassembly		Disassemble the parts in the order below.
①	Stopper bands	2	
②	Hooks	2	
③	Bushings	4	
④	Collars	2	
⑤	Front shock absorber	1	
⑥	Front suspension bracket	1	
⑦	Front pivot arm	1	
⑧	Bushings	2	
⑨	Collar	1	
⑩	Bushings	4	
⑪	Collars	2	
⑫	Suspension wheels	2	
⑬	Wheel brackets	2	
⑭	Front pivot arm brackets	2	
⑮	Shaft	1	(VT500/600, MM600/700)



A : 24 Nm (2.4 m • kg, 17 ft • lb)

B : 49 Nm (4.9 m • kg, 35 ft • lb)

C : 71 Nm (7.1 m • kg, 50 ft • lb)

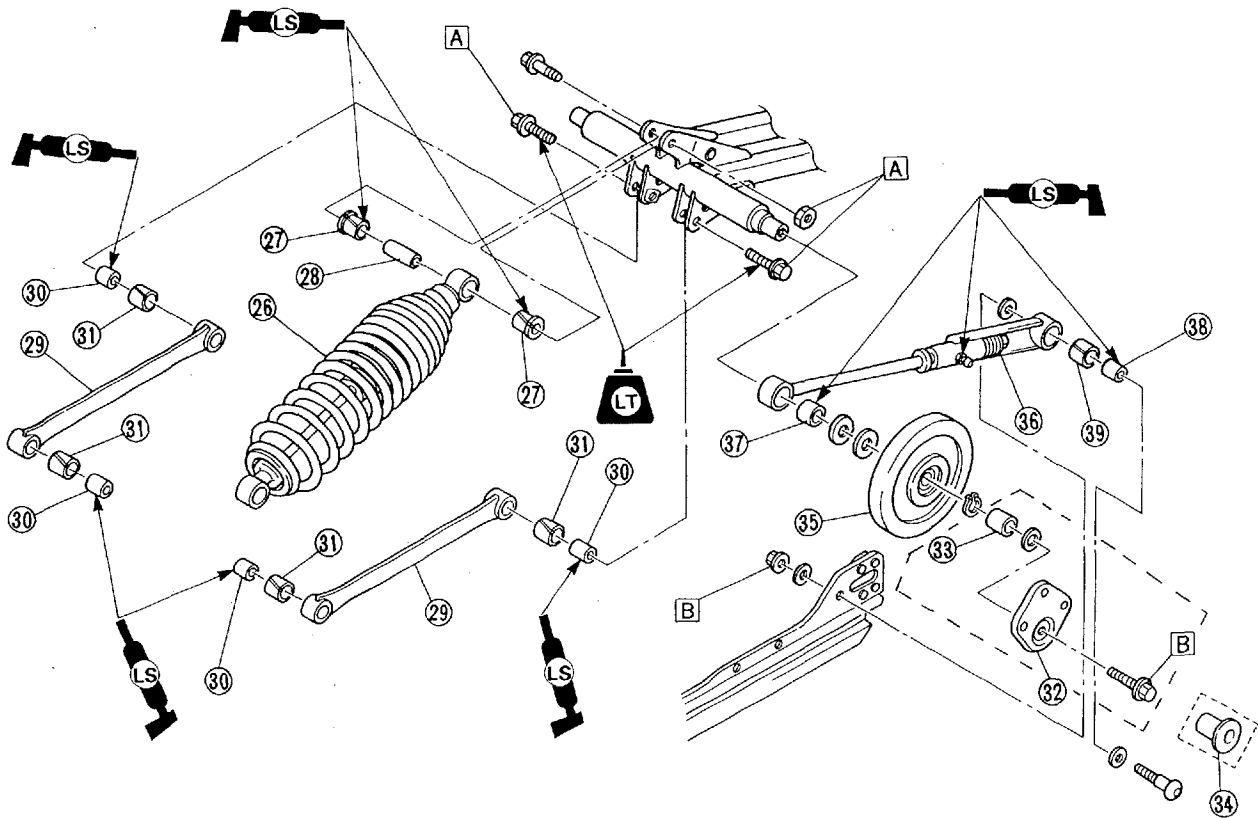


Order	Job name/Part name	Q'ty	Remarks
16	Suspension wheels	2	
17	Wheel brackets	2	
18	Circlips	2	
19	Suspension wheels	2	
20	Bushings	2	
21	Collar	1	
22	Rear suspension bracket	1	
23	Spacers	2	
24	Bushings	2	
25	Collar	1	



[A] : 49 Nm (4.9 m • kg, 35 ft • lb)

[B] : 71 Nm (7.1 m • kg, 50 ft • lb)

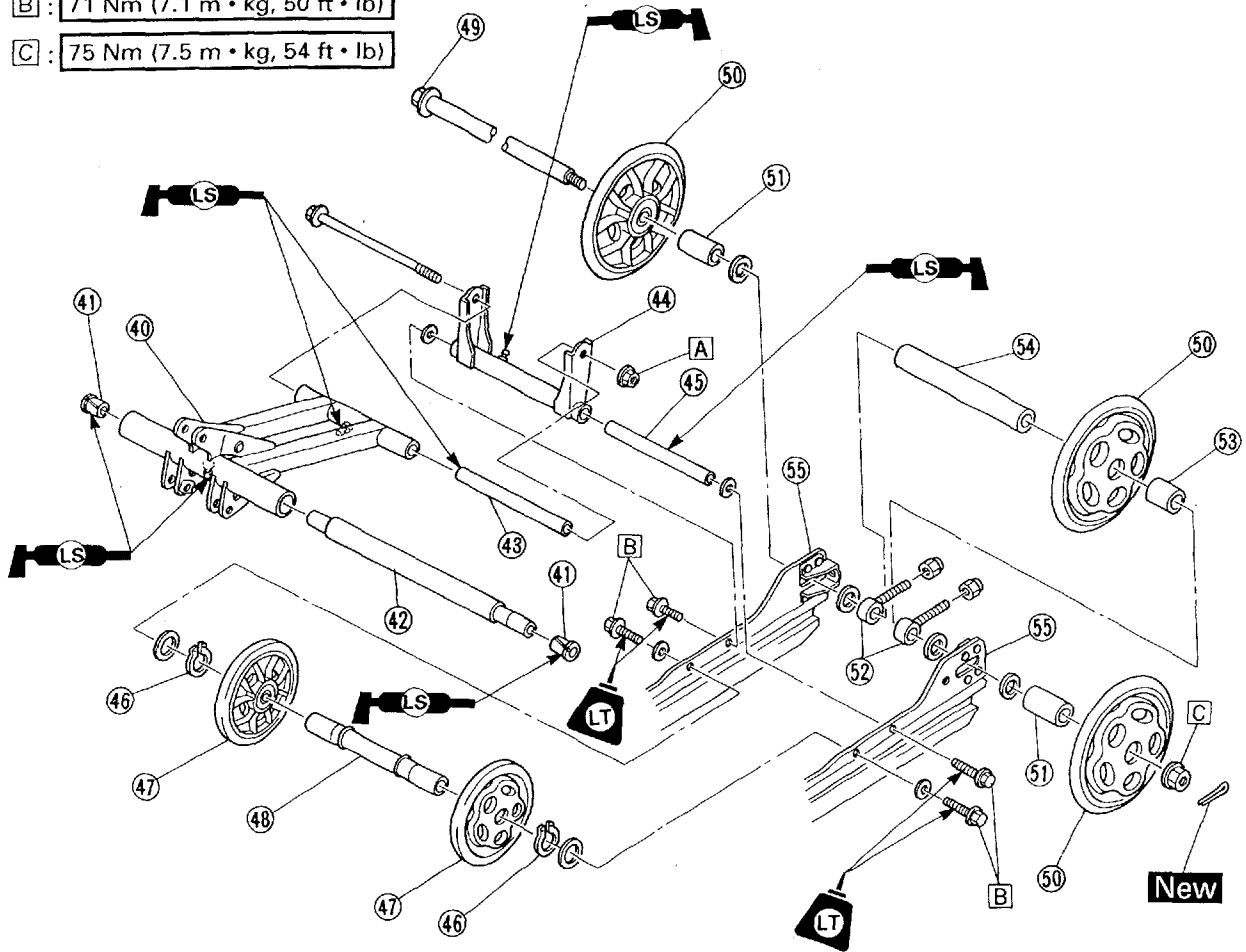


Order	Job name/Part name	Q'ty	Remarks
26	Rear shock absorber	1	
27	Bushings	2	
28	Collar	1	
29	Pull rod	2	
30	Collars	4	
31	Bushings	4	
32	Rear brackets	2	(VT500/600, MM600/700)
33	Collars	2	(VT500/600, MM600/700)
34	Collars	2	(VX500/600/700)
35	Suspension wheels	2	
36	Control rods	2	
37	Bushings	2	
38	Collars	2	
39	Bushings	2	

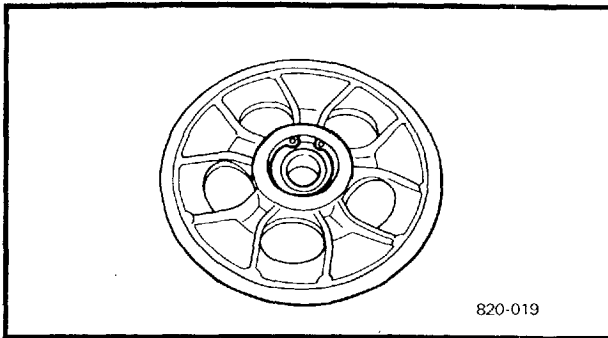
SLIDE RAIL SUSPENSION



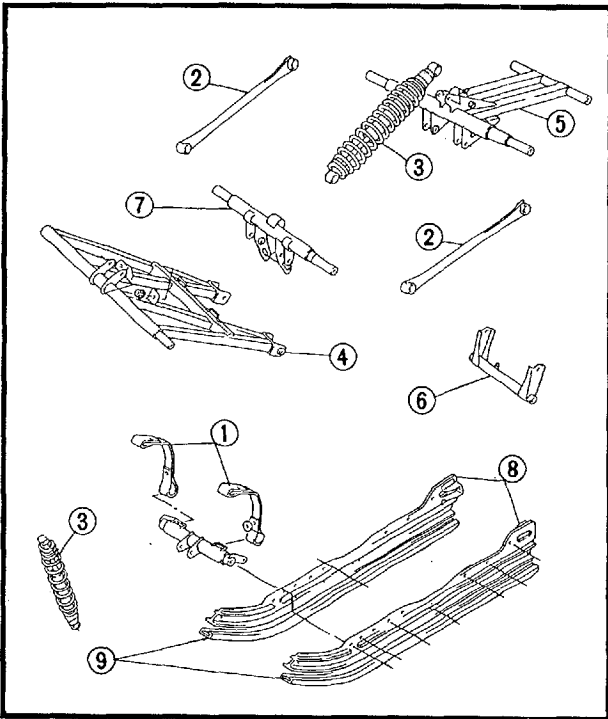
- [A] : 24 Nm (2.4 m • kg, 17 ft • lb)
 [B] : 71 Nm (7.1 m • kg, 50 ft • lb)
 [C] : 75 Nm (7.5 m • kg, 54 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
40	Rear pivot arm	1	
41	Bushings	2	
42	Collar	1	
43	Collar	1	
44	Rear pivot arm bracket	1	
45	Collar	1	
46	Circlips	2	
47	Suspension wheels	2	
48	Wheel bracket	1	
49	Rear axle	1	
50	Guide wheels	3	
51	Collars	2	
52	Tension adjusters	2	
53	Collar	1	
54	Collar	1	
55	Sliding frames	2	
			For assembly, reverse the disassembly procedure.

**INSPECTION****1. Inspect:**

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

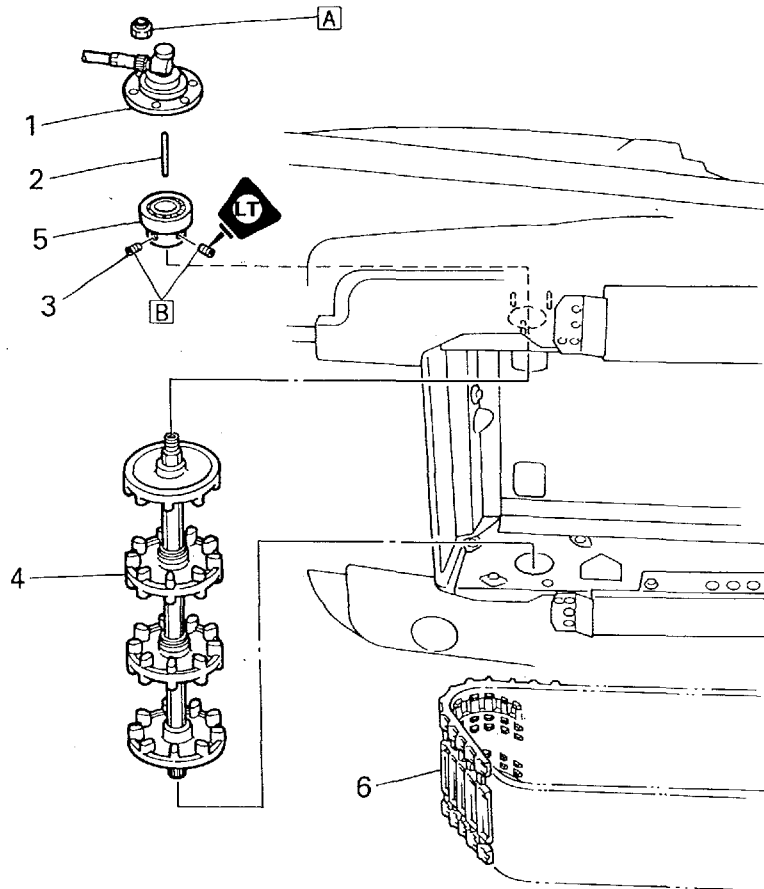
**2. Inspect:**

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

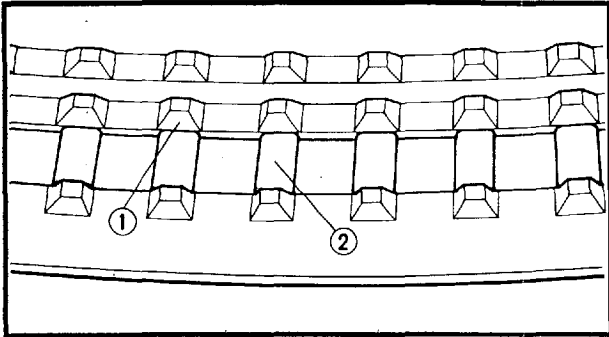
FRONT AXLE AND TRACK

[A] : 20 Nm (2.0 m • kg, 14 ft • lb)

[B] : 5.5 Nm (0.55 m • kg, 4.3 ft • lb)



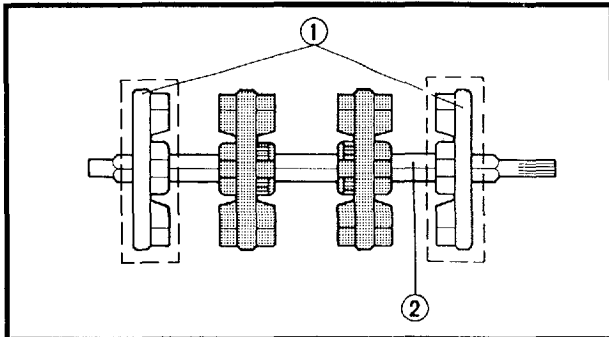
Order	Job name/Part name	Q'ty	Remarks
	Front axle and track removal		Remove the parts in the order below. Refer to "DRIVE CHAIN HOUSING". Refer to "SLIDE RAIL SUSPENSION". Refer to "SECONDARY SHEAVE".
1	Drive chain housing	1	
2	Slide rail suspension	1	
3	Secondary sheave	2	
4	Speedometer gear assembly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



INSPECTION


1. Inspect:

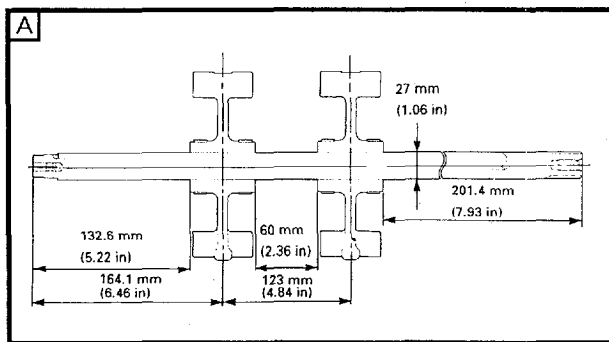
- Track ①
 - Slide metal ②
- Wear/cracks/damage → Replace.



2. Inspect:

- Sprocket wheel ①
 - Front axle ②
- Wear/break/damage → Replace.
- Bent/scratched (excessively)/damage → Replace.

 600/700



INSTALLATION

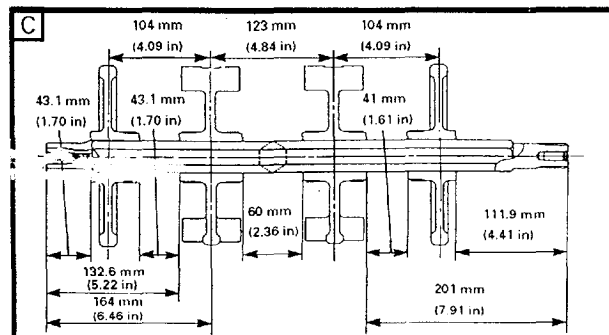
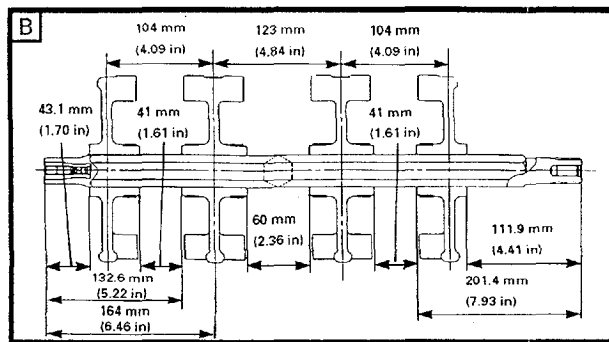
Reverse the "REMOVAL" procedure.
Note the following points.

1. Install:

- Sprocket wheels
- Guide wheels

NOTE:

- When pressing the sprocket wheels onto the front axle, align the lugs on each sprocket wheel.
- Locate each sprocket wheel and guide wheel on the axle where shown in the illustration.

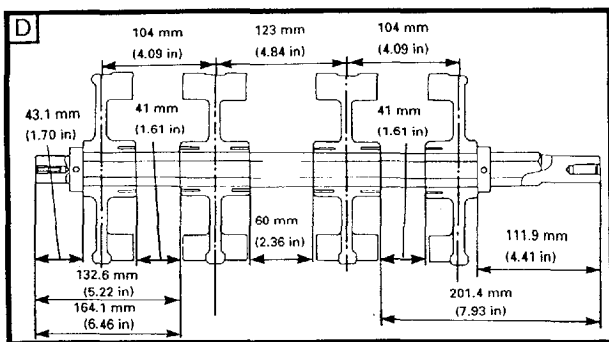


A : VX500XT/XTC/XTCE/XTCR

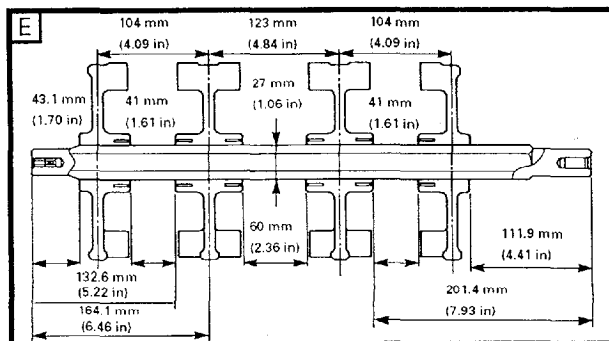
B : VT500, VT600, MM600

C : VX600SX, VX700SX

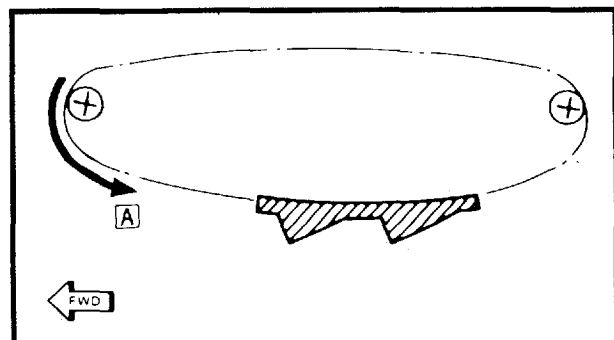
FRONT AXLE AND TRACK



D MM700



E VX600XT/XTC/XTCE/XTCR



2. Place the track in the chassis.

NOTE:

Be sure it is positioned as shown in the illustration.

A TURNING DIRECTION

POWR
TR





CHAPTER 5. ENGINE

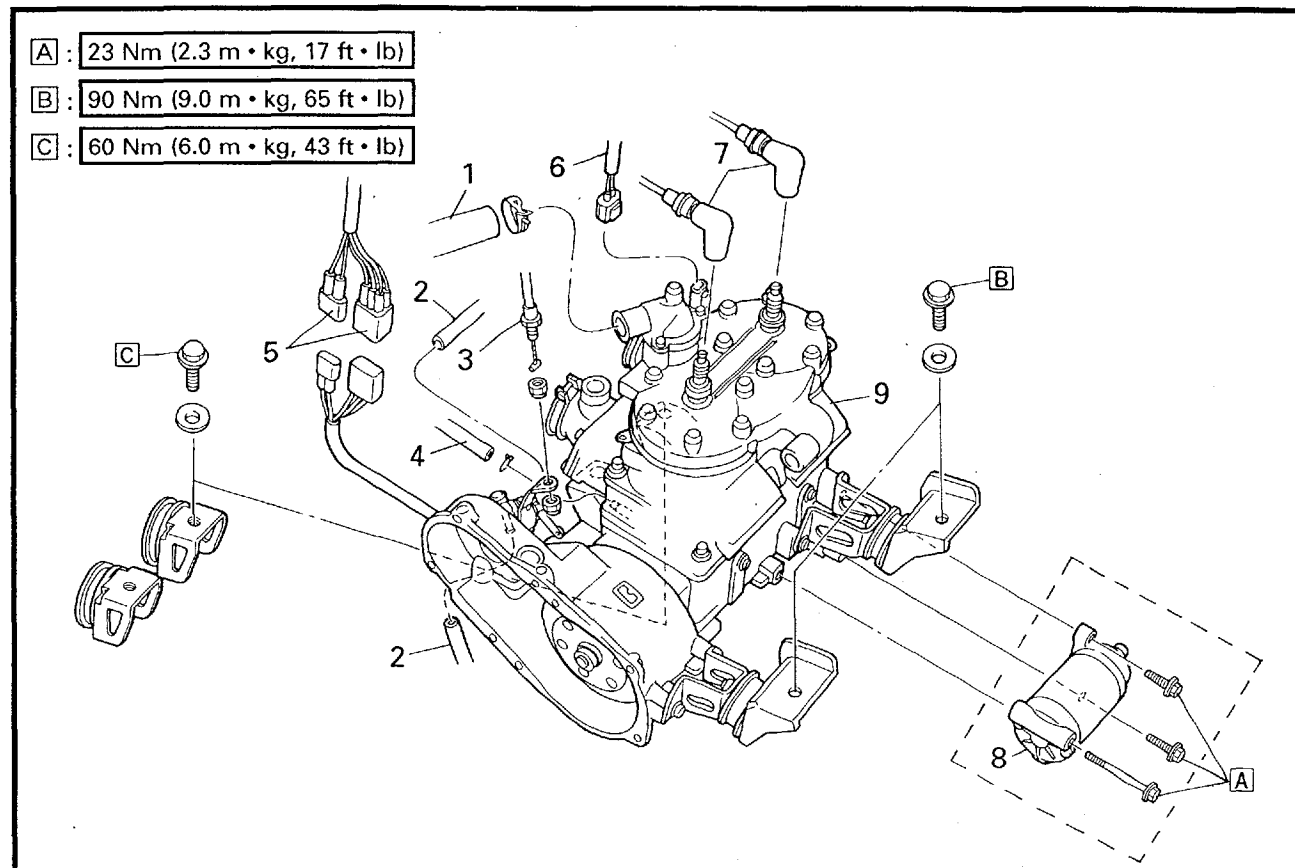
ENGINE ASSEMBLY	5-1
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700	5-2
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700	5-4
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CRANKCASE AND CRANKSHAFT	5-13
500/600	5-13
700	5-14
INSPECTION	5-15
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INSTALLATION (700)	5-18
CDI MAGNETO	5-20
500/600	5-20
700	5-21
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REMOVAL (700)	5-22
INSTALLATION (500/600)	5-23
INSTALLATION (700)	5-24
RECOIL STARTER	5-25
500/600	5-25
700	5-26
REMOVAL	5-27
INSPECTION	5-28
INSTALLATION (500/600)	5-29
INSTALLATION (700)	5-30



ENGINE

ENGINE ASSEMBLY

500/600



Order	Job name/Part name	Q'ty	Remarks
	Engine removal		Remove the parts in the order below. (VX500/600XTCE/XTCR, VT500/600)
	Battery negative lead		
	Exhaust pipe		
	Carburetor		Refer to "CARBURETOR".
	Recoil starter		Refer to "RECOIL STARTER".
	Water pump		Refer to "WATER PUMP AND THERMOSTATIC VALVE".
	Primary sheave		Refer to "PRIMARY SHEAVE AND DRIVE V-BELT".
1	Coolant hose	1	
2	Oil hoses	2	
3	Oil pump cable	1	
4	Vacuum hose	1	
5	CDI magneto couplers	2	
6	Thermo sensor coupler	1	
7	Spark plug caps	2	
8	Starter motor	1	(VX500/600XTCE/XTCR, VT500/600)
9	Engine assembly	1	For installation, reverse the removal procedure.

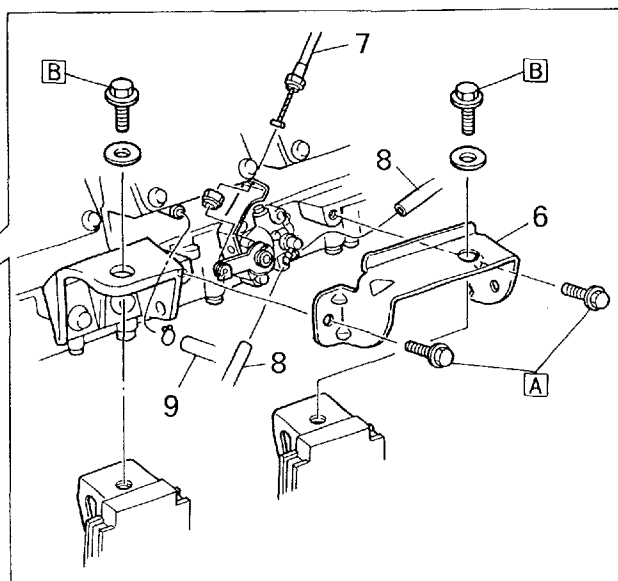
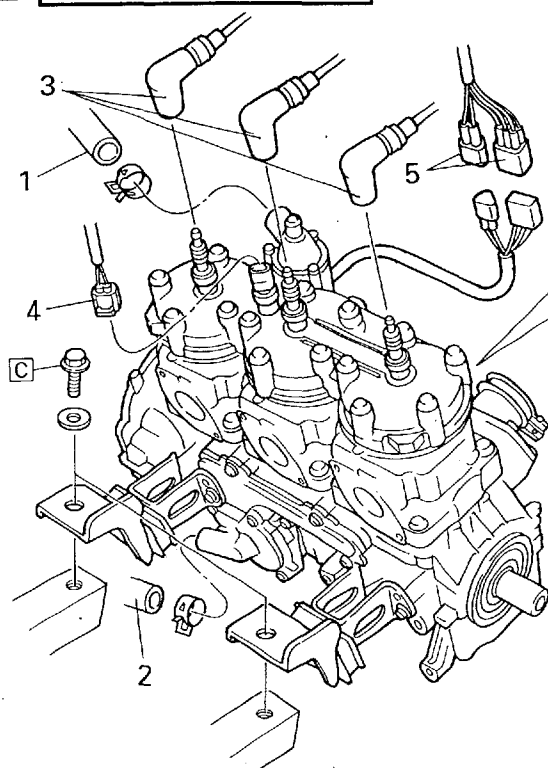


700

[A] : 23 Nm (2.3 m • kg, 17 ft • lb)

[B] : 60 Nm (6.0 m • kg, 43 ft • lb)

[C] : 90 Nm (9.0 m • kg, 65 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Engine removal		Remove the parts in the order below.
	Exhaust pipe		
	Carburetor		Refer to "CARBURETOR".
	Recoil starter		Refer to "RECOIL STARTER".
	CDI Magneto rotor		Refer to "CDI MAGNETO".
	Frame cross member		
	Primary sheave		Refer to "PRIMARY SHEAVE AND DRIVE V-BELT".
	Coolant		Drain. Refer to "COOLANT REPLACEMENT".
1	Coolant hose 1	1	
2	Coolant hose 2	1	
3	Spark plug caps	3	
4	Thermo sensor coupler	1	
5	CDI magneto couplers	2	
6	Rear bracket right	1	
7	Oil pump cable	1	
8	Oil hoses	2	
9	Vacuum hose	1	
			For installation, reverse the removal procedure.



CYLINDER HEAD AND CYLINDER

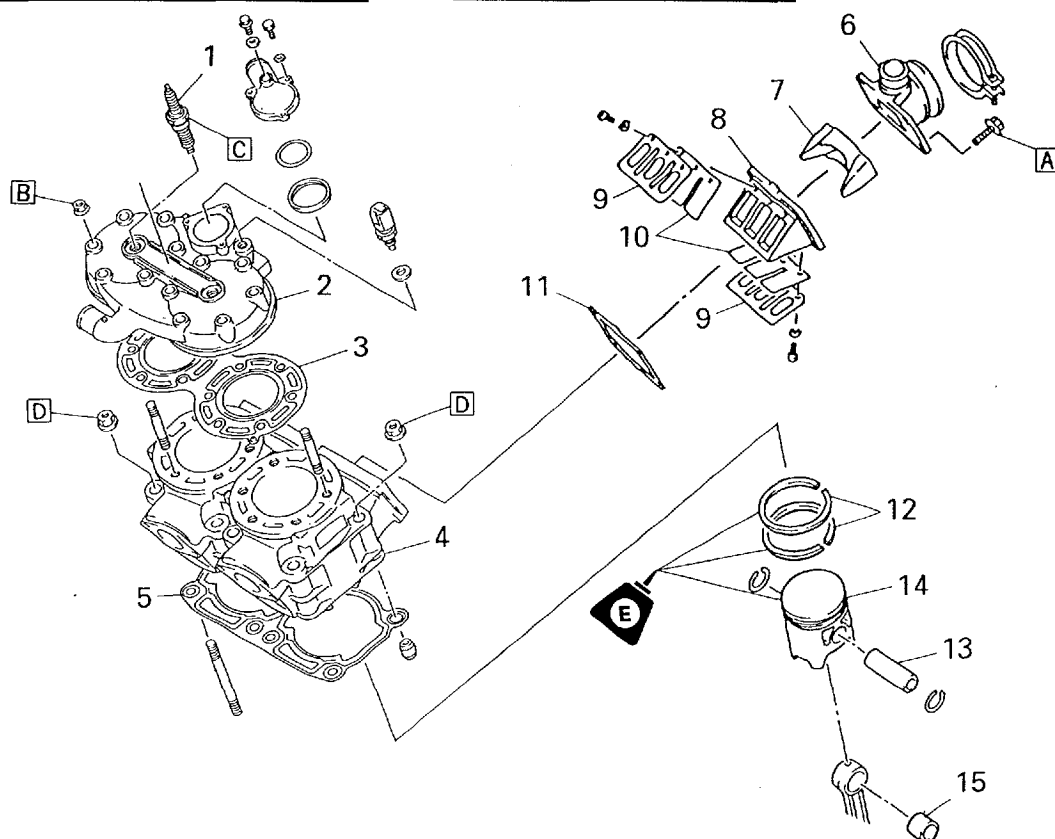
500/600

[A] : 10 Nm (1.0 m • kg, 7.2 ft • lb)

[B] : 1st 13 Nm (1.3 m • kg, 9.4 ft • lb)
2nd 23 Nm (2.3 m • kg, 17 ft • lb)

[C] : 20 Nm (2.0 m • kg, 14 ft • lb)

[D] : 33 Nm (3.3 m • kg, 24 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Cylinder head and cylinder removal		Remove the parts in the order below.
1	Spark plugs	2	
2	Cylinder head	1	
3	Gasket	1	
4	Cylinders	2	
5	Gasket	1	
6	Intake manifolds	2	
7	Spacers	2	
8	Reed valve seats	2	
9	Reed valve stoppers	4	
10	Reed valves	4	
11	Gaskets	2	
12	Piston rings	4	
13	Piston pins	2	
14	Pistons	2	
15	Bearings	2	
			For installation, reverse the removal procedure.



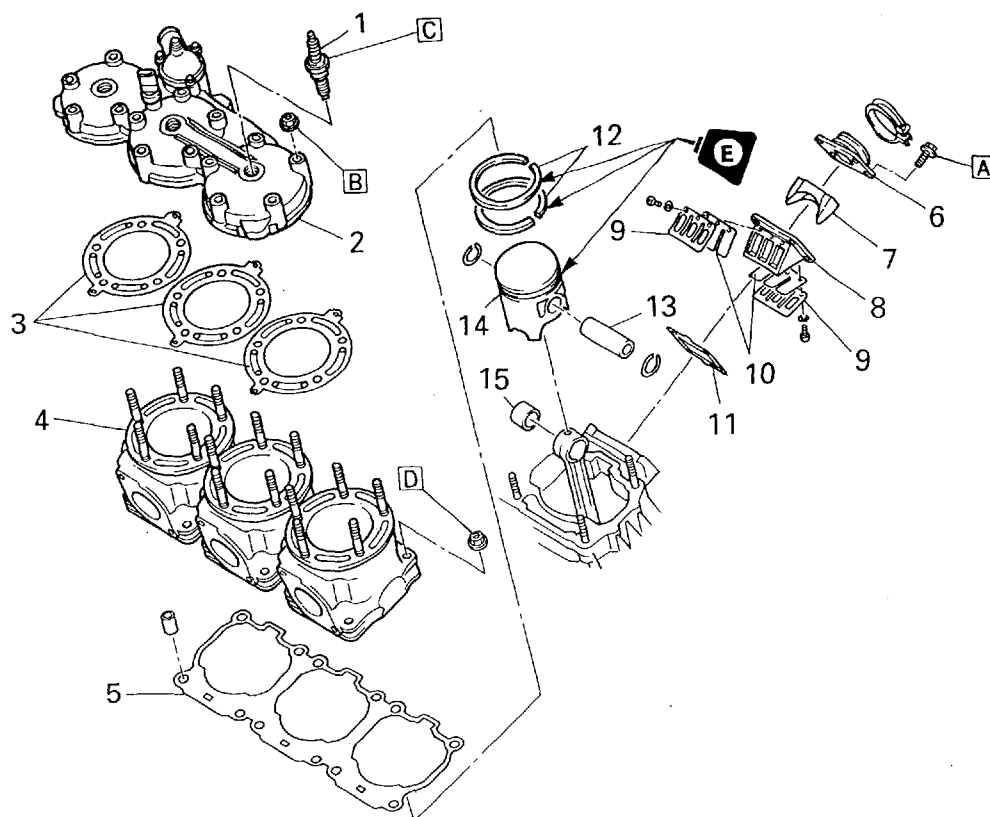
700

[A] : 14 Nm (1.4 m • kg, 10 ft • lb)

[B] : 1st 13 Nm (1.3 m • kg, 9.4 ft • lb)
2nd 25 Nm (2.5 m • kg, 18 ft • lb)

[C] : 20 Nm (2.0 m • kg, 14 ft • lb)

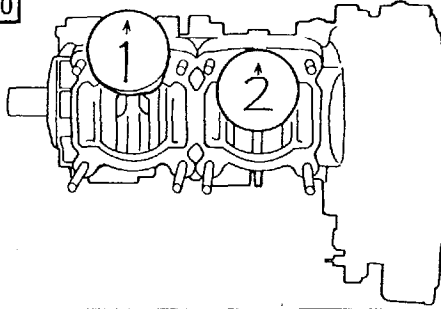
[D] : 28 Nm (2.8 m • kg, 20 ft • lb)



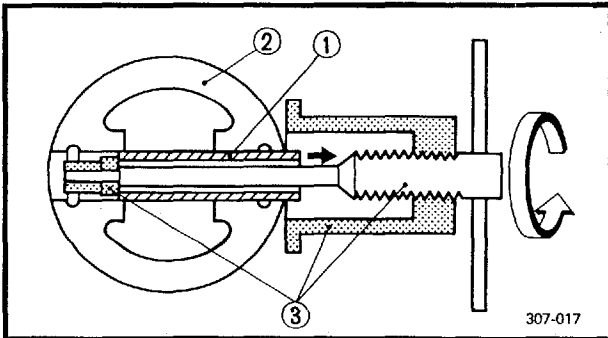
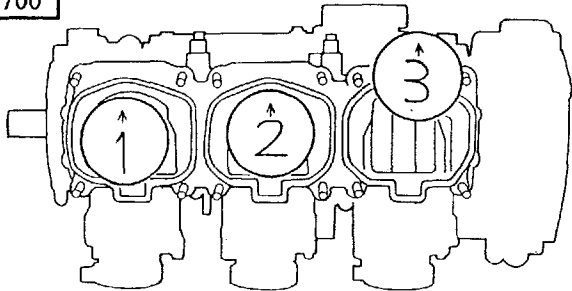
Order	Job name/Part name	Q'ty	Remarks
	Cylinder head and cylinder removal		Remove the parts in the order below.
1	Spark plugs	3	
2	Cylinder head	1	
3	Gaskets	3	
4	Cylinders	3	
5	Gasket	1	
6	Intake manifolds	3	
7	Spacers	3	
8	Reed valve seats	3	
9	Reed valve stoppers	6	
10	Reed valves	6	
11	Gaskets	3	
12	Piston rings	6	
13	Piston pins	3	
14	Pistons	3	
15	Bearings	3	
			For installation, reverse the removal procedure.



500/600



700

**REMOVAL**

1. Remove:

- Piston pin clip
- Piston pin
- Piston
- Small end bearing

NOTE:

- Before removing the piston pin clip, cover the crankcase with a clean rag so you will not accidentally drop the clip into the crankcase.
- 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 piston pin puller (90890-01304, YU-01304).
- Put identification marks on each piston head for reference during reinstallation.

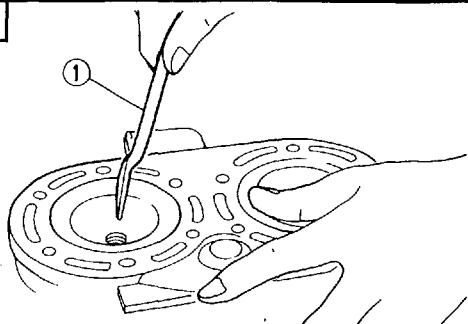
CAUTION:

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

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



500/600



5E011

INSPECTION

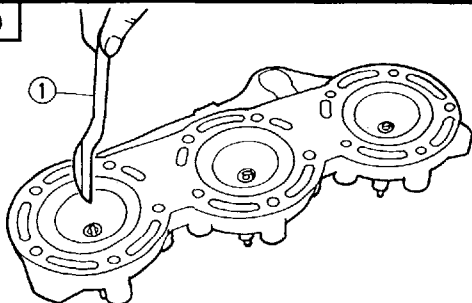
1. Eliminate:

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

CAUTION:

Do not use a sharp instrument and avoid damaging or scratching.

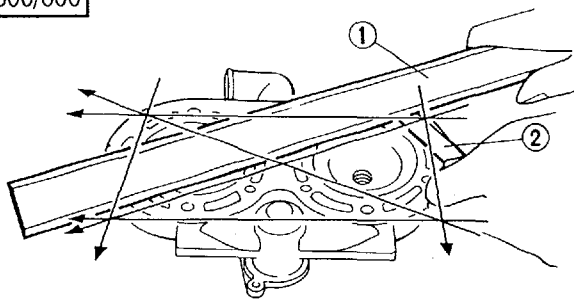
700



2. Inspect:

- Cylinder head water jacket
Crust of minerals/rust → Remove.

500/600



3. Measure:

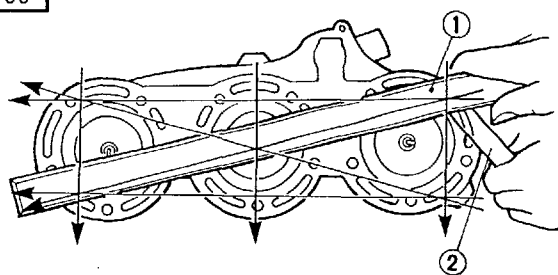
- Cylinder head warpage
Out of specification → Resurface.



Warpage limit:
0.03 mm (0.0012 in)

- Straight edge ①
- Thickness gauge ②

700

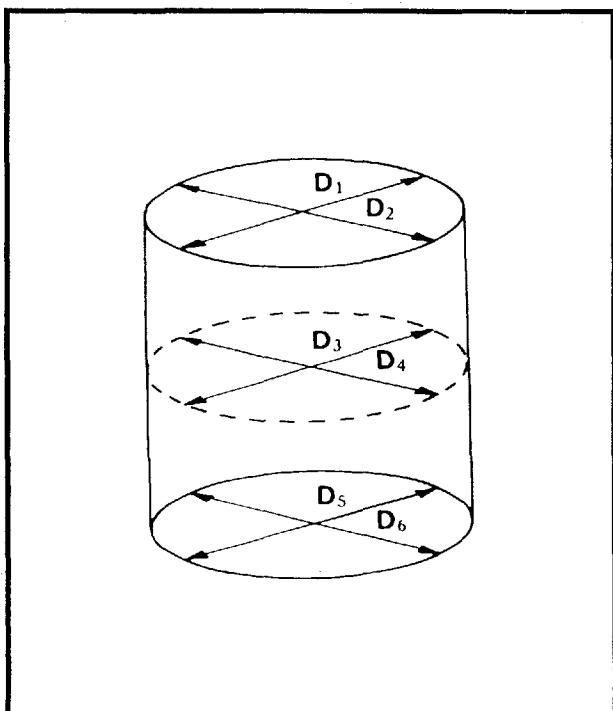
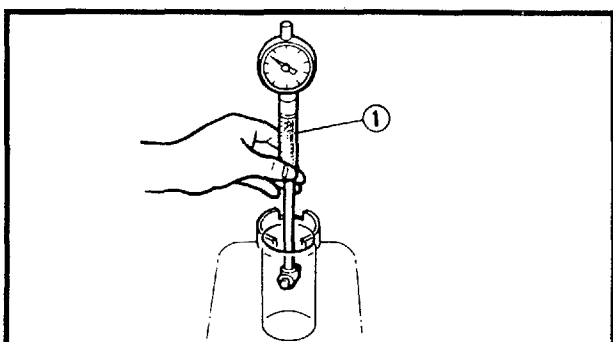
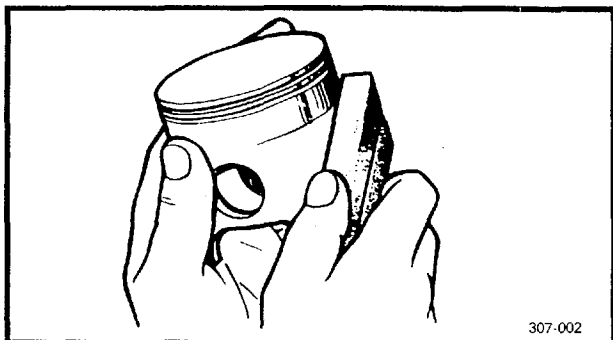
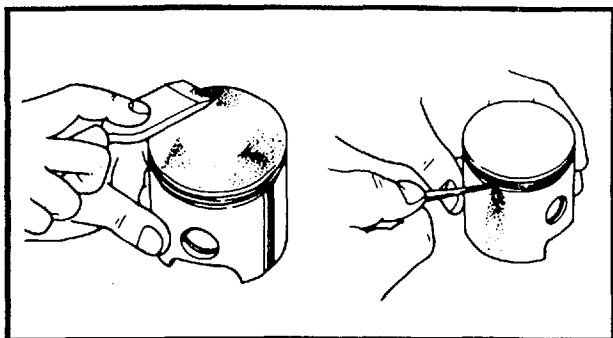


4. Eliminate:

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

CAUTION:

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



5. Eliminate:

- Carbon deposits
(from piston crown and ring grooves)

6. Inspect:

- Piston crown
Burrs/nicks/damage → Replace.

7. Eliminate:

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

NOTE:

Sand in a crisscross pattern. Do not sand excessively.

8. Measure:

- Piston-to-cylinder clearance

Measurement steps:

1st step:

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

NOTE:

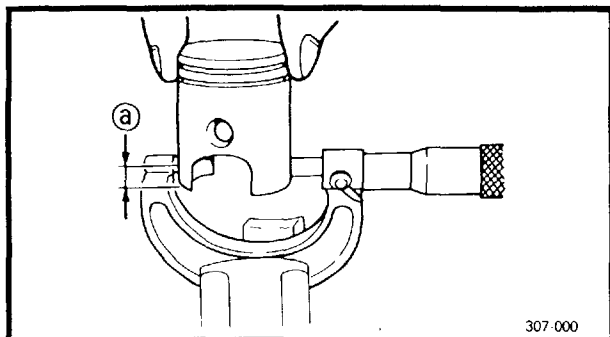
Measure the cylinder bore "C" parallel to, and at right angles to the crankshaft. Then find the average of the measurements.

	Standard	Wear limit
Cylinder bore "C"	500: 68.0 ~ 68.02 mm (2.677 ~ 2.678 in)	68.1 mm (2.681 in)
	600: 74.8 ~ 74.82 mm (2.9449 ~ 2.9457 in)	74.9 mm (2.949 in)
	700: 70.5 ~ 70.52 mm (2.775 ~ 2.776 in)	70.6 mm (2.780 in)
Taper "T"	—	0.05 mm (0.0019 in)
Out of round "R"	—	0.01 mm (0.0004 in)

C = Maximum D

T = (Maximum D₁ or D₂) –
(Maximum D₅ or D₆)

R = (Maximum D₁, D₃ or D₅) –
(Minimum D₂, D₄ or D₆)



- 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.

① 500: 25 mm (0.98 in)

600/700: 15 mm (0.59 in)

from the piston bottom edge.



Piston size P

Standard

500: 67.902 ~ 67.921 mm
(2.673 ~ 2.674 in)

600: 74.702 ~ 74.721 mm
(2.941 ~ 2.942 in)

700: 70.427 ~ 70.446 mm
(2.772 ~ 2.773 in)

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

3rd step:

- Calculate the piston-to-cylinder clearance with the following formula:

$$\text{Piston-to-cylinder clearance} = \text{Cylinder bore "C"} - \text{Piston skirt diameter "P"}$$

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



Piston-to-cylinder clearance:

500: 0.095 ~ 0.100 mm
(0.0037 ~ 0.0039 in)

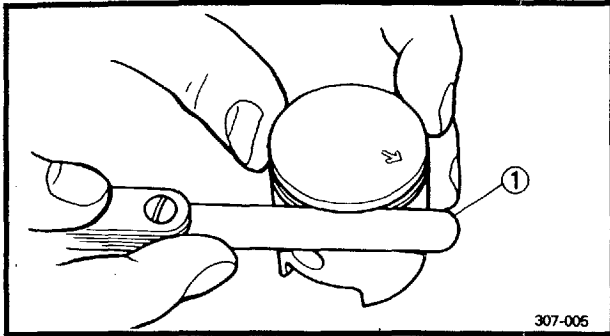
Limit 0.1 mm (0.0039 in)

600: 0.098 ~ 0.103 mm
(0.0039 ~ 0.0041 in)

Limit 0.103 mm (0.0041 in)

700: 0.070 ~ 0.075 mm
(0.0028 ~ 0.0030 in)

Limit 0.1 mm (0.0039 in)



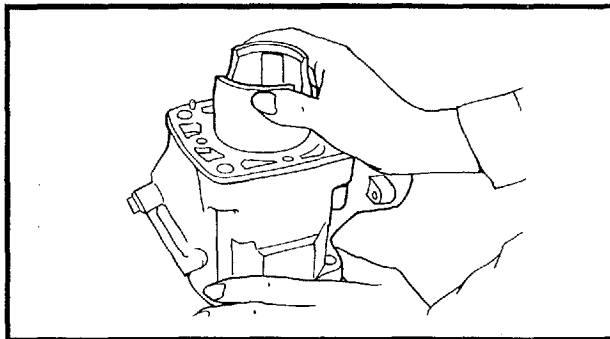
9. Measure:

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

NOTE:

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

	Side clearance		
	500	600	700
TOP	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)	←	←
2nd	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)	←	←

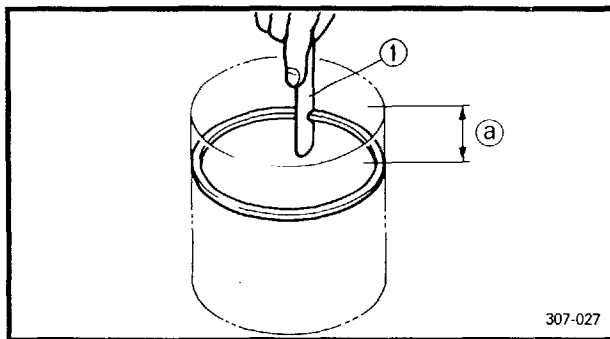


10. Install:

- Piston ring
(into the cylinder)
Push 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 the ring with the piston crown so that the ring is at right angles to the cylinder bore.

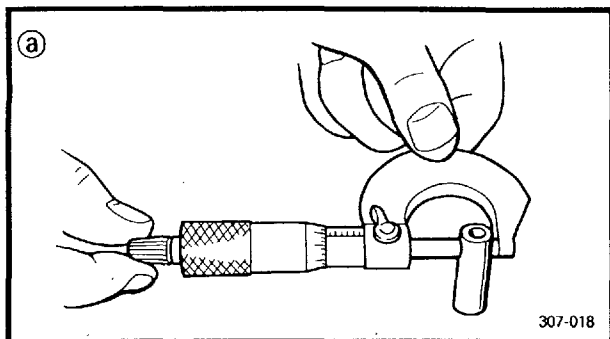


11. Measure:

- End gap (piston rings)
Out of specification → Replace rings as a set.
Use a feeler gauge ①.

	End gap		
	500	600	700
TOP	0.45 ~ 0.60 mm (0.0178 ~ 0.0024 in)	←	0.35 ~ 0.55 mm (0.0137 ~ 0.0217 in)
2nd	0.45 ~ 0.60 mm (0.0178 ~ 0.0024 in)	←	0.35 ~ 0.55 mm (0.0137 ~ 0.0217 in)

① 20 mm (0.8 in)

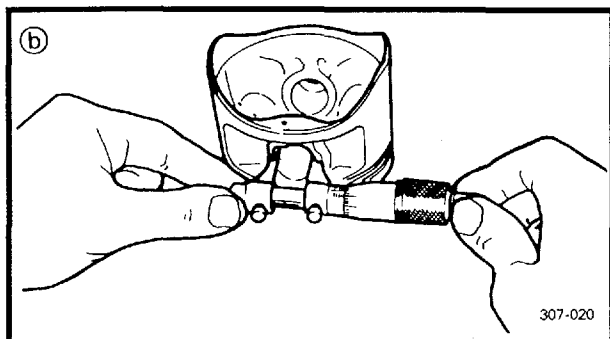


12. Measure:

- Outside diameter (a) (piston pin)
Out of specification → Replace.



Outside diameter (piston pin):
19.995 ~ 20.0 mm
(0.7872 ~ 0.7874 in)



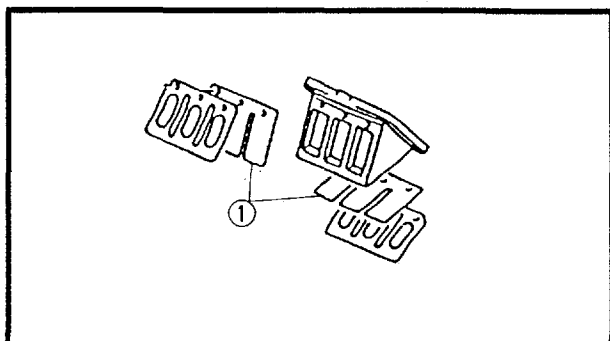
13. Measure:

- Piston pin-to-piston clearance
Out of specification → Replace piston.

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

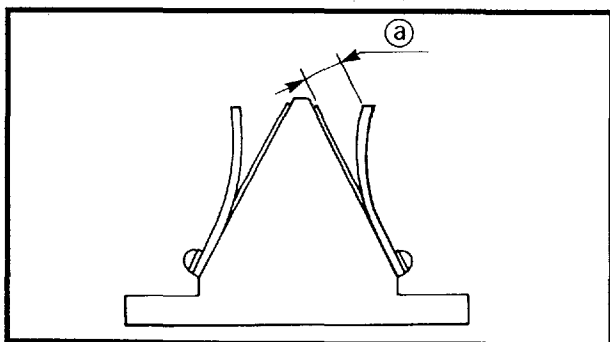


Piston pin-to-piston clearance =
0.004 ~ 0.020 mm
(0.00016 ~ 0.00079 in)



14. Inspect:

- Reed valves ①
Bent/cracks/damage → Replace.

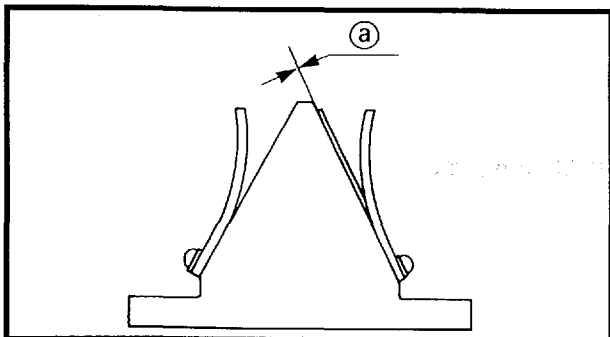


15. Measure:

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



Valve stopper height:
10.3 ~ 10.7 mm (0.41 ~ 0.42 in)



16. Measure:

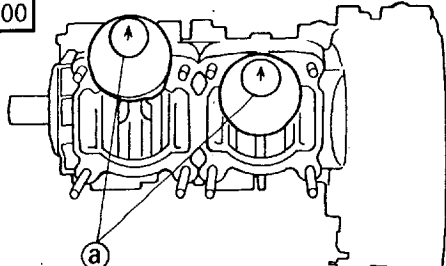
- Reed valve bending limit (a)
Out of specification → Replace.



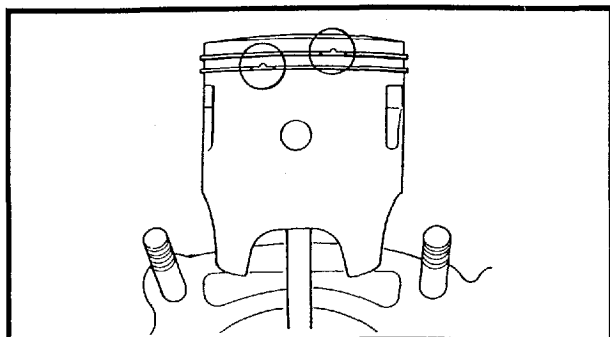
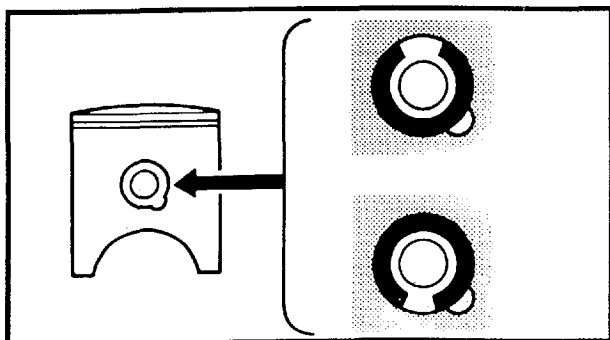
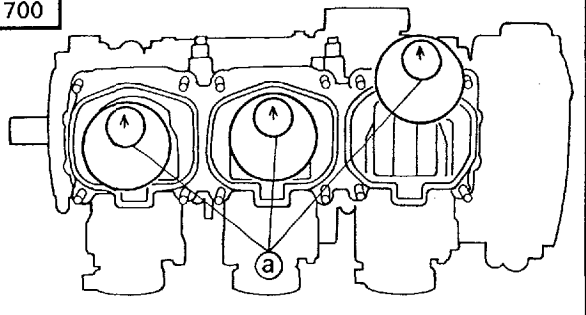
Reed valve bending limit:
less than 0.6 mm (0.0236 in)



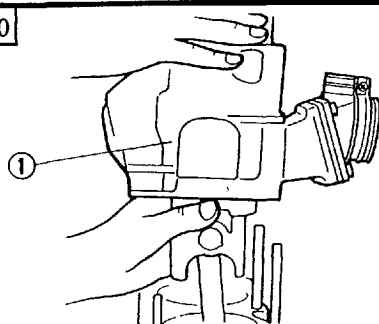
500/600



700



500/600

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

- Small end bearing
- Piston
- Piston pin
- Piston pin clip
- Piston rings

NOTE:

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

CAUTION:

- Always use a new piston pin clip.
- Do not allow the clip open ends to meet the piston pin slot.

2. Check:

- Piston ring position

CAUTION:

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

3. Install:

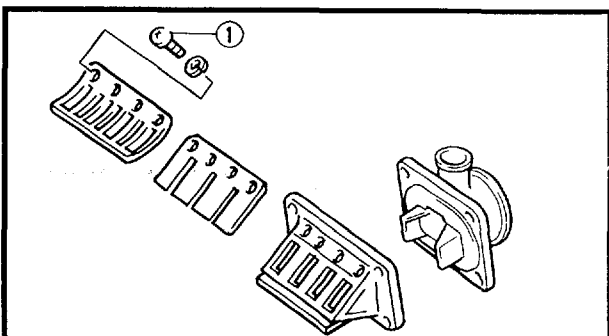
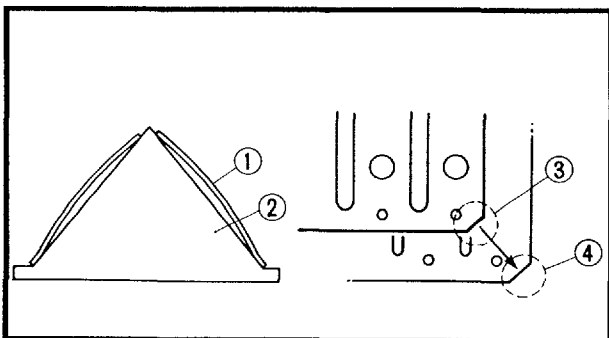
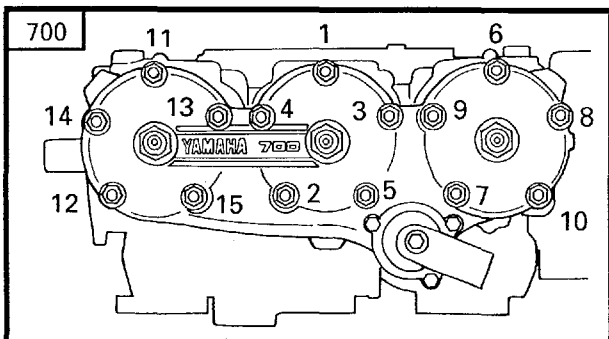
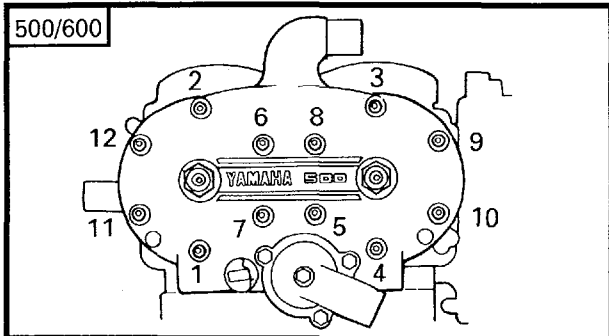
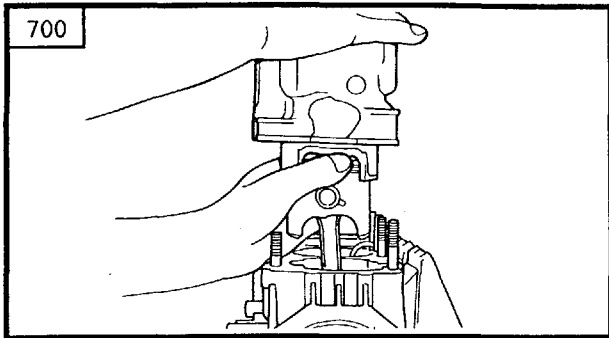
- Gasket (cylinder)
- Cylinder ①

CAUTION:

Always use a new gasket.

NOTE:

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



4. Tighten:

- Nuts (cylinder head)

Tightening steps:

- Temporarily tighten the cylinder head nuts ① ~ ⑫ (500/600), ① ~ ⑮ (700) as follows.

1st step:

- Tighten the nuts ① ~ ⑫ (500/600), ① ~ ⑮ (700).

**Nut (cylinder head):**

13Nm (1.3 m • kg, 9.4 ft • lb)

2nd step:

- Retighten the nuts ① ~ ⑫ (500/600), ① ~ ⑮ (700).

**Nut (cylinder head):**

23 Nm (2.3 m • kg, 17 ft • lb)
(500/600)

25 Nm (2.5 m • kg, 18 ft • lb)(700)

5. Install:

- Reed valves
- Reed valve stoppers

NOTE:

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

6. Tighten:

- Screws (reed valve) ①

**Screws (reed valve):**

1 Nm (0.1 m • kg, 0.7 ft • lb)
LOCTITE®

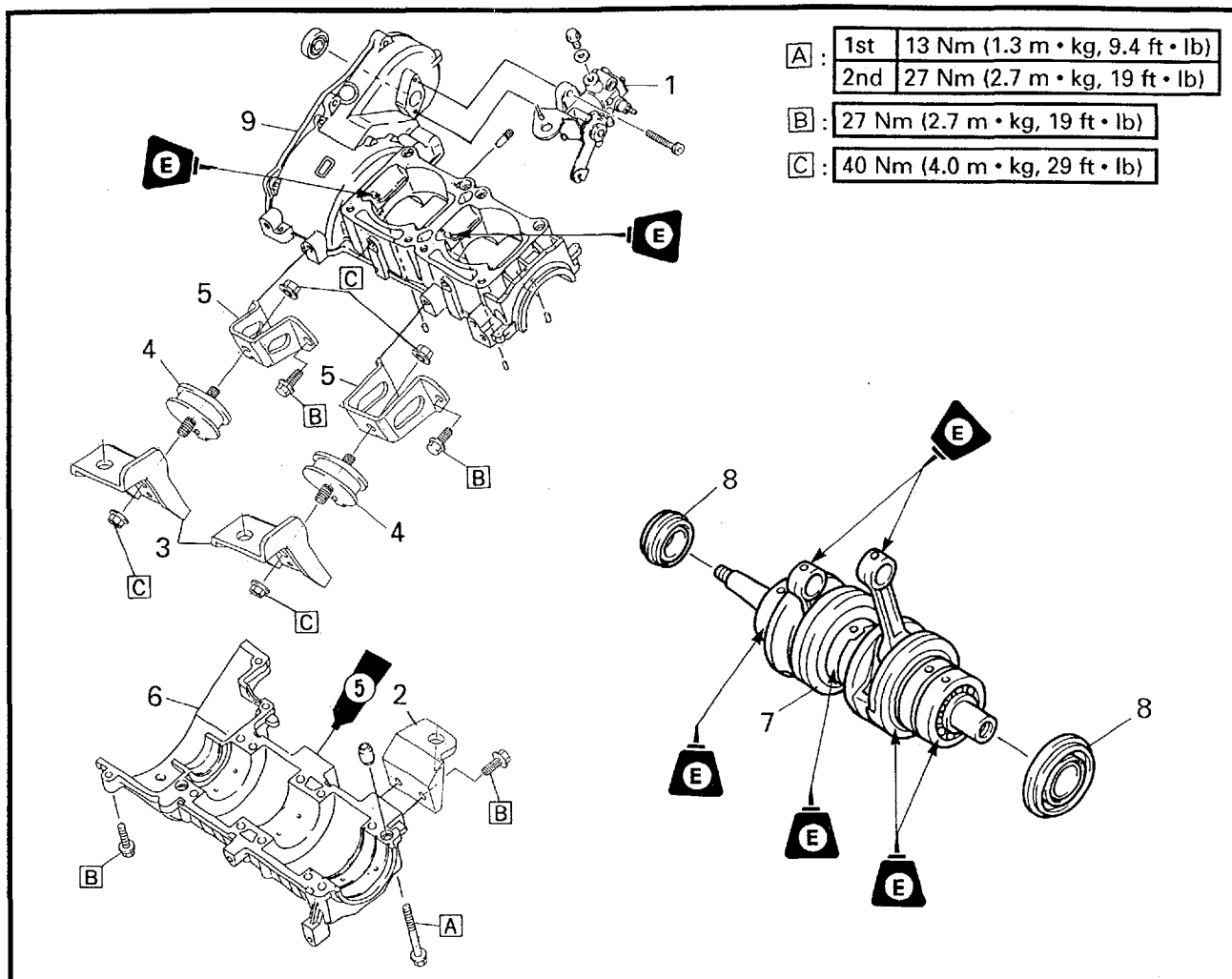
NOTE:

Tighten each screw gradually to avoid warping.



OIL PUMP, CRANKCASE AND CRANKSHAFT

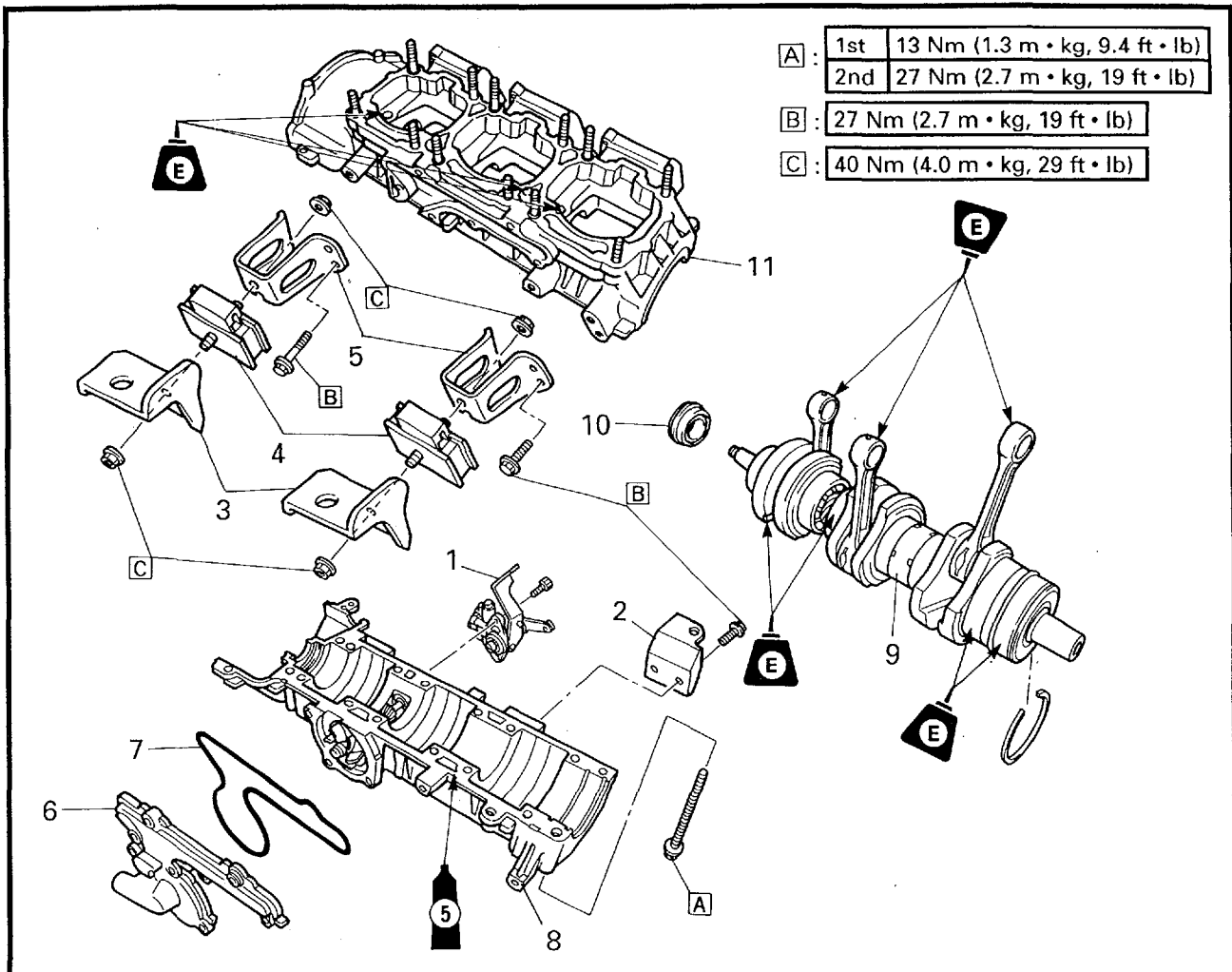
500/600



Order	Job name/Part name	Q'ty	Remarks
	Oil pump, crankcase and crankshaft removal		Remove the parts in the order below.
	CDI Magneto		Refer to "CDI MAGNETO".
1	Oil pump	1	
2	Rear brackets	2	
3	Front lower brackets	2	
4	Dampers	2	
5	Front upper brackets	2	
6	Lower crankcase	1	
7	Crankshaft assembly	1	
8	Oil seals	2	
9	Upper crankcase	1	
			For installation, reverse the removal procedure.



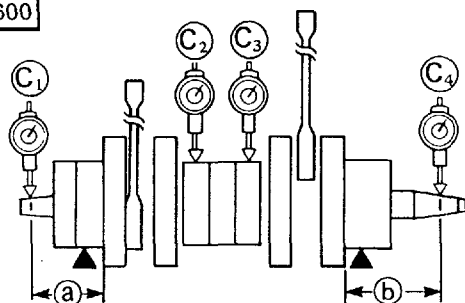
700



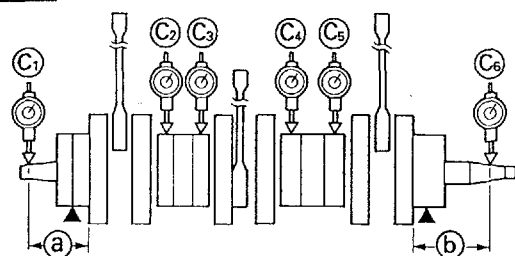
Order	Job name/Part name	Q'ty	Remarks
	Oil pump, crankcase and crankshaft removal		Remove the parts in the order below.
1	Oil pump	1	
2	Rear bracket (left)	1	
3	Front lower brackets	2	
4	Dampers	2	
5	Front upper brackets	2	
6	Water pump cover	1	
7	Gasket	1	
8	Lower crankcase	1	
9	Crankshaft assembly	1	
10	Oil seal	1	
11	Upper crankcase	1	
			For installation, reverse the removal procedure.



500/600



700



INSPECTION

1. Measure:

- Runout
Use V-blocks and a dial gauge (90890-03097, YU-03097).
Out of specification → Replace or repair.



Runout limit:

500/600

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

700

C₁ : 0.03 mm (0.0012 in)C₂ ~ C₅: 0.04 mm (0.0016 in)C₆ : 0.03 mm (0.0012 in)

Ⓐ 80 mm (3.15 in) : 500/600

90 mm (3.54 in) : 700

Ⓑ 99 mm (3.90 in) : 500/600

85 mm (3.35 in) : 700

2. Measure:

- Small end free play
Use a dial gauge.
Out of specification → Replace the defective parts.



Small end free play: Ⓐ

0.8 ~ 1.0 mm (0.031 ~ 0.04 in)

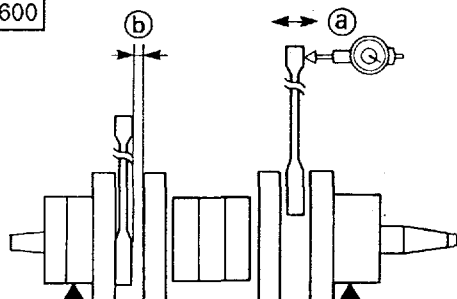
- Big end side clearance
Use a feeler gauge.
Out of specification → Replace the defective parts.



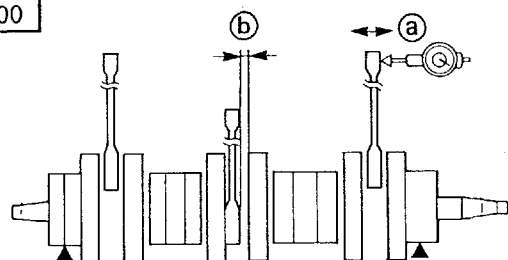
Big end side clearance: Ⓑ

0.25 ~ 0.75 mm (0.01 ~ 0.03 in)

500/600

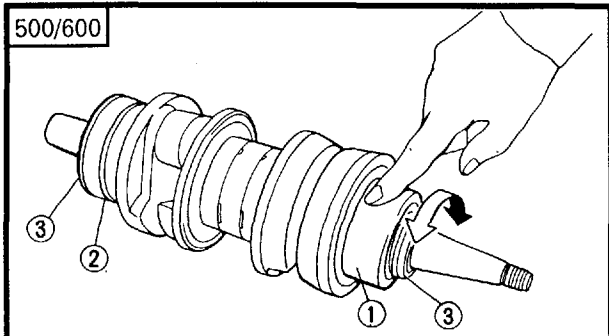


700





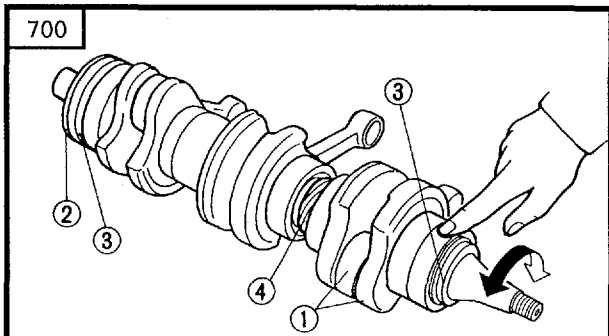
500/600



3. Inspect:

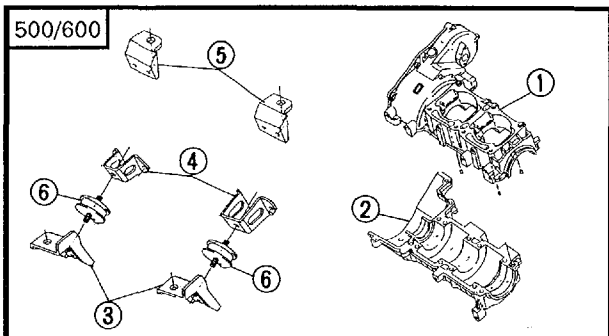
- Crankshaft bearing ①
Pitting/damage → Replace.
- Stopper ring ②
Bend/damage → Replace.
- Crankshaft oil seals ③
- Impeller drive gear teeth ④ (700)
Wear/damage → Replace.

700

**CAUTION:**

Lubricate the bearings immediately after examining them, to prevent rust.

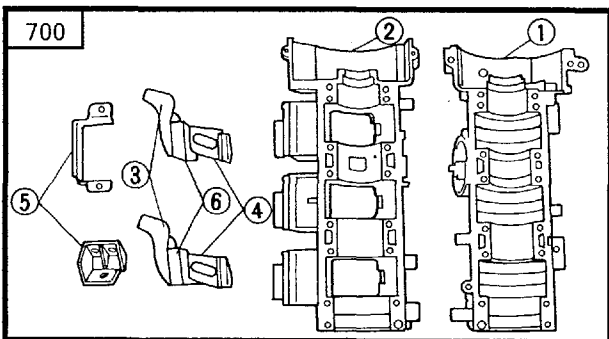
500/600



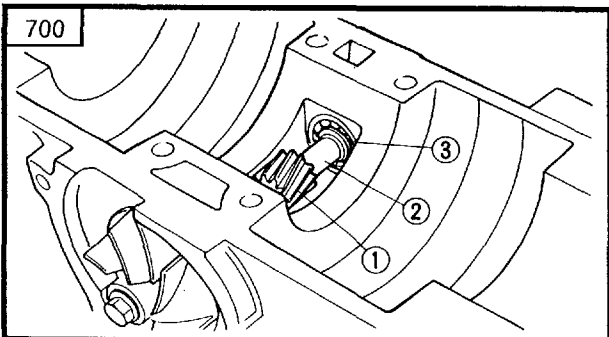
4. Inspect:

- Upper crankcase ①
- Lower crankcase ②
- Front lower bracket ③
- Front upper bracket ④
- Rear bracket ⑤
- Damper ⑥
Cracks/damage → Replace.

700

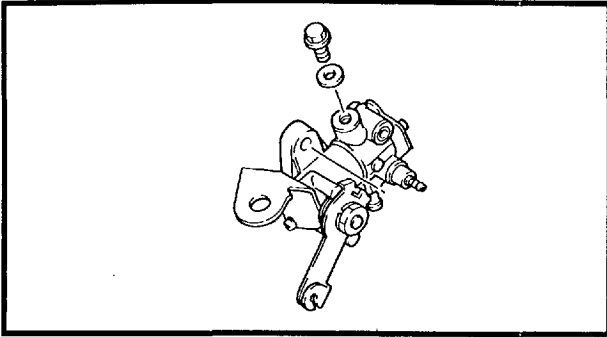


700



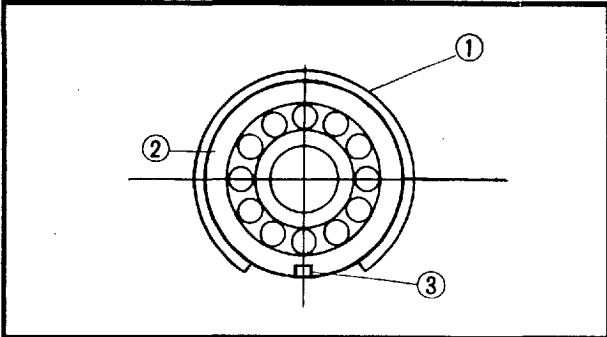
5. Inspect:

- Impeller driven gear teeth ① (700)
Wear/damage → Replace.
- Impeller shaft ② (700)
- Bearing ③ (700)
Pitting/damage → Replace.



6. Inspect:

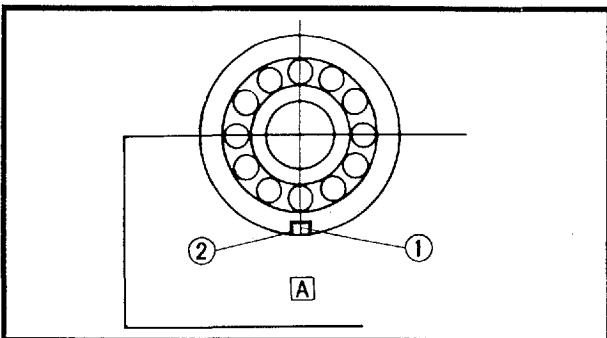
- Oil pump
Cracks/damage → Replace.



INSTALLATION (500/600)

1. Install:

- Stopper ring ①
(onto lower crankcase bearing ② (primary sheave side) as shown)
- ③ Pin hole

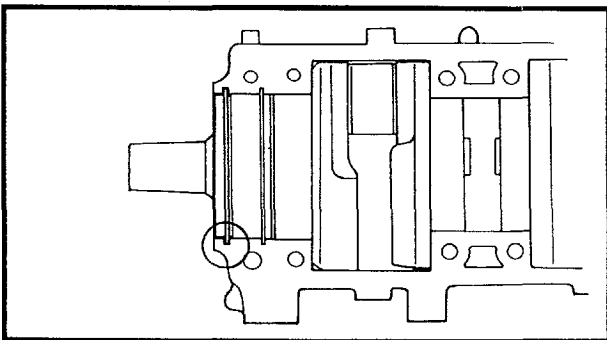


2. Install:

- Crankshaft assembly
(onto upper crankcase [A])

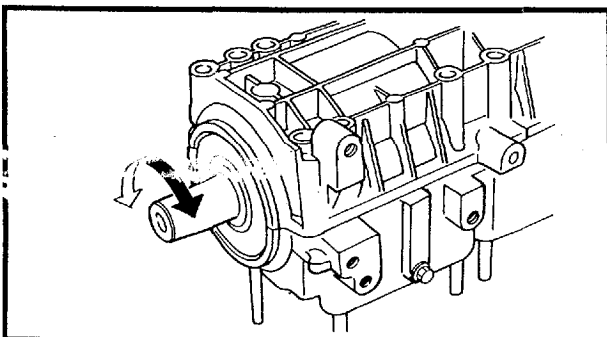
NOTE:

Set the knock pins ① on the upper crankcase [A] and labyrinth seal into the pin holes ② of the bearings and upper crankcase by turning the bearings and labyrinth seal.



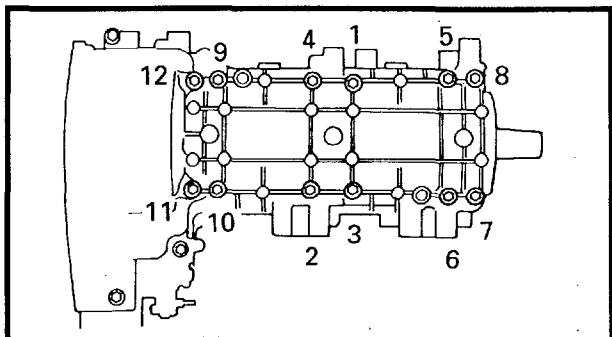
CAUTION:

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 is turning smoothly.



3. Tighten:

- Bolts (crankcase)

NOTE:

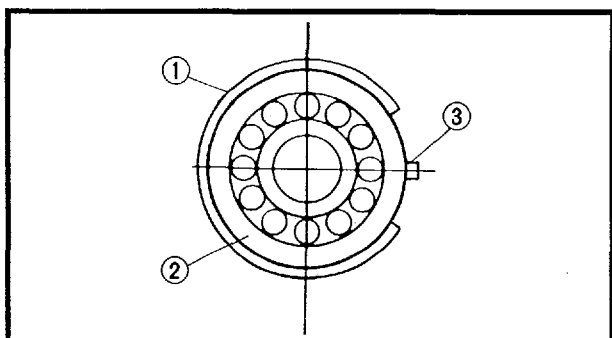
Tighten the bolts in order starting with the lowest numbered and torque the bolts in two stages.

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

13 Nm (1.3 m • kg, 9.4 ft • lb)

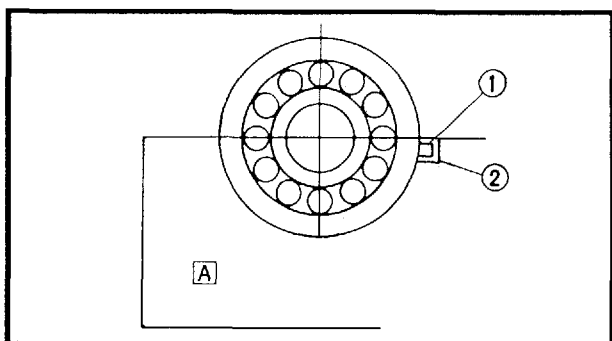
Final:

27 Nm (2.7 m • kg, 19 ft • lb)

**INSTALLATION (700)**

1. Install:

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



2. Install:

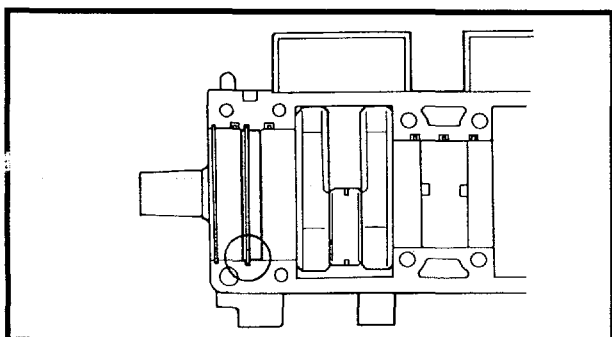
- Crankshaft assembly
(onto upper crankcase)

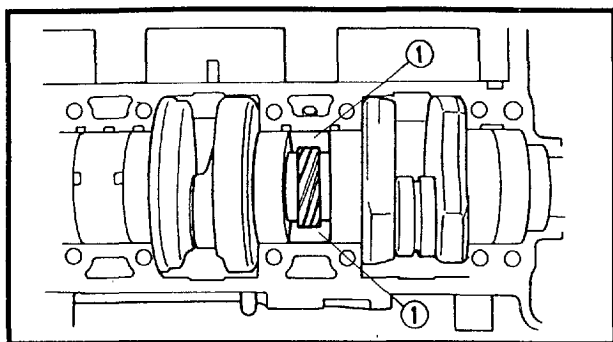
NOTE:

Set the knock pins ① on the upper crankcase A and labyrinth seal into the pin holes ② of the bearings and upper crankcase by turning the bearings and labyrinth seal.

CAUTION:

The oil seal lip must fit into the crankcase groove.



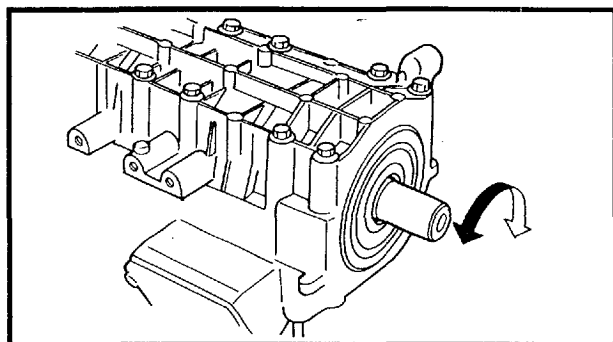


3. Fill:

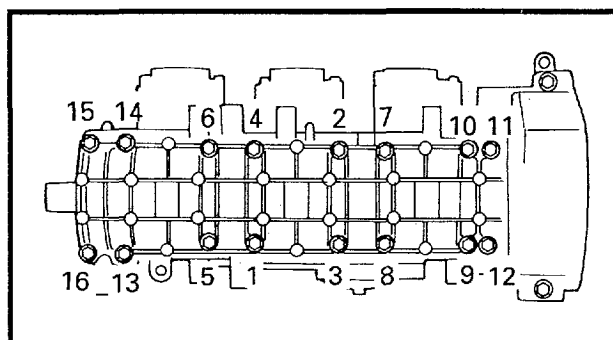
- Gear room ①



Gear room capacity:
20 cm³ (0.71 Imp oz, 0.67 US oz)
Recommended oil:
YAMALUBE 2-cycle

**CAUTION:**

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



4. Tighten:

- Bolts (crankcase)

NOTE:

Tighten the bolts in order starting with the lowest numbered and torque the bolts in two stages.

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

13 Nm (1.3 m • kg, 9.4 ft • lb)

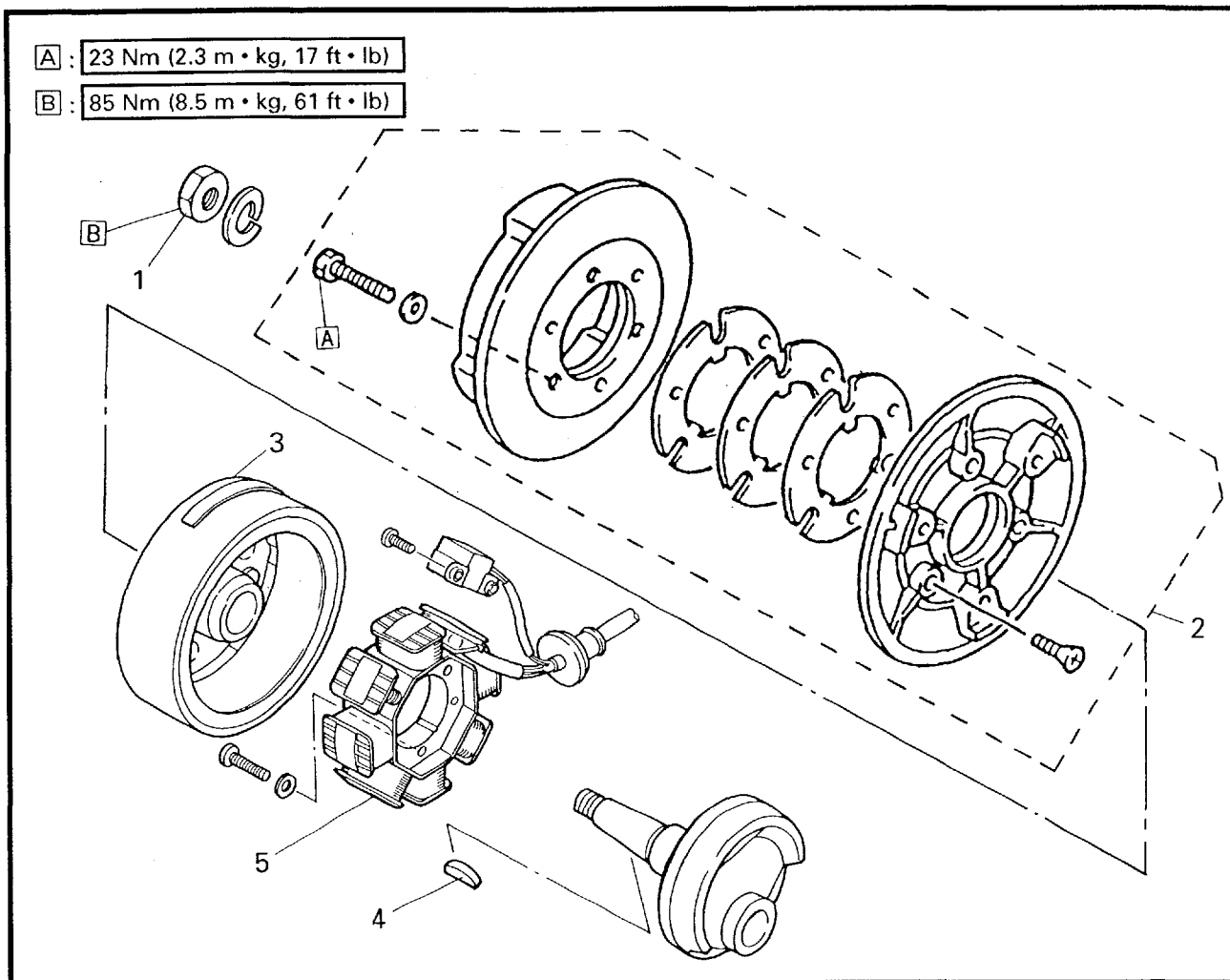
Final:

27 Nm (2.7 m • kg, 19 ft • lb)



CDI MAGNETO

500/600



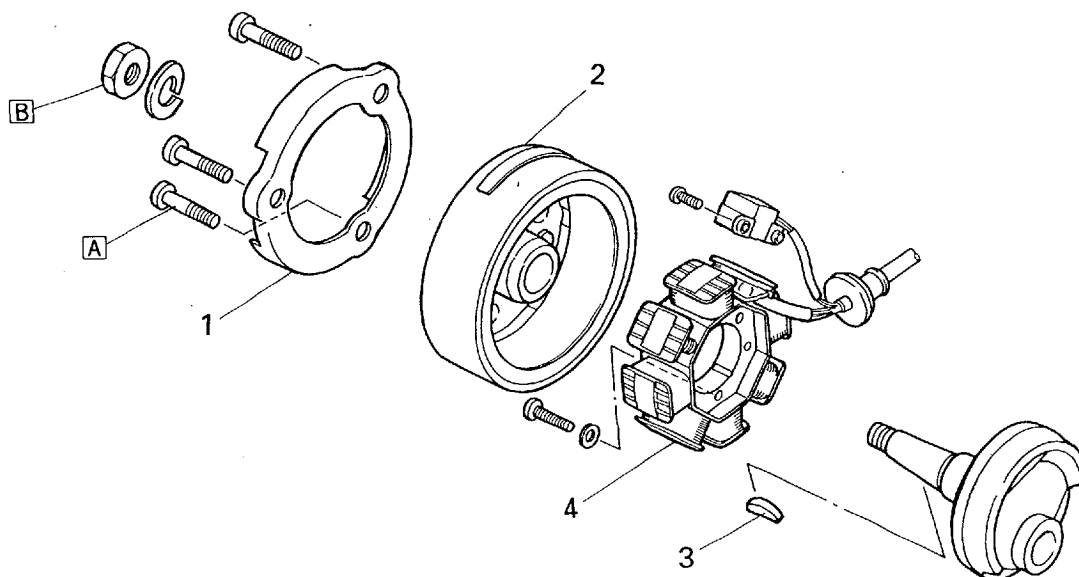
Order	Job name/Part name	Q'ty	Remarks
	CDI Magneto removal		
	Recoil starter		Remove the parts in the order below. Refer to "RECOIL STARTER".
1	Nut	1	
2	Starter pulley assembly	1	
3	Magneto rotor	1	
4	Woodruff key	1	
5	Stator coil	1	
			For installation, reverse the removal procedure.



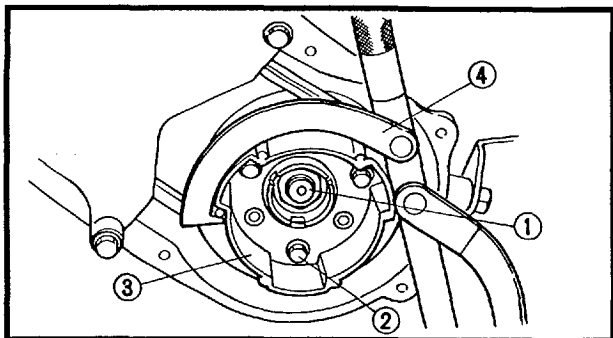
700

[A] : 19 Nm (1.9 m • kg, 13 ft • lb)

[B] : 85 Nm (8.5 m • kg, 61 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	CDI Magneto removal		
	Recoil starter		Remove the parts in the order below. Refer to "RECOIL STARTER".
1	Starter pulley	1	
2	Magneto rotor	1	
3	Woodruff key	1	
4	Stator coil	1	
			For installation, reverse the removal procedure.



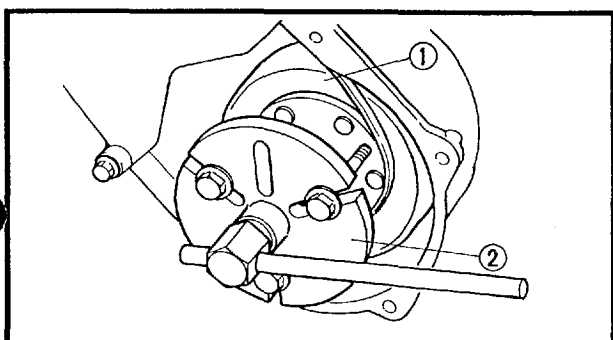
REMOVAL (500/600)

1. Remove:

- Nut ①
- Bolt ②
- Starter pulley ③

NOTE:

Attach the rotor holding tool (90890-01235, YU-01235) ④ to hold the starter pulley.

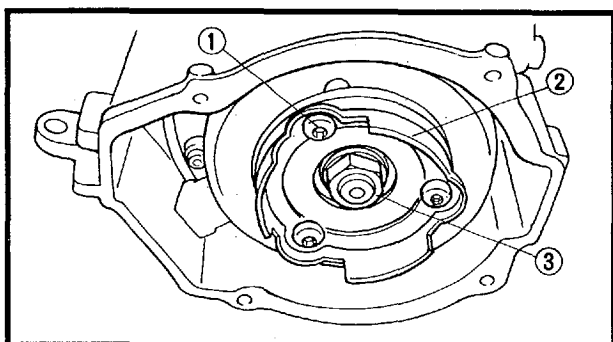


2. Remove:

- Magneto rotor ①

NOTE:

- Remove the magneto rotor using the rotor puller (90890-01362, YU-33270) ②.
- Fully tighten the tool holding bolts, but make sure the tool body is parallel with the magneto rotor. If necessary, one screw may be backed out slightly to level tool body.



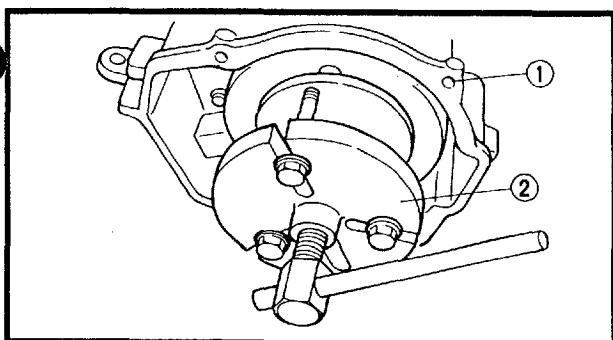
REMOVAL (700)

1. Remove:

- Bolt ①
- Starter pulley ②
- Nut ③

NOTE:

Attach the primary sheave holder (90890-01701, YS-01880) to hold the primary sheave.

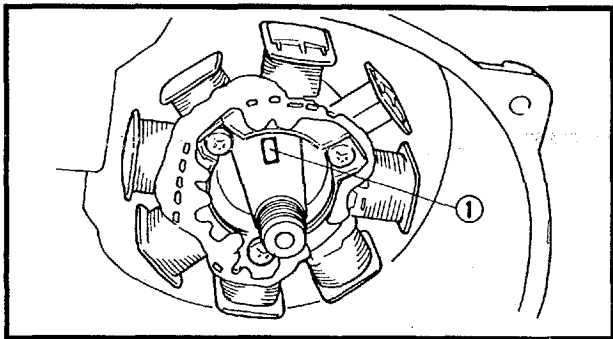


2. Remove:

- Magneto rotor ①

NOTE:

- Remove the magneto rotor using the rotor puller (90890-01362, YU-33270) ②.
- Fully tighten the tool holding bolts, but make sure the tool body is parallel with the magneto rotor. If necessary, one screw may be backed out slightly to level tool body.

**INSTALLATION (500/600)****1. Install:**

- Woodruff key ①

CAUTION:

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

NOTE:

Pass the magneto leads through the hole and install the grommet in the crankcase.

2. Install:

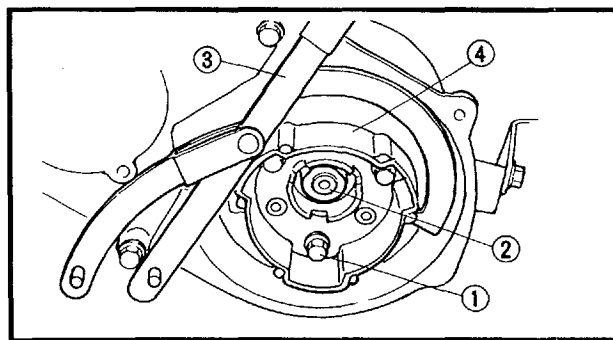
- Magneto rotor
- Washer
- Nut (magneto rotor)

CAUTION:

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

NOTE:

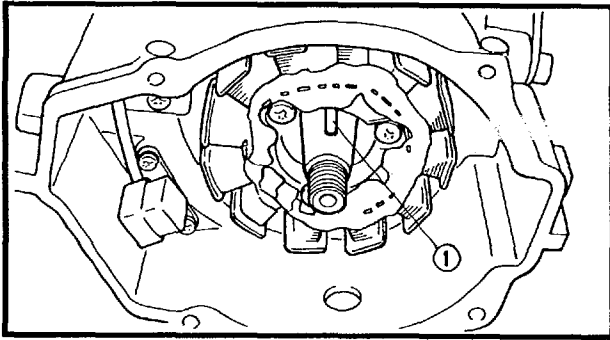
When installing the magneto rotor, make sure the woodruff key is properly seated in the keyway of the crankshaft.

**3. Tighten:**

Starter pulley bolt ①:
23 Nm (2.3 m • kg, 17 ft • lb)
Magneto rotor nut ②:
85 Nm (8.5 m • kg, 61 ft • lb)

NOTE:

Attach the rotor holding tool (90890-01235, YU-01235) ③ to hold the starter pulley ④.



INSTALLATION (700)

1. Install:

- Woodruff key ①

CAUTION:

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

NOTE:

Pass the magneto leads through the hole and install the grommet in the crankcase.

2. Install:

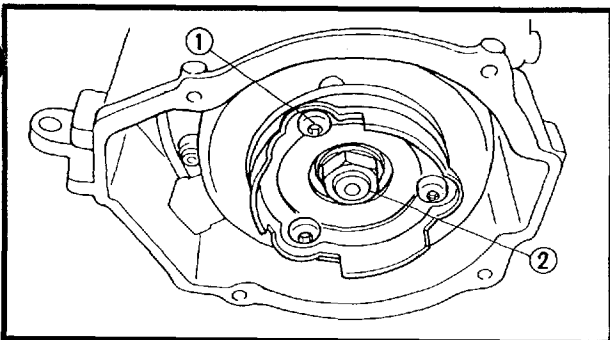
- Magneto rotor
- Washer
- Nut (magneto rotor)

CAUTION:

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

NOTE:

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



3. Tighten:



Starter pulley bolt ①:

19 Nm (1.9 m • kg, 13 ft • lb)

Magneto rotor nut ②:

85 Nm (8.5 m • kg, 61 ft • lb)

NOTE:

Attach the primary sheave holder (90890-01701, YS-01880) to hold the primary sheave.

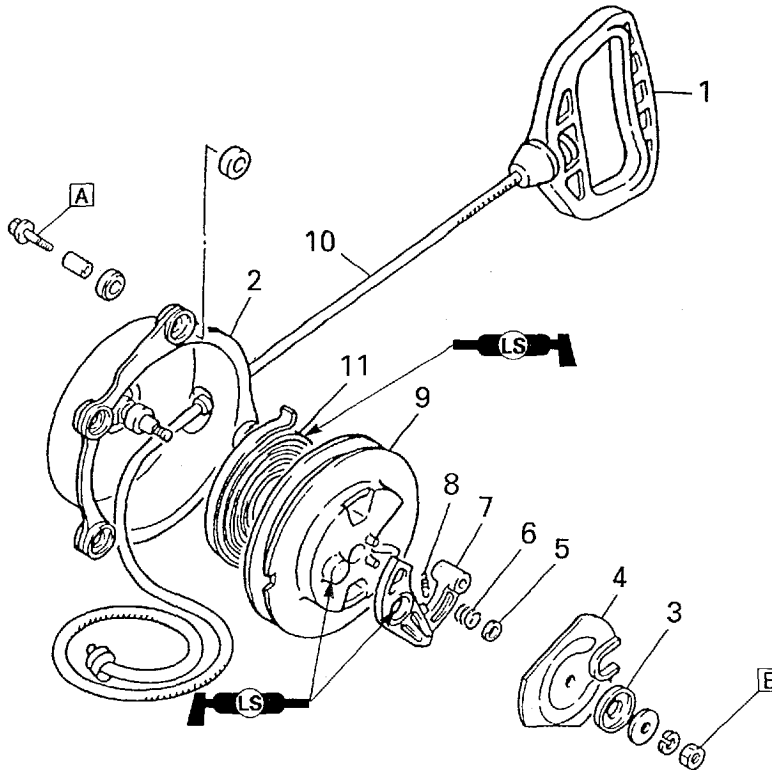


RECOIL STARTER

500/600

[A] : 10 Nm (1.0 m • kg, 7.2 ft • lb)

[B] : 7 Nm (0.7 m • kg, 5.1 ft • lb)



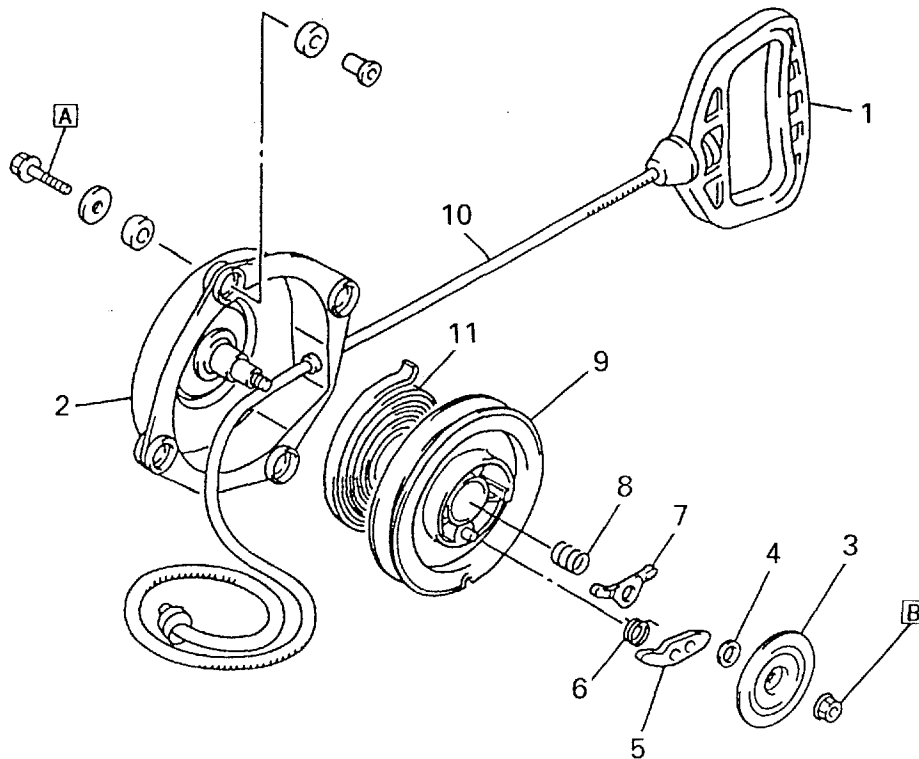
Order	Job name/Part name	Q'ty	Remarks
	Recoil starter removal		Remove the parts in the order below.
1	Muffler	1	
2	Starter handle	1	
3	Recoil starter case	1	
4	Special washer	1	
5	Drive plate	1	
6	Spring cover	1	
7	Drive plate spring	1	
8	Drive pawl	1	
9	Return spring	1	
10	Sheave drum	1	
11	Starter rope	1	
	Starter spring	1	
			For installation, reverse the removal procedure.



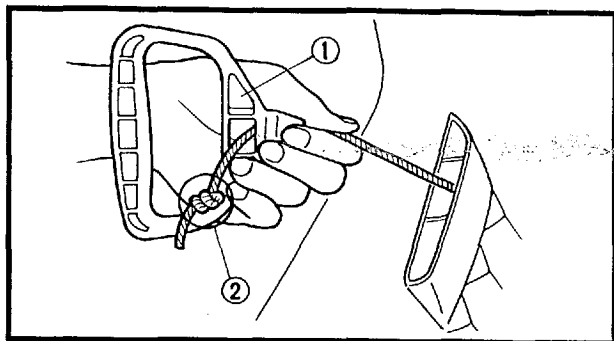
700

[A] : 12 Nm (1.2 m • kg, 8.7 ft • lb)

[B] : 10 Nm (1.0 m • kg, 13 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Recoil starter removal		Remove the parts in the order below.
	Muffler		
1	Starter handle	1	
2	Recoil starter case	1	
3	Drive plate	1	
4	Washer	1	
5	Drive pawl	1	
6	Return spring	1	
7	Cam guide	1	
8	Drive plate spring	1	
9	Sheave drum	1	
10	Starter rope	1	
11	Starter spring	1	
			For installation, reverse the removal procedure.



5E021

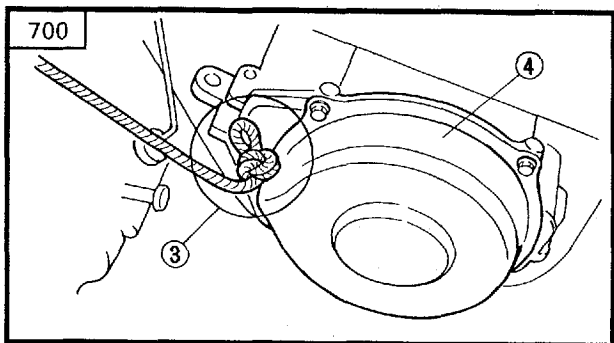
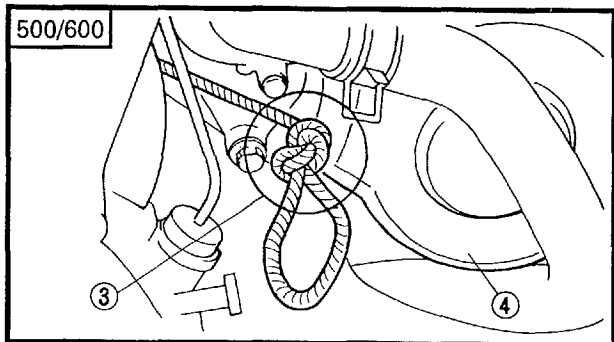
REMOVAL

1. Remove:

- Starter handle ①

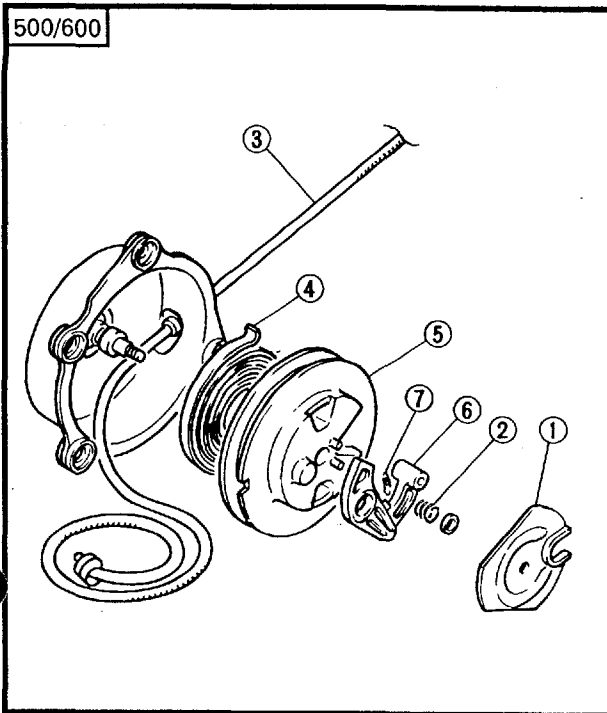
NOTE:

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





500/600

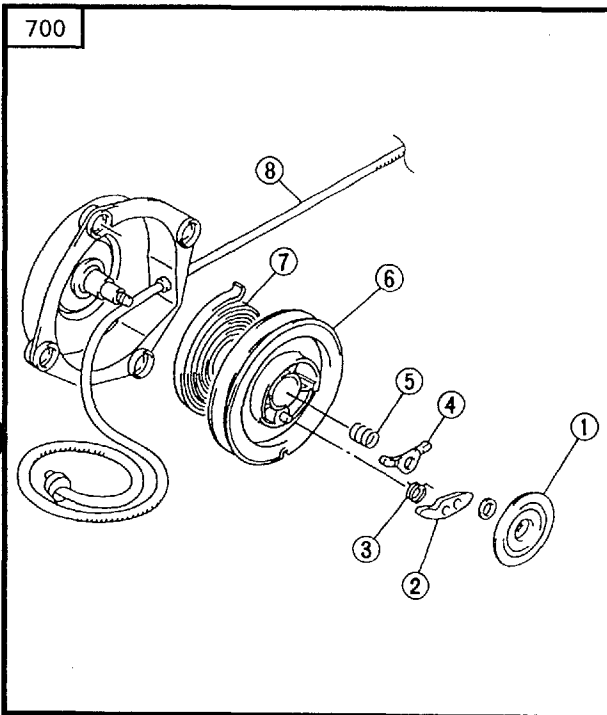


INSPECTION

1. Inspect:

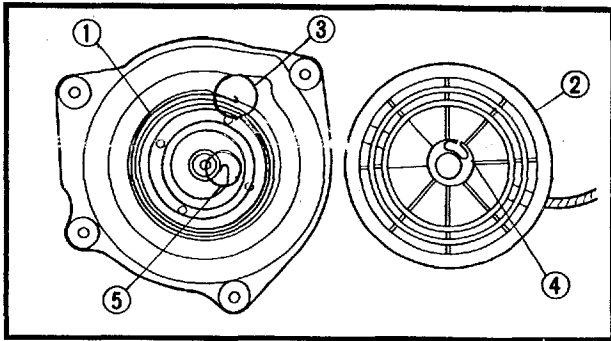
- Drive plate ①
Cracks/bends/damage → Replace.
- Drive plate spring ②
Wear/damage → Replace.
- Starter rope ③
Wear/breaks/damage → Replace.
- Starter spring ④
Cracks/bends/damage → Replace.
- Sheave drum ⑤
Cracks/damage → Replace.
- Drive pawl ⑥
- Return spring ⑦
Wear/cracks/damage → Replace.

700



2. Inspect:

- Drive plate ①
Cracks/bends/damage → Replace.
- Drive pawl ②
- Return spring ③
- Cam guide ④
Wear/cracks/damage → Replace.
- Drive plate spring ⑤
Wear/damage → Replace.
- Sheave drum ⑥
Cracks/damage → Replace.
- Starter spring ⑦
Cracks/bends/damage → Replace.
- Starter rope ⑧
Wear/breaks/damage → Replace.



INSTALLATION (500/600)

1. Wind:

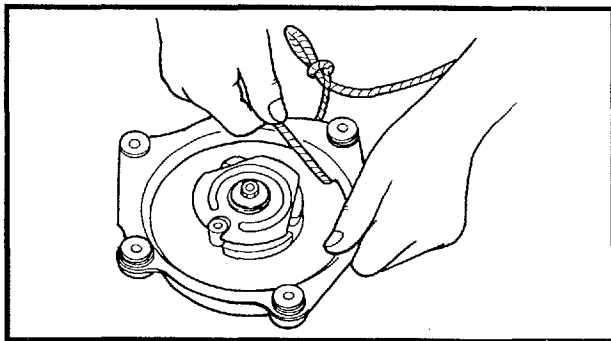
- Starter rope (2 1/4 turn counterclockwise) (to sheave drum)

2. Install:

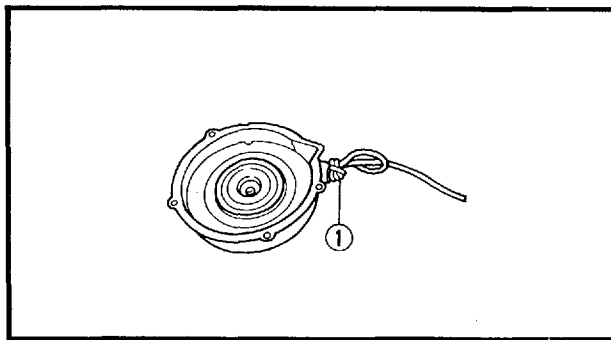
- Starter spring ①
- Sheave drum assembly ②

NOTE:

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

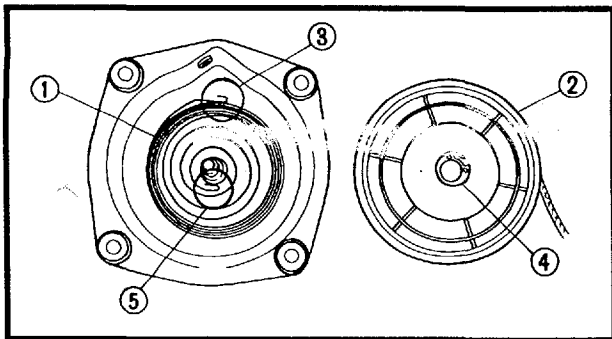


3. Pull about four inches of starter rope out of the cutout portion in the sheave drum and rotate the sheave drum 4 3/4 times counterclockwise to preload the starter spring.



NOTE:

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



INSTALLATION (700)

1. Wind:

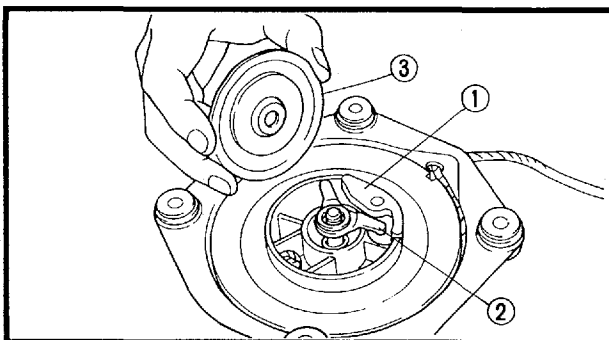
- Starter rope (2 1/2 turns counterclockwise) (to sheave drum)

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 larger to smaller diameter.
- Mesh the sheave drum hook ④ with the spring hook ⑤.

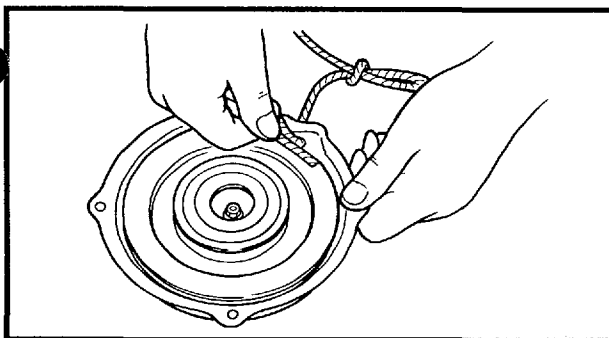


3. Install:

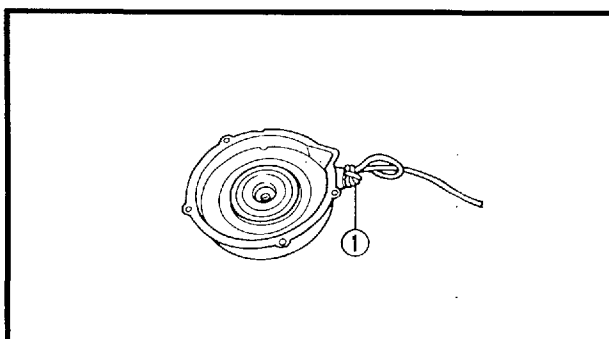
- Drive pawl ①
- Cam guide ②
- Drive plate ③

NOTE:

The cam guide ② should not be on top of the drive pawl ①.

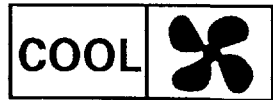


4. Pull about four inches of starter rope out of the cutout portion in the sheave drum and rotate the sheave drum 4 1/2 times counterclockwise to preload the starter spring.



NOTE:

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



CHAPTER 6. COOLING SYSTEM

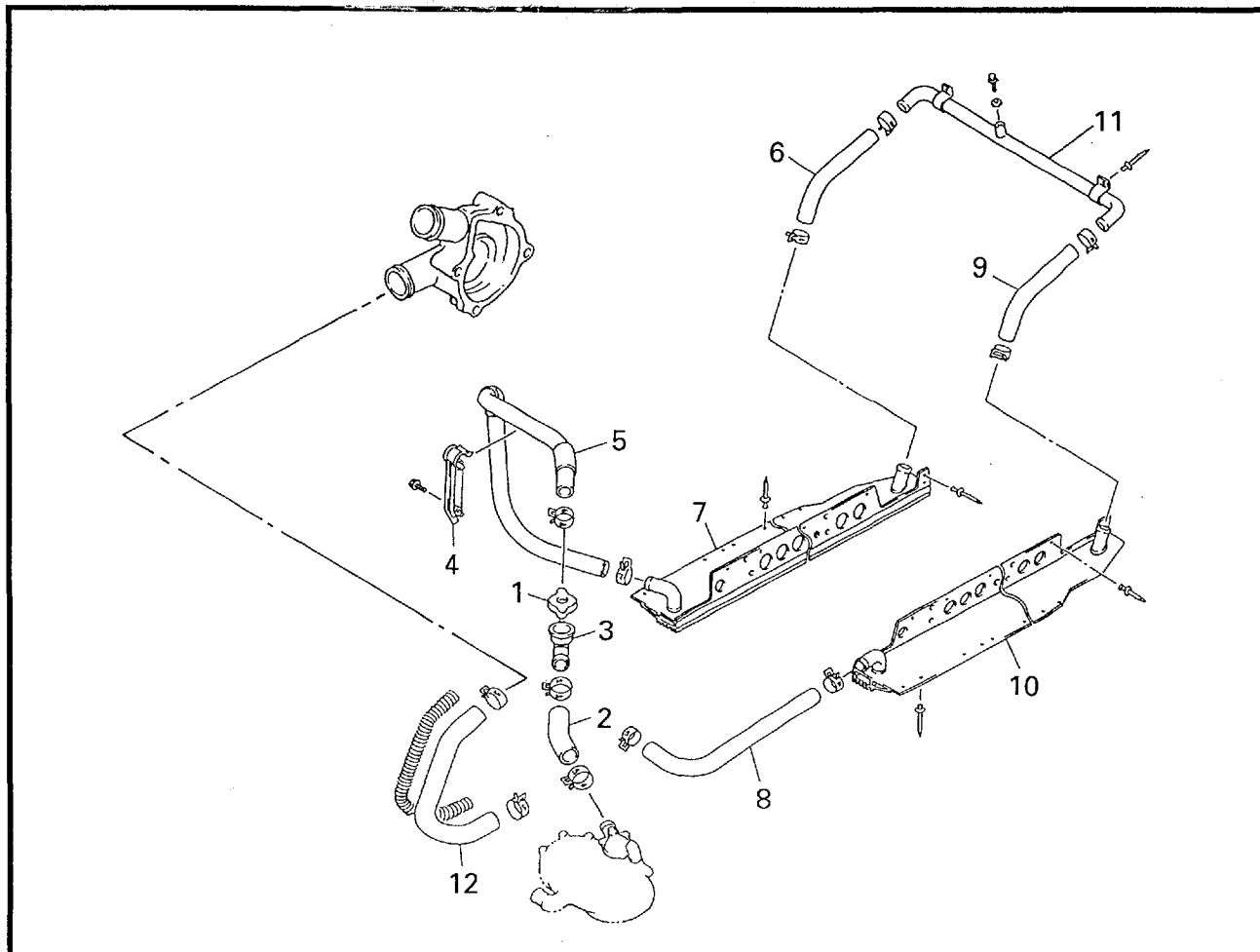
HEAT EXCHANGER	6-1
500/600	6-1
700	6-2
WATER PUMP	6-4
500/600	6-4
REMOVAL	6-5
INSPECTION	6-5
INSTALLATION	6-6
700	6-7
REMOVAL	6-8
INSPECTION	6-8
INSTALLATION	6-8



COOLING SYSTEM

HEAT EXCHANGER

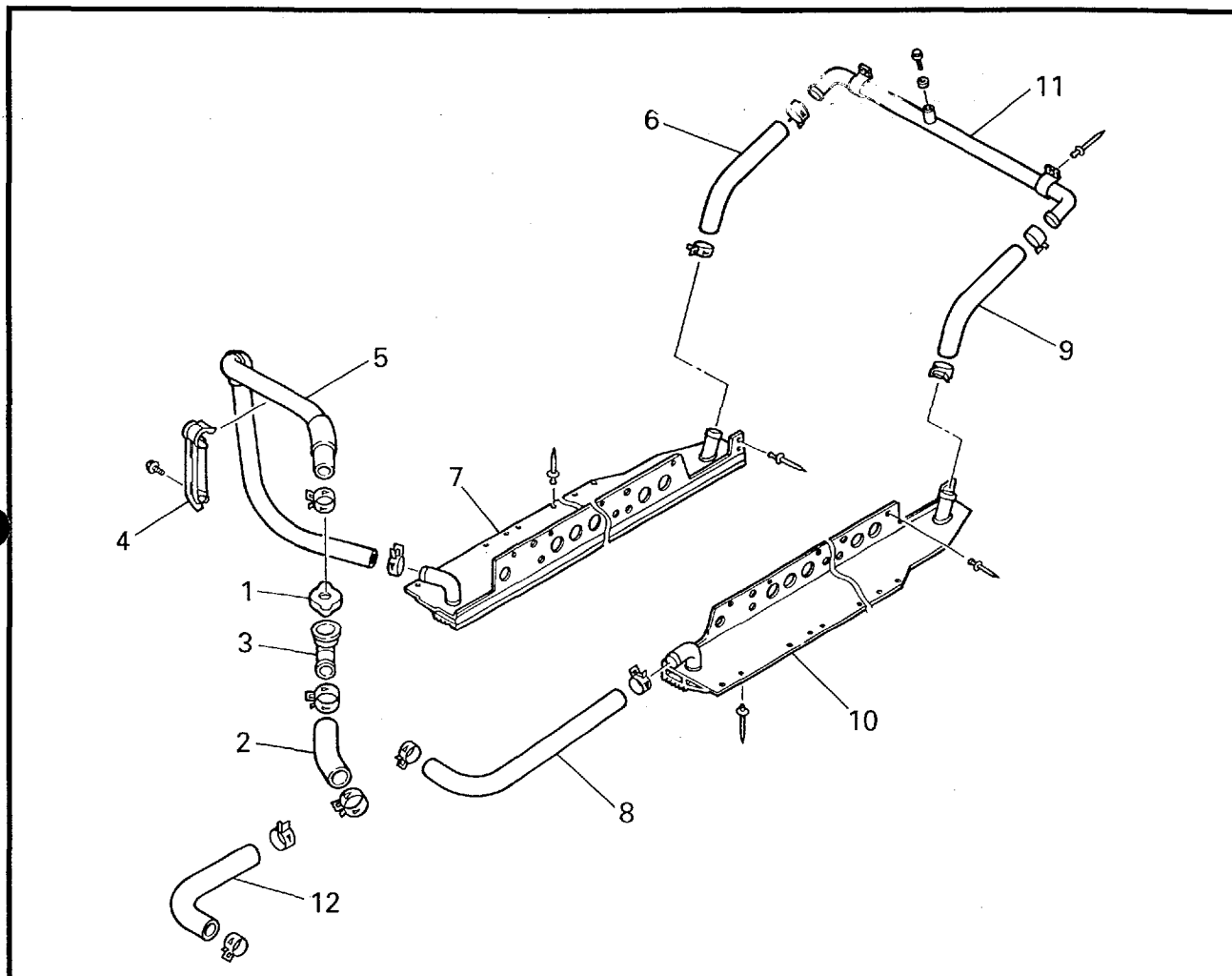
500/600



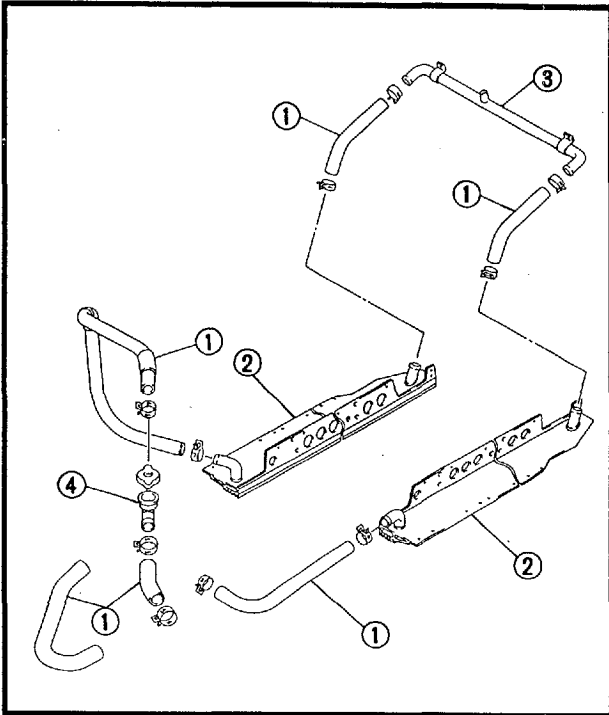
Order	Job name/Part name	Q'ty	Remarks
	Heat exchanger removal		Remove the parts in the order below. Drain. Refer to "COOLANT REPLACEMENT".
1	Coolant filler cap	1	
2	Coolant hose 1	1	
3	Filler cap body	1	
4	Clamp	1	
5	Coolant hose 2	1	
6	Coolant hose 3	1	
7	Heat exchanger (right)	1	
8	Coolant hose 4	1	
9	Coolant hose 5	1	
10	Heat exchanger (left)	1	
11	Joint pipe	1	
12	Coolant hose 6	1	
			For installation, reverse the removal procedure.



700

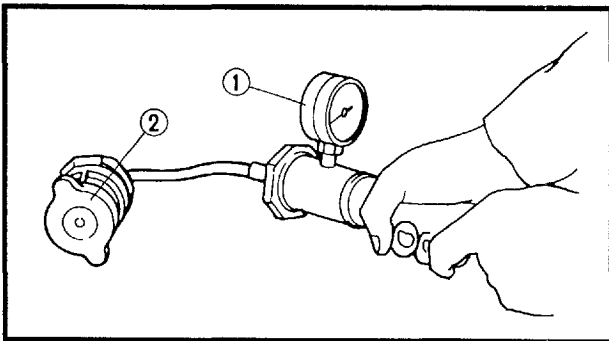


Order	Job name/Part name	Q'ty	Remarks
	Heat exchanger removal		
	Coolant		Remove the parts in the order below. Drain. Refer to "COOLANT REPLACEMENT".
1	Coolant filler cap	1	
2	Coolant hose 1	1	
3	Filler cap body	1	
4	Clamp	1	
5	Coolant hose 2	1	
6	Coolant hose 3	1	
7	Heat exchanger (right)	1	
8	Coolant hose 4	1	
9	Coolant hose 5	1	
10	Heat exchanger (left)	1	
11	Joint pipe	1	
12	Coolant hose 6	1	
			For installation, reverse the removal procedure.



1. Inspect:

- Coolant hoses ①
 - Heat exchangers ②
 - Joint pipe ③
 - Filler cap body ④
- Cracks/damage → Replace.



2. Measure:

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

Cap opening pressure:

100 ~ 120 kPa
(1.0 ~ 1.2 kg/cm², 14 ~ 17 psi)

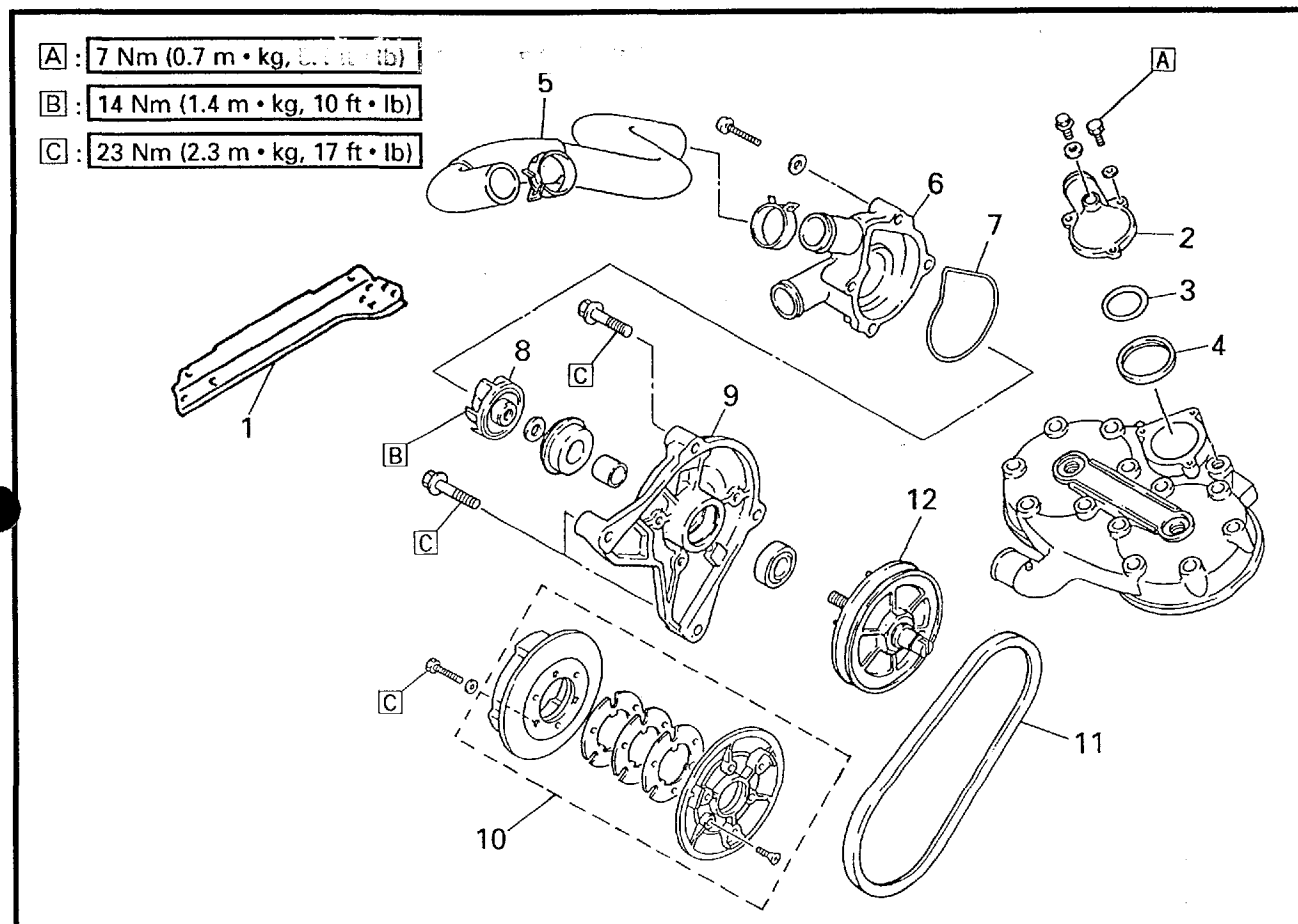
Measurement steps:

- Attach the cooling system tester ① (90890-01325, YU-24460-01) to the coolant filler cap ②.
- Apply the specified pressure for 10 seconds, and make sure there is no pressure drop.

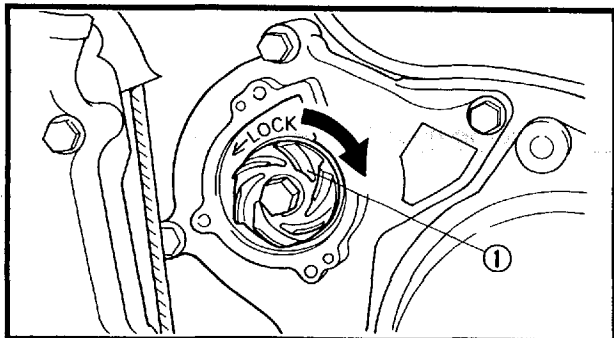


WATER PUMP

500/600



Order	Job name/Part name	Q'ty	Remarks
	Water pump removal		Remove the parts in the order below.
	Exhaust pipe		Refer to "RECOIL STARTER".
	Recoil starter assembly		Drain.
	Coolant		
1	Frame cross member	1	
2	Thermostatic valve cover	1	
3	Plain washer	1	
4	Gasket	1	
5	Coolant hose	1	
6	Water pump cover	1	
7	Gasket	1	
8	Impeller	1	
9	Water pump housing	1	
10	Starter pulley assembly	1	
11	Water pump drive belt	1	
12	Impeller shaft assembly	1	
			For installation, reverse the removal procedure.



REMOVAL

1. Remove:

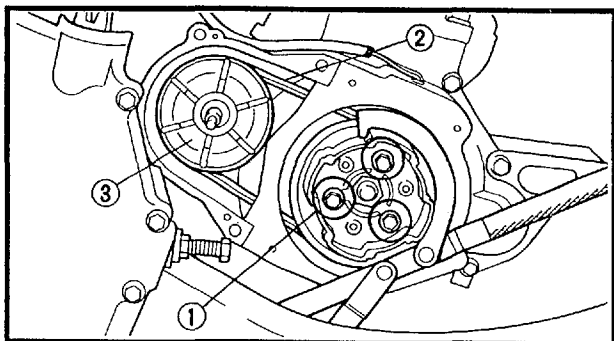
- Impeller ①

NOTE:

Attach the rotor holding tool (90890-01235, YU-01235) to hold the starter pulley.

CAUTION:

The impeller has left-hand threads. Turn the impeller clockwise to loosen it.



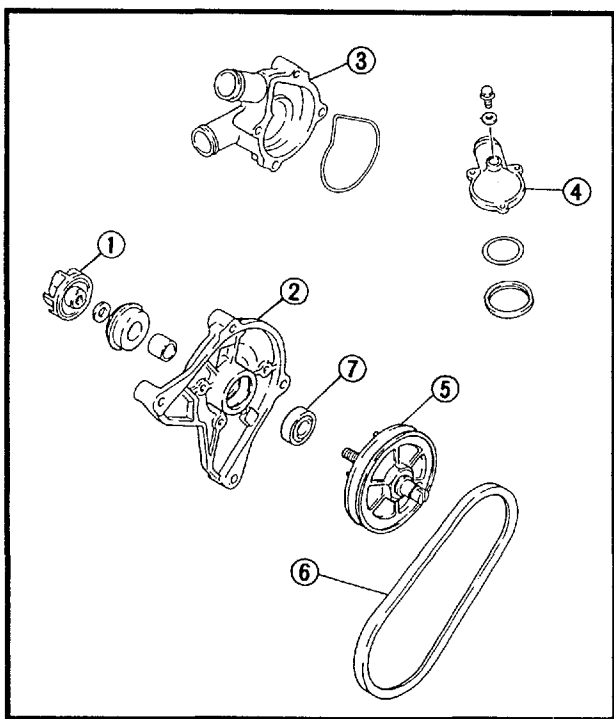
2. Remove:

- Starter pulley ①

NOTE:

Attach the rotor holding tool (90890-01235, YU-01235) to hold the starter pulley.

- Water pump drive belt ②
- Impeller shaft assembly ③



INSPECTION

1. Inspect:

- Impeller ①
- Water pump housing ②
- Water pump cover ③
- Thermostatic cover ④
- Impeller shaft assembly ⑤
Cracks/damage → Replace.
- Water pump drive belt ⑥
Wear/damage → Replace.
- Bearing ⑦
Pitting/damage → Replace.

Replacement steps:

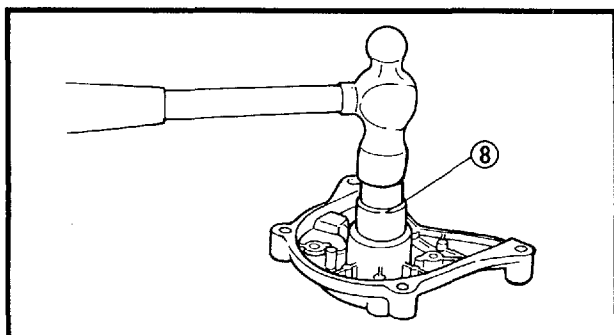
- Remove the bearing using a general bearing puller.
- Install the new bearing.

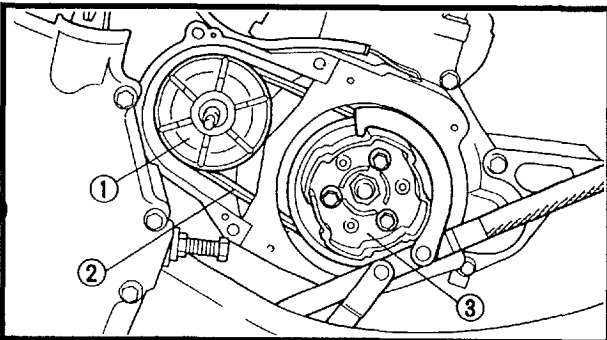
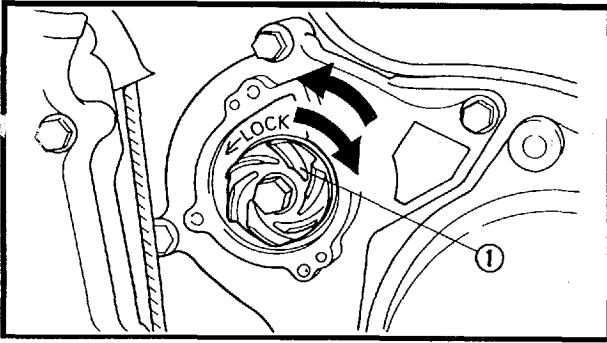
NOTE:

Use a socket ⑧ that matches the outside diameter of the bearing race.

CAUTION:

Do not strike the inner race or ball bearings. Contact should be made only with the outer race.



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

- Impeller shaft assembly ①
- Water pump drive belt ②
- Starter pulley ③

NOTE:

Attach the rotor holding tool (90890-01235, YU-01235) to hold the starter pulley.

2. Install:

- Impeller ①

NOTE:

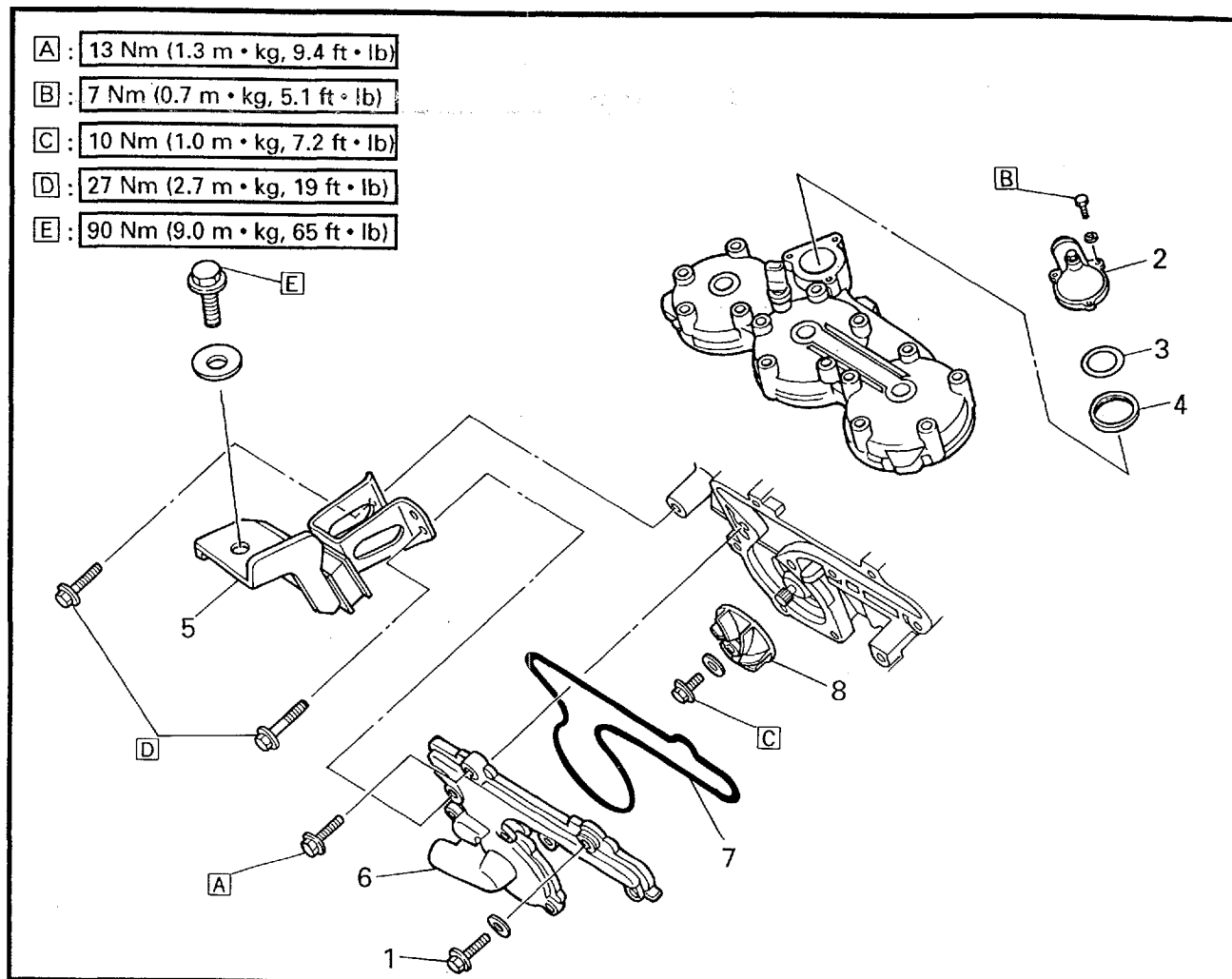
Attach the rotor holding tool (90890-01235, YU-01235) to hold the starter pulley.

CAUTION:

The impeller has left-hand threads. Turn the impeller counterclockwise to fasten it.



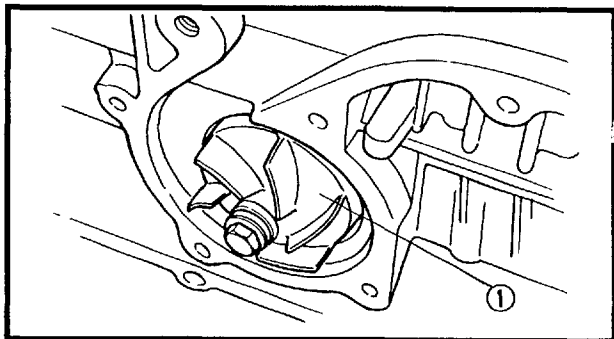
700



Order	Job name/Part name	Q'ty	Remarks
	Water pump and thermostatic valve removal		Remove the parts in the order below.
	Exhaust pipe		
1	Drain bolt		Coolant drain.
2	Thermostatic cover	1	
3	Plain washer	1	
4	Gasket	1	
5	Engine bracket	1	
6	Water pump cover	1	
7	Gasket	1	
8	Impeller	1	
		1	For installation, reverse the removal procedure.

WATER PUMP

COOL



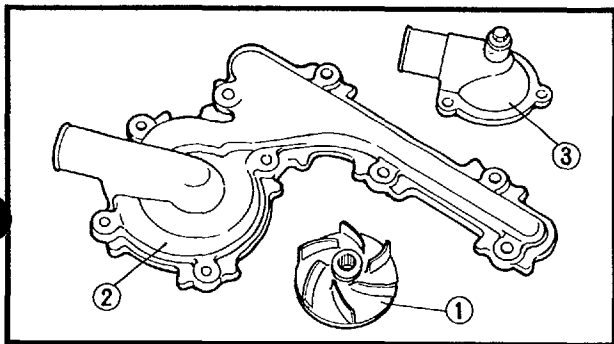
REMOVAL

1. Remove:

- Impeller ①

NOTE:

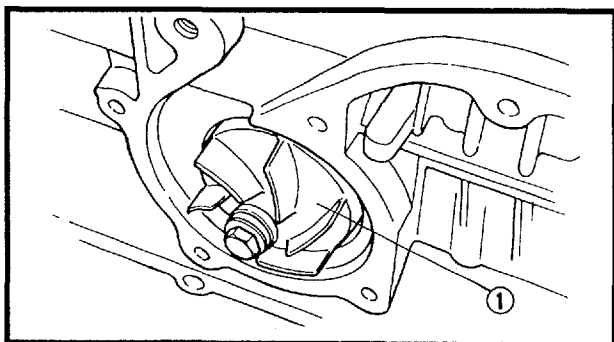
Attach the primary sheave holder (90890-01701, YS-01880) to hold the primary sheave.



INSPECTION

1. Inspect:

- Impeller ①
 - Water pump cover ②
 - Thermostatic cover ③
- Cracks/damage → Replace.



INSTALLATION

1. Install:

- Impeller ①

NOTE:

Attach the primary sheave holder (90890-01701, YS-01880) to hold the primary sheave.





CHAPTER 7. CARBURETION

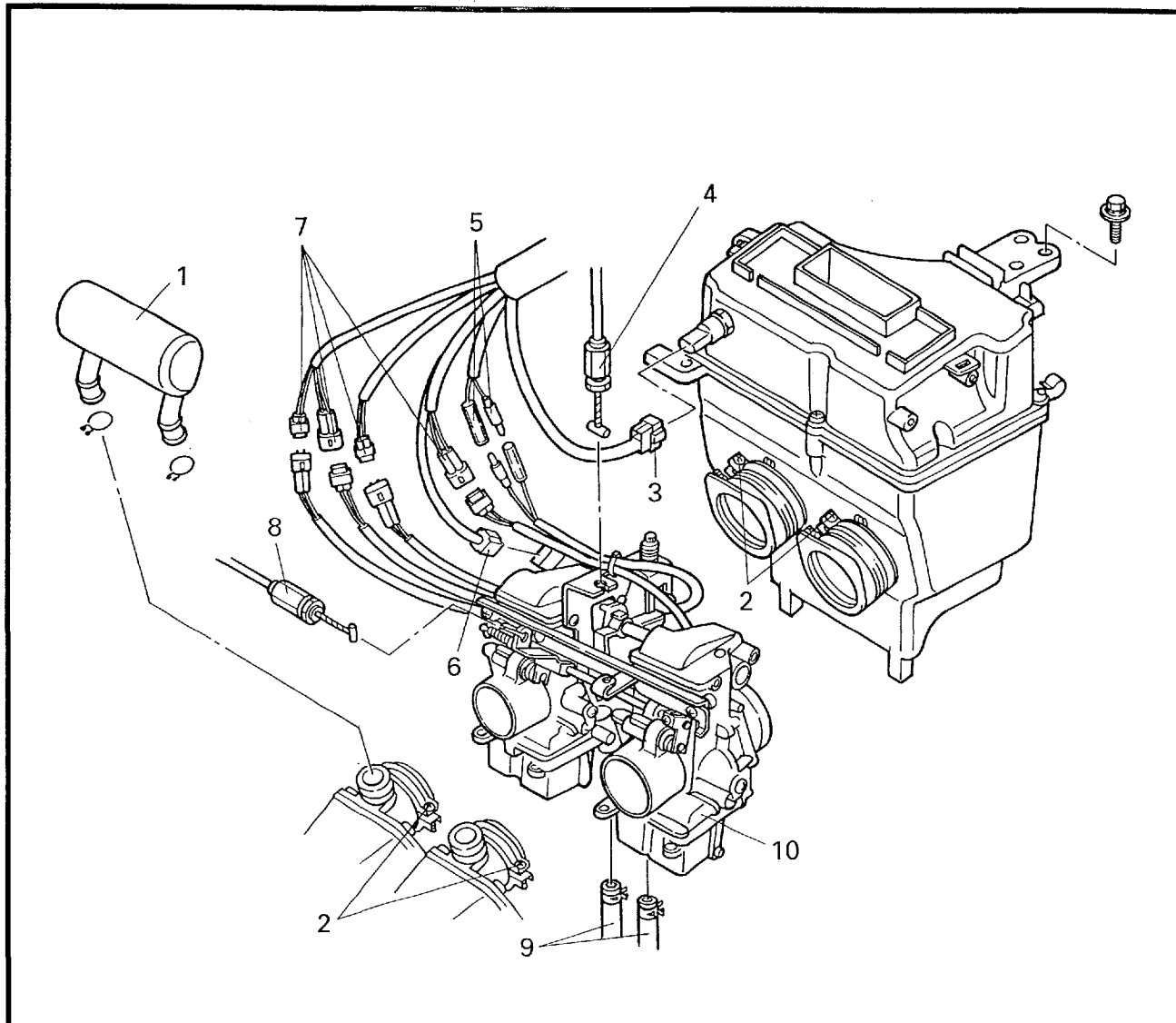
CARBURETORS	7-1
500/600	7-1
700	7-6
INSPECTION	7-10
ASSEMBLY	7-11
FUEL LEVEL ADJUSTMENT	7-12
THROTTLE POSITION SENSOR (TPS) INSPECTION AND ADJUSTMENT	7-13
FUEL PUMP	7-15
500/600	7-15
700	7-16
INSPECTION	7-17



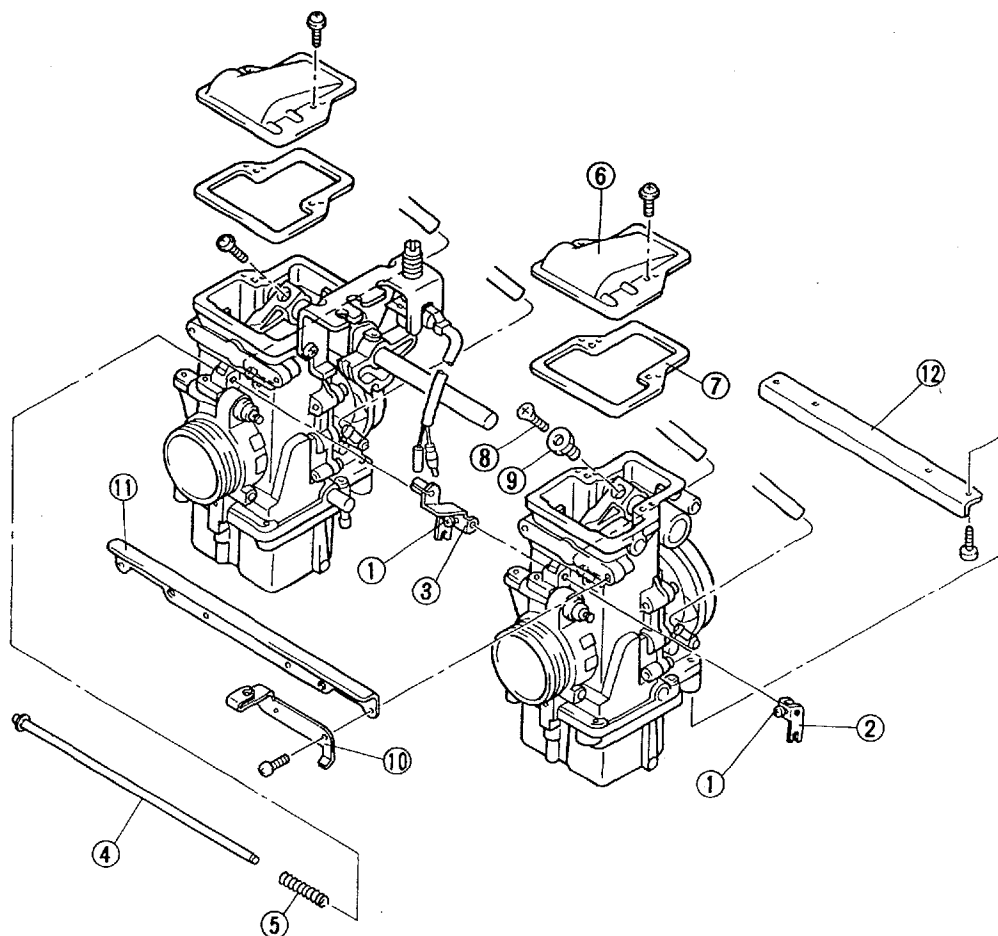
CARBURETION

CARBURETORS

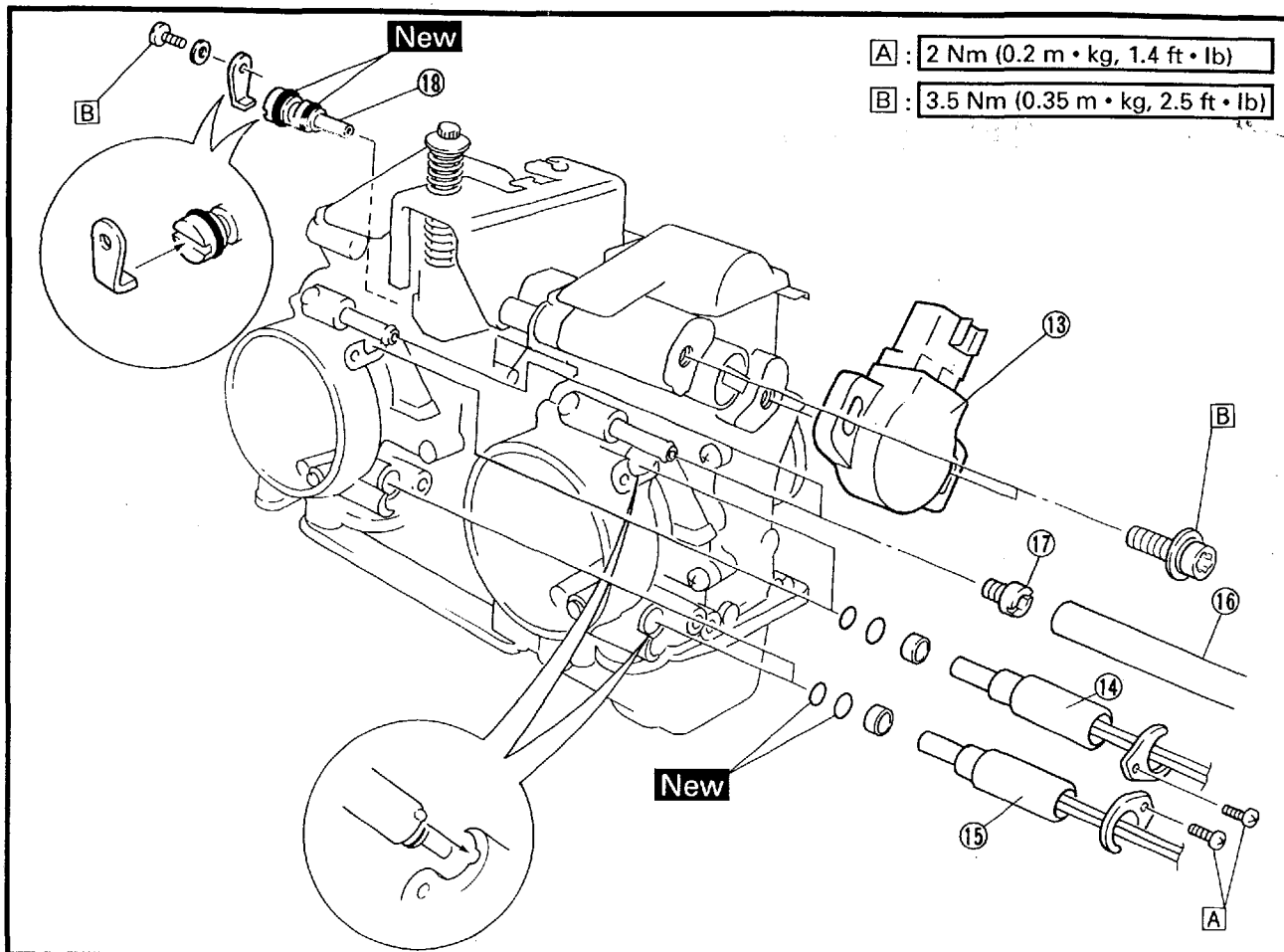
500/600



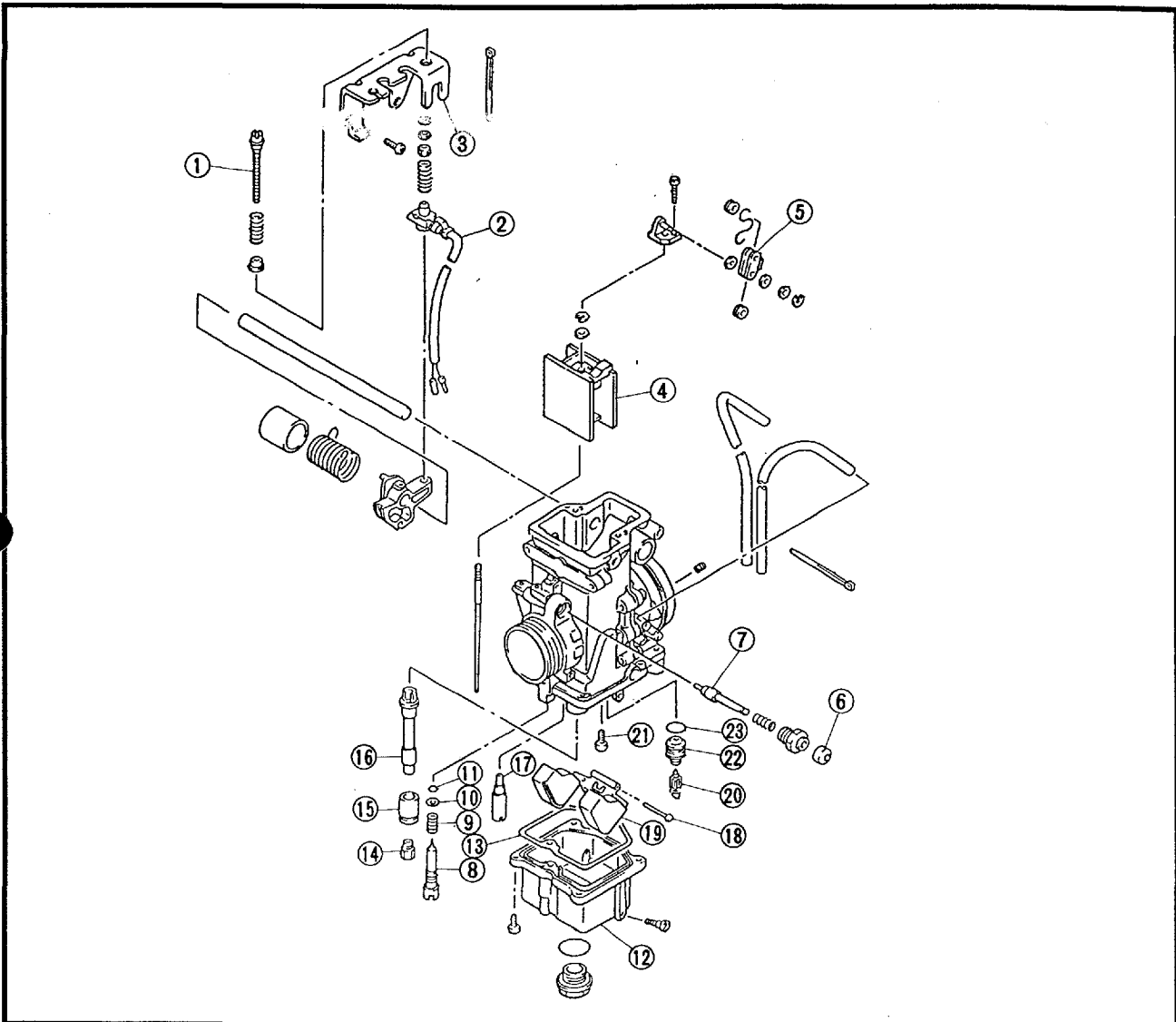
Order	Job name/Part name	Q'ty	Remarks
	Carburetors removal		Remove the parts in the order below.
1	Air chamber	1	
2	Clamp screws	4	Loosen
3	Air temperature sensor coupler	1	VT600, MM600
4	Throttle cable	1	
5	Carburetor switch (T.O.R.S.) leads	2	
6	TPS coupler	1	VX600XT/XTC/XTCX/XTCR/SX, VT600, MM600
7	Solenoid valve couplers	4	VT600, MM600
8	Starter cable	1	
9	Fuel delivery hoses	2	
10	Carburetors	1	
			For installation, reverse the removal procedure.



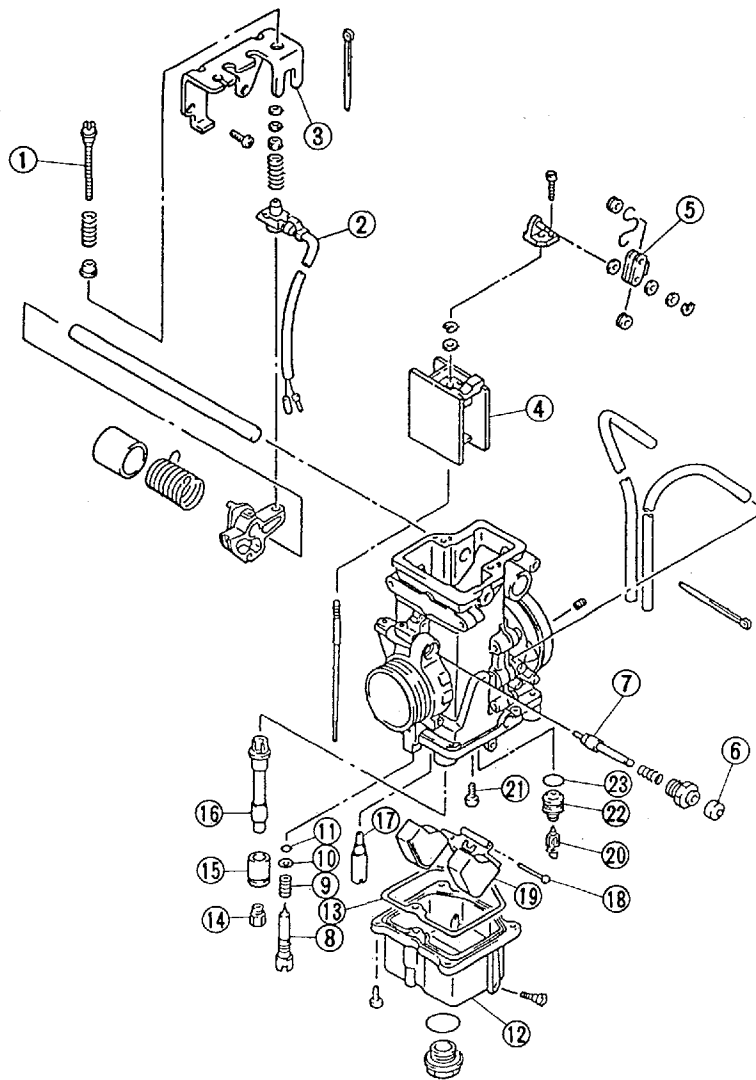
Order	Job name/Part name	Q'ty	Remarks
	Carburetor separation		Separation the parts in the order below.
①	Screws	2	Loosen
②	Starter lever 1	1	
③	Starter lever 2	1	
④	Starter rod	1	
⑤	Spring	1	
⑥	Top covers	2	
⑦	Gaskets	2	
⑧	Throttle shaft connecting screws	2	
⑨	Eccentric nut	1	
⑩	Starter cable holder	1	
⑪	Connecting plate (upper)	1	
⑫	Connecting plate (lower)	1	



Order	Job name/Part name	Q'ty	Remarks
⑬	Throttle position sensor	1	NOTE: _____ • Except for 500/700. • Since the oil seal remains on the carburetor body when the TPS is removed, fit it back on the TPS when reinstalling it. • Measure the resistance and adjust the position of the TPS as needed, then securely install it. • Steps ⑭ to ⑱ only apply to the VT600/MM600.
⑭	Main solenoid valve (black coupler)	2	NOTE: _____ Align the projection with the slit.
⑮	Slow solenoid valve (gray coupler)	2	NOTE: _____ Align the projection with the slit.
⑯	Air vent hose	2	
⑰	Air vent jet	2	
⑱	Nozzle holder	2	NOTE: _____ Insert the bracket into the slit.
			For assembly, reverse the separation procedure.



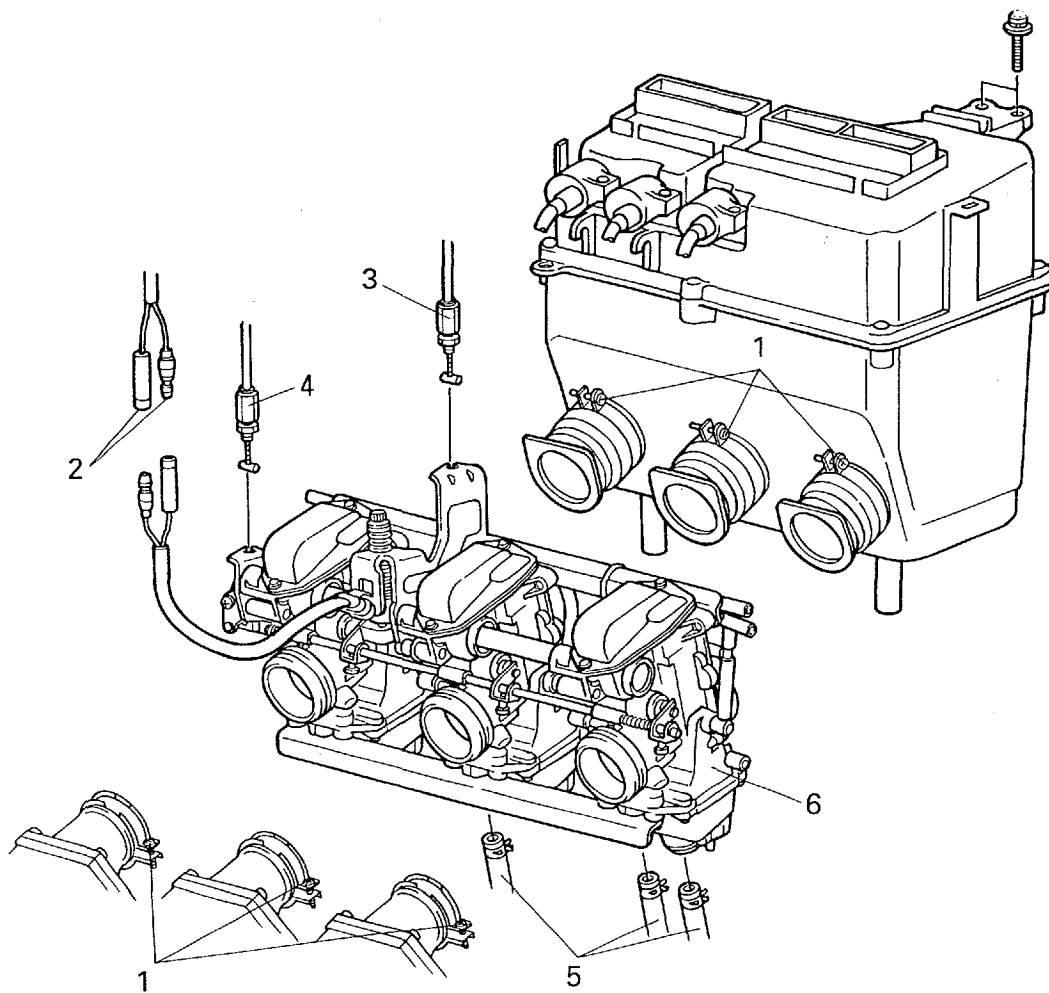
Order	Job name/Part name	Q'ty	Remarks
	Carburetor disassembly		Disassemble the parts in the order below. Turn clockwise.
①	Throttle stop screw	1	
②	Carburetor switch (T.O.R.S.)	1	
③	Throttle cable holder	1	
④	Throttle valve assembly	1	
⑤	Inner throttle lever assembly	1	
⑥	Boot	1	
⑦	Starter plunger assembly	1	
⑧	Pilot mixture screw	1	
⑨	Spring	1	
⑩	Washer	1	
⑪	O-ring	1	
⑫	Float chamber	1	



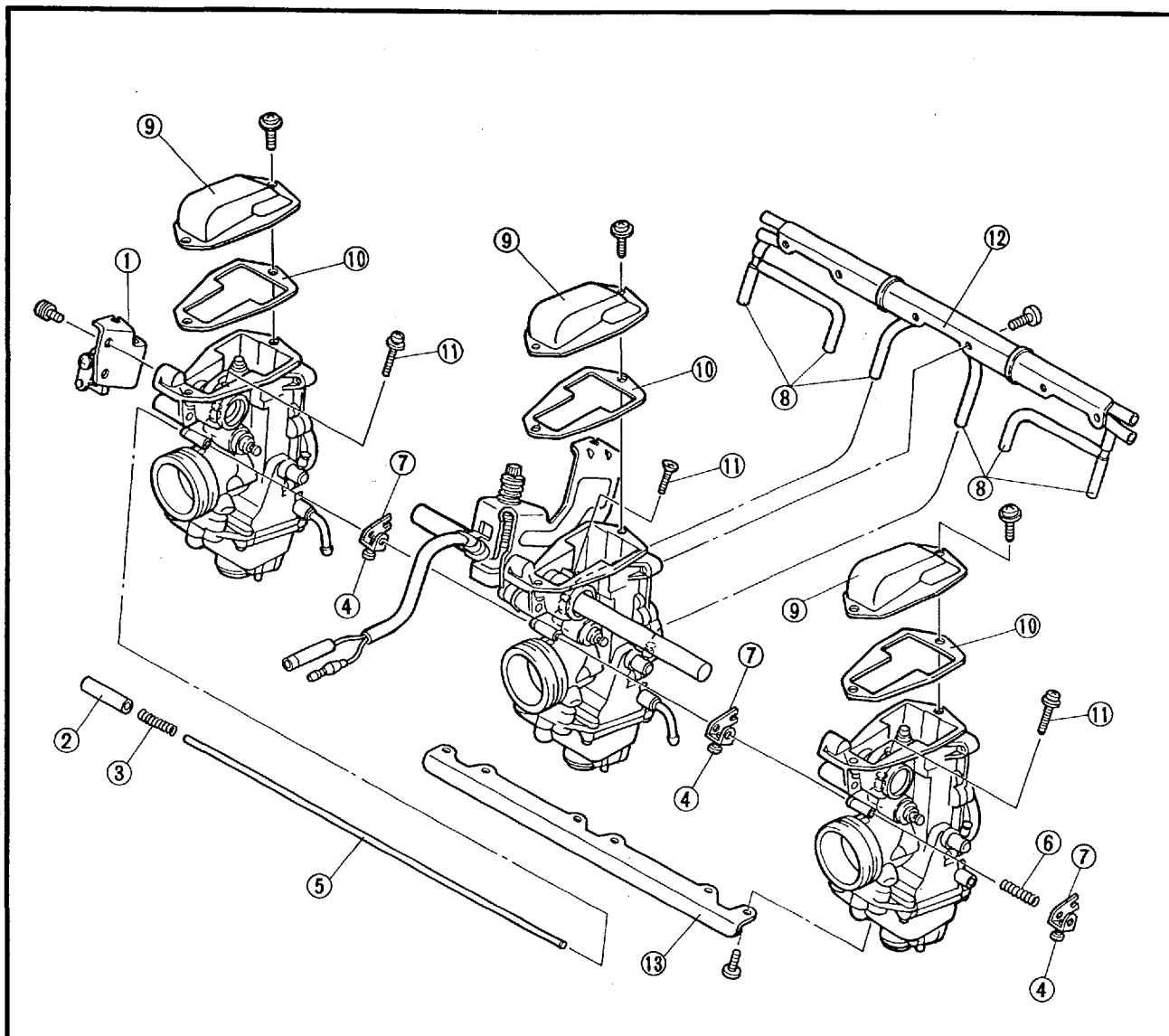
Order	Job name/Part name	Q'ty	Remarks
⑬	Gasket	1	For assembly, reverse the disassembly procedure.
⑭	Main jet	1	
⑮	Main jet ring	1	
⑯	Main nozzle	1	
⑰	Pilot jet	1	
⑱	Float pin	1	
⑲	Float	1	
⑳	Needle valve	1	
㉑	Screw (valve seat)	1	
㉒	Valve seat assembly	1	
㉓	O-ring	1	



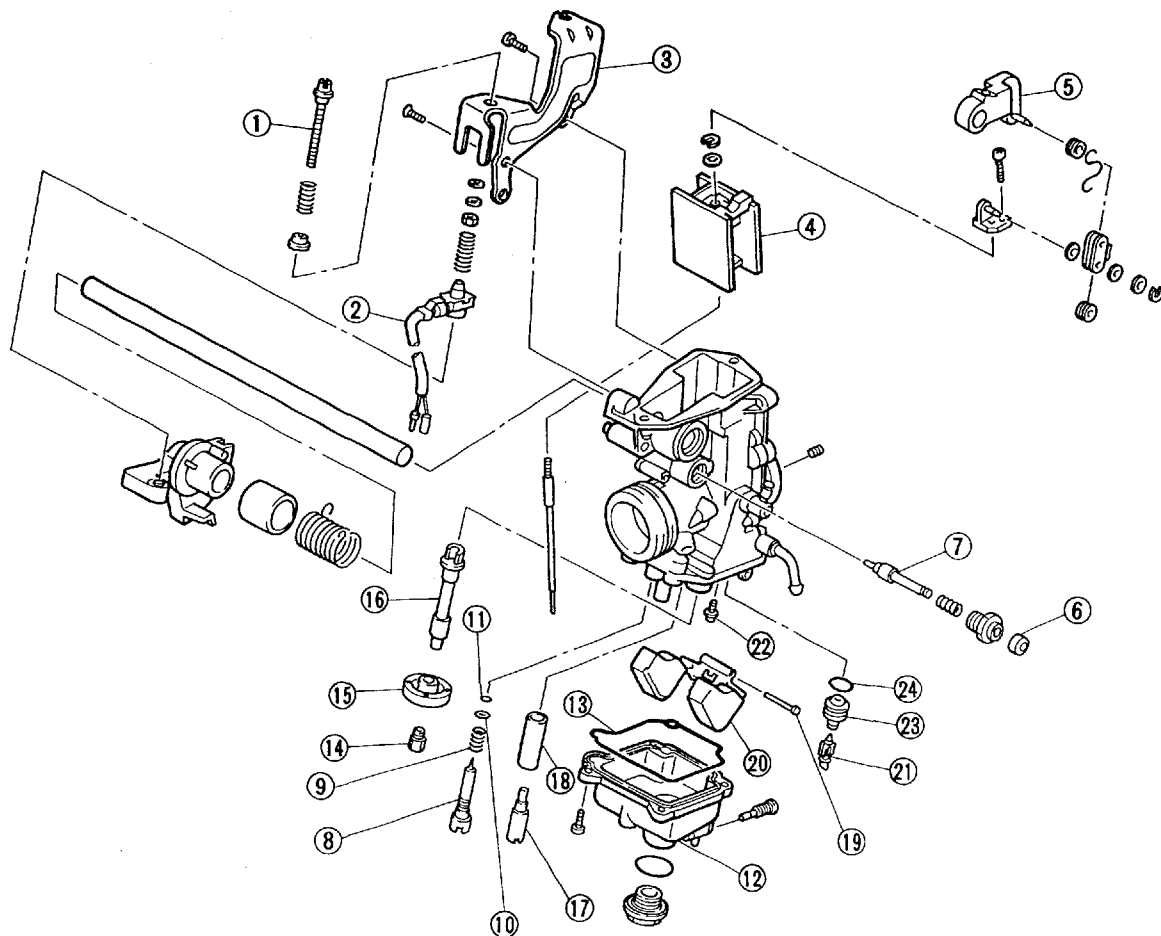
700



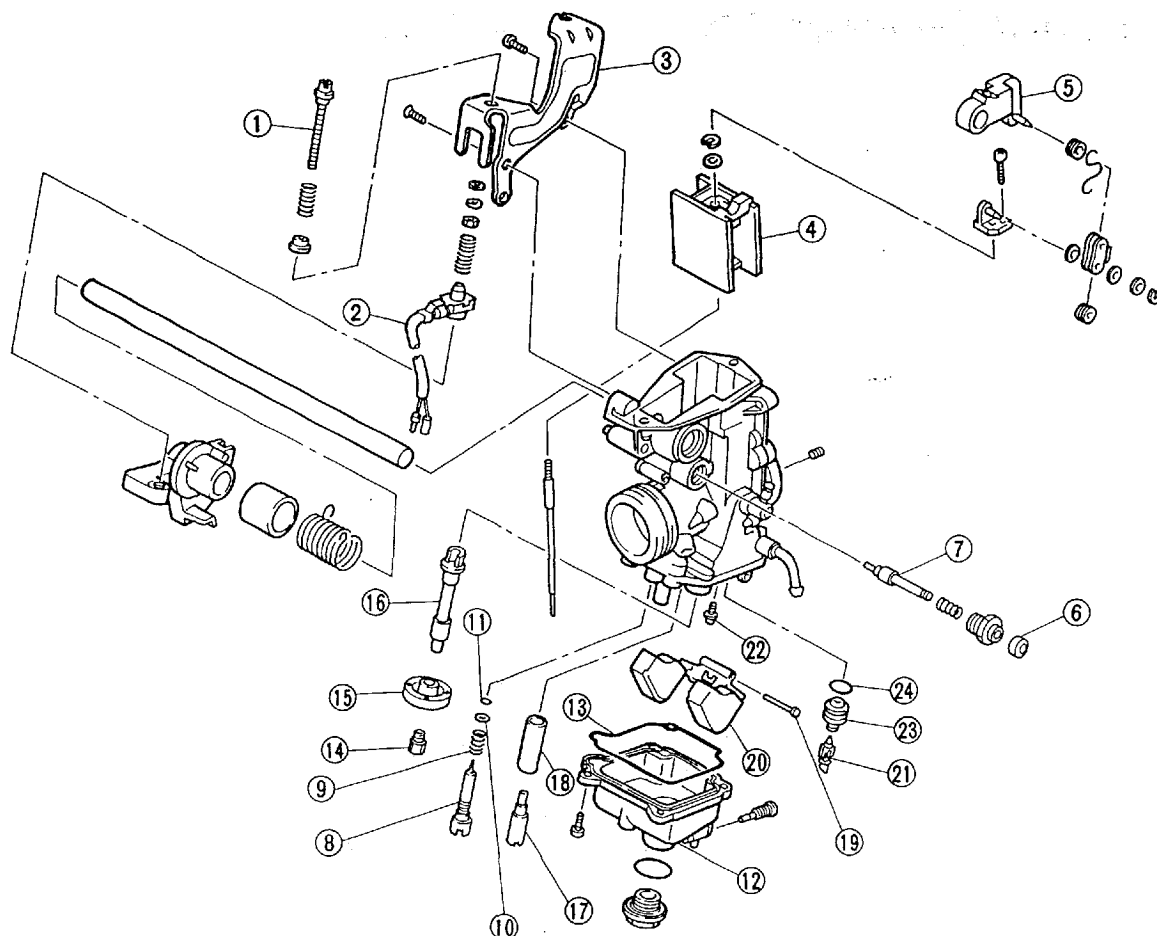
Order	Job name/Part name	Q'ty	Remarks
	Carburetors removal		
1	Clamp screws	6	Remove the parts in the order below. Loosen
2	Carburetor switch (T.O.R.S.) leads	2	
3	Throttle cable	1	
4	Starter cable	1	
5	Fuel hoses	3	
6	Carburetors	1	For installation, reverse the removal procedure.



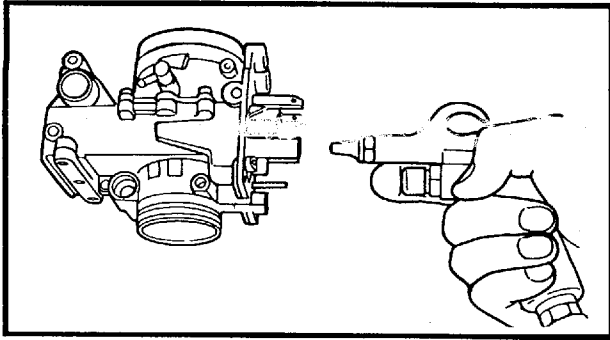
Order	Job name/Part name	Q'ty	Remarks
	Carburetor separation		Separation the parts in the order below.
①	Starter cable holder	1	
②	Collar	1	
③	Spring	1	
④	Screw	3	Loosen
⑤	Starter rod	1	
⑥	Spring	1	
⑦	Starter levers	3	
⑧	Breather hoses	3	
⑨	Top covers	3	
⑩	Gaskets	3	
⑪	Throttle shaft connecting screws	3	
⑫	Connecting plate (upper)	1	
⑬	Connecting plate (lower)	1	
			For assembly, reverse the separation procedure.



Order	Job name/Part name	Q'ty	Remarks
	Carburetor disassembly		
①	Throttle stop screw	1	Disassembly the parts in the order below. Turn clockwise.
②	Carburetor switch (T.O.R.S.)	1	
③	Throttle cable holder	1	
④	Throttle valve assembly	1	
⑤	Inner throttle lever assembly	1	
⑥	Boot	1	
⑦	Starter plunger assembly	1	
⑧	Pilot mixture screw	1	
⑨	Spring	1	
⑩	Washer	1	
⑪	O-ring	1	
⑫	Float chamber	1	



Order	Job name/Part name	Q'ty	Remarks
⑬	Gasket	1	
⑭	Main jet	1	
⑮	Main jet ring	1	
⑯	Main nozzle	1	
⑰	Pilot jet	1	
⑱	Pilot jet sleeve	1	
⑲	Float pin	1	
⑳	Float	1	
㉑	Needle valve	1	
㉒	Screw (valve seat)	1	
㉓	Valve seat assembly	1	
㉔	O-ring		
			For assembly, reverse the disassembly procedure.



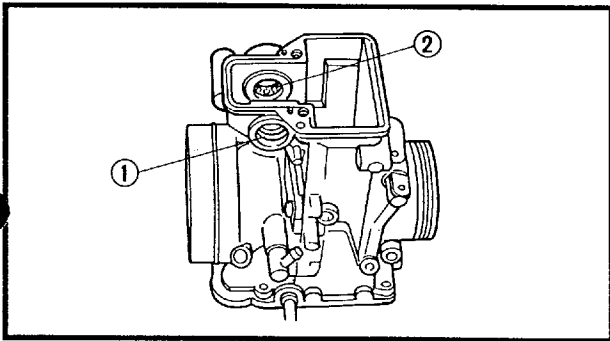
INSPECTION

1. Inspect:

- Carburetor body
 - Fuel passage
- Contamination → Clean.

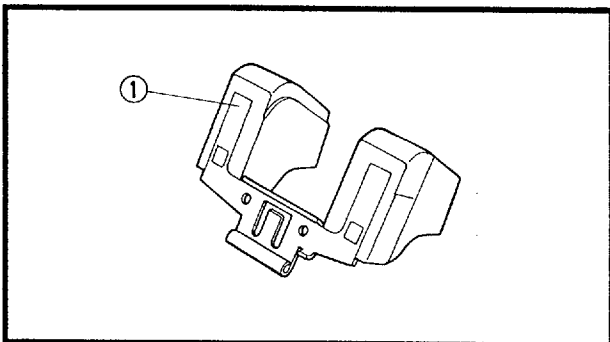
NOTE:

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



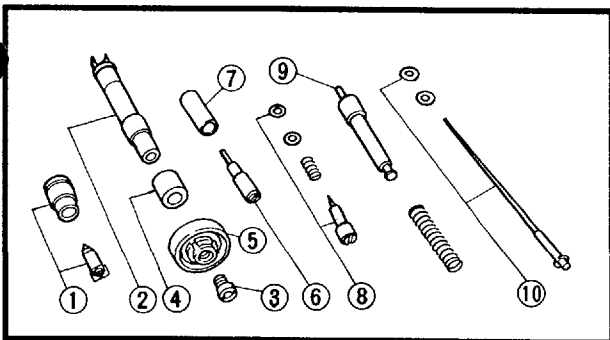
2. Inspect:

- Rubber seals ①
 - Bearing ②
- Wear/damage → Replace.



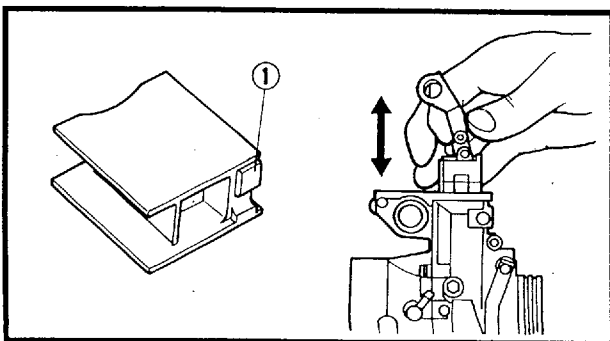
3. Inspect:

- Float ①
- Damage → Replace.



4. Inspect:

- Valve seat assembly ①
 - Main nozzle ②
 - Main jet ③
 - Main jet ring (500,600) ④
 - Main jet ring (700) ⑤
 - Pilot jet ⑥
 - Pilot jet sleeve (700) ⑦
 - Pilot mixture screw assembly ⑧
 - Starter plunger assembly ⑨
 - Jet needle ⑩
- Bend/wear/damage → Replace.
Blockage → Blow out the jets with compressed air.



5. Inspect:

- Throttle valve ①
- Wear/damage → Replace.

6. Check:

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



ASSEMBLY

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

NOTE:

- Before reassembling, wash all parts in clean gasoline.
- Always use a new gasket and O-ring.

1. Tighten:

- Inner parts



Pilot air jet/main air jet:

0.7 Nm (0.07 m • kg, 0.51 ft • lb)

Screw (valve seat):

1 Nm (0.1 m • kg, 0.7 ft • lb)

Pilot jet:

0.7 Nm (0.07 m • kg, 0.51 ft • lb)

Main jet:

1.8 Nm (0.18 m • kg, 1.3 ft • lb)

Starter plunger assembly:

2.5 Nm (0.25 m • kg, 1.8 ft • lb)

2. Measure:

- Float height ②

Out of specification → Adjust.



Float height:

20.3 ~ 24.3 mm (0.80 ~ 0.96 in)(500/600)

11.3 ~ 15.3 mm (0.44 ~ 0.60 in)(700)

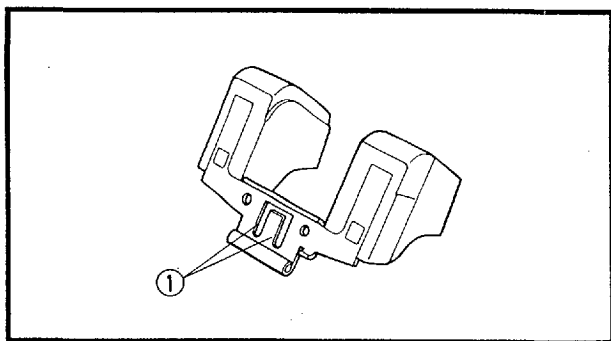
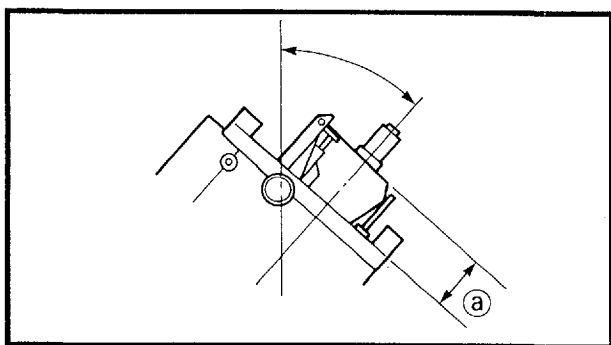
Measurement and adjustment steps:

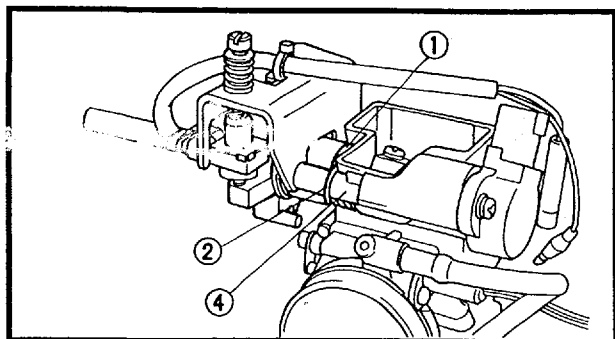
- Hold the carburetor in an upside down position.
- Measure the distance between the carburetor body and top of the floats.

NOTE:

The float arm should be resting on the valve, but no compressing the needle valve.

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





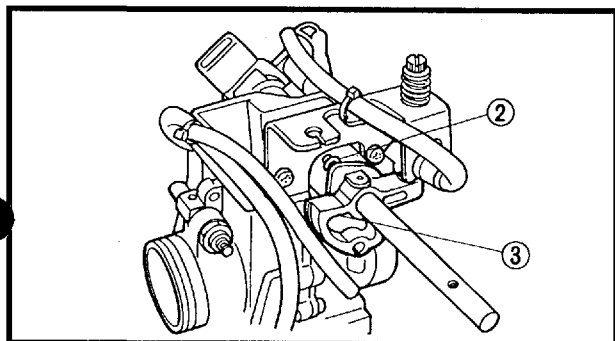
3. Install:

- Return springs ①

NOTE:

Hook the spring hooks ② to the projections on the connecting lever ③ and carburetor body ④, while twisting the spring clockwise approximately 315 degrees.

- Carburetors (No.1, No.4)



FUEL LEVEL ADJUSTMENT

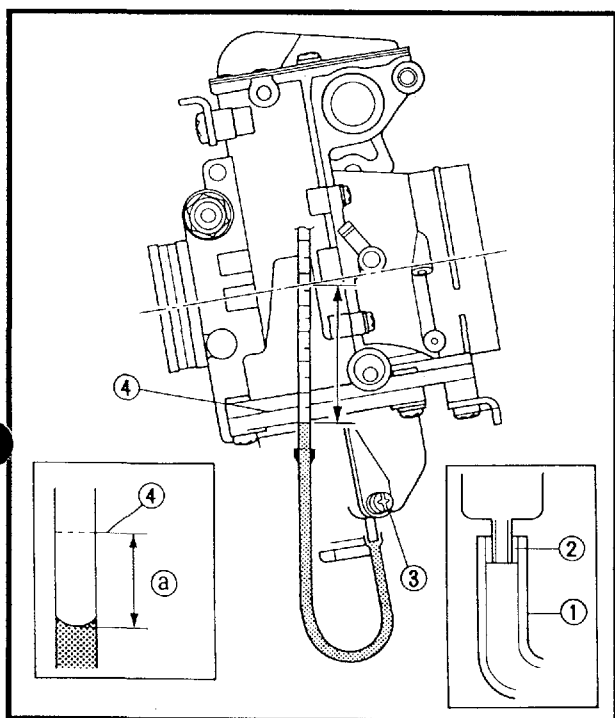
1. Measure:

- Fuel level

Out of specification → Adjust.



Fuel level (From the bore center):
 40 ~ 42 mm (1.57 ~ 1.65 in)(500/
 600)
 36 ~ 38 mm (1.42 ~ 1.50 in)(700)



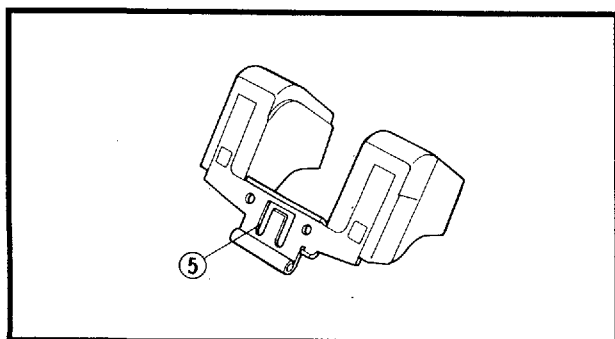
Measurement and adjustment steps:

- Place the machine on a level place.
- Attach the fuel level gauge (90890-01312, YM-01312-A) ① to the float chamber nozzle.

NOTE:

Use the adapter (outside diameter $\phi 6$ hose) ② when attaching the fuel level gauge.

- Loosen the drain screw ③ and start the engine.
- Place the tube along the seam line ④ of the carburetor body.
- Measure the fuel level ① with gauge.
- If the fuel level is incorrect, adjust the fuel level.
- Remove the carburetor.
- Inspect the valve seat and needle valve.
- If either is worn, replace them both.
- If both are fine, adjust the float height by bending the float tang ⑤ on the float.
- Recheck the fuel level.

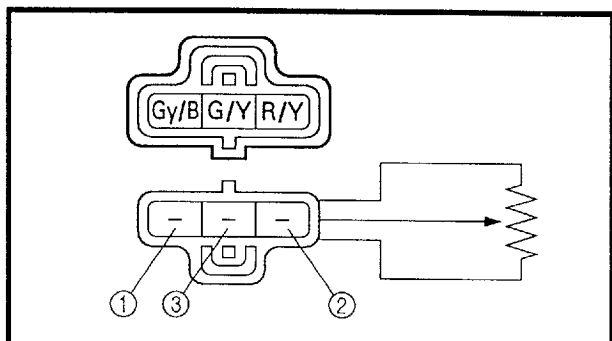




THROTTLE POSITION SENSOR (TPS) INSPECTION AND ADJUSTMENT

NOTE:

Before adjusting the TPS, properly adjust the idle speed.



1. Inspect:

- TPS

Inspection steps:

- Disconnect TPS coupler.
- Connect the pocket tester ($\Omega \times 1k$) to the TPS coupler.

Tester (-) lead → Gray/Black terminal ①
Tester (+) lead → Red/Yellow terminal ②

- Check the TPS resistance.



TPS resistance "R₁":

4 ~ 6 k Ω at 20°C (68°F)
(Gray/Black - Red/Yellow)

Out of specification → Replace the TPS.

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

Tester (-) lead → Gray/Black terminal ①
Tester (+) lead → Green/Yellow terminal ③

- While slowly pushing the throttle check the TPS resistance.



TPS resistance "R₂":

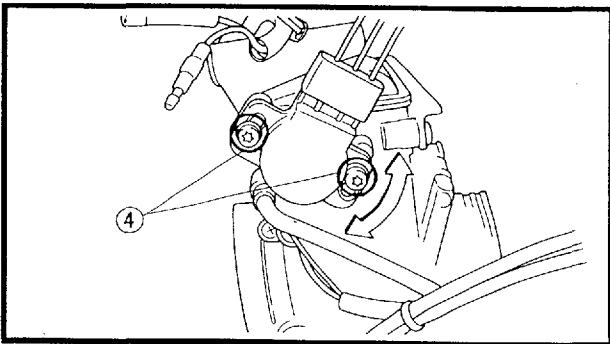
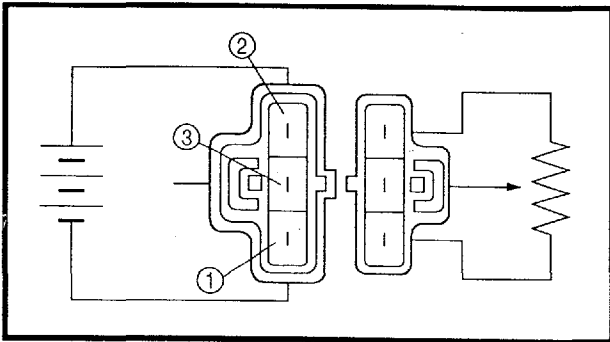
0 ~ 5 k Ω at 20°C (68°F)
(Gray/Black - Green/Yellow)

Out of specification → Replace the TPS.



2. Adjust:

- T.P.S. position

**Adjustment steps:**

- Disconnect the T.P.S. coupler.
- Connect the test coupler to the T.P.S.
- Connect three dry cells (1.5 V \times 3 pcs.) in series to the test coupler.

Dry cells (-) \rightarrow ①

Dry cells (+) \rightarrow ②

- Connect the digital multimeter to the test coupler.

Digital multimeter (-) lead \rightarrow ①

Digital multimeter (+) lead \rightarrow ②

- Measure the voltage ①.

NOTE

When measuring the voltage ① be sure that the test coupler is connected to the T.P.S.

- Calculate the voltage ②.

Voltage ② = Voltage ① \times (0.121 \times 0.129)

- Loosen the T.P.S. bolts ④.
- Connect the digital multimeter to the test coupler.

Digital multimeter (-) lead \rightarrow ①

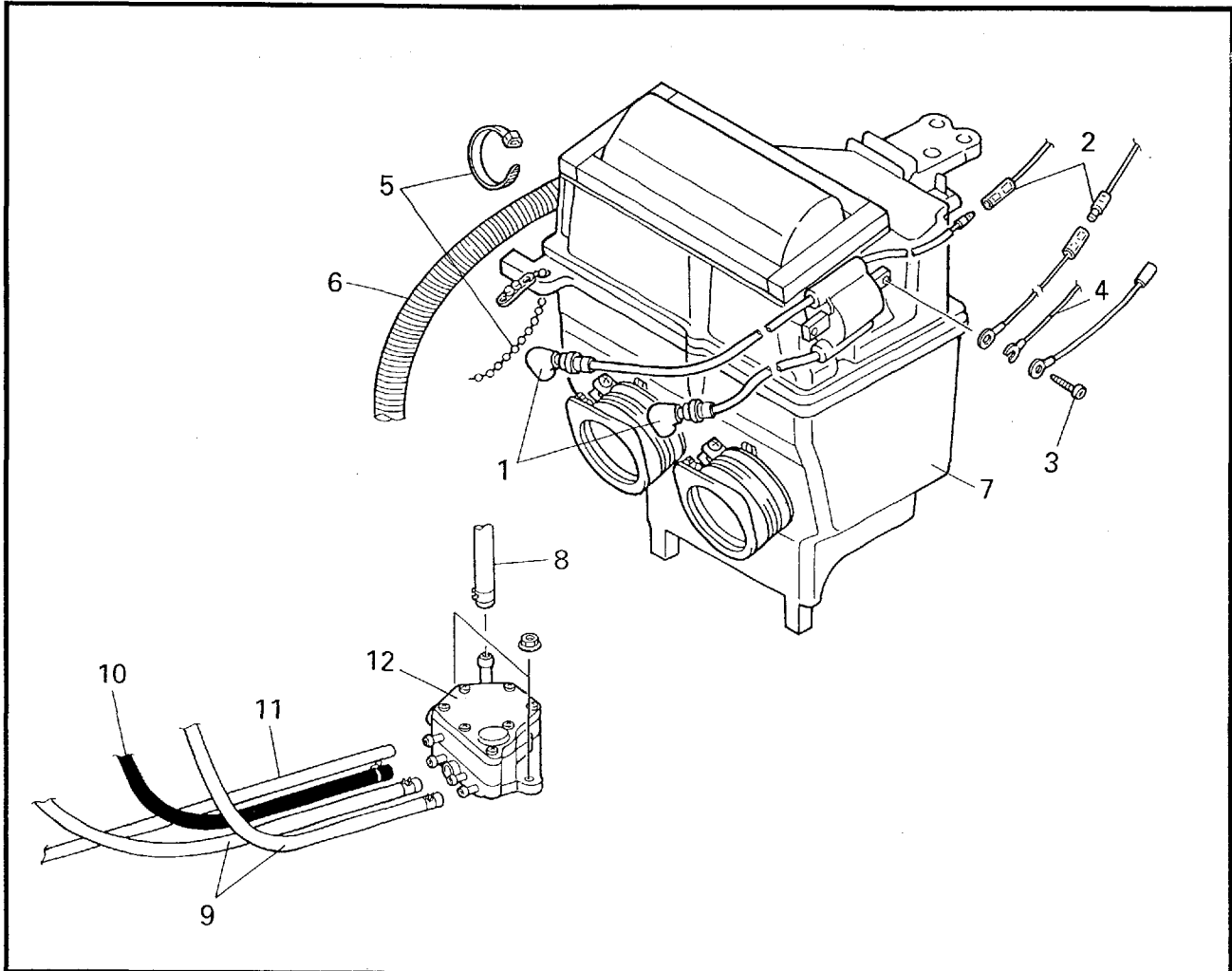
Digital multimeter (+) lead \rightarrow ③

- Adjust the T.P.S. position to obtain the specified voltage ②.
- Tighten the T.P.S. bolts ④.
- Disconnect the test coupler and connect the T.P.S. coupler.



FUEL PUMP

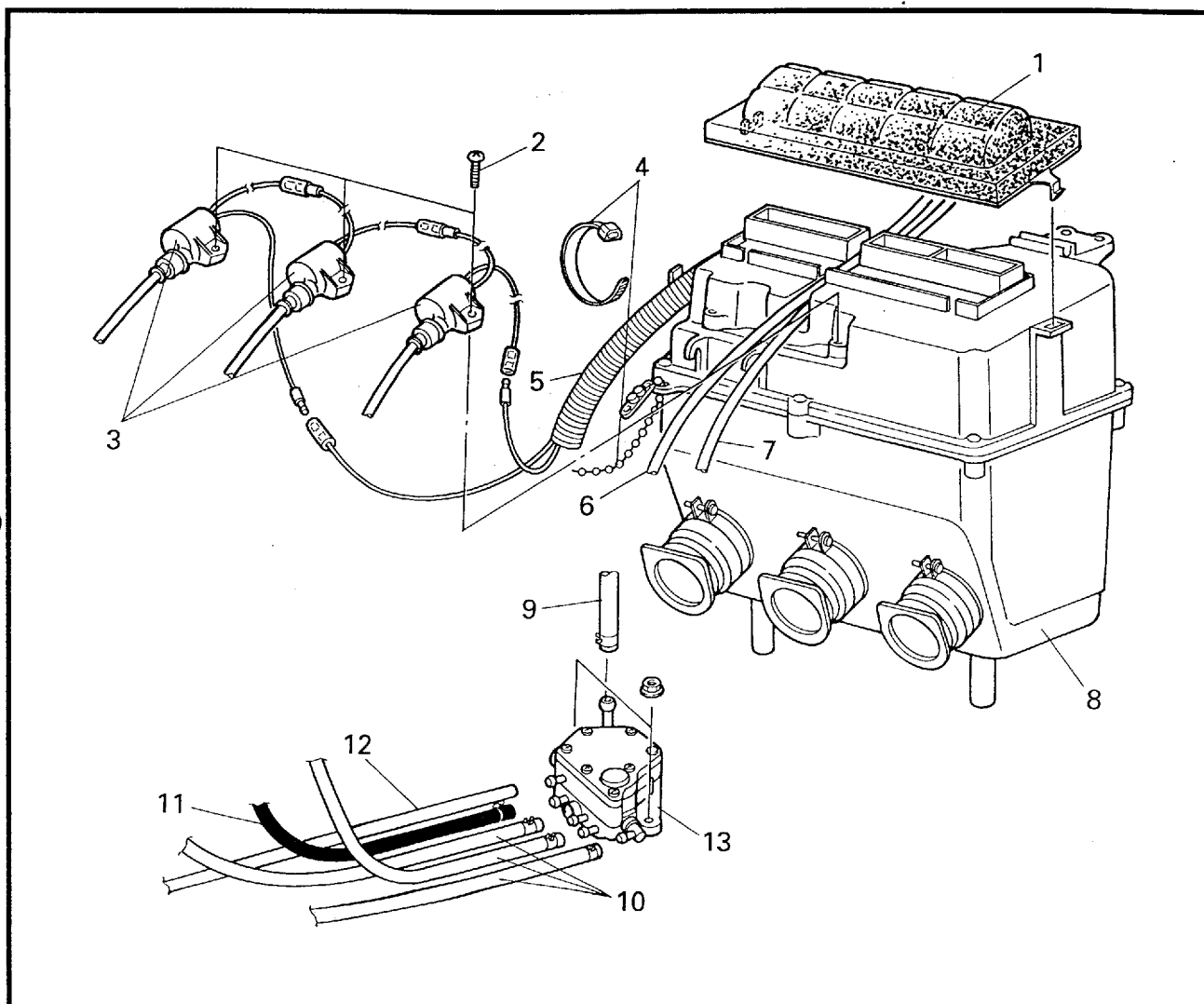
500/600



Order	Job name/Part name	Q'ty	Remarks
	Fuel pump removal		Remove the parts in the order below. Refer to "CARBURETOR".
1	Carburetors		
1	Spark plug leads	2	
2	Ignition coil leads	2	
3	Screw	1	
4	Ground lead	1	VX500XTCE/XTCR, VT500, VX600XTCE/ XTCR, VT600
5	Plastic bands	2	
6	Wire harness	1	
7	Intake silencer	1	
8	Fuel hose	1	
9	Fuel delivery hoses	2	
10	Pulser hose	1	
11	Oil hose	1	
12	Fuel pump assembly	1	
			For installation, reverse the removal procedure.



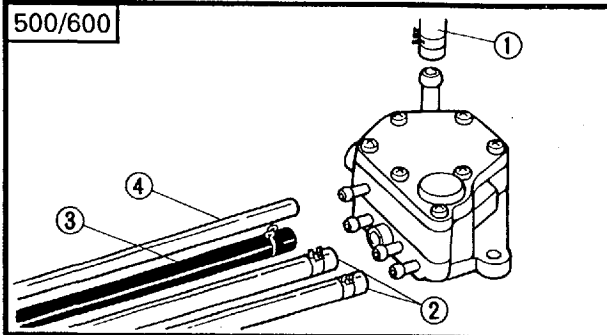
700



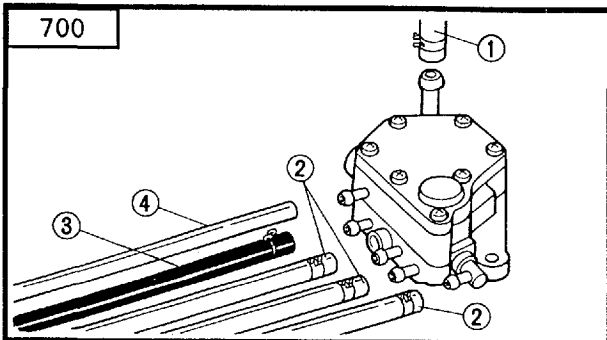
Order	Job name/Part name	Q'ty	Remarks
	Fuel pump removal		
	Carburetors		Remove the parts in the order below. Refer to "CARBURETOR".
1	Air filter element	1	
2	Screws	3	
3	Ignition coils	3	
4	Plastic bands	2	
5	Wire harness	1	
6	Throttle cable	1	NOTE: _____
7	Oil pump cable	1	When removing the intake silencer, lift up the throttle cable and oil pump cable.
8	Intake silencer	1	
9	Fuel hose	1	
10	Fuel delivery hoses	3	
11	Pulser hose	1	
12	Oil hose	1	
13	Fuel pump assembly	1	For installation, reverse the removal procedure.



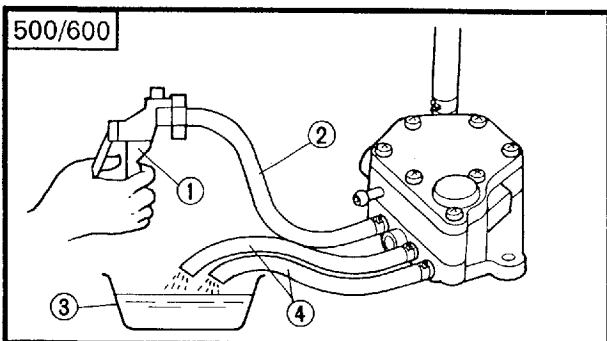
500/600



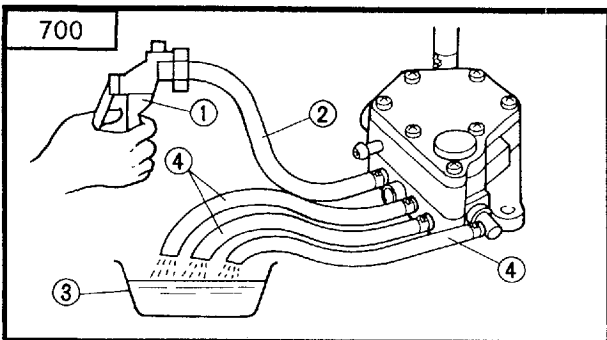
700



500/600



700



INSPECTION

1. Inspect:

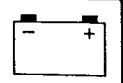
- Fuel hose ①
 - Fuel delivery hoses ②
 - Pulser hose ③
 - Oil hose ④
- Clog/damage → Replace.

2. Check:

- Fuel pump operation

Checking steps:

- Connect a hand-operated vacuum pump ① (i. e. Mighty-Vac®) to the pulser hose ②.
- Place a receptacle ③ under the end of the fuel delivery hoses ④.
- Operate the vacuum pump ①, while checking the fuel flow from the fuel delivery hoses ④.
- If fuel does not flow out, replace the fuel pump assembly.



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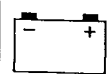
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ELECTRICAL

SWITCH INSPECTION

SWITCH INSPECTION

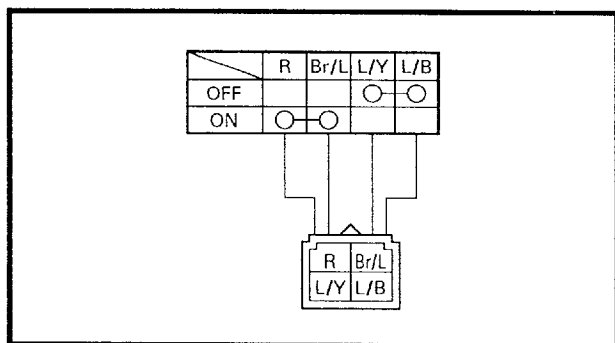
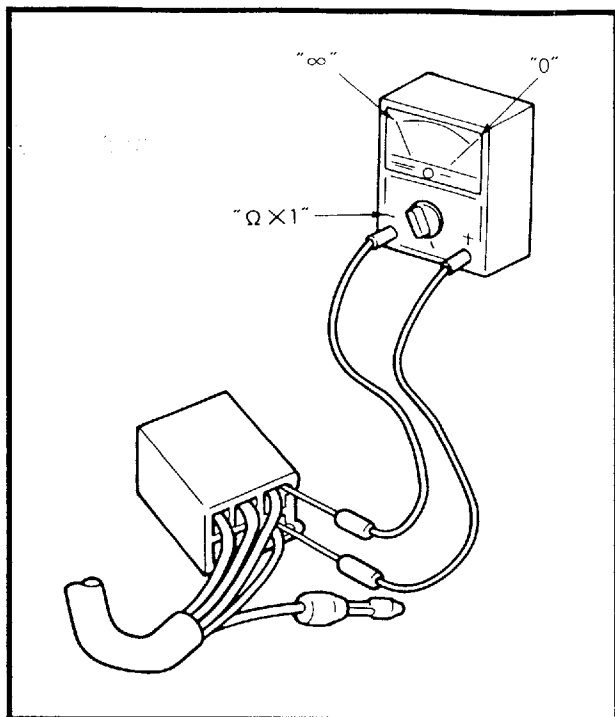
Use a pocket tester to check the terminals for continuity. If the continuity is faulty at any point, replace the switch.



Pocket tester:
90890-03112, YU-03112

NOTE:

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



INSPECTING A SWITCH SHOWN IN THE MANUAL

The terminal connections for switches (main switch, handlebar switch, engine stop switch, light switch, etc.) are shown in a chart similar to the one on the left.

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

The example chart shows that:

- ① There is continuity between the "Blue/Yellow and Blue/Black" leads when the switch is set to "OFF".
- ② There is continuity between the "Red and Brown/Blue" leads when the switch is set to "ON".

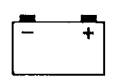
CIRCUIT DIAGRAM (VX500XT/XTC/XTCE/XTCR, VT500, VX600XT/XTC/XTCE/XTCR/SX)



ELEC



③ Fuse
 ④ Starter relay
 ⑤ Battery
 ⑥ Starter motor
 ⑦ Main switch



TROUBLESHOOTING

STARTER MOTOR DOES NOT OPERATE.

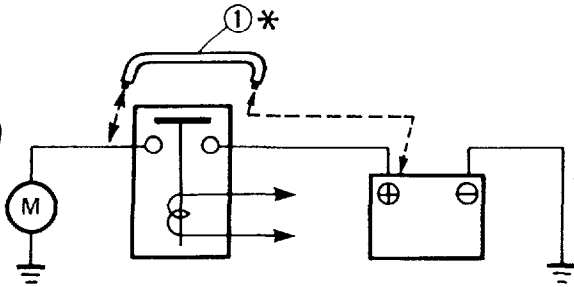
⚠ WARNING

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

A

1. Connect:

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



① Jumper lead

2. Check:

- Starter motor operation



OK

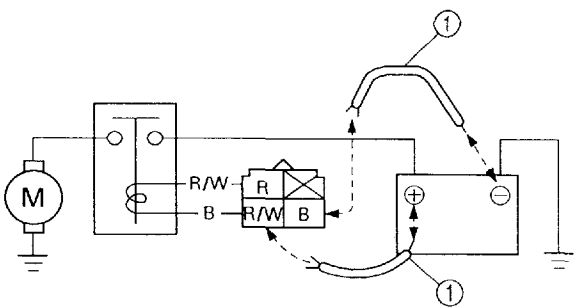
B

1. Disconnect:

- Starter relay coupler

2. Connect:

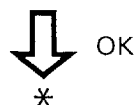
- Starter relay coupler terminals



① Jumper lead

3. Check:

- Starter motor operation



OK

*

NO



Check the battery and connectors.

OK

NO



Charge and/or replace the battery.

Repair and/or replace the starter motor.

⚠ WARNING

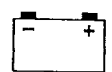
A wire for the jumper lead ① must have the equivalent capacity as that of the battery lead or more, otherwise it may cause the jumper lead to be burned.

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.

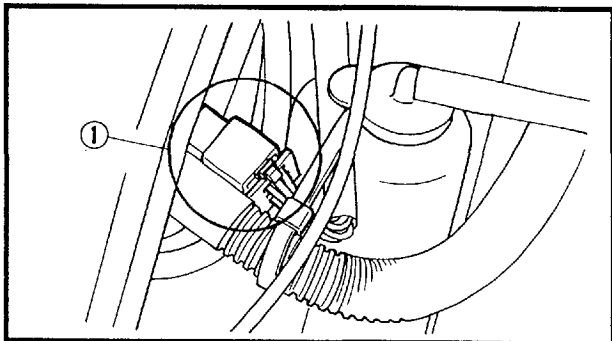


Check the main switch and fuse.



OK

Correct connection.



FAULTY



Replace the main switch and/ or fuse.

MAIN SWITCH (FOR ELECTRIC MODEL)

1. Disconnect:

- Main switch coupler ①

2. Connect:

- Pocket tester (90890-03112, YU-03112)
(to main switch coupler)

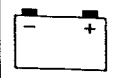
3. Check:

- Main switch continuity

Faulty → Replace.

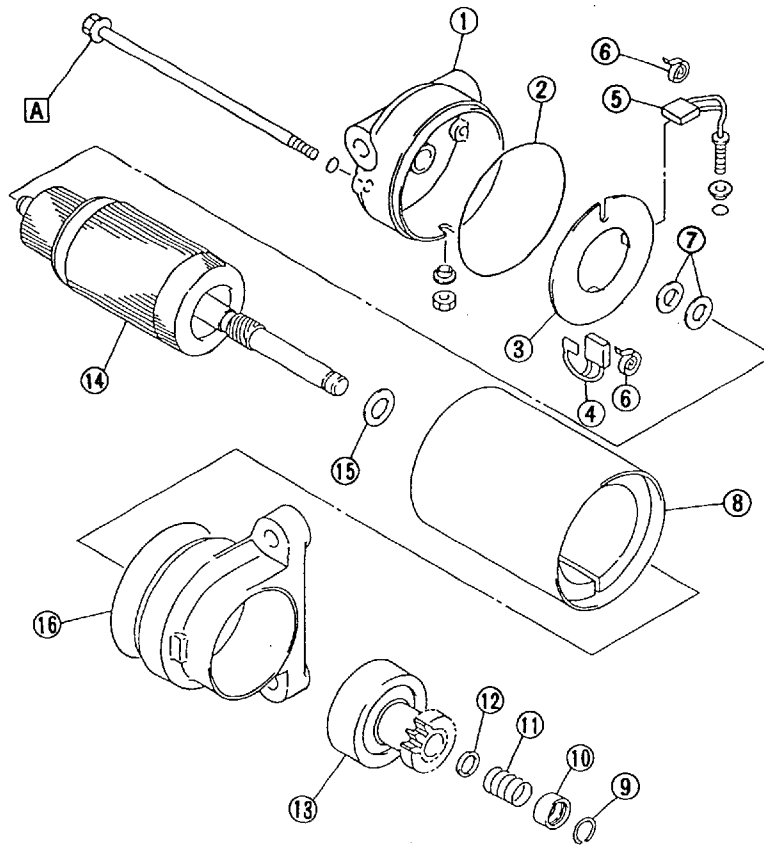
Switch position	Color code						
	Y/B	Y/R	Br	R	R/W	B	B/W
OFF						○	○
ON1			○	○			
ON2	○	○	○	○			
START			○	○	○		

○—○ Continuity

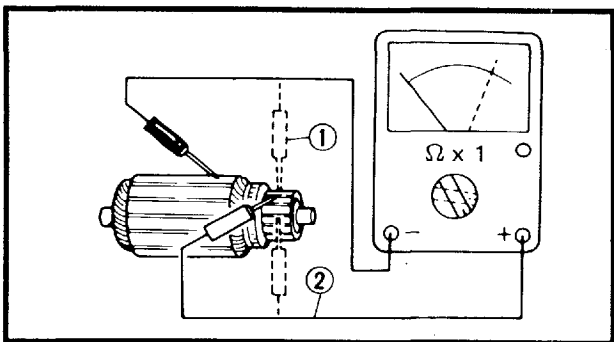
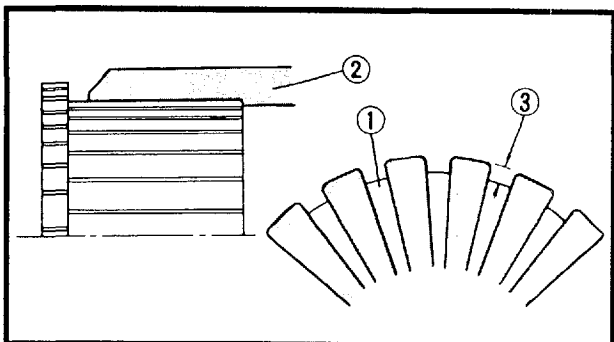
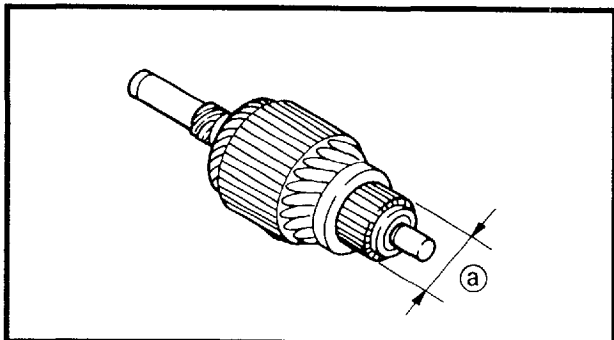
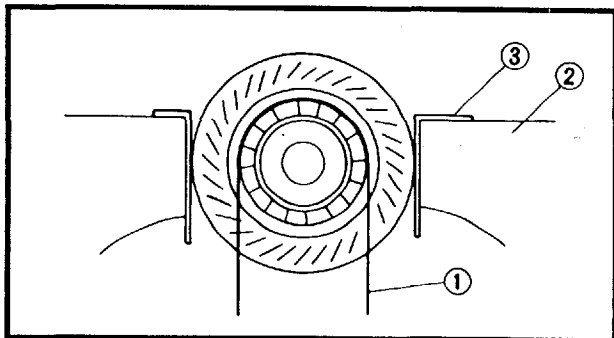
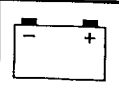


STARTER MOTOR

A : 7 Nm (0.7 m • kg, 5.1 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Starter motor disassembly		
	Starter motor removal		Disassembly the parts in the order below. Refer to "ENGINE REMOVAL".
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	Washers	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****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.



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 ③:
0.4 ~ 0.8 mm (0.016 ~ 0.031 in)

4. Measure:

- Armature coil resistance
(insulation/continuity)
Defect(s) → Replace starter motor.

Inspecting steps:

- Connect the pocket tester for the continuity check ① and the insulation check ②.
- Measure the armature coil resistances.

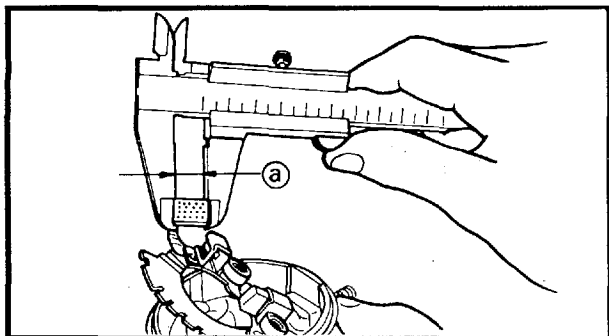
**Armature coil resistance:****Continuity check ①:**

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 (a)
Out of specification → Replace.



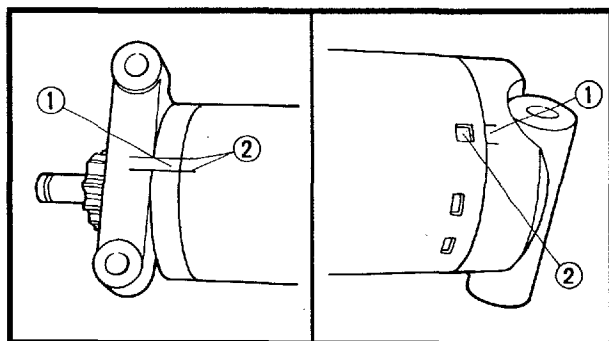
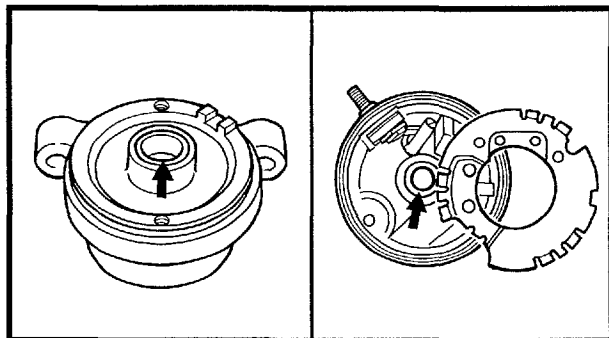
Brush length limit (a):
8.5 mm (0.33 in)

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**

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.

Installation

Reverse the "Removal" procedure.

Note the following points.

1. Install:
 - Starter motor



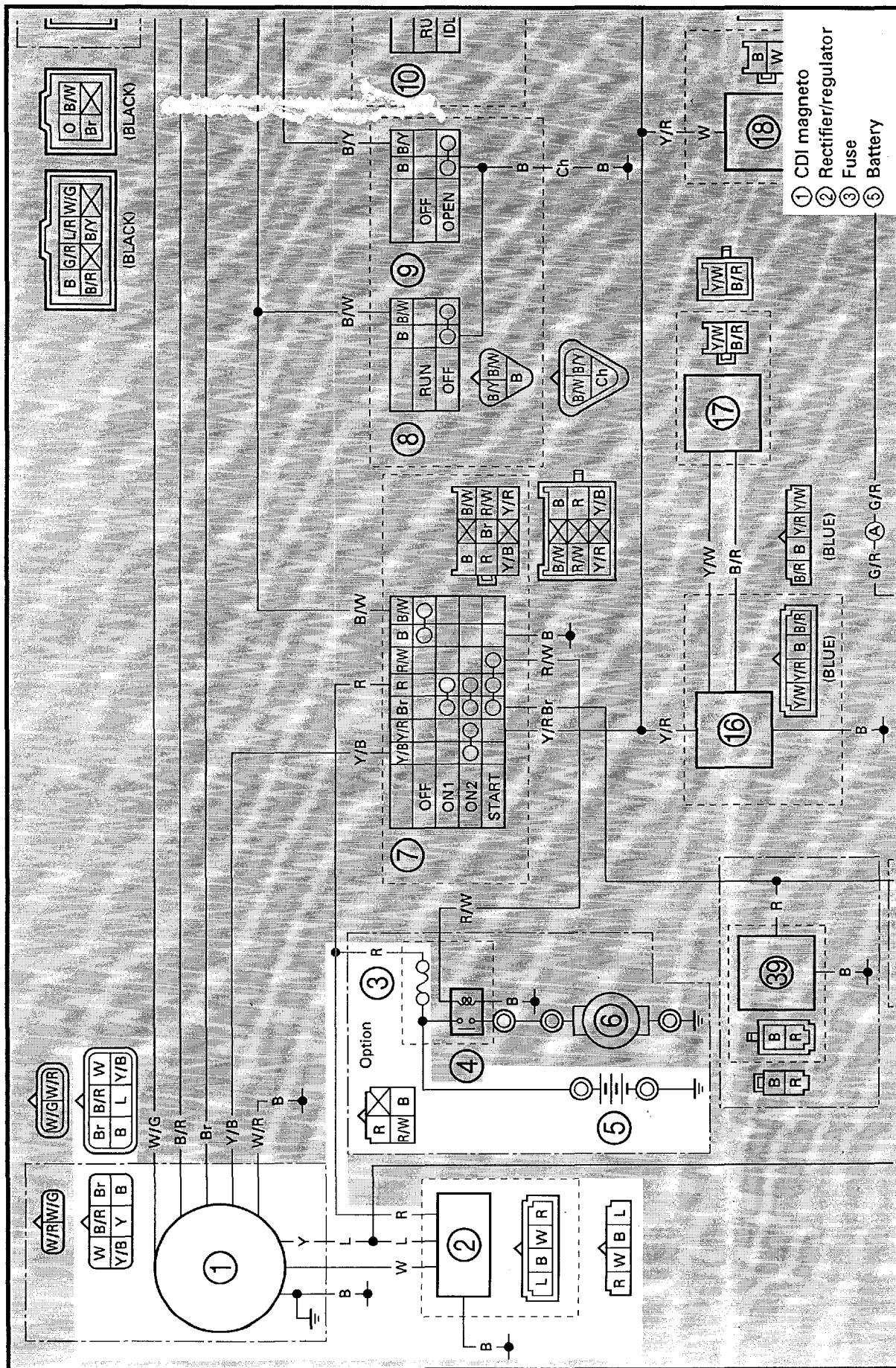
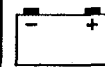
Bolt (starter motor):
23 Nm (2.3 m • kg, 17 ft • lb)

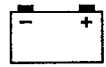
CHARGING SYSTEM

CIRCUIT DIAGRAM (VX500XT/XTC/XTCE/XTCR, VT500, VX600XT/XTC/XTCE/XTCR/SX)

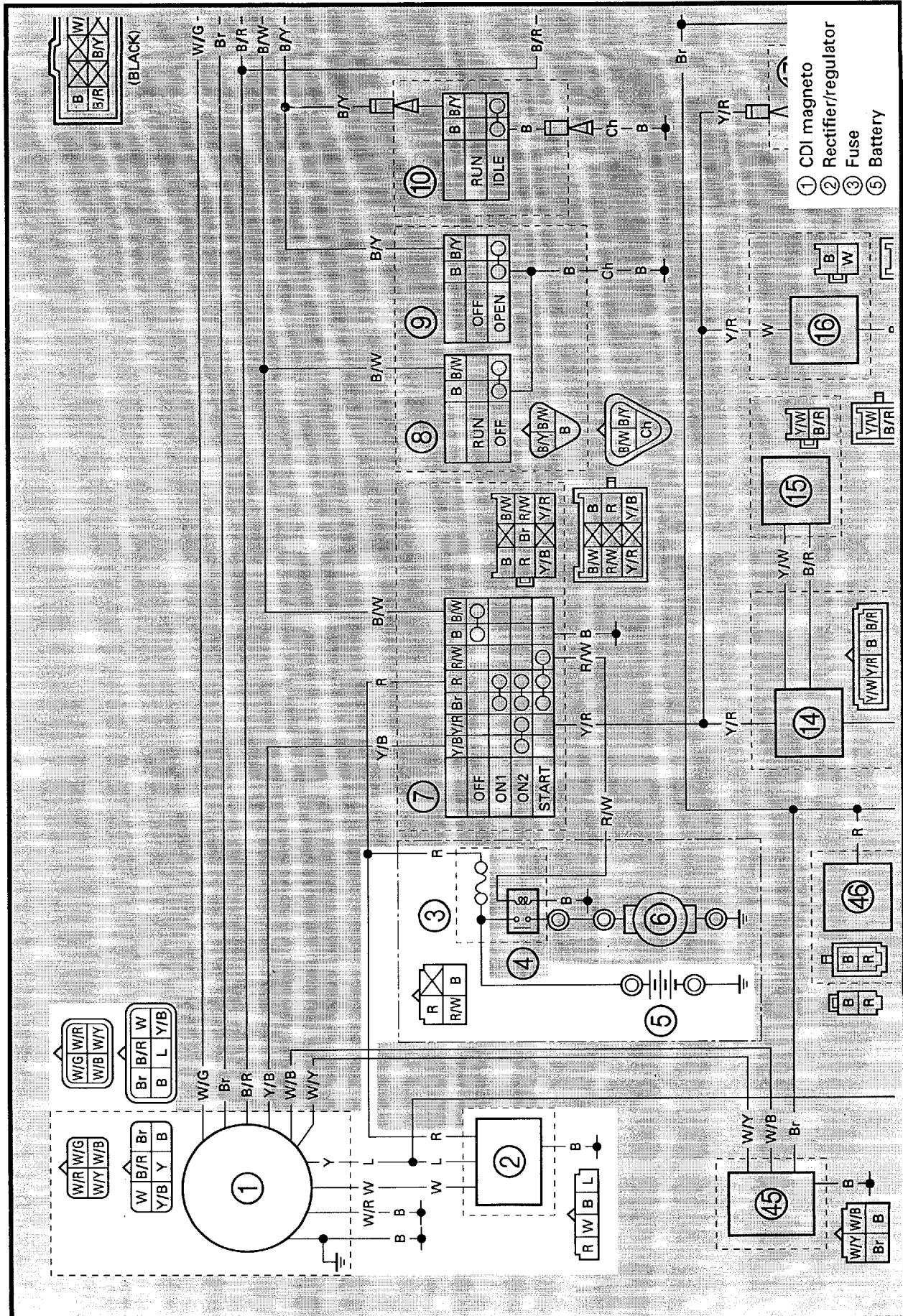
CHARGING SYSTEM

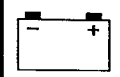
ELEC





CIRCUIT DIAGRAM (VT600, MM600)





TROUBLESHOOTING

BATTERY IS NOT CHARGED.

1. Connect:

- Pocket tester
(to battery terminals)

2. Measure:

- Battery voltage
- Fluid gravity



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



OK

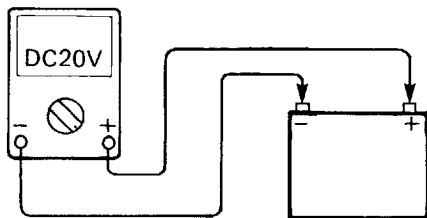
1. Start the engine and accelerate to 3,000 r/min.

2. 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.



OK

Correct connector.

OUT OF SPECIFICATIONS



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

OUT OF SPECIFICATION



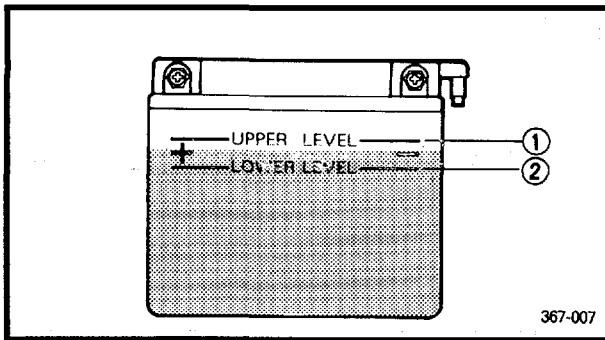
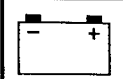
Check the fuse, rectifier/regulator and CDI magneto.

OK

FAULTY

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

Replace rectifier/regulator.

**BATTERY****Inspection**

1. Inspect:

- Battery fluid level
Below lower level → Refill.

- ① Upper level
② Lower level

2. Check:

- Specific gravity
Less than 1.280 → Recharge battery.

Battery Storage

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

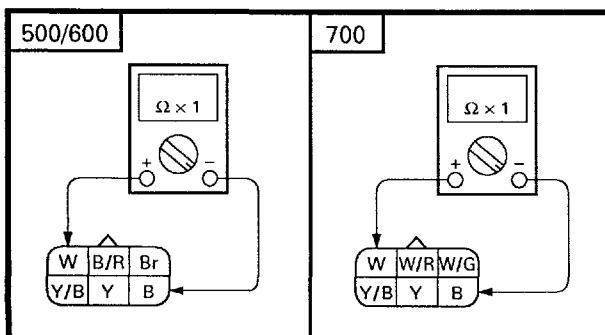
1. Remove:

- 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**

1. Measure:

- Charging coil resistance
Out of specification → Replace.

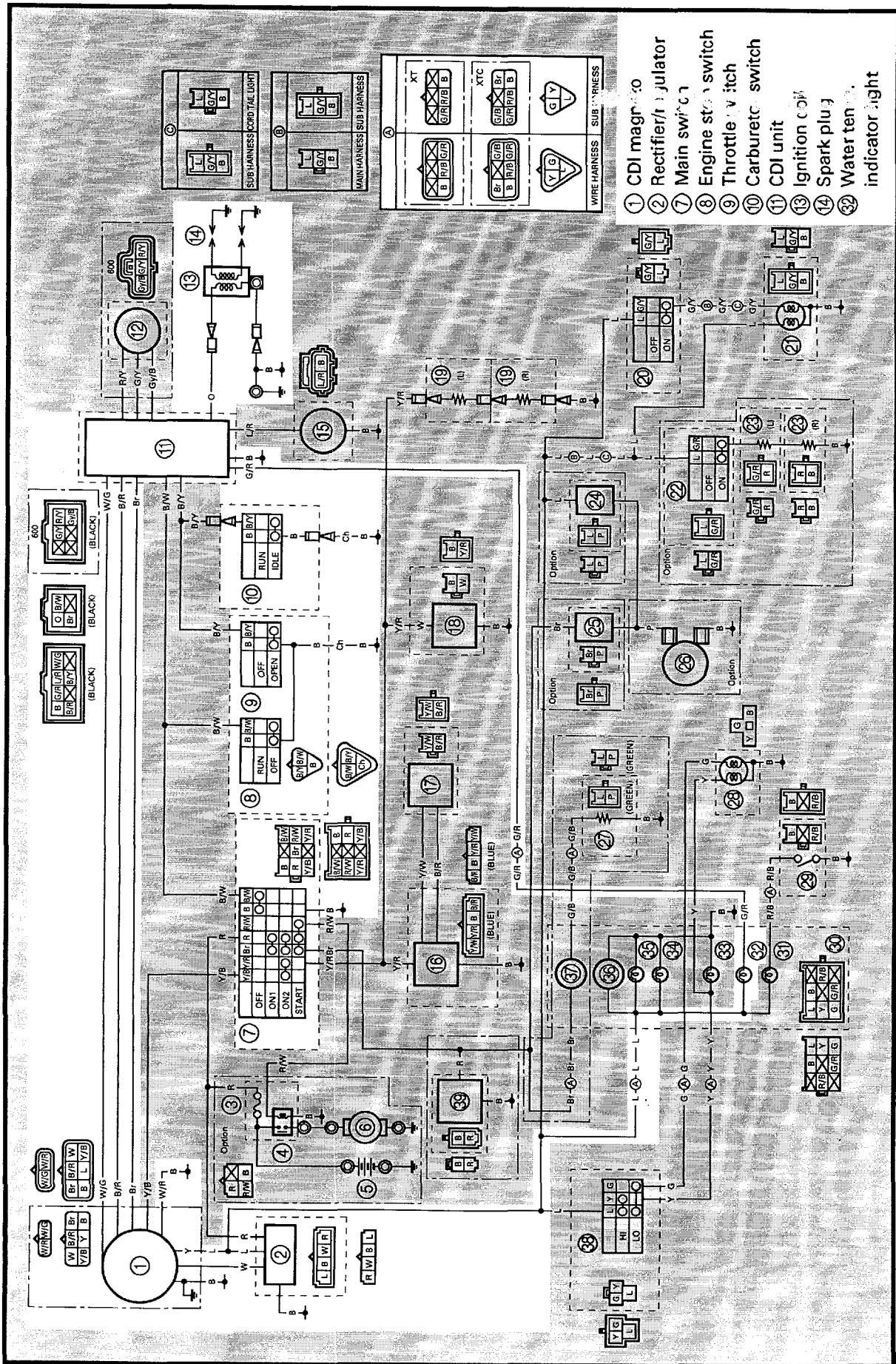
**Charging coil resistance:**
(White – Black)

$0.32 \pm 10\% \Omega$ at 20° (68°F) (500/600)
 $0.36 \pm 10\% \Omega$ at 20° (68°F) (700)



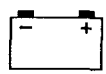
IGNITION SYSTEM

CIRCUIT DIAGRAM (VX500XT/XTC/XTCE/XTCR, VT500, VX600XT/XTC/XTCE/XTCR/SX)

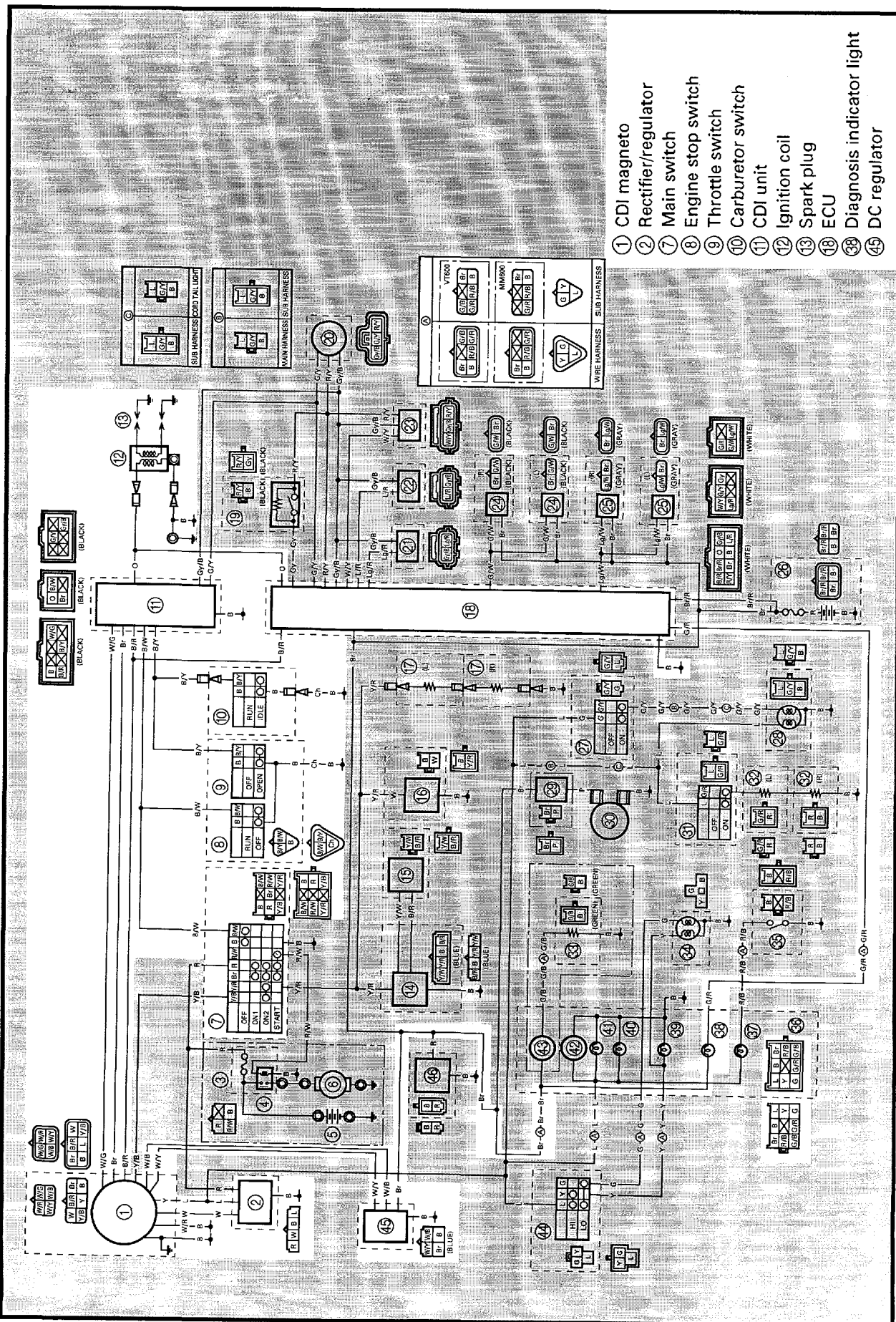


IGNITION SYSTEM

ELEC

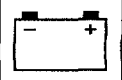


CIRCUIT DIAGRAM (VT600, MM600)

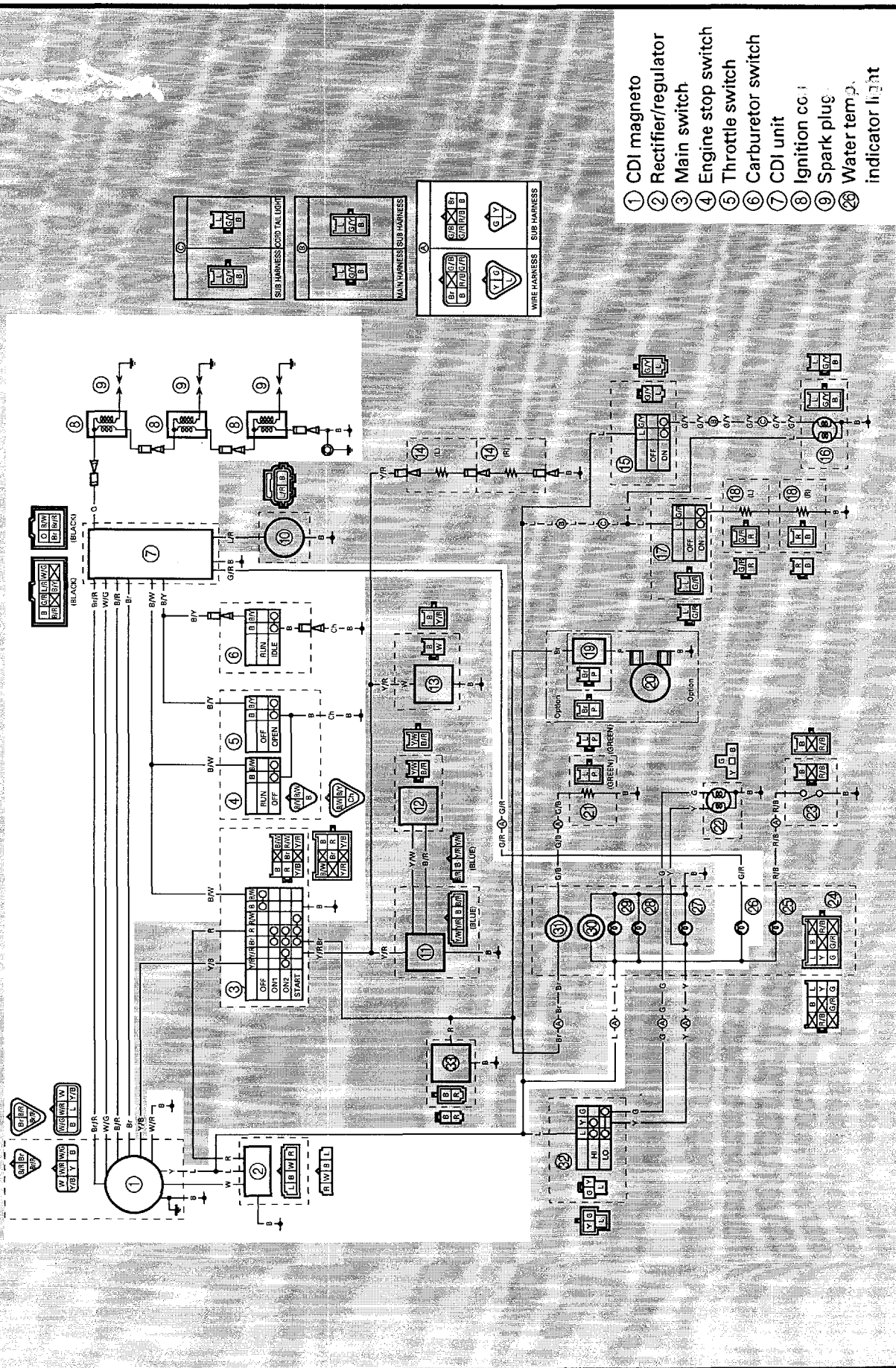


IGNITION SYSTEM

ELEC



CIRCUIT DIAGRAM (VX700SX, MM700)





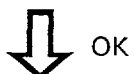
TROUBLESHOOTING

NO SPARK OR WEAK SPARK.

Check the spark plug gap.



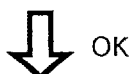
Check the spark plug cap resistance.



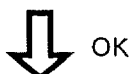
Check the ignition coil resistance.



Check the stator coil.



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



Correct connection and/or replace CDI unit, ECU (VX600, MM600) or DC regulator (VT600, MM600).

OUT OF SPECIFICATION

Repair or replace the spark plug.

OUT OF SPECIFICATION

Replace the spark plug cap.

OUT OF SPECIFICATION

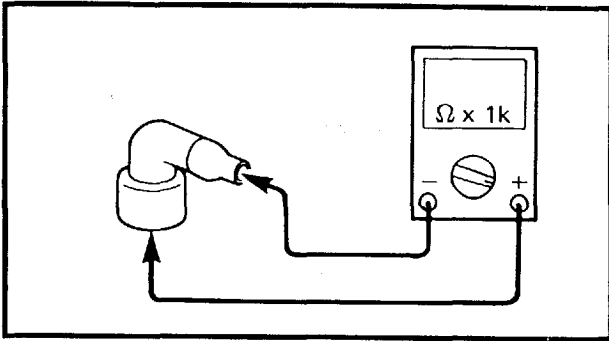
Replace the ignition coil.

FAULTY

Replace the CDI magneto.

FAULTY

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

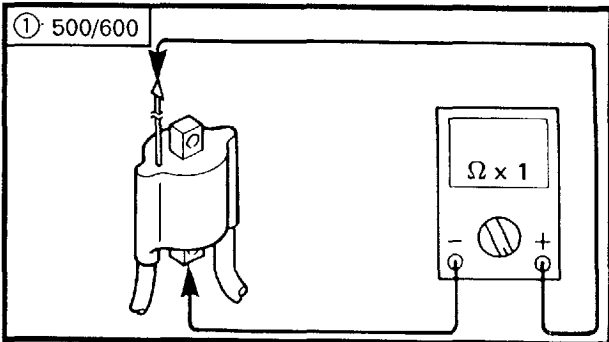


SPARK PLUG CAP

1. Remove:
 - Spark plug cap
2. Connect:
 - Pocket tester (to spark plug cap)
3. Measure:
 - Spark plug cap resistance

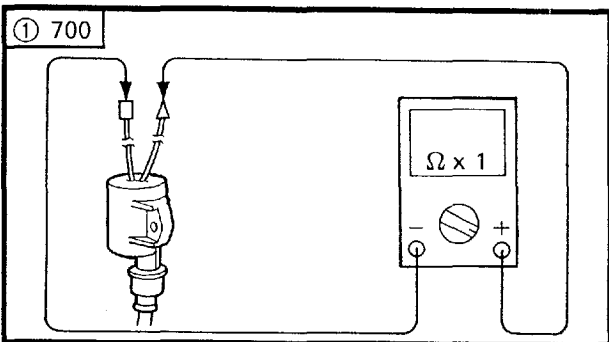


Spark plug cap resistance:
5 kΩ at 20°C (68°F)

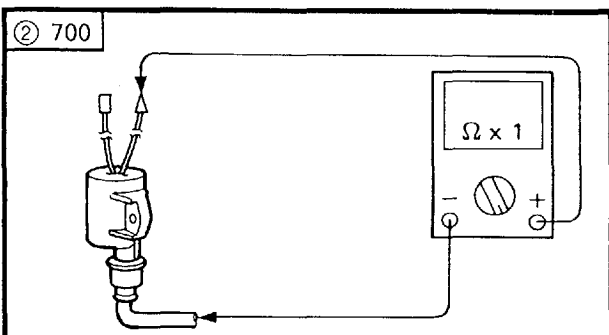
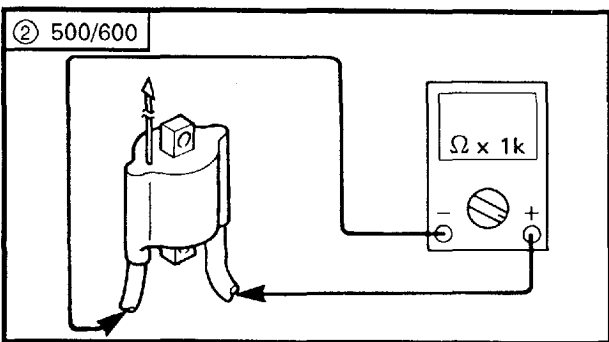


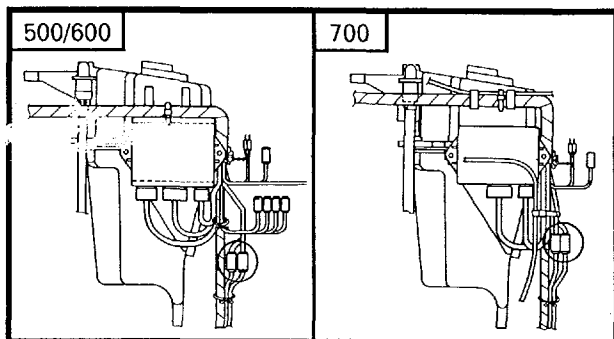
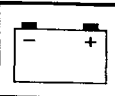
IGNITION COIL

1. Disconnect:
 - Ignition coil lead (orange)
 - Spark plug lead
2. Connect:
 - Pocket tester (to ignition coil and spark plug lead)
3. Measure:
 - Primary coil resistance ①
 - Secondary coil resistance ②



Primary coil resistance:
0.16 ~ 0.24 Ω at 20°C (68°F) (500/600)
0.18 ~ 0.24 Ω at 20°C (68°F) (700)
Secondary coil resistance:
3.9 ~ 5.9 kΩ at 20°C (68°F) (500/600)
2.7 ~ 3.7 kΩ at 20°C (68°F) (700)





SOURCE COIL

1. Disconnect:

- CDI magneto coupler (Brown, Black/Red) (White/Red, White, Green)

2. Connect:

- Pocket tester (to CDI magneto coupler)

3. Measure:

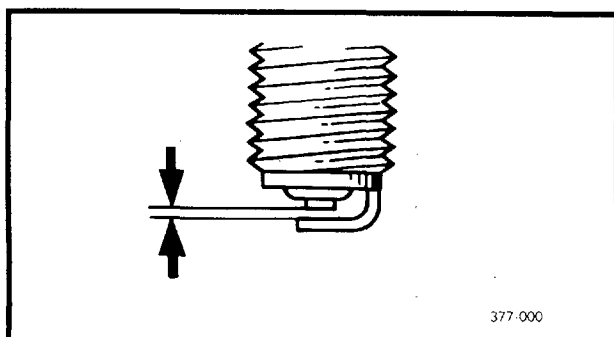
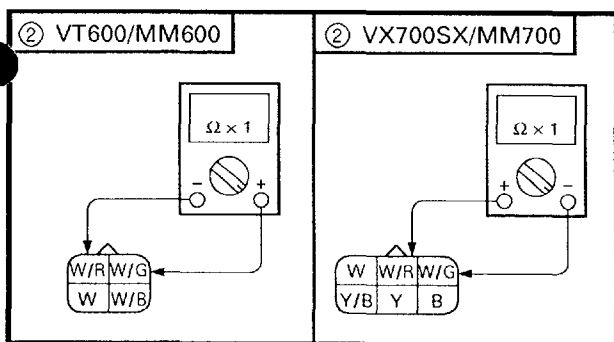
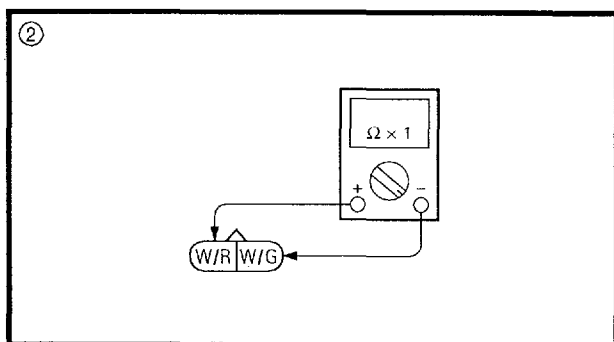
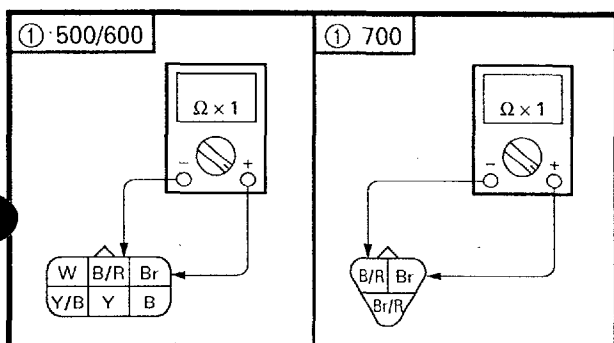
- Source coil/pickup coil resistance
Out of specification → Replace.



Source coil resistance: ① (Br – B/R)
225 ~ 275 Ω at 20°C (68°F) (500/600)
392 ~ 479 Ω at 20°C (68°F) (700)

Source coil resistance: (Br – Br/R)
78 ~ 94 Ω at 20°C (68°F) (700)

Pickup coil resistance: ② (W/R – W/G)
189 ~ 231 Ω at 20°C (68°F)



SPARK PLUG

1. Remove:

- Spark plugs

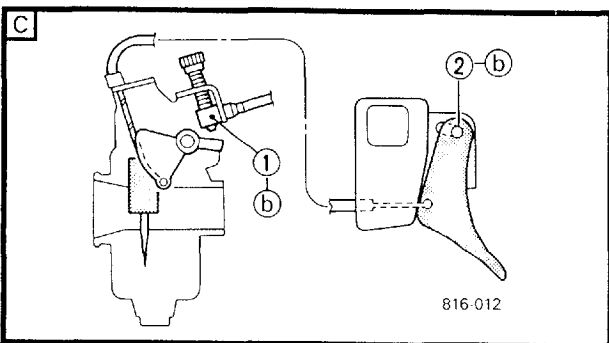
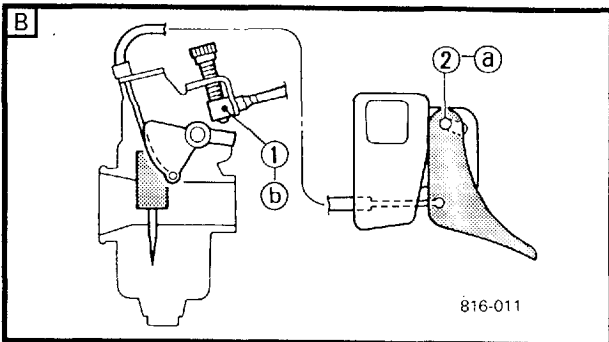
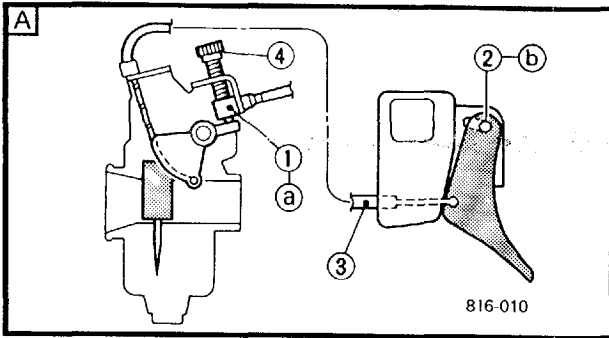
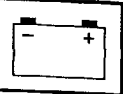
2. Measure:

- 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, T.O.R.S. will operate when the throttle lever is released.

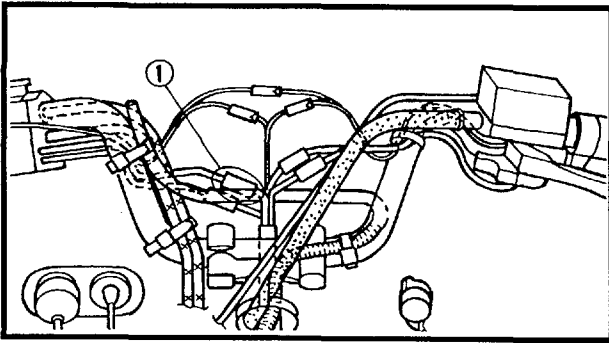
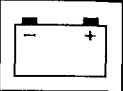
The T.O.R.S. is designed to interrupt the ignition and keep the engine revolutions between 2800 and 3000 r/min if the carburetor fails to return to idle when the lever is released.

⚠ WARNING

- If T.O.R.S. begins to operate, 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.

Mode	A Idle or starting	B Run	C Trouble
Switch			
Throttle switch	OFF	ON	OFF
Carburetor switch	ON	OFF	OFF
Engine	RUN	RUN	T.O.R.S. will operate

- ① Carburetor switch
- ② Throttle switch
- ③ Throttle cable
- ④ Throttle stop screw
- Ⓐ "ON"
- Ⓑ "OFF"



HANDLEBAR SWITCH (RIGHT)

Engine stop switch and throttle switch

1. Disconnect:

- Handlebar switch (right) coupler ①

2. Connect:

- Pocket tester (90890-03112, YU-03112)

3. Check:

- Engine stop switch continuity

Faulty → Replace.

Switch position	Good condition
RUN (pull)	×
OFF (push)	○

○ : Continuity × : No continuity

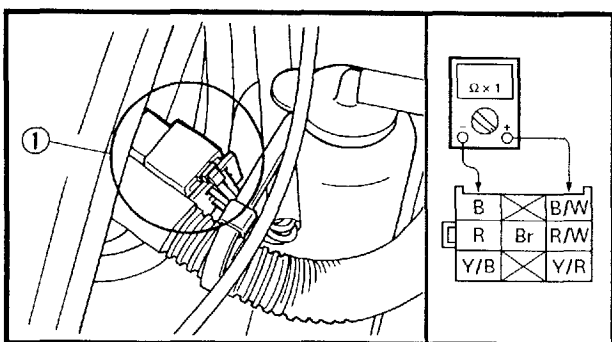
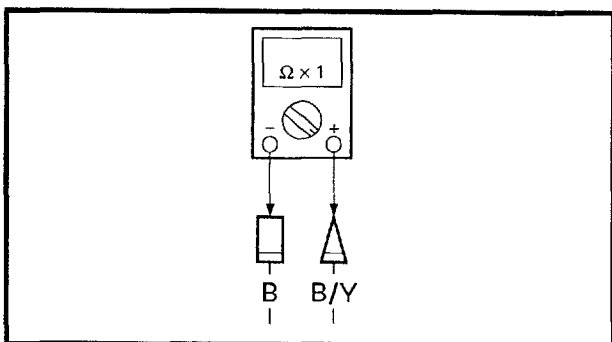
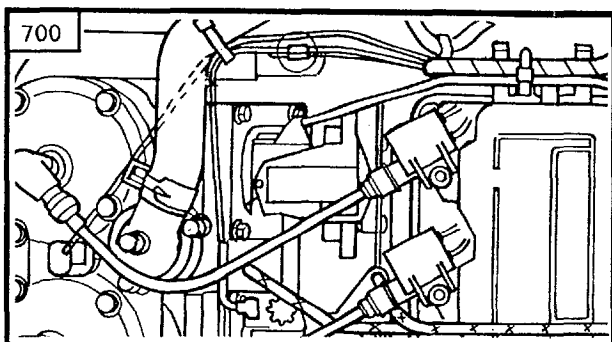
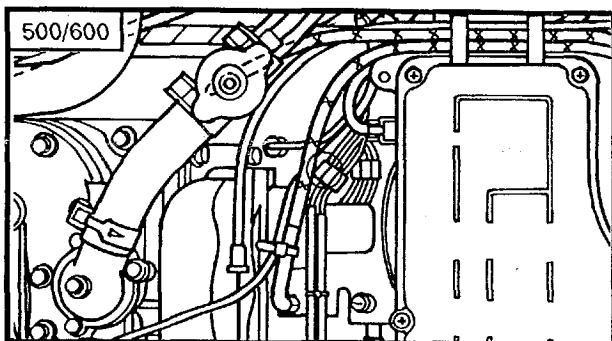
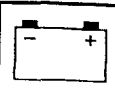
4. Check:

- Throttle switch continuity

Faulty → Replace.

Throttle switch position	Good condition
Throttle lever is operated.	○
Throttle lever is not operated.	×

○ : Continuity × : No continuity



CARBURETOR SWITCH

1. Disconnect:
 - Carburetor switch lead
2. Connect:
 - Pocket tester (90890-03112, YU-03112)
3. Check:
 - Carburetor switch continuity

Faulty → Replace.

Carburetor switch position	Good condition
Throttle lever is operated.	×
Throttle lever is not operated.	○

○ : Continuity × : No continuity

MAIN SWITCH

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

Faulty → Replace.

Switch position	Good condition
OFF	○
ON	×

○ : Continuity × : No continuity

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

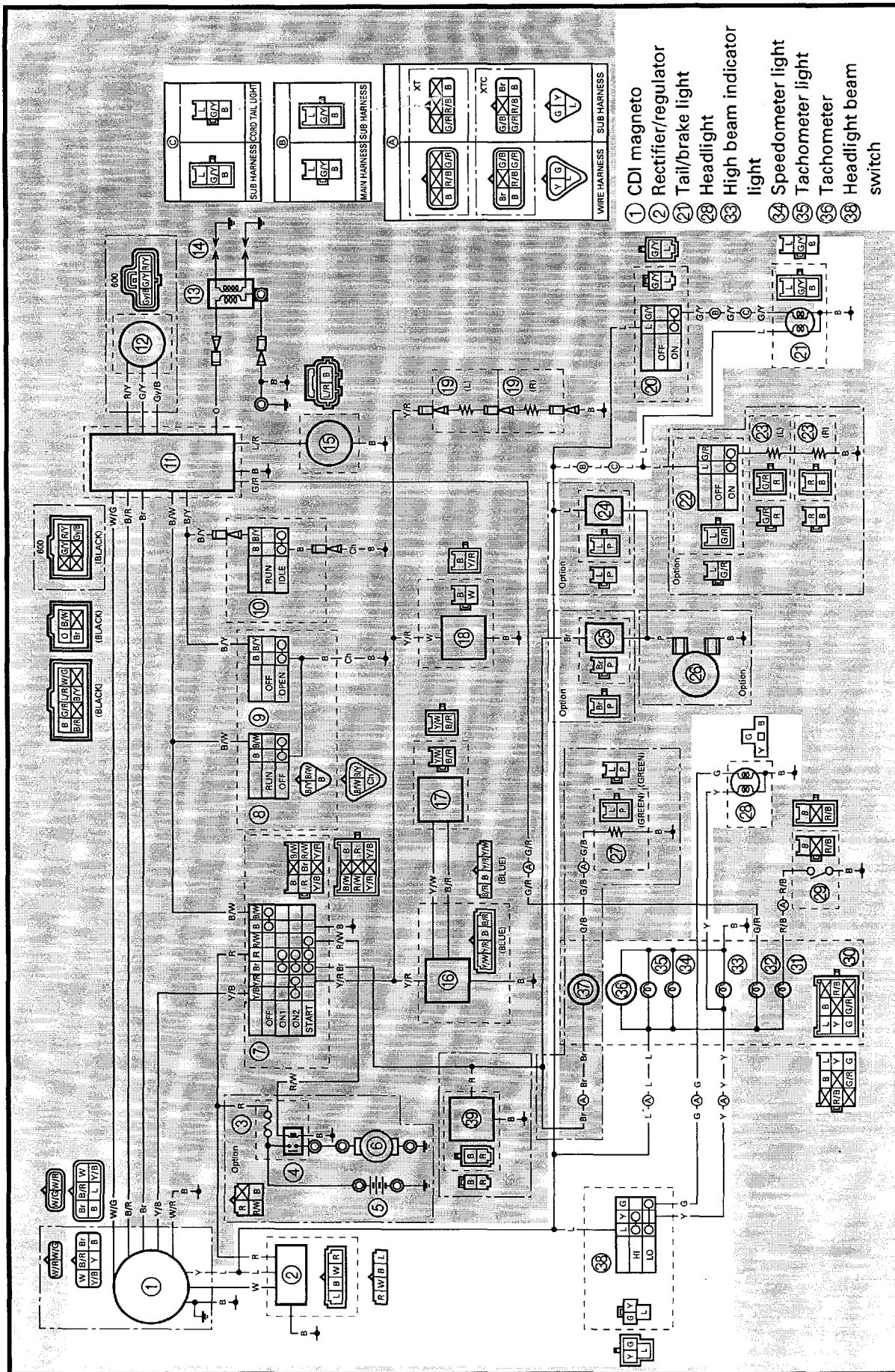
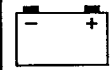
○ — ○ Continuity

LIGHTING SYSTEM

CIRCUIT DIAGRAM (VX500XT/XTC/XTCE/XTCR, VT500, VX600XT/XTC/XTCE/XTCR/SX)

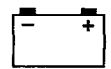
LIGHTING SYSTEM

ELEC

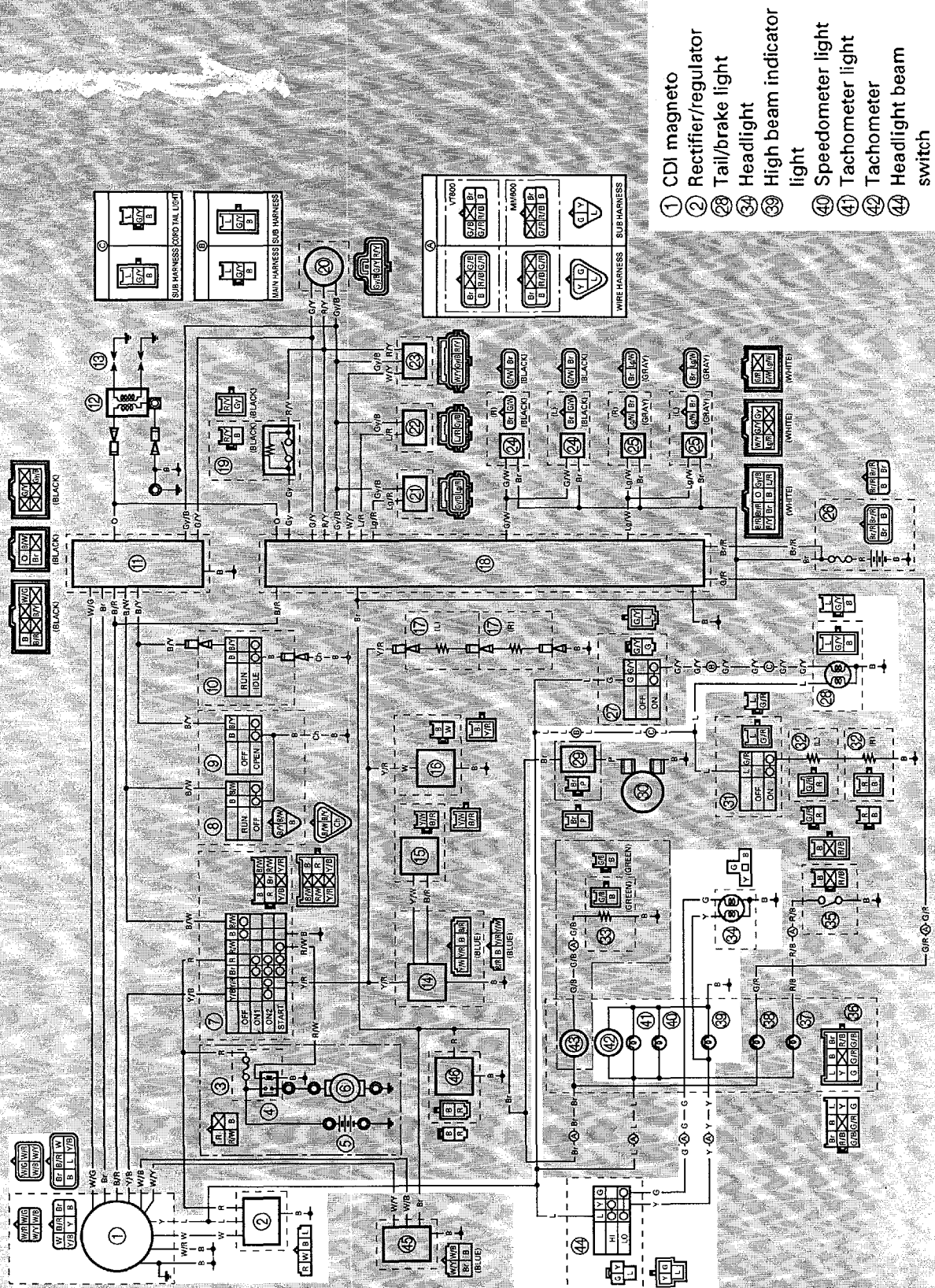


LIGHTING SYSTEM

ELEC



CIRCUIT DIAGRAM (VT600, MM600)

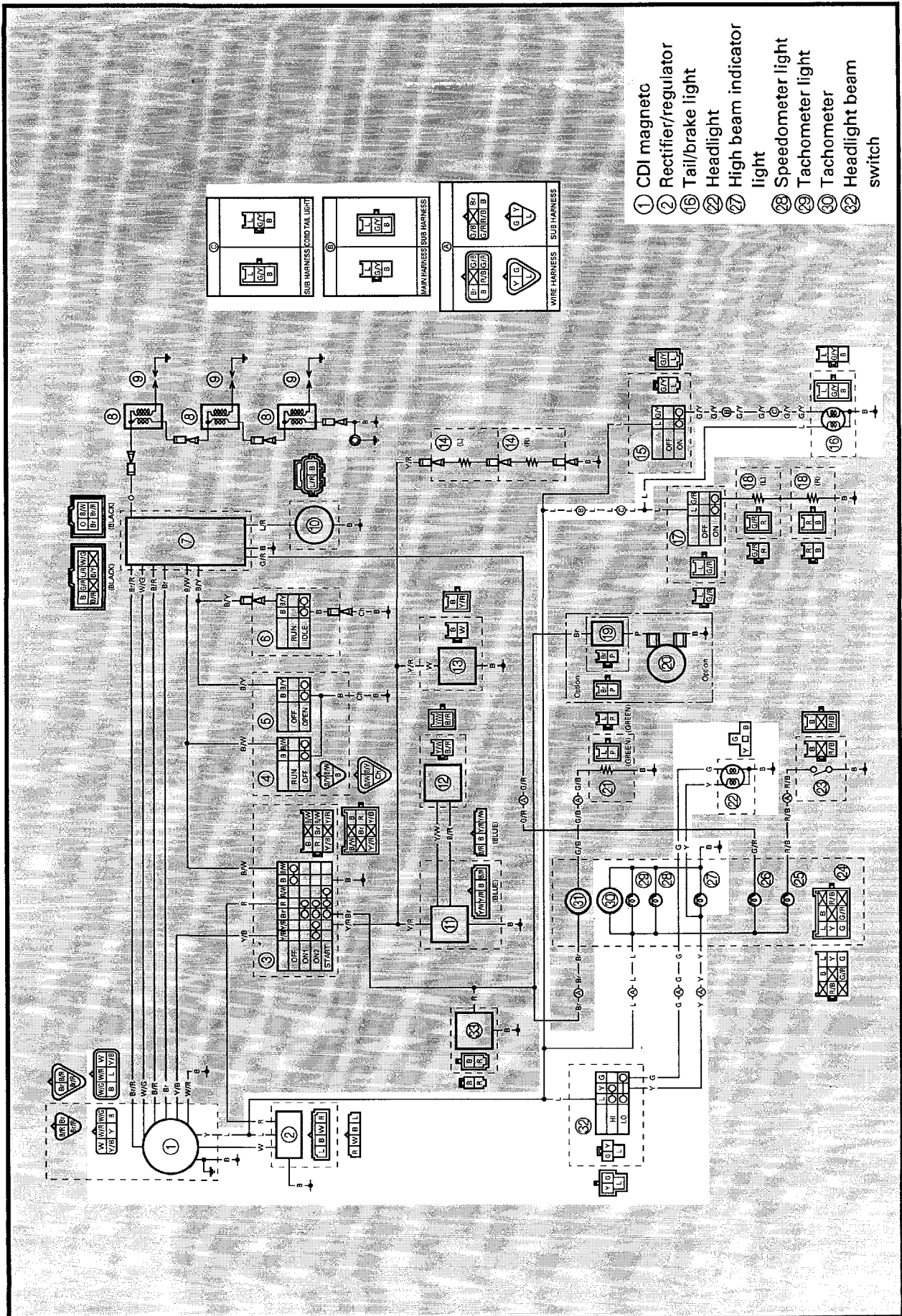


LIGHTING SYSTEM

ELEC



CIRCUIT DIAGRAM (VX700SX, MM700)





TROUBLESHOOTING

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

Check the bulb(s).



OK

Check the headlight beam switch and lighting coil.



OK

Correct connection and/or replace the rectifier/regulator.

NO CONTINUITY

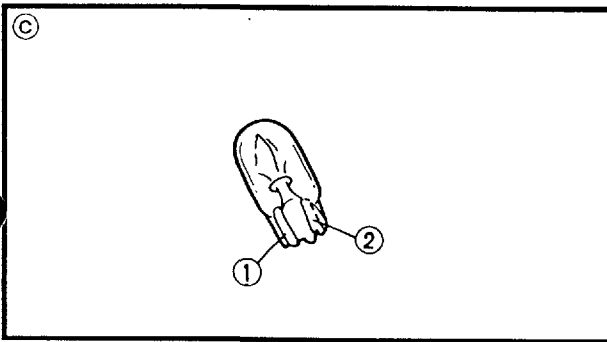
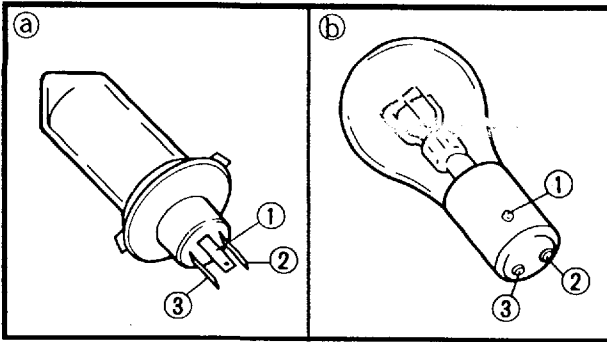
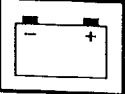


Replace the bulb(s).

FAULTY



Replace the headlight beam switch and/or CDI magneto.



BULB(S)

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

- (a) Headlight
 (b) Tail/brake light
 (c) Meter light

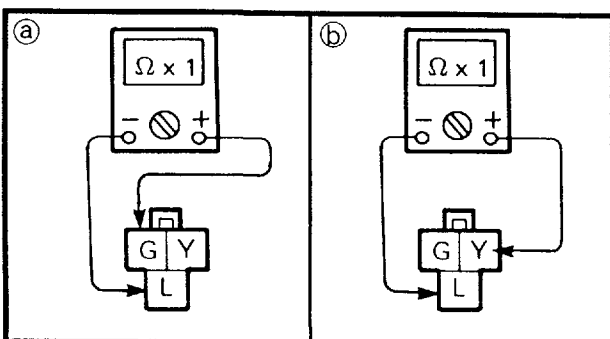
3. Check:
 - Bulb(s)

Terminal	Good condition
① - ②	○
① - ③	○

○ : Continuity

HEADLIGHT BEAM SWITCH

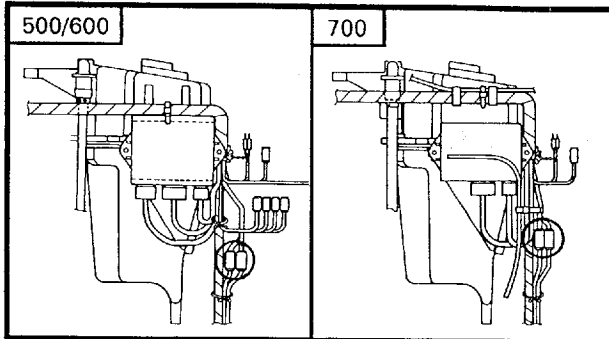
1. Disconnect:
 - Headlight beam switch coupler
2. Connect:
 - Pocket tester (to headlight beam switch coupler)



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

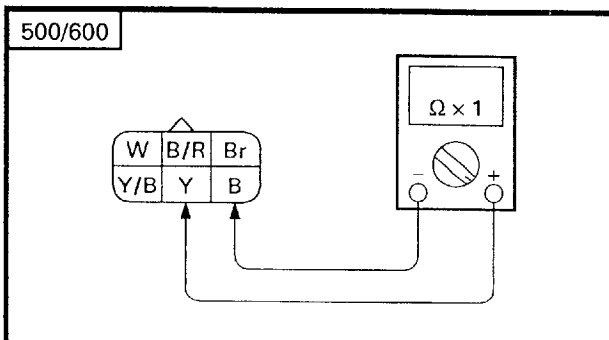
Switch position	(a) Good condition	(b) Good condition
HI	×	○
LO	○	×

○ : Continuity × : No continuity



C.D.I. MAGNETO

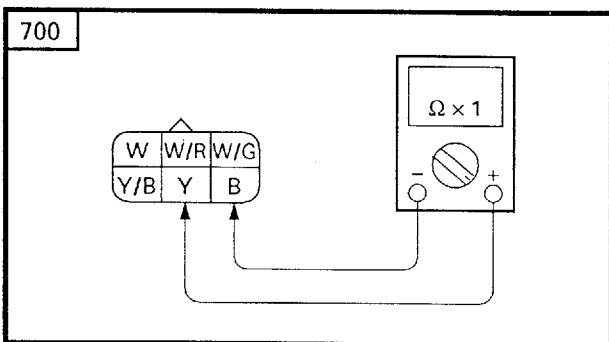
1. Disconnect:
 - C.D.I. magneto coupler (Yellow, Black)
2. Connect:
 - Pocket tester
(to C.D.I. magneto coupler)

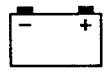


3. Measure:
 - Lighting coil resistance

For the continuity between "Yellow-Black".
Out of specification → Replace.

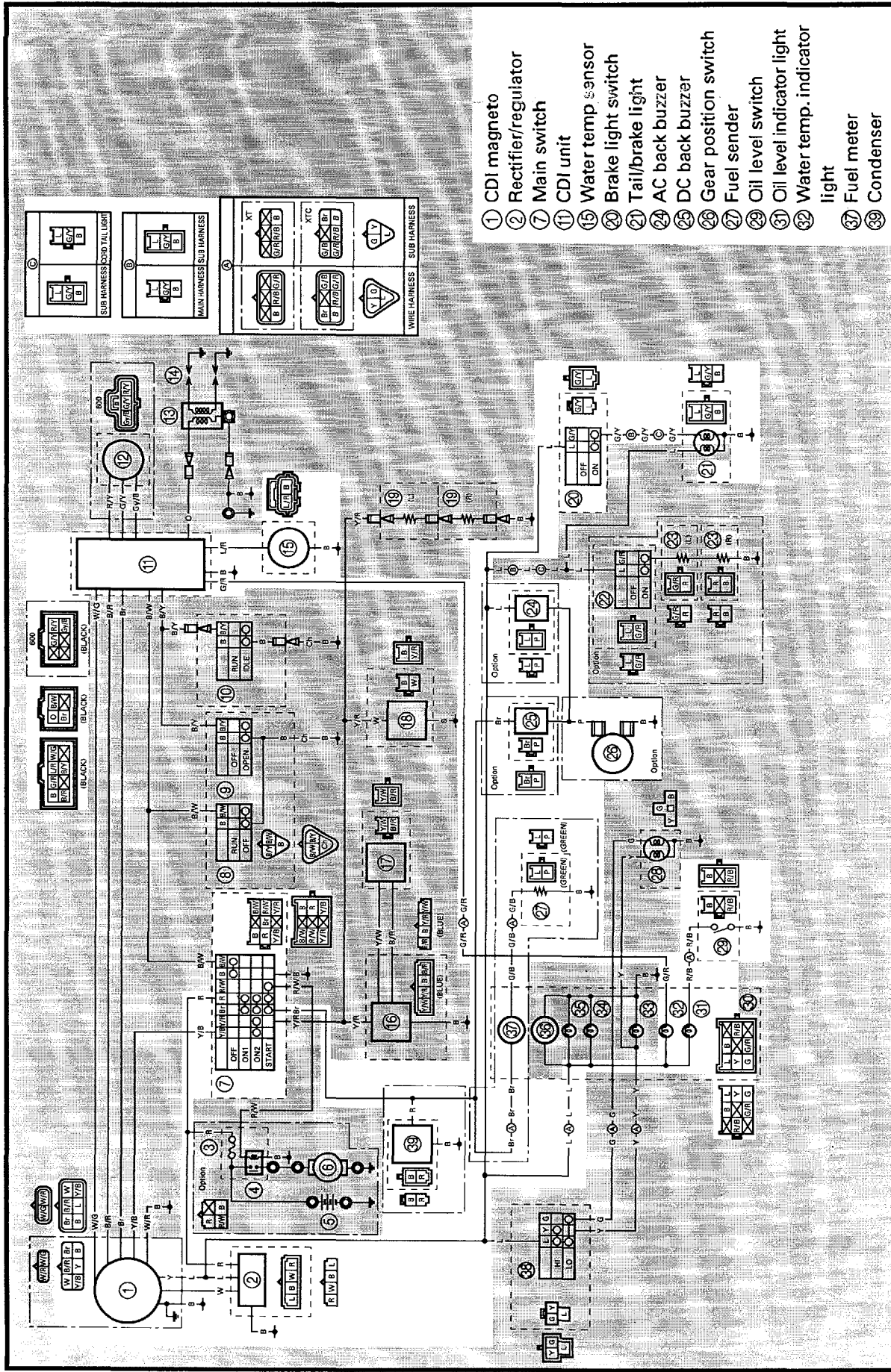
Lighting coil resistance:
(Yellow – Black)
0.27 ~ 0.33 Ω at 20°C (68°F) (500/600)
0.29 ~ 0.35 Ω at 20°C (68°F) (700)





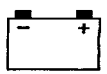
SIGNAL SYSTEM

CIRCUIT DIAGRAM (VX500XT/XTC/XTCCE/XTCR, VT500, VX600XT/XTC/XTCCE/XTCR/SX)

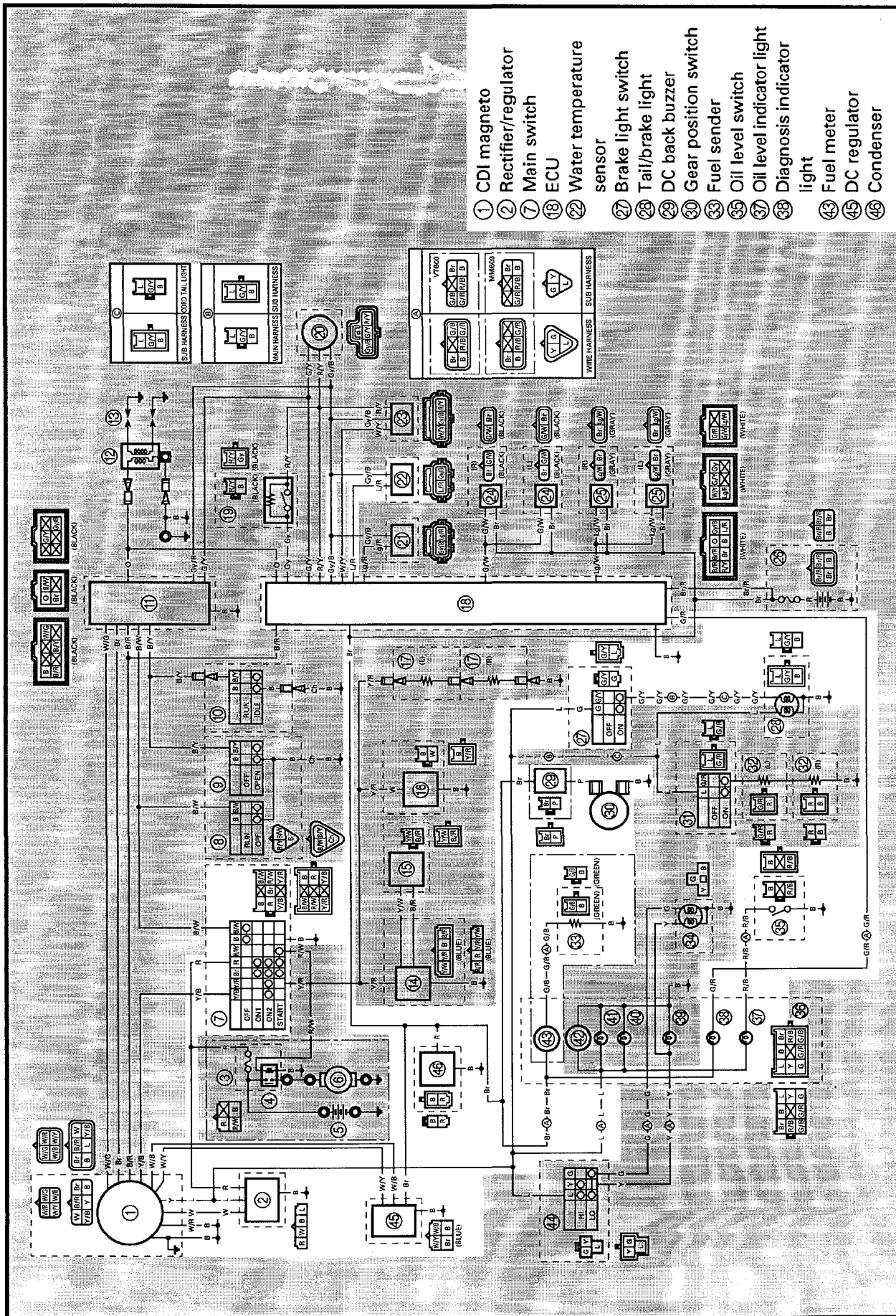


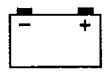
SIGNAL SYSTEM

ELEC

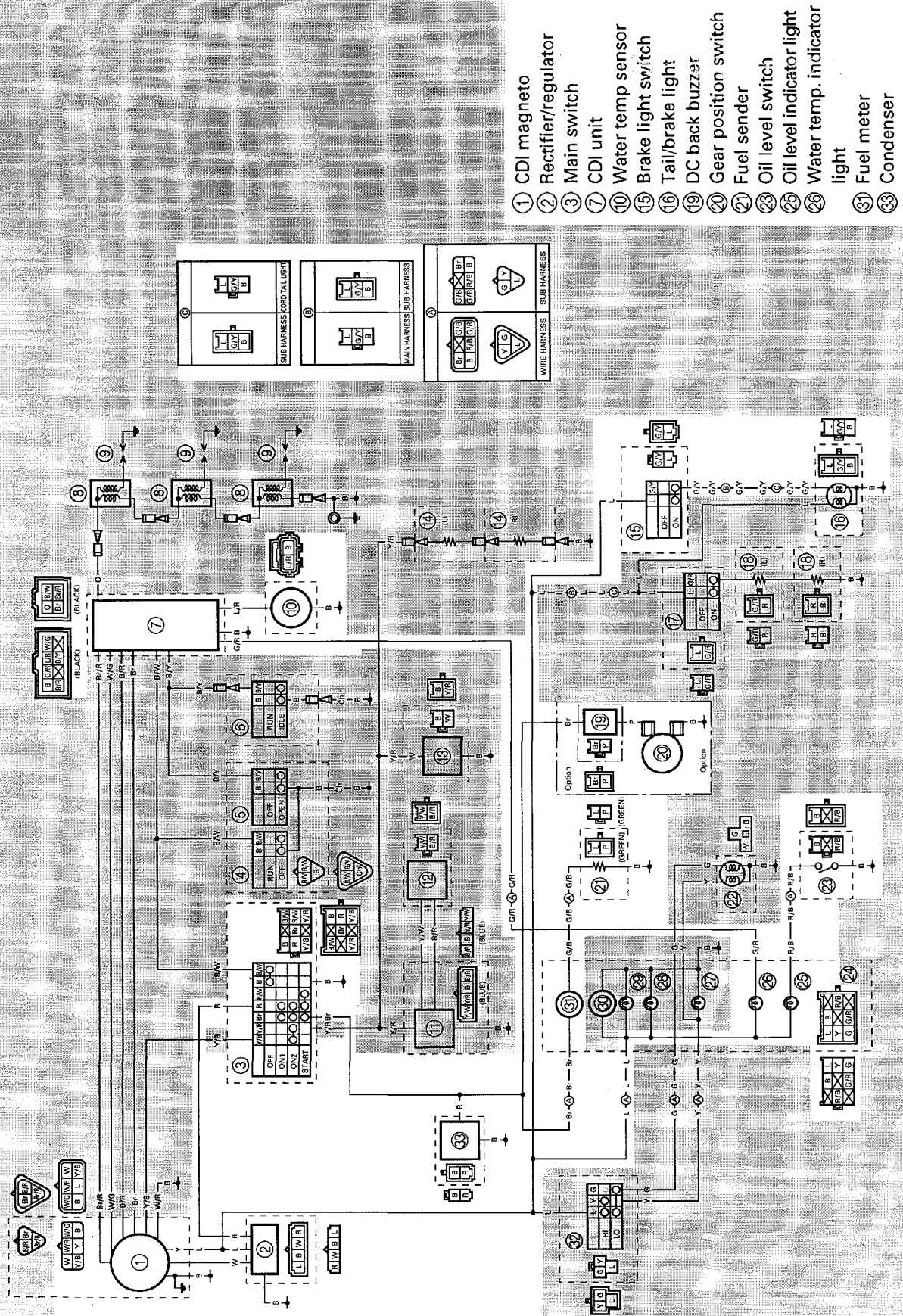


CIRCUIT DIAGRAM (VT600, MM600)





CIRCUIT DIAGRAM (VX700SX, MM700)





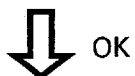
TROUBLESHOOTING

BRAKE LIGHT DOES NOT COME ON.

Check the tail/brake light bulb.



Check the brake light switch.



Check the lighting coil.

OK



Replace the CDI magneto.

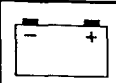
Correct connection and/or replace the rectifier/regulator.

NO CONTINUITY

Replace the bulb.

FAULTY

Replace the brake light switch.



WATER TEMP (EXCEPT FOR VT600, MM600) AND/OR OIL LEVEL INDICATOR LIGHTS DO NOT COME ON.

Check the water temp and/or oil level indicator light bulb(s).



Check the lighting coil.



Check the water temp sensor or oil level gauge.



Correct connection and/or replace the rectifier regulator.

NO CONTINUITY



Replace the bulb(s).

FAULTY



Replace the CDI magneto.

FAULTY



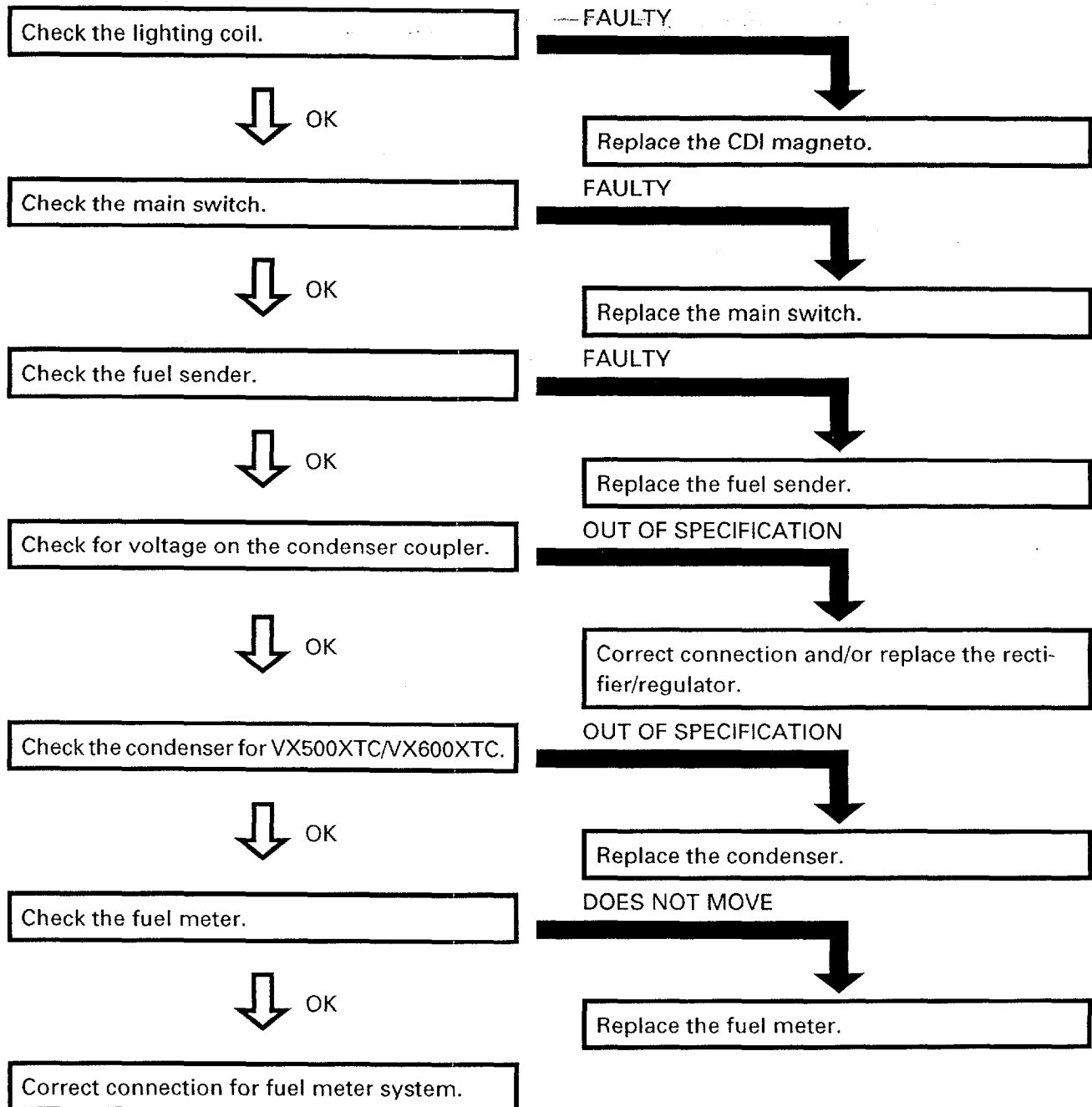
Replace the water temp sensor or oil level gauge.

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(s).



FUEL METER DOES NOT OPERATE





BACK BUZZER DOES NOT SOUND.

Check the gear position switch.



OK

Check the lighting coil.



OK

Check the back buzzer.



OK

Correct connection, replace the rectifier/regulator and /or DC regulator (VT600/MM600).

FAULTY

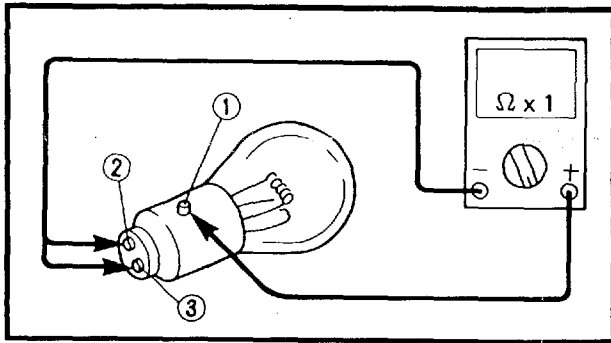
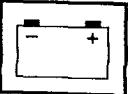
Replace the gear position switch.

OUT OF SPECIFICATION

Replace the CDI magneto.

DOES NOT SOUND

Adjust and/or replace the back buzzer.



8E201

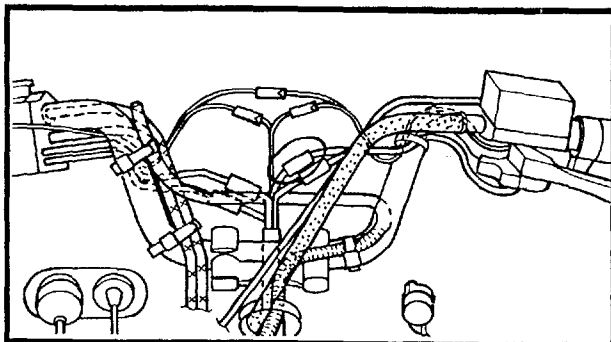
TAIL/BRAKE LIGHT BULB

1. Remove:

- Tail/brake light bulb

Terminal	Good condition
① - ②	○
① - ③	○

○ : Continuity



8E211

BRAKE LIGHT SWITCH

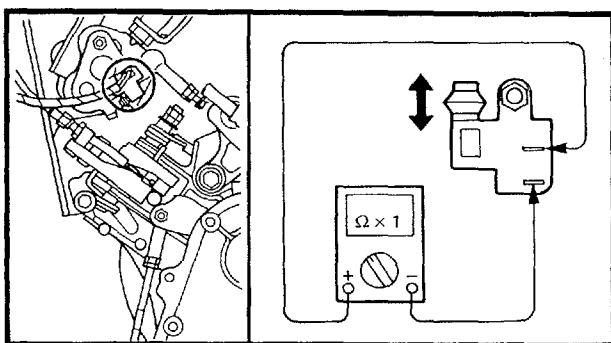
1. Check:

- Brake light switch continuity

Faulty → Replace.

Switch position	Good condition
Brake lever operates	○
Brake lever does not operate	×

○ : Continuity × : No continuity



8E221

GEAR POSITION SWITCH

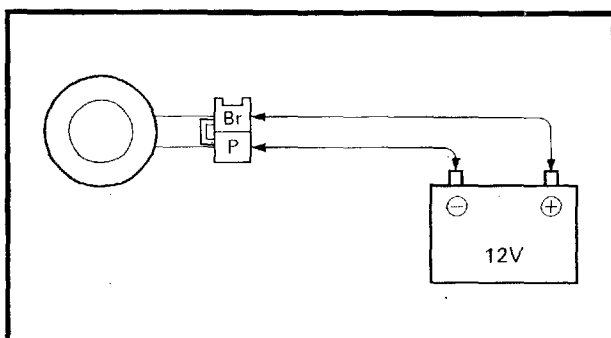
1. Check:

- Gear position switch continuity

Faulty → Replace.

Shift lever position	Good condition
FORWARD	×
REVERSE	○

○ : Continuity × : No continuity



8E231

BACK BUZZER

1. Disconnect:

- Back buzzer coupler

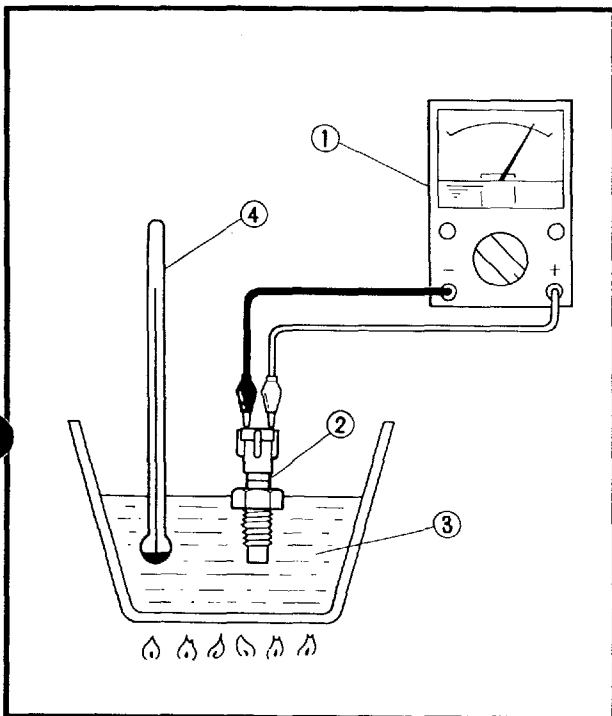
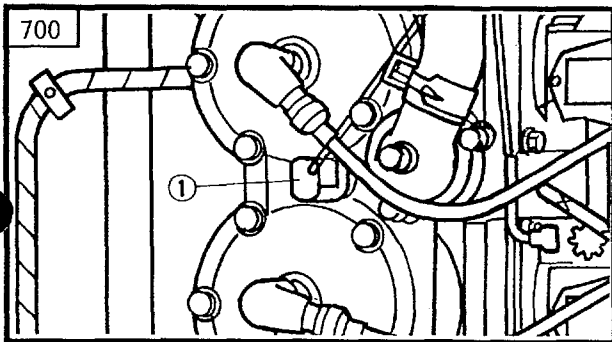
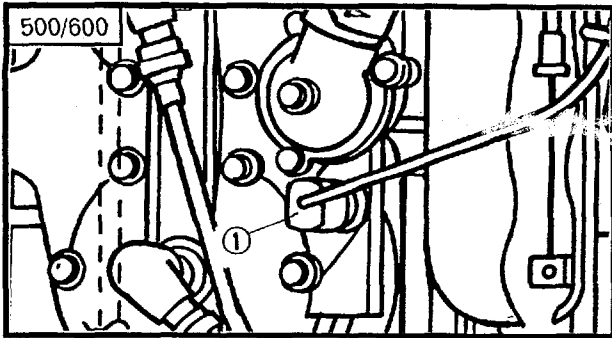
2. Connect:

- Battery

3. Check:

- Back buzzer

Does not sound → Replace.



THERMO SENSOR

1. Disconnect the thermo sensor lead (Green/Ped) and remove the thermo sensor ①.

CAUTION:

Handle the thermo sensor with special care. Never subject it to shock or allow it to be dropped. Should it be dropped, it must be replaced.

2. Connect the pocket tester ① (90890-03112, YU-03112) to the thermo sensor ②.

NOTE:

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

3. Immerse the thermo sensor in coolant ③ and check the thermo sensor operation.



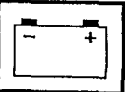
Thermo sensor resistance:

- 2.45 k Ω at 20°C (68°F)
- 1.148 k Ω at 40°C (104°F)
- 0.587 k Ω at 60°C (140°F)
- 0.322 \pm 0.032 k Ω at 80°C (176°F)

- ④ Temperature gauge.

CAUTION:

Never heat the coolant to a temperature of 120°C (248.5°F).



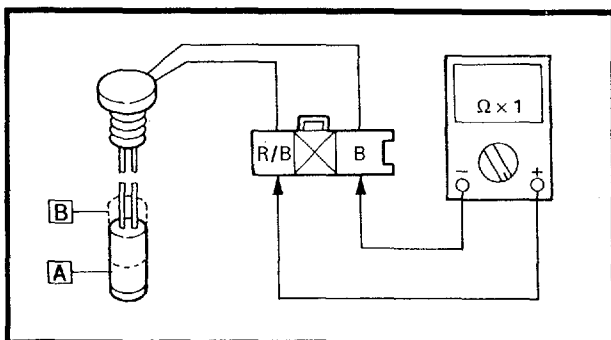
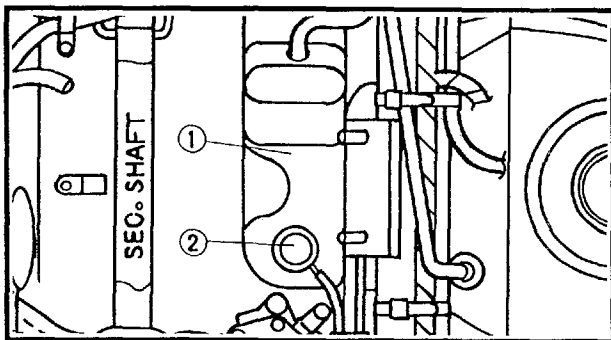
4. If the thermo sensor operation is incorrect, replace it.
5. Install the thermo sensor and connect the thermo sensor lead.



Thermo sensor:
23 Nm (2.3 m · kg, 17 ft · lb)

CAUTION

Do not overtighten the thermo sensor.



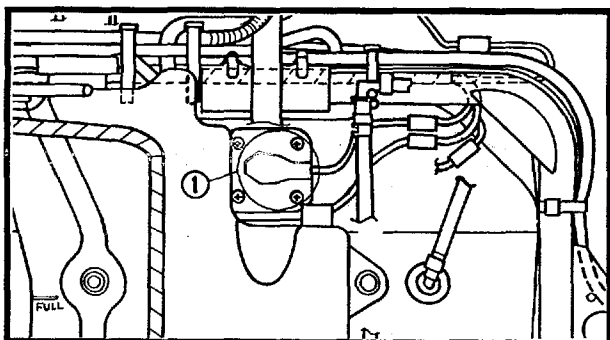
OIL LEVEL SWITCH

1. Remove:
 - Oil tank ①
 - Oil level gauge ②
2. Connect:
 - Pocket tester (90890-03112, YU-03112) (to oil level switch coupler)
3. Check:
 - Oil level switch continuity

Faulty → Replace.

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

○ : Continuity × : No continuity



FUEL SENDER

1. Remove:

- Fuel sender ①
(from fuel tank)

2. Connect:

- Pocket tester
(to fuel sender coupler)

3. Measure:

- Fuel sender resistance
Out of specification → Replace.

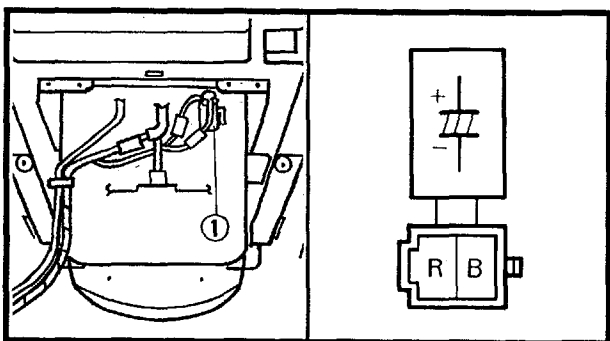
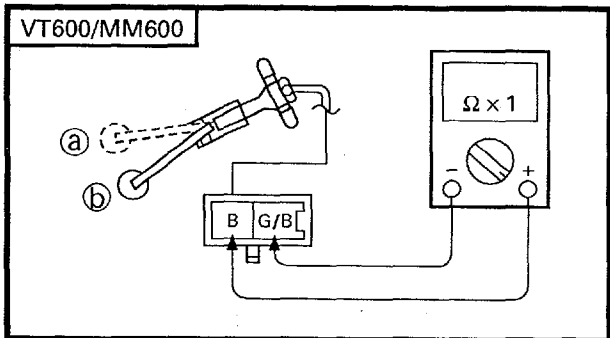
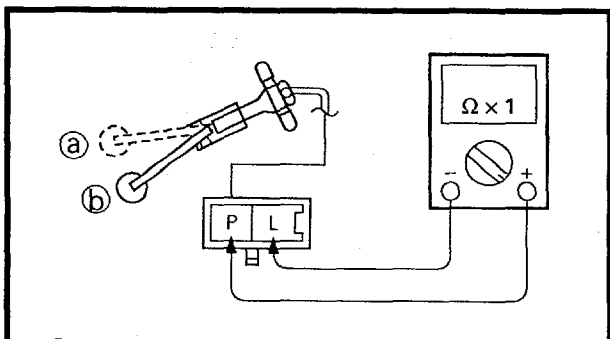


Fuel sender resistance (up ①):

4 ~ 10 Ω at 20°C (68°F)

Fuel sender resistance (down ②):

90 ~ 100 Ω at 20°C (68°F)



CONDENSER (NON ELECTRIC MODEL)

1. Disconnect:

- Condenser ①

2. Connect:

- Condenser
(to LCR meter as shown)

3. Measure:

- Condenser capacity
Out of specification → Replace.

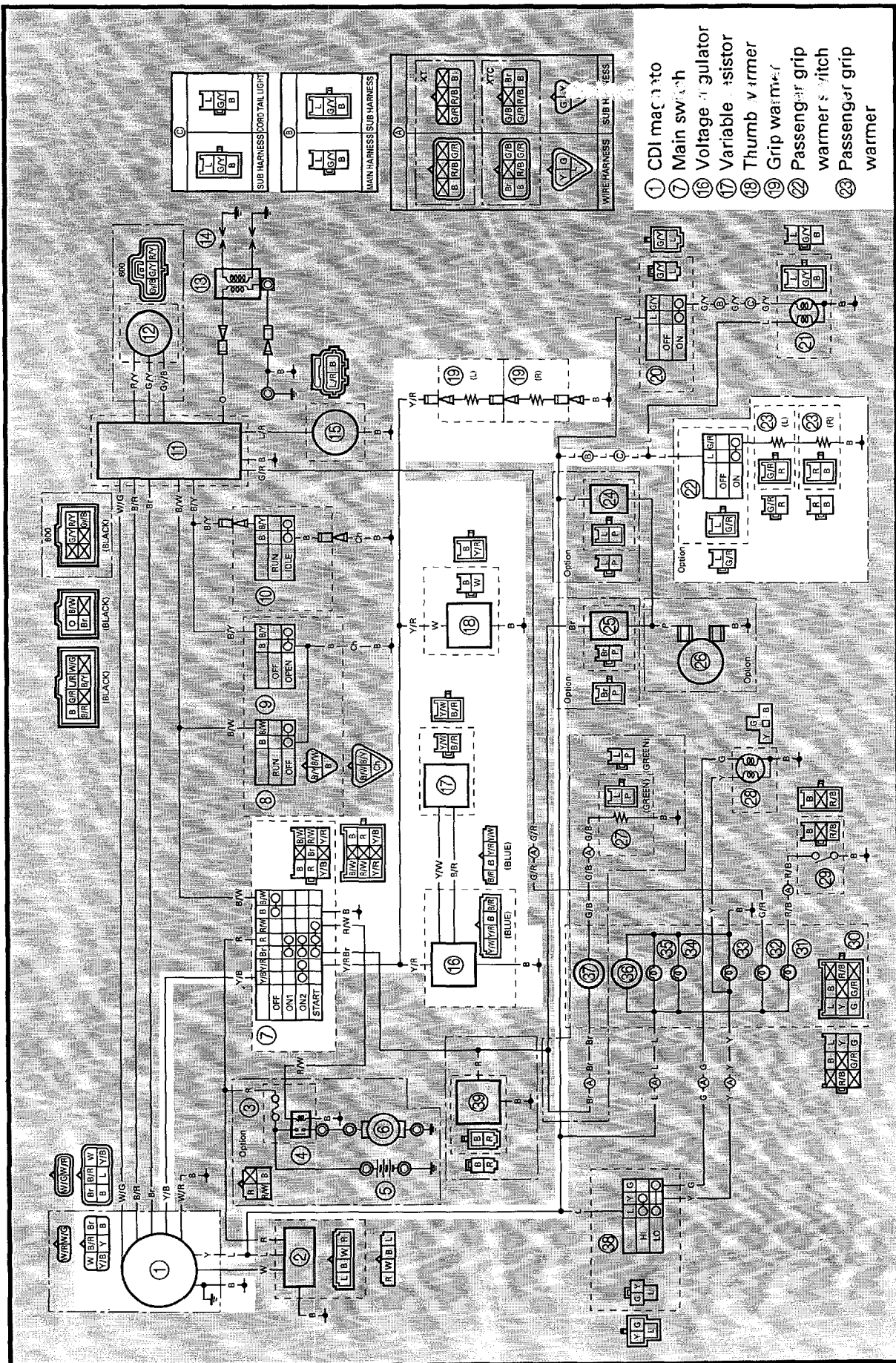


Condenser capacity:

3.760 ~ 5.640 μF at 20°C (68°F)

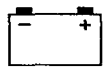


GRIP WARMER SYSTEM
CIRCUIT DIAGRAM (VX500XT/XTC/XTCR, VT500, VX600XT/XTC/XTCR/SX)

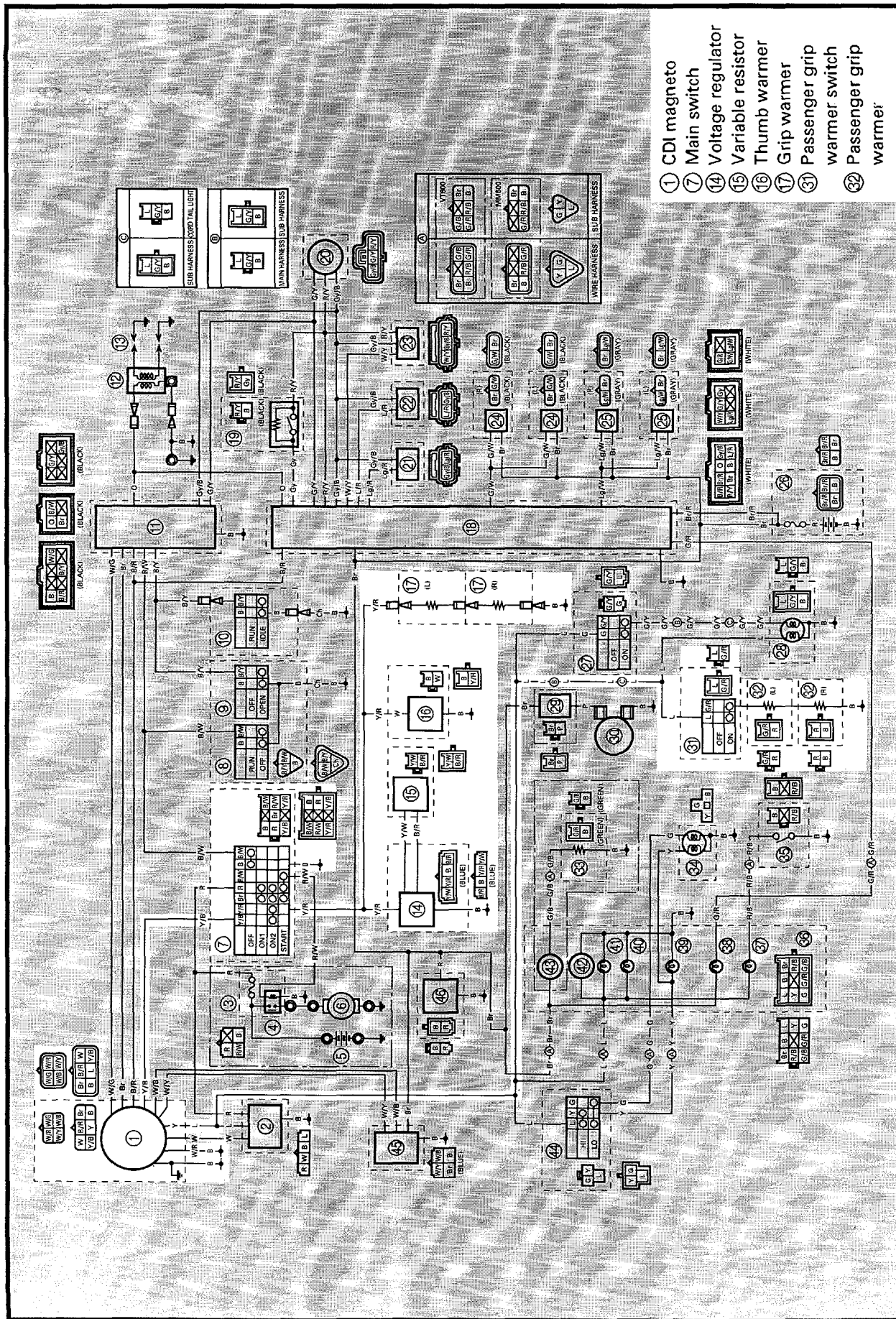


GRIP WARMER SYSTEM

ELEC

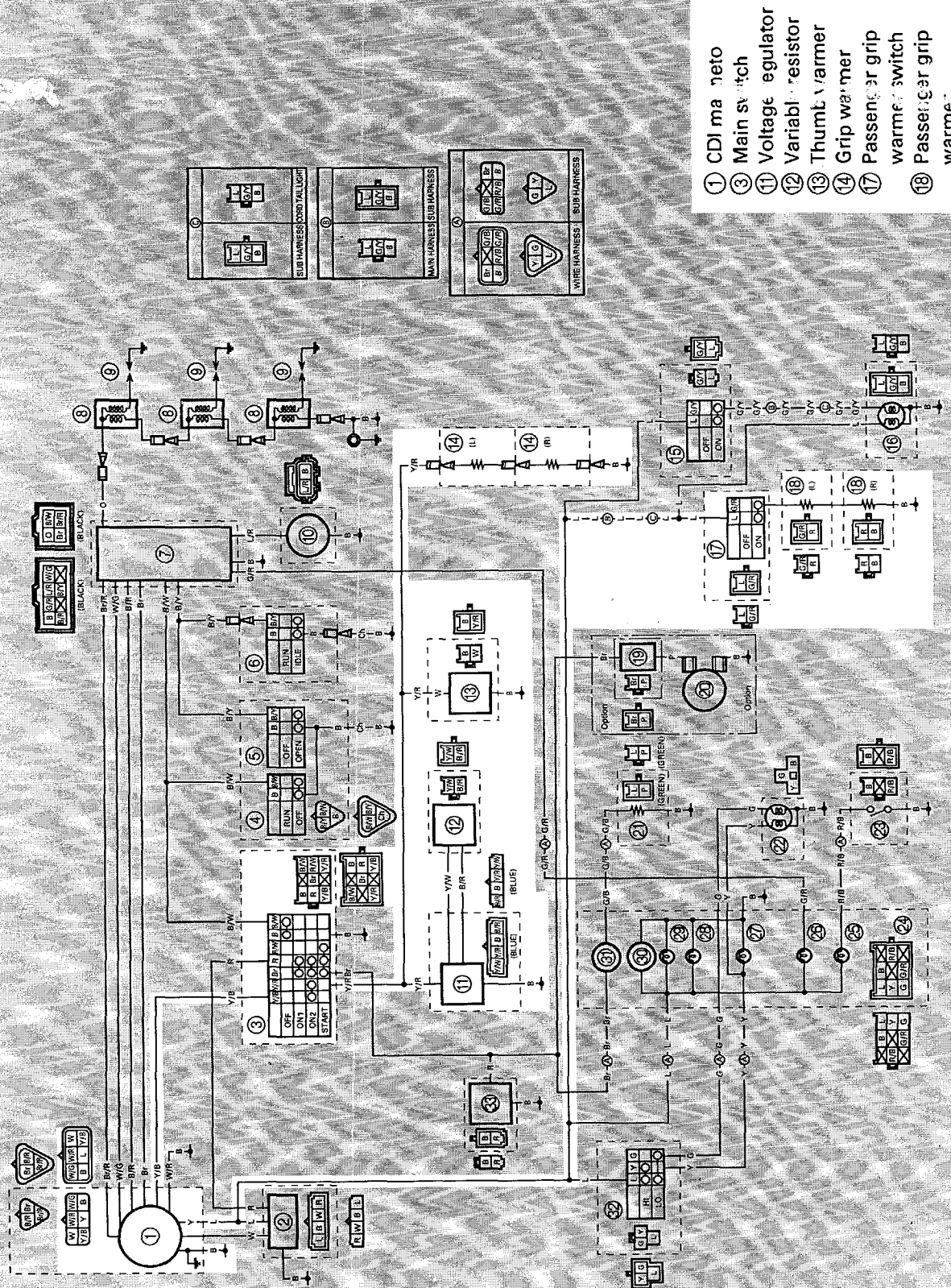


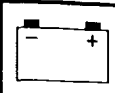
CIRCUIT DIAGRAM (VT600, MM600)





CIRCUIT DIAGRAM (VX700SX, MM700)





TROUBLESHOOTING

GRIP WARMER DOES NOT OPERATE.

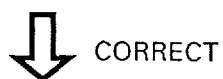
Check the main switch.



Check the grip and thumb warmer.



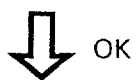
Check the variable resistor.



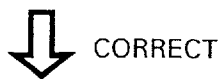
Check the passenger grip warmer.



Check the passenger grip warmer switch.



Check the grip warmer coil.



Check the lighting coil.



NO CONTINUITY

Replace the main switch.

NO CONTINUITY

Replace the grip warmer and/or thumb warmer.

INCORRECT

Replace the variable resistor.

NO CONTINUITY

Replace the passenger grip warmer.

NO CONTINUITY

Replace the passenger grip warmer switch.

INCORRECT

Replace the CDI magneto.

INCORRECT

Replace the CDI magneto.

GRIP WARMER SYSTEM

ELEC



Check the stator coil and/or connection.

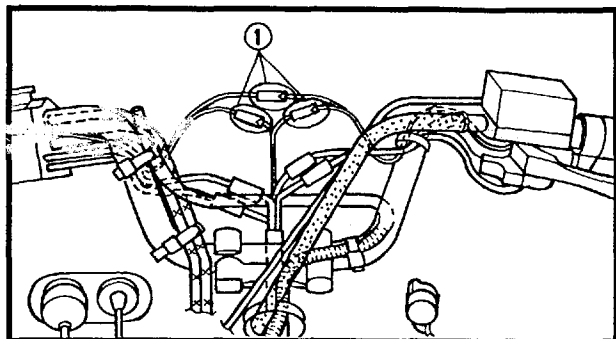
NO CONTINUITY



OK

Replace the voltage regulator.

Replace the CDI magneto and/or correct connection.



8E301

GRIP AND THUMB WARMER COIL

1. Disconnect:

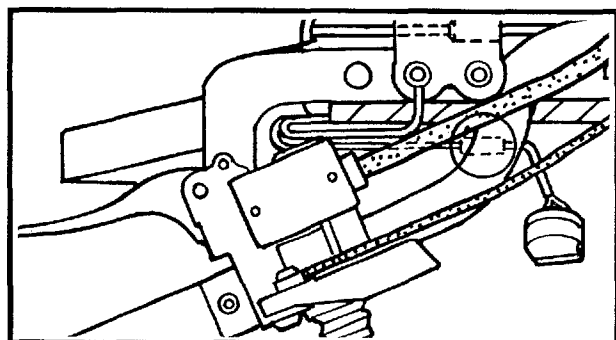
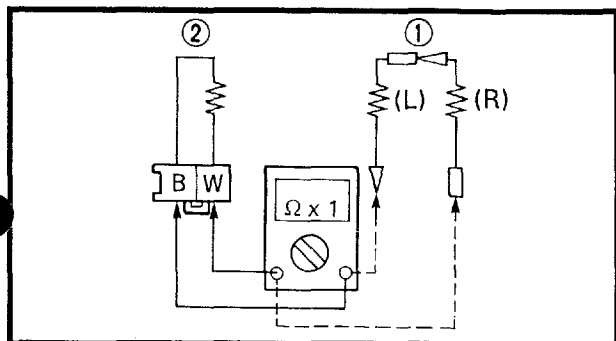
- Grip warmer leads ①
- Thumb warmer leads

2. Connect:

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

3. Check:

- Grip warmer ① continuity
 - Thumb warmer ② continuity
- No continuity → Replace.



VARIABLE RESISTOR

1. Disconnect:

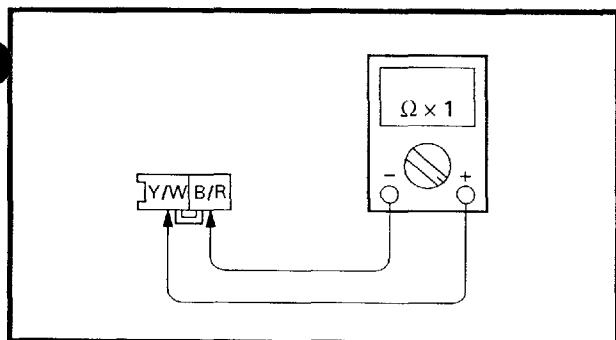
- Variable resistor coupler

2. Connect:

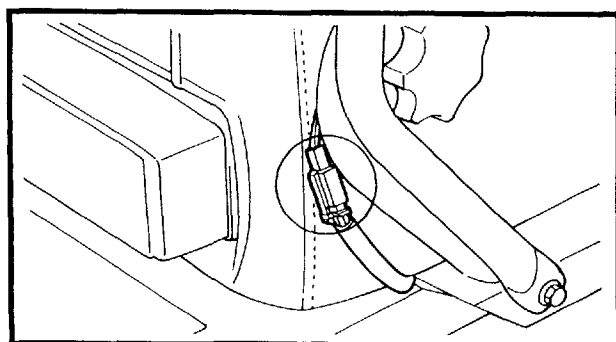
- Pocket tester (90890-03112, YU-03112)
(to variable resistor coupler)

3. Check:

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



Variable resistor resistance:
(Black/Red – Yellow/White)



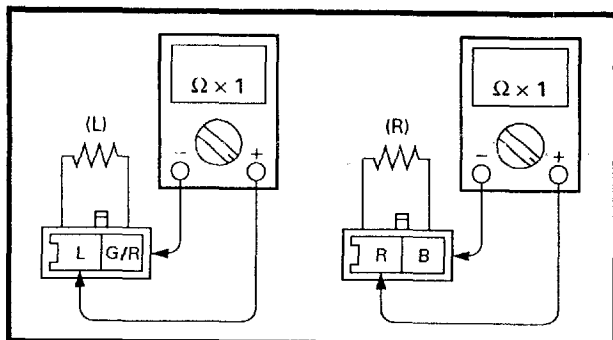
PASSENGER GRIP WARMER (VT500/VT600)

1. Disconnect:

- Passenger grip warmer coupler

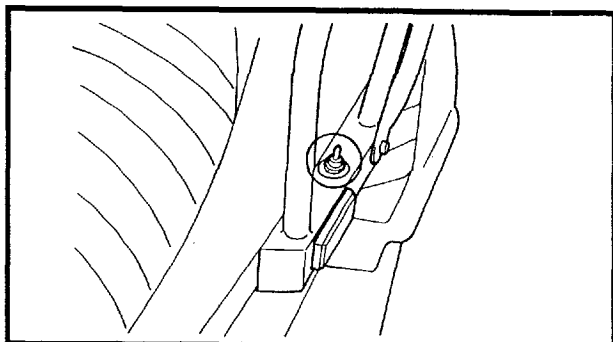
2. Connect:

- Pocket tester (90890-03112, YU-03112)
(to passenger grip warmer coupler)



3. Check:

- Passenger grip warmer continuity
No continuity → Replace.



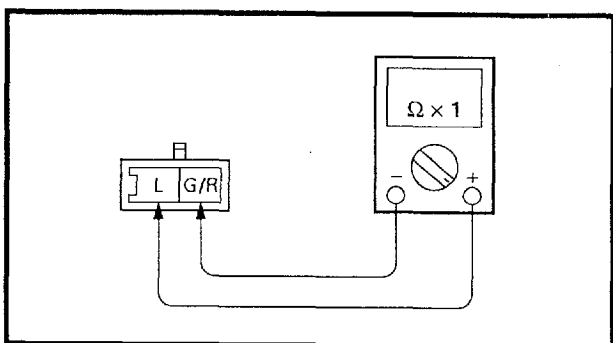
PASSENGER GRIP WARMER SWITCH (VT500/VT600)

1. Disconnect:

- Passenger grip warmer switch coupler

2. Connect:

- Pocket tester (90890-03112, YU-03112)
(to passenger grip warmer switch coupler)

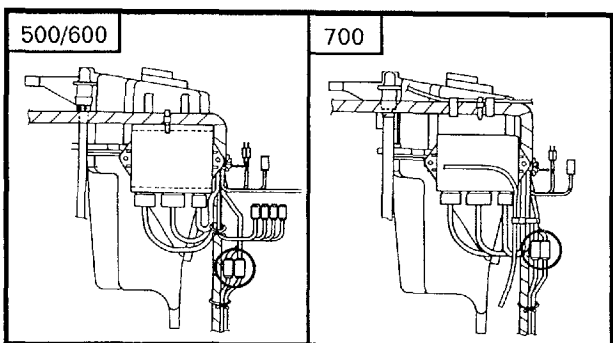


3. Check:

- Passenger grip warmer switch continuity
Faulty → Replace.

	L	G/R
OFF		
ON	○	○

○ — ○ Continuity



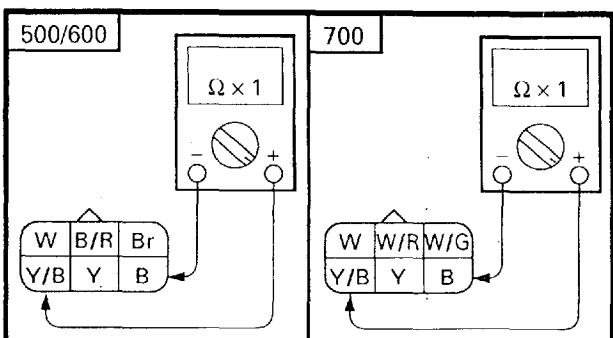
C.D.I. MAGNETO

1. Disconnect:

- C.D.I. magneto coupler (Yellow/Black, Black)

2. Connect:

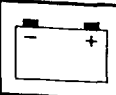
- Pocket tester (90890-03112, YU-03112)
(to C.D.I. magneto coupler)



3. Measure:

- Grip warmer coil resistance
For the continuity between "Yellow/Black and Black".
Out of specification → Replace.

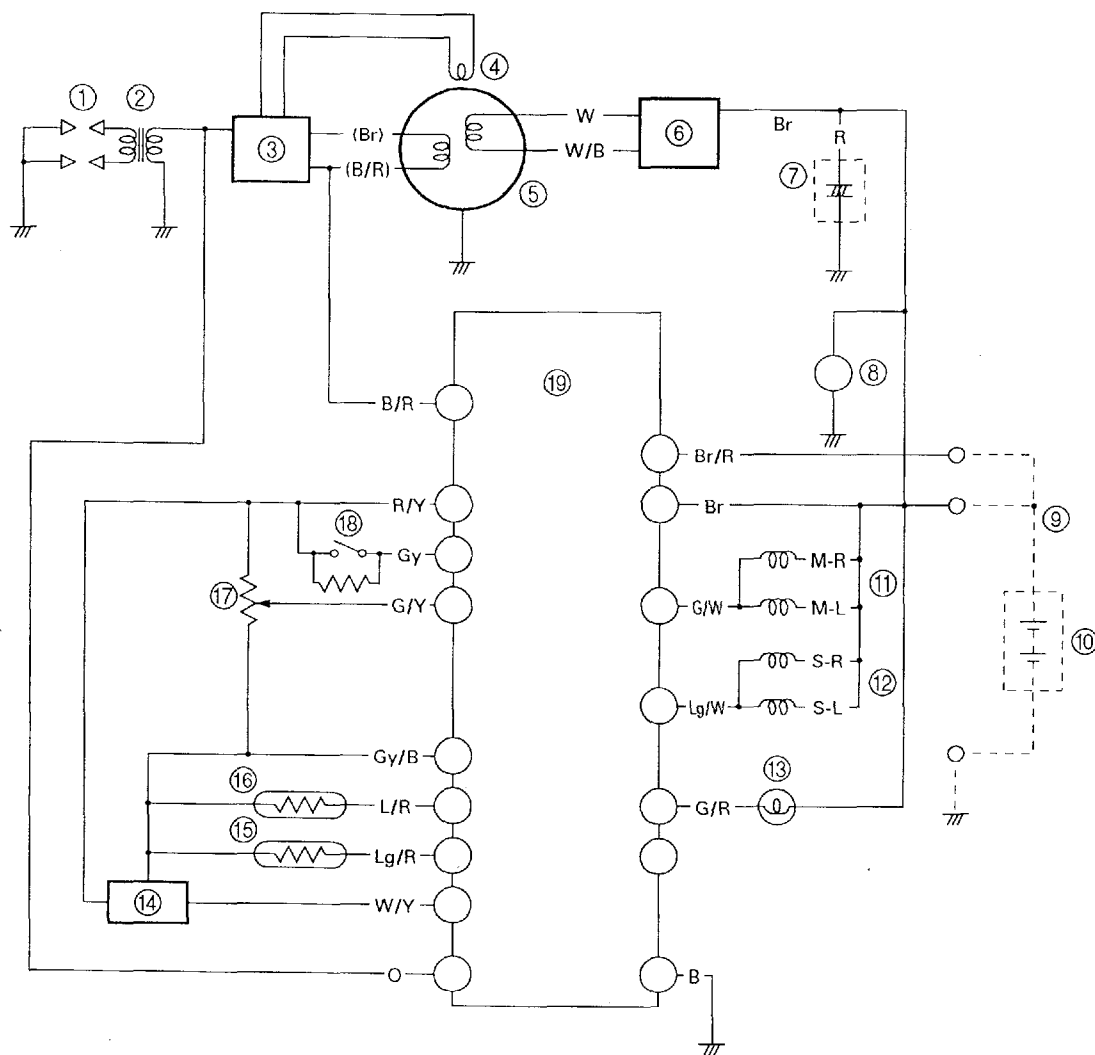
	Grip warmer coil resistance: (Yellow/Black – Black)
	1.0 ~ 1.2 Ω at 20°C (68°F) (500/600)
	1.4 ~ 1.7 Ω at 20°C (68°F) (700)



ELECTRONICALLY CONTROLLED CARBURETOR (E.C.C.) <VT600, MM600>

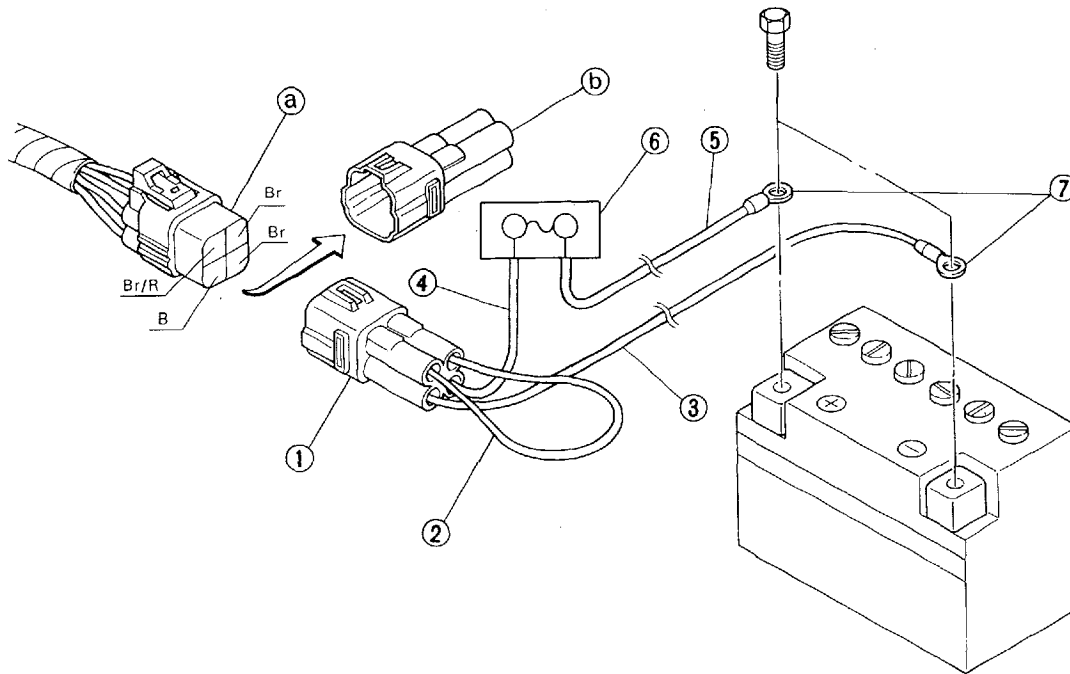
CIRCUIT DIAGRAM

- | | | |
|-----------------------|-------------------------------|----------------------|
| ① Spark plug | ⑨ E.C.C. test lead | ⑰ TPS |
| ② Ignition coil | ⑩ Battery (for testing) | ⑱ Fuel select switch |
| ③ CDI unit | ⑪ Solenoid valve (main) | ⑲ ECU |
| ④ Pickup coil | ⑫ Solenoid valve (slow) | |
| ⑤ CDI magneto | ⑬ Diagnosis indicator light | |
| ⑥ DC regulator | ⑭ Atmospheric pressure sensor | |
| ⑦ Condenser | ⑮ Air temperature sensor | |
| ⑧ Fuel sender (VT600) | ⑯ Water temperature sensor | |





E.C.C. TEST LEAD (VT600, MM600)



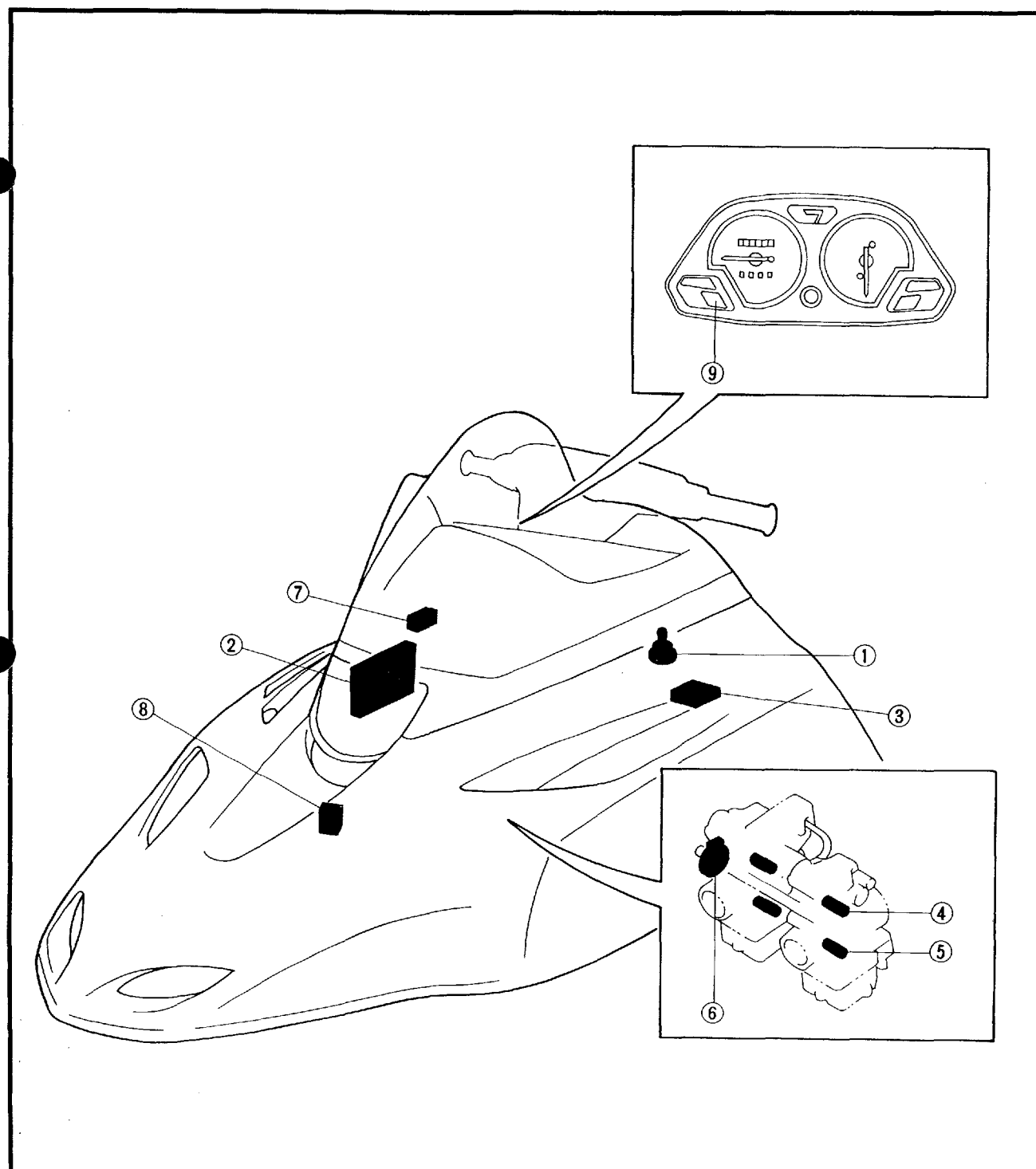
Part list

No	Part name	Q'ty	Remarks
①	Coupler	1	
②	Wire lead (Black)	1	D = 0.75 mm (0.3 in) L = 60 mm (2.4 in)
③	Wire lead (Black)	1	D = 0.75 mm (0.3 in) L = 1 m (3.3 ft)
④	Wire lead (Red)	1	D = 0.75 mm (0.3 in) L = 800 mm (71 in)
⑤	Wire lead (Red)	1	D = 0.75 mm (0.3 in) L = 200 mm (7.9 in)
⑥	Fuse	1	3 Ampere
⑦	Terminal	2	d = 6.2 mm (0.24 in)
a	Diagnosis check coupler	1	on the wire harness
b	Protection cap	1	on the wire harness



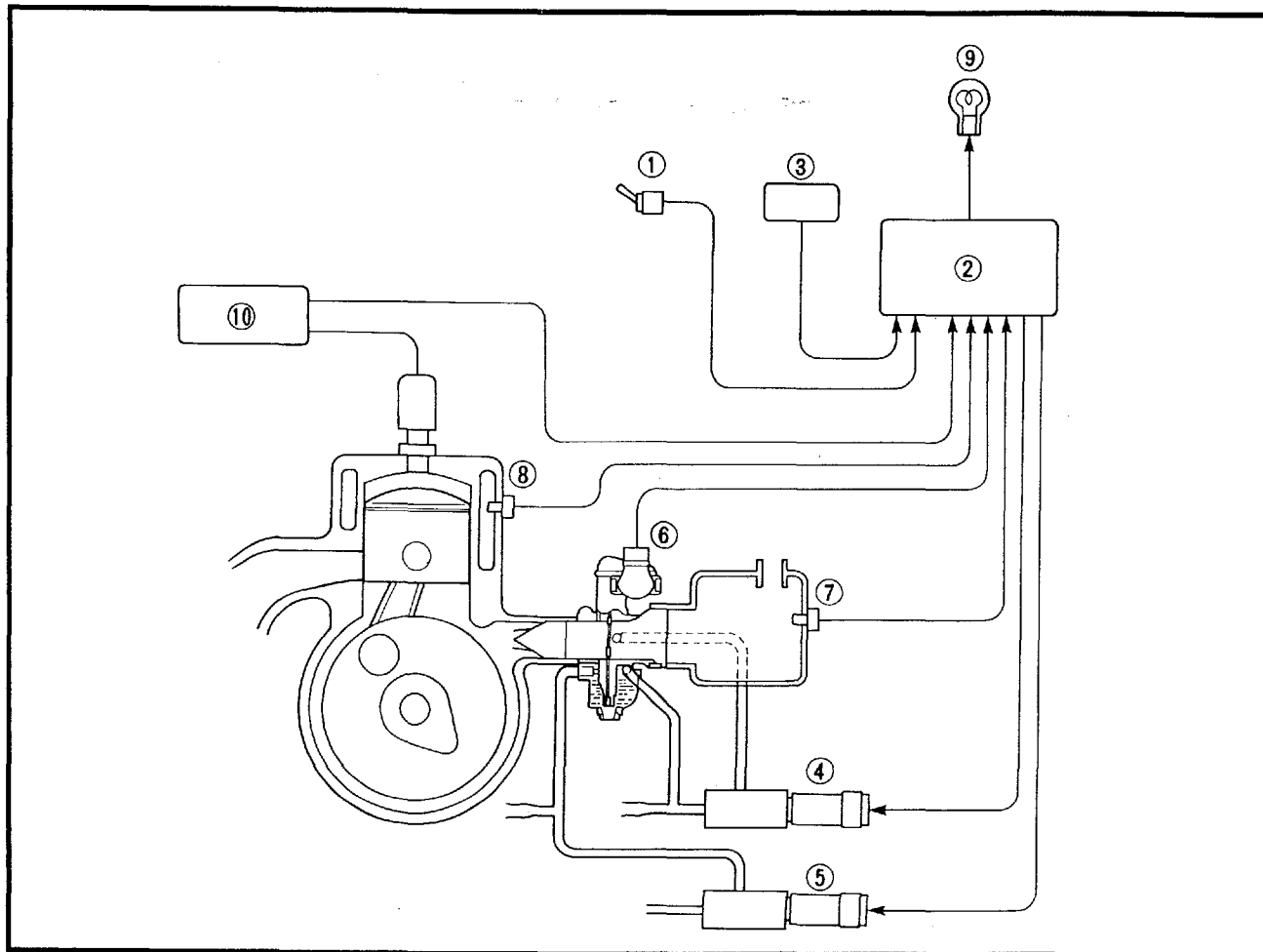
NAMES OF COMPONENTS (VT600, MM600)

- ① Fuel select switch
- ② ECU
- ③ Atmospheric pressure sensor
- ④ Solenoid valve (main)
- ⑤ Solenoid valve (slow)
- ⑥ TPS
- ⑦ Air temperature sensor
- ⑧ Water temperature sensor
- ⑨ Diagnosis indicator light





FUNCTION OF COMPONENTS (VT600, MM600)

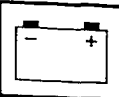


- | | |
|-------------------------------|-----------------------------|
| ① Fuel select switch | ⑥ TPS |
| ② ECU | ⑦ Air temperature sensor |
| ③ Atmospheric pressure sensor | ⑧ Water temperature sensor |
| ④ Solenoid valve (main) | ⑨ Diagnosis indicator light |
| ⑤ Solenoid valve (slow) | ⑩ CDI unit |

THE E.C.C. SYSTEM

Consists of the following components.

	Components	Function
Control system	ECU Solenoid valve (main) Solenoid valve (slow) Carburetor body	Overall system control Main air/fuel compensation Slow air control Air/fuel mixer
Sensor system	Atmospheric pressure sensor TPS Air temperature sensor Water temperature sensor CDI unit	Atmospheric pressure detection Degree of throttle opening detection Air temperature detection Water temperature detection Engine r/min detection
Others	Fuel select switch Diagnosis indicator light	Fuel selection E.C.C. system failure detection and self-diagnosis indication.



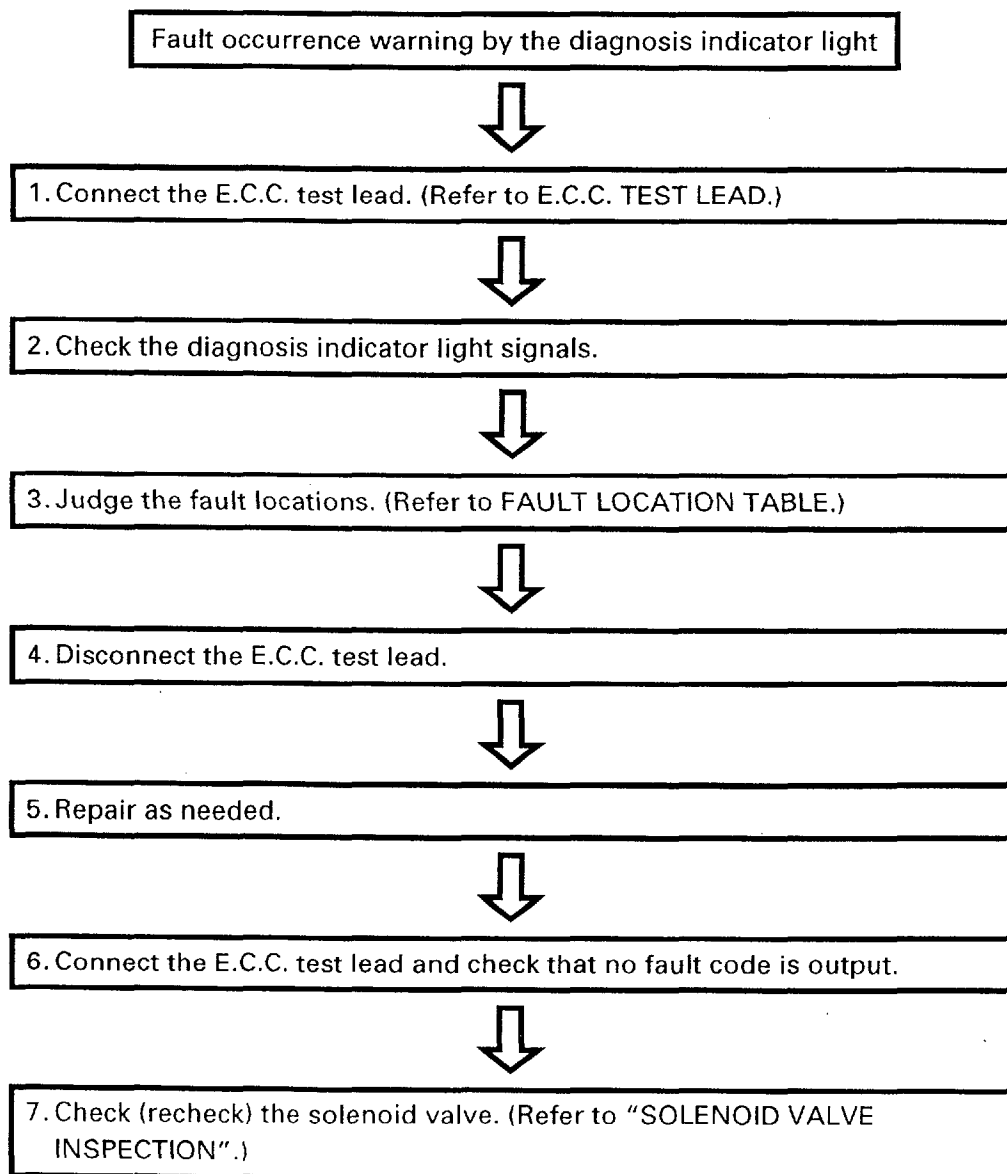
MAINTENANCE PROCEDURE (VT600, MM600)

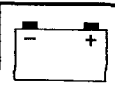
CAUTION:

- Be sure not to hit or drop the ECU and the sensors.
- Do not touch the ECU and the terminals of the attached connectors in order to prevent damage from static electricity.
- Do not disconnect the ECU or sensor connectors while the engine is running.

NOTE:

- Use the full charged battery.
- Record the diagnosis indicator light signals in a notebook.





FAULT LOCATION TABLE (VT600, MM600)

NOTE:

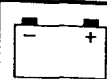
When more than one problem is detected, the diagnosis indicator light flashes in the pattern of the lowest numbered problem. After that problem is corrected, the diagnosis indicator light flashes in the pattern of the next lowest numbered problem. This continues until all of the problems are detected and corrected.

No.	Patterns	Condition	Reference
1		<ul style="list-style-type: none"> ECU is faulty. ↓ Replace the ECU. 	—
2	<p>* If the ECU is working properly, the diagnosis indicator light continues flashing in this pattern when the E.C.C. test lead is connected or after the engine is turned on.</p>	<ul style="list-style-type: none"> diagnosis indicator light is good. If the diagnosis indicator light does not come on replace it. 	Refer to "WATER TEMP" AND/OR "OIL LEVEL" DIAGNOSIS INDICATOR LIGHTS DO NOT COME ON, in CHAPTER 8.
3		<ul style="list-style-type: none"> Overheat. 	Refer to "WATER TEMPERATURE SENSOR INSPECTION".
4		<ul style="list-style-type: none"> Discontinuity or shorting of atmospheric pressure sensor is detected. 	Refer to "ATMOSPHERIC PRESSURE SENSOR INSPECTION".
5		<ul style="list-style-type: none"> Discontinuity or shorting of air temperature sensor is detected. 	Refer to "AIR TEMPERATURE SENSOR INSPECTION".

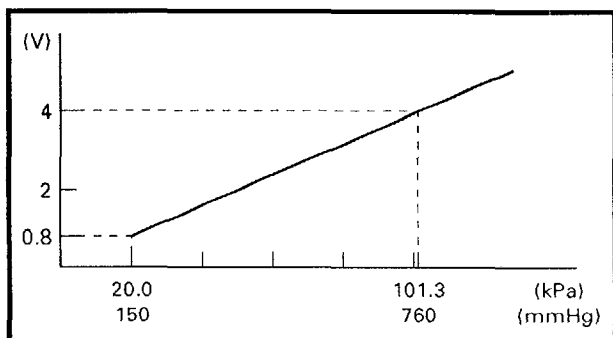
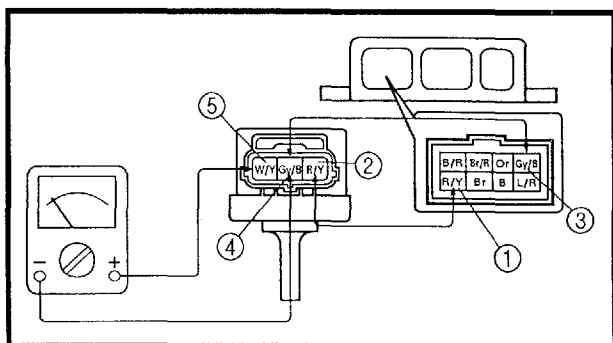
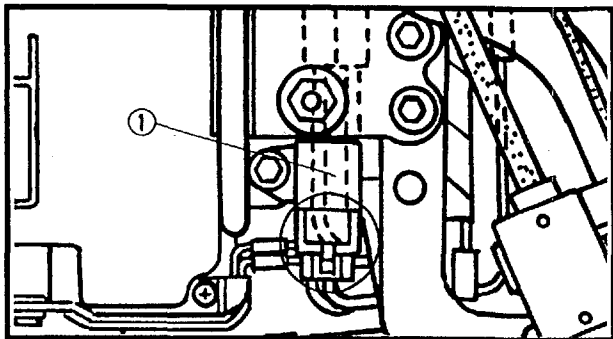
ON Warning light ON
 OFF Warning light OFF

FAULT LOCATION TABLE

ELEC



No.	Patterns	Condition	Reference
6		<ul style="list-style-type: none"> Discontinuity or shorting of water temperature sensor is detected. 	Refer to "WATER TEMPERATURE SENSOR INSPECTION".
7		<ul style="list-style-type: none"> The input of engine speed signal is not correct. * This can only be detected while the engine is running. 	Refer to "IGNITION SYSTEM" in CHAPTER 8.
8		<ul style="list-style-type: none"> Discontinuity or shorting of T.P.S. is detected. 	Refer to "T.P.S. INSPECTION".
9		<ul style="list-style-type: none"> Discontinuity of the fuel select switch is detected. 	Refer to "FUEL SELECT SWITCH INSPECTION".
10		<ul style="list-style-type: none"> Discontinuity on the solenoid valve actuated power lead. (to ECU) 	Refer to "IGNITION SYSTEM" in CHAPTER 8.
11	<p>* The main solenoid valve operates when the throttle is opened more than halfway.</p>	<ul style="list-style-type: none"> Discontinuity or shorting of the solenoid valve (main) is detected. * The light will remain on when a defect is detected in both solenoid valves (main). 	Refer to "SOLENOID VALVE INSPECTION".
12		<ul style="list-style-type: none"> Discontinuity or shorting of the solenoid valve (slow) is detected. * The light will remain on when a defect is detected in both solenoid valves (slow). 	Refer to "SOLENOID VALVE INSPECTION".



ATMOSPHERIC PRESSURE SENSOR INSPECTION (VT600, MM600)

CAUTION:

Never subject it to strong shock or allow it to be dropped. Should it be dropped, it must be replaced.

NOTE:

Connect the E.C.C. test lead while executing this inspection.

1. Disconnect:
 - Atmospheric pressure sensor coupler
2. Remove:
 - Atmospheric pressure sensor ①
3. Inspect:
 - Atmospheric pressure sensor

Inspection steps:

- Connect the ECU coupler and the atmospheric pressure sensor.

ECU coupler:	Atmospheric pressure sensor:
Red/Yellow terminal ① →	Red/Yellow terminal ②
Gray/Black terminal ③ →	Gray/Black terminal ④

- Connect the pocket tester (DC 20 V) to the atmospheric pressure sensor.



Pocket tester:
90890-03112, YU-03112

Tester (+) lead → White/Yellow terminal ⑤
Tester (-) lead → Gray/Black terminal ④

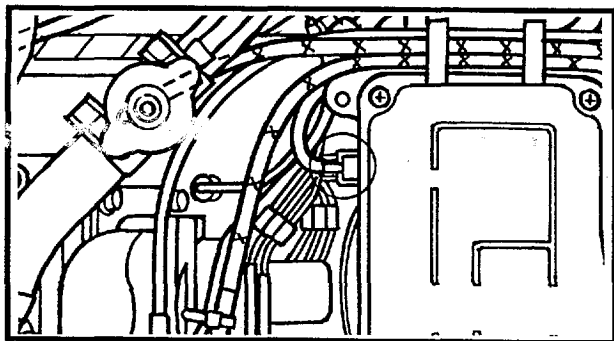
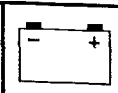
- Measure the atmospheric pressure sensor for specification voltage.

Example:

101.3 kPa (760 mmHg) → 4 V

Out of specification → Replace the atmospheric pressure sensor.

4. Install:
 - Atmospheric pressure sensor
5. Connect:
 - Atmospheric pressure sensor coupler



AIR TEMPERATURE SENSOR INSPECTION (VT600, MM600)

1. Disconnect:
 - Air temperature sensor coupler
2. Remove:
 - Air intake silencer
 - Air temperature sensor

CAUTION:

Handle the thermo switch with special care. Never subject it to shock or allow it to be dropped. Should it be dropped, it must be replaced.

3. Inspect:
 - Air temperature sensor

Inspection steps:

- Connect the pocket tester ① ($\Omega \times 100$) to the air temperature sensor ②.



Pocket tester:
90890-03112, YU-03112

- Immerse the air temperature sensor in coolant ③.
- Measure the air temperature sensor resistance.



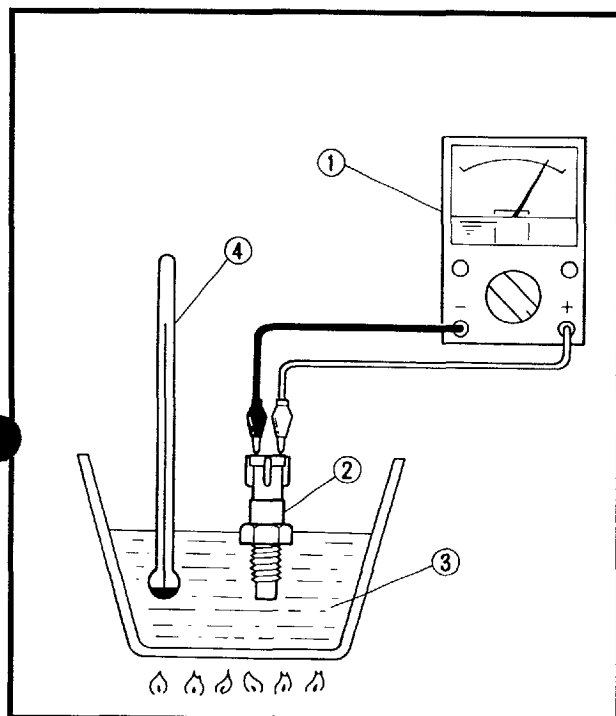
Air temperature sensor resistance:
0°C (34°F): 5.4 ~ 6.6 k Ω
80°C (176°F): 290 ~ 390 Ω

- ④ Temperature gauge

CAUTION:

Never heat the coolant to a temperature of 120°C (248.5°F).

- If the air temperature sensor resistance is out of specification, replace it.

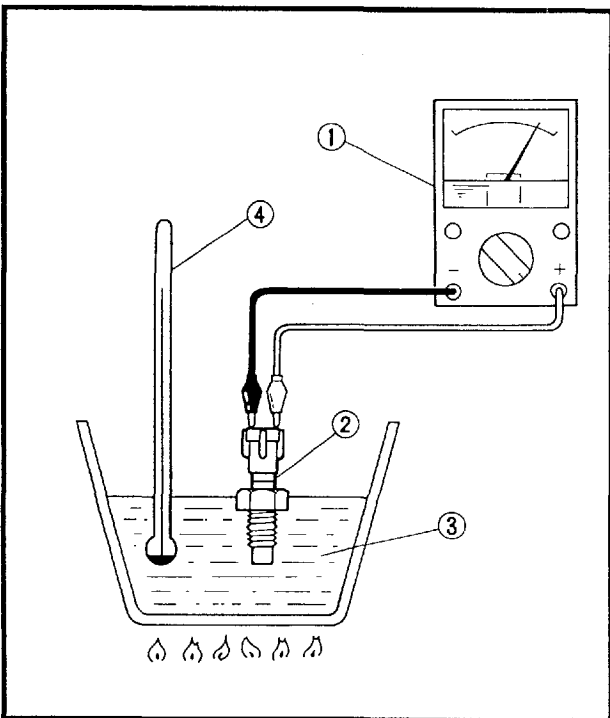
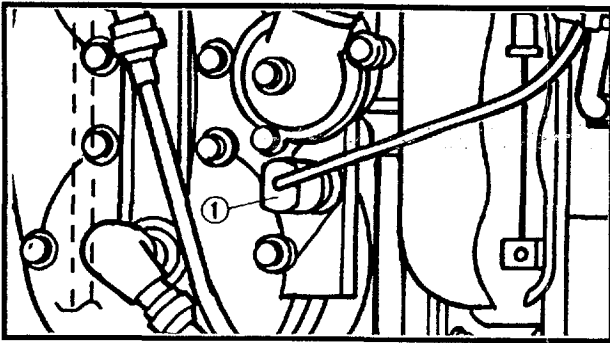
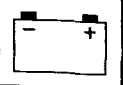


4. Install:
 - Air temperature sensor
 - Air intake silencer



Nut (air temperature sensor):
7 Nm (0.7 m · kg, 5.1 ft · lb)
Use LOCTITE®

5. Connect:
 - Air temperature sensor coupler



WATER TEMPERATURE SENSOR INSPECTION (VT600, MM600)

1. Disconnect:
 - Water temperature sensor coupler
2. Remove:
 - Water temperature sensor ①

CAUTION:

Handle the thermo switch with special care. Never subject it to shock or allow it to be dropped. Should it be dropped, it must be replaced.

3. Inspect:
 - Water temperature sensor

Inspection steps:

- Connect the pocket tester ① ($\Omega \times 100$) to the water temperature sensor ②.



Pocket tester:

90890-03112, YU-03112

- Immerse the water temperature sensor in coolant ③.
- Measure the water temperature sensor resistance.



Water temperature sensor resistance:

0°C (34°F): 5.2 ~ 6.4 k Ω

80°C (176°F): 290 ~ 354 Ω

- ④ Temperature gauge

CAUTION:

Never heat the coolant to a temperature of 120°C (248.5°F).

- If the water temperature sensor resistance is out of specification, replace it.

4. Install:
 - Water temperature sensor



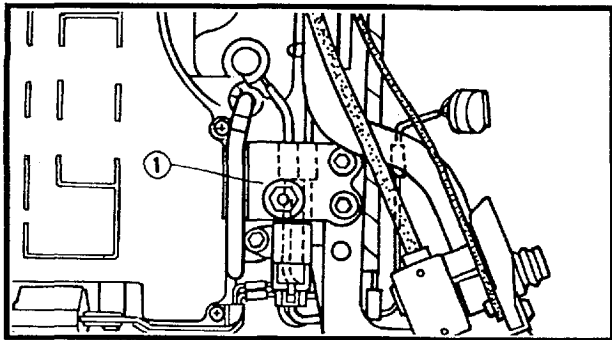
Water temperature sensor:

20 Nm (2.0 m · kg, 14 ft · lb)

5. Connect:
 - Water temperature sensor coupler

FUEL SELECT SWITCH INSPECTION/ SOLENOID VALVE INSPECTION

ELEC



FUEL SELECT SWITCH INSPECTION (VT600, MM600)

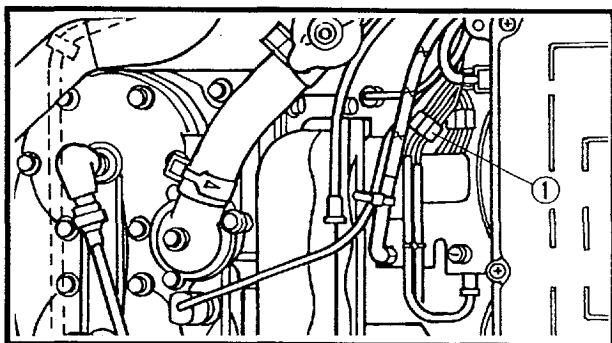
1. Prepare:
 - Fuel select switch bracket ①
2. Disconnect:
 - Fuel select switch coupler
3. Connect:
 - Pocket tester



Pocket tester:
90890-03112, YU-03112

4. Measure:
 - Fuel select switch resistance
 Out of specification → Replace.

Switch position	Resistance
NORMAL	61.9 K Ω \pm 1% at 20°C (68°F)
OXY FUEL	0 Ω at 20°C (68°F)

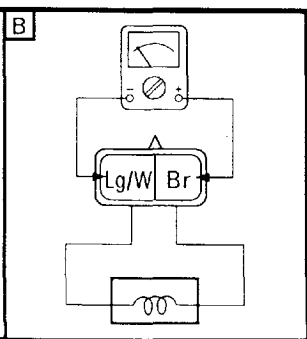
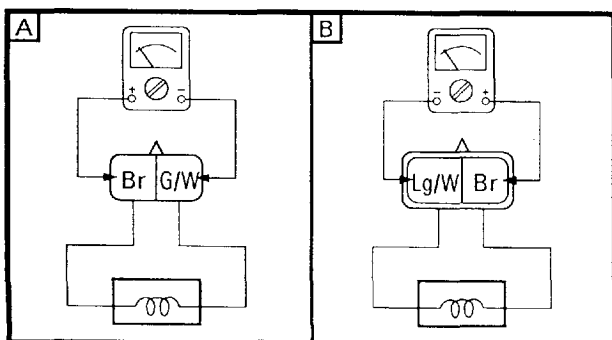
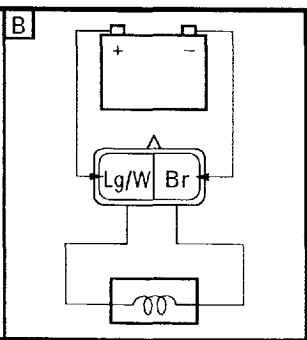
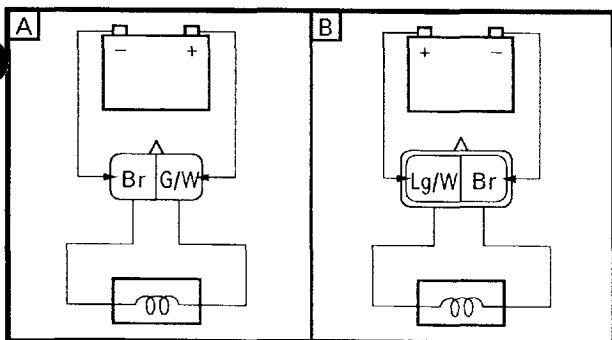


SOLENOID VALVE INSPECTION (VT600, MM600)

1. Inspect:
 - Solenoid valve operation

Inspection steps:

- Disconnect the solenoid valve coupler ①.
- Connect the battery (12 V).
- [A] Solenoid valve (main)
- [B] Solenoid valve (slow)
- Inspect the solenoid valve operation.
If a click can be heard the solenoid valve is working properly.
No click → Measure the solenoid valve resistance.



2. Measure:
 - Solenoid valve resistance
 Out of specification → Replace.



Solenoid valve resistance:
(Brown – Green/White,
Brown – Light green/White)
48.6 ~ 59.4 Ω at 20°C (68°F)

- [A] Solenoid valve (main)
- [B] Solenoid valve (slow)

CHAPTER 9. SPECIFICATIONS

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SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	VX500XT/XTC/ XTCE/XTCR VT500	VX600XT/XTC/ XTCE/XTCR/SX VT600, MM600	VX700SX MM700
Model code number:	8CJ (VX500XT) 8CU (VX500XTC) 8DC (VX500XTCE) 8DD (VX500XTCR) 8CY (VT500)	8CR (VX600XT) 8CX (VX600XTC) 8DA (VX600XTCE) 8DB (VX600XTCR) 8CV (VX600SX) 8CW (VT600) 8CS (MM600)	8CH (VX700SX) 8CP (MM700)
Dimensions:			
Overall length	2,760 mm (108.7 in)		
Overall width	2,970 mm (116.9 in) (VT500/600, MM600/700)		
Overall height	1,200 mm (47.2 in)		
	1,170 mm (46.1 in) (VX600SX/VX700SX)		
	1,155 mm (45.5 in) (MM600/700)		
	1,230 mm (48.4 in)		
	1,085 mm (42.7 in) (VX600SX/VX700SX)		
	1,185 mm (46.7 in) (MM600/700)		
Weight:	216 kg (476 lb) VX500XTC, VX600XTC 218 kg (481 lb) VX500XT, VX600XT 219 kg (483 lb) VX600SX 222 kg (489 lb) VX700SX 225 kg (496 lb) VX500XTCE, VX600XTCE 229 kg (505 lb) MM600 230 kg (507 lb) VX500XTCR, VX600XTCR 233 kg (514 lb) MM700 248 kg (547 lb) VT500 252 kg (556 lb) VT600		
Minimum turning radius:			
Clockwise	4.0 m (13.1 ft)		
Counterclockwise	3.8 m (12.5 ft) (VX600SX/VX700SX)		
	4.0 m (13.1 ft)		
	3.8 m (12.5 ft) (VX600SX/VX700SX)		
Engine:			
Engine type	Liquid cooled 2-stroke, piston port		
Induction system	Piston reed valve	Crankcase reed valve	
Cylinder arrangement	Forward inclined parallel 2-cylinder	Forward inclined parallel 3-cylinder	
Displacement	494 cm ³ (30.1 cu.in)	598 cm ³ (36.5 cu.in)	698 cm ³ (42.6 cu.in)
Bore × Stroke	68 × 68 mm (2.68 × 2.68 in)	74.8 × 68 mm (2.94 × 2.68 in)	70.5 × 59.6 mm (2.78 × 2.35 in)
Compression ratio	6.5 : 1	6.0 : 1	6.7 : 1
Starting system (Manual model) (Electric model)	Recoil hand starter Electric and recoil hand starter		
Lubrication system:	Separate lubrication (YAMAHA AUTOLUBE)		
Engine oil:			
Type	YAMALUBE 2		
Tank capacity	2.4 L (2.1 Imp qt, 2.5 US qt)		
Drive chain housing oil:			
Type	Gear oil API "GL-3" SAE #75 or #80		
Capacity	250 cc (8.8 Imp oz, 8.45 US oz)		

GENERAL SPECIFICATIONS

SPEC



Model	VX500XT/XTC/ XTCE/XTCR VT500	VX600XT/XTC/ XTCE/XTCR/SX VT600, MM600	VX700SX MM700
Coolant: Total amount	3.3 L (2.90 Imp qt, 3.49 US qt) 3.4 L (2.99 Imp qt, 3.59 US qt) (VT500/600, MM600) 4.2 L (3.70 Imp qt, 4.44 US qt) (VX700SX) 4.5 L (3.96 Imp qt, 4.76 US qt) (MM700)		
Reservoir tank capacity	0.17 L (0.15 Imp qt, 0.18 US qt)		
Fuel: Type Tank capacity	Regular gasoline (Pump Octane $\frac{R + M}{2}$; 88) 45 L (9.9 Imp gal, 11.9 US gal)		
Carburetor:			
Type/Quantity	TM36 × 2		TM33 × 3
Manufacturer	MIKUNI		
Spark Plug:			
Type	BR9ES		
Manufacturer	NGK		
Gap	0.7 ~ 0.8 mm (0.028 ~ 0.031 in)		
Transmission:			
Primary reduction system	V-Belt		
Primary reduction ratio	3.8 ~ 1.0 : 1		
Clutch type	Automatic centrifugal engagement		
Secondary reduction system	Chain		
Secondary reduction ratio	1.770 (39/22) 1.860 (39/21)(VT500)	1.700 (39/23) 1.773 (39/22)(VT600) 2.053 (39/19)(MM600)	1.739 (40/23) (VX700SX) 1.818 (40/22) (MM700)
Reverse system	Yes (For VX500XTCR/VX600XTCR, VT500/600)		
Chassis:			
Frame type	Monocoque		
Caster	22.5°		
Ski stance (center to center)	1,070 mm (42.1 in) 1,040 mm (40.9 in) (VX600SX/VX700SX) 980 mm (38.6 in) (MM600/700)		
Suspension:			
Front suspension type	Leading arm		
Rear suspension type	Slide rail suspension		
Track:			
Track type	Internal drive type		
Track width	381 mm (15.0 in) 752 mm (29.6 in) 944 mm (37.2 in) (VT500/600, MM600/700)		
Length on ground			
Track deflection mm/10 kg (22 lb)	25 ~ 30 mm (0.98 ~ 1.18 in)		
Brake:			
Brake type	Caliper type disc brake		
Operation method	Handle lever, left hand operated		
Electrical:			
Ignition system/Manufacturer	CDI/MITSUBISHI		
Generator system	Flywheel magneto		

GENERAL SPECIFICATIONS /MAINTENANCE SPECIFICATIONS

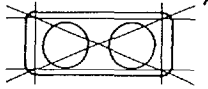
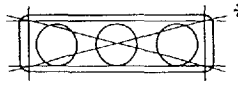
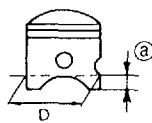
SPEC



Model	VX500XT/XTC/ XTCE/XTCR VT500	VX600XT/XTC/ XTCE/XTCR/SX VT600, MM600	VX700SX MM700
Bulb wattage × Quantity:			
Headlight	60W/55W × 1		
Tail/Brake light	8W/23W × 1		
Tachometer light	1.7W × 1		
Speedometer light	1.7W × 1		
Indicator light			
“HIGH BEAM”	3.4W × 1		
“DIAGNOSIS”	3.4W × 1 (For VT600, MM600)		
“WATER TEMP”	6V.3W × 1 (Except for VT600, MM600)		
“OIL LEVEL”	3.4W × 1		

MAINTENANCE SPECIFICATIONS

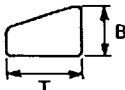
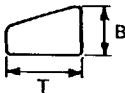
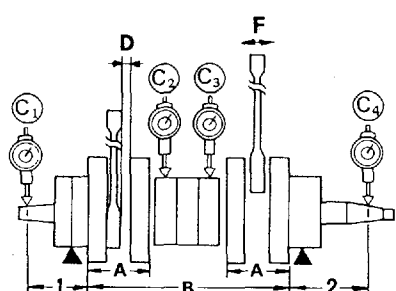
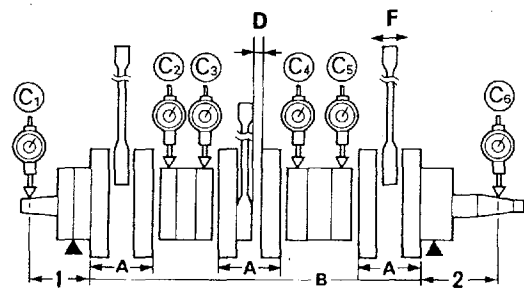
ENGINE

Model	VX500XT/XTC/ XTCE/XTCR VT500	VX600XT/XTC/ XTCE/XTCR/SX VT600, MM600	VX700SX MM700
Cylinder head:			
Volume (with spark plug)	23.3 ~ 23.9 cm ³	29.2 ~ 29.8 cm ³	22.9 ~ 23.5 cm ³
<Warp Limit>	<0.03 mm (0.0012 in)>		
500/600 	*Lines indicate straight edge measurement.		
700 			
Cylinder:			
Material	Aluminum alloy with dispersion coating		
Bore size	68.00 ~ 68.02 mm (2.677 ~ 2.678 in)	74.80 ~ 74.82 mm (2.945 ~ 2.946 in)	70.50 ~ 70.52 mm (2.775 ~ 2.776 in)
<Taper limit>	<0.05 mm (0.002 in)>		
<Out-of-round limit>	<0.01 mm (0.0004 in)>		
Piston:			
Piston size (D) 	67.902 ~ 67.921 mm (2.673 ~ 2.674 in)	74.702 ~ 74.721 mm (2.941 ~ 2.942 in)	70.427 ~ 70.446 mm (2.772 ~ 2.773 in)
Measuring point (a)	25 mm (0.98 in)	15 mm (0.59 in)	
Piston to-cylinder clearance	0.095 ~ 0.100 mm (0.0037 ~ 0.0039 in)	0.098 ~ 0.103 mm (0.0039 ~ 0.0041 in)	0.070 ~ 0.075 mm (0.0028 ~ 0.0030 in)
<Limit>	0.1 mm (0.0039 in)	0.103 mm (0.0041 in)	0.1 mm (0.0039 in)

MAINTENANCE SPECIFICATIONS

SPEC



Model		VX500XT/XTC/ XTCE/XTCR VT500	VX600XT/XTC/ XTCE/XTCR/SX VT600, MM600	VX700SX MM700
Piston ring: Sectional sketch				
Top Ring				
2nd Ring				
End gap (installed)	Top Ring	0.45 ~ 0.60 mm (0.0178 ~ 0.024 in)		0.35 ~ 0.55 mm (0.0137 ~ 0.0217 in)
	2nd Ring	0.45 ~ 0.60 mm (0.0178 ~ 0.024 in)		0.35 ~ 0.55 mm (0.0137 ~ 0.0217 in)
Side clearance	Top Ring	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)		←
	2nd Ring	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)		←
Coating	Top Ring	Chrome plated/Ferox coating		←
	2nd Ring	Chrome plated/Ferox coating		←
Crankshaft:				
Crank width "A"		61.95 ~ 62.00 mm (2.439 ~ 2.440 in)		55.95 ~ 56.00 mm (2.203 ~ 2.205 in)
Crank width "B"		179.85 ~ 180.15 mm (7.080 ~ 7.093 in)		291.75 ~ 292.30 mm (11.486 ~ 11.508 in)
Crankshaft deflection "C": C ₁		Below 0.03 mm (0.0012 in)		
500/600: C ₂ , C ₃		Below 0.04 mm (0.0016 in)		
500/600: C ₄		Below 0.05 mm (0.0020 in)		
700: C ₂ ~ C ₅		Below 0.04 mm (0.0016 in)		
700: C ₆		Below 0.03 mm (0.0012 in)		
Measuring points: 1		80 mm (3.15 in)		90 mm (3.54 in)
2		99 mm (3.90 in)		85 mm (3.35 in)
Connecting rod big end side clear- ance "D"		0.25 ~ 0.75 mm (0.01 ~ 0.03 in)		
Connecting rod small end free play "F"		0.8 ~ 1.0 mm (0.03 ~ 0.04 in)		
500/600	700			
				
Big end bearing:				
Type	Needle bearing			
Small end bearing:				
Type	Needle bearing			

MAINTENANCE SPECIFICATIONS

SPEC



Model	VX500XT/XTC/ XTCE/XTCR VT500	VX600XT/XTC/ XTCE/XTCR/SX VT600, MM600	VX700SX MM700
Carburetor: Type/Quantity Manufacturer I.D. mark Main jet (M.J.) Main air jet (M.A.J.) Pilot jet (P.J.) Jet needle (J.N.) Pilot outlet (P.O.) 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	TM36/2pcs. MIKUNI 8CJ00 #151.3 ø2.5 #45 8CFY14-56-2 ø0.9 1-3/4 3.0 ø1.5 ø0.9 20.3 ~ 24.3 mm (0.8 ~ 0.96 in) 40 ~ 42 mm (1.57 ~ 1.65 in) 1,500 ~ 1,700 r/min	← ← 8CR00 8CW 00 (VT600, MM600) ← #160 (VT600, MM600) ← ← #65 (VT600, MM600) 8DFY6-57-2 8DFY12-57-2 (VT600, MM600) ø0.8 ø1.0 (VT600, MM600) 1-1/2 2 (VT600, MM600) ← 2.5 (VT600, MM600) ← ← ← ← 1,450 ~ 1,650 r/min 1,500 ~ 1,700 r/min (VT600, MM600)	TM33/3pcs. ← 8CH 00 #1 : #145 #2,3 : #143.8 – ← 6DGM05-3 ← ← 3.5 ø1.2 ø1.1 11.3 ~ 15.3 mm (0.44 ~ 0.60 in) 36 ~ 38 mm (1.42 ~ 1.50 in) 1,500 ~ 1,700 r/min
Fuel pump: Type Manufacturer	DIAPHRAM TAIYO GIKEN		
Oil pump: Pump cable adjusting length	Align the marks	←	19 ~ 21 mm (0.75 ~ 0.83 in)
Cooling system: Water pump drive belt tension Filler cap opening pressure Water pump type Coolant type Coolant mixing ratio (coolant: water) Coolant capacity Reservoir tank capacity	8 mm/10 ~ 14 kg (0.3 in/22.0 ~ 30.9 lb) 8 mm/13 ~ 20 kg (0.31 in/28.7 ~ 44.1 lb) (NEW BELT) 100 ~ 120 kPa (1.0 ~ 1.2 kg/cm², 14 ~ 17 psi) Impeller type High quality ethylene glycol anti-freeze containing corrosion inhibitor 3:2 3.3 L (2.90 Imp qt, 3.49 US qt) 3.4 L (2.99 Imp qt, 3.59 US qt) (VT500/600, MM600) 4.2 L (3.70 Imp qt, 4.44 US qt) (VX700SX) 4.5 L (3.96 Imp qt, 4.76 US qt) (MM700) 0.17 L (0.15 Imp qt, 0.18 US qt)		

MAINTENANCE SPECIFICATIONS

SPEC



High altitude settings
VX500XT/XTC/XTCE/XTCR, VT500

Altitude	Temperature (°C / °F)	-40 °C (-40 °F)	-29 °C (-20 °F)	-18 °C (0 °F)	-7 °C (20 °F)	4 °C (40 °F)	15 °C (60 °F)
0 ~ 100 m (0 ~ 330 ft)		MJ #155 JN-2.0	MJ #153.8 JN-2.0	MJ #152.5 JN-2.0	MJ #151.3 JN-2.0	MJ #150 JN-2.0	
100 ~ 500 m (330 ~ 1600 ft)		MJ #153.8 JN-2.0	MJ #152.5 JN-2.0	MJ #151.3 JN-2.0 (STD)	MJ #150 JN-2.0	MJ #148.8 JN-2.0	
500 ~ 1000 m (1600 ~ 3300 ft)		MJ #151.3 JN-2.0	MJ #150 JN-1.5	MJ #148.8 JN-1.5	MJ #147.5 JN-1.5	MJ #146.3 JN-1.5	
1000 ~ 1500 m (3300 ~ 4900 ft)		MJ #148.8 JN-1.5	MJ #147.5 JN-1.5	MJ #146.3 JN-1.5	MJ #145 JN-1.5	MJ #143.8 JN-1.5	
1500 ~ 2000 m (4900 ~ 6600 ft)		MJ #146.3 JN-1.5	MJ #145 JN-1.5	MJ #143.8 JN-1.5	MJ #142.5 JN-1.5	MJ #141.3 JN-1.0	
2000 ~ 2500 m (6600 ~ 8200 ft)		MJ #143.8 JN-1.0	MJ #142.5 JN-1.0	MJ #141.3 JN-1.0	MJ #140 JN-1.0 PJ #50 PS2-1/2	MJ #138.8 JN-1.0 PJ #50 PS2-1/2	
2500 ~ 3000 m (8200 ~ 9800 ft)		MJ #142.5 JN-1.0	MJ #141.3 JN-1.0	MJ #140 JN-1.0	MJ #138.8 JN-0.5 PAJ0.6, PJ #50 PS2-1/2	MJ #136.3 JN-0.5 PAJ0.6, PJ #50 PS2-1/2	

#: Main jet number JN: Jet needle clip position PS: Pilot screw turns out PJ: Pilot jet number

NOTE: Oxygenated fuel - use one size larger Main Jet than specified.



VX600XT/XTC/XTCE/XTCR/SX						
Altitude \ Temperature	-45 °C (-50 °F)	-34 °C (-30 °F)	-23 °C (-10 °F)	-12 °C (10 °F)	-1 °C (30 °F)	10 °C (50 °F)
0 ~ 100 m (0 ~ 330 ft)	MJ #156.3 JN-2.0	MJ #155 JN-2.0	MJ #153.8 JN-2.0	MJ #152.5 JN-2.0	MJ #151.3 JN-2.0	
100 ~ 500 m (330 ~ 1600 ft)	MJ #155 JN-2.0	MJ #153.8 JN-2.0	MJ #152.5 JN-2.0	MJ #151.3 JN-2.0 (STD)	MJ #150 JN-2.0	
500 ~ 1000 m (1600 ~ 3300 ft)	MJ #152.5 JN-2.0	MJ #151.3 JN-2.0	MJ #150 JN-1.5	MJ #148.8 JN-1.5	MJ #147.5 JN-1.5	
1000 ~ 1500 m (3300 ~ 4900 ft)	MJ #150 JN-1.5	MJ #148.8 JN-1.5	MJ #147.5 JN-1.5	MJ #146.3 JN-1.5	MJ #145 JN-1.5	
1500 ~ 2000 m (4900 ~ 6600 ft)	MJ #147.5 JN-1.5	MJ #146.3 JN-1.5	MJ #145 JN-1.5	MJ #143.8 JN-1.5	MJ #142.5 JN-1.5	
2000 ~ 2500 m (6600 ~ 8200 ft)	MJ #145 JN-1.5	MJ #143.8 JN-1.5	MJ #142.5 JN-1.0	MJ #141.3 JN-1.0 PJ #52.5 PS2.0	MJ #140 JN-1.0 PJ #52.5 PS2.0	
2500 ~ 3000 m (8200 ~ 9800 ft)	MJ #143.8 JN-1.0	MJ #142.5 JN-1.0	MJ #141.3 JN-1.0	MJ #140 JN-0.5 PAJ0.5, PS2.0 PJ #52.5	MJ #138.8 JN-0.5 PAJ0.5, PS2.0 PJ #52.5	

#: Main jet number JN: Jet needle clip position PS: Pilot screw turns out PJ: Pilot jet number

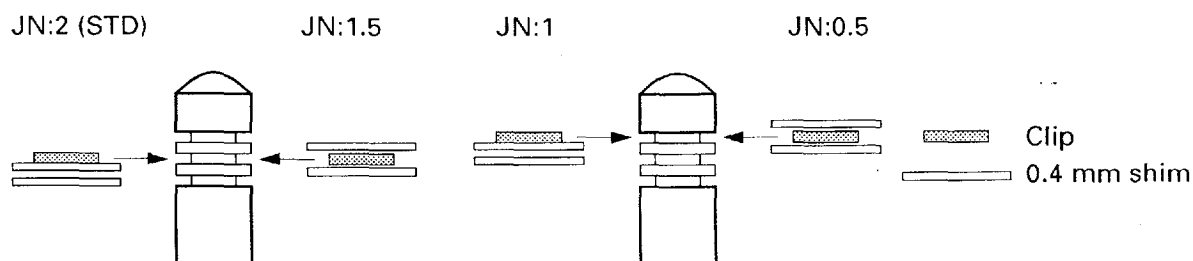
VT600, MM600

These models use a SMART carburetor. The SMART carburetor adjusts the fuel intake for high altitude tuning. Manual adjustments are not necessary.

NOTE:

- Jet needle (JN) position.

Refer to the following information for the Jet needle shims installation.



- Oxygenated fuels

Operating by the oxygenated fuels, use #2.5 larger size M.J instead of the above. Other specifications remains same in the chart above.

MAINTENANCE SPECIFICATIONS

SPEC



VX700SX													
Temperature		-40 °C		-29 °C		-18 °C		-7 °C		4 °C		15 °C	
Altitude		(-40 °F)		(-20 °F)		(0 °F)		(20 °F)		(40 °F)		(60 °F)	
0 ~ 100 m (330 ft)		MJ #1	#148.8	MJ #1	#147.5	MJ #1	#146.3	MJ #1	#145.0	MJ #1	#143.8	MJ #1	#143.8
		MJ #2#3	#147.5	MJ #2#3	#146.3	MJ #2#3	#145.0	MJ #2#3	#143.8	MJ #2#3	#143.8	MJ #2#3	#142.5
		PJ	#45.0	PJ	#45.0	PJ	#45.0	PJ	#45.0	PJ	#45.0	PJ	#45.0
		JN	3.0	JN	3.0	JN	3.0	JN	3.0	JN	3.0	JN	2.5
		PS	1 1/2	PS	1 1/2	PS	1 1/2	PS	1 1/2	PS	1 3/8	PS	1 1/4
100 ~ 500 m (330 ~ 1600 ft)		MJ #1	#147.5	MJ #1	#146.3	MJ #1	#145.0	MJ #1	#143.8	MJ #1	#143.8	MJ #1	#142.5
		MJ #2#3	#146.3	MJ #2#3	#145.0	MJ #2#3	#143.8	MJ #2#3	#142.5	MJ #2#3	#142.5	MJ #2#3	#141.3
		PJ	#45.0	PJ	#45.0	PJ	#45.0	PJ	#45.0	PJ	#45.0	PJ	#45.0
		JN	3.0	JN	3.0	JN	3.0	JN	3.0	JN	2.5	JN	2.5
		PS	1 1/2	PS	1 1/2	PS	1 1/2	PS	1 1/2	PS	1 3/8	PS	1 1/4
500 ~ 1000 m (1600 ~ 3300 ft)		MJ #1	#145.0	MJ #1	#143.8	MJ #1	#142.5	MJ #1	#141.3	MJ #1	#141.3	MJ #1	#140.0
		MJ #2#3	#143.8	MJ #2#3	#142.5	MJ #2#3	#141.3	MJ #2#3	#140.0	MJ #2#3	#140.0	MJ #2#3	#138.8
		PJ	#50.0	PJ	#50.0	PJ	#50.0	PJ	#50.0	PJ	#50.0	PJ	#50.0
		JN	2.5	JN	2.5	JN	2.5	JN	2.5	JN	2.5	JN	2.5
		PS	1 5/8	PS	1 1/2	PS	1 1/2	PS	1 1/2	PS	1 1/2	PS	1 3/8
1000 ~ 1500 m (3300 ~ 4900 ft)		MJ #1	#142.5	MJ #1	#141.3	MJ #1	#140.0	MJ #1	#138.8	MJ #1	#138.8	MJ #1	#137.5
		MJ #2#3	#141.3	MJ #2#3	#140.0	MJ #2#3	#138.8	MJ #2#3	#137.5	MJ #2#3	#137.5	MJ #2#3	#136.3
		PJ	#52.5	PJ	#52.5	PJ	#52.5	PJ	#52.5	PJ	#52.5	PJ	#52.5
		JN	2.5	JN	2.5	JN	2.0	JN	2.0	JN	2.0	JN	2.0
		PS	1 3/4	PS	1 5/8	PS	1 5/8	PS	1 5/8	PS	1 5/8	PS	1 1/2
1500 ~ 2000 m (4900 ~ 6600 ft)		MJ #1	#140.0	MJ #1	#138.8	MJ #1	#137.5	MJ #1	#136.3	MJ #1	#136.3	MJ #1	#135.0
		MJ #2#3	#138.8	MJ #2#3	#137.5	MJ #2#3	#136.3	MJ #2#3	#135.0	MJ #2#3	#135.0	MJ #2#3	#133.8
		PJ	#55.0	PJ	#55.0	PJ	#55.0	PJ	#55.0	PJ	#55.0	PJ	#55.0
		JN	2.0	JN	2.0	JN	2.0	JN	2.0	JN	2.0	JN	2.0
		PS	2.0	PS	1 7/8	PS	1 7/8	PS	1 7/8	PS	1 7/8	PS	1 3/4
2000 ~ 2500 m (6600 ~ 8200 ft)		MJ #1	#137.5	MJ #1	#136.3	MJ #1	#135.0	MJ #1	#133.8	MJ #1	#133.8	MJ #1	#132.5
		MJ #2#3	#136.3	MJ #2#3	#135.0	MJ #2#3	#133.8	MJ #2#3	#132.5	MJ #2#3	#132.5	MJ #2#3	#131.3
		PJ	#57.5	PJ	#57.5	PJ	#57.5	PJ	#57.5	PJ	#57.5	PJ	#57.5
		JN	2.0	JN	2.0	JN	2.0	JN	2.0	JN	2.0	JN	2.0
		PS	2 1/8	PS	2.0	PS	2.0	PS	2.0	PS	2.0	PS	1 7/8
2500 ~ 5000 m (8200 ~ 9800 ft)		MJ #1	#135.0	MJ #1	#133.8	MJ #1	#132.5	MJ #1	#131.3	MJ #1	#131.3	MJ #1	#130.0
		MJ #2#3	#133.8	MJ #2#3	#132.5	MJ #2#3	#131.3	MJ #2#3	#130.0	MJ #2#3	#130.0	MJ #2#3	#128.8
		PJ	#60.0	PJ	#60.0	PJ	#60.0	PJ	#60.0	PJ	#60.0	PJ	#60.0
		JN	2.0	JN	2.0	JN	2.0	JN	2.0	JN	2.0	JN	1.5
		PS	2 1/4	PS	2 1/8	PS	2 1/8	PS	2 1/8	PS	2 1/8	PS	2.0

#: Main jet number JN: Jet needle clip position PS: Pilot screw turns out PJ: Pilot jet number

NOTE: Oxygenated fuel - use one size larger Main Jet than specified.

MAINTENANCE SPECIFICATIONS

SPEC



MM700														
Temperature Altitude		-40 °C (-40 °F)		-29 °C (-20 °F)		-18 °C (0 °F)		-7 °C (20 °F)		4 °C (40 °F)		15 °C (60 °F)		
0 ~ 100 m (330 ft)		MJ #1	#148.8	MJ #1	#147.5	MJ #1	#146.3	MJ #1	#145.0	MJ #1	#143.8	MJ #1	#143.8	
		MJ #2#3	#147.5	MJ #2#3	#146.3	MJ #2#3	#145.0	MJ #2#3	#143.8	MJ #2#3	#142.5	MJ #2#3	#142.5	
		PJ	#45.0	PJ	#45.0	PJ	#45.0	PJ	#45.0	PJ	#45.0	PJ	#45.0	
		JN	3.0	JN	3.0	JN	3.0	JN	3.0	JN	3.0	JN	2.5	
		PS	1 1/2	PS	1 1/2	PS	1 1/2	PS	1 1/2	PS	1 1/2	PS	1 3/8	
100 ~ 500 m (330 ~ 1600 ft)		MJ #1	#147.5	MJ #1	#146.3	MJ #1	#145.0	MJ #1	#143.8	MJ #1	#142.5	MJ #1	#142.5	
		MJ #2#3	#146.5	MJ #2#3	#145.0	MJ #2#3	#143.8	MJ #2#3	#142.5	MJ #2#3	#141.3	MJ #2#3	#141.3	
		PJ	#45.0	PJ	#45.0	PJ	#45.0	PJ	#45.0	PJ	#45.0	PJ	#45.0	
		JN	3.0	JN	3.0	JN	3.0	JN	2.5	JN	2.5	JN	2.5	
		PS	1 1/2	PS	1 1/2	PS	1 1/2	PS	1 3/8	PS	1 3/8	PS	1 1/4	
500 ~ 1000 m (1600 ~ 3300 ft)		MJ #1	#145.0	MJ #1	#143.8	MJ #1	#142.5	MJ #1	#141.3	MJ #1	#140.0	MJ #1	#140.0	
		MJ #2#3	#143.8	MJ #2#3	#142.5	MJ #2#3	#141.3	MJ #2#3	#140.0	MJ #2#3	#138.8	MJ #2#3	#138.8	
		PJ	#50.0	PJ	#50.0	PJ	#50.0	PJ	#50.0	PJ	#50.0	PJ	#50.0	
		JN	2.5	JN	2.5	JN	2.5	JN	2.5	JN	2.5	JN	2.5	
		PS	1 5/8	PS	1 1/2	PS	1 1/2	PS	1 1/2	PS	1 1/2	PS	1 3/8	
1000 ~ 1500 m (3300 ~ 4900 ft)		MJ #1	#142.5	MJ #1	#141.3	MJ #1	#140.0	MJ #1	#138.8	MJ #1	#137.5	MJ #1	#137.5	
		MJ #2#3	#141.3	MJ #2#3	#140.0	MJ #2#3	#138.8	MJ #2#3	#137.5	MJ #2#3	#136.3	MJ #2#3	#136.3	
		PJ	#55.0	PJ	#55.0	PJ	#55.0	PJ	#55.0	PJ	#55.0	PJ	#55.0	
		JN	2.5	JN	2.5	JN	2.0	JN	2.0	JN	2.0	JN	2.0	
		PS	1 3/4	PS	1 5/8	PS	1 5/8	PS	1 5/8	PS	1 5/8	PS	1 1/2	
1500 ~ 2000 m (4900 ~ 6600 ft)		MJ #1	#140.0	MJ #1	#138.8	MJ #1	#137.5	MJ #1	#136.3	MJ #1	#135.0	MJ #1	#135.0	
		MJ #2#3	#138.8	MJ #2#3	#137.5	MJ #2#3	#136.3	MJ #2#3	#135.0	MJ #2#3	#133.8	MJ #2#3	#133.8	
		PJ	#57.5	PJ	#57.5	PJ	#57.5	PJ	#57.5	PJ	#57.5	PJ	#57.5	
		JN	2.0	JN	2.0	JN	2.0	JN	2.0	JN	2.0	JN	2.0	
		PS	2.0	PS	1 7/8	PS	1 7/8	PS	1 7/8	PS	1 7/8	PS	1 3/4	
2000 ~ 2500 m (6600 ~ 8200 ft)		MJ #1	#137.5	MJ #1	#136.3	MJ #1	#135.0	MJ #1	#133.8	MJ #1	#132.5	MJ #1	#132.5	
		MJ #2#3	#136.3	MJ #2#3	#135.0	MJ #2#3	#133.8	MJ #2#3	#132.5	MJ #2#3	#131.3	MJ #2#3	#131.3	
		PJ	#60.0	PJ	#60.0	PJ	#60.0	PJ	#60.0	PJ	#60.0	PJ	#60.0	
		JN	2.0	JN	2.0	JN	2.0	JN	2.0	JN	2.0	JN	2.0	
		PS	2 1/8	PS	2.0	PS	2.0	PS	2.0	PS	2.0	PS	1 7/8	
2500 ~ 5000 m (8200 ~ 9800 ft)		MJ #1	#135.0	MJ #1	#133.8	MJ #1	#132.5	MJ #1	#131.3	MJ #1	#130.0	MJ #1	#130.0	
		MJ #2#3	#133.8	MJ #2#3	#132.5	MJ #2#3	#131.3	MJ #2#3	#130.0	MJ #2#3	#128.8	MJ #2#3	#128.8	
		PJ	#62.5	PJ	#62.5	PJ	#62.5	PJ	#62.5	PJ	#62.5	PJ	#62.5	
		JN	2.0	JN	2.0	JN	2.0	JN	2.0	JN	2.0	JN	2.0	
		PS	2 1/4	PS	2 1/8	PS	2 1/8	PS	2 1/8	PS	2 1/8	PS	2.0	

#: Main jet number JN: Jet needle clip position PS: Pilot screw turns out PJ: Pilot jet number

NOTE: Oxygenated fuel - use one size larger Main Jet than specified.

MAINTENANCE SPECIFICATIONS

SPEC



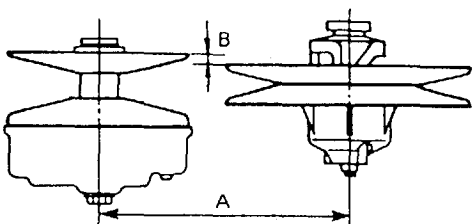
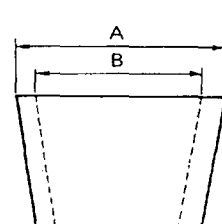
Tightening torque:					
Parts to be tightened		Tightening torque			Remarks
		N·m	in. · lb	ft. · lb	
Crankcase (First)		13	1.3	9.4	Tighten the bolts in two stages.
(Final)		27	2.7	19	
Engine bracket (front) and frame		40	4.0	29	(VX700SX, MM700)
		90	9.0	65	
Engine bracket damper (front)		90	9.0	65	(VX700SX, MM700)
Engine bracket and engine		27	2.7	19	
Engine bracket upper and lower (rear)		60	6.0	43	(VX700SX, MM700)
		60	6.0	43	
Engine bracket damper and frame (rear)		40	4.0	29	(Except for VX700SX, MM700)
Water pump housing		27	2.7	19	
Cylinder head					
Nut	(First)	13	1.3	9.4	Tighten the nuts in two stages. (VX700SX, MM700)
	(Final)	23	2.3	17	
	(First)	13	1.3	9.4	
	(Final)	25	2.5	18	
Cylinder body					
Nut		33	3.3	24	(VX700SX, MM700)
		28	2.8	20	
Spark plug		20	2.0	14	(Except for VX700SX, MM700)
Thermostatic valve cover		7	0.7	5.1	
Water pump drive pulley		23	2.3	17	Left-Hand threads
Impeller 500/600		14	1.4	1.0	
	700	10	1.0	7.2	
Oil pump		8	0.8	5.8	(VX700SX, MM700)
Recoil starter		10	1.0	7.2	
		12	1.2	8.7	
Carburetor					
Pilot jet		0.7	0.07	0.5	for VT600, MM600
Valve seat		1	0.1	0.7	
Main jet		1.8	0.18	1.4	
Water temperature sensor		23	2.3	17	for VT600, MM600
Coolant drain bolt 500/600		23	2.3	17	
	700	13	1.3	9.4	
Magneto rotor nut		85	8.5	61	for VT600, MM600
Starter motor bolt		23	2.3	17	
Air temperature sensor		7	0.7	5.1	Use LOCTITE®

MAINTENANCE SPECIFICATIONS

SPEC



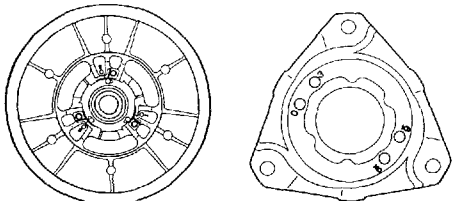
POWER TRAIN

Model	VX500XT/XTC/ XTCE/XTCR VT500	VX600XT/XTC/ XTCE/XTCR/SX VT600, MM600	VX700SX MM700
Transmission: Type Range of ratio Engagement RPM Shift RPM Sheave center distance "A" Sheave offset "B"	V-belt automatic 3.8 ~ 1.0 :1		
	3,800 ~ 4,200 r/min	3,800 ~ 4,200 r/min 3,600 ~ 4,000 r/min (VX600SX) 4,000 ~ 4,400 r/min (MM600)	←
	7,550 ~ 8,050 r/min	7,550 ~ 8,050 r/min 7,600 ~ 8,100 r/min (VX600SX)	8,050 ~ 8,550 r/min
	267 ~ 270 mm (10.5 ~ 10.6 in) 13.5 ~ 16.5 mm (0.53 ~ 0.65 in) (VX500XT/XTC, VX600XT/XTC/SX, MM600/700, VX700SX) 18.5 ~ 21.5 mm (0.73 ~ 0.85 in) (VX500XTCE/XTCR, VX600XTCE/XTCR, VT500/600)		
V-Belt: Part number Outside circumference Width "A" Wear limit "B"	8CJ-17641-00 DAYCO VT500 8CH-17641-00 DAYCO	89L-17641-00 MITSUBOSHI	8CH-17641-00 DAYCO
	1,124 mm (44.3 in)		
	35.0 mm (1.38 in) 32.0 mm (1.26 in)		
Primary sheave spring: Part number Color code Inside diameter Wire diameter Preload Spring rate Number of coils Free length	90501-550J8 White-Pink-White 48 mm (1.89 in) 5.5 mm (0.22 in) 300 N (30 kg, 66.1 lb) 22.5 N/mm (2.25 kg/mm, 126 lb/in)	90501-555J9 White-Silver-White ← ← 350 N (35 kg, 77.2 lb) ←	90501-582J1 (VX700SX) 90501-585J3 (MM700) Yellow-Pink-Yellow (VX700SX) Green-Pink-Green (MM700) ← 5.8 mm (0.23 in) 300 N (30 kg, 66.1 lb) 25.0 N/mm (2.5 kg/mm, 140 lb/in) (VX700SX) 27.5 N/mm (2.75 kg/mm, 154 lb/in) (MM700) 4.96 (VX700SX) 4.64 (MM700) 77.4 mm (3.05 in) (VX700SX) 76.3 mm (3.00 in) (MM700)

MAINTENANCE SPECIFICATIONS

SPEC

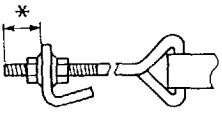
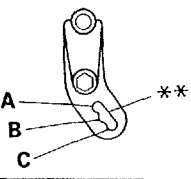


Model	VX500XT/XTC/ XTCE/XTCR VT500	VX600XT/XTC/ XTCE/XTCR/SX VT600, MM600	VX700SX MM700
Primary sheave weight arm: Part number (with bushing) Weight Rivet: Part number Material Quantity Part number Material Quantity Part number Material Quantity	8AB-17605-01 41 g (1.45 oz) 90261-06019 Steel 3 pcs. – – – – –	8CR-17605-00 38.1 g (1.34 oz) ← (VT600) ← ← 90261-06033 Steel 3 pcs. – (MM600) – –	8CH-17605-00 35.3 g (1.25 oz) 90261-06034 (VX700SX) ← ← (MM700) – –
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 – 69.3 mm (2.73 in) 5.3 mm (0.21 in) – 1-3 (40°) 7.4 N/mm (0.74 kg/mm, 41.4 lb/in) – 5.53 – 75 mm (2.95 in) 45°	← 90508-500B1 (VT600) ← Brown (VT600) ← ← 5.0 mm (0.20 in) (VT600) 2-3 (50°) 3-3 (60°) (VX600SX) 6.3 N/mm (0.63 kg/mm, 35.3 lb/in) (VT600) ← 5.19 (VT600) ← 47°	90508-556A2 – Green – ← 5.5 mm (0.22 in) – 3-3 (60°) (MM700) 1-6 (70°) (VX700SX) 8.7 N/mm (0.87 kg/mm, 48.7 lb/in) – ← – ← 45°
Drive chain: Type Number of links	S37TNB13 70 L 68 L (VT500)	← ← –	← ← –
Track: Part number Width Length Pitch Number of links	8AB-47110-10 8BN-47110-10 (VT500) – 381 mm (15.0 in) 3.072 mm (120.9 in) 3.456 mm (136.1 in) (VT500) 64 mm (2.52 in) 48 54 (VT500)	8CA-47110-10 8BN-47110-10 (VT600) 8CC-47110-10 (MM600) ← ← ← (VT600, MM600) ← ← ← (VT600, MM600)	8CH-47110-10 (VX700SX) – 8CC-47110-00 (MM700) ← ← ← (VX700SX) ← (MM700) ← ← (VX700SX) ← (MM700)

MAINTENANCE SPECIFICATIONS

SPEC



Model	VX500XT/XTC/ XTCE/XTCR VT500	VX600XT/XTC/ XTCE/XTCR/SX VT600, MM600	VX700SX MM700
Slide rail suspension: Travel	274 mm (10.79 in) — —	← 200 mm (7.87 in) (VX600SX) 144 mm (5.67 in) (MM600)	← (MM700) ← (VX700SX) —
Suspension spring rate Front			
Rear			
Suspension wire diameter Front	6.5 mm (0.26 in) —	← 9 mm (0.35 in) (VX600SX)	← —
Rear	11.2 mm (0.44 in) 11.8 mm (0.46 in) (VT500)	← 10.5 mm (0.41 in) (VX600SX)	← —
Suspension setting position: Hook setting length *	10 mm (0.39 in)		
 Full rate adjusting position ** 	B		
Shock absorber: Damping force Front Extension	451 ± 88 N/0.3 m/s (VX500XT, VX600XT) 519 ± 88 N/0.3 m/s (VX500XTC/XTCR, VX600XTC/XTCR) 510 ± 88 N/0.3 m/s (VT500, VT600) 500 ± 88 N/0.3 m/s (MM600, MM700)		
Compression	3412 ± 88 N/0.3 m/s (VX600SX) 1304 ± 265 N/0.3 m/s (VX500XT, VX600XT) 1470 ± 225 N/0.3 m/s (VX500XTC/XTCR, VX600XTC/XTCR) 1775 ± 353 N/0.3 m/s (VT500, VT600) 1735 ± 343 N/0.3 m/s (MM600, MM700) 1265 ± 225 N/0.3 m/s (VX600SX)		
Rear Extension	2206 ± 657 N/0.3 m/s (VX500XT, VX600XT) 1725 ± 245 N/0.3 m/s (VX500XTC/XTCR, VX600XTC/XTCR) 2647 ± 794 N/0.3 m/s (VT500, VT600) 2618 ± 784 N/0.3 m/s (MM600, MM700) 1657 ± 235 N/0.3 m/s (VX600SX) 1912 ± 264 N/0.3 m/s (VX700SX)		
Compression	726 ± 216 N/0.3 m/s (VT500XT, VT600XT) 833 ± 156 N/0.3 m/s (VX500XTC/XTCR, VX600XTC/XTCR) 784 ± 235 N/0.3 m/s (VT500, VT600) 902 ± 274 N/0.3 m/s (MM600, MM700) 1235 ± 215 N/0.3 m/s (VX600SX) 1353 ± 235 N/0.3 m/s (VX700SX)		

MAINTENANCE SPECIFICATIONS

SPEC



Model	VX500XT/XTC/ XTCE/XTCR VT500	VX600XT/XTC/ XTCE/XTCR/SX VT600, MM600	VX700SX MM700
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		
Rear guide wheel:			
Material	Aluminum with rubber		
Outside diameter	178 mm (7.01 in)		
Brake:			
Pad thickness	10.2 mm (0.40 in)		
Pad wear limit	4.2 mm (0.17 in)		
Disc outside diameter	220 mm (8.66 in)		
Disc thickness	10 mm (0.39 in)		



Tightening torque:				
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	Apply LOCTITE®
Roller and weight (Primary sheave)				
Bolt	6	0.6	4.3	
Screw	3	0.3	2.2	
Secondary sheave	64	6.4	46	
Drive sprocket	60	6.0	43	
Chain tensioner	24	2.4	17	
Chain housing and frame	48	4.8	35	
Driven sprocket	48	4.8	35	
Drain bolt	16	1.6	11	
Chain housing cover	10	1.0	7.2	Apply LOCTITE®
Chain housing and brake caliper	48	4.8	35	
Bearing holder (Jackshaft)	23	2.3	17	
Suspension wheel	69	6.9	50	
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	71	7.1	51	
Slide rail suspension mounting bolt (Rear)	24	2.4	17	
Rear pivot arm and bracket	23	2.3	17	
Shock absorber and rear pivot arm	49	4.9	35	VT500/600, MM600/700 Apply LOCTITE®
Rear pivot arm and rod	49	4.9	35	
Rear suspension bracket and rod	49	4.9	35	
Control rod and sliding frame	69	6.9	50	
Front pivot arm and sliding frame	69	6.9	50	
Shock absorber and front pivot arm	49	4.9	35	
Shock absorber and bracket	49	4.9	35	
Shock absorber and rear pivot arm	49	4.9	35	
Bracket shaft and sliding frame	69	6.9	50	
Collar (Front axle)	6	0.6	4.3	
Speedometer gear	20	2.0	14	

NOTE:

Tightening steps:

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

MAINTENANCE SPECIFICATIONS

SPEC



CHASSIS

Model	VX500XT/XTC/ XTCE/XTCR VT500	VX600XT/XTC/ XTCE/XTCR/SX VT600, MM600	VX700SX MM700
Frame: Frame material Seat height Luggage box location	Aluminum 730 mm (28.7 in) Rear side of seat		
Steering: Lock to lock angle (Left) (Right) Ski alignment Toe-out size Caster angle	29.8° (R ski) 34.2° (L ski) 34.2° (R ski) 29.8° (L ski) Toe-out 5 ~ 20 mm (0.2 ~ 0.79 in) 3 ~ 18 mm (0.12 ~ 0.71 in) (MM600/700, VX600SX/700SX) 22.5° (VX500XT/XTC, VX600XT/XTC, VT500, VT600, MM600, MM700) 23.5° (VX600SX, VX700SX)		
Ski: Ski material Length Width Thickness Ski ground length	Steel 1032 mm (40.6 in) 128 mm (5.04 in) 175 mm (6.89 in) (MM600/700) 2 mm (0.08 in) 178 mm (7.01 in)		
Ski suspension: Type Travel Spring type Spring rate Wire diameter	Proaction system 222 mm (8.74 in) 177 mm (6.97 in) (VX600SX) 178 mm (7.01 in) (MM600, VX700SX) 170 mm (6.69 in) (MM700) Coil spring 19 N/mm (1.9 kg/mm) (VX500XT, VX600XT) 21 N/mm (2.1 kg/mm) (VT500/600, MM600/700) 23 N/mm (2.3 kg/mm) (VX600SX, VX700SX) 8.4 mm (0.331 in) (VX500XT, VT500, VX600XT, VT600, MM600, MM700) 7.8 mm (0.307 in) (VX600SX, VX700SX) 9 mm (0.354 in) (VX500XTC/XTC/XTCR, VX600XTC/XTC/XTCR)		
Shock absorber: damping force Extension Compression	1750 N/0.3 m/s (VX500XT, VX600XT) 1696 ± 245 N/0.3 m/s (VX500XTC/XTC/XTCR, VX600XTC/XTC/XTCR) 890 N/0.3 m/s (VT500, VT600) 660 N/0.3 m/s (MM600, MM700) 1415 N/0.3 m/s (VX600SX) 346 N/0.3 m/s (VX500XT, VX600XT) 480 N/0.3 m/s (VX500XTC/XTC/XTCR, VX600XTC/XTC/XTCR) 450 N/0.3 m/s (VT500, VT600) 270 N/0.3 m/s (MM600, MM700) 845 N/0.3 m/s (VX600SX)		

MAINTENANCE SPECIFICATIONS

SPEC



Tightening torque:				
Parts to be tightened	Tightening torque			Remarks
	Nm	m • kg	ft • lb	
Handlebar holder	15	1.5	11	Apply LOCTITE® (VX600SX)
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	43	4.3	31	
Locknut (Relay rod)	25	2.5	18	
Ski runner	26	2.6	19	
Ski	48	4.8	35	
Shock absorber (upper)	48	4.8	35	
Shock absorber bracket	40	4.0	29	
Shock absorber (lower)	48	4.8	35	
Steering arm and ski column	48	4.8	35	
Lower control arm and frame	50	5.0	36	
Upper control arm and frame	50	5.0	36	
Control arm 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	56	5.6	40	
Hood	3	0.3	2.2	
Seat and frame (nut)	9	0.9	6.5	
Front cowling	3	0.3	2.2	

MAINTENANCE SPECIFICATIONS

SPEC



ELECTRICAL

Model	VX500XT/XTC/ XTCE/XTCR VT500	VX600XT/XTC/ XTCE/XTCR/SX VT600, MM600	VX700SX MM700
Voltage:	12 V		
Ignition system: Ignition timing (B.T.D.C.) Advanced timing (B.T.D.C.)	16° at 1,600 r/min 18° at 4,500 r/min	12° at 1,550 r/min 12° at 1,600 r/min (VT600, MM600)	20° at 1,600 r/min 24° at 4,500 r/min
Advanced type	Electrical type		
Ignition Coil: Model/Manufacturer Minimum spark gap Primary coil resistance Secondary coil resistance	8AB-00/YAMAHA 6 mm (0.236 in) or more 0.16 ~ 0.24 Ω at 20 °C (68 °F) 3.9 ~ 5.9 kΩ at 20 °C (68 °F)		8CH-00/YAMAHA ← 0.18 ~ 0.24 Ω at 20 °C (68 °F) 2.7 ~ 3.7 kΩ at 20 °C (68 °F)
Spark plug cap: Type Model/Manufacturer Resistance	Rubber type 81E/TOKAI DENSO 5 kΩ 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)	F4T324/MITSUBISHI 189 ~ 231 Ω at 20 °C (68 °F) (White/Red-White/Green) 225 ~ 275 Ω at 20 °C (68 °F) (Brown-Black/Red) 1.2 A at 3,000 r/min 2.0 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)		F4T325/MITSUBISHI ← ← 392 ~ 479 Ω at 20 °C (68 °F) ← 0.5 A at 3,000 r/min 2.5 A at 8,000 r/min 0.32 ~ 0.40 Ω at 20 °C (68 °F) ← ← ← 0.29 ~ 0.35 Ω at 20 °C (68 °F) ← 1.4 ~ 1.7 Ω at 20 °C (68 °F) ←
CDI unit manufacturer	8CJ-00 (MITSUBISHI)	8CR-00 (MITSUBISHI)	8CH-00 (MITSUBISHI)

MAINTENANCE SPECIFICATIONS

SPEC



Model	VX500XT/XTC/ XTCE/XTCR VT500	VX600XT/XTC/ XTCE/XTCR/SX VT600, MM600	VX700SX MM700
Rectifier/regulator: Model/manufacture No load regulated voltage	89A-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		
Starter motor: (For electric model) Model/manufacture Output Armature coil resistance Brush: Overall length Wear limit Spring pressure Commutator diameter Wear limit Mica undercut	DB4XF/NIPPON DENSO 0.6 kW 0.014 ~ 0.018 Ω at 20 °C (68 °F) 12 mm (0.48 in) 8.5 mm (0.33 in) 6.5 ~ 9.5 N (650 ~ 950 g, 22.9 ~ 33.5 oz) 28 mm (1.10 in) 27 mm (1.06 in) 0.4 ~ 0.8 mm (0.016 ~ 0.031 in)		

E.C.C. (VT600, MM600)

Model	VT600, MM600
ECU: Model/Manufacturer	8CW-00/MITSUBISHI
TPS: Model/Manufacturer Resistance (fixed)	03 *1/MIKUNI 4 ~ 6 k Ω
Atmospheric pressure sensor: Model/Manufacturer Output voltage	E1T22071/MITSUBISHI 4 V at 101.3 kPa (760 mmHg)
Air temperature sensor: Model/Manufacturer Resistance	25973/MITSUBISHI 5.4 ~ 6.6 k Ω at 0 °C (34°F) 290 ~ 390 Ω at 80 °C (176 °F)
Water temperature sensor: Model/Manufacturer Resistance	0190/MITSUBISHI 5.2 ~ 6.4 k Ω at 0 °C (34°F) 290 ~ 354 Ω at 80 °C (176 °F)
Solenoid valve: Manufacturer (Main) (Slow) Resistance	MIKUNI MIKUNI 48.6 ~ 59.4 Ω at 20 °C (68 °F)
Fuel select switch: Manufacturer Resistance (NORMAL) (OXY FUEL)	ASAHIDENSO 61.9 k Ω \pm 1% at 20 °C (68 °F) 0 Ω at 20 °C (68 °F)

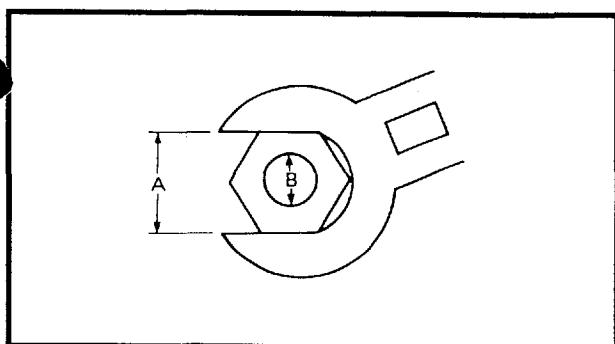
*1: The first two digits of the stamped numbers are for model identification.



GENERAL TORQUE SPECIFICATIONS

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

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



A: Distance across flats

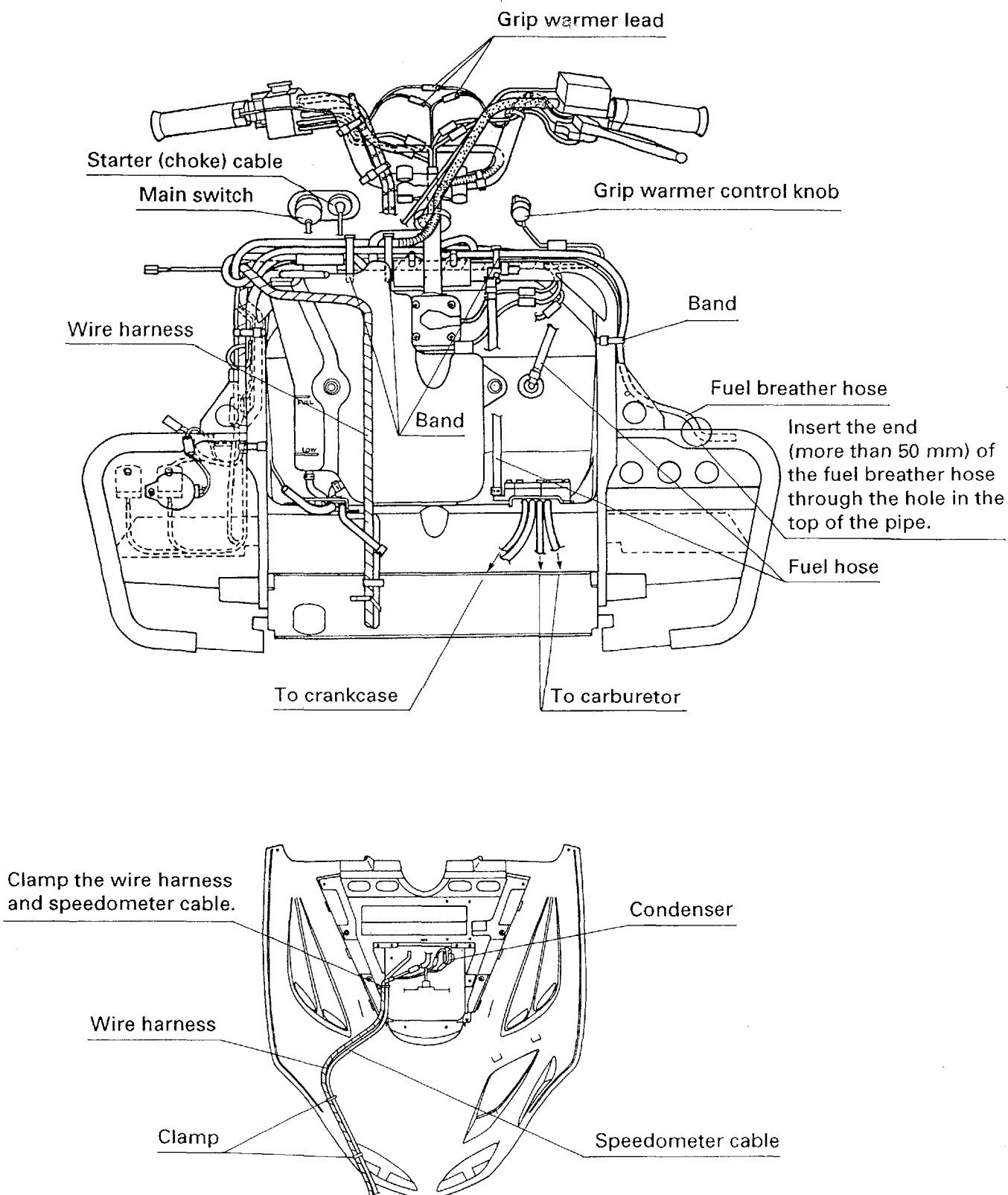
B: Outside thread diameter

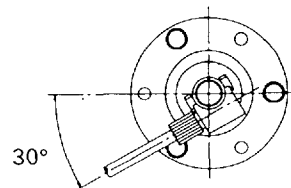
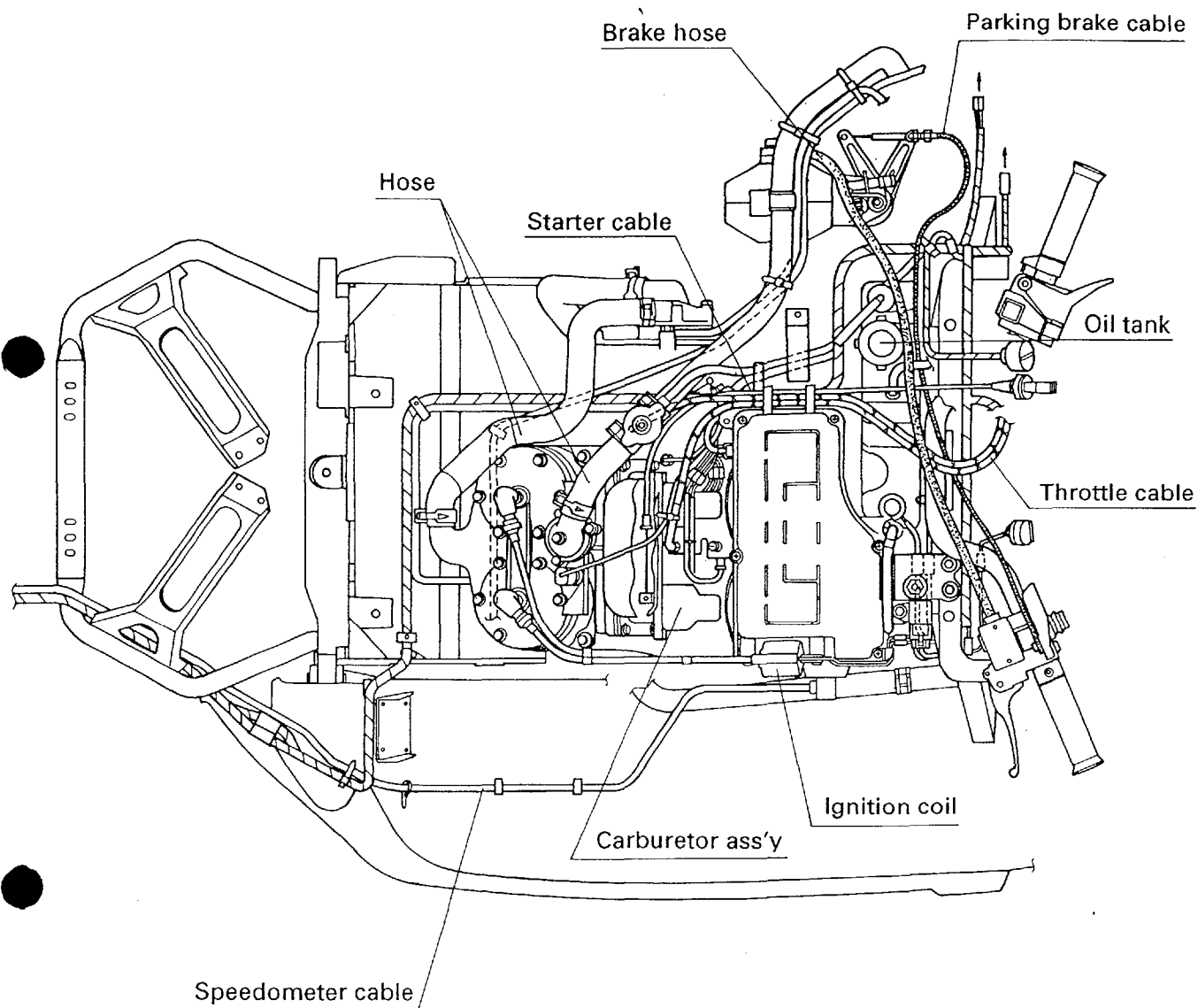
DEFINITION OF UNITS

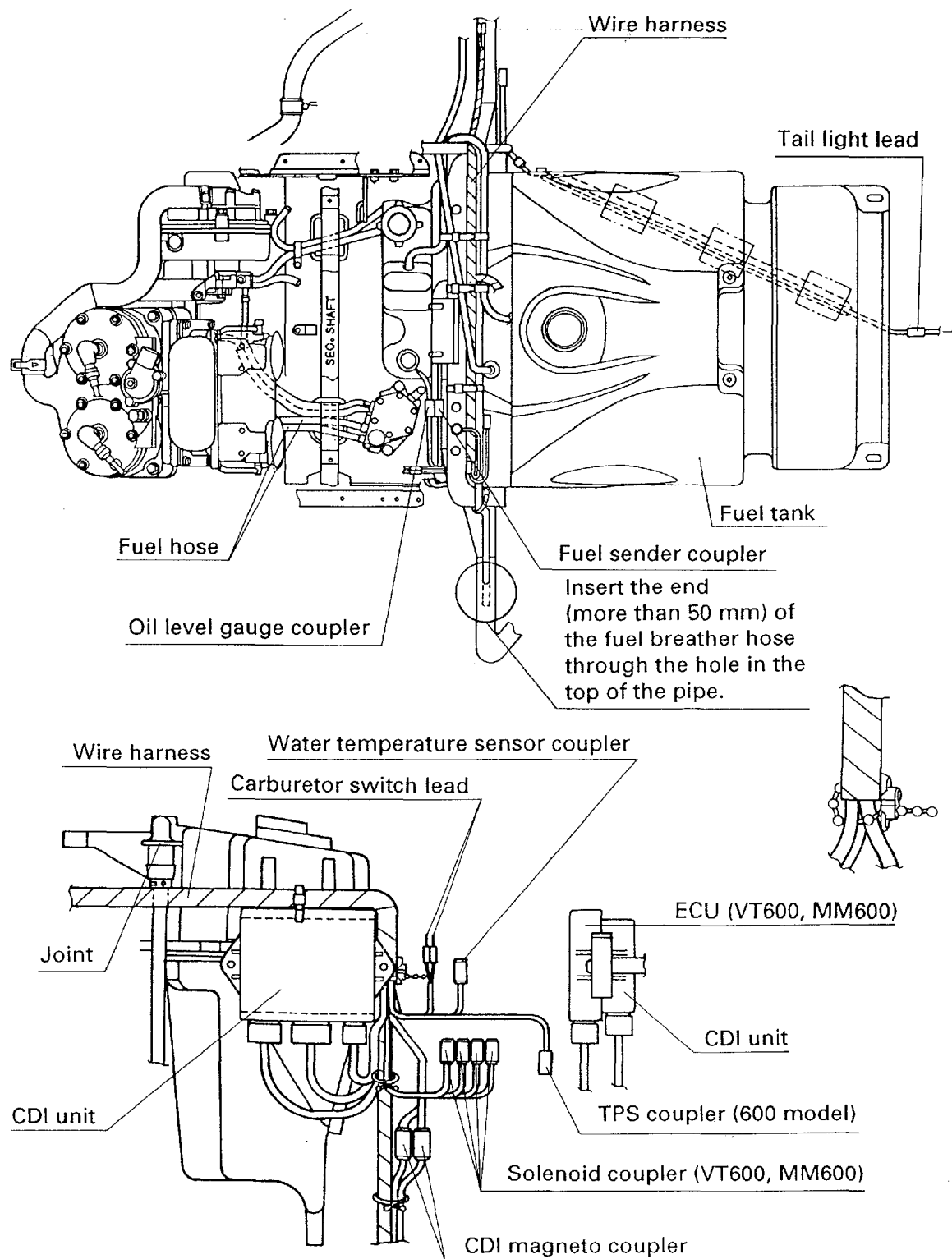
Unit	Read	Definition	Measurement
mm	Millimeter	10^{-3} meter	Length
cm	Centimeter	10^{-2} meter	Length
kg	Kilogram	10^3 gram	Weight
N	Newton	$1 \text{ kg} \times \text{m/sec}^2$	Force
Nm	Newton meter	$\text{N} \times \text{m}$	Torque
m • kg	Meter kilogram	$\text{m} \times \text{kg}$	Torque
Pa	Pascal	N/m^2	Pressure
N/mm	Newtons per millimeter	N/mm	Spring rate
L	Liter	—	Volume or capacity
cm ³	Cubic centimeter	—	Volume or capacity
r/min	Rotations per minute	—	Engine speed



CABLE ROUTING <500/600>

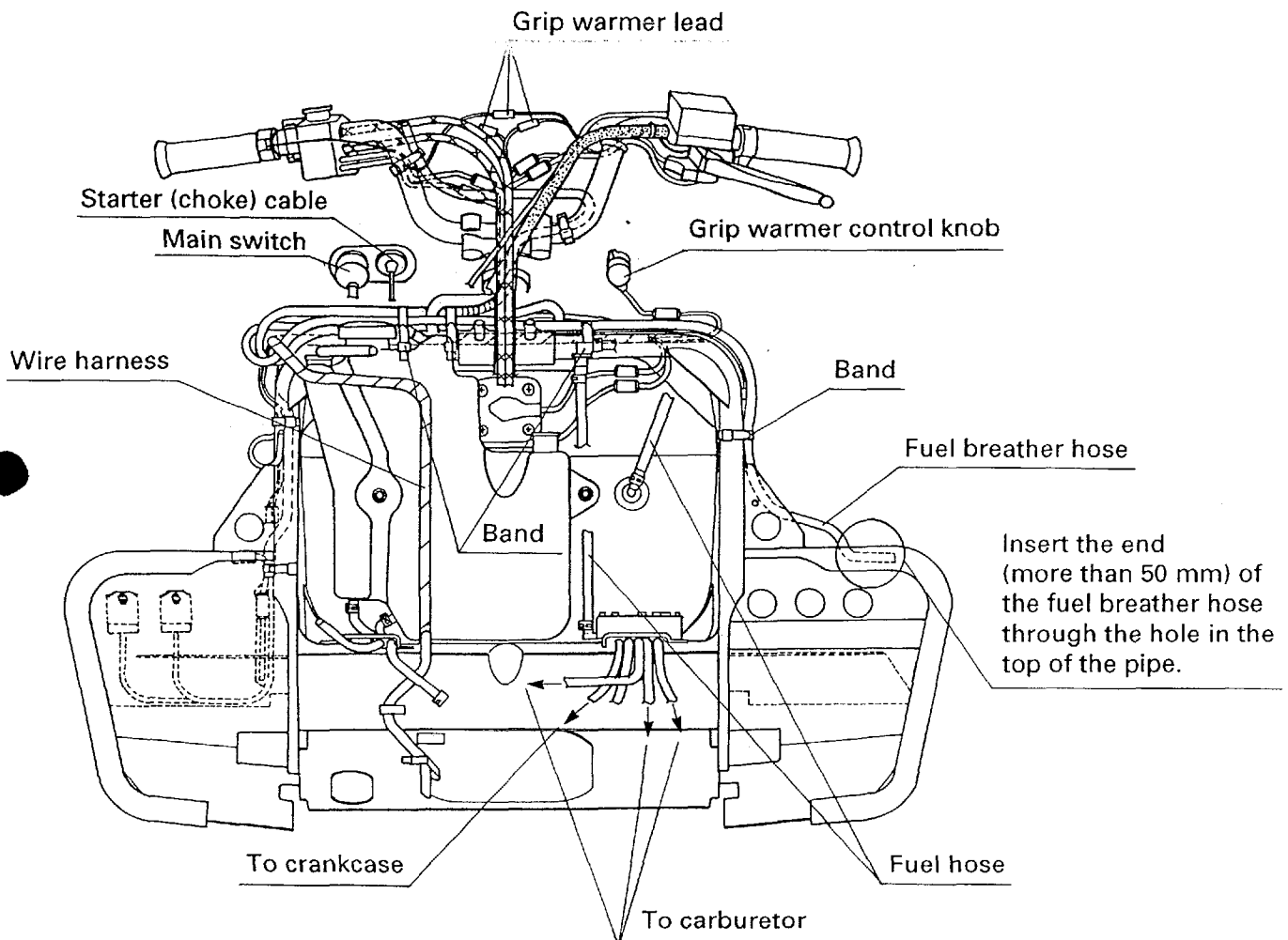








CABLE ROUTING <700>



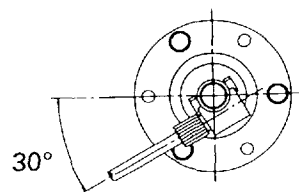
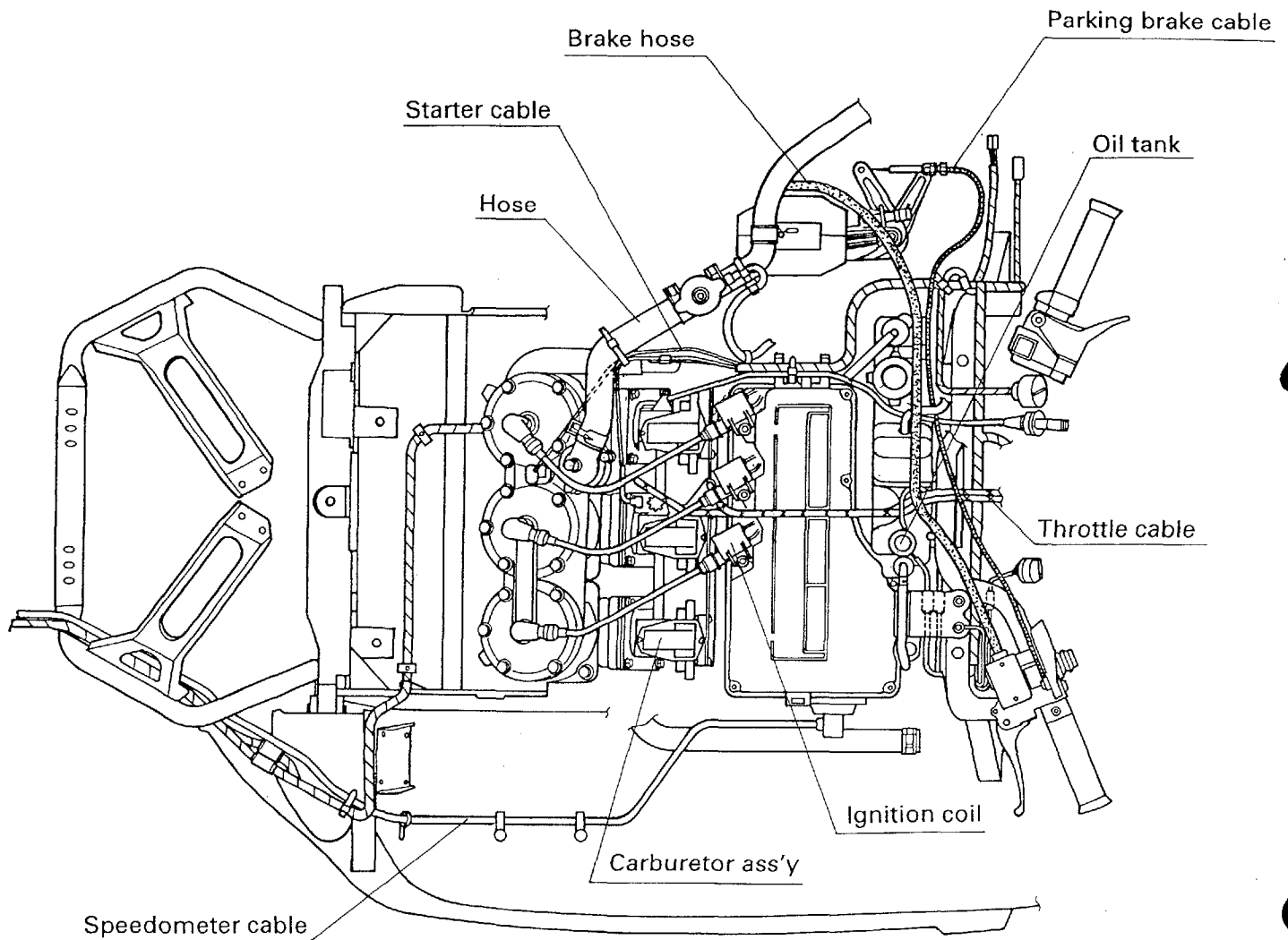
Clamp the wire harness and speedometer cable.

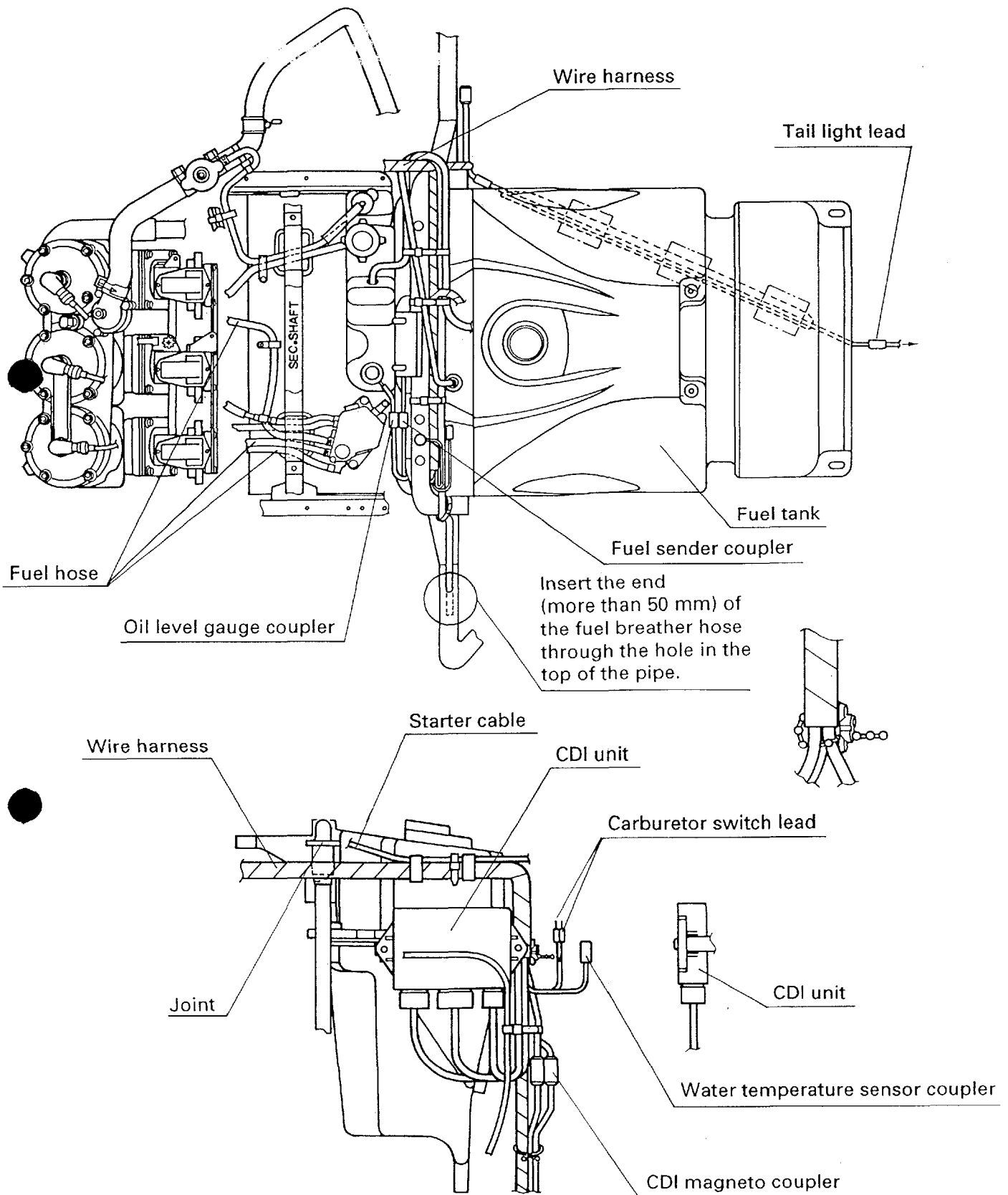
Speedometer cable

Clamp

Condenser

Wire harness





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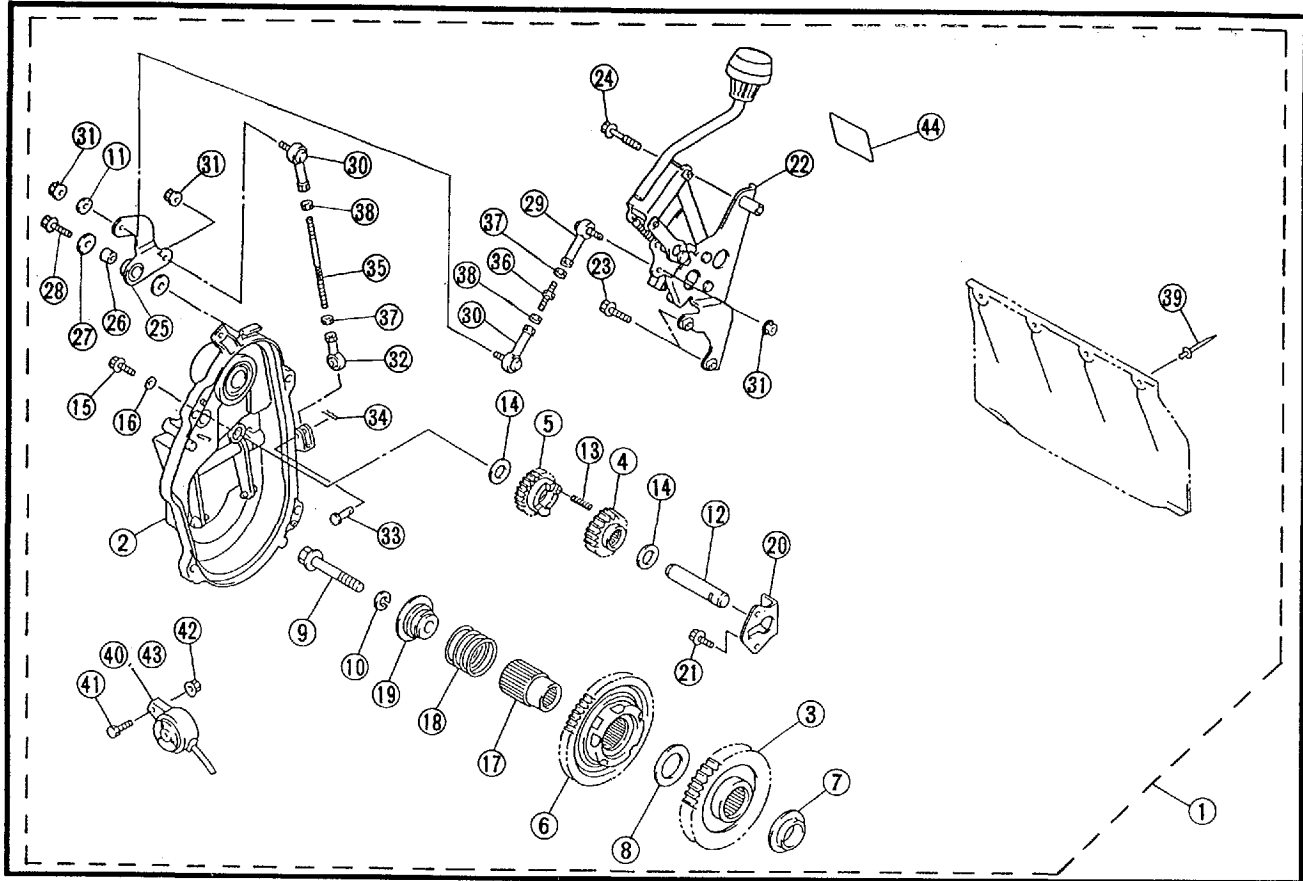
CHAPTER 10. OPTIONAL KIT

REVERSE GEAR KIT	10-1
INSTALLATION	10-5
STARTER MOTOR KIT	10-7
INSTALLATION	10-9



OPTIONAL KIT

REVERSE GEAR KIT



This kit consist of:

No.	Part name	Part No.	Q'ty	Remarks
①	Reverse gear kit	8CW-47590-00	1	
②	Chain housing cover subassembly	8CW-W4754-00	1	
	*Chain housing cover	8CW-47543-01	1	
	*Dowel pin	93606-20044	2	
	*Bearing	93306-20402	1	
	*Shift fork	8CW-18511-00	2	
	*Shaft	8CW-18197-00	1	
	*Spring pin	91609-50022	2	
	*O-ring	93210-12131	1	
③	Driven sprocket 1 sub-ass'y	8CW-W4758-00	1	
	*Driven sprocket 1	8CW-47587-90	1	
	*Bearing	93317-33179	1	
④	Driven sprocket 2 sub-ass'y	8CW-W176F-00	1	
	*Driven sprocket 2	8CW-17692-00	1	
	*Bearing	93317-21578	1	
⑤	Reverse gear 1 sub-ass'y	8CW-W1714-00	1	
	*Reverse gear 1	8CW-17143-00	1	
	*Bearing	93317-21578	1	

REVERSE GEAR KIT

OPT



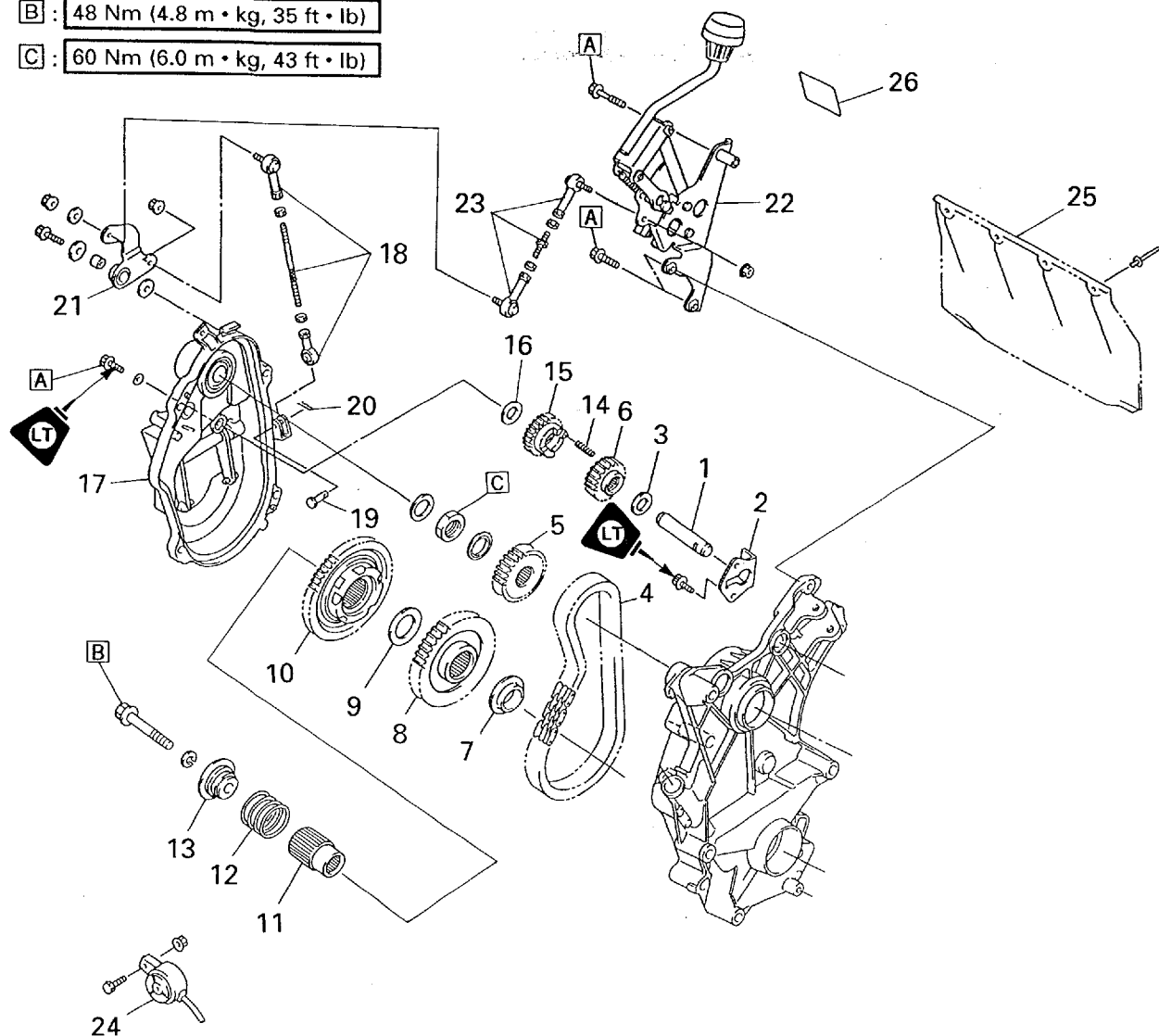
No.	Part name	Part No.	Q'ty	Remark
⑥	Reverse gear 2 sub-ass'y	8CW-W1724-00	1	
	*Reverse gear 2	8CW-17243-00	1	
	*Dog	8CW-17492-00	1	
	*Spring	90501-066J5	5	
	*Circlip	93440-39175	1	
⑦	Collar	90387-2008G	1	
⑧	Plain washer	90201-320S3	1	
⑨	Flange bolt	90105-100A7	1	
⑩	Washer	92907-10100	1	
⑪	Plain washer	90201-06778	1	
⑫	Reverse gear shaft	8CW-1761A-00	1	
⑬	Compression spring	90501-06022	1	
⑭	Plain washer	90201-16245	2	
⑮	Flange bolt	90105-060A6	1	
⑯	Seal washer	90210-06006	1	
⑰	Journal	8CW-47571-00	1	
⑱	Compression spring	90501-326J6	1	
⑲	Collar	8CW-47564-00	1	
⑳	Plate	8CW-47591-00	1	
㉑	Flange bolt	90105-060A6	2	
㉒	Shift lever assembly	8CW-18120-01	1	
㉓	Flange bolt	95827-06025	2	
㉔	Flange bolt	95827-06040	1	
㉕	Lever	8CW-18198-00	1	
㉖	Collar	90387-0608T	1	
㉗	Plain washer	90201-06071	2	
㉘	Flange bolt	90105-06597	1	
㉙	Universal joint	J45-23845-00	1	
㉚	Joint 2	88T-18157-00	2	
㉛	Flange U-nut	95607-06200	3	
㉜	Joint 1	8CW-18156-00	1	
㉝	Clevis pin	91701-06022	1	
㉞	Clip	90468-12007	1	
㉟	Joint rod	88T-18116-01	1	
㊱	Shift rod	26H-18115-00	1	
㊲	Nut	95304-06600	2	
㊳	Nut	90170-06289	2	
㊴	Rivet	90267-48141	4	
㊵	Back buzzer (AC)	8CR-83383-00	1	VX500XT/XTC, VX600XT/XTC
㊶	Bolt	97007-05020	1	
㊷	Flange nut	95707-05500	1	
㊸	Back buzzer (DC)	8CW-83383-00	1	VX500XTCE, VX600XTCE/SX, MM600, VX700SX, MM700
㊹	Warning label	8CW-77763-00	1	



A : 10 Nm (1.0 m • kg, 7.2 ft • lb)

B : 48 Nm (4.8 m • kg, 35 ft • lb)

C : 60 Nm (6.0 m • kg, 43 ft • lb)

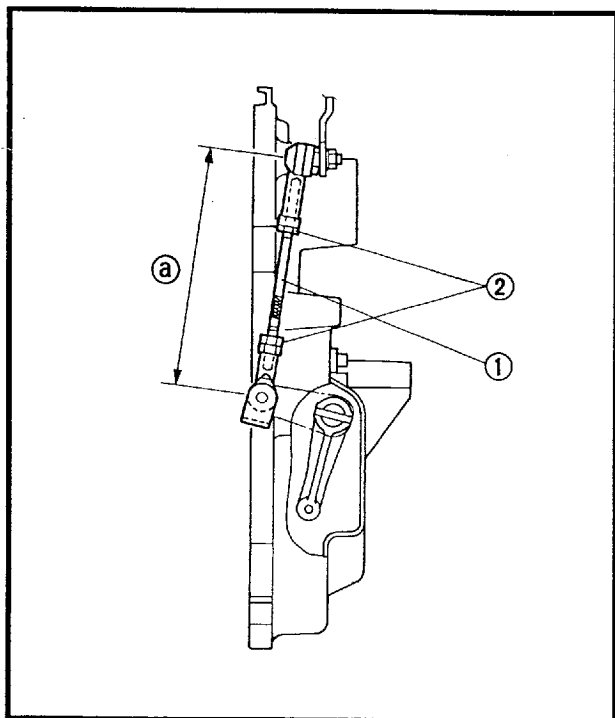


REVERSE GEAR KIT

OPT



Order	Job name/Part name	Q'ty	Remarks
	Reverse gear kit installation		Remove and install the parts in the order below.
	Chain housing cover		Remove
	Drive sprocket		Refer to "DRIVE CHAIN HOUSING-WITHOUT REVERSE MODEL" in CHAPTER 4.
	Drive chain		
	Driven sprocket		
1	Shaft	1	
2	Plate	1	
3	Washer	1	
4	Drive chain	1	
5	Drive sprocket	1	
6	Driven sprocket 2	1	
7	Collar	1	
8	Driven sprocket 1	1	
9	Washer	1	
10	Reverse gear 2	1	
11	Journal	1	
12	Spring	1	
13	Collar	1	
14	Compression spring	1	
15	Reverse gear 1	1	
16	Washer	1	
17	Chain housing cover	1	
18	Joint rod assembly	1	
19	Clevis pin	1	
20	Clip	1	
21	Lever	1	
22	Shift lever assembly	1	
23	Shift rod assembly	1	
24	Back buzzer	1	
25	Rear flap	1	
26	Warning label	1	



INSTALLATION

1. Install:
 - Joint rod ①
2. Adjust:
 - Joint rod length ②

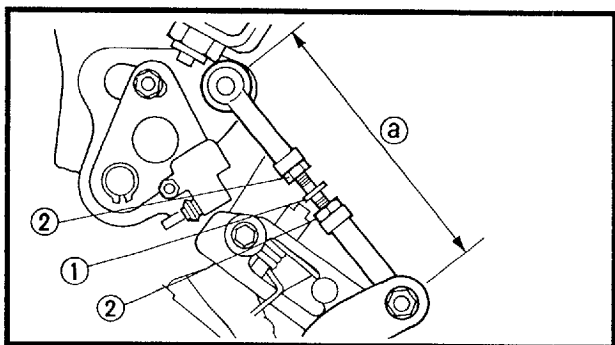
Adjustment steps:

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



Joint rod length:
140 mm (5.51 in)

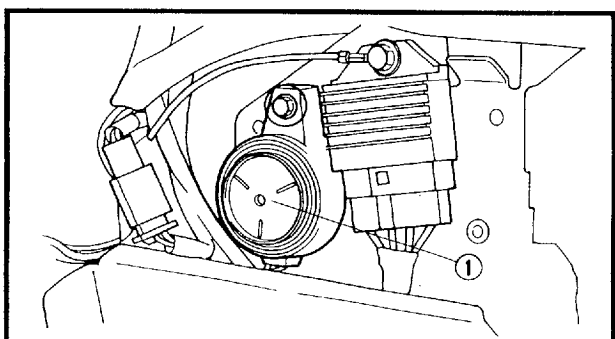
- Tighten the locknuts.



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

Adjustment steps:

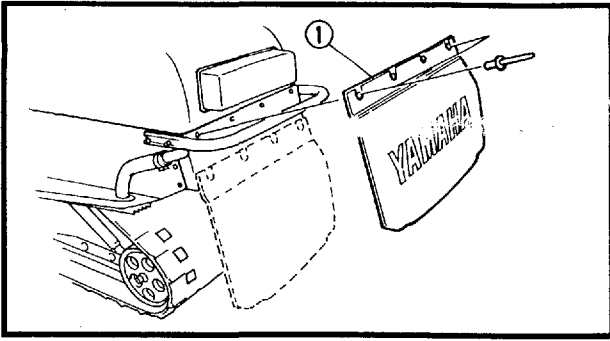
- Move the shift lever "FWD." position.
- Loosen the locknuts ②.
- Turn the shift rod ① so that shift rod free play is 0 mm (in direction where ② can be shortened appropriately) and then turn back the shift rod 1/4 turns.
- Tighten the locknuts.



5. Remove:
 - Center cover
6. Install:
 - Back buzzer ①

REVERSE GEAR KIT

OPT

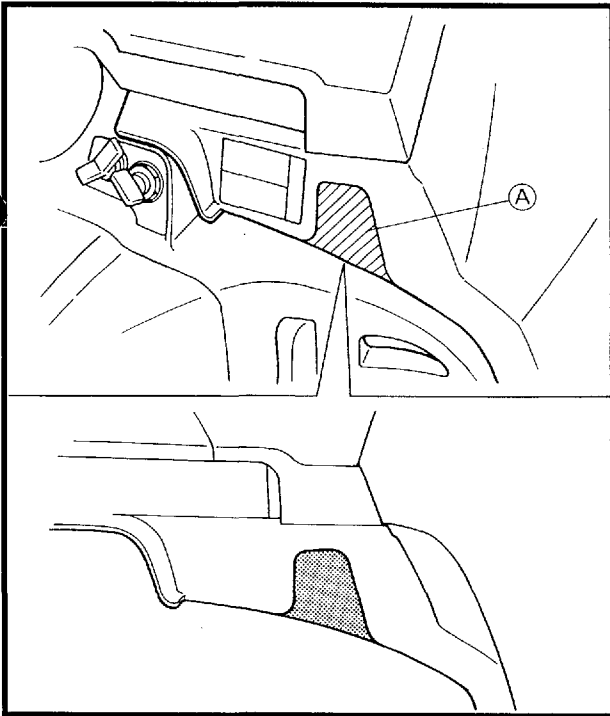


7. Remove:

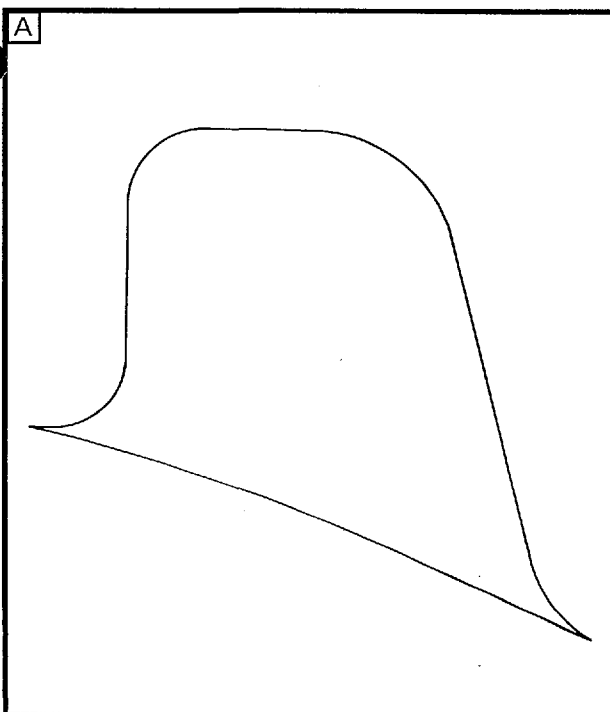
- Rear bumper cover
- Rear flap ①

8. Install:

- Rear flap
(to the upper position)



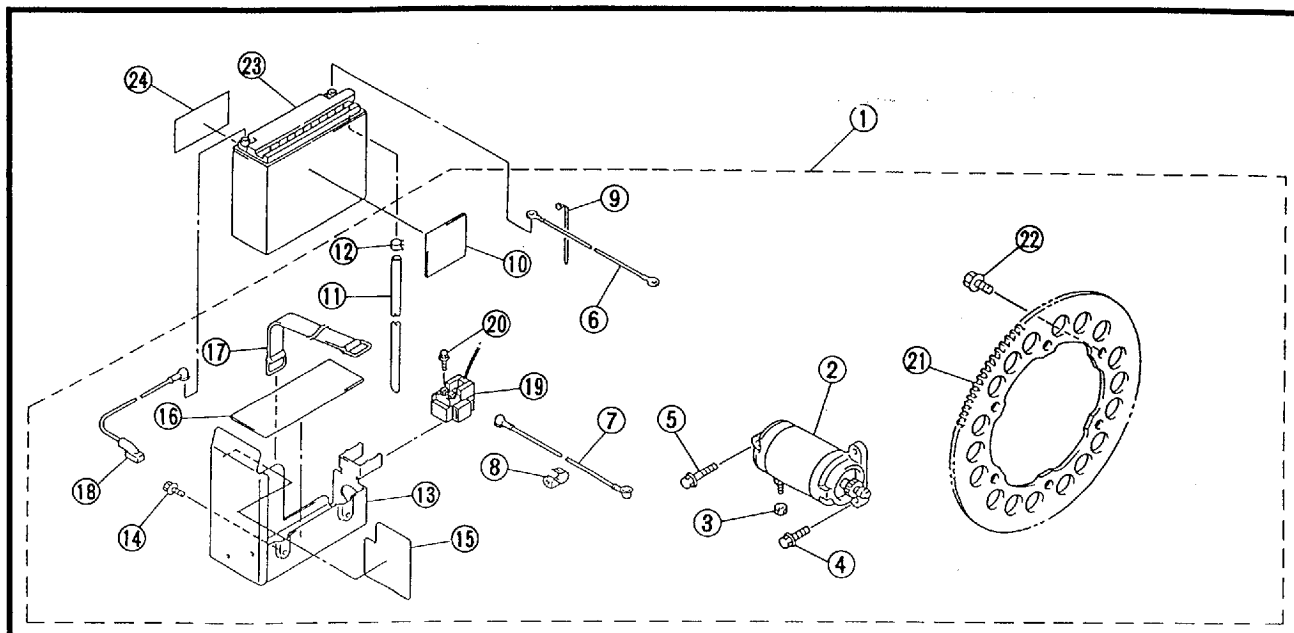
9. Cut the (A) portion of shroud as illustration
(actual size).



(A) Actual size

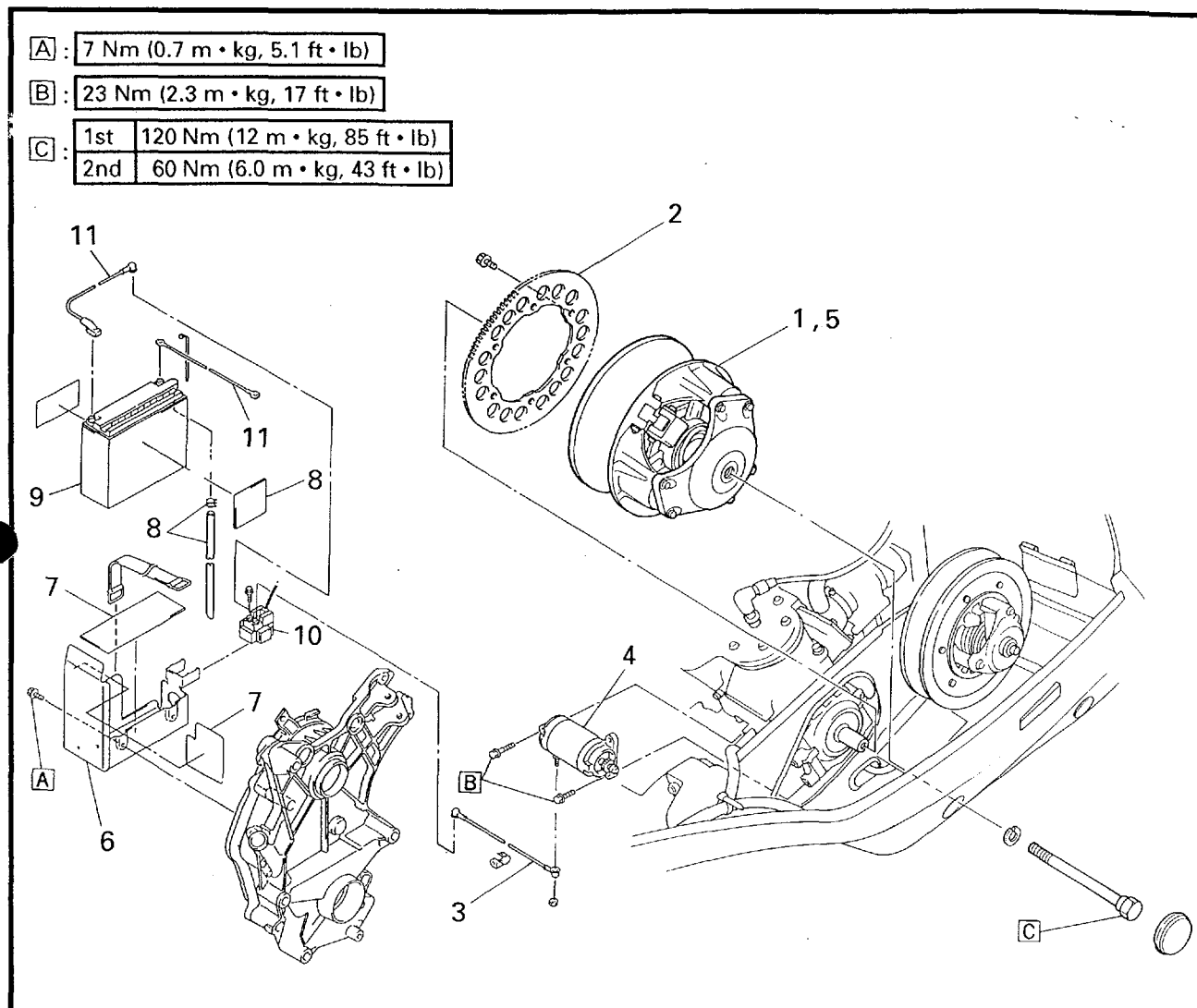


STARTER MOTOR KIT



This kit consist of:

No.	Part name	Part No.	Q'ty	Remarks
①	Starter motor kit	8CW-W8180-00	1	
②	Starter motor assembly	8CW-81800-00	1	
③	Nut	95317-06600	1	
④	Flange bolt	95027-08030	2	
⑤	Flange bolt	95027-08080	1	
⑥	Battery negative lead	8CW-82116-00	1	
⑦	Starter motor lead	8CW-82117-00	1	
⑧	Clamp	90465-10381	1	
⑨	Clamp	90464-13073	3	
⑩	Damper	8CW-82176-00	1	
⑪	Breather hose	8CW-8235W-00	1	
⑫	Clip	90467-08092	1	
⑬	Battery bracket	8CW-2199G-00	1	
⑭	Bolt	90109-06513	2	
⑮	Heat shield	8CW-2199H-00	1	
⑯	Battery seat	84N-82122-00	1	
⑰	Battery band	1E6-82131-00	1	
⑱	Battery plus lead	8CW-82155-00	1	
⑲	Starter relay assembly	3EL-81940-00	1	
⑳	Flange bolt	95027-06008	2	
㉑	Starter gear	8CW-1760A-00	1	
㉒	Bolt	90111-08015	6	
㉓	Battery	5E3-82110-81	1	
㉔	Battery label	118-82141-09	1	For USA



Order	Job name/Part name	Q'ty	Remarks
	Starter motor kit installation		Remove and install the parts in the order below.
1	Muffler Exhaust pipe Primary sheave	1	Remove Remove Refer to "PRIMARY SHEAVE AND DRIVE V-BELT" in CHAPTER 4.
2	Starter gear	1	
3	Starter motor lead	1	
4	Starter motor assembly	1	
5	Primary sheave	1	
6	Battery bracket	1	
7	Heat shield/Battery seat	1/1	
8	Damper/Breather hose/Clip	1/1/1	
9	Battery	1	
10	Starter relay assembly	1	
11	Battery leads	2	



INSTALLATION

⚠ WARNING

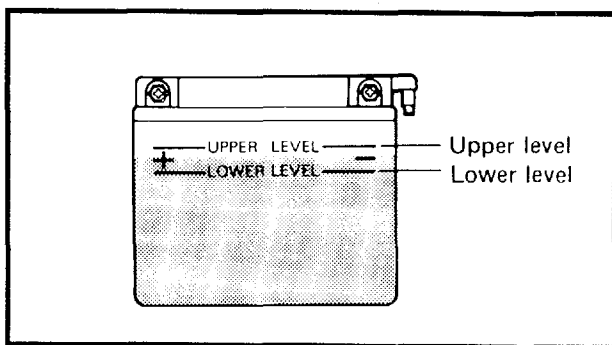
Battery-Fluid is poisonous and dangerous, causes severe burns, etc. Contains sulfuric acid. Avoid contact with skin, eyes or clothing.

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.

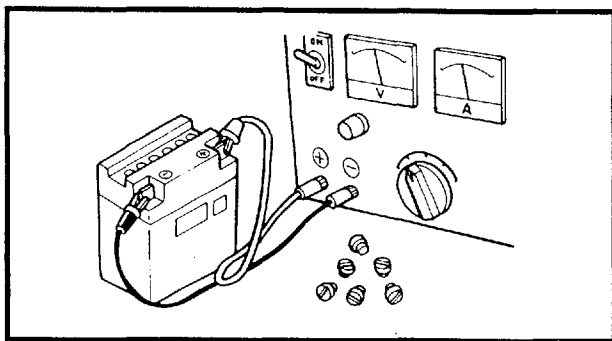
KEEP OUT OF REACH OF CHILDREN.



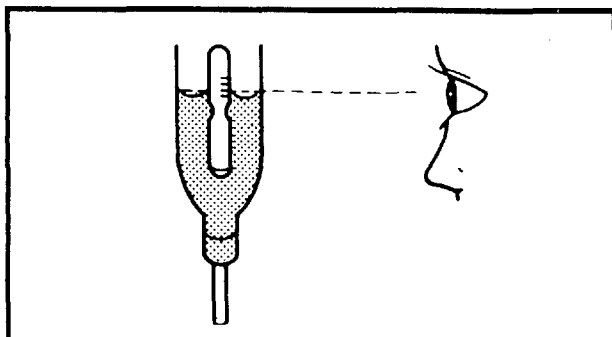
1. Add electrolyte to the battery up to the upper level line.

⚠ WARNING

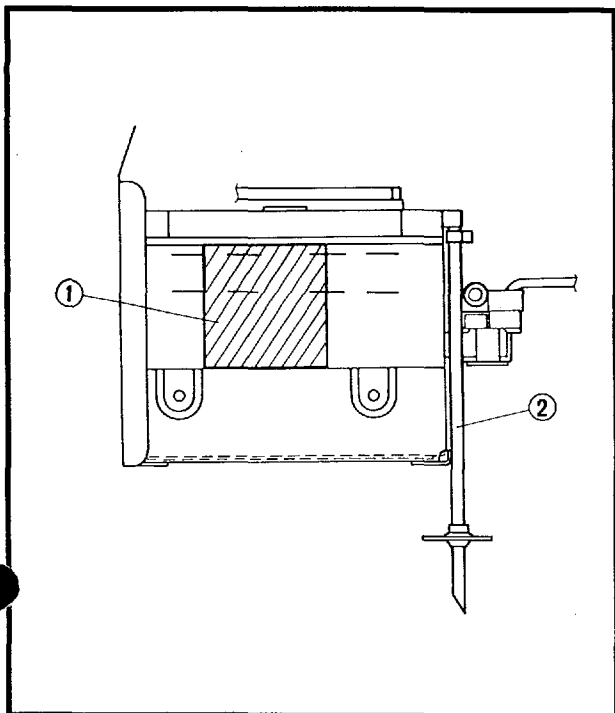
Do not overfill!



2. Loosen the vent caps to allow the gases to escape.
3. Charge the battery at the rate of 1.4A for 10 hours.

**NOTE:**

Charge the battery to 1.280 specific gravity at 68°F (20°C) before installation.

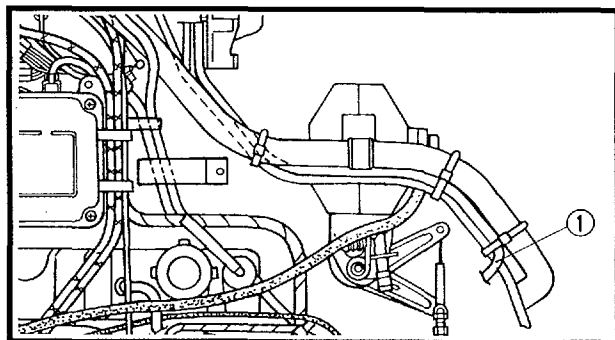


4. Install:

- Damper ①
- Breather hose ②

NOTE:

- Align the damper with the level marks and the lower edge of the battery cover, as shown in the illustration.
- Install the breather hose through the hole in the frame.



5. Install:

- Battery negative lead ①
(to battery negative terminal and water pump housing)

⚠ WARNING

Connect the positive lead first, and then the negative lead to the battery as shown.

NOTE:

Route the battery negative lead along the coolant hose.

6. Check:

- All leads routing
Refer to "CABLE ROUTING".

