YAMAHA

SERVICE MANUAL

PZ500C
VT500XLC

LIT-12618-02-03

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(981026)

0S042

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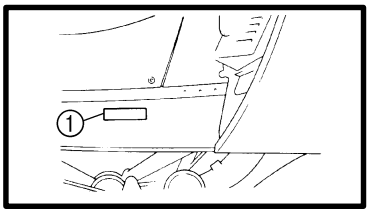


1E001

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 is located on the right-hand side of the crankcase.

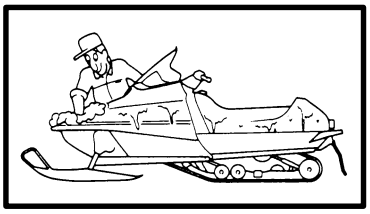
NOTE:

Designs and specifications are subject to change without notice.

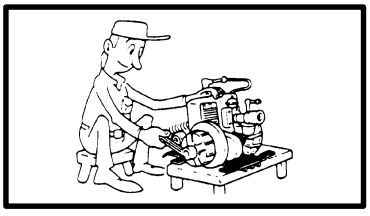
1E011

IMPORTANT INFORMATION

PREPARATION FOR REMOVAL AND DISASSEMBLY



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

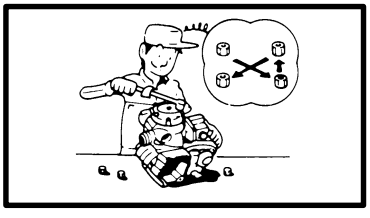


2. Use proper tools and cleaning equipment.
   Refer to “SPECIAL TOOLS” .

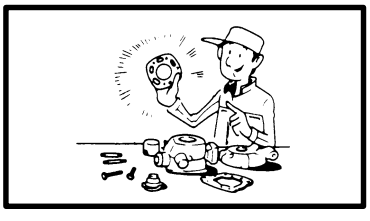
3. When disassembling the machine, keep mated parts together. This includes gears, cylinders, pistons, and other parts that have been “mated” through normal wear. Mated parts must be reused or replaced as an assembly.

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

5. Keep all parts away from any source fire.



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

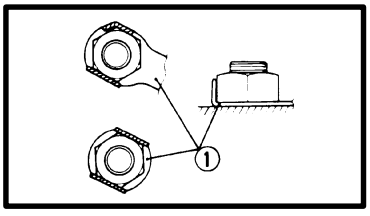


ALL REPLACEMENT PARTS

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

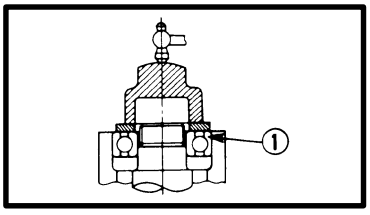
GASKETS, OIL SEALS, AND O-RINGS

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



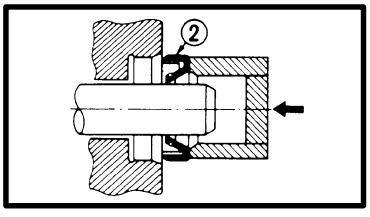
LOCK WASHERS/PLATES AND COTTER PINS

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



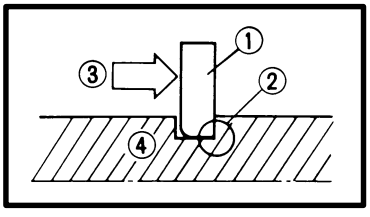
BEARINGS AND OIL SEALS

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



CAUTION:

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



CIRCLIPS

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

④ Shaft

LOCTITE®

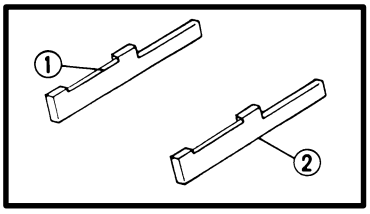
After installing fasteners that have LOCTITE® applied, wait 24 hours before using the machine. This will give the LOCTITE® time to dry properly.

1E021
SPECIAL TOOLS

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

NOTE:

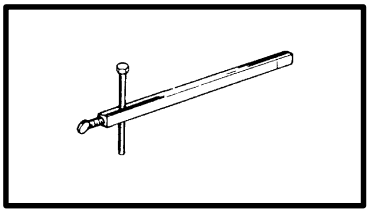
Be sure to use the correct part number when ordering the tool, since the part number may differ according to country.



FOR TUNE UP

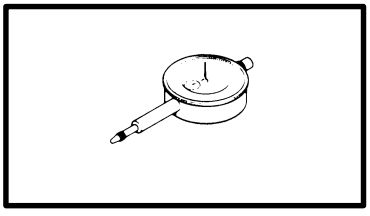
- Sheave gauge
  P/N: YS-42421-1 ① (15 mm offset), YS-42421-2 ② (20 mm offset)

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



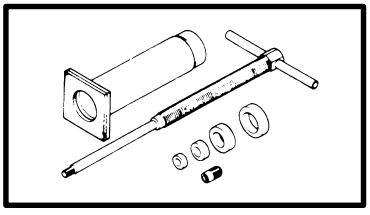
- Distance gauge
  P/N: YS-91047-3 (for U.S.A./Canada)
  90890-01702 (for Europe)

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



1E041
- Dial gauge
  P/N: YU-03097 (for U.S.A./Canada)
  90890-03097 (for Europe)

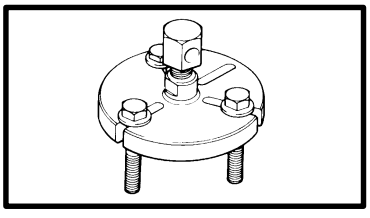
This gauge is used for run out measurement.



1E071
FOR ENGINE SERVICE

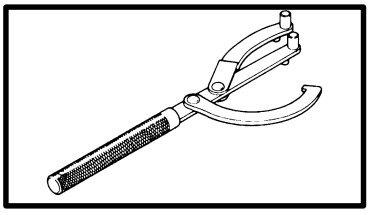
- Piston pin puller
  P/N: YU-01304 (for U.S.A./Canada)
  90890-01304 (for Europe)

This tool is used to remove the piston pin.



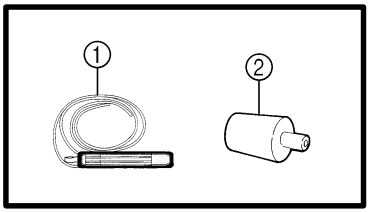
1E081
- Rotor holding puller
  P/N:YU-33270 (for U.S.A./Canada)
  90890-01362 (for Europe)

This tool is used to remove the magneto rotor.



- Rotor holding tool
  P/N: YU-01235 (for U.S.A./Canada)
  90890-01235 (for Europe)

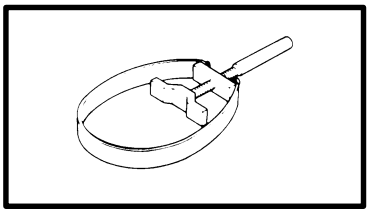
This tool is used to remove the starter pulley.



- Vacuum gauge ①
  P/N: YS-33275 (for U.S.A./Canada)

This gauge is used for carburetor synchronization.

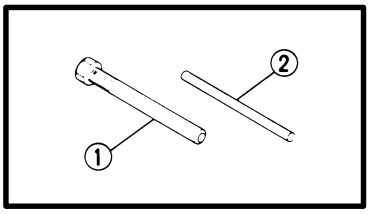
- Carb Sync Adapters ② (Use with YS-33275) (for U.S.A./Canada)



1E101
FOR POWER TRAIN SERVICE

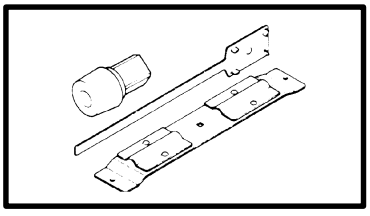
- Primary sheave holder
  P/N: YS-01880 (for U.S.A./Canada)
  90890-01701 (for Europe)

This tool is used to hold the primary sheave.



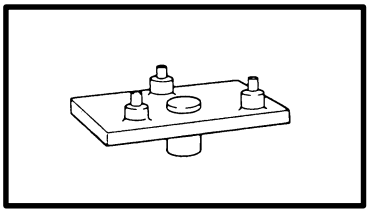
1E111
- Primary sheave puller (18 mm)
  P/N: YS-01881-1 ①, YS-01882-1 ②

This tool is used for removing the primary sheave.



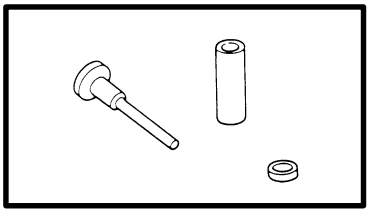
1E121
- Clutch spider separator
  P/N: YS-28890-B (for U.S.A./Canada)
  90890-01711 (for Europe)

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



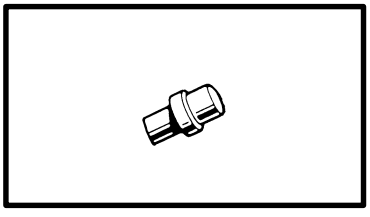
1E131
- Clutch separator adapter
  P/N: YS-34480 (for U.S.A./Canada)
  90890-01740 (for Europe)

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



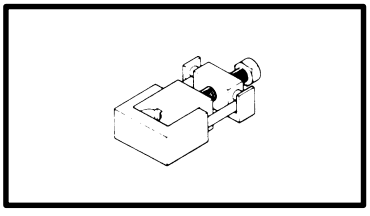
1E171
- Clutch bushing jig kit
  P/N: YS-39752

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



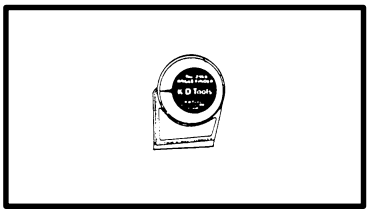
- Clutch bushing press
  P/N: YS-42424

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



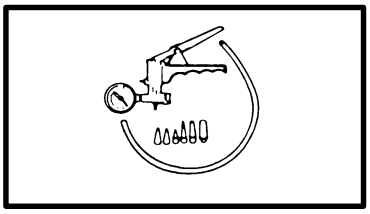
1E141
- Track clip installer
  P/N: YS-91045-A (for U.S.A./Canada)
  90890-01721 (for Europe)

This tool is used for installing the track clip.



- Angle finder
  P/N: YS-42422

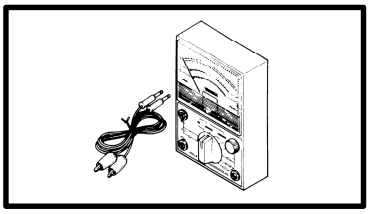
This tool is used for checking and adjusting the ski spindle camber.



FOR CARBURETION SERVICE

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

This tool is used to check the fuel pump.

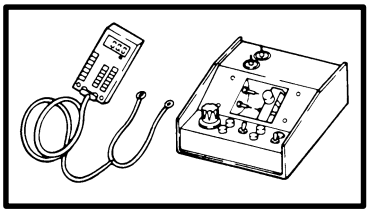


1E151

FOR ELECTRICAL SERVICE

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

This instrument is necessary for checking the electrical components.



1E161

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

This instrument is invaluable for checking the electrical system.

2E007

PERIODIC INSPECTIONS AND ADJUSTMENTS

INTRODUCTION

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

PERIODIC MAINTENANCE TABLE

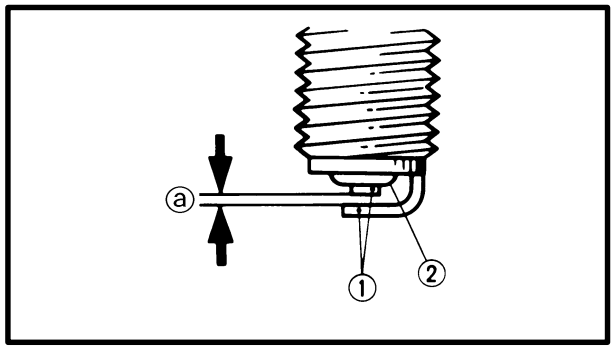
Item	Remarks	Pre-operation check (daily)	First month or first 800 km (500 mi) (40 hr)	Every season or every 3,200 km (2,000 mi) (160 hr)
Spark plugs	Check the condition. Adjust the gap and clean. Replace if necessary.			●
Engine oil	Check the oil level.	●		
	Air bleed the oil pump, if necessary.			●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

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

NOTE:

Brake fluid replacement:

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

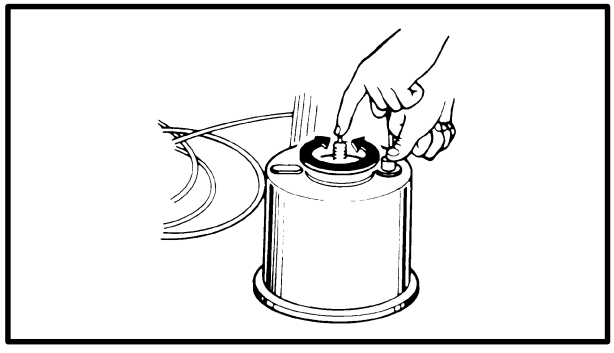


2E011
ENGINE

SPARK PLUGS

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

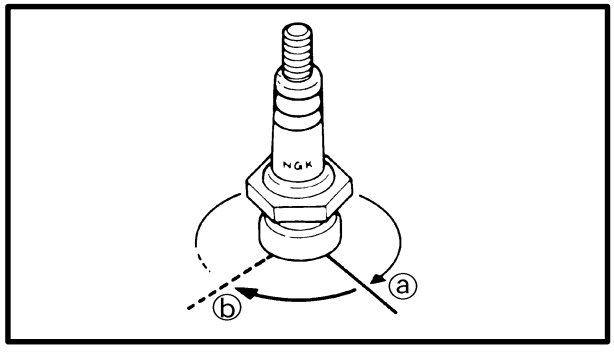
Spark plug gap ⓐ:
0.7 ~ 0.8 mm (0.028 ~ 0.031 in)



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

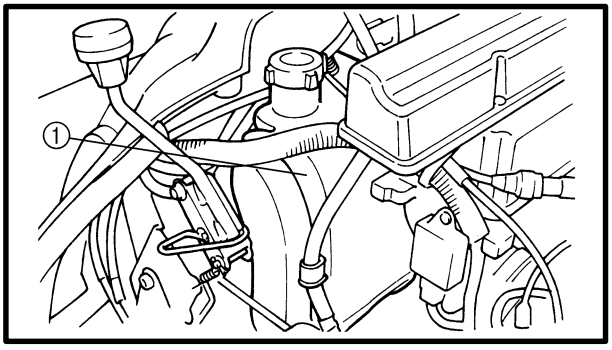
Spark plug:
20 Nm (2.0 m • kg, 14 ft • lb)

NOTE:
Finger-tighten ⓐ the spark plug before torquing ⓑ it to specification.

2E021
OIL PUMP
Air bleeding

CAUTION:

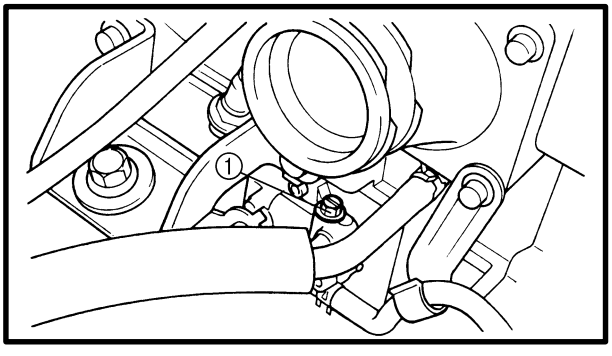
The oil pump and oil delivery line must be bled in the following cases:
- **Any portion of the oil system has been disconnected.**
- **The machine has been turned on its side.**
- **The oil tank has been run empty.**
- **As part of the pre-delivery service.**



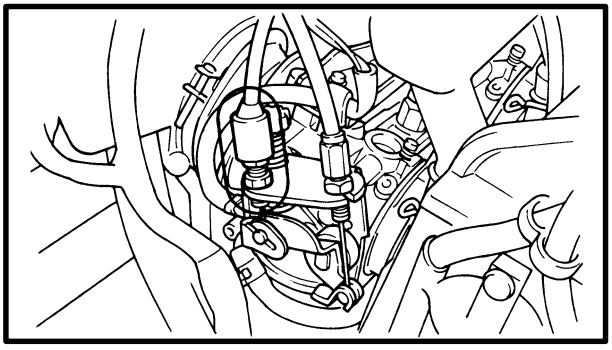
1. Fill:
   - Oil tank ①

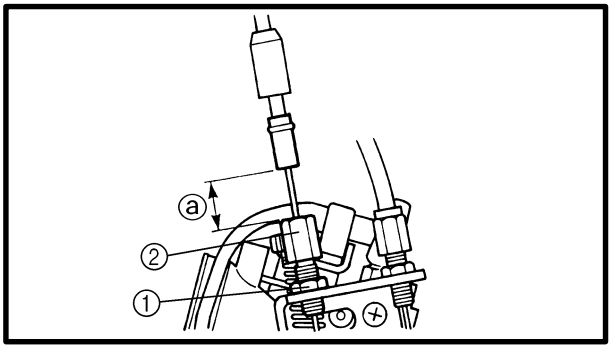
Recommended oil:
YAMALUBE 2-cycle oil
Oil tank capacity:
3.3 L (2.9 Imp qt, 3.5 US qt)

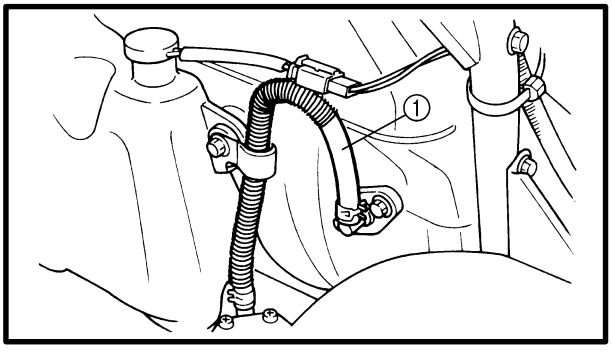
2. Remove:
   - Carburetors
     Refer to "CARBURETORS" in CHAPTER 6.
3. Place a rag under the oil pump assembly to soak up any spilled oil.
4. Disconnect:
   - Oil hose
5. Drain the oil until no more air bubbles appear in the oil hose.
6. Connect:
   - Oil hose
7. Disconnect:
   - Oil delivery hose
8. Feed the "YAMALUBE 2-cycle oil" into the oil delivery hose using an oil can for complete air bleeding.
9. Connect:
   - Oil delivery hose

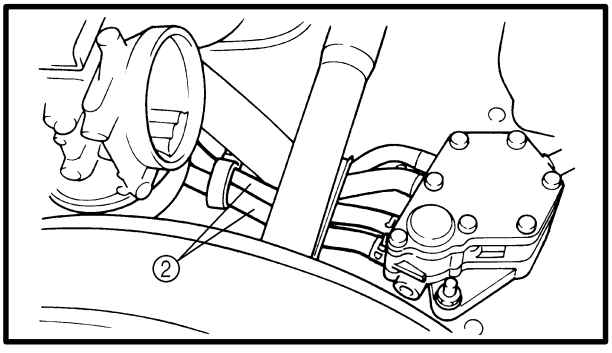


10. Remove:
    - Bleed bolt ①
    - Gasket (bleed bolt)
11. Drain the oil until no more air bubbles appear from the bleed hole.
12. Inspect:
    - Gasket (bleed bolt)
      Damage/wear → Replace.









13. Install:
    - Gasket (bleed bolt)
    - Bleed bolt
14. Install:
    - Carburetors
      Refer to “CARBURETORS” in CHAPTER 6.

Cable adjustment

NOTE:

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

Adjustment steps:

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

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

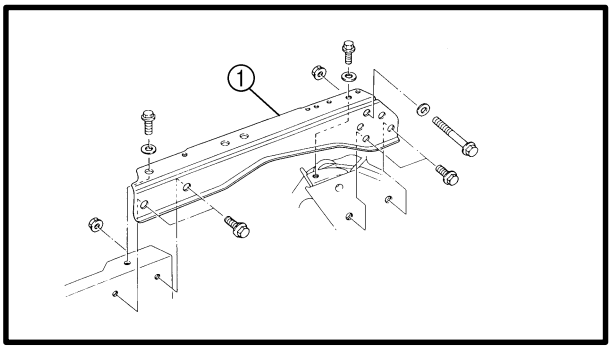
Turning in → Length ⓐ is increased.
Turning out → Length ⓐ is decreased.

- Tighten the locknut and push in the adjuster cover.

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

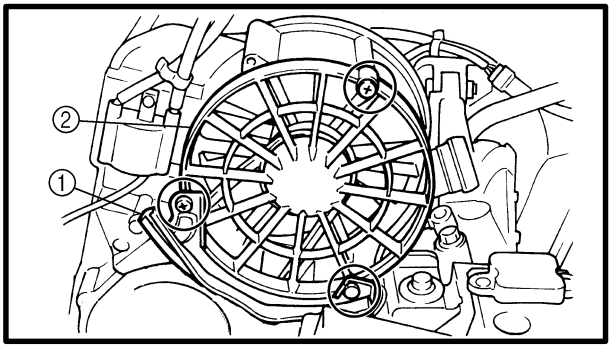
FUEL LINE INSPECTION

1. Remove:
    - Intake silencer
      Refer to “FUEL PUMP” in CHAPTER 6.
2. Inspect:
    - Fuel hose ①
    - Fuel delivery hoses ②
      Cracks/damage→ Replace.
3. Install:
    - Intake silencer
      Refer to “FUEL PUMP” in CHAPTER 6.



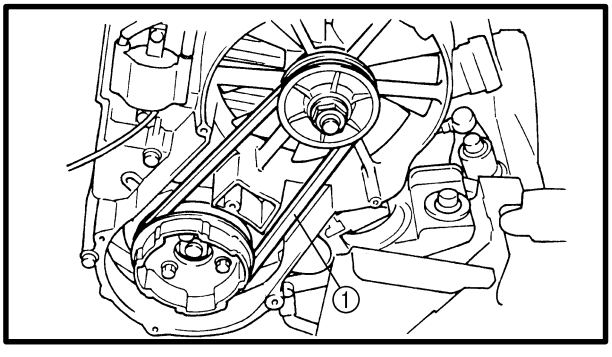
COOLING FAN BELT INSPECTION

1. Remove:
   - Frame cross member ①

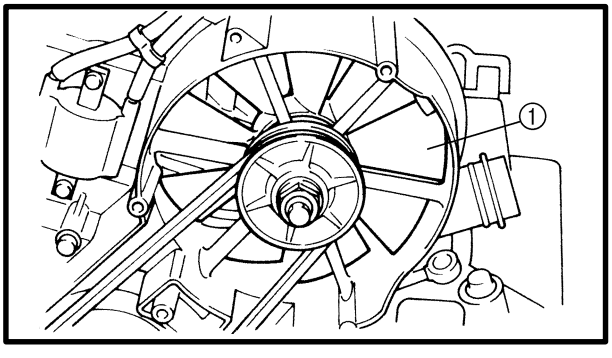


2. Remove:
   - Air duct stopper ①
   - Cooling fan grill ②

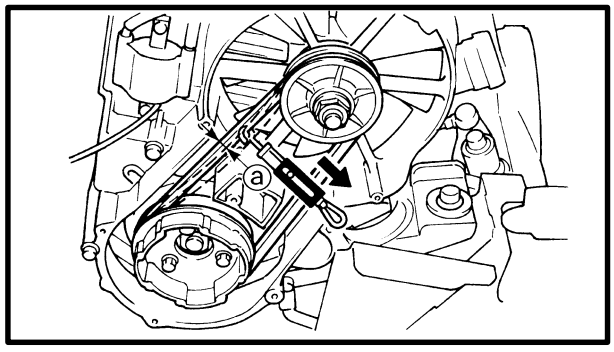
3. Remove:
   - Recoil starter
     Refer to “RECOIL STARTER” in CHAPTER 5.



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



5. Inspect:
   - Cooling fan ①
     Cracks/damage → Replace.
     Refer to “ENGINE COOLING FAN” in CHAPTER 5.

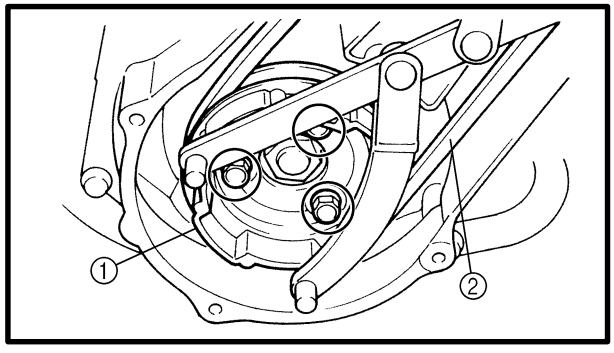


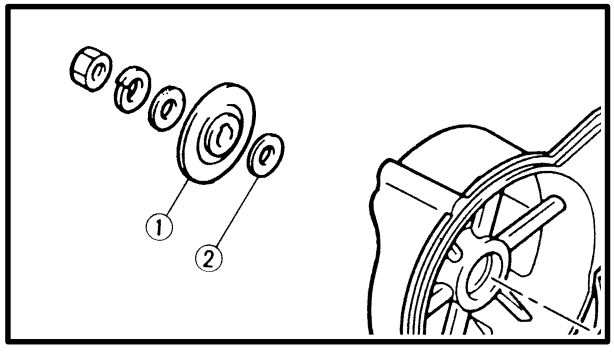
6. Measure:
   - Cooling fan belt deflection ⓐ
     Out of specification → Adjust.

NOTE:

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

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





7. Adjust:
   - Cooling fan belt deflection

Adjustment steps:

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

Rotor holding tool:
90890-01235, YU-01235

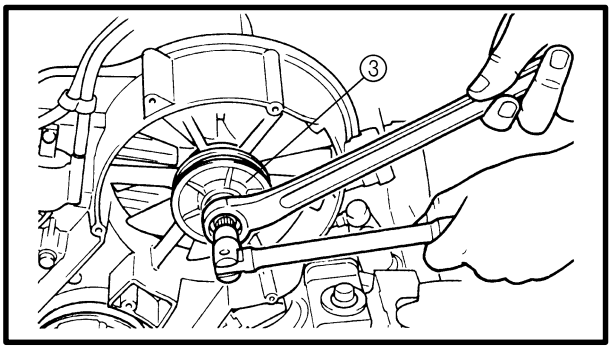
- Remove the driven pulley (outer sheave) ① and shim(s) ②.
- Adjust the cooling fan belt tension by adding or removing a shim(s) ② on the inside of the outer sheave.

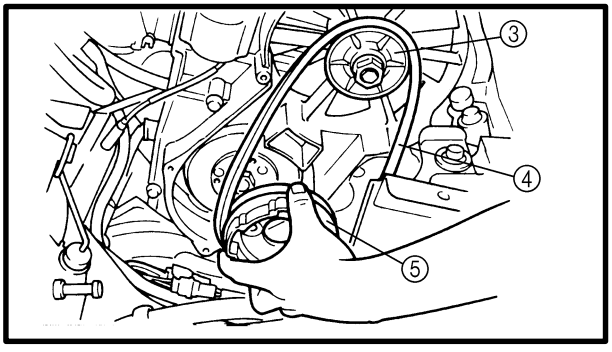
NOTE:

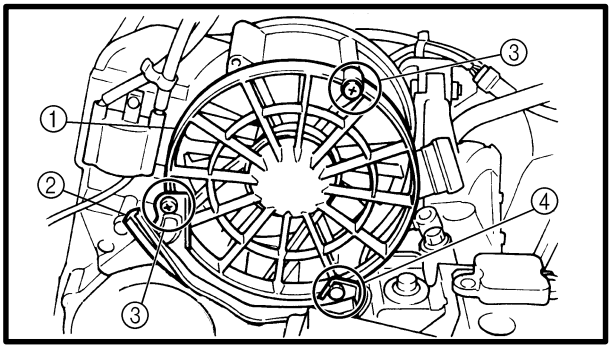
Always use at least one shim with part number 90214-17017 when adjusting the cooling fan belt deflection.

Adding a shim → Belt tension decreases.
Removing a shim → Belt tension increases.

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







- Install the driven pulley outer sheave ③.

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

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

NOTE:

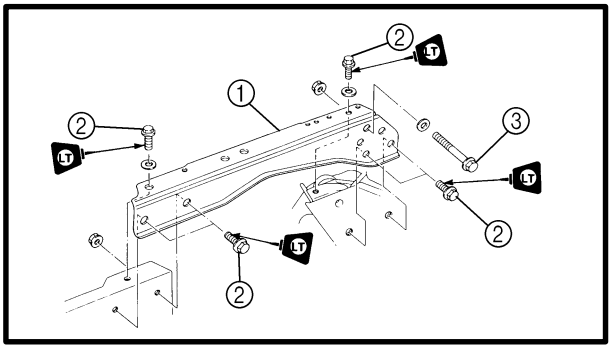
Install the cooling fan belt ④ onto the drive pulley ⑤ and driven pulley ③. Then install the drive pulley and tighten the bolts to the specified torque.

	Rotor holding tool: **90890-01235, YU-01235**
	Bolt (drive pulley): **23 Nm (2.3 m • kg, 17 ft • lb)**

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

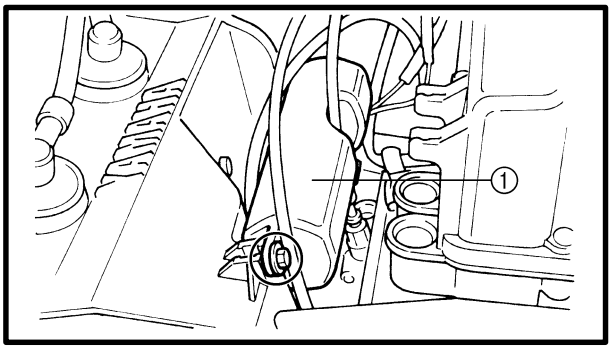
8. Install:
   - Recoil starter
     Refer to “RECOIL STARTER” in CHAPTER 5.
9. Install:
   - Cooling fan grill ①
   - Air duct stopper ②

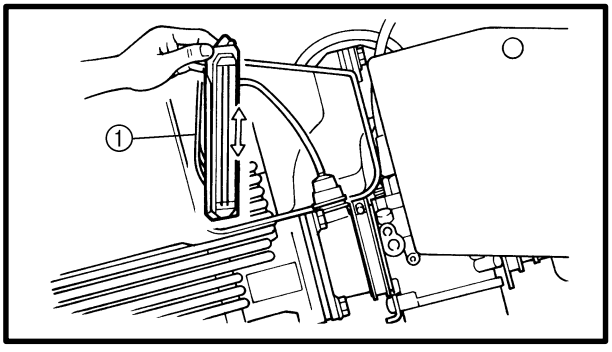
	Screw ③ (cooling fan grill): **7 Nm (0.7 m • kg, 5.1 ft • lb)** **Bolt ④ (cooling fan grill):** **7 Nm (0.7 m • kg, 5.1 ft • lb)**



10. Install:
    - Frame cross member ①

	Bolt (frame cross member) ②: **48 Nm (4.8 m • kg, 35 ft • lb)** **LOCTITE®** **Bolt (frame cross member) ③:** **85 Nm (8.5 m • kg, 61 ft • lb)**





CARBURETOR SYNCHRONIZATION

1. Remove:
   - Y.E.I.S. chamber ①
2. Insert:
   - Carb sync adapters
     (into the intake manifold opening)

Carb sync adapters:
YM-33973

3. Attach:
   - Vacuum gauge ①
     (to the carb sync adapters)

Vacuum gauge:
YS-33275

4. Start the engine and let it warm up.

⚠ WARNING

Do not move the throttle lever more than necessary so the engine will not run faster than the revolutions at which the snowmoble starts to move.
Engine revolutions: 3,500 r/min

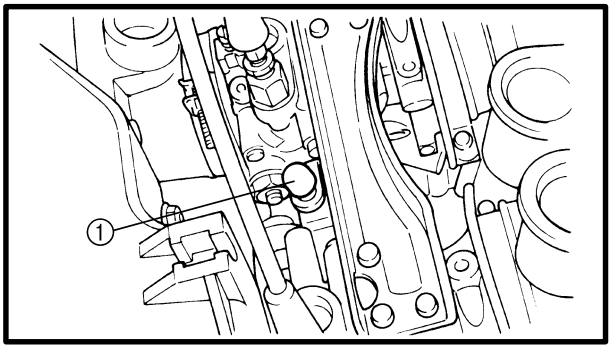
5. Adjust:
   - Engine idel speed
     Refer to “ENGINE IDLE SPEED ADJUSTMENT”.

Engine idle speed:
1,300 ± 100 r/min

6. Adjust:
   - Carburetor synchronization

Adjustment steps:

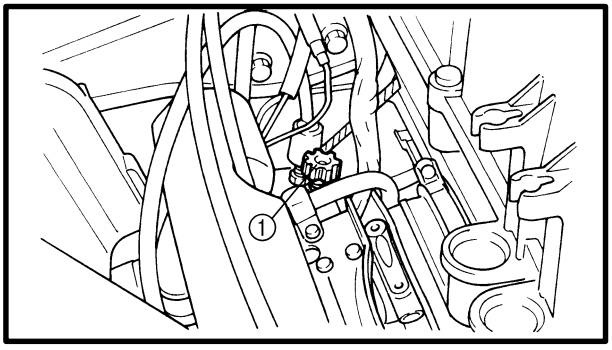
- Synchronize the carburetor (left) with the carburetor (right) by turning synchronizing screw ① until both gauges read the same.
- Race the engine for less than a second, two or three times, and check the synchronization again.



Vacuum pressure at idle speed:
26.06 ~ 27.26 kPa
(195 ~ 205 mmHg, 7.67 ~ 8.07 inHg)
Vacuum synchronous difference:
1.33 kPa (10 mmHg, 0.4 inHg)

7. Remove:
   - Vacuum gauge
8. Install:
   - Y.E.I.S. chamber

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



2E101
ENGINE IDLE SPEED ADJUSTMENT

1. Adjust:
   - Engine idle speed

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

Turning in → Idle speed is increased.
Turning out → Idle speed is decreased.

	Engine idle speed: **1,300 ± 100 r/min**

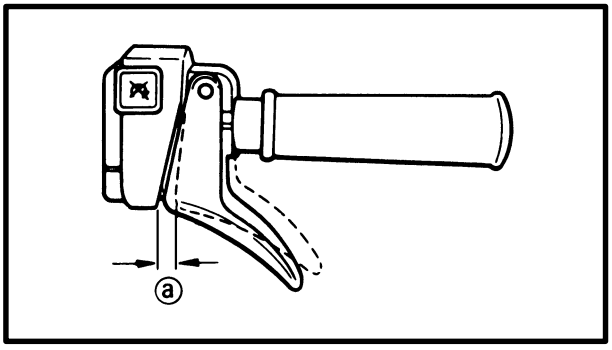
NOTE:
After adjusting the engine idle speed, the throttle cable freeplay should be adjusted.

2E131

THROTTLE CABLE FREEPLAY ADJUSTMENT

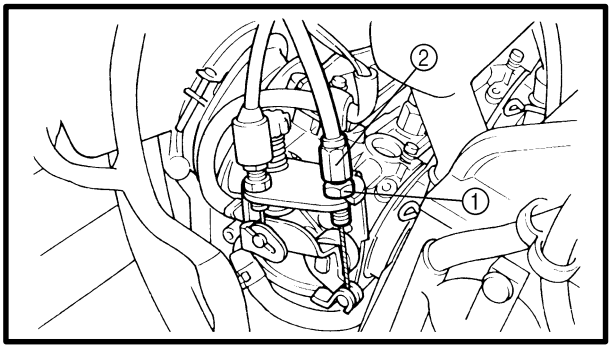
NOTE:

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



1. Measure:
   - Throttle cable freeplay ⓐ
     Out of specification → Adjust.

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



2. Adjust:
   - Throttle cable freeplay

Adjustment steps:

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

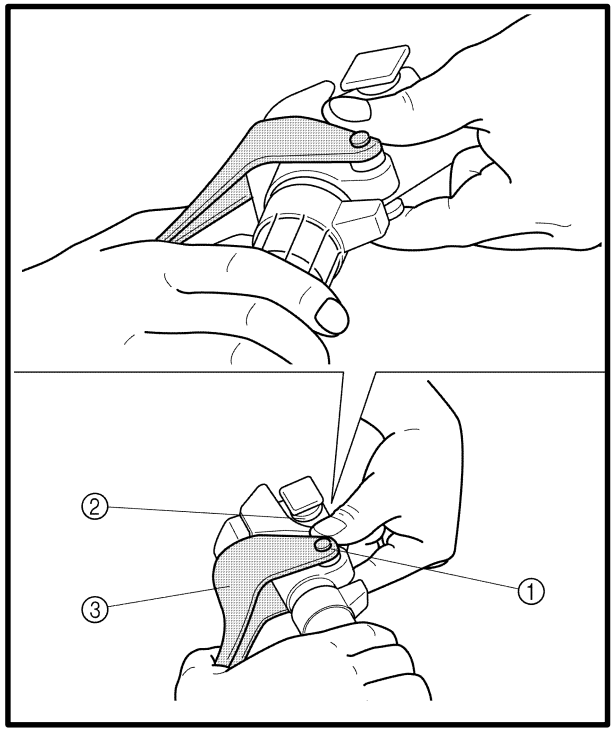
Turning in → Freeplay is increased.
Turning out → Freeplay is decreased.

- Tighten the locknut.

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

NOTE:

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



2E122

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

⚠ WARNING

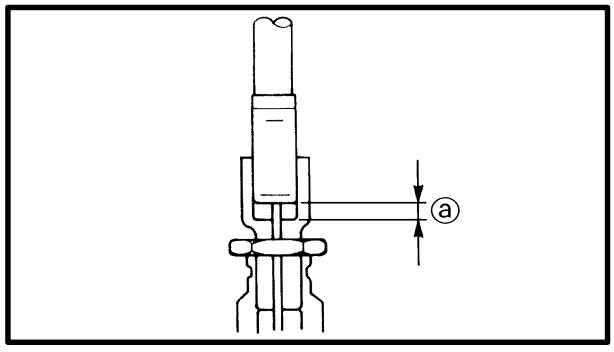
When checking T.O.R.S.:

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

1. Start the engine.
2. Hold the pivot point of the throttle lever away from the throttle switch by putting thumb (above) and fore finger (below) between throttle lever pivot ① and switch housing ②.
   While holding as described above, press the throttle lever ③ gradually.
   The engine should stop immediately.

⚠ WARNING

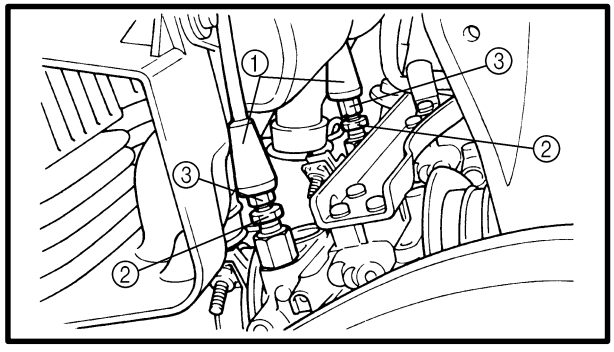
If the engine does not stop, stop the engine by turning the main switch to the "OFF" position and check the electrical system.



2E131
STARTER (CHOKE) CABLE FREEPLAY ADJUSTMENT

1. Measure:
   - Starter cable freeplay ⓐ
     Out of specification → Adjust.

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



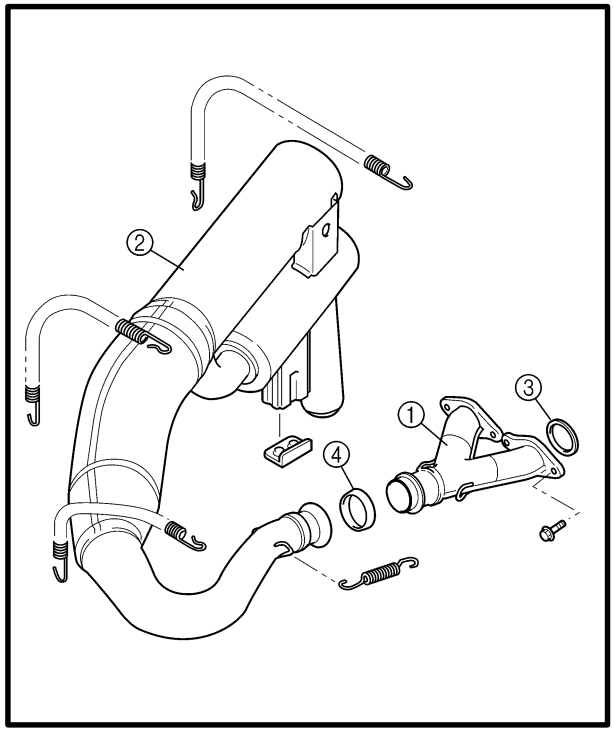
2. Adjust:
   - Starter cable freeplay

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

Turning in → Freeplay is increased.
Turning out → Freeplay is decreased.

- Tighten the locknut and push in the adjuster cover.

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



EXHAUST SYSTEM INSPECTION

1. Open the shroud.
2. Remove:
   - Springs (exhaust joint and silencer)
3. Inspect:
   - Exhaust joint ①
   - Exhaust silencer ②
     Cracks/damage → Replace.
   - Exhaust gaskets ③
   - Exhaust gasket ④
     Exhaust gas leaks → Replace.
4. Check:
   - Tightening torque

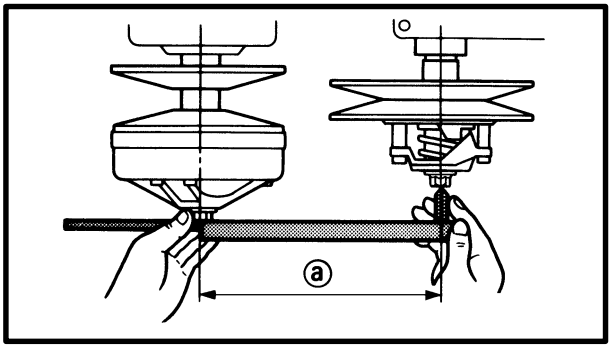
	Bolt (exhaust joint): **30 Nm (3.0 m • kg, 22 ft • lb)**

5. Install:
   - Springs (exhaust joint and silencer)
     Refer to “EXHAUST ASSEMBLY” in CHAPTER 5.

POWER TRAIN

SHEAVE DISTANCE AND OFFSET ADJUSTMENT

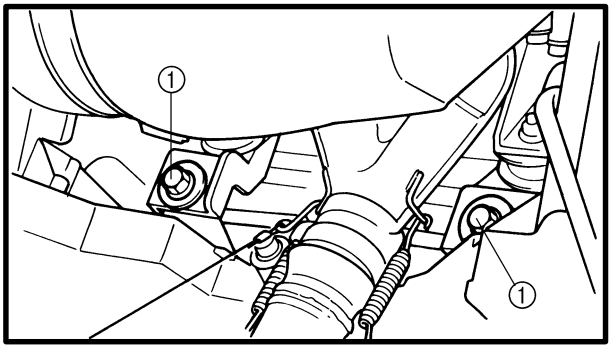
1. Open the shroud
2. Remove:
   - Drive V-belt guard
   - Drive V-belt



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

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

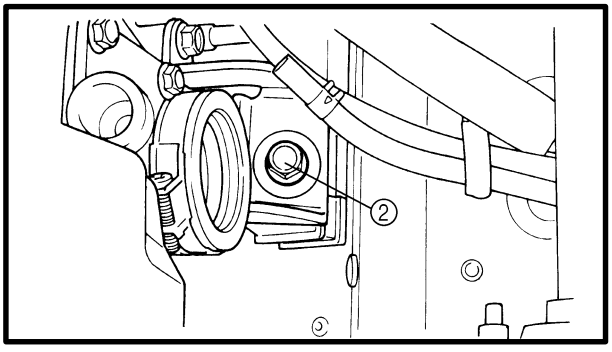
Sheave gauge:
YS-91047-3, 90890-01702



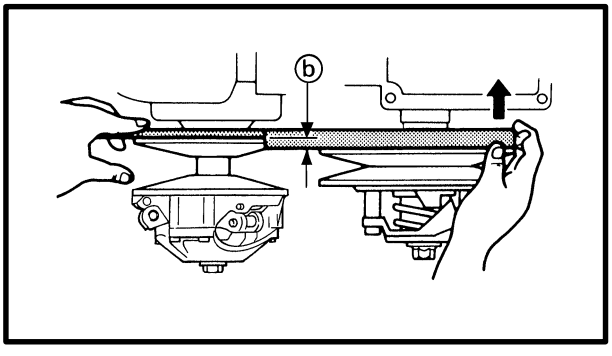
4. Adjust:
   - Sheave distance

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

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

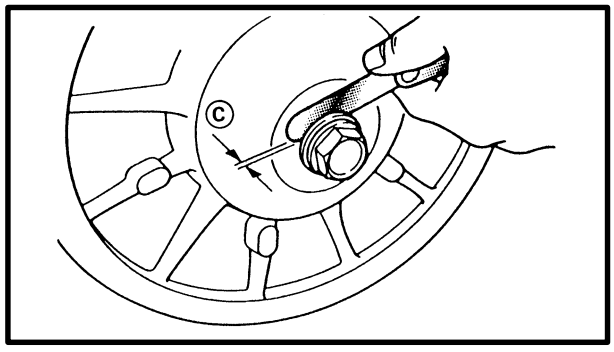


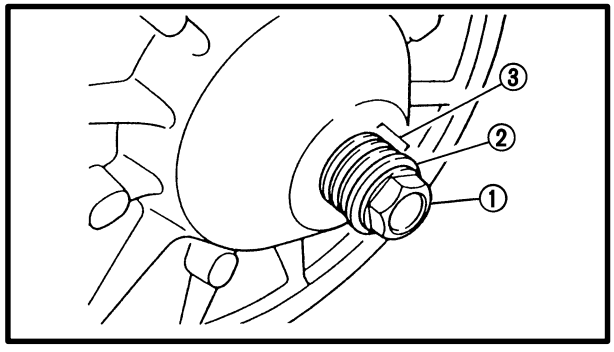
5. Measure:
   - Sheave offset ⓑ
     Use the sheave gauge.
     Out of specification → Adjust.



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

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





6. Measure:
   - Secondary sheave freeplay (clearance) Ⓒ
     Use a feeler gauge.
     Out of specification → Adjust.

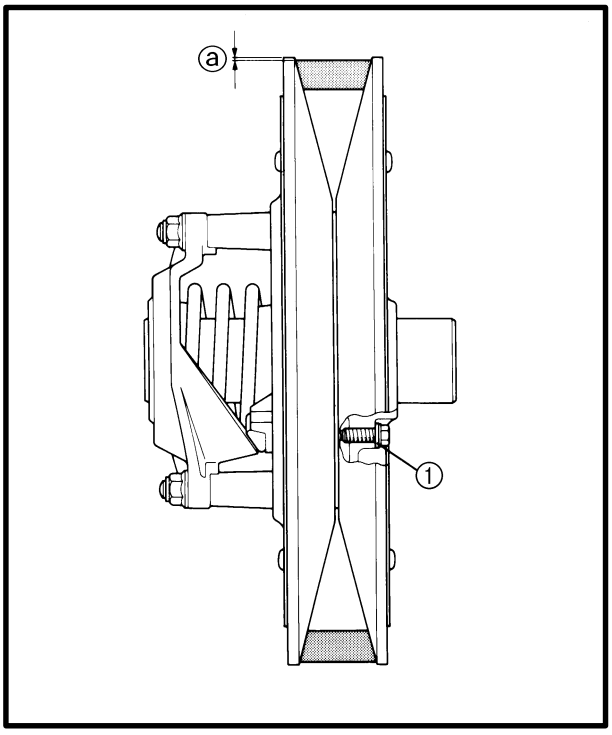
Secondary sheave freeplay (clearance) Ⓒ:
1.0 ~ 2.0 mm (0.0394 ~ 0.0787 in)

7. Adjust:
   - Secondary sheave freeplay (clearance)

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

Shim size:

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



DRIVE V-BELT

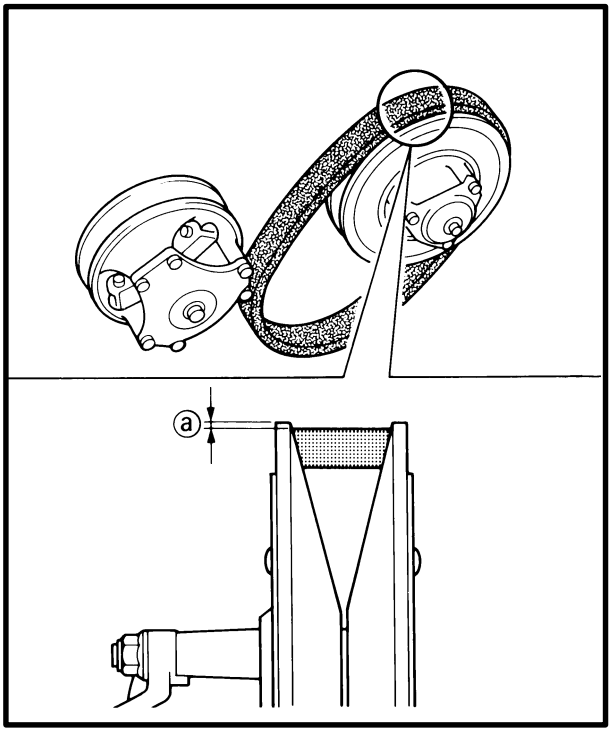
⚠ WARNING

When installing the new belt, be sure the V-belt is positioned 0 ~ 2 mm (0 ~ 0.08 in) below the edge ⓐ of the secondary sheave.
If the V-belt is not properly installed, the clutch engagement speed will be changed and the machine may move unexpectedly when the engine is started.
Adjust the V-belt position by removing or adding a spacer ① on each adjusting bolt.

CAUTION:

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

New belt width:
35.0 mm (1.38 in)
Belt wear limit width:
32.0 mm (1.26 in)

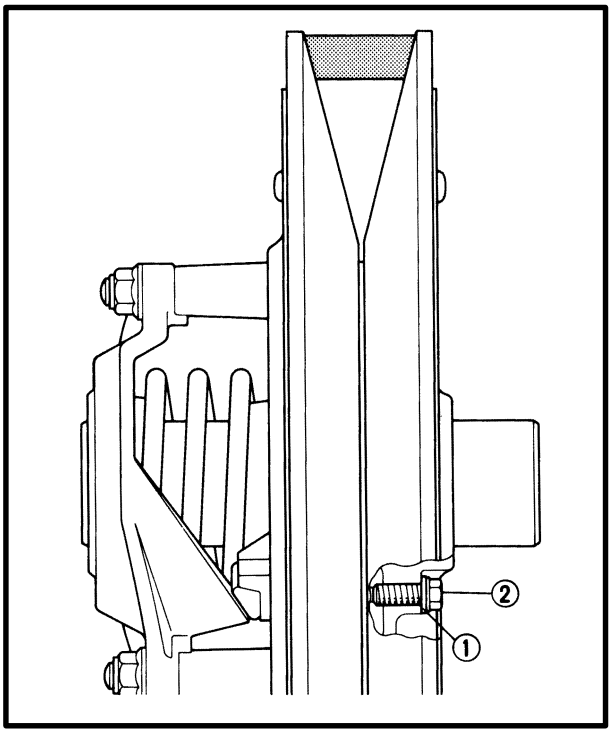


1. Measure:
   - V-belt position ⓐ

NOTE:

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

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

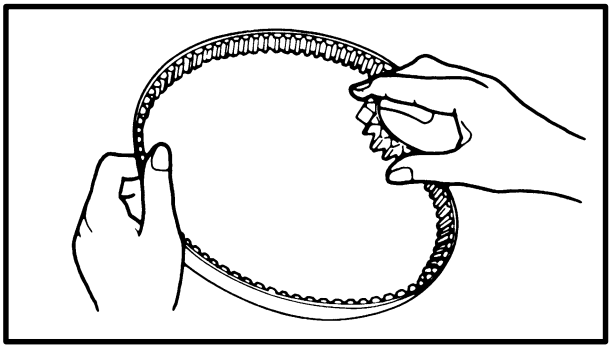


2. Adjust the position of the V-belt by removing or adding a spacer ① on each adjusting bolt ②.

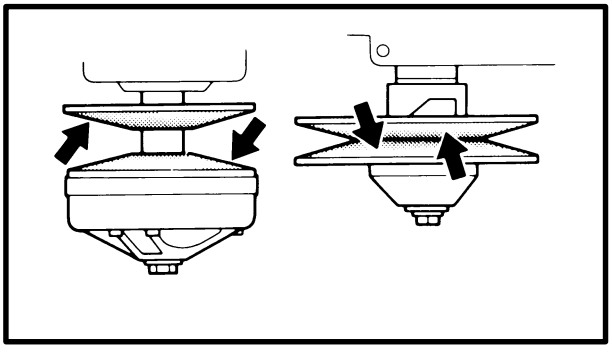
V-belt position	Adjustment
Above the edge	Remove a spacer
Below the edge 0 ~2 mm (0 ~ 0.08 in)	Not adjustment is necessary
Below the edge more than 2 mm (0.08 in)	Add spacer

3. Tighten:
   - Adjusting bolt

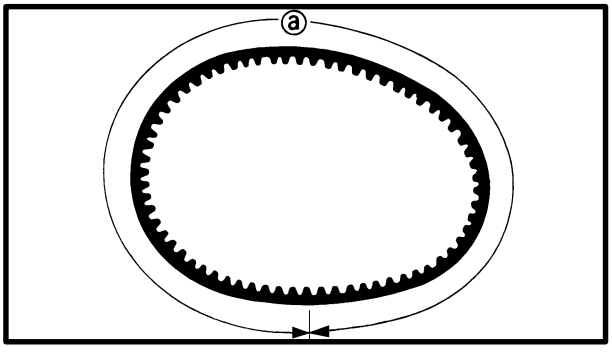
Adjusting bolt:
10 Nm (1.0 m • kg, 7.2 ft • lb)



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



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



6. Measure:
   - Drive V-belt length ⓐ
     Out of specification → Replace the drive V-belt.

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

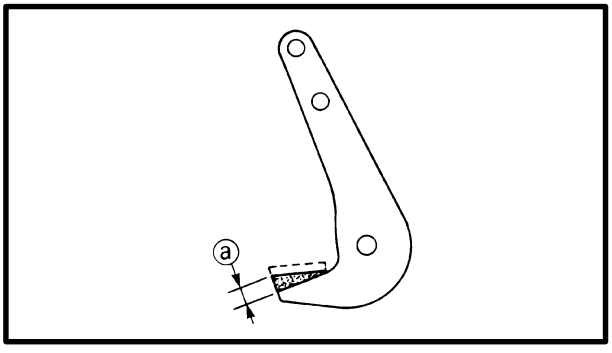
2E201
ENGAGEMENT SPEED CHECK

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

Checking steps:

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

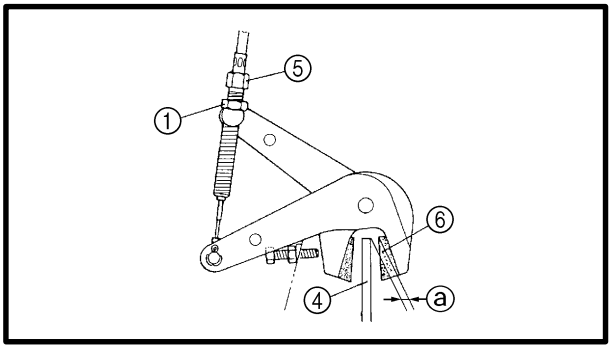
Engagement speed:
PZ500:
3,800 ± 200 r/min
VT500XL:
3,700 ± 200 r/min



PARKING BRAKE PAD INSPECTION

1. Measure:
   - Parking brake pad thickness ⓐ
     Out of specification → Replace the parking brake pads as a set.

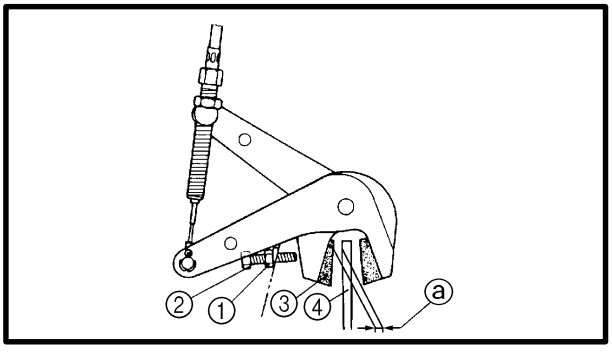
Wear limit ⓐ:
6 mm (0.24 in)



PARKING BRAKE ADJUSTMENT

1. Measure:
   - Clearance ⓐ
     Out of specification → Adjust.

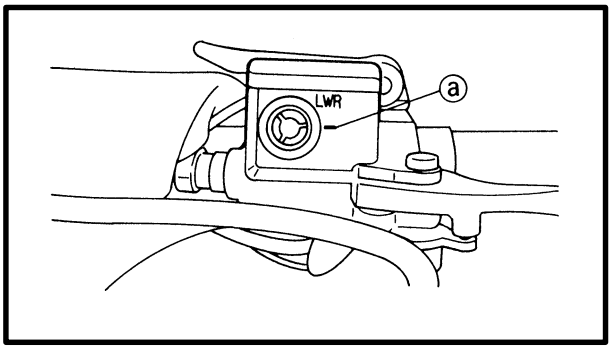
Clearance ⓐ:
1.2 ~ 1.3 mm (0.047 ~ 0.051 in)



2. Adjust:
   - Clearance ⓐ

Adjustment steps:

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



BRAKE FLUID LEVEL INSPECTION

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

Recommended brake fluid:
DOT 4

NOTE:

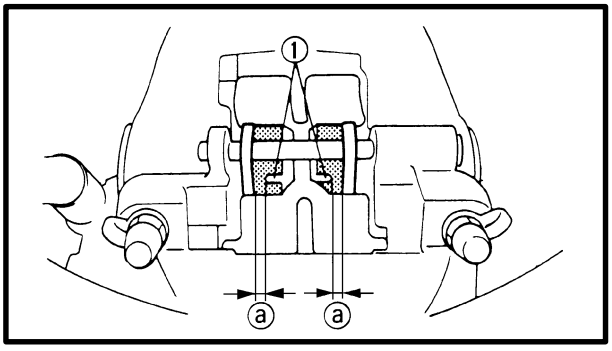
For a correct reading of the brake fluid level, make sure that the top of the handlebar brake master cylinder reservoir is horizontal.

CAUTION:

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

⚠ WARNING

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



BRAKE PAD INSPECTION

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

Wear limit ⓐ:
1.5 mm (0.06 in)

BRAKE HOSE INSPECTION

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

AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

⚠ WARNING

Bleed the brake system in the following cases:
- **The system has been disassembled.**
- **A brake hose is loosened or removed.**
- **The brake fluid has been very low.**
- **Brake operation is faulty.**

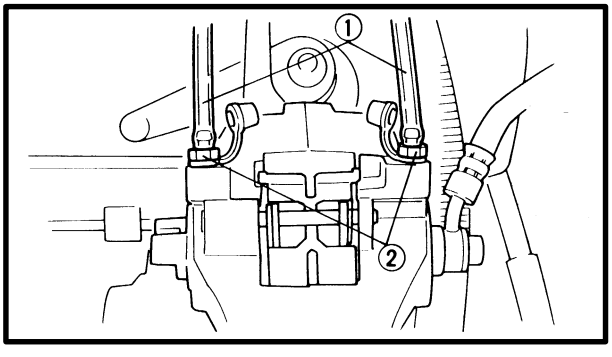
If the brake system is not properly bled a loss of braking performance may occur.

1. Bleed:
   - Brake system

Air bleeding steps:
- Fill the brake master cylinder reservoir with the proper brake fluid.
- Install the diaphragm. Be careful not to spill any fluid or allow the brake master cylinder reservoir to overflow.
- Connect a clear plastic hose ① tightly to the brake caliper bleed screw ②.
- Place the other end of the hose in a container.

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

- Repeat steps (a) to (d) until all of the air bubbles have disappeared from the fluid.
- Tighten the bleed screw.



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

NOTE:

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

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

⚠ WARNING

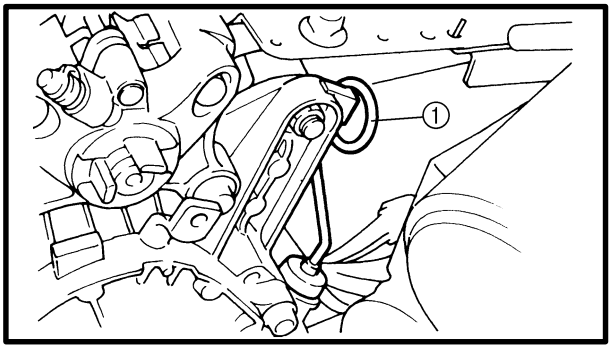
After bleeding the brake system, check the brake operation.

DRIVE CHAIN

Oil level inspection

⚠ WARNING

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



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

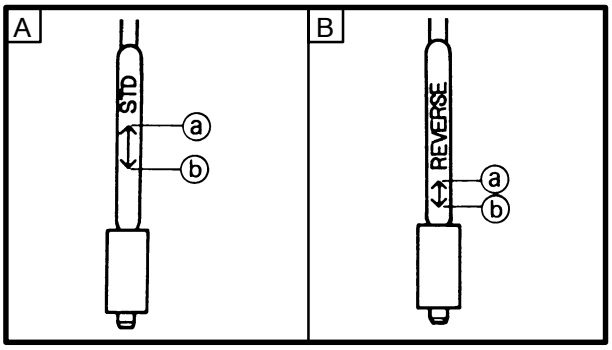
Checking steps:

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

CAUTION:

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

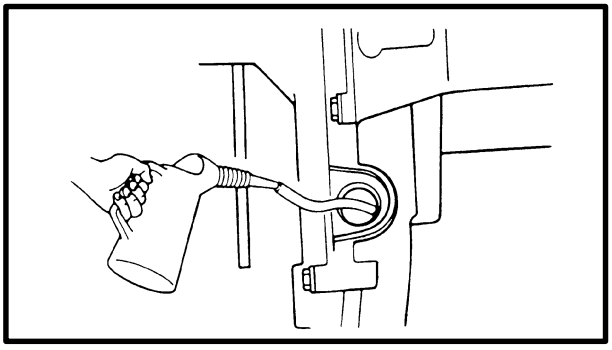
- **Pull the dipstick out slowly and gently so the metal particles do not fall off the magnet back into the drive chain housing.**
- **Wipe off the magnet before reinserting the dipstick into the drive chain housing.**



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

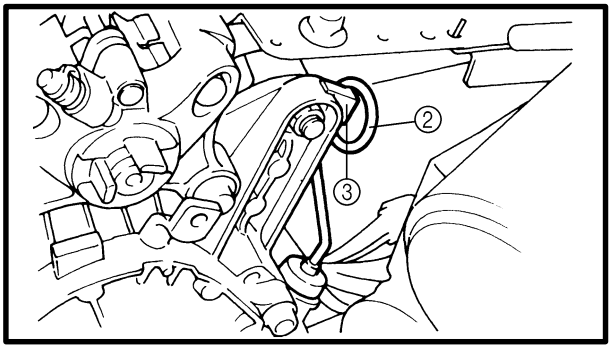
A For models without reverse transmissions.
B For models with reverse transmissions.

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

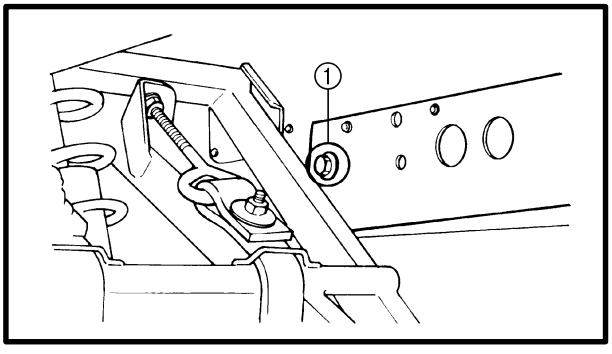


CAUTION:

Make sure that no foreign material enters the gear case.



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



Oil replacement

Oil replacement steps:

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

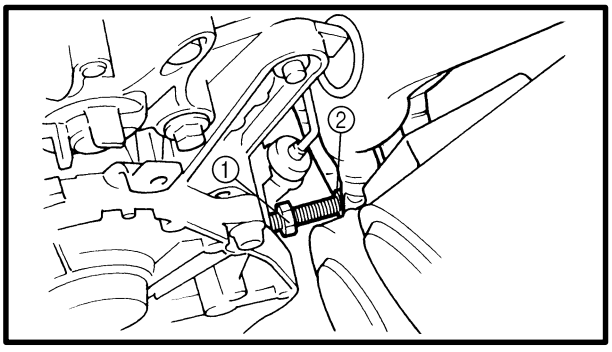
CAUTION:

Be sure to remove any oil from the heat protector.

- Install the oil drain bolt ①.

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

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



2E182
Chain slack adjustment

1. Adjust:
   - Drive chain slack

Adjustment steps:

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

2E151
TRACK TENSION ADJUSTMENT

⚠ WARNING

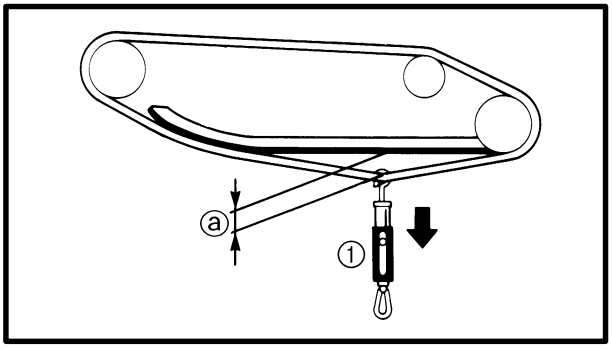
A broken track or track fittings, and debris thrown by the track could be dangerous to an operator or bystanders. Observe the following precautions.

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

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

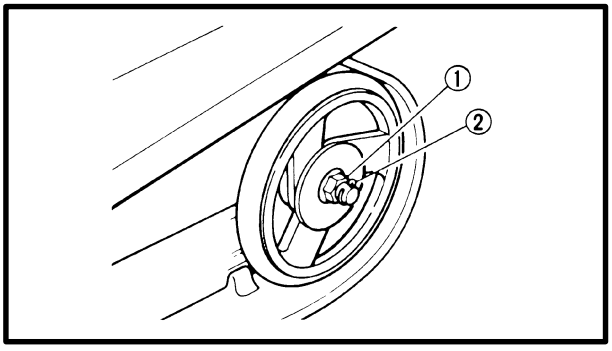
CAUTION:

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



2. Measure:
   - Track deflection ⓐ
     Using a spring scale ①, pull down on the center of the track with 10 kg (22 lb) of force.
     Out of specification → Adjust.

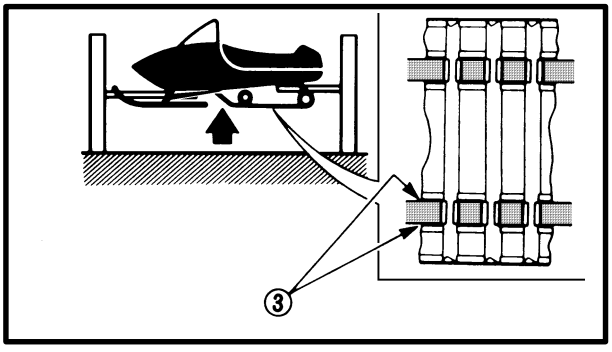
Track deflection ⓐ:
25 ~ 30 mm (0.98 ~ 1.18 in)



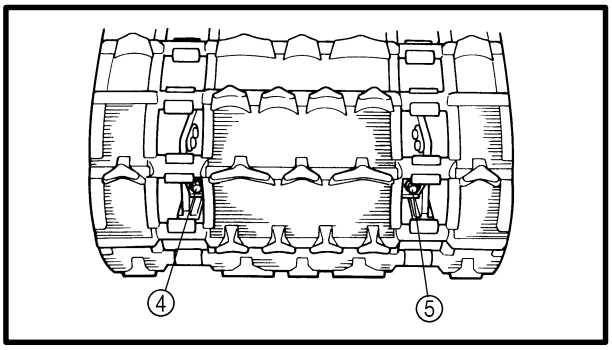
3. Adjust:
   - Track deflection

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

NOTE:
It is not necessary to remove the cotter pin ②.

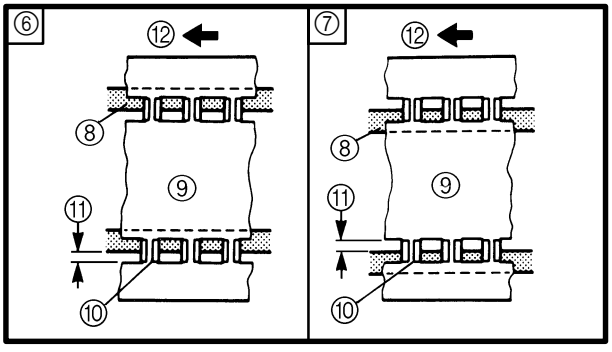


a. Start the engine and rotate the track once or twice. Stop the engine.
b. Check the track alignment with the slide runner ③.
   If the alignment is incorrect, turn the left and right adjusters to adjust.



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

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



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

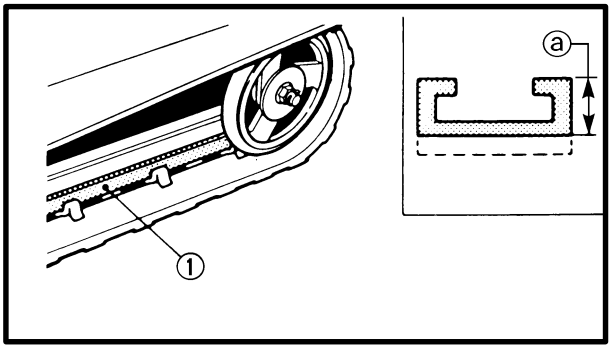
Track deflection	More than specified	Less than specified
④ Left adjuster	Turn in	Turn out
⑤ Right adjuster	Turn in	Turn out

CAUTION:

The adjusters should be turned an equal amount.

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

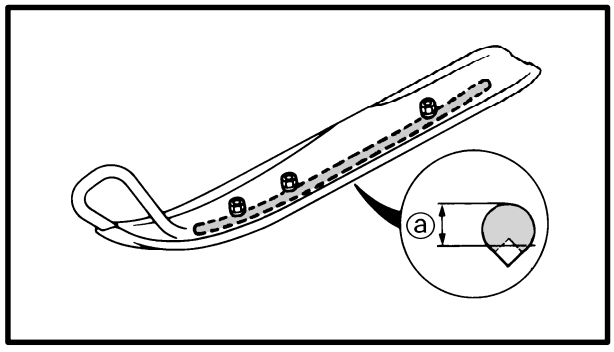
Nut (rear axle):
75 Nm (7.5 m • kg, 54 ft • lb)



SLIDE RUNNER INSPECTION

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

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

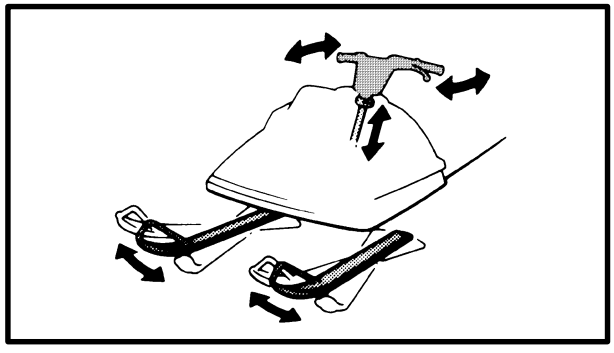


2E212
CHASSIS

SKI/SKI RUNNER

1. Inspect:
   - Ski
   - Ski runner
     Damage/wear → Replace.

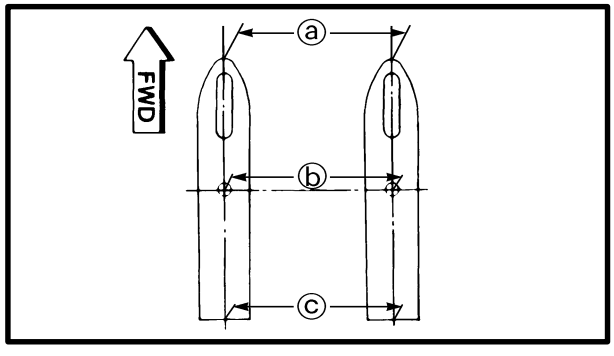
Ski runner wear limit ⓐ:
8 mm (0.31 in)



2E221
STEERING SYSTEM

Freeplay check

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

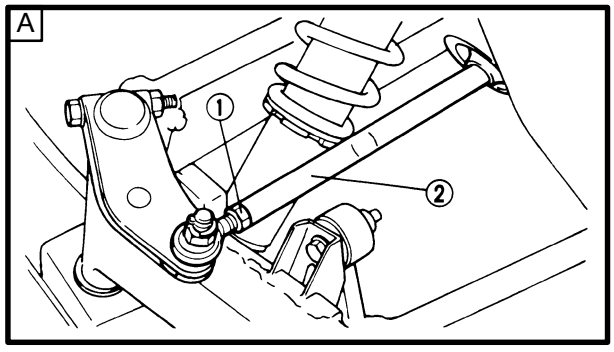


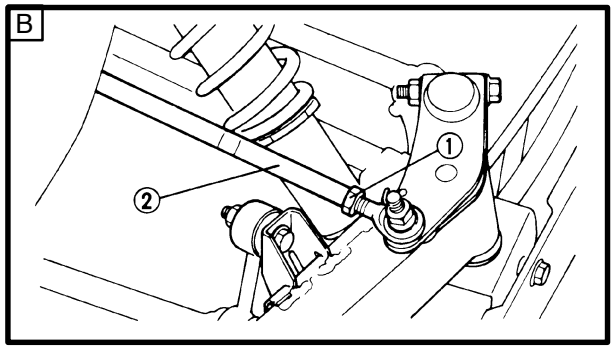
2E232

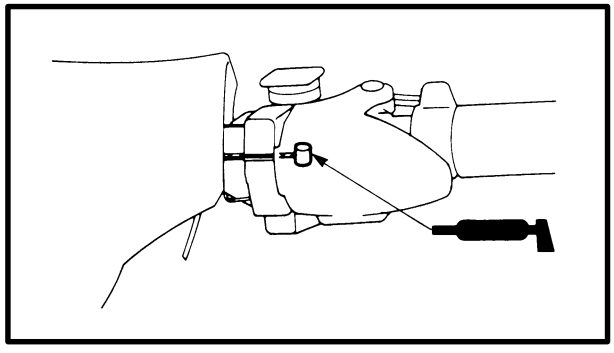
Toe-out adjustment

1. Place the machine on a level surface.
2. Check:
   - Ski toe-out
     Point the skis forward.
     Out of specification → Adjust.

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







3. Adjust:
   - Ski toe-out

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

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

A Left side
B Right side

2E251
LUBRICATION

Brake lever, throttle lever and throttle cable end

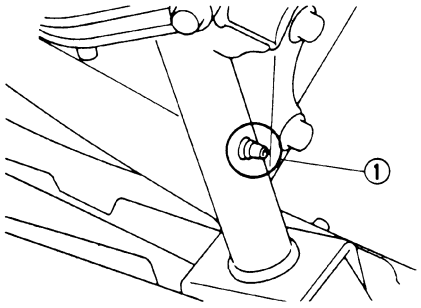
1. Lubricate the brake lever pivot, throttle lever and the ends of the throttle cable.

Recommended lubricant:
ESSO Beacon 325 Grease

⚠ WARNING

Apply a dab of grease onto only the end of the cable.
Do not grease the throttle cables.
They could freeze and cause a loss of control.

A



2E261

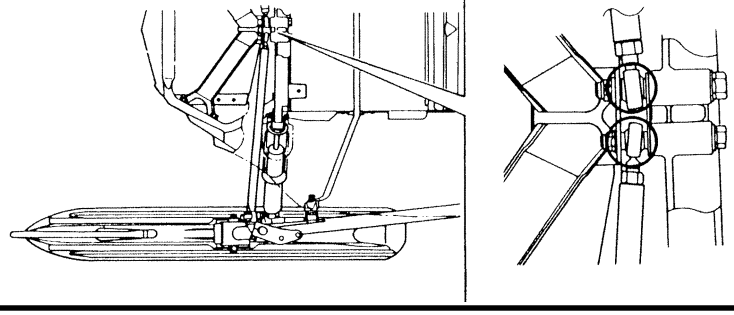
Front and rear suspension

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

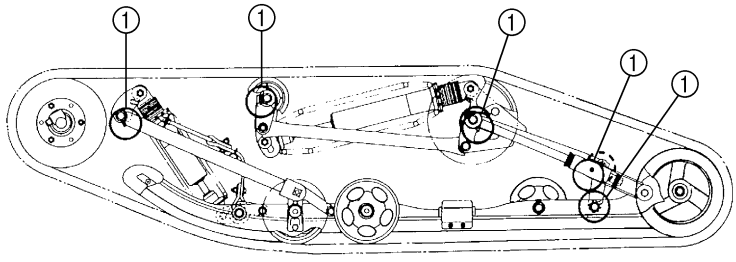
Recommended lubricant:
Esso Beacon 325 Grease or
Aeroshell Grease #7A

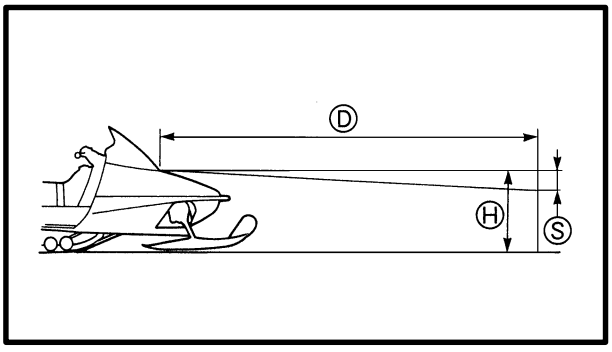
A Front
B Rear

A



B





ELECTRICAL

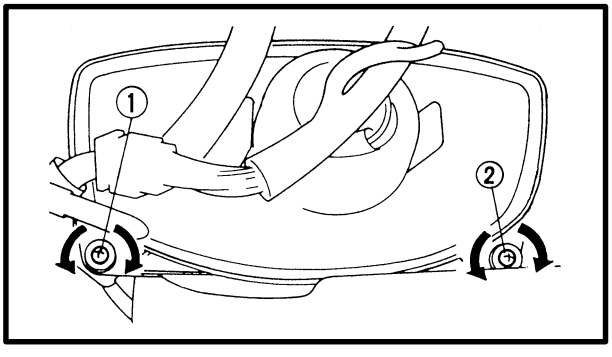
2E241

HEADLIGHT BEAM ADJUSTMENT

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

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

Ⓓ: Distance Ⓢ: Set range



6. Adjust:
   - Headlight beam (vertically)

   Vertical adjustment

   Higher **Turn the adjusting screw ① + ② clockwise.**

   Lower **Turn the adjusting screw ① + ② counterclockwise.**

7. Adjust:
   - Headlight beam (horizontally)

   Horizontal adjustment

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

   Left **Turn the adjusting screw ② counterclockwise.**