



SERVICE MANUAL

**SXV60ERJ
SXV60J
VT60J**

NOTICE

This manual was written by the Yamaha Motor Company primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so it is assumed that persons using this book to perform maintenance and repairs on Yamaha snowmobiles have a basic understanding of the mechanical concepts and procedures inherent in snowmobile repair. Without such knowledge, attempted repairs or service to this model may render it unfit and/or unsafe to use. Yamaha Motor Company, Ltd. is continually striving to improve all models manufactured by Yamaha. Modifications and significant changes in specifications or procedures will be forwarded to all authorized Yamaha dealers and will, where applicable, appear in future editions of this manual.

HOW TO USE THIS MANUAL

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



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

WARNING

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

CAUTION:

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

NOTE:

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

MANUAL FORMAT

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

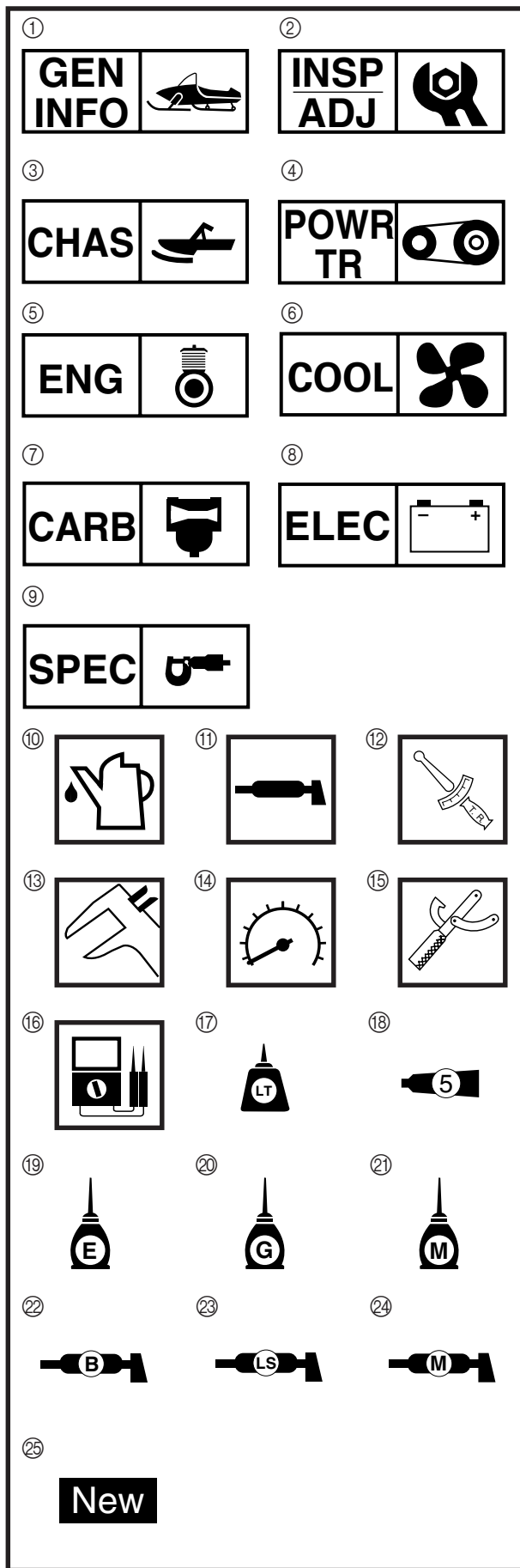
In this revised format, the condition of a faulty component will precede an arrow symbol and the course of action required to correct the problem will follow the symbol, e.g.,

- Bearings
Pitting/damage → Replace.

EXPLODED DIAGRAM

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

**SXV60ER, SXV60, VT60
SERVICE MANUAL
©2003 by Yamaha Motor
Corporation, U.S.A.
1st Edition, June 2003
All rights reserved. Any reprinting or
unauthorized use without the written
permission of Yamaha Motor Corporation,
U.S.A. is expressly prohibited.
Printed in U.S.A.
P/N.LIT-12618-02-30**



ILLUSTRATED SYMBOLS

(Refer to the illustration)

Illustrated symbols ① to ⑨ are designed as thumb tabs to indicate the chapter's number and content.

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










Illustrated symbols ⑩ to ⑯ are used to identify the specifications which appear.

- ⑩ Filling fluid
- ⑪ Lubricant
- ⑫ Tightening
- ⑬ Wear limit, clearance
- ⑭ Engine speed
- ⑮ Special tool
- ⑯ Ω, V, A

Illustrated symbols ⑰ to ⑳ in the exploded diagram indicate grade of lubricant and location of lubrication point.

- ⑰ Apply locking agent (LOCTITE®)
- ⑱ Apply Yamabond No.5®
- ⑲ Apply engine oil
- ⑳ Apply gear oil
- ㉑ Apply molybdenum disulfide oil
- ㉒ Apply wheel bearing grease
- ㉓ Apply low-temperature lithium-soap base grease
- ㉔ Apply molybdenum disulfide grease
- ㉕ Use new one

INDEX

GENERAL INFORMATION	 GEN INFO 1
PERIODIC INSPECTION AND ADJUSTMENT	 INSP ADJ 2
CHASSIS	 CHAS 3
POWER TRAIN	 POWR TR 4
ENGINE	 ENG 5
COOLING SYSTEM	 COOL 6
CARBURETION	 CARB 7
ELECTRICAL	 ELEC 8
SPECIFICATIONS	 SPEC 9

CHAPTER 1. GENERAL INFORMATION

MACHINE IDENTIFICATION	1-1
FRAME SERIAL NUMBER	1-1
ENGINE SERIAL NUMBER	1-1
IMPORTANT INFORMATION	1-2
PREPARATION FOR REMOVAL AND DISASSEMBLY	1-2
ALL REPLACEMENT PARTS	1-2
GASKETS, OIL SEALS, AND O-RINGS	1-3
LOCK WASHERS/PLATES AND COTTER PINS	1-3
BEARINGS AND OIL SEALS	1-3
CIRCLIPS	1-3
LOCTITE®	1-3
SPECIAL TOOLS	1-4
FOR TUNE UP	1-4
FOR ENGINE SERVICE	1-5
FOR POWER TRAIN SERVICE	1-5
FOR CARBURETION SERVICE	1-6
FOR ELECTRICAL SERVICE	1-6

CHAPTER 2. PERIODIC INSPECTION AND ADJUSTMENT

INTRODUCTION	2-1
PERIODIC MAINTENANCE TABLE	2-1
ENGINE	2-3
SPARK PLUGS	2-3
OIL PUMP	2-4
FUEL LINE INSPECTION	2-6
COOLING SYSTEM	2-6
HEAT SHIELD CLAMP REPLACEMENT ..	2-12
CARBURETOR SYNCHRONIZATION	2-12
ENGINE IDLE SPEED ADJUSTMENT	2-13
THROTTLE CABLE FREE PLAY ADJUSTMENT	2-13
THROTTLE OVERRIDE SYSTEM (T.O.R.S.) CHECK	2-14
STARTER (CHOKE) CABLE FREE PLAY ADJUSTMENT	2-15
EXHAUST SYSTEM INSPECTION	2-15

POWER TRAIN	2-16
SHEAVE DISTANCE AND OFFSET ADJUSTMENT	2-16
DRIVE V-BELT	2-19
ENGAGEMENT SPEED CHECK	2-21
PARKING BRAKE PAD INSPECTION	2-21
PARKING BRAKE ADJUSTMENT	2-22
BRAKE LEVER ADJUSTMENT	2-22
BRAKE FLUID LEVEL INSPECTION	2-23
BRAKE PAD INSPECTION	2-23
BRAKE HOSE INSPECTION	2-24
AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)	2-24
DRIVE CHAIN	2-25
TRACK TENSION ADJUSTMENT	2-28
SLIDE RUNNER INSPECTION	2-30
MAXIMIZING DRIVE TRACK LIFE	2-31
CHASSIS	2-32
SKI/SKI RUNNER	2-32
STEERING SYSTEM	2-33
LUBRICATION	2-34
ELECTRICAL	2-36
HEADLIGHT BEAM ADJUSTMENT	2-36
BATTERY INSPECTION (SXV60ER/VT60)	2-37
BATTERY CHARGING (SXV60ER/VT60) ..	2-39
FUSE INSPECTION (SXV60ER/VT60)	2-40
SPEEDOMETER ASSEMBLY INSPECTION	2-42
TUNING	2-43
CARBURETOR TUNING	2-43
CLUTCH	2-50
GEAR SELECTION	2-54
HIGH ALTITUDE TUNING	2-60
FRONT SUSPENSION	2-61
REAR SUSPENSION	2-61

CHAPTER 3. CHASSIS

STEERING	3-1
INSPECTION	3-3
INSTALLATION	3-4
SKI	3-7
SXV60ER/SXV60	3-7
VT60	3-8
INSPECTION	3-9
INSTALLATION (VT60)	3-9
FRONT SUSPENSION	3-10
INSPECTION	3-11
INSTALLATION	3-12

CHAPTER 4. POWER TRAIN

PRIMARY SHEAVE AND DRIVE V-BELT	4-1
REMOVAL	4-3
DISASSEMBLY	4-4
INSPECTION	4-5
ASSEMBLY	4-7
INSTALLATION	4-10
SECONDARY SHEAVE	4-11
DISASSEMBLY	4-13
INSPECTION	4-13
ASSEMBLY	4-14
INSTALLATION	4-16
DRIVE CHAIN HOUSING	4-17
WITHOUT REVERSE MODEL	4-17
INSPECTION	4-18
INSTALLATION	4-20
WITH REVERSE MODEL	4-21
INSPECTION	4-23
INSTALLATION	4-24
JACKSHAFT	4-26
INSPECTION	4-27
JACKSHAFT AND DRIVE CHAIN HOUSING INSTALLATION	4-28

BRAKE	4-29
BRAKE PAD REPLACEMENT	4-30
REMOVAL	4-33
BRAKE CALIPER DISASSEMBLY	4-35
BRAKE CALIPER INSPECTION AND REPAIR	4-35
BRAKE CALIPER ASSEMBLY	4-36
BRAKE CALIPER INSTALLATION	4-36
INSPECTION	4-38
BRAKE MASTER CYLINDER ASSEMBLY	4-38
INSTALLATION	4-38
SLIDE RAIL SUSPENSION	4-39
SXV60ER/SXV60	4-39
VT60	4-40
INSPECTION	4-45
ASSEMBLY	4-45
CONTROL ROD PARTS NUMBER	4-46

FRONT AXLE AND TRACK	4-47
INSPECTION	4-48
INSTALLATION	4-48

CHAPTER 5. ENGINE

EXHAUST ASSEMBLY	5-1
INSTALLATION	5-2
ENGINE ASSEMBLY	5-3
INSPECTION	5-4
INSTALLATION	5-4
CYLINDER HEAD AND CYLINDER	5-6
REMOVAL	5-8
INSPECTION	5-9
INSTALLATION	5-14
OIL PUMP, CRANKCASE AND CRANKSHAFT	5-17
INSPECTION	5-18
INSTALLATION	5-20

AC MAGNETO	5-23
REMOVAL	5-24
INSTALLATION	5-25

RECOIL STARTER	5-27
REMOVAL	5-28
INSPECTION	5-28
INSTALLATION	5-29

CHAPTER 6. COOLING SYSTEM

HEAT EXCHANGER	6-1
INSPECTION	6-2
INSTALLATION	6-2

WATER PUMP	6-3
REMOVAL	6-4
INSPECTION	6-4
INSTALLATION	6-4

CHAPTER 7. CARBURETION

CARBURETORS	7-1
INSPECTION	7-5
ASSEMBLY	7-6
CARBURETOR SYNCHRONIZATION	7-7
FUEL LEVEL ADJUSTMENT	7-8
INSTALLATION	7-9

FUEL PUMP	7-10
INSPECTION	7-11
INSTALLATION	7-11

CHAPTER 8. ELECTRICAL

SWITCH INSPECTION	8-1
SWITCH INSPECTION	8-1
INSPECTING A SWITCH SHOWN IN THE MANUAL	8-1

IGNITION SYSTEM	8-2
CIRCUIT DIAGRAM	8-2
TROUBLESHOOTING	8-4
CONDENSER (SXV60)	8-6
AC MAGNETO	8-6
SPARK PLUG	8-7
SPARK PLUG CAP	8-7
IGNITION COIL	8-7
THROTTLE OVERRIDE SYSTEM (T.O.R.S.)	8-8
HANDLEBAR SWITCH (RIGHT)	8-8
CARBURETOR SWITCH	8-9
MAIN SWITCH	8-9
LOAD CONTROL RELAY	8-10
EMERGENCY ENGINE STARTING (SXV60)	8-10

ELECTRICAL STARTING SYSTEM	8-11
CIRCUIT DIAGRAM (SXV60ER/VT60)	8-11
TROUBLESHOOTING (SXV60ER/VT60)	8-12
STARTER MOTOR (SXV60ER/VT60)	8-14

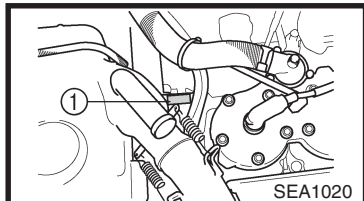
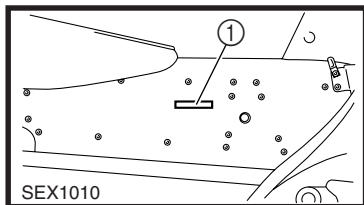
CHARGING SYSTEM	8-18
CIRCUIT DIAGRAM (SXV60ER/VT60)	8-18
TROUBLESHOOTING (SXV60ER/VT60)	8-19
BATTERY	8-21

LIGHTING SYSTEM	8-22
CIRCUIT DIAGRAM	8-22
TROUBLESHOOTING	8-24
BULB(S)	8-26
HEADLIGHT BEAM SWITCH	8-26
HEADLIGHT RELAY	8-27

SIGNAL SYSTEM	8-28
CIRCUIT DIAGRAM	8-28
TROUBLESHOOTING	8-30
BRAKE LIGHT SWITCH	8-36
GEAR POSITION SWITCH (SXV60ER/VT60)	8-36
DC BACK BUZZER (SXV60ER/VT60)	8-36
WATER TEMPERATURE SENSOR	8-37
OIL LEVEL SWITCH	8-38
FUEL SENDER	8-38
SPEED SENSOR	8-39
GRIP WARMER SYSTEM	8-40
CIRCUIT DIAGRAM	8-40
TROUBLESHOOTING	8-42
GRIP AND THUMB WARMER COIL	8-44
THUMB WARMER ADJUSTMENT SWITCH	8-44
GRIP WARMER ADJUSTMENT SWITCH ...	8-45
PASSENGER GRIP WARMER (VT60)	8-45
PASSENGER GRIP WARMER SWITCH (VT60)	8-46
RESISTOR (VT60)	8-46
PASSENGER GRIP WARMER RELAY (VT60)	8-47
FAULT LOCATION TABLE	8-48

CHAPTER 9. SPECIFICATIONS

GENERAL SPECIFICATIONS	9-1
MAINTENANCE SPECIFICATIONS	9-3
ENGINE	9-3
POWER TRAIN	9-6
CHASSIS	9-10
ELECTRICAL	9-11
HIGH ALTITUDE SETTINGS	9-13
TIGHTENING TORQUE	9-14
GENERAL TORQUE SPECIFICATIONS	9-18
DEFINITION OF UNITS	9-18
CABLE ROUTING	9-19



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

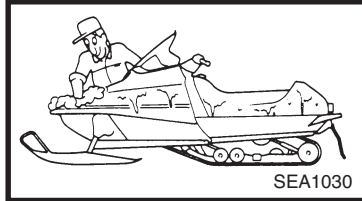
The engine serial number ① is located on the right-hand side of the crankcase.

NOTE:

Designs and specifications are subject to change without notice.

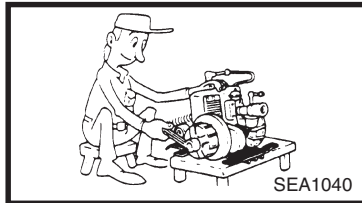
**IMPORTANT INFORMATION
PREPARATION FOR REMOVAL AND DISASSEMBLY**

1



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

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

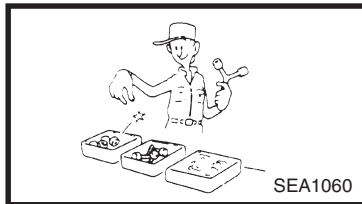


2. Use proper tools and cleaning equipment.

Refer to "SPECIAL TOOLS".

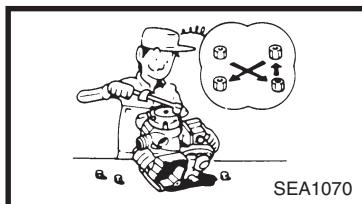


3. When disassembling the machine, keep mated parts together. This includes gears, cylinders, pistons, and other parts that have been "mated" through normal wear. Mated parts must be reused or replaced as an assembly.



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

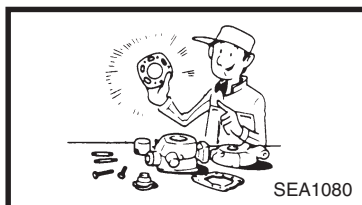
5. Keep all parts away from any source of fire.



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

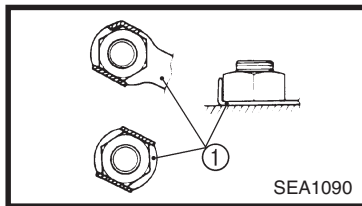
ALL REPLACEMENT PARTS

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



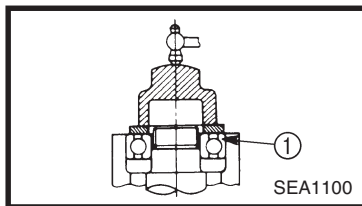
GASKETS, OIL SEALS, AND O-RINGS

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



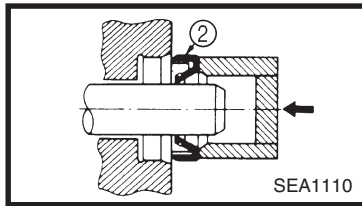
LOCK WASHERS/PLATES AND COTTER PINS

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



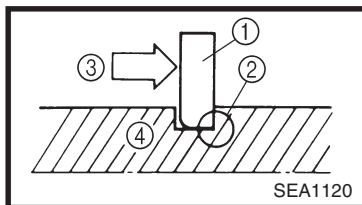
BEARINGS AND OIL SEALS

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



CAUTION:

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



CIRCLIPS

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

④ Shaft

LOCTITE®

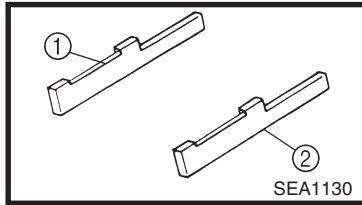
After installing fasteners that have LOCTITE® applied, wait 24 hours before using the machine. This will give the LOCTITE® time to dry properly.

SPECIAL TOOLS

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

NOTE:

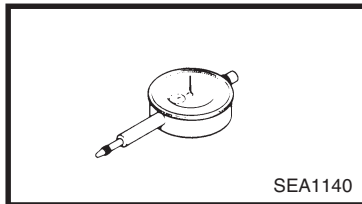
Be sure to use the correct part number when ordering the tool, since the part number may differ according to country.



FOR TUNE UP

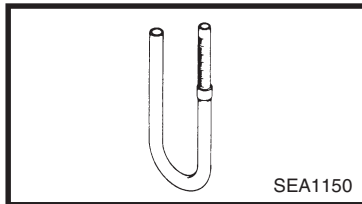
- Offset gauge
P/N: YS-42421-1 (15 mm offset) ①
YS-42421-2 (20 mm offset) ②

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



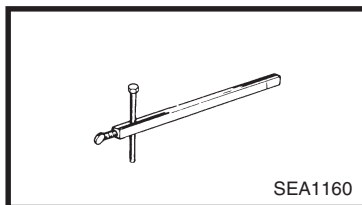
- Dial indicator
P/N: YU-03097 (for U.S.A./Canada)
- Dial gauge
P/N: 90890-03097 (for Europe)

This gauge is used for run out measurement.



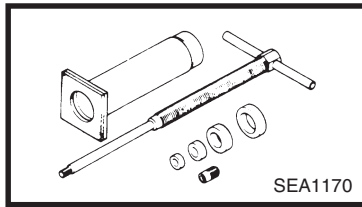
- Fuel level gauge
P/N: YM-01312-A (for U.S.A./Canada)
90890-01312 (for Europe)

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



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

This gauge is used to measure the distance between the center of the primary sheave and the center of the secondary sheave.

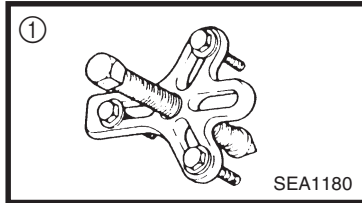


SEA1170

FOR ENGINE SERVICE

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

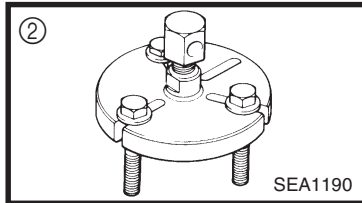
This tool is used to remove the piston pin.



SEA1180

- Rotor holding puller
P/N: YU-33270 ① (for U.S.A./Canada)
90890-01362 ② (for Europe)

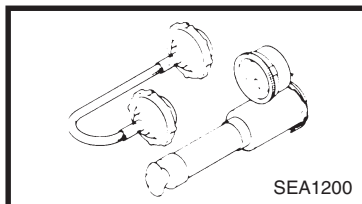
This tool is used to remove the magneto rotor.



SEA1190

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

This tester is used for checking the cooling system.

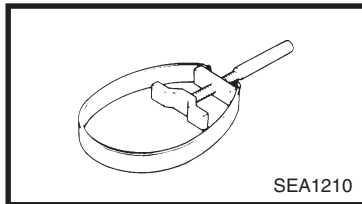


SEA1200

FOR POWER TRAIN SERVICE

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

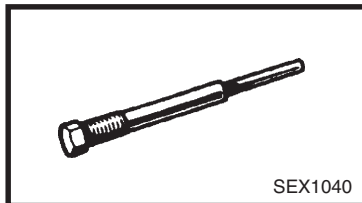
This tool is used to hold the primary sheave.



SEA1210

- Primary sheave puller (18 mm)
P/N: YS-39962 (for U.S.A./Canada)
90890-01898 (for Europe)

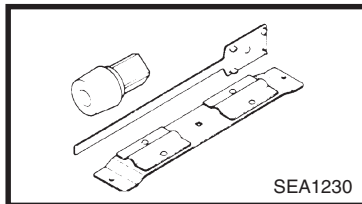
This tool is used for removing the primary sheave.



SEX1040

- Primary clutch spider separator tool set
P/N: YS-28890-C

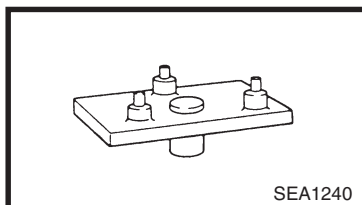
This tool is used when disassembling and assembling the primary sheave.



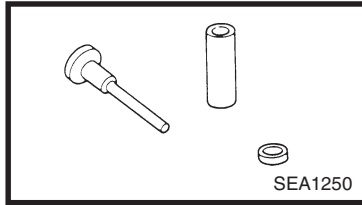
SEA1230

- Clutch separator adapter
P/N: YS-34480

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

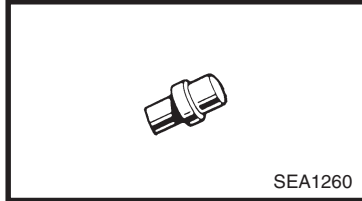


SEA1240



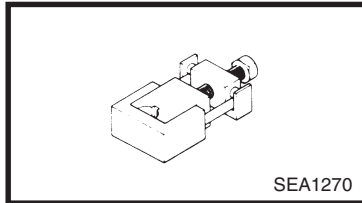
- YXR clutch bushing jig kit
P/N: YS-39752

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



- Clutch bushing press
P/N: YS-42424

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



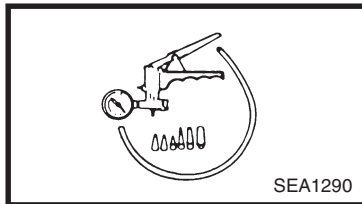
- Track clip installer
P/N: YS-91045-A

This tool is used for installing the track clip.



- Angle finder with magnetic strip
P/N: YS-42422

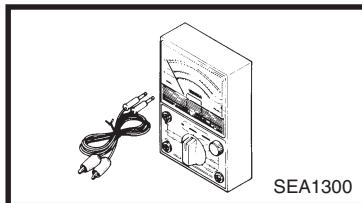
This tool is used for checking and adjusting the ski spindle camber.



FOR CARBURETION SERVICE

- Hydraulic brake bleeding tool
P/N: YS-42423 (for U.S.A./Canada)
- Mity vac
P/N: 90890-06756 (for Europe)

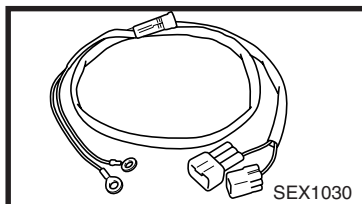
This tool is used to check the fuel pump.



FOR ELECTRICAL SERVICE

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

This instrument is necessary for checking the electrical components.



- Speedometer unit test coupler
P/N: YS-45686

This tool is used for checking the speedometer unit.

PERIODIC INSPECTION AND ADJUSTMENT

INTRODUCTION

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

PERIODIC MAINTENANCE TABLE

Item	Remarks	Pre-operation check (Daily)	Initial 1 month or 800 km (500 mi) (40 hr)	Every
				Seasonally or 3,200 km (2,000 mi) (160 hr)
Spark plugs	Check condition. Adjust gap and clean. Replace if necessary.			●
Engine oil	Check oil level.	●		
	Air bleed the oil pump if necessary.			●
Fuel	Check fuel level.	●		
Fuel filter	Check condition. Replace if necessary.			●
Fuel line	Check fuel hose for cracks or damage. Replace if necessary.			●
Oil line	Check oil hose for cracks or damage. Replace if necessary.			●
Engine coolant	Check coolant level.	●		
	Air bleed the cooling system if necessary.			●
Carburetors	Check throttle lever operation.	●		
	Adjust the jets.	Whenever operating condition (elevation/temperature) is changed.		
Recoil starter	Check operation and rope damage. Replace if necessary.	●		
Engine stop switch	Check operation. Repair if necessary.	●		
Throttle override system (T.O.R.S.)	Check operation. Repair if necessary.	●		
Throttle lever	Check operation. Repair if necessary.	●		
Exhaust system	Check for leakage. Tighten or replace gasket if necessary.			●
Decarbonization	More frequently if necessary.			●
Drive guard	Check for cracks, bends or damage. Replace if necessary.	●		
V-belt	Check for wear and damage. Replace if necessary.	●		
Drive track and idler wheels	Check deflection, and for wear and damage. Adjust/replace if necessary.	●		
	Check for wear and damage. Replace if necessary.	●		●
Brake and parking brake	Check operation and fluid leakage.	●		
	Adjust free play and/or replace pads if necessary.			●
	Replace brake fluid.	See NOTE on page 2-2.		

PERIODIC MAINTENANCE TABLE

**INSP
ADJ**

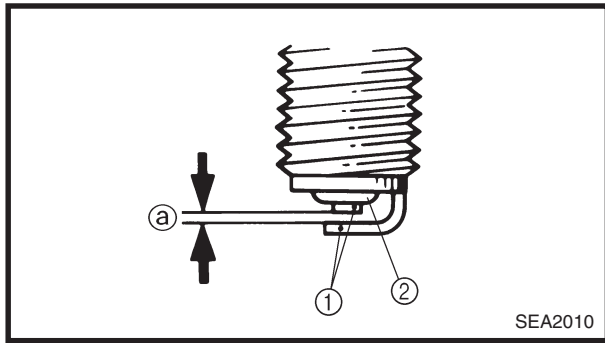


Item	Remarks	Pre-operation check (Daily)	Initial 1 month or 800 km (500 mi) (40 hr)	Every
				Seasonally or 3,200 km (2,000 mi) (160 hr)
Disc brake installation	Check for slight free play. Lubricate shaft with specified grease as required.			Every 1,600 km (1,000 mi)
Drive chain oil	Check oil level.		●	
	Replace.			●
Drive chain	Check deflection. Adjust if necessary.	Initial at 500 km (300 mi) and every 800 km (500 mi) thereafter.		
Skis and ski runners	Check for wear and damage.	●		
	Replace if necessary.			●
Steering system	Check operation.	●		
	Adjust toe-out if necessary.			●
Lights	Check operation. Replace bulbs if necessary.	●		
Battery (SXV60ER/VT60)	Check fluid level. Add only distilled water if necessary.	●		
	Check specific gravity and breather hose operation. Charge/correct if necessary.			●
Primary and secondary clutches	Check engagement and shift speed. Adjust if necessary.			●
		Whenever operating elevation is changed.		
	Inspect sheaves for wear/damage. Inspect weights/rollers and bushings for wear-for primary. Inspect ramp shoes/bushings for wear-for secondary. Replace if necessary.			●
	Lubricate with specified grease.			●
Steering column bearing	Lubricate with specified grease.			●
Ski and front suspension	Lubricate with specified grease.			●
Suspension component	Lubricate with specified grease.			●
Parking brake cable end and lever end/throttle cable end	Lubricate with specified grease.			●
	Check cable damage. Replace if necessary.			●
Shroud latches	Make sure that the shroud latches are hooked.	●		
Fittings and fasteners	Check tightness. Repair if necessary.	●		
Tool kit and recommended equipment	Check for proper placement.	●		

NOTE:


Brake fluid replacement:

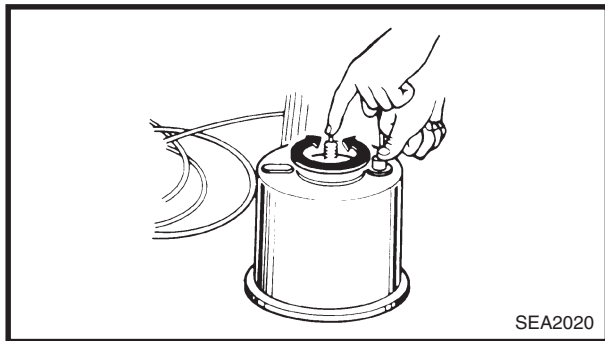
1. When disassembling the master cylinder or caliper cylinder, replace the brake fluid. Normally check the brake fluid level and add the fluid as required.
2. On the inner parts of the master cylinder and caliper cylinder, replace the oil seals every two years.
3. Replace the brake hoses every four years,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



**ENGINE
SPARK PLUGS**

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

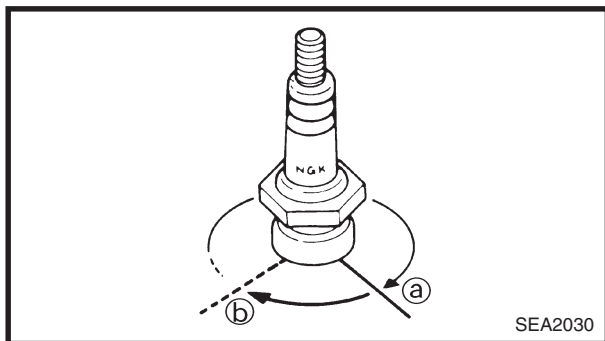
 **Spark plug gap:**
0.7 ~ 0.8 mm (0.028 ~ 0.031 in)



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

**Standard spark plug:
BR9ES (NGK)**

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



4. Install:
 - Spark plugs

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

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



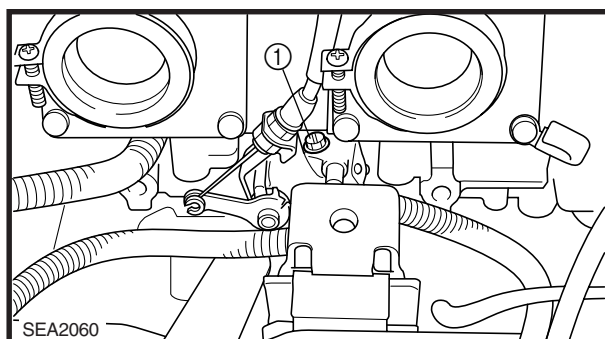
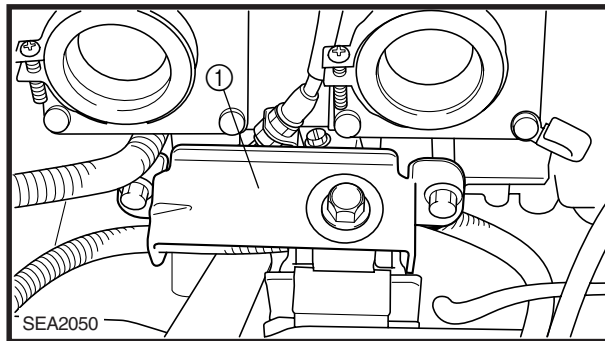
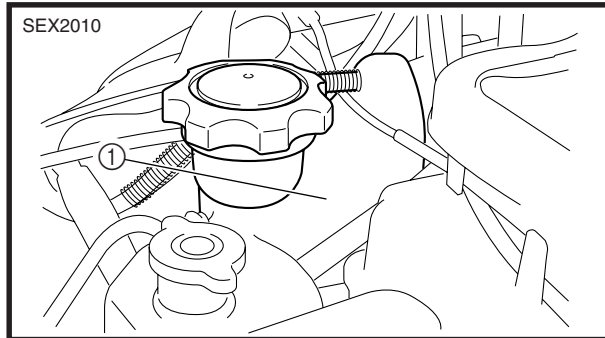
OIL PUMP

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:

3.0 L (2.6 Imp qt, 3.2 US qt)

2. Remove:

- Carburetors

Refer to "CARBURETORS" in CHAPTER 7.

3. Remove:

- Rear bracket (right) ①

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

5. Disconnect:

- Oil hose

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

7. Connect:

- Oil hose

8. Disconnect:

- Oil delivery hose

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

10. Connect:

- Oil delivery hose

11. Remove:

- Bleed bolt ①
- Gasket (bleed bolt)

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

13. Inspect:

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

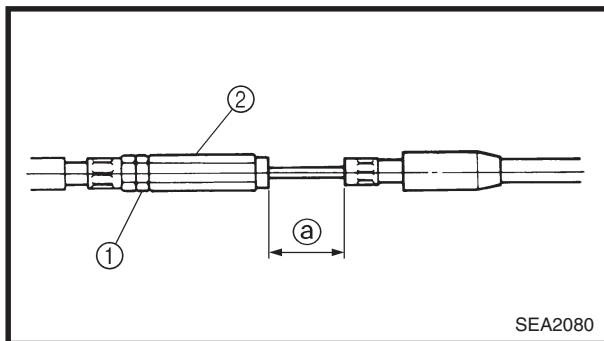
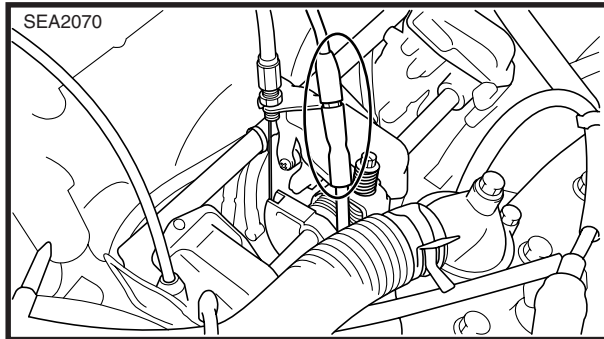


14. Install:
- Gasket (bleed bolt)
 - Bleed bolt
15. Install:
- Rear bracket (right)



M8 mounting bolt (rear):
33 Nm (3.3 m · kg, 24 ft · lb)
M10 mounting bolt (rear):
57 Nm (5.7 m · kg, 41 ft · lb)

16. Install:
- Carburetors
- Refer to "CARBURETORS" in CHAPTER 7.



Cable adjustment

NOTE: _____
 Before adjusting the oil pump cable, the throttle cable free play should be adjusted.
 (See page 2-13, 2-14)

Adjustment steps:

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

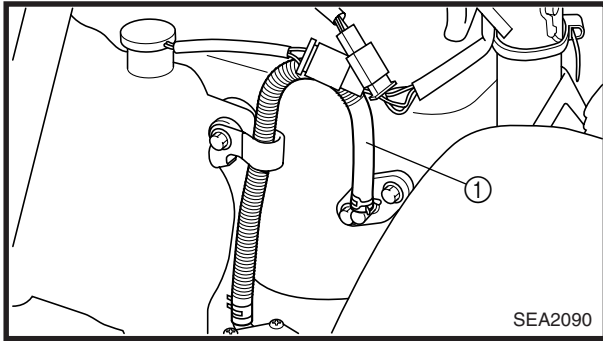


Distance:
23 ± 1 mm (0.906 ± 0.039 in)

Turning in → Distance ③ is increased.

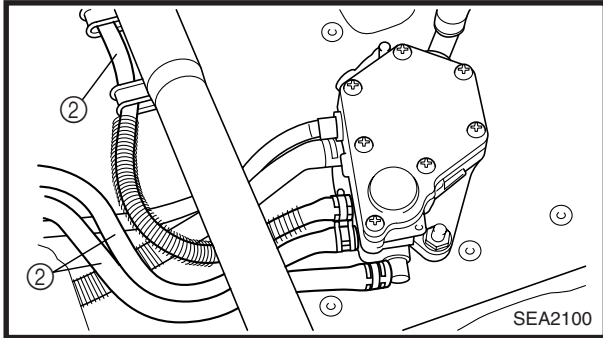
Turning out → Distance ③ is decreased.

- Tighten the locknut and push in the adjuster cover.



FUEL LINE INSPECTION

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

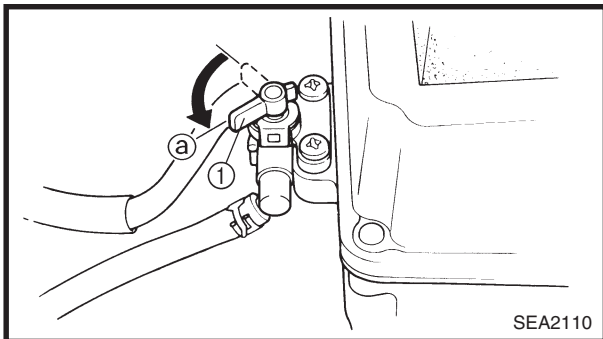


COOLING SYSTEM

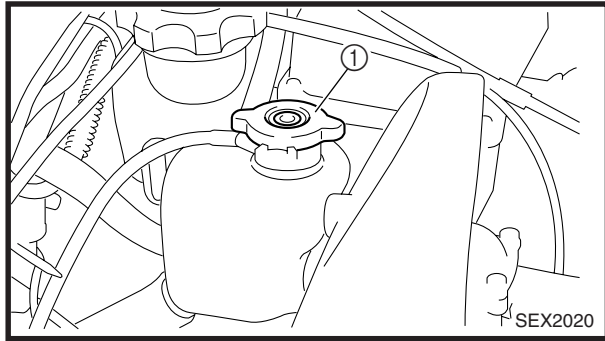
Coolant replacement

NOTE: _____
The coolant should be changed at least every season.

1. Place the machine on a level surface.
2. Remove:
 - Exhaust pipe
 - Exhaust joint
Refer to “EXHAUST ASSEMBLY” in CHAPTER 5.



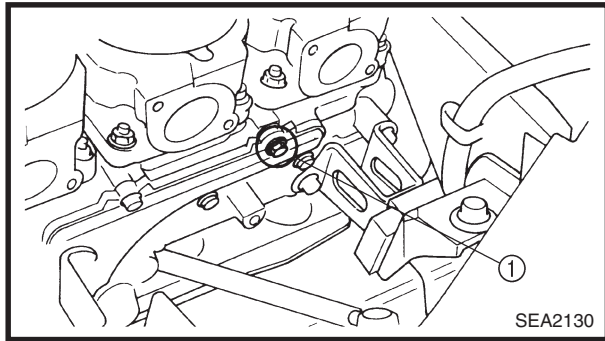
3. Make sure that the carburetor coolant shut-off lever ① is turned to “ON” ②.



4. Remove:
- Coolant filler cap ①

⚠ WARNING

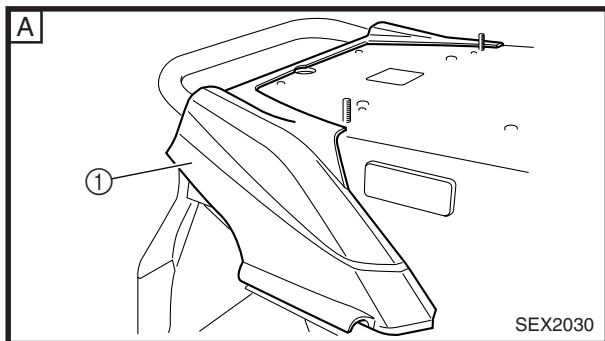
Do not remove the coolant filler cap ① when the engine is hot. Pressurized scalding hot fluid and steam may be blown out, which could cause serious injury. When the engine has cooled, place a thick rag or a towel over the coolant filler cap. Slowly turn the cap counterclockwise until it stop. This allows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



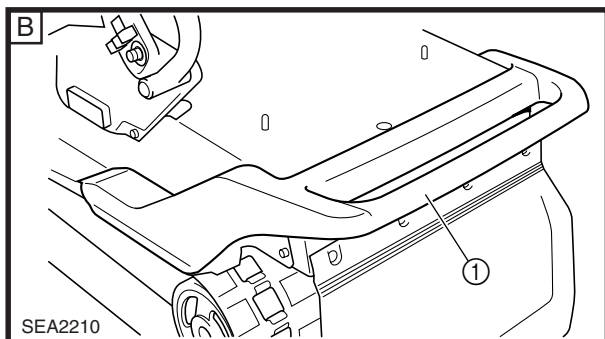
5. Place an open container under the coolant drain bolt ①.
6. Remove:
- Coolant drain bolt ①
 - Gasket (coolant drain bolt)
7. Drain the coolant.

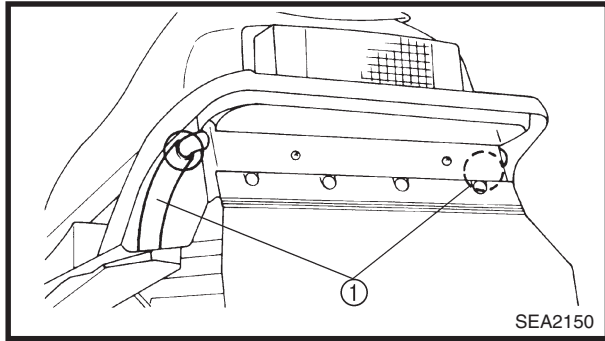
NOTE:

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



8. Remove:
- Seat
 - Side cover ① (SXV60ER/SXV60)
 - Rear bumper cover ① (VT60)
- A** SXV60ER/SXV60
B VT60





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

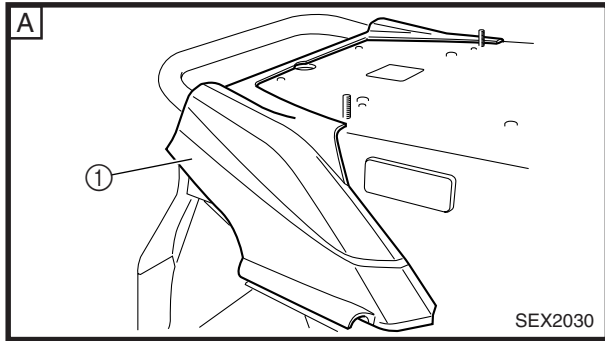
NOTE:

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

⚠ WARNING

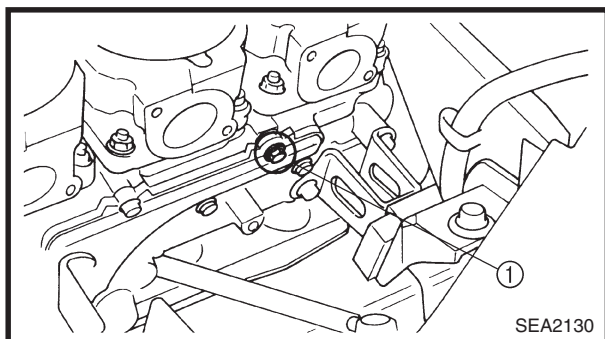
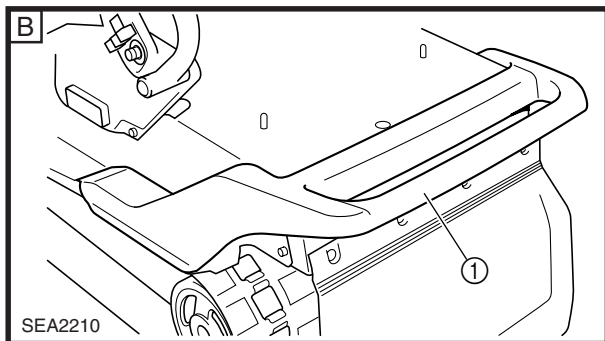
Coolant is poisonous. It is harmful or fatal if swallowed.

- 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.



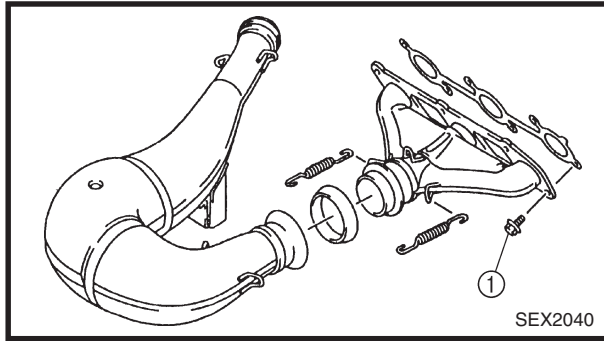
11. Connect:
 - Coolant hoses
12. Install:
 - Side cover ① (SXV60ER/SXV60)
 - Rear bumper cover ① (VT60)
 - Seat

- Ⓐ SXV60ER/SXV60
- Ⓑ VT60



13. Inspect:
 - Gasket (coolant drain bolt)
Damage → Replace.
14. Install:
 - Gasket
 - Coolant drain bolt ①


	<p>Coolant drain bolt: 13 Nm (1.3 m · kg, 9.4 ft · lb)</p>
---	---



15. Install:


- Exhaust joint
- Exhaust pipe
- Bolt (exhaust joint) ①

Refer to “EXHAUST ASSEMBLY” in CHAPTER 5.

	Bolt (exhaust joint):
	1st: 18 Nm (1.8 m · kg, 13 ft · lb)
	2nd: 27 Nm (2.7 m · kg, 19 ft · lb)

16. Fill:

- Cooling system

	Recommended coolant: High quality ethylene glycol antifreeze containing corrosion inhibitors
	Coolant mixing ratio (coolant:water) 3:2 (60%:40%)
	Total amount:
	SXV60ER/SXV60: 3.8 L (3.34 Imp qt, 4.02 US qt)
	VT60: 4.1 L (3.61 Imp qt, 4.33 US qt)
	Reservoir tank capacity: 0.28 L (0.25 Imp qt, 0.30 US qt)
	From LOW to FULL level: 0.13 L (0.11 Imp qt, 0.14 US qt)

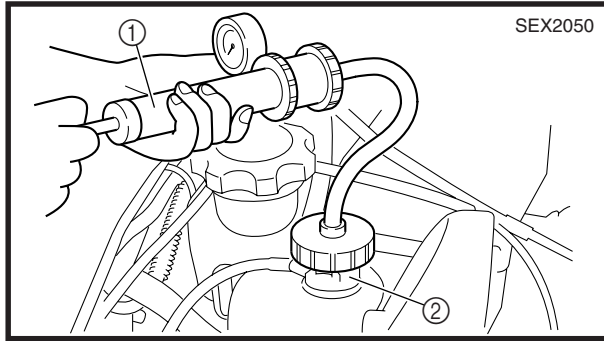
CAUTION:

- 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.

17. Bleed the air from the cooling system.

18. Inspect:

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

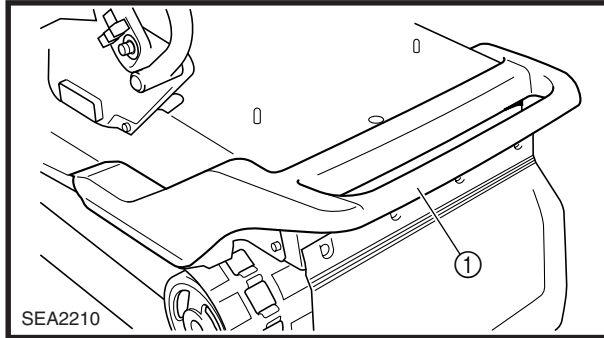


Inspection steps:

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

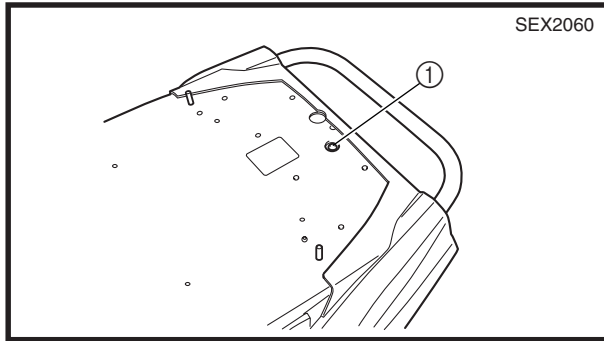
	<p>Cooling system tester: 90890-01325, YU-24460-01</p>
--	---

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



Air bleeding

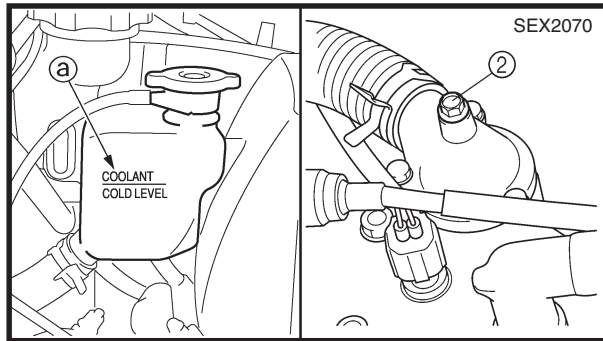
1. Remove:
 - Seat
 - Rear bumper cover ① (VT60)
2. Bleed air from the cooling system.



Air bleeding steps:

- Lift up the tail of the machine.
- Remove the bleed screw ① on the heat exchanger.
- While slowly adding coolant to the coolant filler, drain the coolant until no more air bubbles appear.
- Tighten the bleed screw ①.

	<p>Bleed screw: 13 Nm (1.3 m · kg, 9.4 ft · lb)</p>
--	--



- Add coolant to the coolant cold level ①.
- Loosen the bleed bolt ② on the thermostatic cover.
- Drain the coolant until no more air bubbles appear.
- Tighten the bleed bolt ②.



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 2,500 ~ 3,000 r/min until the coolant circulates (approximately 3 ~ 5 minutes). The rear heat exchanger will be warm to the touch.

⚠ WARNING

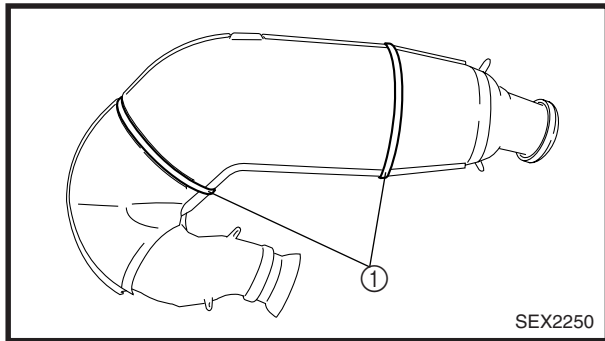
To avoid severe injury or death:

- **Make sure the machine is securely supported with a suitable stand.**
- **Do not exceed 3,000 r/min. Drive line damage and excessive V-belt wear could occur, or the machine could unexpectedly move forward if the clutch engages.**
- **Operate the engine only in a well-ventilated area.**

- Remove the coolant filler cap and bleed the cooling system again, as described above.
No air bubbles → OK.
- Add coolant to the specified level.

3. Install:

- Rear bumper cover (VT60)
- Seat



HEAT SHIELD CLAMP REPLACEMENT

Clamps on the exhaust pipe heat shields may become loose and cause a ratting noise, which is due to the deformation of the heat shields.

These clamps are not adjustable and must be replaced when they become loose.

When replacing the clamps, use an adjustable clamp from the list below.

① Clamps

Part number	Size
90450-99054	∅130 ~ 150 mm (5.1 ~ 5.9 in)

CARBURETOR SYNCHRONIZATION

1. Remove:

- Carburetors

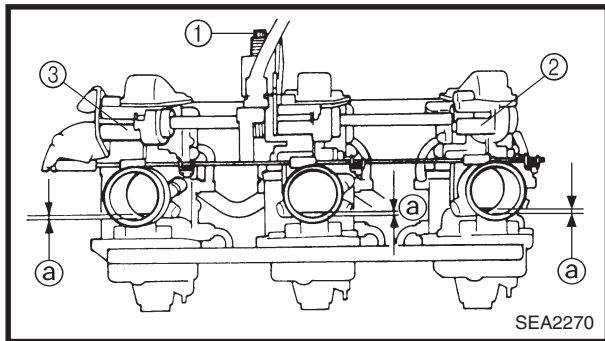
Refer to “CARBURETORS” in CHAPTER 7.

2. Adjust:

- Carburetor synchronization

Adjustment steps:

- Turn the throttle stop screw ① of carburetor #2 until the specified throttle valve height ② is obtained.



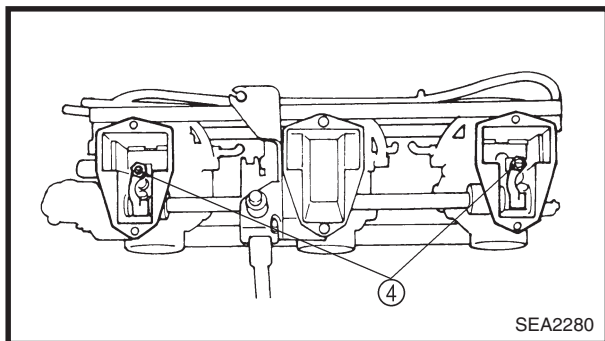
 <div style="margin-left: 10px;"> <p>Throttle valve height: 1.2 mm (0.047 in)</p> </div>

- Adjust the throttle valve height ② on carburetor #1 ② and #3 ③ with the adjusting screws ④.
- Move the throttle lever 2 ~ 3 times.
- Make sure that all of the carburetor throttle valves are at the same height.

3. Install:

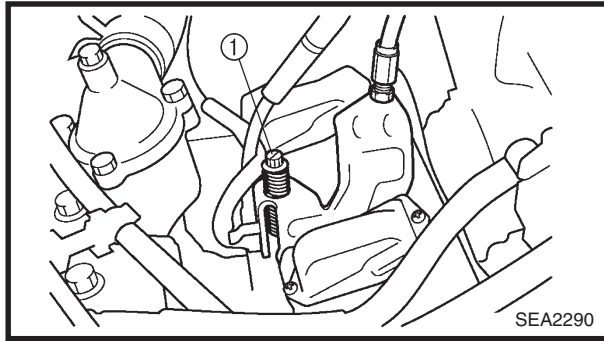
- Carburetors

Refer to “CARBURETORS” in CHAPTER 7.



ENGINE IDLE SPEED ADJUSTMENT/ THROTTLE CABLE FREE PLAY ADJUSTMENT

**INSP
ADJ**



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:
1,600 ± 100 r/min

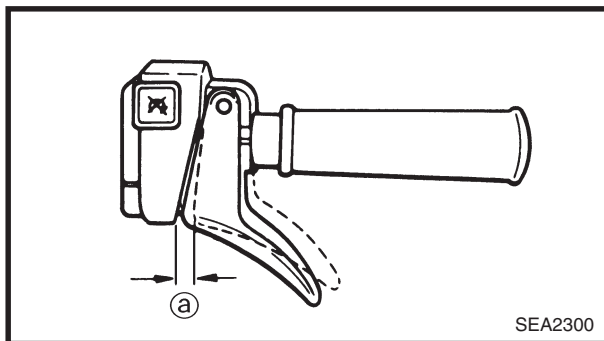
NOTE:

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

THROTTLE CABLE FREE PLAY ADJUSTMENT

NOTE:

- Before adjusting the throttle cable free play, the engine idle speed should be adjusted.
- Adjust the throttle cable free play while the cable is in the cable guide.



1. Measure:

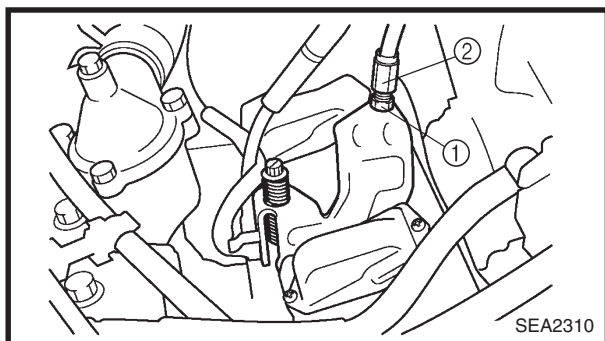
- Throttle cable free play ②
Out of specification → Adjust.



Throttle cable free play:
2.0 ~ 3.0 mm (0.08 ~ 0.19 in)

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

INSP
ADJ



2. Adjust:

- Throttle cable free play

Adjustment steps:

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

Turning in → Free play is increased.

Turning out → Free play is decreased.

- Tighten the locknut.

NOTE:

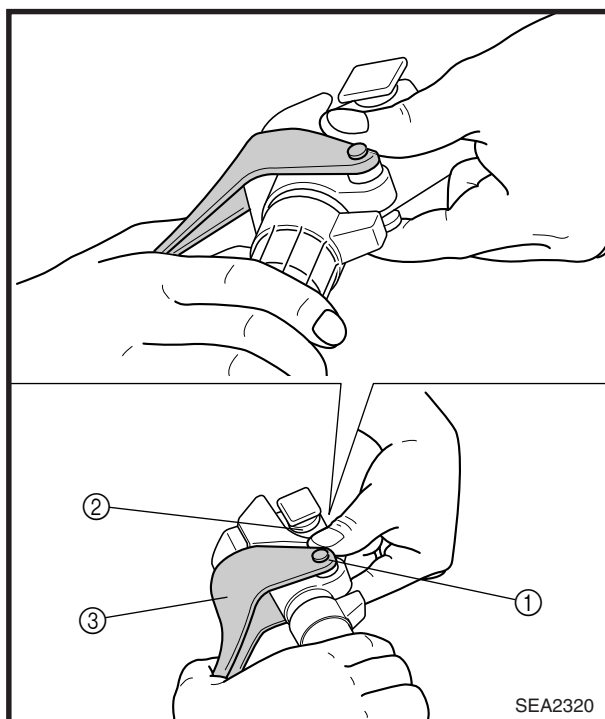
After adjusting the free play, turn the handlebar to right and left, and make sure that the engine idling does not run faster.

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

⚠ WARNING

When checking T.O.R.S.:

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



1. Start the engine.

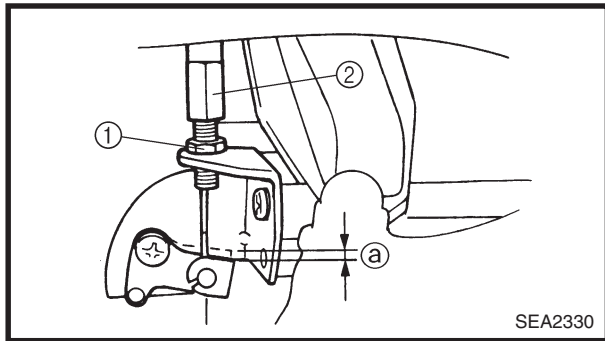
2. Hold the pivot point of the throttle lever away from the throttle switch by putting your thumb (above) and forefinger (below) between the throttle lever pivot ① and stop switch housing ②.

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

The T.O.R.S. will operate and the engine should run between 2,800 and 3,000 r/min.

⚠ WARNING

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



STARTER (CHOKE) CABLE FREE PLAY ADJUSTMENT

1. Measure:
 - Starter cable free play (a)
 - Out of specification → Adjust.

	<p>Starter cable free play: 0.5 ~ 1.5 mm (0.02 ~ 0.06 in)</p>
---	--

2. Adjust:
 - Starter cable free play

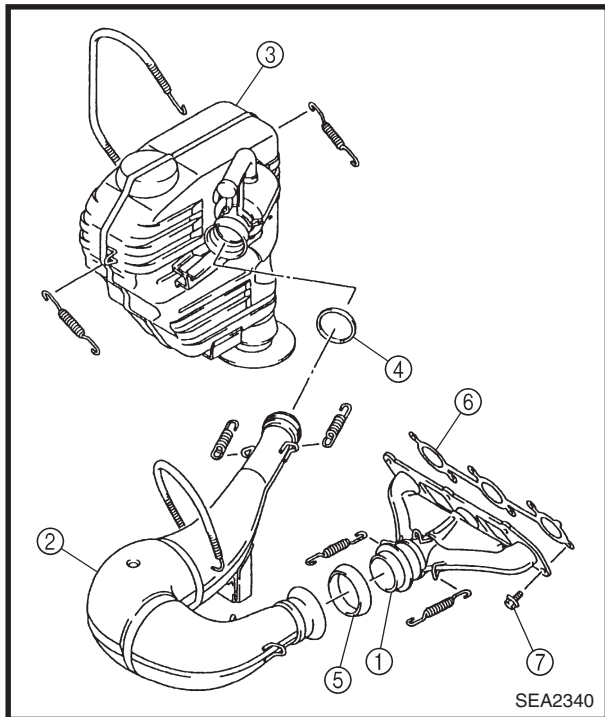
Adjustment steps:

- 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.



EXHAUST SYSTEM INSPECTION

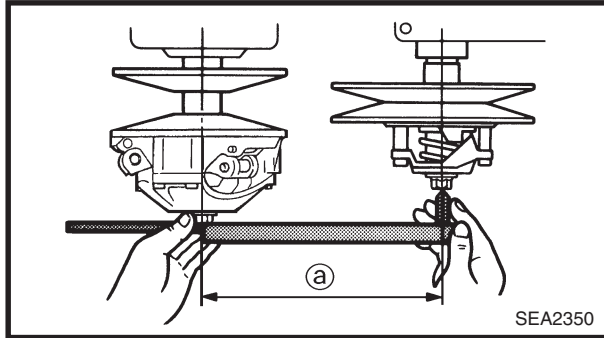
1. Open the shroud.
2. Remove:
 - Springs
 - Refer to “EXHAUST ASSEMBLY” in CHAPTER 5.
3. Inspect:
 - Exhaust joint (1)
 - Exhaust pipe (2)
 - Exhaust silencer (3)
 - Cracks/damage → Replace.
 - Gasket 1 (4)
 - Gasket 2 (5)
 - Gasket 3 (6)
 - Exhaust gas leaks → Replace.
4. Check:
 - Tightening torque (7)

	<p>Bolt (exhaust joint): 1st: 18 Nm (1.8 m · kg, 13 ft · lb) 2nd: 27 Nm (2.7 m · kg, 19 ft · lb)</p>
---	---


5. Install:
 - Springs
 - Refer to “EXHAUST ASSEMBLY” in CHAPTER 5.


POWER TRAIN SHEAVE DISTANCE AND OFFSET ADJUSTMENT

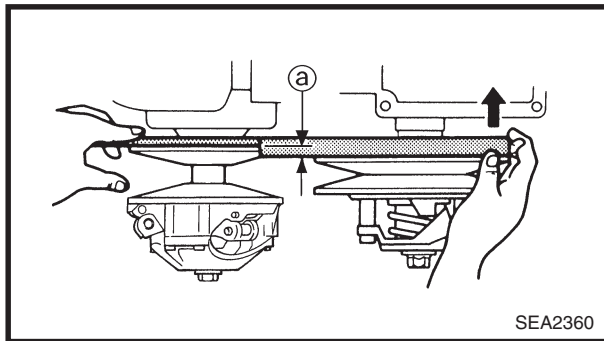
1. Open the shroud.
2. Remove:
 - Drive V-belt guard
 - Drive V-belt




3. Measure:
 - Sheave distance $\text{\textcircled{a}}$
Use the distance gauge.
Out of specification → Adjust.

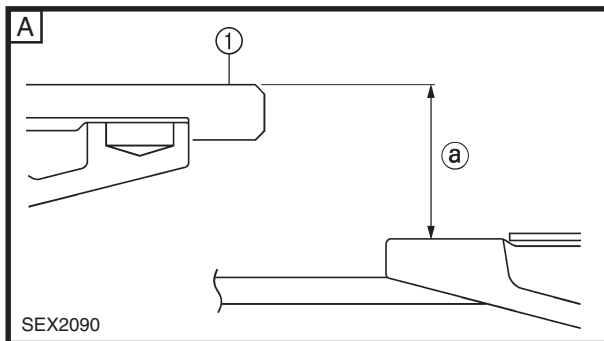
	Sheave distance: 267 ~ 270 mm (10.52 ~ 10.62 in)
---	--


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



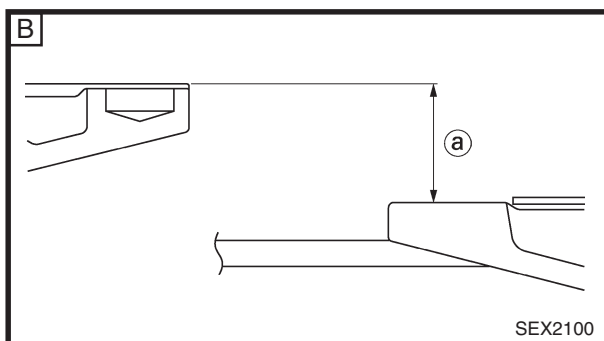
4. Measure:
 - Sheave offset $\text{\textcircled{a}}$
Use the offset gauge.
Out of specification → Adjust.

	Sheave offset: SXV60ER/VT60: $\text{\textcircled{A}}$ 18.5 ~ 21.5 mm (0.73 ~ 0.85 in) SXV60: $\text{\textcircled{B}}$ 13.5 ~ 16.5 mm (0.53 ~ 0.64 in)
---	--



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

- ① Starter motor driven gear





Download the full PDF manual instantly.

Our customer service e-mail:

aservicemanualpdf@yahoo.com