YAMAHA

SERVICE MANUAL

2008

FX Nytro

FX10X
FX10RTX
FX10RTRX
FX10RTRAX
FX10MTX
FX10MTRX
FX10MTRAX

LIT-12618-02-69

8GL-28197-10

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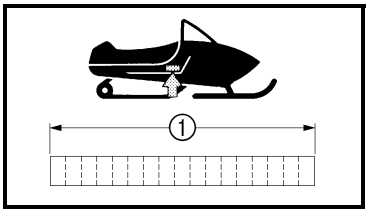
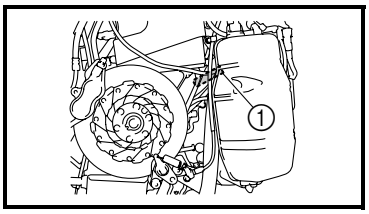




GENERAL INFORMATION

SNOWMOBILE 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

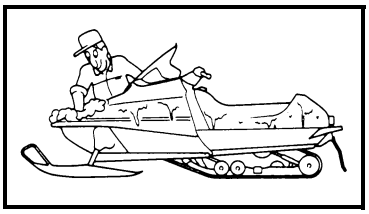
The engine serial number ① is located on the right-hand side of the crankcase.

NOTE:

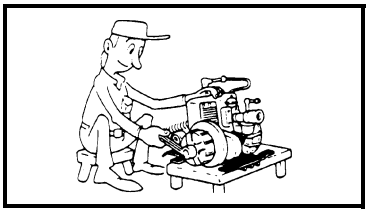
Designs and specifications are subject to change without notice.

IMPORTANT INFORMATION

PREPARATION FOR REMOVAL AND DISASSEMBLY

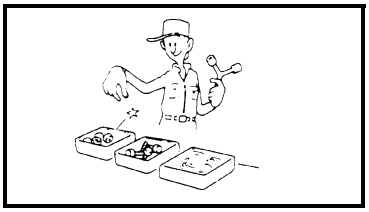


1. Remove all dirt, mud, dust, and foreign material before removal and disassembly.
   While cleaning, take care to protect the electrical parts, such as relays, switches, motor, resistors, controllers, etc., from high pressure water splashes.



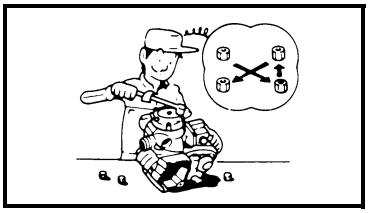
2. Use proper tools and cleaning equipment.
   Refer to “SPECIAL TOOLS”.

3. When disassembling the snowmobile, 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.

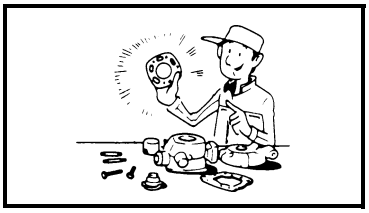


4. During disassembly of the snowmobile, clean all parts and place them in trays in the order of disassembly. This will speed up assembly time and help ensure that all parts are reinstalled correctly.

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.

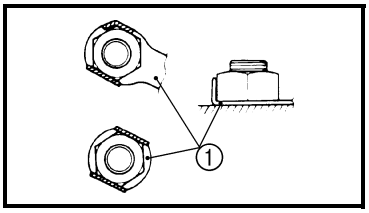


ALL REPLACEMENT PARTS

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

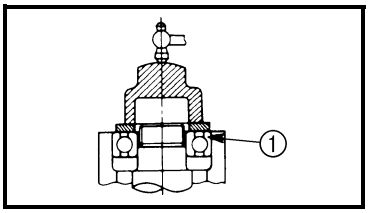
GASKETS, OIL SEALS, AND O-RINGS

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.



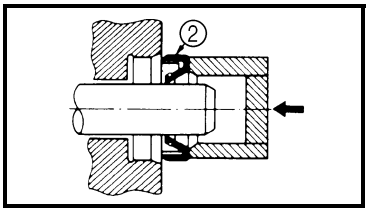
LOCK WASHERS/PLATES AND COTTER PINS

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.



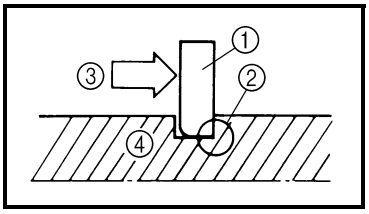
BEARINGS AND OIL SEALS

Install the bearings ① and oil seals ② with their manufacturer 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 low temperature lithium-soap-based 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®

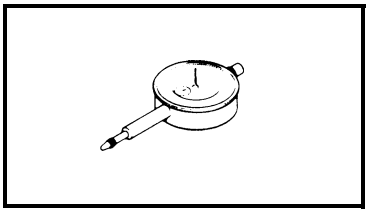
After installing fasteners that have LOCTITE® applied, wait 24 hours before using the snowmobile. This will give the LOCTITE® time to dry properly.

SPECIAL TOOLS

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

NOTE:

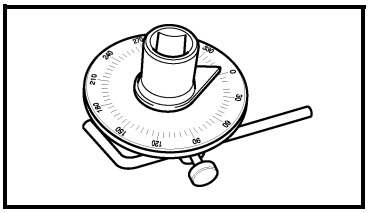
- Be sure to use the correct part number when ordering the tool, since the part number may differ according to country.
- For USA and Canada, use part number starting with “YB-”, “YM-”, “YU-” or “YS-”.
- For others, use part number starting with “90890-”.



FOR TUNE UP

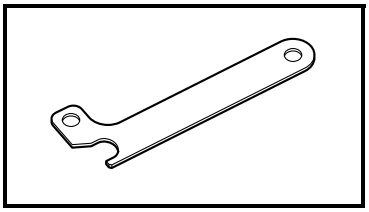
- Dial indicator gauge
  P/N: YU-A8428
- Dial gauge
  P/N: 90890-03097

This gauge is used for runout measurements.



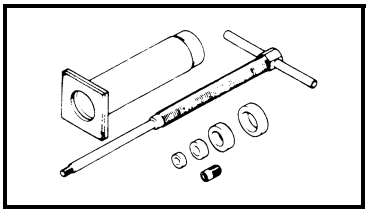
- Angle gauge
  Use goods on the market.

This tool is used to tighten to specified angles.



- Steering linkage alignment plate
  P/N: YS-01531
  90890-01531

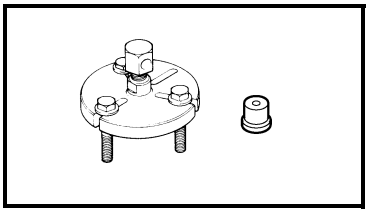
Locks steering column and pivot arm in place while adjusting the steering linkage for front-end alignment.



FOR ENGINE SERVICE

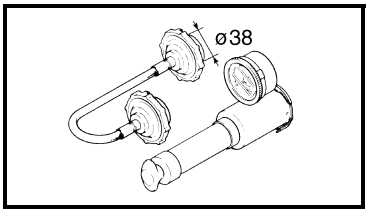
- Piston pin puller
  P/N: YU-01304
- Piston pin puller set
  P/N: 90890-01304

This tool is used to remove the piston pin.



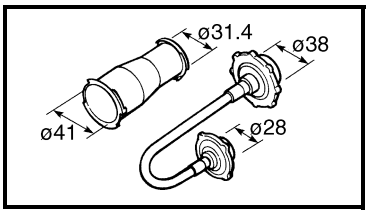
- Heavy duty puller
  P/N: YU-33270-B
- Flywheel puller
  P/N: 90890-01362
- Crankshaft protector
  P/N: YM-33282
- Flywheel puller attachment
  P/N: 90890-04089

These tools are used to remove the magneto rotor.



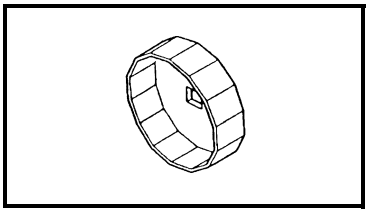
- Radiator pressure tester
  P/N: YU-24460-01
- Radiator cap tester
  P/N: 90890-01325

This tester is used to check the cooling system.



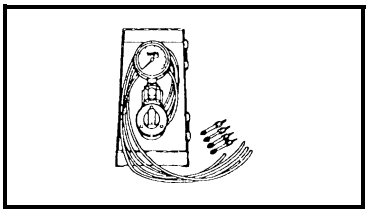
- Radiator pressure tester adapter
  P/N: YU-33984
- Radiator cap tester adapter
  P/N: 90890-01352

This adapter is used to check the cooling system.



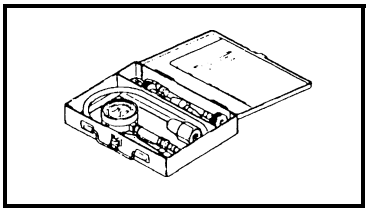
- Oil filter wrench
  P/N: YM-01469
  90890-01469

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



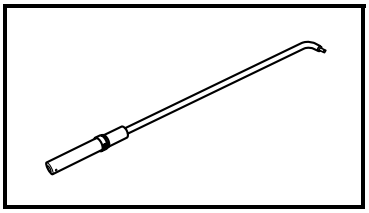
- Carburetor synchronizer
  P/N: YU-44456
- Vacuum gauge
  P/N: 90890-03094

This tool is used to synchronize the throttle bodies.



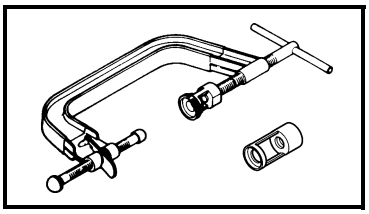
- Engine compression tester
  P/N: YU-33223
- Compression gauge
  P/N: 90890-03081

This tool is used to measure engine compression.



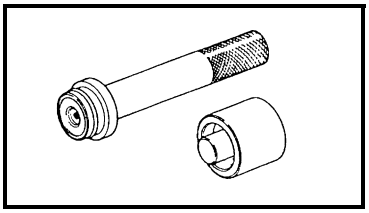
- Carburetor angle driver 2
  P/N:90890-03173

This tool is used to synchronize the throttle bodies.



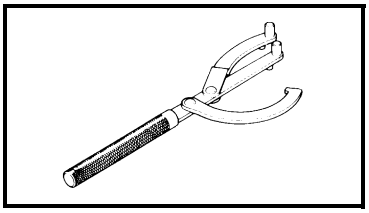
- Valve spring compressor
  P/N: YM-04019
  90890-04019
- Valve spring compressor adapter 19.5 mm
  P/N: YM-04114
- Valve spring compressor attachment
  P/N: 90890-04114

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



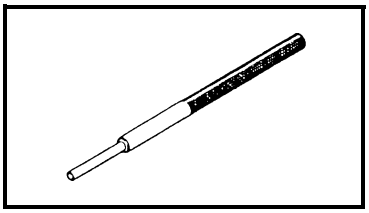
- Bearing driver 40 mm
  P/N: YM-04058
- Middle driven shaft bearing driver
  P/N: 90890-04058
- Mechanical seal installer
  P/N: 90890-04145

These tools are used to install the water pump seal.



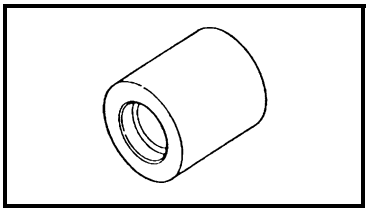
- Universal magneto & rotor holder
  P/N: YU-01235
- Rotor holding tool
  P/N: 90890-01235

This tool is used to hold the camshaft sprockets and oil pump driven gear.



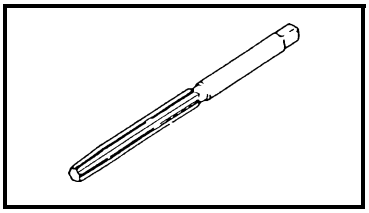
- Valve guide remover (4.5 mm)
  P/N: YM-04116
- Valve guide remover (ø4.5)
  P/N: 90890-04116

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



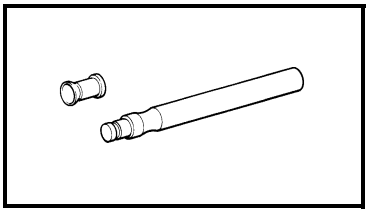
- Valve guide installer (4.5 mm)
  P/N: YM-04117
- Valve guide installer (ø4.5)
  P/N: 90890-04117

This tool is used to install the valve guides.



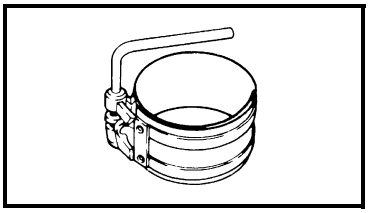
- Valve guide reamer (4.5 mm)
  P/N: YM-04118
- Valve guide reamer (ø4.5)
  P/N: 90890-04118

This tool is used to rebore the new valve guides.



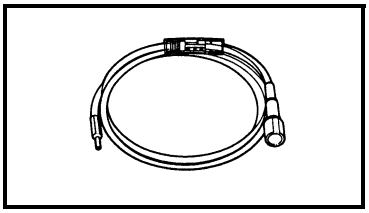
- Valve lapping tool
  P/N: YM-A8998
- Valve lapper
  P/N: 90890-04101

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



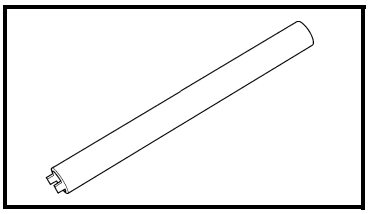
- Piston ring compressor
  P/N: YM-08037
  90890-05158

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



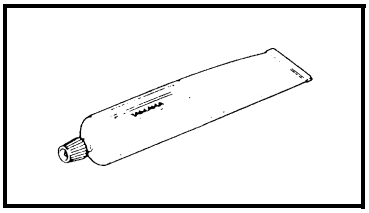
- Opama pet-4000 spark checker
  P/N: YM-34487
- Ignition checker
  P/N: 90890-06754

This tool is used to check the ignition system component.



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

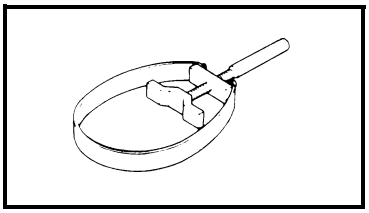
Used to turn the engine mounting bolt spacer when removing/installing engine.



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

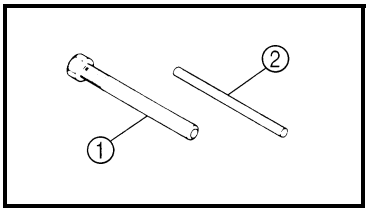
This bond is used to seal two mating surfaces (e.g., crankcase mating surfaces.)

FOR POWER TRAIN SERVICE



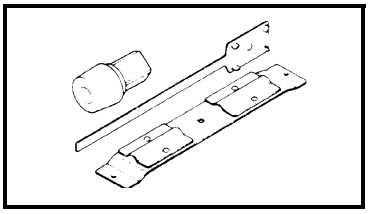
- Primary clutch holder
  P/N: YS-01880-A
- Sheave holder
  P/N: 90890-01701

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



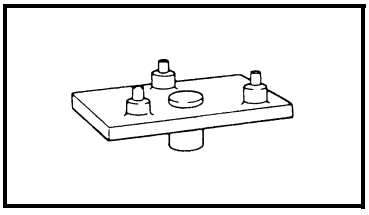
- Primary sheave puller (18 mm)
  P/N: YS-01881-A ①, YS-01881-1 ②
  90890-01898

This tool is used for removing the primary sheave.



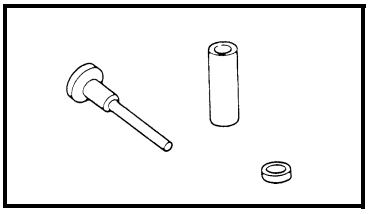
- Clutch spider separator
  P/N: YS-28890-C
  90890-01711

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



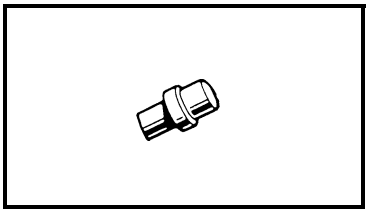
- Clutch separator adapter
  P/N: YS-34480
  90890-01740

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



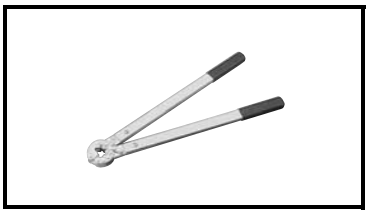
- YXR clutch bushing jig kit
  P/N: YS-39752
  90890-01528

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



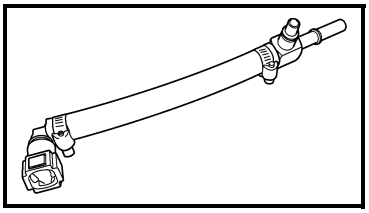
- Clutch bushing press
  P/N: YS-42424
  90890-01529

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



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

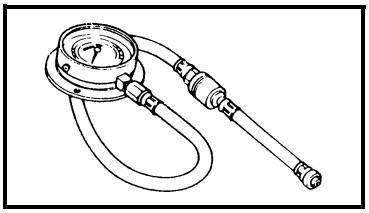
This tool is used for installing the track clip.



FOR FUEL INJECTION SERVICE

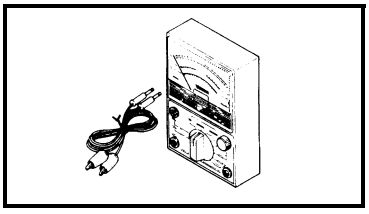
- Fuel pressure adapter
  P/N: YM-03176
  90890-03176

This tool is needed to measure fuel pressure.



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

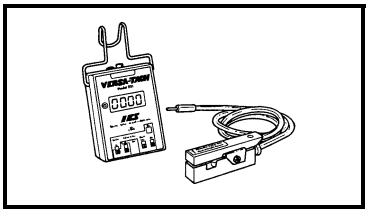
This tool is used to measure fuel pressure.



FOR ELECTRICAL SERVICE

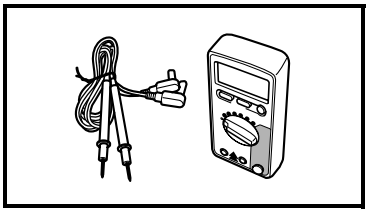
- Analog pocket tester
  P/N: YU-03112-C
- Pocket tester
  P/N: 90890-03112

This instrument is necessary for checking the electrical components.



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

This tool is used to check engine speed.



- Model 88 Multimeter with tachometer
  P/N: YU-A1927
- Digital circuit tester
  P/N: 90890-03174

This instrument is necessary for checking the electrical components.

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 snowmobile operation and a longer service life. In addition, the need for costly overhaul work will be greatly reduced. This information applies to snowmobiles already in service as well as new snowmobiles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

PERIODIC MAINTENANCE CHART FOR THE EMISSION CONTROL SYSTEM

	ITEM	REMARKS	INITIAL	EVERY
			1 month or 800 km (500 mi) (40 hr)	Seasonally or 4000 km (2500 mi) (200 hr)
	Spark plugs	• Check condition. • Adjust gap and clean. • Replace if necessary.		●
*	Valve clearance	• Check and adjust valve clearance when engine is cold.	Every 40000 km (25000 mi)	
*	Crankcase breather system	• Check breather hose for cracks or damage. • Replace if necessary.		●
*	Fuel filter	• Check condition. • Replace fuel pump assembly if necessary.		●
*	Fuel line	• Check fuel hose for cracks or damage. • Replace if necessary.		●
*	Fuel injection	• Check synchronization. • Adjust if necessary.	●	●
*	Exhaust system	• Check for leakage. • Tighten or replace gasket if necessary.		●

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

GENERAL MAINTENANCE AND LUBRICATION CHART

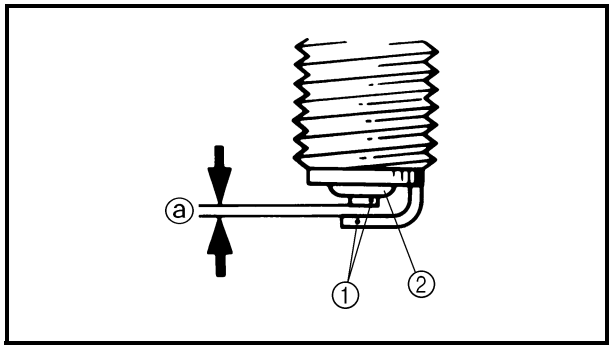
	ITEM	REMARKS	INITIAL	EVERY
			1 month or 800 km (500 mi) (40 hr)	Seasonally or 4000 km (2500 mi) (200 hr)
	Engine oil	• Change (warm engine before draining)	●	●
*	Engine oil filter cartridge	• Replace.	●	Every 20000 km (12000 mi)
*	Cooling system	• Check coolant level. • Air bleed the cooling system if necessary.		●
*	Primary and secondary clutches	• Check engagement and shift speed. • Adjust if necessary.		●
			Whenever operating elevation is changed.	
		• Inspect sheaves for wear and 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.		●
*	Drive chain	• Check chain slack. • Adjust if necessary.	Initial at 500 km (300 mi) and every 800 km (500 mi) thereafter.	
*	Drive chain oil	• Check oil level.	●	●
		• Change.		●
*	Brake and parking brake	• Adjust free play and/or replace pads if necessary.		●
		• Change brake fluid.	See NOTE following this chart.	
	Control cables	• Make sure that operation is smooth. • Lubricate if necessary.		●
*	Disc brake installation	• Check for slight free play. • Lubricate shaft with specified grease as required.	Every 1600 km (1000 mi)	
*	Slide runners	• Check for wear and damage. • Replace if necessary.		●
*	Skis and ski runners	• Check for wear and damage. • Replace if necessary.		●
*	Steering system	• Check toe-out. • Adjust if necessary.		●
*	Steering bearings	• Check bearing assemblies for looseness. • Lubricate with specified grease.		●
*	Ski and front suspension	• Lubricate with specified grease.		●
*	Suspension component	• Lubricate with specified grease.		●
	Fittings and fasteners	• Make sure that all nuts, bolts and screws are properly tightened. • Tighten if necessary.	●	●
*	Battery	• Check condition. • Charge if necessary.		●

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

NOTE:

Brake system:

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

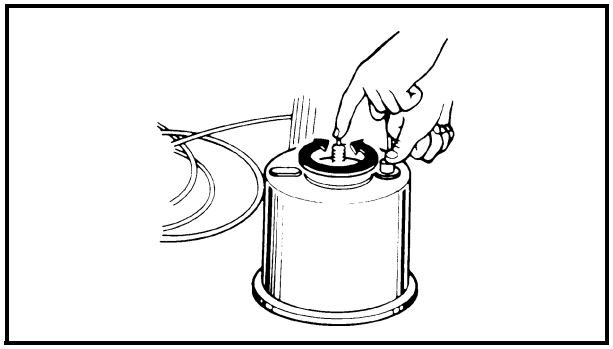


ENGINE

SPARK PLUGS

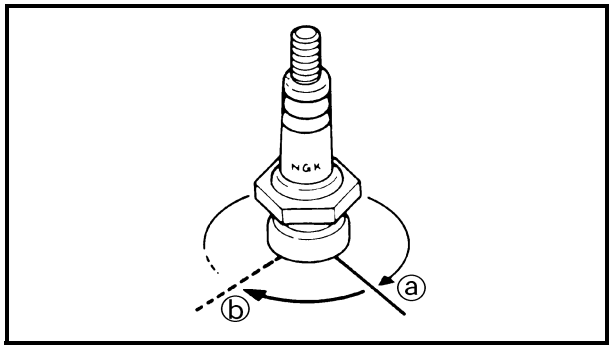
1. Remove:
   - Left side cover
     Refer to “COVERS” in CHAPTER 3.
2. Remove:
   - Ignition coils
   - Spark plugs
3. Inspect:
   - Electrodes ①
     Damage/wear → Replace the spark plug.
   - Insulator color ②
     Abnormal color → Replace the spark plug
     Normal color is medium-to-light tan.
4. Measure:
   - Spark plug gap ⓐ
     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:
NGK CR9E (NGK)

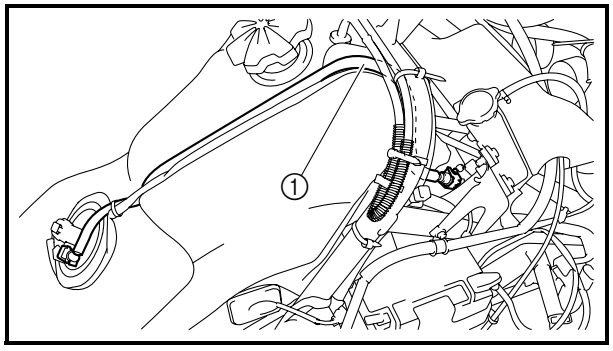


Before installing a spark plug, clean the gasket surface and spark plug surface.

5. Install:
   - Spark plugs

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

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



FUEL LINE INSPECTION

1. Remove:
   - Fuel tank cover
     Refer to “SEAT AND FUEL TANK” in CHAPTER 5.
2. Inspect:
   - Fuel hose ①
     Cracks/damage → Replace.

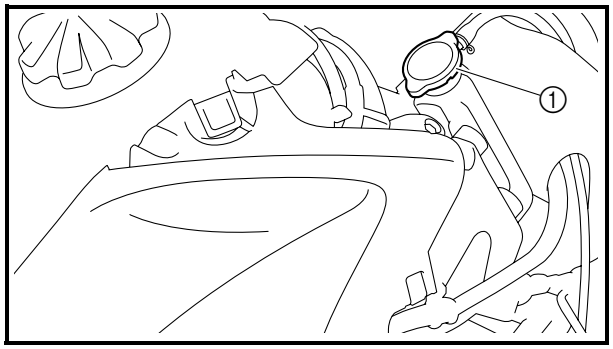
COOLING SYSTEM

Coolant replacement

NOTE:

The coolant should be changed at least every season.

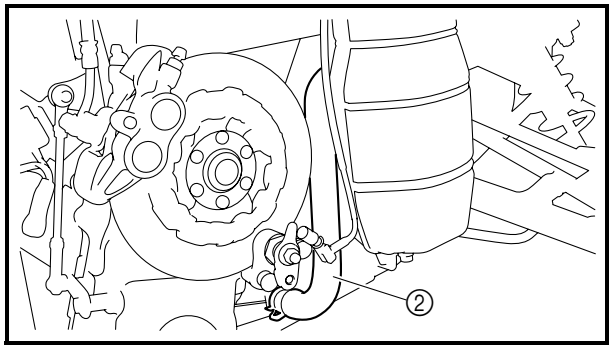
1. Place the snowmobile on a level surface.
2. Remove:
   - Right lower cover
     Refer to "COVERS" in CHAPTER 3.
3. Remove:
   - Radiator cap ①

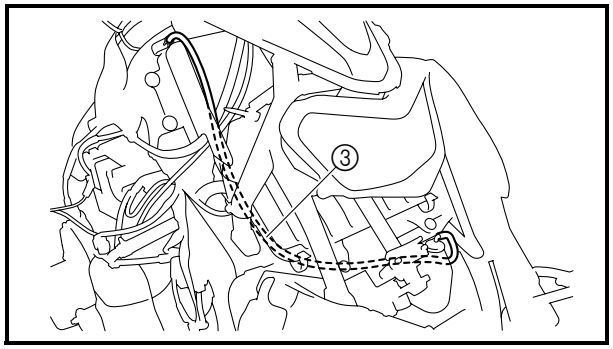


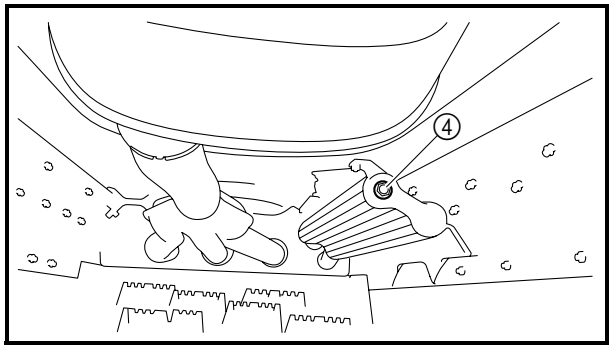
⚠ WARNING

Do not remove the radiator cap 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 radiator cap. Slowly turn the cap counterclockwise until it stop. This allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning it counterclockwise to remove it.

4. Place an open container under the thermostat outlet hose, coolant reservoir hose and, for FX10MT/FX10MTR/FX10MTRA only, heat exchanger.
5. Disconnect:
   - Thermostat outlet hose ②
   - Coolant reservoir hose ③
6. Remove:
   - Heat exchanger drain bolt ④
     (FX10MT/FX10MTR/FX10MTRA)
7. Drain the coolant.







NOTE:

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

⚠ WARNING

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

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

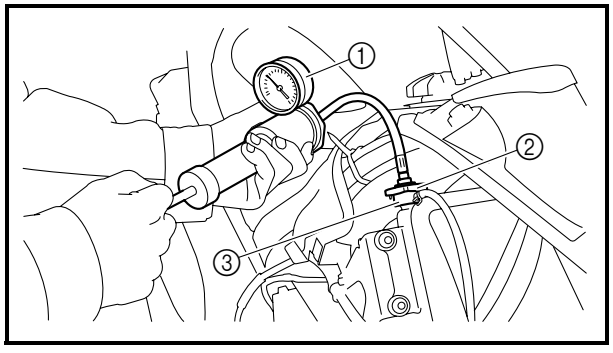
8. Connect:
   - Coolant reservoir hose
   - Thermostat outlet hose
9. Fill:
   - Cooling system

Recommended coolant:
High quality ethylene glycol anti-freeze containing corrosion inhibitors
Coolant mixing ratio (coolant:water):
3:2 (60%:40%)
Total amount:
FX10/FX10RT/FX10RTR/FX10RTRA
3.40 L (2.99 Imp qt, 3.59 US qt)
FX10MT/FX10MTR/FX10MTRA
4.70 L (4.14 Imp qt, 4.97 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.**

10. Bleed the air from the cooling system.



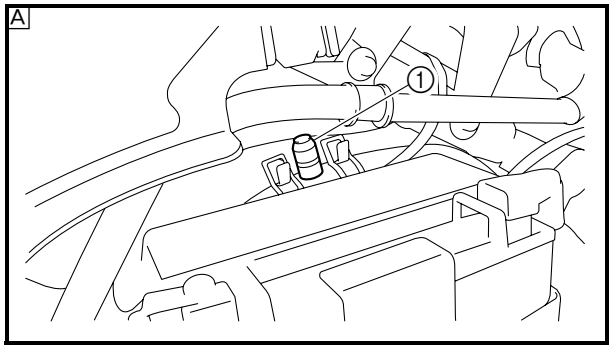
11. Inspect:
    - Cooling system
      Decrease of pressure (leaks) → Repair as required.

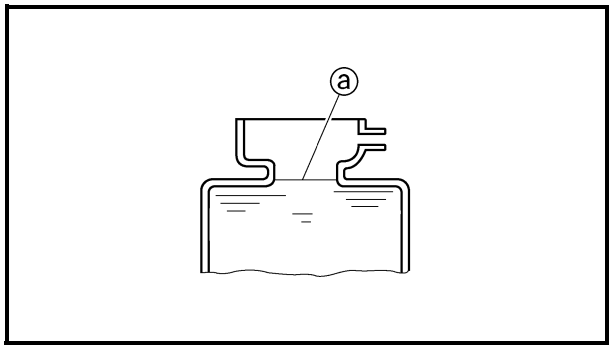
Inspection steps:

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

Radiator cap tester:
90890-01325
Radiator pressure tester:
YU-24460-01
Radiator cap tester adapter:
90890-01352
Radiator pressure tester adapter:
YU-33984

- Apply 100 kPa (1.0 kg/cm^2, 14 psi).
- Measure the pressure with the gauge.





Air bleeding steps:

NOTE:

For models other than FX10MT/FX10MTR/FX10MTRA, skip steps 1–3.

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

  Apply and lock the parking brake. Start the engine and run it at less than the clutch engagement speed until the coolant circulates (approximately 3 ~ 5 minutes). The heat exchanger will be warm to the touch (FX10MT/FX10MTR/FX10MTRA).

A FX10MT/FX10MTR/FX10MTRA

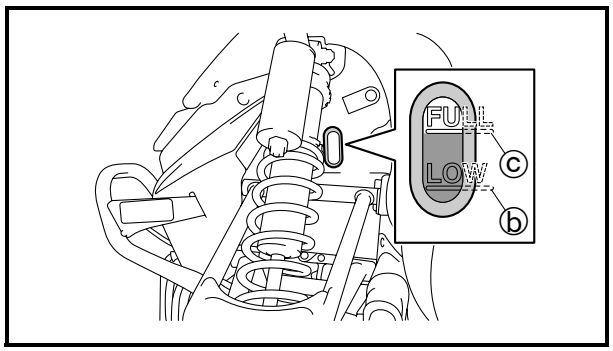
⚠ WARNING

To avoid severe injury or death:

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

- Remove the radiator cap and bleed the cooling system again, as described above.

  No air bubbles → OK.
- Check the coolant level in the coolant reservoir when the engine is cold. If the coolant level is below the “LOW” mark ⓑ, add coolant until it reaches the “FULL” mark ⓒ.

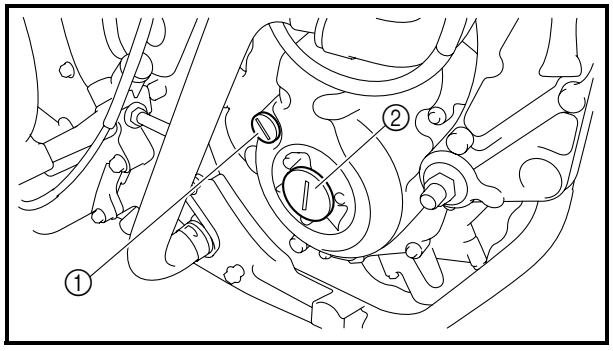


VALVE CLEARANCE ADJUSTMENT

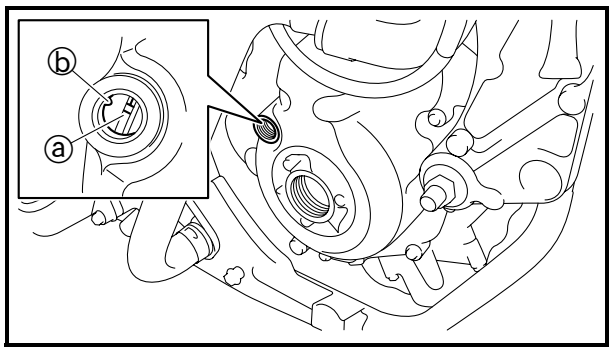
NOTE:

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

1. Drain:
   - Engine oil
     Refer to “ENGINE OIL REPLACEMENT”.
2. Remove:
   - Fuel tank
     Refer to “SEAT AND FUEL TANK” in CHAPTER 5.
   - Oil tank
     Refer to “OIL TANK” in CHAPTER 5.

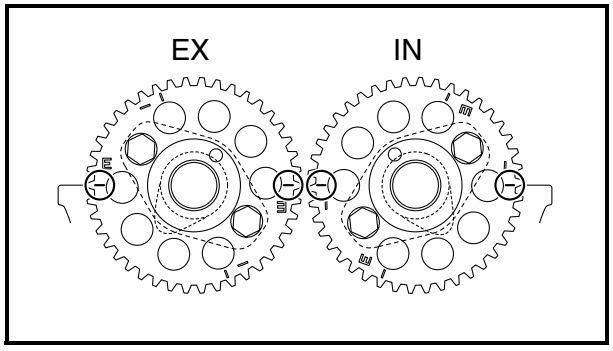


3. Remove:
   - Cylinder head cover
     Refer to “CAMSHAFTS” in CHAPTER 5.
   - Timing mark accessing screw ①
   - Crankshaft end accessing screw ②



4. Measure:
   - Valve clearance
     Out of specification → Adjust.

Valve clearance (cold):
Intake valve:
0.15 ~ 0.22 mm
(0.0059 ~ 0.0087 in)
Exhaust valve:
0.21 ~ 0.25 mm
(0.0083 ~ 0.0098 in)

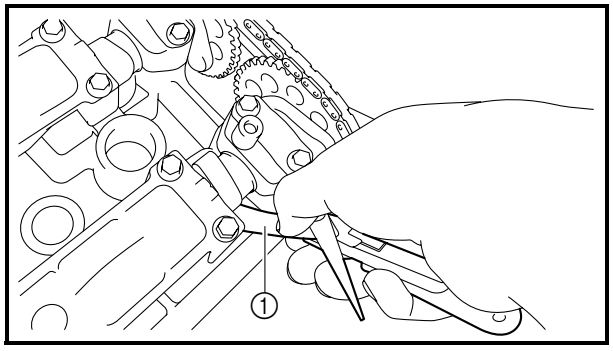


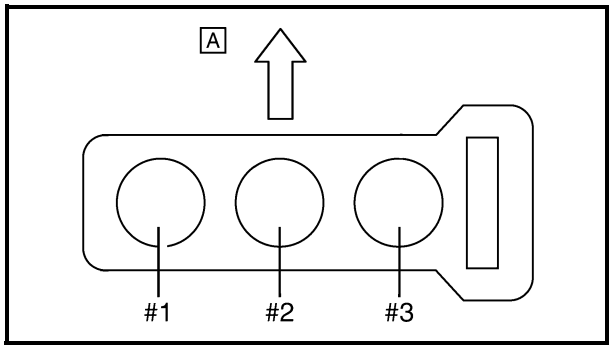
Checking steps:

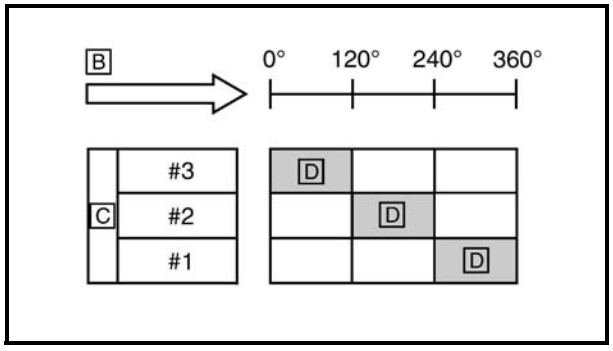
- Turn the crankshaft clockwise.
- When piston #3 is at TDC on the compression stroke, align the TDC mark ⓐ on the AC magneto rotor with the mark ⓑ on the AC magneto cover.

NOTE:

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







- Measure the valve clearance with a thickness gauge ①.

NOTE:

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

Valve clearance measuring sequence
Cylinder #3 → #2 → #1

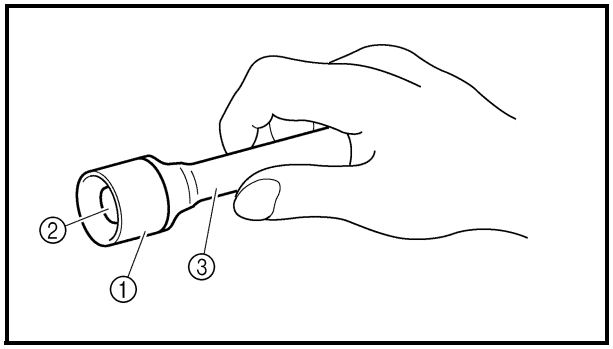
A Front
For each cylinder, starting with cylinder #3 at TDC, turn the crankshaft clockwise as specified in the following table.
B Degrees that the crankshaft is turned clockwise
C Cylinder
D Combustion cycle

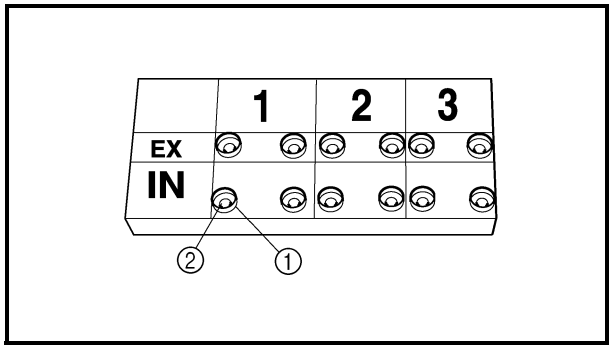
Cylinder #2	120°
Cylinder #1	240°

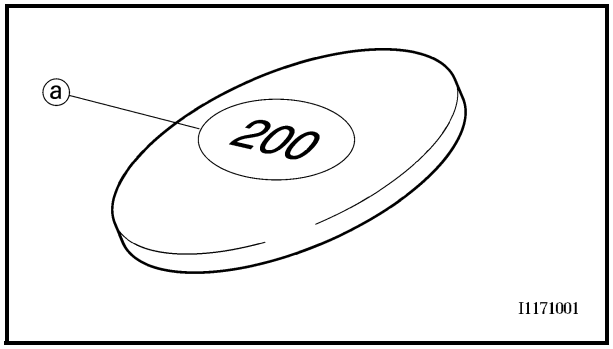
5. Remove:
   - Intake camshaft
   - Exhaust camshaft

NOTE:

- Refer to “CAMSHAFTS” in CHAPTER 5.
- When removing the timing chain and camshafts, fasten a wire to the timing chain to retrieve it if it falls into the crankcase.







6. Adjust:
   - Valve clearance

Adjustment steps:

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

Valve lapper
90890-04101
Valve lapping tool
YM-A8998

NOTE:

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

- Select the proper valve pad from the following table.

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

NOTE:

- The thickness ⓐ of each valve pad is marked in hundredths of millimeters on the side that touches the valve lifter.
- Since valve pads of various sizes are originally installed, the valve pad number must be rounded in order to reach the closest equivalent to the original.

- Round off the original valve pad number according to the following table.

Last digit	Rounded value
0 or 2	**0**
5	**5**
8	**10**

EXAMPLE:

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

Rounded value = 150

- Locate the rounded number of the original valve pad and the measured valve clearance in the valve pad selection table. The point where the column and row intersect is the new valve pad number.

NOTE:

The new valve pad number is only an approximation. The valve clearance must be measured again and the above steps should be repeated if the measurement is still incorrect.

VALVE PAD SELECTION TABLE

INTAKE

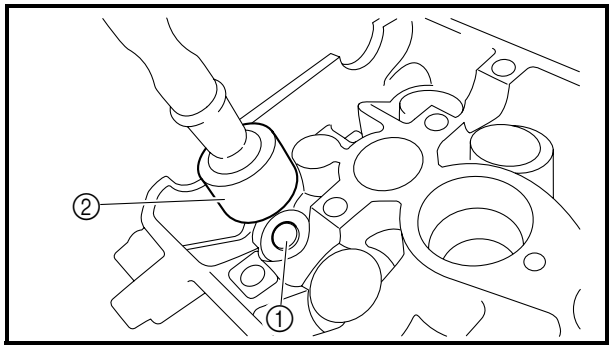
Measured clearance ↓	INSTALLED PAD NUMBER																										
	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240
0.00 ~ 0.04				120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225
0.05 ~ 0.09			120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
0.10 ~ 0.14		120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235
0.15 ~ 0.22	Specification																								
exa 0.23 ~ 0.27	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	
→ 0.28 ~ 0.32	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240		
0.33 ~ 0.37	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240			
0.38 ~ 0.42	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240				
0.43 ~ 0.47	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240					
0.48 ~ 0.52	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240						
0.53 ~ 0.57	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240							
0.58 ~ 0.62	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240								
0.63 ~ 0.67	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240									
0.68 ~ 0.72	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240										
0.73 ~ 0.77	175	180	185	190	195	200	205	210	215	220	225	230	235	240											
0.78 ~ 0.82	180	185	190	195	200	205	210	215	220	225	230	235	240												
0.83 ~ 0.87	185	190	195	200	205	210	215	220	225	230	235	240													
0.88 ~ 0.92	190	195	200	205	210	215	220	225	230	235	240														
0.93 ~ 0.97	195	200	205	210	215	220	225	230	235	240															
0.98 ~ 1.02	200	205	210	215	220	225	230	235	240																
1.03 ~ 1.07	205	210	215	220	225	230	235	240																	
1.08 ~ 1.12	210	215	220	225	230	235	240																		
1.13 ~ 1.17	215	220	225	230	235	240																			
1.18 ~ 1.22	220	225	230	235	240																				
1.23 ~ 1.27	225	230	235	240																					
1.28 ~ 1.32	230	235	240																						
1.33 ~ 1.37	235	240																							
1.38 ~ 1.42	240																								

EXAMPLE:
VALVE CLEARANCE:
0.15 ~ 0.22 mm (0.0059 ~ 0.0087 in)
Installed is 150
Measured clearance is 0.30 mm (0.0118 in)
Replace 150 pad with 160 pad

EXHAUST

Measured clearance ↓	INSTALLED PAD NUMBER																										
	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240
0.00 ~ 0.02						120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215
0.03 ~ 0.07					120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
0.08 ~ 0.12				120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225
0.13 ~ 0.17			120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
0.18 ~ 0.20		120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235
0.21 ~ 0.25	Specification																								
exa 0.26 ~ 0.30	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	
→ 0.31 ~ 0.35	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240		
0.36 ~ 0.40	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240			
0.41 ~ 0.45	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240				
0.46 ~ 0.50	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240					
0.51 ~ 0.55	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240						
0.56 ~ 0.60	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240							
0.61 ~ 0.65	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240								
0.66 ~ 0.70	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240									
0.71 ~ 0.75	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240										
0.76 ~ 0.80	175	180	185	190	195	200	205	210	215	220	225	230	235	240											
0.81 ~ 0.85	180	185	190	195	200	205	210	215	220	225	230	235	240												
0.86 ~ 0.90	185	190	195	200	205	210	215	220	225	230	235	240													
0.91 ~ 0.95	190	195	200	205	210	215	220	225	230	235	240														
0.96 ~ 1.00	195	200	205	210	215	220	225	230	235	240															
1.01 ~ 1.05	200	205	210	215	220	225	230	235	240																
1.06 ~ 1.10	205	210	215	220	225	230	235	240																	
1.11 ~ 1.15	210	215	220	225	230	235	240																		
1.16 ~ 1.20	215	220	225	230	235	240																			
1.21 ~ 1.25	220	225	230	235	240																				
1.26 ~ 1.30	225	230	235	240																					
1.31 ~ 1.35	230	235	240																						
1.36 ~ 1.40	235	240																							
1.41 ~ 1.45	240																								

EXAMPLE:
VALVE CLEARANCE:
0.21 ~ 0.25 mm (0.0083 ~ 0.0098 in)
Installed is 175
Measured clearance is 0.35 mm (0.0138 in)
Replace 175 pad with 185 pad



- Install the new valve pad ① and the valve lifter ②.

NOTE:
- Apply molybdenum disulfide oil to the valve pad and the valve lifter.
- The valve lifter must turn smoothly when rotated by hand.
- Install the valve lifter and the valve pad in the correct place.

- Install the exhaust and intake camshafts, timing chain and camshaft caps.

Camshaft cap bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)

NOTE:
- Refer to “CAMSHAFTS” in CHAPTER 5.
- Lubricate the camshaft caps, camshaft lobes, camshaft journals and camshaft cap bolts.
- Align the camshaft marks with the camshaft cap marks.
- Rotate the crankshaft clockwise several turns to seat the parts.

- Measure the valve clearance again.
- If the valve clearance is still out of specification, repeat all of the valve clearance adjustment steps until the specified clearance is obtained.

7. Install:
   - All removed parts

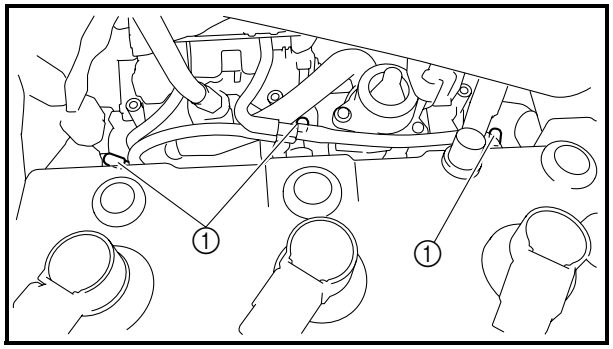
NOTE:
For installation, reverse the removal procedure.

8. Add:
   - Engine oil
     Refer to “ENGINE OIL REPLACEMENT”.

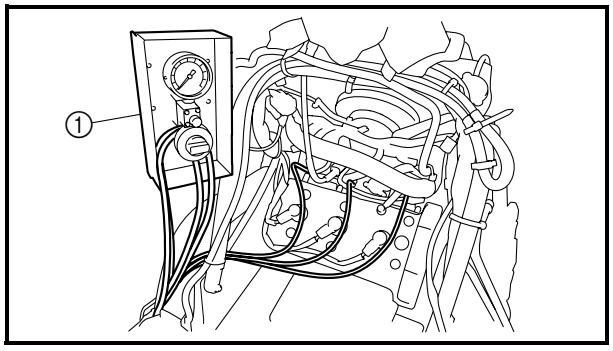
THROTTLE BODY SYNCHRONIZATION

NOTE:
Prior to synchronizing the throttle bodies, the valve clearance should be properly adjusted.

1. Remove:
   - Fuel tank
     Refer to “SEAT AND FUEL TANK” in CHAPTER 5.



2. Remove:
   - Vacuum caps ①



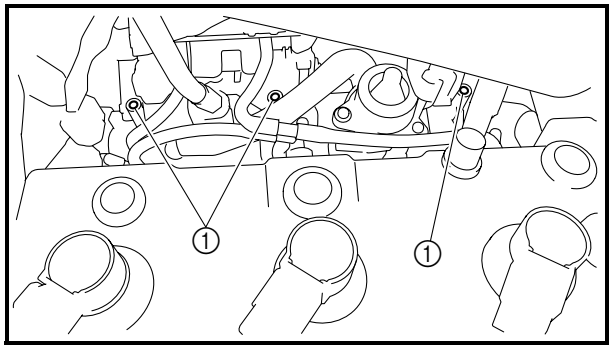
3. Install:
   - Vacuum gauge ①

Vacuum gauge:
90890-03094
Carburetor synchronizer:
YU-44456

4. Install:
   - Fuel tank
     Refer to “SEAT AND FUEL TANK” in CHAPTER 5.
5. Start the engine and let it warm up for several minutes, and then let it run at specified engine idling speed.

Engine idle speed:
1,450 ~ 1,550 r/min

6. Adjust:
   - Throttle body synchronization



Adjustment steps:

- With throttle body #1 as standard, adjust throttle body #1 and #2 using the synchronizing screws ①.

Carburetor angle driver 2:
90890-03173

NOTE:

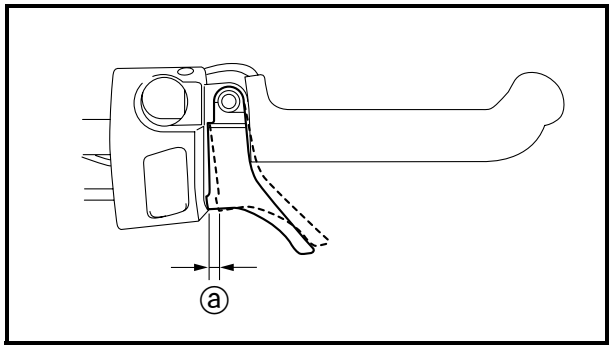
After each step, rev the engine two or three times, each time for less than a second, and check the synchronization again.

Vacuum pressure at engine idling speed:
25.37 ~ 28.03 kPa
(0.25 ~ 0.28 kg/cm^2, 3.61~ 3.99 psi)

NOTE:

The difference in vacuum pressure between two throttle bodies should not exceed 1.3 kPa (0.01 kg/cm^2, 0.18 psi).

7. Stop the engine and remove the measuring equipment.
8. Adjust:
   - Throttle cable free play
     Refer to "THROTTLE CABLE FREE PLAY ADJUSTMENT".



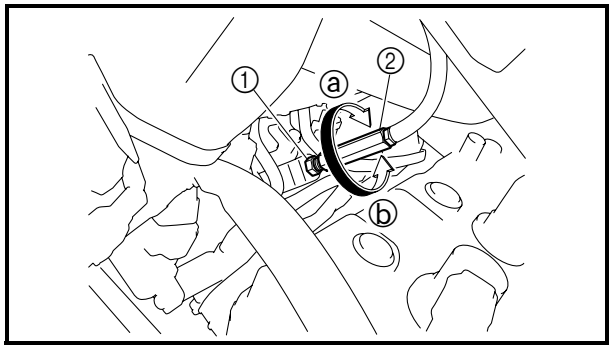
THROTTLE CABLE FREE PLAY ADJUSTMENT

NOTE:

Adjust the throttle cable free play while the cable is in the cable guide.

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

Throttle cable free play:
3.0 ~ 4.0 mm (0.12 ~ 0.16 in)



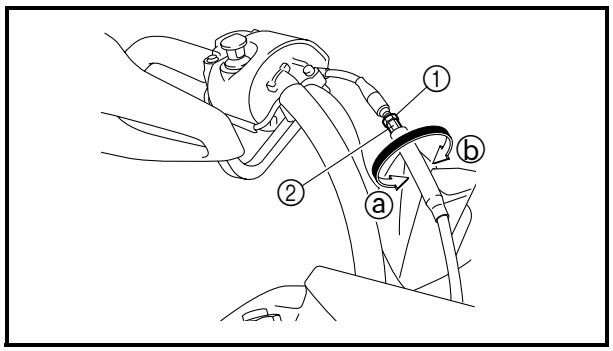
2. Adjust:
   • Throttle cable free play

Throttle body side adjustment steps:
- Remove the left side cover.
  Refer to "COVERS" in CHAPTER 3.
- Loosen the locknut ①.
- Turn the adjusting nut ② in direction ⓐ or ⓑ until the specified free play is obtained.

Direction ⓐ	**Free play is increased.**
Direction ⓑ	**Free play is decreased.**

- Tighten the locknut.

NOTE:
If the specified throttle cable free play cannot be obtained on the throttle body side of the cable, use the adjusting nut on the handlebar side.

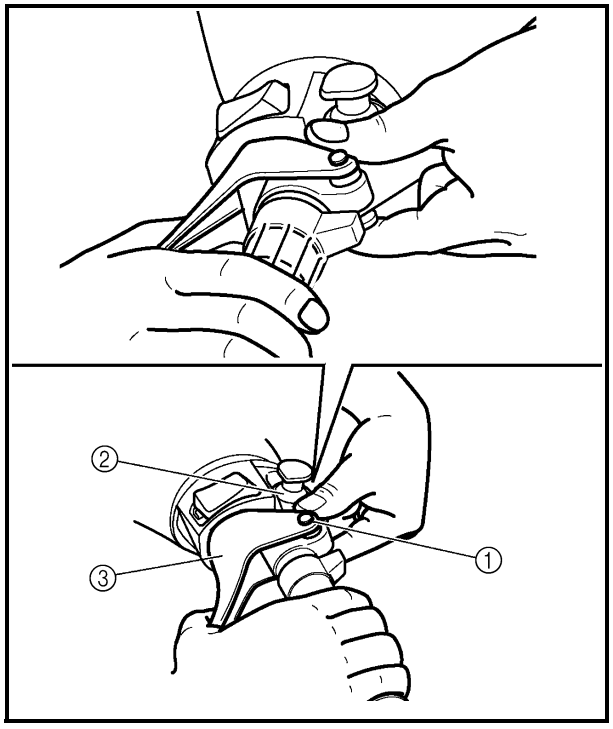


Handlebar side adjustment steps:
- Slide back the rubber cover.
- Loosen the locknut ①.
- Turn the adjusting nut ② in direction ⓐ or ⓑ until the specified free play is obtained.

Direction ⓐ	**Free play is increased.**
Direction ⓑ	**Free play is decreased.**

- Tighten the locknut.
- Slide the rubber cover to its original position.

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 the T.O.R.S.:
- **Be sure the parking brake is applied.**
- **Be sure the throttle lever moves smoothly.**
- **Do not rev the engine to the point that the clutch engages, otherwise, the snowmobile 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 engine stop switch housing ②.
   While holding as described above, press the throttle lever ③ gradually.
   The T.O.R.S. will be activated and the engine speed will be limited to less than the clutch engagement speed.

Engagement speed:
FX10/FX10RT/FX10RTR/FX10RTRA
3,550 ~ 3,950 r/min
FX10MT/FX10MTR "USA/Canada"/ FX10MTRA "USA/Canada"
3,300 ~ 3,700 r/min
FX10MTR "Europe"/FX10MTRA "Europe"
3,100 ~ 3,500 r/min

⚠ WARNING

If the engine speed does not decrease to less than the clutch engagement speed, stop the engine by turning the main switch to the off position and check the electrical system.

COMPRESSION PRESSURE MEASUREMENT

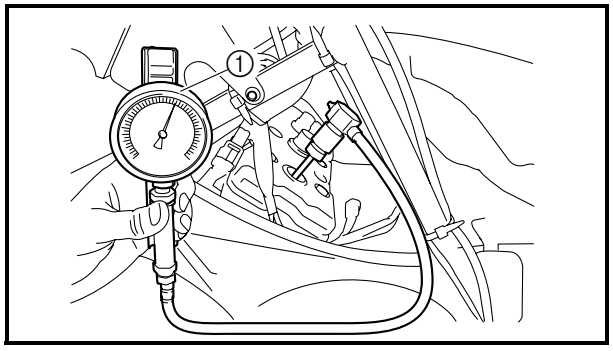
NOTE:

Insufficient compression pressure will result in a loss of performance.

1. Measure:
   - Valve clearance
     Out of specification → Adjust.
     Refer to "VALVE CLEARANCE ADJUSTMENT".
2. Start the engine, warm it up for several minutes, and then turn it off.
3. Remove:
   - Fuel tank
     Refer to "SEAT AND FUEL TANK" in CHAPTER 5.
4. Remove:
   - Spark plug

CAUTION:

Before removing the spark plugs, use compressed air to blow away any dirt accumulated in the spark plug wells to prevent it from falling into the cylinders.



5. Install:
   - Compression gauge ①

Compression gauge:
90890-03081
Engine compression tester:
YU-33223

6. Measure:
   - Compression pressure
     Above the maximum pressure → Inspect the cylinder head, valve surfaces, and piston crown for carbon deposits.
     Below the minimum pressure → Squirt a few drops of oil into the affected cylinder and measure again.
     Refer to the following table.

Compression pressure (with oil applied into cylinder)	
Reading	**Diagnosis**
Higher than without oil	**Piston ring(-s) wear or damage → Repair.**
Same as without oil	**Piston, valves, cylinder head gasket or piston possibly defective → Repair.**

Compression pressure (at sea level):
Standard:
1,500 kPa (15.0 kg/cm^2, 213.3 psi) at 400 r/min
Minimum:
1,400 kPa (14.0 kg/cm^2, 199.1 psi) at 400 r/min
Maximum:
1,600 kPa (16.0 kg/cm^2, 227.5 psi) at 400 r/min

Measurement steps:
- Set the engine stop switch to “RUN” and turn the main switch to “START”.
- With the throttle wide open, crank the engine until the reading on the compression gauge stabilizes.

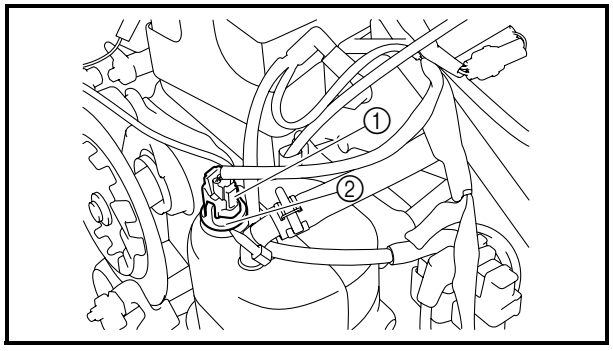
⚠ WARNING

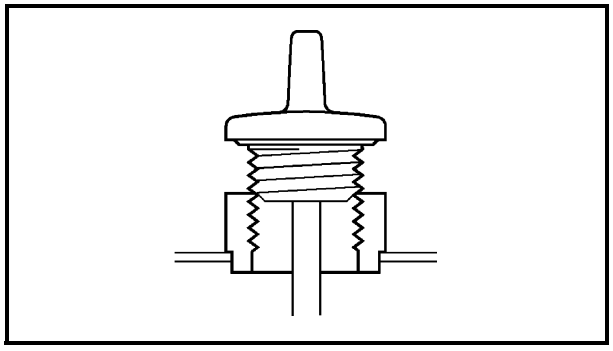
To prevent sparking, disconnect all ignition coil couplers before cranking the engine.

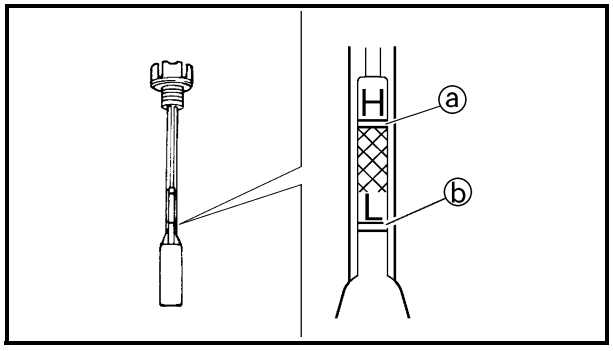
NOTE:
The difference in compression pressure between cylinders should not exceed 100 kPa (1 kg/cm^2, 14.2 psi).

7. Install:
   - Spark plug

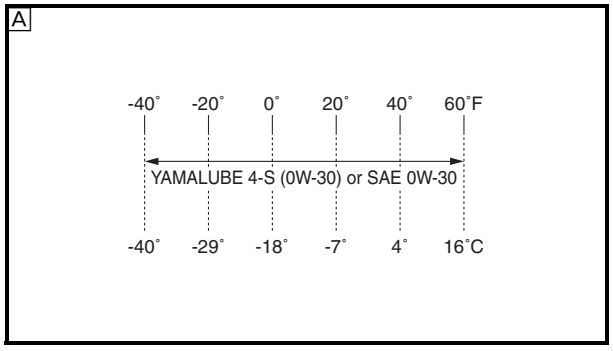
Spark plug:
13 Nm (1.3 m · kg, 9.4 ft · lb)



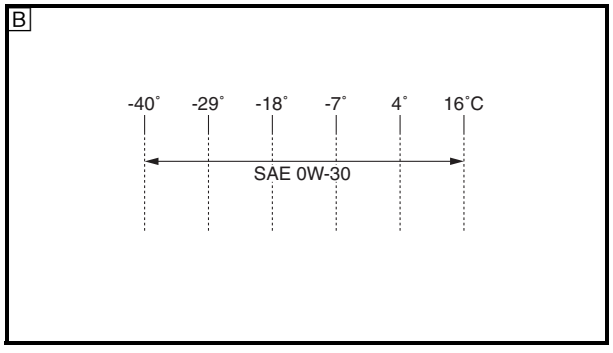




A



B



ENGINE OIL LEVEL INSPECTION

1. Inspect:
   - Engine oil level

CAUTION:

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

Inspection steps:

- Place the snowmobile on a level surface and apply the parking brake.
- Start the engine, warm it up for 10 ~ 15 minutes, and then turn off.
- Remove the right side cover.
  Refer to "COVERS" in CHAPTER 3.
- Disconnect the oil level switch coupler ①.

CAUTION:

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

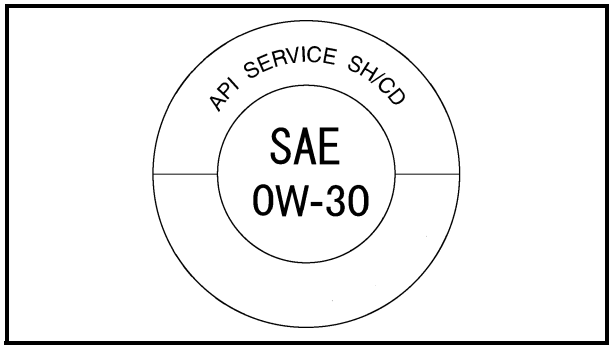
- Remove the oil level gauge ②, wipe it clean, insert it back into the filler hole (without screwing it in), and then remove it again to check the oil level.
- The engine oil level should be between the maximum level mark "H" ⓐ and minimum level mark "L" ⓑ.
  Below the minimum level mark → Add the recommended engine oil to the proper level.

CAUTION:

- **When adding the engine oil, be careful not to fill above the maximum level mark "H" and minimum level mark "L" on the oil level gauge.**
- **Do not allow foreign materials to enter the oil tank.**

Recommended engine oil type:
For USA/Canada
YAMALUBE 4-S (0W-30) or SAE 0W-30
For Europe
SAE 0W-30
Recommended engine oil grade:
API service SG type or higher, JASO standard MA

A USA/Canada
B Europe



NOTE:

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

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

NOTE:

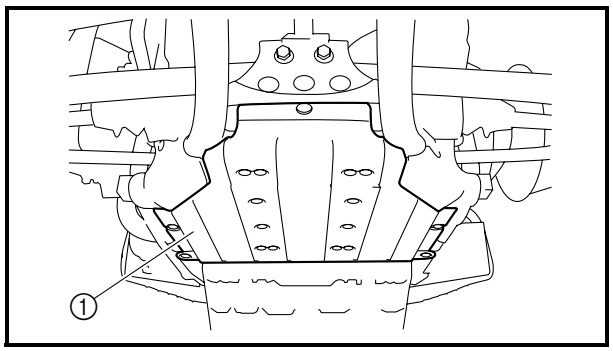
Before checking the engine oil level, wait a few minutes until the oil has settled.

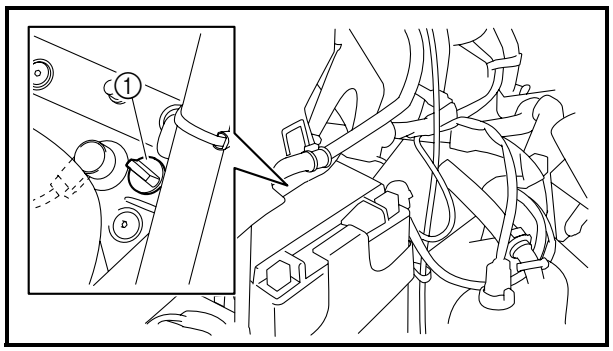
CAUTION:

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

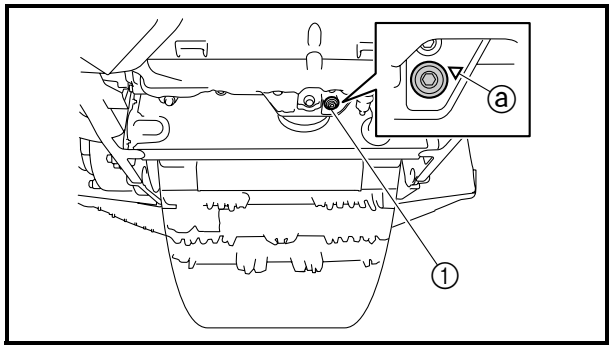
ENGINE OIL REPLACEMENT

1. Place the snowmobile on a level surface and apply the parking brake.
2. Start the engine, warm up for several minutes, and then turn it off.
3. Remove:
   - Lower cover (left and right)
     Refer to "COVERS" in CHAPTER 3.
4. Place containers under the engine oil pan and oil tank.
5. Remove:
   - Bottom panel ①
6. Disconnect:
   - Oil level switch coupler
     Refer to "ENGINE OIL LEVEL INSPECTION".
7. Remove:
   - Oil level gauge
     Refer to "ENGINE OIL LEVEL INSPECTION".



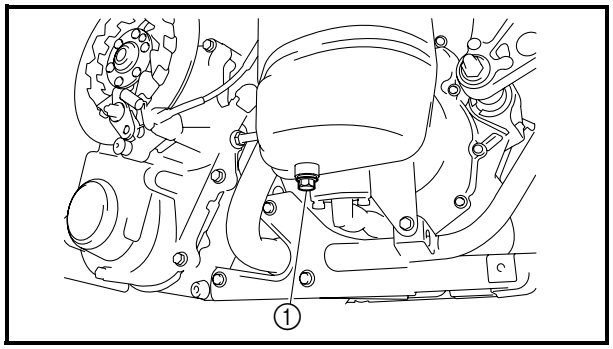


8. Remove:
   - Cylinder head oil filler cap ①

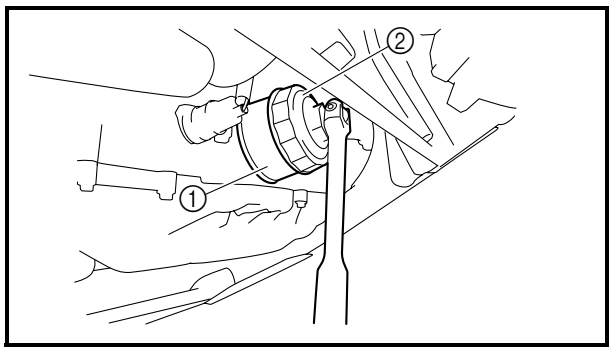


9. Remove:
   • Oil pan engine oil drain bolt ①

NOTE:
A "▽" mark ⓐ is stamped in the oil pan near the oil pan drain bolt.

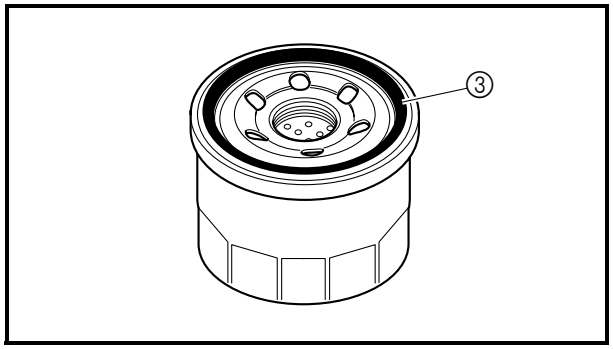


10. Remove:
    • Oil tank engine oil drain bolt ①
11. Drain:
    • Engine oil
      (completely from the oil pan and oil tank)
12. If the oil filter cartridge is also to be replaced, perform the following procedure.



Replacement steps:
• Remove the oil filter cartridge ① with an oil filter wrench ②.

NOTE:
Make sure that the O-ring is removed together with the oil filter cartridge. If the O-ring remains attached to the crankcase, oil leakage may occur.

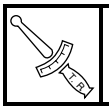


Oil filter wrench:
90890-01469
YM-01469

• Apply a thin coat of engine oil onto the O-ring ③ of the new oil filter cartridge.

CAUTION:
Make sure that the O-ring ③ is positioned correctly in the groove of the oil filter cartridge.

• Tighten the new oil filter cartridge to specification with an oil filter wrench.



Oil filter cartridge:
17 Nm (1.7 m · kg, 12 ft · lb)

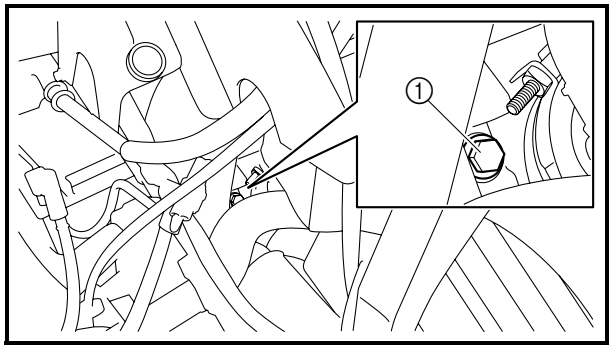
13. Install:
    - Drain bolts
      (along with the new gaskets)

Oil tank engine oil drain bolt:
16 Nm (1.6 m · kg, 11 ft · lb)
Oil pan engine oil drain bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)

14. Fill:
    - Engine oil
      (with the specified amount of the recommended engine oil)
      Add 2.0 L (1.76 Imp qt, 2.11 US qt) of the recommended engine oil to the oil tank, and then install and tighten the oil level gauge and the cylinder head oil filler cap.

Quantity:
Total amount:
3.90 L (3.43 Imp qt, 4.12 US qt)
Periodic oil change:
3.00 L (2.64 Imp qt, 3.17 US qt)
With oil filter cartridge replacement:
3.20 L (2.82 Imp qt, 3.38 US qt)

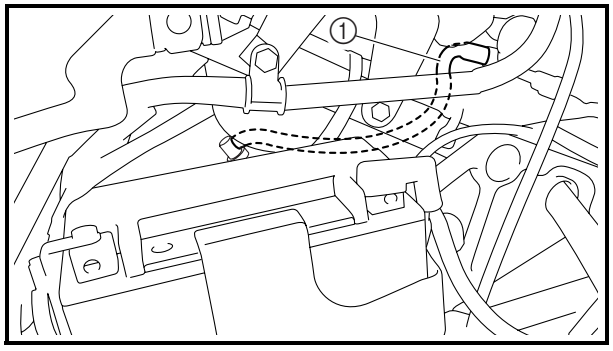
15. Inspect:
    - Engine and oil tank
      (for oil leaks)
16. Inspect:
    - Engine oil level
      Refer to “ENGINE OIL LEVEL INSPECTION”.



17. Inspect:
    - Engine oil pressure

Inspection steps:
- Slightly loosen the oil check bolt ①.
- Start the engine and keep it idling until engine oil starts to seep from the oil check bolt.
  If no engine oil comes out after one minute, turn the engine off so that it will not seize.
- Check the engine oil passages, the oil filter and the oil pump for damage or leakage.
- Start the engine after solving the problem(-s) and check the engine oil pressure again. Tighten the oil check bolt to specification.

Oil check bolt:
20 Nm (2.0 m · kg, 14 ft · lb)

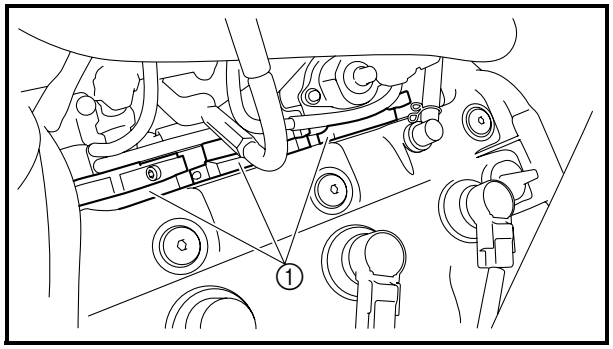


CYLINDER HEAD BREATHER HOSE INSPECTION

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

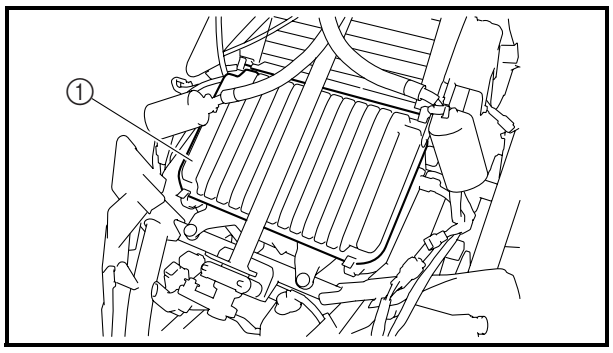
CAUTION:

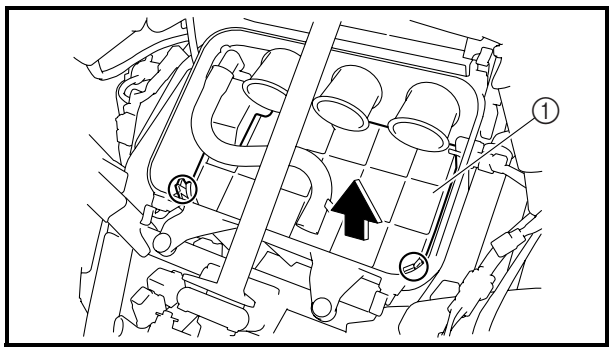
Make sure that the cylinder head breather hose is routed correctly.



THROTTLE BODY JOINTS INSPECTION

1. Inspect:
   - Throttle body joints ①
     Cracks/damage → Replace the defective parts.
     Refer to "THROTTLE BODY" in CHAPTER 7.





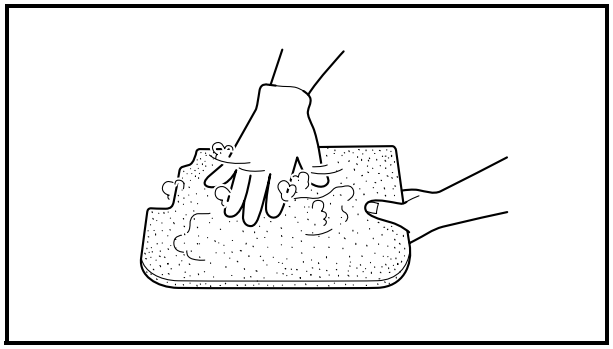
CHECKING THE AIR FILTER ELEMENT

1. Remove:
   - Headlight stay
     Refer to "COVERS" in CHAPTER 3.
2. Remove:
   - Air filter case cover ①

NOTE:

Slide the air filter case cover toward the right side of the snowmobile and remove it.

3. Lift up the air filter element frame ① and remove the air filter element.

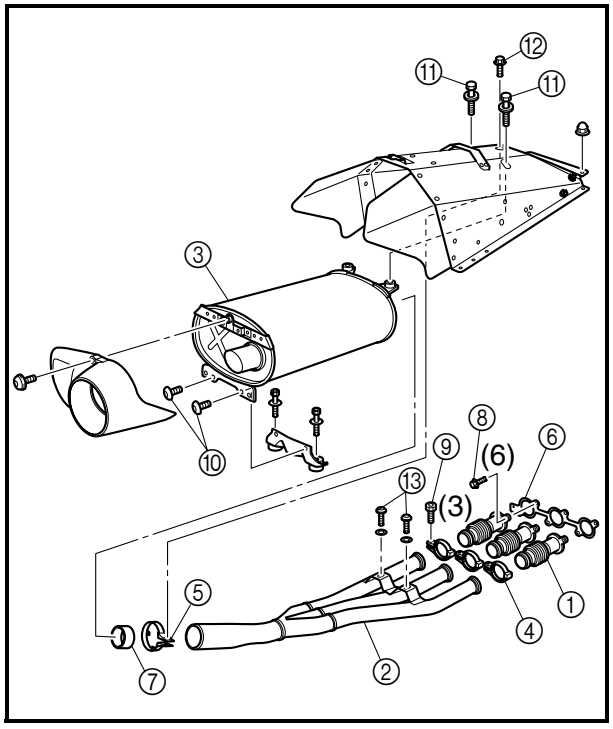


4. Clean:
   - Air filter element

NOTE:
Remove the snow.

5. Inspect:
   - Air filter element
     Damage/clogs → Replace.
6. Install:
   - Air filter element
   - Air filter element frame
   - Air filter case cover

NOTE:
Push down on the air filter element frame until a click is heard.



EXHAUST SYSTEM INSPECTION

1. Remove:
   - Fuel tank
     Refer to "SEAT AND FUEL TANK" in CHAPTER 5.
2. Inspect:
   - Exhaust pipe joints ①
   - Exhaust pipe ②
   - Muffler ③
   - Exhaust pipe bands ④
   - Muffler band ⑤
     Cracks/damage → Replace.
   - Exhaust pipe joint gasket ⑥
   - Muffler gasket ⑦
     Exhaust gas leaks → Replace.
3. Inspect:
   - Tightening torque

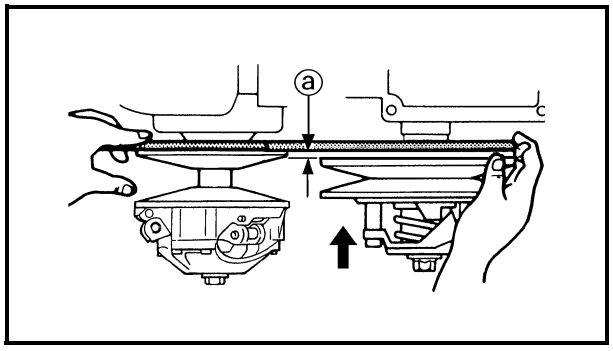
Exhaust pipe joint bolt ⑧:
25 Nm (2.5 m · kg, 18 ft · lb)
Exhaust pipe band bolt ⑨:
9 Nm (0.9 m · kg, 6.5 ft · lb)
Muffler bolt (rear side) ⑩:
23 Nm (2.3 m · kg, 17 ft · lb)
Muffler bolt (front side) ⑪:
23 Nm (2.3 m · kg, 17 ft · lb)
Muffler band bolt ⑫:
20 Nm (2.0 m · kg, 14 ft · lb)
Exhaust pipe bolt ⑬:
23 Nm (2.3 m · kg, 17 ft · lb)

4. Install:
   - Fuel tank
     Refer to "SEAT AND FUEL TANK" in CHAPTER 5.

POWER TRAIN

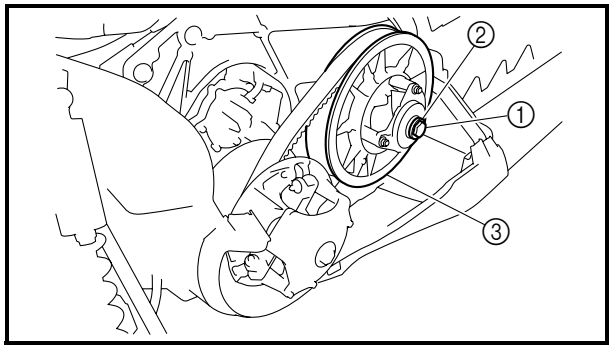
SHEAVE OFFSET ADJUSTMENT

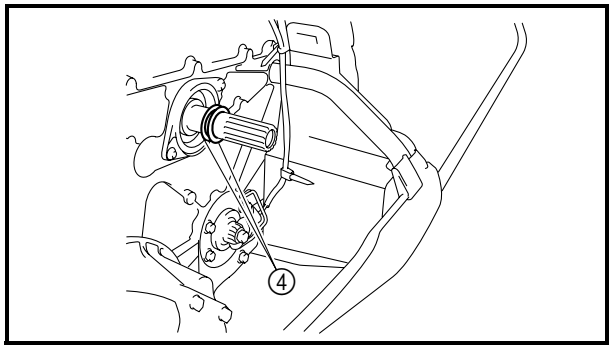
1. Remove:
   - Left side cover
   - Drive guard
   Refer to “COVERS” in CHAPTER 3.
2. Remove:
   - Drive V-belt
3. Measure:
   - Sheave offset ⓐ
   Use a straightedge that is approximately 470 mm (18.5 in) long, 20 mm (0.79 in) wide, and 4 mm (0.16 in) thick.
   Out of specification → Adjust.



Sheave offset:
13.5 ~ 16.5 mm (0.53 ~ 0.65 in)

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





4. Adjust:
   - Sheave offset

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

Shim size	
Part number	**Thickness**
90201-286K9	**1.0 mm (0.04 in)**

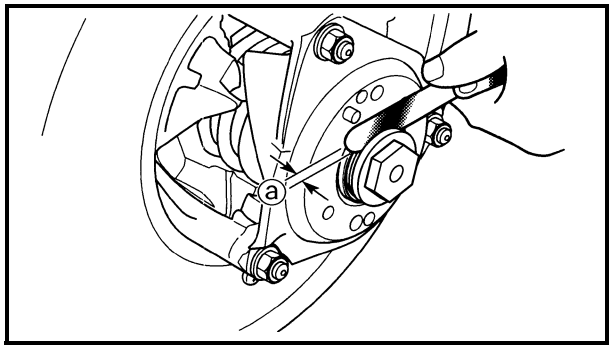
- Install the secondary sheave, secondary sheave bolt and washer.

	Secondary sheave bolt: **64 Nm (6.4 m · kg, 46 ft · lb)**

- Recheck the sheave offset. If out of specification, repeat the above steps.

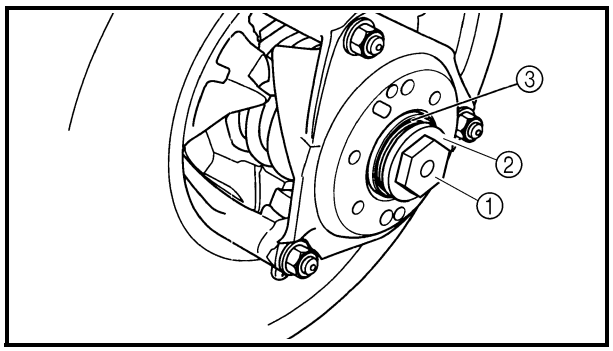
NOTE:

When adjusting the sheave offset, the secondary sheave free play (clearance) should be adjusted.



5. Measure:
   - Secondary sheave free play (clearance) ⓐ
     Use a feeler gauge.
     Out of specification → Adjust.

	Secondary sheave free play (clearance): **1.0 ~ 2.0 mm (0.04 ~ 0.08 in)**

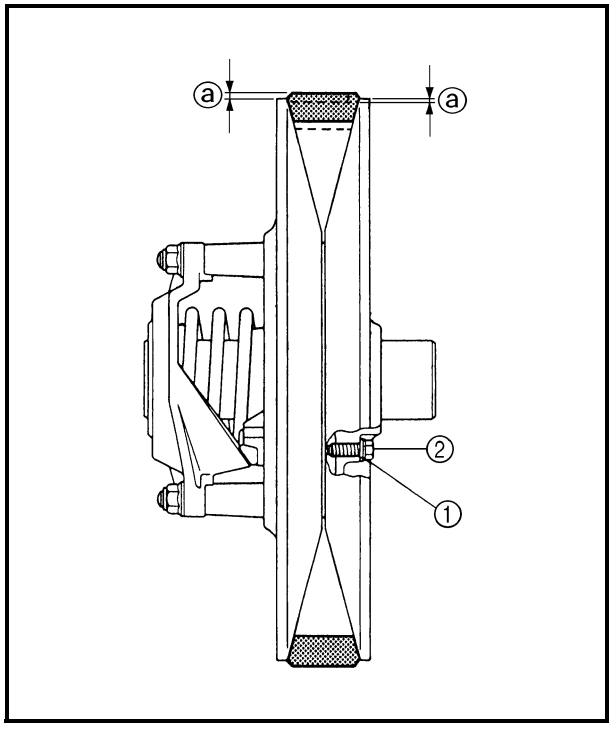


6. Adjust:
   - Secondary sheave free play (clearance)

Adjustment steps:

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

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



DRIVE V-BELT

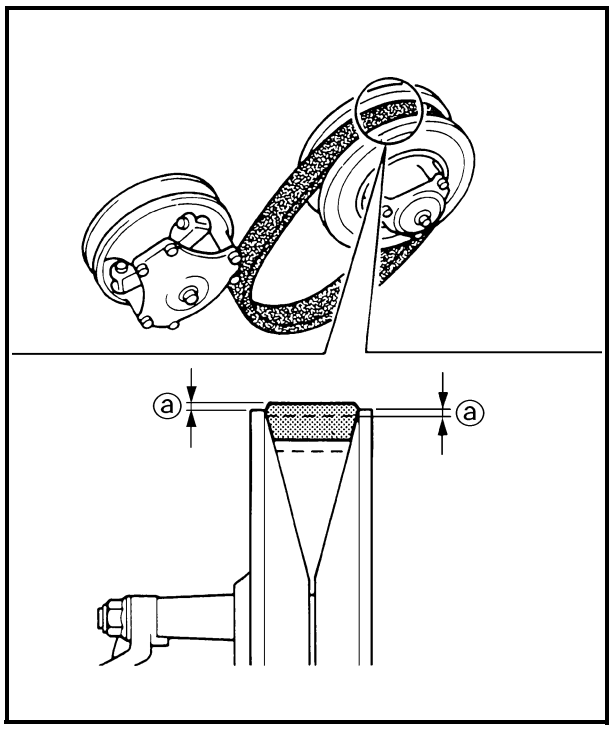
⚠ WARNING

When installing the new V-belt, make sure that it is positioned from 1.5 mm (0.06 in) above the edge of the secondary sheave to –0.5 mm (–0.02 in) below the edge ⓐ.
If the V-belt is not positioned correctly, the clutch engagement speed will be changed. The snowmobile may move unexpectedly when the engine is started.
Adjust the V-belt position by removing or adding a spacer ① on each adjusting bolt ②.

CAUTION:

As the V-belt wears, adjustment may be necessary. To ensure proper clutch performance, the V-belt position should be adjusted by adding a spacer on each adjusting bolt when the V-belt position reaches 1.5 mm (0.06 in) below the edge.

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

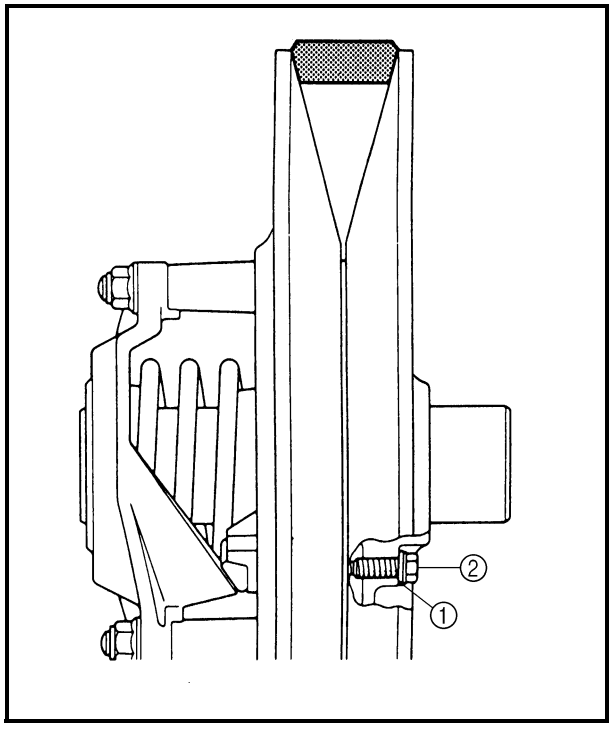


1. Measure:
   • V-belt position ⓐ

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:
–0.5 ~ 1.5 mm (–0.02 ~ 0.06 in)



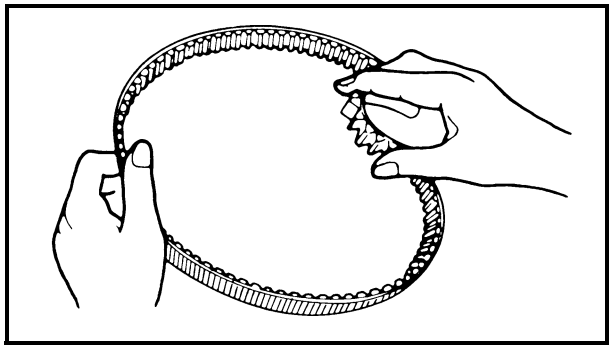
2. Adjust the position of the V-belt by removing or adding a spacer ① on each adjusting bolt ②.

V-belt position	Adjustment
More than 1.5 mm (0.06 in) above the edge	Remove a spacer
From 1.5 mm (0.06 in) above the edge to –0.5 mm (–0.02 in) below the edge	Not necessary (It is correct.)
More than –0.5 mm (–0.02 in) below the edge	Add spacer

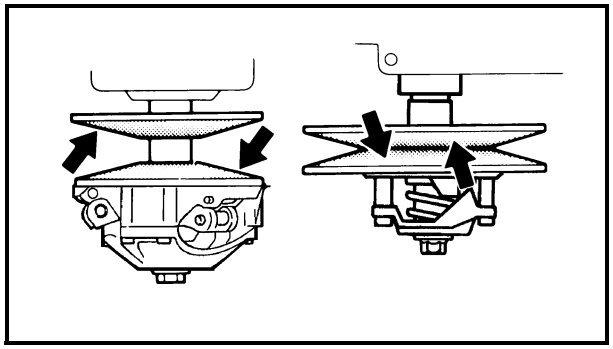
Part number	Thickness
90201-061H1	0.5 mm (0.02 in)
90201-06037	1.0 mm (0.04 in)

3. Tighten:
   - Secondary sheave adjusting bolt ②

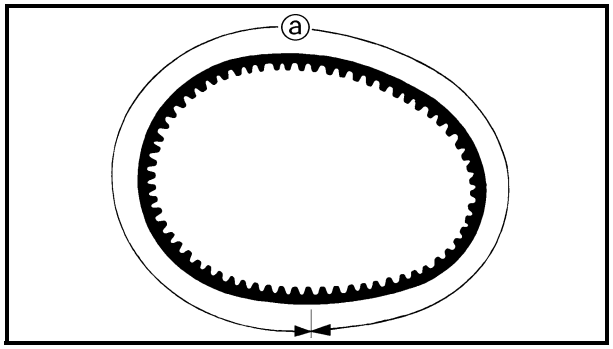
	Secondary sheave adjusting bolt: 10 Nm (1.0 m · kg, 7.2 ft · lb)



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, and then check the primary and secondary sheaves.



6. Measure:
   • Drive V-belt circumference ⓐ
   Out of specification → Replace.

V-belt circumference:
1,129 ~ 1,137 mm (44.4 ~ 44.8 in)

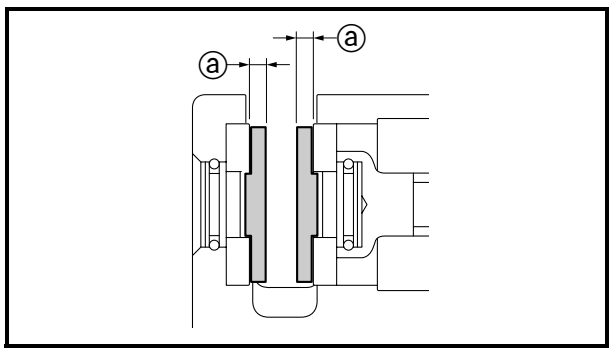
ENGAGEMENT SPEED CHECK

1. Place the snowmobile on a level surface.
2. Inspect:
   • Clutch engagement speed

Inspection steps:

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

Engagement speed:
FX10/FX10RT/FX10RTR/FX10RTRA
3,550 ~ 3,950 r/min
FX10MT/FX10MTR "USA/Canada"/
FX10MTRA "USA/Canada"
3,300 ~ 3,700 r/min
FX10MTR "Europe"/FX10MTRA
"Europe"
3,100 ~ 3,500 r/min



PARKING BRAKE PAD INSPECTION

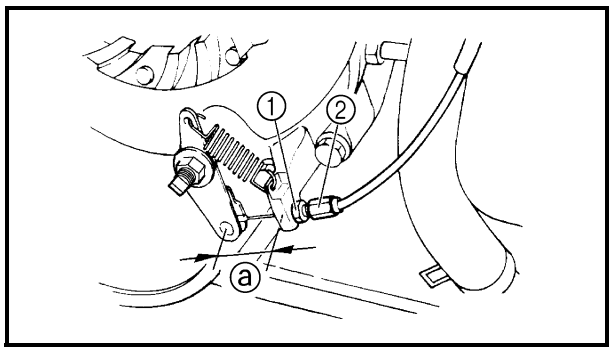
1. Remove:
   - Right side cover
     Refer to "COVERS" in CHAPTER 3.
2. Inspect:
   - Parking brake pad
     Wear limit ⓐ reached → Replace the parking brake assembly.

Parking brake pad wear limit:
1.2 mm (0.05 in)

PARKING BRAKE ADJUSTMENT

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

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



3. Adjust:
   - Parking brake cable

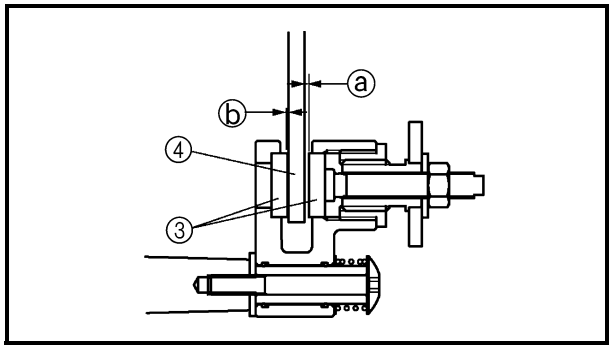
Adjustment steps:

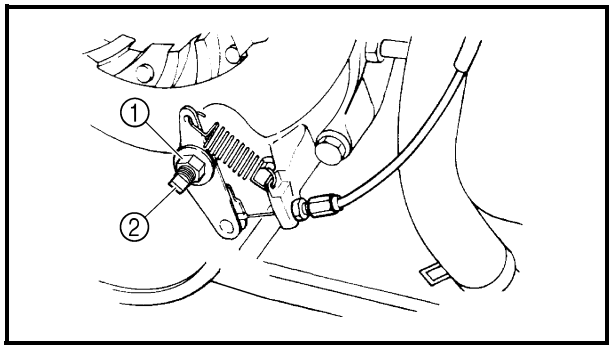
- Loosen the locknut ①.
- Turn the adjusting nut ② in or out until the specified distance ⓐ is obtained.

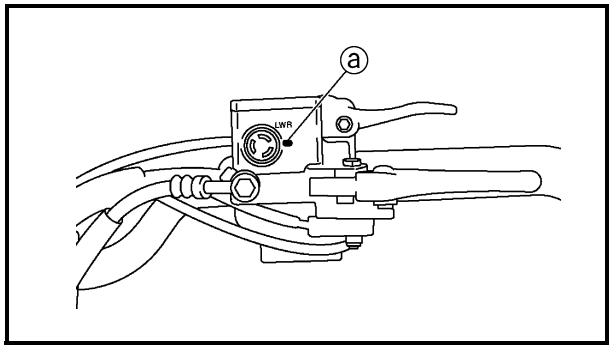
Turning in	**Distance is increased.**
Turning out	**Distance is decreased.**

- Tighten the locknut.

Parking brake cable locknut:
6 Nm (0.6 m · kg, 4.3 ft · lb)







4. Measure:
   • Brake pad clearance (ⓐ + ⓑ)
   Out of specification → Adjust.

Brake pad clearance (ⓐ + ⓑ):
1.5 ~ 2.0 mm (0.059 ~ 0.079 in)

5. Adjust:
   • Brake pad clearance

Adjustment steps:
- Loosen the locknut ①.
- Turn the adjusting bolt ② in or out until the specified clearance between the parking brake pad ③ and brake disc ④ is obtained.
- Tighten the locknut.

Parking brake adjusting locknut:
15 Nm (1.5 m · kg, 1.1 ft · lb)

BRAKE FLUID LEVEL INSPECTION

1. Place the snowmobile 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:

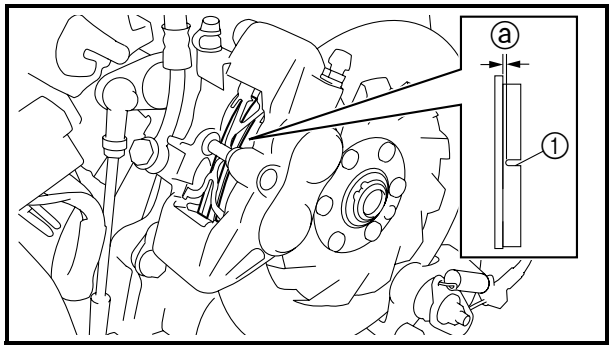
For a correct reading of the brake fluid level, make sure that the top of the handlebar brake master cylinder reservoir is horizontal.

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. Remove:
   - Right side cover
     Refer to "COVERS" in CHAPTER 3.
2. Apply the brake lever.
3. Inspect:
   - Brake pad wear limit ⓐ
     Wear indicator groove ① almost disappeared
     → Replace 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.

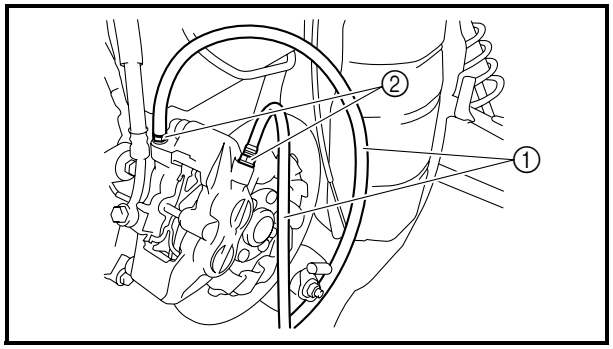
AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

⚠ 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.**

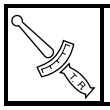
If the brake system is not properly bled a loss of braking performance may occur.

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



Air bleeding steps:

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



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

NOTE:

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

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

⚠ WARNING

After bleeding the brake system, check the brake operation.