YAMAHA

OWNER'S MANUAL (E)
MANUEL DU PROPRIÉTAIRE (F)
USO E MANUTENZIONE (I)
INSTRUKTIONSBOK (S)
OMISTAJAN KÄSIKIRJA (SF)
EIERHÅNDBOK (N)

(E) ⚠ Read this manual carefully before operating this vehicle.

(F) ⚠ Il convient de lire attentivement ce manuel avant la première utilisation du véhicule.

(I) ⚠ Leggere attentamente questo manuale prima di utilizzare questo veicolo.

(S) ⚠ Läs den här instruktionsboken noga innan snöskotern används.

(SF) ⚠ Lue tämä käsikirja huolellisesti ennen moottorikelkan käyttöä.

(N) ⚠ Les denne håndboken nøye før du tar kjøretøyet i bruk.

SW1AML53J
SW1AML62J
SW1AXS41J
SW1AXS37J
SW1AXL41J
SW1ABL53J

8KC-F8199-S1

Original instructions
Notice originale
Istruzioni originali
Bruksanvisning i original
Alkuperäiset ohjeet
Opprinnelige instruksjoner

PRINTED IN U.S.A.

YAMAHA

OWNER'S MANUAL

⚠ Read this manual carefully before operating this vehicle.

SW1AML53J
SW1AML62J
SW1AXS41J
SW1AXS37J
SW1AXL41J
SW1ABL53J

8KC-F8199-S1-E0

⚠ Read this manual carefully before operating this vehicle. This manual should stay with this vehicle if it is sold.

EC Declaration of Conformity

conforming to Directive 2006/42/EC

We, YAMAHA MOTOR CO., LTD. 2500 Shingai, Iwata, Japan, declare in sole responsibility, that the product

SRS10ML53(SW1AML53) (4UF8MS20*JT000001-)	**SRS10XS37(SW1AXS37) (4UF8MM20*JT000001-)**
SRS10ML62(SW1AML62) (4UF8MT20*JT000001-)	**SRS10XL41(SW1AXL41) (4UF8MD40*JT000001-)**
SRS10XS41(SW1AXS41) (4UF8ME40*JT000001-)	**SRS10BL53(SW1ABL53) (4UF8MF40*JT000001-)**

(Make, model)

to which this declaration applies, conforms to the essential health and safety requirements of Directive 2006/42/EC

(If applicable)

and to the other relevant Directive of EEC

2014/30/EU

(Title and/or number and date of issue of the other Directives of EEC)

(If applicable)

To effect correct application of the essential health and safety requirements stated in the Directives of EEC, the following-standards and/or technical specifications were consulted:

– – – – – –

(Title and/or number and date of issue of standards and/or specifications)

Authorized Representative

YAMAHA MOTOR EUROPE N.V.
Koolhovenlaan 101, 1119 NC Schiphol-Rijk, The Netherlands

Signature Akihiro Tsuzuki

Akihiro Tsuzuki
General Manager
Engineering Div., RV Business Unit
YAMAHA MOTOR CO., LTD.

Date of Issue *11, January, 2017*

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Reference Information

Write the appropriate information for your Yamaha Snowmobile in the spaces below.

Always use these numbers when referring to your snowmobile.

Model: _____

Date of Purchase: _____

Vehicle Identification Number: _____

Engine Serial Number: _____

Your Yamaha Dealer: _____

Address: _____

Phone: _____

⚠ WARNING

A snowmobile is a very high performance vehicle. Because it does accelerate rapidly and is capable of very high speeds, it should not be operated by a novice or an inexperienced operator. Never accelerate rapidly or drive at high speed beyond the limits of visibility or without being totally familiar with the terrain and what lies in front of you. Obey speed limits and never operate at speeds that do not allow adequate maneuvering and stopping distances. Read and study the entire Owner's Manual. Failure to follow this warning could result in personal injury to yourself or others.

Personal Injury

- To avoid injury to yourself and others, NEVER operate the snowmobile without first reading and understanding this manual; then follow the instructions and heed the warnings given.
- USE COMMON SENSE.
- DON'T DRINK and DRIVE.
- STAY IN CONTROL at ALL TIMES.
- TELL YOUR FRIENDS. If you see a friend operating a snowmobile recklessly, at excessive speeds, while intoxicated, or in other unsafe ways, don't wait until it is too late to warn of the consequences of snowmobile misuse. Such conduct endangers everyone. TAKE AN ACTIVE ROLE IN THE SAFETY OF YOURSELF AND OTHERS.

Parts and Accessories

When in need of replacement parts, oil, or accessories for your Yamaha Snowmobile, be sure to only use GENUINE YAMAHA PARTS, OIL, AND ACCESSORIES. Only genuine Yamaha parts, oil, and accessories are engineered to meet the standards and requirements of your Yamaha Snowmobile. For a complete list of accessories, refer to the current Yamaha Accessory Catalog. To aid in service and maintenance procedures on these snowmobiles, an Illustrated Parts Manual and a Service Manual are available through your local Yamaha Snowmobile dealer.

Foreword

Congratulations! You have chosen a quality Yamaha Snowmobile designed and assembled to give dependable service. Be sure, as the owner/operator of a Yamaha Snowmobile, to become thoroughly familiar with its basic operation, maintenance, and off-season storage procedures. Read this manual before operating the snowmobile to learn safe and proper use of your new Yamaha Snowmobile. Always operate the snowmobile within your level of skill and current terrain conditions.

The Owner's Manual and Snowmobile Decals display the words Warning, Caution, and Note to emphasize important information. The symbol ⚠ **WARNING** identifies personal safety-related information. Be sure to follow the directive because it deals with the possibility of serious personal injury or even death. A **CAUTION** identifies unsafe practices which may result in snowmobile-related damage. Follow the directive because it deals with the possibility of damaging part or parts of the snowmobile. The symbol ■ **NOTE:** identifies supplementary information worthy of particular attention.

This manual covers operator-related maintenance, operating instructions, and offseason storage instructions. If major repair or service is ever required, contact an authorized Yamaha Snowmobile dealer for professional service.

At the time of publication, all information and illustrations were technically correct. Some illustrations used in this manual are used for clarity purposes only and are not designed to depict actual conditions. Because Yamaha constantly refines and improves its products, no retroactive obligation is incurred.

This Owner's Manual should be considered a permanent part of the snowmobile and must remain with the snowmobile at the time of resale. If the snowmobile changes ownership more than once, contact your Yamaha.

Every Yamaha Snowmobile meets or exceeds the standards of the Snowmobile Safety and Certification Committee and displays the SSCC decal. Yamaha endorses and encourages the safe use of all snowmobiles. Always wear a helmet and eye protection. Drive with caution, observe all state and local regulations, and respect the rights of others. ISMA members like Yamaha do their part to improve trails, sponsor events, and generally support the sport of snowmobiling. As a member of the National Snowmobile Foundation, Yamaha promotes snowmobiling through education, charity, and research programs.

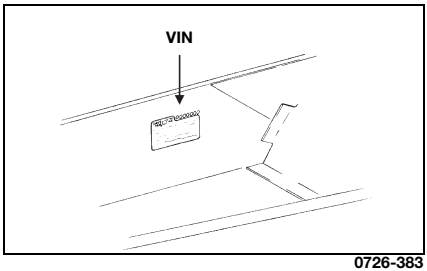
E10

■ **NOTE: This mark identifies the recommended fuel for this vehicle as specified by European regulation (EN228).**

■ **NOTE: Check that gasoline nozzle has the same identifier when fueling.**

Snowmobile Identification

The snowmobile has two important identification numbers. The Vehicle Identification Number (VIN) is stamped into the tunnel near the right-side footrest and on a decal beneath the seat. The decal also displays pertinent production information. The Engine Serial Number (ESN) is stamped into the crankcase of the engine.



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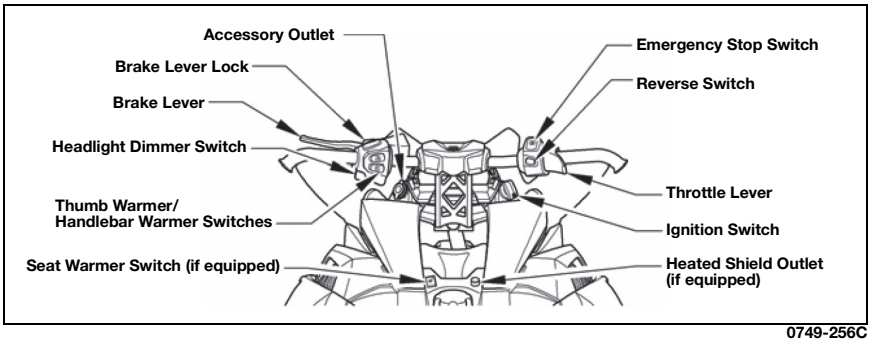
These numbers are required by the dealer to complete warranty claims properly. No warranty will be allowed by Yamaha Inc. if the engine serial number or VIN is removed or mutilated in any way.

Always provide the snowmobile name, VIN, and ESN when contacting an authorized Yamaha Snowmobile dealer for parts, service, accessories, or warranty. If the complete engine must be replaced, ask the dealer to notify Yamaha for correct registration information.

Control Locations

Shown are the typical control locations for Yamaha snowmobiles. Location of a specific control will vary according to model.



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Gasoline-Oil

Recommended Gasoline

The recommended gasoline to use is 91 octane premium unleaded (PON for North America) or 95 octane premium unleaded (RON for Europe). In many areas, oxygenates are added to the gasoline. Oxygenated gasolines containing up to 10% ethanol are acceptable gasolines.

CAUTION

If a situation arises wherein 91 octane gasoline is not available, 89 or 87 octane gasoline can be substituted; however, do not prolong the usage of 89 or 87 octane gasoline as it will cause poor engine performance.

When using ethanol blended gasoline, it is not necessary to add a gasoline antifreeze since ethanol will prevent the accumulation of moisture in the fuel system.

Recommended Engine Oil

The recommended oil to use is Semi-Synthetic YAMALUBE 0W-30 oil.

CAUTION

Any oil used in place of the recommended oil could cause serious engine damage.

After 800 km (500 miles) of operating, the engine oil must changed and the oil filter replaced. The engine oil should be changed every 4000 km (2500 miles) before prolonged storage and the oil filter should be changed every 20,000 km (12,500 miles).

Filling Gas Tank

Since gasoline expands as its temperature increases, the gas tank must be filled to its rated capacity only. Expansion room must be maintained in the tank particularly if the tank is filled with cold gasoline and then moved to a warm area.

Also, if the snowmobile is to remain on a trailer after filling the gas tank, the bed of the trailer must be maintained level to prevent gasoline from draining out through the gas tank vent hose.

⚠ WARNING

Always fill the gas tank in a well-ventilated area. Never add gasoline to the snowmobile gas tank near any open flames or with the engine running. DO NOT SMOKE while filling the gas tank. Do not sit on the snowmobile without first installing the gas tank cap.

This snowmobile features a 15.9 L (4.2 US gallon) auxiliary gas tank. A separate gas tank cap is located beneath the cowling just behind the operator seat. The auxiliary tank is plumbed directly into the main gas tank.

YM-126

To access the spare belt location along with the tool kit, the storage box lid, auxiliary gas tank cap, and storage tray must be removed.

When installing the storage tray, ensure it is properly pushed all the way down into position. If not, the storage box lid will not sit properly.

Engine Break-In

The engine (when new or rebuilt) requires a short break-in period before the engine is subjected to heavy load conditions.

This engine does not require any premixed fuel during the break-in period.

There is never a more important period in the life of the engine than the first 500 km (300 miles).

Since the engine is brand new, do not put an excessive load on it for the first 500 km (300 miles). The various parts in the engine wear and polish themselves to the correct operating clearances. During this period, prolonged full throttle operation or any condition that might result in engine overheating must be avoided.

0-160 km (0–100 miles): Avoid prolonged operation above 6000 RPM.

160-500 km (100–300 miles): Avoid prolonged operation above 8000 RPM.

500 km (300 miles) and beyond: The snowmobile can now be operated normally.

■ **NOTE: After 800 km (500 miles) of operation, the engine oil must be changed and the oil filter replaced. If any engine trouble should occur during the engine break-in period, immediately have a Yamaha dealer check the snowmobile.**

Drive Belt Break-In

Drive belts require a break-in period of 40 km (25 miles). Drive the snowmobile for 40 km (25 miles) at 3/4 throttle or less. By revving the engine up and down (but not exceeding 100 km/h [60 mph]), the exposed cord on the side of a new belt will be worn down. This will allow the drive belt to gain its optimum flexibility and will extend drive belt life.

■ **NOTE: Before starting the snowmobile in extremely cold temperatures, the drive belt should be removed and warmed up to room temperature. Once the drive belt is at room temperature, install the drive belt.**

CAUTION

Never run the engine with the drive belt removed. Excessive revving of the engine could result in serious engine damage and drive clutch failure.

Cold Drive-Away Function

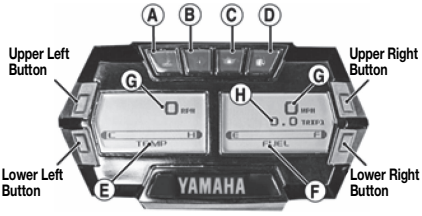
On these models, there is a "cold drive-away" function incorporated within the ECM.

When cold-starting the engine, the coolant temperature warning icon will illuminate and the LOW TEMP display on the readout screen will begin to flash. With the engine in this temperature range, the RPM "limit" of the engine will be below drive system engagement speed. As the engine warms, the coolant temperature warning icon will begin to flash, the TEMP display will continue to flash, and the RPM "limit" of the engine will increase allowing the snowmobile to move without full-throttle operation. When the engine reaches proper operating temperature, the coolant temperature warning icon and the LOW TEMP display will go out.

CAUTION

It is extremely important that the engine is properly warmed up before subjecting the engine to high speed operation or heavy loads. The engine should be allowed to idle at least 3-4 minutes before it is operated at more than 1/2 throttle. In extremely cold conditions, the warm-up time will be longer. Cold seizure and piston scuffing caused by insufficient warm-up will not be covered by warranty. Also, do not idle the engine for excessively long periods of time.

Speedometer/Tachometer/ Digital Gauge



CWI-050A

A. Coolant Temperature Indicator

The indicator and LOW TEMP display will cease to flash when the engine reaches proper operating temperature.

If the coolant temperature rises too far above proper operating temperature, the indicator will flash a warning (alert) and the engine will "surge" to alert the operator. If the coolant temperature rises to a critical point above proper operating temperature, the indicator will cease flashing and will remain constantly illuminated.

■ **NOTE: If the indicator is constantly on, the engine will shut off if vehicle speed is reduced to 1.5 km-h (0.9 MPH) or slower.**

CAUTION

If the indicator is illuminated, stop the engine immediately and allow it to cool down. If unable to either determine or remedy the problem, take the snowmobile to an authorized Yamaha Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

B. High Beam Indicator

The indicator is on whenever the high beam mode is selected by the headlight switch.

C. Oil Pressure Indicator

The indicator relates to engine oil pressure, not the oil level; however, if the oil level is low, it may affect oil pressure. If oil pressure is lost, check the oil level (see page 22).

If the indicator does not go out or if the engine does not start, take the snowmobile to an authorized Yamaha Snowmobile dealer. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

D. Low Fuel Indicator

The indicator illuminates whenever the gas in the gas tank is low.

E. Coolant Temperature/Battery Voltage/Intake Air Temperature

This bar display shows coolant temperature, battery voltage, and intake air temperature. Press the Lower Left Button to change which parameter is being displayed. Press and hold the Lower Left Button to see the actual values associated with the mode selected.

F. Fuel Level Display

This display shows the approximate amount of gas remaining in the gas tank.

G. RPM/Speed/Clock/Altimeter

Press the Upper Left Button to cycle the left screen between RPM and speed.

■ NOTE: When RPM is displayed on the left screen, the right screen will display speed, clock, or altimeter. When speed is displayed on the left screen, the right screen will display RPM, clock, or altimeter.

Press the Upper Right Button to cycle the right screen between speed, RPM, clock, and altimeter.

Press and hold the Upper Button on the speed-side of the gauge to shift the gauge between standard (MPH/miles/Fahrenheit) and metric (km/h/kilometers/Celsius) modes.

Press and hold the Upper Button on the RPM-side of the gauge to view maximum RPM. This value is reset each time the ignition key is turned off.

With the clock mode selected by pressing the Upper Right Button, press and hold the Upper Right Button to set the clock. The option of selecting the 12-hour or 24-hour clock is available; press the either Left Button to alternate between the two modes. Next, press the Lower Right Button to set the clock. Press either Left Button to set the hours; then press the Lower Right Button to set the minutes. Press either Left Button to set the minutes. When the proper time has been set, press the Lower Right Button to return to the main gauge display.

With the altimeter mode selected by pressing the Upper Right Button, press and hold the Upper Right Button to set the current altitude by using either Left Button. When the proper altitude has been set, press the Lower Right Button to return to the main gauge display.

H. Engine Hour Meter/Odometer/Trip Meter/Clock

This display shows engine hours, odometer, trip meter, or clock. Press the Lower Right Button to change which parameter is being displayed. The Engine Hour Meter and Odometer cannot be reset. To reset the trip meter, select the Trip Meter; then press and hold the Lower Right Button until the trip meter display reads 0.

■ NOTE: The clock can only be displayed in this position if it is not already being displayed in the main right screen. To set the clock when the clock is in this position, press and hold the Lower Right Button; then use the procedure found in G.

Diagnostic Codes

Diagnostic codes are activated by the ECM and may be displayed on the readout screen for a number of reasons.

If a code is displayed while the engine is running, the ECM is receiving input that is outside of its established parameters. If a code has been activated, take the snowmobile to an authorized Yamaha Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

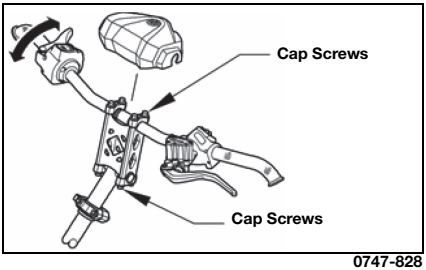
Refer to the following chart for a list of possible diagnostic codes.

Code	Trouble
8	Shift Switch Abnormality
12	Crank Sensor
13	Manifold Pressure Sensor (PB)
14	Manifold Pressure Sensor (PB)
15	Throttle Position Sensor
19	Wastegate Solenoid
21	Water Temperature Sensor
22	Intake Air Temperature Sensor
23	Atmospheric Pressure Sensor
25	Upstream Pressure Sensor (PC)
26	Upstream Pressure Sensor (PC)
30	Oil Pressure Reduction
33	Ignition Abnormality #1
34	Ignition Abnormality #2
35	Ignition Abnormality #3
37	Idle Speed Control Abnormality
39	Injector Abnormality
42	Vehicle Speed Sensor
43	Monitor Voltage (Fuel System Power)
44	EEPROM Write Error
46	Vehicle System Power Supply Abnormality
50	ECU Internal Failure
65	Knock Sensor
67	Oil Pressure Sensor
69	Air Bypass Solenoid
84	TORS Control
85	Oil Pressure Switch
89	Meter Communication Abnormality

Handlebar Tilt

The handlebar can be adjusted to the operator's preference. To adjust the handlebar, use the following procedure:

1. Remove the handlebar cover; then loosen the eight cap screws securing the handlebar caps to the riser and the riser to the steering post.



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2. Adjust the handlebar to operator's desired position, tighten the cap screws evenly to 2.0 kg-m (15 ft-lb), and check steering for maximum right/left turning capabilities.

CAUTION

Do not rotate the handlebar to a position that allows air to enter the brake system.

⚠ WARNING

Tighten cap screws according to specifications to prevent unexpected "movement" of the handlebar during operation over rough terrain. DO NOT position the handlebar so steering (maximum right/left turning capabilities) or throttle and brake controls are affected.

Exhaust System

The exhaust system is designed to reduce noise and to improve the total performance of the engine. If any exhaust system component is removed from the engine and the engine is run, severe engine damage will result.

Air-Intake Silencer

Used in conjunction with the fuel intake system is a specially designed air-intake silencer. The purpose of the silencer is to quiet the intake of fresh air. Since the fuel intake system is calibrated with the air-intake silencer in place, the engine must never be run with the silencer removed. Performance will not be improved if the air-intake silencer is removed. In contrast, severe engine damage will occur.

CAUTION

These snowmobiles are not designed to be operated in dusty conditions. Operating the snowmobile in dusty conditions will result in severe engine damage.

Cooling System

These snowmobiles are equipped with a closed liquid cooling system for engine cooling. The cooling system should be inspected daily for leakage and damage. Also, the coolant level should be checked daily. If leakage or damage is detected, take the snowmobile to an authorized Yamaha Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

When filling the cooling system, use an ethylene glycol-based coolant/water mixture which will satisfy the coldest anticipated weather conditions of your area in accordance with the coolant manufacturer's recommendations.

■ NOTE: The gurgling noise heard when the engine is shut off from the turbocharger area is normal. The snowmobile is equipped with a vapor tank to assist with cooling the turbocharger after the engine is off.

■ NOTE: If operating on ice or hard-packed snow conditions, it is recommended that Ice Scratchers be installed to reduce wear strip wear and engine overheating.

For checking/filling cooling system, refer to Coolant Level sub-section in the Maintenance section.

Battery

It is extremely important that the battery be maintained at full charge at all times and that the battery connections be clean and tight. If charging the battery becomes necessary, refer to Battery sub-section in the Maintenance section.

CAUTION

Always turn the ignition switch key to the OFF position when the snowmobile is not being used. Leaving the ignition switch in the ON position will result in discharging the battery and possible damage to the battery.

Jump-Starting

■ NOTE: Yamaha does not recommend jump-starting a snowmobile with a dead battery but rather to remove the battery, service it, and correctly charge it; however, in an emergency, it may be necessary to jump-start a snowmobile. If so, use the following procedure to carefully and safely complete this procedure.

⚠ WARNING

Improper handling or connecting of a battery may result in severe injury including acid burns, electrical burns, or blindness as a result of an explosion. Always remove rings and watches. Any time service is performed on a battery, the following must be observed: keep sparks, open flame, cigarettes, or any other flame away. Always wear safety glasses. Protect skin and clothing when handling a battery. When servicing a battery in an enclosed space, keep the area well-ventilated.

■ NOTE: To access the battery, the seat must be removed.

1. For the snowmobile to be jump-started, slide any terminal boots away.
2. Inspect the battery for any signs of electrolyte leaks, loose terminals, or bulging sides. Leaking or bulging battery cases may indicate a frozen or shorted battery.

⚠ WARNING

If any of these conditions exist, DO NOT attempt to jump-start, boost, or charge the battery. An explosion could occur causing serious injury.

3. Inspect the snowmobile to be used for jump-starting to determine if voltage and ground polarity are compatible. The vehicle must have a 12-volt DC, negative ground electrical system.

CAUTION

Always make sure the electrical systems are of the same voltage and ground polarity prior to connecting jumper cables. If not, severe electrical damage may occur.

4. Move the vehicle to be used for the jump-start close enough to ensure the jumper cables easily reach; then set and lock the brakes, shut off all electrical accessories, and turn the ignition switch OFF.

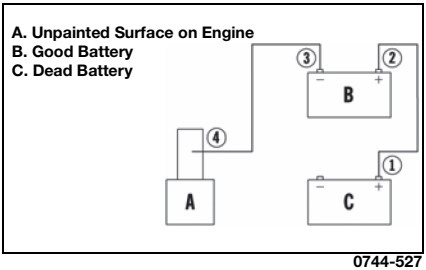
■ NOTE: Make sure all switches on the snowmobile to be jump-started are turned OFF.

5. Disconnect all external accessories such as cell phones, GPS units, and radios on both vehicles.

CAUTION

Failure to disconnect electronic accessories during jump-starting may cause system damage due to power spikes.

6. Attach one clamp of the positive (red) cable to the positive (+) terminal (1) of the dead battery (C) being careful not to touch any metal with the other clamp; then attach the other clamp of the positive (red) cable to the positive (+) terminal (2) of the good battery (B).



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■ NOTE: Some jumper cables may be the same color but the clamps or ends will be color-coded red and black.

7. Attach one clamp of the negative jumper cable (black) to the negative (-) terminal (3) of the good battery (B); then attach the other clamp of the negative (black) jumper cable (4) to an unpainted metal surface (A) on the engine or frame well away from the dead battery and fuel system components.

⚠ WARNING

Never make the final connection to a battery as a spark could ignite hydrogen gases causing an explosion of the battery resulting in acid burns or blindness.

8. Stand well away from the dead battery and start the vehicle with the good battery. Allow the vehicle to run for several minutes applying some charge to the dead battery.
9. Start the snowmobile with the dead battery and allow it to run for several minutes before disconnecting the jumper cables.
10. Remove the jumper cables in opposite order of hook-up (4, 3, 2, 1). Be careful not to short cables against bare metal.

■ NOTE: Have the battery and electrical system checked prior to operating the snowmobile again.

Drive Clutch and Driven Clutch

The drive clutch and driven clutch do not require lubrication; therefore, no special maintenance is required by the snowmobile owner except for periodical cleaning.

However, the drive clutch and driven clutch should be disassembled, cleaned, and inspected by an authorized Yamaha Snowmobile dealer after every 4000 km (2500 miles) or seasonally, whichever occurs first. This service is at the discretion and expense of the snowmobile owner.

When operating the snowmobile at high altitudes, it may be necessary to change certain component parts of the drive clutch and/or the driven clutch. See an authorized Yamaha Snowmobile dealer for further information.

CAUTION

DO NOT attempt to service the drive clutch and driven clutch. The drive clutch and driven clutch must be serviced by an authorized Yamaha Snowmobile dealer only.

Drive Clutch/Driven Clutch Alignment

The alignment between the drive clutch and driven clutch is set at the factory. Normally, no adjustment is necessary as long as neither the drive clutch nor the driven clutch is removed or disassembled. However, if premature drive belt wear is experienced or if the drive belt turns over, the drive clutch/driven clutch alignment must be checked. Take the snowmobile to an authorized Yamaha Snowmobile dealer for this service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

Fuel Pump

The fuel pump is designed to provide adequate amount of gas to the injectors at all throttle settings. If a fuel delivery problem is suspected, take the snowmobile to an authorized Yamaha Snowmobile dealer. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

Track/Track Studs

Accelerated wear strip and track clip wear caused by operating on ice or hard-packed snow conditions is NOT covered under Yamaha warranty policy.

■ NOTE: If regularly operating on ice or hard-packed snow conditions, Performance Wear Strips may be installed at the expense of the snowmobile owner.

In general, track life will be shortened when studs are installed. Drilling stud holes into the drive track will cut the internal fibers weakening the track. Avoid spinning the drive track. Studs may catch on an object and pull out of the track leaving tears and damage around the already weakened area. To minimize possible damage, consult your stud manufacturer for installation and stud pattern recommendations. Yamaha does not recommend studding a track.

Paddle Track (On Equipped Models)

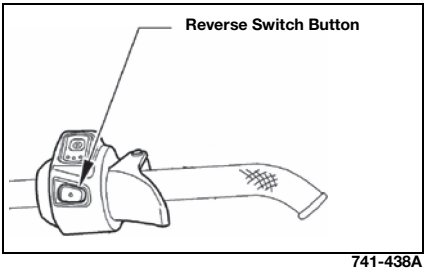
These models are equipped with a Power Claw style track which is specially designed for use in powder snow riding conditions. When the Power Claw track is operated in hard-packed snow conditions, it will run slightly slower than a standard track and it will accelerate wear strip wear. To decrease the amount of wear strip wear, slower speeds must be maintained when operating on hard-packed trails. Accelerated wear strip wear caused by operating a Power Claw track on hard-packed snow conditions is NOT covered under Yamaha warranty policy.

■ NOTE: If operating on ice or hard-packed snow conditions, it is recommended that Ice Scratchers be installed to reduce wear strip wear and engine overheating.

Reverse Operation

The electrical reverse function offers the operator the convenience of being able to back up the snowmobile rather than having to turn the snowmobile around by hand. This feature, under most situations, should not be used to free a stuck snowmobile as it will tend to dig the skis deeper into the snow. Always use minimal speed when operating in reverse and come to a complete stop before shifting from either forward to reverse or reverse to forward.

Shifting Into Reverse



741-438A

■ **NOTE: Correct drive belt tension (deflection) is important for the reverse function to operate properly. If the belt is too tight, difficulty in engaging reverse will be experienced.**

1. Always warm up the engine for 2-3 minutes prior to shifting into reverse.
2. With the engine at idle (or under 3000 RPM) and the snowmobile at a complete stop, press and release the reverse switch button.

■ **NOTE: The snowmobile must be at a complete stop and the engine running under 3000 RPM before the system will allow shifting.**

3. When reverse is engaged, a reverse icon will illuminate on the deluxe digital gauge and a reverse alarm will sound.

CAUTION

Never shift into reverse while the snowmobile is moving forward as it is hard on the drive system.

Operating in Reverse

⚠ WARNING

Use caution and minimal speed when operating the snowmobile in reverse. Be sure the button is in the desired position.

1. When shifting into reverse, always wait for the reverse icon to illuminate and the reverse alarm to sound before backing up.

■ **NOTE: The reverse function is cancelled whenever the engine is shut off.**

2. After shifting from reverse to forward (or from forward to reverse), apply the throttle slowly and evenly to allow the driven pulley to engage properly.

CAUTION

After reversing in deep powder snow conditions, make sure the snowflap does not become "caught up" in the track. Track and/or snowflap damage may occur.

CAUTION

If the snowmobile is equipped with ice scratchers, the scratchers must be disengaged or component damage will occur.

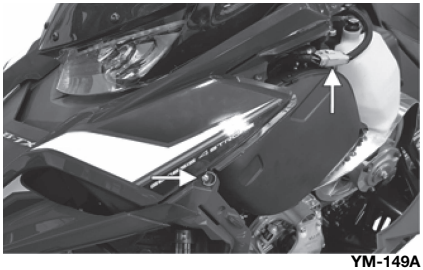
Access Panel/Hood

To remove the access panel and hood, use the following procedure:

1. Rotate the two quarter turns to the vertical position; then pull the top of the side panel out and up and off the skid plate.

YM-148A

2. Disconnect the hood harness on the left-side of the hood; then loosen the two quarter turns securing the front of the hood. Pull the hood forward and remove the hood.


YM-149A

To install the hood and access panels, use the following procedure:

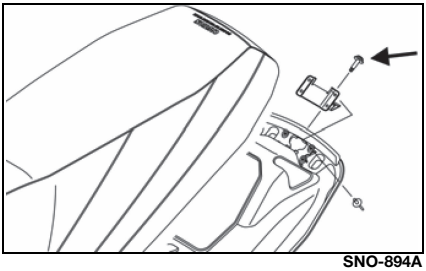
1. Position the hood onto the snowmobile and connect the hood harness connector and secure the two front quarter turns.
2. Install the access panel into the skid plate; then close the access panel and secure with the two quarter turns.

Removable Seat

To remove the seat, remove the torx-head screw from the underside of the seat; then lift on the back of the seat and move it up and rearward to remove it.

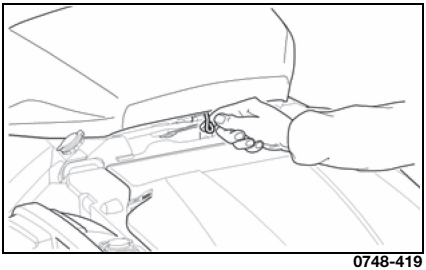
CAUTION

Prior to removing the seat, lift the rear of the seat and disconnect the seat heater harness connector.



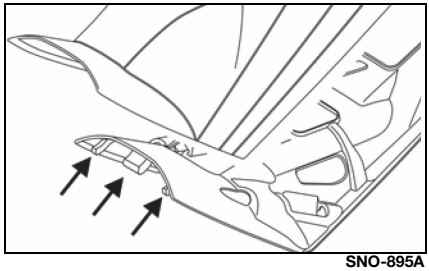
SNO-894A

On S-TX DX 146 models, release the lever securing the seat assembly; then lift up and remove the seat. Make sure to disconnect the seat heater harness.



0748-419

To install the seat, route the front tabs on the seat base through the console; then install the seat and secure using the torx-head screw.



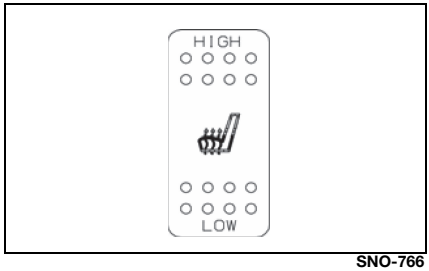
SNO-895A

On S-TX DX 146 models, route the front tabs on the seat base through the console; then press down on the rear of the seat until the rear latches.

■ **NOTE: Prior to lowering and securing the seat, connect the seat heater harness connector.**

Heated Seat

Some models are equipped with a heated seat. Models with this option can be adjusted with a HIGH and LOW switch which will be located near the gas tank cap.



SNO-766

⚠ WARNING

People who are unable to feel pain to the skin because of advanced age, chronic illness, diabetes, spinal cord injury, medication, alcohol use, exhaustion, or other physical conditions, must exercise care when using the seat heater. The seat heater may cause burns even at low temperatures, especially if used for long periods of time. Do not place anything on the seat that insulates against heat, such as a blanket or cushion, because this may cause the seat heater to overheat. Do not puncture the seat with pins, needles, or other pointed objects because this may damage the heating element which may cause the seat heater to overheat. An overheated seat may cause serious personal injury.

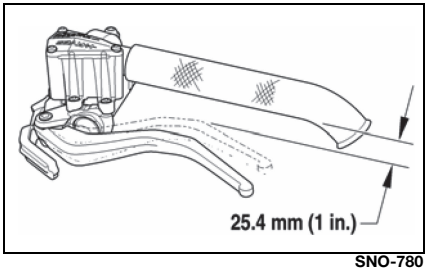
Towing

If the snowmobile is to be towed by another snowmobile, do not tow using the loops in the skis. The tow rope should be attached to the lower A-arms.

Pre-Start

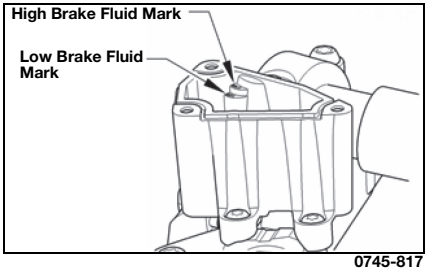
It is imperative that the brake system be checked for wear and proper operation. After the engine has been started, check the headlights (high and low beam), taillight, and brake-light to be sure they are working properly and adjusted correctly. Make sure all lights are clean to provide maximum illumination. The headlight and taillight must be clean and must be illuminated whenever the engine is running.

1. Test the operation of the brake system by compressing the brake lever. The brake lever must feel firm when compressed; then while holding the brake lever in the compressed position, measure the distance between the brake lever and the handlebar. The distance must be greater than 25.4 mm (1 in.).



SNO-780

2. With the brake fluid reservoir in a level position and the cover removed, check the fluid level. The brake fluid level must be at the high brake fluid mark in the reservoir.



0745-817

3. If the brake fluid is below the high brake fluid mark, add YAMAHA approved DOT 4 brake fluid until the fluid is at the recommended level. Install and secure the reservoir cover. Do not allow moisture to contaminate the brake system.

CAUTION

Brake fluid is highly corrosive. Do not spill brake fluid on any surface of the snowmobile.

⚠ WARNING

Do not overfill the brake fluid reservoir. Overfilling the reservoir may cause the brake system to hydraulically lock. Use only YAMAHA approved brake fluid.

⚠ WARNING

Do not start the engine if the brake system is not functioning properly. Service the brake system or have it properly repaired prior to operating the snowmobile. Serious personal injury or even death may occur if the brake system is not operating properly.

4. Test the throttle control lever by completely compressing and releasing it several times. The lever MUST return to the idle position quickly and completely.

CAUTION

Always check the coolant level before starting the engine.

5. Make sure the battery is fully charged to ensure the engine is turning over at a sufficient RPM to start.

■ NOTE: Even though the engine turns over, the engine may not have sufficient RPM to start.

6. Check the spark plugs and replace as necessary. Short engine run times cause carbon buildup on spark plugs.
7. Ensure the gas tank is full of fresh gas whenever the snowmobile is removed from storage.

8. Ensure drive belt tension and deflection are correct to reduce starter drag.

Starting and Stopping Engine

1. Move the emergency stop switch to the UP or RUN position.
2. Insert key into ignition switch; then rotate key to the RUN position.

■ NOTE: When a cold engine is being started, DO NOT COMPRESS THE THROTTLE CONTROL LEVER. If the throttle control lever is compressed, the engine will not start because the fuel/air mixture will be too lean.

3. Rotate the key to the START position for 5-10 seconds; then when the engine starts, release the key.

CAUTION

Do not continuously run the starter for more than 10 seconds at a time.

4. A "cold drive-away" function is incorporated within the engine. This function is active until the engine reaches operating temperature.

CAUTION

It is extremely important that the engine is properly warmed up before subjecting the engine to high speed operation or heavy loads. The engine should be allowed to idle at least 3-4 minutes before it is operated at more than 1/2 throttle. In extremely cold conditions, the warm-up time will be longer. Cold seizure and piston scuffing caused by insufficient warm-up will not be covered by warranty. Also, do not idle the engine for excessively long periods of time.

5. Flooding — If the engine does not start but seems ready to start, engage the brake lever lock; then compress the throttle control lever fully and try to start the engine. When the engine starts, release the throttle control lever immediately. After the warm-up, release the brake lever lock.

■ NOTE: Spark plugs can be changed by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized YAMAHA Snowmobile dealer for inspection and service. This service is at the discretion and expense of the snowmobile owner.

6. To shut off the engine, turn the ignition key to the OFF position or push the emergency stop switch to the DOWN position.

CAUTION

Always turn the ignition switch key to the OFF position when the snowmobile is not being used. Leaving the ignition switch in the ON position will result in discharging the battery and possible damage to the battery.

■ NOTE: When the engine is turned off, wait for the gauge to completely power down before attempting to start the engine.

Braking

The following items are items that the operator must be familiar with when operating this snowmobile and its hydraulic brake system. Important additional information on the proper maintenance of the brake system is found in the Maintenance section.

1. Use the brakes wisely. Each time the brakes are applied in all hydraulic brake systems (including automotive applications), heat is transferred to the brake fluid. The amount of heat transferred during high speed stops and/or repetitive use may be high enough to boil the brake fluid and cause the brakes to either fade or may cause an unexpected loss of brakes. If this occurs, the brake fluid requires a cool-down period before the brakes will again function properly.

This cool-down period will vary depending upon the ambient air temperature and the temperature of the brake fluid. If loss of brakes has occurred because of high fluid temperatures, do not operate the snowmobile until the cool-down period has expired and brake lever firmness has returned.

⚠ WARNING

Excessive, repetitive use of the hydraulic brake for high speed stops will cause overheating of the brake fluid and premature brake pad wear which will result in an unexpected loss of brakes.

2. Be sure to maintain the brake fluid at the proper level and take care not to get any moisture in the system as moisture in the brake fluid lowers the boiling point. If the brake fluid is ever boiled (by high speed stops or repetitive use) or if moisture is allowed to enter the system, it must be changed. Never substitute or mix different types or grades of brake fluid.

⚠ WARNING

Use only Yamaha approved DOT 4 brake fluid. Never substitute or mix different types or grades of brake fluid. Brake loss can result. Check brake fluid level and pad wear before each use. Brake loss can result in severe injury or even death.

3. Never ride the brake. Even maintaining minimal pressure on the brake lever will cause the brake pads to drag on the disc and may overheat the brake fluid.
4. The brake lever lock is not a parking brake and should not be applied for periods exceeding 5 minutes. NEVER OPERATE THE SNOWMOBILE WITH THE BRAKE LEVER LOCK ENGAGED.

⚠ WARNING

The brake lever lock is not a parking brake and should not be applied for periods exceeding 5 minutes. The brake lever lock maintains the brake lever in the compressed position and maintains pressure against the brake disc; however, after a period of time, the pressure applied to the brake disc may relax below the amount required to hold the snowmobile stationary.

5. Pumping the brake lever is permissible; however, if pumping the brake lever more than twice is necessary to obtain the necessary stopping power, immediately take the snowmobile to an authorized Yamaha Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.
6. When new brake pads are installed, a "burnishing" process is required.

Emergency Stopping

There are several methods of stopping or slowing the snowmobile under a variety of situations. Identified in the following chart are the ways a snowmobile may be brought to a stop and the effectiveness under normal conditions.

Item	Function
Emergency Stop Switch	interrupts ignition circuit
Throttle/Ignition Monitor Switch	interrupts ignition circuit
Ignition Switch	interrupts ignition circuit
Brake	slows the drive system

Throttle/Ignition Monitor Switch

The throttle control is equipped with a monitor switch for safety purposes which will stop the engine when a loss of return spring force occurs. If ice forms in the throttle system or if there is some other malfunction of the throttle system resulting in a loss of return spring force, the monitor switch will stop the engine when the throttle control lever is released.

⚠ WARNING

If any malfunction of the throttle system occurs (such as freezing in fluffy snow) and the monitor switch does not shut off the engine, press down on the emergency stop switch IMMEDIATELY to stop the engine. DO NOT start the engine until the malfunction in the throttle system has been located and corrected.

If the snowmobile engine stops abruptly when the throttle control lever is released and the activation of the monitor switch is suspected, use the following procedure:

1. Rotate the ignition key to the OFF position.
2. Remove ice and snow from the throttle system and wait 5-10 minutes for the engine heat to thaw ice from the throttle system.
3. Test the throttle control lever by compressing and releasing it several times. The lever MUST return to the idle position quickly and completely.

■ NOTE: If the throttle control lever operates properly and the engine does not start, compress the throttle lever slightly (approximately 1/8 throttle) and try starting the engine. If the engine now starts and stops when the throttle lever is released, take the snowmobile to an authorized Yamaha Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

⚠ WARNING

If the throttle control lever does not work properly, DO NOT ATTEMPT TO START THE ENGINE.

4. If the throttle control lever operates properly, rotate the ignition key to the RUN position and go through normal starting procedures.

■ NOTE: If the throttle control lever operates properly and the engine does not start, a malfunctioning monitor switch may be the problem. Take the snowmobile to an authorized Yamaha Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner. However, if a dire emergency exists wherein the engine must be started, disconnect the throttle monitor switch located in the right-side handlebar control.

■ NOTE: If disconnection of the throttle monitor switch is needed to start the engine, take the snowmobile to an authorized Yamaha Snowmobile dealer for service as soon as possible. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

⚠ WARNING

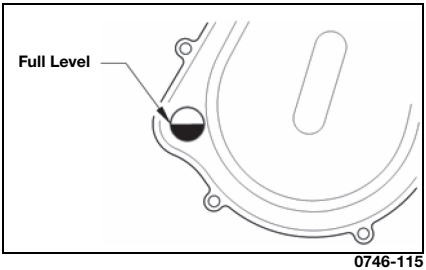
Under no circumstances should disconnection of the throttle control wiring harness be used as a substitute for the monitor switch during normal operation of the snowmobile. Personal injury and damage could occur if the throttle system malfunctions or if the operator is unable to stop the engine in an emergency. If the snowmobile must be operated with a disconnected throttle control wiring harness, EXTREME CAUTION MUST BE TAKEN. NEVER EXCEED 10 MPH WITH THE THROTTLE CONTROL WIRING HARNESS DISCONNECTED.

■ NOTE: The monitor switch is now bypassed. All other ignition/electrical features (ignition switch, emergency stop switch, headlight, taillight, and brakelight) will operate properly.

Chain Case

■ **NOTE: The snowmobile must be on a level surface for this procedure.**

1. Check the lubricant level in the chain case by using the sight glass.



0746-115

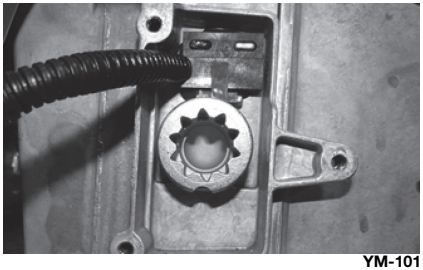
■ **NOTE: The correct level is when the lubricant is at least halfway up in the sight glass.**

■ **NOTE: Adding lubricant can be done by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Yamaha Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.**

2. If the lubricant level is low, remove the right-side access panel.
3. Remove the three screws securing the shift actuator to the chain case, disconnect the actuator wiring harness, and remove the actuator w/ extension, detent, and spring; then add appropriate amount of Synthetic Chain Lube through the shift actuator opening.

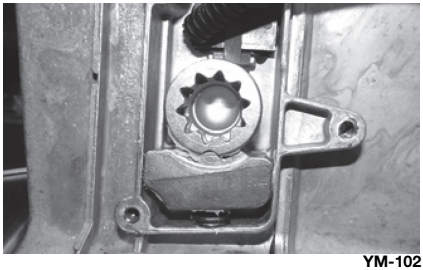
■ **NOTE: Be sure to add a small amount of white lithium grease to the O-rings of the new actuator extension and the shift actuator detent block before installing.**

4. Install the actuator extension and gently rotate counter clockwise to make sure the shift fork is in the forward position. When the shift fork is in the forward position, make sure the notch in the extension is directed downward.



YM-101

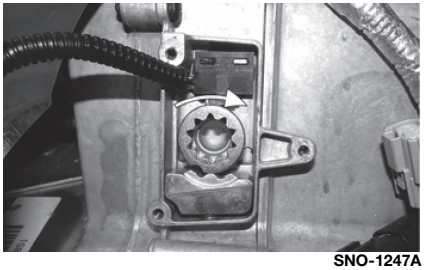
5. Install spring into the bottom of shift actuator detent block and install into the chain case cover. The notch in the extension should be lined up with the notch in the block.



YM-102

■ **NOTE: To verify everything is installed correctly, turn the extension counter clockwise. The notch in the extension should not rotate out of the detent block.**

6. Rotate the extension clockwise approximately 20° making sure not to pull out the extension when rotating. This is only to aid in the installation of the actuator.



SNO-1247A

7. Install the actuator and secure using the existing three torx screws. Tighten to 0.4 kg-m, (36 in-lb).

8. Connect the harness to the gear position sensor; then secure the connector to the main harness using a Cable Tie.
9. Install the lower console; then install the seat, hood, and both access panels.
10. Start the engine; then shift the snowmobile into and out of reverse three times.

■ NOTE: If excessive build-up of moisture or discolored oil is detected in the chain case, it may be necessary to replace the lube.

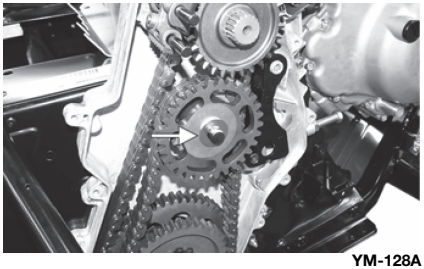
Replacing Lubricant

■ NOTE: Replacing the lubricant can be done by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Yamaha Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.

1. Place the snowmobile on a level surface. Remove both access panels and the hood; then remove the exhaust resonator.
2. Remove the three screws securing the shift actuator to the chain case; then disconnect the actuator wiring harness and remove the actuator, extension, detent, and spring.
3. Place a drain pain under the chain case; then loosen the eleven screws securing the chain case cover/oil tank assembly to the chain case housing starting with the bottom screws first.

■ NOTE: Do not remove all eleven screws completely until the chain lube has been completely removed. This will help keep debris/oil out of the screw holes.

4. Remove all eleven screws; then swing the chain case out of the way. Account for a thrust washer on the countershaft.

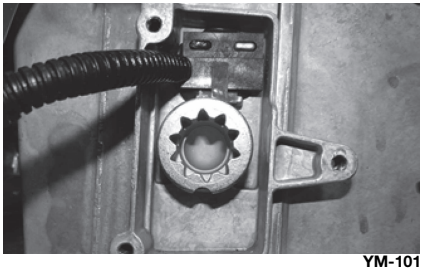


YM-128A

5. Inspect all chain case components along with the cover seal for nicks or damage.
6. Wipe clean the chain case cover and housing free of old oil; then install the cover and secure using the existing screws. Tighten to 1.65 kg-m (12 ft-lb).
7. Fill the chain case with 355 ml (12 oz) of Yamaha Snowmobile Chain Case Lube.

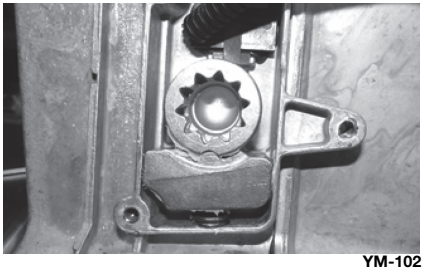
■ NOTE: Be sure to add a small amount of white lithium grease to the O-rings of the new actuator extension and the shift actuator detent block before installing.

8. Install the actuator extension and gently rotate counter clockwise to make sure the shift fork is in the forward position. When the shift fork is in the forward position, make sure the notch in the extension is directed downward.



YM-101

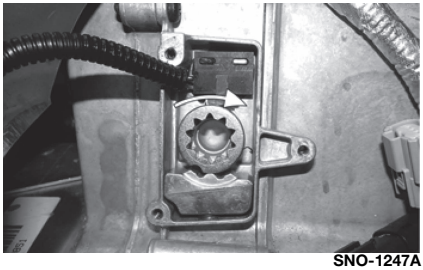
9. Install spring into the bottom of shift actuator detent block and install into the chain case cover. The notch in the extension should be lined up with the notch in the block.



YM-102

■ **NOTE: To verify everything is installed correctly, turn the extension counter clockwise. The notch in the extension should not rotate out of the detent block.**

10. Rotate the extension clockwise approximately 20° making sure not to pull out the extension when rotating. This is only to aid in the installation of the actuator.



SNO-1247A

11. Install the actuator and secure using the existing three torx screws. Tighten to 0.4 kg-m, (36 in-lb).
12. Connect the harness to the gear position sensor; then secure the connector to the main harness using a Cable Tie.
13. Install the resonator and secure using existing hardware.
14. Install the lower console; then install the seat, hood, and both access panels.
15. Start the engine; then shift the snowmobile into and out of reverse three times.

Rear Suspension

This procedure should be done every 40 operating hours.

■ **NOTE: Yamaha recommends that low-temperature grease be used for this procedure.**

1. Using Handlebar Stand or Steering Post Stand or a suitable substitute, lay the snowmobile on its left side.
2. Lubricate all grease fittings with low-temperature grease.

Periodic Maintenance Checklist			
Item	**Interval**	**Page**	**Remarks**
Brake System	Daily	28	Check for binding, leakage, and proper operation; lever firmness, travel, caliper, disc, and pads
Cooling System - Liquid	Daily	8,24	Check for leakage, damage, obstructions, coolant level
Engine Oil	Daily	22	Check oil level and for signs of leakage
Engine Oil - Initial	800 km (500 Mi)	22	Change oil
Engine Oil - After Initial	4000 km (2500 Mi)	22	Change oil
Engine Oil Filter - Initial	800 km (500 Mi)	22	Change filter
Engine Oil Filter - After Initial	20000 km (12500 Mi)	22	Change filter
Air Filter	4000 km (2500 Mi)/ Seasonal	24	Check and clean, Change if necessary
Battery	Daily	8,25	Check for proper charge and tight connections
Stop Switch	Daily	—	Check for proper operation
Hoses	Daily	—	Check for damage, leakage, and wear
Headlight & Taillight/Brakelight	Daily	40-40	Check for proper operation and cleanliness
Steering System	Daily	—	Check for proper operation, tightness of bolts, and binding
Throttle Control System	Daily	16	Check for binding, sticking, proper operation, throttle cable tension, and wear
Drive Belt	Daily Monthly	32	Check for wear, cracks, and fraying Check length and width dimensions
Ski Wear Bars	Daily	41	Check for wear and damage
Electrical Wiring	Weekly	—	Check for wear, damage, and tight connections
Exhaust System	Weekly	7	Check for damage, leakage, and obstructions
Nuts, Bolts, Fasteners	Weekly	—	Check tightness
Shock Absorbers	Weekly	37	Check for fluid leakage and damage and air pressure (Fox Air Shocks)
Spark Plugs	4000 km (2500 Mi)/ Seasonal	25	Check center electrode insulator color, carbon, and gap
Valve Clearance	40000 km (25000 Mi)	25	Check/adjust
Crankcase Breather System	Seasonal	—	Check breather hose for cracks or damage and replace as necessary
Suspension	Weekly	36	Check for damage, loose components, and proper adjustment
Track Tension/Alignment	Weekly	33-35	Check/adjust as necessary
Wear Strips	Weekly	43	Check for wear and damage
Wires & Cables	Weekly	—	Check for wear, damage, and fraying
Fuel System - Tank, Pump, & Vent Hose	Weekly	—	Check for damage, wear, obstructions, and leakage
Chain Case	Daily	18	Check lube level and for leakage
Chain Case - Lubricant	Seasonal	18	Replace
Drive Chain Tension - Initial	500 km (300 Mi)	31	Check tension and adjust as necessary
Drive Chain Tension - After Initial	800 km (500 Mi)	31	Check tension and adjust as necessary
Heat Exchangers	Monthly	—	Check for wear, leakage, and damage
Drive Clutch/Driven Clutch	4000 km (2500 Mi)/ Seasonal	9,10	Check for damage, binding, and wear/remove drive belt, clean drive clutch/driven clutch
Rear Suspension	Monthly	20	Grease

The longevity and safety of the snowmobile can be increased by making periodic checks of the items in the preceding checklist.

If, at any time, abnormal noises, vibrations, or improper working conditions of any component of this snowmobile are detected, DO NOT OPERATE THE SNOWMOBILE. Take the snowmobile to an authorized Yamaha Snowmobile dealer for inspection and adjustment or repair. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

The snowmobile should be taken to an authorized Yamaha Snowmobile dealer at the end of each snowmobiling season for general inspection and for off-season storage servicing. This inspection and servicing is at the expense of the snowmobile owner.

Fuel System

⚠ WARNING

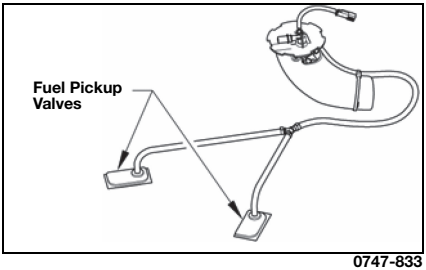
Whenever any maintenance or inspection is made on the fuel system in which there may be fuel leakage, there should be no welding, smoking, open flames, etc., in the area.

Gasoline Additives

Fuel de-icer can be used for all models. Yamaha Fuel Stabilizer should also be added to the last tank of gasoline before storage.

Fuel Pickup Valves

If ever there is a restricted fuel flow and a pickup valve is suspected, take the snowmobile to an authorized Yamaha Snowmobile dealer for this service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.



0747-833

Checking Engine Oil Level

■ **NOTE: The snowmobile must be on a level surface for this procedure.**

CAUTION

If the engine and oil are not at operating temperature the oil will not read correctly in the oil level tube.

1. Start the engine and let it idle and warm up until the engine reaches operating temperature.
2. Shut the engine off. Remove the right-side access panel; then look at the oil level tube on the backside of the oil tank. The oil should be above the MIN line and below the MAX line.

XM451

3. If step 1 and 2 was followed and the oil level is not within the "MAX to MIN" range, add the recommended engine oil through the oil tank fill hole.

■ **NOTE: Care must be taken not to over-fill the oil tank.**

4. Install the oil fill plug.

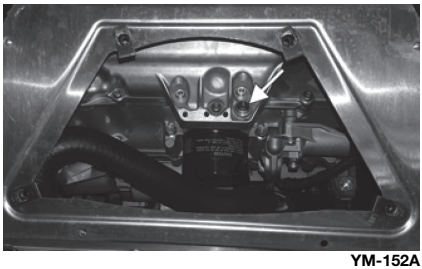
Changing Engine Oil/Filter

⚠ WARNING

Engine oil is extremely hot immediately after the engine is turned off. Burning could occur if oil contacts skin or clothing.

■ **NOTE: Recycle or properly dispose of the used engine oil.**

1. Start the engine and let it idle and warm up until the engine reaches operating temperature, or if the snowmobile was operated, allow the engine to idle for approximately 30 seconds.
2. Shut the engine off. Remove the access panels and the hood.
3. Remove the torx-head screws and the rear access plate from beneath the snowmobile.
4. Place a drain pan beneath the engine oil drain screw; then remove the screw and allow the oil to drain completely.

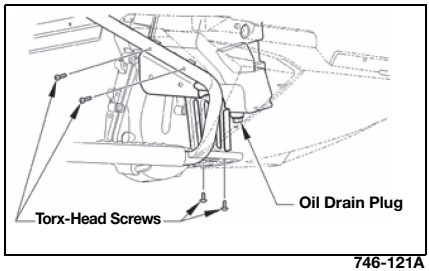


YM-152A

5. Using Oil Filter Wrench, loosen (but do not remove) the oil filter and allow the oil to drain from the filter into the drain pan; then remove the filter.

■ NOTE: Ensure the O-ring is removed with the oil filter. If the O-ring remains attached to the crankcase, oil leakage may occur.

6. Apply a light coat of fresh engine oil to the seal of the new oil filter.
7. Install the new oil filter by turning the oil filter by hand until the seal has contacted the oil filter mounting surface; then tighten the oil filter to 1.7 kg-m (12 ft-lb).
8. Install the engine oil drain screw with a new gasket. Tighten the screw to 1.0 kg-m (7.2 ft-lb).
9. Install the rear access plate. Tighten the screws to 1.2 kg-m (9 ft-lb).
10. Remove the four torx-head screws securing the right-side footrest to the tunnel and the support; then with a drain pan in position, remove the drain plug from the oil tank.



746-121A

■ NOTE: To aid in draining the oil from the tank, position a funnel between the tank and the opening of the tunnel running board.

11. After the oil has drained completely, install the drain plug with a new O-ring and tighten to 2.2 kg-m (16 ft-lb).
12. Install the four screws securing the right-side footrest. Tighten the screws to 50.5 kg-m (44 in.-lb).
13. Pour 2.8 L (3 US quarts) of engine oil in through oil tank fill hole.
14. Install the oil tank plug then start the engine and let it idle. The oil pressure light may illuminate briefly after starting but should go out within 10 seconds. If the light does not go out within 10 seconds, the engine will automatically shut down. If a shutdown occurs check that there are no leaks and that oil has been added to the oil tank before trying to start the engine again. If the engine shuts down automatically, the key will have to be turned off for 5 seconds before the engine can be restarted. If the light does not stay off after starting the engine a second time, take the snowmobile to and authorized Yamaha Snowmobile dealer for service.
15. Shut the engine off; then look at the oil level tube on the backside of the oil tank. The oil should be above the MIN line but not above the MAX line.

XM451

16. If step 13 was followed and the oil level is not within the "MAX to MIN" range, add the recommended engine oil through the oil tank fill hole.

■ **NOTE: Care must be taken not to over-fill the oil tank.**

17. Install the oil fill plug; then install the hood and access panels.

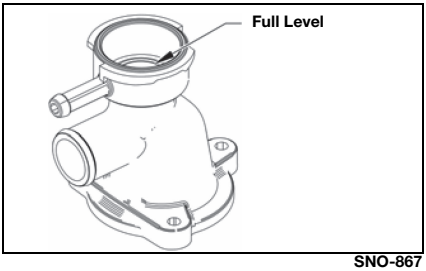
Coolant Level

■ **NOTE: Use a good quality, ethylene glycol-based, automotive-type coolant.**

⚠ WARNING

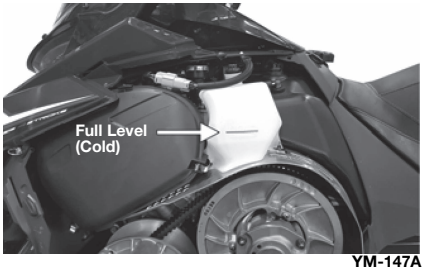
Always check the coolant level with the engine cold.

Locate the filler neck located above the resonator; then remove the coolant cap from the filler neck. Verify that the coolant is at the bottom of the tab in the filler neck.



SNO-867

Locate the coolant tank above the drive clutch; then remove the plug from the coolant tank. Add coolant to the full level on the tank. Install the plug.

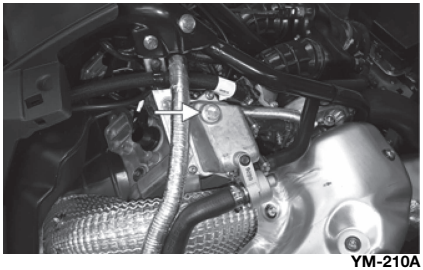


YM-147A

CAUTION

If the coolant is below the neck and if coolant has been added, immediately inspect for leakage and/or damage. If leakage or damage is detected, take the snowmobile to an authorized Yamaha Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

Remove the plug in the vapor tank located above the exhaust. Once the plug is removed, verify the coolant is just below the treads. Install the plug.



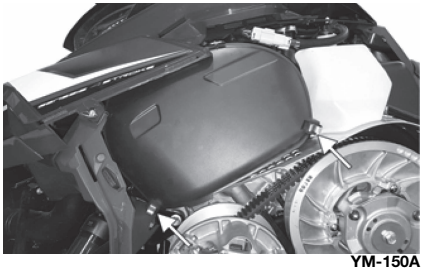
YM-210A

Air Filter

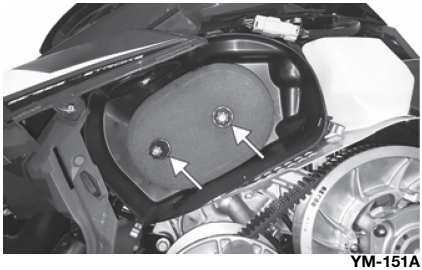
The air filter inside the air filter housing must be clean to provide good engine power and gas mileage.

If operating the snowmobile in deep powder conditions, the air filter should be inspected for snow buildup.

1. Remove the left-side access panel; then remove the clips securing the air filter housing cover.


YM-150A

2. Loosen the two knobs securing the air filter to the inside of the housing; then remove the filter.


YM-151A

3. Install the filter and secure using the two knobs.
4. Install the air filter housing cover and secure with the clips.
5. Install the left-side access panel.

Spark Plugs

■ NOTE: Always use the recommended spark plugs in the engine. See the appropriate specifications sheet for correct spark plug gap.

CAUTION

If adjusting spark plug gap is necessary, do not use the center electrode as a leverage point. Damage to the plug may occur.

1. Disconnect the main harness from the ignition coils; then remove the ignition coils from the cylinder head cover.
2. Remove the three spark plugs.

■ NOTE: Prior to installing the spark plugs, check the gap between the electrode and ground strap. The clearance should be 0.7-0.8 mm (0.028-0.031 in.).

3. Install new spark plugs. Tighten to 1.3 kg-m (9.4 ft-lb).
4. Install the ignition coils onto the cylinder head cover making sure they are fully seated. Connect the main harness to the ignition coils.
5. Install the hood and access panels.

Checking/Adjusting Valve Clearance

After 40,000 km (25,000 miles), valve clearance should be checked and adjusted as necessary.

■ NOTE: Take the snowmobile to an authorized Yamaha Snowmobile dealer for inspection and service. This service is at the discretion and expense of the snowmobile owner.

CAUTION

It is critical that the checking/adjusting valve clearance be done at the recommended intervals or severe engine damage may occur.

Battery

These sealed batteries after being in service require regular cleaning and charging in order to deliver peak performance and maximum service life. The following procedure is recommended for cleaning and maintaining sealed batteries. Always read and follow instructions provided with battery chargers and battery products.

■ NOTE: Battery maintenance may be done by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Yamaha Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.

⚠ WARNING

Improper handling or connecting of a battery may result in severe injury including acid burns, electrical burns, or blindness as a result of an explosion. Always remove rings and watches. Any time service is performed on a battery, the following must be observed: keep sparks, open flame, cigarettes, or any other flame away. Always wear safety glasses. Protect skin and clothing when handling a battery. When servicing a battery in an enclosed space, keep the area well-ventilated.

⚠ WARNING

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and reproductive harm. Wash hands after handling.

1. Remove the torx-head screw from the rear underside of the seat; then remove the seat.

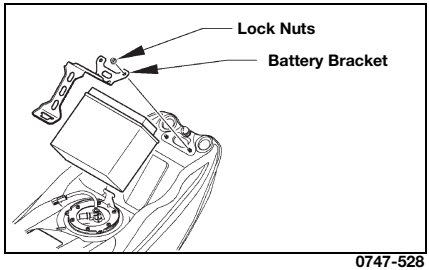
CAUTION

Make sure to disconnect the seat heater harness connector prior to removing the seat.

2. Remove the negative battery cable and ground wire; then remove the positive cable.

■ NOTE: For installing purposes prior to removing the battery, note the routing and securing locations of the cables and harness wires.

3. Remove the two lock nuts securing the battery bracket/solenoid to the seat-base; then move the bracket up and out of the way and remove the battery.



0747-528

⚠ WARNING

Avoid spillage and contact with skin, eyes, and clothing.

CAUTION

Do not charge the battery while it is in the snowmobile with the battery terminals connected.

4. Thoroughly wash the battery with soap and water; then using a wire brush, clean the battery posts and cable ends removing all corrosive buildup. Replace damaged cables or cable ends.

■ NOTE: If battery posts or cable ends have a build-up of white/green powder residue, apply water and baking soda to neutralize acid; then flush off with warm soapy water.

CAUTION

Do not remove seal strip on a sealed battery.

⚠ WARNING

Battery acid is harmful if it contacts eyes, skin, or clothing. Care must be taken whenever handling a battery.

5. Using a multimeter, test the battery voltage. The meter must read no less than 12.5 DC Volts for a fully charged battery.

■ NOTE: At this point if the meter reads as specified, the battery may be returned to service (see step 9).

6. If the meter reads less than specified voltage, charge the battery using the following guidelines.

   A. When using an automatic battery charger, always follow the charger manufacturer's instructions.

B. When using a constant-current battery charger, use the following Battery Charging Chart.

CAUTION

Never exceed the standard charging rate.

⚠ WARNING

An overheated battery could explode causing severe injury or death. Always monitor charging times and charge rates carefully. Stop charging if the battery becomes very warm to the touch. Allow it to cool before resuming charging.

Battery Charging Chart (Constant-Current Charger)

Battery Voltage (DC)	Charge State	Charge Time Required (at 1.5-2.0 Amps)
12.5 (minimum)	100%	None
12.2-12.4	75%-99%	3-6 hours
12.0-12.2	50%-74%	5-11 hours
11.0-11.9	25%-49%	13 hours (minimum)
11.5 or less	0-24%	20 hours (minimum)

■ NOTE: If the battery voltage is 11.5 DC Volts or less, some chargers may "cut off" and fail to charge. If this occurs, connect a fully charged booster battery in parallel (positive to positive and negative to negative) for a short period of time with the charger connected. After 10-15 minutes, disconnect the booster battery leaving the charger connected and the charger should continue to charge. If the charger "cuts off," replace the battery.

7. After charging the battery for the specified time, remove the battery charger and allow the battery to sit for 1-2 hours.
8. Connect the multimeter and test the battery voltage. The meter should read no less than 12.5 DC Volts. If the voltage is as specified, the battery is ready for service.

■ NOTE: If voltage in step 8 is below specifications, charge the battery an additional 1-5 hours; then retest. The battery is ready for service.

9. Place the battery into position in the snowmobile; then coat the battery posts and cable ends with a light coat of multi-purpose grease.

CAUTION

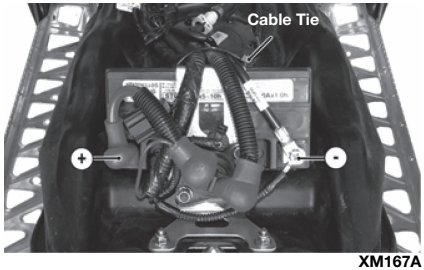
Before installing the battery, make sure the ignition switch is in the OFF position.

10. Secure the red positive cable to the positive terminal on the battery using a cap screw, lock washer, and a flat washer. Tighten securely.
11. Secure the main black negative cable and the small black negative cable to the battery using a cap screw, lock washer, and a flat washer. Tighten securely.

CAUTION

Connecting cables in reverse (positive to negative and negative to positive) can cause serious damage to the electrical system.

■ NOTE: Assure the harness wires and cables are routed properly as noted during removing battery procedure.



XM167A

12. Install the battery bracket/solenoid and tighten the two lock nuts to 1.2 kg-m (105 in.-lb); then install the seat and secure with the torx-head screw. Tighten securely.

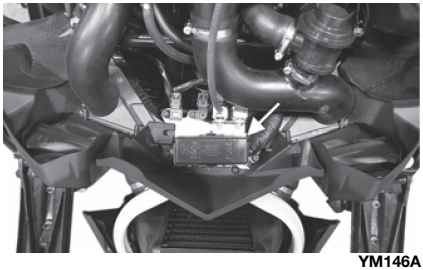
■ NOTE: Prior to lowering and securing the seat, connect the seat heater harness connector.

Fuses

Fuses protect the snowmobile electrical system from overloading. If electrical parts in the snowmobile are not working, the system may have been overloaded and caused a blown fuse. Before repairing or replacing any electrical part, check the appropriate fuses. If a fuse blows (opens a circuit), all the parts of the snowmobile that use that circuit will not work.

Once which fuse to check has been determined, perform the following steps:

1. Remove both access panels and the hood. Locate the fuse block in front of the engine.



YM146A

■ **NOTE: There are spare fuses beneath the fuse block cover.**

2. Remove the suspected fuse.

■ **NOTE: Fuse function descriptions are next to the fuse contacts in the fuse block.**

3. Look through the clear side of the fuse to see if the element inside is burned or separated. If it is, the fuse is blown and should be replaced with a fuse of the correct amperage rating.

⚠ WARNING

Always replace a fuse with one having the same specified amperage rating. Using a fuse with a higher rating can cause severe wire damage and could start a fire.

4. Install the fuse block cover and install the hood and access panels.

Even after replacing a fuse, it may continue to blow if the cause of the overload is not determined. If the fuse continues to blow, take the snowmobile to an authorized Yamaha Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

Brake System

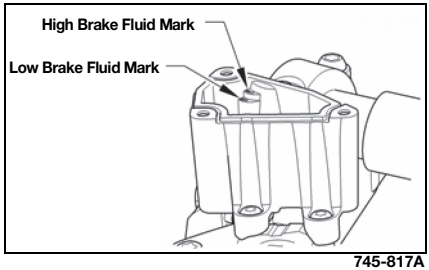
Yamaha recommends that the brake system (brake lever, fluid reservoir, hose, caliper, pads, and brake disc) be checked daily for fluid leakage, wear, or damage and for proper operation. Also, the brake fluid level must be checked every time before starting the engine.

⚠ WARNING

DO NOT operate the snowmobile when the brake lever lock is engaged or when any component in the brake system is damaged, worn, or adjusted improperly. If the snowmobile is operated and the brake system is not functioning properly, severe personal injury could result.

Checking/Adding Brake Fluid

1. With the brake fluid reservoir in a level position and the cover removed, check the fluid level. The brake fluid level must be at the high brake fluid mark in the reservoir.



745-817A

2. If the brake fluid is below the high brake fluid mark, add Yamaha approved DOT 4 brake fluid until the fluid is at the recommended level. Install and secure the reservoir cover. Do not allow moisture to contaminate the brake system.

CAUTION

Brake fluid is highly corrosive. Do not spill brake fluid on any surface of the snowmobile.

⚠ WARNING

Do not overfill the brake fluid reservoir. Overfilling the reservoir may cause the brake system to hydraulically lock. Use only Yamaha approved DOT 4 brake fluid. Never substitute or mix different types or grades of brake fluid. Brake loss can result. Brake loss can result in severe injury or even death.

Changing Brake Fluid

The brake fluid must be changed on a regular basis and whenever the brake fluid has been overheated or contaminated. The brake fluid should be changed every 1600 km (1000 miles) or at the end of the snowmobiling season, whichever occurs first. Take the snowmobile to an authorized Yamaha Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.

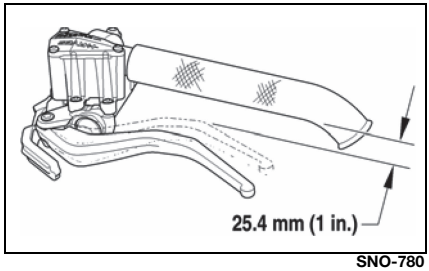
Checking Brake Lever Travel

Before each use, check the brake lever travel using the following procedure:

1. Compress the brake lever fully.

■ NOTE: Do not pump the brake lever as it will produce an inaccurate reading.

2. Measure the distance between the brake lever and the handlebar. The distance must be greater than 25.4 mm (1 in.).



SNO-780

3. If the resultant distance is less than specified, take the snowmobile to an authorized Yamaha Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

⚠ WARNING

Do not operate the snowmobile if the compressed distance between the brake lever and the handlebar is less than 25.4 mm (1 in.). Brake loss may occur. Brake loss can result in severe personal injury.

Bleeding Brake System

If the brake lever feels spongy when applied, the brake system may need to be bled. To bleed the brake, use the following procedure:

■ NOTE: The brake system may be bled by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Yamaha Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.

1. Remove the reservoir cover and (if necessary) fill the reservoir to the high brake fluid mark with Yamaha approved DOT 4 brake fluid.

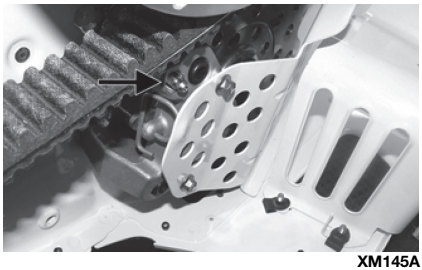
CAUTION

Brake fluid is highly corrosive. Do not spill brake fluid on any surface of the snowmobile.

⚠ WARNING

Use only Yamaha approved DOT 4 brake fluid. Any substitute may result in a loss of brakes.

2. Slide a piece of flexible tubing over the ball of the bleeder valve and direct the other end into a container.



XM145A

3. Slowly compress the brake lever until maximum pressure is attained; then hold the lever in the compressed position to maintain pressure. Open the bleeder valve to release the fluid and air. When the fluid stops, close the bleeder valve; then release the brake lever.
4. Repeat step 3 until the brake fluid flows free of air bubbles.

■ **NOTE: It may be necessary to refill the reservoir during the bleeding process. Never allow the brake fluid to go below the low brake fluid mark in the reservoir.**

5. When the brake fluid is free of all air and the brake lever feels firm when compressed, fill the reservoir to the high brake fluid mark; then install and secure the cover. Remove the tube from the bleeder valve.

Checking/Changing Brake Pads

The condition of the brake pads must be checked daily and changed if worn or damaged. To check and change the brake pads, use the following procedure:

■ **NOTE: The brake pads may be changed by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Yamaha Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.**

■ **NOTE: When installing new brake pads, always install them as a set. Never install just one pad or use brake pads which have been used in another snowmobile.**

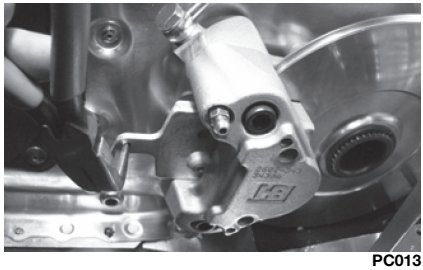
1. Remove the brake fluid reservoir cover; then remove most of the brake fluid from the reservoir. Install the cover.

CAUTION

Brake fluid is highly corrosive. Do not spill brake fluid on any surface of the snowmobile.

■ **NOTE: The above procedure will allow room for the fluid from the caliper when the pistons are pushed into the caliper for installing new brake pads. Replacing the cover will prevent fluid spillage.**

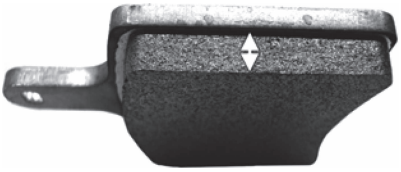
2. Open the left-side access panel.
3. Remove the torx-head screws securing the brake shield to the belt guard mount; then remove the cap screws securing the brake shield to the brake caliper.
4. Carefully move the shield out of the way; then remove the hairpin clip securing the brake pads to the caliper assembly.
5. Using a pair of pliers, pull the outer brake pad out of the caliper assembly.



PC013

■ **NOTE: Changing one pad at a time will prevent one piston from pushing out the other piston from the caliper.**

6. Measure the thickness of the brake pad. The brake pad thickness must be greater than 1.0 mm (0.04 in.). If the brake pad thickness is less than specified, replacement of both pads is necessary.



PC011A

7. Using a flat-blade tool, slowly and carefully push the piston into the caliper.
8. Position the outer brake pad into the caliper; then install the hair-pin clip into the caliper assembly.
9. Repeat steps 5-8 for the inner pad; then secure the pad with the hairpin clip.
10. Remove the reservoir cover and remove the remaining fluid; then fill the reservoir with fresh fluid and install the cover.
11. Pump the brake lever to ensure correct positioning of the brake pads and proper brake lever travel; then release.

■ NOTE: If brake lever travel is not within specification, bleed the brake system.

12. Remove the reservoir cover and fill the reservoir (if necessary) to the proper level with fresh brake fluid; then install the cover.
13. Secure the brake shield, the driven clutch; then install and secure the left-side access panel.

■ NOTE: When new brake pads are installed, a "burnishing" process is required (see Burnishing Brake Pads sub-section).

Burnishing Brake Pads

After changing brake pads, the new brake pads must be burnished to achieve full braking effectiveness. Braking distance will be extended until brake pads are properly burnished.

To properly burnish the brakes, use following procedure:

1. Choose an area sufficiently large to safely accelerate to 50-65 km/h (30-40 mph) and to brake to a stop.

■ NOTE: This procedure can also be accomplished using a shielded jack stand.

2. Accelerate to 50-65 km/h (30-40 mph); then compress brake lever to decelerate to a stop.

■ NOTE: Lightly apply the brake lever to come to an easy stop; do not overapply brakes or "lock up" the track.

3. Repeat procedure 10-15 times allowing some cooling between stops.

■ NOTE: Do not repeat too soon or too aggressively as to get the brake disc "red hot."

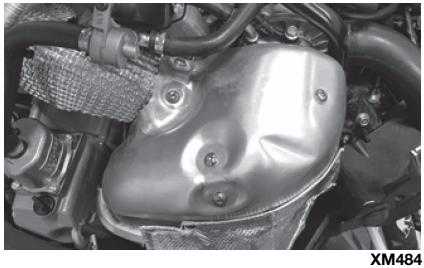
⚠ WARNING

Do not attempt sudden stops or put yourself into a situation where a sudden stop will be required until the brake pads are properly burnished.

■ NOTE: This procedure stabilizes the pad material and extends the life of the pads.

Chain Tension

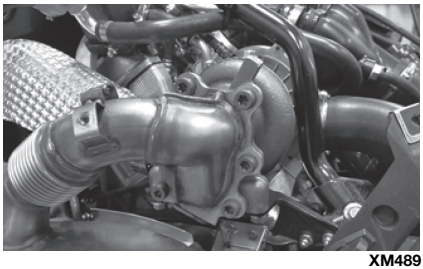
1. Remove both access panels; then remove the hood.
2. Remove the five torx screws and washers securing the turbo heat shield to the turbo. Remove the shield.



XM484

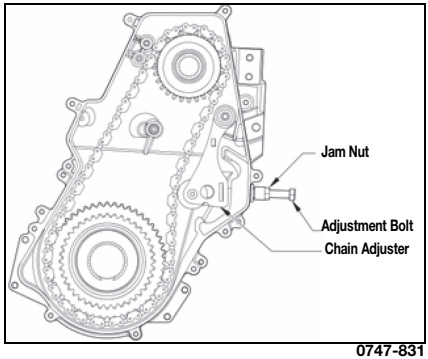
3. Remove the six torx screws securing the resonator to the turbo; then remove the spring securing the resonator. Remove the resonator and account for a gasket.

■ **NOTE: A long T50 ball head torx bit will be needed to remove or install the torx screws.**



XM489

4. Loosen the jam nut.
5. Turn the chain tension adjustment bolt clockwise until it is finger tight; then loosen it 1 1/2 turns.



0747-831

6. While holding the bolt with a wrench, tighten the jam nut to 2.4 kg-m (18 ft-lb).
7. Install the resonator and secure using the existing gasket, spring, and cap screws. Tighten the screws to 1.2 kg-m (9 ft-lb) then to 2.4 kg-m (18 ft-lb) in a crisscross pattern.

■ **NOTE: Apply a small amount of high temperature anti-seize lubricant to the threads of the screws.**

8. Install the turbo heat shield and secure using the existing screws and washers. Tighten securely.
9. Install the hood and access panels.

Drive Belt

The drive belt transfers power from the drive clutch to the driven clutch. If the belt is worn, cracked, or stretched, maximum power will not be transmitted and the belt could also fail and therefore must be replaced. Periodic checks (at least once a month under normal usage) of two drive belt specifications are essential.

1. Measure the outside circumference of the drive belt. The belt should be within 1118-1126 mm (44.0-44.3 in.).
2. Measure the outside width of the drive belt. The belt should be at least 34.5 mm (1.36 in.) on a new belt or 32.5 mm (1.28 in.) on a broken in belt.
3. Check the belt for cracking, fraying, etc.

If any of the specifications or conditions are unsatisfactory, replace the drive belt.

■ **NOTE: Drive belts should be purchased from an authorized Yamaha Snowmobile dealer, as Yamaha drive belts are made to exact specifications and of quality material. Belts made by other manufacturers may not be of the same specifications or quality and, therefore, usage could result in poor performance and premature belt failure.**

■ **NOTE: Before starting the snowmobile in extremely cold temperatures, the drive belt should be removed and warmed up to room temperature. Once the drive belt is at room temperature, install the drive belt.**

Also, new drive belts have a break-in period of 40 km (25 miles). After installing a new drive belt, drive the snowmobile for 40 km (25 miles) at 3/4 throttle or less. By revving the engine up and down (but not exceeding 97 km/h [60 mph]), the exposed cord on the side of a new belt will be worn down. This allows the drive belt to gain its optimum flexibility and will extend drive belt life.

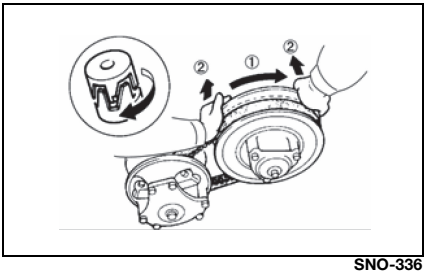
CAUTION

Never run the engine with the drive belt removed. Excessive revving of the engine could result in serious engine damage and drive clutch failure.

Removing Drive Belt

■ **NOTE: Changing a drive belt can be done by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Yamaha Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.**

1. Place the snowmobile on a level surface and engage the brake lever lock.
2. Open the left-side access panel and remove the belt guard assembly.
3. Rotate the driven clutch sliding sheave clockwise (1); then push towards the engine (2) so it will separate from the fixed sheave.
4. Remove the drive belt by pulling it up and over the fixed sheave.

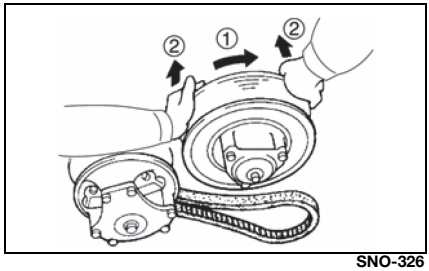


SNO-336

Installing Drive Belt

■ **NOTE: Before installing the drive belt, use a suitable cleaning solvent to thoroughly clean the sheaves.**

1. Open the left-side access panel.
2. Rotate the driven clutch sliding sheave clockwise (1); then push towards the engine (2) so it will separate from the fixed sheave.
3. Install the drive belt (3) between the sheaves.



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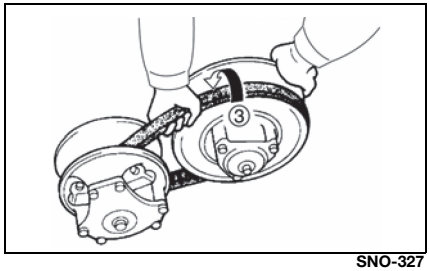


SNO-327

4. Install the left-side access panel.

⚠ WARNING

Never operate the snowmobile without the access panel secured in place.

Track Tension

Track tension is directly related to the overall performance of the snowmobile. If the track is too loose, it may slap against the tunnel causing wear or it may "ratchet" on the track drive sprockets. If extremely loose, the idler wheels may climb over the track lugs forcing the track against the tunnel causing the track to "lock." Yamaha recommends that the track tension be checked daily during the first 500 km (300 miles) of operation and once a week thereafter and adjusted according to need. The track will stretch and take a "set" during break-in. Track deflection must be maintained within the recommended range.

⚠ WARNING

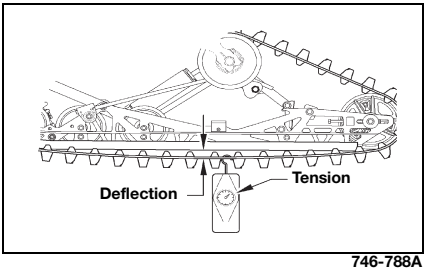
Track tension must be properly maintained. Personal injury could result if a track is allowed to become excessively loose.

Checking Track Tension

⚠ WARNING

DO NOT attempt to check or adjust track tension with engine running. Turn ignition key to the OFF position. Personal injury could result from contact with a rotating track.

1. Remove excess ice and snow buildup from the track, track drive sprockets, and the inside of the skid frame.
2. Elevate the snowmobile on a shielded safety stand high enough to use a spring scale.
3. At the mid-point of the track (on the bottom side), hook a spring scale around a track clip; then pull down on the scale to 9 kg (20 lb). Measure the deflection (distance) between the bottom of the wear strip and the inside surface of the track clip. Measurement should be 50 mm (2.0 in.).



746-788A

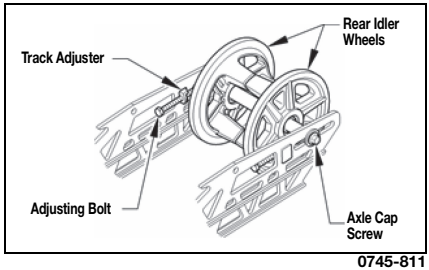
■ NOTE: Measurement is from the bottom of the wear strip at the point of the shock pad on the slide rail.

■ NOTE: Only tighten track until the track does not ratchet. Too tight of a track will cause the rear suspension to not work properly.

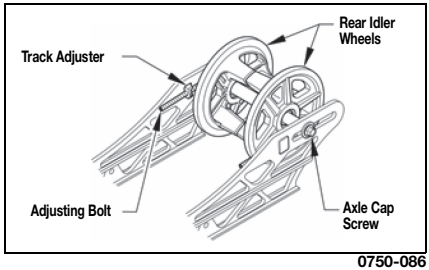
Adjusting Track Tension

■ NOTE: To ensure proper track tension adjustment, perform all adjustments on both sides of the snowmobile.

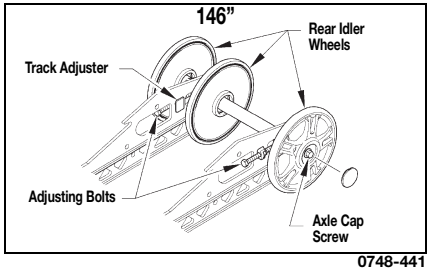
1. Loosen the idler wheel axle cap screws.



0745-811



0750-086



0748-441

2. If the deflection (distance between the bottom of the wear strip and the inside surface of the track clip) exceeds specifications, tighten the adjusting bolts to take up excessive slack in the track.
3. If the distance between the bottom of the wear strip and the inside surface of the track clip is less than specified, loosen the adjusting bolts to increase the slack in the track.

CAUTION

Always maintain track tension within recommended specification.

4. Check track alignment.
5. After proper track tension is obtained, tighten the idler wheel axle cap screws to 4.7 kg-m (34 ft-lb); then tighten the adjusting bolts securely against the axle.

■ **NOTE: Since track tension and track alignment are interrelated, always check both even if only one adjustment seems necessary.**

⚠ WARNING

Always make sure the adjusting bolts are snug against the axle and the idler wheel cap screws are tightened to specifications. Failure to do so could cause the track to become extremely loose and, under some operating conditions, allow the idler wheels to climb over the track lugs forcing the track against the tunnel causing the track to "lock." If a track "locks" during operation, severe personal injury could result.

Track Alignment

Proper track alignment is obtained when the rear idler wheels are equal distance from the inner track drive lugs. Excessive wear to the idler wheels, drive lugs, and track will occur if the track is improperly aligned. Yamaha recommends that the track alignment be checked once a week or whenever the track tension is adjusted.

Checking Track Alignment

⚠ WARNING

Make sure the ignition key is in the OFF position and the track is not rotating before checking or adjusting track alignment. Personal injury could result if contact is made with a rotating track.

1. Remove excess ice and snow buildup from the track, track drive sprockets, and the inside of the skid frame.
2. Position the tips of the skis against a wall; then using a shielded safety stand, raise the rear of the snowmobile off the floor making sure the track is free to rotate.

⚠ WARNING

The tips of the skis must be positioned against a wall or similar object.

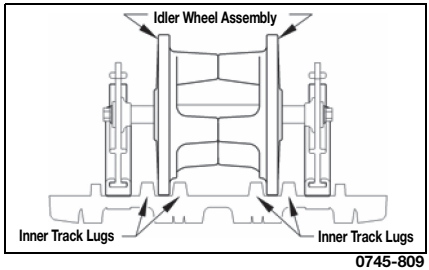
⚠ WARNING

DO NOT stand behind the snowmobile or near the rotating track. NEVER run the track at high speed when the track is suspended.

3. Start the engine and accelerate slightly. Use only enough throttle to turn the track several revolutions. SHUT ENGINE OFF.

■ **NOTE: Allow the track to coast to a stop. DO NOT apply the brake because it could produce an inaccurate alignment condition.**

4. When the track stops rotating, check the relationship of the rear idler wheels and the inner track drive lugs. If the rear idler wheels are centered between the inner track drive lugs, no adjustment is necessary.



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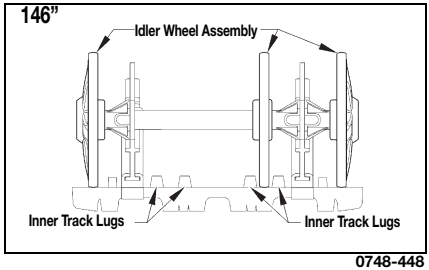
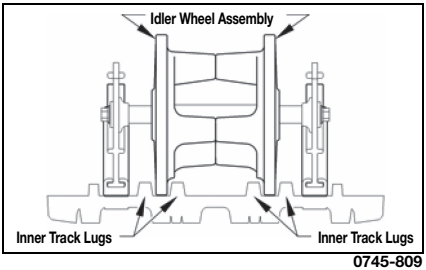


0748-448

5. If the idler wheels are not centered between the inner track drive lugs, an adjustment is necessary.

Adjusting Track Alignment

1. On the side of the track which has the inner track drive lugs closer to the rear idler wheel, loosen the idler wheel axle cap screw; then rotate the adjusting bolt clockwise 1 to 1 1/2 turns.



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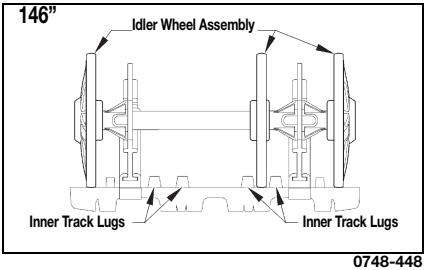


0748-448

2. Check track alignment and continue adjustment until proper alignment is obtained.

■ **NOTE: Make sure correct track tension is maintained after adjusting track alignment.**

3. After proper track adjustments are obtained and the adjusting bolts are snug against the axle housings, tighten the idler wheel axle cap screws to 4.7 kg-m (34 ft-lb).

⚠ WARNING

Always make sure the adjusting bolts are snug against the axle and the idler wheel cap screws are tightened to specifications. Failure to do so could cause the track to become extremely loose and, under some operating conditions, allow the idler wheels to climb over the track lugs forcing the track against the tunnel causing the track to "lock." If a track "locks" during operation, severe personal injury could result.

4. Field test the track under actual conditions.
5. After the field test, check the alignment of the track. If additional adjustment is necessary, repeat Adjusting Track Alignment procedure.

Suspension

The suspension should be adjusted for the operational needs and riding preference of the operator.

The front shock springs or shock air pressure determines the amount of ski pressure and the reaction of the front suspension to rough terrain. The amount of ski pressure can also be changed by adjusting the length of the skid frame front arm limiter straps.

The rear arm shock absorber setting or springs influences the load carrying capability of the snowmobile and should be adjusted for the weight and riding preference of the operator.

⚠ WARNING

Read and understand the following information before handling shock absorbers that contain highly pressurized nitrogen gas.

- **Do not tamper with tor attempt to open the cylinder assemblies.**
- **Do not subject the shock absorbers to an open flame or other high heat source. This may cause the unit to explode due to excessive gas pressure.**
- **Do not deform or damage the cylinders in any way. Cylinder damage will result in poor damping performance.**
- **Do not dispose of a damaged or worn out shock absorber yourself. Take the shock absorber to a Yamaha dealer for any service.**

Gas Shocks

Each shock absorber should be visibly checked weekly for fluid leakage, cracks or breaks in the body, or a bent shaft. If any one of these conditions is detected, replacement is necessary. Take the snowmobile to an authorized Yamaha Snowmobile dealer for this service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

FOX Shocks

If service work is needed on any FOX shocks, the shock must be removed and sent to FOX or any FOX distributor for any service work. For FOX shock information, log on to www.ridefox.com.

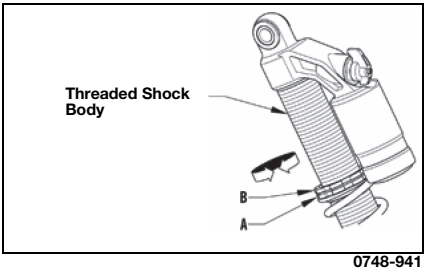
Each shock absorber should be visibly checked weekly for fluid leakage, cracks or breaks in the body, or a bent shaft. If any one of these conditions is detected, replacement is necessary. Take the snowmobile to an authorized Yamaha Snowmobile dealer for this service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

Adjusting Front Ski Shock Springs

The front ski shock springs are individually adjustable for the terrain conditions and driving style of the operator. The spring adjuster nut has been set at the factory so the correct amount of threads are exposed between the adjuster nut and the threaded shock body as an initial setting. Additional ski pressure can be obtained by tightening the spring tension; ski pressure can be decreased by relaxing spring tension.

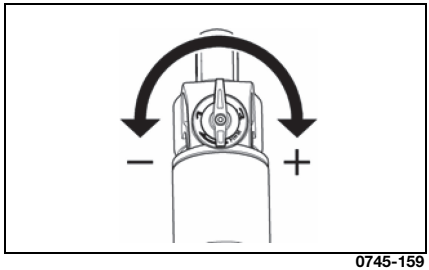
■ **NOTE: Equal adjustments should be maintained on both sides of the snowmobile.**

Front ski shock spring pre-load adjustment is accomplished by loosening the adjuster nut locking collar (B) from the adjuster nut (A) and using the Spring Adjuster Tool from the tool kit, rotating the adjuster nut in whichever direction is desired. Tighten the locking collar against the adjuster nut.



0748-941

To adjust the damping, use the adjustment lever located above the EVOL chamber on the shock. There are three settings that may be chosen 1, 2, or 3.



0745-159

Adjusting Fox Air Shocks

■ **NOTE: It is recommended to monitor the air pressure in the air shocks once every month.**

■ **NOTE: Adjusting air shocks may be done by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Yamaha Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.**

The air shocks are individually adjustable for the terrain conditions and driving style of the operator. The shocks are preset at the factory (see chart) as an initial setting; however, it is possible to "fine tune" the shocks to match the operator's weight, riding style, and terrain conditions.

■ **NOTE: Adding air pressure will increase the air spring force; reducing air pressure will decrease air spring force.**

■ **NOTE: Shock Pressure should be checked/added at room temperature of 18° to 20° C (65° to 70° F). The following settings are recommended but vary on rider preference or style.**

Initial Setting Chart			
Model	**Front Shock (Ski)**	**Front Arm Shock**	**Rear Arm Shock**
Fox Float 3	85 psi	N/A	165 psi
Fox Float QS3 models	85 psi	35 psi	165 psi

■ **NOTE: Care should be taken to have equal pressure in the front ski shocks before operating the snowmobile.**

To increase or decrease air pressure, use the following procedure.

■ **NOTE: When adjusting air pressure, all weight must be removed from the suspension, and the shock absorbers must be fully extended.**

1. Remove the air valve cap from the shock.
2. Thread the valve of Shock Absorber Air Pump onto the shock air valve approximately six rotations.

■ **NOTE: As the pump is being attached to the shock, the hose will fill with air. This will result in a lower gauge pressure of 0.14-0.35 kg/cm^2 (2-5 psi).**

3. To decrease air pressure in the shock, press the black bleed valve button half way down and hold until desired pressure is attained.

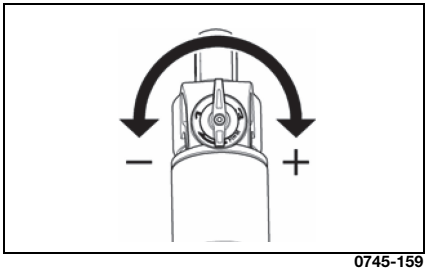
■ **NOTE: Pressing the button fully down and releasing it will allow only a small amount of air to escape (micro-adjust).**

4. To increase air pressure in the shock, pump until desired pressure is attained.
5. Remove the pump valve from the shock air valve.

■ **NOTE: As the pump valve is being removed from the shock, the sound of air loss is from the pump hose, not from the shock.**

6. Install the air valve cap onto the shock.

To adjust the damping, use the adjustment lever located on the shock. There are three settings that may be chosen 1, 2, or 3.



0745-159

Choose from three specifically calibrated ride control settings, with the 3rd position calibrated specifically for technical Mountain riding, allowing increased climbing capabilities and limited transfer of the rear suspension.

The third setting should only be used when riding in the back country. This setting is not designed for trail riding.

Rebound Adjustment

The Rebound Adjust feature on certain shocks gives the ability to externally adjust the shock rebound damping. Adjustments are made by turning the knob or using a small flat-bladed screwdriver to turn the adjuster on the air sleeve body cap located on the end of the shock absorber.

For slower rebound, turn the knob/screw clockwise. The rebound adjuster has about 20 clicks of adjustment. The factory setting is 12 clicks out. The performance of the shock at this setting is close to the performance of the non-adjustable shock and is a good all-around setting.

The rebound damping affects how quickly the shock extends (rebounds). This adjustment affects how quickly the ski rebounds when traveling through a series of large bumps and how quickly the front end responds in the corner.

The optimum rebound setting is usually found with the minimum damping required to give acceptable control. Excessive rebound damping will typically be felt as the suspension “packing”. This can often be seen or felt as the vehicle travels through a series of similar-sized, successive bumps. It works well for the first two or three bumps and then bottoms hard on the third or fourth. This is because the shock has not rebounded quickly enough, and the shock “packs” into compression.

Adjusting Skid Frame Front Arm Spring

The skid frame front arm shock spring ten- sion and the limiter straps are adjustable. However, Yamaha recommends that the shock spring be maintained at the factory preset of 3.2-6.4 mm (1/8-1/4 in.) preload. Tightening the skid frame front arm shock spring may cause improper balance and may ruin the handling features of the snowmobile.

The length adjustment of the front arm limiter straps determines the weight distribution between the front of the skid frame and the skis. Tightening the limiter strap (shortening the strap) will pull up on the front of the skid frame and will increase ski pressure. Loosening the limiter strap (lengthening the strap) lowers the front of the skid frame and decreases ski pressure.

When customizing the amount of ski pressure, be sure to adjust both straps equally and do not over-adjust the limiter straps to adversely affect steering and operator control of the snowmobile. Some experimentation may be required until the proper adjustment for the operator's individual style is obtained.

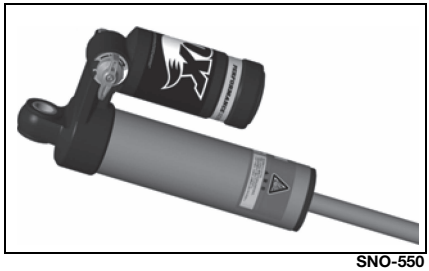
■ **NOTE: If the limiter straps are adjusted, it is highly recommended that at least a minimum of 3.2 mm (1/8 in.) preload on the shock spring be maintained.**

⚠ WARNING

Do not adjust the front arm limiter straps to a point at which steering and operator control of the snowmobile are adversely affected.

Adjusting Skid Frame Rear Shock (Fox QS3)

To adjust the damping, use the adjustment lever located above the EVOL chamber on the shock. There are three settings that may be chosen: 1, 2, or 3.



SNO-550

Adjusting Rear Spring Pre-Load

Proper adjustment of rear spring pre-load is necessary to get the most desirable ride. The chart is designed to help in setting up rear spring pre-load; however, riding style is the single greatest factor in determining rear spring requirements.

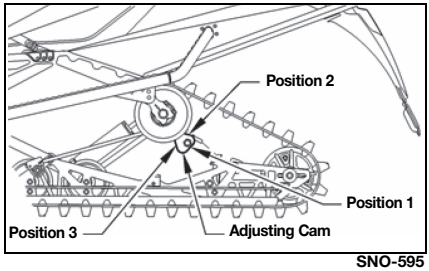
Rider Weight (lb)	Cam Position
Up to 80 kg (180 lb)	1
80 kg (180 lb) - 110 kg (240 lb)	2
Over 110 kg (240 lb)	3

■ **NOTE: These cam position settings are suggestions only. Personal riding style will greatly influence cam position settings. Spend time to determine setting preferences.**

Rear spring pre-load adjustment is accomplished by rotating the adjusting cams. Position 3 provides the stiffest ride, and position 1 is for the light driver or slow-speed trail riding. Position 2 is for the average operator under normal conditions. Always rotate the cam from the lighter position to the heavier position.

CAUTION

Never force the adjustment cams from the low position to the high position. Cam damage may occur.



SNO-595

To rotate an adjusting cam, use the spark plug wrench from the tool kit. Rotate the wrench until the cam is in the desired position. To stiffen the ride, rotate the cam so as to raise the spring end. Make the appropriate adjustment on the other cam.

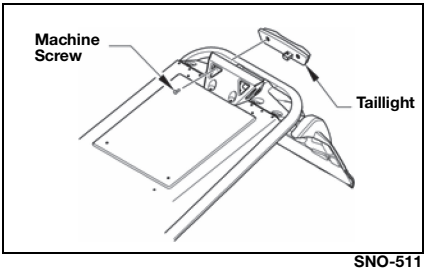
Lights

For the correct headlight bulb and/or taillight/brakelight LED, see the appropriate specifications sheet.

Removing and Installing Taillight/ Brakelight (All models except 146")

These models are equipped with an LED taillight/brakelight. If the LED fails, it must be replaced.

1. Disconnect the taillight harness connector.
2. Remove the two machine screws securing the taillight to the bracket.

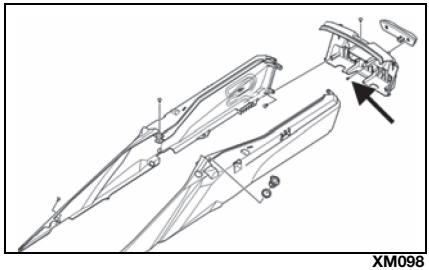


SNO-511

3. Connect the taillight harness connector; then secure the taillight to the bracket with the two screws.

Removing and Installing Taillight/ Brakelight (146")

1. Remove the storage box lid and storage tray; then remove the machine screws securing the taillight to the rear rack fascia. Disconnect the taillight harness connector.


XM098

2. Connect the taillight harness connector; then secure the taillight to the rear rack fascia with the screws. Tighten to 0.5 kg-m (48 in.-lb). Install the storage box tray and lid.

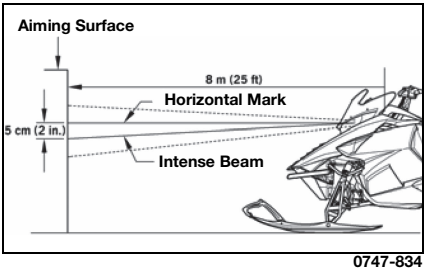
Adjusting Headlight Aim

The headlight can be adjusted for vertical aim of the HIGH/LOW beam. The geometric center of HIGH beam zone is to be used for vertical aiming.

1. Position the snowmobile on a level floor so the headlight is approximately 8 m (25 ft) from an aiming surface (wall or similar surface).

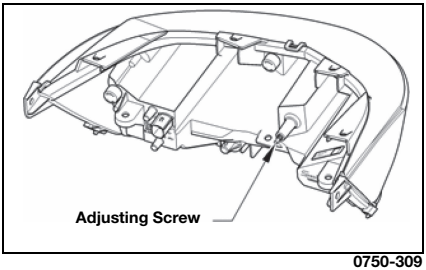
■ **NOTE: There should be an "average" operating load on the snowmobile when adjusting headlight aim.**

2. Measure the distance from the floor to midpoint of the headlight.
3. Using the measurement obtained in step 2, make a horizontal mark on the aiming surface.
4. Make a vertical mark which intersects the horizontal mark on the aiming surface directly in front of the headlight.
5. Engage the brake lever lock and start the engine. Move the headlight dimmer switch to the HIGH beam position. DO NOT USE LOW BEAM.
6. Observe the headlight beam aim. Proper aim is when the most intense beam is centered on the vertical mark 50 mm (2 in.) below the horizontal mark on the aiming surface.



0747-834

7. Adjust the headlight using the adjusting screw on the backside of the headlight using a 4 mm swivel socket and long extension until correct aim is obtained. Shut the engine off; then disengage the brake lever lock.



0750-309

Ski Wear Bars

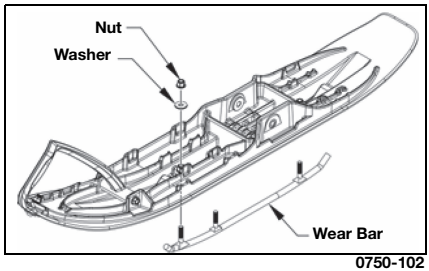
The ski wear bar is a replaceable bar attached to the underside of the ski. The purpose of the wear bar is to assist in turning the snowmobile, to minimize ski wear, and to maintain good steering control. If the snowmobile is operated primarily in deep snow, ski wear bar wear will be minimal; however, if the snowmobile is operated on terrain where the snow cover is minimal, the ski wear bar will wear faster. To maintain positive steering characteristics, Yamaha recommends that the ski wear bars be checked before each use and replaced if worn beyond 1/2 of the original diameter. Ski wear bars are available from an authorized Yamaha Snowmobile dealer.

⚠ WARNING

Operating the snowmobile with excessively worn ski wear bars may result in a loss of steering control.

Removing (Single)

1. Using Front End Lift, elevate the front of the snowmobile.
2. Remove the lock nuts securing the wear bar to the ski.



0750-102

3. Remove the wear bar from the ski.

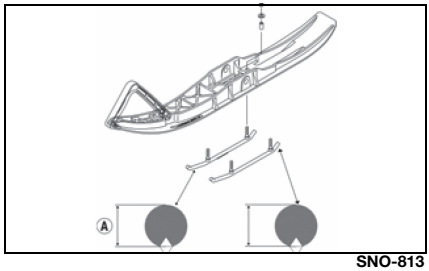
Installing (Single)

1. Move the wear bar into position on the bottom of the ski.
2. Align the wear bar studs with the holes in the ski; then install the lock nuts. Tighten to 14.3-23.4 N-m (124-203 in.-lb).

Removing (Dual)

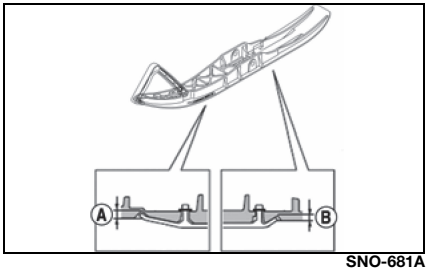
1. Using Front End Lift, elevate the front of the snowmobile.
2. Remove the lock nuts, washers, and spacers securing the wear bars to the ski.
3. Remove the wear bars from the ski.

■ NOTE: When the wear bars are removed, measure the thickness of both wear bars to see if they are within the wear limit of 6.0 mm (0.24 in.) (A). Replace as necessary.



SNO-813

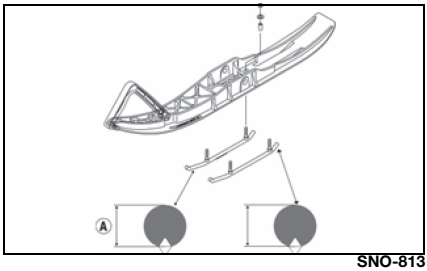
■ NOTE: Measure the thickness of the ski where the front and rear of the wear bar contacts the ski to see if it is within the wear limit of 13 mm (0.51 in.) (A) and 8 mm (0.31 in.) (B). Replace as necessary.



SNO-681A

Installing (Dual)

1. Position the wear bars in the ski and loosely secure using the existing spacers, washers and nuts.



SNO-813

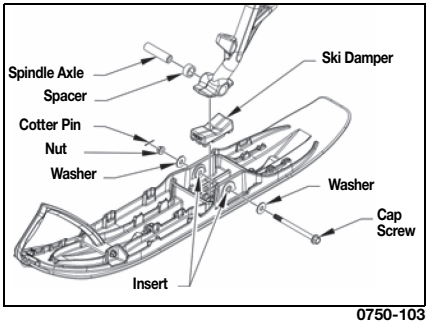
2. Tighten the nuts evenly to 2.0 kg-m (15 ft-lb).

Adjusting Ski Stance

■ **NOTE: Local laws and/or regulations as to maximum width of the ski stance on these snowmobiles may be applicable. Always comply with the maximum width laws and/or regulations when adjusting ski stance.**

Single Wear Bar

1. Place the front of the snowmobile on a support stand.
2. Remove the cotter pin; then remove the slotted nut and cap screw securing the ski assembly to the spindle. Remove the ski. Account for the ski damper, inserts, spacer and washers.



0750-103

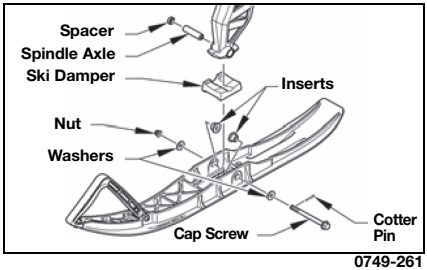
3. To increase ski stance, place ski stance spacer to the outside of the spindle and adjust the damper.
4. To decrease ski stance, place ski stance spacer to the inside of the spindle and adjust the damper.
5. Apply an all-temperature grease to the non-threaded portion of the cap screw; then slide the cap screw through the ski accounting for the rubber damper, inserts, and washers.

■ **NOTE: Install the cap screw so the nut will be located to the inside of the ski.**

6. Apply Yamabond Red Threadlocker to the threads of the cap screw; then tighten the nut to 6.2 kg-m (45 ft-lb).
7. Place the cotter pin into the ski cap screw and spread the pin.
8. Repeat procedure for the other ski.

Dual Wear Bar

1. Place the front of the snowmobile on a support stand.
2. Remove the cotter pin; then remove the slotted nut and cap screw securing the ski assembly to the spindle. Remove the ski. Account for the rubber damper, inserts, and washers.
3. To increase ski stance, place ski stance spacer to the outside of the spindle and adjust the damper.
4. To decrease ski stance, place ski stance spacer to the inside of the spindle and adjust the damper.



0749-261

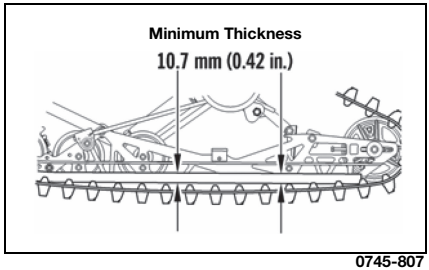
5. Apply an all-temperature grease to the non-threaded portion of the cap screw; then slide the cap screw through the ski accounting for the rubber damper, inserts, and washers.

■ **NOTE: Install the cap screw so the slotted nut will be located to the inside of the ski.**

6. Apply Yamabond Red Threadlocker to the threads of the cap screw; then tighten the nut to 6.2 kg-m (45 ft-lb).
7. Place the cotter pin into the ski cap screw and spread the pin.
8. Repeat procedure for the other ski.

Rail Wear Strips

Yamaha recommends that the wear strips be checked weekly and replaced as necessary. Measure the wear strips at 254 mm (10 in.) intervals. Wear strips must be 10.7 mm (0.42 in.) thick or thicker.



0745-807

If wear strip measurements are less than specified, replacement of both wear strips is necessary to prevent premature track clip wear and possible track damage. Take the snowmobile to an authorized Yamaha Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.

Each time a new set of wear strips are installed, they should be tempered. Temper the wear strips by driving the snowmobile for approximately a mile on a hard pack trail; then immediately drive into deep snow and allow the wear strips to cool. Repeat the procedure (warming up the wear strips; then cooling them down) two or three times.

■ **NOTE: The rail wear strips will wear rapidly if the snowmobile is operated on terrain on which the snow cover is minimal. Loose snow is required to cool and lubricate the wear strips and prevent accelerated wear.**

■ **NOTE: Two Wheel Kit and Four Wheel Kit are available to reduce wear strip wear.**

■ **NOTE: If operating on ice or hard-packed snow conditions, it is recommended that Ice Scratchers be installed to reduce wear strip wear and engine overheating.**

Operating a high performance snowmobile requires a special attention that is not required by a low performance snowmobile. Often, a minor adjustment will result in a large increase in performance. This section is intended to highlight minor conditions that adversely affect performance and the adjustments needed to correct them. Be sure, however, to thoroughly read and understand this entire manual especially the section on spark plugs, track tension and alignment, and suspension.

DRIVE CLUTCH/DRIVEN CLUTCH OFFSET

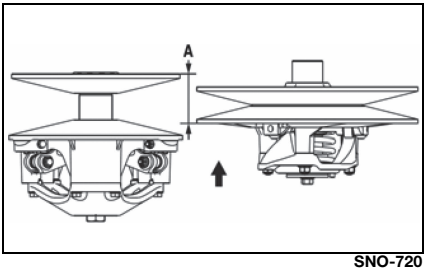
If premature drive belt wear is experienced or if the drive belt turns over, offset must be checked. Also, offset must be checked whenever either the drive clutch or driven clutch is serviced.

Checking Offset

1. Remove the left-side access panel.
2. Remove the drive belt.

■ **NOTE: 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.**

3. Measure the offset (A) between the drive clutch and the driven clutch. Sheave offset must be within 58.1-61.1 mm (2.29-2.41 in.). If adjustment is needed, proceed to step 4.



SNO-720

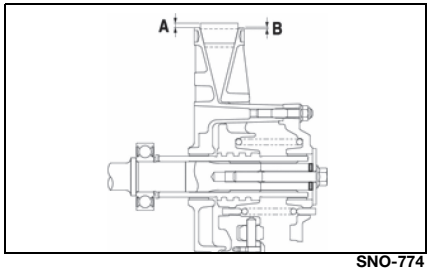
4. If offset adjustment needs to be made, remove the driven clutch and add shims (p/n 8JP-RA448-00): 1 mm (0.04), (8JP-RA449-00): 2 mm (0.08) to increase the offset or remove shims to decrease the offset.
5. Once the correct offset is reached, install driven clutch and tighten cap screw to 60 N-m (6.0 kg-m, 43 ft-lb).

DRIVE BELT POSITION

Drive belt length, condition, and position are all important for peak performance. To check and adjust drive belt, remove the belt guard; then use the following procedure.

■ **NOTE: Removing/adding shim washers may be done by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Yamaha Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.**

1. Turn the engine off; then open the left access panel.
2. Make sure the drive belt is positioned from 1.5 mm (0.06 in.) above the edge (A) of the driven clutch sheaves to 0.5 mm (0.02 in.) below the edge (B).



SNO-774

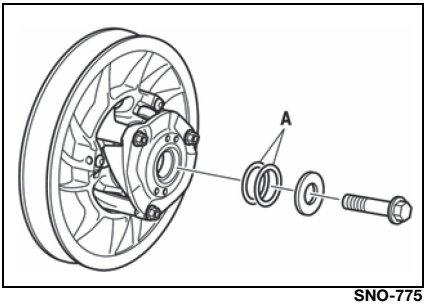
⚠ WARNING

If the belt is not positioned correctly, the clutch engagement speed will be changed. The snowmobile may move unexpectedly when the engine is started.

3. Adjust the position by removing or adding a spacer on the mounting bolt.

CAUTION

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



SNO-775

Belt Position	Adjustment
More than 1.5 mm (0.06 in.) above the edge	Remove a spacer
1.5 mm (0.06 in.) above the edge to 0.5 mm (0.02 in.) below the edge	No adjustment necessary
More than 0.5 mm (0.02 in.) below the edge	Add a spacer

Spacer Part Numbers:

8KC-RA446-00: 0.5 mm (0.02 in.)

8KC-RA447-00: 1.0 mm (0.04 in.)

4. Once the correct belt position is reached, tighten the cap screw to 60 N-m (6.0 kg-m, 43 ft-lb).
5. Install the access panel.

DRIVE CLUTCH AND DRIVEN CLUTCH

Keeping the drive clutch and driven clutch clean should be the primary consideration of the operator. The drive clutch and driven clutch can be cleaned of any drive belt accumulation using compressed air. The sheaves can be cleaned using a clean cloth and parts-cleaning solvent.

Preparation for Storage

Prior to storing the snowmobile, it must be properly serviced to prevent corrosion and component deterioration. An authorized Yamaha Snowmobile dealer should perform this service; however, the owner/operator can perform this service if desired. This service is at the discretion and expense of the snowmobile owner. To prepare the snowmobile for storage, Yamaha recommends the following procedure:

1. Clean the seat cushion with a damp cloth and a Vinyl Protectant.
2. Clean the snowmobile thoroughly by hosing dirt, oil, grass, and other foreign matter from the skid frame, tunnel, hood, and belly pan. Allow the snowmobile to dry thoroughly. DO NOT get water into any part of the engine.
3. Change the engine oil.
4. Plug the exhaust system outlet with a clean cloth.
5. Fill the gas tank to its rated capacity; then add Yamaha Fuel Stabilizer to the gas tank following directions on the container for the stabilizer/gasoline ratio. Tighten the gas tank cap securely.
6. With the snowmobile level, check the lubricant level in the chain case. If low, add chain lube through the fill plug hole.
7. Remove the drive belt from the drive clutch/driven clutch. Lay the belt on a flat surface or slide it into a cardboard sleeve to prevent warping or distortion during storage.
8. Clean and inspect the drive clutch and driven clutch.
9. Apply light oil to the upper steering post bushing and shafts of the shock absorbers.
10. Lubricate the rear suspension with low temperature grease.
11. Tighten all nuts, bolts, and cap screws making sure all nuts, bolts, and cap screws are tightened securely. Make sure all rivets holding the components together are tight. Replace all loose rivets.
12. Clean and polish the hood, console, and chassis. DO NOT USE SOLVENTS. THE PROPELLANT WILL DAMAGE THE FINISH.

■ **NOTE: Disconnect the battery cables making sure to disconnect the negative cable first; then clean the battery posts and cables. Charge the battery.**

CAUTION

Sealed batteries require charging if left for extended non-start periods. Yamaha recommends trickle charging once a month. Follow the manufacturer's instructions and cautions.

13. If possible, store the snowmobile indoors. Raise the track off the floor by blocking up the back end making sure the snowmobile is secure. Loosen the track adjusting bolts to reduce track tension. Cover the snowmobile with a machine cover or a heavy tarpaulin to protect it from dirt and dust.
14. If the snowmobile must be stored outdoors, position the snowmobile out of direct sunlight; then block the entire snowmobile off the ground making sure the snowmobile is secure. Loosen the track adjusting bolts to reduce track tension. Cover with a machine cover or a heavy tarpaulin to protect it from dirt, dust, and rain.

CAUTION

Avoid storing in direct sunlight and using a plastic cover as moisture may collect on the snowmobile causing corrosion.

Preparation after Storage

Taking the snowmobile out of storage and correctly preparing it for another season will assure many miles and hours of trouble-free snowmobiling. Yamaha recommends the following procedure:

1. Clean the snowmobile thoroughly. Polish the exterior of the snowmobile.
2. Clean the engine. Remove the cloth from the exhaust system. Check exhaust system and air-intake silencer for obstructions.
3. Inspect all control wires and cables for signs of wear or fraying. Replace if necessary. Use cable ties or tape to route wires and cables away from hot or rotating parts.
4. Inspect the drive belt for cracks and tears. Check belt specifications. Replace if damaged or worn. Install the drive belt.

■ **NOTE: If the old belt is worn but in reasonable condition, retain it with the snowmobile as a spare in case of emergency.**

5. Tighten all nuts, bolts, and cap screws making sure all nuts, bolts, and cap screws are tightened securely.
6. If not done during preparation for storage, lubricate the rear suspension with low temperature grease.
7. Check the coolant level and all coolant hoses and connections for deterioration or cracks. Add properly mixed coolant as necessary.
8. Charge the battery until fully charged; then connect the battery cables making sure to connect the positive cable first. Test the electric start system.
9. Inspect the entire brake system, all controls, headlight, taillight, brakelight, ski wear bars, and headlight aim; adjust or replace as necessary.
10. Adjust the track to the proper tension and alignment.

Noise level and vibration level

Noise level (77/311/EEC):

96 dB(A)@4375 r/min

Uncertainty of measurement:

3.0 dB(A)

A-weighted sound power level:

103 dB(A)@4375 r/min

Uncertainty of measurement:

3.0 dB(A)

Vibration on seat (EN1032, ISO 5008):

Not exceed 0.7 m/s²

Uncertainty of measurement:

1.5 m/s²

Vibration on handlebar (EN1032, ISO 5008):

Not exceed 4.2 m/s²

Uncertainty of measurement:

0.4 m/s²

The figures quoted are emission levels and are not necessarily safe working levels. Whilst there is a correlation between the emission and exposure levels, this cannot be used reliably to determine whether or not further precautions are required. Factors that influence the actual level of exposure of work-force include the characteristics of the work room, the other sources of noise, etc. i.e. the number of machines and other adjacent processes, and the length of time for which an operator is exposed to the noise. Also the permissible exposure level can vary from country. This information, however, will enable the user of the machine to make a better evaluation of the hazard and risk.

SNOWMOBILE SAFETY RULES

Yamaha® endorses and encourages the safe use of all snowmobiles.
Always follow these rules to ensure your continued enjoyment of the sport.
Receive proper training and operate within your capabilities. See operator's manual for complete safety instructions.

RÈGLEMENTS DE SÉCURITÉ EN MOTONEIGE

Yamaha® endosse et encourage l'utilisation sécuritaire de toutes motoneiges.
Respectez toujours ces règlements qui vous permettront de pratiquer ce sport avec plaisir.
Obtenez la formation nécessaire et conduisez selon vos capacités.
Veuillez vous référer au manuel de l'opérateur pour les instructions complètes de sécurité.

SÄKERHETSREGLER VID SNÖSKOTERKÖRNING

Yamaha® manar till försiktighet vid snöskoterkörning. Följ alltid dessa regler när du är ute och kör.

MOOTTORIKELKAN TURVASÄÄNNÖT

Yamaha® korostaa ja kannustaa moottorikelkkojen turvallista käyttöä.
Näitä sääntöjä tarkkaan noudattaen saat kelkkailusta irti parhaan mahdollisen huvin ja hyödyn.

SIKKERHETSREGLER FOR BRUK AV SNØSCOOTER

Yamaha® oppfordrer alle til å utvise forsiktighet ved bruk av snøscootere.
Følg alltid disse reglene når du er ute og kjører.

NORME DI SICUREZZA PER LE MOTOSLITTE

Yamaha® sostiene ed incoraggia la sicurezza delle motoslitte.
Per un divertimento continuo di questo sport seguite sempre le suddette norme.

1 Don't drink and ride.
No buvez pas lorsque vous conduisez.
Kor aldrig om du är alkoholpåverkad.
Jos olet, älä kelkkaile!
Kjør aldri under påvirkning av alkohol.
Non bevete durante la guida.

2 Always wear a helmet.
Portez toujours un casque.
Hjälm ska alltid bäras.
Käytä aina suojakypärää.
Bruk alltid hjelm.
Indossate sempre il casco.

3 Watch out for thin ice/open water.
Évitez la glace mince et les trous d'eau.
Se upp för tunn is/öppet vatten.
Varo heikkoja jäitä ja avantoja.
Se opp for tynn is/åpent vann.
Attenti allo spessore/rottura del ghiaccio.

4 Use caution when crossing road/train tracks.
Soyez prudent lorsque vous traversez des routes ot des chemins de fer.
Var försiktig när du korsar vägljärnväg.
Ole varovainen kun ajat tien tai rautatien poikki.
Vær forsiktig når du krysser veier/jernbaneskinner.
Usate prudenza nell'attraversare strade/passaggi a livello.

5 Don't ride after midnight.
No conduisez pas après minuit.
Kör inte efter midnatt.
Älä ajele pekkuriuretta.
Unngå å kjøre etter midnatt.
Non guidate dopo la mezzanotte.

6 Beware of trees and other hazards.
Soyez attentif aux dangers naturels.
Se upp för träd och andra faror.
Varo puita ja muita vaaroja.
Se opp for trær og andre faror.
Attenti agli alberi e ai diversi ostacoli.

7 Always use a solid hitch for towing.
Assurez-vous d'avoir une attache solide pour remorquer.
Använd alltid stel koppling vid bogsering.
Käytä aina vahvoja vetoliitteitä.
Bruk alltid solid slepeutstyr for tauing.
Usate un gancio fisso per il traino.

8 Observe proper rider capacity.
A. Maximum one rider on 1-Up sleds.
B. Maximum two riders on 2-Up sleds.
Respectez le nombre recommandé de passagers.
A. Maximum un passager sur les modèles réguliers.
B. Maximum deux passagers sur les modèles à 2-Niveaux.
Begränsa antal åkande.
A. Enkeldyna: Endast förare.
B. Dubbeldyna: Föraren och en passagerare.
Ota huomioon kuormitusrajat.
A. Vain yksi henkilö yhdan istuttavaan kelkkaan.
B. Korkeintaan kaksi kahden hengen kelkkaan.
Vær oppmerksom på passasjerkapasiteten.
A. Maks. En person på en-setere scootere.
B. Maks. To personer på to-setters scootere.
Osservate la capienza dei veicolo.
1-posto: Massimo 1 passeggero.
2-posti: Massimo 2 passeggeri.

9 Check controls and maintain your machines.
Vérifiez les commandes et entretenez votre véhicule.
Kontrollera reglage och underhåll din maskin.
Tarkista kaikki säädöt ja pidä kelkeesi kunnossa.
Sjekk instrumentene og hold scooteren vedlike.
Controllate i comandi ed eseguite la manutenzione.

10 Be of legal age.
Soyez d'âge légal.
Respektera åldersgränsen.
Ööda kunnos saavutat vaaditun ikärajan.
Fører må være over aldersgrensen.
Dovete essere maggiorenni.

11 Read and understand your Operator's Manual.
Lisez et comprenez votre Manuel de l'opérateur.
Läs och förstå Instruktionsboken.
Lue ja ymmärrä mitä Kayttooppaassa sanotaan.
Les og forstå Brukerhåndboken.
Leggete attentamente il Manuale di Guida.

12 Obey all local laws and regulations and use common sense.
Obéissez aux lois et recommandations locales et usez de bon sens.
Följ lagar och lokala bestämmelser. Använd sunt förnuft.
Noudata kaikkia lakeja ja paikallismääräyksiä, ja käytä myös tervettä järkeä.
Overhold lokale lover og regelverk og bruk sunn fornuft.
Osservate tutte le norme di legge nazionali.

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