

ski-doo®

OPERATOR'S GUIDE SUPPLEMENT 2003

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This supplement must be used in conjunction with 2003 *Operator's Guide* (P/N 484 100 081).



WARNING

Read this guide thoroughly.
It contains important safety information.

LEGEND

Sport V-1000
SE 800 SDI

GRAND TOURING

Sport V-1000
SE 800 SDI



2 1 9 0 0 0 3 0 1

SAFETY WARNING

Disregarding any of the safety precautions and instructions contained in this *Operator's Guide*, *Safety Handbook*, *Safety Videocassette* or on-product warnings may result in injury, including the possibility of death.

This *Operator's Guide*, the *Safety Handbook* and *Safety Videocassette* should remain with the unit at time of resale.

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GRAND TOURING™

4-TEC™

DESS™

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2003 SKI-DOO OPERATOR'S GUIDE SUPPLEMENT

This supplement is applicable to the following models:

Legend™ SPORT V-1000 (4-TEC™)

Legend™ SE 800 SDI (2-TEC)

Grand Touring™ SPORT V-1000 (4-TEC)

Grand Touring™ SE 800 SDI (2-TEC)

Dear operator, informations in the 2003 ZX Series Operator's Guide (P/N 484 100 081) also apply to the above listed models except for the following.

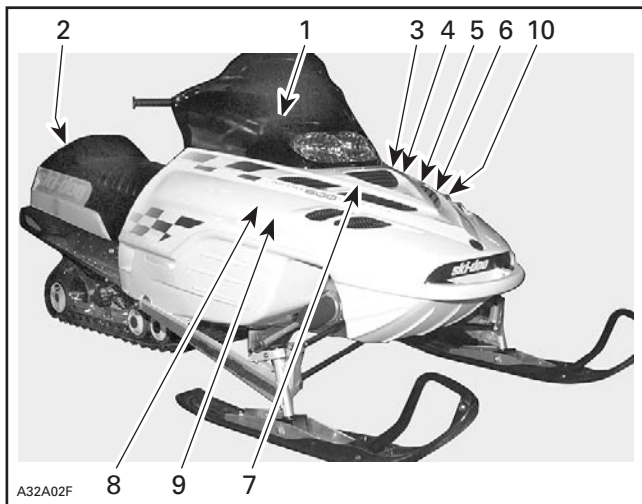
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ON-VEHICLE IMPORTANT INSTRUCTIONS

The following instructions are on your snowmobile. If missing or damaged, the decals can be replaced free of charge. See an authorized SKI-DOO dealer.

Please read the following instructions carefully before operating snowmobile.



TYPICAL — LOCATION OF IMPORTANT INSTRUCTIONS

Instruction 1

SINGLE SEAT MODELS

WARNING

- Read and follow all warning labels & operator's guide/safety handbook before operation.
 - Severe injury or death can result from ignoring warnings or through improper use of snowmobile.
 - Before starting engine, check:** •If throttle lever returns to its initial position when released. •All guards are in place.
 - The hood is closed and the clutch access door is installed. •Parking brake is applied.
 - After starting, check proper operation of:** •Engine emergency cut-off switch and all controls.
 - Before operating the vehicle:** •Make sure parking is fully disengaged.
 - Drive carefully.
- This vehicle is designed for operator only. "NO PASSENGER".

AVERTISSEMENT

- Lisez et respectez tous les avertissements contenus dans le guide du conducteur/guide de sécurité, avant toute mise en marche.
 - Le fait de passer outre aux avertissements ou d'utiliser la motoneige de façon inadéquate peut entraîner de graves blessures ou la mort.
 - Avant de démarrer le moteur, s'assurer que:** •La manette d'accélérateur revienne à sa position initiale lorsque relâchée.
 - Les gardes soient en place. •Le capot soit fermé et le panneau d'accès de la poulie soit installé. •Le frein de stationnement soit appliqué.
 - Après démarrage, s'assurer que:** •L'interrupteur d'arrêt d'urgence du moteur et tous les contrôles fonctionnent normalement.
 - Avant d'utiliser le véhicule:** •S'assurer que le frein de stationnement soit complètement relâché.
 - Conduisez prudemment.
- Ce véhicule est conçu pour un conducteur seulement. "AUCUN PASSAGER".

DOUBLE SEAT MODELS

WARNING

- Read and follow all warning labels & operator's guide/safety handbook before operation.
- Severe injury or death can result from ignoring warnings or through improper use of snowmobile.
- Before starting engine, check:** •If throttle lever returns to its initial position when released. •All guards are in place.
- The hood is closed and the clutch access door is installed. •Parking brake is applied.
- After starting, check proper operation of:** •Engine emergency cut-off switch and all controls.
- Before operating the vehicle:** •Make sure parking is fully disengaged.
- Drive carefully.

AVERTISSEMENT

- Lisez et respectez tous les avertissements contenus dans le guide du conducteur/guide de sécurité, avant toute mise en marche.
- Le fait de passer outre aux avertissements ou d'utiliser la motoneige de façon inadéquate peut entraîner de graves blessures ou la mort.
- Avant de démarrer le moteur, s'assurer que:** •La manette d'accélérateur revienne à sa position initiale lorsque relâchée.
- Les gardes soient en place. •Le capot soit fermé et le panneau d'accès de la poulie soit installé. •Le frein de stationnement soit appliqué.
- Après démarrage, s'assurer que:** •L'interrupteur d'arrêt d'urgence du moteur et tous les contrôles fonctionnent normalement.
- Avant d'utiliser le véhicule:** •S'assurer que le frein de stationnement soit complètement relâché.
- Conduisez prudemment.

516 001 229

A02A0HA

Instruction 2



A01A1ZD

ALL MODELS

Instruction 3

CAUTION

- To comply with noise regulations, this engine is designed to operate with an air intake silencer.
- Operation without air intake silencer or with one not properly installed may cause engine damage.

ATTENTION

- Le moteur a été conçu pour fonctionner avec ce silencieux d'admission afin de se conformer aux lois et règlements relatifs au bruit.
- Son absence ou une mauvaise installation peut endommager le moteur.

516 001 191

A01A2EA

ALL MODELS

Instruction 4

⚠ WARNING

This guard must always
be in place when engine is running.

⚠ AVERTISSEMENT

Ce garde-courroie doit toujours être
en place lorsque le moteur fonctionne.

516 001 190

A01A2FA

ALL MODELS

Instruction 5



A01A24D

TYPICAL — ALL MODELS

Instruction 6

SUSPENSION ADJUSTMENT CHART/TABLEAU DES RÉGLAGES DE LA SUSPENSION			
FRONT SUSPENSION (SKI)/SUSPENSION AVANT (SKI)			
NOT APPLICABLE			
SANS OBJET			
REAR SUSPENSION/SUSPENSION ARRIÈRE ADJUST ACCORDING TO LOAD/ RÉGLER SELON LA CHARGE			
(LB)	LOAD CHARGE	(kg)	REAR SPRING RESSORT ARRIÈRE
up to 125		jusqu'à 57	1
125 to 150		57 à 68	2
150 to 175		68 à 79	3
175 to 200		79 à 91	4
			NOT APPLICABLE
			SANS OBJET
<small>FOR LOADS EXCEEDING RANGE SHOWN ABOVE, CONSULT YOUR DEALER. SI LES CHARGES EXCÈDENT LES PLAGES MONTREES CI-HAUT, CONSULTEZ VOTRE CONCESSIONNAIRE.</small>			
			418 0017 01

A01A25D

TYPICAL — ALL MODELS

Instruction 7

WARNING	AVERTISSEMENT
<p>Certain components in the engine compartment may be very hot. Direct contact may result in skin burn.</p>	<p>Certaines composantes dans l'habitacle du moteur peuvent être très chaudes. Le contact direct sur la peau peut causer des brûlures.</p>
516 001 297	
A32A1GA	

ALL MODELS

Instruction 8



A32A1HA

ALL MODELS

Instruction 9

CAUTION

Use XP-S II synthetic injection oil
(or equivalent)
See operator's guide

ATTENTION

Utilisez de l'huile synthétique XP-S II
(ou équivalent)
Voir guide du conducteur

516 001 794

A32A1EA

2-TEC MODELS

Instruction 10

CAUTION

Checking Engine Oil Level

- Snowmobile must be on a level surface.
- Leave engine running at idle for 30 seconds.
- Stop engine & wipe the dipstick.
- Dip stick must be completely screwed in before checking oil level.
- Use Bombardier synthetic oil 0W40.

ATTENTION

Vérification du niveau d'huile moteur

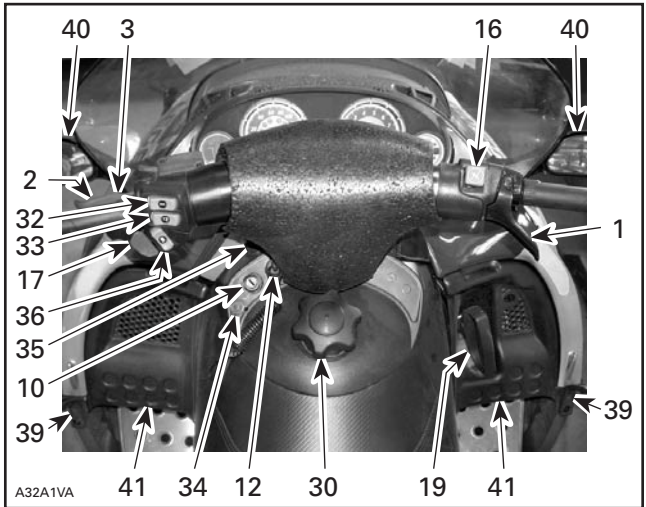
- La motoneige doit être au niveau.
- Laisser tourner le moteur au ralenti pendant 30 secondes.
- Arrêter le moteur et nettoyer la jauge de niveau d'huile.
- S'assurer que la jauge de niveau d'huile est complètement vissée avant de mesurer le niveau d'huile.
- Utiliser de l'huile synthétique Bombardier 0W40.

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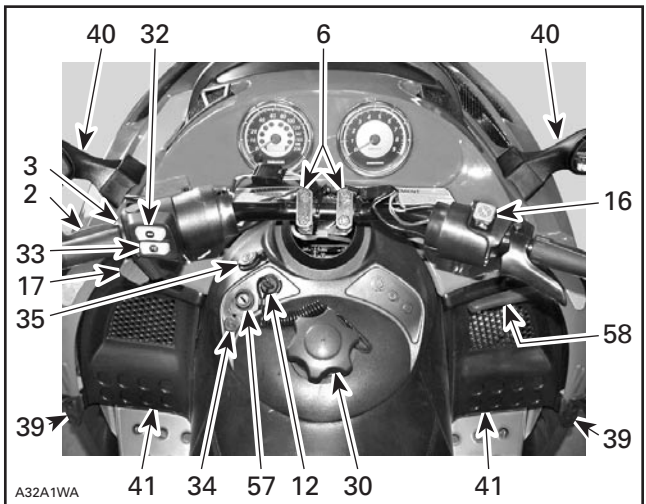
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4-TEC MODELS

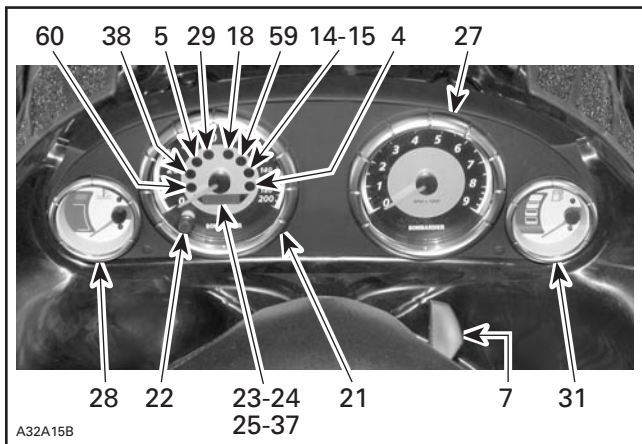
CONTROLS/INSTRUMENTS



2-TEC MODELS



4-TEC MODELS



TYPICAL — 2-TEC AND 4-TEC MODELS

NOTE: Electric fuel gauge and temperature gauge are optional on 4-TEC models. See description or numbered items in *2003 ZX Series Operator's Guide* (P/N 484 100 081) except for the following.

10) Start/RER Switch

Start Mode — 2-TEC Models (see item 57 for 4-TEC models)

Turn ignition key clockwise completely to activate electric starter in order to start engine.

CAUTION: Do not turn key for more than 10 seconds. Wait 15 seconds before restarting to let starter cool down.

Release key immediately when engine has started.

If engine does not start on first try, wait a few seconds before turning key again to let starter cool down.

NOTE: Engine may be manually started with rewind starter if necessary.

If starter does not operate, check starting system fuse condition. Refer to FUSES below.

RER Mode — 2-TEC Models Only

Shifting in Reverse

WARNING

Shifting to reverse mode on these snowmobiles is done by turning the ignition key clockwise completely and releasing it when the engine is running. Wait until the reverse alarm sounds and the DESS/RER pilot lamp begins to blink in the dash board before operating throttle to proceed in reverse. The reverse speed of these snowmobiles is not limited. Always proceed with caution as fast reverse could result in loss of vehicle stability and control. Come to complete stop before turning the ignition key clockwise completely and releasing it. Always remain seated and apply the brake before shifting. Ensure the path behind is clear of obstacles or bystanders before proceeding.

With the snowmobile completely stopped and engine running at idle, rotate the ignition key clockwise completely and release key.

The DESS™/RER™ pilot lamp will blink and a reverse alarm will sound once every second with a half a second duration when the snowmobile is engaged in reverse.

Apply throttle slowly and evenly. Allow drive pulley to engage then accelerate carefully.

Shifting in Forward

With the snowmobile completely stopped and engine running at idle, rotate the ignition key clockwise completely and release key.

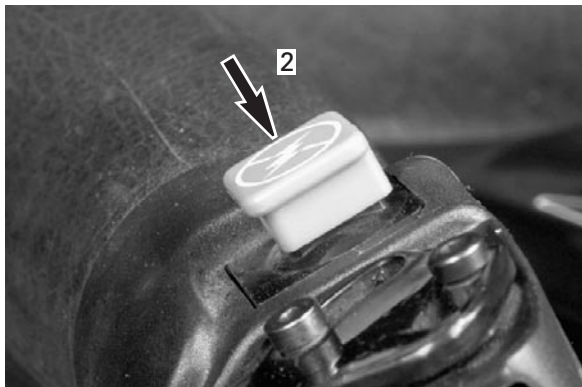
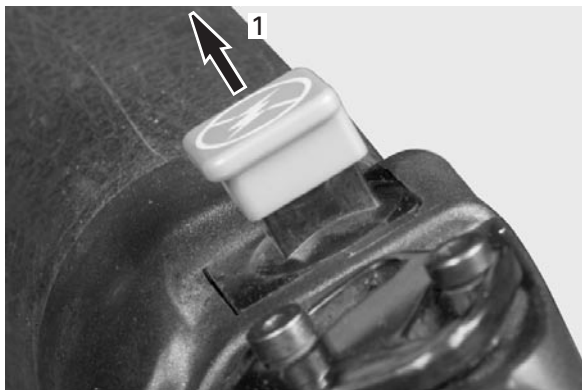
DESS/RER pilot lamp and reverse alarm will stop.

Apply throttle slowly and evenly. Allow drive pulley to engage then accelerate carefully.

16) Engine Cut-Out Switch

This push-pull type switch is located on the right side of the handle-bar. To stop the engine, push the button to the lower position (OFF) and simultaneously apply the brakes. To restart, button must be at the upper position (ON).

NOTE: When shutting-off engine with the engine cut-out switch, all instruments will keep functioning for 30 seconds before auto-shut off.



A30E03A

TYPICAL

1. ON
2. OFF

All operators of the snowmobile should familiarize themselves with the function of this device by using it several times on first outing and whenever stopping the engine thereafter. Thereby this engine cut-out procedure will become a reflex and will prepare operators in emergency situations requiring its use.

WARNING

If the switch has been used in a an emergency caused by mechanical malfunction, the source of the malfunction should be determined and corrected before restarting engine.

21) Speedometer

Change from One Unit to the Other

NOTE: Speedometer, odometer and trip meter will have their units (kilometers or miles) changed all together.

Stop engine and open hood. Cut locking ties. Plug connectors together to change units from miles to kilometers.



KILOMETERS READING — CONNECTORS PLUGGED

Unplug to return to miles reading. Fasten connector to harness with locking ties.



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MILES READING — CONNECTORS UNPLUGGED

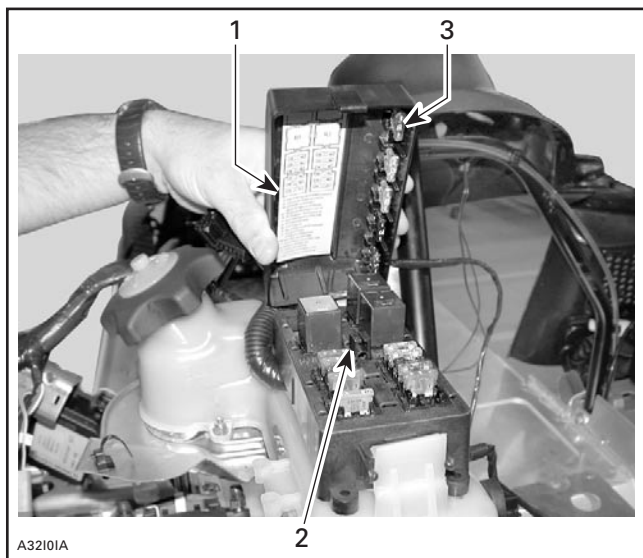
51) Fuses

All Models

To open fuse box push on cover tab and tilt cover.

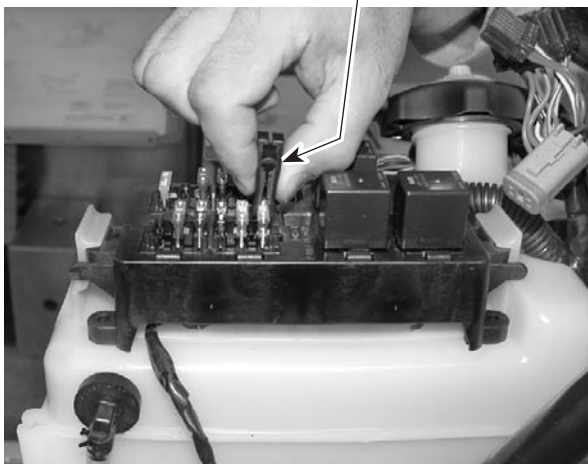


1. Push tab



A32101A

1. Fuse description decal
2. Fuse remover
3. Spare fuses



A3210JA

1. Fuse remover

54) Front Grab Handles/Front Bumper

4-TEC Models

To be used whenever snowmobile requires manual pulling.



A32H05A

1. Front grab handles

CAUTION: Do not use skis to pull or lift snowmobile. Do not lift snowmobile by the front bumper.

57) Start Switch

4-TEC Models (see item 10 for 2-TEC models)

Turn ignition key clockwise completely to activate electric starter in order to start engine.

CAUTION: Do not turn key for more than 10 seconds. Wait 15 seconds before restarting to let starter cool down.

Release key as soon as the engine starts.

If engine does not start on first try, wait a few seconds before turning key again to let starter cool down.

If starter does not operate, check starting system fuse condition. Refer to FUSES (see 51 earlier in this guide).

58) Gear Shift Lever

WARNING

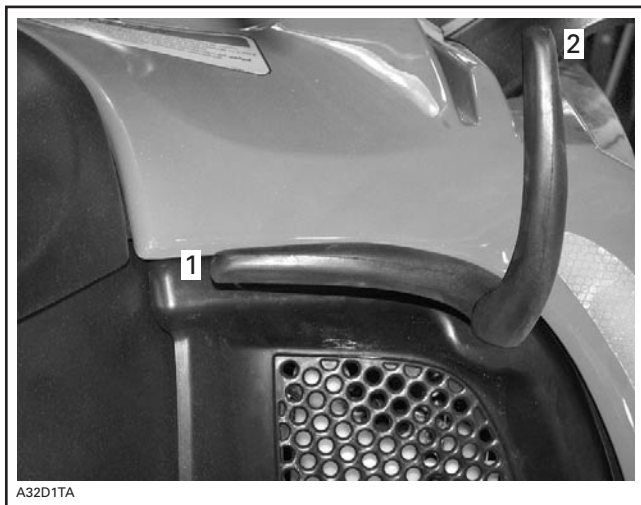
The reverse speed of these snowmobiles is not limited. Always proceed with caution as fast reverse could result in loss of vehicle stability and control. Come to complete stop before selecting reverse gear. Wait until the reverse alarm sounds before operating throttle to proceed in reverse. Always remain seated and apply the brakes before shifting. Ensure the path behind is clear of obstacles or bystanders before proceeding.

With engine running, a reverse alarm will sound when the shift lever is in reverse gear position.

A 2-position lever:

Move lever toward left side: **Forward gear.**

Move lever toward right side: **Reverse gear.**



1. *Forward*
2. *Reverse*

Shifting Procedure

With snowmobile completely stopped and engine at idle, move lever to engage in desired gear.

Do not force lever. If unable to shift, apply throttle to move snowmobile and try again.

59) Low Battery Voltage Pilot Lamp

This lamp will light up to indicate a low battery voltage condition. See an authorized SKI-DOO dealer as soon as possible.

60) Engine Management System (EMS) pilot lamp

This lamp will light up to indicate a trouble. Refer to TROUBLESHOOTING for trouble code meaning and remedy.

FUEL AND OIL

Recommended Fuel

All Models

Use regular unleaded gasoline, available from most service stations or oxygenated fuel containing less than 10% of ethanol or 5% of methanol. The gasoline used must have an octane number $(R + M)/2$ of 87 or higher.

NOTE: In most service station pump octane number corresponds to $(R + M)/2$ octane number.

CAUTION: Never experiment with other fuels or fuel ratios. The use of unrecommended fuel can result in snowmobile performance deterioration and damage to critical parts in the fuel system and engine components. Do not mistake oil reservoir cap for fuel tank cap. Oil reservoir cap is identified OIL.

WARNING

Always stop engine before refueling. Open cap slowly. If a differential pressure condition is noticed (whistling sound heard when loosening fuel tank cap) have vehicle inspected and/or repaired before further operation. Fuel is flammable and explosive under certain conditions. Never use an open flame to check fuel level. Never smoke or allow flame or spark in vicinity. Always work in a well-ventilated area. Never top up the fuel tank before placing the vehicle in a warm area. As temperature increases, fuel expands and may overflow. Always wipe off any fuel spillage from the vehicle.

Fuel System Antifreeze

When using oxygenated fuel, additional gas line antifreeze or water absorbing additives are not required and should be not used.

When using non-oxygenated fuel, we highly recommend the use of isopropyl base gas line antifreeze in a proportion of 150 mL (5 U.S. oz) of gas line antifreeze added to 40 liters (10-1/2 U.S. gal) of gas.

This precaution is in order to reduce the risk of fuel line freezing.

IMPORTANT: Use only methyl hydrate free gas line antifreeze.

Recommended Oil

2-TEC Models

CAUTION: Use only oil that flows at - 40°C (- 40°F).

Oil is contained in the injection oil reservoir.

Use only two-stroke engine injection oil, sold by authorized SKI-DOO dealers.

MODEL	OIL TYPE
GT SE 800 SDI Legend SE 800 SDI	BOMBARDIER FORMULA XP-S II synthetic injection oil ①

① **CAUTION:** The BOMBARDIER Formula XP-S II oil is specially formulated and tested for the severe requirements of this engine. Use of any other brand two-stroke oil may void the limited warranty. Use only BOMBARDIER FORMULA XP-S II oil. There is no known equivalent on the market for the moment. If a high quality equivalent were available, it could be used.

The BOMBARDIER FORMULA XP-S II synthetic injection oil provides superior lubrication, reduced engine component wear and oil deposit, thus maintaining maximum-level performance and antifriction properties. This synthetic injection oil meets the latest ASTM and JASO standards by ensuring high biodegradability and low exhaust smoke.

CAUTION: Never use four-stroke petroleum or synthetic motor oil and never mix these with outboard motor oil. Do not use NMMA TC-W, TC-W2 or TC-W3 outboard two-stroke engine oils or ashless two-stroke engine oils. Avoid mixing different brands of API TC oil as resulting chemical reactions may cause severe engine damage.

WARNING

Wipe off any oil spills. Oil is highly flammable.

4-TEC Models

These models are equipped with a 4-stroke engine.

Use BOMBARDIER 4-stroke synthetic oil 0W40 (P/N 293 600 054 — 12 x 1L).

PRE-OPERATION CHECK LIST

ITEM	OPERATION	✓
Body including seat, footrests, lights, controls and instruments	Check that there is no snow or ice.	
Track and idler wheels	Check for free movement.	
Brake lever	Check proper action.	
Parking device	Check proper action.	
Throttle lever	Check proper action.	
Switches and lights	Check proper action. Tether cord must be attached to driver clothing eyelet.	
Skis and steering	Check for free movement and proper action.	
Fuel and oil	Check for proper level and leaks.	
Air filter	Check that there is no snow or ice.	
Adjustable features	Check for optimal adjustment and securely tightened adjustment locks.	
Storage compartment	Check for proper latching and no heavy or breakable objects.	
Vehicle vicinity	Snowmobile must be pointed away from people or objects. No one is to be standing in front of or in back of the snowmobile.	
Clothing	Be warmly dressed according to weather forecast.	

Starting the Engine

IMPORTANT: On 2-TEC models if the low battery voltage pilot lamp is on, battery would not have enough power to start the engine. In this case, use the manual rewind starter.

IMPORTANT: On 2-TEC and 4-TEC models if the battery is dead, engine cannot be started. Have the battery recharged or replaced.

- Re-check throttle control lever operation.
- Ensure that the engine cut-out switch is in the ON position.
- Ensure the tether cord cut-out cap is set in place and that the cord is attached to your clothing.
- Press START button.

NOTE: You will not feel any button movement when you press it.

WARNING

Do not apply throttle while starting.

- Release START button when engine has started.

CAUTION: Do not depress START button for more than 10 seconds. A rest period should be observed between the cranking cycles to let starter cool down.

If engine does not start on first try, wait few seconds before depressing START button again.

NOTE: 2-TEC engine may be manually started with rewind starter if necessary. There is no rewind starter on 4-TEC engine.

Emergency Starting

2-TEC Models

Only 2-TEC models are equipped with an emergency starting device. Refer to *2003 ZX Series Operator's Guide* (P/N 484 100 081).

FLUID LEVEL

CAUTION: Vehicle must be on a level surface before checking any fluid levels.

Engine Oil Level

2-TEC Models

Follow the procedure described in the *2003 ZX Series Operator's Guide* (P/N 484 100 081).

4-TEC Models

Snowmobile must be on a level surface.

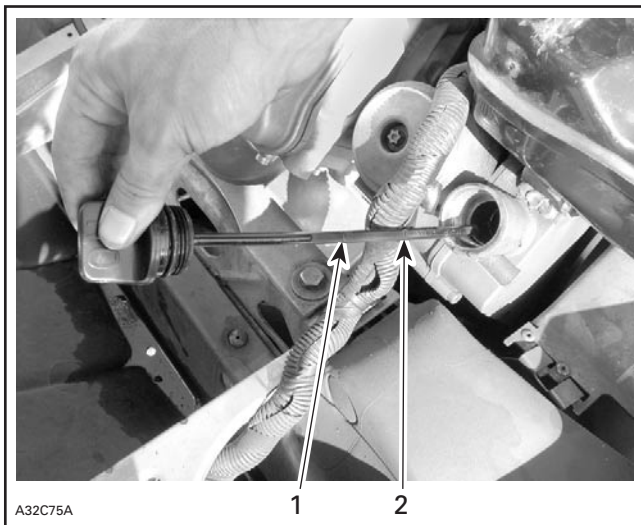
Leave engine running at idle for 30 seconds.

Stop engine and wipe the dipstick.

Dipstick must be completely screwed in before checking oil level.

Oil level must be between minimum and maximum marks on dipstick.

There is a capacity of 500 mL (17 U.S. oz) between the two marks.



1. Maximum
2. Minimum

Add BOMBARDIER synthetic oil 0W40 through dipstick hole as required.

Reinstall dipstick.

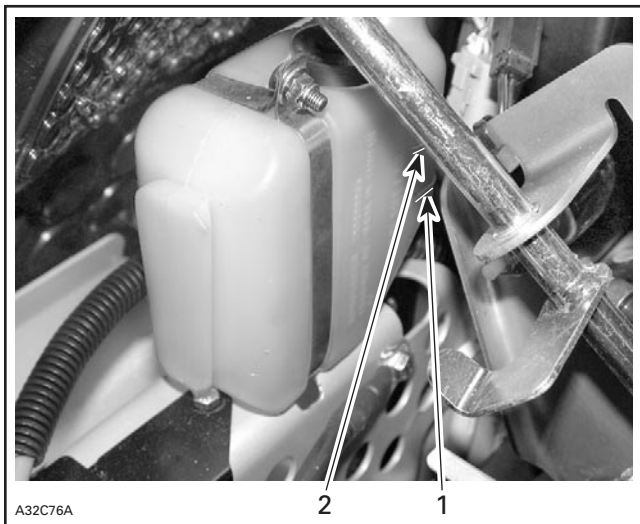
Coolant System

2-TEC Models

Follow the procedure described in the *2003 ZX Series Operator's Guide* (P/N 484 100 081).

4-TEC Models

Check coolant level in expansion reservoir. When the engine is cold, the level must be between minimum and maximum marks.



1. Minimum
2. Maximum

Use a blend of 50/50 distilled water and ethylene-glycol (P/N 293 600 038 — 16 x 1L). That blend will protect the system from freezing as low as - 37°C (- 35°F).

PERIODIC MAINTENANCE CHART

WARNING

Observe WARNINGS and CAUTIONS mentioned throughout this guide which are pertinent to the item being checked. When component conditions seem less than satisfactory, replace with genuine BOMBARDIER parts or approved equivalents.

Some items may not apply to your particular model. Refer to LUBRICATION AND MAINTENANCE in *Shop Manual* for more details.

① 10-HOUR OR 500 km (300 miles) INSPECTION

(To be performed by an authorized SKI-DOO dealer)

② WEEKLY OR EVERY 240 km (150 miles)

③ MONTHLY OR EVERY 800 km (500 miles)





④ ONCE A YEAR OR EVERY 3200 km (2000 miles)







⑤ ONCE A YEAR OR EVERY 6000 km (3700 miles)

⑥ STORAGE (To be performed by an authorized SKI-DOO dealer)

⑦ PRESEASON PREPARATION

(To be performed by an authorized SKI-DOO dealer)

PERIODIC MAINTENANCE CHART		①	②	③	④	⑤	⑥	⑦
	Rewind Starter Lubrication and Starting Rope Condition (2-TEC)						✓	✓
	Engine Nuts and Screws	✓			✓		✓	
	Exhaust System	✓		✓			✓	
	Engine Lubrication						✓	
	Cooling System Condition	✓			✓			✓
	Coolant Replacement						✓	
	Condition of Seals						✓	✓
	Oil and Filter Replacement (4-TEC)	✓				✓		
	Injection Oil Filter Condition (2-TEC)			✓				
	Injection Oil Filter Replacement (2-TEC)							✓
	Injection Oil Pump Adjustment (2-TEC)	✓			✓			✓
	Fuel Stabilizer						✓	
	Fuel Filter Replacement							✓
	Fuel Lines and Connections	✓					✓	✓
	Throttle Cable Inspection	✓			✓		✓	✓
	Air Filter Cleaning			✓				✓

PERIODIC MAINTENANCE CHART		①	②	③	④	⑤	⑥	⑦
	Drive Belt Condition	✓	✓					✓
	Condition of Drive and Driven Pulleys	✓		✓			✓	
	Cleaning of Drive and Driven Pulleys				✓			✓
	Retorquing of Drive Pulley Screw	✓			✓			✓
	Driven Pulley Preload	✓			✓			
	Brake Fluid Level	✓	✓					✓
	Brake Fluid (change once a year)						✓	
	Brake Condition	✓	✓				✓	✓
	Drive Chain Tension	✓		✓			✓	
	Chaincase Oil Level	✓		✓				✓
	Chaincase Oil Change	✓					✓	
	Lubrication of Drive Axle End Bearing**	✓		✓			✓	
	Steering and Front Suspension Mechanism Lubrication**	✓		✓			✓	
	Steering and Front Suspension Mechanism Condition	✓		✓			✓	
	Wear and Condition of Skis and Runners	✓	✓				✓	
	Steering and Ski Leg Adjustment	✓		✓			✓	
	Suspension Adjustments	AS REQUIRED						
	Suspension Lubrication**			✓			✓	
	Suspension Condition	✓		✓	✓		✓	
	Suspension Stopper Strap Condition				✓		✓	
	Track Condition	✓		✓			✓	
	Track Tension and Alignment	✓	AS REQUIRED					
	Spark Plugs* Condition	✓		✓				✓
	Battery (if so equipped)	✓		✓			✓	✓
	Headlight Beam Aiming				✓			✓
	Wiring Harnesses, Cables and Lines	✓		✓			✓	
	Operation of Lighting System (HI/LO Beam, Brake Light, etc.), Test Operation of Engine Cut-Out Switch and Tether Cut-Out Switch	✓	✓					✓
	Rags in Air Intake and Exhaust System						✓	✓
	Engine Compartment	✓		✓			✓	
	Vehicle Cleaning and Protection	✓		✓			✓	

* Before installing new properly gapped spark plugs at pre-season preparation, it is suggested to burn excess storage oil by starting the engine with the old spark plugs. Only perform this operation in a well ventilated area.

** Lubricate whenever the vehicle is used in wet conditions (wet snow, rain, puddles).

MAINTENANCE

Belt Guard Removal and Installation

WARNING

Engine should be running only when belt guard is secured in place.

2-TEC Models

Follow the procedure described in the *2003 ZX Series Operator's Guide* (P/N 484 100 081).

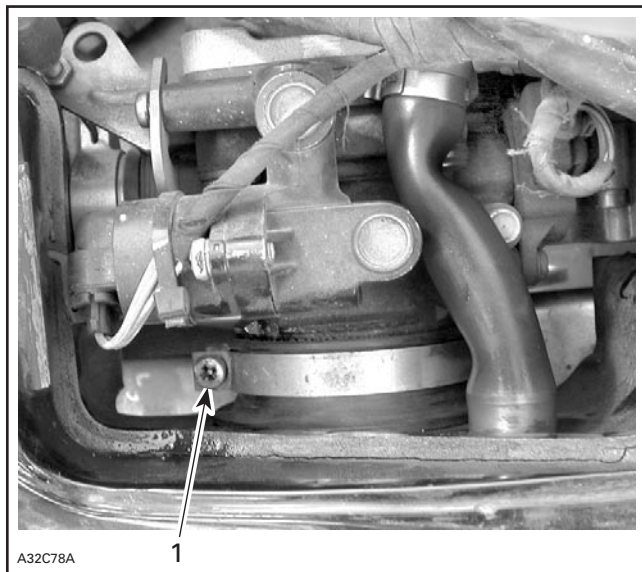
4-TEC Models

1. Turn off engine cut-out switch. Open hood.
2. Remove air silencer access panel.



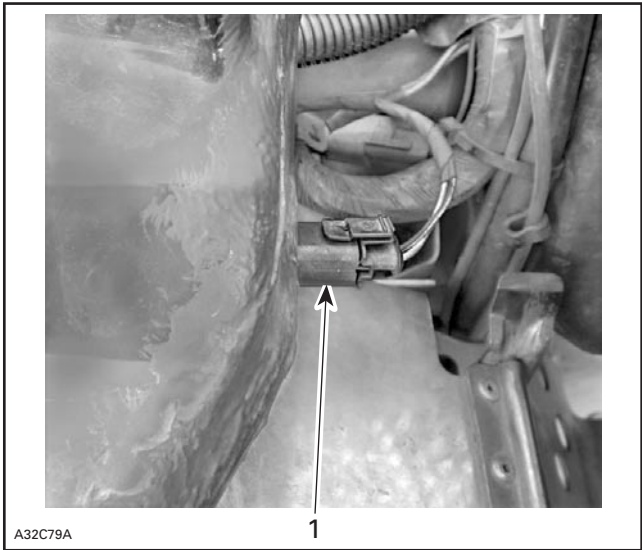
1. Access panel

3. Loosen collar screw on air silencer grommet.



1. Collar screw

4. Disconnect air temperature sensor at rear of air silencer.



1. Air temperature sensor

5. Then, follow the procedure described in the *2003 ZX Series Operator's Guide* (P/N 484 100 081).

At installation do not forget to connect air temperature sensor otherwise a trouble code will appear.

TRA Drive Pulley Adjustment

2-TEC Models

Follow the procedure described in the *2003 ZX Series Operator's Guide* (P/N 484 100 081).

4-TEC Models

General

From factory TRA drive pulley adjustment screws are set to position 3. This position allows the best compromise between acceleration, top speed and fuel economy.

Position 1 or 2 would provide the best fuel economy. Top speed would be reduced.

Position 4 would give the best acceleration. Fuel economy would be reduced.

Adjustment

To gain access to drive pulley, refer to BELT GUARD REMOVAL AND INSTALLATION above in order to remove air silencer.

Follow the procedure described in the *2003 ZX Series Operator's Guide* (P/N 484 100 081).

TROUBLESHOOTING

The following chart is provided to help in diagnosing the probable source of simple troubles. You may be able to solve many of these problems rather quickly, but others may require the skills of a mechanical technician. In such cases, consult an authorized SKI-DOO dealer for servicing.

Monitoring Beeper Coded Signals

CODED SIGNALS	POSSIBLE CAUSE	REMEDY
2 short beeps (while installing tether cord cap on DESS post). DESS/RER pilot lamp also blinks.	<ul style="list-style-type: none">• Confirms that proper tether cord cap is installed	Engine can be started.
1 short beep every 1.5 seconds (while installing tether cord cap on DESS post). DESS/RER pilot lamp also blinks. Engine cannot reach pulley engagement speed. Vehicle cannot be driven.	<ul style="list-style-type: none">• Bad DESS system connection.• Defective tether cord cap.• Dirt or snow in tether cord cap.• Defective DESS post.	Reinstall tether cord cap correctly over post. Use another programmed tether cord cap. Clean tether cord cap. Refer to an authorized SKI-DOO dealer.
1 long beep per second. DESS/RER pilot lamp also blinks.	<ul style="list-style-type: none">• Reverse is selected.	Vehicle can be driven in reverse.
3 short beeps per second. DESS/RER pilot lamp also blinks. Engine cannot reach pulley engagement speed. Vehicle cannot be driven.	<ul style="list-style-type: none">• Wrong tether cord cap is installed.	Install proper tether cord cap.
3 short beeps per second. Engine overheating pilot lamp also blinks.	<ul style="list-style-type: none">• Engine is overheating.	Stop engine immediately and allow to cool. If problem repeats, see an authorized SKI-DOO dealer.

CODED SIGNALS	POSSIBLE CAUSE	REMEDY
3 short beeps per second. Oil pilot lamp also lights up.	<ul style="list-style-type: none"> • Low oil pressure on 4-TEC models. 	Stop engine immediately and check oil level and top it. If problem repeats, see an authorized SKI-DOO dealer.
3 short beeps per second. Battery pilot lamp also blinks.	<ul style="list-style-type: none"> • Low battery voltage. 	Have battery and charging system checked by an authorized SKI-DOO dealer.
4 short beeps every 2 minutes. Oil pilot lamp also lights up.	<ul style="list-style-type: none"> • Low oil level on 2-TEC models. 	Check oil level and replenish as soon as possible.
4 short beeps every 2 minutes. Engine pilot lamp blinks 3 times per second.	<ul style="list-style-type: none"> • Too high battery voltage. • DESS system has detected a shorted key installed on DESS post. 	Have battery and charging system checked by an authorized SKI-DOO dealer. Use another programmed tether cord cap.
4 short beeps every 2 minutes. Engine pilot lamp lights up.	<ul style="list-style-type: none"> • Engine management system (EMS) failure. 	Have EMS checked by an authorized SKI-DOO dealer.
4 short beeps every 2 minutes. Engine pilot lamp blinks 1 time per second.	<ul style="list-style-type: none"> • Engine management system (EMS) failure. 	Have EMS checked by an authorized SKI-DOO dealer.

SYMPTOM: *Electric starter does not crank and no power to gauges.*

POSSIBLE CAUSES	WHAT TO DO
1. Engine cut-out switch in the OFF position or tether cord cap away from switch post.	Place engine cut-out switch in the ON position and install tether cord cap on switch post.
2. MPEM/fuel pump fuse burnt out.	Replace MPEM/fuel pump fuse with an appropriate rated fuse.

SYMPTOM: *Electric starter does not crank and low battery voltage pilot lamp is on.*

POSSIBLE CAUSES	WHAT TO DO
1. Battery voltage is too low to allow electric starting.	On 2-TEC models try to start engine with rewind starter and have battery and charging system checked by an authorized SKI-DOO dealer. On 4-TEC models have battery and charging system checked by an authorized SKI-DOO dealer.

SYMPTOM: *Engine is cranked over but fails to start.*

POSSIBLE CAUSES	WHAT TO DO
1. Flooded engine (spark plug wet when removed).	Remove wet spark plug and crank engine several times. Install clean dry properly gapped spark plug. Start engine following usual starting procedure. If engine continues to flood, see an authorized SKI-DOO dealer.
2. No fuel to the engine (spark plug dry when removed).	Check fuel tank level; check condition of fuel lines and their connections. If a failure of the fuel pump has occurred, contact an authorized SKI-DOO dealer.
3. Spark plug/ignition (no spark).	Remove spark plug(s) then reconnect to spark cap. Start engine with spark plug(s) grounded to engine away from spark plug hole. If no spark appears, replace spark plug with new ones properly gapped. If trouble persists, contact an authorized SKI-DOO dealer.
4. Engine compression.	As the engine is cranked over with the rewind starter, "cycles" of resistance should be felt as piston goes past top dead center (each piston). If no pulsating resistance is felt, it suggests a major loss of compression. Contact an authorized SKI-DOO dealer.

SYMPTOM: Engine lacks acceleration or power.

POSSIBLE CAUSES	WHAT TO DO
1. Fouled or defective spark plug.	Check item 3 of "Engine is cranked over but fails to start".
2. Lack of fuel to engine.	Check item 2 of "Engine is cranked over but fails to start".
3. Drive belt worn too thin.	If the drive belt has lost more than 3 mm (1/8 in) of its original width, it will affect vehicle performance.
4. Drive and driven pulleys require servicing.	Contact an authorized SKI-DOO dealer.
5. Engine is overheating.	Check coolant level, pressure cap, thermostat and for air locks in cooling system.

SYMPTOM: On 2-TEC models engine cannot exceed 6400 RPM.

POSSIBLE CAUSES	WHAT TO DO
1. Faulty injector.	Contact an authorized SKI-DOO dealer.

SYMPTOM: Engine backfires.

POSSIBLE CAUSES	WHAT TO DO
1. Faulty spark plug (carbon accumulation) or wrong gap.	See item 3 of "Engine is cranked over but fails to start".
2. Engine is running too hot.	See item 5 of "Engine lacks acceleration or power".
3. Ignition timing is incorrect or there is an ignition system failure.	Contact an authorized SKI-DOO dealer.

SYMPTOM: <i>Engine misfires.</i>	
POSSIBLE CAUSES	WHAT TO DO
1. DESS did not read cap code. Engine cannot reach pulley engagement speed.	DESS pilot lamp blinks once every 1.5 seconds. Properly install tether cord cap.
2. DESS has read a different code than the one programmed. Engine cannot reach pulley engagement speed.	DESS pilot lamp blinks rapidly (3 times per second). Install a cap (key) for which this snowmobile was programmed.
3. Fouled/defective/worn spark plugs or wrong gap.	Clean/verify spark plug and heat range. Replace as required.
4. Too much oil supplied to engine (SDI only).	Improper oil pump adjustment, refer to an authorized SKI-DOO dealer.
5. Water in fuel.	Drain fuel system and refill with fresh fuel.

SYMPTOM: <i>Snowmobile cannot reach full speed.</i>	
POSSIBLE CAUSE	WHAT TO DO
1. DESS did not read cap code. Engine cannot reach pulley engagement speed.	DESS/RER pilot lamp blinks once every 1.5 seconds. Properly install tether cord cap.
2. DESS has read a different code than the one programmed. Engine cannot reach pulley engagement speed.	DESS pilot lamp blinks rapidly (3 times per second). Install a cap (key) for which this snowmobile was programmed.
3. Drive belt.	Check item 3 of "ENGINE LACKS ACCELERATION OR POWER".
4. Incorrect track adjustment.	See MAINTENANCE and/or an authorized SKI-DOO dealer for proper alignment and tension adjustments.
5. Pulleys misaligned.	Contact an authorized SKI-DOO dealer.
6. Incorrect drive pulley adjustment.	See MAINTENANCE and/or an authorized SKI-DOO dealer for proper drive pulley adjustment.
7. Engine.	See items 3 to 8 of "ENGINE LACKS ACCELERATION OR POWER".

SPECIFICATIONS

GENERAL		LEGEND SE 800 SDI GRAND TOURING SE 800 SDI	LEGEND SPORT V-1000 GRAND TOURING SPORT V-1000
Engine			
- Maximum power engine speed	± 100 RPM	7850	7250
Drive belt			
- Number		417 300 166	417 300 197
- New belt width	mm (in)	34.67 (1-23/64)	36.60 (1-7/16)
- Wear limit width	mm (in)	35.27 (1-25/64)	34.20 (1-11/32)
Spark plug			
- Type		NGK BR 9 ECS	NGK DCPR8E
- Gap	± 0.05 mm (± .002 in)	0.80 (.031) ⑧	0.75 (.030)
Track			
- Tension	mm (in)	30 to 35 (1-3/16 to 1-3/8) ①	30 to 35 (1-3/16 to 1-3/8) ①
- Alignment		②	②
FLUIDS			
Fuel			
- Type		③	③
- Tank capacity	L (U.S. gal)	37.0 (9.8)	37.0 (9.8)
Oil (engine)			
- Type		④	⑤
- Capacity	L (U.S. oz)	3.5 (118)	3.4 (115)
Chaincase/Transmission Oil			
- Type		⑥	⑥
- Capacity	mL (U.S. oz)	250 (8.5)	250 (8.5)
Cooling System			
- Type		⑦	⑦
- Capacity	L (U.S. oz)	3.8 (128)	3.8 (128)
Brake System Fluid			
- Type		DOT 4 ⑨	DOT 4 ⑨

- ① Measure gap between slider shoe and bottom inside of track when exerting a downward pull of 7.3 kg (16 lb) to the track.
- ② Equal distance between edges of track guides and slider shoes.
- ③ Regular unleaded gasoline with a minimum octane number of 87 (R + M)/2.
- ④ BOMBARDIER Formula XP-S II synthetic injection oil (P/N 293 600 245 — 12 x 1 L).
- ⑤ BOMBARDIER 4-stroke synthetic oil 0W40 (P/N 293 600 054 — 12 x 1L)
- ⑥ BOMBARDIER synthetic chaincase oil (P/N 413 803 300) (12 x 355 mL).
- ⑦ Blend of 50/50 distilled water and ethylene-glycol (P/N 293 600 038 — 16 x 1L). That blend will protect the system from freezing as low as - 37°C (- 35°F).
- ⑧ **CAUTION: Do not attempt to adjust gap on spark plug BR 9 ECS.**
- ⑨ SRF (DOT 4) (P/N 293 600 063) or GTLMA (DOT 4) (P/N 293 600 062).

Bombardier reserves the right at any time to discontinue or change specifications, designs features, models, prices or equipment without incurring obligation.