

# OPERATOR'S GUIDE

## Formula



# 1993



# Formula

**MX/MX II/MX XTC R  
PLUS/PLUS E/PLUS II/  
PLUS EFI/  
GRAND TOURING/  
PLUS XTC/  
PLUS X  
MACH 1/MACH II/MACH 1 XTC**

## SAFETY WARNING

Disregarding any of the safety precautions and instructions contained in this *Operator's Guide*, the *Warranty Guide and Vehicle Logbook* and the *Snowmobiler's Safety Handbook* could cause injury, including the possibility of death.

This *Operator's Guide*, the *Warranty Guide and Vehicle Logbook* and the *Snowmobiler's Safety Handbook* should remain with the vehicle at the time of resale.

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# NOTICE


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The *Operator's Guide*, the *Warranty Guide and Vehicle Logbook* and the *Snowmobiler's Safety Handbook* have been prepared to acquaint the owner/operator or passenger of a new snowmobile with the various vehicle controls, maintenance and safe operating instructions. **Each is indispensable for the proper use of the product, and should be kept with the vehicle at all times.**

Should you have any questions pertaining to the warranty and its application, please consult the "Often Asked Questions" section of the *Warranty Guide and Vehicle Logbook*, or an authorized dealer.

These guides use the following symbols.

 **WARNING** : Identifies an instruction which, if not followed, could cause serious personal injuries including possibility of death.

 **CAUTION** : Denotes an instruction which, if not followed, could severely damage vehicle components.

 **NOTE** : Indicates supplementary information needed to fully complete an instruction.

Although the mere reading of such information does not eliminate the hazard, your understanding of the information will promote its correct use.

The information and components/system descriptions contained in this guide are correct at time of publication. Bombardier Inc. however, maintains a policy of continuous improvement of its products without imposing upon itself any obligation to install them on products previously manufactured.


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


The illustrations show the typical construction of the different assemblies and, in all cases, may not reproduce the full detail or exact shape of the parts shown, however, they represent parts which have the same or a similar function.


Most specifications are given in both metric and customary units. Where precise accuracy is not required, some conversions are rounded to even numbers for easier use.

A *Shop Manual* can be obtained for complete service, maintenance and repair information.

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 **WARNING** : The engine and components implemented in a particular model should not be used on other models. Use of Rotax® snowmobile engines in other than Ski-Doo snowmobiles is not recommended or authorized by Bombardier Inc.

 **WARNING** : Maintenance procedures and tightening torques must be strictly adhered to, never attempt repairs unless the appropriate tools are available.

 **CAUTION** : Most components of this vehicle are built with parts dimensioned in the metric system. Most fasteners are metric and must not be replaced by customary fasteners or vice versa.

# SAFETY MEASURES

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## Observe the following precautions :

- ◆ Throttle mechanism should be checked for free movement before starting engine.
- ◆ Do not operate vehicle near snow making equipment.
  - The snowmobile engine can be stopped by activating the emergency cut-out or tether switch or turning off the key.
- ◆ Clean and check operation of the headlight, taillight and brake light.
- ◆ Engine should be running only when belt guard and/or pulley guard is secured in place.
- ◆ Never run the engine without drive belt installed. Running an unloaded engine can prove to be dangerous.
- ◆ Never run the engine when the track is raised off the ground.
- ◆ It can be dangerous to run engine with the hood removed.
- ◆ Fuel is flammable and explosive under certain conditions. Always manipulate in a well ventilated area. Do not smoke or allow open flames or sparks in the vicinity. If fuel fumes are noticed while driving, the cause should be determined and corrected without delay.
- ◆ Maintain your vehicle in top mechanical condition at all times.
- ◆ Your snowmobile is not designed to be driven or operated on black top, bare earth, ice, hard pack or other abrasive surfaces. On such surfaces, abnormal and excessive wear of critical parts is inevitable.
- ◆ Your snowmobile is not designed to be operated on public streets, road or highways. In most States and Provinces, it is considered an illegal operation.
- ◆ **Electric start models only** : Never charge or boost a battery while installed on vehicle.
- ◆ Never drive the vehicle with the parking brake applied. This may overheat the brake disc and reduce braking ability.
- ◆ Installation of other than standard equipment, including ski-spreaders, bumpers, pack racks, etc., could severely affect the stability and safety of your vehicle. Avoid adding on accessories that alter the basic vehicle configuration.
- ◆ Whenever the vehicle is parked outdoors, overnight or for a long period, it is suggested to protect it against the inclemency of the weather with a snowmobile cover.
- ◆ Do not lubricate throttle and/or brake cables and housings.
- ◆ Only perform procedures as detailed in this guide. Unless otherwise specified, engine should be turned OFF for all lubrication and maintenance procedures.
  - **Liquid cooled engines only** : Since engine cooling is fully in effect only when the vehicle is in motion and driven on snow, it is not recommended that you allow the engine to idle for more than brief periods and/or you drive the vehicle on icy surfaces. Prolonged idling and/or continuous driving on ice may cause engine damage.
- ◆ **Liquid cooled engines only** : When removing coolant tank cap, first place a cloth over cap then turn cap to its first step to release pressure. Never drain or refill the cooling system when engine is hot.
- ◆ Some models are designed for the driver only. No provisions have been made for a passenger.
- ◆ The performance of some vehicles may significantly exceed that of other snowmobiles you have operated. Therefore, use of these vehicles by novice or inexperienced operators is not recommended.
- ◆ Should removal of a locking device be required when undergoing repairs/disassembly, always replace by new ones. Tighten fasteners as specified in the applicable *Shop Manual*.

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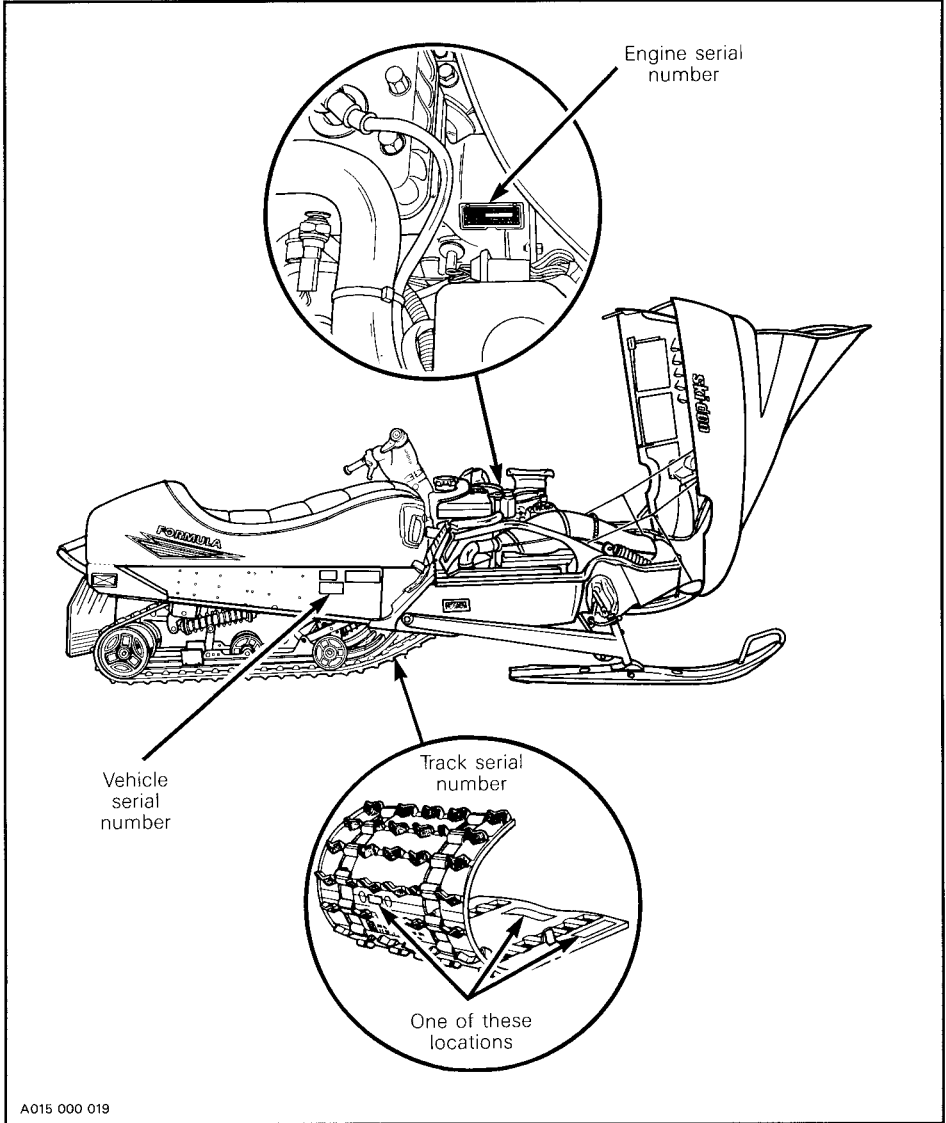
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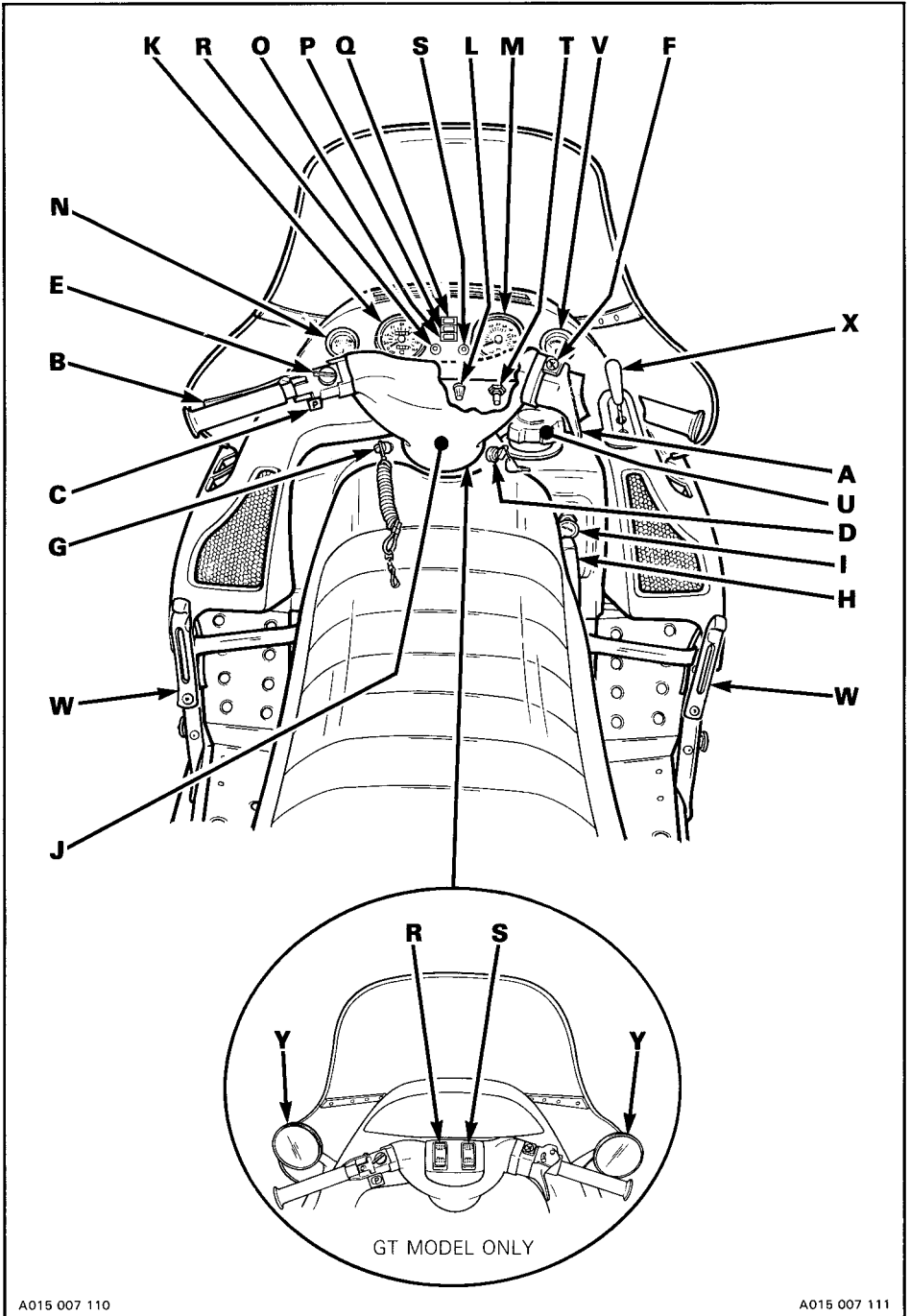
# HOW TO IDENTIFY YOUR SNOWMOBILE

The main components of your snowmobile (engine, track and frame) are identified by different serial numbers. It may sometimes become necessary to locate these numbers for warranty purposes or to trace your snowmobile in the event of loss. These numbers are required by the dealer to complete warranty claims properly. No warranty will be allowed by Bombardier Inc. if the engine serial number or VIN is removed or mutilated in any way.

**NOTE :** We strongly recommend that you take note of all the serial numbers on your vehicle and supply them to your insurance company.



# CONTROLS/ INSTRUMENTS



A015 007 110

A015 007 111

- A ) Throttle Lever
- B ) Brake Lever
- C ) Parking Brake Button
- D ) Ignition Switch
- E ) Headlamp Dimmer Switch
- F ) Emergency Cut-Out Switch
- G ) Tether Cut-Out Switch
- H ) Rewind Starter Handle
- I ) Primer Button  
(Except EFI Model)
- J ) Adjustable Steering Handle
- K ) Speedometer/Odometer
- L ) Trip Meter Reset Button
- M ) Tachometer
- N ) Temperature Gauge

\* Some models only

- O ) Injection Oil Level Pilot Lamp (Red)
- P ) High Beam Pilot Lamp (Blue)
- Q ) ECU Monitor Lamp (EFI Model Only)
- R ) Heated Grip Switch
- S ) Heated Throttle Lever Switch
- T ) Rear Passenger Heated Grip Switch\*
- U ) Fuel Tank Cap
- V ) Electric Fuel Level Gauge
- W ) Hood Latches
- X ) Gear Shift Lever\*
- Y ) Adjustable Mirrors

## A) Throttle Lever

Located on the right side of handlebar. When compressed, it controls the engine speed and the engagement of the transmission. When released, engine speed returns automatically to idle.

## B) Brake Lever

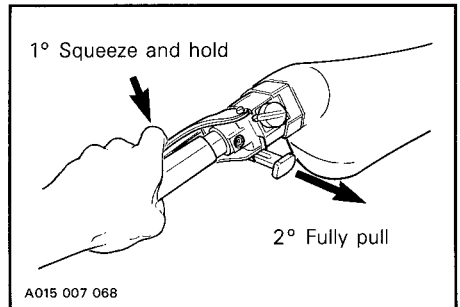
Located on the left side of handlebar. When compressed, the brake is applied. When released, it automatically returns to its original position. Braking effect is proportional to the pressure applied on the lever and to the type of terrain and its snow coverage.

## C) Parking Brake Button

Located on left side of handlebar. Parking brake should be used whenever vehicle is parked.

To engage mechanism, squeeze brake lever and maintain while pulling button with the other hand. There are two retaining notches on button lever; pull button until it locks on a notch then release brake lever.

To release mechanism, squeeze brake lever then fully push parking brake button.

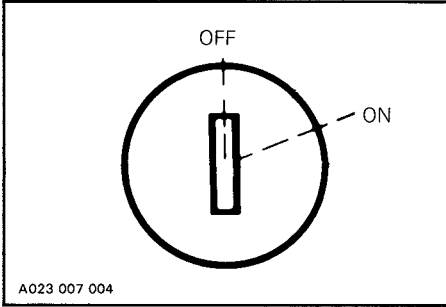


**WARNING :** DO NOT operate the snowmobile when the parking brake is engaged or when any component in the brake system is damaged, worn, or adjusted improperly.

## D) Ignition Switch

The lights are automatically ON whenever the engine is running.

### Manual Starting (some models only)



Key operated, two-position switch. To start the engine, first turn the key to ON position. To stop the engine, turn the key to OFF position.

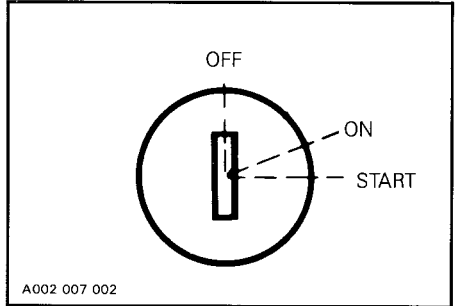
### EFI model only

When ignition switch is turned to the ON position, the ECU (Electronic Control Unit) monitor lamp must come on. Otherwise, refer to **ECU monitor lamp** in forthcoming page of this section.

The EFI (Electronic Fuel Injection) system has an auto shut-down feature that takes effect approximately two minutes after engine has been stopped and the ignition switch has been left in the ON position. A timer will power off the ECU and the electric fuel pump to avoid battery discharging. For this reason, **WHENEVER THE KEY IS FOUND IN THE ON POSITION AFTER VEHICLE PARKING, THE KEY MUST BE TURNED OFF (for at least one second) THEN ON TO RESET THE SYSTEM FOR THE NEXT STARTING.** The ECU monitor lamp must be ON prior to starting.

○ **NOTE :** If for any reason, the ignition switch is quickly turned ON and OFF, the EFI system will stay in the OFF condition even if the switch is left in the ON position. In this case, turn switch to OFF for at least one second prior to turning it ON.

### Electric Starting (some models only)



Key operated, three-position switch. To start engine, turn key to START position and hold.

▼ **CAUTION :** Do not hold key at **START position more than 30 seconds.**

Release key immediately when engine has started. Key returns to ON position as soon as it is released.

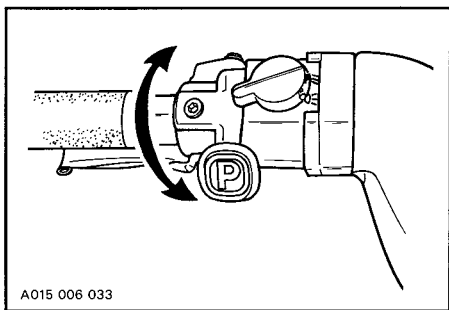
If engine does not start on first try, key must be turned fully back to OFF each time. To stop engine, turn key to OFF position.

▼ **CAUTION :** Holding key in **START position when engine has started could damage starter mechanism.**

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

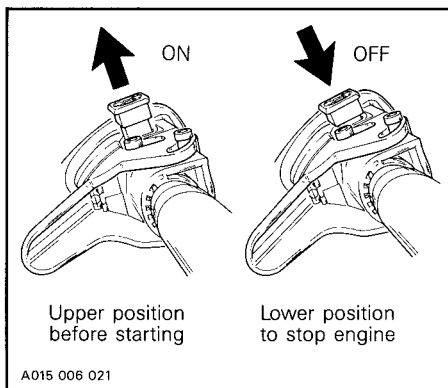
## E) Headlamp Dimmer Switch

The dimmer switch, located on left side of handlebar, allows correct selection of headlamp beam. To obtain high or low beam simply flick switch.



## F) Emergency Cut-Out Switch

A push-pull type switch located on the right side of the handlebar. To stop the engine in an emergency, push the button to the lower OFF position and simultaneously apply the brake. To start engine, button must be at the upper ON position.



The driver of this vehicle should familiarize himself with the function of this device by using it several times on first outing. Thereby being mentally prepared for emergency situations requiring its use.

◆ **WARNING** : If the switch has been used in an emergency situation the source of malfunction should be determined and corrected before restarting engine.

## G) Tether Cut-Out Switch

A pull switch located below the handlebar. Attach tether cord to wrist or other convenient location then snap tether cut-out cap over receptacle before starting engine.

If emergency engine "shut off" is required, completely pull cap from safety switch and engine power will be automatically shut off.

○ **NOTE** : The cap must be installed on the safety switch at all times in order to operate the vehicle.

◆ **WARNING** : If the switch is used in an emergency situation, the source of malfunction should be determined and corrected before restarting engine.

## H) Rewind Starter Handle

Auto rewind type located on right hand side of vehicle. To engage mechanism, pull handle slowly until a resistance is felt then pull vigorously.

## I) Primer Button (except EFI model)

Pull and push button (two-three times) to start a cold engine. Not necessary when engine is warm.

## J) Adjustable Steering Handle

Steering handle height is adjustable, see an authorized dealer.

## K) Speedometer/Odometer

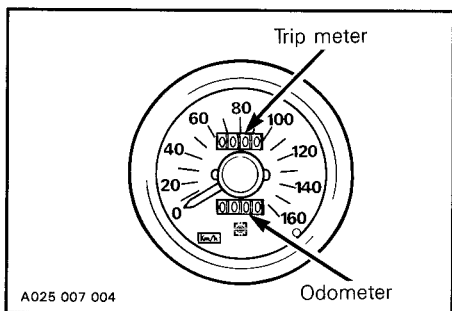
The speedometer is linked directly to the drive axle. Direct-reading dial indicates the speed of the vehicle in kilometers or in miles per hour. Odometer records the total distance travelled in kilometers or in miles.

## L) Trip Meter Reset Button

Trip meter reset button is located in dashboard. To reset, turn button until all numbers read zero.

## Trip Meter

Speedometer features a trip meter that records a distance travelled in kilometers or in miles until it is reset. It can be used to record a fuel tank range or distance between two relays for instance.

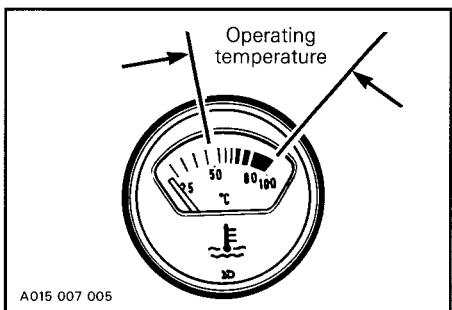


## M) Tachometer

The tachometer registers the impulses of magneto. Direct-reading dial indicates the number of revolutions per minute (RPM) of the engine.

## N) Temperature Gauge

The gauge indicates engine coolant temperature. Normal operating temperature is from 50° to 100°C (120° - 212°F).



However, coolant temperature can vary according to driving conditions. If coolant temperature exceeds 100°C (212°F), reduce speed and run vehicle in loose snow or stop engine immediately.

◆ **WARNING :** To remove coolant tank cap, place a cloth over the cap and unscrew it to the first stop to release the pressure. If this notice is disregarded, loss of fluid and severe burns could occur.

## O) Injection Oil Level Pilot Lamp (Red)

Will light up when injection oil level is low. Check level and replenish as soon as possible.

▼ **CAUTION :** Do not run engine out of oil. Serious engine damage will occur.

○ **NOTE :** Whenever brake lever is actuated, oil injection level pilot lamp should light up. If not replace lamp.

## P) High Beam Pilot Lamp (Blue)

Lights when headlamp is on high beam.

## Q) ECU Monitor Lamp (EFI model only)

This lamp has two functions :

### 1. READY LAMP :

When turned on, it indicates that the ECU (Electronic Control Unit) is ready and the EFI ( Electronic Fuel Injection) system is operational (in Ready Mode). The lamp turns on two seconds after the ignition switch is turned in the ON position.

The lamp will turn off by itself after the engine has been started.

## 2. TROUBLE CODE LAMP :

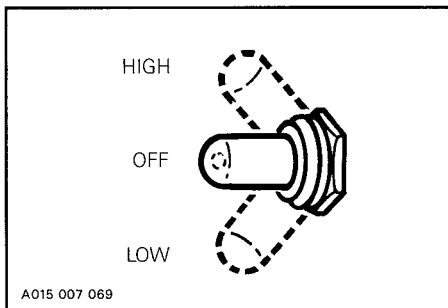
When flashing, it indicates a malfunction of the EFI system. The flashing sequence gives a code number reporting the source of malfunction. See **ECU monitor lamp status** in **Troubleshooting Section**.

The engine will not start if the lamp does not come on. In such case, check main harness fuse and ECU fuse. Refer to **EFI Fuses** in forthcoming page of this section. If fuses are in good condition, refer to an authorized dealer.

If lamp flashes, it may be caused by a low-charged battery. Turn the key to the OFF position then to the ON position and listen to the electric fuel pump. If it is heard working, try starting engine. While driving, the charging system will recharge the battery. Notice that the trouble code lamp will continuously flash until ignition switch be closed. If lamp still flashes thereafter, refer to an authorized dealer for servicing.

### R) Heated Grip Switch

The three-position toggle switch is located between speedometer and tachometer (left switch). Select the desired position to keep hands at a comfortable temperature.



### S) Heated Throttle Lever Switch

The three-position toggle switch is located between speedometer and tachometer (right switch). Select the desired position to keep right thumb at a comfortable temperature. Refer to illustration above.

### T) Rear Passenger Heated Grip Switch (some models only)

The three-position toggle switch is located on bottom right side of dashboard. Select the desired position to keep rear passenger's hands at a comfortable temperature. Refer to illustration above.

### U) Fuel Tank Cap

Unscrew to fill up tank then fully tighten.

### V) Electric Fuel Level Gauge

The electric fuel gauge is located in the dashboard and allows driver to observe the fuel level while riding the snowmobile.

### W) Hood Latches

Pull up the latches to unlock the hood from its anchors.

▼ **CAUTION** : On vehicle so equipped, gear shift lever must be in forward position before opening hood.

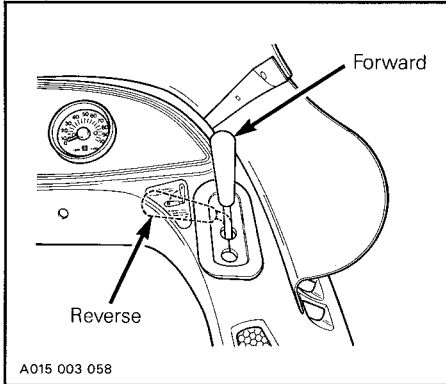
○ **NOTE** : Always lift hood gently until stopped by retaining device.

◆ **WARNING** : It is dangerous to run an engine with the hood opened, unfastened or removed.

## X) Gear Shift Lever (models with reverse gear only)

With machine fully stopped and engine at idle, turn lever right or left to engage forward or reverse gear.

Do not force into reverse. If not able to shift to reverse, apply throttle to move vehicle and try again.



▼ **CAUTION** : Bring vehicle to complete stop before changing gear.

○ **NOTE** : A buzzer should sound every time the shift lever is in reverse gear position.

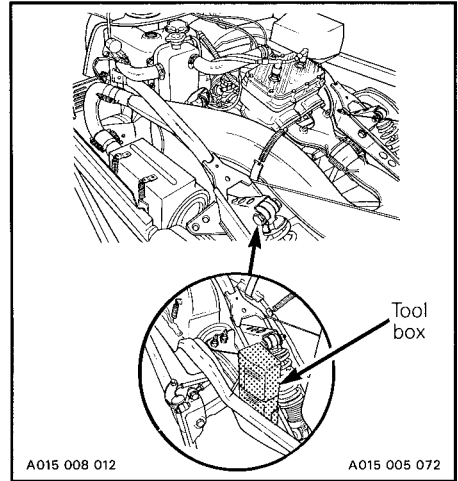
◆ **WARNING** : This snowmobile is capable of a fast reverse. On first outing, operator should become familiar with this operation by practicing on level ground. Ensure the path behind is clear of obstacles or bystanders. Fast reverse, while turning, could result in loss of stability. Before starting engine, check that lever is in forward position.

## Y) Adjustable Mirrors

Each mirror can be adjusted to suit driver's preference.

## Tool Kit

Tool kit is located in tool box. To gain access, tilt hood.

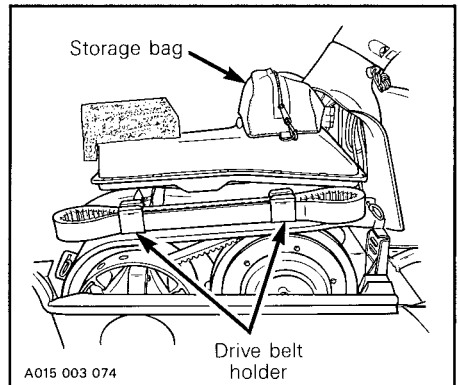


## Spare Drive Belt Holder

A spare drive belt can be installed in drive belt holder clips on belt guard. To gain access, tilt hood. See illustration below.

## Storage Bag (Except EFI model)

Storage bag is located on air intake silencer. To gain access, tilt hood.

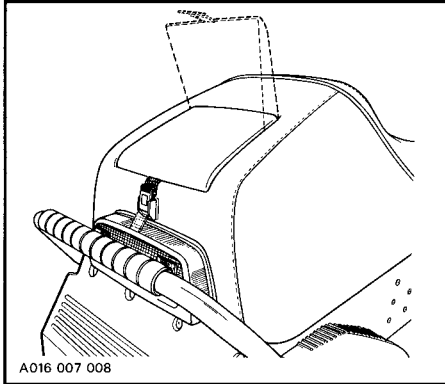




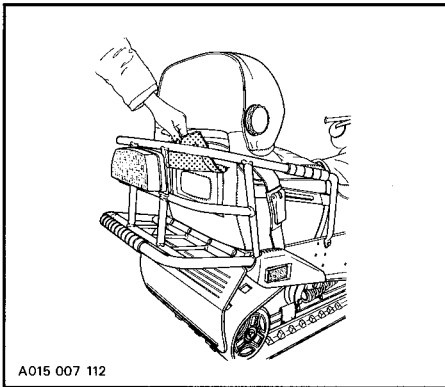
## Storage Compartment (some models only)

To gain access, flip locking device to release strap. Lift cover.

◆ **WARNING** : Do not sit on cover at rear of seat while riding.



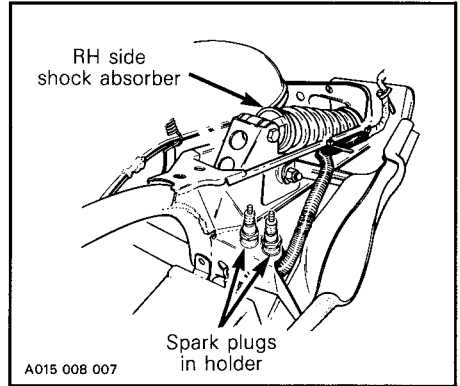
On GRAND TOURING model, lift flap to gain access to storage compartment.



## Spark Plug Holder

To keep spark plugs dry and prevent shocks that might affect the adjustment or break them, a holder is provided under hood, close to top of RH side shock absorber.

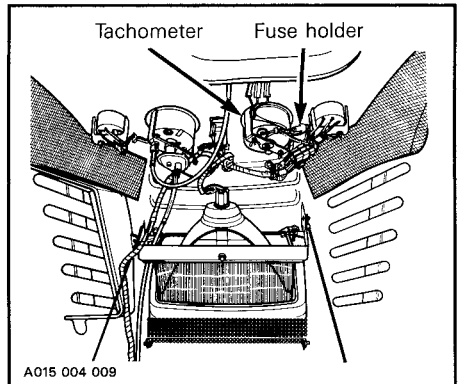
Fully tighten them into the holder.



## Tachometer Fuse

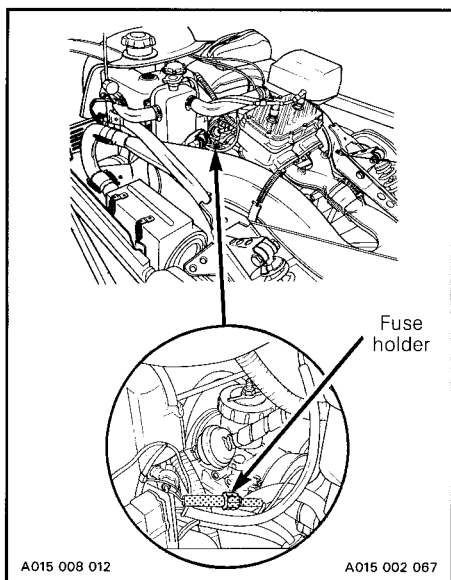
The tachometer is protected by a 0.1 ampere rated fuse. Fuse holder is located under the hood beside the tachometer. If tachometer stops operating, check fuse condition and replace if necessary.

▼ **CAUTION** : Do not use a higher rated fuse as this can cause severe damage to the tachometer.



## Starting System Fuse (electric start models only)

Starting system is protected with a 30 amperes rated fuse. Fuse holder is located near oil injection filter beside MAG side carburetor. If starter does not operate, check fuse condition and replace if necessary.



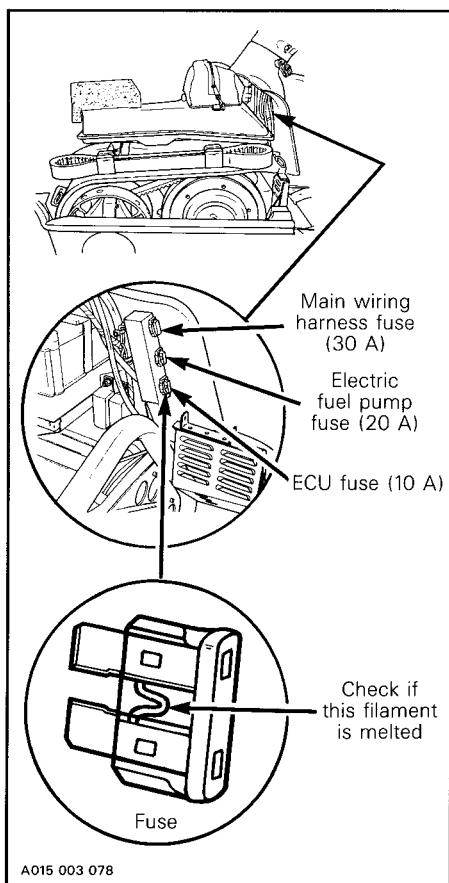
**CAUTION :** Do not use a higher rated fuse as this can cause severe damage to the starting system.

### EFI System Fuses (EFI model only)

The fuse holder is located in engine compartment, against console and above LH side footrest. To remove fuse, pull it off.

The main wiring harness and ECU (electronic control unit) are protected with a 30 and 10 amperes rated fuses respectively. If the ECU monitor lamp does not come on, check these fuses and replace as necessary with one of the same rate.

The electric fuel pump fuse is protected with a 20 amperes rated fuse. If the ECU monitor lamp flashes and the fuel pump is not heard working when turning the ignition switch on, check this fuse and replace as necessary with one of the same rate.

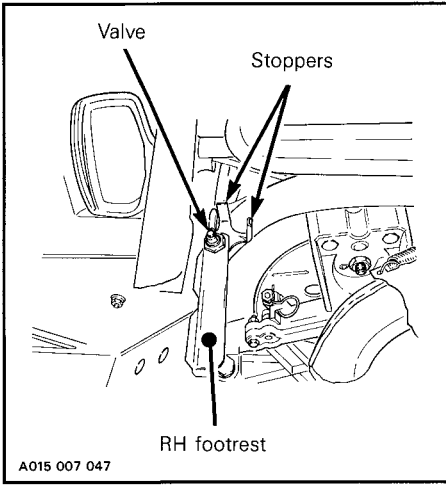


### Fuel Shut-Off Valve(s) (Except EFI model)

It is recommended to close it (them) when transporting or storing vehicle. The valve(s) is (are) under hood, on top of RH side footrest.

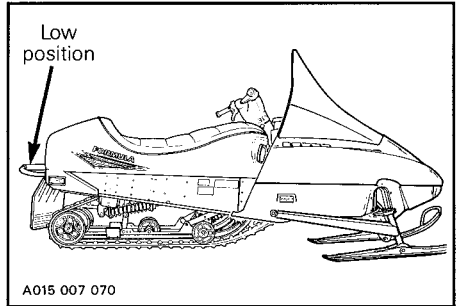
Two stoppers are provided on the fuel shut-off valve to prevent the lever from rotating due to vibration.

These stoppers are set so that the inner tip of the lever contacts the stoppers while in the **fully opened** or **fully closed** positions.

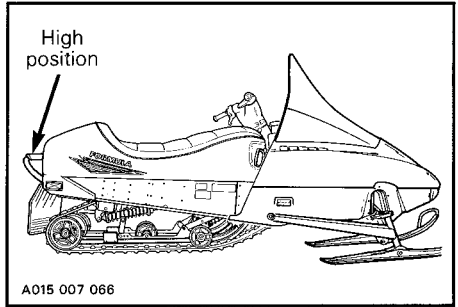
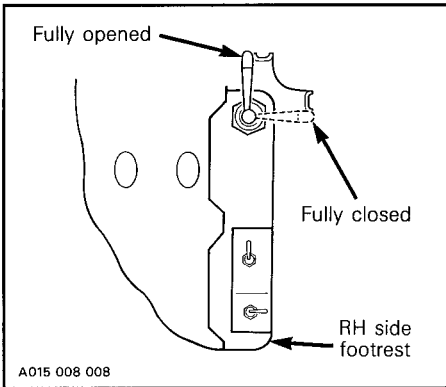


## Rear Bumper (some models only)

The rear bumper can be installed in two positions, as desired by the driver. The low position can be used in deep snow to provide a grip at a more convenient level.



When opening or closing valve(s), always rotate lever so that it flips over the stopper and maintains its position.



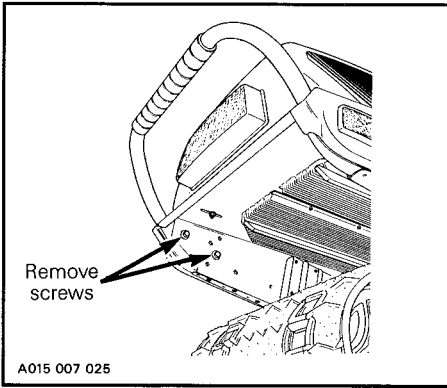
**Fully** open the valve(s) in order to operate the vehicle.

**CAUTION:** Always fully open the valve(s) before riding. Never allow the valve lever to remain between stoppers.

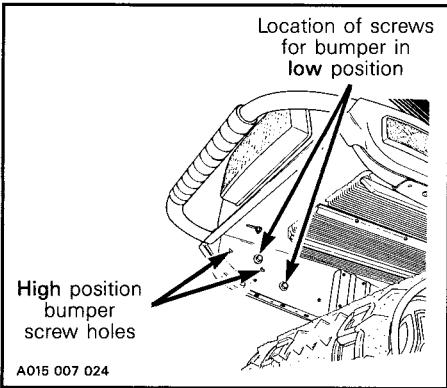
**NOTE:** It may be necessary to push against stopper if lever is hard to get in position.

To install bumper in **lower** position, proceed as follows :

- Lift snow guard and block in that position.
- From inside tunnel, remove bumper retaining screws ; two per side.

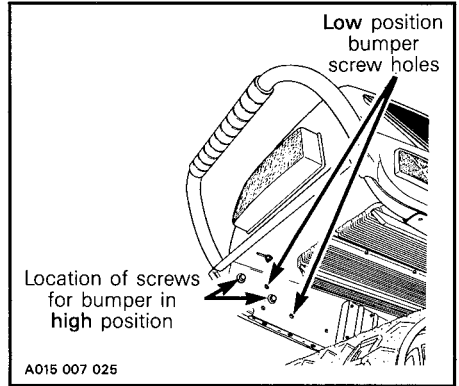


- Remove bumper.
- Reverse bumper position and insert in tunnel.
- When installing bumper in **lower** position, the retaining screws have to be relocated to different holes, as shown.



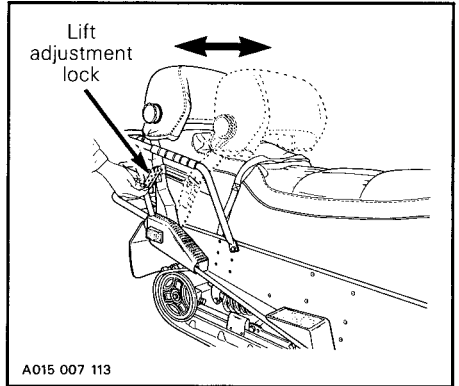
- Firmly tighten bumper screws.
- Lower snow guard.

○ **NOTE :** When installing bumper at **upper** position, bumper retaining screws have to be relocated to different holes, as shown.



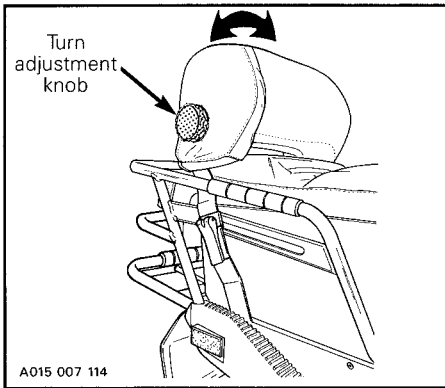
### Adjustable Backrest (Grand Touring model only)

The backrest position and support angle may be adjusted to suit driver or passenger convenience.



To adjust :

1. Lift adjustment lock on each side of backrest rack.

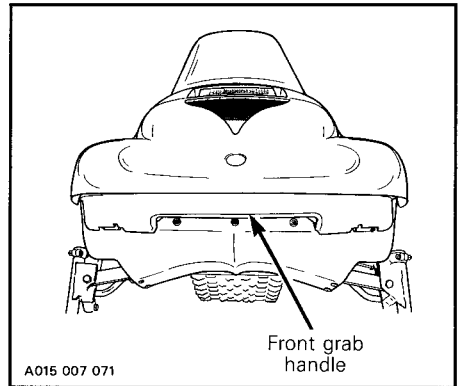


2. Move backrest forward or backward as desired.
3. Secure each adjustment lock.
4. Turn adjustment knob in either direction to change backrest angle as desired.

◆ **WARNING :** Backrest should only be repositioned while the snowmobile is stopped. Adjust to provide maximum lower back support. Always consider your passengers' comfort and safety.

## Front Grab Handle

Located at the front of the bottom pan, this grab handle must be used whenever front of vehicle is lifted.



▼ **CAUTION :** Do not use skis to pull or lift vehicle.

# FUEL AND OIL

○ **NOTE** : During the break-in period, engine requires a richer fuel/oil mixture. Refer to BREAK-IN section.

## Recommended Fuel

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

◆ **WARNING** : Never top up the fuel tank before placing the vehicle in a warm area. As temperature increases, fuel expands and might overflow. Do not fill the fuel tank all the way to the top. When the vehicle is tilted, this could cause the fuel to overflow. Fuel is flammable and explosive under certain conditions. Always handle in a well ventilated area. Do not smoke or allow open flames or sparks in the vicinity. If fumes are noticed while driving, the cause should be determined and corrected without delay. Never add fuel while engine is running. Avoid skin contact with fuel when temperature is below freezing point. Always wipe off any fuel spillage from the vehicle.

▼ **CAUTION** : Never experiment with other fuels or fuel ratios. The use of fuel containing methanol, or similar products including naphta is not recommended. The use of unrecommended fuel can result in vehicle performance deterioration and damage to critical parts in the fuel system and engine components.

## Recommended Oil

Use BOMBARDIER Snowmobile Injection Oil (P/N 496 0133 00 – 1 liter) available from an authorized dealer.

This type of oil will flow at temperatures as low as  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ).

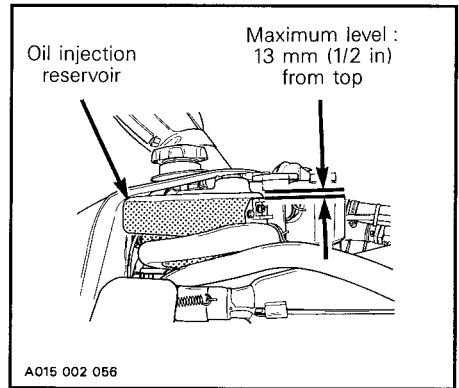
If BOMBARDIER Snowmobile Injection Oil is unavailable, substitute with BLIZZARD Oil (P/N 496 0135 00).

▼ **CAUTION** : Never mix brands of two-cycle oil as serious chemical reactions can cause severe damage. Never use outboard or straight mineral oils.

## Oil Injection System

Always maintain a sufficient amount of BOMBARDIER Snowmobile Injection Oil in the injection oil tank.

▼ **CAUTION** : Never allow oil level to drop more than 2/3.



▼ **CAUTION** : Check level and refill every time you refuel. Do not overflow. Wipe off any spillage.


○ **NOTE** : For initial engine break-in, and add 500 mL (18 imp. oz) of BLIZZARD Oil or the same quantity of BOMBARDIER Injection Oil to the first full filling of fuel tank.


# BREAK-IN PERIOD

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## Engine

With Rotax® snowmobile engines, a break-in period is required before running the vehicle at full throttle. Engine manufacturer's recommendation is 10 to 15 operating hours. During this period, maximum throttle should not exceed 3/4. However, brief full acceleration and speed variations contribute to a good break-in. Continued wide open throttle accelerations, prolonged cruising speeds, and engine overheating are detrimental during the break-in period.

 **NOTE** : To assure additional protection during the initial engine break-in, 500 mL (18 imp. oz) of BLIZZARD Oil (P/N 496 0135 00) or the same quantity of BOMBARDIER Injection Oil (P/N 496 0133 00) should be added to fuel for the first full filling of fuel tank.

 **CAUTION** : Remove and clean spark plugs after engine break-in.

## Belt

A new drive belt requires a break-in period of 25 km (15 miles).

## 10 - Hour Inspection

As with any precision piece of mechanical equipment, we suggest that after the first 10 hours of operation or 30 days after the purchase, whichever comes first, your vehicle be checked by an authorized dealer. This inspection will give you the opportunity to discuss the unanswered questions you may have encountered during the first hours of operation. Refer to the *Warranty Guide and Vehicle Logbook*.

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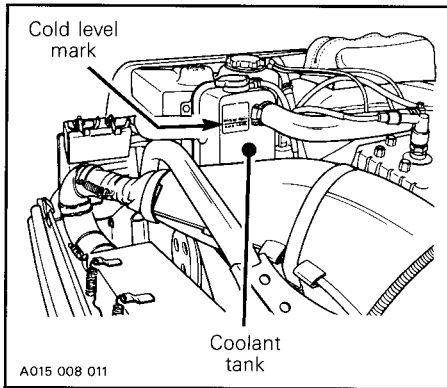
**The 10-hour inspection is at the expense of the vehicle owner.**

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# PRE-START CHECK

## Check Points

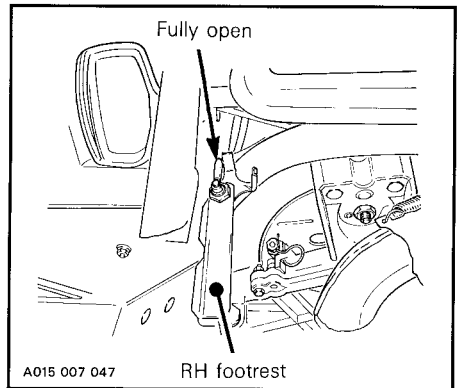
- ACTIVATE THE THROTTLE CONTROL LEVER SEVERAL TIMES to check that it operates easily and smoothly. It must return to idle position when released.
- Check gear shift lever position (some models only).
- Check that the skis and the track are not frozen to the ground or snow surface and that steering operates freely.
- Check that air filter is free of snow.
- Activate the brake control lever and make sure the brake fully applies before the brake control lever touches the handlebar grip.
- Check coolant level. Liquid should be at level mark (engine cold) of coolant tank.



If additional coolant is necessary or if entire system has to be refilled, refer to an authorized dealer.

◆ **WARNING** : If radiator cap has to be removed, place a cloth over the cap and unscrew it to the first step to release the pressure. Never drain or refill the cooling system when engine is hot. Loss of fluid and severe burns could occur if this notice is disregarded.

- Check injection oil level.
- Check fuel level.
- Ensure fuel shut-off valve(s) is (are) in **fully opened position** (except EFI model).



- Verify that the path ahead of the vehicle is clear of bystanders and obstacles.
- Clean and check operation of the headlight, taillight and brake light.

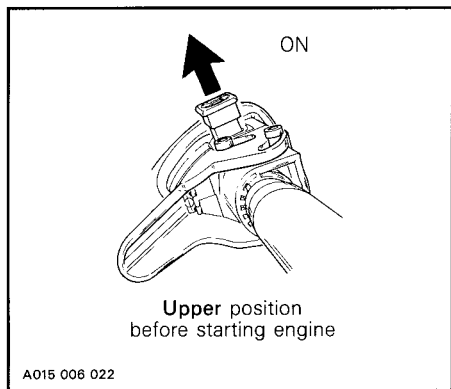
◆ **WARNING** : Only start your snowmobile once all components are checked and functioning properly.



# STARTING PROCEDURE

Test throttle control lever operation.

Check that the emergency cut-out switch is in the ON position.



Ensure the tether cut-out cap is in position and that the cord is attached to your clothing.

Activate the primer two or three times except EFI model.

○ **NOTE** : Priming is not necessary when engine is warm. To prime, activate button until a pumping resistance is felt. This indicates that fuel has reached primer valve. From this point, pump two or three times to inject fuel in intake manifold. After priming, ensure that primer button is pushed all the way in to avoid fuel from draining.

▼ **CAUTION** : Use of ether and/or other types of fluid as a starting aid can cause damage to engine components and is not recommended.

## Manual Starting

Insert the key in the ignition switch and turn to ON position.

On EFI model, ensure the ECU (Electronic Control Unit) monitor light turns on.

Grasp manual starter handle firmly and pull slowly until a resistance is felt then pull vigorously. Slowly release the re-wind starter handle.

◆ **WARNING** : Do not apply throttle while starting.

### EFI model only

○ **NOTE** : The engine will not start with a discharged battery (ECU monitor lamp will flash). However, an attempt to start engine may be performed. Refer to ECU Monitor Lamp in **Control/instruments** section.

If for any reason engine becomes flooded, squeeze throttle lever against handlebar while cranking engine. Keep in this position while engine begins to fire until it normally runs then, release throttle lever. Beyond 3/4-throttle position, the fuel injection is shut down (when engine is not running).

◆ **WARNING** : Take extreme care when cranking engine and squeezing throttle lever at the same time. Vehicle will move as engine speed increases. Release throttle lever as soon as engine begins firing and running.

○ **NOTE** : The following procedure allows to use both hands to crank a flooded engine.

1. Turn ignition switch to OFF.
2. Squeeze throttle lever against handlebar and hold **WHILE** turning ignition switch to ON. The ECU monitor lamp will flash a code to indicate this condition.
3. Throttle lever can be now released for cranking. The fuel injection is shut down until engine starts running.

## Electric Starting (some models only)

To start engine, follow either manual or electric starting procedure.

▼ **CAUTION** : Never operate your snowmobile with the battery removed or disconnected. As it reduces voltage fluctuations, operating vehicle without battery might cause instrument or bulb failures.

Insert key in ignition switch.

Turn key clockwise until starter engages.

▼ **CAUTION** : To avoid starter overheating, the cranking period should never exceed 30 seconds and a rest period should be observed between the cranking cycles to let starter cool down.

Release key immediately when engine has started. If engine does not start on first try, key must be turned fully back to OFF each time.

○ **NOTE** : If for some reason, the vehicle cannot be started electrically, place ignition key to ON position and start engine manually.

## Before Riding

Check operation of the emergency cut-out switch and tether switch. Restart engine.

◆ **WARNING** : If engine does not shut-off when applying the emergency cut-out switch and/or when pulling the tether cut-out cap, stop the engine by turning OFF the ignition key. Do not operate the vehicle further, see an authorized dealer.

Allow the engine to warm before operating at full throttle.

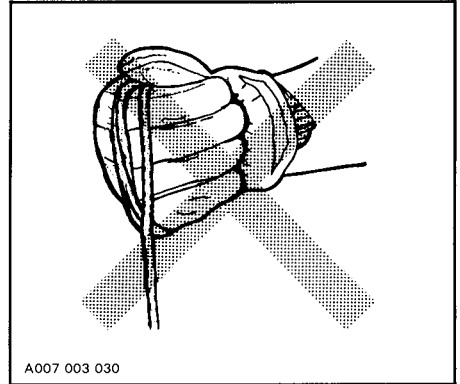
○ **NOTE** : Engine is warm when operating temperature has been reached on temperature gauge.

◆ **WARNING** : This snowmobile is propelled by a revolving track which must be partially exposed for proper operation. Serious injuries may be caused by operator carelessness, resulting in hands, feet or clothing becoming entangled in the track.

## Emergency Starting

Should the rewind starter rope fray and break, the engine can be started with the emergency starter rope supplied with the tool kit.

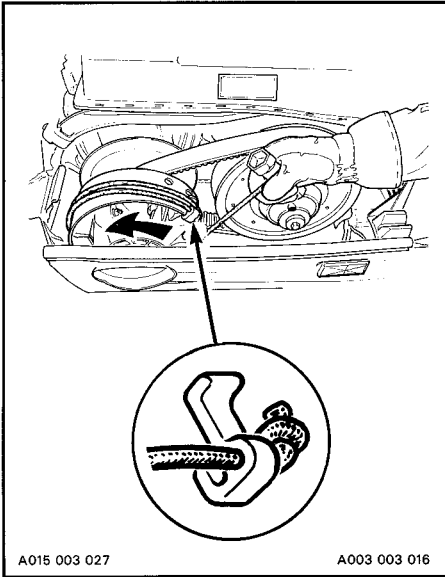
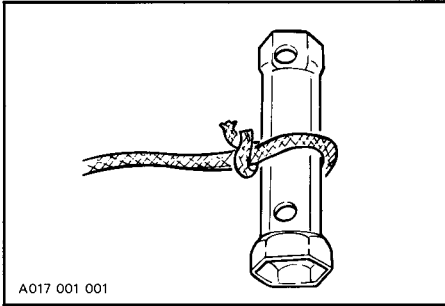
◆ **WARNING** : Do not wind starting rope around your hand. Hold rope by the handle only.



◆ **WARNING** : Do not start the vehicle by the drive pulley unless it is a true emergency situation. Have the vehicle repaired as soon as possible.

Attach emergency rope to any available handle and to the starter clip supplied in the tool box. Wind the rope tightly around drive pulley so that when pulled, pulley will rotate counterclockwise.

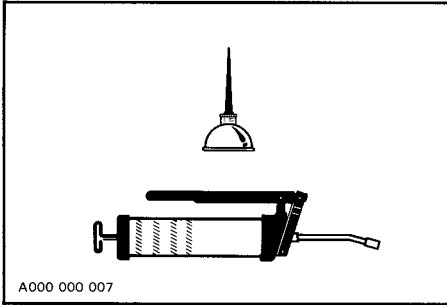
○ **NOTE** : The spark plug socket can be used as an emergency starter grip.



Start engine as per usual manual starting.

◆ **WARNING :** When starting the vehicle in an emergency situation, using drive pulley, do not reinstall the belt guard and return slowly to have vehicle repaired.

# LUBRICATION



## Frequency

Routine maintenance is necessary for all mechanized products and snowmobiles are no exception. A weekly vehicle inspection greatly contributes to the life span of the snowmobile.

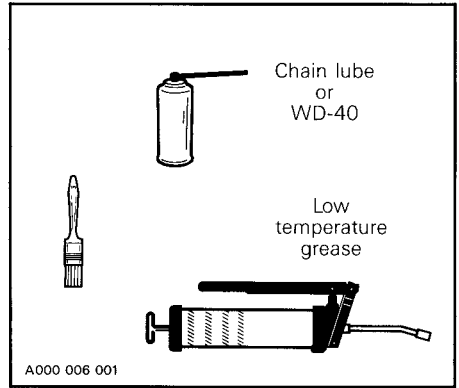
It is recommended that the steering system and suspension be lubricated monthly or every 40 hours of operation. If the vehicle is operated in wet snow or in severe conditions these items should be lubricated more frequently.

Penetrating lubricant is recommended on moving parts. Use either :

- chain lube from BARDAHL (BCS 362, dry)
- WD-40

Other grease fittings require low temperature grease (P/N 413 7061 00) using standard grease gun.

The following symbols will be used to show what type of lubricant should be used at required locations.



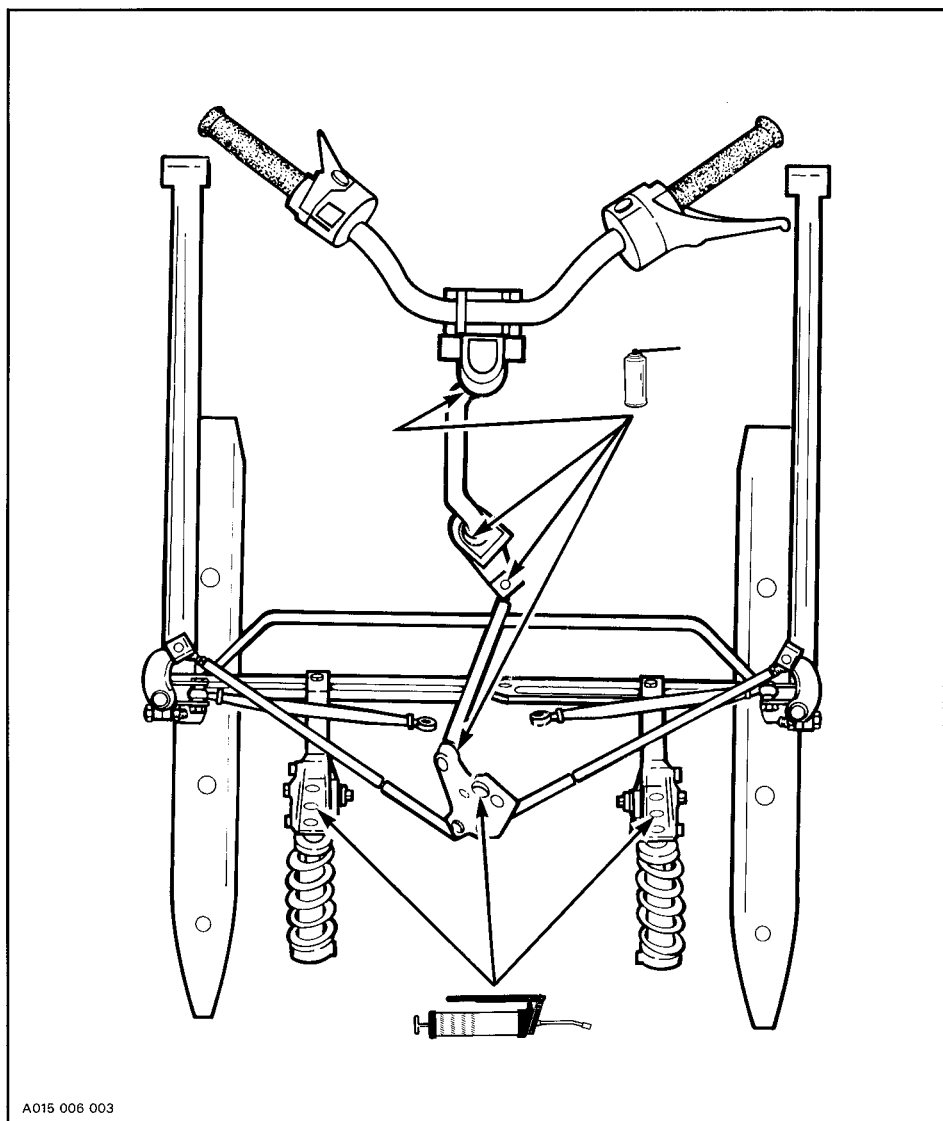
○ **NOTE** : When lubricating through grease fittings, slowly pump grease gun until grease appears at joints. Always use low temperature grease (P/N 413 7061 00).

◆ **WARNING** : Only perform such procedures as detailed in this guide. It is recommended that dealer assistance be periodically obtained on other components/systems not covered in this guide. Unless otherwise specified, engine should be turned OFF for all lubrication and maintenance procedures. Do not lubricate throttle and/or brake cables and housings.

## Steering and Front Suspension Mechanism

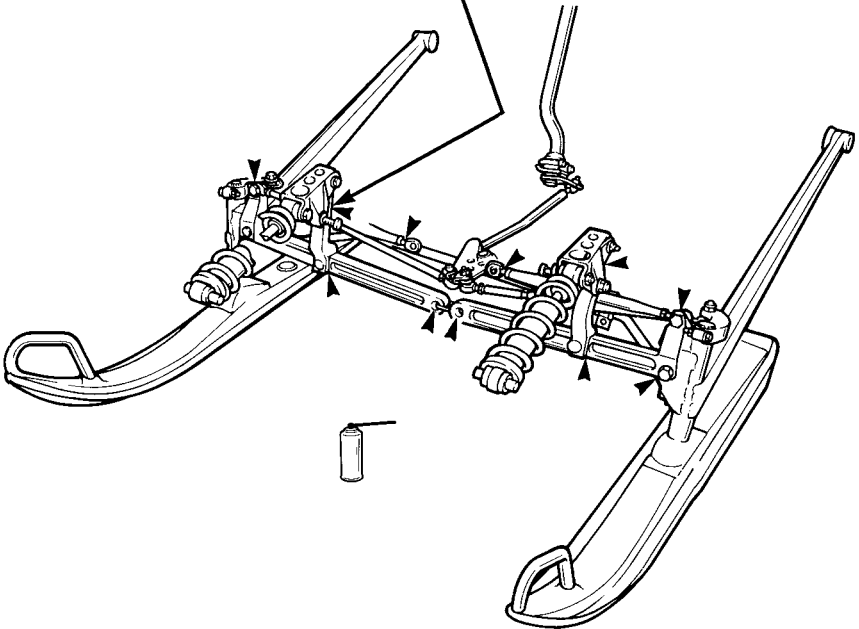
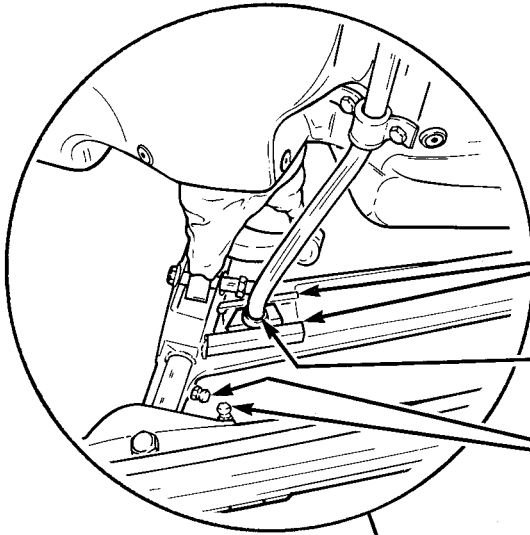
— Lubricate upper and lower control arms and tie rod ends (steel on steel only).

— Grease ski legs, ski pivots and idler arm.  
— Lubricate moving parts at end of stabilizer bar.



A015 006 003

○ **NOTE :** Take this opportunity to verify tightness of fasteners and ball joints.

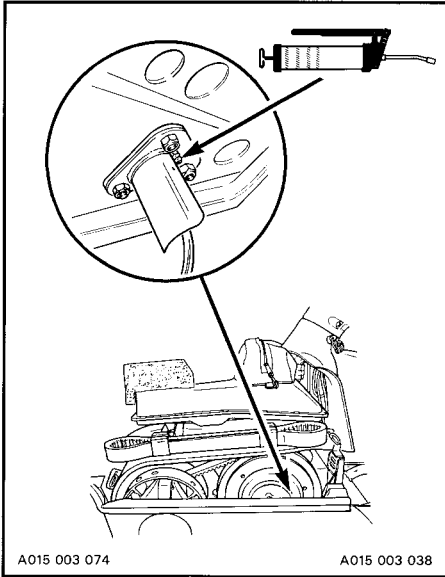


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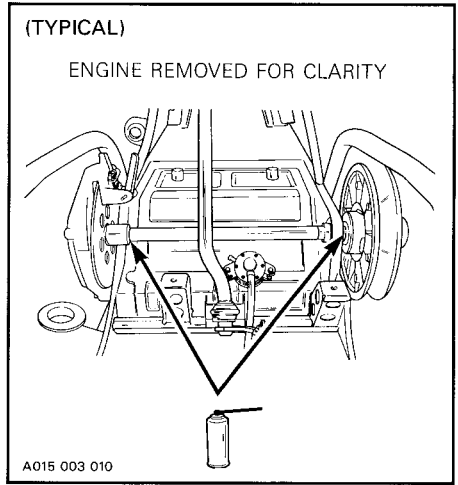
## Drive Axle

Lubricate through grease fitting using low temperature grease only.



## Countershaft (Brake Disc and Driven Pulley)

For proper operation, brake disc and driven pulley must slide freely on countershaft. Lubricate sparingly.



▼ **CAUTION** : Do not lubricate excessively as the lubricant could contact and soil brake pads and/or drive belt.

## Brake Caliper

See an authorized dealer for proper lubrication of brake caliper ratchet wheel.

◆ **WARNING** : Do not lubricate throttle and/or brake cables and housings.

## Slide Suspension

Lubricate suspension through following grease fittings :

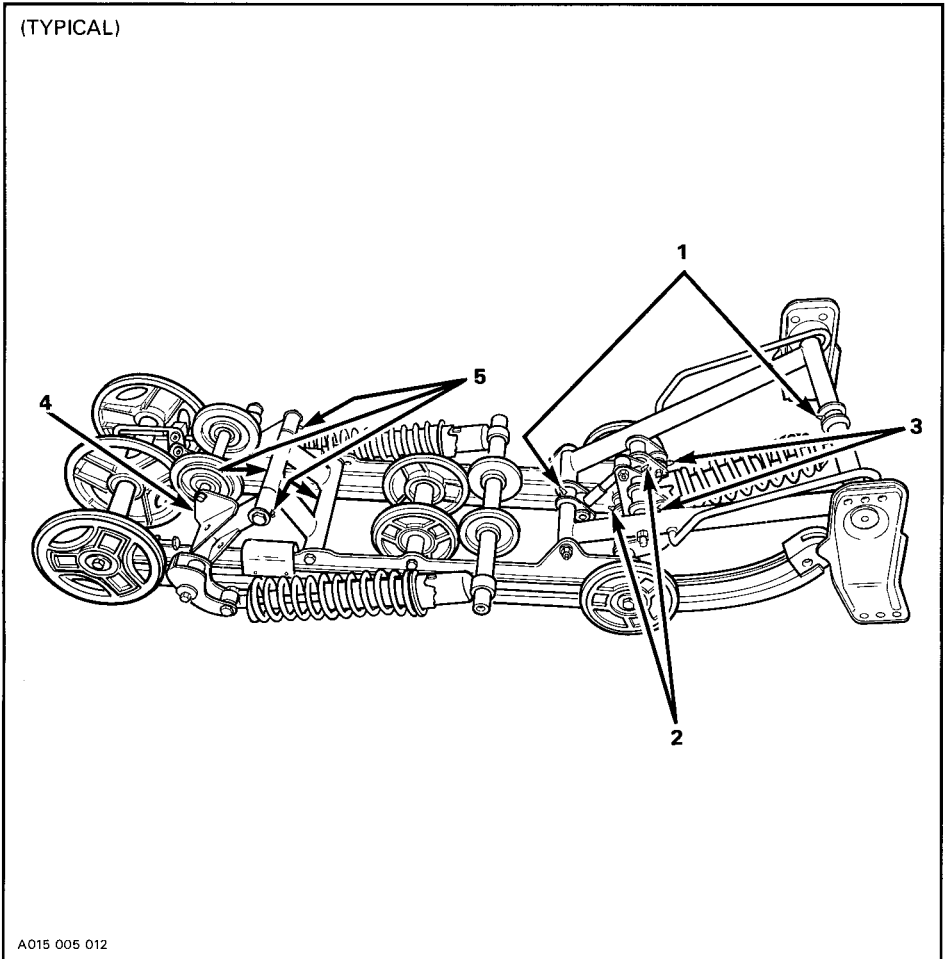
1. Front arm : upper and lower axles.
2. Front swing arm : upper and lower axle.

3. Front shackles.

4. Rear arm : upper axle.

5. Rear shackle : upper and lower axles.

○ **NOTE :** There are eleven lubrication points.

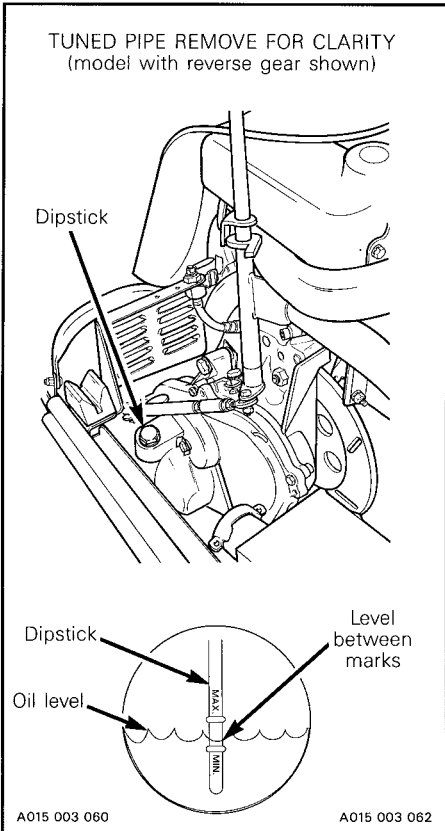




## Chaincase/Gearbox Oil Level

With vehicle on a level surface, check the oil level by removing dipstick. With dipstick **unscrewed**, oil level must be **between** lower and upper marks. Refill up to upper mark using BOMBARDIER synthetic chaincase oil (P/N 413 8026 00 - 250 mL (9 oz)).

▼ **CAUTION** : Do not use other types of oil than synthetic chaincase oil (P/N 413 8026 00) when servicing. Do not mix this synthetic oil with other types of oil.



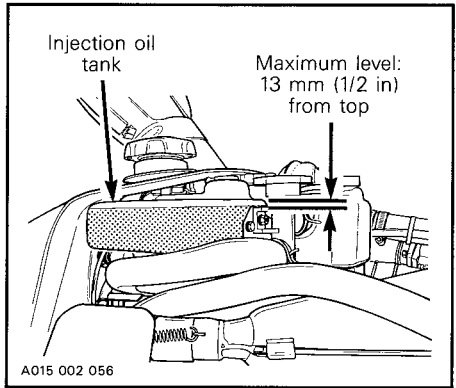
○ **NOTE** : The chaincase and gearbox oil capacity is approximately 350 mL (12 oz).

## Oil Injection System

Always maintain a sufficient amount of BOMBARDIER Snowmobile Injection Oil in the injection oil tank.

▼ **CAUTION** : Never allow oil level to drop more than 2/3.

▼ **CAUTION** : Check level and refill every time you refuel. Do not overfill. Wipe off any spillage.



## Rotary Valve System

The rotary valve system is lubricated with oil from the injection oil reservoir.

Always maintain a sufficient amount of BOMBARDIER Snowmobile Injection Oil in the injection oil tank.

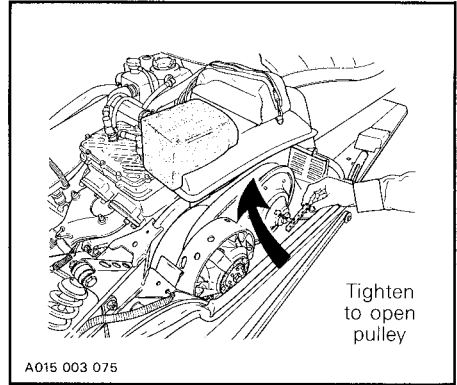
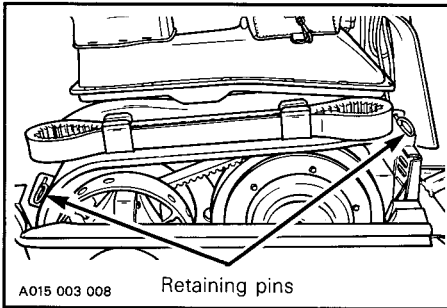
▼ **CAUTION** : Check level and refill every time you refuel. Do not overfill. Wipe off any spillage.

# MAINTENANCE

## Belt Guard Removal

◆ **WARNING** : Engine should be operated only when belt guard is properly secured.

1. Open hood.
2. Pull out both belt guard retaining pins.
3. Lift and remove the belt guard.



## Drive Belt Removal and Installation

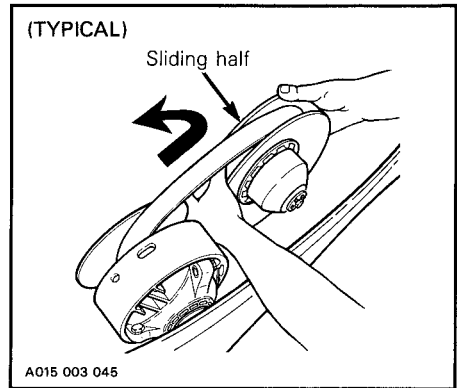
◆ **WARNING** : Never start or run engine without the drive belt installed. Running an unloaded engine is dangerous.

1. Remove ignition key.
2. Open hood and remove belt guard.

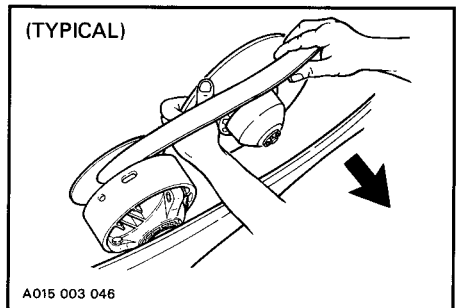
○ **NOTE** : Removal and installation of drive belt is easier when driven pulley is held with brake so that it can not rotate. Apply parking brake for this purpose. Drive pulley access plug can be removed from side pan to make room for belt removal.

3. Open the driven pulley with the drive belt installer/remover (P/N 529 0195 00) provided in tool box.

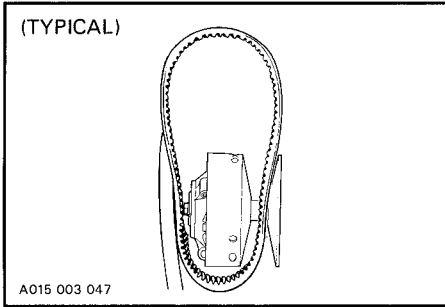
- Remove and discard one Allen screw, nut and washer on driven pulley (if there are two screws).
- Screw tool in the threaded hole and tighten to open the pulley.



4. Slip the belt over the top edge of the fixed half, as shown.

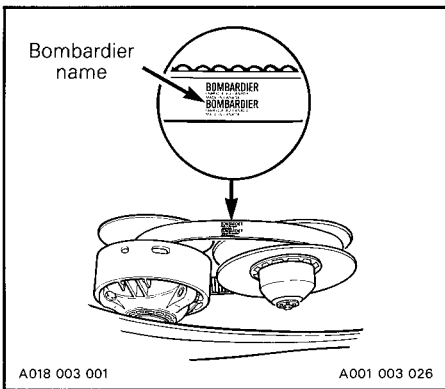


5. Slip the belt out from the drive pulley and remove from the vehicle.



To install the drive belt, reverse the procedure, however pay attention to the following :

Maximum drive belt life span is achieved when belt runs in the same direction. Always install drive belt so Bombardier name can be read when facing pulleys.



▼ **CAUTION** : Do not force or use tools to pry the belt into place, this could cut or break the cords in the belt.

○ **NOTE** : It is not necessary to reinstall Allen screw, nut and washer.  
Remove tool from driven pulley.

◆ **WARNING** : Always remove tool before operating vehicle.

## Drive Belt Condition

Inspect belt for cracks, fraying or abnormal wear (uneven wear, wear on one side, missing cogs, cracked fabric). If abnormal wear is noted, probable cause could be pulley misalignment, excessive RPM with frozen track, fast starts without warm-up period, burred or rusty sheave, oil on belt or distorted belt. Contact an authorized dealer.

Check drive belt width, replace if less than 32 mm (1-1/4 in).

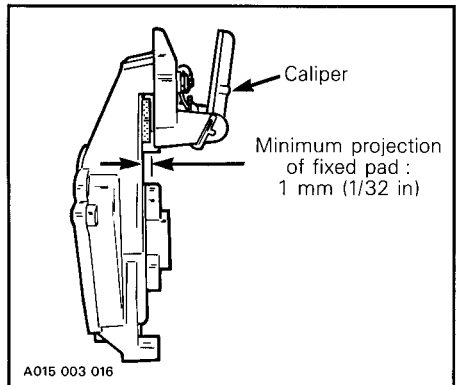
## New Drive Belt

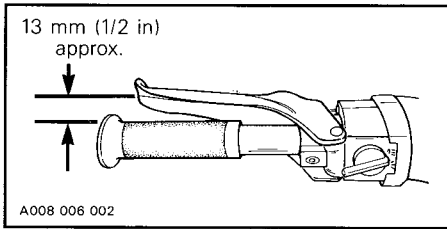
When installing a new drive belt, break-in period of 25 km (15 miles) is strongly recommended.

## Brake Condition

The brake mechanism on your snowmobile is an essential safety device. Keep this mechanism in proper working condition. Above all, do not operate the snowmobile without an effective brake system.

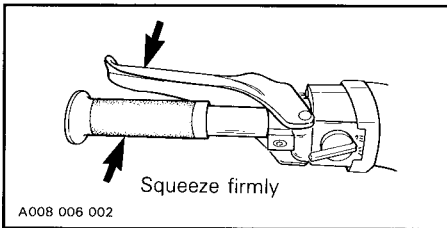
◆ **WARNING** : Brake pads must be replaced when fixed pad projects 1 mm (1/32 in) or less from caliper. Replacement must be performed by an authorized dealer.



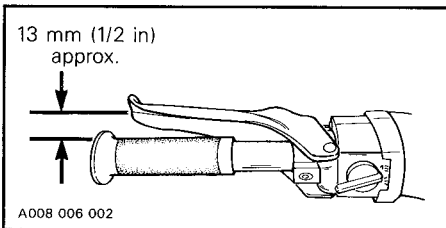


## Brake Adjustment

If a quicker brake response is desired, strongly squeeze the brake lever several times, this will actuate the adjusting mechanism.



After the adjustment, brake should apply fully when lever is approximately 13 mm (1/2 in) from handlebar grip. If not, do not tamper with the brake, contact your servicing dealer.



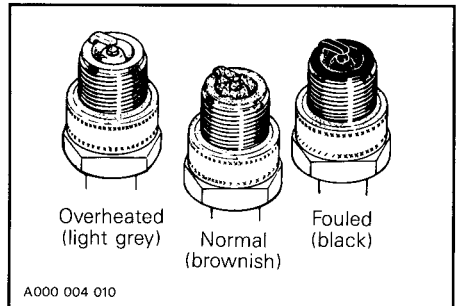
## Spark Plugs

Disconnect the spark plug wires and remove the spark plugs.

Check the condition of the plugs.

- A brownish tip reflects ideal conditions. (Carburetor adjustments, spark plug heat range, etc., are correct).

- A black insulator tip indicates fouling caused by : carburetor idle speed mixture and/or high speed mixture too rich, incorrect fuel mixture ratio, wrong type of spark plug (heat range), or excessive idling.
- A light grey insulator tip indicates a lean mixture caused by : carburetor high speed mixture adjusted too lean, wrong spark plug heat range, incorrect fuel mixture ratio, or a leaking seal or gasket.



**CAUTION :** If spark plug condition is not ideal, contact an authorized dealer.

Check spark plug gap using a wire feeler gauge, adjust according to technical data chart.

Reinstall plugs and connect wires.

## Battery Condition (Electric Start and EFI Model)

**CAUTION :** It is very important that the battery be maintained in good state of charge. As electrolyte density decreases, it becomes water. For this reason, a discharged battery may freeze and be damaged. Always keep it fully charged.

○ **NOTE** : On EFI model, engine will not start when battery is discharged. Battery supplies the electric fuel pump and the ECU (Electronic Control Unit). The ECU Monitor Lamp will flash a code number to indicate this condition. However, an attempt to start engine may be performed. Refer to ECU Monitor Lamp in **Control/instruments** section.

▼ **CAUTION** : Battery must be disconnected prior to charging battery on EFI model. Otherwise, ECU might be damaged by peak voltage.

Check electrolyte level monthly.

Battery is located in a recessed area of fuel tank which is accessed from engine side. To check electrolyte level, it is necessary to remove battery from vehicle.

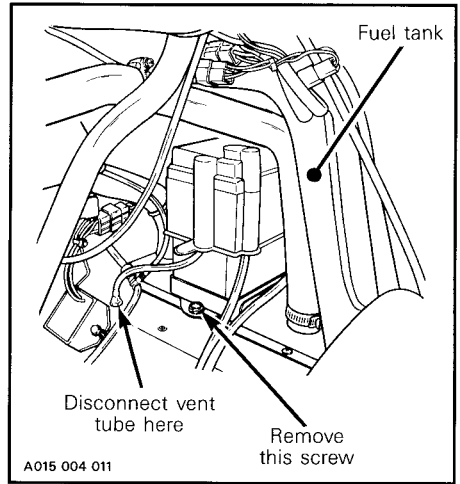
◆ **WARNING** : Never charge or boost battery while connected or installed on vehicle.

### Battery Removal

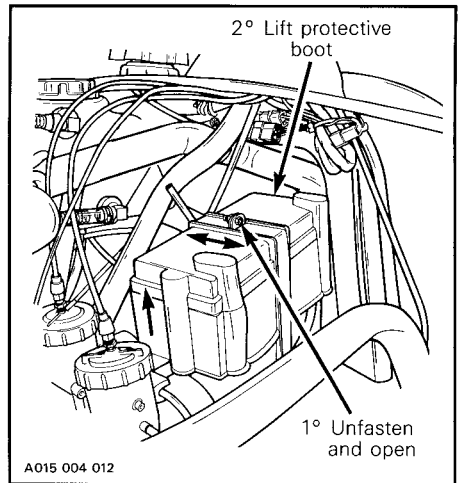
▼ **CAUTION** : On EFI model, ignition switch must be in the OFF position prior to disconnecting battery. Otherwise, ECU (Electronic Control Unit) might be damaged.

○ **NOTE** : On EFI model, it is necessary to remove ECU box from air intake silencer. Grip the end of the rubber post which retains the box. Pull it up while sliding it out of the box slot. Proceed the same way for the three posts. Take box away of silencer.

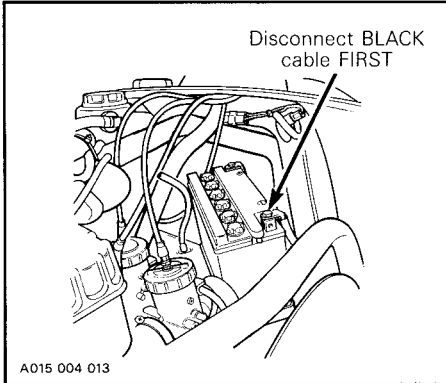
1. Remove air intake silencer.
2. Disconnect vent tube from vehicle fitting. Cut locking tie retaining battery cable to battery rack.
3. Remove battery rack retaining screw.



4. Pull battery and rack forward.
5. Unfasten retaining strips.
6. Open strips and lift battery protective boot.



7. Disconnect BLACK negative cable FIRST.



8. Then, disconnect RED positive cable LAST.

◆ **WARNING :** Always disconnect battery cables exactly in the specified order. Electrolyte or fuel vapors can be present in engine compartment and a spark might ignite them and possibly cause personal injuries.

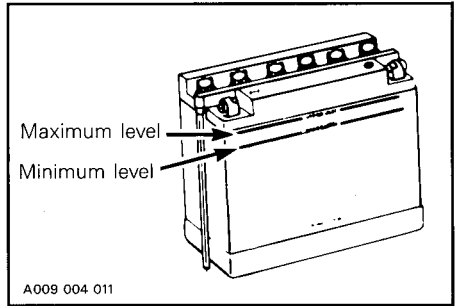
9. Withdraw battery from vehicle being careful not to lean it so that electrolyte flows out of vent tube.

▼ **CAUTION :** Should any electrolyte spillage occur, immediately wash off with a solution of baking soda and water to prevent damage to vehicle components.

10. Withdraw battery from rack.

### Electrolyte Level Verification

Check electrolyte level. Electrolyte must be at UPPER LEVEL line on battery casing.

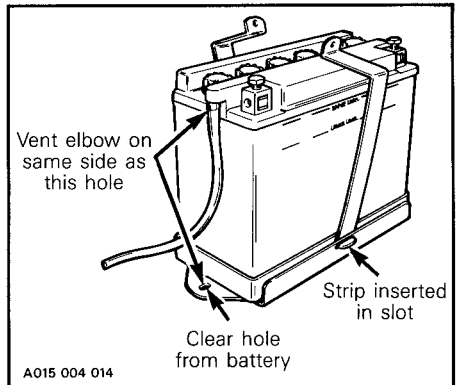


If necessary add distilled water. Battery connections must also be free of corrosion. If cleaning is necessary, remove corrosion using a stiff brush then clean with a solution of baking soda and water. Rinse and dry well.

▼ **CAUTION :** Do not allow cleaning solution to enter battery. It will destroy the chemical properties of the electrolyte.

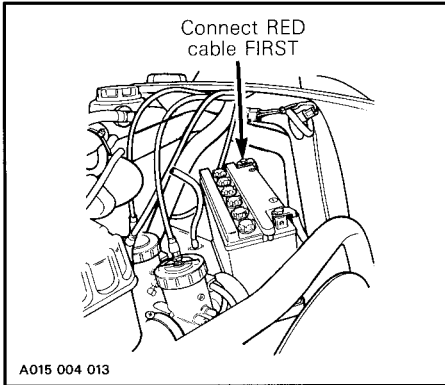
### Battery Installation

1. Install retaining strips in slots of battery rack. Hold in position.
2. Locate retaining screw hole in rack and position battery so that vent elbow is on same side. Push battery rearward enough to clear hole of retaining screw.



▼ **CAUTION** : On EFI model, ignition switch must be in the OFF position prior to connecting cables. Otherwise, ECU (Electronic Control Unit) might be damaged.

3. Connect RED positive cable FIRST.



4. Then, connect BLACK negative cable LAST.

◆ **WARNING** : Always connect battery cables exactly in the specified order.

5. Apply silicone dielectric grease (P/N 413 7017 00) or petroleum jelly on battery posts and connectors.

6. Ensure vent tube is properly installed on battery elbow then, install protective boot over battery.

7. Close and fasten retaining strips.

8. Slide battery in its emplacement and move it until it is properly held by its retaining device.

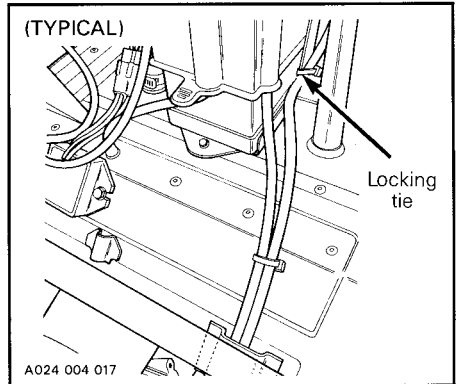
9. Secure rack to chassis.

10. Connect vent tube to vehicle fitting.

11. Ensure that vent tube is not kinked or blocked.

◆ **WARNING** : Vent tube must be free and open. If not, it will restrict ventilation and create a gas accumulation that could result in an explosion. Avoid skin contact with electrolyte.

12. Secure cable using locking tie (P/N 414 1152 00).



○ **NOTE** : Always keep battery fully charged. (To charge, refer to battery in STORAGE section).

◆ **WARNING** : Gases given off by a battery being charged are highly explosive. Always charge in a well ventilated area. Keep battery away from cigarettes or open flames. Avoid skin contact with electrolyte.

13. Reinstall air intake silencer.

▼ **CAUTION** : Ensure air intake silencer boots are properly secured to carburetors.

## Suspension Condition

Visually inspect all suspension components.

○ **NOTE** : During normal driving, snow will act as a lubricant and coolant for the slider shoes. Extensive riding on ice or sanded snow will create excessive heat build-up and cause premature slider shoe wear.

## Suspension Adjustments

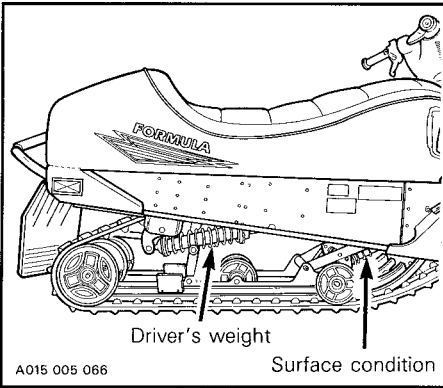
The front suspension can be customized by changing springs. Refer to an authorized dealer for more information.

○ **NOTE** : On Formula Plus X model, the front spring preload can be adjusted. Refer to rear spring adjustment for details.

The rear suspension has three adjustments :

- The front shock spring to control weight distribution on ski/track.
- The rear shock springs for driver's weight.
- Limiter screw to control vehicle weight transfer.

### Shock Absorber Spring Adjustment



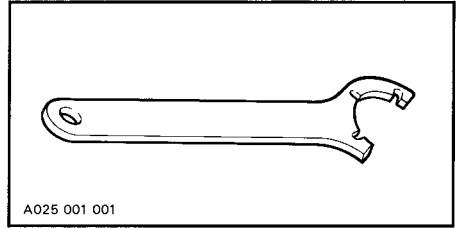
Each shock absorber has a cam located at the bottom of the shock. Spring preload may be increased or decreased by turning the cam.

To adjust, use the adjustment key supplied in tool kit. Spray WD-40 between spring and spring cam to ease adjustment.

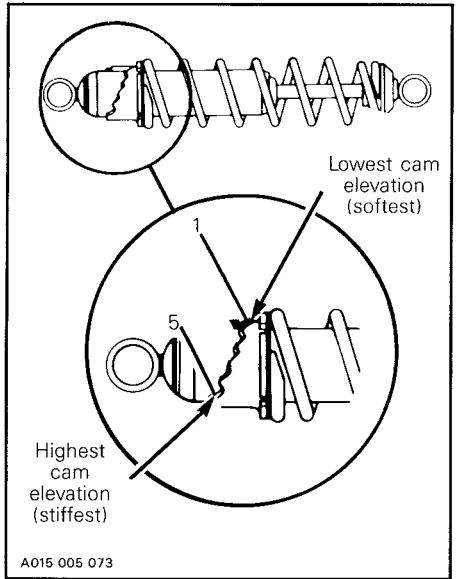
### Front Spring

○ **NOTE** : The front shock absorber of the rear suspension should be removed to adjust spring collar.

Use the following key (not applicable to Formula Plus X).



Fit the key on the shock spring cam and turn so that spring compress to stiffen suspension or so that spring extends to soften suspension.



○ **NOTE** : On Formula Plus X, it is easier to adjust spring preload when shock is removed from vehicle. Use a spring compressor to collapse it then change lock ring position as desired. The recommended pressure of nitrogen in shock absorber is 1380 kPa (200 PSI).

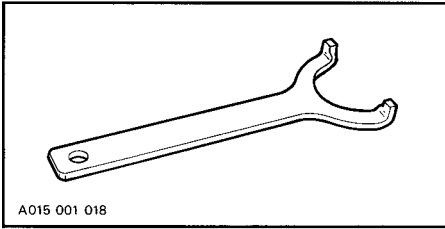


When the front spring cam is at the lowest elevation more weight is distributed on the skis.

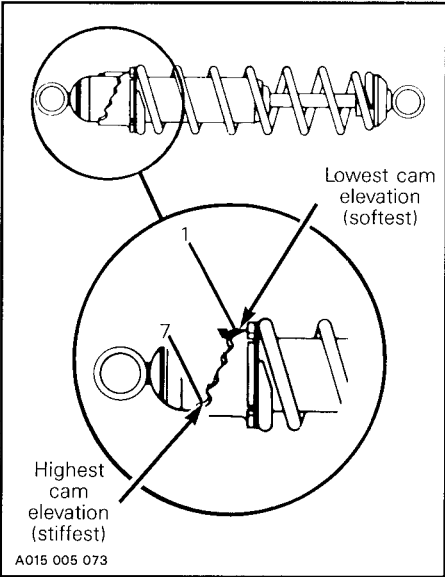
At the highest position more weight is transferred from the skis to the track.

### Rear Springs

Use the following key.



Fit the key on the shock spring cam and turn so that spring compress to stiffen suspension or so that spring extends to soften suspension.



Choice of cam positions depends on operator's weight, riding speed and field conditions.

Cam position	1 —————> 7
Operator's weight	Light —————> Heavy
Riding speed	Low —————> High
Field condition	Flat —————> Bumpy

Slight suspension bottoming occurring under the worst riding conditions indicates a good choice of preload adjustment (cam position).

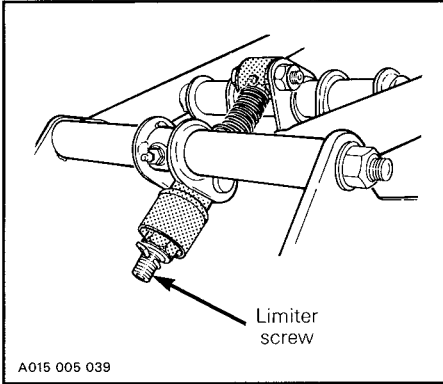
The rear suspension can be customized by changing springs and/or changing attachment position of shock absorber pivot to chassis. Refer to an authorized dealer for more information.

### Limiter Screw

The function of the suspension limiter screw is to control the vehicle weight transfer.

The closer the nut is to the cotter pin, the more the weight will be transferred to the track to provide better traction. The farther the nut is from the cotter pin the less weight will be transferred to the track, maintaining a more positive steering. Limiter screw allows weight transfer adjustment according to driver's requirement, field and/or snow conditions.

○ **NOTE** : As carrying load increases, a higher cam elevation is required.

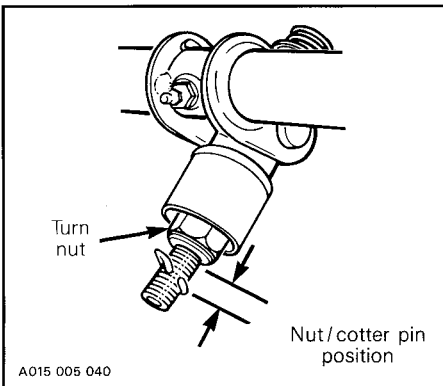


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The following table is a general guideline only :

Snow condition	Nut/cotter pin position
Hill climbing	Close
Hard surface	Far

**CAUTION :** Whenever limiter screw adjustment is changed, track tension must be readjusted to prevent any possibility of operating vehicle with a too loose or too tight track tension.



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## In Deep Snow

When operating the vehicle in deep snow, it may be necessary to vary the position of front spring adjustment cam, limiter screw and/or riding position, to change the angle at which the track rides on the snow. Operator's familiarity with the various adjustments as well as snow conditions will dictate the most efficient combination.

## Track Condition

Lift the rear of the vehicle and support it off the ground. With the engine **off**, rotate the track by hand, and inspect condition. If worn or cut, or if track fibers are exposed, or if missing or defective inserts or guides are noted ; contact an authorized dealer.

**WARNING :** Do not operate a snowmobile with a cut, torn or damaged track.

## Track Tension and Alignment

### Tension :

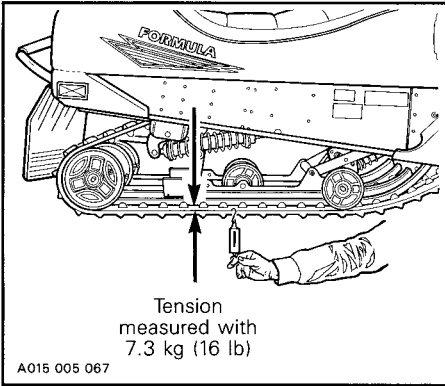
**NOTE :** Ride the vehicle in snow about 15 to 20 minutes prior to adjusting track tension.

Lift rear of vehicle and support it with a mechanical stand.

Allow the suspension to extend normally and check gap half-way along slider shoe. The gap should be as specified between the slider shoe and the bottom inside of the track when applying a downward pull of 7.3 kg (16 lb). If the track tension is too loose, track will have a tendency to thump.

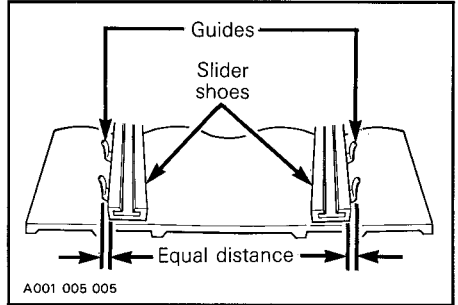
### Specifications :

Model	Tension mm (in)
All Formula series	40 - 45 (1-9/16 - 1-3/4)



## Alignment

Start the engine and accelerate just so that track turns **slowly**. Check that the track is well centered; equal distance on both sides between edges of track guides and slider shoes.



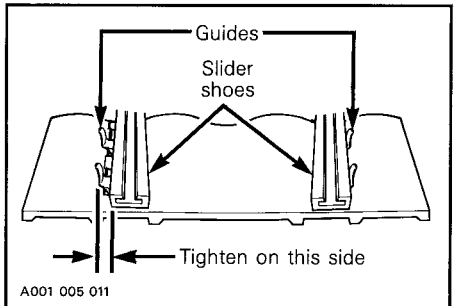
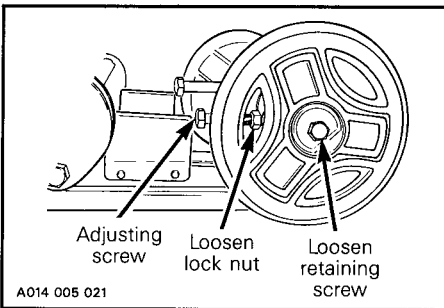
**CAUTION** : Too much tension will result in power loss and excessive stresses on suspension components.

If adjustment is necessary, loosen the rear idler wheel retaining screws and the adjusting screw lock nuts, then loosen or tighten the adjusting screws located on the inner side of the rear idler wheels. If correct tension is unattainable, contact an authorized dealer.

**NOTE** : Torque retaining screw to 48 N•m (35 lbf•ft) after adjustment.

**WARNING** : Before checking track alignment, ensure that the track is free of particles which could be thrown out while it is rotating. Keep hands, tools, feet and clothing clear of track. Ensure no-one is standing in close proximity to the vehicle.

To correct, **stop the engine**, loosen the retaining screws of both idler wheels as well as adjusting screw lock nuts. Tighten the adjusting screw on side where slider shoe is farthest from track guides.

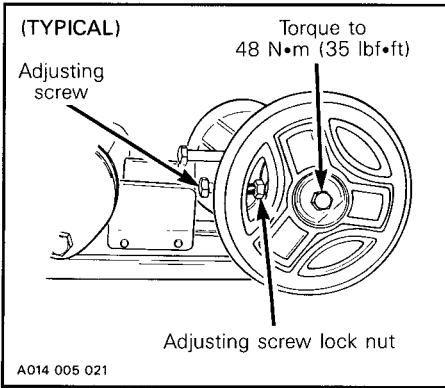


**NOTE** : Track tension and alignment are inter-related. Do not adjust one without the other.

Tighten adjusting screw lock nuts and idler wheel retaining screws.

○ **NOTE** : Torque retaining screw to 48 N•m (35 lbf•ft) after adjustment.

◆ **WARNING** : If lock nuts or retaining screws are not tightened properly, the adjusting screws could loosen causing 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".



Restart engine, rotate track **slowly** and recheck alignment.

## Condition of Drive and Driven Pulleys

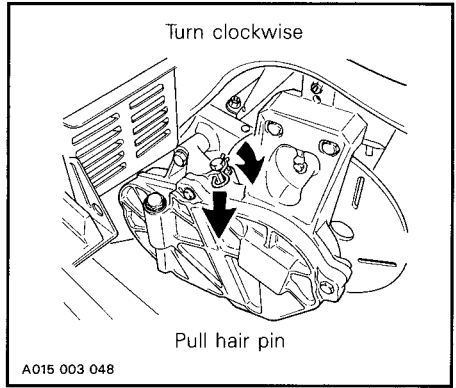
There are complex mechanism which operate at high rotational speeds. Each pulley is dynamically balanced at the factory. Any tampering by the owner may disrupt this precision balancing and create an unstable condition.

Pulleys are factory-adjusted to provide the best performance under most riding conditions. However, certain conditions, such as deep snow, high altitude, pulling a load, etc., may require different adjustments. Contact an authorized dealer for adjustment.

◆ **WARNING** : The drive and driven pulleys must be inspected and cleaned by an authorized dealer at least annually.

## Drive Chain Tension

Run vehicle forward so that true free-play can be taken. To adjust, remove adjusting screw hair pin. Fully tighten adjusting screw **by hand** then back off only far enough for hair pin to engage locking hole and install hair pin.



This adjustment should provide 3-5 mm (1/8 - 13/64 in) free-play when measured at the outer circumference of the brake disc.

▼ **CAUTION** : Free-play must not exceed 5 mm (13/64 in), readjust if necessary.

◆ **WARNING** : If the specified free-play is not reached with the tensioner screw fully tightened, consult an authorized dealer.

○ **NOTE** : If chattering is experienced when the transmission is shifted into reverse, the linkage may have to be adjusted. Refer to an authorized dealer for adjustment.

## Steering and Front Suspension Mechanism

Visually inspect steering and front suspension mechanism for tightness of components (steering arms, control arms and links, tie rods, ball joints, ski coupler bolts etc.). If necessary, replace or retighten.

## Wear and Condition of Skis and Runners

Check the condition of the skis and the ski runners. If worn, contact your authorized dealer.

◆ **WARNING** : Excessively worn skis and/or ski runners will hinder proper vehicle control.

## Steering and Ski Leg Camber Adjustment

There are accurate front suspension geometry adjustments to perform on these vehicles and they should be done only by an authorized dealer.

## Exhaust System

Replace any components which have rusted or developed cracks or holes. Ensure muffler is properly secured in its mount and the ends of retaining springs have not been over-stretched. The tail pipe of the muffler should be centered with the exit hole in the bottom pan.

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, severe engine damage will result.

▼ **CAUTION** : Do not operate vehicle with muffler disconnected ; serious engine damage will occur.

## Engine Compartment

Keep clean of grass, twigs, clothes, etc. These are combustible under certain conditions.

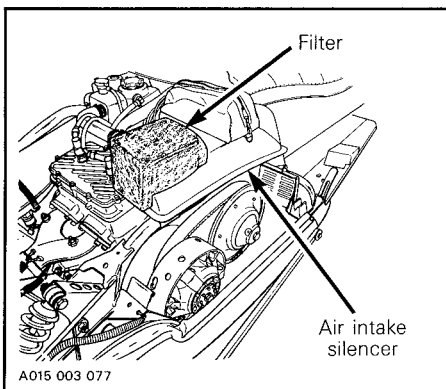
## Engine Mount Screws and Engine Head Screws

Refer to an authorized dealer for inspection.

## Air Filter Cleaning

Leaving the vehicle uncovered during a snowfall or riding in deep powder snow may block air filter.

Lift hood and remove air filter from air intake silencer.



To clean the filter, shake the snow out of it then, dry it out.

Check that the air box is clean and dry and properly reinstall the filter.

▼ **CAUTION** : These vehicles have been calibrated with the filter installed. Operating the vehicle without it may cause engine damage.

## EFI System Inspection

Except for fuel filter replacement and idle speed adjustment, which are covered in forthcoming sections, there is no adjustment or maintenance to perform on EFI (Electronic Fuel Injection) system.

Occasionally check system for fuel leaks, electrical connections, wiring attachments, etc.

Once a year, the system should be inspected by an authorized dealer.

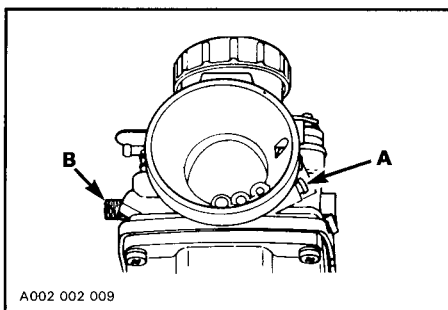
▼ **CAUTION:** Do not temper to perform adjustments that are not detailed in this guide. The EFI system requires professional technicians with specific skills to correctly servicing it. Always refer to an authorized dealer.

## Carburetor/Throttle Body Adjustment

▼ **CAUTION:** Never operate your snowmobile with the air intake silencer disconnected. Serious engine damage will occur if this notice is disregarded.

### Carburetor (All Models except EFI)

▼ **CAUTION:** Make sure both carburetors start to operate simultaneously.



#### A) Air Screw Adjustment

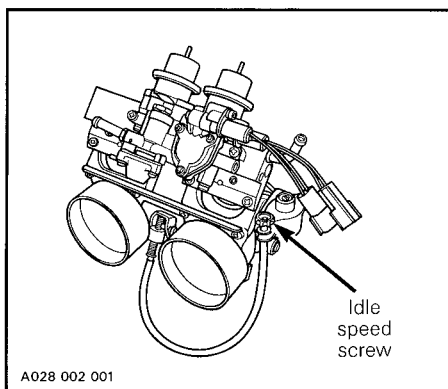
Slowly close the air screw (until a slight seating resistance is felt) then unscrew 1-1/2 turns (2 turns on Formula MACH 1 series).

#### B) Idle Speed Adjustment

Turn **idle speed** screw clockwise until it contacts the throttle slide then continue turning two additional turns. This will provide a preliminary idle speed setting. Start engine and allow it to warm up. Adjust idle speed to 1800-2000 RPM by turning the idle speed screw clockwise or counterclockwise.

### Throttle body (EFI Model Only)

Start engine and allow it to warm up. Adjust idle speed to 1800-2000 by turning the idle speed screw clockwise or counterclockwise. If idle speed can not be adjusted properly, refer to an authorized dealer.



○ **NOTE:** There is no air screw on EFI model. Throttle bodies synchronization has been performed at factory and does not need adjustment.

### Fuel Filter Replacement

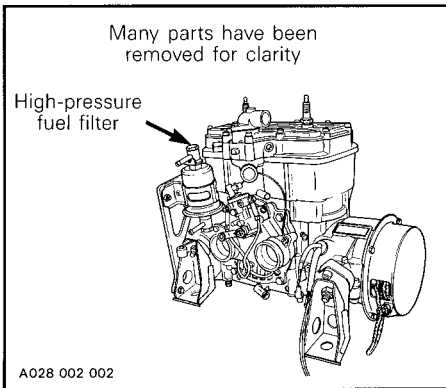
◆ **WARNING:** On EFI model, fuel system is under high pressure. Servicing must be performed by an authorized dealer only.

Fuel filter (more than one on EFI model) should be inspected and replaced by an authorized dealer. Fuel filter is located in fuel tank at the end of fuel line.

▼ **CAUTION** : On EFI model, always replace the high-pressure fuel filter with genuine Bombardier part.

### **Additional Filters on EFI Model**

The high-pressure fuel filter is located on engine.



In addition, there are 2 in-line fuel filters located in fuel pressure regulator inlet and in electric fuel pump inlet.

### **High Altitude Kit**

Altitude and temperature affect the carburetion needed for optimum engine performance. The carburetor jetting and drive system must be changed in conjunction with changes in operating altitude and temperature. As the ambient temperature rises or as snowmobile is operated at a higher altitude, the jetting must be replaced with leaner jets. The original equipment (production) jets need to be changed (depending upon your operating altitude and temperature), following the break-in period, to the proper size. Refer to an authorized dealer.

An engine loses about 3-1/2 percent of its power for each 300 m (1000 ft) increase in elevation. For example, an engine operating at 3000 m (10 000 ft) elevation would produce approximately 65 percent of the power it would have at sea level. Although this power cannot be regained, changes to the carburetor and drive system can be made to allow the engine to operate within its power band.

○ **NOTE** : On EFI model, only the drive system needs to be optimized for high altitude operation. The SFCI (Self Fuel Control Injection) automatically compensates for altitude and temperature changes.

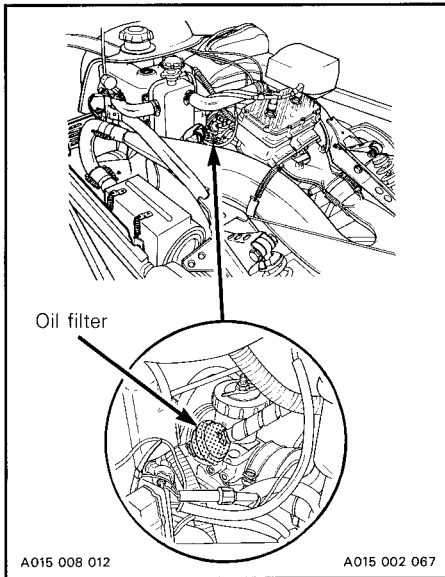
If snowmobile is used in high altitude areas (1200 m (4000 ft) and up) the carburetor (except EFI model) and drive system have to be recalibrated to meet those particular requirements. See an authorized dealer for high altitude kit installation.

▼ **CAUTION** : Do not change original jetting if vehicle is used below 1200 m (4000 ft) (not applicable to EFI model).

### **Oil Injection System**

#### **Injection Oil Filter Condition**

Inspect oil filter at least once a month. Insure that filter is not obstructed by foreign particles ; if so, see an authorized dealer.



▼ **CAUTION** : An obstructed injection oil filter will cause oil starvation resulting in serious engine damage.

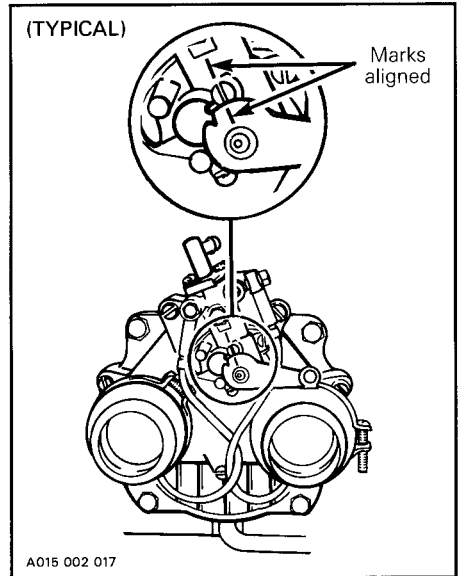
○ **NOTE** : After a storage period, it is important that your dealer replace the injection oil filter, that he verifies the oil flow of the injection pump and adjust it.

### Oil Injection Pump Adjustment

Proper oil injection pump adjustment is critical, any delay in the opening of the pump can result in serious engine damage.

▼ **CAUTION** : The carburetors/throttle body must be adjusted before adjusting the oil injection pump. Make sure idle speed is 1800-2000 RPM.

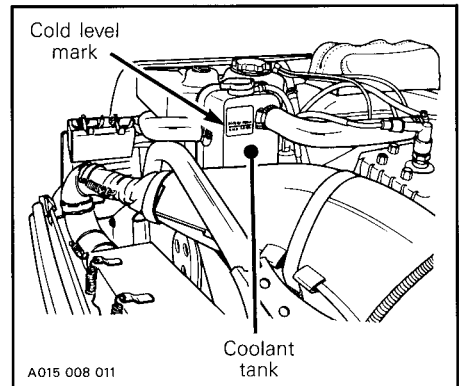
To check adjustment: eliminate the throttle cable free-play by pressing the throttle lever until a slight resistance is felt then hold in place. The marks on the pump casting and lever must align perfectly. If not, contact an authorized dealer.



### Cooling System Condition

Check condition of hoses and tightness of clamps.

Check coolant level. Liquid should be at level mark (engine cold) of coolant tank.



If additional coolant is necessary or if entire system has to be refilled, refer to an authorized dealer.



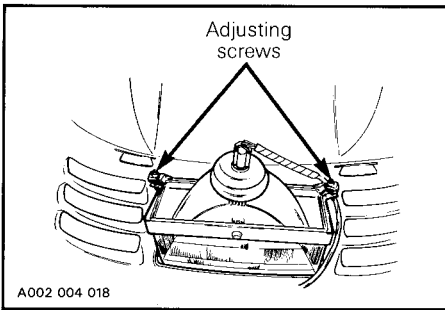
◆ **WARNING :** If radiator cap has to be removed, place a cloth over the cap and unscrew it to the first step to release the pressure. Never drain or refill the cooling system when engine is hot. Loss of fluid and severe burns could occur if this notice is disregarded.

○ **NOTE :** If coolant temperature rises above recommended range of 50 to 100°C (120 to 212°F), hose off grime from the heat exchanger (underneath the frame above the track).

If necessary, contact an authorized dealer.

## Headlamp Beam Aiming

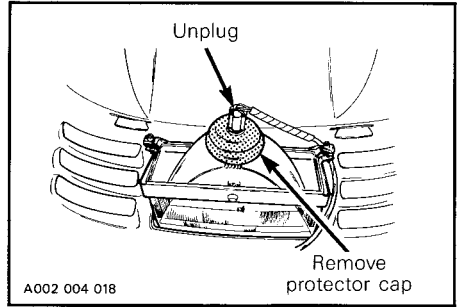
Open hood to adjust. From inside of hood, turn adjusting screw to obtain desired beam position.



## Bulb Replacement

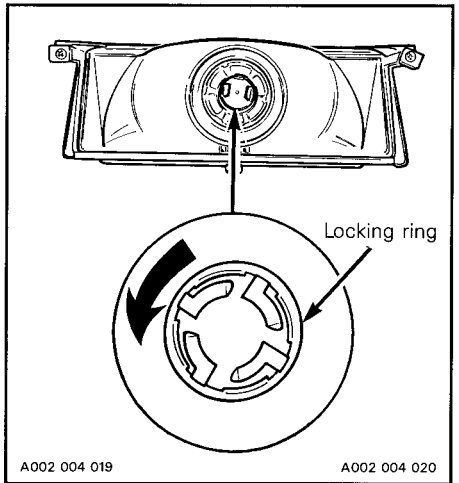
### Headlight

If the headlight is burnt, open hood. Unplug connector from headlight and remove protector cap.



To remove bulb, rotate locking ring counterclockwise then pull bulb.

▼ **CAUTION :** On applicable models, never touch glass portion of an halogen bulb with bare fingers, it shortens it's operating life. If by mistake glass is touched, clean it with isopropyl alcohol which will not leave a film on the bulb.

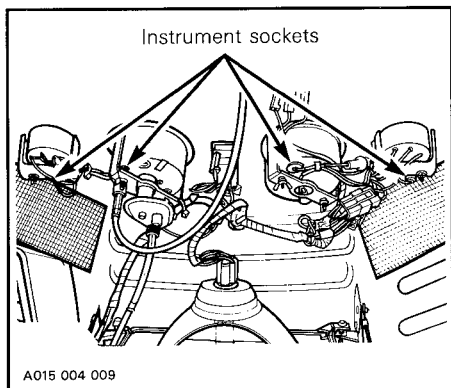


Properly reinstall parts.

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## Instrument(s)

Bulb socket is always behind the instrument under a black rubber boot. Pull rubber boot and socket to expose bulb. To release bulb, push bulb and at the same time, rotate bulb counterclockwise.



## Taillight

If taillight bulb is burnt, expose the bulb by removing the red plastic lens. To remove, unscrew the two screws.

◆ **WARNING** : Always check light operation after bulb replacement.

## Wiring Harnesses, Cables and Lines

Ensure each routing is well secured with proper fasten device (locking tie, clip, grommet, etc.) away from hot or rotating components.

## General Inspection

Check electrical wiring and components, retighten loose connections. Check for stripped wires or damaged insulation. Thoroughly inspect the vehicle and tighten loose bolts, nuts and linkage. Inspect skis and ski runner for wear.

◆ **WARNING** : Check condition of skis and ski runners. Replace if worn.

# STORAGE

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It is during summer, or when a vehicle is not in use for more than one month that proper storage is a necessity.

◆ **WARNING** : Only perform such procedures as detailed in this guide. It is recommended that dealer assistance be periodically obtained on other components/systems not covered in this guide. Unless otherwise specified, engine should be turned OFF for all lubrication and maintenance procedures.

## Track

Lift rear of vehicle until track is clear of the ground and support with a brace or trestle.

○ **NOTE** : Do not release track tension.

## Controls

Lubricate the steering and front suspension mechanism. Inspect all components for tightness. Oil all moving joints of the brake mechanism.

◆ **WARNING** : Do not lubricate the throttle and/or brake cables and housings. Avoid getting oil on the brake pads.

Coat all electrical connections and switches with silicone dielectric grease (P/N 413 7017 00). If unavailable, use petroleum jelly.

## Chaincase/Gearbox

Drain the chaincase and refill to proper level, using fresh Bombardier synthetic chaincase oil (P/N 413 8026 00 - 250 mL (9 oz)). To drain, remove the chaincase cover.

▼ **CAUTION** : Do not use other types of oil than synthetic chaincase oil (P/N 413 8026 00). Do not mix this synthetic oil with other types of oil.

○ **NOTE** : Chaincase oil capacity is about 350 mL (12 oz).

## Battery (Electric Start and EFI Model)

Battery should be removed from vehicle when storing vehicle. Refer to MAINTENANCE section for removal instructions.

▼ **CAUTION** : A poorly charged or discharged battery will freeze and damage its elements and possibly damage its casing and parts surrounding battery.

Clean outside surface of battery with a solution of baking soda and water. Remove all deposits from posts then rinse with clear tap water.

▼ **CAUTION** : Do not allow cleaning solution to enter battery since it will destroy the electrolyte.

Check electrolyte level. Refill if necessary with distilled water. Fully charge battery at a maximum rate of 2.0 A.

▼ **CAUTION** : Prior to charging the battery, always remove it from the vehicle to prevent electrolyte spillage.

◆ **WARNING** : Gases given off by a battery being charged are highly explosive. Always charge in a well ventilated area. Keep battery away from cigarettes, open flames and sparks. Avoid skin contact with electrolyte.

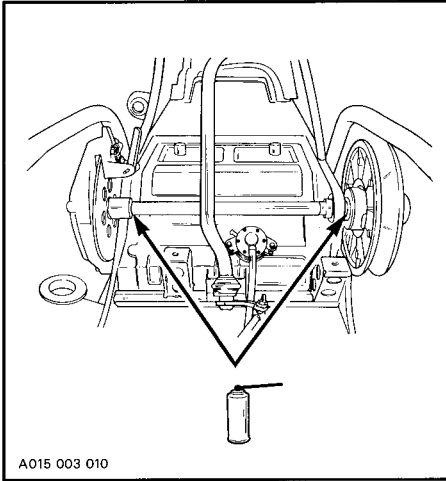
Coat battery posts with silicone dielectric grease (P/N 413 7017 00), if unavailable, use petroleum jelly.

Store battery in a cool, dry place.

○ **NOTE** : To prevent battery from discharging, store it on a wooden shelf away from moisture. A stored battery must be recharged at least every 40 days.

## Countershaft (Brake Disc and Driven Pulley)

For proper operation, brake disc and driven pulley must slide freely on countershaft. Lubricate sparingly.



**CAUTION :** Do not lubricate excessively as lubricant could contact and soil brake pads and/or drive belt.

## Engine

Engine internal parts must be lubricated to protect them from possible rust formation during the storage period.

To perform the storage procedures, proceed as follows :

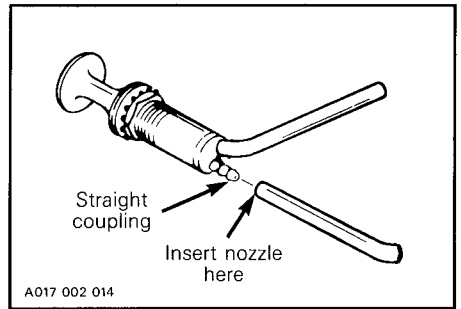
- Start the engine and allow it to run at idle speed until the engine reaches its operating temperature.

**WARNING :** Ensure the track is free of all particles which could be thrown out while it is rotating. Keep hands, tools, feet and clothing clear of track. Ensure no one is standing in close proximity to the vehicle.

- Stop the engine.

### All models except EFI

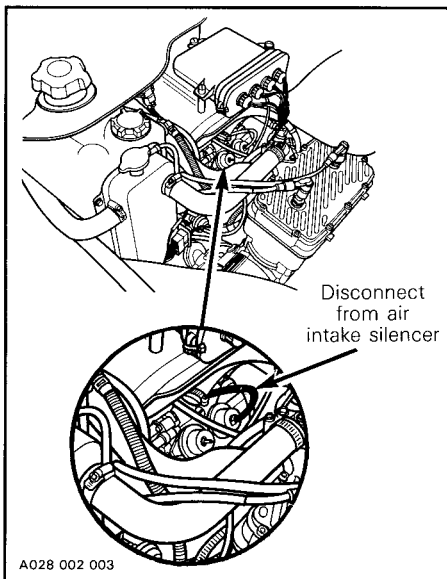
- To prevent fuel from draining, primer button should be pushed all the way in.
- Disconnect the outlet primer hose from the primer valve (straight coupling).



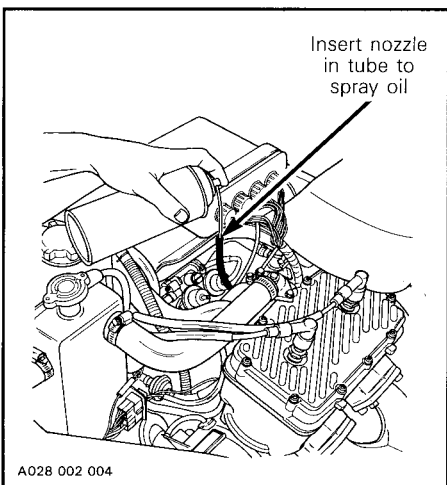
- Insert storage oil (P/N 496 0141 00) nozzle into primer outlet hose.

## EFI model only

- Disconnect the small tube connect- ed to air intake silencer as shown.



- Insert storage oil (P/N 496 0141 00) nozzle into tube end.



## All models

- Restart engine and run at idle speed.
- Inject storage oil until the engine stalls or until a sufficient quantity of oil has entered the engine (approximately half a can).
- With the engine stopped, remove the spark plug and spray storage oil (P/N 496 0141 00) into each cylinder.
- Crank slowly two or three revolutions to lubricate cylinders.
- Reinstall the spark plugs and the out- let primer hose (tube on air intake silencer for EFI model).

◆ **WARNING :** This procedure must only be performed in a well ven- tilated area. Do not run engine during storage period.

## Drive and Driven Pulleys

Remove belt guard and slip off drive belt.

Spray antirust product on pulleys.

## Fuel Tank and Carburetors

A fuel stabilizer, such as Sta-Bil® (or equivalent), can be added in fuel tank to prevent fuel deterioration and avoid draining fuel system for storage. Follow manufacturer's instructions for proper use.

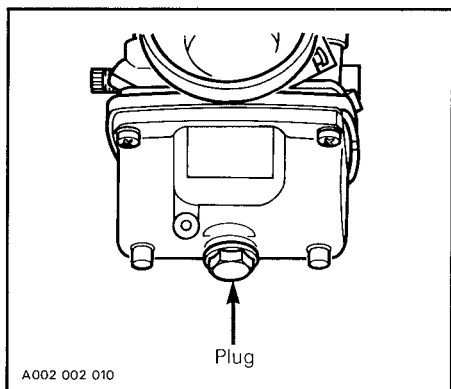
If above fuel stabilizer is not used, drain fuel system as described below.

Remove the cap and using a siphon, drain fuel tank.

◆ **WARNING :** Fuel is flammable and explosive under certain con- ditions. Always manipulate in a well ventilated area. Do not smoke or al- low open flames or sparks in the vi- cinity.

Carburetors must be dried out comple- tely to prevent gum formation during the storage period.

Once the fuel tank is emptied, remove the float chamber drain plug on each carburetor and drain carburetor.



Reinstall plug.

## General Inspection

Grease or oil at all recommended lubrication points. Wipe off surplus.

Block air intake hole and exhaust system hole using clean cloths.

Remove any dirt or rust.

To clean the entire vehicle, use only flannel clothes or Kimtowels® wipers no. 58-380 from Kimberly-Clark.

▼ **CAUTION** : It is necessary to use flannel cloths or "Kimtowels" wipers on windshield and hood to avoid damaging further surfaces to clean.

To clean the entire vehicle, including metallic parts with a **thick** coat of grease, use "Endust" imported by Bristol Myers, available at hardware stores or supermarkets.

To clean the entire vehicle, including metallic parts with a **thin** coat of grease, use "Simple Green" from Sunshine Makers Inc., available at hardware stores or at automotive parts retailer.

To remove scratches on windshield or hood : Start with "Slip Streamer Motorcycle Windshield Heavy Duty Scratch Remover". Finish with "Slip Streamer Motorcycle Cleaner and Polish".

○ **NOTE** : The latest product may be use alone if only light scratches are noticeable.

▼ **CAUTION** : Never clean plastic parts or hood with strong detergent, degreasing agent, paint thinner, acetone, products containing chlorine, etc.

Inspect the hood and repair any damage. Touch up all metal spots where paint has been scratched off. Spray all metal parts with antirust product. Wax the hood and the painted portion of the frame for better protection.

○ **NOTE** : Apply wax on glossy finish only. Protect the vehicle with a cover to prevent dust accumulation during storage.

▼ **CAUTION** : The snowmobile has to be stored in a cool and dry place and covered with an opaque tarpaulin. This will prevent sun rays and grime from affecting plastic components and vehicle finish.

# TROUBLESHOOTING

ALL MODELS EXCEPT EFI		
SYMPTOMS	POSSIBLE CAUSES	WHAT TO DO
Engine turns over but fails to start.	1. Ignition switch, emergency cut-out switch or tether switch is in the OFF position.	Place all switches in the RUN or ON position.
	2. Mixture not rich enough to start cold engine.	Check fuel tank level and check starting procedure, particularly use of the primer.
	3. Flooded engine (spark plug wet when removed).	Do not overprime. Remove wet spark plug, turn ignition switch to OFF and crank engine several times. Install clean dry spark plug. Start engine following usual starting procedure. If engine continues to flood, see an authorized dealer.
	4. No fuel to the engine (spark plug dry when removed).	Check fuel tank level ; turn fuel valve on if applicable ; check fuel filter ; replace if clogged ; check condition of fuel and impulse lines and their connections. A failure of the fuel pump or carburetor has occurred. Contact an authorized dealer.
	5. Spark plug/ignition (no spark).	Check that emergency cut-out switch is at the upper position ON and the tether cut-out switch cap is snapped over the receptacle.  Check for fouled or defective spark plug. Disconnect spark plug wire, unscrew plug and remove from cylinder head. Reconnect wire and ground exposed plug on a metallic part of engine <b>being careful to hold away from spark plug hole</b> . Follow engine starting procedure and check for sparks. If no spark appears, replace spark plug. If trouble persists, contact an authorized dealer.
	6. Engine compression.	As the engine is pulled over with the rewind starter, "cycles" of resistance should be felt as piston goes past top dead center (each piston on twin-cylinder engines). If no pulsating resistance is felt, it suggests a major loss of compression. Contact an authorized dealer.

**EFI MODEL ONLY**

<b>SYMPTOMS</b>	<b>POSSIBLE CAUSES</b>	<b>WHAT TO DO</b>
Engine turns over but fails to start and ECU monitor lamp does not turn on.	1. Ignition switch.	Turn to the ON position.
	2. ECU and/or main wiring harness fuses melted or defective.	Check wiring harness. Replace fuse(s).
	3. EFI system malfunction.	Refer to an authorized dealer.
Engine turns over but fails to start and ECU monitor lamp blinks.	1. EFI system malfunction.	Refer to ECU monitor lamp codes chart.
Engine turns over but fails to start and ECU monitor lamp turns on normally.	1. Ignition switch, emergency or tether switch is in the OFF position.	Place all switches in the ON position.
	2. Flooded engine (spark plug wet when removed).	Remove wet spark plug, turn ignition switch to OFF and crank engine several times. Install clean dry spark plug. Start engine following usual starting procedure. If engine is still flooded, refer to the special procedure in <b>Starting Procedure</b> section. If trouble persist, refer to an authorized dealer.
	3. No fuel to the engine (spark plug dry when removed).	Check fuel tank level. Turn ignition switch to OFF then to ON and listen to electric fuel pump for a spinning noise. If no sound is heard, check ECU and/or main wiring harness fuses and replace as necessary. Check if the ignition pulse wire (white/blue) is connected (look around ignition module). Otherwise, refer to an authorized dealer.



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**EFI MODEL ONLY**

<b>SYMPTOMS</b>	<b>POSSIBLE CAUSES</b>	<b>WHAT TO DO</b>
	4. Spark plug/ignition (no spark).	Ensure that all switches are in the ON position.  Check for fouled or defective spark plug. Disconnect spark plug wire, unscrew spark plug and remove from cylinder head. Reconnect wire and ground exposed plug on a metallic part of engine <b>being careful to hold away from spark plug hole</b> . Follow engine starting procedure and check for sparks. If no spark appears, replace spark plug. If trouble persists, contact an authorized dealer.
	5. Engine compression.	As the engine is pulled over with the rewind starter, "cycles" of resistance should be felt as piston goes past top dead center (each piston on twin-cylinder engines). If no pulsating resistance is felt, it suggests a major loss of compression. Contact an authorized dealer.

ECU : Electronic Control Unit.


EFI : Electronic Fuel Injection.

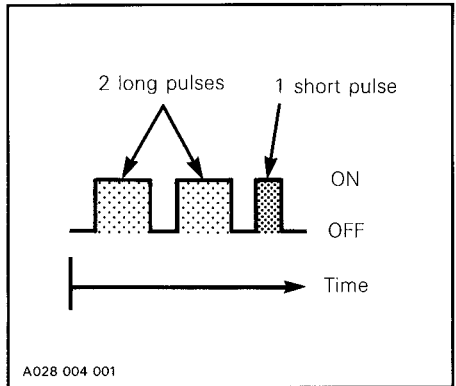
# ECU Monitor Lamp Codes Chart

## EFI Model Only

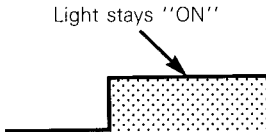
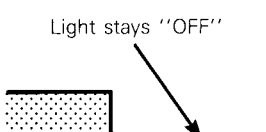
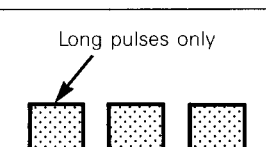
The EFI (Electronic Fuel Injection) system features a self-diagnosis monitoring that reports failure of its components. The monitor light is located on dashboard and indicates the normal state (ready mode) or a failure condition. If any component of the EFI system fails to operate properly, the light will begin to blink in long and/or short light pulses. To decode the light signal, simply count the number of **long** pulses that the light turns **on** and then the **short** pulses that the light turns **on**. The long pulse represents the first digit of the code and the short pulse represents the last digit. Then, compare the code to the chart below to find the problem.

Example : Two long light pulses followed by one short light pulse represent a code 21 which is a defective throttle position sensor.

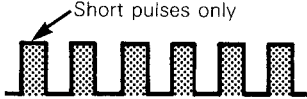









 **NOTE :** The light will blink until the defective part is repaired.



## ECU Monitor Lamp Status (no-fault chart)

Monitor lamp status	Condition
<p>Light stays "ON"</p> 	<p>Ready mode. Indicates that the system can be started. This pattern starts approximately 2 seconds after the main switch is turned ON. If the emergency or tether cord switch is in operation, however, the system cannot be started even after the ignition switch is turned ON.</p>
<p>Light stays "OFF"</p> 	<p>Auto-power-shut-off : If the engine is left unstarted approximately 2 minutes after the monitor lamp indicated that it was ready, power is automatically turned off to protect the battery. To start the system at this state, turn on the ignition switch at least one second after it was switched OFF. This condition also appears after normal engine starting when operating the vehicle.</p>
<p>Long pulses only</p> 	<p>Non-injection (purge) mode : If the ignition switch is turned ON with the throttle fully opened when the ignition plug is wet with fuel, the system enters the non-injection mode and the monitor lamp indicates it with this blinking pattern.</p>

## ECU Monitor Lamp Status (fault chart)

Code number	Monitor lamp blinking pattern	Fault
01		Battery voltage abnormal at high speed RPM.
11		Z-solenoid defective.
12		G-solenoid defective.
21		Throttle position sensor defective.
22		Water-temperature sensor defective.
23		Intake air-temperature sensor defective.
24		Battery voltage abnormal.
31		Atmospheric pressure sensor defective.
32		Air/fuel ratio adjusting resistor failure.
33		EFI system failure.

**ALL MODELS**

<b>SYMPTOMS</b>	<b>POSSIBLE CAUSES</b>	<b>WHAT TO DO</b>
Engine lacks acceleration or power.	1. Fouled or defective spark plug.	Check item 5 (item 4 for troubleshooting chart of EFI model) of "Engine turns over but fails to start".
	2. Lack of fuel to engine.	Check item 4 (item 3 for troubleshooting chart of EFI model) of "Engine turns over but fails to start".
	3. Carburetor adjustments. ① EFI system malfunction. ②	Contact an authorized dealer.
	4. 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.
	5. Drive and driven pulleys require servicing.	Contact an authorized dealer.
	6. Engine is overheating.	On liquid cooled engines, check coolant level, pressure cap, thermostat and for air locks in cooling system.  On fan cooled engines, check fan belt and its tension ; clean cooling fins of engine ; if heating persists, contact an authorized dealer.

① Applicable to all models except EFI.

② Applicable to EFI model only.

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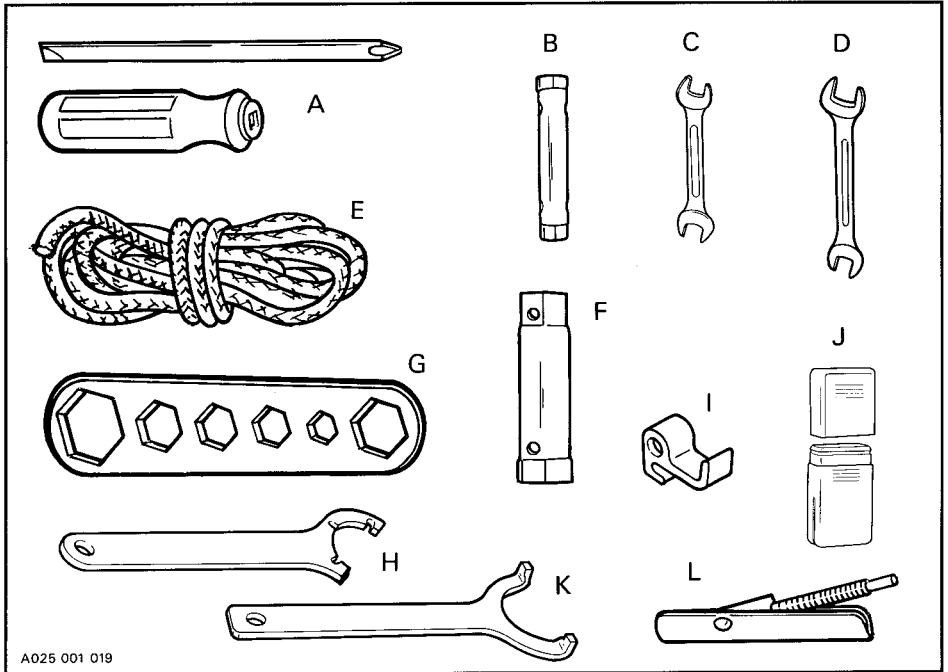
**ALL MODELS**

<b>SYMPTOMS</b>	<b>POSSIBLE CAUSES</b>	<b>WHAT TO DO</b>
Engine backfires.	1. Faulty spark plug.	See item 5 (item 4 for troubleshooting chart of EFI model) of "Engine turns over but fails to start".
	2. Water in fuel.	Drain fuel system and refill with clean fuel.
	3. Engine is running too hot.	See item 6 of "Engine lacks acceleration or power".
	4. Ignition timing is incorrect or there is an ignition system failure.	Contact an authorized dealer.
Snowmobile cannot reach full speed.	1. Drive belt.	Check item 4 of "Engine lacks acceleration or power".
	2. Incorrect track adjustment.	See maintenance section for proper alignment and tension adjustments.
	3. Pulleys misaligned.	Contact an authorized dealer.
	4. Engine.	See items 1, 2, 3 and 6 of "Engine lacks acceleration or power".

# TOOLS

As standard equipment, each new snowmobile is supplied with basic tools such as screwdriver, wrenches, emergency starting rope, etc.

## Standard Tools



A025 001 019

### DESCRIPTION

- A. Screwdriver
- B. Socket 10/13 mm
- C. Open end wrench 10/13 mm
- D. Open end wrench 15/17 mm
- E. Emergency starting rope
- F. Socket 21/26 mm
- G. Multi-purpose key
- H. Shock absorber spring collar adjustment key for rear suspension (front shock)
- I. Emergency starting clip
- J. Tool box  
Tool box cover
- K. Shock absorber spring collar adjustment key for rear suspension (rear shock)
- L. Drive belt installer/remover

### PART NUMBERS

- 529 0192 00
- 529 0149 00
- 529 0173 00
- 529 0193 00
- 529 0175 00
- 529 0148 00
- 529 0147 00
- 529 0122 00
- 529 0194 00
- 572 0363 00  
572 0364 00
- 529 0190 00
- 529 0195 00

# SPECIFICATIONS

## Engine/Electrical

	<b>MX SERIES</b>	<b>PLUS SERIES EXCEPT PLUS X ①</b>
<b>ENGINE</b>		
Type	467	582
No. of cylinders	2	2
Bore	69.5 mm (2.736 in)	76.0 mm (2.992 in)
Stroke	61.0 mm (2.402 in)	64.0 mm (2.520 in)
Displacement	462.8 cm <sup>3</sup> (28.24 in <sup>3</sup> )	580.7 cm <sup>3</sup> (35.44 in <sup>3</sup> )
Compression ratio (corrected)	6.97 : 1	7.5 : 1
Maximum horsepower RPM	7000 RPM	7100 RPM
Carburetor type	Variable Venturi, float type ②	
Carburetor adjustment :		
— air screw	1-1/2 turns	1-1/2 turns ③
— idle speed	1800-2000 RPM	1800-2000 RPM
Cooling system capacity :		
— SI	4.2 L	4.2 L
— U.S.	142 oz	142 oz
Antifreeze / water mixture (% by volume)	60 / 40	60 / 40
Thermostat	43°C (109°F)	42°C (108°F)
Radiator pressure cap	90 kPa (13 lb/in <sup>2</sup> )	90 kPa (13 lb/in <sup>2</sup> )
<b>ELECTRICAL</b>		
Lighting system (output)	12 V 220 W	12 V 220 W
Bulb :		
— headlamp	60 / 55 W halogen	60 / 55 W halogen
— tail / stop	8 / 27 W	8 / 27 W
— speedometer	5 W	5 W
— tachometer	5 W	5 W
— Electric fuel level gauge	2 W	2 W
— temperature gauge	2 W	2 W
Fuse :		
— tachometer	0.1 A	0.1 A
— starting system		30 A ④
Spark plug :		
— type	NGK BR9ES	NGK BR9ES
— gap	0.45 mm (.018 in)	0.45 mm (.018 in)

① See at the end of specifications for Formula Plus X.

② SFCI (Self Fuel Control Injection), throttle body type (38 mm bore) on EFI model.

③ Not applicable to EFI model.

④ Applies to electric start models only.

## Engine/Electrical

### MACH 1/MACH II/MACH 1 XTC

#### ENGINE

Type	670
No. of cylinders	2
Bore	78.0 mm (3.071 in)
Stroke	70.0 mm (2.756 in)
Displacement	667.0 cm <sup>3</sup> (40.8 in <sup>3</sup> )
Compression ratio (corrected)	6.4 : 1
Maximum horsepower RPM	7250 RPM
Carburetor type	Variable Venturi, float type
Carburetor adjustment :	
– air screw	2 turns
– idle speed	1800-2000 RPM
Cooling system capacity :	
– SI	4.2 L
– U.S.	142 oz
Anti-freeze / water mixture (% by volume)	60 / 40
Thermostat	42°C (108°F)
Radiator pressure cap	90 kPa (13 lb/in <sup>2</sup> )

#### ELECTRICAL

Lighting system (output)	12 V 220 W
Bulb :	
– headlamp	60 / 55 W halogen
– tail / stop	8 / 27 W
– speedometer	5 W
– tachometer	5 W
– electric fuel level gauge	2 W
– temperature gauge	2 W
Fuse :	
– tachometer	0.1 A
Spark plug :	
– type	NGK BR9ES
– gap	0.45 mm (.018 in)



## Power train

	<b>MX/MX II</b>		<b>MX XTC R</b>	
Track :				
– width	40.9 cm	(16.1 in)	40.9 cm	(16.1 in)
– length	307 cm	(121 in)	352 cm	(139 in)
– tension	40-45 mm (1-9/16 - 1-3/4 in) gap between slider shoe and bottom inside of track when exerting a downward pull of 7.3 kg (16 lb) to the track.			
– alignment	Equal distance between edges of track guides and slider shoes.			
Standard gear ratio	22/44		22/44	
Drive belt :				
– number	414 6338 00		414 6338 00	
– maximum width	35 mm	(1-3/8 in)	35 mm	(1-3/8 in)
– minimum width	32 mm	(1-1/4 in)	32 mm	(1-1/4 in)
Chaincase oil	350 mL (12 oz)		350 mL (12 oz)	
	<b>PLUS/PLUS E/PLUS II/ GRAND TOURING/ PLUS EFI</b>		<b>PLUS XTC</b>	
Track :				
– width	40.9 cm	(16.1 in)	40.9 cm	(16.1 in)
– length	307 cm	(121 in)	352 cm	(139 in)
– tension	40-45 mm (1-9/16 - 1-3/4 in) gap between slider shoe and bottom inside of track when exerting a downward pull of 7.3 kg (16 lb) to the track.			
– alignment	Equal distance between edges of track guides and slider shoes.			
Standard gear ratio	25/44		23/44	
Drive belt :				
– number	414 7413 00		414 7413 00	
– maximum width	35 mm	(1-3/8 in)	35 mm	(1-3/8 in)
– minimum width	32 mm	(1-1/4 in)	32 mm	(1-1/4 in)
Chaincase oil	350 mL (12 oz)		350 mL (12 oz)	
	<b>MACH 1/MACH II</b>		<b>MACH 1 XTC</b>	
Track :				
– width	40.9 cm	(16.1 in)	40.9 cm	(16.1 in)
– length	307 cm	(121 in)	352 cm	(139 in)
– tension	40-45 mm (1-9/16 - 1-3/4 in) gap between slider shoe and bottom inside of track when exerting a downward pull of 7.3 kg (16 lb) to the track.			
– alignment	Equal distance between edges of track guides and slider shoes.			
Standard gear ratio	26/44		25/44	
Drive belt :				
– number	414 7413 00		414 7413 00	
– maximum width	35 mm	(1-3/8 in)	35 mm	(1-3/8 in)
– minimum width	32 mm	(1-1/4 in)	32 mm	(1-1/4 in)
Chaincase oil	350 mL (12 oz)		350 mL (12 oz)	

## Brake/Fuel

### ALL FORMULA SERIES

#### BRAKE

Type	Disc, self-adjusting
Lining minimum thickness	Fixed pad must project 1 mm (1/32 in) minimum from caliper.
Control lever adjustment	13 mm (1/2 in) minimum distance from handlebar grip when fully applied.

#### FUEL

Gas type	Regular unleaded with a minimum octane number (R + M/2) of 87.
Fuel tank capacity :	
- SI	35.3 L
- U.S.	9.3 gal
Injection oil	BOMBARDIER Snowmobile Injection Oil.
Tank capacity :	
- SI	2.9 L
- U.S.	98 oz

## Chassis

	<b>MX/MX II</b>		<b>MX XTC R</b>	
Lenght, overall	276.5 cm	(108.8 in)	296.5 cm	(116.7 in)
Width, overall	112.7 cm	(44.4 in)	106.0 cm	(41.7 in)
Height, overall	113.5 cm	(44.7 in)	120.0 cm	(47.2 in)
Ski stance (center to center)	101.0 cm	(39.76 in)	92.1 cm	(36.25 in)
Weight	225 kg	(496 lb)	247 kg	(545 lb)
Bearing area	7099 cm <sup>2</sup>	(1100 in <sup>2</sup> )	8455 cm <sup>2</sup>	(1311 in <sup>2</sup> )
Ground pressure	3.11 kPa	(.451 lb/in <sup>2</sup> )	2.87 kPa	(.416 lb/in <sup>2</sup> )
	<b>PLUS/PLUS II</b>		<b>PLUS E/ GRAND TOURING</b>	
Lenght, overall	276.5 cm	(108.8 in)	276.5 cm	(108.8 in)
Width, overall	112.7 cm	(44.4 in)	112.7 cm	(44.4 in)
Height, overall	113.5 cm	(44.7 in)	113.5 cm	(44.7 in)
Ski stance (center to center)	101.0 cm	(39.76 in)	101.0 cm	(39.76 in)
Weight	228 kg	(504 lb)	240 kg	(530 lb) ①
Bearing area	7099 cm <sup>2</sup>	(1100 in <sup>2</sup> )	7099 cm <sup>2</sup>	(1100 in <sup>2</sup> )
Ground pressure	3.16 kPa	(.458 lb/in <sup>2</sup> )	3.32 kPa	(.482 lb/in <sup>2</sup> ) ②
	<b>PLUS EFI</b>		<b>PLUS XTC</b>	
Lenght, overall	276.5 cm	(108.8 in)	296.5 cm	(116.7 in)
Width, overall	112.7 cm	(44.4 in)	106.0 cm	(41.7 in)
Height, overall	113.5 cm	(44.7 in)	120.0 cm	(47.2 in)
Ski stance (center to center)	101.0 cm	(39.76 in)	92.1 cm	(36.25 in)
Weight	232 kg	(510 lb)	250 kg	(550 lb)
Bearing area	7099 cm <sup>2</sup>	(1100 in <sup>2</sup> )	8455 cm <sup>2</sup>	(1311 in <sup>2</sup> )
Ground pressure	3.20 kPa	(.464 lb/in <sup>2</sup> )	2.89 kPa	(.420 lb/in <sup>2</sup> )
	<b>MACH 1/MACH II</b>		<b>MACH 1 XTC</b>	
Lenght, overall	276.5 cm	(108.8 in)	296.5 cm	(116.7 in)
Width, overall	112.7 cm	(44.3 in)	106.0 cm	(41.7 in)
Height, overall	96.4 cm	(37.9 in)	120.0 cm	(47.2 in)
Ski stance (center to center)	101.0 cm	(39.76 in)	92.1 cm	(36.25 in)
Weight	233 kg	(514 lb)	254 kg	(560 lb)
Bearing area	7099 cm <sup>2</sup>	(1100 in <sup>2</sup> )	8455 cm <sup>2</sup>	(1311 in <sup>2</sup> )
Ground pressure	3.22 kPa	(.467 lb/in <sup>2</sup> )	2.95 kPa	(.427 lb/in <sup>2</sup> )

① 250 kg (550 lb) on GRAND TOURING.

② 3.45 kPa (.500 lb/in<sup>2</sup>) on GRAND TOURING.

*Bombardier Inc. reserves the right to make changes in design and specifications and/or to make additions to, or improvements in its product without imposing any obligation upon itself to install them on its products previously manufactured.*

**FORMULA PLUS X****ENGINE**

Type	583
No. of cylinders	2
Bore	76.0 mm (2.992")
Stroke	64.0 mm (2.520")
Displacement	580.7 cm <sup>3</sup> (35.44 in <sup>3</sup> )
Compression ratio (corrected)	6.1:1
Shift speed (RPM)	7600
Carburetor type	Variable Venturi, float type
Carburetor adjustment :	
– air screw	1-1/2 turns
– idle speed (RPM)	1800-2000
Cooling system capacity :	
– SI	4.2 L
– U.S.	142 oz
Antifreeze/water mixture (% by volume)	60/40
Thermostat	42°C (108°F)
Radiator pressure cap	90 kPa (13 lb/in <sup>2</sup> )

**CHASSIS**

Length overall	276.5 cm (108.8")
Width overall	112.7 cm (44.4")
Height overall	91.5 cm (36")
Ski stance (center to center)	101.0 cm (39.76")
Weight	233 kg (514 lb)
Bearing area	6741 cm <sup>2</sup> (1045 in <sup>2</sup> )
Ground pressure	3.39 kPa (.492 lbf/in <sup>2</sup> )

**POWER TRAIN**

Track :	
– width	38.1 cm (15")
– length	306.7 cm (121")
– tension	40-45 mm (1-9/16 - 1-3/4 in) gap between slider shoe and bottom inside of track when exerting a downward pull of 7.3 kg (16 lb) to the track.
– alignment	Equal distance between edges of track guides and slider shoes.
Standard ratio	26/44
Drive belt :	
– number	414 7413 00
– maximum width	35.0 mm (1-3/8")
– minimum width	32.0 mm (1-1/4")
Chaincase oil	350 mL (12 oz)

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**FORMULA PLUS X****ELECTRICAL**

Lighting system (output)	12 V 160 W
Bulb :	
– headlamp	60/55 W H4 Hal.
– tail/stop	8/27 W
– speedometer	5 W
– tachometer	5 W
– temperature gauge	2 W
– electric fuel gauge	2 W
Fuse :	
– tachometer	0.1 A
– starting system	N.A.
Spark plug :	
– type	NGK BR9ES
– gap	0.45 mm (.018'')

**FUEL**

Gas type	Regular unleaded with a minimum octane number (R + M/2) of 87,
Fuel tank capacity :	
– SI	35.3 L
– U.S.	9.3 gal
Injection oil	Bombardier Snowmobile Injection Oil.
Tank capacity :	
– SI	2.9 L
– U.S.	98 oz

**BRAKE**

Type	Disc, self-adjusting
Lining minimum thickness	Fixed pad must project 1 mm (1/32 in) minimum from caliper.
Control lever adjustment	13 mm (1/2 in) minimum distance from handlebar grip when fully applied.

Hal. : Halogen

N.A. : Not applicable

*Bombardier Inc. reserves the right to make changes in design and specifications and/or to make additions to, or improvements in its product without imposing any obligation upon itself to install them on its products previously manufactured.*

# SI\* METRIC INFORMATION GUIDE

BASE UNITS			
DESCRIPTION	UNIT	SYMBOL	
length	meter	m	
mass	kilogram	kg	
force	Newton	N	
liquid	liter	L	
temperature	Celsius	°C	
pressure	kilopascal	kPa	
torque	Newton meter	N•m	
speed	kilometer per hour	km/h	

PREFIXES			
PREFIX	SYMBOL	MEANING	VALUE
kilo	k	one thousand	1 000
centi	c	one hundredth	0.01
milli	m	one thousandth	0.001
micro	μ	one millionth	0.000 001

CONVERSION FACTORS			
TO CONVERT	TO †	MULTIPLY BY	
in	mm	25.4	
in	cm	2.54	
in <sup>2</sup>	cm <sup>2</sup>	6.45	
in <sup>3</sup>	cm <sup>3</sup>	16.39	
ft	m	0.3	
oz	g	28.35	
lb	kg	0.45	
lbf	N	4.4	
<b>lbf•in</b>	<b>N•m</b>	0.11	
<b>lbf•ft</b>	<b>N•m</b>	1.36	
<b>lbf•ft</b>	<b>lbf•in</b>	12	
PSI	kPa	6.89	
imp. oz	U.S. oz	0.96	
imp. oz	mL	28.41	
imp. gal	U.S. gal	1.2	
imp. gal	L	4.55	
U.S. oz	mL	29.57	
U.S. gal	L	3.79	
MPH	km/h	1.61	
Fahrenheit	Celsius	$(°F - 32) \div 1.8$	
Celsius	Fahrenheit	$(°C \times 1.8) + 32$	

\* The international system of units abbreviates SI in all languages.

† To obtain the inverse sequence, divide by the given factor.  
 To convert "mm" to "in", divide by 25.4.

**NOTE**

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**NOTE** \_\_\_\_\_







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