

# 1978

# blizzard®

## OPERATOR MANUAL





## BLIZZARD

This vehicle has been designed for and should be used on, oval race track only.

The performance of this snowmobile significantly exceeds that of other snowmobiles you may have operated. Therefore, use of this vehicle should be restricted to experienced snowmobile racers.

◆ **WARNING:** The design of this snowmobile differs considerably from most other snowmobiles. Maintenance and adjustment must be performed only by a knowledgeable mechanic. Always refer to operator manual.

All warranties on 1978 Blizzard Super Stock either expressed or implied including any implied warranty of merchantability and any implied warranty of fitness for a particular purpose are hereby excluded and disclaimed.

September 30th, 1977

Bombardier Limited  
Valcourt, Quebec, Canada



## Recreational Products

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ALPINE	MIRAGE	SPIRIT
BLIZZARD	NORDIC	NUVIK
CARRY BOOSE	OLYMPIQUE	SONIC
ELAN	SKI-BOOSE	
RV	T'NT	

## FOREWORD

### CONGRATULATIONS

This tough, sleek and fast racing vehicle is the result of incomparable teamwork between Bombardier designers, engineers, technicians and top racing drivers. Consequently, this vehicle is designed and engineered with safety, handling and comfort foremost. Realizing that this vehicle has been purchased for racing only, this manual has been prepared to acquaint the owner / operator with the various vehicle controls and owner-related maintenance instructions.

This manual emphasizes particular information denoted by the wording and symbols:

◆ **WARNING:** Identifies an instruction which, if not followed, could cause personal injury.

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

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

*All the information, illustrations and component / system descriptions contained in this manual are correct at the time of publication. However, Bombardier Limited reserves the right to make changes in design and specifications, and / or to make additions to or improvements in its products without imposing any obligations upon itself to install them on its products previously manufactured.*

Text By:

TECHNICAL INFORMATION CENTRE  
AFTER SALES SERVICE DEPARTMENT  
BOMBARDIER LIMITED  
VALCOURT, QUEBEC, CANADA

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## SAFETY IN MAINTENANCE

### Observe the following precautions:

- Throttle mechanism should be checked for free movement before starting engine.
- Engine should be running only when pulley guard is secured in place.
- Never run engine without drive belt installed. Running an unloaded engine can prove to be dangerous.
- Never run the engine at high R.P.M. when the track of the vehicle is raised off the ground.
- It can be dangerous to run engine with the cab removed.
- Gasoline is flammable and explosive under certain conditions. Always perform procedures in a well ventilated area. Do not smoke or allow open flames or sparks in the vicinity. If gasoline fumes are noticed while driving, the cause should be determined and corrected without delay.
- Your snowmobile is not designed to be operated on public streets, road or highways.  
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, or other abrasive surfaces. On such surfaces abnormal and excessive wear of critical parts is inevitable.
- Only perform such procedures as detailed in this manual. It is recommended that dealer assistance be periodically obtained on other components / systems not covered in this manual. Unless otherwise specified, engine should be turned OFF for all lubrication and maintenance procedures.
- Installation of other than "stock" 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.
- The snowmobile engine can be stopped by activating the emergency cut-out or tether switches.
- This vehicle is not designed nor intended to be used for other than oval racing. Operating it for other use than competition is illegal.

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Please read and understand all other warnings contained elsewhere in this manual.

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**THIS MANUAL SHOULD REMAIN WITH THE VEHICLE AT THE TIME OF RESALE.**

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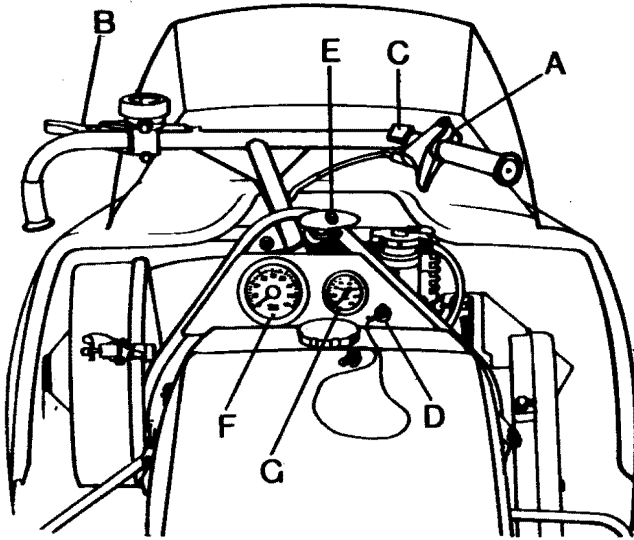
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## CONTROLS / INSTRUMENTS



- A) Throttle Control Lever
- B) Brake Control Lever
- C) Emergency Cut-Out Switch
- D) Tether Cut-Out Switch
- E) Rewind Starter Handle
- F) Tachometer
- G) Temperature Gauge

### A) Throttle Control Lever

Located on 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 Control Lever

Mounted on left side of handlebar when applied activates the hydraulic disc brake system binding the vehicle to a fast smooth stop.

### C) Emergency Cut-Out Switch

A push button switch located on right side of handlebar. To stop the engine in an emergency, press button down into **lower** position.

Before re-starting engine always depress button into released **upper** 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 button has been used in an emergency situation the source of malfunction should be determined and corrected before restarting engine.

### D) Tether Cut-Out Switch

A pull switch located on the right side of dash panel.

Attach tether cord to wrist or other convenient location before starting engine then fully insert tether cut-out cap on receptacle.

○ **NOTE:** The cap must be used at all time in order to operate the vehicle.

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

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

### E) Rewind Starter

Auto rewind type located on the center of vehicle. To engage mechanism, pull handle.

### F) Tachometer

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

▼ **CAUTION:** The tachometer is protected by a fuse, if tachometer stops operating check fuse condition and if necessary replace. The fuse is 0.1 amp. Do not use a higher rated fuse as this can cause severe damage to the tachometer.

### G) Temperature Gauge

The gauge indicates engine coolant temperature. Normal operating temperature is 60° C (140° F). The coolant temperature can vary depending on driving condition however it should never exceed 80° C (180° F).

◆ **WARNING:** Do not remove coolant tank cap unless pressure is released by pulling on the top lever, loss of fluid and possible severe burns could occur.

### Choke

The carburetor levers are located on the right side of each carburetor. To engage choke depress each lever. To disengage lift levers.

○ **NOTE:** Do not operate vehicle with choke on.

### Fuel Gauge

To check fuel level, simply look through the translucent tank.

◆ **WARNING:** Never use a lite match or open flame to check fuel level.

### Cab Removal

For those procedures that require cab removal, unlock side latches then remove cab from vehicle by sliding it forward.

◆ **WARNING:** It is dangerous to run engine with cab removed.

## BREAK-IN PERIOD

With Bombardier-Rotax engines, a break-in period of 6 to 10 operating hours is required before running the vehicle at full throttle. During this period, brief full throttle accelerations and constant speed variation will contribute to a good break-in. Continued wide open throttle accelerations can be detrimental. Never let your engine overheat.

**CAUTION:** Incorrect or lack of a break-in period will result in engine horsepower loss.

## FUEL MIXING

Oil must be added to the gasoline in pre-measured amounts then both oil and gasoline should be thoroughly mixed together before fueling the tank.

### Recommended Gasoline

High octane gasoline **must** be used. Ex.: Aviation gasoline light blue 100 octane or light green 100-130 octane.

**CAUTION:** Never experiment with different fuel or fuel ratios. Never use low lead or non leaded gasoline, naphtha, methanol or similar products.

### Recommended Oil

Use a 50 / 1 Blizzard snowmobile oil, this type of oil is specially formulated to meet lubrication requirements of the high performance Bombardier-Rotax engine.

**CAUTION:** Use of other than recommended oil can result in engine damage.

### Fuel Mixture Ratio

The importance of using the correct fuel mixture cannot be overstressed. An incorrect fuel ratio results in serious engine damage.

Recommended fuel / oil ratio is 20 / 1.

#### Imperial Measures

2 cans of 16 oz Blizzard oil to 4 Imp. gals = 20 to 1

#### U.S. Measures

2 cans of 12 oz Blizzard oil to 4 U.S. gals = 20 to 1

**NOTE:** To facilitate fuel mixing, oil should be kept at room temperature.

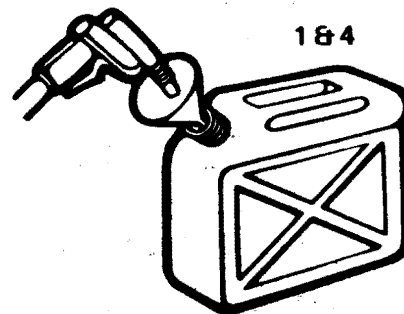
### Fuel Mixing Procedure

To mix the gasoline and oil always use a separate clean container. Never mix directly in your snowmobile tank. For best results, acquire two containers, either plastic or metal. Draw from one until empty then use the second one.

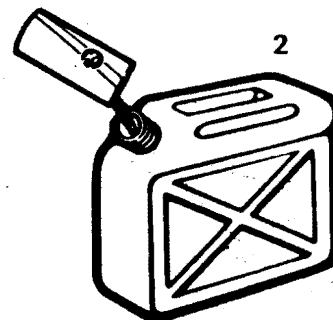
**WARNING:** Gasoline is flammable and explosive under certain conditions. Always perform procedures in a well ventilated area. Do not smoke or allow open flames or sparks in the vicinity. If gasoline fumes

are noticed while driving, the cause should be determined and corrected without delay. Never add fuel while engine is running. Avoid ski contact with fuel at below freezing temperatures.

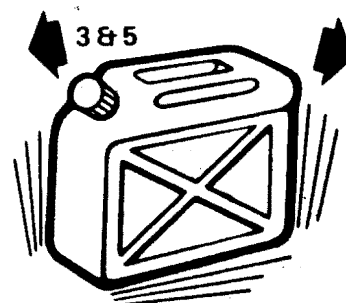
1. Pour approximately one gallon of gasoline into a clean container.



2. Add full amount of oil.



3. Replace container cap and shake the container thoroughly.



4. Add the remainder of the gasoline.
5. Once again thoroughly agitate the container. Then using a funnel with a fine mesh screen to prevent the entry of water and foreign particles, transfer mixture from container into the snowmobile tank.

**NOTE:** When using pre-mixed fuel, always shake the container thoroughly as the oil has a tendency to settle.

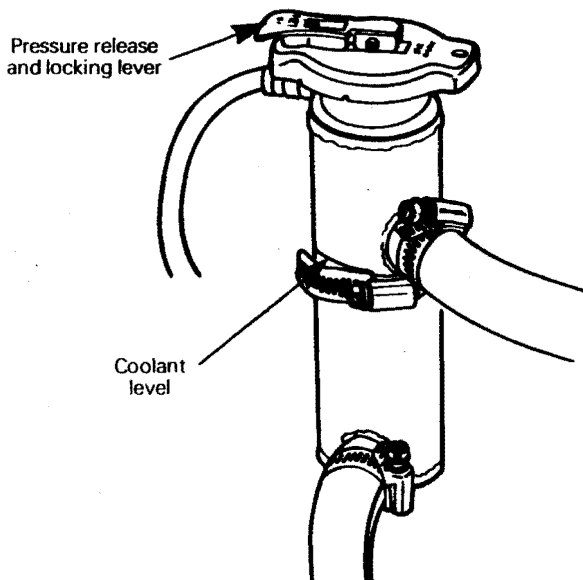
**WARNING:** Never 'top up' gas tank before placing the vehicle in a warm area. At certain temperatures, gasoline will expand and overflow.

## PRE-START CHECK

### Check Points

- Activate the throttle control lever several times to check that it operates easily and smoothly. The throttle control lever must return to idle position when released.
- Check that the skis and the track are not frozen to the ground or snow surface and that steering operates freely.
- 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 up to the lower portion at the top return hose. If additional coolant is necessary, always use a 50 / 50 (50 parts of water for 50 parts of anti-freeze) solution. When entire system has to be refilled, use a solution of 3 parts of anti-freeze for 2 parts of water. See cooling system in storage procedures.

◆ **WARNING:** Before removing the cap always release the pressure by lifting the lever incorporated on the cap, loss of fluid and possibility of severe burns could occur.



- Check fuel level.
- Verify that the path ahead of the vehicle is clear of bystanders and obstacles.

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

## STARTING PROCEDURE

1. Test operation of throttle control lever.
2. Engage choke by depressing each lever. To disengage choke simply lift the levers. The chokes should always be used for easier cold engine starts. After engine is warm, it is not necessary to use choke when starting. Do not operate vehicle with choke on.
3. Make sure that the tether cut-out cap is in position and that the cord is attached to your body.
4. Grasp manual starter handle firmly and pull slowly until a resistance is felt then pull vigorously. Slowly release rewind starter handle.

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

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

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

6. Allow the engine to warm before operating at full throttle.

▼ **CAUTION:** Since engine cooling is in effect only when the vehicle is in motion, it is recommended that you do not allow the engine to idle for more than brief periods. Prolonged idling may cause engine damage.

## LUBRICATION

### Frequency

As with any mechanical product routine maintenance is necessary.

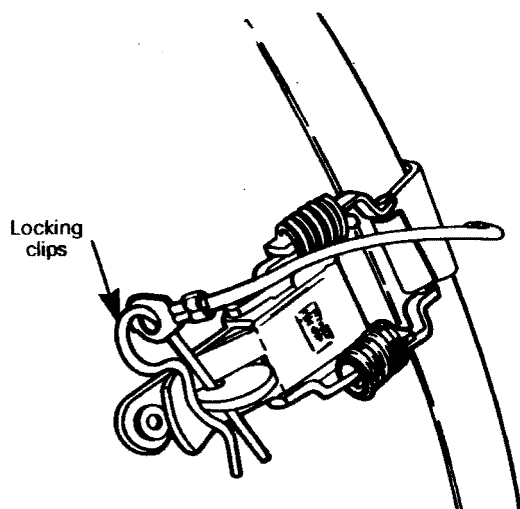
The steering system and suspension must be lubricated on a weekly basis or more often if the vehicle is operated in wet snow.

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

### Pulley Guard Removal

◆ **WARNING:** Engine should be running only when pulley guard is secured in place.

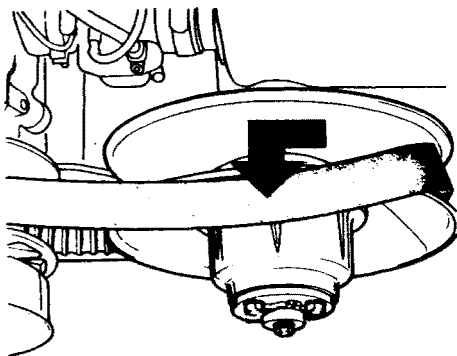
Remove cab. Pull out locking clips and unlock latches, slide the pulley guard side ways.



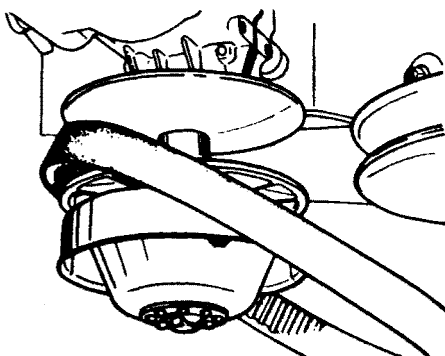
## Drive Belt Removal

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

1. Remove cab and pulley guard.
2. Open the driven pulley by twisting and pushing the sliding half. Hold in fully open position.
3. Slip slackened belt over the top edge of the sliding half.

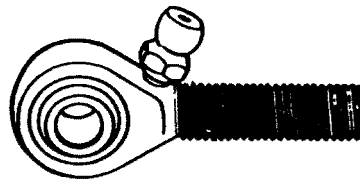


4. Slip the belt out from the drive pulley and remove completely from vehicle. To install drive belt, reverse procedure.

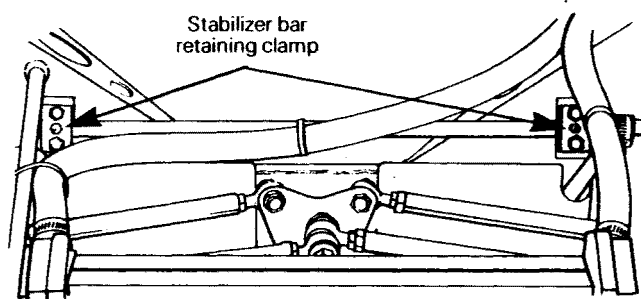


## Steering Mechanism

Lubricate all tie rod ends at grease fitting until new grease appears at joints. Oil ski leg / coupler bolts.



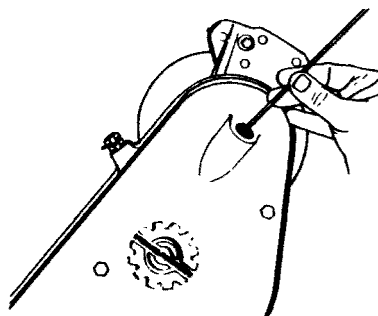
Lubricate at the stabilizer bar retaining clamps until new grease appears.



▼ **CAUTION:** Do not lubricate throttle and / or brake cable housings.

## Chaincase Oil Level

Remove plug then using a rigid wire as "dipstick", check oil level. The oil level on the "dipstick" should be 50 mm (2"), replenish as necessary. The chaincase oil capacity is approximately 255 ml (9 fl oz).



## Hydraulic Brake Oil Level

To check fluid level remove reservoir cover located on handlebar. Fluid must reach top lip of reservoir. If necessary to replenish use only hydraulic brake fluid meeting specification J-1703.

▼ **CAUTION:** The entry of dirt or foreign particles into the brake fluid may constitute system flushing.

Check brake hose for abrasion and signs of leakage. Check brake pad condition, if less than:

250 model: 4.5 mm (  $\frac{3}{16}$  ") thick

340-440 models: 1.6 mm (  $\frac{1}{16}$  ") thick.

the pads must be replaced.



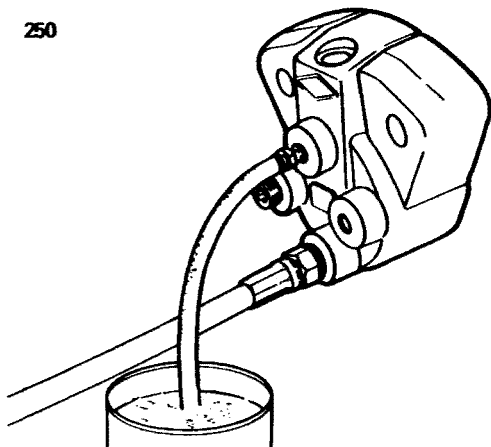
If the reserve is low and / or air has entered the system creating a soft, spongy braking action, the following should be done:

Remove reservoir cover and 'top up' fluid level. Install cover.

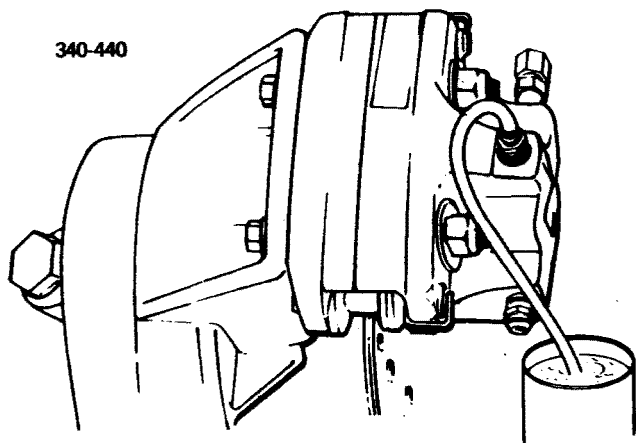
○ **NOTE:** Retain this reservoir level throughout the following procedure.

Connect a bleeder drain to the valve and insert end of bleeder hose into a container of brake fluid.

250



340-440



Repeatedly depress the brake lever in quick succession (pumping), to obtain pressure. Once obtained, hold lever, open bleeder valve then quickly depress brake lever. Close bleeder valve and allow brake lever to return slowly.

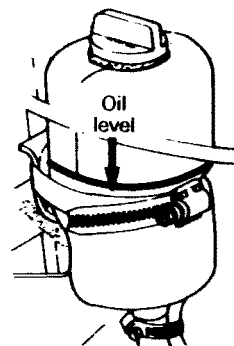
Continue pressing and releasing brake lever until the fluid injected into the container is air free.

Disconnect bleeder hose, recheck brake fluid.

○ **NOTE:** Brake fluid should be changed at least once every snowmobiling season.

### Rotary Valve System

Check reservoir oil level frequently. Level should not be below level line of plastic reservoir. If necessary replenish to oil level line using "Castrol Injector Oil" or equivalent.



### Driven Pulley

Remove the bolt locking the driven pulley to its shaft and pull off the driven pulley ass'y. Lubricate the shaft using antiseize compound. Install pulley on shaft and torque the bolt to 0.5-1 kg-m (4-5 ft-lbs).

## MAINTENANCE

The following Maintenance Chart indicates regular servicing schedules to be performed by you or your servicing dealer.

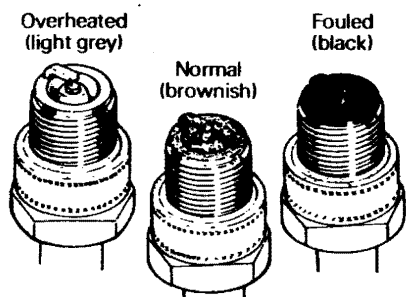
◆ **WARNING:** Only perform such procedures as detailed in this manual. It is recommended that dealer assistance be periodically obtained on other components / systems not covered in this manual. Unless otherwise specified, engine should be turned OFF for all lubrication and maintenance procedures.

Code	Weekly	Page
W1	Spark plugs	8
W2	Suspension condition	8
W3	Track condition	8
W4	Suspension	8
W5	Track adjustment	10
W6	Drive chain tension	11
W7	Carburetor adjustment	11
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W9	Drive pulley	11
W10	Drive belt tension	12
Code	Monthly	Page
M1	Steering mechanism	13
M2	Steering adjustment	13
M3	Cooling system	14
M4	Engine head nuts	14
M5	Engine mount nuts	14
M6	Exhaust system	14
M7	Vehicle general inspection	14

## W1 Spark plugs

Disconnect spark plug wires and remove spark plugs. Check condition of plugs.

- A brownish tip reflects ideal condition (correct carburetor adjustment, spark plug heat range, etc.).
- A black insulator tip indicates fouling caused by: carburetor idle speed mixture and / or high speed mixture too rich, incorrect fuel mixing 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 your dealer.

Check spark plug gap using a wire feeler gauge. Gap must be 0.40 mm (.016"). Reinstall plugs and connect wires. Correct spark plugs are Bosch W 340 S2S or equivalent.

## W2 Suspension Condition

Visually inspect suspension springs. Replace any weak or broken spring. Inspect shoe condition of slide suspension and replace as necessary.

## W3 Track Condition

Lift rear of the vehicle and support it off the ground so that the track is free to turn. Rotate track by hand and visually inspect the condition, pay attention to cross links and rivets. Immediately replace cracked cross links and loose or / and missing rivets.

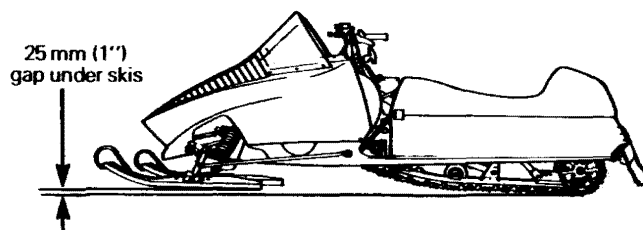
**WARNING:** Do not operate a snowmobile with a cut, torn or damaged track.

## W4 Suspension Adjustment

### Front Suspension

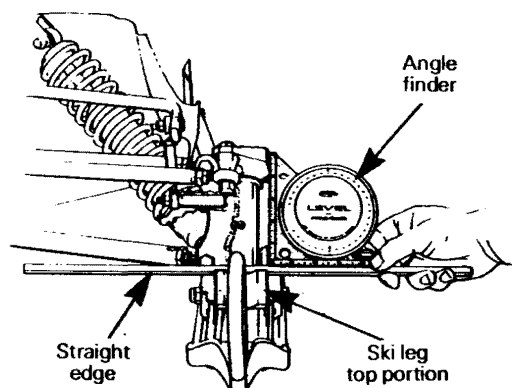
Proceed as follows to adjust:

- Place the vehicle on an horizontal surface.
- Lift the front of the vehicle (using two wooden blocks (approx. 6") installed under the bottom plate) in order to obtain a gap of one inch under each ski when the front suspension is totally extended.



**NOTE:** This adjustment must be performed with the cab removed.

- Ensure that the front suspension is totally extended.
- With the angle finder and a straight edge (laid flat on the ski leg top portion) adjust the camber as recommended.



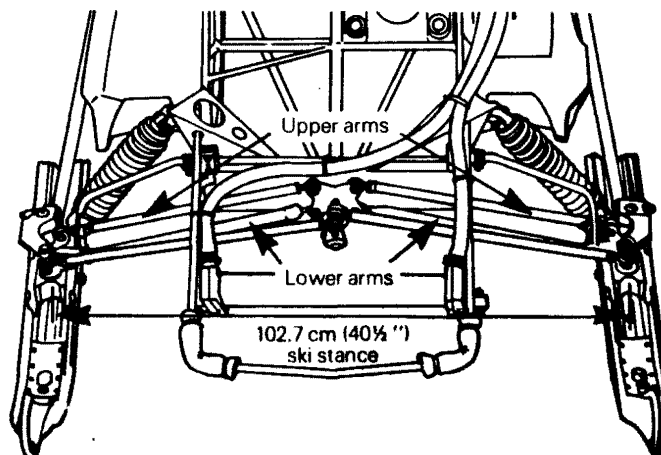
Camber L.H. 0°  
Camber R.H. 5° negative

**NOTE:** The camber is the tilting of the ski leg / ski from the vertical. To obtain a negative camber the ski leg / ski must be tilt inward, so that the ski legs are closer together at the top then at the bottom. The amount of tilt is measured in degrees from the vertical. The measurement is called camber angle.

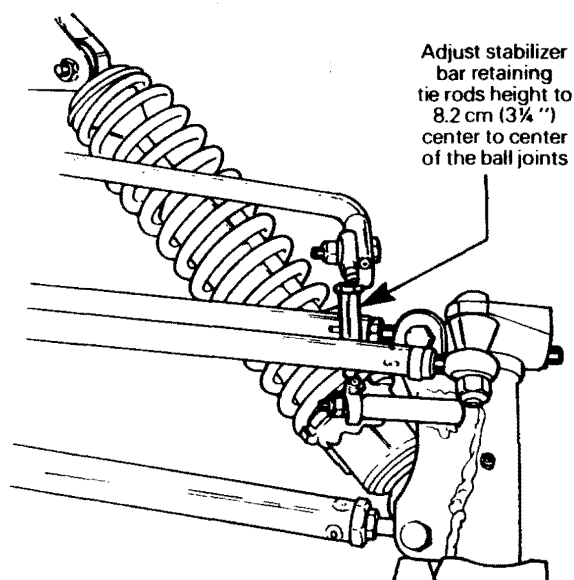
To adjust the camber:

Loosen the lock nuts of the upper and lower front arms. Turn the arms manually until recommended camber angle is reached. Firmly retighten lock nuts.

**NOTE:** Always ensure to maintain the ski stance of 102.8 cm (40½") while performing this adjustment.



- It is recommended, to recheck the procedure, starting at no. 2 through 4, stages.
- Recheck all bolts and locking nuts and ensure that the ski stance remains at 102.8 cm (40½") from center to center of skis.
- The stabilizer bar has three (3) interchangeable attachment positions to suit the drivers preference, however, it is also important that the stabilizer tie rods be adjusted to a minimum height of 8.2 cm (3¼") from center to center of each ball joint.



- Ski shock absorbers are adjustable to suit a driver's particular preference. This adjustment includes, a damping action adjustment as well as spring pre-loading adjustment.

The damping action has three possible variations, regular, firm or extrafirm.

Remove the shock absorber from the vehicle and install the lower retaining eye in a vise. Unscrew the upper aluminium stopper retaining screw and lower the stopper on the shaft.

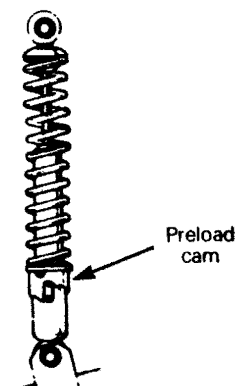
Top collar mark

Body identification

XF F R

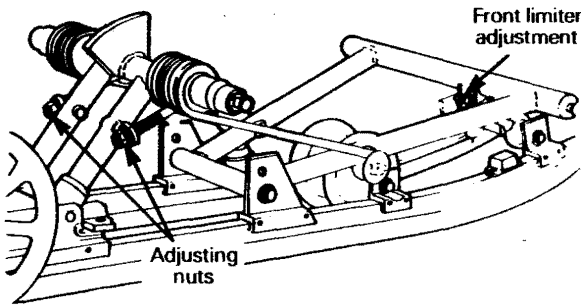
## Preloading

- To adjust the spring preload, the cam collar can be turned clockwise to increase, counter-clockwise to decrease. A high spring preload will increase the vehicle carrying capacity.

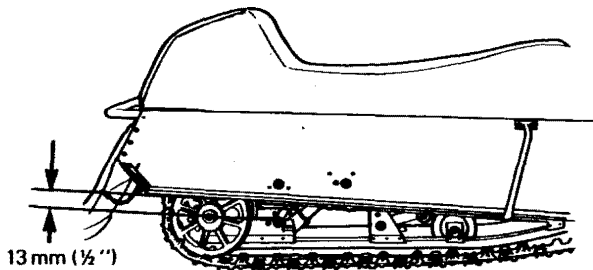


## Rear Suspension

### Suspension Adjustment Driver's Weight

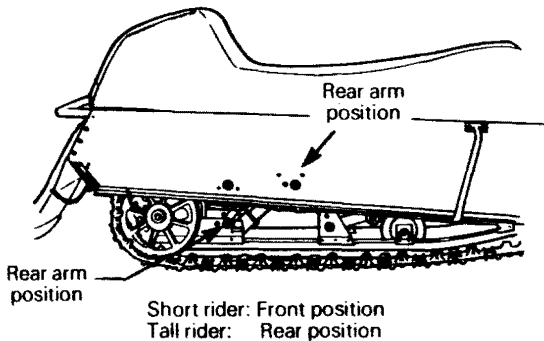


Adjust the spring tension in such a way that when the driver sits on the vehicle the rear end of the vehicle does not lower more than 13 mm ( $\frac{1}{2}$ ").

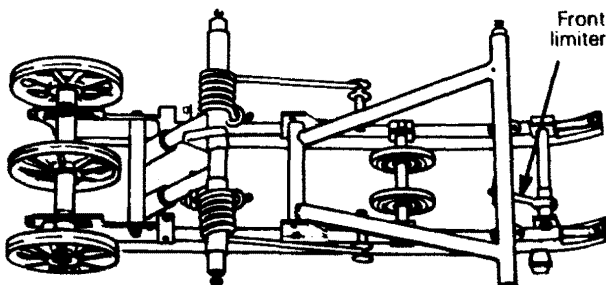


### Rear Arm Adjustment

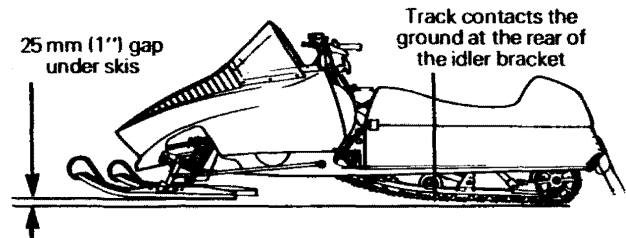
Depending on the driver height and / or normal sitting position, the suspension can be adjusted in order that the driver can transfer his weight as desired toward the front or the rear of the vehicle. With the driver sitting on the vehicle (normal driving position) place the rear arm to the proper position to obtain the desired "pivot effect".



### Front Limiter Adjustment



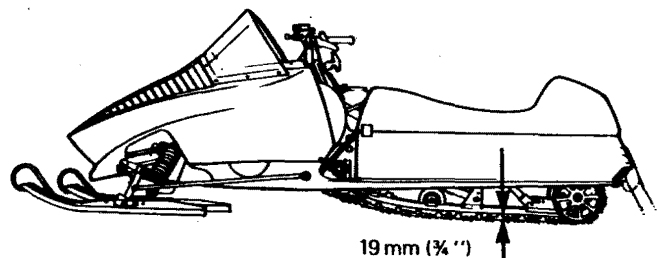
- Place the vehicle on an horizontal surface.
- Raise the front of the vehicle (using two wooden blocks installed under the bottom plate) in order to obtain a gap of one inch under each ski when the front suspension is totally extended.



- Adjust the front limiter until the front portion of the track (at the rear of the idler bracket) comes in contact with the ground.

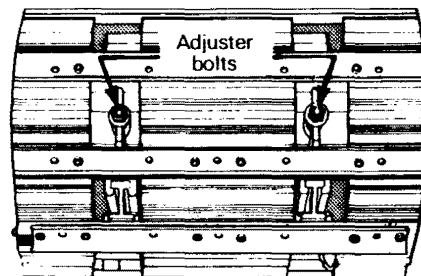
## W5 Track Adjustment

Raise the rear of vehicle and support with a mechanical stand. Allow slide to extend normally. A gap of 19 mm ( $\frac{3}{4}$ ") should exist between slider shoe and cross links. If the track tension is too loose, the track will have a tendency to thump.



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

If necessary to adjust simply loosen or tighten adjuster bolts.



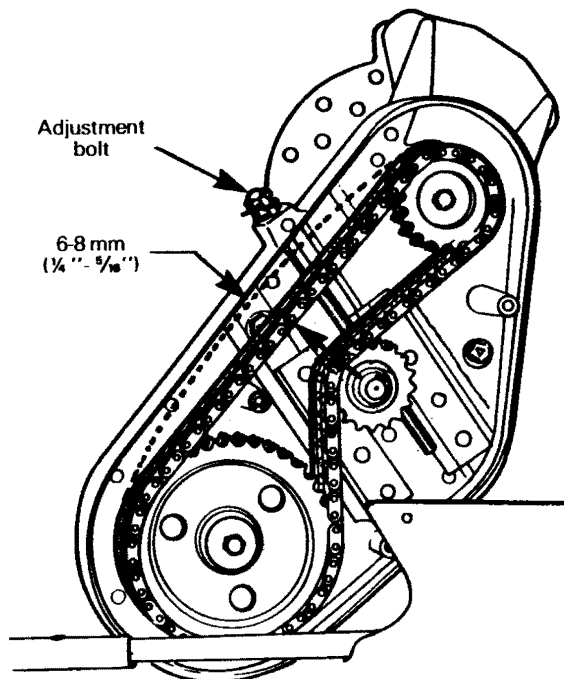
**NOTE:** Track tension and alignment are inter-related. Do not adjust one without the other.

Start the engine and accelerate slightly so that track turns **slowly**. Check that track is well centered and turns evenly. To correct, stop engine then tighten the adjuster bolt on side where track is closest to the frame. Recheck alignment.

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

## W6 Drive Chain Tension

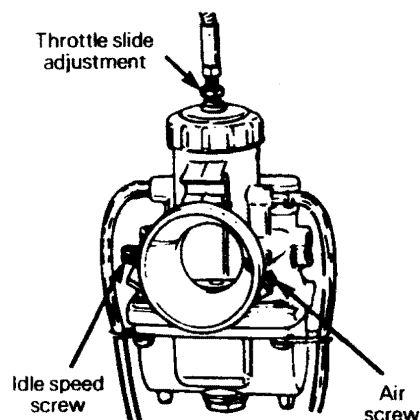
The tension is correct when there is a deflection of 6-8 mm ( $\frac{1}{4}$ " -  $\frac{5}{16}$ ") towards the exterior. Tension is adjusted by slightly tightening the tensioner sprocket against the chain and by locking it in position.



**CAUTION:** Do not overtighten the chain sprocket adjustment screw.

## W7 Carburetor Adjustment

The carburetor adjustments are: Air Screw Adjustment, Throttle Slide Adjustment and Idle Speed Adjustment.



### A) Air Screw Adjustment

Completely close the air screw (until a slight seating resistance is felt), then back off screw to specification.

### B) Throttle Slide Adjustment

Completely open (counter-clockwise) the idle speed screw, unlock cable adjuster lock nut then adjust the throttle cable to remove all slack when operating throttle control lever. Lock cable adjuster in position by tightening the adjuster lock nut.

## C) Idle Speed Adjustment

Turn idle speed screw clockwise until it contacts the throttle slide then continue turning two (2) additional turns. This will provide a preliminary idle speed setting. Start engine and allow it to warm then adjust idle speed to 2500-3000 RPM by turning idle speed screw clockwise or counter-clockwise.

**CAUTION:** Do not attempt to set the idle speed by using the air screw. Severe engine damage can occur.

## W8 Drive Belt

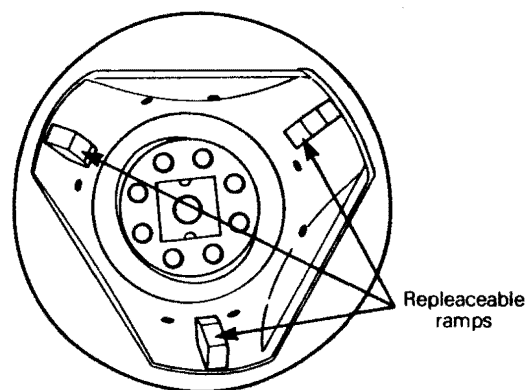
Inspect belt for cracks, fraying or abnormal wear (uneven wear, wear on one side, etc.). If abnormal wear is noted, probable cause is pulley misalignment. Contact your dealer. Check drive belt width. The drive belt width should not be less than 31.7 mm ( $1\frac{1}{4}$ " wide). A too narrow belt will result in a loss of performance.

**NOTE:** When installing a new drive belt, a break-in period of 15-25 km (10-15 miles) is strongly recommended.

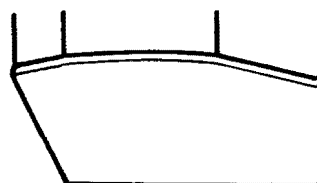
## W9 Drive Pulley

**WARNING:** The drive pulley maintenance and / or calibration should be performed only by a professional mechanic who is familiar with this type of drive pulley.

The drive pulley is of the replaceable ramp type. Depending on the terrain condition, driver's weight and engine torque, the calibration of the drive pulley can be slightly compensated.



The clutch calibration kit supplied with the vehicle permits different calibration.



When recalibrating the vehicle should be running at the constant specified R.P.M.; 250 model: 9700 to 9900 R.P.M. 340-440 model: 9800 to 10.000 R.P.M. Under no circumstance should it be loaded or have hesitation, poor acceleration, etc.

## Torque Specs.

$\frac{5}{16}$ " bolts retaining ramps on cup 2-2.5 kg-m (15-19 ft-lbs).

$\frac{1}{4}$ " bolts retaining ramps on cup 1-1.4 kg-m (8-10 ft-lbs).

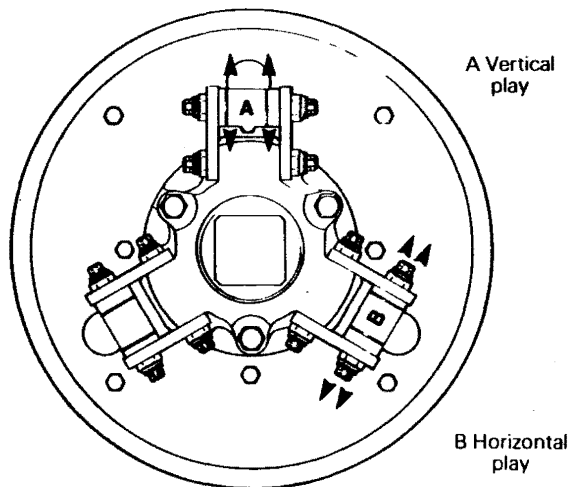
Shouldered pin lock nuts 1.2-1.5 kg-m (9-11 ft-lbs).

Drive pulley retaining bolt 8-9.4 kg-m (58-68 ft-lbs).

**WARNING:** Loctite no. 242 (medium strength) or equivalent must be applied on the threads of each bolt and nut before installation and where applicable, the tab locks must be bent against the bolt heads. Tab locks should never be used more than twice.

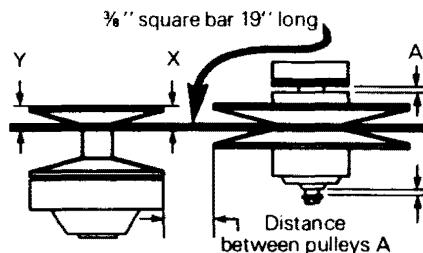
## Maintenance

The drive pulley rollers are made of an internal teflon sleeve (bonded) and a steel roller. The roller assemblies should not have any excessive vertical play on the retaining pins.



If excessive free-play is noticed replace the roller. The flyweight assemblies should not have any excessive horizontal play. If excessive play is noticed replace the hub / shouldered pin bushings.

## W10 Drive Belt Tension

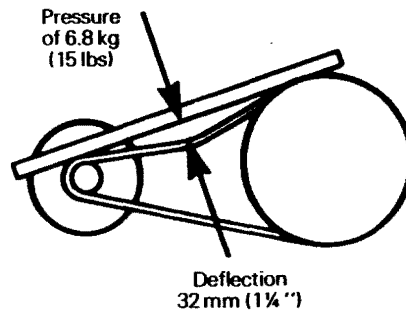


A free floating 1.6 mm ( $\frac{1}{16}$ " )

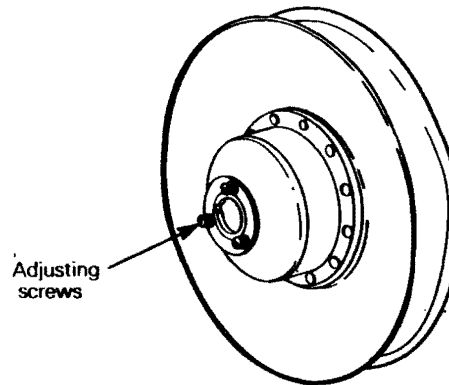
Dimension Y and X (offset); 33-35 mm ( $1\frac{5}{16}$ " -  $1\frac{3}{8}$ " ).

**CAUTION:** Dimension "X" must never exceed dimension "Y". Dimension "Y" can exceed dimension "X" by 1.6 mm ( $\frac{1}{16}$ " ).

The distance between pulleys should be 35 mm ( $1\frac{3}{8}$ " ), however, maximum vehicle performance is obtained when the drive belt deflects by 32 mm ( $1\frac{1}{4}$ " ) when a pressure of 6.8 kg (15 lbs) is applied on the drive belt.



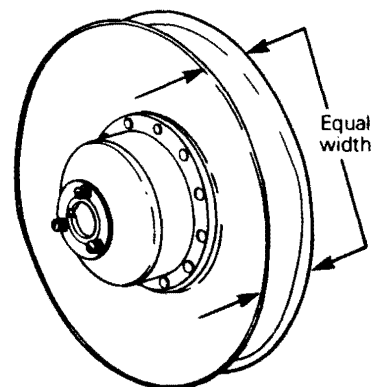
To obtain the proper belt deflection the driven pulley is equipped with three adjusting screws which increases or decreases the distance between pulley halves while at the same time attaining exact belt tension.



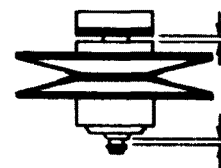
## Adjustment

Unlock the locking nuts and equally tighten or slacken the adjusting screws in order to obtain the recommended belt deflection.

**CAUTION:** Ensure that the pulley width between each halves is the same all around then tighten the locking nut securely.



Using shims, adjust the driven pulley in order to have a free-play of 1.6 mm ( $\frac{1}{16}$ " ) on each side.



## M1 Steering Mechanism

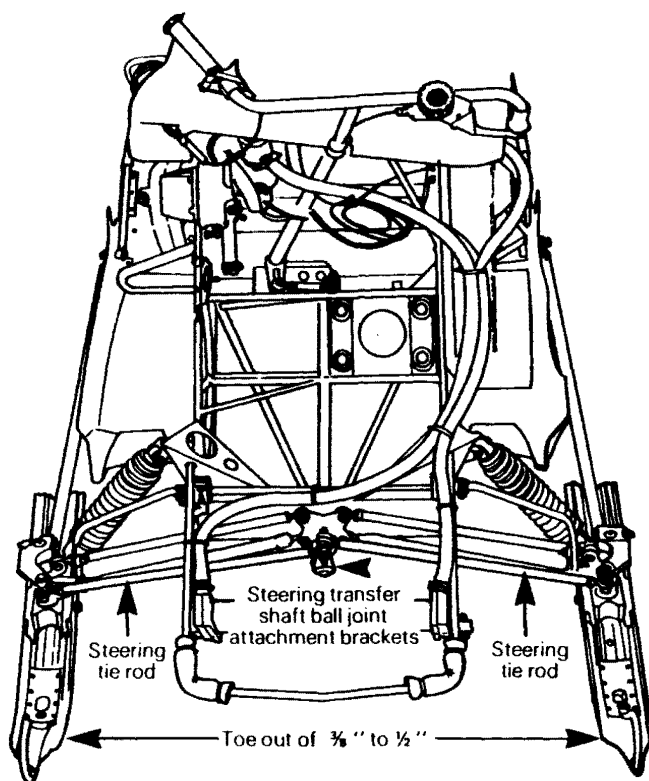
Inspect steering mechanism for tightness of components (steering arms, tie rods, ball joints, spring coupler bolts, etc.). If necessary, replace or retighten. Check condition of skis and ski runners. Replace if worn.

## M2 Steering Adjustment

Skis should have a toe out of 9.5 mm (  $\frac{3}{8}$  ") minimum to 12.7 mm (  $\frac{1}{2}$  ") maximum. To check, measure distance between skis at front and rear of outside edge.

### To adjust:

Ensure that the steering transfer shaft ball joint attachment brackets are vertical and that the skis are pointed directly forward.



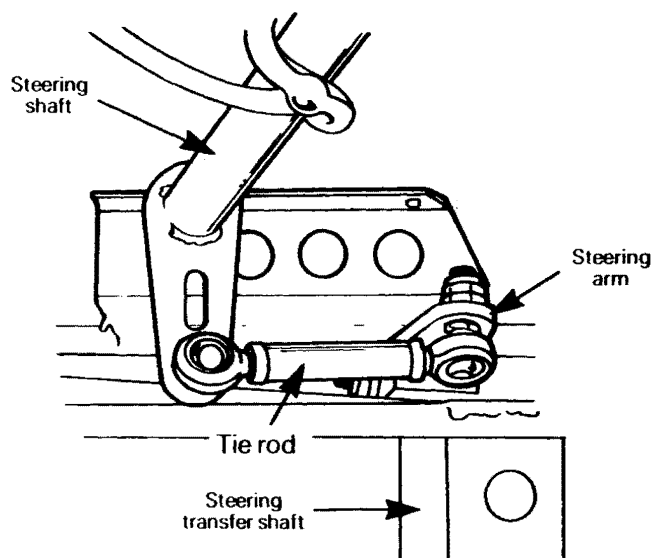
### To adjust:

Loosen the lock nuts of each tie rod. Equally turn the tie rods manually until skis are properly aligned. Firmly retighten lock nuts.

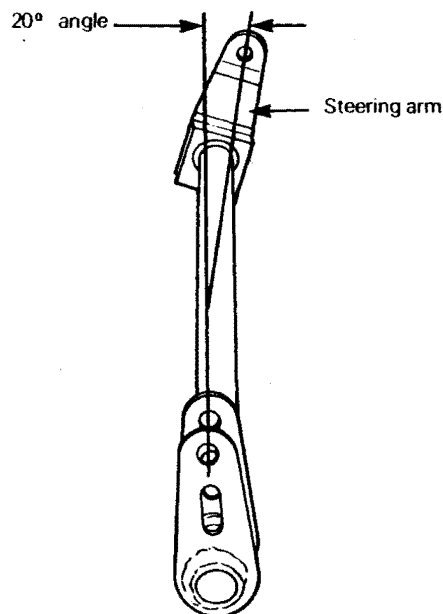
**WARNING:** The ball joint socket must run parallel with the steering arm. The socket must be restrained when tightening the tie rod end lock nuts. The handlebar should form a 90° angle with the skis, when the skis are pointed forward.

### To adjust:

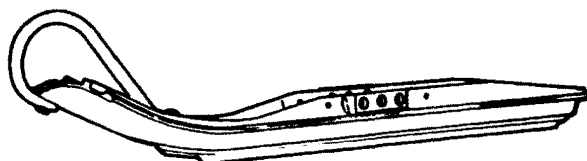
Loosen the lock nuts of the tie rod. (Located at front of track tunnel). Turn tie rod manually until the handlebar forms a 90° angle with the skis. Firmly retighten lock nuts.



**WARNING:** Always ensure that the steering transfer shaft ball joint attachment brackets are vertical when the skis are pointed forward, and that the steering arm is positioned at a 20° angle with the attachment brackets.



**NOTE:** The ski attachment position is interchangeable.



### M3 Cooling System

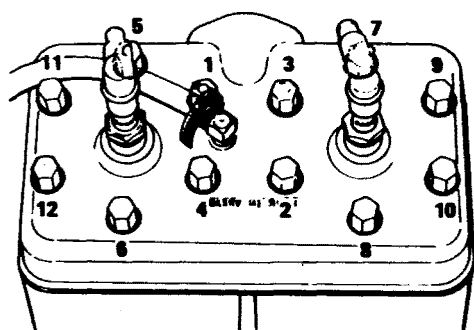
By lifting the radiator cap lever check that the cap pressurizes the system. If not install a new 14 lb pressure radiator cap.

Using an hydrometer check that the anti-freeze solution is strong enough for the temperature in which the vehicle is operated.

If coolant temperature is above recommended temperature 60° C (140° F) 80° C (180° F) check that the radiator is not obstructed with grim or foreign material.

### M4 Engine Head Nuts

After the first 5 hours of operation, check that engine head nuts are tight and equally torqued to 1.5-1.8 kg-m (11-13 ft-lbs) when cold.



### M5 Engine Mount Nuts

Check engine mount nuts for tightness. Retighten if necessary.

### M6 Exhaust System

The engine / exhaust system parts are vital toward efficient muffler function. Check all attachments. Replace springs and / or tighten if necessary.

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

### M7 Vehicle 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 runners for wear.



## TROUBLE SHOOTING

SYMPTOMS	POSSIBLE CAUSES	WHAT TO DO
Engine turns over but fails to start or starts with difficulty	1. No fuel to the engine	Check the tank level and fill up with correct gas-oil mixture. Check for possible clogging or fuel, item 5.
	2. Spark plug	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 engine, being careful to hold away from spark plug hole. Follow engine starting procedure and check for spark. If no sparks appear, replace spark plug.
	3. Faulty ignition	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 engine, being careful to hold away from spark plug hole. Follow engine starting procedure and check for spark. If no sparks appear, replace spark plug.
	4. Flooded engine	Remove wet spark plugs, turn ignition to OFF and crank engine several times. Install clean dry spark plugs. Start engine following usual starting procedure. If engine continues to flood, see your dealer.
	5. Clogged fuel line (water or dirt)	Remove and clean the fuel filter. Change filter cartridge if necessary. Check condition and connections of fuel lines. Check the cleanliness of fuel tank.
	6. Faulty carburetor	First make primary adjustments on carburetor (See Maintenance Section). If carburetor is still faulty, contact your dealer for repair.
	7. Too much oil in fuel	Drain the fuel tank and refill with the correct gas / oil mixture.
	8. Engine timing	Engine timing may be defective or out of adjustment. Contact your dealer.
	9. Poor engine compression	Running with a lean fuel mixture may produce excessive engine wear resulting in poor engine compression. If this occurs, contact your dealer at once.
Engine will not turn manually	1. Seized engine	In the case of seized engine contact your dealer. Seizure is a direct result of poor lubrication. Use of incorrect gas / oil ratio may be the cause.

<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 2 of "Engine turns over but fails to start or starts with difficulty".
	2. Clogged fuel line (water or dirt)	Check fuel line condition. (See item 5 of "Engine turns over but fails to start or starts with difficulty".)
	3. Carburetor	Readjust the carburetors. (See Maintenance Section). If trouble persists, contact your dealer.
	4. Faulty ignition	First check item 2 and 3 of "Engine turns over but fails to start or starts with difficulty". If the ignition system still seems faulty, contact your dealer.
	5. Engine	If unable to locate specific symptoms, contact your dealer.
Engine continually backfires	1. Faulty spark plug	Check item 2 of "Engine turns over but fails to start or starts with difficulty".
	2. Overheated	Carburetors set too lean. Contact your dealer. Coolant level too low (leaking hose or gasket, restricted hose). Engine coolant pump inoperative. Air in cooling system.
	3. Engine timing incorrectly set	Contact your dealer.
Snowmobile cannot reach full speed	1. Drive belt	Check for damaged or worn drive belt. Replace if necessary.
	2. Incorrect track adjustment	Check track tension and alignment. Readjust to specifications. (See Maintenance section).
	3. Faulty engine	Check item 1 to 5 "Engine lacks acceleration or power".
	4. Pulley misaligned	Contact your dealer.

## STORAGE



**IMPORTANT:** It is during summer, or when a vehicle is not in use for any length of time that proper storage is a necessity. Storage of the snowmobile during long periods of inactivity consists of checking and replacing missing broken or worn parts; proper lubrication and treatments to insure that parts do not become rusted; cleaning items such as carburetor of oil mixtures, to prevent gum varnish formation within the carburetor; and in general, preparing the vehicle so that when the time comes to use the snowmobile again it will start and be in top condition.

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

### Track

Inspect track for cuts, loose or broken cross links and rivets. Make any necessary replacement. Lift rear of vehicle until track is clear of ground then support with brace or trestle. The snowmobile should be stored in such a way that track does not stay in contact with cement floor or bare ground.

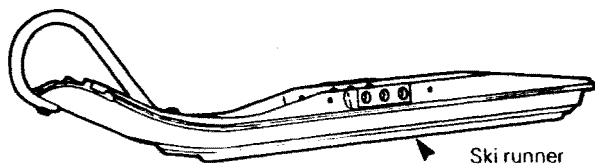
○ **NOTE:** The track should be rotated periodically, (every 40 days). Do not release track tension.)

### Suspension

Remove any grime or rust. Check slider shoe condition. Replace as necessary.

### Skis

Wash or brush all grime or rust accumulation from skis and springs. Grease ski legs at grease fittings. Check condition of skis and ski runners. Replace if worn or weak.



### Fuel Tank

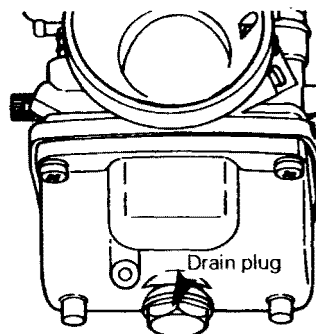
Remove cap then using a siphon, remove gasoline from tank.

◆ **WARNING:** Gasoline is flammable and explosive under certain conditions. Always perform procedures in a well ventilated area. Do not smoke or allow open flames or sparks in the vicinity.

## Carburetors

The carburetors must be dried out completely to prevent gum formation during the storage period.

Assure that inlet line is disconnected. Remove drain plug of the float chamber of each carburetor. Drain carburetors.



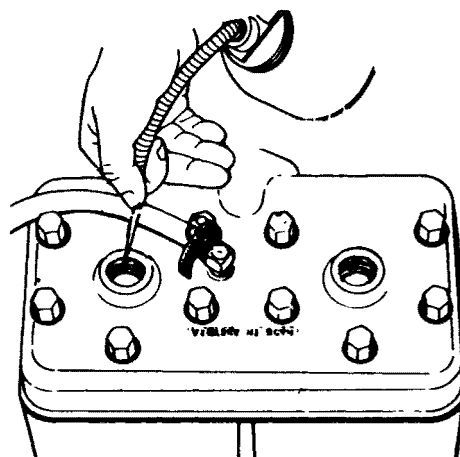
Reinstall plug and connect fuel line.

## Cylinder Lubrication

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

○ **NOTE:** This operation should be repeated every 40 days during storage.

Remove spark plugs. Operate rewind starter to bring piston at top position. Pour the equivalent of one spoonful of oil into spark plug hole.

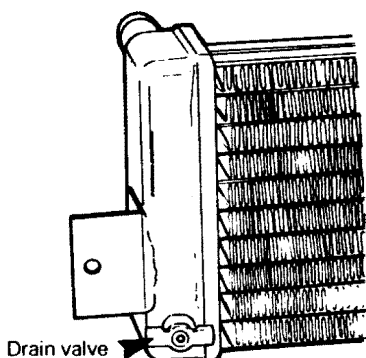
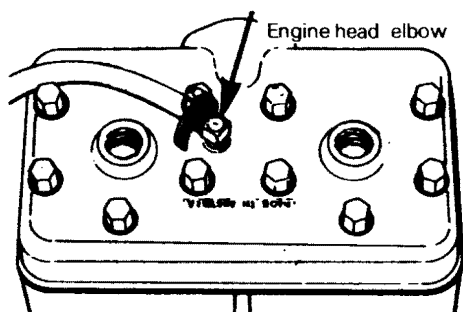


Slowly crank engine several times using manual starter. Repeat above steps for other cylinder. Install spark plugs.

▼ **CAUTION:** To prevent ignition system damage, make sure that the cut-out button is in the lower position.

## Coolant System

Drain the cooling system by disconnecting the by-pass hose from the engine head elbow, then block off the elbow and open the radiator drain valve. (Located on the lower portion of the radiator) then lower the by-pass hose to drain engine.



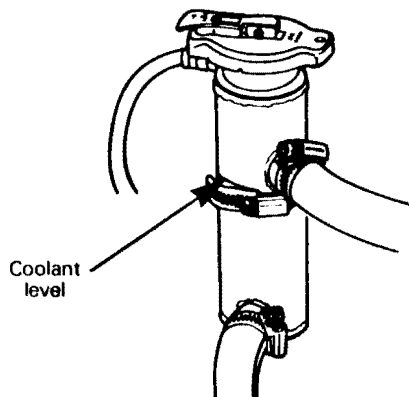
Remove the radiator cap from the tank. Once the system has been drained, unblock the elbow.

○ **NOTE:** To completely drain the system the elbow has to be blocked, otherwise no syphoning effect will be produced and a certain quantity of liquid will remain in the system.

▼ **CAUTION:** To prevent rust formation in the cooling system, always replenish the system with the recommended solution. (60% antifreeze 40% water).

### To refill the cooling system

Close the radiator drain valve, position the disconnected end of the by-pass hose higher than the engine head, then pour in the liquid until it reaches the elbow fitting on the engine head. Reconnect the hose. Continue to slowly pour the liquid in the tank until the coolant level reaches the lower portion of the upper return hose.



## Drive Pulley

Inspection and cleaning should be performed by the dealer at the end of each season.

## Chaincase

Drain the chaincase completely and refill to proper level using fresh chaincase oil. To drain, remove chaincase cover.

## Controls

Lubricate steering mechanism. Inspect components for tightness, (spring coupler bolts, steering arm locking bolts, tie rods, ball joints, etc.). Tighten if necessary.

◆ **WARNING:** Do not lubricate throttle housing.

Coat electrical connections and switches with a greaseless metal protector. If unavailable, use petroleum jelly.

## Chassis

Clean the vehicle thoroughly, removing all dirt and grease accumulation.

▼ **CAUTION:** Plastic alloy components such as fuel tank, etc., can be cleaned using mild detergents or isopropyl alcohol. Do not use strong soaps, degreasing solvents, abrasive cleaners, paint thinners, etc.

Inspect cab and repair damage. Repair kits are available at your authorized dealer. Clean frame (Use only "Aluminum cleaner" and follow instructions on container). Touch up metal spots where paint has been scratched off. Spray all bare metal parts of vehicle with metal protector. Wax the cab for better protection.

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

▼ **CAUTION:** If for some reason the snowmobile has to be stored outside it is necessary to cover it with an opaque tarpaulin. This caution will prevent the sun rays affecting the plastic components and the vehicle finish.

## 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.

○ **NOTE:** Leave drive belt off pulleys for the entire storage period.

# SPECIFICATIONS

ENGINE	Type	254	354	454
	No. of cylinder	2	2	2
	Bore	51 mm	59.5 mm	67.5 mm
	Stroke	61 mm	61 mm	61 mm
	Displacement	249.2 cc	339.2 cc	436.6 cc
	Compression ratio $\pm$ .6	16:1	16:1	16:1
	Max. operation R.P.M.	9700 to 9900	9800 to 10000	9800 to 10000
	Rotary valve port timing			
	opening B.T.D.C.	125°	130°	136°
	closing A.T.D.C.	75°	73°	75°
	Cylinder port timing			
	transfer ports	63.7°	65°	65°
	exhaust ports	97.3°	98.2°	99.2°
	exhaust boost port	97.3°	98.2°	99.2°
	Squish gap (min)	1.2 mm (.047")	1.2 mm (.047")	1.2 mm (.047")
	Squish angle	14°	14°	12°
	Piston ring type	Keystone "L" with moly-filling		
	Ring end gap	0.15-0.3 mm (.006-.012")	0.15-0.3 mm (.006-.012")	0.2-0.35 mm (.008-.014")
	Piston to wall clearance	0.082-0.112 mm (.0032-.0044")	0.082-0.136 mm (.0032-.0054")	0.132-0.166 mm (.0051-.0065")
	Con. rod axial play	0.4-0.73 mm (.016-.029")	0.4-0.73 mm (.016-.029")	0.4-0.73 mm (.016-.029")
	Cyl. max out of round	0.02 (.0008")	0.02 mm (.0008")	0.02 mm (.0008")
CHASSIS	Overall length	248.9 cm (98")	248.9 cm (98")	248.9 cm (98")
	Overall width	113.6 cm (44¾")	113.6 cm (44¾")	113.6 cm (44¾")
	Overall height			
	Dry weight $\pm$ 2 kg (5 lbs)	147.4 kg (325 lbs)	147.4 kg (325 lbs)	147.4 kg (325 lbs)
	Ski stance	102.8 cm (40½")	102.8 cm (40½")	102.8 cm (40½")
POWER TRAIN	Track type	Internal drive with riveted steel cleats		
	Width	38 cm (15")	38 cm (15")	38 cm (15")
	Length	259 cm (102")	259 cm (102")	259 cm (102")
SUSPENSION	Shock travel	53.9 mm (2 ⅞")		
	Front ski travel	88.9 (3½" $\pm$ ¼")		
	Shock spring tension rate	145 lb / in		
ELECTRICAL	Ignition type	Bosch C.D.I. R.C.P.K. 6 pole		
	Magneto gen. output	130 W		
	Spark plug	Bosch W 340 S2S		
	Spark plug gap	0.4 mm (.016")		
	Basic timing	1.39 mm (.055")		
	Ignition timing at 6000 RPM	Marks must align		
	Lighting resistance	0.2 ohms		
	Charging coil resistance	470 ohms $\pm$ 5%		
	Trigger coil resistance	220 to 230 ohms		
FUEL	Tank capacity	9 litres		
	— S.I.	2 gals.		
	— Imp. gals.	2.42 gals		
	— U.S. gals.			
	Gasoline	Aviation type light blue 100 LL octane		
		Light green 100 to 130 octane		
		Blizzard snowmobile oil		
	Oil	20 / 1		
	Gas / oil ratio	2500-3000 RPM		
	Idling R.P.M.	_____	_____	_____
	Carburetor	_____	_____	_____
	Main jet	_____	_____	_____
	Jet needle	_____	_____	_____
	Throttle slide cut-away	_____	_____	_____
	Carburetor pilot jet	_____	_____	_____
	Air screw adjustment ¼	_____	_____	_____
	By-pass hole	_____	_____	_____
	Valve seat	_____	_____	_____
	Starter jet	_____	_____	_____

