

2007

FS IQ Touring
FST IQ
FST IQ LX
FST IQ Cruiser
FST IQ Touring
FST SwitchBack

Snowmobile Owner's Manual

for Maintenance and Safety

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POLARIS
The Way Out.

For your nearest Polaris dealer,
call 1-800-POLARIS
or visit www.polarisindustries.com
Polaris Sales Inc.,
2100 Hwy. 55, Medina, MN 55340
Phone (763) 417-8650 Fax (763) 542-0599
Part No. 9920468 Rev 01
Printed in USA

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⚠ WARNING

Read, understand, and follow all of the instructions and safety precautions in this manual and on all product labels.

Failure to follow the safety precautions could result in serious injury or death.

⚠ WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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WELCOME

Thank you for purchasing a Polaris vehicle, and welcome to our world-wide family of Polaris owners. We proudly produce an exciting line of utility and recreational products.

- Snowmobiles
- All-terrain vehicles (ATVs)
- *RANGER* utility vehicles
- Victory motorcycles

We believe Polaris sets a standard of excellence for all utility and recreational vehicles manufactured in the world today. Many years of experience have gone into the engineering, design, and development of your Polaris vehicle, making it the finest machine we've ever produced.

For safe and enjoyable operation of your vehicle, be sure to follow the instructions and recommendations in this owner's manual. Your manual contains instructions for minor maintenance, but information about major repairs is outlined in the Polaris Service Manual and should be performed only by a Factory Certified Master Service Dealer (MSD) Technician.

Your Polaris dealer knows your vehicle best and is interested in your total satisfaction. Be sure to return to your dealership for all of your service needs during, and after, the warranty period.

We also take great pride in our complete line of apparel, parts and accessories, available through our online store at www.purepolaris.com. Have your accessories and clothing delivered right to your door!

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The Way Out.

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2007 Owner's Manual P/N 9920468

FS IQ Touring/FST IQ/FST IQ Touring/FST IQ Cruiser/FST IQ LX/FST SwitchBack

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Important Notes for Owners and Drivers

After reading this manual, store it in the snowmobile for convenient reference. It should remain with the snowmobile when the snowmobile is sold.

Some of the illustrations and photos used in this manual are general representations. Your model may differ.

Follow the maintenance program outlined in this manual. Preventive maintenance ensures that critical components of the snowmobile are inspected by your dealer at specific mileage intervals.

You and your dealer must complete the registration form included with your snowmobile and forward it to us. This completed form is necessary to ensure warranty coverage.

Protect and preserve your right to ride by joining your local trail riding clubs.

When teaching inexperienced operators to ride, set up a predetermined course for practice. Make sure they know how to drive and control the snowmobile before allowing them to make longer trips. Teach them proper snowmobile courtesy, and enroll them in driver's training and safety courses sponsored by local or state organizations.

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INTRODUCTION

Preservation of the Environment

Polaris is committed to supporting an environmental education campaign. We encourage state and provincial governments across the snowbelt to adopt rigorous safety training programs that encourage protection of our environment, including wildlife and vegetation.

Snowmobile clubs and other organizations are working together to protect our environment. Please support their efforts and operate your snowmobile with consideration for the protection and preservation of our environment.

Noise Level

One of the most publicized issues about snowmobiles is noise. The Society of Automotive Engineers (SAE), the standard-setting body for snowmobile development, recommends that snowmobiles conform to prescribed sound levels.

Polaris snowmobiles are engineered to conform to these SAE standards. Our muffler systems are designed to reduce noise levels and must not be altered or removed. The sound of your snowmobile may not be welcome to non-snowmobilers, so you have a responsibility to operate your snowmobile with concern for others. We do our part by manufacturing quieter machines; we ask your help to further reduce the impact of noise by operating your snowmobile safely and responsibly.

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Vehicle Identification Numbers

Record your snowmobile's identification numbers and key number in the spaces provided. Remove the spare key and store it in a safe place. Your key can be duplicated only by mating a Polaris key blank with one of your existing keys, so if both keys are lost, the ignition switch must be replaced.

Vehicle Model Number: _____

Tunnel VIN: _____
(lower right side of the tunnel)

Engine Serial Number (on valve cover): _____

Key Number: _____

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SAFETY

Operator Safety

The following signal words and symbols appear throughout this manual and on your vehicle. Your safety is involved when these words and symbols are used. Become familiar with their meanings before reading the manual.

⚠

The *safety alert symbol*, on your vehicle or in this manual, alerts you to the potential for injury.

⚠ WARNING

The *safety alert warning* indicates a potential hazard that may result in serious injury or death.

⚠ CAUTION

The *safety alert caution* indicates a potential hazard that may result in minor injury or damage to the vehicle.

CAUTION

A *caution* indicates a situation that may result in damage to the vehicle.

NOTE

A *note* will alert you to important information or instructions.

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Operator Safety

Follow the recommended maintenance program outlined beginning on page 101 of this manual to ensure that all critical components on the snowmobile are thoroughly inspected by your dealer at specific mileage intervals.

⚠ WARNING

Driving a snowmobile requires your full attention. DO NOT drink alcohol or use drugs or medications before or while driving or riding as a passenger. They will reduce your alertness and slow your reaction time.

Snowmobiles are capable of traveling at high speeds. Use extra caution to ensure operator safety. Make sure your snowmobile is in excellent operating condition at all times. Always check major and vital safety components before every ride.

All Polaris snowmobiles are designed and tested to provide safe operation when used as directed. Failure of critical machine components may result from operation with any modifications, especially those that increase speed or power. DO NOT MODIFY YOUR MACHINE. The snowmobile may become aerodynamically unstable at speeds higher than those for which it is designed. Loss of control may occur at higher speeds. Modifications may also create a safety hazard and lead to bodily injury.

The warranty on your entire machine is terminated if any equipment has been added, or any modifications have been made, to increase the speed or power of the snowmobile.

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SAFETY
Operator Safety
Stay Clear of Track

Your snowmobile is propelled by a revolving track that must be partially exposed for proper operation.

⚠ WARNING

Serious injuries may result if hands, feet, or clothing become entangled in the track. Be alert when riding, and remain properly seated to stay clear of the track.

Never hold the snowmobile up or stand behind it while warming up the track. A loose track or flying debris could cause serious injury or death. We recommend having your dealer perform all track service and alignment procedures.



Stay Clear of Engine

Never attempt adjustments with the engine running. Turn off the ignition, raise the hood, make the adjustment, secure shields and guards, secure the hood, and then restart the engine to check its operation.

⚠ WARNING

Serious injury can occur if fingers or clothing contact the moving parts of an engine. Always stop the engine before attempting adjustments.

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Operator Safety

Riding Position

Operating a snowmobile requires skill and balance for proper control. Rider positions may vary with experience; but under many conditions, the proper position is to be seated with both feet on the running boards and both hands on the handlebar grips for proper throttle, brake and steering control.

⚠ WARNING

Improper riding position may reduce control and could result in serious injury or death. Always ride in a position that allows for control of your vehicle.

Survival Preparation

For your safety, always ride in a group of other snowmobilers. Always tell someone where you're going and how long you expect to be gone. If it isn't possible to ride with others, and you must travel into remote areas, always carry survival equipment that's appropriate to the conditions you may encounter. Such equipment may include, but is not limited to: extra clothing, a sleeping bag, a flashlight, food and water, a signaling mirror, a means of building a fire, and a two-way radio or cellular telephone.

Always carry the owner's manual on your snowmobile. For added protection, purchase and carry the following items on your snowmobile as well:

- Spare Drive Belt
- Extra Set of Spark Plugs
- Tow Rope
- Extra Oil
- Fuel Deicer
- Winter Survival Kit
- Trail Map
- First Aid Kit
- Tool Kit

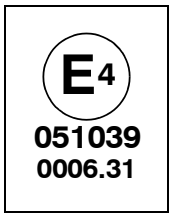
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SAFETY
Operator Safety
Riding Apparel
Helmet

Wearing a helmet can prevent a severe head injury. Whenever riding a Polaris vehicle, always wear a helmet that meets or exceeds established safety standards.

Approved helmets in the USA and Canada bear a U.S. Department of Transportation (DOT) label.

Approved helmets in Europe, Asia and Oceania bear the ECE 22.05 label. The ECE mark consists of a circle surrounding the letter E, followed by the distinguishing number of the country which has granted approval. The approval number and serial number will also be displayed on the label.



Eye Protection

Do not depend on eyeglasses or sunglasses for eye protection. Whenever riding a Polaris vehicle, always wear shatterproof goggles or use a shatterproof helmet face shield. Polaris recommends wearing approved Personal Protective Equipment (PPE) bearing markings such as VESC 8, V-8, Z87.1, or CE. Make sure protective eye wear is kept clean.

Clothing

Be prepared, be warm and be comfortable when riding. Be aware of the weather forecast, especially the windchill, and dress accordingly. See the chart on page 22.



⚠ WARNING

Avoid wearing loose clothing or long scarves, which can become entangled in moving parts and cause serious injury. Always wear an approved helmet and eye protection.

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Operator Safety

Rider Capacity

Driving 1-Up - Some Polaris snowmobiles are designed for a single rider only. A decal on the *console* of these models indicates single rider operation.

Driving 2-Up - Some Polaris snowmobiles are designed for up to two riders. A decal on the *hood* of these models indicates that the vehicle is designed for one operator and one passenger only.

⚠ WARNING

Control becomes more difficult with two people on board. More space is required to make turns, and longer distances are needed for stopping. Make sure the passenger remains seated behind the driver, facing forward, with both feet placed firmly on the running boards. Slow down and avoid “jumping” your snowmobile.

Snowmobiles designed for two riders should never be operated with more than two people on board. When traveling with a passenger, it’s the driver’s responsibility to operate the snowmobile safely.

Slow down! Control becomes more difficult with two people on board. More space is required to make turns, and longer distances are necessary for stopping.

Disabled Operators

Safe operation of this rider-active vehicle requires good judgement and physical skills.

⚠ WARNING

Operators with cognitive or physical disabilities have an increased risk of loss of control, which could result in serious injury or death. Do not allow disabled persons to operate this vehicle.

Cargo Overload

Too much weight on the rear of the machine may reduce your ability to steer. Do not exceed carrier and rack weight limits, and do not allow a passenger to sit on the seat back or the cargo carrier.

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SAFETY
Operator Safety
Excessive Speed

⚠ WARNING

High speed driving, especially at night, could result in serious injury or death. Always reduce speed when driving at night or in inclement weather.

Always observe all state and local laws governing snowmobile operation and speed limits. Always be alert and pay attention to the trail ahead. If your speed is 40 MPH (64 km/h), your snowmobile is traveling about 60 feet (18 m) per second. If you look back for only two seconds, your snowmobile will travel about 120 feet (36 m). If your speed is 60 MPH (96 km/h), your snowmobile will travel about 180 feet (55 m) in two seconds.

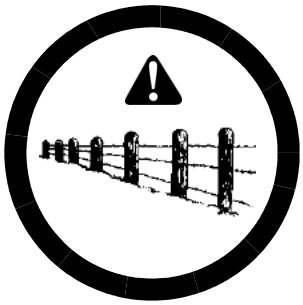
Traveling at night requires extra caution. Check headlight and taillight to ensure proper operation, and don't over-drive your headlight beam. Always be able to bring your snowmobile to a stop in the distance illuminated by the headlight.

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Operator Safety

Driver Awareness

Slow down when traveling near poles, posts, or other obstacles. Be especially alert if you're snowmobiling after dark. Always be on the alert for wire fences. Single strands are especially dangerous, since there may be a great distance between posts. Guy wires on utility poles are also difficult to distinguish.



Make sure the way is clear before crossing railroads and other roads and highways. The noise of your snowmobile will drown out the sound of approaching vehicles. Look ahead, behind, and to both sides before turning or crossing railroad tracks or highways. Steep embankments may also hide your view. Always leave yourself a way out.



Variances in snow depth and/or water currents may result in uneven ice thickness. You may drown if you break through the ice. Avoid travelling on frozen bodies of water.

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SAFETY
Operator Safety
Avalanches

Snowmobilers should always be properly trained and equipped before traveling in mountainous terrain:

- Take an avalanche class
- Travel with experienced people
- Travel on designated trails
- Make sure each person is equipped with a shovel, probe and avalanche beacon.



You don’t have to be snowmobiling on a slope for an avalanche to occur. Be aware that all of the snow is connected. You may be riding on a flat slope or snow covered road, but if the snowpack above is unstable enough you can trigger an avalanche on a steeper slope above you. Always be aware of snow conditions above you as you travel in mountainous terrain.

Before riding in mountainous terrain, call or log on to your local avalanche advisory to get current weather and snow stability information.

For more information about avalanche training and avalanche conditions, contact local law enforcement in your area, or visit the American and Canadian online avalanche centers at www.avalanche.org.

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Operator Safety

Ice and Snow Build-up

⚠ WARNING

Ice and snow build-up may interfere with the steering of your snowmobile, resulting in serious injury or death. Keep the underhood area free of snow and ice.

Before driving, manually turn the skis to the left and right to be sure ice and snow are not interfering with full left and right steering. If difficulty is encountered, remove ice and snow build-up that may be obstructing the steering linkage.

NOTE: If your snowmobile is equipped with RIDER SELECT, perform this check in both the full up and full down steering positions.

Driving Downhill

When riding downhill, shift your weight to the rear of the snowmobile and reduce your speed to a minimum. Apply just enough throttle to keep the clutch engaged, allowing the engine's compression to help slow the snowmobile and keep it from rolling freely downhill.

⚠ WARNING

When driving on long downhill stretches, pump the brakes. Riding the brakes may cause the brake system to overheat, which may result in brake failure.

Excessive or repetitive use of the brakes for high speed stops will also cause an overheated brake system. This condition may lead to a sudden loss of brakes and/or fire and may result in serious injury or death.

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SAFETY
Operator Safety
Driving on Slippery Surfaces

⚠ WARNING

Never attempt an abrupt change of direction when operating on slippery surfaces. Proceed slowly and use extra caution.

Driving on ice or hard-packed snow reduces steering and braking control, which may result in loss of control and serious injury or death. Slow down and use extra caution when operating on slippery surfaces.

Driving in Hilly Terrain

⚠ WARNING

Climbing a hill or crossing the face of a slope may result in loss of balance and snowmobile rollover, causing serious injury or death. Use caution and good judgement when driving in hilly terrain.

Use extra caution when operating in hilly terrain. If climbing a hill is unavoidable, keep your weight low and forward. If you must cross the face of a slope, keep your weight on the uphill side of the snowmobile to maintain proper balance and avoid possible rollover.

Slow down when reaching the crest of a hill. Be prepared to react to obstacles, sharp drops or other people or vehicles that may be on the other side of the hill.

If you're unable to continue up a hill, turn the snowmobile downhill before it loses momentum. If this isn't possible, spin the track just enough to dig in to prevent it from rolling back down the hill. Stop the engine and set the parking brake (if equipped). Keeping away from the downhill side of the snowmobile, pull the rear of the snowmobile around and point the front end and skis downhill. Remount the snowmobile, restart the engine, release the parking brake, and descend the hill carefully.

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Operator Safety

Drive Belt

Do not operate the engine with the drive belt removed.

Any servicing that requires operation without a belt must be performed by your dealer. Operation of the engine with the belt removed may result in injury or damage to the engine.

Intake Silencer

Do not operate the engine with the intake silencer or filter removed.

Damage to the engine may occur if the intake silencer or filter are removed.

Clutches

Do not attempt to service the clutches.

All clutch service must be performed by your dealer. The clutch is a complex mechanism that rotates at high speeds. Each clutch is dynamically balanced before installation. Any tampering may disrupt this precision balancing and create an unstable condition.

Cold Weather Drive-Away

Whenever your snowmobile has been parked for a length of time, especially overnight, always make sure the skis and track are loosened from ice and snow before attempting to drive. Apply the throttle with enough authority to put the snowmobile into motion, but always operate within safety limits and, on 2-up machines, with respect for a passenger.

Maneuverability

While much control and maneuverability is achieved through the steering system and skis, maximum control is achieved by the shifting of your body weight. Maneuverability will change for lighter operators or snowmobiles designed to carry a load or a passenger.

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SAFETY
Operator Safety
Inadequate Snow Conditions

Since snow provides the only lubrication for the power slide suspension and, on liquid cooled models, cooling for the engine, adequate snow cover is a requirement for operation of your snowmobile. Driving in too little snow will result in excessive wear and damage to the slide rail, track and/or engine.

⚠ WARNING

Inadequate cooling and lubrication will lead to overheating of the slide rail and track, causing premature wear, damage and failure, which can result in serious injury. Reduce speeds and frequently drive into fresh snow to allow adequate cooling and polishing of the slide rail and track surfaces. Avoid operating for prolonged periods on ice, hard-packed surfaces or roads.

Operating in Deep Snow

If the snowmobile becomes stuck in snow, clear the running board area of snow, then step down the snow in front of the snowmobile so that when the throttle is opened, the snowmobile will be able to climb up and over the snow.

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Operator Safety

Driving Responsibly

Every snowmobile handles differently, and even the most docile conditions may become dangerous if operators drive improperly. If you're new to snowmobiling, acquaint yourself with the machine and with what it will and won't do under various conditions. Even seasoned drivers should spend some time getting the feel for a machine before attempting ambitious maneuvers.

- A snowmobile depends on the rider's body position for proper balance in executing turns, traversing hills, etc. Always start on a smooth, level area to begin building your operating experience.
- Before allowing someone else to use your snowmobile, know the extent of their operating skills. Check to see if they've taken a snowmobile safety course and have an operator's certificate. For their protection, as well as yours, make sure they take a snowmobile safety course. Everyone can benefit from the course.
- Don't "jump" your snowmobile. Jumping may injure your back because of spinal compression. The seat and suspension of your snowmobile have been designed to provide protection under normal riding conditions. Your snowmobile is not intended for this kind of use.
- Be courteous to oncoming traffic by dimming your headlights and reducing your speed.
- When traveling in a group of snowmobiles, don't tailgate (follow too closely). Leave enough distance between snowmobiles to provide ample stopping room and to provide protection from flying snow and debris. Allow even more distance when driving on slippery surfaces or when driving in darkness or other low visibility conditions. Be aware of any snowmobile traffic around your vehicle. Drive defensively to avoid accidents.
- Remove the key from the ignition when you leave the snowmobile unattended.

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SAFETY
Operator Safety
Windchill/Temperature Charts

The following information is provided to help you determine when temperatures become dangerous for riding.

WIND CHILL CHART (°F)

Wind Speed in MPH	Actual Thermometer Reading (°F)																	
	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
	Equivalent Temperature (°F)																	
Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98
Frostbite in >>							30 min.		10 min.		5 min.							

WIND CHILL CHART (°C)

Wind Speed in KPH	Actual Thermometer Reading (°C)																	
	5	2	-1	-4	-7	-10	-13	-16	-19	-22	-25	-28	-31	-34	-37	-40	-43	-46
	Equivalent Temperature (°C)																	
Calm	5	2	-1	-4	-7	-10	-13	-16	-19	-22	-25	-28	-31	-34	-37	-40	-43	-46
8	3	0	-	-7	-11	-14	-18	-22	-25	-29	-32	-36	-39	-43	-46	-50	-53	-57
16	2	-2	-6	-10	-13	-17	-21	-24	-28	-32	-36	-39	-43	-47	-50	-54	-58	-62
24	1	-3	-7	-11	-15	-19	-22	-26	-30	-34	-38	-42	-45	-49	-53	-57	-61	-65
32	0	-4	-8	-12	-16	-20	-24	-28	-32	-36	-39	-43	-47	-51	-55	-59	-63	-67
40	-1	-5	-9	-13	-17	-21	-25	-29	-33	-37	-41	-45	-49	-53	-57	-61	-65	-69
48	-1	-5	-9	-13	-18	-22	-26	-30	-34	-38	-42	-46	-50	-54	-58	-62	-66	-70
56	-2	-6	-10	-14	-18	-22	-26	-31	-35	-39	-43	-47	-51	-55	-59	-64	-68	-72
64	-2	-6	-10	-15	-19	-23	-27	-31	-35	-40	-44	-48	-52	-56	-61	-65	-69	-73
72	-2	-7	-11	-15	-19	-23	-28	-32	-36	-40	-45	-49	-53	-57	-61	-66	-70	-74
80	-3	-7	-11	-15	-20	-24	-28	-33	-37	-41	-45	-50	-54	-58	-62	-67	-71	-75
88	-3	-7	-12	-16	-20	-24	-29	-33	-37	-42	-46	-50	-55	-59	-63	-67	-72	-76
96	-3	-8	-12	-16	-21	-25	-29	-34	-38	-42	-47	-51	-55	-60	-64	-68	-73	-77
Frostbite in >>							30 min.		10 min.		5 min.							

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Safety Decals and Locations

Warning decals have been placed on the snowmobile for your protection. Read and follow the instructions of the decals and other warnings on the snowmobile carefully. If any of the decals depicted in this manual differ from the decals on your snowmobile, always read and follow the instructions of the decals *on the snowmobile*.

If any decal becomes illegible or comes off, contact your Polaris dealer to purchase a replacement. Replacement *safety* decals are provided by Polaris at no charge. The part number is printed on the decal.

Clutch Cover Warning

This warning decal is found under the hood on the clutch cover:

WARNING

Do not operate with hood open.

Do not attempt adjustment with engine running.

Do not operate engine with plenum/belt guard removed.

Never run engine with drive belt removed.

Never service clutches yourself. See your dealer.

Pressure Cap Warning

This warning decal is found under the hood on the pressure cap of applicable liquid cooled models:

WARNING

Do not open hot. Test or replace when changing coolant. Press down and turn to release cap. 13 PSI

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SAFETY

Safety Decals and Locations

“No Passenger” Warning

Snowmobiles designed for a single rider only have a warning decal on the left console:

WARNING

This vehicle is designed for operator only.

“NO PASSENGER”



“No Passenger” Warning or “One Passenger” Warning

Passenger Warning

Snowmobiles designed for an operator and one passenger have a warning decal on the left console. For more information on operating with a passenger, see page 13.

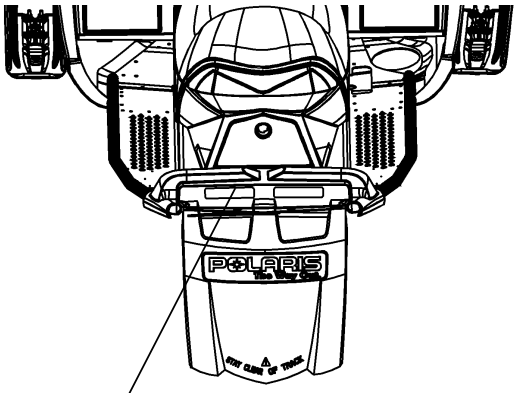
WARNING

This vehicle is designed for operator and “ONE” passenger only.

Track Warning

WARNING

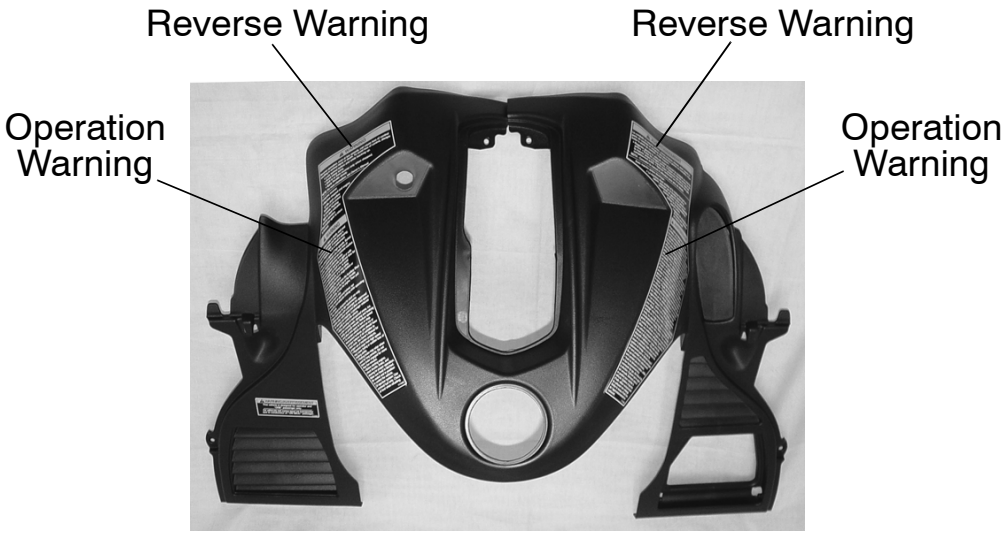
Stay clear of track. Do not sit on seat back. Entanglement with the track or a fall from seat back may result in severe injury or death.



Track Warning

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Safety Decals and Locations



Reverse Warning

Polaris snowmobiles equipped with electric reverse and will have this decal on the console:

WARNING

Reverse operation, even at low speeds, can cause loss of control resulting in serious injury or death. To avoid loss of control, always:

- **Look behind before and while backing up.**
- **Avoid sharp turns.**
- **Shift to or from reverse only when stopped.**
- **Apply throttle slowly.**

NOTE: For more information, see Owner's Manual.

If electric reverse:

- **Machine stopped and engine at idle, push yellow button on LH control to reverse. Flashing light on dash indicates reverse operation.**
- **Push button again to return to forward.**

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SAFETY
Safety Decals and Locations
Operation Warning

An operation warning decal is present on the console of all Polaris snowmobiles:

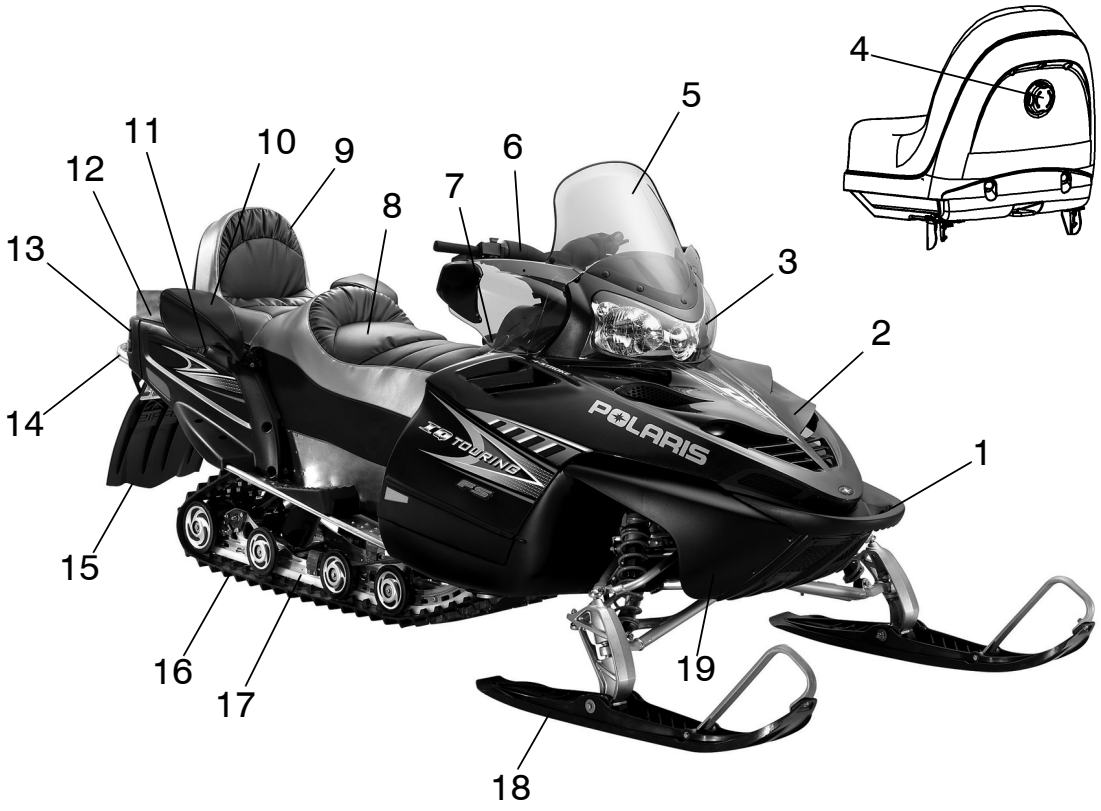
WARNING

- **To avoid serious injury or death, read and understand all warnings and the Owner's Manual before operation. If manual is missing, contact a Polaris dealer for a replacement.**
- **This vehicle is capable of high speeds. Buried objects or uneven terrain can cause loss of control. Reduce speed and use extreme caution when operating in unfamiliar terrain.**
- **Excessive speed, especially at night or with limited visibility, can result in insufficient time for you to react to terrain changes, to avoid unexpected obstacles, or to stop safely.**
- **Never consume alcohol or drugs before or while operating this vehicle.**
- **In an emergency, push down the Auxiliary Shut-Off Switch, located on the top of the throttle control assembly, to stop the engine. Then pull the brake lever to stop.**
- **Always wear an approved helmet, eye protection, and adequate clothing while operating this vehicle.**
- **This vehicle is designed for adult use only. Check local laws for age requirements.**
- **When operating with a passenger (on approved models only), reduce speed and allow extra space for steering and stopping. A passenger reduces your ability to control the vehicle.**
- **When operating on hard-packed snow, ice, or when crossing roads, steering and braking ability are greatly reduced. Reduce speed and allow extra space to turn or stop.**
- **To maintain vehicle control on ice or hard-packed surfaces, you should have a proper balance of ski carbides to track studs. See Owner's Manual for proper use of traction products.**
- **Repeated stops from high speed may cause fading or sudden loss of braking ability.**
- **Parking brake may relax when used for long periods. Do not leave brake engaged for more than five minutes.**
- **Before starting the engine, check throttle, brake, and steering for proper operation. Make sure hood is latched. Be seated and in position to control the vehicle.**

Oil injection system: Use unmixed fuel only. Check oil level when refueling.

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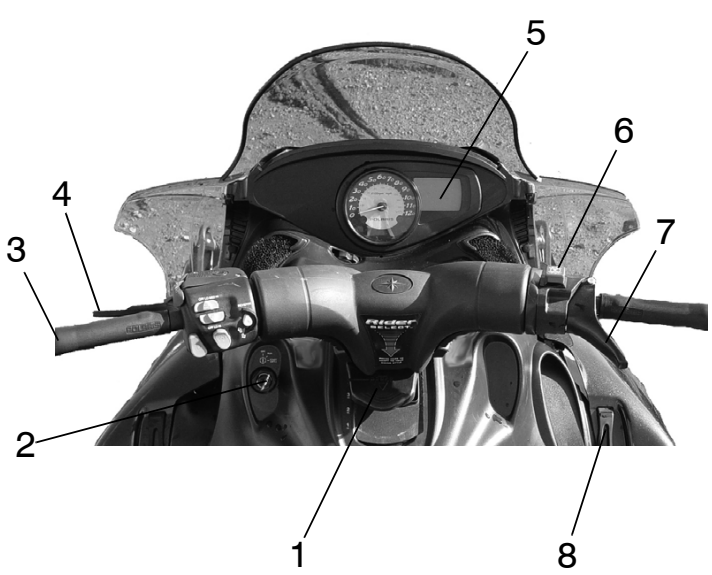
FEATURES

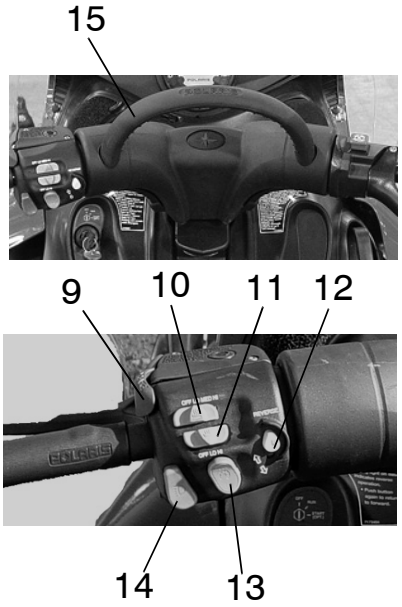


1. Front Bumper
2. Hood
3. Headlight
4. Passenger Lumbar Adjuster (Touring)
5. Windshield
6. Handlebar
7. Fuel Filler Cap
8. Operator Seat
9. Passenger Seat (Touring)
10. Passenger Grab Handle (Touring)
11. Grab Handle Heater Switch (Touring)
12. Storage Compartment or Cargo Bag
13. Taillights
14. Rear Bumper
15. Snow Flap
16. Track
17. Suspension
18. Skis
19. Nosepan

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FEATURES



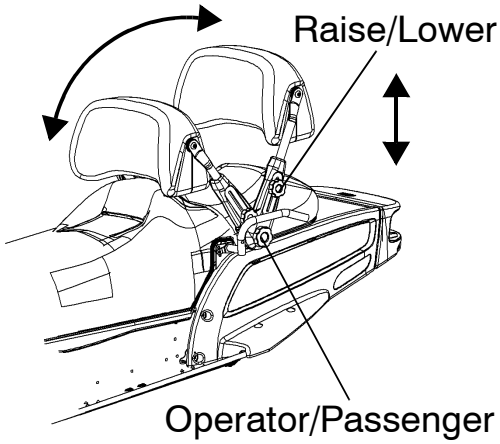


1. Rider Select™
2. Ignition Switch
3. Handlebar hook
4. Brake Lever
5. MFD (Multi-Function Display)
6. Engine Stop Switch
7. Throttle Control
8. Hood Hold Down Straps
9. Parking Brake
10. Handlebar Grip Warmer Switch
11. Thumbwarmer Switch
12. Electronic Reverse Button
13. MFD Control
14. Headlight Dimmer Switch
15. Mountain Bar (if equipped)

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Backrest (Cruiser)

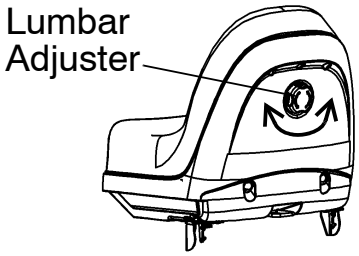
The backrest is adjustable for either operator or passenger use. See page 32 for passenger seat installation instructions.



1. Loosen the upper adjustment knobs to raise or lower the backrest.
2. Loosen the lower adjustment knobs to move the backrest forward for operator use or rearward for passenger use.
3. Always tighten the knobs securely after adjusting.

Passenger Seat (Touring)

The passenger seat features an adjustable lumbar support. To adjust for rider comfort, rotate the lumbar adjustment knob.



M-10 ACE Suspension Adjustment Switch

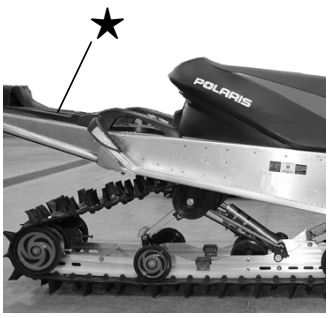
A switch on the console (above the ignition switch) allows you to adjust the M-10 ACE suspension with the MFD control switch. See page 71 for instructions.



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FEATURES

Cargo Rack (SwitchBack)



The maximum weight capacity for the cargo rack is 15 lbs. (7 kg). Always secure cargo before operating. Do not exceed the rack weight limit. Do not allow a passenger to sit on the seat back or the cargo rack.

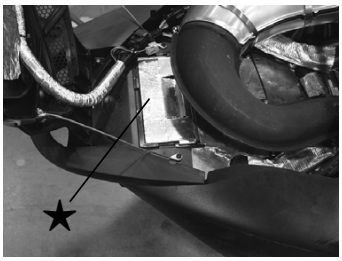
Adjustable Headlights



Move the adjuster to the left to lower the headlight beam.

Move the adjuster to the right to raise the headlight beam.

Radiator Compartment Access Panel



The access panel is provided for cleaning debris from the radiator.

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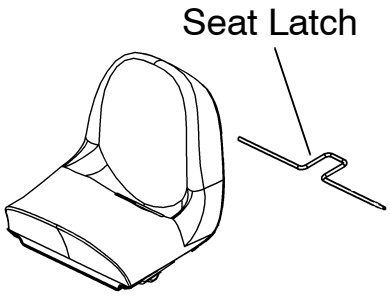
Storage Compartments

Cargo Bag (Touring)

The cargo bag is secured to the rear of the tunnel with straps. The cargo bag and the passenger seat are removable to provide open storage for transporting larger items. The maximum weight capacity for the cargo carrier is 30 lbs. (14 kg). Always secure cargo before operating. Do not exceed the carrier weight limit. Do not allow a passenger to sit on the seat back or the cargo area.



1. Push down on the seat latch lever, which is located at the lower rear of the passenger seat.
2. Lift up the seat and remove it from the chassis.
3. Reverse the procedure to reinstall the seat.



Under-Seat Storage (SwitchBack)

Lift the seat lever and lift the seat to access the under-seat storage area.



Storage Compartment (Classic)

Open or close the storage compartments with the key.



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FEATURES
Storage Compartments
Trunk/Passenger Seat/Cargo Bag (Cruiser)

The trunk cover is removable to allow installation of the passenger seat and cargo bag. The maximum weight capacity for the cargo carrier is 30 lbs. (14 kg). Always secure cargo before operating. Do not exceed the carrier weight limit. Do not allow a passenger to sit on the seat back or the cargo area.







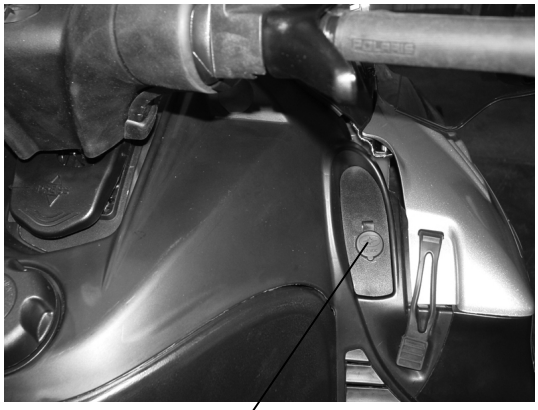
1. Adjust the backrest to the forward (operator) position. See page 29.
2. Release the trunk cover latch.
3. Lift the trunk assembly upward and rearward to remove it.
4. Install the passenger seat securely.
5. Install the cargo bag and secure the straps to the cargo carrier sides.
6. Adjust the backrest to the rear (passenger) position.

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12-Volt DC Outlet

If equipped, use the outlet to power a global positioning sensor (GPS), heated helmet shield, utility light, cell phone or other accessories.

The 12-volt DC outlet is installed in the recoil pocket next to the right hood hold-down. If you install an accessory outlet on your model, always install it in the recoil pocket. The fuel filter is installed in the upper console area. Do not install an outlet on the upper console.



12-Volt DC Outlet

⚠ WARNING

Serious injury could occur if sparks ignite a fuel supply. Do not install an accessory 12-volt DC outlet on the upper console. Install the outlet in the recoil pocket.

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FEATURES
RIDER SELECT Adjustable Steering System

The RIDER SELECT adjustable steering system (if equipped) allows you to adjust the handlebar position to fit your style of riding. Some models have five (5) adjustment positions. Other models have seven (7) positions.

⚠ WARNING

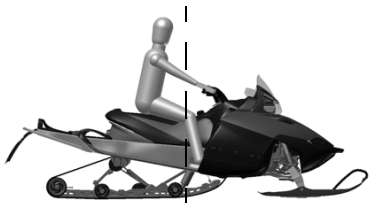
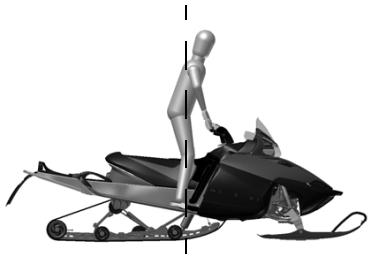
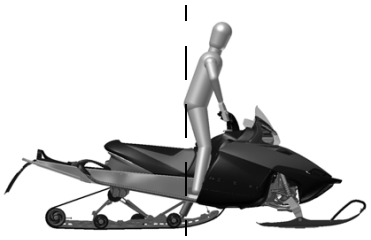
If your snowmobile has five adjustment positions, do not remove the RIDER SELECT lockout. Your Polaris snowmobile has been engineered for this range of adjustability. Removing this lockout and using RIDER SELECT position 6 or 7 will result in the handlebars and brake lever contacting other components and interfering with steering and braking. This could lead to loss of control resulting in serious injury or death. Always be sure that the handlebars and brake lever do not contact any other snowmobile components at any steering position AND at any RIDER SELECT position.

Do not use RIDER SELECT positions 6 or 7 unless riding conditions require it. Operation in position 6 or 7 can reduce vehicle handling for other types of riding and result in serious injury or death.

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RIDER SELECT Adjustable Steering System

Choosing the Best RIDER SELECT Position

Position		Riding Style
	1 2 3	**Relaxed Trail Riding** Rider weight is slightly behind the center of the snowmobile for comfortable and relaxed riding.
	4 5	**General Trail Riding, Boondocking, Deep Snow Riding** Rider weight is centered on the snowmobile, providing balance, comfort and control for both novice and experienced riders. *This is the recommended position for most riding situations.*
	6 7	**Snowcross/Steep Hill Climbing Only** Rider weight is ahead of the center of the snowmobile, adding weight to the skis and making the snowmobile heavier in the front. These positions are ONLY for snowcross and severe hill climbing.

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FEATURES
RIDER SELECT Adjustable Steering System

⚠ WARNING

Attempting to adjust the handlebar position while the snowmobile is moving could result in loss of control and serious injury or death. Always stop the snowmobile before attempting to adjust the steering system.

1. Stop the snowmobile.
2. Press the release button and move the handlebar forward or rearward to the desired position.



⚠ WARNING

Do not lubricate the RIDER SELECT mechanism. Doing so could cause loss of control and result in serious injury or death. The RIDER SELECT mechanism is lubricated for life at the factory.

⚠ WARNING

Some aftermarket accessories (including windshields and cargo bags) may interfere with the handlebar. Such accessories could limit your ability to steer the vehicle and/or may contact the brake lever. This could lead to loss of control resulting in serious injury or death. Always be sure that accessories do not contact the handlebar or brake lever at any steering position and at any RIDER SELECT position.

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Engine Management System

Malfunction Indicator Lamp (MIL)

Illuminated MIL

The MIL (Check Engine Indicator) will *illuminate* when a problem with engine management system components is detected.

1. Turn the engine off and restart it. If the light goes off, continued operation is permissible.
2. If the light illuminates again, determine whether engine RPM or vehicle speed is limited, then check the charts on page 38 to identify the cause.

NOTE: If you are unable to determine the cause of an illuminated MIL, please see your Polaris dealer.

Flashing MIL (FST)

The MIL will *flash* if an error with the turbo boost regulation system is detected.

CAUTION
If you are unable to determine and correct the cause of a flashing MIL or high temperature indicator, serious engine damage may occur with continued operation. See your Polaris dealer.

1. Verify that all electrical connections are secure.
2. Check battery voltage on the gauge, and install a new battery if voltage is low (see page 52).
3. Verify that engine temperature is within the recommended operating range. See the Turbo Boost chart on page 39.

A flashing MIL may also be caused by damaged or disconnected hoses between the turbocharger and wastegate solenoid pulse valve (located on the engine side of the airbox) or between the wastegate actuator (located under the turbocharger) and wastegate solenoid pulse valve. If the hose has no damage and is not disconnected, see your dealer immediately.

CAUTION
Serious engine damage may occur if the wastegate reference line is removed or modified. DO NOT remove or modify the wastegate reference line.

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FEATURES
Engine Management System

To protect the engine, the engine management system will limit engine RPM, vehicle speed or turbo boost (FST) if the following conditions are encountered.

Vehicle Speed is Limited

Cause	Function	Maximum Speed MPH (km/h)	Result
Reverse is selected	Reverse	12 (19)	Engine will misfire at higher vehicle speed
Defective rollover switch	Rollover	37 (59)	
Throttle stuck, throttle lever depressed	Throttle stuck, throttle safety switch high	18 (29)	
Maximum vehicle speed	Max speed limiter	186 (299)	

Engine Speed is Limited

Cause	Function	Maximum RPM	Result
Reverse is selected, speed sensor error	Reverse	5300	Engine will misfire at higher engine speed
Defective rollover switch, speed sensor error	Rollover	6000	
Throttle stuck, throttle lever depressed, speed sensor error	Throttle stuck, throttle safety switch high	5450	
Throttle stuck, throttle lever at idle position	Throttle stuck, throttle safety switch low	2400	
Maximum vehicle speed, speed sensor error	Max speed limiter	8800	
Reverse failure	Reverse	2500	ECU cannot determine whether reverse or forward is selected

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Engine Management System

Engine Overheats (FS)

Indication	At Vehicle Speed MPH (km/h)	At Engine Temp °F (°C)	Explanation
Flashing High Temperature Indicator	0-31 (0-50)	230 (110)	Lamp flashes when engine temperature exceeds table values. Stop and cool the engine.
	32-46 (51-74)	230-221 (110-105)	
	47-62 (75-100)	221-212 (105-100)	
	Above 62 (100)	212 (100)	
Flashing High Temperature Indicator with engine misfire	0-31 (0-50)	239 (115)	Lamp flashes and engine misfires when engine temperature exceeds table values. Stop and cool the engine.
	32-46 (51-74)	239-230 (115-110)	
	47-62 (75-100)	230-221 (110-105)	
	Above 62 (100)	221 (105)	

Engine Overheats (FST)

Indication	At Vehicle Speed MPH (km/h)	At Engine Temp °F (°C)	Explanation
Flashing High Temperature Indicator	0-31 (0-50)	221 (105)	Lamp flashes when engine temperature exceeds table values. Stop and cool the engine.
	32-46 (51-74)	221-212 (105-100)	
	47-75 (75-120)	212-203 (100-95)	
	Above 75 (120)	203 (95)	
Flashing High Temperature Indicator with engine misfire	0-31 (0-50)	239 (115)	Lamp flashes and engine misfires when engine temperature exceeds table values, operator may feel loss of power. Stop and cool the engine.
	32-46 (51-74)	239-230 (115-110)	
	47-75 (75-120)	230-221 (110-105)	
	Above 75 (120)	221 (105)	

Turbo Boost is Limited (FST)

Indication	Result
Illuminated High Temperature Indicator	Operator may feel loss of power
Engine coolant temperature is at or below 122° F (50° C) OR Engine coolant temperature is at or above 203° F (95° C)	
Intake manifold air temperature is at or below 32° F (0° C) OR Intake manifold air temperature is at or above 158° F (70° C)	
Overboost condition occurs (Check Engine light will flash)	
Fuel octane is too low (use the recommended fuel)	

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FEATURES
Knock Sensor (Turbo Models)

A knock sensor monitors the engine and responds to detonation by automatically reducing the engine timing and adding fuel. This results in decreased engine RPM and performance.

NOTE: Engine performance will be reduced if fuel with a lower octane than 91 is used. See fuel recommendations on page 91.

Effect

The knock sensor system prevents damage to the engine from detonation while developing the maximum power of the engine safely. If the system senses detonation beyond a preset limit, it retards ignition timing and adds fuel to reduce the detonation and prevent engine damage.

When the detonation returns to a permissible level, the system will return spark and fuel to normal, allowing the engine to run at rated power levels.

Fail-Safe

The knock sensor includes a sensor fail-safe system to prevent the engine from damage if the sensor fails, becomes disconnected or is unable to detect detonation. The rider will experience a loss in power. The sensor must be reconnected or repaired to regain full power.

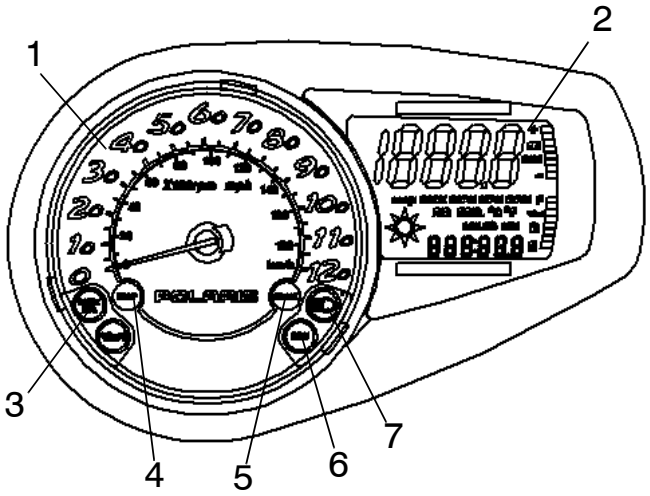
NOTE: The check engine light will illuminate if the sensor fails or becomes disconnected.

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Instrumentation

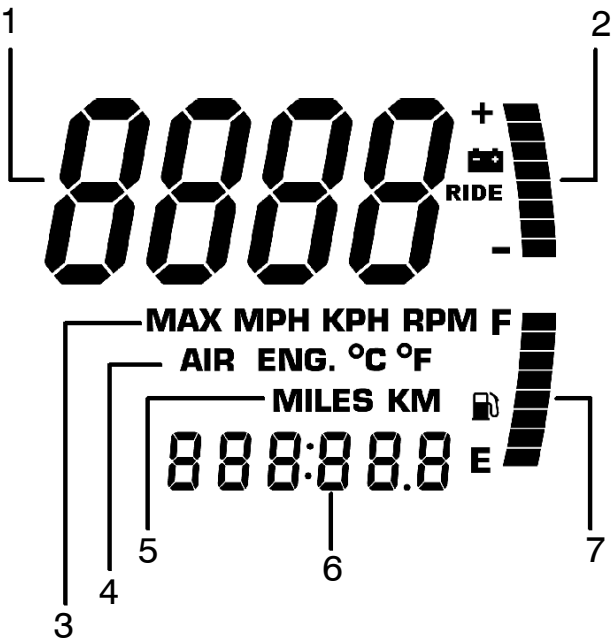
MFD Component Identification

Item	
1	Analog Gauge
2	Digital Gauge
3	Check Engine Indicator
4	High Temp Indicator
5	Brake Indicator
6	Reverse Indicator
7	High Beam Indicator



Digital Display Identification

Item	
1	RPM or Speed Altitude (if equipped) Service Interval
2	Electrical System Voltage Level (all models) and M-10 ACE Suspension Adjustment (RIDE) (Cruiser only)
3	MAX - Maximum MPH/ KPH or RPM MPH - Miles per hour KPH - Kilometers per hour RPM - Engine crankshaft revolutions per minute
4	Air Temp (if equipped) Engine Temp Degrees Celsius Degrees Fahrenheit
5	Miles/Kilometers
6	Hours Trip 1/Trip 2/Trip F Service Label Altitude Label
7	Fuel Level (FS) or Turbo Boost (FST)



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FEATURES
Instrumentation
MFD Settings

The MFD control switch allows you to set the MFD display to your preferences. The rocker switch has a MODE button (top) and a SET button (bottom). Specific instructions are outlined on the following pages.

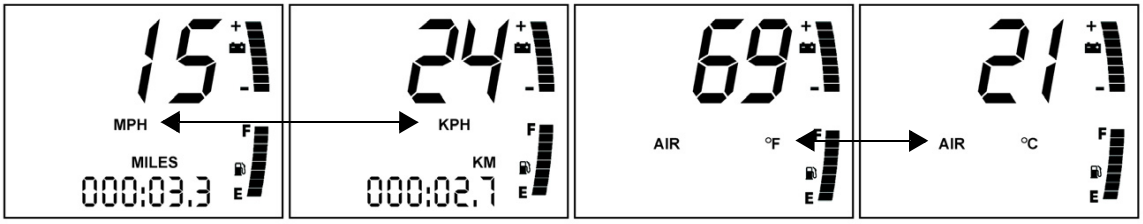


MFD Control Switch

MFD settings can be made with the engine running or with the engine off. If the engine is off, make sure the stop switch is pressed down, and turn the ignition key to the START position briefly to activate the gauge. The gauge will illuminate for about 90 seconds.

Standard vs. Metric

The MFD will display either standard or metric units of measurement. While viewing a screen that displays measurements (MPH, km/h or temperatures), press and hold the MODE switch until the unit of measurement changes (about 10 seconds).



ACE Suspension Adjustment (FST Cruiser)

The MFD control switch also operates the M-10 ACE rear suspension adjustment. When the blue ACE adjustment switch on the console is in the GAUGE position, the MFD control switch functions the same as on all other FST models. When the switch is in the ACE position, you may use the MFD control switch to adjust the rear suspension. See page 71 for instructions.

NOTE: The engine must be running to make suspension adjustments with the MFD control switch.

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Instrumentation

MFD Settings

Speedometer/Tachometer

The speedometer and tachometer can be viewed in either the analog or the digital display. If the analog display is set to show speedometer readings, the digital screen will automatically display the tachometer (option 1). If the analog is set to show the tachometer, the digital screen will show the speedometer (option 2).

To change viewing preferences, press and hold the MODE button for three seconds. When the button is released, the new setting becomes active and screen colors change. See table below.

Option	Analog Display	Digital Display	Analog Screen	Digital Screen
1	Speed	RPM	Blue “MPH”	Blue Backlight
2	RPM	Speed	Red “X100RPM”	Red Backlight

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FEATURES
Instrumentation
MFD Digital Display Programs

Press and release the MODE button to cycle through the three MFD programs: Performance, Engine and History. Each program remains active until you cycle to the next program. While any program is active, press and release the SET button to cycle through the program's screens.

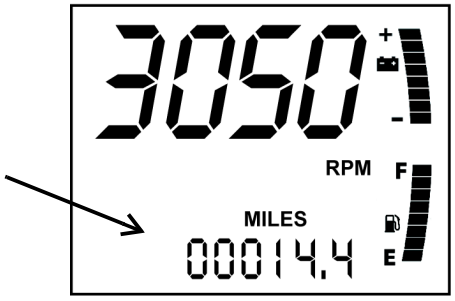
Performance Program

Press and release the MODE button until the performance program screen is active. The default display for this screen includes electrical system voltage (unless equipped with ACE suspension adjustment), fuel level (if equipped) and either speed or tachometer, whichever is selected. See page 43.

Press and release the SET button to cycle through the following screens: odometer, trip 1 odometer, trip 2 odometer, fuel trip odometer (if fuel is low) and clock (if equipped). Use the following procedures to make changes to these screens.

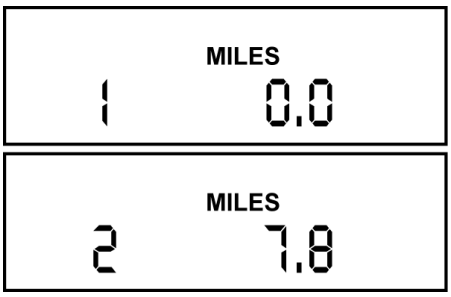
Odometer Setting

The odometer records the vehicle's total distance traveled since manufacture. The odometer cannot be reset.



Trip Settings

Trip 1 and Trip 2 are odometers used to check fuel mileage or to keep track of distance traveled. Both odometers can be reset to zero.



1. Enter the Performance Program.
2. Press and release the SET button until the desired trip screen is active.
3. Press and hold the SET button for two seconds to reset the trip odometer to zero.
4. Press and release the SET button to cycle through additional screens.

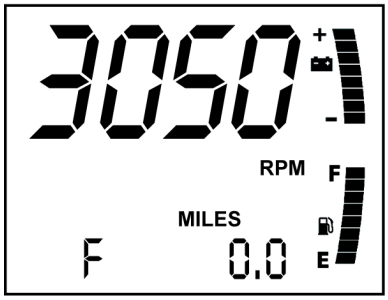
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Instrumentation

MFD Digital Display Programs

Performance Program

Trip Settings

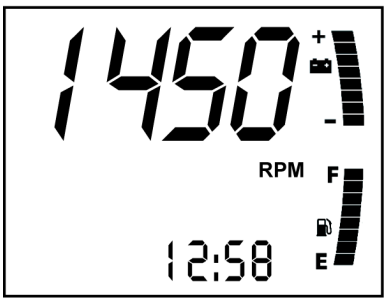


Trip F automatically displays when the fuel level is low if the snowmobile is equipped with an electronic fuel gauge. The fuel symbol and the last fuel bar on the MFD gauge (if equipped) will blink when the fuel level reaches 1/8 of a tank.

The Trip F odometer records distance traveled, and the fuel symbol continues to blink, until enough fuel is added to raise the level above 1/4 of a tank. The Trip F odometer will automatically reset to zero after refueling.

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FEATURES
Instrumentation
MFD Digital Display Programs
Performance Program
Clock Setting (if equipped)



1. Enter the Performance Program.
2. Press and release the SET button until the clock screen is active.
3. Press and hold the SET button for five seconds.
4. When the hour starts flashing, press the SET switch *once* to advance one hour.

NOTE: *Press and hold* the SET button to advance the hours quickly.

5. Press and release the MODE button to save the hour. The minutes will begin flashing.
6. Set the minutes in the same manner.
7. When finished, press and release the MODE button to save the new setting.

NOTE: If the MODE button is not pressed within ten seconds, the gauge will automatically save the new entry.

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Instrumentation

MFD Digital Display Programs

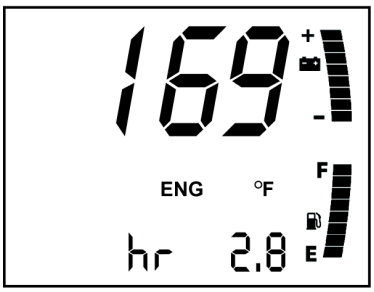
Engine Program

Press and release the MODE button until the engine program screen is active. The default display for this screen includes engine hours, electrical system voltage level, fuel level (if equipped) and either engine coolant temperature, air temperature (accessory) or altimeter (accessory).

Press and release the SET button to cycle through the following screens: hour meter, engine temperature, air temperature (available as an accessory), altimeter (available as an accessory) and turbo boost (FST models).

Hour Meter

The hour meter records the total hours of engine operation since manufacture. This meter cannot be reset.



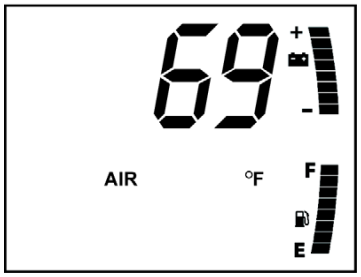
Engine Temperature

A thermometer measures water temperature, giving an indication of engine temperature.

Air Temperature (if equipped)

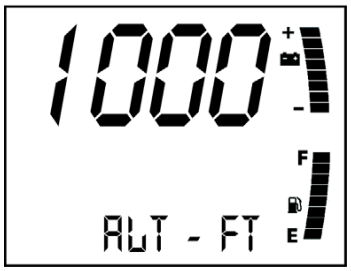
The MFD displays actual air temperature in either standard or metric units.

1. Enter the Engine Program.
2. Press and hold the MODE switch for ten seconds to switch between standard and metric units of measurement.



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FEATURES
Instrumentation
MFD Digital Display Programs
Engine Program
Altitude (if equipped)



The rider can calibrate the altimeter for current atmospheric conditions. Altimeter accuracy will be +/-300 ft. (91 m) after adjustment.

1. Enter the Engine Program.

NOTE: Press and hold the MODE switch for ten seconds to switch between standard and metric units of measurement. When "ALt" displays, the program is in the metric mode.

2. Press and release the SET button until the altimeter screen is active.
3. Press and hold the SET button for five seconds. When the digits begin to flash, release the button.
4. Press and release the SET button *once* to advance 50 feet (15 m).

NOTE: *Press and hold* the SET button to advance quickly by 100-foot (30 m) increments.

5. Adjust the altitude display to within 50 ft. (15 m) of current altitude.

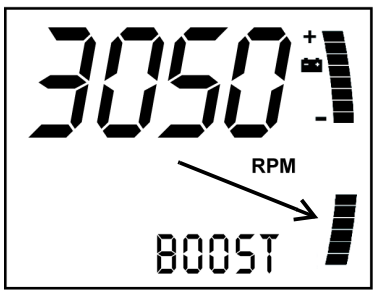
NOTE: The gauge reads barometric pressure and allows the rider to compensate for daily fluctuations in air pressure. The gauge can adjust the displayed altitude to +/- 1300 ft. (396 m) from the preset value. It will adjust up to +1300 ft. (396 m) above the calibrated altitude. Once the +1300 ft. (396 m) offset has been reached, the next adjustment is -1300 ft. (396 m) from the calibrated altitude, and 50 ft. (15 m) will be added to the altitude each time the SET button is pressed.

6. Press and release the MODE button to set the reading at the adjusted value.

NOTE: If the MODE button is not pressed within ten seconds, the gauge will automatically save the new entry.

Turbo Boost (FST models)

Turbo boost pressure displays in the fuel level area of the gauge. The word BOOST will also display when this screen is active.



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Instrumentation

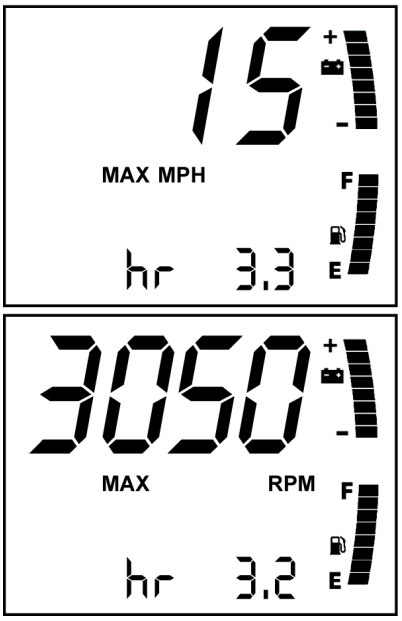
MFD Digital Display Programs

History Program

Press and release the MODE button until the history program screen is active. This screen will always display electrical system voltage level and fuel level (if equipped).

Press and release the SET button to cycle through the Maximum Vehicle Speed, Maximum Engine RPM and Service Interval Reminder screens.

Maximum Speed/Maximum RPM



The gauge automatically logs the maximum speed and engine RPM even if the history program is not active in the display.

1. Enter the History Program.
2. Press and release the SET button until one of the two screens is active.

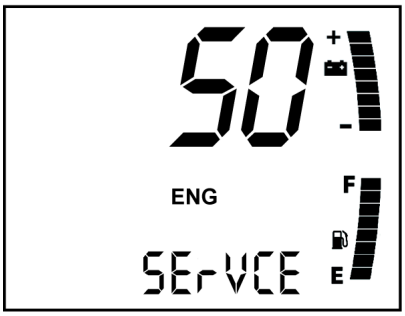
NOTE: The MPH and RPM values are both reset at the same time. Reset the values before each run to obtain accurate readings.

3. Press and hold the SET button for three seconds to reset the recorded maximum values for both MPH and RPM.

NOTE: Due to electrical noise, the MFD may occasionally display MAX MPH/RPM values that are not representative of actual values.

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FEATURES
Instrumentation
MFD Digital Display Programs
History Program
Service Interval Reminder



The gauge logs the number of engine hours accumulated between service reminders. When the logged hours reaches the designated service interval (set by the user), the gauge provides a reminder that service is due. "SErVCE" will flash in the odometer area and "ENG" will flash in the icon area for five seconds each time the engine is started (until the service reminder is reset.) Use the following procedures to reset the reminder.

To reset the reminder at the existing interval:

1. Enter the History Program.
2. Press and release the SET button until the service interval screen is active.
3. Press and hold the SET button for *ten* seconds, continuing to hold even after the display begins to flash.
4. When the display stops flashing, release the button. The service interval has been reset.

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Instrumentation

MFD Digital Display Programs

History Program

Service Interval Reminder

To reset the reminder at a new interval:

1. Enter the History Program.
2. Press and release the SET button until the service interval screen is active.
3. Press and hold the SET button for *five* seconds, until the hours begin to flash. Immediately release the button.
4. Press the button again, up to five times, to advance the reminder in 50-hour increments.

NOTE: The maximum interval is 250 hours.

5. Press and release the MODE button to save the new settings.

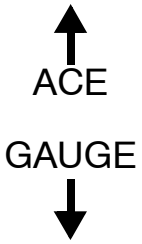
To disable the service interval reminder:

1. Press the SET button once after reaching 250 hours on the display. The gauge will display "OFF".

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FEATURES
Instrumentation
MFD Digital Display Programs
M-10 ACE Suspension Adjustments (Cruiser)

A switch on the console (above the ignition switch) allows you to adjust the M-10 ACE suspension with the MFD control switch. See page 71 for instructions.





ACE Suspension Adjustment Switch

MFD Battery Replacement

Models equipped with the clock feature have a battery to power the clock. If the clock function of the MFD isn't working properly, replace the battery. Replacement batteries are available from your dealer.





1. Remove the plenum from the underside of the hood.
2. Locate the black battery compartment. It has a red wire and a brown wire with a white stripe. It's located about three inches down the main harness from the point where the harness connects to the MFD.
3. Cut the plastic cable tie from the outside of the compartment.
4. Carefully cut the bottom of the compartment (opposite the wires) to separate the heat-sealed seams. Squeeze the corners of the compartment inward so the battery is visible.

NOTE: Note the orientation of the battery before removing it. An incorrectly installed battery will not maintain the clock.

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Instrumentation

MFD Battery Replacement

5. Using needle-nose pliers, grasp the battery and rotate it so the leading edge of the battery is raised slightly away from the battery holder. Pull the battery out gently.

NOTE: The battery will not come out of the holder unless the leading edge of the battery is raised. Hold the battery compartment, not the wires, while removing the battery. Pulling on the wires will separate them from the battery holder.

6. Install a new battery with fingers only.
7. Seal the end of the battery compartment using high strength double-sided tape between the two compartment halves or high strength single-sided tape around the outside of the compartment.
8. Make sure the taped seam of the compartment faces the downward side of the wire harness.
9. Install a cable tie to secure the compartment to the wire harness in the same location where the previous cable tie was located. Make sure the battery wires are not stretched tight.

Gauge Cleaning

1. Wipe the gauge face as needed using a clean cloth and a mild soap and water solution. Wipe dry with clean, soft cloth.
2. Clean the back side of the gauge using a clean cloth and a mild soap and water solution. Do not remove the electrical connectors or protective rubber boot. Do not spray the back side of the gauge or the wire harness with a pressure washer or other water source.

CAUTION
To prevent damage to the lens, do not use alcohol for cleaning. Do not allow chemicals or sprays to come into contact with the lens. Immediately clean off any gasoline that splashes on the gauge during refueling.

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THE PERFECT FIT

IQ Front Suspension Adjustments

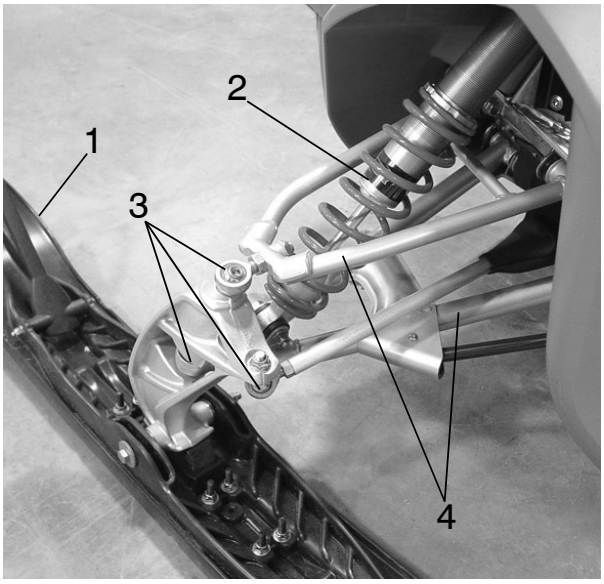
Independent Front Suspension (IFS)

Break in the suspension for approximately 150 miles (240 km) before making any fine-tuning adjustments.

Settings will vary from rider to rider, depending on rider weight, vehicle speed, riding style, and trail conditions. We recommend starting with factory settings and then customizing each adjustment individually to suit rider preference. The snowmobile should be methodically tested, one change at a time, under the same conditions (trail and snow conditions, vehicle speed, riding position, etc.) after each adjustment until the best ride is achieved.

IFS Components

1. Skis
2. Front shocks and springs
3. Rod ends
4. A-arms



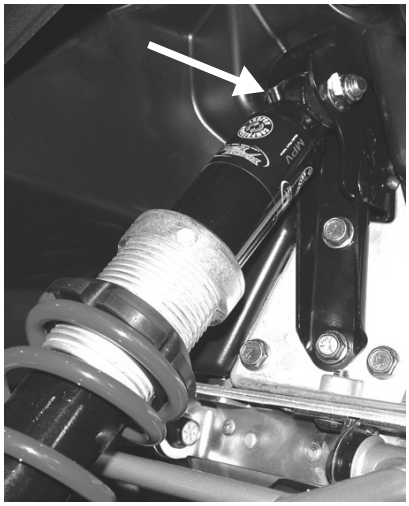
IFS Adjustment Options

- Shock damping (if equipped with ArvinMeritor MPV Select shocks)
- Front shock spring preload
- Optional springs
- Optional shock valving (SwitchBack)
- Toe (ski alignment) (see page 146)
- Camber (see your dealer)

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IQ Front Suspension Adjustments

Shock Damping



Adjustments to the compression stiffness of ArvinMeritor MPV Select shocks can be made by turning the adjustment screw located near the base of the shock. This adjustment is the easiest to perform and it should be considered first.

The factory setting for this shock is the softest position, with the adjusting screw all the way out (counterclockwise). If bottoming occurs, turn the screw clockwise to increase compression and stiffen the ride.

When adjusting these shocks, we recommend that you turn the screw only 1/4 turn at a time, then test ride. Always adjust both shocks equally.

Front Shock Spring Preload

The factory preload setting should be appropriate for most riders and conditions. Please see your Polaris dealer for assistance before attempting to adjust preload.

Increasing the spring preload too much may adversely affect the handling of the snowmobile and the performance of the rear suspension.

Decreasing the spring preload too much may allow the lower spring retainer to fall off.

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THE PERFECT FIT

IQ Front Suspension Adjustments

Shock Valving (FST IQ and FST SwitchBack only)

The shocks can be revalved if spring preload alone isn't sufficient and further adjustment is desired to control suspension stiffness.

⚠ WARNING

Changing shock valving requires special tools and a sound knowledge of mechanical theory, tool use, and shop procedures to perform the work safely and correctly. Shocks contain high-pressure nitrogen gas. Use extreme caution when handling high-pressure service equipment. We recommend that this work be performed by a Polaris dealer.

Front Springs

The front springs can be changed if spring preload alone isn't sufficient and further adjustment is desired to control suspension stiffness. See your Polaris dealer for more information.

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Rear Suspension Adjustments

Rider weight, riding style, trail conditions, and vehicle speed all affect suspension action.

Each rear suspension can be adjusted to suit rider preference and deliver excellent performance for a given set of conditions. However, all suspension designs and adjustments involve a compromise, or trade-off. For example, a suspension set up for snow-cross racing would provide a very stiff ride on the trail. A suspension set up for trail riding would bottom out harshly on a snow-cross course.

Make adjustments to one area at a time so you can evaluate the change. For further assistance, see your dealer.

Suspension Performance Tips

- Rider weight usually determines the position at which the spring preload should be set. However, this may vary with riding style. With a little experimentation, each rider can find a preferred set-up. These adjustments are easy to make, involve very little time or effort, and greatly affect the ride.
- In deep snow, a new rail slide will offer improved performance over a worn slide. It can also improve top speed.
- Polaris offers track kits for improved flotation in deep snow. See your dealer for assistance.

NOTE: Keep the suspension pivot points lubricated. This will reduce moisture and rust build-up and ensure proper function of the suspension components. Grease rear suspension pivots before adjusting the rear suspension. Refer to the suspension lubrication information beginning on page 115.

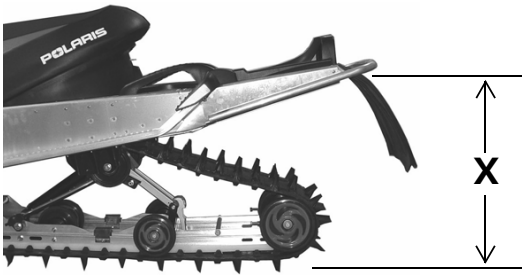
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THE PERFECT FIT

IQ & SwitchBack Rear Suspension Adjustments

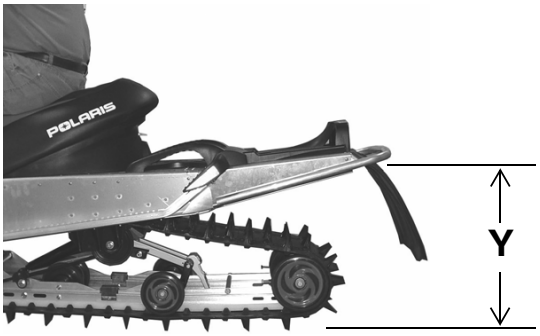
Initial Spring Preload Setting (Sag Method)

To set up the rear suspension torsion spring preload, measure the distance between the ground and rear bumper. This is measurement X.



Take the first measurement with no rider and with the rear suspension at full extension.

NOTE: The rear bumper may need to be lifted upward slightly to fully extend the rear suspension.



Next, have the rider drop down hard on the seat and bounce up and down several times, collapsing the rear suspension. With the rider seated, measure the distance between the ground and the rear bumper at the exact location used for measurement X. This is measurement Y.

To determine sag, commonly referred to as ride-in, subtract measurement Y from X (sag=X-Y). If the measured sag is incorrect, adjust the FRA position and/or rear torsion spring preload.

Suspension	Recommended Sag	Adjustment	See Page
IQ (121)	4-5 inches (10-13 cm)	Torsion Spring Preload	59
SwitchBack (144)	5 inches (13 cm) (see note below)	Torsion Spring Preload	63

This is only an initial setup, and final spring preload may vary based on rider preference and riding conditions.

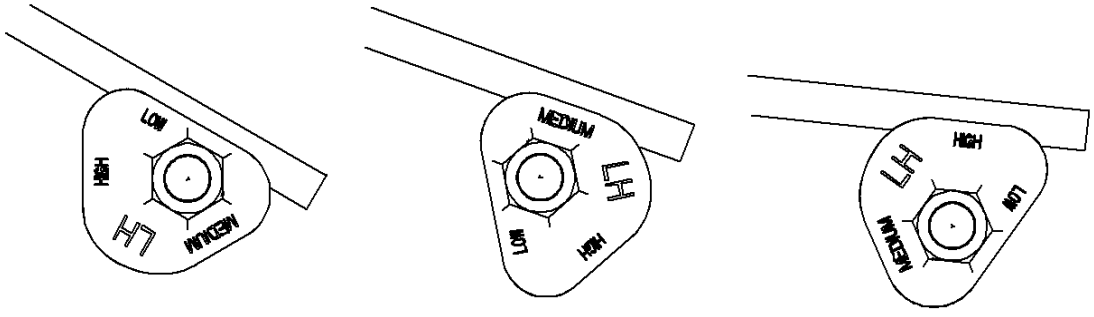
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IQ Rear Suspension Adjustments

Torsion Spring Preload

To adjust rear torsion spring preload, rotate the three-position cam using the engine spark plug tool. Adjustment is easiest when the cam is rotated from low to medium, and then to high. Rotating directly from low to high will require significantly more effort.

Different rate torsion springs are available if a firmer ride is desired. See your dealer for more information.

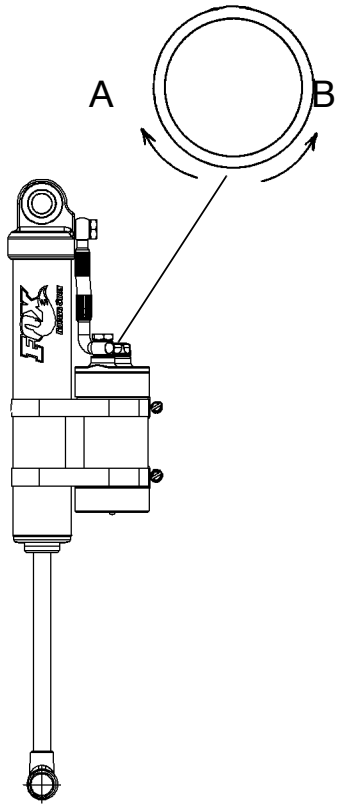


Soft Medium Firm

Rear Shock Compression Damping (Premium Shocks)

Turn the adjustment knob on the shock reservoir to make adjustments to the compression damping. Positions are labeled on the shock. When adjusting, we recommend that you turn the adjuster slightly, then test ride.

- Turn the knob clockwise (A) for a stiffer ride.
- Turn the knob counter clockwise (B) for a softer ride.



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THE PERFECT FIT
IQ Rear Suspension Adjustments
Suspension Coupling

On all Polaris snowmobile rear suspensions, there are two torque arms that control the movement of the rail beam. Prior to the advent of suspension coupling, these torque arms could move independently of each other. Rear suspension coupling links the movement of the front and rear torque arms to each other. There are two types of rear suspension coupling.

Front To Rear Coupling and the Front Rear Scissor Stop (FRSS)

The front rear scissor stop (FRSS) couples the movement of the front torque arm with the rear torque arm and limits the amount of independence between the movement of the front torque arm and the rear torque arm.

When hitting a bump, the front torque arm starts to compress. The FRSS links that movement to the rear torque arm, causing it to compress and raise the rear suspension up as one, allowing the suspension to hit the bump only once and reducing kickback.

The factory setting is usually adequate for all riders and conditions.

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IQ Rear Suspension Adjustments

Rear To Front Coupling and the Rear Rear Scissor Stop (RRSS)

The rear rear scissor stop (RRSS) couples the movement of the rear torque arm with the front torque arm and limits the amount of independent movement between the rear torque and the front torque arm.

Adjusting the RRSS either allows more weight to transfer to the rear for more traction, or allows less weight to transfer to the rear, resulting in improved cornering performance. An adjustment dot is located on the RRSS. This dot is on the longest end of the scissor stop.

Rear Rear Scissor Stop (RRSS) - Attributes

Moving the RRSS to a higher position will have the following effects on the suspension:

- Reduced weight transfer.
- Improved chatter bump ride.
- Improved cornering performance.

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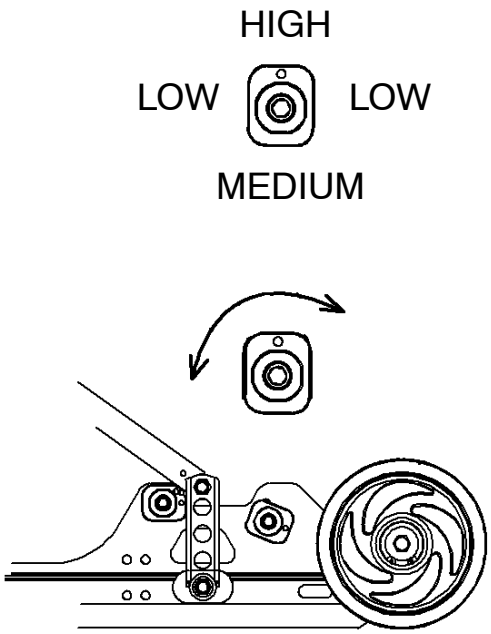
THE PERFECT FIT
IQ Rear Suspension Adjustments
Weight Transfer During Acceleration

The preferred method for controlling weight transfer during acceleration is by adjusting the rear rear scissor stop (RRSS). The factory setting is the best for most trail riding conditions.

To decrease weight transfer under acceleration (for improved cornering), rotate the RRSS to a higher position.

To increase weight transfer or ski lift during acceleration, rotate the RRSS to a lower position.

NOTE: Your dealer can help you with initial setup and additional setup instructions to help you achieve your optimum ride. A scissor stop tool is also available from your dealer.



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SwitchBack Rear Suspension Adjustments

Torsion Spring Preload

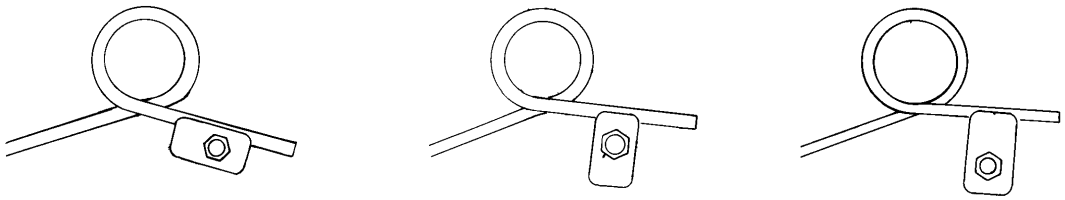
To adjust rear torsion spring preload, rotate the three-position cam using the engine spark plug tool. Different rate torsion springs are available if a firmer ride is desired. Contact your dealer for more information.

The following information is provided only as a guideline to be used for initial suspension set-up. Your set-up may vary based on your desired riding style.

Soft (long end of cam to front)

Medium (short end of cam up)

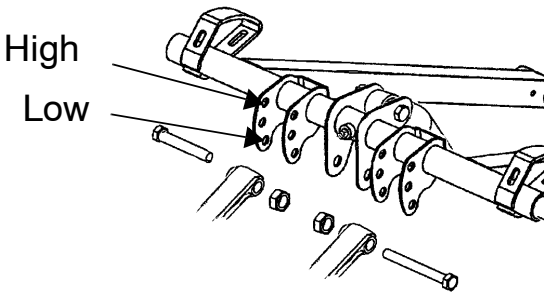
Firm (long end of cam up)



Limiter Strap Position

High: Limiter strap in high position increases ski pressure

Low: Limiter strap in low position decreases ski pressure



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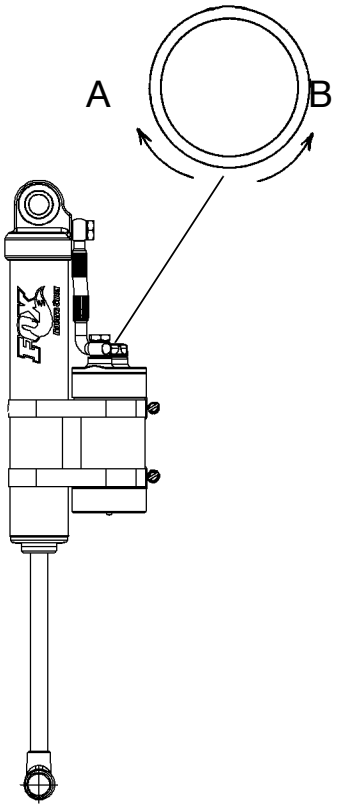
THE PERFECT FIT

SwitchBack Rear Suspension Adjustments

Rear Shock Compression Damping

The FOX Zero Pro XC shock is standard on the SwitchBack model. Turn the adjustment knob on the shock reservoir to make adjustments to the compression damping.

When adjusting, we recommend that you turn the adjuster slightly, then test ride. The factory setting for this shock is ten (10) clicks counter-clockwise.



- Turn the rear track shock knob clockwise (A) for a stiffer ride.
- Turn the rear track shock knob counterclockwise (B) for a softer ride.

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FAST M-10 Rear Suspension Adjustments

The M-10 suspension has been designed to be very sensitive to rider weight. Changes in rider weight of 25 lbs. (11 kg) or more might require appropriate changes in settings. The following information has been compiled to assist you in tuning your M-10 suspension to its maximum potential and achieve the best possible ride. Please take the time to read and understand all the possible adjustments available with this suspension.

Static Sag and Ride Height Settings

Static sag describes the difference in height of the rear bumper from the suspension's fully extended position to its loaded height, with the rider seated on the snowmobile. Too much sag will result in bottoming, and too little sag will result in reduced rider comfort.

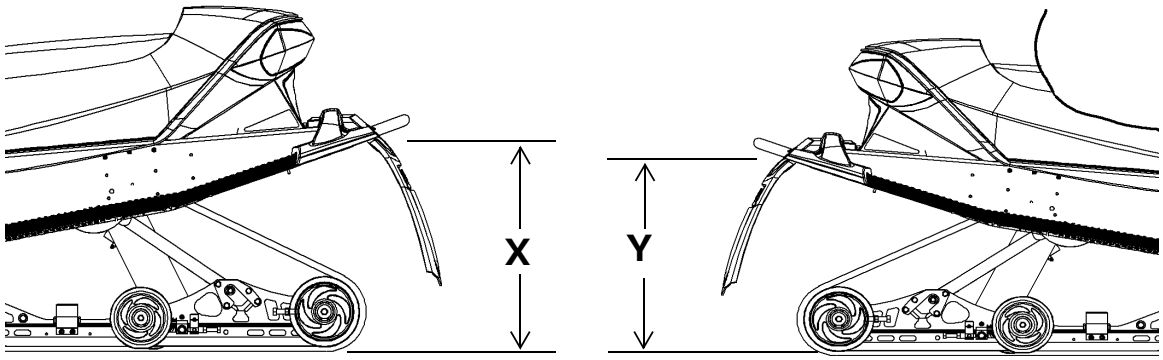
Sag is used to control ride quality and rebound travel. On this suspension, sag is controlled by two settings, the full range adjuster (FRA) position and the rear spring preload.

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THE PERFECT FIT
FAST M-10 Rear Suspension Adjustments
Static Sag and Ride Height Settings

1. To check sag, raise the rear bumper until the suspension is fully extended (the rear shock will not extend any further). Measure the distance from the ground to the bottom of the bumper (dimension X) as shown in the illustration. Record the measurement.
2. Have the rider sit on the snowmobile and bounce up and down on the seat a few times to set in the suspension. While the rider remains seated, measure the distance from the ground to the top of the bumper (dimension Y) and record it.
3. Subtract Y from X and you will have the SAG setting (X - Y = sag setting. Example: 21 - 17 = 4). The correct amount of SAG for the FAST M-10 rear suspension is 3-4 inches (8-10 cm).

If the measured sag is incorrect, adjust the FRA position and rear spring preload. See pages 67-68.



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FAST M-10 Rear Suspension Adjustments

Static Sag and Ride Height Settings

FRA Position

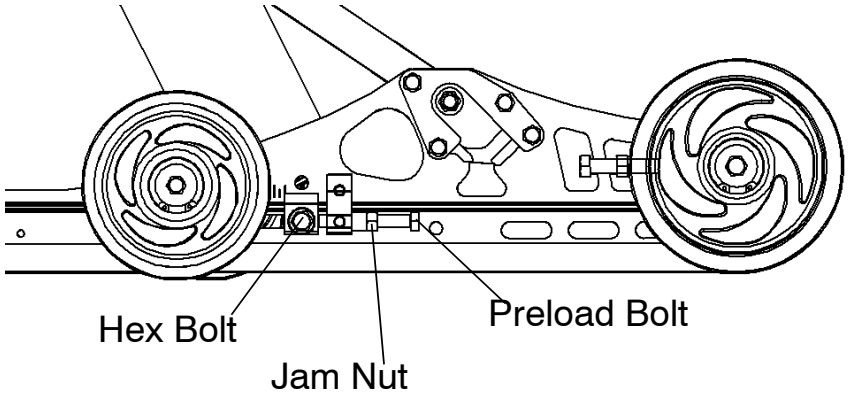
The FRA setting is the primary rear suspension adjustment. It will have the *MOST* effect on the rear suspension performance. To adjust the FRA:

1. Refer to the initial set-up reference chart (see page 70) to determine the desired FRA position.
2. To adjust, loosen the hex bolts attaching the rear lower shock cross shaft to the rail beam.
3. Using a 9/16" wrench, loosen the jam nuts on the preload bolts.
4. Adjust the preload bolts to the desired FRA position.
5. Tighten the jam nuts.

NOTE: Make sure the preload bolt contacts the slide block before tightening the jam nut.

6. Tighten the hex bolts and torque to 35 ft. lbs. (47 Nm).

NOTE: When the M-10 suspension is new, it will take from 25 to 200 miles (40-300 km) to properly break in the springs and shocks, at which time the suspension will be softer and may require FRA re-adjustment.



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THE PERFECT FIT
FAST M-10 Rear Suspension Adjustments
Static Sag and Ride Height Settings
Rear Spring Preload

If FRA position alone does not allow the setup of the proper amount of sag, the center retainer of the rear track shock can be replaced with optional retainers to adjust the preload and change the sag. See your Polaris dealer for assistance.

OPTIONAL RETAINERS			
Retainer Insert Part Number	**Retainer Part Number**	**Preload**	**Sag**
5436109	5135077 (standard on M-10 128)	Least	Most
	5134923	Middle	Middle
	5135080 (standard on M-10 136)	Most	Least

NOTE: Whenever ordering any of the retainers listed in the chart, always order the retainer insert as well. The insert is not removable once installed, so a new insert is needed when installing a new retainer.

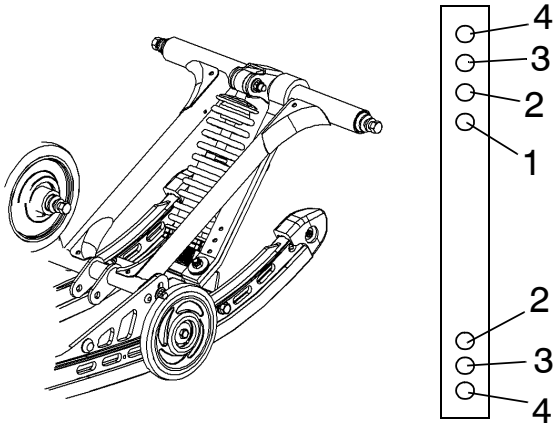
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FAST M-10 Rear Suspension Adjustments

Static Sag and Ride Height Settings

Ski Pressure

Ski pressure is set at the factory to deliver the optimum balance between ride and handling. If a rider prefers more ski pressure for improved steering performance, adjustments can be made to the front limiter strap and front arm mount.

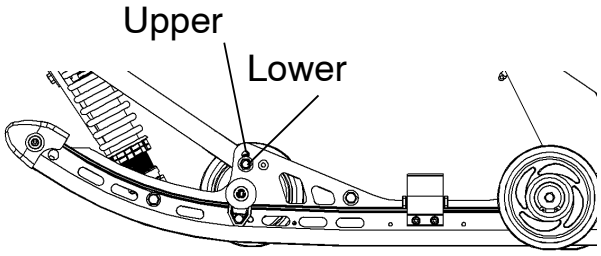


1. Determine if the rider prefers comfort or control. Lean toward the #4 setting for comfort and toward the #3 setting for aggressive riding.
2. For full hole adjustments, remove the 5/16" nut and flat washers from the lower attachments of the limiter straps and relocate the straps to the desired position (i.e. move from position 4 to 3). Replace the nut and washer. Tighten securely.
3. For half-hole increments (such as 3/4), the limiter straps have slots at the upper pinch bolt. These slots allow the bolts to be loosened (rather than removed) for half-step adjustments. Re-tighten the pinch bolts.

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THE PERFECT FIT
FAST M-10 Rear Suspension Adjustments
Static Sag and Ride Height Settings
Ski Pressure

4. There are also two front arm mounting holes in the slide rail that can adjust ski pressure. The lower hole increases ski pressure while the upper hole decreases ski pressure.



NOTE: By design, the BIASED COUPLE design of the M-10 suspension displaces the rear arm as the front arm is compressed. This means that when you raise the front limiter strap, at some point you will collapse the rear suspension arm, which will affect SAG height and reduce rear suspension travel.

Initial M-10 Suspension Set-up Chart

These charts are a guideline to be used for initial suspension set-ups. Your set-up may vary based on your desired riding style.

M-10 128	
Rider Weight with Gear (lbs./kg)	Suggested FRA Range (Lower Number is Softer)
Under 100/45	1 to 1 1/2
100-150/45-68	1 1/2 to 2
150-200/45-90	2 to 2 1/2
200-250/90-113	2 1/2 to 3
250-300/113-136	3 to 3 1/2
300-350*/136-159*	3 1/2 to 4
350+*/159+*	4 to 5

M-10 136	
Rider(s) Weight with Gear (lbs./kg)	Suggested FRA Range (Lower Number is Softer)
Under 100*/45*	1 to 1 1/2
100-150*/45-68*	1 1/2 to 2
150-200*/45-90*	2 to 2 1/2
200-250/90-113	2 1/2 to 3
250-300/113-136	3 to 3 1/2
300-350/136-159	3 1/2 to 4
350+/159+	4 to 5

*You may prefer an optional rear track middle spring retainer. See page 68.

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FAST M-10 ACE Rear Suspension Adjustments

MFD Suspension Adjustments (Cruiser)

A switch on the console (above the ignition switch) allows you to adjust the M-10 ACE suspension with the MFD control switch.

ACE

GAUGE

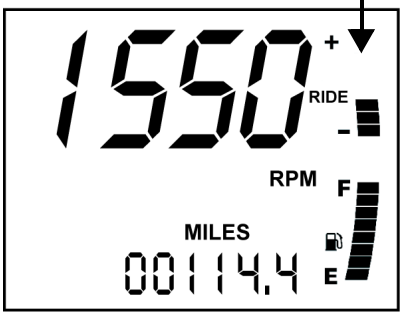


ACE Suspension Adjustment Switch

NOTE: The engine must be running to make suspension adjustments with the MFD control switch.

1. Place the console rocker switch on the gauge setting (G).
2. Press and release the MODE switch until the RIDE icon appears in the voltage display area.
3. Place the console rocker switch on the ACE setting (A).
4. Press and release the MODE button to increase the ACE setting for a firmer ride.

Ride Setting Display



5. Press and release the SET button to decrease the ACE setting for a softer ride.

NOTE: Each time the MODE or SET button is pressed, the ACE suspension will adjust one position. The RIDE display indicates the new position and the former position by flashing the bars between the two positions, one bar for each level of adjustment. Press and hold the MODE or SET button for 3 or more seconds to adjust the suspension to the fully firm or fully soft position. The suspension is fully adjusted when no bars flash in the RIDE display.

6. Return the console switch to the gauge setting (G) to operate the MFD gauge.

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THE PERFECT FIT
Handlebar Adjustments

Use the RIDER SELECT feature to adjust handlebar position. See page 34. Use the following steps to adjust handlebar angle at the handlebar block.

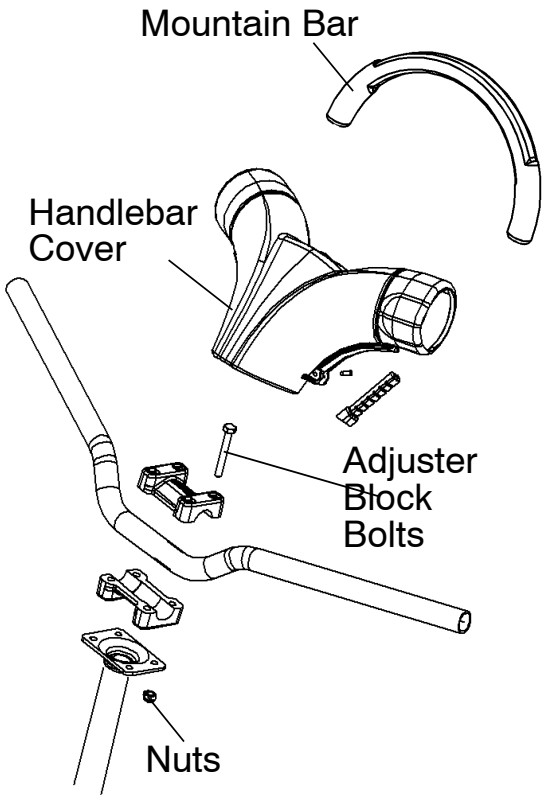
1. Remove the handlebar cover to expose the handlebar and the four adjuster block bolts.

NOTE: If equipped, remove the mountain bar.

2. Using a 7/16" wrench, loosen the four nuts on the bottom of the adjuster block (turn handlebar to left or right for access to back nuts).

NOTE: If necessary, pry the blocks apart with a screwdriver.

3. Adjust the handlebar to the desired height. Be sure handlebars, brake lever and throttle lever operate smoothly and do not hit the gas tank, windshield or any other part of the machine when turned fully to the left or right.
4. Torque the front bolts first, then torque the rear bolts. Torque the bolts to 11-13 ft. lbs. (15-18 Nm).
5. Reinstall the handlebar cover.

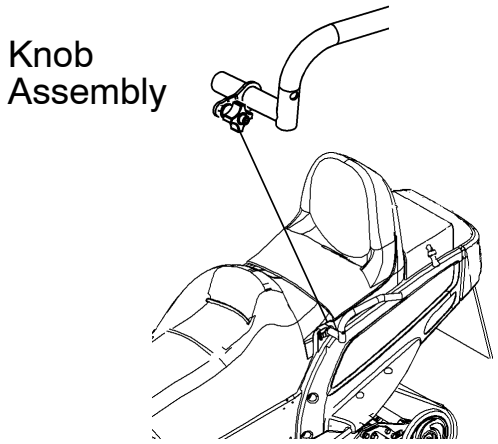


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Passenger Grab Handle Adjustment (Touring)

On some Touring models the position of the passenger grab handles can be adjusted for rider preference. To make an adjustment:

1. Unscrew and remove the knob assemblies that secure the grab handles.
2. Reposition the grab handles to one of the three available positions on the grab handle tube between the operator seat and the passenger seat.
3. Reinstall the knob assemblies and tighten securely.



Accessories

Polaris offers a wide range of accessories for your snowmobile to help make each ride more enjoyable.

Use only Polaris parts and accessories on your Polaris snowmobile. Use of unapproved parts and accessories may result in:

- Non-compliance with government/industry requirements
- Voiding of warranty
- Injury to self or others

This applies, but is not limited to the following areas: brakes, clutches, fuel systems, and exhaust systems.

NOTE: Exhaust systems are critical safety areas that must use approved Polaris parts. Please see your Polaris dealer for service.

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THE PERFECT FIT
Traction Products
Studs

Before equipping your snowmobile with traction products, be aware of the laws in your area pertaining to the use of traction products.

Use only Polaris traction products on your snowmobile. Track warranties are void if track damage or failure results from improper or excessive stud installation or the use of non-Polaris traction products.

See your dealer about installing studs and/or carbides.

CAUTION
Always install wear strips before installing studs. Failure to install wear strips may result in cooler or tunnel damage. See page 75. Never add shims to the wear strip. Track damage will result because of lack of clearance between upper carrier wheels and track. Use of studs longer than the recommended length on machines equipped with center coolers will result in center cooler damage or damage to the tunnel.

Track studding will enhance braking control on hard-packed snow or ice, but extreme caution is still required on such surfaces. Steering ability may be reduced on hard-packed snow or ice.

When studded tracks are used, increased wear to the brake pads will result from increased braking. Extended-wear brake pad kits are available. See your dealer.

CAUTION
Aggressive studding patterns may require grinding protruding stud bolts flush to prevent idler wheel damage. Maintain track tension on studded tracks on the tight side of the spec to prevent heat exchanger damage. Center of stud must be at least 1 1/8" (2.86 cm) from the outside edge of the track.

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Traction Products

Carbide Skags

A skag is a replaceable bar attached to the underside of the ski to assist in turning the snowmobile and to prevent ski wear caused by contact with roads and other bare terrain. Use carbide skags with studded tracks to help maintain proper vehicle steering and control. See page 147.

If your snowmobile has carbide skags, it may be necessary to add track studs to maintain proper vehicle control. Maintain a proper balance between the number of studs and the length of carbide on the skags (the more studs you use, the longer the carbide on the skags should be). See your dealer's track studding chart.

Wear Strips

To avoid excessive tunnel wear, tunnel wear strips must be installed whenever track studding is used.

Install the appropriate wear strip kit. See your dealer.

Wear strips are designed for a specific stud length. See your dealer's studding chart for recommended traction accessories.

CAUTION
Whenever wear strips are relocated, be sure there's adequate stud clearance to the heat exchangers. Lack of clearance may result in damage to heat exchangers.

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PRE-RIDE INSPECTIONS

Pre-Ride Checklist

Inspect all items on the checklist for proper operation or condition before each use of the snowmobile. Procedures are outlined on the referenced pages. Look for a checkmark (✔) on the referenced pages to locate the pre-ride inspection items.

Item	See Page
Drive Belt Condition	137
Steering System	78
Parking Brake Lock/Brake Lever/Brake System	79, 80, 131
Throttle Lever	77
Throttle Safety Switch	77
Auxiliary Shut-Off Switch (Engine Stop Switch)	83, 97
Ignition Switch	83, 97
Taillight/Brakelight/Headlight	83
Coolant Level	125
Gearcase Oil Level	118
Engine Oil Level	106
Foam Oil Breather Element	114
Suspension Mounting Bolts	82
Skags (Wear Bars)	75, 147
Ski Saddle and Spindle Bolts	82
Hood Straps/Latches	78
Seat Latches	77
Rear Wheel Idler Bolts	82, 143
Track Alignment/Condition	81, 144
Rail Slide Condition	144
Oil Level (check before operating if vehicle was tipped over)	84

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Check Before Starting the Engine

⚠ WARNING
Worn, damaged, or malfunctioning components may cause serious injury or death. Before starting the engine, check all components to be sure of proper operation.

Read and Understand Your Owner's Manual

Read the Owner's Manual completely and refer to it often. The manual is your guide to safe and enjoyable snowmobiling experience.

Throttle Lever

The throttle and brake are the primary controls of your snowmobile. Always make sure both are functioning properly.

Squeeze the throttle lever to make sure it compresses evenly and smoothly. When released, the lever should immediately return to the idle position without binding or hesitation. If the throttle does not function smoothly, or if you discover excessive lever freeplay, DO NOT start the engine. Have the throttle serviced immediately.

Throttle Safety Switch

Test the throttle safety switch system before the snowmobile is operated. See page 94 for procedure.

Seat Latches

Ensure that the seat latches are securely in place before every use of the snowmobile.

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PRE-RIDE INSPECTIONS

Check Before Starting the Engine

Hood Latches

The hood of the snowmobile protects the operator from moving parts as well as aiding in sound emission control and other functions. Under no circumstances should your snowmobile be operated with the hood open or removed. Always ensure that the hood straps are in good condition and that the latches are securely in place before operating the snowmobile.

Steering System

⚠ WARNING
Ice and snow build-up may interfere with the steering of your snowmobile, resulting in serious injury or death. Keep the underhood area free of snow and ice.

Before driving, manually turn the skis to the left and right to be sure ice and snow are not interfering with full left and right steering. If difficulty is encountered, remove ice and snow build-up that may be obstructing the steering linkage.

NOTE: If your snowmobile is equipped with RIDER SELECT, perform this check in both the full up and full down steering positions.

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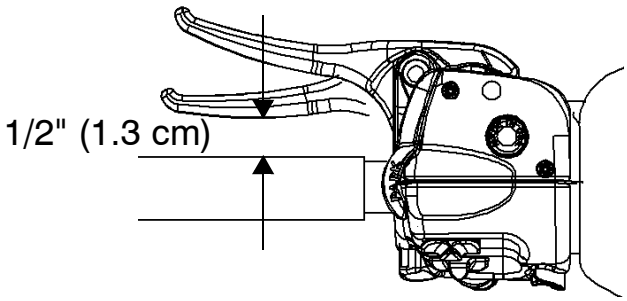
Check Before Starting the Engine

Brakes

Always check the following items for proper operation before starting the engine.

Brake Lever Travel

Squeeze the brake lever. It should move no closer to the handgrip than 1/2" (1.3 cm). A smaller distance indicates low brake fluid level or air in the hydraulic system. Refer to the brake bleeding information on page 133.



Brake Lever Feel

If the brake lever feels “spongy” when squeezed, check the brake fluid level and condition. Add fluid as needed. See page 132.

Check for the presence of air in the fluid system. See page 133 for more information, or see your dealer for service.

⚠ WARNING

Continued use of “spongy” brakes may cause a complete loss of brakes, which could result in serious injury or death. Always have the brakes serviced at the first sign of sponginess.

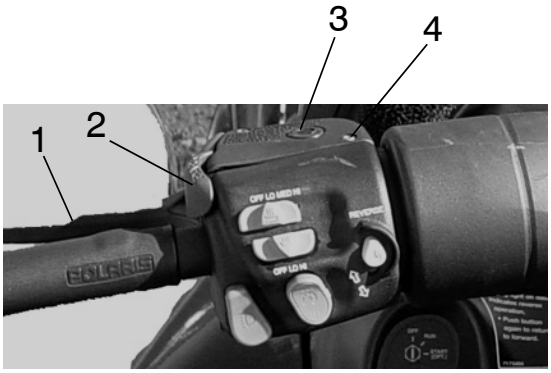
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PRE-RIDE INSPECTIONS

Check Before Starting the Engine

Parking Brake Lever Lock

Use the parking brake lever lock only when you want the snowmobile to remain stationary; for example, when parked on an incline for a period of five minutes or less.



1. Brake Lever
2. Parking Brake Lever Lock
3. Master Cylinder Reservoir/ Cover
4. Fluid Level Indicator

Lock Engagement

To engage the lock, squeeze the brake lever tightly and push forward on the lock. Hold the lock forward while releasing the brake lever.

NOTE: If the brake lever is squeezed tightly enough, the lock will move freely into place. Do not force the lock or it may break.

The parking brake light on the gauge will light up if the parking brake lever lock is set while the engine is running. It will also be lit when the service brake is in use. If the parking brake light does not come on when the parking brake or service brake is in use, have it serviced by your dealer.

Lock Release

To release the lock, squeeze the brake lever tightly. The lock will return to the unlock position.

⚠ WARNING

If the parking brake lever lock is partially or entirely engaged while riding, the brakes may overheat, resulting in brake damage. In extreme cases it could cause a fire, which could result in serious injury or death. Always ensure that the lever lock is completely disengaged before operating the snowmobile.

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Check Before Starting the Engine

Track Inspection

⚠ WARNING

Operating the snowmobile with a damaged track increases the possibility of track failure, which could cause loss of control resulting in serious injury or death. Always inspect the track for damage before using the vehicle.

Use of traction products such as studs increases the possibility of track damage and/or failure. Driving at high speeds for extended periods of time in marginal lubrication could severely damage track rods, break track edges and cause other track damage. Examples of marginal lubrication would include frozen bodies of water without snow cover, icy trails, and no-snow conditions.

NOTE: Track damage or failure caused by operation on ice or poor lubrication conditions voids the track warranty.

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PRE-RIDE INSPECTIONS

Check Before Starting the Engine

Suspension Inspection

Loose nuts and bolts can reduce your snowmobile's reliability and cause needless repairs and down time. Before beginning any snowmobile trip, a visual inspection will uncover potential problems. Check the following items on a weekly basis or before any long trip.

Item	Check	Page
Suspension mounting bolts	Tightness	--
Rear idler wheel bolts	Tightness	143
Rear idler adjusting bolt locknuts	Tightness	--
Torque arm bolts	Tightness	--
Carrier and bogie wheel bolts	Tightness	--
Front torque arm limiter strap	Condition	--
Rail slide	Condition	144
Track	Tension	142
All rear suspension components	Lubrication	116
Ski runner/skag	Condition	--
Ski spindle bolts	Tightness	--
Tie rod end nuts	Tightness	--

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Check After Starting the Engine

Engine Stop Switch

Check the auxiliary shut-off switch for proper operation. Push the switch down to stop the engine. Pull it up to allow restarting.

Ignition Switch

Make sure the engine stops when the ignition switch is turned to OFF.

Lighting

Check the headlight (high and low beam), taillight, and brake light. Replace burned out lamps before operating.

Mirror Adjustment

If equipped, adjust your mirrors so they can be used to their full advantage.

Operating Area

Before driving away, check your surroundings. Be aware of obstacles and make sure bystanders are a safe distance from the snowmobile.

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PRE-RIDE INSPECTIONS

Tip-Over Inspections

In the event of a tip-over or rollover, check the oil level before operating the snowmobile.

CAUTION
Failure to check the oil after a tip-over can result in serious engine damage. Always check the oil level before operating a snowmobile that has tipped over or rolled over.

NOTE: In the event of a tip-over or rollover, the engine will stop. To restart the engine, turn the key to the OFF position, then restart.

⚠ WARNING
Operating a snowmobile with accident damage can result in serious injury or death. Do not operate the snowmobile if vehicle components have been damaged in a collision or tip-over. Have the snowmobile inspected by an authorized Polaris dealer.

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Fuel Safety

⚠ WARNING

Gasoline is highly flammable and explosive under certain conditions.

- Always exercise extreme caution whenever handling gasoline.
- Always refuel outdoors or in a well-ventilated area.
- Always turn off the engine before refueling.
- Do not overfill the tank. Do not fill the tank neck.
- Do not smoke or allow open flames or sparks in or near the area where refueling is performed or where gasoline is stored.
- If gasoline spills on your skin or clothing, immediately wash it off with soap and water and change clothing.
- Never start the engine or let it run in an enclosed area. Engine exhaust fumes are poisonous and can cause loss of consciousness or death in a short time.

⚠ WARNING

The engine exhaust from this product contains chemicals known to cause cancer, birth defects or other reproductive harm. Operate this vehicle only outdoors or in well-ventilated areas.

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OPERATION
Break-In Period

The break-in period for your new Polaris snowmobile is the first 500 miles (800 km) of operation. No single action on your part is as important as following the procedures for a proper break-in. Careful treatment of a new engine and drive components will result in more efficient performance and longer life for these components.

CAUTION
Excessive heat build-up during the first 500 miles (800 km) of operation will damage close-fitting engine parts. Do not operate at full throttle or high speeds for extended periods during the break-in period. Use of non-recommended oil may cause serious engine damage. Always use the recommended oil for your Polaris snowmobile.

1. Fill the fuel tank with the recommended fuel. See page 91.
2. Check the oil level in the oil tank. See page 106. Add oil if necessary to maintain at the recommended level.
3. Drive slowly at first. Vary the throttle positions. Do not operate at sustained idle.
4. Perform regular checks on fluid levels, controls and areas outlined on the daily pre-ride inspection checklist. See page 76.
5. During the break-in period, change both the oil and the filter at 500 miles or before seasonal storage, whichever comes first.

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Starting the Engine

⚠ WARNING

Before starting the engine, always refer to all safety warnings pertaining to snowmobile operation. Never start your snowmobile without checking all components to be sure of proper operation. See Check Before Starting the Engine beginning on page 77.

1. Turn the key to the ON position.
2. Pull the engine stop switch up to the RUN position.

⚠ CAUTION

To avoid injury and/or engine damage, do not operate the electric starter while the engine is running.

3. Do not apply throttle when starting the engine unless extremely cold temperatures (below -15° F/-26° C) prevent the engine from starting.

NOTE: Under these conditions, attempt to start the engine without using the throttle. If two to three attempts are unsuccessful, apply 1/8 to 1/4 throttle while cranking the engine. *Ease off the throttle immediately* when the engine starts. Continue to apply just enough throttle to keep the engine running until it idles smoothly.

4. Turn the key to START to crank the engine. Release the key to the ON position when the engine starts.
5. Repeat the cranking procedure as needed until the engine starts.

NOTE: Always allow the engine to warm up to full operating temperature (150° F/65° C) before shutting it down. Avoid starting and stopping the engine with less than 5 minutes of run time when the engine is cold.

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OPERATION
Emergency Starting

If the battery is too weak to start the engine, and a battery charger is not available, the engine can be started using jumper cables and a charged battery from another vehicle. Carefully read and follow the instructions on the following pages.

⚠ WARNING

Improperly connecting or disconnecting jumper cables can result in an explosion and cause serious injury or death. When connecting jumper cables, always connect the negative (usually black) cable last. When removing jumper cables, always disconnect the negative (usually black) cable first.

⚠ WARNING

Loose-fitting clothing can get caught in the engine when the vehicle is running with the hood open. This can cause serious injury or death. Remove or control all items that could catch in the engine, including scarves, gloves, jackets and clothing straps and hooks.

NOTE: If a car or truck battery will be used to jump start the snowmobile, turn the engine off. A running engine will put out too much electrical current for the snowmobile battery.

NOTE: Never attempt to jump start a discharged battery that is frozen.

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Emergency Starting

1. *Always wear eye protection* when jump starting your vehicle.
2. Keep bystanders away from the vehicles.
3. Perform the emergency starting procedure in a well-ventilated area.
4. Position the vehicles close enough for the jumper cables to reach easily between the batteries, but do not allow the vehicles to touch each other.
5. Lock the parking brakes on both vehicles to prevent accidental movement.
6. Open the hood and remove the left side panel.
7. Decide which of the jumper cables will be positive (usually red or yellow) and which will be negative (usually black).

NOTE: Never connect a jumper cable to the fuel system or fuel lines.

8. Pull back the red plastic boot covering the positive terminal of the weak battery. Connect one end of the positive jumper cable to the positive terminal of the weak battery.
9. Connect the other end of the positive jumper cable to the positive terminal of the charged battery.

NOTE: Make sure that the end of the negative cable by the weak battery is not contacting the snowmobile battery or chassis.

10. Connect the other negative end of the jumper cable to the negative terminal of the charged battery.
11. Connect the end of the negative jumper cable by the weak battery to the CHASSIS of the snowmobile. There may be a small spark when this is done, but this is normal.

NOTE: Always be sure that the jumper cables do not interfere with the belts, pulleys or clutches on either vehicle.

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Emergency Starting

12. Make sure that the engine stop switch is in the UP position.
13. Attempt to start the vehicle.
14. If the engine does not turn over (crank over), wait 30 to 60 seconds and attempt to start the engine again. If the engine does not start, wait another 1 to 2 minutes and attempt to start the engine again.
15. If the engine still does not start, try adjusting the clips on the jumper cable ends to ensure that they have a good electrical connections. Repeat step 14.
16. If the engine still does not start, remove the jumper cables as outlined in step 17 and transport the snowmobile to an authorized Polaris dealer for service.
17. Carefully remove the jumper cables in this order:
    A. Remove the negative end of the jumper cable from the snowmobile chassis.
    B. Remove the negative end of the jumper cable from the charged battery.
    C. Remove the positive end of the jumper cable from the charged battery.
    D. Remove the positive end of the jumper cable from the weak battery.
18. Reinstall the left side panel.
19. Close and secure the hood.

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Fuel

For peak performance, Polaris recommends the use of 91 octane or higher fuel. Although 87 octane fuel is usable, some engine performance will be lost and fuel economy will decrease. Do not use lower than 87 octane fuel. *Do not use fuel containing more than 10% ethanol (including E85).*

CAUTION
Operating with obstructed fuel systems will result in serious engine damage. Perform maintenance as recommended. Damage to the fuel pump will occur if the snowmobile is operated with an empty fuel tank. Do not allow the snowmobile to run out of fuel. Always refuel when the level is low. Prolonged exposure to petroleum based products may damage paint. Always protect painted surfaces when handling fuel.

Fuel Level

The fuel symbol and the last fuel bar on the MFD gauge will blink when the fuel level reaches 1/8th tank. There will be approximately one gallon of fuel remaining. Refuel as soon as possible. *Do not allow the snowmobile to run out of fuel.*

Fuel System Deicers

If you use non-oxygenated fuel, Polaris recommends the regular use of isopropyl-based fuel system deicer. Add one to two ounces per gallon (8-16 ml per liter) of gasoline to prevent engine damage resulting from fuel system icing and lean fuel mixtures. *Never use deicers or additives containing methanol.* Polaris also recommends the use of Carbon Clean Plus. See page 153 for the part numbers of Polaris products.

If you use oxygenated fuel containing ethanol, additional alcohol deicers or water absorbing additives should not be used.

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OPERATION
Track Warm-Up

⚠ WARNING
A loose track or flying debris could cause serious injury or death. Stand clear of the front of the machine and the moving track. Never hold the snowmobile up or stand behind it while warming up the track. Do not use excessive throttle during warm-up or when the track is free-hanging. Be sure the rear support is stable.

⚠ WARNING
Use of traction products such as studs, ice growsers, etc. will increase the possibility of track damage and/or failure. This could cause loss of control, resulting in serious injury or death. Always inspect for track damage before operating the snowmobile.

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Track Warm-Up



Follow these steps to ensure proper warm-up of the engine, drive train and track.

1. Use an appropriate stand to securely support the rear of the snowmobile at the rear bumper. The track should be approximately 4" (10 cm) off the ground.
2. Start the engine and allow it to warm up two to three minutes.
3. Depress the throttle abruptly and allow the track to rotate several revolutions.

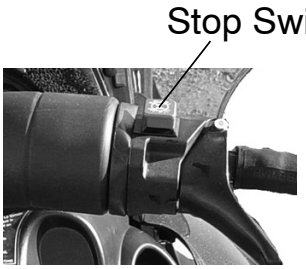
NOTE: It will take longer to warm up the track sufficiently during colder outdoor temperatures.

4. Release the throttle, apply the brakes, shut off the engine and lower the snowmobile to the ground.
5. Grasp the skis by their front loops and move them from side to side to loosen snow and ice.

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OPERATION

Engine Stop Switch



Push down on the engine stop switch to ground out the ignition and stop the engine quickly. Pull the switch up to the RUN position to allow restarting.

Throttle Safety Switch

The throttle safety switch is designed to limit engine speed to 2400 RPM whenever all pressure is removed from the throttle lever and the throttle cable or throttle valves do not return to the normal closed position. If the throttle lever is depressed with a throttle valve error, the Malfunction Indicator Lamp will come on and vehicle speed will be limited to 18 MPH (29 km/h).

See page 38 for more information about conditions that will cause vehicle speed and engine speed to be limited.

⚠ WARNING

Operating the snowmobile with a faulty throttle safety switch can result in serious injury or death in the event of an accident. If the throttle safety switch does not limit engine speed to 2400 RPM when all pressure is removed from the throttle lever during a throttle malfunction, immediately push down the engine stop switch. Do not start the engine again until the malfunction has been corrected by your dealer.

This four-stroke snowmobile has a self-diagnostic check of the throttle safety switch. The switch operation is checked through the engine control unit for correct operation. If a defective switch is detected by the self diagnostics system, the MIL will illuminate. Take your snowmobile to an authorized Polaris dealer for diagnosis and repair if the MIL is illuminated.

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Throttle Lever

⚠ WARNING

An improperly functioning throttle lever may cause erratic machine behavior and loss of control, which could result in serious injury or death. If the throttle lever does not work properly, DO NOT start the engine.

If the engine speed limits at 2400 RPM when the throttle lever is released:

1. Turn the ignition switch to OFF.
2. Visually inspect the throttle cable and throttle body to determine what caused the safety switch to activate.
3. Test the throttle lever by compressing and releasing it several times. The lever and cable must return to the idle position quickly and completely.
4. If the throttle lever operates properly, turn the ignition switch on and go through normal starting procedures.
5. If the engine doesn't start, take the snowmobile to an authorized Polaris dealer for service.

NOTE: Excessive freeplay in the throttle cable may cause the safety switch to activate, preventing the engine from starting. If this occurs, return the snowmobile to an authorized Polaris dealer for service.

Turbo Noise (FST)

Under some conditions, when the throttle lever is released the boost pressure dump valve will release pressure, and you may hear the sound of escaping air. This is a normal occurrence on turbo-charged models.

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OPERATION
Electronic Reverse (PERC 4™)

Electronic reverse will activate only when the vehicle is stopped and engine speed is below 2500 RPM. Maximum vehicle speed when operating in reverse will be approximately 12 MPH (19 km/h).

⚠ WARNING

Improper reverse operation, even at low speeds, may cause loss of control, resulting in serious injury or death. Damage will occur to the gearcase or transmission if shifting is attempted when the engine is operating above idle speed.

- Shift to or from reverse only when the snowmobile is stopped and when engine speed is at idle.
- Look behind the snowmobile before and while backing.
- Avoid sharp turns.
- Apply throttle slowly.

Engaging Reverse



Reverse Button

1. Stop the snowmobile and leave the engine idling.
2. Make sure the area behind your snowmobile is clear.
3. Push the yellow reverse button on the left-hand control for one second, then release.

NOTE: A reverse light on the instrument panel will indicate that the snowmobile is in reverse.

4. Apply the throttle slowly to make sure the snowmobile is in reverse.

NOTE: If the engine stops running, the snowmobile will be in forward gear when it's restarted.

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Electronic Reverse (PERC 4™)

Disengaging Reverse

1. Stop the snowmobile and leave the engine idling.
2. Push the yellow reverse button for one second and release. The light on the instrument panel will shut off.
3. Apply the throttle slowly to make sure the snowmobile is in forward.

Emergency Stopping

The following chart lists methods for stopping the snowmobile in the event of an emergency. See page 94 for more information about the engine stop switch.

SYSTEM	WHAT IT DOES	THROTTLE CONDITION
Ignition Switch	Interrupts ignition circuit	All
Brake	Slows jackshaft	All
Engine Stop Switch	Interrupts ignition circuit	All

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OPERATION
Daily Storage



At the end of each ride, park the snowmobile on a level surface and support it at the rear with an appropriate track stand. The track should be suspended approximately 4" (10 cm) off the ground.

Remove the key and cover the snowmobile.

Towing

⚠ WARNING

Objects towed with a rope have no braking power and can easily collide with the rear of the snowmobile or other objects, resulting in serious injury or death. DO NOT tow toboggans, sleds, saucers, or any type of vehicle with a rope. Only a stiff metal pole connecting the towed object and the tow hitch on the snowmobile should be used. If passengers are to be towed on a toboggan or sled, make sure the pole is at least four feet (1.2 meters) long to prevent any possibility of contact between the snowmobile's track and a person riding in the towed object.

Braking distances increase when towing loads. Slow down to maintain control of the snowmobile.

If the snowmobile becomes inoperable and must be towed, and if it isn't possible to use a rigid tow bar, attach the tow rope to the ski spindles (not to the ski loops) to prevent damage to the steering components. Remove the drive belt before towing, and have someone ride on the towed snowmobile to operate the brake and steering when necessary.

CAUTION

Towing a disabled snowmobile with the drive belt in place can result in serious damage to the engine and drive system. Always remove the drive belt from a disabled snowmobile before towing.

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Emission Control Information

Any qualified repair shop or qualified person may maintain, replace, or repair the emission control devices or systems on your snowmobile.

Emission Control Label

Your snowmobile is equipped at the time of sale with an emission control information (ECI) label and a factory-installed emissions information hangtag. These items are required by U.S. Environmental Protection Agency regulations. The ECI label is permanently affixed to either the right side of the tunnel or the engine recoil cover. The ECI label should not be removed, even after you purchase the snowmobile. You may remove the factory-installed emissions information hangtag, which is intended solely for your use in making a purchasing decision.

Emission Control Maintenance Requirements

Your snowmobile is certified to operate on gasoline with a minimum octane level of 87 (R+M)/2. The emission control system designation per SAE J1930 is MFI. If your snowmobile is equipped with a check engine light and it comes on, you must take your snowmobile to a qualified dealer for diagnostic service. Specifications and adjustments for engine tune-ups are located in the Service Manual, which is available to your qualified service technician. Reverse (if equipped) must not be engaged during engine tune-ups.

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MAINTENANCE
Emission Control Information
Owner's Responsibilities

Please read the Snowmobile Engine Emissions Limited Warranty on page 169, and read the maintenance section of your owner's manual. You are responsible for ensuring that the specified maintenance is performed, including the emission-related maintenance outlined in these sections of the manual.

You must inspect the air intake system on your snowmobile prior to each use (including the airbox foam filter and hood foam filters) and clean these components as necessary. Polaris considers the specified maintenance for the spark plugs, oil changes, air intake system and exhaust valves to be critical emission-related maintenance. The specified maintenance for the fuel filter is recommended additional emission-related maintenance. Polaris recommends that you contact an authorized Polaris dealer to perform any service that may be necessary.

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Polaris Recommended Maintenance Program

To ensure many trouble-free miles of snowmobiling enjoyment, follow recommended regular maintenance and perform service checks as outlined in this manual. Record maintenance and service in the Maintenance Log beginning on page 171.

The recommended maintenance schedule on your snowmobile calls for service and maintenance inspections at 150 miles (240 km), 500 miles (800 km) and 1500 miles (2400 km). These inspections should be performed by a qualified service technician. For continued optimum performance and component life, continue maintenance checks at 1500 mile (2400 km) intervals.

All necessary replacement parts and labor incurred, with the exception of authorized warranty repairs, become the responsibility of the registered owner. If, during the course of the warranty period, part failures occur as a result of owner neglect in performing recommended regular maintenance, the cost of repairs are the responsibility of the owner.

Personal safety is critical when attempting to service or make adjustments to your snowmobile. If you're not familiar with safe service or adjustment procedures and the use of tools, or if you don't feel comfortable performing these tasks yourself, contact an authorized Polaris dealer for service.

NOTE: Polaris does not recommend tipping the snowmobile onto it's side for service. Any time the snowmobile is tipped onto it's left side, always check the oil level and clean the foam oil breather element. See page 114.

CAUTION
Hot components can cause damage to plastic. Always make sure the exhaust system and engine have cooled before tipping the snowmobile on its side for service or inspection.

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MAINTENANCE
Periodic Maintenance Interval Table

O = Perform Service X = Replace			DAILY or PRE-RIDE	INITIALLY Miles (km)		YEARLY or EVERY Miles (km)
Item	**Pg**	**Instructions (see referenced pages)**		**150 (240)**	**500 (800)**	**1500 (2400)**
Engine Stop Switch	83	Test for proper operation. Do not operate if switches fail, see your dealer for service.	O			
Ignition Switch	83		O			
Throttle Safety Switch	94		O			
Taillight	83	Test for proper operation, replace bulbs as needed	O			
Brakelight	83		O			
Headlight	83		O			
Skags (Wear Bars)	147	Inspect for wear or damage, replace when worn	O			
Fluid Leaks	--	Inspect for fluid leaks	O			
Parking Brake	80	Test for proper engagement and release, see your dealer for service	O			
Brake Lever	79	Check lever travel and lever “feel”	O			
Coolant	125	Inspect level, add as needed	O			
Brake fluid	132		O	CHANGE EVERY 2 YEARS		
Hood Latches	78	Secure properly, replace if damaged	O			
Seat Latches	77		O			
Rail Slide	144	Inspect for wear or damage, replace when worn	O			
Foam Oil Breather Element	114	Check pre-ride, clean or replace with each oil change. Clean after tipping 3 times onto left side.	O	O	O	O
Front and Rear Suspension and Steering Fasteners	82	Inspect for missing or loose bolts and fasteners, tighten or replace as needed	WEEKLY / BEFORE LONG TRIPS			
Front Limiter Strap	--	Inspect for wear, damage and missing or loose fasteners, replace as needed	WEEKLY / BEFORE LONG TRIPS			
Oil Lines	--	Inspect, replace if worn or damaged	O	O	O	O
Alternator Belt	123	Check tension and condition, replace if worn or damaged	O	O	O	O
Throttle Lever	77 95	Verify smooth and proper operation	O	O	O	O
Track Alignment	144	Verify alignment, adjust as needed	O	O	O	O

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Periodic Maintenance Interval Table

O = Perform Service X = Replace			DAILY or PRE-RIDE	INITIALLY Miles (km)		YEARLY or EVERY Miles (km)
Item	**Pg**	**Instructions (see referenced pages)**		**150 (240)**	**500 (800)**	**1500 (2400)**
Coolant Hoses	--	Inspect, replace if worn or damaged		**O**	**O**	**O**
Heat Exchangers	--	Inspect, replace if damaged		**O**	**O**	**O**
Fuel Lines	122	Inspect, replace if worn or damaged		**O**	**O**	**O**
Battery	148	Clean terminals, test voltage		**O**	**O**	**O**
Track Tension	142	Verify tension, adjust as needed		**O**	**O**	**O**
Handlebars	--	Verify alignment, adjust as needed		**O**	**O**	**O**
Drive Chain	130	Verify tension, adjust as needed			**EVERY**	
Rear Track Shock (M-10)	--	Inspect covers and caps for wear or damage, replace as needed			**EVERY**	
Gearcase Oil	118	Check at 500 mi. (800 km), change every 1000 mi. (1600 km)			**O**	**EVERY 1000 (1600)**
Rear Suspension	116	Lubricate pivot shafts (more often in wet snow conditions)			**O**	**O**
Bearings	115 151	Lubricate drive shaft and jackshaft bearings			**O**	**O**
Throttle Cable	115	Lubricate			**O**	**O**
Clutches	136	Verify offset alignment, inspect for wear, residue, loose bushings, see your dealer for all service			**O**	**O**
Drive Belt	137	Check tension and condition, replace if worn or damaged			**O**	**O**
Air Filter	123	Inspect for oil and dirt, replace as needed			**O**	**O**
Oil Change	110 114	Replace oil and clean the foam oil breather element			**X**	**X**

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MAINTENANCE
Periodic Maintenance Interval Table

O = Perform Service X = Replace			DAILY or PRE-RIDE	INITIALLY Miles (km)		YEARLY or EVERY Miles (km)
Item	**Pg**	**Instructions (see referenced pages)**		**150 (240)**	**500 (800)**	**1500 (2400)**
Engine Mounts	--	Inspect, replace if worn or damaged			**O**	**O**
Spark Plugs	120	Inspect condition/gap, replace as needed			**O**	**O**
Exhaust System	124	Check muffler and pipe condition, replace damaged or missing components, clean plastic surfaces			**O**	**O**
Hoses	--	Inspect for wear, damage and proper routing, replace as needed			**O**	**O**
Brake Pads/Disc	131	Inspect, replace if worn or damaged			**O**	**O**
Fuel Vent Lines	122	Inspect, replace if worn or damaged			**O**	**O**
Ski Toe	146	Verify alignment, see your dealer for adjustments			**O**	**O**
Cooling Fins/Shroud	--	Inspect and clean			**O**	**O**
Valve Lash	--	See your dealer FS Specifications Intake: 0.08 - 0.15 mm Exhaust: 0.15 - 0.20 mm FST Specifications Intake: 0.08 - 0.15 mm Exhaust: 0.18 - 0.23 mm			**1500 (2400) INITIALLY EVERY 10,000 (16,000) THEREAFTER**	
Cooling System	127	Bleed the cooling system, inspect for leaks and proper circulation				**EVERY 2000 (3200)**
Fuel Filter	122	Inspect, replace as needed				**EVERY 2000 (3200)**
Rear Suspension Shock Oil	--	See your dealer (IQ/SwitchBack/M-10)				**EVERY 2000 (3200)**

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Engine Oil

Always check and change the engine oil at the intervals outlined in the Periodic Maintenance Table beginning on page 102. Always change the oil filter whenever changing oil. See page 153 for the part numbers of Polaris products.

Performance Synthetic 4-Stroke (PS-4) Oil

Polaris recommends the use of Performance Synthetic 4-Stroke (PS-4) 0W50 oil for this engine. PS-4 has been specially formulated for use in Polaris 4-cycle snowmobile engines. It's a fully synthetic, high performance, multi-viscosity oil designed to provide the ultimate in lubrication performance and protection.

Oil may need to be changed more frequently if Polaris oil is not used. Always use 0W50 oil. Follow the manufacturer's recommendations for ambient temperature operation.

CAUTION
Mixing brands or using a non-recommended oil may cause serious engine damage. Always use the recommended oil. Never substitute or mix oil brands.

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MAINTENANCE

Engine Oil

Oil Level Check

NOTE: Read the entire oil check procedure before checking the oil level.

The oil level will rise as engine temperature increases. The oil level will be lower when the engine is cold. To obtain a proper oil level reading, the snowmobile must be on a level surface, and the engine coolant temperature must be between 145 and 160 degrees F. (63-71 degrees C).

NOTE: Always check the oil level before operating a snowmobile that has tipped over.

CAUTION
Severe engine damage may occur if procedures for checking the oil level are not followed precisely. Always check the oil with the snowmobile positioned on a level surface. Always check the oil level when the coolant temperature is within the specified range.

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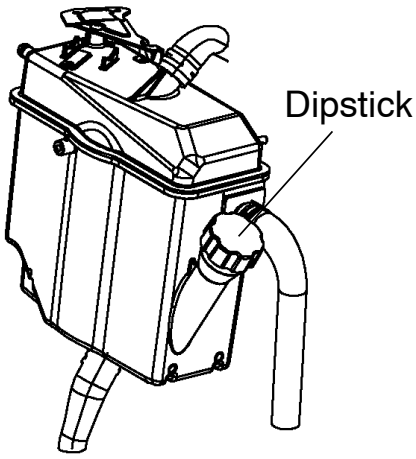
Engine Oil

Oil Level Check

NOTE: The oil level in the oil bottle may drain below the level of the dipstick if the engine has not run for more than a week. If you're not sure if there is oil in the system, you must first check to make sure oil is in the system before checking the oil level. Perform the “Oil in System Check” procedure on page 109 before performing the oil level check.

1. Position the vehicle on a level surface.
2. If the engine is cold, start the engine and allow it to idle until the engine coolant temperature reaches the specified range. Proceed to step 4.
3. If the engine has been running, stop the engine and verify that coolant temperature is within the specified range for performing the oil check. Allow the engine to cool if necessary. When the coolant is within the specified range, restart the engine and allow it to idle for no more than 20 seconds to circulate the oil back into the tank.
4. Turn the engine off.

NOTE: Check the oil level within three minutes, before the coolant temperature (and oil level) begin to drop.

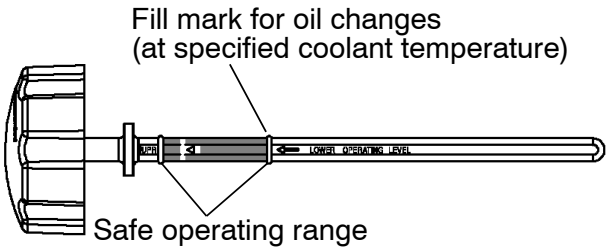


5. Remove the dipstick from the oil tank.
6. Clean the dipstick with a clean shop towel and reinstall it, screwing it in completely.
7. Remove the dipstick and view the oil level.

NOTE: The oil level reading will be accurate for only one to three minutes after turning off the engine. If the oil check isn't completed within three minutes, reinstall the dipstick. Restart the engine and allow it to idle for no more than 20 seconds to circulate the oil back into the tank.

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MAINTENANCE
Engine Oil
Oil Level Check



8. Maintain the oil level in the safe operating range, between the upper and lower marks on the dipstick. If the level is low, add the recommended oil in small increments, about 2 ounces (60 ml), and recheck the level. If the level is high, remove 2 ounces (60 ml) and recheck the level.

CAUTION
Do not overfill the oil tank. Engine damage may occur. Always add oil in small increments and recheck the level to avoid overfilling.

9. Recheck the oil level if oil was added or removed, making sure the coolant temperature is within the specified range. If necessary, continue adding or removing oil until the level is in the safe operating range.

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Engine Oil

Oil in System Check

1. Position the vehicle on a level surface. Start the engine and allow it to idle 3-5 seconds (no more than 5 seconds). Turn the engine off.
2. Remove the dipstick. Clean the dipstick with a clean shop towel and reinstall it, screwing it in completely. Remove the dipstick and verify that oil is present anywhere on the dipstick.
3. If oil is present, continue with the oil level check procedure beginning on page 106.
4. If oil is not present, add 1/2 quart (.47 l) of the recommended oil. Reinstall the dipstick, start the engine for no more than 5 seconds, stop the engine, and recheck for the presence of oil.
5. If oil is present, continue with the oil level check procedure beginning on page 106.
6. If oil is not present, add another 1/2 quart (.47 l) of oil. Reinstall the dipstick, start the engine for no more than 5 seconds, stop the engine, and recheck for the presence of oil.
7. If no oil is present on the dipstick, check the oil system for leaks and proper operation or see your Polaris dealer.

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MAINTENANCE
Engine Oil
Oil Change

Always change the oil at the intervals outlined in the Periodic Maintenance Table beginning on page 102. Clean the foam oil breather element with each engine oil change. See page 114.

Always use the recommended oil. See page 106, or see your Polaris dealer about oil change kits, which contain a new filter and the recommended oil.

NOTE: A special jumper harness is required for changing the oil on this vehicle. Please see your Polaris dealer to purchase the harness, which will allow you to use the ignition key to turn over the engine without starting it. You may also need an assistant to help with the oil change.

1. Position the vehicle on a level surface.
2. Make sure the engine coolant temperature is between 145 and 160 degrees F. (63-71 degrees C). If necessary, start the engine and allow it to idle until the coolant temperature is within the specified range.
3. Turn the engine off.

⚠ CAUTION

Hot oil and a hot exhaust system and engine can cause serious burns. Do not allow hot oil or hot components to contact skin.

4. Open the hood and remove the left side panel.

NOTE: Clamp orientation is critical to the proper operation of the system. Be aware of clamp placement and orientation when removing hose clamps. Always reinstall hose clamps in the same location and position.

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Engine Oil

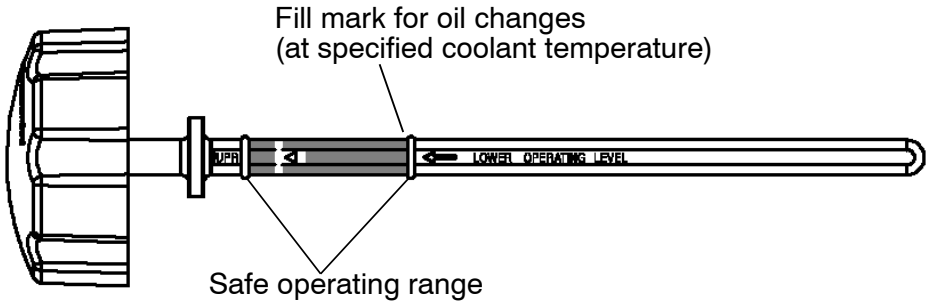
Oil Change

5. Remove the oil return hose from the oil tank. Have an assistant place the end of the hose into a drain pan.
6. Disconnect the 2-pin WHITE/RED and GREEN/WHITE starter motor solenoid control switch harness connector located near the battery.
7. Rotate the plug 90 degrees and reinstall it with the WHITE/RED wire connected.
8. Insert the male pin of the jumper harness into the starter solenoid's female port.
9. Open the handlebar cover. Locate the 3-pin connector with the BROWN and RED/WHITE wires. Plug this connector into the 3-pin connector of the jumper harness.
10. Open the fuse box and remove the 20A EFI fuse from the fuse block.
11. Reinstall the left side panel.
12. Have an assistant use the ignition key to turn over the engine. Crank the engine for 15 seconds.
13. Wait 30 seconds to allow the starter motor to cool down.
14. Repeat steps 12 and 13 four more times for a total of five cycles.
15. Reconnect the oil return line to the oil tank. Tighten the hose clamp securely, but do not over-tighten.
16. To prevent oil spillage, wait 3 to 5 minutes to allow any oil in the oil filter cap to drain out before removing it. While waiting, remove the foam oil breather element from the airbox. See page 114.
17. Inspect the foam element. Clean it with soap and water and let it dry. Reinstall it, or install a new element if the existing element is damaged or degraded and unable to absorb liquid.

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MAINTENANCE
Engine Oil
Oil Change

18. Remove the oil filter cap, then remove the oil filter. Inspect the o-ring and replace it if it's worn or damaged.
19. Install a new filter, then reinstall the cap. Tighten the cap to 18.5 ft. lbs. (25 Nm).
20. Remove the jumper from the starter motor wiring harness. Reconnect the solenoid and the originally-installed harness. Reinstall the 20A EFI Fuse.
21. Remove the dipstick from the oil tank. Add 2 quarts (1.9 liters) of the recommended oil. Reinstall the dipstick.
22. Make sure the engine coolant temperature is between 145 and 160 degrees F. (63-71 degrees C). If necessary, start the engine and allow it to idle until the coolant temperature is within the specified range.
23. Remove the dipstick from the oil tank. Clean the dipstick with a clean shop towel and reinstall it, screwing it in completely.
24. Remove the dipstick and view the oil level.



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Engine Oil

Oil Change

25. Add additional oil to bring the level slightly above the lower mark (in the safe operating range) on the dipstick. See the chart for approximate amounts to add at this step. DO NOT OVERFILL.

MODEL	OIL TO ADD AT STEP 25	
	Ounces	Milliliters
FS	4 to 16	118 to 473
FST	24 to 32	710 to 496

NOTE: Check the oil level often during the fill procedure to avoid overfilling. If the filling and checking procedure is not completed within three minutes, reinstall the dipstick. Restart the engine and allow it to idle for *no more than 20 seconds* to circulate the oil back into the tank. Continue adding and checking the oil until the level is slightly above the lower mark (in the safe operating range) on the dipstick. Do not overfill.

26. Reinstall the dipstick.

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MAINTENANCE

Foam Oil Breather Element

The foam oil breather element absorbs small amounts of liquid to protect sensors within the intake system from damage due to oil ingestion. Check the element before each ride. Clean or replace the breather element at each engine oil change. Clean the element if the snowmobile has been tipped on its left side three times, either during service or while riding, as oil may leak into the element.

CAUTION
Operating the snowmobile with a clogged foam oil breather element can result in severe engine damage. Always clean or replace the element as recommended.

The foam oil breather element is located inside the airbox.

FS Element



1. Open the hood.
2. Release the airbox cover retaining clips and remove the cover.
3. Remove the foam breather element.
4. Wash the foam element in soapy water, then rinse thoroughly and let dry.

NOTE: If soap and water are not readily available, remove as much liquid as possible by pressing the foam element in paper towels or a similar absorbent material.

FST Element



5. Reinstall the dry foam element, or install a new foam element.

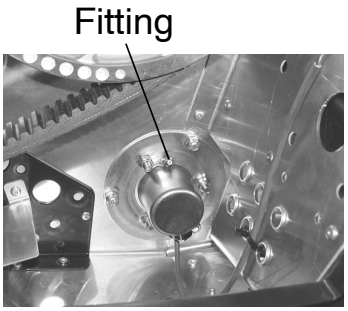
NOTE: Always replace a foam element that is brittle, cracked, crumbling or otherwise damaged. For best performance, routinely replace the foam element with every other engine oil change.

6. Reinstall the airbox cover. Secure all retaining clips.

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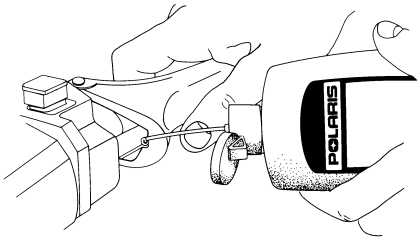
Lubrication

Driveshaft Bearing



Inject grease into the fitting on the speedometer sensor housing until grease purges from the seal on the inside of the tunnel. This should take approximately two pumps. Do not use more than four pumps.

Throttle Cable



Lubricate the throttle cable lightly with grease or oil. With the engine off, turn the handlebars to the left and lubricate liberally as shown.

Front Suspension

The front suspension and steering components do not require lubrication.

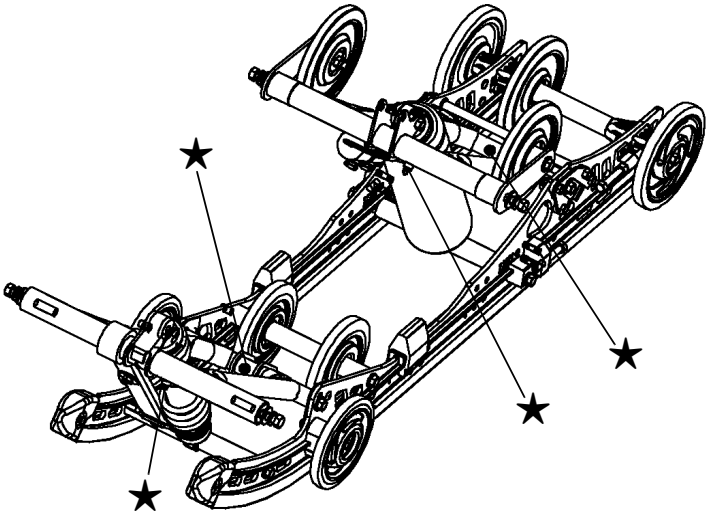
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MAINTENANCE
Lubrication
Rear Suspension

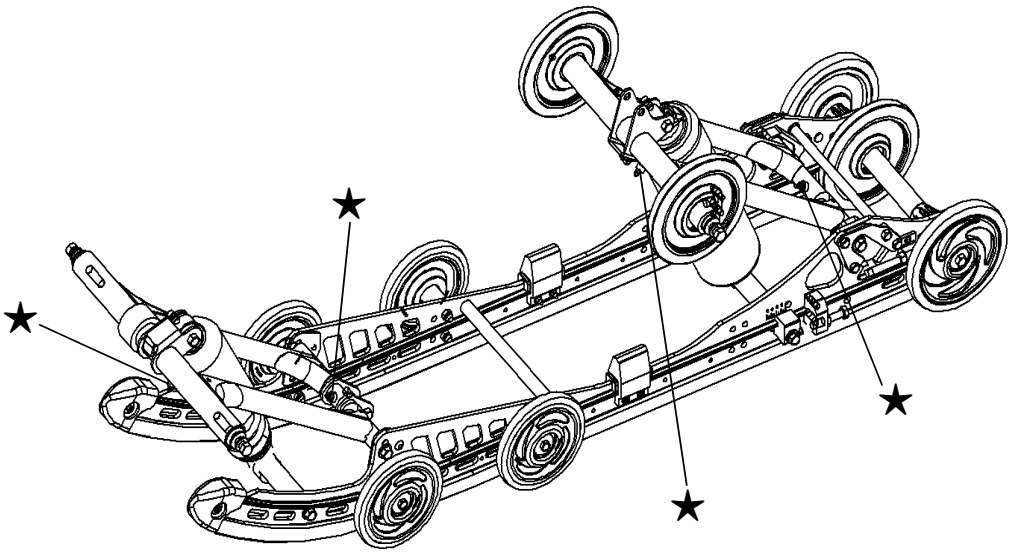
Lubricate the suspension pivot shafts with Polaris Premium All Season Grease at the intervals outlined in the Periodic Maintenance Table beginning on page 102 and before seasonal storage. When operating in heavy, wet snow conditions, lubricate every 500 miles (800 km).

Lack of lubrication will adversely affect your ride and the life of the suspension. For more information about suspension lubrication and adjustments, see your Polaris dealer.

M-10 128 Rear Suspension



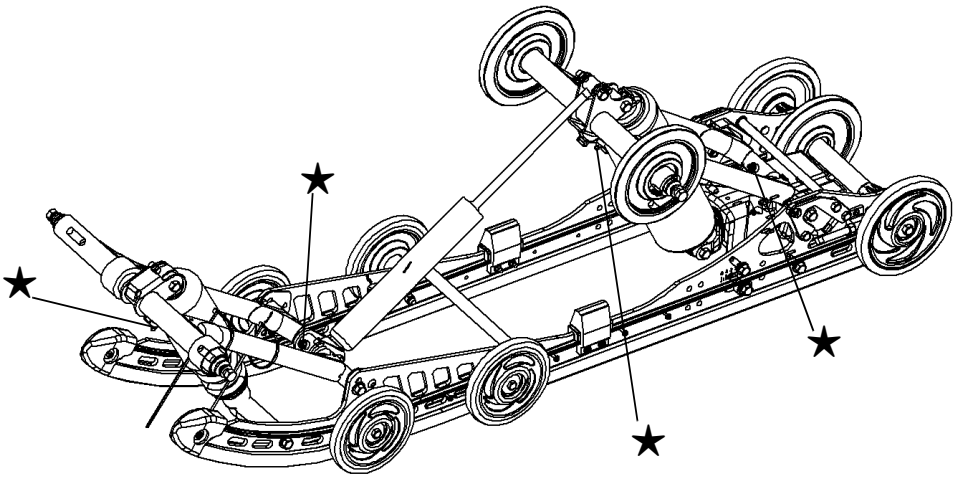
M-10 136 Rear Suspension



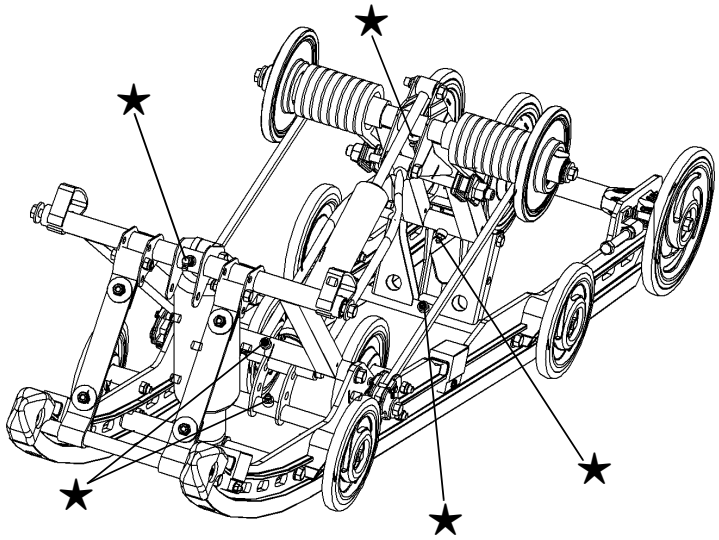
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Lubrication

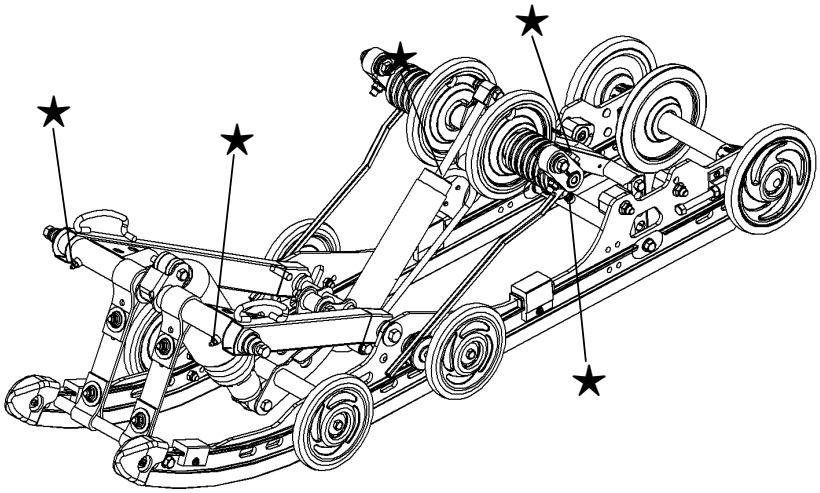
M-10 136 ACE Rear Suspension



SwitchBack Rear Suspension



IQ Rear Suspension



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MAINTENANCE

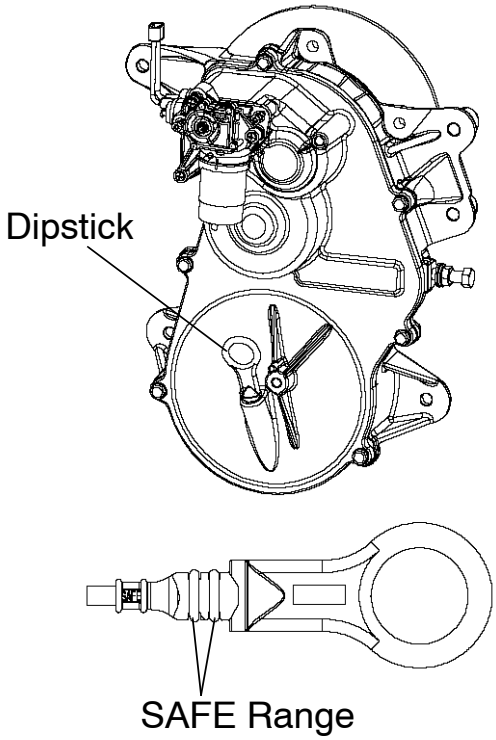
Gearcase Oil

Gearcase Oil Check

Check and change the gearcase oil at the intervals outlined in the Periodic Maintenance Table beginning on page 102.

Polaris recommends the use of Polaris Synthetic Chaincase Lube. See page 153 for the part numbers of Polaris products.

The dipstick is located on the lower front side of the gearcase. Maintain the oil level in the safe operating range, between the upper and lower marks on the dipstick.



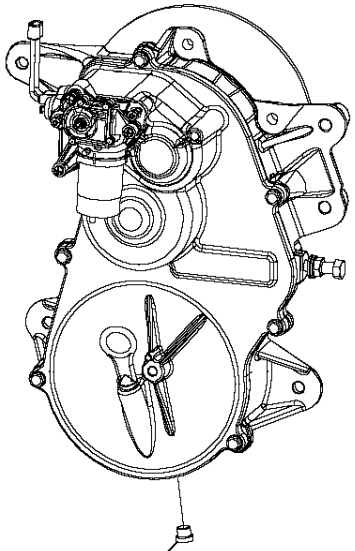
1. Position the vehicle on a level surface.
2. Remove the dipstick and wipe it dry with a clean cloth. Reinstall the dipstick.
3. Remove the dipstick and view the oil level.
4. Add the recommended oil as needed. Do not overfill.
5. Reinstall the dipstick.

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Gearcase Oil

Gearcase Oil Change

The drain plug is located on the bottom of the gearcase.



NOTE: Polaris does not recommend tipping the snowmobile onto it's side for service. Any time the snowmobile is tipped onto it's left side, always check the oil level and clean the foam oil breather element. See page 114.

1. Position the vehicle on a level surface.
2. Remove the drain plug and drain the oil into a drain pan. Allow the oil to drain completely

NOTE: The sealing surfaces on the drain plug and the gearcase should be clean and free of burrs, nicks or scratches.

3. Reinstall the drain plug. Torque to 6-10 ft. lbs. (8-13 Nm).
4. Remove the dipstick.
5. Add 9 oz. (266 ml) of the recommended oil. *Do not overfill.*
6. Reinstall the dipstick, making sure it is seated properly.

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MAINTENANCE
Spark Plugs

A new engine can cause temporary spark plug fouling due to the preservative added during the assembly process. Avoid prolonged idle speeds, which cause plug fouling and carbonization.

CAUTION

Using non-recommended spark plugs can result in serious engine damage. A spark plug with a heat range too high will always cause engine damage if the engine is operated in conditions more severe than intended for that plug. Always use the spark plugs recommended for your snowmobile.

- Use recommended spark plugs with the proper gap.
- Use only resistor-type spark plugs.
- Torque spark plugs to 18-20 ft. lbs. (24-27 Nm).

Check the spark plug firing end condition after the engine has been warmed up and the vehicle has been driven at higher speeds. If a plug is fouled, replace the plug with a new plug.

⚠ WARNING

A hot exhaust system and engine can cause serious burns. Wear protective gloves when removing a spark plug for inspection.

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Spark Plugs

Normal Spark Plug

The normal insulator tip is gray, tan or light brown. There will be few combustion deposits. The electrodes are not burned or eroded. This indicates the proper type and heat range for the engine and the service.

NOTE: The tip should not be white. A white insulator tip indicates overheating, caused by use of an improper spark plug or incorrect throttle body adjustments.

Wet Fouled Spark Plug

The wet fouled insulator tip is black. A damp oil film covers the firing end. There may be a carbon layer over the entire nose. Generally, the electrodes are not worn. General causes of fouling are excessive oil or rich fuel mixture.

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MAINTENANCE

Intake Filters



The intake foam filter limits snow ingestion into the intake system. When operating in loose powder snow, check the top of the foam filter periodically to remove any accumulation of snow.

Fuel Injectors

All fuel injector service must be performed by an authorized Polaris dealer. Do not attempt to clean or service the fuel injectors.

Fuel Pump

All fuel pump service must be performed by an authorized Polaris dealer. Do not attempt to service the fuel pump.

Fuel Filter

See your Polaris dealer for replacement of the fuel filter at the intervals outlined in the Periodic Maintenance Table beginning on page 102.

Fuel Lines

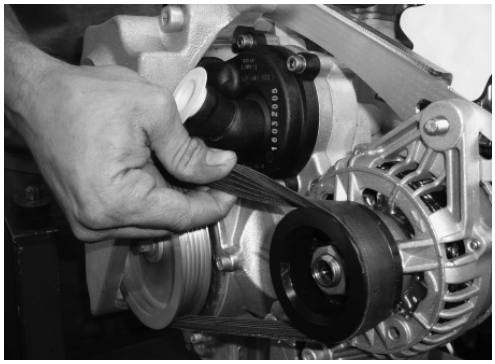
Inspect the fuel lines regularly for signs of deterioration or damage. Always check fuel line condition after periods of storage. Normal deterioration from weather and fuel compounds may occur. Replace worn or damaged fuel lines promptly.

CAUTION
Kinking the fuel lines or using a pliers or similar tools to remove fuel lines may cause damage to the lines. If a fuel line has been damaged or kinked, replace it promptly.

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Alternator Belt Inspection

Inspect the alternator belt condition and tension before each ride.



1. Stop the engine.
2. Open the hood.
3. Inspect the belt for wear, cracks or other damage. If the belt is worn or damaged, install a new belt.
4. Grasp the alternator belt and attempt to twist it.
5. If the belt rotates 1/4 turn (90 degrees) or more (as shown), tighten the belt or install a new belt.

Air Filter (FST)

Inspect the air filter for oil and dirt accumulation at the intervals outlined in the Periodic Maintenance Table beginning on page 102.

1. Open the air box.
2. Remove the air filter.
3. Shake or pat the filter to clean it, or install a new filter. Do not attempt to clean the filter with liquids.

Foam Oil Breather Filter

Clean or replace the breather element at each engine oil change. See page 114. Clean the element if the snowmobile has been tipped on its left side three times.

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MAINTENANCE
Exhaust System

Check the exhaust system for wear or damage at the intervals outlined in the Periodic Maintenance Table beginning on page 102.

⚠ WARNING

Hot exhaust system parts can cause serious burns. Allow adequate time for the exhaust system to cool. Never perform this procedure with the engine running.

1. Allow the engine and exhaust system to cool completely.
2. Open the hood.
3. Inspect the muffler and pipes for cracks or damage. Check for weak or missing retaining springs or damper/support grommets.
4. Replace any damaged or missing components.
5. Clean the plastic surfaces next to the muffler with aerosol Carburetor and Throttle Body Cleaner.

NOTE: See page 153 for the part numbers of Polaris products.

6. Close the hood.

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Cooling System

Coolant

The coolant supplied in the system is a 60/40 mixture of ethylene-glycol and distilled water. This mixture provides protection against freezing. Contact your dealer if greater protection is required.

Use Premium 60/40 anti-freeze coolant, which is already premixed and ready to use. Do not dilute with water. Never exceed a 60% antifreeze/ 40% water mixture. See page 153 for the part numbers of Polaris products.

NOTE: Never add tap water to the cooling system. Minerals cause deposits and may react adversely with the metals in the engine and cooling system.

Use of a non-standard pressure cap will not allow the recovery system to function properly. If the pressure cap needs replacement, contact your dealer for the correct part.

⚠ WARNING

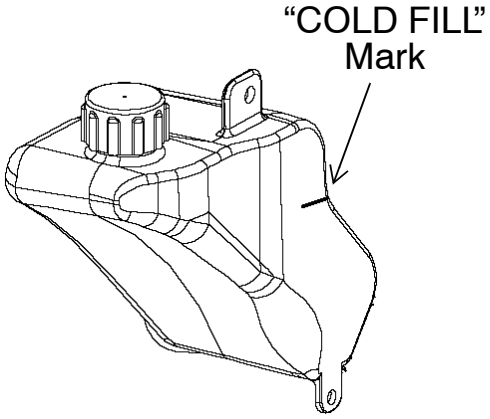
Steam and hot liquids will cause serious burns to your skin. Never remove the pressure cap when the engine is warm or hot.

Coolant Level

The engine coolant level is controlled by the recovery system. The recovery system components are:

- Coolant bottle or overflow tank
- Filler neck
- Pressure cap
- Connecting hoses

Always maintain the coolant level at the “COLD FILL” mark on the coolant tank (when the engine is cold).



CAUTION

Operating the snowmobile with insufficient coolant will result in overheating and serious engine damage. Always maintain the coolant level as recommended.

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MAINTENANCE
Cooling System
Coolant High Temperature Indicator Light

The high temperature indicator light will illuminate when engine coolant temperature becomes too hot for safe continued operation of the engine. *Stop the snowmobile and allow the engine to cool.* Place snow on the coolers to help cool the engine. If coolant is low in the coolant overflow bottle, add coolant to the coolant bottle. Do not open the radiator pressure cap.

⚠ WARNING

Steam and hot liquids will cause serious burns to your skin. Never remove the pressure cap when the engine is warm or hot, or if any part of the cooling system is warm or hot.

CAUTION

Operating the snowmobile when the high temperature indicator light is illuminated can result in serious engine damage. Always stop the snowmobile and cool the engine when the high temperature indicator light illuminates.

Drive in adequate snow to prevent overheating. If you must drive your snowmobile after the high temperature indicator light has illuminated, drive in deep snow. Drive slowly and stop frequently to allow the engine to cool down. Engine performance will be reduced if you continue operating when the high temperature light is illuminated.

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Cooling System

Flushing the Cooling System

To ensure that the coolant maintains its ability to protect the engine, the system should be completely drained every two years and a fresh mixture of antifreeze and distilled water should be added. Have your Polaris dealer perform this service.

Bleeding the Cooling System

Bleed the cooling system at the intervals outlined in the Periodic Maintenance Table beginning on page 102. In addition, bleed the cooling system any time one or more of the following conditions exist.

- A component of the cooling system has been serviced or replaced (including coolers, radiator, engine, coolant lines and oil cooler)
- A cooling system failure occurs, resulting in coolant loss
- A coolant line has been disconnected for any reason
- A coolant leak occurs

⚠ WARNING

The engine exhaust from this product contains chemicals known to cause cancer, birth defects or other reproductive harm. Operate this vehicle only outdoors or in well-ventilated areas.

1. Read the entire coolant bleed procedure before beginning. After beginning the bleed procedure, do not stop the engine until reaching step 14.
2. Move the snowmobile into a well-ventilated area. Allow the engine to cool completely.

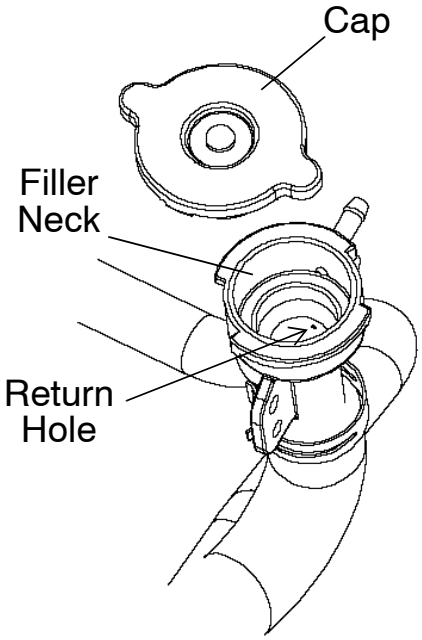
⚠ WARNING

Steam and hot liquids will cause serious burns to your skin. Never bleed the cooling system or remove the pressure cap when the engine is warm or hot.

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MAINTENANCE
Cooling System
Bleeding the Cooling System

3. Open the hood.
4. Remove the coolant pressure cap carefully.
5. Slowly pour coolant into the filler neck until the coolant level reaches the bleed return hole on the inside of the filler neck. Leave the pressure cap off.
6. With the cap off, start the engine and allow it to idle.
7. With the engine idling, observe the coolant level in the filler neck. Make sure that the coolant level in the filler neck is always visible. When the level falls, add coolant. A rising level is acceptable.



NOTE: During bleeding, air pockets will bubble to the surface. Add coolant after these air pockets have surfaced, making sure that the coolant level remains visible in the filler neck.

8. With the engine idling, and while making sure that the level in the filler neck remains visible, observe the bleed return. If the system is self-bleeding properly, coolant will be pumped out of this hole.

NOTE: Coolant flow may be erratic (spitting, misting) for the first few minutes of bleeding, but as long as the procedure is followed and coolant is visible in the filler neck, the system should bleed properly.

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Cooling System

Bleeding the Cooling System

9. While observing the bleed return and making sure the coolant level is visible in the filler neck, observe the engine temperature in the digital display. The temperature should rise steadily, indicating that the system is bleeding properly.
10. If the temperature does not rise after approximately one (1) minute, repeat steps 8 and 9. *Make sure steps* 8 *and* 9 *are followed precisely during the entire bleed procedure.*
11. Reinstall the coolant pressure cap when engine temperature reaches 120° (48° C). *Do not stop the engine at this step.*

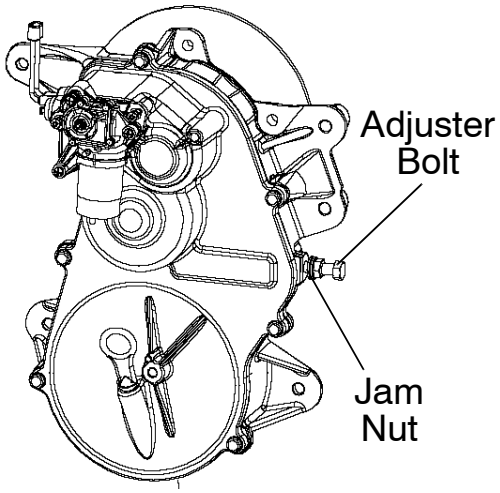
NOTE: If the engine is stopped before the cap is installed, a large amount of coolant will flow out of the filler neck and the entire bleed procedure will have to be performed again.

12. While the engine temperature is rising, allow the engine to idle until the temperature reaches approximately 220° F (104° C). *Do not stop the engine at this step.*
13. Feel the coolers at the rear of the snowmobile (rear cooler, de-icers, grippers, as equipped). These components should be warm to the touch, indicating the thermostat is open and the entire cooling system is bleeding. If coolant is still flowing from the bleed return and there is coolant in the filler neck, the system has been bled properly.
14. Stop the engine.
15. Remove the coolant overflow tank cap. Add coolant to the “COLD FILL” mark on the tank. Reinstall the cap.

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MAINTENANCE
Drive Chain Tension

Check drive chain tension weekly and before each long trip. To obtain correct chain tension:



1. Rotate the driven clutch counterclockwise to move all chain slack to the tensioner side. Lock the brake lever lock, or have an assistant hold the brake lever firmly.
2. Loosen the adjuster bolt jam nut.
3. Finger tighten the adjuster bolt until it can no longer be adjusted by hand, then back off 1/4 turn.
4. Tighten the jam nut while holding the adjuster bolt. Torque to 18-23 ft. lbs. (24-31 Nm).
5. Release the brake lever lock.

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Brakes

Hydraulic Brake Inspection

Inspect the brake lever reserve before each use of the snowmobile. See page 79.

Brake pads must be replaced when the brake pad material becomes thinner than the backing plate, approximately 1/16" (1.5 mm). A kit is available for replacing brake pads. See your dealer.

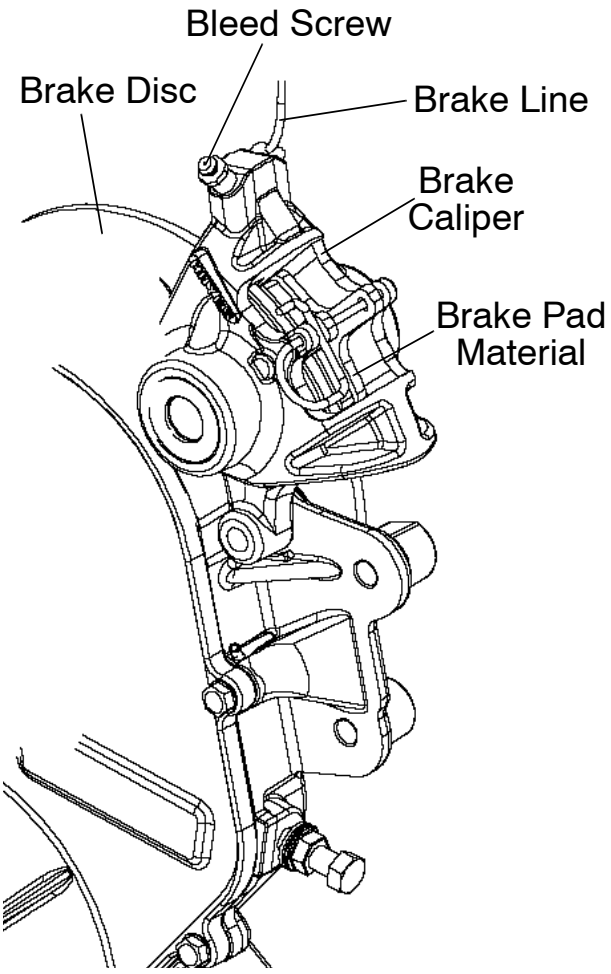
⚠ WARNING

Brake failure during operation can result in serious injury or death. Properly functioning brakes are vital to your safety. Be sure the brake pads do not drag on the disc and that brake lever travel is not excessive.

Always replace brake pads when the brake pad material becomes thinner than the backing plate, approximately 1/16" (1.5mm).

Brake Components

- Brake Disc
- Bleed Screw
- Brake Line
- Brake Caliper
- Brake Pad Material - Replace when thickness is less than 1/16" (1.5 mm).



Excessive Lever Travel

Hydraulic brakes are self-adjusting, but if excessive brake pad clearance develops bring the snowmobile to an authorized Polaris dealer for inspection and adjustment.

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MAINTENANCE
Brakes
Brake Fluid

⚠ WARNING

After opening a bottle of brake fluid, always discard any unused portion. Never store or use a partial bottle. Brake fluid is hygroscopic, meaning it rapidly absorbs moisture from the air. The moisture causes the boiling temperature of the brake fluid to drop, which can lead to early brake fade and the possibility of accident or serious injury.

⚠ WARNING

Keep the master cylinder cover free of dirt and debris. The vent slits allow for diaphragm movement, and if they become plugged, movement of brake fluid below the diaphragm may be restricted, altering brake function.

CAUTION

Brake fluid will damage decals, paint and some plastics. Always wipe up spills immediately.

Replace brake fluid at least every two years with Polaris DOT 4 high temperature brake fluid. See page 153 for the part numbers of Polaris products.

The brake fluid level can be seen through a plastic sight glass in the brake reservoir. If the fluid is sufficient, the sight glass will be black. If the sight glass is any color other than black, add brake fluid.



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Brakes

Bleeding the Hydraulic Brake System

Air in the hydraulic brake system will cause spongy brake lever action. Bleed the system before operating the snowmobile.

⚠ WARNING

Operating the vehicle with a spongy brake lever can result in loss of brakes, which could cause an accident and lead to serious injury or death. Never operate the vehicle with a spongy-feeling brake lever.

During the bleeding procedure, keep the brake handle as level as possible. The reservoir must be in this position to minimize the possibility of air entering the system through the reservoir vent.

1. Remove brake master cylinder reservoir cover and gasket.
2. Fill the master cylinder reservoir to between the MIN and MAX marks or 1/4"-5/16" (.6-.8 cm) below the lip of the reservoir opening. Reinstall the gasket and cover.
3. Slip a rubber tube over the ball of the bleeder valve and direct the flow of fluid into an approved container.
4. Squeeze the brake lever a full stroke. Then unscrew the bleeder valve 3/4 of a turn to release air.
5. Close the bleeder valve and release the brake lever.
6. Repeat steps 4 and 5 until fluid flows from the bleeder valve in a solid stream free of air bubbles.

⚠ WARNING

Overfilling the master cylinder leaves no room for fluid expansion and may cause the brakes to lock, resulting in serious injury or death. Always add brake fluid to the fill line as recommended.

7. After bleeding is complete, refill the reservoir to the proper level. See page 132.
8. Reinstall the gasket and cover.

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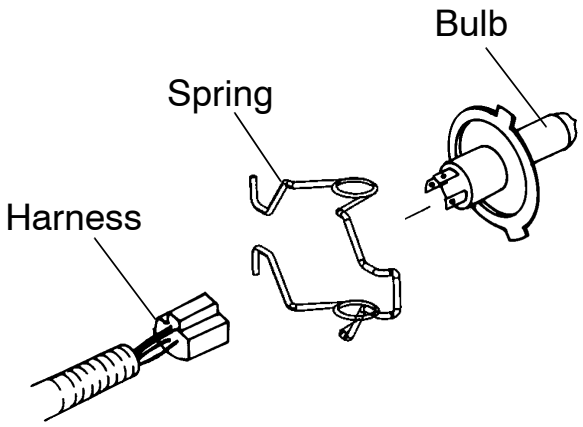
MAINTENANCE

Lights

Removing Halogen Bulbs

NOTE: Do not touch a halogen bulb with bare fingers. Oil from skin leaves a residue, causing a hot spot that will shorten the life of the lamp. If fingers do touch the bulb, clean it with an alcohol-moistened towel.

1. Remove the plenum covering from the headlight assembly.
2. Lift the rubber boot to expose the bulb.
3. Push down on the spring to release it from the housing.
4. With the wire harness attached to the bulb, withdraw the bulb from the housing.



5. Grasp the bulb by its metal base and carefully separate the bulb from the harness.

Installing Halogen Bulbs

1. Hold the bulb by its metal base and install it into the wire harness.
2. Insert the bulb into the housing.
3. Connect the spring to the housing.
4. Carefully flip the spring back into the housing, placing it around the wire harness.
5. Reinstall the plenum covering on the headlight assembly.
6. Adjust headlight aim. See page 30.

Replacing Taillight Bulbs

1. Remove the screws securing the taillight lens.
2. Push the bulb in and twist counterclockwise and replace the bulb.
3. Replace the taillight lens.

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Electrical System

RELAY LABEL	FUSE LABEL	ITEM POWERED
START SOLENOID RELAY		Ground side of start solenoid
CHASSIS RELAY	**SPARE 20A**	None
	ACCESSORY EMERGENCY SPARE 30A	Accessory plugs
	CHASSIS 30A	High beams
		Low beams
		Handwarmers
		Thumbwarmer
		Tail lamp
		Brake lamp
		Alternator coils
EFI RELAY	**EX. SENSOR GAUGE 20A REVERSE SHIFT**	Exhaust sensor
		Gauge
		Reverse shift
		Accessory projector beam relay
		Diagnostic plug
	IGNITION 20A	Ignition relay power
	EFI 20A	Cam phase sensor
		ECU hold-on power
		Reverse limit switch
		Forward limit switch
		Start relay coil
		Chassis relay coil
		Ignition relay coil
		Fuel pump relay coil
		Fan relay coil
		Fuel pump relay power
		PTO injector
		MAG injector
		Wastegate
IGNITION RELAY		PTO ignition coil
		MAG ignition coil
FUEL PUMP RELAY		Fuel pump
FAN RELAY		CAC fan

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MAINTENANCE
Clutch System

Periodically inspect clutch sheaves for damage, wear or belt residue. To maintain optimum performance, clean with non-oil based cleaners such as isopropyl alcohol.

⚠ WARNING

If you become aware of higher than normal clutch engagement or an unusual vibration or shift pattern, see your dealer immediately. Do not operate the snowmobile until repairs have been made.

All clutch maintenance and repairs must be performed by an authorized Polaris dealer. Any unauthorized modifications to clutches, such as adding or removing weights, will void the warranty.

CAUTION

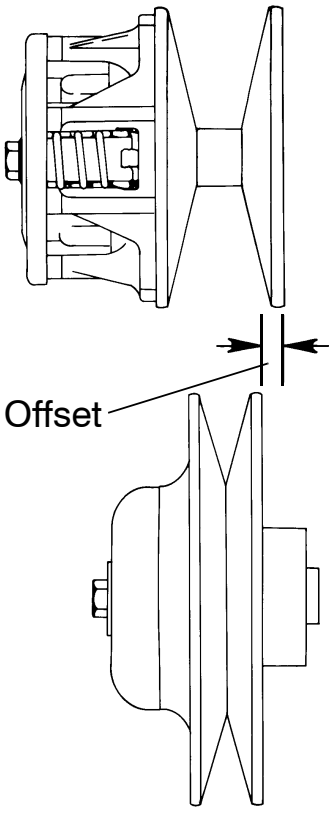
The bushings in the weights and rollers of Polaris clutches are made of a material that may be damaged if lubricated. Do not lubricate clutch bushings.

Clutch Alignment and Offset

Clutch alignment offset is important for maintaining optimum performance. See your Owner's Manual Supplement for the recommended offset between the drive and driven clutches with the belt removed.

Belt width and length must match the center distance of the clutches and sheave width of the drive clutch. Polaris recommends the use of O.E.M. belts. Other belts may match the dimensions, but can drastically change the shift pattern, resulting in poor performance. See your dealer for service and adjustments.

NOTE: A worn belt will continue to function, but will not deliver maximum performance. Always carry a spare belt in case of an emergency.



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Clutch System

Drive Belt Condition

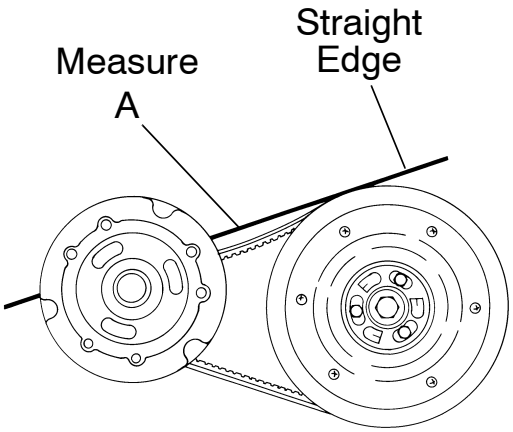
Periodically check the condition and tension of the drive belt, and always carry a spare. Inspect the belt for signs of excessive wear: frayed edges, missing cogs, cracks and excessive looseness. Replace the belt if any of these conditions exist. See Drive Belt Troubleshooting on page 161.

For improved drive-away during extremely cold temperatures, remove the belt and warm it to room temperature. Reinstall it before starting the snowmobile.

Drive Belt Deflection

Measure belt deflection with both clutches at rest and in their full neutral position.

Place a straight edge on the belt and apply downward pressure while measuring at point A. This measurement should be 1 1/4" (3.2 cm).



Drive Belt Adjustment

TEAM Clutch

1. Loosen the 7/16" jam nut on the belt width adjuster.
2. Using a 1/8" Allen wrench, adjust the threaded set screw as needed.

NOTE: Turn the set screw in (clockwise) to increase the distance between the sheaves and out (counterclockwise) to decrease the distance.

3. Tighten the jam nut.

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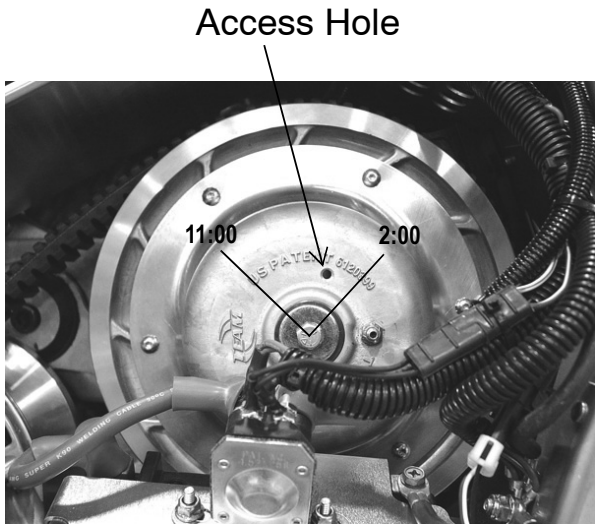
MAINTENANCE
Clutch System
Drive Belt Removal

CAUTION
Do not attempt to remove the drive belt after operating in reverse. The snowmobile must be stopped after forward motion to prevent damage to components during belt removal.

1. Stop the engine after operating in a forward motion.

NOTE: For easier accessibility, make sure the clutch tool access hole is visible between the 11:00 and 2:00 positions of the clutch sheave.

2. Turn the ignition key off. Wait for the engine to come to a complete stop.
3. Lock the parking brake.
4. Open the hood.
5. Remove the left side panel.
6. Install an L-wrench into the open threaded access hole in the outer sheave of the clutch.
7. Turn the wrench clockwise until the sheaves open far enough to remove the belt.

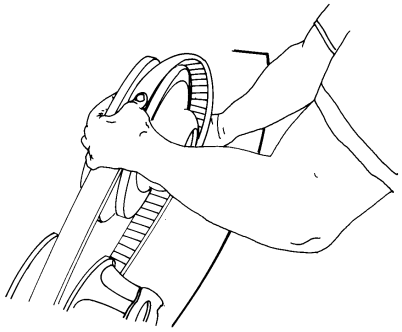


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Clutch System

Drive Belt Installation

1. Drop the drive belt over the drive clutch and pull back the slack.



NOTE: To ensure satisfactory belt life, install belts so they operate in the same direction of rotation by positioning the identification numbers so that you can read them. If required, separate the sheaves as outlined in the belt removal procedures.

2. Rotate the L-wrench counter-clockwise to tighten the sheaves while working the belt to the outer edge of the sheaves.
3. Remove the wrench.
4. Reinstall the side panel.
5. Close and secure the hood.

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MAINTENANCE

Track Replacement

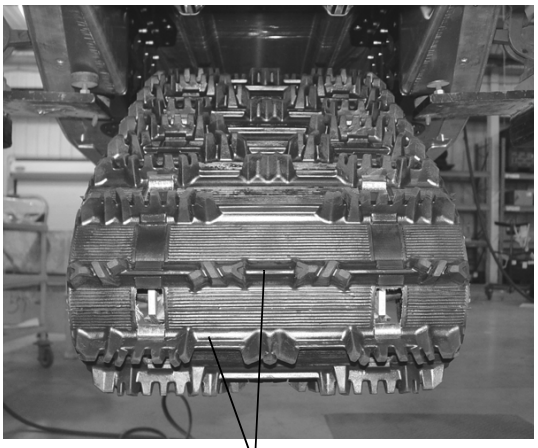
When replacing the track, always install a track having the lug size recommended for your model. See your Polaris dealer.

CAUTION
Installing tracks with larger lugs on machines equipped with coolers will result in damage to the cooler or tunnel. Always install a track having the lug size recommended for your model.

Track Inspection

⚠ WARNING
Broken track rods can cause a rotating track to come off the machine, which could cause serious injury or death. Never operate with a damaged track. Never rotate a damaged track under power.

1. Using a hoist, safely lift and support the rear of the snowmobile off the ground.
2. Rotate the track by hand to check for damage.
3. Carefully examine the track along the entire length of each rod. Bend the track to check for breakage.
4. Replace the track if any rod damage is found.



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Track Lubrication

⚠ WARNING

Operating with insufficient lubrication between the rail slide and track guide clips can cause track failure, loss of vehicle control and loss of braking ability, which can result in serious injury or death.

Avoid operating for extended periods on ice and other surfaces that have little or no snow for lubrication.

The slide rail requires adequate snow cover for sufficient lubrication. Excessive wear indicates insufficient lubrication. A new rail slide can cause faster heat build-up in limited lubrication, resulting in excessive wear.

NOTE: Track damage or failure caused by operation on ice or under other poor lubrication conditions will void the track warranty.

CAUTION

High speed use on hard-packed surfaces is not recommended for models equipped with a deep lug track. Track lug damage may occur. Keep high speed use to a minimum, including frequent slow-speed intervals for track cooling.

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MAINTENANCE
Track Tension

⚠ WARNING

Moving parts can cut and crush body parts. When performing the checks and adjustments recommended on the following pages, stay clear of all moving parts. Never perform track measurement or adjustments with the engine running.

Track adjustment is critical for proper handling. Always maintain correct tension and alignment.

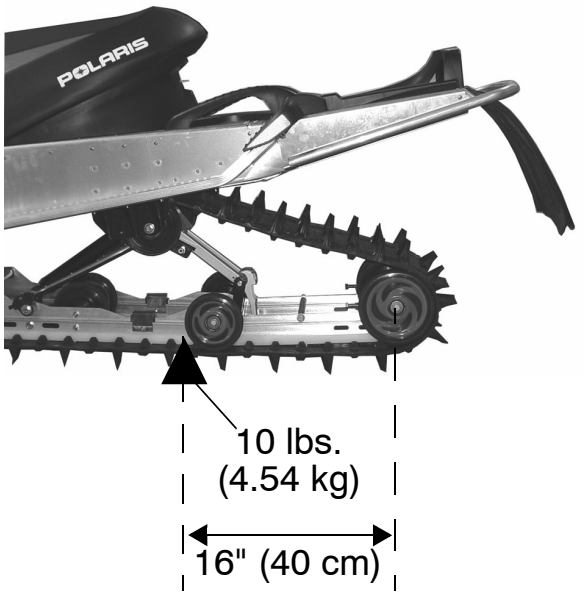
TRACK TENSION DATA CHART

Suspension	Slack Measurement	Weight	Measurement Location
SwitchBack	3/8"-1/2" (1-1.3 cm)	10 lbs. (4.54 kg)	16" (40 cm) ahead of rear idler shaft
IQ	7/8"-1 1/8" (2.2-2.9 cm)		
M-10 128	7/8"-1 1/8" (2.2-2.9 cm)		
M-10 136	7/8"-1 1/8" (2.2-2.9 cm)		

NOTE: Tension adjustments should be made only after the track is warmed up and limber.

1. Turn the engine off.
2. Lift the rear of the snowmobile and safely support it off the ground.
3. Place the recommended weight or downward pressure on the track at the specified distance (see chart) ahead of the center of the rear idler wheel.

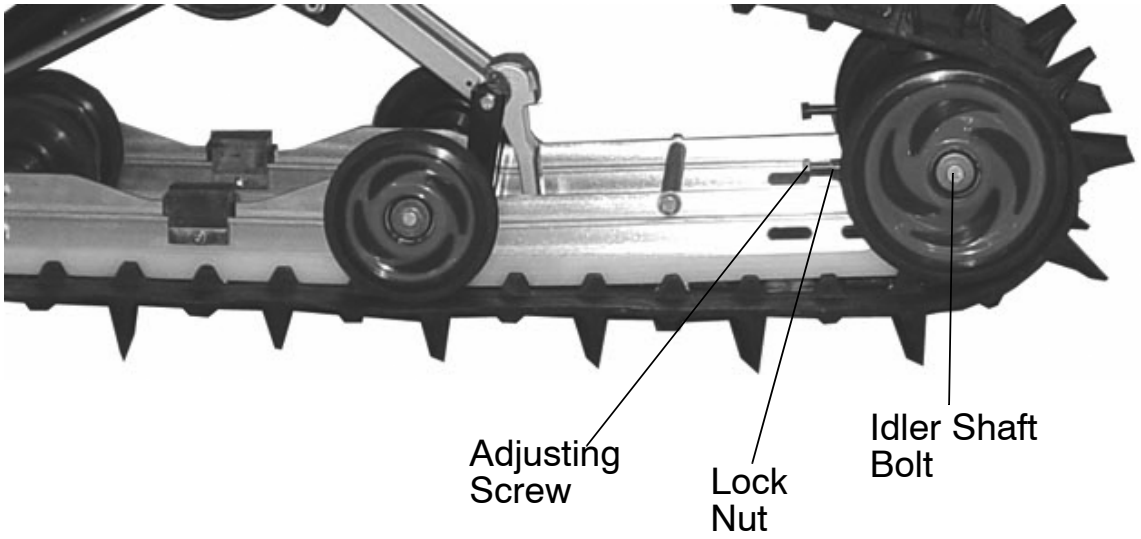
NOTE: Measure at the point where the weight is hanging.



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Track Tension

4. Check for specified slack between the wear surface of the track clip and the plastic rail slide.



If the track needs adjustment:

5. Loosen the rear idler shaft bolt.
6. Loosen the lock nuts.
7. Tighten or loosen the track adjusting screws as necessary to provide equal adjustment on both sides of the track.
8. Repeat the measurement on the other side of the track.

NOTE: Check more frequently when the snowmobile is new.

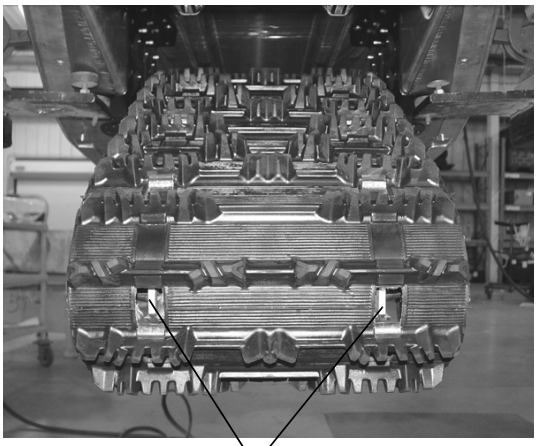
9. Start the engine and slowly rotate the track at least five revolutions. Let the track come to a stop (do not apply brakes).
10. Check track alignment (see page 144) and adjust as necessary.
11. Tighten the lock nuts.
12. Tighten the idler shaft bolts. Torque to 35 ft. lbs. (47.5 Nm).

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MAINTENANCE

Track Alignment

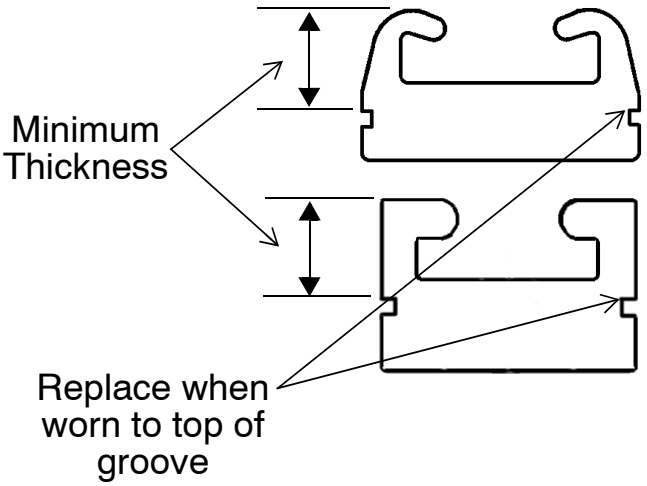
Periodically check that the track is centered and running evenly on the slide rails. Misalignment will cause excessive wear to the track and slide rail.



1. Safely support the rear of the snowmobile with the track off the ground.
2. Start the engine and apply a small amount of throttle until the track turns slowly at least five complete revolutions. Stop the engine and let the track come to a stop (do not apply brakes).
3. Inspect track alignment by looking through the track window to make sure the rails are evenly spaced on each side. If the track runs to the left, loosen left locknut and tighten the left adjusting bolt. If the track runs to the right, loosen right locknut and tighten the right adjusting bolt.
4. After adjustments are complete, tighten locknuts and torque idler shaft bolts to 35 ft. lbs. (47.5 Nm).
5. Repeat steps 2 and 3 to verify proper alignment.

Rail Slide Wear

For ease of inspection, all Polaris rail slides have a wear limit indicator groove to indicate the minimum permissible slide thickness. Replace the rail slides if they are worn to the top of the groove at any point along their length. Failure to do so may result in permanent damage to the track or rails.

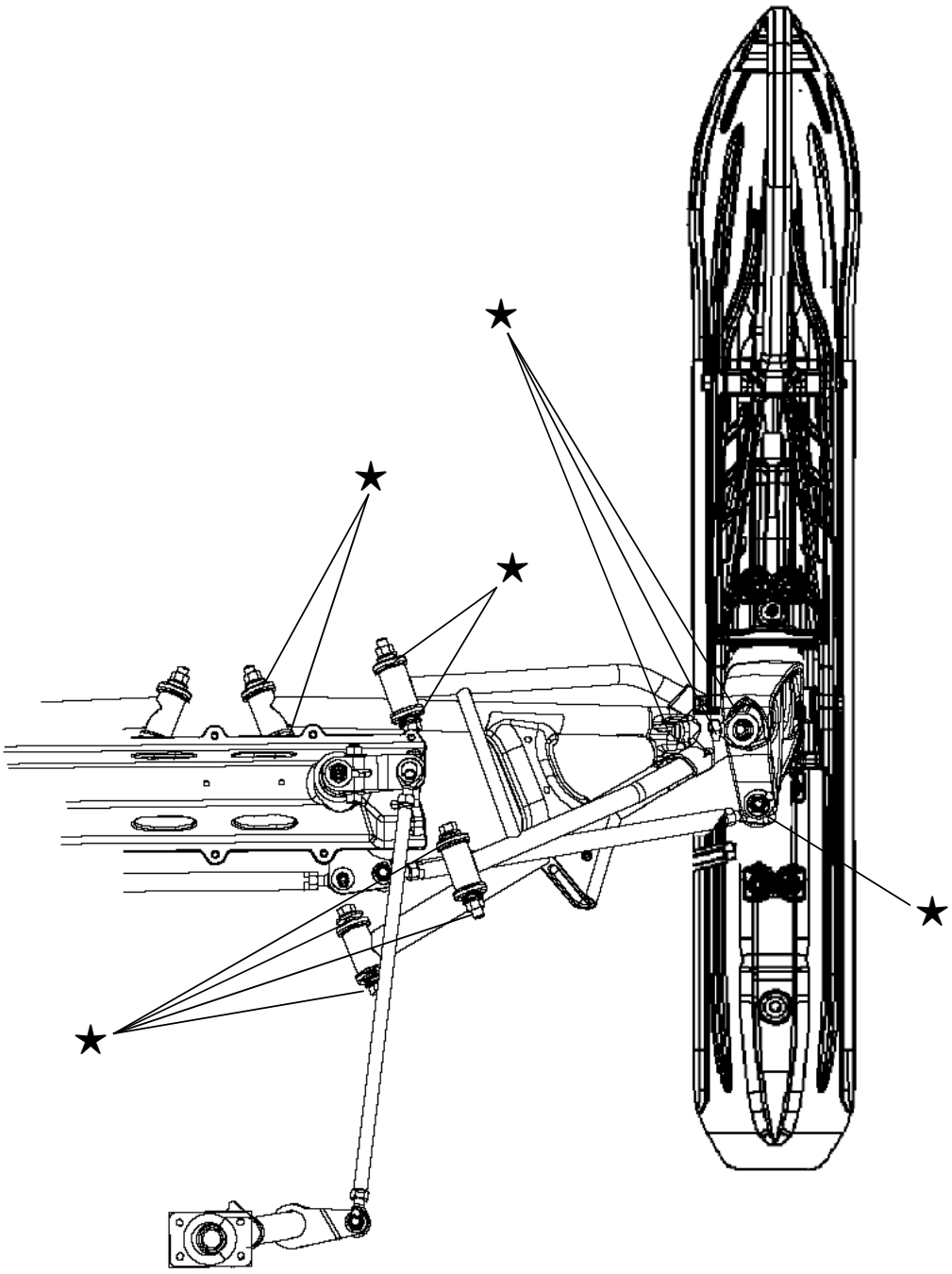


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Steering System

Steering Inspection and Adjustment

Check all steering system fasteners weekly and before a long ride. Tighten any loose fasteners.



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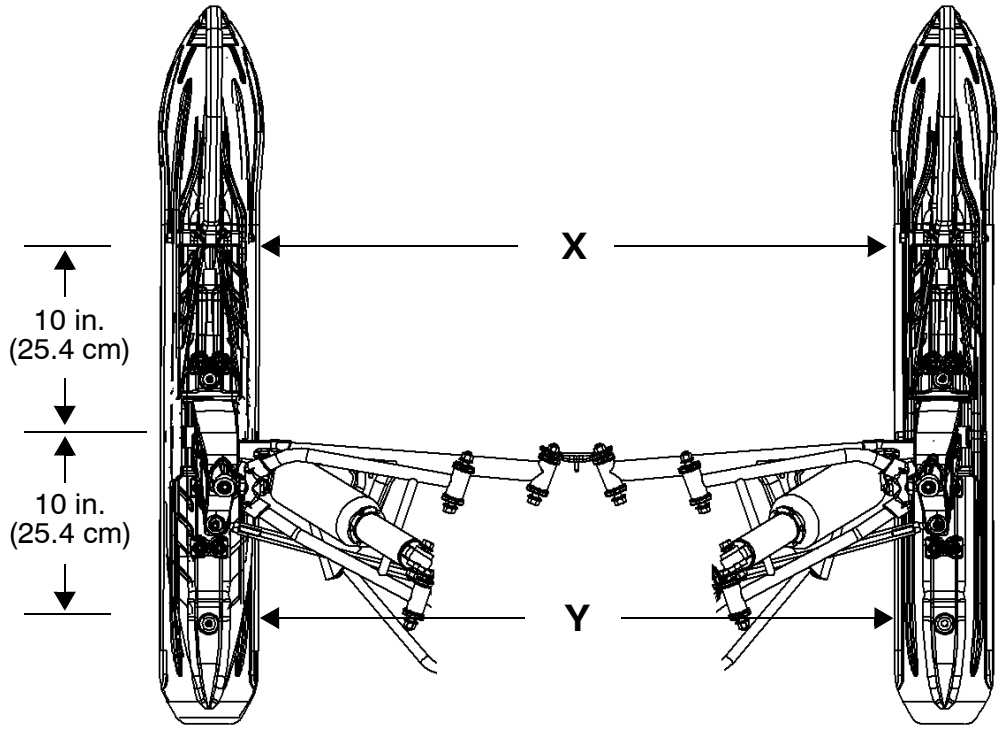
MAINTENANCE
Steering System
Ski Alignment

⚠ WARNING

Improper ski alignment or adjustment may cause loss of steering control, resulting in serious injury or death. Do not attempt to change the ski alignment or camber adjustment. See your Polaris dealer.

With the handlebars in a straight ahead position, and with vehicle weight compressing the suspension, measure from the straight edge of the skis at the center of the ski mounting bolt. The measurement between the skis at point X should be 1/8" to 1/4" (3-6 mm) greater than the measurement at point Y.

NOTE: If the skis are misaligned, we recommend that your dealer correct the alignment, since camber adjustment may also be affected.



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Steering System

Ski Skags

⚠ WARNING

Worn skis and/or skags will adversely affect handling. Loss of vehicle control may result, causing serious injury or death.

See your dealer's studding chart for recommended skags. If you install longer or more aggressive carbide skags than the original equipment, it may also be necessary to add track studs to maintain proper vehicle control while turning on hard-packed snow or ice.

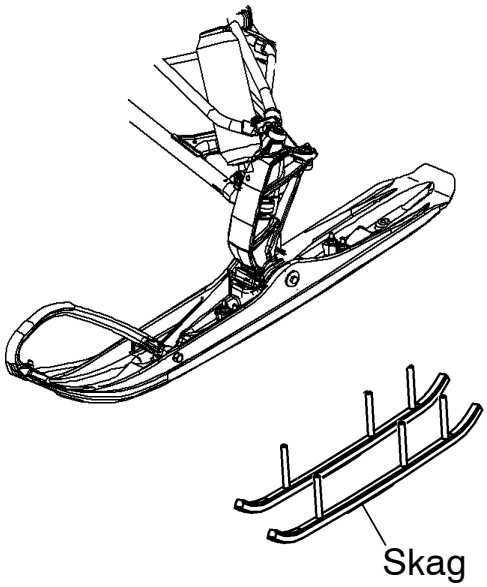
Check skags before each use of the snowmobile to ensure positive steering characteristics. Skags must be replaced when worn to half their original diameter.

NOTE: Carbide skags must be replaced if any abnormal wear or chipping is found.

Skag Replacement

NOTE: Some models are equipped with single skags. Other models are equipped with dual skags.

1. Raise and support the front of the snowmobile so the skis are approximately 6" (15 cm) from the ground.
2. Remove the attaching nuts and pry the skag downward.
3. Remove the front end of the skag.
4. Remove the rear end of the skag.
5. Reverse the steps to install a skag.



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MAINTENANCE
Battery

⚠ WARNING

Improperly connecting or disconnecting battery cables can result in an explosion and cause serious injury or death. When removing the battery, always disconnect the negative (black) cable first. When reinstalling the battery, always connect the negative (black) cable last.

Battery Removal

1. Remove the left side panel.
2. Disconnect the battery hold-down strap.
3. Disconnect the black (negative) battery cable first.
4. Disconnect the red (positive) battery cable last.
5. Lift the battery out of the vehicle.

Battery Installation

When installing a new battery, make sure it's fully charged prior to its initial use. Using a new battery that has not been fully charged can damage the battery and result in a shorter life. It can also hinder vehicle performance. Follow the battery charging instructions on page 150 before installing the battery.

1. Ensure that the battery is fully charged.
2. Set the battery in the battery holder.
3. Connect and tighten the red (positive) cable first.
4. Connect and tighten the black (negative) cable last.
5. Attach the hold-down strap.
6. Verify that cables are properly routed.
7. Reinstall the left side panel.

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Battery

Battery Storage

Whenever the vehicle is not used for a period of three months or more, remove the battery from the vehicle, ensure that it's fully charged, and store it out of the sun in a cool, dry place. Check battery voltage each month during storage and recharge as needed to maintain a full charge.

NOTE: Battery charge can be maintained by using a Polaris Battery Tender™ charger (PN 2871076) or by charging about once a month to make up for normal self-discharge. Battery Tender™ can be left connected during the storage period, and will automatically charge the battery if the voltage drops below a pre-determined point.

Battery Charging

The following battery charging instructions apply only to the installation of a sealed battery. Read all instructions before proceeding with the installation of this battery.

The sealed battery is already filled with electrolyte and has been sealed and *fully charged* at the factory. *Do not ever pry the sealing strip off* or add any other fluid to this battery.

The single most important thing about maintaining a sealed battery is to keep it fully charged. Since the battery is sealed and the sealing strip cannot be removed, you must use a voltmeter or multimeter to measure DC voltage.

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MAINTENANCE

Battery

Battery Charging

For a refresh charge, follow all instructions carefully.

1. Check the battery voltage with a voltmeter or multimeter. A fully charged battery will register 12.8 V or higher.
2. If the voltage is less than 12.8 volts, recharge the battery at 1.2 amps or less until the battery voltage is 12.8 or greater.

NOTE: When using an automatic charger, refer to the charger manufacturer's instructions for recharging. When using a constant current charger, use the following guidelines for recharging.

⚠ WARNING
An overheated battery may explode, causing severe injury or death. Always watch charging times carefully. Stop charging if the battery becomes very warm to the touch. Allow it to cool before resuming charging.

NOTE: Always verify battery condition before and 1-2 hours after the end of charging.

State of Charge	Voltage	Action	Charge Time (Using constant current charger @ standard amps specified on top of battery)
100%	12.8-13.0 volts	None, check at 3 mos. from date of manufacture	None required
75%-100%	12.5-12.8 volts	May need slight charge, if no charge given, check in 3 months	3-6 hours
50%-75%	12.0-12.5 volts	Needs charge	5-11 hours
25%-50%	11.5-12.0 volts	Needs charge	At least 13 hours, verify state of charge
0%-25%	11.5 volts or less	Needs charge with desulfating charger	At least 20 hours

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Extended Storage

Off-season or extended storage of your snowmobile requires preventive measures to aid against deterioration and to prolong the useful life of many components. See page 153 for the part numbers of Polaris products.

Cleaning and Preservation

Proper storage starts with cleaning, washing, and waxing the hood, chassis, and plastic parts. Wipe down remaining surfaces with a damp cloth. Clean and touch up with paint any rusted or previously painted surfaces. Be sure that corrosive salt and acids are removed from surfaces before beginning preservation with waxes and rust inhibitors (grease, oil or paint).

The snowmobile should be stored in a dry garage or shed, out of direct sunlight, and covered with a fabric snowmobile cover. Plastic tarp may cause condensation to form and damage snowmobile components.

Battery Maintenance

Remove the battery and recharge it as outlined on page 150. Store the battery in a cool, dry place.

Controls and Linkage

Lubricate all bushings and cables at the intervals outlined in the Periodic Maintenance Table beginning on page 102.

Bearings

Grease the jackshaft and drive shaft clutch side bearings with Polaris Premium All-Season Grease or a similar high quality grease to prevent corrosion.

Clutch and Drive System

Remove the drive belt and store in a cool dry location. Do not lubricate clutch components, except the driven clutch shaft bushing as outlined in the service manual. See your dealer.

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MAINTENANCE
Extended Storage
Engine Protection

Fogging the engine is not recommended for this model.

CAUTION
Fogging the engine improperly can result in damage to the sensors. Fogging is not recommended.

Electrical Connections

Replace worn or frayed electrical wire and connectors. Be sure wiring harness is properly secured away from sharp edges, steering linkage, moving parts, and hot exhaust parts.

Track and Suspension



Moderate track tension should be maintained during summer storage. The snowmobile should be supported off the ground to allow the track to hang freely. See illustration.

Transporting the Snowmobile

Whenever the snowmobile is transported:

1. Be sure the fuel cap and oil cap are installed correctly.
2. Always tie the snowmobile to the transporting unit securely using suitable straps.
3. Remove the ignition key to prevent loss.

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Part No.	Description
	Engine Lubricants
2874865	Performance Synthetic 4-Stroke (PS-4) 0W 50 Oil (qt.)
2874866	Performance Synthetic 4-Stroke (PS-4) 0W 50 Oil (gal.)
	Chaincase Lubricants
2873105	Synthetic Chaincase Lubricant (qt.)
2872951	Synthetic Chaincase Lubricant (12 oz.)
	Grease / Specialized Lubricants
2871312	Grease Gun Kit, Premium All Season (3 oz.)
2871322	Premium All Season Grease (3 oz. cartridge)
2871423	Premium All Season Grease (14 oz. cartridge)
2871329	Dielectric Grease (Nyogel™)
	Coolant
2871323	Anitfreeze, 60/40 Premix (gal.)
2871534	Anitfreeze, 60/40 Premix (qt.)
	Additives / Miscellaneous
2871326	Carbon Clean Plus (12 oz.)
2870652	Fuel Stabilizer (16 oz.)
2872189	DOT4 Brake Fluid (12 oz.)
2872893	Engine Degreaser (12 oz.)
2870505	Isopropyl
2872889	Brake and Clutch Cleaner
2872890	Carburetor and Throttle Body Cleaner

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TROUBLESHOOTING

Engine and Drive Train Troubleshooting

Engine Speed, RPM or Boost is Limited

Probable Cause	Solution
Engine Management System RPM Reduction Mode is activated	See causes on page 38.
Jammed clutch	Check for twisted belt or broken spring. See your dealer.
Jammed track	Remove any foreign objects. Slider may be melted to the track clips due to lack of lubrication. Track may be iced up or frozen to the ground.
Jammed or broken chaincase sprocket or chain	See your dealer.
Mechanical failure	See your dealer.

Engine Doesn't Turn Over

Probable Cause	Solution
Low battery voltage	Recharge the battery to 12.8 VDC.
Loose battery connections	Check all connections and tighten.
Loose solenoid connections	Check all connections and tighten.
Engine stop switch is off	Lift the stop switch to the ON position.
Fusible link malfunction	See your dealer.
Fuse panel malfunction	Check condition of fuses. Replace blown fuses, then see your dealer.
Main relay panel malfunction	See your dealer.
Mechanical failure	See your dealer.

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Engine and Drive Train Troubleshooting

Engine Turns Over, Fails to Start

Probable Cause	Solution
Out of fuel	Refuel.
Water is present in fuel	See your dealer.
Old or non-recommended fuel	Replace with fresh recommended fuel.
Fouled or defective spark plugs	Inspect plugs and replace if necessary.
No spark to spark plug	See your dealer.
Water or fuel in crankcase	See your dealer.
Clogged fuel filter	Replace the filter.
Low battery voltage	Recharge the battery to 12.8 VDC.
Poor engine compression	See your dealer.
Mechanical failure	See your dealer.

Engine Backfires

Probable Cause	Solution
Weak spark from spark plug	Inspect, clean and/or replace spark plugs.
Incorrect spark plug gap or heat range	Set gap to specs or replace plugs.
Old or non-recommended fuel	Replace with fresh recommended fuel.
Mechanical failure	See your dealer.
Loose ignition connections	Check all connections and tighten.
Water present in fuel	Replace with fresh recommended fuel.
Exhaust manifold leak	Inspect and repair, or see your dealer.

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TROUBLESHOOTING

Engine and Drive Train Troubleshooting

Engine Runs Irregularly, Stops or Loses Power

Probable Cause	Solution
Engine Management System RPM Reduction Mode is activated	See causes on page 38.
Low battery voltage	Recharge the battery to 12.8 VDC.
Water is present in fuel	See your dealer.
Poor quality or low octane fuel	Replace with fresh recommended fuel.
Loose ignition connections	Check all connections and tighten.
Incorrect spark plug gap or heat range	Set gap to specs or replace plug.
Fouled or defective spark plug	Inspect, clean and/or replace spark plug.
Kinked or plugged fuel vent line	Inspect and replace.
Clogged air filter	Inspect and clean or replace.
Air flow through intake is too warm (FST only)	Boost is limited until cooler air flows through the intake.
Engine management system failure	See your dealer.
Engine overheating	Stop and cool the engine. See the “Engine Overheating” troubleshooting section on page 157.
Fuel in crankcase	See your dealer.
Drive clutch binding	See your dealer.
Incorrect clutching	See your dealer.
Driven clutch malfunction	See your dealer.
Worn drive belt	Replace with the recommended belt.
Excessive belt/sheave clearance	See your dealer.
Loose torque stop	Inspect and adjust.
Other mechanical failure	See your dealer.

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Engine and Drive Train Troubleshooting

Engine Overheating

Probable Cause	Solution
Inadequate snow conditions	Stop and cool the engine. Drive into snow frequently to prevent overheating. See page 20.
Low coolant	Stop and cool the engine. Check the coolant level. See page 125. Check for leaks. Bleed the system if the coolant level is extremely low.
Restricted air flow to radiator	Stop and cool the engine. Clean snow and debris from the radiator.

Harsh Drive Clutch Engagement

Probable Cause	Solution
Worn drive belt	Replace with the recommended belt.
Excessive belt/sheave clearance	See your dealer.

Drive Belt Turns Over

Probable Cause	Solution
Incorrect belt	Replace with the recommended belt.
Incorrect clutch alignment	See your dealer.
Broken or loose engine mount	See your dealer.

Drive System Noise

Probable Cause	Solution
Broken drive clutch components	See your dealer.
Bearing failure (chaincase, jackshaft or front drive shaft)	See your dealer.
Flat spots on drive belt surface	Inspect and replace as needed.
Loose drive chain	Inspect and adjust (or replace).
Worn drive chain/broken sprocket teeth	See your dealer.

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TROUBLESHOOTING
SwitchBack Suspension Troubleshooting

Problem	Solution (Perform only one change at a time)
Rear suspension bottoms too easily	• Verify sag dimension (see page 58). Adjust torsion spring blocks or install optional torsion springs to achieve correct sag dimensions. • Increase shock compression damping (see page 64).
Rear suspension rides too stiff	• Check for binding suspension components and grease all pivot points. • Verify sag dimension (see page 58). Adjust torsion spring blocks or install optional torsion springs to achieve correct sag dimensions. • Decrease shock compression damping (see page 64).
Too much weight transfer when climbing	• Verify sag dimension (see page 58). Adjust torsion spring blocks or install optional torsion springs to achieve correct sag dimensions. • Move limiter strap on front torque arm to high position (see page 63).
Too little weight transfer when climbing	• Verify sag dimension (see page 58). Adjust torsion spring blocks or install optional torsion springs to achieve correct sag dimensions. • Move limiter strap on front torque arm to low position (see page 63).
Front end pushes	• Check for worn skags • Check for binding front suspension shafts and steering components, grease all pivot points (elevate front of machine). • Verify sag dimension (see page 58). Adjust torsion spring blocks or install optional torsion springs to achieve correct sag dimensions. • Increase IFS preload (see page 55). • Move limiter strap on front torque arm to high position (see page 63).
Steering is heavy	• Check skags and skis for damage. • Check ski alignment (see page 146). • Make sure spindles and all steering components turn freely. • Verify sag dimension (see page 58). Adjust torsion spring blocks or install optional torsion springs to achieve correct sag dimensions. • Adjust IFS preload (see page 55). • Adjust RIDER SELECT (see page 34).
Machine darts from side to side	• Check ski alignment (see page 146). • Check for binding front suspension shafts and steering components, grease all pivot points (elevate front of machine). • Ensure skags are straight on skis.

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IQ Suspension Troubleshooting

Problem	Solution
Rear suspension bottoms too easily	• Adjust torsion spring preload to achieve proper static sag (see page 58). • Change torsion spring to stiffer optional spring (see your dealer). • Revalve rear track shock (see your dealer).
Rides too stiff in rear	• Check for binding suspension shafts and grease all pivot points. • Adjust torsion spring preload to achieve proper static sag (see page 58). • Change torsion spring to softer optional spring (see your dealer). • Check track tension (see page 142).
Machine darts from side to side	• Check ski alignment (see page 146). • Make sure spindles and all steering components turn freely. • Check for excessive play in steering assembly (see your dealer). • Ensure skags are straight on skis. • Set static sag (see page 58). • Check rail slide/replace if worn (see page 144). • Install Accu-Trak dual skags (see your dealer).
Front end pushes	• Check for worn skags. • Check for binding front suspension shafts and steering components, grease all pivot points (elevate front of machine). • Set static sag (see page 58). • Install single skag (see your dealer). • Increase IFS preload (if equipped) (see page 55). • Rotate RRSS to high position (see page 62).
Steering is heavy	• Make sure spindles and all steering components turn freely. • Check ski alignment (see page 146). • Check skags and skis for damage. • Set static sag (see page 58).

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TROUBLESHOOTING
M-10 Suspension Troubleshooting

Problem	Solution (Perform only one change at a time)
Rear suspension bottoms too easily	• Increase FRA position (see page 67). • Install appropriate optional center retainer on rear track shock (see page 68). • Increase front track shock coil spring preload by adding washers. • Revalve rear track shock compression damping (see your dealer). • Check track tension (see page 142).
Rear suspension rides too stiff	• Decrease FRA position (see page 67). • Install appropriate optional center retainer on rear track shock (see page 68). • Decrease front track shock coil spring preload by adding washers. • Revalve rear track shock compression damping (see your dealer). • Check track tension (see page 142).
Front end pushes	• Check for worn skags • Check for binding suspension shafts and grease all pivot points. • Shorten front limiter strap. • Install single skags (see your dealer).
Steering is heavy	• Check skags and skis for damage. • Check ski alignment (see page 146). • Make sure spindles and all steering components turn freely. • Verify sag dimension (see page 65). Adjust torsion spring blocks or install optional torsion springs to achieve correct sag dimensions. • Adjust IFS preload (see page 55). • Adjust RIDER SELECT (see page 34).
Machine darts from side to side	• Check ski alignment (see page 146). • Make sure spindles and all steering components turn freely. • Check for excessive play in steering assembly (see your dealer). • Make sure skags are straight on skis. • Set static sag (see page 65). • Install dual skags.

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Drive Belt Wear/Burn

Cause	Solution
Driving at low RPM	Drive at higher RPM. Gear the machine down. Check belt deflection.
Insufficient warm-up	Warm the engine at least five minutes. Take the drive belt off the machine in extremely cold weather and warm it up. Break machine loose from the snow.
Towing at low RPM	Do not tow in deep snow. Use fast, aggressive throttle to engage clutch.
Riding with high RPM and slow speed (8000 RPM/ 10 MPH)	Lower the gear ratio. Reduce RPM. Avoid riding in high ambient temperatures. Check for snow ingestion.
Ice and snow build-up between track and tunnel	Warm the engine at least five minutes. Take the drive belt off the machine in extremely cold weather and warm it up. Break machine loose from the snow.
Poor engine performance	Check for fouled plugs or water, ice, or dirt in the gas tank or fuel line.
Loading machines onto trailers	Skis may gouge into trailers and prevent the drivetrain from spinning properly. Use enough speed to drive the machine completely onto the trailer. Push and pull it to finish loading if necessary.
Clutch malfunction	Inspect clutch components. See your dealer.
Slow, easy clutch engagement	Use fast, aggressive throttle to engage clutch.
Wrong or missing belt	Always use the recommended belt.
Improper break-in	Always break in a new belt and/or clutch by avoiding aggressive or high speed operation during the break-in period.

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WARRANTY

Service And Warranty Information

Obtaining Service and Warranty Assistance

Read and understand the service data and the Polaris warranty information contained in this manual. Contact your Polaris dealer for replacement parts, service or warranty. Your dealer receives frequent updates on changes, modifications and tips on snowmobile maintenance, which may supersede information contained in this manual. Your dealer is also familiar with Polaris policies and procedures and will be happy to assist you.

When contacting us about parts, service, or warranty, always provide the following information:

1. Serial number
2. Model number
3. Dealer name
4. Date of purchase
5. Details of trouble experienced
6. Length of time and conditions of operation
7. Previous correspondence

Use the page provided near the front of your Owner's Manual to record the identification numbers of your snowmobile and its engine.

Polaris Customer Service

United States: 1-763-417-8650

Canada: 1-204-925-7100

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Service And Warranty Information

Polaris Anti-Theft System

The Polaris anti-theft system (PATS) monitoring program is designed to aid owners of registered snowmobiles in recovery of stolen machines.

Administration

1. Polaris snowmobile owner reports theft.

   A. In addition to notifying the proper law enforcement officials, the owner must call Polaris Customer Service.

   B. Owners must provide their name, address, telephone number and the model and serial number of stolen machines.

2. Polaris warranty will provide all dealerships with a monthly updated list of all stolen units to further monitor thefts.
3. Polaris warranty will aid in notifying the proper owner when a unit is recovered

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WARRANTY

Limited Warranty

Polaris Sales Inc., 2100 Highway 55, Medina, MN 55340, provides a ONE YEAR LIMITED WARRANTY on all components of the Polaris snowmobile against defects in material or workmanship. This warranty covers the parts and labor charges for repair or replacement of defective parts that are covered by this warranty. The warranty begins on the date of purchase. This warranty is transferable to another consumer, during the warranty period, through a Polaris dealer.

Registration

At the time of sale, the Warranty Registration Form must be completed by your dealer and submitted to Polaris within ten days. Upon receipt of this registration, Polaris will record the registration for warranty. No verification of registration will be sent to the purchaser as the copy of the Warranty Registration Form will be the warranty entitlement. If you have not signed the original registration and received the customer copy, please contact your dealer immediately. NO WARRANTY COVERAGE WILL BE ALLOWED UNLESS THE SNOWMOBILE IS REGISTERED WITH POLARIS.

Initial dealer preparation and set-up of your snowmobile is very important in ensuring trouble-free operation. Purchasing a snowmobile in the crate or without proper dealer set-up will void your warranty coverage.

Warranty Coverage and Exclusions

Limitations of warranties and remedies

This warranty excludes any failures not caused by a defect in material or workmanship. The warranty does not cover accidental damage, normal wear and tear, abuse or improper handling. The warranty also does not cover any snowmobile that has been structurally altered, neglected, improperly maintained, used for racing or used for purposes other than for which it was manufactured. The warranty does not cover any damages that occur during trailer transit or as a result of unauthorized service or parts. In addition, this warranty does not cover physical damage to paint or finish, stress cracks, tearing or puncturing of upholstery material, corrosion or defects in parts, components or the snowmobile due to fire, explosions or any other cause beyond Polaris' control.

This warranty does not cover the use of unauthorized lubricants, chemicals, or fuels that are not compatible with the snowmobile.

The exclusive remedy for breach of this warranty shall be, at Polaris' exclusive option, repair or replacement of any defective materials, or components or products. THE REMEDIES SET FORTH IN THIS WARRANTY ARE THE ONLY REMEDIES AVAILABLE TO ANY PERSON FOR BREACH OF THIS WARRANTY. POLARIS SHALL HAVE NO LIABILITY TO ANY PERSON FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY DESCRIPTION, WHETHER ARISING OUT OF EXPRESS OR IMPLIED WARRANTY OR ANY OTHER CONTRACT, NEGLIGENCE, OR OTHER TORT OR OTHERWISE. Some states do not permit the exclusion or limitation of incidental or consequential damages or implied warranties, so the above limitations or exclusions may not apply to you if inconsistent with controlling state law.

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Limitations of warranties and remedies

ALL IMPLIED WARRANTIES (INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) ARE LIMITED IN DURATION TO THE ABOVE ONE YEAR WARRANTY PERIOD. POLARIS FURTHER DISCLAIMS ALL EXPRESS WARRANTIES NOT STATED IN THIS WARRANTY. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you if inconsistent with controlling state law.

How to Obtain Warranty Service

If your snowmobile requires warranty service, you must take it to a Polaris dealer authorized to repair Polaris snowmobiles. When requesting warranty service you must present your copy of the Warranty Registration form to the dealer. (The cost of transportation to and from the dealer is YOUR responsibility). Polaris recommends that you use your original selling dealer; however, you may use any Polaris Servicing Dealer to perform warranty service.

Please work with your dealer to resolve any warranty issues. Your dealer will contact the appropriate personnel at Polaris if additional assistance is needed.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

If any of the above terms are void because of state or federal law, all other warranty terms will remain in effect.

Engine Oil

1. Mixing oil brands or using non-recommended oil may cause engine damage. We recommend the use of Polaris engine oil.

2. Damage resulting from the use of non-recommended lubricants may not be covered by warranty.

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WARRANTY

Conditions and Exclusions

In order to qualify for warranty, the product must have been properly set up and tested by a Polaris Dealer (if applicable). Failure of any dealer to perform the required vehicle Pre-Delivery Inspection, perform all applicable service bulletins and have the consumer sign the PDI form prior to delivery may void the warranty. Failure to provide proof of required periodic maintenance upon request may result in denial of warranty coverage. Use of the recommended Polaris products for lubrication and maintenance as directed by the Owner's manual is highly recommended. Should a failure occur during the warranty period resulting from the use of non-recommended products, warranty coverage may be denied.

Warranty does not apply to parts exposed to friction surfaces, stresses, environmental conditions and/or contamination. The following items are excluded from warranty consideration if the failure was due to wear or not the direct result of a defect:

Skis	Ski wear rods
Tracks	Slide rails
Suspension components	Finished and unfinished surfaces
Brake components	Carburetor/Throttle body components
Seat components	Engine components
Clutches and components	Drive belts
Steering components	Hydraulic components
Batteries	Circuit breakers/Fuses
Light bulbs/Sealed beam lamps	Electronic components
Idler wheels	

Warranty applies to the product only and does not allow for coverage of personal loss. Some items are considered "consumable," meaning they are considered part of normal maintenance or part of completing an effective repair. The following items are excluded from warranty coverage in the event of a warranty claim:

Spark Plugs	Lubricants such as oil, grease, etc.
Filters	Batteries (unless defective)
Fuel	Cosmetic damage/repair
Sealants	Coolants
Hotel fees	Meals
Towing charges	Shipping/ handling fees
Mileage	Product pick-up/delivery
Rentals/Loss of product use	Loss of vacation/personal time

This warranty also excludes failures resulting from improper lubrication; improper engine timing; improper fuel; surface imperfections caused by external stress, heat, cold or contamination; operator error or abuse; improper component alignment, tension, adjustment or altitude compensation; failure due to snow, water, dirt or other foreign substance ingestion/contamination; improper maintenance; modified components; use of aftermarket components resulting in failure; unauthorized repairs; repairs made after the warranty period expires or by an unauthorized repair center; use of the product in competition or for commercial purposes. Warranty will not apply to any product which has been damaged by abuse, accident, fire or any other casualty not determined a defect of materials or workmanship.

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Polaris Second Year Engine Service Contract

Second Year Engine Service Contract is standard on all eligible new and unused snowmobiles that were Snow Checked through an authorized Polaris dealer during the March/April Snow Check promotion. The free Second Year Engine Service Contract is honored by all authorized Polaris snowmobile dealers in North America and is transferable 120 days after the original purchase date, free of charge, through any Polaris snowmobile dealer. Coverage on Snow Check units is automatic. Although you do not receive a warranty card, your dealership should have printed a copy of the warranty registration form. This form is your proof of warranty.

Consumer Exclusions

- Each repair visit after the first twelve months of standard warranty coverage is subject to a $50 deductible.
- The free Second Year Engine Service Contract applies to the first 5,000 miles or two (2) calendar years from date of purchase, whichever comes first. Tampering with the odometer shall void all warranties/service contracts. No extensions to coverage under this engine service contract can be given. Used snowmobiles are not eligible under this program.
- Snowmobiles used for commercial purposes or for racing are excluded from coverage.

Coverage

Coverage for second year engine failures due to defects in materials and workmanship will be determined by Polaris in its sole discretion. Coverage is automatic with no additional paperwork required. The free Second Year Engine Service Contract is subject to a $50 deductible per visit. Regular, documented service maintenance visits are required to validate this warranty.

A partial list of items excluded from coverage includes:

- Damage due to accident, fire, explosion, theft, or other causes beyond Polaris' control.
- Damage caused by the failure of other components of the snowmobile.
- Failures caused by improper fuel or oil.
- Piston seizures, unless caused by a defective engine component.
- Failures caused due to improper adjustments.
- Failure due to unauthorized service.
- Failures due to lack of service as required in the owner's manual or Polaris updates. This includes off-season storage as listed in the owner's manual.
- Failure due to use of unauthorized parts or modifications.
- Normal wear parts, including but not limited to spark plugs, hoses, batteries, controls, and recoil ropes are excluded from coverage. Gaskets are covered, as are intake and exhaust manifolds excluding paint coverage.
- Electrical coverage is limited to the ECU box, coils, stator plate, and sensors. Wiring and other electrical components are excluded from coverage.
- Cooling system coverage is limited to the water pump assembly and components, fan, fan bearings, temperature sensor, gasket and seals.
- Non wear related throttle body parts are covered. The fuel pump is covered.
- Clutches and related clutch parts, including but not limited to, the drive belt, are excluded from coverage.
- Electrical components are excluded from coverage.
- Gearcases and transmissions are excluded from coverage.

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WARRANTY

Exported Vehicles

EXCEPT WHERE SPECIFICALLY REQUIRED BY LAW, THERE IS NO WARRANTY OR SERVICE BULLETIN COVERAGE ON THIS VEHICLE IF IT IS SOLD OUTSIDE THE COUNTRY OF THE SELLING DEALER'S AUTHORIZED LOCATION.

This policy does not apply to vehicles that have received authorization for export from Polaris Industries. Dealers may not give authorization for export. You should consult an authorized dealer to determine this vehicle's warranty or service bulletin coverage if you have any questions.

This policy does not apply to vehicles registered to government officials or military personnel on assignment outside the country of the selling dealer's authorized location.

This policy does not apply to Safety Recalls.

How to Get Service

In the Country where your vehicle was purchased:

Warranty or Service Bulletin repairs must be done by an authorized Polaris dealer. If you move or are traveling within the country where your vehicle was purchased, Warranty or Service Bulletin repairs may be requested from any authorized Polaris dealer who sells the same line as your vehicle.

Outside the Country where your vehicle was purchased:

If you are traveling temporarily outside the country where your vehicle was purchased, you should take your vehicle to an authorized Polaris dealer. You must show the dealer photo identification from the country of the selling dealer's authorized location as proof of residence. Upon residence verification, the servicing dealer will be authorized to perform the warranty repair.

If You Move:

If you move to another country, be sure to contact Polaris Customer Assistance and the customs department of the destination country before you move. Vehicles importation rules vary considerably from country to country. You may be required to present documentation of your move to Polaris Industries in order to continue your warranty coverage. You may also be required to obtain documentation from Polaris Industries in order to register your vehicle in your new country.

If Purchased From A Private Party:

If you purchase a Polaris product from a private citizen outside of the country in which the vehicle was originally purchased, all warranty coverage will be denied.

Notice

If your vehicle is registered outside of the country where it was purchased, and you have not followed the procedure set out above, your vehicle will no longer be eligible for warranty or service bulletin coverage of any kind. (Vehicles registered to Government officials or military personnel on assignment outside of the country where the vehicle was purchased will continue to be covered by the basic warranty.)

For questions call Polaris Customer Assistance (see page 162).

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Snowmobile Engine Emissions Limited Warranty

This snowmobile engine emissions limited warranty is in addition to the Polaris standard limited warranty for snowmobiles. Polaris Industries Inc. warrants that at the time it is first purchased, this emissions-certified snowmobile engine meets current U.S. Environmental Protection Agency regulations applicable to snowmobile emissions under 40 CFR1051, 1065 and 1068.

Polaris warrants that the engine is free from defects in materials and workmanship that would cause it to fail to meet these regulations. The warranty period for this emissions certified snowmobile engine starts on the date when the engine is first purchased and continues for 4000 kilometers (2485 miles) of vehicle travel, 200 hours of operation, or 30 calendar months, whichever comes first.

This engine emissions limited warranty covers the parts and labor charges for repair or replacement of defective parts that are covered by this warranty. This includes components whose failure increases the snowmobile engine's emissions. To the extent they are present on your snowmobile engine, this includes electronic controls, fuel injection components, exhaust-gas recirculation system components, and aftertreatment system components. Replacing or repairing other components not covered by this warranty is the responsibility of the snowmobile owner.

The exclusive remedy for breach of this limited warranty shall be, at the exclusive option of Polaris, repair or replacement of any defective materials, components or products.

THE REMEDIES SET FORTH IN THIS LIMITED WARRANTY ARE THE ONLY REMEDIES AVAILABLE TO ANY PERSON FOR BREACH OF THIS WARRANTY. POLARIS SHALL HAVE NO LIABILITY TO ANY PERSON FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY DESCRIPTION,WHETHER ARISING OUT OF EXPRESS OR IMPLIED WARRANTY OR ANY OTHER CONTRACT, NEGLIGENCE OR OTHER TORT OR OTHERWISE. ALL IMPLIED WARRANTIES (INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) ARE LIMITED IN DURATION TO THE WARRANTY PERIOD DESCRIBED HEREIN. POLARIS DISCLAIMS ALL EXPRESS WARRANTIES NOT STATED IN THIS WARRANTY.

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WARRANTY

Snowmobile Engine Emissions Limited Warranty

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply if it is inconsistent with the controlling state law. This limited warranty excludes failures not caused by a defect in material or workmanship. This limited warranty does not cover damage due to accidents, abuse or improper handling, maintenance or use. This limited warranty also does not cover any engine that has been structurally altered, or any engine that has been used in racing competition. This limited warranty also does not cover physical damage, corrosion or defects caused by fire, explosions or other similar causes beyond the control of Polaris.

Owners are responsible for performing the scheduled maintenance identified in the owner's manual. Polaris can deny an emissions warranty claim if any specified critical emissions-related maintenance is not performed. Performance of other scheduled maintenance is strongly recommended, but is not necessary to keep the emissions-related warranty valid.

Any qualified repair shop or qualified person may maintain, replace, or repair the emission control devices or systems on your snowmobile. Polaris recommends that you contact an authorized Polaris dealer to perform any service that may be necessary.

It is a potential violation of the Clean Air Act if a part supplied by an aftermarket parts manufacturer reduces the effectiveness of the vehicle's emission controls. Tampering with emission controls is prohibited by federal law and may result in civil penalties.

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MAINTENANCE LOG

Present this section of your manual to your dealer each time your snowmobile is serviced. This will provide you and future owners with an accurate log of maintenance and services performed on the snowmobile.

DATE	MILES (KM)	TECHNICIAN	SERVICE PERFORMED / COMMENTS
	150 mi. (240 km)		
	500 mi. (800 km)		
	1000 mi. (1600 km)		
	1500 mi. (2400 km)		

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MAINTENANCE LOG

DATE	MILES (KM)	TECHNICIAN	SERVICE PERFORMED / COMMENTS

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