PMS 419

2014

POLARIS®

RANGER® Diesel
RANGER CREW® Diesel

Owner's Manual
for Maintenance and Safety

⚠ 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.

WELCOME

Thank you for purchasing a POLARIS vehicle, and welcome to our world-wide family of POLARIS enthusiasts. Be sure to visit us online at www.polaris.com for the latest news, new product introductions, upcoming events, career opportunities and more.

Here at POLARIS we proudly produce an exciting line of utility and recreational products.

- Snowmobiles
- All-terrain vehicles (ATVs)
- Low emission vehicles (LEVs)
- *RANGER*® utility vehicles
- *RZR*® sport vehicles
- VICTORY® motorcycles
- GEM® electric vehicles

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.

The original instructions for this vehicle are in English. Other languages are provided as translations of the original instructions.

Printed in U.S.A.

2014 *RANGER* Diesel / *RANGER* CREW Diesel Owner's Manual

P/N 9924704

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INTRODUCTION

The *RANGER* is an off-road vehicle. Familiarize yourself with all laws and regulations concerning the operation of this vehicle in your area.

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 indicates a potential personal injury hazard.

DANGER

A DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury.

WARNING

A WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION

A CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

NOTICE

A NOTICE indicates a situation that could result in property damage.

The Prohibition Safety Sign indicates an action NOT to take in order to avoid a hazard.

The Mandatory Action Sign indicates an action that NEEDS to be taken to avoid a hazard.

⚠ WARNING

Failure to follow the warnings contained in this manual can result in severe injury or death.

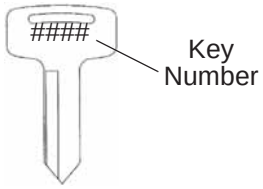
Your POLARIS *RANGER* is not a toy and can be hazardous to operate. This vehicle handles differently than other vehicles, such as cars, trucks or other off-road vehicles. A collision or rollover can occur quickly, even during routine maneuvers like turning, or driving on hills or over obstacles, if you fail to take proper precautions.

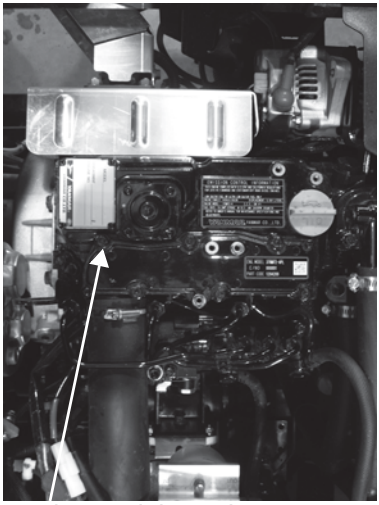
- Read this owner's manual and review the safety DVD that came with your vehicle. A free extra copy of the DVD can be obtained by contacting your local POLARIS dealer. Understand all safety warnings, precautions and operating procedures before operating the vehicle. Keep this manual with the vehicle.
- Review the safety DVD and take the free online Recreational Off-Highway Vehicle Association (ROHVA) training course at www.rohva.org.
- This vehicle is an ADULT VEHICLE ONLY. You MUST be at least age 16 and have a valid driver's license to operate this vehicle.
- No person under the age of 12 may ride as a passenger in this vehicle. All riders must be able to sit with backs against the seat, both feet flat on the floor and both hands on the steering wheel (if driving) or on a passenger hand hold.
- Never permit a guest to operate this vehicle unless the guest has read this manual and all product labels.
- Always use the cab nets (or doors) while riding in this vehicle. Always keep hands, feet and all other body parts inside the vehicle at all times.
- Always wear a helmet, eye protection, gloves, long-sleeve shirt, long pants and over-the-ankle boots.
- Never use this vehicle with drugs or alcohol, as these conditions impair judgment and reduce operator reaction time.

INTRODUCTION
Vehicle Identification Numbers

Record your vehicle's identification numbers and key number in the spaces provided. Remove the spare key and store it in a safe place. An ignition key can be duplicated only by ordering a POLARIS key blank (using your key number) and mating it with one of your existing keys. The ignition switch must be replaced if all keys are lost.

VIN





Engine Serial Number

Vehicle Model Number: _____

Frame VIN: _____

Engine Serial Number: _____

Key Number: _____

European Vibration and Noise

The driver-perceived noise and hand/arm and whole body vibration levels of this machinery is measured per prEN 15997.

The operating conditions of the machinery during testing:

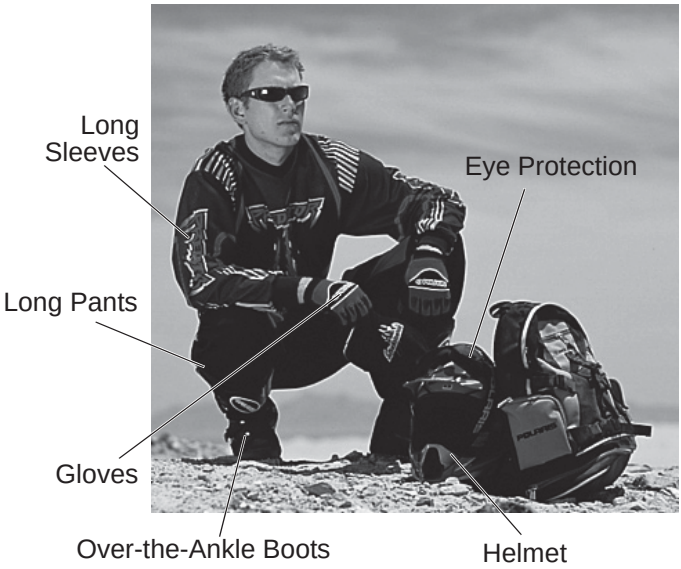
The vehicles were in like-new condition. The environment was controlled as indicated by the test procedure(s).

The uncertainty of vibration exposure measurement is dependent on many factors, including:

- Instrument and calibration uncertainty
- Variations in the machine such as wear of components
- Variation of machine operators such as experience or physique
- Ability of the worker to reproduce typical work during measurements
- Environmental factors such as ambient noise or temperature

SAFETY
Safe Riding Gear

The driver and all passengers must wear helmet, eye protection, gloves, long-sleeve shirt, long pants, over-the-ankle boots and seat belt at all times. Protective gear reduces the chance of injury.

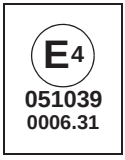


Helmet

Wearing a helmet can prevent a severe head injury. Whenever riding this 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.



Safe Riding Gear

Eye Protection

Do not depend on eyeglasses or sunglasses for eye protection. Whenever riding this 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.

Gloves

Wear gloves for comfort and for protection from sun, cold weather and other elements.

Boots

Wear sturdy over-the-ankle boots for support and protection. Never ride a POLARIS vehicle with bare feet or sandals.

Clothing

Wear long sleeves and long pants to protect arms and legs.

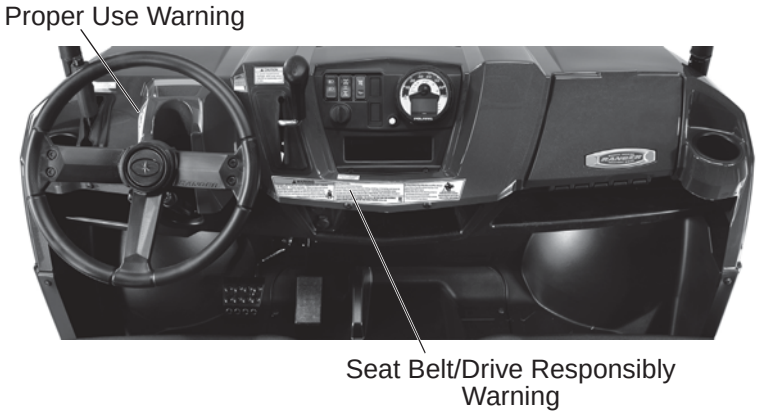
Rider Comfort

Under certain operating conditions, heat generated by the engine and exhaust system can elevate temperatures in the driver and passenger cab area. The condition occurs most frequently when a vehicle is being operated in high ambient temperatures at low speeds and/or high load conditions for an extended period of time. The use of certain windshield, roof and/or cab systems may contribute to this condition by restricting airflow. Any discomfort due to heat buildup in this area can be minimized by wearing proper riding apparel and by varying speeds to increase airflow.

SAFETY
Safety Labels and Locations

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

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



Proper Use Warning (4X4, 6X6)

Require Proper Use of Your Vehicle

Do your part to prevent injuries:

- Do not allow careless or reckless driving.
- Make sure operators are 16 or older with a valid driver's license.
- Do not let people drive or ride after using alcohol or drugs.
- Do not allow operation on public roads (unless designated for off-highway vehicle access) - collisions with cars and trucks can occur.
- Do not exceed seating capacity: 3 occupants.

7179979

Proper Use Warning (CREW)

Require Proper Use of Your Vehicle

Do your part to prevent injuries:

- Do not allow careless or reckless driving.
- Make sure operators are 16 or older with a valid driver's license.
- Do not let people drive or ride after using alcohol or drugs.
- Do not allow operation on public roads (unless designated for off-highway vehicle access) - collisions with cars and trucks can occur.
- Do not exceed seating capacity: 6 occupants.

7179981

Safety Labels and Locations

Seat Belt/Drive Responsibly Warning

WARNING

Improper vehicle use can result in SEVERE INJURY or DEATH

Be Prepared

- Fasten seat belts.
- Wear an approved helmet and protective gear.
- ALWAYS use vehicle cab nets and/or doors.
- Each rider must be able to sit with back against seat, feet flat on the floor, and hands on steering wheel or hand holds. Stay completely inside the vehicle.

Drive Responsibly

Avoid loss of control and rollovers:

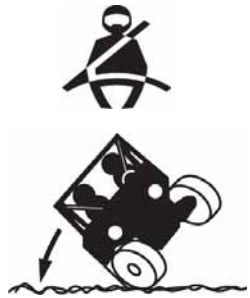
- Avoid abrupt maneuvers, sideways sliding, skidding or fishtailing, and never do donuts.
- Slow down before entering a turn.
- Avoid hard acceleration when turning, even from a stop.
- Plan for hills, rough terrain, ruts and other changes in traction and terrain. Avoid paved surfaces.
- Avoid sidehilling (riding across slopes).

Be Sure Riders Pay Attention and Plan Ahead

If you think or feel the vehicle may tip or roll, reduce your risk of injury:

- Keep a firm grip on the steering wheel or hand holds and brace yourself.
- Do not put any part of your body outside of the vehicle for any reason.

LOCATE AND READ OWNER'S MANUAL. FOLLOW ALL INSTRUCTIONS AND WARNINGS. ALWAYS REVIEW SAFETY VIDEO AND TAKE ROHVA TRAINING (rohva.org).



Rollovers have caused severe injuries and death, even on flat, open areas.

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Payload Warning

WARNING

RANGER	Never Exceed	If Total Payload Exceeds
4x4 Gas	25 mph (40 kph)	630 lbs. (285 kg)
CA 4x4 Gas	40 mph (65 kph)	630 lbs. (285 kg)
Crew Gas	35 mph (56 kph)	1230 lbs. (558 kg)
4x4 Diesel	25 mph (40 kph)	1080 lbs. (490 kg)

7180172

Payload Warning

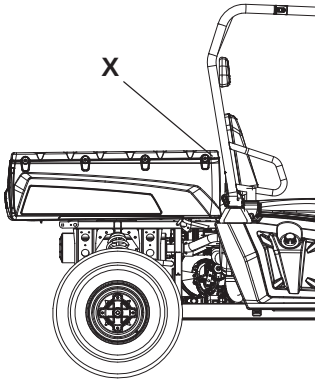
SAFETY
Safety Labels and Locations
Load/Passenger/Tire Pressure Warning

WARNING

- Never carry passengers in cargo box.
- Passengers can be thrown off. This can cause serious injury or death.

IMPROPER TIRE PRESSURE OR OVERLOADING CAN CAUSE LOSS OF CONTROL RESULTING IN SERIOUS INJURY OR DEATH.

- Reduce speed and allow greater distance for braking when carrying cargo.
- Overloading or carrying tall, off-center, or unsecured loads will increase your risk of losing control. Loads should be centered and carried as low as possible in box.
- For stability on rough or hilly terrain, reduce speed and cargo.



RANGER	**4 x 4 Diesel**	**Crew Diesel**
MAXIMUM CARGO BOX LOAD	1000 lbs. (454 kg)	1000 lbs. (454 kg)
TIRE PRESSURE IN PSI (KPa)	FRONT 10 (69) REAR 12 (83)	FRONT 12 (83) REAR 16 (110)
MAXIMUM WEIGHT CAPACITY INCLUDES WEIGHT OF OPERATOR, PASSENGER, CARGO AND ACCESSORIES	1500 lbs. (682 kg)	1750 lbs. (795 kg)
Read Operation and Maintenance Manual for more detailed loading information.		

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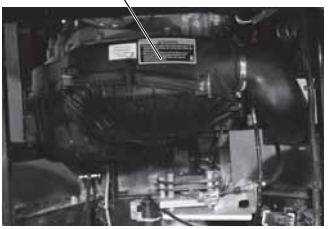
Clutch Cover Warning

Clutch Cover Warning



WARNING

NO STEP

- Moving parts hazard under belt-clutch guard. To prevent serious injury, do not operate vehicle with guard removed.
- Do not modify engine or clutch. Doing so can cause part failure, possible imbalance, and excessive engine RPM which can result in serious injury or death.

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Shift Caution

CAUTION

To avoid transmission damage, shift only when vehicle is stationary and at idle.

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Operator Safety

⚠ WARNING

Serious injury or death can result if you do not follow these instructions and procedures, which are outlined in further detail within your owner's manual.

- Read this entire manual and all labels carefully. Follow the operating procedures described.
- Never allow anyone under the age of 16 to operate this vehicle and never allow anyone without a valid driver's license to operate this vehicle.
- Do not carry a passenger until you have at least two hours of driving experience with this vehicle.
- No person under the age of 12 may ride as a passenger in this vehicle. All riders must be able to sit with backs against the seat, both feet flat on the floor and both hands on the steering wheel (if driving) or on a passenger hand hold.
- The driver and all passengers must wear helmet, eye protection, gloves, long-sleeve shirt, long pants, over-the-ankle boots and seat belt at all times.
- Always use the cab nets (or doors) while riding in this vehicle.
- Always keep hands and feet inside the vehicle at all times.
- Always keep both hands on the steering wheel and both feet on the floorboards of the vehicle during operation.
- Never permit a guest to operate this vehicle unless the guest has read this manual and all product labels.
- To reduce rollover risk, be especially careful when encountering obstacles and slopes and when braking on hills or during turns.
- This vehicle is for off-road use only. Never operate on public roads (unless marked for off-road use). Always avoid paved surfaces.
- Never consume alcohol or drugs before or while operating this vehicle.
- Never operate at excessive speeds. Always travel at a speed proper for the terrain, visibility and operating conditions, and your experience.
- Never attempt jumps or other stunts.
- Always inspect the vehicle before each use to make sure it's in safe operating condition. Always follow the inspection procedures described in this manual.

SAFETY
Operator Safety

- Always travel slowly and use extra caution when operating on unfamiliar terrain. Be alert to changing terrain.
- Never operate on excessively rough, slippery or loose terrain.
- Always follow proper procedures for turning. Practice turning at slow speeds before attempting to turn at faster speeds. Never turn at excessive speeds.
- Always have this vehicle checked by an authorized POLARIS dealer if it has been involved in an accident.
- Never operate this vehicle on hills too steep for the vehicle or for your abilities. Practice on smaller hills before attempting larger hills.
- Always follow proper procedures for climbing hills as described in this manual. See page 44. Check the terrain carefully before attempting to climb a hill. Never climb hills with excessively slippery or loose surfaces. Never apply throttle suddenly. Never make sudden gear changes. Never go over the top of a hill at high speed.
- Always follow the proper procedures outlined in this manual for traveling downhill and for braking on hills. See page 44. Check the terrain carefully before descending a hill. Never travel downhill at high speed. Avoid going downhill at an angle, which would cause the vehicle to lean sharply to one side. Travel straight down the hill where possible.
- Always check for obstacles before operating in a new area. Never attempt to operate over large obstacles such as large rocks or fallen trees. Always follow the proper procedures outlined in this manual when operating over obstacles. See page 46.
- Always be careful of skidding or sliding. On slippery surfaces such as ice, travel slowly and exercise caution to reduce the chance of skidding or sliding out of control.
- Never operate your vehicle in fast-flowing water or in water deeper than that specified in this manual. See page 47. Wet brakes may have reduced stopping ability. Test your brakes after leaving water. If necessary, apply them lightly several times to let friction dry out the pads.
- Always be sure there are no obstacles or people behind your vehicle when operating in reverse. When it's safe to proceed in reverse, move slowly. Avoid turning at sharp angles in reverse.

Operator Safety

- Always use the proper size and type of tires specified in this manual. Always maintain proper tire pressure as specified on safety labels.
- Never modify this vehicle through improper installation or use of non-POLARIS-approved accessories.
- Never exceed the stated load capacity for this vehicle. Cargo should be properly distributed and securely attached. Reduce speed and follow the instructions in this manual for hauling cargo or pulling a trailer. Allow a greater distance for braking.
- Always engage the park brake before getting out of the vehicle. See page 25.
- Always apply the brakes before engaging or releasing the park brake.
- Always stop the engine before refueling. Remove flammable material containers from the box before filling them with fuel. Make sure the refueling area is well ventilated and free of any source of flame or sparks.
- Always remove the ignition key when the vehicle is not in use to prevent unauthorized use by someone under the age of 16 or without a driver's license and proper training, or accidental starting.

FOR MORE INFORMATION ABOUT SAFETY, call POLARIS at 1-800-342-3764.

Equipment Modifications

Do not install any non-POLARIS-approved accessory or modify the vehicle for the purpose of increasing speed or power. Any modifications or installation of non-POLARIS-approved accessories could create a substantial safety hazard and increase the risk of bodily injury.

The warranty on your POLARIS vehicle will be terminated if any non-POLARIS-approved equipment and/or modifications have been added to the vehicle that increase speed or power.

The addition of certain accessories, including (but not limited to) mowers, blades, tires, sprayers, or large racks, may change the handling characteristics of the vehicle. Use only POLARIS-approved accessories, and familiarize yourself with their function and effect on the vehicle.

SAFETY
Operator Safety

⚠ WARNING

Failure to operate the *RANGER* properly can result in a collision, loss of control, accident or rollover, which may result in serious injury or death. Heed all safety warnings outlined in this section of the owner's manual. See the OPERATION section of the owner's manual for proper operating procedures.

Age Restrictions

This vehicle is an ADULT VEHICLE ONLY. NEVER operate this vehicle if you are under age 16 and NEVER operate without a valid driver's license.

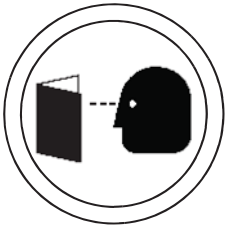
Never operate with a passenger under the age of 12. All riders must be able to sit with backs against the seat, both feet flat on the floor and both hands on the steering wheel (if driving) or on a passenger hand hold.

Cab Nets

Riding in this vehicle without using the cab nets (or doors, if equipped) increases the risk of serious injury or death in the event of an accident or rollover. Always use the cab nets (or doors) while riding in this vehicle.

Always keep hands and feet inside the vehicle at all times.

Operating Without Instruction



Operating this vehicle without proper instruction increases the risk of an accident. The operator must understand how to operate the vehicle properly in different situations and on different types of terrain.

All operators must read and understand the Owner's Manual and all warning and instruction labels before operating the vehicle.

All operators should review the safety DVD provided with this vehicle and take a ROHVA training course (www.rohva.org).

Failure to Inspect Before Operating

Failure to inspect and verify that the vehicle is in safe operating condition before operating increases the risk of an accident. Always perform the pre-ride inspection before each use of your *RANGER* to make sure it's in safe operating condition. See page 35.

Always follow all inspection and maintenance procedures and schedules described in this owner's manual. See page 63.

Operator Safety

Using Alcohol or Drugs

Operating the vehicle after consuming alcohol or drugs could adversely affect operator judgment, reaction time, balance and perception.

Never drink alcohol or use drugs or medications before or while operating this vehicle.

Seat Belts

Riding in this vehicle without wearing the seat belt increases the risk of serious injury in the event of rollover, loss of control, other accident or sudden stop. Seat belts may reduce the severity of injury in these circumstances.

All riders *must* wear seat belts at all times.

Protective Apparel

Riding in this vehicle without wearing an approved helmet and protective eyewear increases the risk of a serious injuries in the event of an accident.

Operator and all passengers *must* always wear an approved helmet that fits properly and eye protection (goggles or face shield).

Operating With a Load on the Vehicle

The weight of both cargo and passengers impacts vehicle operation. For your safety and the safety of others, carefully consider how your vehicle is loaded and how to safely operate the vehicle. Follow the instructions in this manual for loading, tire pressure, gear selection and speed.

- ***Do not exceed vehicle weight capacities.*** The vehicle's maximum weight capacity is listed in the specifications section of this manual and on a label on the vehicle. When more passenger weight is added, cargo weight may need to be reduced accordingly.
- The recommended tire pressures are listed in the specifications section of this manual and on a label on the vehicle.

Always follow these guidelines:

Under ANY of these conditions:	**Do ALL of these steps:**
Passenger and/or cargo exceeds half the maximum weight capacity	1. Slow down. 2. Verify tire pressure. 3. Use extra caution when operating.
Operating in rough terrain	
Operating over obstacles	
Climbing an incline	
Towing	

SAFETY

Exposure to Exhaust

Engine exhaust fumes are poisonous and can cause loss of consciousness or death in a short time. Never start the engine or let it run in an enclosed area.

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.

Operating a Damaged Vehicle

Operating a damaged vehicle can result in an accident. After any rollover or other accident, have a qualified service dealer inspect the entire machine for possible damage, including (but not limited to) seat belts, rollover protection devices, brakes, throttle and steering systems.

Operating at Excessive Speeds

Operating this vehicle at excessive speeds increases the operator's risk of losing control. Always operate at a speed that's appropriate for the terrain, the visibility and operating conditions, your skills and experience and your passengers' skills and experience.

Turning Improperly

Turning improperly could cause loss of traction, loss of control, accident or rollover. Always follow proper procedures for turning as described in this owner's manual. Never turn abruptly or at sharp angles. Never turn at high speeds. Practice turning at slow speeds before attempting to turn at faster speeds.

Operating on Pavement

This vehicle's tires are designed for off-road use only, not for use on pavement. Operating this vehicle on paved surfaces (including sidewalks, paths, parking lots and driveways) may adversely affect the handling of the vehicle and may increase the risk of loss of control and accident or rollover. Avoid operating the vehicle on pavement. If it's unavoidable, travel slowly, travel short distances and avoid sudden turns or stops.

Operator Safety

Operating on Public Roads

Operating this vehicle on public streets, roads or highways could result in a collision with another vehicle. Never operate this vehicle on any public street, road or highway, including dirt and gravel roads (unless designated for off-highway use). In some areas it's unlawful to operate this vehicle on public streets, roads and highways.

Jumps and Stunts

Attempting wheelies, jumps and other stunts increases the risk of an accident or rollover. Never attempt wheelies, jumps, or other stunts. Avoid exhibition driving.

Operating in Unfamiliar Terrain

Failure to use extra caution when operating on unfamiliar terrain could result in an accident or rollover. Unfamiliar terrain may contain hidden rocks, bumps, or holes that could cause loss of control or rollover. Travel slowly and use extra caution when operating on unfamiliar terrain. Always be alert to changing terrain conditions.

Operating on Slippery Terrain

Failure to use extra caution when operating on excessively rough, slippery or loose terrain could cause loss of traction, loss of control, accident or rollover. Do not operate on excessively slippery surfaces. Always slow down and use additional caution when operating on slippery surfaces.

Skidding or sliding due to loss of traction can cause loss of control or rollover (if tires regain traction unexpectedly). Always follow proper procedures for operating on slippery surfaces as described in this owner's manual. See page 45.

Improper Hill Climbing

Climbing hills improperly can cause loss of control or vehicle rollover. Always follow proper procedures for climbing hills as described in this owner's manual. See page 44.

Descending Hills Improperly

Improperly descending a hill could cause loss of control or rollover. Always follow proper procedures for traveling down hills as described in this owner’s manual. See page 44.

Stalling While Climbing a Hill

Stalling or rolling backwards while climbing a hill could cause a rollover. Always maintain a steady speed when climbing a hill.

If all forward speed is lost:

- Apply the brakes.
- Place the transmission in reverse and slowly allow the vehicle to roll straight downhill while applying light brake pressure to control speed.

If you begin rolling downhill:

- Never apply engine power.
- Apply the brakes gradually until the vehicle is fully stopped.
- Place the transmission in reverse and slowly allow the vehicle to roll straight downhill while applying light brake pressure to control speed.

SAFETY
Operator Safety
Improper Tire Maintenance

Operating this vehicle with improper tires or with improper or uneven tire pressure could cause loss of control or accident. Always use the size and type of tires specified for your vehicle. Always maintain proper tire pressure as described in the owner's manual and on safety labels.

Operating on Frozen Bodies of Water

Severe injury or death can result if the vehicle and/or the operator fall through the ice. Never operate the vehicle on a frozen body of water unless you have first verified that the ice is sufficiently thick to support the weight and moving force of the vehicle, you and your passengers, and your cargo, together with any other vehicles in your party.

Always check with local authorities and residents to confirm ice conditions and thickness over your entire route. Vehicle operators assume all risk associated with ice conditions on frozen bodies of water.

Unauthorized Use of the Vehicle

Leaving the keys in the ignition can lead to unauthorized use of the vehicle by someone under the age of 16, without a drivers license, or without proper training. This could result in an accident or rollover. Always remove the ignition key when the vehicle is not in use.

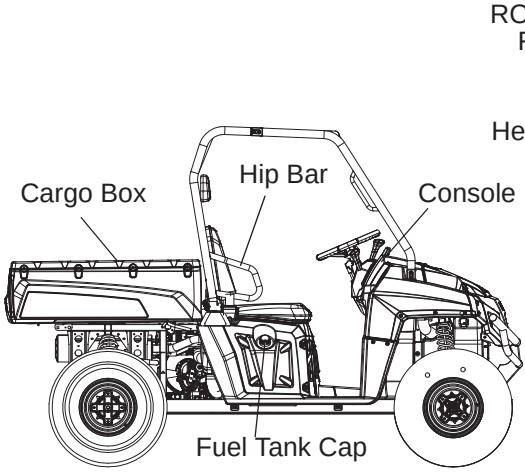
Hot Exhaust Systems

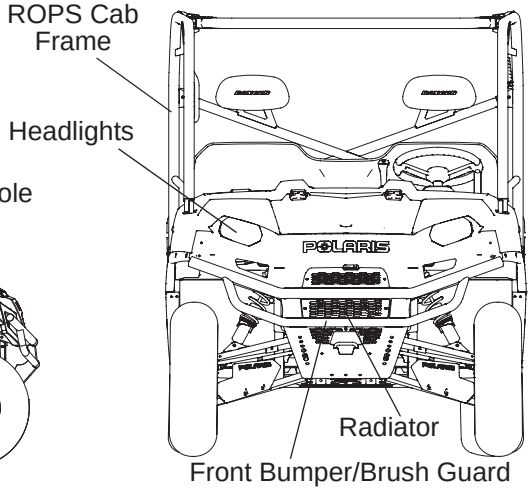
Exhaust system components are very hot during and after use of the vehicle. Hot components can cause burns and fire. Do not touch hot exhaust system components. Always keep combustible materials away from the exhaust system. Use caution when traveling through tall grass, especially dry grass, to avoid debris build-up around the exhaust system.

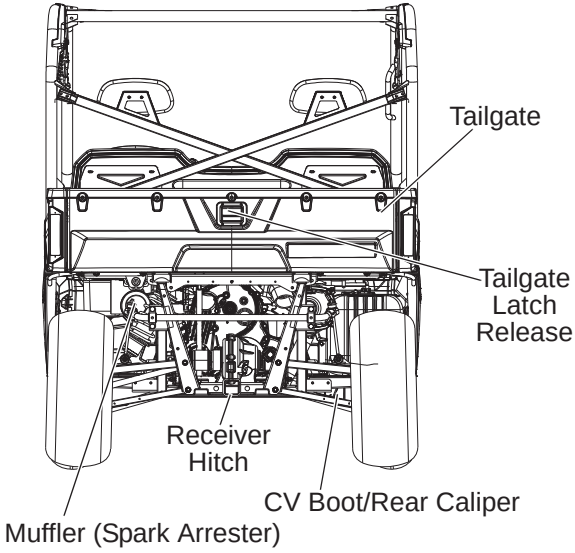
Component Locations

Your vehicle is equipped with cab nets on both sides of the vehicle. Cab nets (or doors, if equipped) must be used by both operator and passengers at all times. The vehicle illustrated below is shown without cab nets only to allow component identification. Always use the cab nets (or doors).

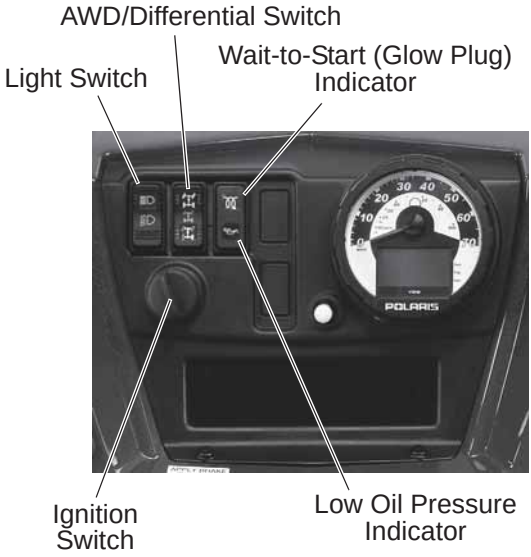
Not all models come with all features. Refer to the specifications section on page 93.





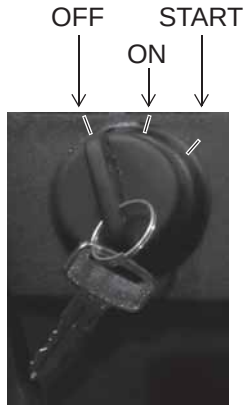


FEATURES AND CONTROLS
Switches and Indicator Lights



Ignition Switch

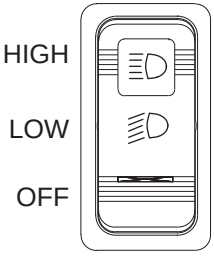
The ignition switch is a three-position, key-operated switch. The key can be removed from the switch in the OFF position.



OFF	The engine is off. Electrical circuits are off, except Acc, 12V.
ON	Electrical circuits are on. Electrical equipment can be used.
START	After the wait-to-start indicator turns off, turn the key to the START position to engage the electric starter. The key returns to the ON position when released.

Switches and Indicator Lights

Light Switch



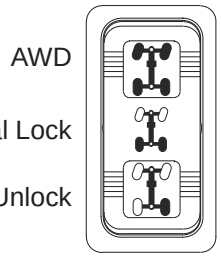
The ignition switch must be in the ON position to operate the headlights.

Press the top of the rocker switch toward the dash to place the headlights on high beam.

Move the rocker switch to the center position to place the headlights on low beam.

Press the bottom of the rocker switch to turn off the headlights.

AWD/Differential Lock Switch



The AWD/Differential Switch has three positions:

- All Wheel Drive (AWD)
- Differential Lock (2WD)
- Differential Unlock

Press the top of the rocker switch to engage All Wheel Drive (AWD). See page 52 for operating instructions.

Move the rocker switch to the center position to lock the differential and operate in rear wheel drive. Press the bottom of the switch to unlock the differential and allow the two rear drive wheels to operate independently. See page 52 for differential lock operating instructions.

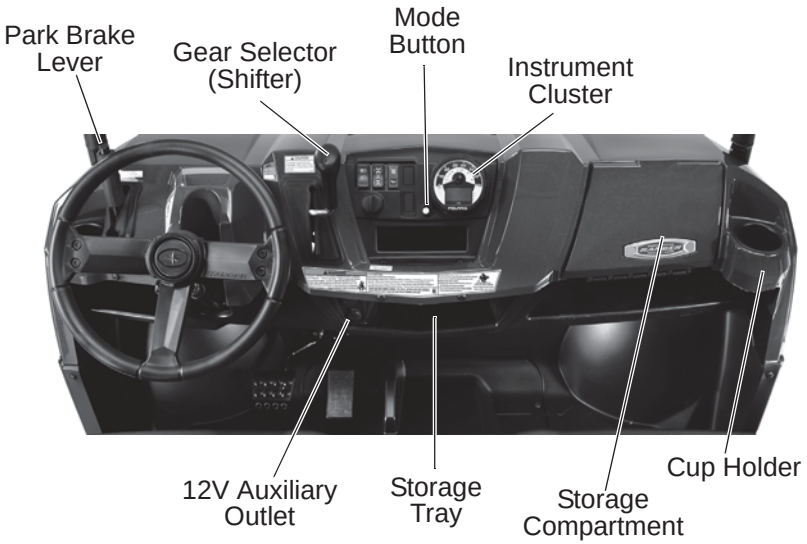
Wait-to-Start (Glow Plug) Indicator

When the key is turned to the ON position, the glow plug system activates and the wait-to-start indicator illuminates. *Do not crank the engine until this indicator light turns off.* See page 41 for engine starting procedures.

Low Oil Pressure Indicator

If the low oil pressure indicator remains on when the engine is running, stop the engine immediately to avoid engine damage. Check the oil level and add oil as necessary to bring the level within the safe operating range. See page 67. If the oil level is adequate, see your POLARIS dealer for service.

FEATURES AND CONTROLS
Console



Auxiliary Outlet

The 12-volt receptacles have spade connections on the back that may be used to power an auxiliary light or other optional accessories or lights. The connections are behind the console, under the dash.

Mode Button

The yellow button located near the instrument cluster is used to toggle through mode options. See pages 30-33.

Gear Selector

Use the gear selector to shift gears. Low gear is the primary driving range for the *RANGER*. High gear is intended for use on hard-packed surfaces with light loads. To shift gears, brake to a complete stop. When the engine is idling, move the lever to the desired gear.

NOTICE: Shifting gears with the engine speed above idle or while the vehicle is moving could cause transmission damage. Always shift when the vehicle is stationary and the engine is at idle.

Tip: Maintaining shift linkage adjustment is important to assure proper transmission function. See your dealer if you experience any shifting problems.

Console

Adjustable Steering Wheel

The steering wheel can be tilted upward or downward for rider preference.

Lift and hold the adjustment lever toward you while moving the steering wheel upward or downward. Release the lever when the steering wheel is at the desired position.

Park Brake Lever

To help prevent the vehicle from rolling, engage the park brake when parking the vehicle. When the park brake is fully engaged, the park brake indicator will be illuminated.

If the vehicle is in any gear other than neutral with the park brake engaged, “BRAKE” flashes in the rider information display. If throttle is applied and engine speed reaches 1200 RPM, an alarm will sound to alert the operator.

Tip: This feature will not operate properly if the park brake connector or switch (under the hood) malfunctions or becomes disconnected, or if the switch has moved. Check for disconnection, then see your dealer promptly if this feature fails to operate properly.

Inspect and adjust park brake cable tension after the first 25 hours of operation and every 100 hours thereafter to ensure proper cable tension. See page 81.

Always apply the service brakes before engaging or releasing the park brake.

1. Apply the brakes.
2. Pull the park brake lever downward as far as possible.
3. To release the park brake, apply the brakes. Press the park brake release inward and move the lever upward as far as possible.

WARNING! Operating the vehicle while the park brake is engaged could cause loss of control and result in serious injury or death. Always disengage the park brake before operating the vehicle.

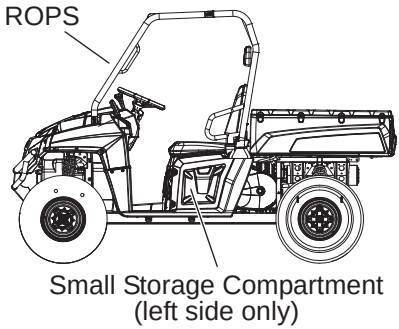
FEATURES AND CONTROLS

Rollover Protective Structure (ROPS)

The Rollover Protective Structure (ROPS) on this vehicle meets OSHA 1928.53 rollover performance requirements. Always have your authorized POLARIS dealer thoroughly inspect the ROPS if it ever becomes damaged in any way.

No device can assure occupant protection in the event of a rollover. Always follow all safe operating practices outlined in this manual to avoid vehicle rollover.

WARNING! Vehicle rollover could cause severe injury or death. Always avoid operating in a manner that could result in vehicle rollover.



Storage Compartments

A storage compartment is located under the driver's seat.

Trailer Hitch Bracket

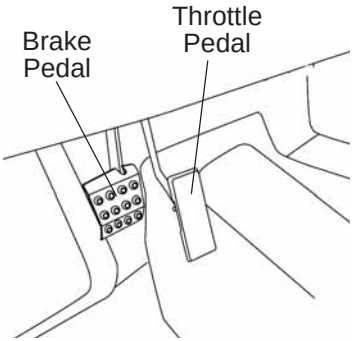
This vehicle is equipped with a receiver hitch bracket for a trailer hitch. To avoid injury and property damage, always heed the warnings and towing capacities outlined on pages 49-50.

Brake Pedal

Depress the brake pedal to slow or stop the vehicle. Apply the brakes while starting the engine.

Throttle Pedal

Push the throttle pedal down to increase engine speed. Spring pressure returns the pedal to the rest position when released. Always check that the throttle pedal returns normally before starting the engine. Make sure there's adequate throttle pedal freeplay. See page 79 for throttle pedal adjustment procedures.



Cab Nets

Riding in this vehicle without using the cab nets (or doors, if equipped) increases the risk of serious injury or death in the event of an accident or rollover. Cab nets (or doors) must be used by both operator and passengers at all times. Make sure all latches are secure before operating the vehicle.

Always inspect cab nets and latches for tightness, wear and damage before each use of the vehicle. Use the strap adjusters to tighten any loose straps. Promptly replace worn or damaged cab nets and latches with new cab nets and latches. Please see your authorized POLARIS dealer

Securing a Net

1. After entering the vehicle, insert the lower net rod into the net mount on the floor. Make sure the ball at the end of the rod is properly secured in the slot at the base of the mount.
2. Connect the latch at the top edge of the net to the receiver latch mounted on the front frame.

Opening a Net

1. To exit the vehicle, release the top front latch.
2. Rotate the net rearward and slide the lower net rod out of the mount to remove it.
3. Allow the net to hang freely outside the vehicle while dismounting.

Seat Removal

Pull up on the front of the seat and slide it toward the front of the vehicle. Install the seat by sliding the tabs into the rear of the seat base. Push down firmly on the front of the seat until the pins are fully seated into the grommets.

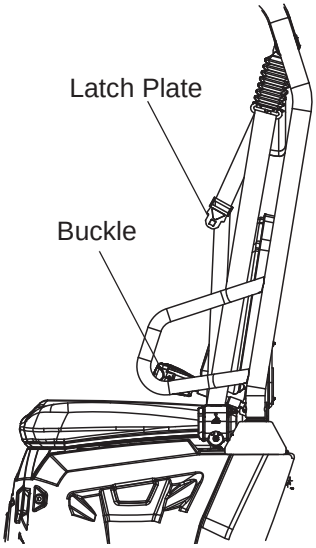
Seat Belts

This POLARIS vehicle is equipped with three-point lap and diagonal seat belts on all seats. Always make sure the seat belts are secured for all riders before operating.

WARNING! Falling from a moving vehicle could result in serious injury or death. Always fasten your seat belt securely before operating or riding in the *RANGER*.

To wear the seat belt properly, follow this procedure:

1. Pull the seat belt latch downward and across your chest toward the buckle at the inner edge of the seat. The belt should fit snugly across your hips and diagonally across your chest. Make sure the belt is not twisted.
2. Push the latch plate into the buckle until it clicks.
3. Release the strap, it will self-tighten.
4. To release the seat belt, press the square red button in the buckle's center.



Seat Belts

Seat Belt Inspection

Inspect all seat belts for proper operation before each use of the vehicle.

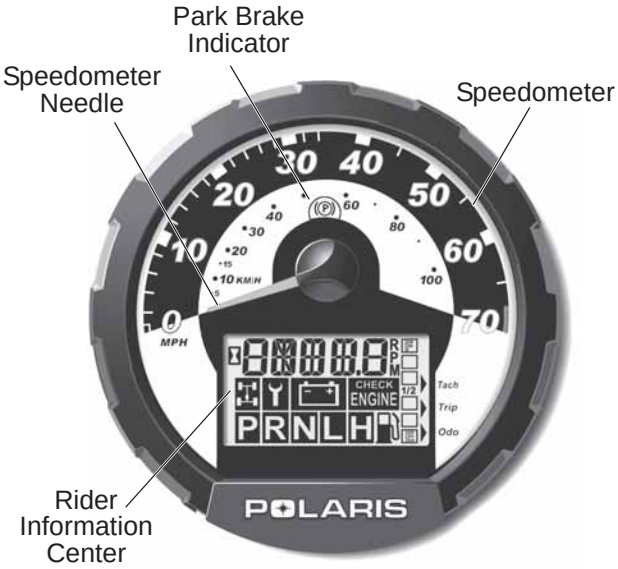
1. Push the latch plate into the buckle until it clicks. The latch plate must slide smoothly into the buckle. A click indicates that it's securely latched.
2. Push the red release latch in the middle of the buckle to make sure it releases freely.
3. Pull each seat belt completely out and inspect the full length for any damage, including cuts, wear, fraying or stiffness. If any damage is found, or if the seat belt does not operate properly, have the seat belt system checked and/or replaced by an authorized POLARIS dealer.
4. To clean dirt or debris from the seat belts, sponge the straps with mild soap and water. Do not use bleach, dye or household detergents.

FEATURES AND CONTROLS
Instrument Cluster

Your vehicle is equipped with an instrument cluster that senses vehicle speed from the transmission. In addition to showing vehicle speed, the speedometer needle flashes when a warning condition exists.

NOTICE: High water pressure may damage components. Wash the vehicle by hand or with a garden hose using mild soap.

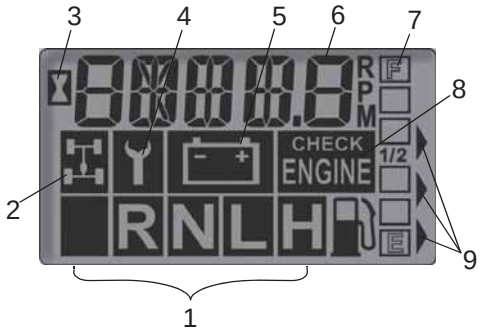
Certain products, including insect repellents and chemicals, will damage the instrument cluster lens and other plastic surfaces. Do not use alcohol to clean the instrument cluster. Do not allow insect sprays to contact the lens. Immediately clean off any fuel that splashes on the instrument cluster.



Rider Information Center

The rider information center is located in the instrument cluster. All segments will briefly light up and "HOT" may display at start-up. If the instrument cluster fails to illuminate, a battery over-voltage may have occurred and the instrument cluster may have shut off to protect the electronic speedometer. If this occurs, take the vehicle to your Polaris dealer for proper diagnosis.

1. **Gear Indicator -** This indicator displays gear shifter position.
   H = High Gear
   L = Low Gear
   N = Neutral
   R = Reverse Gear
2. **AWD Indicator -** This indicator illuminates when the AWD switch is on AWD.
3. **Engine Hour Display Indicator**



Instrument Cluster

4. **Service Interval/Diagnostic Mode Indicator**
5. **Low Battery and Over Voltage** - This warning usually indicates that the vehicle is operating at an RPM too low to keep the battery charged. It may also occur when the engine is at idle and high electrical load (lights, cooling fan, accessories) is applied. Drive at a higher RPM or recharge the battery to clear the warning.
6. **Odometer/Tachometer/Tripmeter/Hour Meter/Engine Overheat -** If "HOT" displays in this area, the engine is overheating. Check and clean the radiator screen and core and the engine exterior. If the display continues, see your dealer for service.
7. **Fuel Gauge** - The segments of the fuel gauge show the level of fuel in the fuel tank. When the last segment clears, a low fuel warning is activated. All segments will flash, FUEL will display in the LCD, and the speedometer needle will blink. Refuel immediately.
8. **Check Engine Warning Indicator -** This indicator is not active for this model.
9. **Mode Indicator**

Standard Modes

Use the MODE button to toggle through the mode options.

Odometer Mode

The odometer records the miles traveled by the vehicle.

Trip Meter Mode

The trip meter records the miles traveled by the vehicle on each trip if it's reset before each trip. To reset the trip meter, select the trip meter mode. Press and hold the MODE button until the total changes to 0. In the Rider Information Center, the trip meter display contains a decimal point, but the odometer displays without a decimal point.

Hour Meter Mode

This mode logs the total hours the engine has been in operation.

Tachometer Mode

The engine RPM is displayed digitally. Small fluctuations in the RPM from day to day may be normal because of changes in humidity, temperature and elevation.

FEATURES AND CONTROLS
Instrument Cluster
Rider Information Center
Diagnostic Mode

The wrench icon will display when the gauge is in the diagnostic mode. To exit the diagnostic mode, turn the ignition switch off and on. Any movement of the tires will also cause the gauge to exit the diagnostic mode.

To enter the diagnostics mode:

1. Turn the ignition switch off and wait 10 seconds.
2. Lock the parking brake.
3. Place the transmission in neutral.
4. Hold the MODE button and turn the key switch on. Release the switch as soon as the display is activated.
5. Use the MODE button to toggle through the diagnostic screens.

Battery Voltage Screen

View this screen to check battery voltage level.

Tachometer Screen

View the tachometer to check engine speed.

AWD Diagnostic Screen

The gauge indicates whether or not current is flowing through the all-wheel-drive coil. This screen is for informational purposes only. Please see your dealer for all major repairs.

Gear Circuit Diagnostic Screen

This screen displays the resistance value (in ohms) being read at the gear switch input of the gauge. This screen is for informational purposes only. Please see your dealer for all major repairs.

Programmable service interval

When the hours of engine operation equal the programmed service interval setting, the wrench icon will flash for 5 seconds each time the engine is started. When this feature is enabled, it provides a convenient reminder to perform routine maintenance. See page 33.

Tip: The first service interval is programmed at 50 hours at the factory.

Instrument Cluster

Rider Information Center

Diagnostic Mode

Programmable service interval

To enable or disable the service interval:

1. Enter the diagnostic mode.
2. Toggle to the service interval screen.
3. Press and hold the MODE button for about 7 seconds, until either ON or OFF appears in the Rider Information Center, depending on your preference.

To reset the service interval:

1. Enter the diagnostic mode.
2. Toggle to the service interval screen.
3. Press and hold the MODE button for 2-3 seconds, until the wrench icon flashes. Release the button.
4. Press and release the MODE button once to advance the setting by one hour. Press and *hold* the MODE button to advance the hours quickly.
5. If you scroll past the intended number, press and hold the button until the hours cycle back to zero.
6. When the desired setting is displayed, wait until the wrench icon stops flashing. The new service interval is now programmed.

Miles/Kilometers toggle

The display in the tripmeter and odometer can be changed to display either standard or metric units of measurement.

1. Enter the diagnostic mode.
2. Toggle to the screen that displays either kilometers (KM) or miles (MP).
3. Press and hold the MODE button until the letters flash, then press and release the button once. When the display stops flashing, the mode has been set.

OPERATION

⚠ WARNING

Failure to operate the vehicle properly can result in a collision, loss of control, accident or rollover, which may result in serious injury or death. Read and understand all safety warnings outlined in this owner's manual.

Break-In Period

The break-in period for your new vehicle is the first 50 hours of operation. No single action on your part is as important as a proper break-in period. Careful treatment of a new engine will result in more efficient performance and longer life for the engine.

New Engine Break-In

1. Fill the fuel tank with the recommended fuel. See page 36.
2. On the initial engine start-up, allow the engine to idle for approximately 15 minutes. Check for proper engine oil pressure, diesel fuel leaks, engine oil leaks, coolant leaks and proper operation of the indicators and gauges.
3. During the first hour of operation, vary engine speed and the load on the engine. Short periods of maximum engine speed and load are desirable. Avoid prolonged operation at minimum or maximum engine speeds and loads for the next 4 to 5 hours.
4. During the break-in period, carefully observe the engine oil pressure and engine temperature.
5. Check the engine oil and coolant levels frequently during the break-in period. Perform regular checks on areas outlined on the daily pre-ride inspection checklist. See page 35.
6. Change both the oil and the filter at 50 hours.
7. Check fluid levels of transmission and all gearcases after the first 25 hours of operation and every 100 hours thereafter.
8. Inspect and adjust park brake cable tension after the first 25 hours of operation and every 100 hours thereafter. See page 81.

PVT Break-in (Clutches/Belt)

A proper break-in of the clutches and drive belt will ensure a longer life and better performance. Break in the clutches and belt by operating at slower speeds during the break-in period as recommended. Pull only light loads. Avoid aggressive acceleration and high speed operation during the break-in period.

If a belt fails, always clean any debris from the duct and from the engine compartment.

Pre-Ride Inspection

Failure to inspect and verify that the vehicle is in safe operating condition before operating increases the risk of an accident. Always inspect the vehicle before each use to make sure it's in safe operating condition.

Item	Remarks	Page
Brake system/pedal travel	Ensure proper operation	26 80
Brake fluid	Ensure proper level	80
Front suspension	Inspect, lubricate if necessary	66
Rear suspension	Inspect, lubricate if necessary	66
Steering	Ensure free operation	82
Tires	Inspect condition and pressure	83
Wheels/fasteners	Inspect, ensure fastener tightness	83
Frame nuts, bolts, fasteners	Inspect, ensure tightness	-
Fuel and oil	Ensure proper levels	39 67
Coolant level	Ensure proper level	73
Coolant hoses	Inspect for leaks	-
Throttle	Ensure proper operation	79
Indicator lights/switches	Ensure operation	22
Air filter, pre-filter	Inspect, clean	77
Air box sediment tube	Drain deposits whenever visible	77
Headlamp	Check operation, apply POLARIS dielectric grease when lamp is replaced	85
Brake light/tail lamp	Check operation, apply POLARIS dielectric grease when lamp is replaced	84
Seat Belts	Check length of belt for damage, check latches for proper operation	29
Cab nets (or doors)	Check for wear or damage, ensure proper installation	27

OPERATION
Fuel Recommendations

NOTICE: For the best engine performance, to prevent engine damage and to comply with EPA/CARB warranty requirements, use ONLY the recommended diesel fuels. Use only CLEAN diesel fuel.

POLARIS recommends the following diesel fuels for use in this vehicle:

- Low Sulfur
- Ultra Low Sulfur #2
- #1 Diesel Fuel containing no more than 5% bio-diesel (see page 37)

See page 39 for cold weather fuel blend recommendations. For more information about recommended diesel fuels and the consequences of using bio-diesel fuel exceeding 5% bio-diesel, see *Additional Technical Fuel Requirements* below.

Diesel fuel should comply with the following world-wide specifications.

Diesel Fuel Specification	Location
ASTM D975 No. 1D S15, S500 No. 2D S15, S500	USA
EN590:96	European Union
ISO 8217 DMX	International
BS 2869-A1 or A2	United Kingdom
JIS K2204 Grade No. 2	Japan
KSM-2610	Korea
GB252	China

Additional Technical Fuel Requirements

- The fuel cetane number should be equal to 45 or higher.
- The sulfur content must not exceed 0.5% by volume. Less than 0.5% is preferred. Especially in the U.S.A. and Canada, Low Sulfur (300 to 500 ppm (mg/kg) or Ultra Low Sulfur fuel should be used.
- Bio-Diesel fuels: see pages 37-38.
- NEVER mix kerosene, used engine oil or residual fuels with diesel fuel.
- Water and sediment in the fuel should not exceed 0.05% by volume.
- Keep the fuel tank and fuel-handling equipment clean at all times.
- Poor quality fuel can reduce engine performance and/or cause engine damage.
- Fuel additives are not recommended. Some fuel additives may cause poor engine performance.
- Ash content must not exceed 0.01% by volume.
- Carbon residue content must not exceed 0.35% by volume. Less than 0.1% is preferred.
- Total aromatics content should not exceed 35% by volume. Less than 30% is preferred.
- PAH (polycyclic aromatic hydrocarbons) content should be below 10% by volume.
- Metal content of Na, Mg, Si and Al should be equal to or lower than 1 mass ppm (test analysis method JPI-5S-44-95).
- Lubricity: Wear mark of WS1.4 should be Max. 0.018 in. (460µm) at HFRR test.

Fuel Recommendations

Bio-Diesel Fuels

In Europe and in the United States, as well as some other countries, non-mineral oil based fuel resources such as RME (Rapeseed Methyl Ester) and SOME (Soybean Methyl Ester), collectively known as FAME (Fatty Acid Methyl Esters), are being used as extenders for mineral oil derived diesel fuels.

YANMAR approves the use of bio-diesel fuels that do not exceed a blend of 5% (by volume) of FAME with 95% (by volume) of approved mineral oil derived diesel fuel. Such bio-diesel fuels are known in the marketplace as B5 diesel fuels.

These B5 diesel fuels must meet certain requirements:

1. The bio-fuels must meet the minimum specifications for the country in which they are used.
   - In Europe, bio-diesel fuels must comply with the European Standard EN14214.
   - In the United States, bio-diesel fuels must comply with the American Standard ASTMD-6751.2.
2. Bio-fuels should be purchased only from recognized and authorized diesel fuel suppliers.

Precautions and concerns regarding the use of bio-fuels:

1. Free methanol in FAME may result in corrosion of aluminum and zinc FIE components.
2. Free water in FAME may result in plugging of fuel filters and increased bacterial growth.
3. High viscosity at low temperatures may result in fuel delivery problems, injection pump seizures and poor injection nozzle spray atomization.
4. FAME may have adverse effects on some elastomers (seal materials) and may result in fuel leakage and dilution of the engine lubricating oil.
5. Even bio-diesel fuels that comply with a suitable standard as delivered will require additional care and attention to maintain the quality of the fuel in the equipment or other fuel tanks. It is important to maintain a supply of clean, fresh fuel. Regular flushing of the fuel system and/or fuel storage containers may be necessary.
6. The use of bio-diesel fuels that do not comply with the standards as agreed to by the diesel engine manufacturers and the diesel fuel injection equipment manufacturers, or bio-diesel fuels that have degraded as per the precautions and concerns above, may affect the warranty coverage of your engine.

OPERATION
Fuel Recommendations
Bio-Diesel Fuels
B6 To B20 Bio-diesel Fuel Blend Usage
B6 to B20 bio-diesel is not approved for this POLARIS application.

Approved Engines

Only the YANMAR TNM engine series listed below may operate with bio-diesel fuel concentrations up to B5 for POLARIS applications.

NOTICE: Do not exceed bio-diesel fuel blend B5 for this POLARIS application.

- 3TNM72

Approved Fuel

NOTICE: Raw pressed vegetable oils are not considered bio-diesel, and are unacceptable for use as fuel in any concentration in YANMAR engines.

Bio-diesel fuel blends up to B5 must comply with the following standards:

- EN14214 (European standard) and/or ASTM D-6751 (American standard).
- All applicable engines may operate with bio-diesel fuel up to a maximum B5 (5% bio-diesel blend) concentration.

Operating Conditions with B5 Bio-diesel Fuel Blends

Engine Warranty

Damages, performance or service concerns determined to be caused by the use of bio-diesel fuel not meeting the specifications outlined above are not considered to be defects in material or factory workmanship and are not covered under warranty. The same applies to damages or other concerns induced by not complying with the recommended operating conditions of YANMAR engines with bio-diesel fuel.

Handling Fuel

WARNING! Diesel fuel is flammable and explosive under certain conditions.

- NEVER refuel with the engine running.
- Always refuel outdoors or in a well ventilated area.
- Fill the fuel tank with diesel fuel ONLY. Filling the fuel tank with gasoline may result in a fire and will damage the engine.
- Remove flammable material containers from the box before filling them with fuel.
- Do not smoke or allow open flames or sparks in or near the area where refueling is performed or where fuel is stored.
- Wipe up all spills immediately.
- Keep sparks, open flames or any other form of ignition (match, cigarette, static electricity source) well away when refueling.
- NEVER remove the fuel cap while the engine is running.
- NEVER overfill the fuel tank. Do not fill the tank neck.
- If fuel spills on your skin or clothing, immediately wash it off with soap and water and change clothing.

Fuel Recommendations

Refueling

The fuel tank filler cap is located on the right side of the vehicle near the passenger seat. Remove the cap and add the recommended fuel to the bottom of the filler neck. Do not overfill.

Cold Weather Operation

Cold weather operation can result in fuel gelling if the incorrect fuel type is used. Use the following fuel blending guideline to prevent this from occurring.

Fuel Blending Guideline		
Temperature	**No. 2**	**No. 1**
+15° F (9° C)	100%	0%
Down to -20° F (-29° C)	50%	50%
Below -20° F (-29° C)	0%	100%

Block Heater Use

If this vehicle will be operated when temperatures are in the +5° to -25° F. (-15° to -32° C) range, a block heater must be installed. Please see your dealer to purchase a block heater kit.

Bio-Diesel Blended Fuel

NOTICE: Never use bio-diesel blended fuel containing more than 5% bio-diesel in this vehicle. See page 37.

Bio-diesel blended fuel has unique qualities that should be considered before using it in this vehicle:

- Cold weather conditions can lead to plugged fuel system components and hard starting.
- Bio-diesel blended fuel is an excellent medium for microbial growth and contamination which can cause corrosion and plugging of fuel system components.
- Use of bio-diesel blended fuel may result in premature failure of fuel system components, such as plugged fuel filters and deteriorated fuel lines.
- Shorter maintenance intervals may be required, such as cleaning the fuel system and replacing fuel filters and fuel lines.
- Using bio-diesel blended fuels containing more than five percent (5%) bio-diesel can affect engine life and cause deterioration of hoses, tubes, injectors, injector pump and seals.

OPERATION
Cold Weather Operation
Bio-Diesel Blended Fuel

Use the following guidelines if bio-diesel blended fuel is used:

- Never use bio-diesel blended fuel containing more than 5% bio-diesel in this vehicle.
- Ensure the fuel tank is as full as possible at all times to prevent moisture from collecting in the fuel tank.
- Ensure that the fuel tank cap is securely tightened.
- Clean up any spilled fuel immediately to prevent damage to painted surfaces.
- Drain all water from the fuel filter daily before operating the vehicle.
- Do not exceed the engine oil change interval. Extended intervals can result in engine damage.
- Before vehicle storage, drain the fuel tank, refill with 100% petroleum diesel fuel, add fuel stabilizer and run the engine for at least 30 minutes.

NOTICE: Bio-diesel blended fuel does not have long term stability and should not be stored for more than three months.

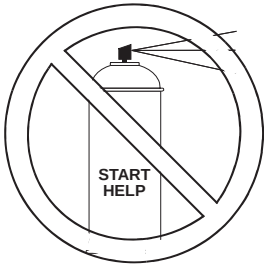
Operating Conditions

NOTICE: Observe the following environmental operating conditions to maintain engine performance and avoid premature engine wear.

- Avoid operating in the presence of chemical gases or fumes.
- Avoid operating in a corrosive atmosphere such as salt water spray.
- NEVER operate the engine in a floodplain unless proper precautions are taken to avoid being subject to a flood.
- NEVER expose the engine to the rain.
- The standard range of ambient temperatures for the normal operation of YANMAR engines is from +5° F (-15° C) to +104° F (+40° C).
- If the ambient temperature exceeds +104° F (+40° C), the engine may overheat and cause the engine oil to break down.
- If the ambient temperature is between +5° F (-15° C) and -25° F (-32° C), POLARIS recommends the use of a block heater. See page 39.

Starting the Engine

NOTICE: NEVER use an engine starting aid such as ether. Engine damage will result.



Before operating this vehicle in cold weather, review the cold weather operation information beginning on page 39.

Always wait for the wait-to-start indicator light to turn off before cranking the engine.

1. Always start the engine outdoors or in a well-ventilated area.
2. Sit in the driver's seat and fasten the seat belt. Secure the cab nets (or doors).
3. Apply the brakes. Engage the park brake.
4. Shift the transmission to neutral.
5. Turn the ignition switch to the ON position and wait for the wait-to-start indicator light to turn off before cranking the engine.
6. Turn the ignition switch past the ON position to START. Engage the starter for a maximum of five seconds. Release the key when the engine starts.
7. If the engine does not start within five seconds, release the ignition switch and wait five seconds. Repeat steps 6 and 7 until the engine starts.
8. Vary the engine RPM slightly with the throttle to aid in warm up until the engine idles smoothly.

NOTICE: Operating the vehicle immediately after starting could cause engine damage. Allow the engine to warm up for several minutes before operating the vehicle.

Stopping the Engine

For maximum engine life, allow the engine to idle, without load, for 5 minutes. This will allow the engine components that operate at high temperatures, such as the exhaust system, to cool slightly before the engine is shut down.

1. Release the throttle pedal completely and brake to a complete stop.
2. Turn the engine off.
3. Engage the park brake.

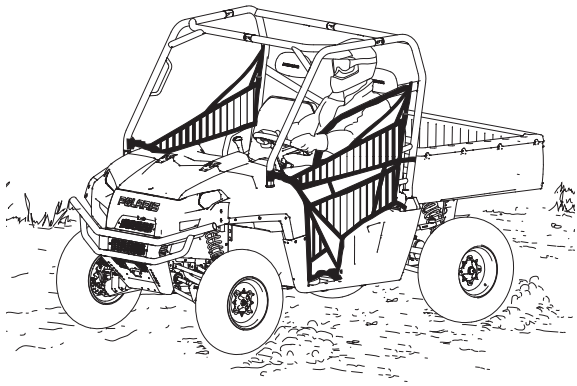
WARNING! A rolling vehicle can cause serious injury. Always engage the park brake after stopping the engine.

OPERATION
Braking

1. Release the throttle pedal completely.
2. Press on the brake pedal evenly and firmly.
3. Practice starting and stopping (using the brakes) until you're familiar with the controls.

Tip: When the throttle pedal is released completely and the engine speed drops near an idle, the vehicle has no engine braking.

Driving Procedure



1. Wear a helmet and eye protection.
2. Perform the pre-ride inspection. See page 35.
3. Sit in the driver's seat and fasten the seat belt.
4. Always use the cab nets (or doors) while riding in this vehicle.
5. Start the engine and allow it to warm up.
6. Apply the service brakes and shift the transmission into gear.
7. Check your surroundings and determine your path of travel.
8. Release the park brake.
9. Keeping both hands on the steering wheel, slowly release the brakes and depress the throttle with your right foot to begin driving.
10. Drive slowly. Practice maneuvering and using the throttle and brakes on level surfaces.
11. Do not carry a passenger until you have at least two hours of driving experience with this vehicle.

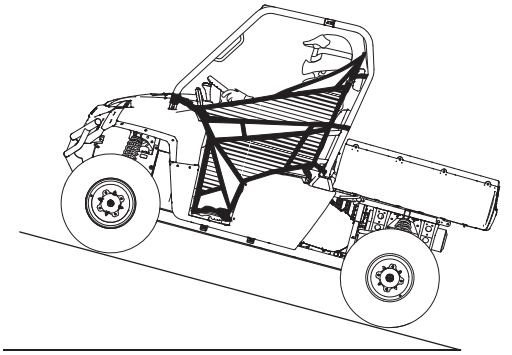
Driving with a Passenger

1. Perform the pre-ride inspection. See page 35.
2. Make sure all passengers are at least 12 years of age and tall enough to comfortably and safely sit in a passenger seat with the seat belt secured, put both feet on the floor and grasp the hand hold.
3. Make sure all passengers are wearing an approved helmet and eye protection.
4. Make sure all passengers secure their seat belt.
5. Make sure all cab nets (or doors) are properly secured.
6. Do not carry more than the recommended number of passengers for your vehicle. See page 10.
7. Allow a passenger to ride only in a passenger seat.
8. Slow down. Always travel at a speed appropriate for your skills, your passengers' skills, and operating conditions. Avoid unexpected or aggressive maneuvers that could cause discomfort or injury to a passenger.
9. Vehicle handling may change with a passenger and/or cargo on board. Allow more time and distance for braking.
10. Always follow all operating guidelines as outlined on safety labels and in this manual.

OPERATION
Driving Uphill

Whenever traveling uphill, follow these precautions:

1. Always travel straight uphill.
2. Avoid excessively steep hills.
3. Keep both feet on the floor.
4. Always check the terrain carefully before ascending any hill. Never climb hills with excessively slippery or loose surfaces.
5. Proceed at a steady rate of speed and throttle opening. Never open the throttle suddenly.
6. Never go over the crest of a hill at high speed. An obstacle, a sharp drop, or another vehicle or person could be on the other side of the hill.



Driving on a Sidehill (Sidehilling)

Driving on a sidehill is not recommended. Improper procedure could cause loss of control or rollover. Avoid crossing the side of any hill unless absolutely necessary.

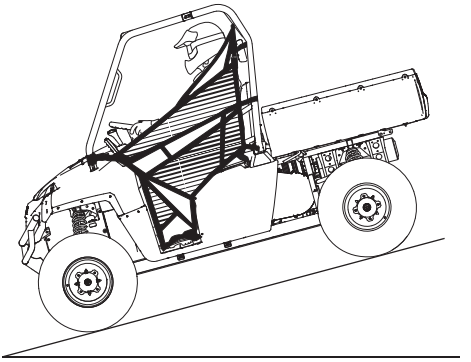
If crossing a sidehill is *unavoidable*, follow these precautions:

1. Slow down.
2. Exercise extreme caution.
3. Avoid crossing the side of a steep hill.

Driving Downhill

When driving downhill, follow these precautions:

1. Avoid excessively steep hills.
2. Drive straight downhill. Avoid descending a hill at an angle, which would cause the vehicle to lean sharply to one side. Travel straight downhill when possible.
3. Slow down.
4. Apply the brakes *slightly* to aid in slowing.



Driving on Slippery Surfaces

⚠WARNING

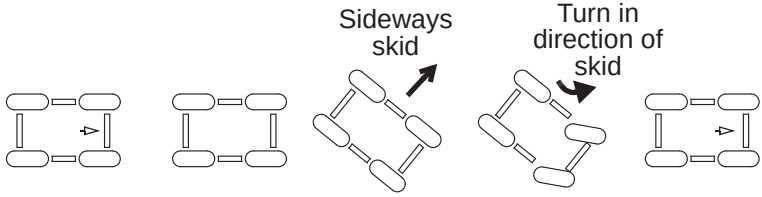
Skidding or sliding can cause loss of control or rollover (if tires regain traction unexpectedly). When operating on slippery surfaces such as ice or loose gravel, reduce speed and use extra caution to reduce the chance of skidding or sliding out of control. Do not operate on excessively slippery surfaces.

Whenever riding on slippery surfaces such as wet trails or loose gravel, or during freezing weather, follow these precautions:

1. Do not operate on excessively rough, slippery or loose terrain.
2. Slow down before entering slippery areas.
3. Maintain a high level of alertness, reading the trail and avoiding quick, sharp turns, which can cause skids.
4. Engage all-wheel drive before wheels begin to lose traction.

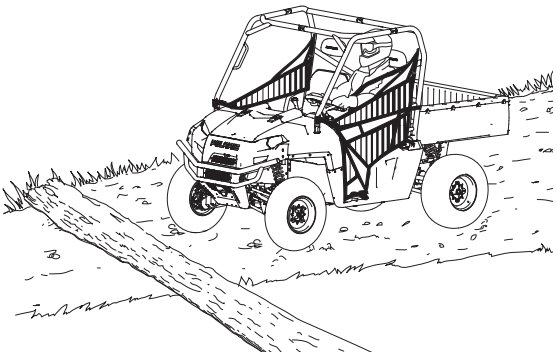
NOTICE: Severe damage to the drive train may occur if the AWD is engaged while the wheels are spinning. Always allow the wheels to stop spinning before engaging AWD.

5. Correct a skid by turning the steering wheel in the direction of the skid. *Never apply the brakes during a skid.*



OPERATION
Driving Over Obstacles

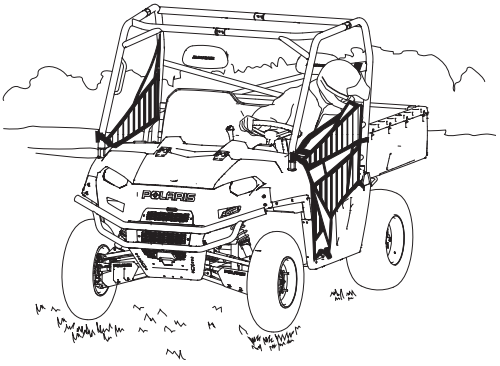
Follow these precautions when operating over obstacles:



1. Always check for obstacles before operating in a new area.
2. Look ahead and learn to read the terrain. Be constantly alert for hazards such as logs, rocks and low hanging branches.
3. Travel slowly and use extra caution when operating on unfamiliar terrain. Not all obstacles are immediately visible.
4. Avoid operating over large obstacles such as large rocks and fallen trees. If unavoidable, use extreme caution and operate slowly.
5. Always have all passengers dismount and move away from the vehicle before operating over an obstacle that could cause a rollover.

Driving in Reverse

Follow these precautions when operating in reverse:



1. Always check for obstacles or people behind the vehicle. Always inspect left and right fields of vision before backing.
2. Always avoid backing downhill.
3. Back slowly.
4. Apply the brakes *lightly* for stopping.
5. Avoid turning at sharp angles.
6. Never open the throttle suddenly.

Driving Through Water

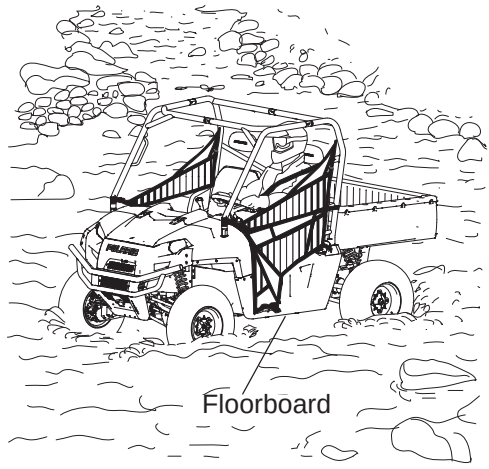
Your POLARIS *RANGER* can operate through water up to a maximum recommended depth equal to the floorboards.

NOTICE: Driving through water deeper than the floorboards will cause engine damage and will also void the engine warranty.

NOTICE: Immersion can result in major damage if the vehicle isn't serviced correctly and promptly. After immersion, always take the vehicle to a your dealer for service. Do not start the engine! If it's impossible to bring the vehicle to your dealer before starting the engine, perform the service outlined on page 75, and take the vehicle to your dealer at the first opportunity.

Follow these procedures when operating through water:

1. Determine water depths and current before entering water.
2. Choose a crossing where both banks have gradual inclines.
3. Proceed slowly, avoiding rocks and obstacles.
4. Avoid operating through deep or fast-flowing water.



WARNING! The large tires on your *RANGER* may cause the vehicle to float in deep or fast-flowing water, which could result in loss of control and lead to serious injury or death. Never cross deep or fast-flowing water with your *RANGER*.

5. After leaving water, always dry the brakes by applying light pressure to the pedal repeatedly until braking action is normal.

NOTICE: After operating the vehicle in water, it's critical that you perform the services outlined in the Periodic Maintenance Chart beginning on page 63. Give special attention to engine oil, transmission oil, all gearcase fluids and all grease fittings.

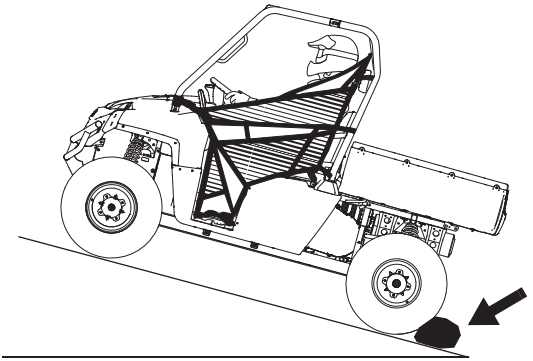
OPERATION
Parking the Vehicle

1. Apply the brakes. Stop the vehicle on a level surface.
2. When parking inside a garage or other structure, be sure that the structure is well ventilated and that the vehicle is not close to any source of flame or sparks, including any appliance with pilot lights.
3. Turn the engine off.
4. Engage the park brake.
5. Remove the ignition switch key to prevent unauthorized use.

Parking on an Incline

Avoid parking on an incline if possible. If it's unavoidable, follow these precautions:

1. Apply the brakes.
2. Place the transmission in gear.
3. Engage the park brake.
4. Turn the engine off.
5. Block the rear wheels on the downhill side.



Hauling Cargo

⚠ WARNING

Hauling cargo improperly can alter vehicle handling and may cause loss of control or brake instability, which can result in serious injury or death. Always follow these precautions when hauling cargo:

Never exceed the maximum weight capacity of the vehicle. When determining the weight you are adding to the vehicle, include the weight of the operator, passenger, accessories, loads in the rack or box and the load on the trailer tongue. The combined weight of these items must not exceed the maximum weight capacity.

REDUCE SPEED AND ALLOW GREATER DISTANCES FOR BRAKING WHEN HAULING CARGO.

Always load the cargo box with the load as far forward and as low as possible.

When operating over rough or hilly terrain, reduce speed and cargo to maintain stable driving conditions.

Always operate the vehicle with extreme care when hauling or towing loads.

Slow down and drive in the lowest gear available.

SECURE ALL LOADS BEFORE OPERATING. Unsecured loads can create unstable operating conditions, which could result in loss of control of the vehicle.

OPERATE ONLY WITH STABLE AND SAFELY ARRANGED LOADS. When handling off-centered loads that cannot be centered, securely fasten the load and operate with extra caution. Always attach the tow load to the hitch point designated for your vehicle.

HEAVY LOADS CAN CAUSE BRAKING AND CONTROL PROBLEMS. Use extreme caution when applying brakes with a loaded vehicle. Avoid terrain or situations that may require backing downhill.

USE EXTREME CAUTION when operating with loads that extend over the rack sides. Stability and maneuverability may be adversely affected, causing vehicle rollover.

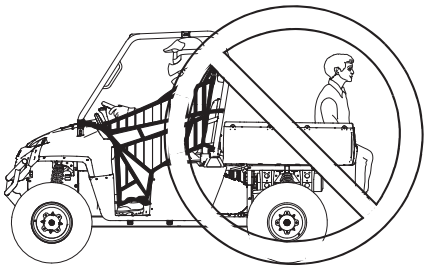
DO NOT TRAVEL FASTER THAN THE RECOMMENDED SPEEDS. Vehicle should never exceed 10 MPH (16 km/h) while towing a load on a level grass surface. Vehicle speed should never exceed 5 MPH (8 km/h) when towing loads in rough terrain, while cornering, or while ascending or descending a hill.

OPERATION
Hauling Cargo

The *RANGER* has been designed to carry or tow specific capacities. Always read and understand the load distribution warnings listed on the warning labels. The total load (operator, passenger, accessories, cargo and weight on hitch) must not exceed the maximum weight capacity of the vehicle. Never exceed the following capacities.

Model	Maximum Total Weight Capacity (Level Ground)	Maximum Cargo Box Weight Capacity
RANGER Diesel *RANGER* CREW Diesel	1500 lbs. (681 kg)	1000 lbs. (454 kg)

WARNING! Driving with passengers in the cargo box can result in severe injury or death. Never allow passengers to ride in the cargo box. Passengers must always ride in the cab with seat belts fastened securely.



Towing Loads

Towing improperly can alter vehicle handling and may cause loss of control or brake instability. Always follow these precautions when towing:

1. Never load more than 150 lbs. (68.1 kg) tongue weight on the towing bracket.
2. Always shift to low gear for towing.
3. When towing a disabled *RANGER* vehicle, place the disabled vehicle's transmission in neutral. Do not operate the vehicle faster than 10 MPH (16 km/h) when towing.
4. Towing a trailer increases braking distance. Do not operate the vehicle faster than 10 MPH (16 km/h) when towing.
5. Do not tow more than the recommended weight for the vehicle. See the towing capacity chart below and the specifications charts beginning on page 93.
6. Attach a trailer to the trailer hitch bracket only. Do not attach a trailer to any other location or you may lose control of the vehicle.
7. Never tow a trailer on a grade steeper than 15°.

Model	Total Towed Load Weight (Level Ground)	Total Towed Load Weight (15° grade)	Total Hitch Vertical Weight	Maximum Towing Speed
RANGER Diesel RANGER CREW Diesel	2000 lbs. (907 kg)	850 lbs. (386 kg)	150 lbs. (68.1 kg)	10 MPH (16 km/h)

Belt Life

To extend belt life, use the lowest gear possible when hauling or towing heavy cargo.

Dumping the Cargo Box

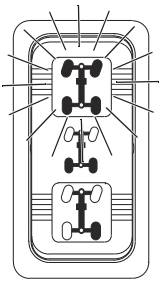
1. Select a level site to dump the cargo box. Do not attempt to dump or unload the vehicle while parked on an incline.
2. Apply the brakes.
3. Place the transmission in gear.
4. Engage the park brake.
5. Dismount the vehicle.
6. Ensure that the cargo is positioned evenly or toward the front of the cargo box.
7. Release the tailgate by pulling up on the tailgate latch.

WARNING! If the weight distribution on the box is located toward the rear of the box when the release lever is pulled forward, the box may dump unexpectedly and cause serious injury to the operator or bystanders. Never operate the dump lever without ensuring that the load is positioned evenly or at the front of the box.

8. Stand clear and pull up on the cargo box release lever.
9. Lift the front of the cargo box to dump the cargo.
10. Lower the cargo box and push down securely to latch.

WARNING! Operating the vehicle while the cargo box is raised could result in severe injury. The box could close unexpectedly and cause injury to the driver or passenger. The rear tires will also catch the rear of a raised box, damaging the vehicle and creating hazardous driving conditions. Never operate this vehicle with the cargo box in the raised position.

OPERATION
All Wheel Drive (AWD)
Engaging AWD



Press the top of the rocker switch to engage All Wheel Drive (AWD). The illuminated amber AWD switch indicates that the vehicle is in AWD.

When the AWD switch is on, the front wheels will automatically engage any time the rear wheels lose traction. When the rear wheels regain traction, the front wheels will automatically disengage. There is no limit to the length of time the vehicle may remain in AWD.

Tip: The AWD switch may be turned on or off while the vehicle is moving.

Engage the AWD before getting into conditions where front wheel drive may be needed. If the rear wheels are spinning, release the throttle before switching to AWD.

NOTICE: Switching to AWD while the rear wheels are spinning may cause severe drive shaft and clutch damage. Always switch to AWD while the rear wheels have traction or are at rest.

Disengaging AWD

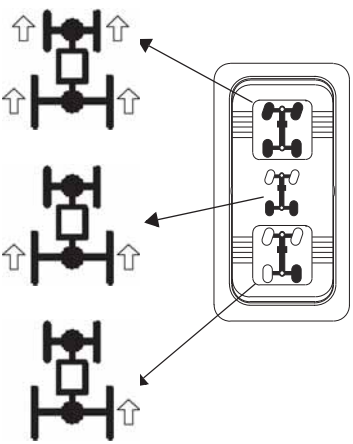
Move the AWD switch to the center or bottom position to disengage AWD. If the switch is turned off while the front hubs are driving, they will not release until the rear wheels regain traction.

In some situations, the front gearcase may remain locked after turning the AWD switch off. If this occurs, you may notice increased steering effort and some vehicle speed restriction. Perform the following procedure to unlock the front gearcase.

1. Stop the vehicle. Operate in reverse for at least 10 feet (3 m).
2. Stop completely. Shift into low gear and drive forward.
3. If the front gearcase remains locked after following these instructions, see your dealer for service.

Locking the Differential

NOTICE: Damage to the differential can occur if it is engaged while the vehicle is traveling at high speeds or while the rear wheels are spinning. Slow the vehicle to nearly stopped before engaging the differential.



Locking the differential in slippery or low traction conditions helps improve traction. Move the rocker switch to the center position (2WD) to lock the differential and operate in rear wheel drive.

Press the bottom of the switch to unlock the differential and allow the rear drive wheels to operate independently. This mode of operation is well suited to turf driving or whenever aggressive traction is not required.

These safety warnings and instructions apply if your vehicle came equipped with a winch or if you choose to add an accessory winch to your vehicle.

⚠ WARNING

Improper winch use can result in SEVERE INJURY or DEATH. Always follow all winch instructions and warnings in this manual.

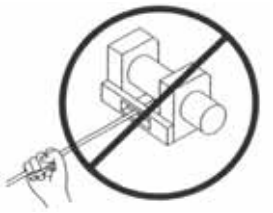
Your winch may have a cable made of either wire rope or specially designed synthetic rope. The term "winch cable" will be used for either unless noted otherwise.

Winch Safety Precautions

1. Read all sections of this manual.
2. Never use alcohol or drugs before or while operating the winch.
3. Never allow children under 16 years of age to operate the winch.
4. Always wear eye protection and heavy gloves when operating the winch.
5. Always keep body, hair, clothing and jewelry clear of the winch cable, fairlead and hook when operating winch.
6. Never attempt to "jerk" a load attached to the winch with a moving vehicle. See the *Shock Loading* section on page 60.
7. Always keep the area around the vehicle, winch, winch cable and load clear of people (especially children) and distractions while operating the winch.
8. Always turn the vehicle ignition power OFF when it and the winch are not being used.
9. Always be sure that at least five (5) full turns of winch cable are wrapped around the winch drum at all times. The friction provided by this wrapped cable allows the drum to pull on the winch cable and move the load.
10. Always apply your vehicle's park brake and/or park mechanism to hold the vehicle in place during winching. Use wheel chocks if needed.
11. Always align the vehicle and winch with the load directly in front of the vehicle as much as possible. Avoid winching with the winch cable at an angle to the winching vehicle's centerline whenever possible.
12. If winching at an angle is unavoidable, follow these precautions:
    A. Look at the winch drum occasionally. Never let the winch cable "stack" or accumulate at one end of the winch drum. Too much winch cable at one end of the winch drum can damage the winch and the winch cable.
    B. If stacking occurs, stop winching. Follow step 15 on page 58 to feed and rewind the cable evenly before continuing the winch operation.

WINCH GUIDE
Winch Safety Precautions

13. Never winch up or down at sharp angles. This can destabilize the winching vehicle and possibly cause it to move without warning.
14. Never attempt to winch loads that weigh more than the winch's rated capacity.
15. The winch motor may become hot during winch use. If you winch for more than 45 seconds, or if the winch stalls during operation, stop winching and permit the winch to cool down for 10 minutes before using it again.
16. Never touch, push, pull or straddle the winch cable while winching a load.
17. Never let the winch cable run through your hands, even if wearing heavy gloves.
18. Never release the clutch on the winch when the winch cable is under load.
19. Never use the winch for lifting or transporting people.
20. Never use the winch to hoist or suspend a vertical load.
21. Never immerse or submerse your winch in water. Take your winch to your dealer for service if this occurs.
22. Always inspect your winch and winch cable before each use.
23. Never winch the hook fully into the winch. This can cause damage to winch components.
24. Unplug the remote control from the vehicle when the winch is not in use to prevent inadvertent activation and use by unauthorized persons.
25. Never grease or oil the winch cable. This will cause the winch cable to collect debris that will shorten the life of the cable.



Winch Operation

Read the *Winch Safety Precautions* in the preceding pages before using your winch.

Tip: Consider practicing the operation and use of your winch before you actually need to use it in the field.

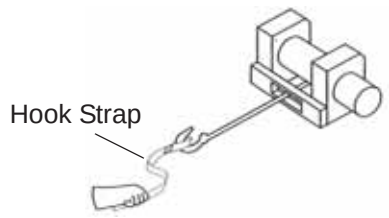
⚠WARNING

Improper winch use can result in SEVERE INJURY or DEATH. Always follow all winch instructions and warnings in this manual.

Each winching situation is unique.

- Take your time to think through the winching you are about to do.
- Proceed slowly and deliberately.
- Never hurry or rush during winching.
- Always pay attention to your surroundings.
- You may need to change your winching strategy if it is not working.
- Always remember that your winch is very powerful.
- There are simply some situations that you and your winch will not be able to deal with. Do not be afraid to ask others to help when this happens.

1. Always inspect the vehicle, winch, winch cable and winch controls for any signs of damage or parts in need of repair or replacement before each use. *Pay particular attention to the first 3 feet (1 meter) of winch cable if the winch is being used (or has been used) for lifting an accessory plow assembly.* Promptly replace any worn or damaged cable.
2. Never operate a winch or a vehicle in need of repair or service.
3. Always apply your vehicle's park brake and/or park mechanism to hold the vehicle in place during winching. Use wheel chocks if needed.



WINCH GUIDE
Winch Operation

4. Always use the hook strap when handling the hook.

WARNING! Never put your fingers into the hook. This could lead to SEVERE INJURY.

A. Attach the hook itself onto the load or use a tow strap or chain to secure the load to the winch cable.

Tip: A “tow strap” is NOT intended to stretch. A “recovery strap” is designed to stretch.

WARNING! Never use a recovery strap when winching due to the excessive energy that can be released if the winch cable breaks. This can result in SEVERE INJURY or DEATH. See the *Shock Loading* section on page 60.

B. Never hook the winch cable back onto itself. This will damage the winch cable and may result in winch cable failure.

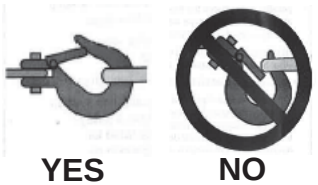
WARNING! Replace the winch cable at the first sign of damage to prevent SEVERE INJURY or DEATH in the event of failure. For your safety, always replace POLARIS winch parts (including the cable) with genuine POLARIS replacement parts available at your authorized POLARIS dealer.

C. If possible, keep the winch cable aligned with the centerline of the winching vehicle. This will help the spooling of the winch cable and reduce the load on the fairlead.

D. If freeing a stuck vehicle by attaching to a tree, use an item such as a tow strap to avoid damaging the tree during winch operation. Sharp cables and chains can damage and even kill trees. Please remember to TreadLightly® (treadlightly.org).

E. Before operating the winch, be sure that the safety latch on the winch cable hook is fully seated when the load is attached.

F. Never operate your winch with a damaged hook or latch. Always replace damaged parts before using the winch.



5. Never remove the hook strap from the hook.
6. Release the winch clutch and pull out the winch cable.
7. Pulling out as much cable as possible maximizes the winch’s pulling capacity. Always be sure that at least five (5) full turns of winch cable are wrapped around the winch drum at all times. The friction provided by this wrapped cable allows the drum to pull on the winch cable and move the load.

Winch Operation

8. Read and adhere to the following information for winch damping to ensure safe winch use.
   A. In order to absorb energy that could be released by a winch cable failure, always place a "damper" on the winch cable. A damper can be a heavy jacket, tarp, or other soft, dense object. A damper can absorb much of the energy released if a winch cable breaks when winching. Even a tree limb can help as a damper if no other items are available to you.
   B. Lay the damper on top of the mid-point of the winch cable length that is spooled out.
   C. On a long pull, it may be necessary to stop winching so that the damper can be repositioned to the new mid-point of the winch cable. Always release the tension on the winch cable before repositioning the damper.
   D. Avoid being directly in line with the winch cable whenever possible. Also, never permit others to stand near or in line with the winch cable during winch operation.
9. Never hook the winch cable back onto itself. This will damage the winch cable and may result in winch cable failure.
10. Never use straps, chains or other rigging items that are damaged or worn.
11. The ONLY time a winch-equipped vehicle should be moving when using the winch is when that vehicle itself is stuck. The winch-equipped vehicle should NEVER be in motion to "shock" load the winch cable in an attempt to move a second stuck vehicle. See the *Shock Loading* section on page 60. For your safety, always follow these guidelines when winching a vehicle free:
   A. Release the winch clutch and spool out the necessary length of winch cable.
   B. Align the winch cable as close as possible to the winching vehicle's centerline.
   C. Attach the winch cable hook to the anchor point or the stuck vehicle's frame following instructions in this manual.
   D. Re-engage the clutch on the winch.
   E. Slowly winch in the slack in the winch cable.
   F. Select the proper vehicle gear to propel the stuck vehicle in the direction of winching.
   G. Shift to the lowest gear available on the stuck vehicle.
   H. Slowly and carefully apply vehicle throttle and winch together to free the vehicle.
   I. Stop winching as soon as the stuck vehicle is able to propel itself without the help of the winch.
   J. Detach the winch cable hook.
   K. Rewind the winch cable evenly back onto the winch drum following the instructions in this manual.
12. Never attempt to winch another stuck vehicle by attaching the winch cable to a suspension component, brush guard, bumper or cargo rack. Vehicle damage may result. Instead, attach the winch to a strong portion of the vehicle frame or hitch.

WINCH GUIDE
Winch Operation

13. Extensive winching will run down the battery on the winching vehicle. Let the winching vehicle's engine run while operating the winch to prevent the battery from running low if winching for long periods.
14. The winch motor may become hot during winch use. If you winch for more than 45 seconds, or if the winch stalls during operation, stop winching and permit the winch to cool down for 10 minutes before using it again.
15. After winching is complete, especially if winching at an angle, it may be necessary to re-distribute the winch cable across the winch drum. You will need an assistant to perform this task.
    A. Release the clutch on the winch.
    B. Feed out the winch cable that is unevenly bunched up in one area.
    C. Re-engage the winch clutch.
    D. Have an assistant pull the winch cable tightly with about 100 lbs. (45 kg) of tension using the hook strap.
    E. Slowly winch the cable in while your assistant moves the end of the winch cable back and forth horizontally to evenly distribute the winch cable on the drum.
    F. Doing this reduces the chances of the winch cable "wedging" itself between lower layers of winch cable.

Winch Cable Care

For your safety, always replace POLARIS winch parts (including the cable) with genuine POLARIS replacement parts available at your authorized POLARIS dealer.

WARNING! Use of worn or damaged cable could lead to sudden failure and SEVERE INJURY.

1. Always inspect your winch before each use. Inspect for worn or loose parts including mounting hardware. Never use the winch if any part needs repair or replacement.
2. Always inspect your winch cable before each use. Inspect for worn or kinked winch cable.
   A. A kinked winch cable made of wire rope is shown at right. Even after being “straightened out,” this cable has already been permanently and severely damaged. Promptly discontinue use of a winch cable in this condition.
   B. A kinked winch cable made of wire rope that has been “straightened out” is shown at right. Even though it may look usable, the cable has been permanently and severely damaged. It can no longer transmit the load that it could prior to kinking. Promptly discontinue use of a winch cable in this condition.
   C. A winch cable made of synthetic rope should be inspected for signs of fraying. Replace the cable if fraying is observed (shown at right). Promptly discontinue use of a winch cable in this condition.
   D. Also replace the winch cable if there are fused or melted fibers. Such an area of the synthetic rope will be stiff and appear smooth or glazed. Promptly discontinue use of a winch cable in this condition.

WINCH GUIDE
Shock Loading

WARNING! Your winch cable is very strong but it is NOT designed for dynamic, or “shock” loading. Shock loading may tension a winch cable beyond its strength and cause the cable to break. The end of a broken winch cable under such high loading can cause SEVERE INJURY or DEATH to you and other bystanders.

Winch cables are designed to NOT absorb energy. This is true of both wire-rope and synthetic-rope winch cables.

1. Never attempt to “jerk” a load with the winch. For example, never take up slack in the winch cable by moving the winching vehicle in an attempt to move an object. This is a dangerous practice. It generates high winch cable loads that may exceed the strength of the cable. Even a slowly moving vehicle can create large shock loads in a winch cable.

WARNING! SEVERE INJURY or DEATH can result from a broken winch cable.

2. Never quickly turn the winch ON and OFF repeatedly (“jogging”). This puts extra load on the winch, winch cable, and generates excessive heat from the motor. This is a form of shock loading.
3. Never tow a vehicle or other object with your winch. Towing an object with a winch produces shock loading of the cable even when towing at slow speeds. Towing from a winch also positions the towing force high on the vehicle. This can cause instability of the vehicle and possibly lead to an accident.
4. Never use recovery straps with your winch. Recovery straps are designed to stretch and can store energy. This stored energy in the recovery strap is released if a winch cable fails making the event even more hazardous. Similarly, never use elastic “bungie” cords for winching.
5. Never use the winch to tie down a vehicle to a trailer or other transportation vehicle. This type of use also causes shock loading that can cause damage to the winch, winch cable, or vehicles used.

Your winch cable is designed and tested to withstand the loads produced by the winch motor when operated from a stationary vehicle. Always remember that the winch and winch cable are NOT designed for shock loading.

Winch Maintenance and Service Safety

WARNING! Improper or lack of winch maintenance and service could lead to SEVERE INJURY or DEATH. Always follow all winch instructions and warnings in this manual.

1. Always inspect your winch before each use. Inspect for worn or kinked winch cable. Also inspect for worn or loose parts including mounting hardware.
2. Permit your winch motor to cool down prior to servicing your winch.
3. Never work on your winch without first disconnecting the battery connections to prevent accidental activation of the winch
4. For your safety, always replace POLARIS winch parts (including the cable) with genuine POLARIS replacement parts available at your authorized POLARIS dealer.
5. Some winch models use wire rope as the winch cable. Other winches use a specially designed synthetic rope as the winch cable.
6. Never replace a synthetic-rope winch cable with a consumer-grade polymer rope such as can be purchased in a hardware store. Although they may look similar, they are NOT alike. A polymer rope not designed for winch use will stretch and store excessive energy when winching.

WARNING! Failure of a stretched rope under winching conditions will release all of the stored energy. This will increase the chances of SEVERE INJURY or DEATH.

EMISSION CONTROL SYSTEMS

Noise Emission Control System

Do not modify the engine, intake or exhaust components, as doing so may affect compliance with U.S.A. EPA noise control requirements (40 CFR 205) and local noise level requirements.

Operation on Public Lands in the U.S.A.

Your POLARIS vehicle has a spark arrester that was tested and qualified to be in accordance with the USFS standard 5100-1c. Federal law requires that this spark arrester be installed and functional when the vehicle is operated on public lands.

Operation of off-road vehicles on public lands in the U.S.A. is regulated by 43 CFR 420. Violations are subject to monetary penalties. Federal regulations can be viewed online at www.gpoaccess.gov/ecfr/.

Exhaust Emission Control System

Exhaust emissions are controlled by engine design. A fuel injection system controls fuel delivery. The engine and fuel injection components are set at the factory for optimal performance and are not adjustable.

Your engine is designed to operate on low sulfur or ultra low sulfur diesel fuel only. Use of any other fuel may result in your engine no longer operating in compliance with emissions requirements.

Electromagnetic Interference

This vehicle complies with the EMC requirements of European directives 97/24/EC and 2004/108/EC.

Non-ionizing Radiation

This vehicle emits some electromagnetic energy. People with active or non-active implantable medical devices (such as heart monitoring or controlling devices) should review the limitations of their device and the applicable electromagnetic standards that apply to this vehicle.

Periodic Maintenance Chart

Careful periodic maintenance will help keep your vehicle in the safest, most reliable condition. Inspection, adjustment and lubrication of important components are explained in the periodic maintenance chart.

Inspect, clean, lubricate, adjust and replace parts as necessary. When inspection reveals the need for replacement parts, use genuine POLARIS parts available from your POLARIS dealer.

Record maintenance and service in the Maintenance Log beginning on page 104.

Tip: Service and adjustments are important for proper vehicle operation. If you're not familiar with safe service and adjustment procedures, have a qualified dealer perform these operations.

Vehicles subjected to heavy or severe use patterns must be inspected and serviced more frequently.

Severe Use Definition

- Frequent immersion in mud, water or sand
- Frequent or prolonged operation in dusty environments
- Racing or race-style high RPM use
- Prolonged low speed, heavy load operation
- Extended idle
- Short trip cold weather operation

Pay special attention to the oil level. A rise in oil level during cold weather can indicate contaminants collecting in the oil sump or crankcase. Change oil immediately if the oil level begins to rise. Monitor the oil level, and if it continues to rise, discontinue use and determine the cause or see your dealer.

Maintenance Chart Key

► Perform these operations more often for vehicles subjected to severe use.

E Emission-related service (Failure to conduct this maintenance will not void the emissions warranty but may affect emissions.)

D Have an authorized POLARIS dealer perform these services.

WARNING! Improperly performing the procedures marked with a **"D"** could result in component failure and lead to serious injury or death. Have an authorized POLARIS dealer perform these services.

MAINTENANCE
Periodic Maintenance Chart

Perform all services at whichever maintenance interval is reached first.

	Item	Maintenance Interval (whichever comes first)			Remarks
		Hours	Calendar	Miles (Km)	
	Steering		Pre-Ride		Make adjustments as need ed. See Pre-Ride Checklist on page 35.
	Front suspension				
	Rear suspension				
	Tires				
	Brake fluid level				
	Brake pedal travel				
	Brake system				
	Wheels/fasteners				
	Frame fasteners				
	Engine oil level				
► E	Air filter, pre-filter	-	Daily	-	Inspect; clean often; replace as needed
►	Fuel filter/water separator	-	Daily	-	Inspect
	Coolant (if applicable)	-	Daily	-	Check level daily, change coolant every 2 years
	Radiator	-	Daily	-	Clean dust/dirt from external surfaces daily
	Headlamp/tail lamp	-	Daily	-	Check operation; apply dielectric grease if replacing
► E	Air filter, main element	-	Weekly	-	Inspect; replace every 150 hours (or more often)
► D	Brake pad wear	10 H	Monthly	-	Inspect periodically
	Battery	20 H	Monthly	-	Check terminals; clean; test
►	Front Gearcase oil (if equipped)	25 H	1 M	-	Perform a break-in oil level check
►	Middle Gearcase oil (if equipped)	25 H	1 M	-	Perform a break-in oil level check
►	Rear gearcase oil (if equipped)	25 H	1 M	-	Perform a break-in oil level check
►	Transmission oil	25 H	1 M	-	Perform a break-in oil level check
	Park brake cable tension	25 H	1 M	-	Check tension, adjust
►	Engine oil change	50 H	-	-	Perform break-in oil change, then change oil and filter every 100 hours
►	General lubrication	50 H	3 M	-	Lubricate all fittings, pivots, cables, etc.
►	Fuel filter/water separator	50 H	3 M	-	Drain water
	Shift Linkage	50 H	6 M	-	Inspect, lubricate, adjust
D	Steering	50 H	6 M	-	Lubricate

► Perform these procedures more often for vehicles subjected to severe use.
E Emission-Related Service
D Have an authorized POLARIS dealer perform these services.

Periodic Maintenance Chart

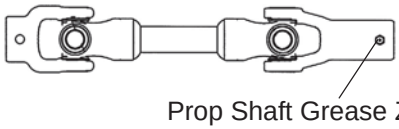
	Item	Maintenance Interval (whichever comes first)			Remarks
		Hours	Calendar	Miles (Km)	
►	Front Suspension	50 H	6 M	-	Lubricate
►	Rear Suspension	50 H	6 M	-	Lubricate
D E	Throttle cable/ ETC switch	50 H	6 M	-	Inspect; adjust; lubricate; replace if necessary
E	Throttle body air intake ducts/ flange	50 H	6 M	-	Inspect duct for proper sealing/air leaks
	Drive belt	50 H	6 M	-	Inspect; adjust; replace as needed
	Cooling system (if applicable)	50 H	6 M	-	Inspect coolant strength seasonally; pressure test system yearly
►	Oil lines, fasteners (if equipped)	50 H	6 M	-	Inspect for leaks and loose fittings
	Park brake cable tension	100 H	6 M	-	Check tension, adjust
►	Engine oil change	100 H	-	-	After break-in oil change at 50 hours, change oil and filter every 100 hours
►	Oil filter change	100 H	-	-	Replace with oil change
►	Front Gearcase oil (if equipped)	100 H	6 M	-	Inspect level; change yearly
►	Middle Gearcase oil (if equipped)	100 H	6 M	-	Inspect level; change yearly
►	Rear gearcase oil (if equipped)	100 H	6 M	-	Inspect level; change yearly
►	Transmission oil	100 H	6 M	-	Inspect level; change yearly
D E	Fuel system	100 H	12 M	-	Check for leaks at tank cap, lines, fuel valve, filter, pump, throttle body; replace lines every 2 years
►	Radiator (in applicable)	100 H	12 M	-	Inspect; clean external surfaces
►	Cooling Hoses	100 H	12 M	-	Inspect for leaks
►	Engine mounts	100 H	12 M	-	Inspect
	Exhaust muffler/pipe	100 H	12 M	-	Inspect
►	Wiring	100 H	12 M	-	Inspect for wear, routing, security; apply dielectric grease to connectors subjected to water, mud, etc.
D ►	Clutches (drive and driven)	100 H	12 M	-	Inspect; clean; replace worn parts
D	Front wheel bearings	100 H	12 M	-	Inspect; replace as needed
D E	Air filter, main element	150 H		-	Replace
D	Fuel filter/water separator	150 H	12 M	-	Replace
D	Brake fluid	200 H	24 M	-	Change every two years
D	Fuel system	200 H	24 M	-	Replace lines every 2 years
	Spark arrester	300 H	36 M	-	Clean out
D	Toe adjustment	-			Inspect periodically; adjust when parts are replaced
D ►	Auxiliary brake (if equipped)	-			Inspect daily; adjust as needed
	Headlight aim	-			Adjust as needed

► Perform these procedures more often for vehicles subjected to severe use.
E Emission-Related Service
D Have an authorized POLARIS dealer perform these services.

MAINTENANCE
Lubrication Recommendations

Check and lubricate all components at the intervals outlined in the Periodic Maintenance Chart beginning on page 63, or more often under severe use, such as wet or dusty conditions. Items not listed in the chart should be lubricated at the general lubrication interval.

Item	Lube	Method
Engine Oil	See page 67.	
Brake Fluid	DOT 4 Brake Fluid	Maintain level between fill lines. See page 80.
Main Gearcase Oil (Transmission)	AGL Gearcase Lubricant & Transmission Fluid	See page 69.
Front Gearcase Oil	Demand Drive Fluid	See page 70.
Front Prop Shaft Yoke	U-Joint Grease	Locate fittings and grease (3 pumps maximum).



Engine Oil

Always check the oil level *daily*. Change the engine oil at the intervals outlined in the Periodic Maintenance Chart beginning on page 63. Always change the oil filter whenever changing oil.

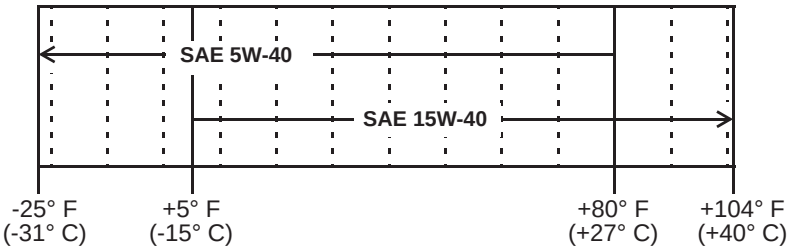
WARNING! Vehicle operation with insufficient, deteriorated or contaminated engine oil will cause accelerated wear and may result in engine seizure, accident and injury. Always perform the maintenance procedures as outlined in the Periodic Maintenance Chart.

Oil Recommendations

NOTICE: Use of a non-recommended engine oil may cause serious engine damage.

POLARIS recommends the use of POLARIS Diesel Oil (SAE CI-4) for this vehicle. Always use the the correct viscosity grade based on the ambient temperature expected during operation. See the chart below.

Oil Viscosity/Ambient Air Temperature Chart

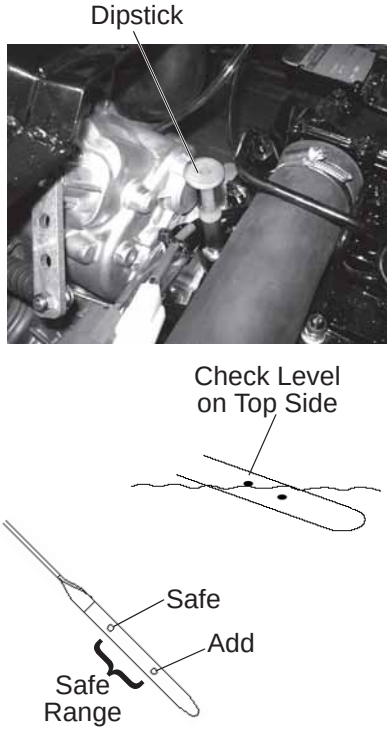


Oil Check

The oil dipstick is located on the engine under the passenger seat.

1. Position the vehicle on a level surface.
2. Stop the engine.
3. Remove the seat.
4. Remove the dipstick. Wipe it dry with a clean cloth.
5. Reinstall the dipstick, then remove it and check the oil level. Maintain the oil level in the safe range. Do not overfill.

Tip: Due to the dipstick entry angle into the crankcase, the oil level will read higher on the bottom side of the dipstick. Always read the level on the upper surface of the dipstick.



MAINTENANCE
Engine Oil
Oil and Filter Change

Always change the oil and filter at the intervals outlined in the Periodic Maintenance Chart beginning on page 63. Always change the oil filter whenever changing oil.

1. Position the vehicle on a level surface.
2. Run the engine for two to three minutes until warm. Stop the engine.
3. Clean the area around the drain plug.
4. Place a drain pan beneath the engine crankcase.

CAUTION! Hot oil can cause burns to skin. Do not allow hot oil to contact skin.

5. Remove the drain plug. Allow the oil to drain completely.
6. Reinstall the sealing washer on the drain plug. The sealing surfaces on drain plug and crankcase should be clean and free of burrs, nicks or scratches.
7. Reinstall the drain plug. Torque to 25 ft. lbs. (34 Nm).
8. Place shop towels beneath the oil filter. Using an oil filter wrench, turn the filter counter-clockwise to remove it.
9. Using a clean dry cloth, clean the filter sealing surface on the crankcase.
10. Lubricate the o-ring on the new filter with a film of fresh engine oil. Check to make sure the o-ring is in good condition.
11. Install the new filter and turn by hand until the filter gasket contacts the sealing surface, then turn and additional 1/2 turn.
12. Remove the oil fill cap and add 1.8 quarts (1.7 l) of the recommended oil.

Tip: An additional fill cap is located on the side of the engine on the crankcase. Use the most convenient location for adding oil.

13. Reinstall the oil fill cap.
14. Shift the transmission to neutral.
15. Apply the brakes. Engage the park brake.
16. Start the engine. Allow it to idle for one to two minutes.
17. Stop the engine. Inspect for leaks.
18. Check the oil level on the dipstick and add oil as necessary to bring the level to the upper mark on the dipstick.
19. Dispose of used filter and oil properly.

Gearcases

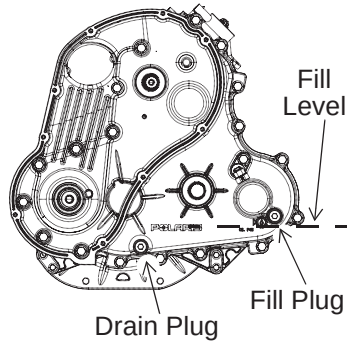
Gearcase Specification Chart

RANGER Diesel Gearcase Specifications				
Gearcase	**Lubricant**	**Capacity**	**Fill Plug Torque**	**Drain Plug Torque**
Main Gearcase (Transmission)	AGL Gearcase Lubricant & Transmission Fluid	34 oz. (1000 ml)	12 ft. lbs. (16.3 Nm)	12 ft. lbs. (16.3 Nm)
Front Gearcase	Demand Drive Fluid	6.75 oz. (200 ml)	8-10 ft. lbs. (11-13.6 Nm	11 ft. lbs. (15 Nm)
Rear Gearcase	ATV Angle Drive Fluid (or GL5 80-90 weight gear lube)	20 oz. (591 ml)	20-30 ft. lbs. (27-40 Nm)	30-45 in. lbs. (.2-.3 Nm)

Transmission (Main Gearcase)

Always check and change the transmission oil at the intervals outlined in the Periodic Maintenance Chart beginning on page 63. Maintain the oil level even with the bottom of the fill plug hole threads.

Refer to the Gearcase Specifications Chart for recommended lubricants, capacities and torque specifications. See page 94 for the part numbers of POLARIS products.



Oil Check

The fill plug is located on the right side of the transmission. Access the fill plug from the rear right-hand side of the vehicle.

1. Position the vehicle on a level surface. Remove the fill plug.
2. Check the oil level. Add the recommended oil as needed.
3. Reinstall the fill plug. Torque to specification.

Oil Change

The drain plug is located on the right side of the transmission. Access the drain plug from the rear right-hand side of the vehicle.

1. Remove the fill plug.
2. Place a funnel into the skid plate hole and under the transmission drain plug. Place a drain pan under the vehicle at the location of the funnel.
3. Remove the drain plug. Allow the oil to drain completely.
4. Clean and reinstall the drain plug with a new sealing washer. Torque to specification.
5. Add the recommended oil.
6. Reinstall the fill plug. Torque to specification.
7. Check for leaks. Dispose of used oil properly.

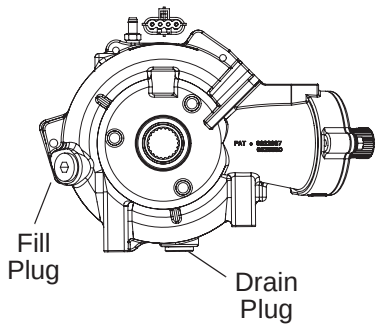
MAINTENANCE
Gearcases
Front Gearcase

Always check and change the front gearcase oil at the intervals outlined in the Periodic Maintenance Chart beginning on page 63. Maintain the oil level even with the bottom thread of the fill plug hole.

Refer to the Gearcase Specifications Chart on page 69 for recommended lubricants, capacities and torque specifications. See page 94 for the part numbers of POLARIS products.

Oil Check

The front gearcase fill plug is located on the right side of the front gearcase.



1. Position the vehicle on a level surface.
2. Remove the fill plug. Check the oil level.
3. Add the recommended oil as needed.
4. Reinstall the fill plug. Torque to specification.

Oil Change

1. Support the vehicle securely with a jackstand.
2. Remove the front tire on the driver's side.
3. Remove the fill plug.
4. Place a drain pan under the drain plug on the bottom right-hand side.
5. Remove the drain plug. Allow the oil to drain completely.
6. Clean and reinstall the drain plug. Torque to specification.
7. Add the recommended oil.
8. Reinstall the fill plug. Torque to specification.
9. Check for leaks. Dispose of used oil properly.

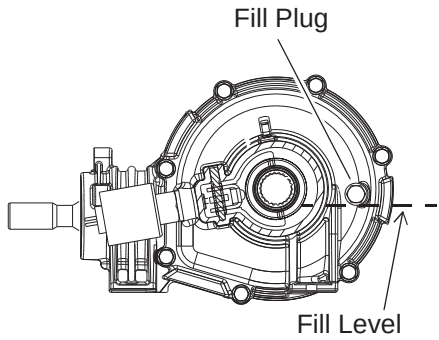
Gearcases

Rear Gearcase

Always check and change the rear gearcase oil at the intervals outlined in the Periodic Maintenance Chart beginning on page 63. Maintain the fluid level at the bottom of the fill hole threads. Do not overfill.

Refer to the Gearcase Specifications Chart on page 69 for recommended lubricants, capacities and torque specifications.

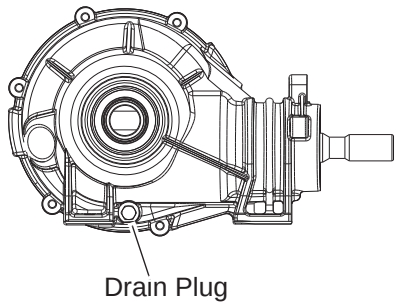
The fill plug is located on the rear of the gearcase. The drain plug is located on the bottom of the gearcase.



Oil Check

1. Position the vehicle on a level surface.
2. Remove the fill plug. Check the oil level.
3. Add the recommended oil as needed. *Do not overfill*.
4. Reinstall the fill plug. Torque to specification.

Oil Change



1. Position the vehicle on a level surface.
2. Place a drain pan under the drain plug.
3. Remove the drain plug. Allow the oil to drain completely.
4. Clean and reinstall the drain plug with a new sealing washer. Torque to specification.
5. Remove the fill plug. Add the proper amount of the recommended oil. *Do not overfill*.
6. Reinstall the fill plug. Torque to specification.
7. Check for leaks.
8. Dispose of used oil properly.

MAINTENANCE
Cooling System

The engine coolant level is controlled or maintained by the recovery system. The recovery system components are the overflow bottle, radiator filler neck, radiator pressure cap and connecting hose.

As coolant operating temperature increases, the expanding (heated) excess coolant is forced out of the radiator, past the pressure cap, and into the overflow bottle. As engine coolant temperature decreases, the contracting (cooled) coolant is drawn back up from the tank, past the pressure cap, and into the radiator.

Some coolant level drop on new vehicles is normal as the system is purging itself of trapped air. Observe coolant levels and maintain as recommended by adding coolant to the overflow bottle.

Adding or Changing Coolant

To ensure that the coolant maintains its ability to protect the engine, we recommend that the system be completely drained every two years and a fresh mixture of antifreeze and water added.

NOTICE: Do not mix different types of coolant in the cooling system when adding coolant. Mixing types can result in damage to the cooling system.

POLARIS recommends the use of POLARIS Antifreeze 60/40 premix or a 50/50 mixture of high quality aluminum compatible anti-freeze/coolant and distilled water. POLARIS Antifreeze is already premixed and ready to use. Do not dilute with water. See page 94 for the part numbers of POLARIS products.

Always follow the manufacturer's mixing recommendations for the freeze protection required in your area.

Any time the cooling system has been drained for maintenance or repair, replace the coolant. If the recovery bottle has run dry, the level in the radiator should be inspected. Add coolant as needed.

Radiator and Cooling Fan

Always check and clean the screen and radiator fins at the intervals outlined in the Periodic Maintenance Chart beginning on page 63. Do not obstruct or deflect air flow through the radiator by installing unauthorized accessories in front of the radiator or behind the cooling fan. Interference with the radiator air flow can lead to overheating and consequent engine damage.

NOTICE: Washing the vehicle with a high-pressure hose could damage the radiator fins and impair the radiator's effectiveness. Using a high-pressure system is not recommended.

Cooling System

Overflow Bottle Coolant Level

Always check and change the coolant at the intervals outlined in the Periodic Maintenance Chart beginning on page 63. Maintain the coolant level between the minimum and maximum marks on the bottle (when the fluid is cool).

The overflow bottle is located in front of the right front wheel.

1. Position the vehicle on a level surface.
2. View the coolant level in the overflow bottle.
3. If the coolant level is below the safe operating range, lift the hood and locate the overflow bottle lid. Remove the cap and use a funnel to add coolant through the filler opening. Reinstall the cap.

Tip: If coolant must be added often, or if the overflow bottle runs completely dry, there may be a leak in the system. Have the cooling system inspected by your POLARIS dealer.

Radiator Coolant Level

1. Lift the hood.

CAUTION! Escaping steam can cause burns. Never remove the pressure cap while the engine is warm or hot. Always allow the engine to cool before removing the pressure cap.

2. Slowly remove the radiator cap.
3. View the coolant level through the opening.
4. Use a funnel and slowly add coolant as needed.

Tip: This procedure is required only if the cooling system has been drained for maintenance and/or repair. But if the overflow bottle has run dry, the level in the radiator should also be inspected.

5. Reinstall the pressure cap. Use of a non-standard pressure cap will not allow the recovery system to function properly. See your dealer for the correct replacement part.

MAINTENANCE
POLARIS Variable Transmission (PVT) System

⚠ WARNING

Failure to comply with the instructions in this warning can result in severe injury or death.

Do not modify any component of the PVT system. Doing so may reduce its strength so that a failure may occur at a high speed. The PVT system has been precision balanced. Any modification will cause the system to be out of balance, creating vibration and additional loads on components.

The PVT system rotates at high speeds, creating large amounts of force on clutch components. As the owner, you have the following responsibilities for your own safety and the safety of others:

- Always follow all recommended maintenance procedures. Always look for and remove debris inside and around the clutch and vent system when replacing the belt.
- See your dealer as outlined in the owner's manual.
- This PVT system is intended for use on POLARIS products only. Do not install it in any other product.
- Always make sure the PVT housing is securely in place during operation.

Belt Replacement/Debris Removal

If a belt fails, always clean any debris from the duct and from the clutch and engine compartments when replacing the belt.

WARNING! Failure to remove ALL debris when replacing the belt could result in vehicle damage, loss of control and severe injury or death.

1. Remove the seat and the underseat storage box.
2. Remove the clutch cover screws and open the clutch cover. Remove all debris wrapped in and around the PVT system.
3. Remove all debris from the entire clutch air duct passage.
4. Check for signs of damage to seals on the transmission and engine. See your dealer promptly for service if any seals appear to be damaged.

Tip: Belt slip is responsible for creating excessive heat that destroys belts, wears clutch components and causes outer clutch covers to fail. Switch to low range while operating at slower speeds to extend the life of the PVT components (belt, cover, etc.).

POLARIS Variable Transmission (PVT) System

PVT Drying

There may be some instances when water is accidently ingested into the PVT system. Use the following instructions to dry it out before operating.

NOTICE: Do not attempt to start the engine if water is present in the air box.

1. Position the vehicle on a level surface.
2. Remove the drain plug. Allow the water to drain completely. Reinstall the drain plug.
3. Apply the brakes. Start the engine.
4. Engage the park brake. Shift the transmission to neutral.
5. Apply varying throttle for 10-15 seconds to expel the moisture and air-dry the belt and clutches. Do not hold the throttle wide open for more than 10 seconds.
6. Allow the engine RPM to settle to idle speed. Apply the service brakes. Release the park brake and shift the transmission to the lowest available range.
7. Test for belt slippage. If the belt slips, repeat the process.
8. Take the vehicle to your dealer for service as soon as possible.

Vehicle Immersion

NOTICE: If your vehicle becomes immersed, major engine damage can result if the machine is not thoroughly inspected. Take the vehicle to your dealer before starting the engine.

If it's impossible to take your *RANGER* to a dealer before starting it, follow the steps outlined below.

1. Move the vehicle to dry land or at the very least, to water below the floorboards.
2. Inspect the air box for water.

NOTICE: Do not attempt to start the engine if water is present in the air box. Engine damage will result. Take the vehicle to your dealer before starting the engine.

3. If the air box is wet but has no visible water, dry the air box.
4. Thoroughly dry the air pre-cleaner located under the hood.
5. Take the vehicle to your dealer for service as soon as possible, whether you succeed in starting it or not.
6. If water has been ingested into the PVT follow the procedure on page 75 for drying.

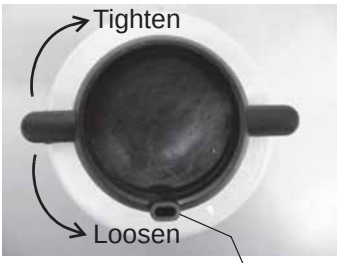
MAINTENANCE
Fuel Filter/Water Separator

The fuel filter/water separator is located under the seat on the right side of the vehicle, between the engine and fuel tank.

Inspect the separator *daily* for leaks. Drain water and replace the separator at the intervals outlined in the Periodic Maintenance Chart beginning on page 63. Service the separator more frequently if the vehicle is operated with inferior fuel.

CAUTION! Both fuel and water will drain from the separator during the following procedure. Use caution and observe all fuel safety precautions when handling fuel.

1. Remove the seat. Disconnect the battery.
2. Place an appropriate container under the fuel filter drain to catch fluids (water and fuel).
3. Slightly loosen the bleed screw to relieve fuel pressure in the filter. Do not tighten the screw at this time.
4. Reach under the fuel filter and slightly loosen the drain valve until the fluids drain from the drain hole. Do not completely unscrew the drain valve.
5. When fluids stop draining from the valve, tighten the valve firmly (by hand only).
6. Reconnect the battery.
7. Turn the ignition key on to engage the fuel pump. Leave the key on only until fuel begins to spit from the bleed screw, then tighten the screw.



8. Clean up any spilled fuel and soiled shop towels properly.
9. Cycle the key switch from OFF to ON six times, waiting three seconds at each “ON” cycle to allow the fuel pump to cycle.
10. Start the engine and check for fuel leaks.
11. Reinstall the seat.

Air Filter

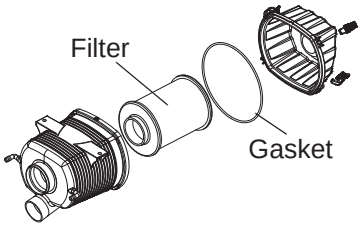
Always change the air filter at the intervals outlined in the Periodic Maintenance Chart beginning on page 63. Service the air filter more frequently if the vehicle is operated in wet or dusty conditions or at high throttle openings for extended periods.

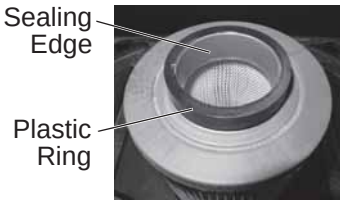
1. Lift the cargo box to access the air box.
2. Release the four air box cover clips. Remove the air box cover and inspect the gasket. It should adhere tightly to the cover.
3. Remove the air filter assembly with a pulling and twisting motion. Use care to avoid damaging the filter element.
4. Remove debris from the filter using low pressure compressed air. Lightly blow from the inside out.

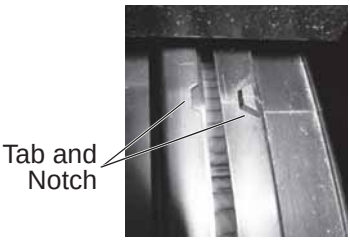
NOTICE: Operating a diesel engine with a soiled or damaged air filter can result in engine damage. Do not attempt to wash the filter. Always replace a soiled or damaged filter with a new filter.

5. Clean any oil or water deposits from the air box.
6. Apply a small amount of all-purpose grease to the sealing edges of the filter. Make sure the plastic ring is installed.
7. Reinstall the filter into the air box. Make sure it fits tightly.
8. Align the tab and notch of the air box cover and secure the cover clips.

Air Box







MAINTENANCE
Spark Arrester

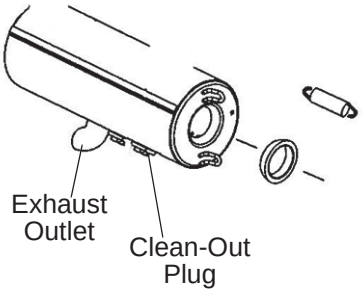
⚠ WARNING

Failure to heed the following warnings while servicing the spark arrester could result in serious injury or death.

- Do not perform service on the spark arrester while the system is hot. Exhaust system temperatures can reach 1000° F. Allow components to cool sufficiently before proceeding.
- Remove any combustible materials from the area.
- Wear eye protection and gloves.
- Do not stand behind or in front of the vehicle while purging.
- Never run the engine in an enclosed area. Exhaust can cause loss of consciousness or death in a very short time.
- Never operate without the spark arrestor.
- Never go under the vehicle while it's inclined.

Use the following procedure to periodically purge accumulated carbon from the exhaust pipe.

1. Remove the arrester clean-out plug located on the bottom of the muffler.
2. Place the transmission in neutral. Engage the park brake. Start the engine.
3. Purge accumulated carbon from the system by momentarily revving the engine several times.
4. If carbon is expelled, *partially* cover the exhaust outlet and rap on the pipe around the clean-out plug while revving the engine several more times.
5. If particles are still suspected to be in the muffler, elevate the rear of the vehicle one foot higher than the front. Block the wheels.



6. Repeat steps 3 and 4 until no more particles are expelled when the engine is revved.
7. Stop the engine. Allow the arrester to cool.
8. Reinstall the arrester plug and remove the partial outlet cover.

Throttle System

⚠ WARNING

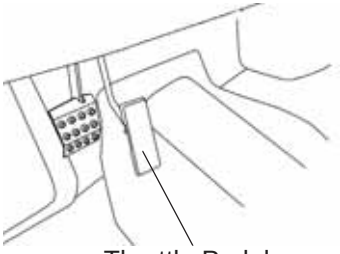
Failure to check or maintain proper operation of the throttle system can result in an accident and lead to serious injury or death if the throttle pedal sticks during operation.

Always check the pedal for free movement and return before starting the engine and occasionally during operation. Never start or operate this vehicle if it has a sticking or improperly operating throttle pedal. Immediately contact your dealer for service if throttle problems arise.

Throttle Freeplay

If the throttle pedal has excessive play due to cable stretch or misadjustment, it will cause a delay in throttle response, especially at low engine speed. The throttle may also not open fully. If the throttle pedal has no freeplay, the throttle may be hard to control, and the idle speed may be erratic.

Check the throttle pedal freeplay at the intervals outlined in the Periodic Maintenance Chart beginning on page 63. Adjust the freeplay if necessary.



Throttle Freeplay Inspection

1. Apply the brakes. Engage the park brake. Shift the transmission to neutral.
2. Start the engine. Allow it to warm up thoroughly.
3. Measure the distance the throttle pedal moves before the engine begins to pick up speed. Freeplay should be 1/16 to 1/8 inches (1.6-3.2 mm).

Idle RPM

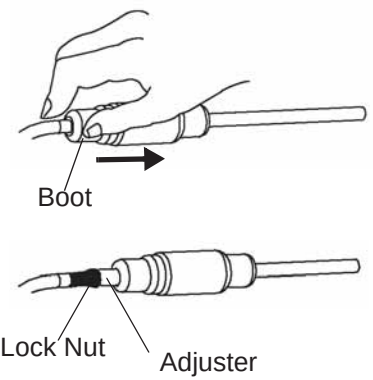
Idle RPM is preset by the manufacturer. If the engine idle speed is not satisfactory, please see your POLARIS dealer for adjustment.

Throttle Freeplay Adjustment

1. Remove the seat.
2. Locate the throttle cable adjuster.
3. Squeeze the end of the rubber boot and slide it far enough to expose the end of the inline cable adjuster.
4. Loosen the adjuster lock nut.
5. Rotate the boot to turn the adjuster until 1/16" to 1/8" (1.5-3 mm) of freeplay is achieved at the throttle pedal.

Tip: While adjusting, lightly flip the throttle pedal up and down.

6. Tighten the lock nut.
7. Squeeze the end of the rubber boot and slide it over the cable adjuster to its original position.



MAINTENANCE
Brakes

The front and rear brakes are hydraulic disc type brakes activated by the brake pedal. See page 26.

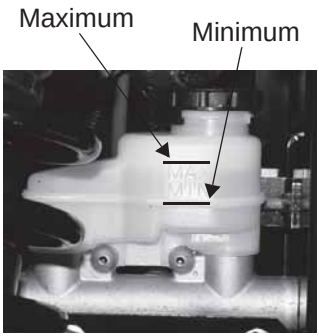
Brake Fluid

Inspect the brake system routinely. Inspect the level of the brake fluid before each operation.

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 severe injury.

Change the brake fluid every two years and any time the fluid becomes contaminated, the fluid level is below the minimum, or if the type and brand of the fluid in the reservoir are unknown.

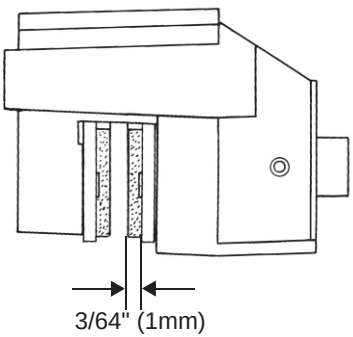
1. Position the vehicle on a level surface.
2. View the brake fluid level at the reservoir in the driver's side wheel well.
3. The level should be between the upper (MAX) and lower (MIN) level lines.
4. If the fluid level is lower than the upper level line, add brake fluid to the upper (MAX) line.
5. Apply the brake forcefully for a few seconds and check for fluid leakage around the fittings.



Brake Inspection

1. Check the brake system for fluid leaks.
2. Check the brake pedal for excessive travel or a spongy feel.
3. Check the friction pads for wear, damage and looseness.
4. Check brake discs for signs of cracks, excessive corrosion, warping or other damage. Clean any grease using an approved brake cleaner or alcohol.

WARNING! Do not apply WD-40 or any petroleum product to brake discs. These types of products are flammable and may also reduce the friction between the brake pad and caliper.

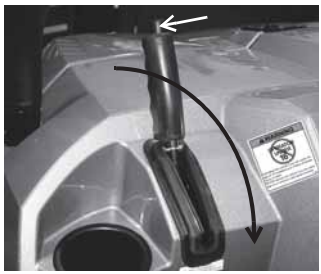


5. Inspect the brake disc spline and pad wear surface for excessive wear. Change pads when worn to 3/64" (1 mm).

Brakes

Park Brake Inspection

Park Brake Release



1. Apply the brakes.
2. Pull the park brake lever downward as far as possible.
3. Check the vehicle for movement. The vehicle should not roll while parked. If the vehicle moves, adjust the park brake.

Park Brake Adjustment

Inspect and adjust park brake cable tension after the first 25 hours of operation and every 100 hours thereafter to ensure proper cable tension. Loss of tension in the park brake cable may cause illumination of the park brake light and activation of the limiting feature. If this occurs, move the park brake lever to the forward-most position, then inspect and adjust park brake cable tension.

Tip: If performing this service is difficult due to conditions or location, open the hood and temporarily disconnect the park brake connector. This will inactivate the limiting function. Reconnect the connector as soon as possible, and adjust the park brake cable to proper tension.

1. Position the vehicle on a level surface.
2. Shift the transmission to neutral.
3. Loosen or tighten the nuts on the lever end of the park brake cable as needed.

MAINTENANCE

Steering Wheel Inspection

Check the steering wheel for specified freeplay and smooth operation at the intervals outlined in the Periodic Maintenance Chart beginning on page 63.

1. Position the vehicle on level ground.
2. Lightly turn the steering wheel left and right.
3. There should be 0.8"-1.0" (20-25 mm) of freeplay.
4. If there is excessive freeplay or strange noises, or the steering feels rough or “catchy,” have the steering system inspected by an authorized POLARIS dealer.

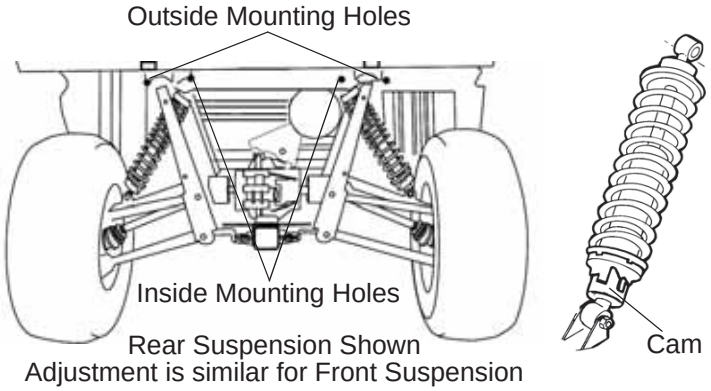
Suspension Adjustments

The front and rear suspensions can be adjusted to provide a stiffer suspension, if necessary.

1. Remove the top shock mounting bolts from the inside mounting holes.
2. Reposition the shocks to the outside mounting holes.
3. Reinstall the shock mounting bolts. Torque to 30 ft. lbs. (40 Nm).

Spring Adjustment

Adjust the front and rear shock absorber springs by rotating the adjustment cam either clockwise or counterclockwise to increase or decrease spring tension.



Rear Suspension Shown
Adjustment is similar for Front Suspension

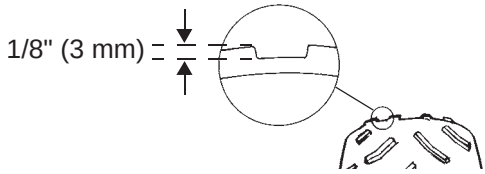
Tires

⚠ WARNING

Operating your vehicle with worn tires, improperly inflated tires, non-standard tires or improperly installed tires will affect vehicle handling and could cause an accident resulting in serious injury or death. Always follow all tire maintenance procedures as outlined in this manual and on the labels on the vehicle. Always use POLARIS-approved size and type of tires for this vehicle when replacing tires.

Tire Tread Depth

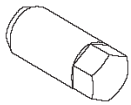
Always replace tires when tread depth is worn to 1/8" (3 mm) or less.



Axle and Wheel Nut Torque Specifications

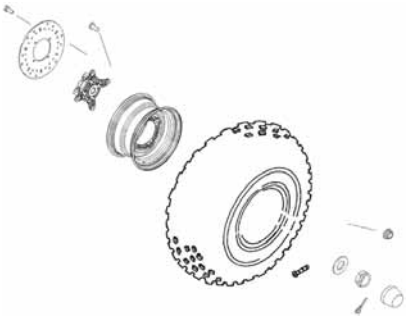
Inspect the following items occasionally for tightness, and if they've been loosened for maintenance service.

Do not lubricate the stud or the lug nut.

Nut Type	Location	Nut Torque
Lug Nut (Aluminum Wheels) 	Front and Rear	30 ft. lbs. (41 Nm) PLUS 1/4 TURN
Nut and Washer (Steel Wheels) 	Front and Rear	35 ft. lbs. (47 Nm)
Spindle Nut	Front	70 ft. lbs. (95 Nm)
Hub Retaining Nuts	Center and Rear	110 ft. lbs. (150 Nm)

MAINTENANCE
Tires
Wheel Removal

1. Apply the brakes. Engage the park brake.
2. Stop the engine. Place the transmission in gear.
3. Loosen the wheel nuts slightly.
4. Elevate the side of the vehicle by placing a suitable stand under the frame.
5. Remove the wheel nuts and washers. Remove the wheel.



Wheel Installation

1. Apply the brakes.
2. Place the transmission in gear.
3. Engage the park brake.
4. Place the wheel in the correct position on the wheel hub. Be sure the valve stem is toward the outside and rotation arrows on the tire point toward forward rotation.

WARNING! Improperly installed wheels can adversely affect tire wear and vehicle handling, which can result in serious injury or death. Always ensure that all nuts are torqued to specification. Do not service axle nuts that have a cotter pin installed. See your POLARIS dealer.

5. Attach the wheel nuts and washers and finger tighten.
6. Carefully lower the vehicle to the ground.
7. Torque the wheel nuts to specification. See page 83.

Lights

Poor lighting can result in reduced visibility when driving. Headlight and taillight lenses become dirty during normal operation. Clean lights frequently and replace burned out lamps promptly. Do not operate this vehicle at night or in low light conditions until the headlight is replaced. Always make sure lights are adjusted properly for best visibility.

When servicing a halogen lamp, don't touch the lamp with bare fingers. Oil from your skin leaves a residue, causing a hot spot that will shorten the life of the lamp.

Brake Lights

When the brake pedal is depressed, the brake light comes on. Check the brake light before each ride.

1. Turn the ignition switch to the ON position.
2. Depress the brake pedal. The brake light should come on after about 10 mm (0.4 in.) of pedal travel. If the light doesn't come on, check the bulb.

Lights

Headlight Lamp Replacement

1. Open the hood.

CAUTION! Hot components can cause burns to skin. Allow lamps to cool before servicing.

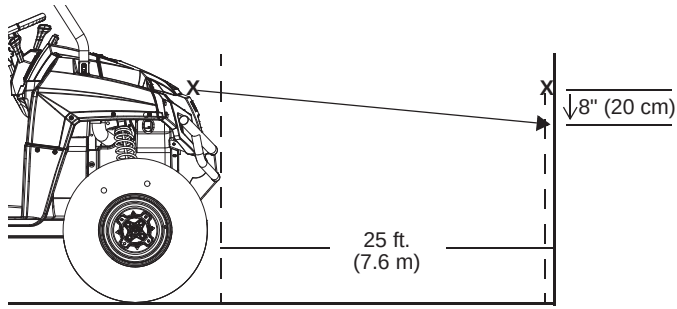
2. Unplug the headlamp from the wiring harness. Be sure to pull on the connector, not on the wiring.
3. Turn the lamp counterclockwise to remove it.
4. Install the new lamp.

Tip: Make sure the tab on the lamp locates properly in the housing.

5. Reinstall the harness assembly into the headlight assembly.

Headlight Beam Adjustment

1. Place the vehicle on a level surface with the headlight approximately 25 ft. (7.6 m) from a wall.
2. Place the transmission in gear. Engage the park brake.
3. Measure the distance from the floor to the center of the headlight and make a mark on the wall at the same height.



4. Apply the brakes. Start the engine. Turn on the headlights.
5. Observe the headlight aim. The most intense part of the headlight beam should be aimed 8" (20 cm) below the mark placed on the wall. Include the weight of a rider on the seat while performing this step.
6. If a headlight needs adjustment, locate the adjustment screw at the back of the headlight.
7. Loosen the screw, adjust the headlight, and tighten the screw.
8. Repeat steps 5-7 until the lamp is properly adjusted.

MAINTENANCE
Fuses

If the engine stops or will not start, or if you experience other electrical failures, a fuse may need replacement. Locate and correct any short circuits that may have caused the blown fuse, then replace the fuse. Spare fuses are provided in the fuse box.

If you suspect that a fuse or relay may not be working properly, please see your POLARIS dealer.

Tip: The 120 ohm resistor (if equipped) is used by your POLARIS dealer for power steering diagnostics.

START RELAY	SPARE 30A	SPARE 20A	SPARE 10A
	FUEL PULL 30A		UNSWITCH 10A
PARK BRAKE RELAY	GLOW PLUG 30A		AUX. LIGHTING 20A
	DRIVE 20A	ACCESSORY 20A	LIGHTS 20A

7177049

	FAN RELAY	FUEL PULL RELAY
CHASSIS RELAY	GLOW PLUG RELAY	ATTACH RELAY

7176368

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.

Your vehicle is equipped with a sealed battery, which requires little maintenance. Always keep battery terminals and connections free of corrosion. If cleaning is necessary, remove corrosion with a stiff wire brush. Wash with a solution of one tablespoon baking soda and one cup water. Rinse well with tap water and dry off with clean shop towels. Coat the terminals with dielectric grease or petroleum jelly.

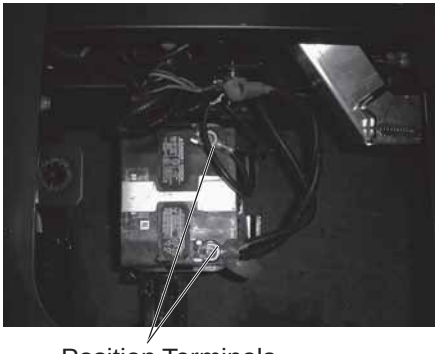
Battery Removal

1. Remove the front seat.
2. Remove the screws from the battery hold-down strap and remove the strap.
3. Disconnect the black (-) battery cable first.
4. Disconnect the red (+) battery cable last.
5. Lift the battery out of the vehicle.

Battery Installation

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 88 before installing the battery.

1. Ensure that the battery is fully charged.
2. Place the fully charged battery in the battery holder under the driver's seat with the terminals toward the rear of the vehicle.
3. Coat the terminals with dielectric grease or petroleum jelly.
4. Connect and tighten the red (+) cable first.
5. Connect and tighten the black (-) cable last.
6. Verify that cables are properly routed and install the hold-down strap. Tighten the screws securely.



Position Terminals Toward Rear

MAINTENANCE
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. POLARIS recommends maintaining battery charge by using a POLARIS Battery Tender charger 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. See page 94 for the part numbers of POLARIS products.

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. *Never* pry the sealing strip off or add any other fluid to this battery.

Always keep a sealed battery 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.

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.

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 battery voltage is 12.8 or greater.
3. When using an automatic charger, refer to the charger manufacturer's instructions for recharging. When using a constant current charger, use the guidelines below for recharging.

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

Cleaning and Storage

Washing the Vehicle

Keeping your POLARIS vehicle clean will not only improve its appearance but it can also extend the life of various components.

NOTICE: High water pressure may damage components. POLARIS recommends washing the vehicle by hand or with a garden hose, using mild soap.

NOTICE: Certain products, including insect repellents and chemicals, will damage plastic surfaces. Do not allow these types of products to contact the vehicle.

The best and safest way to clean your POLARIS vehicle is with a garden hose and a pail of mild soap and water.

1. Use a professional-type washing cloth, cleaning the upper body first and the lower parts last.
2. Rinse with clean water frequently.
3. Dry surfaces with a chamois to prevent water spots.

Washing Tips

- Avoid the use of harsh cleaners, which can scratch the finish.
- Do not use a power washer to clean the vehicle.
- Do not use medium to heavy duty compounds on the finish.
- Always use clean cloths and pads for cleaning and polishing. Old or reused cloths and pads may contain dirt particles that will scratch the finish.

Washing the Vehicle

If a high pressure water system is used for cleaning (not recommended), exercise extreme caution. The water may damage components and could remove paint and labels. Avoid directing the water stream at the following items:

- Engine
- Air Intake
- Wheel bearings
- Radiator
- Transmission seals
- Brakes
- Cab and body panels
- Labels and decals
- Switches and controls
- Electrical components and wiring

If an informational or graphic label becomes illegible or comes off, contact your POLARIS dealer to purchase a replacement. Replacement *safety* labels are provided by POLARIS at no charge.

Grease all zerk fittings immediately after washing. Allow the engine to run for a while to evaporate any water that may have entered the engine or exhaust system.

MAINTENANCE
Cleaning and Storage
Polishing the Vehicle

POLARIS recommends the use of common household aerosol furniture polish for polishing the finish on your POLARIS vehicle. Follow the instructions on the container.

Polishing Tips

- Avoid the use of automotive products, some of which can scratch the finish of your vehicle.
- Always use clean cloths and pads for cleaning and polishing. Old or reused cloths and pads may contain dirt particles that will scratch the finish.

Chrome Wheel Care (if equipped)

Proper maintenance will protect chrome wheels from corrosion, preserve wheel life and ensure a “like new” appearance for many years. Chrome wheels exposed to road salt (or salt in the air in coastal areas) are more susceptible to corrosion if not properly cleaned. Clean chrome wheels more often if they're exposed to salt or other corrosive elements.

1. Wash chrome wheels frequently. Use a mild detergent. Never use abrasive cleaners on plated or painted surfaces.
2. Rinse well with clear water. Soap, detergents, salt, dirt, mud and other elements can cause corrosion.
3. Polish the clean chrome wheels periodically. Use an automotive grade chrome polish.
4. Routinely and liberally apply a weather resistant wax to each polished chrome wheel. Choose a product suitable for chrome finishes. Read and follow the product labels and instructions.

Removing Corrosion

If light rust is found on the chrome finish, use steel wool (#0000-OTT grade) to remove it. Gently rub the affected areas with the steel wool until the corrosion has been removed. Clean and polish the wheel as outlined above.

Cleaning and Storage

Storage Tips

Clean the Exterior

Make any necessary repairs and clean the vehicle as recommended. See page 89.

Oil and Filter

Change the oil and filter. See page 68.

Air Filter / Air Box

1. Inspect and clean or replace the pre-cleaner and air filter. See page 77.
2. Clean the air box, including sediment plugs.

Inspect and Lubricate

Inspect all cables and lubricate all areas of the vehicle as recommended in the Periodic Maintenance Chart beginning on page 63.

Battery Maintenance

See page 88 for storage and charging procedures.

Fluid Levels

Inspect the fluid levels. Add or change fluids as recommended in the Periodic Maintenance Chart beginning on page 63.

- Front gearcase fluid
- Rear gearcase fluid
- Transmission fluid
- Brake fluid (change every two years and any time the fluid looks dark or contaminated)
- Coolant (test strength/fill)

Storage Area/Covers

Be sure the storage area is well ventilated. Cover the vehicle with a genuine POLARIS cover. Do not use plastic or coated materials. They do not allow enough ventilation to prevent condensation, and may promote corrosion and oxidation.

MAINTENANCE
Removal from Storage

1. Charge the battery if necessary. Install it in the vehicle.
2. Fill the fuel tank with fuel.
3. Check all the points listed in the Daily Pre-Ride Inspection section on page 35. *Tightness of the bolts, nuts and other fasteners should be checked by an authorized POLARIS dealer.*
4. Lubricate at the intervals outlined in the Periodic Maintenance Chart beginning on page 63.

Transporting the *RANGER*

Follow these procedures when transporting the vehicle.

1. Apply the brakes.
2. Engage the park brake.
3. Stop the engine.
4. Place the transmission in gear.
5. Secure the fuel cap, oil cap, hood and seat. Ensure that the seats are attached correctly and are not loose.

WARNING! Cargo and other loose vehicle parts may fly off while transporting this vehicle. Secure or remove all cargo, and inspect the unit for loose parts prior to transport.

6. Always tie the frame of the *RANGER* to the transporting unit securely with suitable straps or rope. Do not attach tie straps to the front A-arm bolt pockets.
7. Remove the key to prevent loss during transporting.

RANGER Diesel / *RANGER* CREW Diesel	
Maximum Weight Capacity (includes weight of operator, passenger, cargo, accessories)	4X4: 1500 lbs. (681 kg) CREW: 1750 lbs. (795 kg)
Dry Weight	1435 lbs. (651 kg)
Test GVW - Rollover Protection System (ROPS)	4X4: 3660 lbs. (1660 kg) per OSHA 29 CFR 1928.53 CREW: 3750 lbs. (1701 kg) per OSHA 29 CFR 1928.53
Fuel Capacity	8.8 gal. (33.3 l)
Engine Oil Capacity	1.8 qts. (1.7 l)
Coolant Capacity (Radiator)	190 oz. (5.6 l)
Coolant Capacity (Overflow)	7.5 oz. (222 ml)
Towing Capacity	2000 lbs. (907 kg)
Hitch Tongue Capacity	150 lbs. (68 kg)
Max. Cargo Box Load	1000 lbs. (454 kg)
Overall Length	114 in. (289.6 cm)
Overall Width (box)	60 in. (152.4 cm)
Overall Width (tires)	58 in. (147.3 cm)
Overall Height	76 in. (193 cm)
Wheelbase	76 in. (193 cm)
Cargo Box Dimensions (Inside)	36.5 x 54 x 11.5 in. (93 x 137 x 29 cm)
Ground Clearance	12 in. (30.5 cm)
Min. Turning Radius	158 in. (401 cm)
Engine	YANMAR 3-Cylinder Inline Diesel
Displacement	904 cc
Bore x Stroke	72mm x 74mm
Alternator Output	12V DC 55A
Compression Ratio	23.5:1
Starting System	Electric
Fuel System	Indirect Injection
Front Suspension	Dual A-arm w/9.6 in. (24.4 cm) of travel
Rear Suspension	Independent w/9 in. (23 cm) of travel
Lubrication System	Pressurized Wet Sump
Driving System Type	PVT, 4-wheel independent shaft, lockable differential
Shift Type	Single Lever (H/L/N/R)
Gear Reduction - Low	5.77:1
Gear Reduction - Reverse	5.17:1
Gear Reduction - High	2.72:1
Drive Ratio - Front:	3.818:1
Drive Ratio - Rear	3.70:1
Tire Size - Front	25 x 8 - 12
Tire Size - Rear	25 x 11 - 12
Tire Pressure - Front	10 psi (69 KPa) (4X4) 12 psi (83 KPa) (CREW)
Tire Pressure - Rear	12 psi (83 KPa) (4X4) 16 psi (110 KPa) (CREW)
Brakes, Front/Rear	Foot Activated, 4 wheel hydraulic disc
Brake, Park	Hand activated, mechanical
Hood Headlight	60/55W High/Low Halogen
Taillights	10 L.E.D. (.28W)
Brake Light	10 L.E.D. (3.1W)
Indicator Light	1.0 W

POLARIS PRODUCTS

Part Number	Description
	Engine Lubricant
2878473	15W-40 Diesel Oil (2 qt./1.9 l)
2879832	5W-40 Synthetic Diesel Oil (2 qt./1.9 l)
	Gearcase / Transmission Lubricants
2878068	AGL Full Synthetic Gearcase Lubricant & Transmission Fluid (qt./.95 l)
2878069	AGL Full Synthetic Gearcase Lubricant & Transmission Fluid (gal./3.8 l)
2877922	Demand Drive Fluid (qt./.95 l)
2877923	Demand Drive Fluid (gal./3.8 l)
2870465	Pump for Gallon (3.8 l) Jug
	Coolant
2871534	Polaris Antifreeze 60/40 Premix (qt./.95 l)
2871323	Polaris Antifreeze 60/40 Premix (gal./3.8 l)
	Grease / Specialized Lubricants
2871312	Grease Gun Kit, Premium All Season
2871322	All Season Grease (3 oz./89 ml cartridge)
2871423	All Season Grease (14 oz./414 ml cartridge)
2876160	ATV Angle Drive Fluid (qt./.95 l)
2872276	ATV Angle Drive Fluid (2.5 gal./9.5 l)
2871460	Premium Starter Grease
2871515	U-Joint Grease (3 oz./89 ml cartridge)
2871551	U-Joint Grease (14 oz./414 ml cartridge)
2871329	Dielectric Grease (Nyogel™)
	Additives / Miscellaneous
2872189	DOT 4 Brake Fluid
2871956	Loctite™ 565 Thread Sealant

Drive Belt Wear/Burn

Possible Cause	Solution
Driving onto a pickup or tall trailer in high range	Use low range during loading.
Starting out going up a steep incline	Use low range. See warnings on page 44.
Driving at low RPM or ground speed (3-7 MPH)	Drive at a higher speed or use low range more frequently.
Insufficient warm-up at low ambient temperatures	Warm the engine at least 5 minutes. With the transmission in neutral, advance the throttle to about 1/8 throttle in short bursts, 5 to 7 times. The belt will become more flexible and prevent belt burning.
Slow/easy clutch engagement	Use the throttle quickly and effectively.
Towing/pushing at low RPM/low ground speed	Use low range only.
Utility use/plowing	Use low range only.
Stuck in mud or snow	Shift the transmission to low range and carefully use fast, aggressive throttle application to engage clutch. **WARNING**: Excessive throttle may cause loss of control and vehicle rollover.
Climbing over large objects from a stopped position	Shift the transmission to low range and carefully use fast, brief, aggressive throttle application to engage clutch. **WARNING**: Excessive throttle may cause loss of control and vehicle rollover.
Belt slippage from water or snow ingestion into the PVT system	Dry out the PVT. See page 75. Inspect clutch seals for damage if repeated leaking occurs.
Clutch malfunction	See your POLARIS dealer.
Poor engine performance	Check for clogged air filter, clogged fuel filter, water in the fuel or foreign material in fuel tank or fuel lines. See your dealer.
Slippage from failure to warm up belt	Always warm up the belt by operating below 30 MPH for one mile (5 miles or more when temperature is below freezing).
Wrong or missing belt	Install the recommended belt.
Improper break-in	Always break in a new belt and/or clutch. See pages 34 and 74.

TROUBLESHOOTING

Park Brake Alarm Fails to Turn Off

Possible Cause	Solution
Park brake is not completely disengaged	Ensure lever is in forward-most position
Park brake connector malfunction or switch movement or failure	Disconnect the connector if temporary continued operation is necessary, see your dealer promptly for service

Engine Doesn't Turn Over

Possible 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
Loose electronic control box connections	Inspect, clean, reinstall connectors

Engine Turns Over, Fails to Start

Possible Cause	Solution
Out of fuel	Refuel
Clogged fuel filter/water separator	Replace
Clogged air filter	Replace
Water is present in fuel	Drain the fuel system and refuel, replace fuel filter/water separator
Old or non-recommended fuel	Replace with fresh recommended fuel
Water or fuel in crankcase	Immediately see your POLARIS dealer
Low battery voltage	Recharge the battery to 12.8 VDC
Mechanical failure	See your dealer
Defective glow plug	Inspect and replace
Defective stop solenoid	Replace
Defective fuel pump	Replace

Engine Backfires

Possible Cause	Solution
Old or non-recommended fuel	Replace with fresh recommended fuel
Loose ignition connections	Check all connections and tighten
Water present in fuel	Replace with fresh recommended fuel

Engine Runs Irregularly, Stalls or Misfires

Possible Cause	Solution
Poor fuel quality or incorrect fuel	Replace with recommended fuel
Low fuel level	Refuel
Clogged fuel filter	Replace
Clogged air filter	Replace
Loose ignition connections	Check all connections and tighten
Water present in fuel	Replace with new fuel
Kinked or plugged fuel tank vent line	Inspect and replace
Other mechanical failure	See your dealer

Engine Stops or Loses Power

Possible Cause	Solution
Poor fuel quality or incorrect fuel	Replace with recommended fuel
Clogged fuel filter	Replace
Clogged air filter	Replace
Loose ignition connections	Check all connections and tighten
Water present in fuel	Replace with new fuel
Kinked or plugged fuel tank vent line	Inspect and replace
Other mechanical failure	See your dealer
Out of fuel	Refuel
Low battery voltage	Recharge the battery to 12.8 VDC
Overheated engine	Clean radiator screen and core, clean engine exterior, operate at lower load, see your dealer

WARRANTY

LIMITED WARRANTY

POLARIS Sales Inc., 2100 Highway 55, Medina, MN 55340, gives a SIX MONTH LIMITED WARRANTY on all components of the POLARIS *RANGER* against defects in material or workmanship. POLARIS further warrants that the spark arrestor in this product will meet the efficiency requirements of USFS standard 5100-1C for at least 1000 hours when subjected to normal use and when maintenance and installation are in accordance with POLARIS recommendations. POLARIS also gives a 12-month /1000-hours of engine operation limited warranty on the engine of this vehicle for failure due to defects. This warranty covers the parts and labor charges for repair or replacement of defective parts which are covered by this warranty. This 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 of purchase. 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 your proof of warranty coverage. 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 YOUR VEHICLE IS REGISTERED WITH POLARIS. Initial dealer preparation and set-up of your vehicle is very important in ensuring trouble-free operation. Purchasing a machine in the crate or without proper dealer set-up will void your warranty coverage.

WARRANTY COVERAGE AND EXCLUSIONS: LIMITATIONS OF WARRANTIES AND REMEDIES

This POLARIS limited warranty excludes any failures that are not caused by a defect in material or workmanship. THIS WARRANTY DOES NOT COVER CLAIMS OF DEFECTIVE DESIGN. This warranty also does not cover acts of God, accidental damage, normal wear and tear, abuse or improper handling. This warranty also does not cover any vehicle, component, or part that has been altered structurally, modified, neglected, improperly maintained, or used for purposes other than for which it was designed.

This warranty excludes damages or 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; snow, water, dirt or other foreign substance ingestion/contamination; improper maintenance; modified components; use of aftermarket or unapproved components, accessories, or attachments; unauthorized repairs; or repairs made after the warranty period expires or by an unauthorized repair center.

This warranty excludes damages or failures caused by abuse, accident, fire, or any other cause other than a defect in materials or workmanship and provides no coverage for consumable components, general wear items, or any parts exposed to friction surfaces, stresses, environmental conditions and/or contamination for which they were not designed or not intended, including but not limited to the following items:

- Wheels and tires
- Suspension components
- Brake components
- Seat components
- Clutches and components
- Steering components
- Batteries
- Light bulbs/Sealed beam lamps
- Filters
- Lubricants
- Bushings
- Finished and unfinished surfaces
- Carburetor/Throttle body components
- Engine components
- Drive belts
- Hydraulic components and fluids
- Circuit breakers/Fuses
- Electronic components
- Spark plugs
- Sealants
- Coolants
- Bearings

LIMITATIONS OF WARRANTIES AND REMEDIES

LUBRICANTS AND FLUIDS

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

2. Damage or failure resulting from the use of non-recommended lubricants or fluids is not covered by this warranty.

This warranty provides no coverage for personal loss or expense, including mileage, transportation costs, hotels, meals, shipping or handling fees, product pick-up or delivery, replacement rentals, loss of product use, loss of profits, or loss of vacation or personal time.

THE EXCLUSIVE REMEDY FOR BREACH OF THIS WARRANTY SHALL BE, AT POLARIS' OPTION, REPAIR OR REPLACEMENT OF ANY DEFECTIVE MATERIALS, 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. THIS EXCLUSION OF CONSEQUENTAL, INCIDENTAL, AND SPECIAL DAMAGES IS INDEPENDENT FROM AND SHALL SURVIVE ANY FINDING THAT THE EXCLUSIVE REMEDY FAILED OF ITS ESSENTIAL PURPOSE.

THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS EXCLUDED FROM THIS LIMITED WARRANTY. ALL OTHER IMPLIED WARRANTIES (INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTY OF MERCHANTABILITY) ARE LIMITED IN DURATION TO THE ABOVE SIX MONTH WARRANTY PERIOD. POLARIS DISCLAIMS ALL EXPRESS WARRANTIES NOT STATED IN THIS WARRANTY. SOME STATES DO NOT PERMIT THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR ALLOW LIMITATIONS ON THE DURATION OF IMPLIED WARRANTIES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU IF INCONSISTENT WITH CONTROLLING STATE LAW.

12-MONTH / 1000-HOUR ENGINE OPERATION LIMITED ENGINE WARRANTY TERMS AND EXCLUSIONS

How long is the engine warranty period?

The standard limited warranty on the engine of this vehicle runs for a period of twelve (12) months or 1000 engine operation hours, whichever occurs first. The warranty period on the engine (by duration or operation hours) begins on the date of delivery to the original retail purchaser and is valid only until the applicable warranted duration has passed or the operation hours are exceeded, whichever comes first.

What is NOT covered by this warranty?

This warranty does not cover parts affected by or damaged by any reason other than defective materials or workmanship including, but not limited to, accident, misuse, abuse, “Acts of God”, neglect, improper installation, improper maintenance, improper storage, the use of unsuitable attachments or parts, the use of contaminated fuels, the use of fuels, oils, lubricants or fluids other than those recommended in this manual, unauthorized alterations or modifications, ordinary wear and tear, and rust or corrosion.

This warranty does not cover the cost of parts and/or labor required to perform normal scheduled maintenance on your engine. This warranty does not cover consumable parts such as, but not limited to, filters, belts, hoses, fuel injector nozzles, lubricants and cleaning fluids. This warranty does not cover the cost of shipping the product to or from your POLARIS dealership.

WARRANTY

HOW TO OBTAIN WARRANTY SERVICE

If your vehicle requires warranty service, you must take it to a POLARIS Servicing Dealer. When requesting warranty service you must present your copy of the Warranty Registration From to the dealer. (THE COST OF TRANSPORTATION TO AND FROM THE DEALER IS YOUR RESPONSIBILITY). POLARIS suggests that you use your original selling dealer; however, you may use any POLARIS Servicing Dealer to perform warranty service.

In the Country where your product 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 product was purchased, Warranty and Service Bulletin repairs may be requested from any authorized POLARIS dealer that sells the same line as your product.

Outside the Country where your product was purchased:

If you are traveling temporarily outside the country where your product was purchased, you should take your product 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. Product importation rules vary considerably from country to country. You may be required to present documentation of your move to POLARIS in order to continue your warranty coverage. You may also be required to obtain documentation from POLARIS in order to register your product in your new country. You should warranty register your product at a local POLARIS dealer in your new country immediately after you move to continue your warranty coverage and to ensure that you receive information and notices regarding your vehicle.

If you purchase from a private party:

If you purchase a POLARIS product from a private party, to be kept and used outside of the country in which the product was originally purchased, all warranty coverage will be denied. You must nonetheless register your product under your name and address with a local POLARIS dealer in your country to ensure that you receive safety information and notices regarding your product.

EXPORTED PRODUCTS

EXCEPT WHERE SPECIFICALLY REQUIRED BY LAW, THERE IS NO WARRANTY OR SERVICE BULLETIN COVERAGE ON THIS PRODUCT IF IT IS SOLD OUTSIDE THE COUNTRY OF THE SELLING DEALER'S AUTHORIZED LOCATION. This policy does not apply to products that have received authorization for export from POLARIS. Dealers may not give authorization for export. You should consult an authorized dealer to determine this product's warranty or service coverage if you have any questions. This policy does not apply to products 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 Bulletins.

NOTICE

If your product is registered outside of the country where it was purchased and you have not followed the procedure set above, your product will no longer be eligible for warranty or service bulletin coverage of any kind, other than safety bulletins. Products registered to Government officials or military personnel on assignment outside of the country where the product was purchased will continue to be covered by the Limited Warranty.

Please work with your dealer to resolve any warranty issues. Should your dealer require any additional assistance, they will contact the appropriate person at POLARIS.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state or in different countries. If any of the above terms are void because of federal, state, local law, all other warranty terms will remain in effect.

For questions call POLARIS Customer Assistance:

United States & Canada: 1-800-POLARIS (1-800-765-2747)

French: 1-800-268-6334

WARRANTY

U.S.A. EPA Emissions Limited Warranty

This emissions limited warranty is in addition to the POLARIS standard limited warranty for your vehicle. POLARIS Industries Inc. warrants that at the time it is first purchased, this emissions-certified vehicle is designed, built and equipped so it conforms with applicable U.S. Environmental Protection Agency emission regulations. POLARIS warrants that the vehicle 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 vehicle starts on the date the vehicle is first purchased and continues for a period of 500 hours of engine operation, 5000 kilometers (3100 miles) of vehicle travel, or 30 calendar months from the date of purchase, whichever comes first.

This emissions limited warranty covers components whose failure increases the vehicle's regulated emissions, and it covers components of systems whose only purpose is to control emissions. Repairing or replacing other components not covered by this warranty is the responsibility of the vehicle owner. This emissions limited warranty does not cover components whose failure does not increase the vehicle's regulated emissions.

For exhaust emissions, emission-related components include any engine parts related to the following systems:

- Air-induction system
- Fuel system
- Ignition system
- Exhaust gas recirculation systems

The following parts are also considered emission-related components for exhaust emissions:

- Aftertreatment devices
- Crankcase ventilation valves
- Sensors
- Electronic control units

The following parts are considered emission-related components for evaporative emissions:

- Fuel Tank
- Fuel Cap
- Fuel Line
- Fuel Line Fittings
- Clamps*
- Pressure Relief Valves*
- Control Valves*
- Control Solenoids*
- Electronic Controls*
- Vacuum Control Diaphragms*
- Control Cables*
- Control Linkages*
- Purge Valves
- Vapor Hoses
- Liquid/Vapor Separator
- Carbon Canister
- Canister Mounting Brackets
- Carburetor Purge Port Connector

*As related to the evaporative emission control system.

U.S.A. EPA Emissions Limited Warranty

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. THIS EXCLUSION OF CONSEQUENTIAL, INCIDENTAL, AND SPECIAL DAMAGES IS INDEPENDENT FROM AND SHALL SURVIVE ANY FINDING THAT THE EXCLUSIVE REMEDY FAILED OF ITS ESSENTIAL PURPOSE.

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. 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 when the vehicle 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 may deny warranty claims for failures that have been caused by the owner’s or operator’s improper maintenance or use, by accidents for which POLARIS has no responsibility, or by acts of God.

Any qualified repair shop or person may maintain, replace, or repair the emission control devices or systems on your vehicle. POLARIS recommends that you contact an authorized POLARIS dealer to perform any service that may be necessary for your vehicle. POLARIS also recommends that you use only Pure POLARIS parts. 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.

If you have any questions regarding your warranty rights and responsibilities, please contact POLARIS Customer Assistance.

United States & Canada: 1-800-POLARIS (1-800-765-2747)

French: 1-800-268-6334

MAINTENANCE LOG

Use the following chart to record periodic maintenance.

DATE	MILES (KM) OR HOURS	TECHNICIAN	SERVICE PERFORMED / COMMENTS

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⚠WARNING

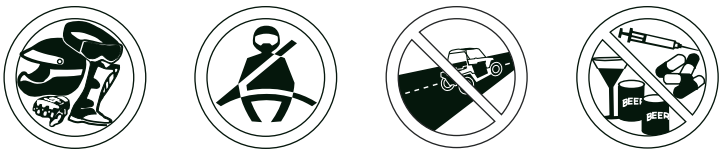
Improper vehicle use can result in SEVERE INJURY or DEATH

NEVER Operate:

- **If you are under age 16 and without a valid driver's license.**
- **Without first viewing safety video and taking a ROHVA training course at www.rohva.org.**
- **On excessively steep hills.**
- **On public roads (unless designated for off-road use).**
- **With a passenger who is not seated in a passenger seat, or with passengers under age 12 or who cannot comfortably reach the floor and hand holds.**
- **On paved surfaces - pavement may seriously affect handling and control.**
- **With non-Polaris approved accessories - they may seriously affect stability.**

ALWAYS:

- **Wear your seat belt. Vehicle rollover can cause severe injury or death.**
- **Secure cab nets or doors and keep hands and feet inside vehicle at all times.**
- **Wear a helmet, eye protection, gloves, long-sleeve shirt, long pants and over-the-ankle boots.**
- **Reduce speed and use extra caution when carrying passengers.**
- **Avoid sharp turns or turns while applying heavy throttle.**
- **Operate slowly in reverse - avoid sharp turns or sudden braking.**
- **Make sure passengers read and understand all safety labels.**



ALL RIDERS MUST WEAR AN APPROVED HELMET AND PROTECTIVE GEAR.
ALL RIDERS MUST WEAR SEAT BELTS. NEVER USE ON PUBLIC ROADS.
NEVER USE WITH DRUGS OR ALCOHOL.

READ OWNER'S MANUAL. FOLLOW ALL INSTRUCTIONS AND WARNINGS.

POLARIS®

For your nearest Polaris dealer,
call 1-800-POLARIS
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