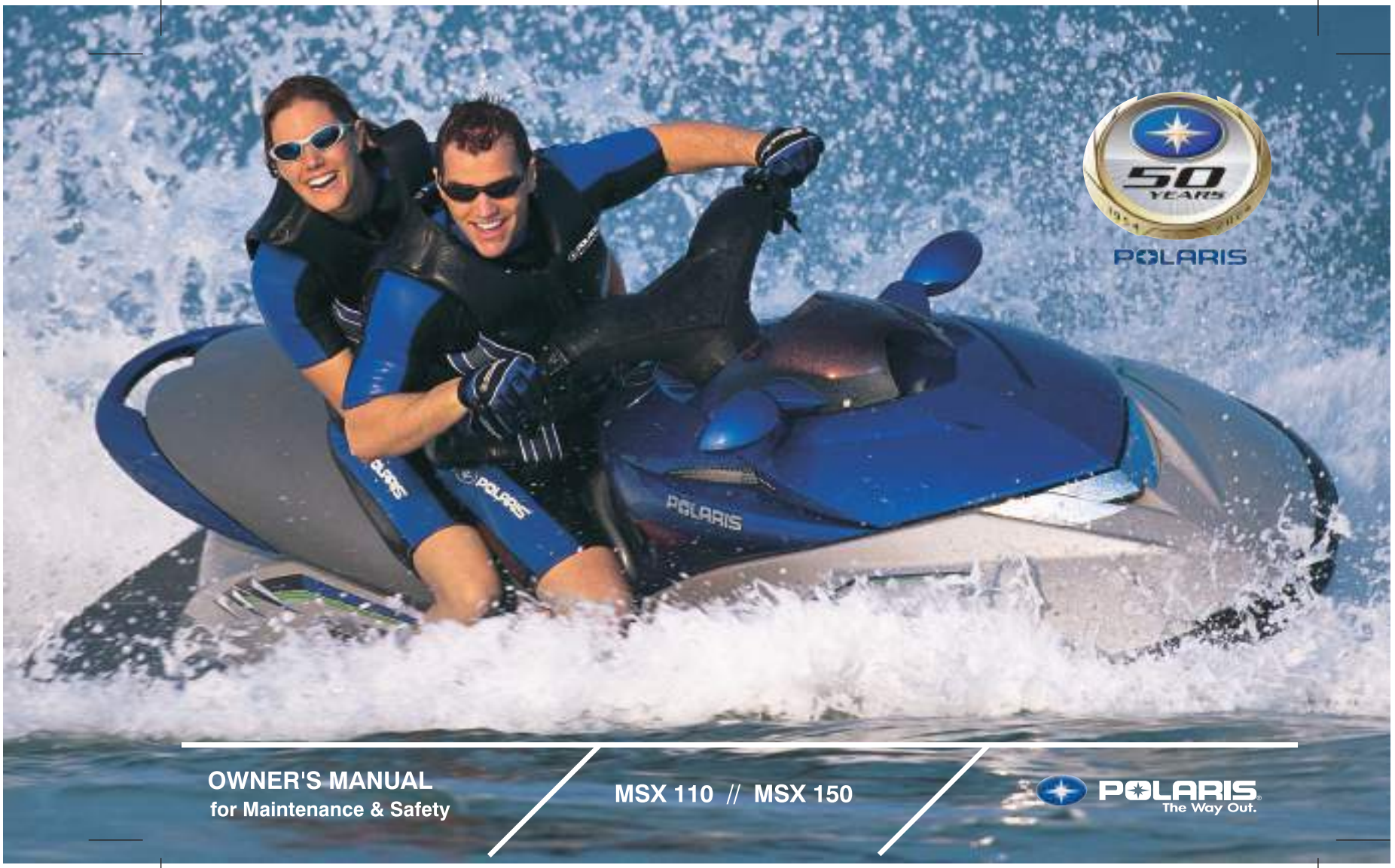

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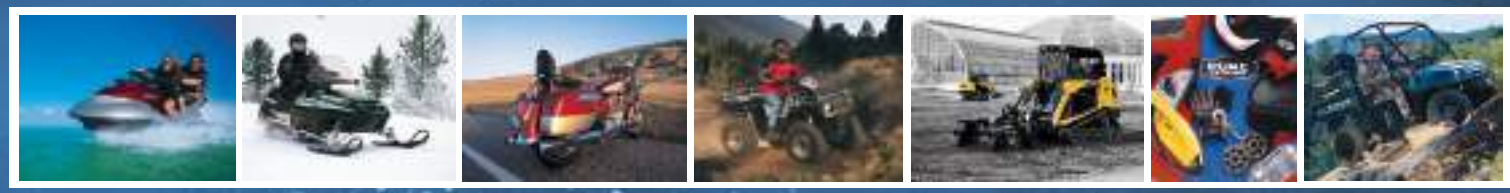
Read and understand all warning labels and Owner's Manual before operation. Severe injury or death can result from ignoring warnings or from improper use. Never permit a guest to operate this watercraft unless the guest has read and understands all warning labels and the Owner's Manual.

THIS MANUAL SHOULD REMAIN WITH THE WATERCRAFT, IN ITS STORAGE BAG, AT ALL TIMES.



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The Way Out.

For your nearest Polaris dealer, call 1-800-POLARIS
or visit www.polarisindustries.com
Polaris Sales Inc., 2100 Hwy. 55, Medina, MN 55340
Phone (763) 417-8650 Fax (763) 542-0599
Part No. 9918972 Rev 01
Printed in USA

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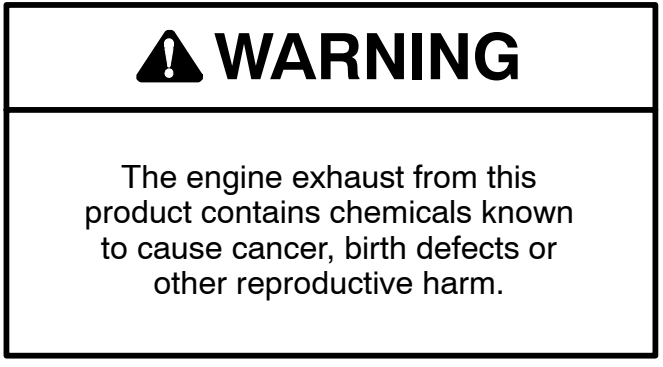

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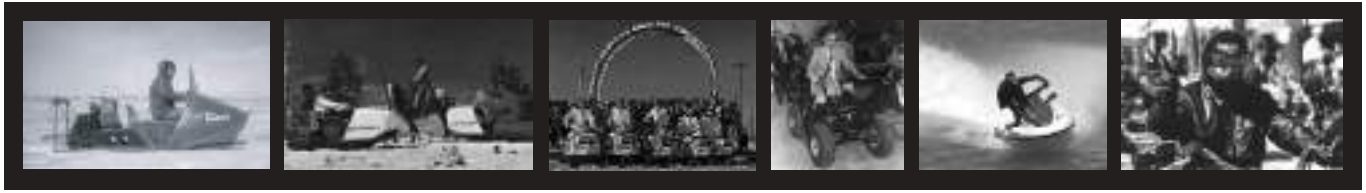
50 YEARS
1954 USA 2004
POLARIS

For 50 years we've been helping
Polaris customers find The Way Out.

It's been a fun ride.
But then, after all these years,
that's what we're all about.



Find out more about our exciting once-in-a-lifetime 50th Anniversary celebration:
Go to www.polarisindustries.com and look for the 50th Anniversary link.

This is a ride you won't want to miss!

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WELCOME

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

Polaris Recreational Vehicles

- Snowmobiles
- All-terrain vehicles (ATVs)
- Personal Watercraft
- Sport Boats
- *RANGER* utility vehicles
- Victory motorcycles

Polaris Professional Series Workmobiles™

- Utility Task Vehicles™ (UTVs)
- Personal Task Vehicles™ (PTVs)
- All-Surface Loaders (ASLs)

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. Refer to page 101 for the part numbers of Polaris products for your vehicle.

We take great pride in our Pure Polaris Parts Apparel and Accessories (PAA), available at your Polaris dealership or through our online store at www.purepolaris.com. Have your Pure Polaris products delivered right to your door!

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Observe Age Restrictions

This vehicle is not a toy. Polaris recommends that all operators be 16 years of age or older. Contact local authorities to find out what the legal age requirements are in your area of operation.

Follow Maintenance Requirements

Follow the recommended maintenance program outlined in your owner's manual. This preventive maintenance program is designed to ensure that all critical components on your vehicle are thoroughly inspected at specific intervals.

Do Your Part - Ride Smart

Riding your Polaris watercraft will be an enjoyable experience for you, your family and friends, but we must all do our part to ride safely and protect our environment so we can continue to enjoy this sport for many years. Please show respect for our waterways, our wildlife and other people.

Know Your Vehicle

As the operator of the vehicle, you are responsible for your personal safety, the safety of others, and the protection of our environment. Read and understand your owner's manual, which discusses all aspects of your vehicle, including safe operating procedures. *Read and follow all warnings contained in the owner's manual.*

⚠ WARNING

Failure to follow the warnings contained in this manual can result in serious injury or death. A Polaris watercraft is not a toy. It's a high performance powerboat and can be hazardous to operate. A collision or overturn can occur quickly if you fail to take proper precautions. Read and understand the entire owner's manual and all safety warnings before operating a Polaris watercraft.

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YOUR RESPONSIBILITIES

Ride Smart

Take Safety Training

When you purchased your new Polaris watercraft, you received a watercraft safety video and an owner's manual. Your Polaris dealer should review the key safety training items with you. Refusal to watch the safety and operation video or to review the summary training points voids the warranty on your watercraft. Continue to review this information on a regular basis. All operators and passengers should read and understand the owner's manual before riding.

Store the manual in a waterproof bag in one of the storage areas on the watercraft. If the vehicle is sold, the owner's manual and the safety video should remain with it. If the owner's manual or safety video is lost or missing, see a Polaris dealer for a replacement.

Obey the Rules

Familiarize yourself with all boating laws and regulations in your area. Ride only in areas approved for personal watercraft. Avoid riding near waterfront homes, wildlife areas, other boats and swimmers.

Respect Your Neighbors

Some people may find the sound of your watercraft disturbing. Avoid making excessive noise when riding, and don't make any modifications to your watercraft that may increase the sound or emission level.

Use Care When Refueling

When refueling in or near the water, use care to avoid spilling fuel. If you do spill, wipe it up promptly and dispose of the soiled towels appropriately.

Use Biodegradable Products

Choose biodegradable products for cleaning your watercraft. Avoid environmentally harmful aerosol sprays, and dispose of used products and containers appropriately. Never place used oil and other chemicals (including soiled towels) in the trash, on the ground or down a drain. Contact your local or state office of public works to find out how to dispose of these wastes in your area.

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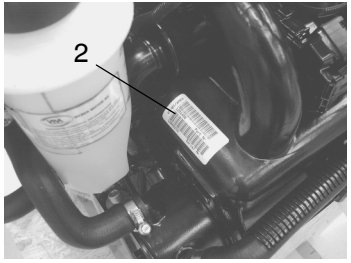
IDENTIFICATION NUMBERS

Your watercraft's hull and engine identification numbers are important for model identification when registering your watercraft, when obtaining insurance, and when ordering replacement parts. The hull identification number is located on the rear right-hand boarding platform (1). The engine identification number is located on the intake manifold toward the rear of the engine (2).



Record your vehicle's identification numbers in the spaces provided and in another location away from the vehicle. If the vehicle is destroyed or stolen, you'll have the identification numbers required by insurance and/or law enforcement.

NOTE: Check with your insurance agent about obtaining insurance coverage for your watercraft, or see your Polaris dealer.

1. Hull ID Number:

_____

2. Engine ID Number:

_____

3. Vehicle Model Number:

_____

4. Purchase Date:

_____

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SAFETY
Signal Words and Symbols

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

⚠

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

⚠ WARNING

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

⚠ CAUTION

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

CAUTION

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

NOTE:

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

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Safety Decals

Important warning and instruction decals have been placed on the watercraft for your protection. Read and follow the instructions on each decal carefully. If any decal becomes illegible or comes off, contact your Polaris dealer for a replacement. Any *safety* decal needing replacement will be provided by Polaris at no charge.

The warning decals summarize and highlight key safety and operational information. Be sure to read the entire owner's manual for details that affect safe operation of this watercraft.

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SAFETY
Safety Decals
Collision Avoidance Warning Decal

This decal is located on the glove box/console storage lid at the helm of your watercraft.

Collision Avoidance Warning Decal Text:

Collisions result in more **INJURIES AND DEATHS** than any other type of accident for personal watercraft (PWC).

TO AVOID COLLISIONS:

SCAN CONSTANTLY for people, objects and other watercraft. Be alert for conditions that limit your visibility or block your vision of others.

OPERATE DEFENSIVELY at safe speeds, and keep a safe distance away from people, objects and other watercraft.

- Do not follow directly behind PWCs or other boats.
- Do not go near others to spray or splash them with water.
- Avoid sharp turns or other maneuvers that make it hard for others to avoid you or understand where you are going.
- Avoid areas with submerged objects or shallow water.

TAKE EARLY ACTION to avoid collisions. Remember, PWCs and other boats do not have brakes.

DO NOT RELEASE THROTTLE WHEN TRYING TO STEER away from objects – you need throttle to steer. Always check throttle and steering controls for proper operation before starting PWC.

Follow navigation rules and all state and local laws that apply to PWCs.

See Owner's Manual for more information.

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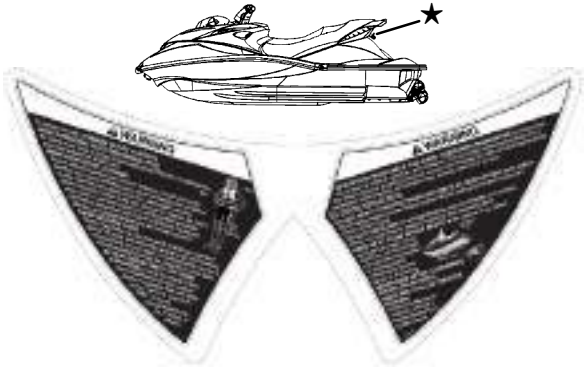
Safety Decals

General Safety/Warning Decal

This decal is located just below the rear of the seat.



General Safety/Warning Decal Text:

To reduce the risk of **SEVERE INJURY or DEATH**:

Wear **A PERSONAL FLOTATION DEVICE (PFD)**. All riders must wear a Coast guard approved PFD that is suitable for personal watercraft (PWC) use.

WEAR PROTECTIVE CLOTHING. Severe internal injuries can occur if water is forced into body cavities as a result of falling into water or being near jet thrust nozzle. Normal swimwear does not adequately protect against forceful water entry into rectum or vagina. All riders must wear a wet suit bottom or clothing that provides equivalent protection (see Owner's Manual). Footwear, gloves and goggles/glasses are recommended.

KNOW BOATING LAWS. Polaris Industries Inc. recommends a minimum operator age of 16 years old. Know the operator age and training requirements for your state. A boating safety course is recommended and may be required by your state.

ATTACH ENGINE SHUT-OFF CORD (LANYARD) to wrist and keep it free from handlebars so that engine stops if operator falls off. After riding, remove cord from PWC to avoid unauthorized use by children or others.

RIDE WITHIN YOUR LIMITS AND AVOID AGGRESSIVE MANEUVERS to reduce the risk of loss of control, ejection, and collision. This is a high performance boat - not a toy. Sharp turns or jumping wakes or waves can increase the risk of back/spinal injury (paralysis), facial injuries, and broken legs, ankles and other bones. Do not jump wakes or waves.

DO NOT APPLY THROTTLE WHEN ANYONE IS AT REAR OF PWC. Turn engine off or keep engine at idle. Water and/or debris exiting jet thrust nozzle can cause severe injury.

DO NOT OVERLOAD. It will significantly reduce stability and control. Never exceed rider or weight capacity. See capacity decal.

KEEP AWAY FROM INTAKE GRATE while engine is on. Items such as long hair, loose clothing, or PFD straps can become entangled in moving parts resulting in severe injury or drowning.

NEVER RIDE AFTER CONSUMING DRUGS OR ALCOHOL.

READ AND FOLLOW OWNER'S MANUAL. If Owner's Manual is missing, contact a Polaris Dealer for a replacement.

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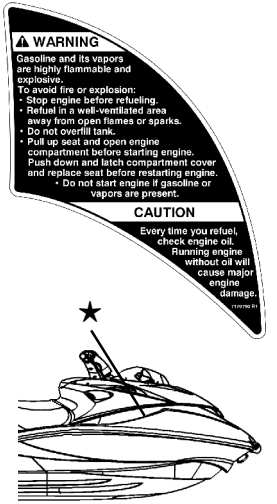
SAFETY
Safety Decals
Fuel Warning Decal

This decal is located on the right side of the watercraft, forward of the footwell pad, just below the mirror.



Fuel Warning Decal Text

WARNING: Gasoline and its vapors are highly flammable and explosive.

To avoid fire or explosion:

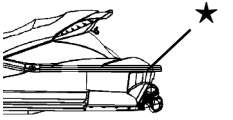
- Stop engine before refueling.
- Refuel in a well-ventilated area away from open flames or sparks.
- Do not overfill tank.
- Pull up seat and open engine compartment before starting engine. Push down and latch compartment cover and replace seat before restarting engine.
- Do not start engine if gasoline or vapors are present.

CAUTION: Every time you refuel, check engine oil. Running engine without oil will cause major engine damage.

Capsize Warning Decal

The capsize warning decal is located at the rear of the watercraft. It's positioned upside down so the operator can read it when the boat is capsized.

NOTE: Polaris does not recommend capsizing the watercraft under any circumstances.



Capsize Warning Decal Text

RIGHTING CAPSIZED BOAT

- To prevent injury, do not place hands or objects into pump inlet, intake grate or nozzle.
- To prevent major engine damage:
  Make sure engine is stopped by pulling lanyard from engine stop switch and turn boat to upright position in a clockwise direction.

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Safety Decals

A shock hazard decal is located on the deck, on the right side of the seat opening.

⚠WARNING	DO NOT REMOVE ELECTRICAL PART WHEN STARTING OR DURING OPERATION. HIGH VOLTAGE SHOCK HAZARD. 7172605 R1

Informational Decals

The Coast Guard exemption decal is located below the left-hand mirror.

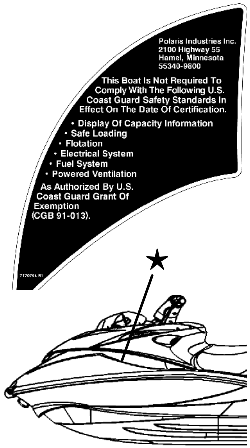
Coast Guard Decal Text

Polaris Industries Inc.
2100 Highway 55
Medina, Minnesota
55340-9800

This Boat Is Not Required To Comply With The Following U.S. Coast Guard Safety Standards In Effect On The Date Of Certification.

- Display of Capacity Information
- Safe Loading
- Flotation
- Electrical System
- Fuel System
- Powered Ventilation

As Authorized By U.S. Coast Guard Grant Of Exemption (CGB 91-013).



Located on the upper shroud near the hood:

FIRE EXTINGUISHER CONTAINER
LOCATED INSIDE
7171396

The fuel octane decal is located on the shroud near the fuel fill:

The capacity decal is located on the deck at the rear of the watercraft:

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SAFETY
Operator Safety
⚠ WARNING

Failure to follow the warnings and instructions contained throughout this manual and on your watercraft can result in serious injury or death.

Read and understand your owner's manual and all warning decals before operating a Polaris watercraft.

Any operator of a Polaris watercraft must know and practice the following guidelines for personal safety and the safety of passengers. Never permit a guest to operate this watercraft unless the guest has read and understands all warning decals and the owner's manual.

Operator Guidelines

This watercraft is not a toy. It's a high performance powerboat, and operating it requires learned and practiced skills. All operators and passengers should become familiar with proper operating techniques before attempting maneuvers. Always operate the watercraft at a speed appropriate for water conditions and for your level of experience.

The minimum recommended age for operators of this watercraft is 16 years. Obey all applicable boating rules and regulations.

Brakes

This watercraft does not have brakes. The watercraft coasts to a stop when the throttle is released. The natural drag of the water slows and stops the watercraft. *Allow a minimum of 300 feet (90 m) to coast to a stop from full throttle.*

Steering

Jet thrust is required to steer and turn the watercraft. Never completely release the throttle and attempt to turn at more than a trolling speed. The watercraft will not turn. Practice until you're comfortable with turning and stopping, and be sure you've mastered the skills before carrying a passenger. See page 33 for a description of the watercraft's Enhanced Steering Performance feature.

Learn and observe all local, state, and federal boating regulations and speed limits. Boating laws and navigational rules are designed for the safety of everyone sharing the waterways.

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Operator Safety

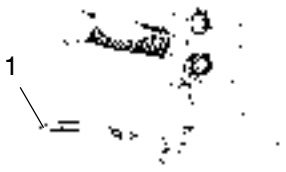
Operator Guidelines (continued)

Your Polaris watercraft is capable of towing, but please be aware that towing can cause reduced steering control. Be extremely careful when towing other watercraft, skiers or objects behind this watercraft, as they have a significant impact on handling and steering. Observe local and state laws regarding water skiing and towing.

Do not allow passengers to stand on the boarding platform while the watercraft is running or in motion. Passengers should always remain seated.

Never travel over a ski jump or attempt to jump waves, wakes or other objects in the water. Doing so may seriously damage the watercraft and cause personal injury due to the hard impact, a temporary loss of visibility, possible loss of control and reduced reaction time.

Always securely attach the lanyard cord (1) to the operator's left wrist or PFD before starting the watercraft. If the operator falls off, the engine will immediately lose power.



Be sure the lanyard cord is free and not wrapped around the handlebars or controls. When the watercraft is not in service, disconnect the lanyard from the engine stop switch to prevent accidental starting of the engine.

Pre-Operation Check

Always perform the pre-operation check (beginning on page 35) before starting and riding the watercraft. Make sure all critical components are operating correctly. Check fuel and oil levels and all controls, especially the throttle lever, handlebars, and steering nozzle. Failure of these critical components can result in an accident and lead to serious injury or death.

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SAFETY
Operator Safety

⚠ WARNING

Failure to wear protective gear while operating a watercraft can result in serious injury. The jet pump emits a forceful stream of water that can injure body orifices. Falling off the watercraft while operating at higher speeds may also lead to injury of the body or body orifices. Always wear the recommended protective gear while riding a watercraft.

⚠ WARNING

Falling off a moving watercraft can result in serious injury or death. If a passenger falls from the watercraft, release the throttle immediately. Do not exceed idle speed if any person in the water is within 50 feet (15 m) of the rear of the watercraft.

Safe Riding Gear

Always wear protective gear when operating or riding a personal watercraft. Attach a whistle to your lanyard to summon help in emergency situations.

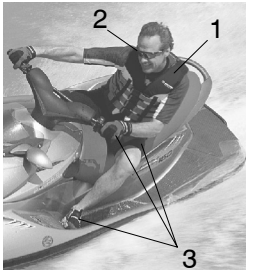
Personal Flotation Device (1)

The operator and passengers must always wear an approved personal flotation device (PFD) at all times to prevent accidental drowning. Polaris recommends a vest-type PFD (U.S. Coast Guard type 1, 2, or 3).

NOTE: The seat of the watercraft *is not* a PFD.

Eye Protection (2)

Polaris recommends that watercraft riders wear adequate eye protection to guard against water spray, sun, insects and other objects. Wear securely fitting goggles to protect prescription eyewear and sunglasses from loss or damage.



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Operator Safety

Safe Riding Gear (continued)

Protective Apparel (3)

Polaris recommends that all riders wear a wet/dry suit or equivalent protective clothing while riding a personal watercraft. A wet/dry suit or equivalent clothing protects against the force of the water as well as from exposure and any unknown hazards in the water, such as debris or hidden objects. If a wet/dry suit is unavailable, wear snug-fitting clothing made of thick, tightly woven, sturdy fabric such as denim. Do not wear spandex or similar fabrics such as those used for bicycle shorts or typical swimwear. These fabrics do not provide protection for watercraft riding.

Polaris also recommends that watercraft riders wear watercraft shoes and gloves for additional protection.

Helmet

If a rider falls off a moving watercraft while wearing a helmet, the helmet could catch the water and cause choking, serious and permanent injuries or death. A helmet may not provide adequate protection against all foreseeable impacts and may aggravate some injuries. A helmet may also increase the possibility of an accident if it reduces your visibility or ability to hear, or if its weight contributes to fatigue. However, a helmet may provide increased protection in some situations, such as impact with the watercraft or collision with other watercraft or an obstacle.

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SAFETY
Operator Safety
Boating Under the Influence

Operating any watercraft while under the influence of alcohol or drugs could result in an accident and lead to serious injury or death.

More than half of all the people who drown have consumed alcohol prior to their accident. Even if you're not intoxicated, any amount of alcohol can be a threat to your safety and the safety of others. The equivalent of one beer will impair your balance, vision, judgment and reaction time, making you a potential danger to yourself and others.

Do not operate any watercraft while under the influence of alcohol or drugs.

Operator Awareness

A collision can cause serious injury or death. Always be aware of other watercraft, swimmers and other obstacles while operating the watercraft. Always maintain a safe distance, especially if you're an inexperienced operator. Do not exceed idle speed if any person in the water is within 50 feet (15 m) of the rear of the watercraft.

Operator Fitness

Safe operation of this rider-active craft requires good judgement and physical skills. Persons with cognitive or physical disabilities who operate this vehicle have an increased risk of overturns and loss of control, which could result in serious injury or death.

Riding personal watercraft is strenuous. All riders should be in good physical condition. Pregnant women should consult their physicians before riding any watercraft.

Reboarding the watercraft in deep water can also be strenuous. Operators and passengers should be physically fit enough to reboard the watercraft in deep water. Practice boarding in chest-deep water to be sure you are physically able to reboard if the need arises.

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Operator Safety

Operator Fatigue and Dehydration

Long hours of boating with exposure to noise, vibration, sun, glare and wind can result in operator fatigue and dehydration. These conditions can affect your balance, vision, judgment and reaction time. Fatigue and dehydration can increase your risk of an accident resulting in serious injury or death. Combining alcohol consumption with this condition greatly increases your risk of causing an accident.

Learn to recognize the early symptoms of fatigue, and allow your body to recover by taking a break from operating the watercraft. Drink plenty of non-alcoholic beverages to prevent dehydration, and wear protective riding gear to protect against exposure to weather elements.

Hypothermia

Your life may depend on a clear understanding of the effects of cold water on the human body. Many suspected drowning victims actually died from cold exposure (hypothermia) rather than drowning.

Hypothermia can begin in water as warm as 80° F. (27° C). It's a condition in which the body loses heat faster than it can produce it. Violent shivering develops, which may give way to confusion and a loss of body movement. Hypothermia can result in serious injury or death in a very short time.

To avoid hypothermia:

- Dress warmly.
- Wear proper gear and stay as dry as possible.
- Seek a warm environment at the first sign of hypothermia (mild shivering).

If you fall into the water:

- Do not discard clothing.
- While wearing your life jacket, draw your knees up toward your chest and hold them there with your arms in the Heat Escape Lessening Posture (HELP).

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SAFETY
Operator Safety
Safe Riding Position

Falling off a watercraft can result in serious injury. The operator and any passengers should always keep both feet firmly planted on the floorboards while the watercraft is in motion. The passenger should face forward and firmly hang on to the operator's waist, except in towing situations, when the spotter faces the rear and uses the grab handle to hold on.

Turning and Accelerating

High thrust makes the watercraft turn more sharply. Lower thrust makes the watercraft turn less sharply.

Making sharp turns at high speeds may cause the watercraft to "spin out" and may cause rider(s) to be ejected from the watercraft. Make gradual turns when operating at higher speeds.

Turning and accelerating without checking for other boats and objects in your path can cause an accident and result in serious injury or death. *Always look behind the watercraft and to each side before accelerating and before making turns.* Always be aware of obstacles, swimmers and other watercraft.

Overloading the Watercraft

⚠ WARNING

Overloading a watercraft will significantly reduce vehicle stability and control, which could result in an accident and lead to serious injury or death. Never exceed the specified rider capacity for the watercraft.

Your Polaris watercraft is designed to carry an operator and up to two passengers. When more than one person is riding, the watercraft handles differently. Make sure that you feel comfortable driving the watercraft by yourself before allowing any passengers to ride with you.

Do not exceed the capacity of the watercraft under any circumstances. Refer to the capacity decal at the rear of the watercraft and on page 13 of this manual.

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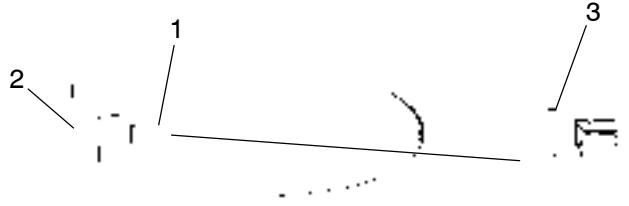
Operator Safety

Jet Pump Water Intake Safety

Contact with the jet pump or driveline components of the watercraft can result in serious injury, death or drowning. Do not allow hands, feet, ropes, straps, clothing or long hair to come in contact with the jet pump water intake (1) on the bottom of the watercraft while the engine is running. Never insert any object into the intake or outlet (2) of the jet pump, and never start or operate the watercraft with any guard or shield removed (such as the ride plate (3) or inlet grate).

To prevent serious injury due to accidental starter engagement, be sure the engine is off and the safety lanyard is disconnected before removing weeds or debris that may have collected in or around the jet pump intake.



Weather and Darkness

Be aware of severe weather conditions. Observe weather forecasts and conditions before venturing out, and do not operate the watercraft when visibility is poor and when the water is rough. Operation of the watercraft in poor weather conditions can result in an accident and lead to serious injury, hypothermia or death.

Never operate the watercraft after sunset, before sunrise or in any condition of darkness. The vehicle is not equipped with lights, which makes it unsafe and illegal to operate in darkness. Consult local regulations concerning allowed hours of operation.

Always ride with another watercraft when operating in remote areas or in large areas of open water. Carry a flare gun on board to signal for help if necessary.

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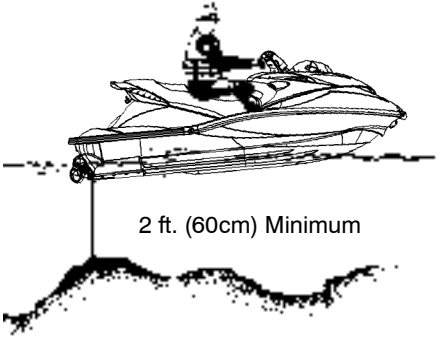
SAFETY
Operator Safety
Obstacles and Shallow Water

Always be on the lookout for dangerous obstacles above and below the water surface, especially in shallow water. Use extra caution when riding in unfamiliar areas.

Never ride in water that is less than two feet (60 cm) deep, and do not operate at more than an idle speed in water that is less than six feet deep. Colliding with an underwater object could result in serious injury or death. Ingesting sand into the cooling system will also cause the engine to overheat, which could lead to serious mechanical damage.



If the watercraft has been beached or has been sitting in shallow water, clear out any sand or small rocks before boarding and restarting the watercraft. Remove the particles by bouncing the back of the machine up and down in at least two feet of water. If the craft has been beached with the engine running, flush the system as outlined beginning on page 82.

CAUTION

Failure to flush the freshwater cooling system after the watercraft has been beached could result in serious engine damage. Always follow the recommended flushing procedures and flush the freshwater cooling system any time the watercraft has been beached with the engine running.

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Operator Safety

Fire Safety

Federal regulation requires that all watercraft carry an approved fire extinguisher. The operator is responsible for providing and maintaining the fully charged fire extinguisher in the watercraft. Do not operate the watercraft without a fire extinguisher on board.

Stow your fire extinguisher under the front storage compartment in the recessed area of the flotation foam. Know how to reach the extinguisher quickly in case of fire, and know how to use it before you operate the personal watercraft.

If you have any doubts about your ability to extinguish a fire, swim away from the craft as quickly as possible. Immediately seek help from other boaters or people on shore.

Electrical Shock Hazard

Serious injury or death could result from electrical shock. Never touch or remove electrical parts while starting or during operation of the watercraft. These parts include, but are not limed to the battery, ignition coils, spark plugs, and any exposed wire or wire connector.

Lifting the Watercraft

Serious back injury or other injury could result from attempting to lift the watercraft without assistance. Never attempt to lift the watercraft without the aid of a trailer and winch or another heavy lifting device.

Service and Maintenance

Routine service and adjustments to the watercraft are critical for the safe operation and extended life of the watercraft. Follow the maintenance and service recommendations outlined in this manual.

Watercraft Modifications

Modifications to this machine could create safety hazards and reduce vehicle reliability as well as make it unsafe or illegal to operate. *Do not modify this watercraft or any of its components.* Any modifications to the watercraft will void your warranty.

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FEATURES AND CONTROLS

1. **Starter Button** - Depress and hold the starter button to start the engine. Release it as soon as the engine starts. Do not depress for more than ten seconds at a time.

NOTE: The lanyard and lock plate must be attached to the engine stop switch to start the engine

2. **Stop Switch/Lanyard** - Push this switch down or disconnect the lanyard plate to stop the engine quickly.

3. **Safety Lanyard Wrist Cord** - The lock plate end is attached to the stop switch. The wrist band is attached to the operator's wrist or PFD.

4. **Gauge Mode Button** - This button operates the display change for the NGI. See page 29.

5. **Throttle** - Squeeze the throttle lever toward the handlebar to increase speed. Release the lever to slow the craft and return the engine to idle.

6. **Instrumentation** - Instrumentation is Next Generation Instrument (NGI). See pages 29-31.

7. **Seat Latch** - The seat latch secures the seat in position. When released, it provides access to the engine compartment.

8. **Jet Pump Outlet Nozzle** - The nozzle is the exit for the jet output. Orientation is controlled by the handlebars and determines the direction of craft movement.

9. **Exhaust Outlet**

10. **Reverse Gate**

11. **Drain Plugs** - When water gets into the bilge, it can be drained through the drain plugs. Remove the watercraft from the water before draining the bilge. Be sure the plugs are securely installed before launching the craft.

12. **Fuel Tank Fill** - The fuel fill is located under the front hood.

13. **Oil Fill/Dipstick** - The oil fill/dipstick is located on the oil reservoir, which is under the seat in the engine compartment.

14. **Jet Pump Intake Grate** - The grate protects the impeller and drive shaft and protects riders from contact with components.

15. **Drive Shaft** - Beneath the intake grate, the drive shaft transmits power from the engine to the impeller.

16. **Ride Plate** - The ride plate covers and protects the jet pump and provides leveling control for the craft.

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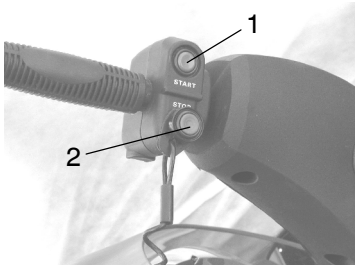
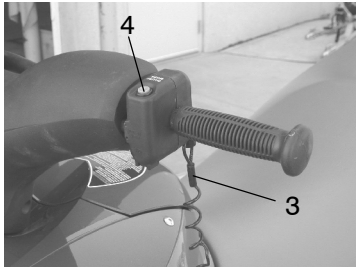
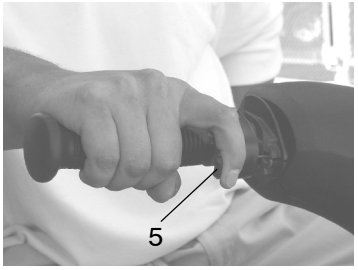
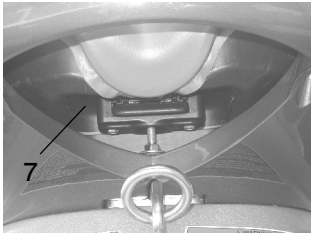
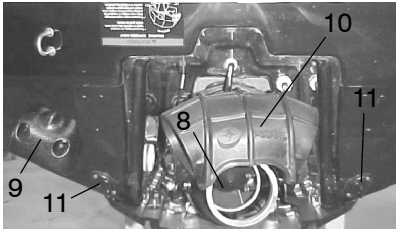
FEATURES AND CONTROLS

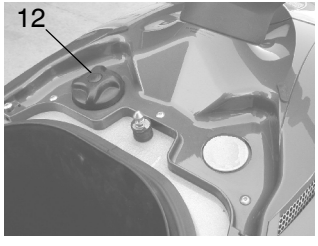


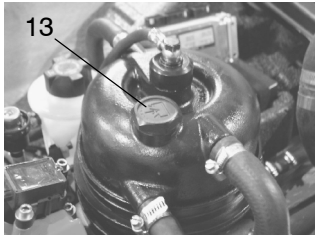


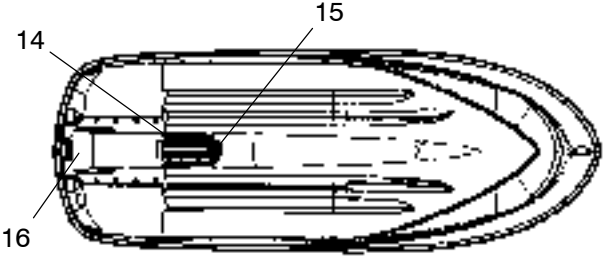












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FEATURES AND CONTROLS

1. **Front Hood** - The hood provides access to the fire extinguisher, fuel fill and main storage space.

2. **Fire Extinguisher Compartment** - Located under the front hood and under the storage bucket in the left side flotation foam recess, this compartment provides secure storage for the fire extinguisher.

3. **Handlebars** - The handlebars control the orientation of the jet pump outlet nozzle, which in turn controls the direction of craft movement.

4. **Reverse Lever** - The reverse lever has three positions: forward, neutral and reverse. See page 59 for operating procedures.

5. **Helm/Console Storage**

6. **Seat/Engine Compartment** - Removing the seat provides access to the engine, battery, engine control unit (ECU), exhaust system and other components.

7. **Grab Handle** - The grab handle assists a rider while boarding the craft or when riding as spotter in towing situations.

8. **Tow Eye/Hook** - Securely attach the tow rope to this hook when pulling skiers, wake boarders and tubes.

9. **Boarding Platform/Footwell Pads** - The boarding platform assists riders while boarding. The footwell pads are the place for the operator's and passenger's feet while riding the watercraft.

10. **Sponson** -The sponson enhances vehicle stability and turning ability in water.

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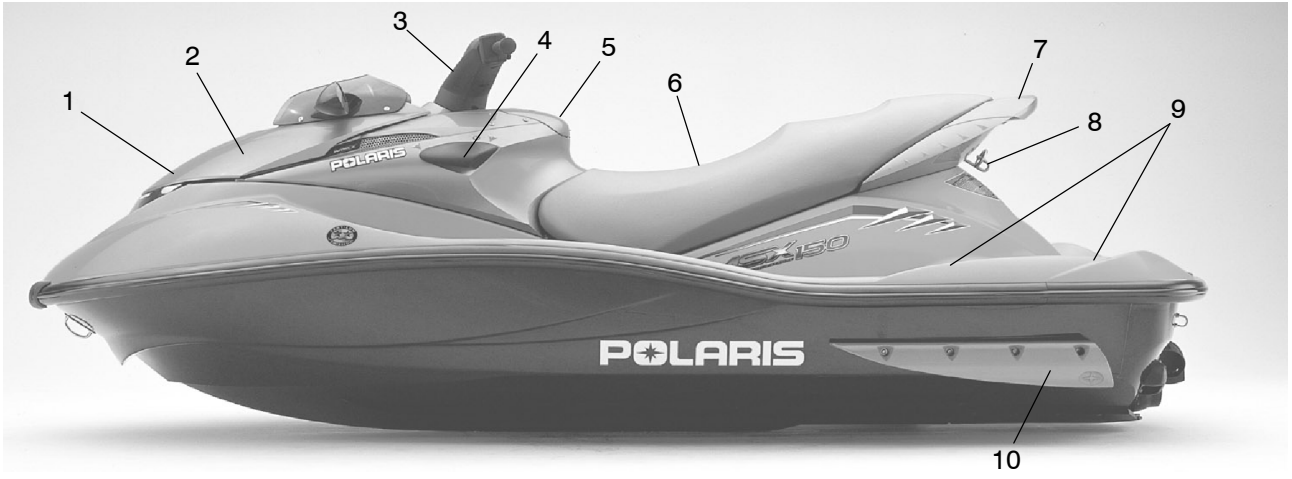

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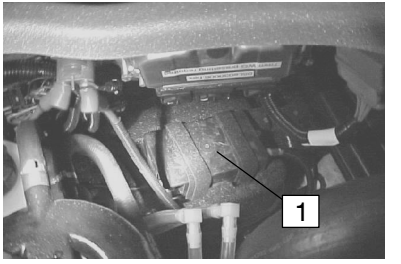
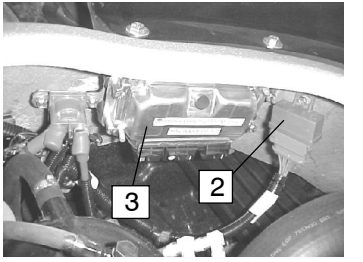
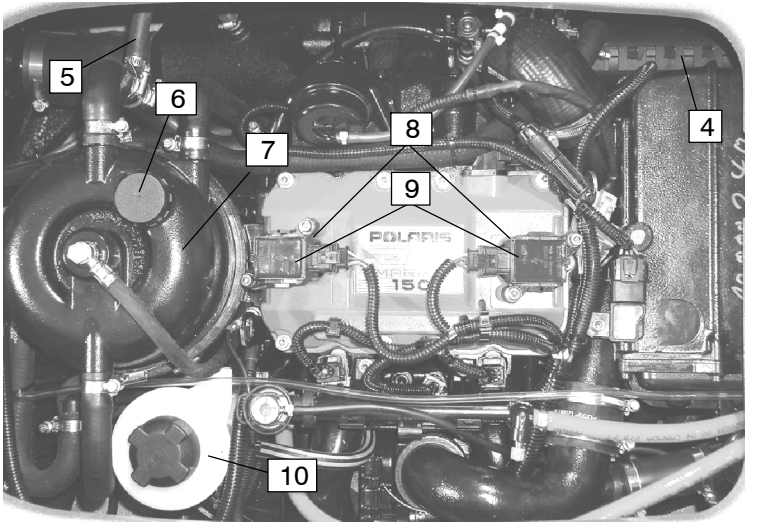
FEATURES AND CONTROLS
Engine Components (under seat)

1. Battery
2. Main relay
3. Engine control unit (ECU)
4. Air intake cover
5. Exhaust cooling water hose
6. Oil check/fill cap
7. Oil reservoir
8. Spark plugs (under ignition coils)
9. Ignition coils
10. Coolant reservoir







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Next Generation Instrument (NGI)
Primary Functions

NOTE: The fuel and turbo LCD bars are shown at their maximum levels in photo.

- Speedometer
- Fuel Level
- Turbo Boost Level
- Clock
- Low Oil Pressure/ Fuel/Battery Voltage Warnings
- High Engine Temperature Warning
- Check Engine Warning

Accessible Functions

- Tachometer
- Engine Hourmeter
- Trip Odometer

Function Overview

Speedometer

The large numeric speedometer displays vehicle speed. The NGI receives signals via a paddle wheel on the ride plate and interprets them to compute actual speed. Maximum display is 75 MPH (120Km/H). A higher speed will not display.

Tachometer

The NGI will display 0 to 9990 RPM in 50 RPM increments. The gauge receives the tachometer signal from the ECU.

Trip Odometer

The NGI will display accumulated miles or kilometers traveled. Engine speed must be at or above 500 RPM before the gauge will begin recording.

Fuel Level

Fuel level is displayed with an 8-bar LCD graphic (1/8th increments). When the display is down to one bar, a LOW FUEL symbol and red LED warning light will blink to alert the operator to refill the fuel tank.

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FEATURES AND CONTROLS
Next Generation Instrument (NGI)
Function Overview

Turbo Boost Level

Turbo boost pressure level displays with a 7-bar LCD graphic (1/7th increments).

Oil Pressure Level

If oil pressure becomes low, a LOW OIL symbol and red LED warning light will blink to alert the operator to check the oil. See page 40 for oil check procedures.

CAUTION

Operating the engine without oil will result in serious engine damage. Immediately check the oil as recommended on page 40 if the NGI indicates low oil.

Engine Hourmeter

The NGI retains and displays up to 999.9 hours (additional hours will not reset the gauge to zero). It begins to record engine hours whenever engine speed is at 500 RPM or higher. Memory retention is approximately 10 years.

Clock

The NGI displays the time in the main display mode without reference to either AM or PM.

Instrument Operation

DISPLAY MODE

There are three different display modes the NGI uses to display information to the operator. The three modes are: MAIN MODE, SPEED/TACHOMETER MODE and NAVIGATION MODE. Press and release the MODE button on the left handlebar control to advance through the three modes one at a time.

MAIN MODE displays SPEED and CLOCK.

SPEED/TACHOMETER MODE displays SPEED and TACHOMETER.

NAVIGATION MODE displays SPEED, TRIP ODOMETER and ENGINE HOURS.

The mode will scroll back to the main mode with the third push of the MODE button.

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Next Generation Instrument (NGI)

Instrument Operation

CLOCK SET

In the main mode, press and hold the RESET button until the hour digits flash (approximately six seconds). Press the RESET button to advance the hour digits. Press the MODE button to stop the hour flash and begin the minute digits flash. Press the RESET button to advance one minute. Press the MODE button to set the clock and exit the clock set mode.

TRIP ODOMETER RESET

Press and hold the RESET button until the trip odometer is reset to 000.0 miles / km.

CHANGE UNITS OF MEASURE

To toggle between standard and metric units of measure, press and hold the MODE button for ten seconds.

Display Warnings

Regardless of the type of warning, a blinking red LED warning will illuminate and a corresponding ISO symbol will appear on the LCD screen. The NGI will alert the operator to the following conditions:

- LOW FUEL (fuel level reaches 1/8 level)
- LOW OIL PRESSURE
- LOW BATTERY VOLTAGE
  (Battery voltage is at or below 10.9 volts DC)
- HIGH TEMPERATURE
  (Temperature is monitored by ECU)
- CHECK ENGINE
  (Check engine warning is triggered by ECU)

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RPM Limiter

CAUTION

A clogged intake and/or impeller can cause engine overheating and/or damage to the jet pump and impeller parts. Always keep the intake and/or impeller free of debris and weeds.

Your Polaris watercraft is equipped with a device that will limit engine revolutions per minute (RPM) if the engine overheats. This feature is designed to help prevent engine damage caused by engine overheating.

If the high temperature indicator and warning displays, stop the engine *immediately.*

Disable all starting mechanisms and clean the jet pump and impeller of any weeds and debris that may have collected during operation. If the cause of overheating is identified and corrected, normal operation can be resumed.

If the high temperature indicator and warning did not display, but the RPM is still limited, check to make sure the watercraft is not in the reverse mode, because RPM is limited during reverse operation. See the troubleshooting section beginning on page 96 for more information about limit modes.

If RPM continues to be limited, take the watercraft to an authorized Polaris dealer for service.

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Enhanced Steering Performance (ESP™)

Engine thrust is required to steer and turn the vehicle. Thus, if you release the throttle, the watercraft's ability to turn is reduced.

Your Polaris MSX watercraft is equipped with Polaris Enhanced Steering Performance (ESP) technology, a system that provides enhanced maneuverability if the operator releases the throttle but still needs steering control.

- ESP will provide thrust should the operator release the throttle and turn the handlebars completely to either the left or right.
- ESP works only when the watercraft is traveling more than 15 miles per hour and the handlebars are turned completely to the left or right. It does not work at slower speeds or when the engine is off.
- ESP is not a substitute for safe riding techniques, which should be followed and are described in the labels attached to the watercraft and in the owner's manual.

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FEATURES AND CONTROLS

Standard Equipment

- Watercraft Owner's Safety and Maintenance Manual
- Watercraft Safety Video PN 9916475
- Lanyard with wristband, lock plate and whistle
- Tool Kit containing: a wrench, a flat screwdriver, a spark plug wrench with Phillips head screwdriver, a 3/16-inch Allen wrench and a 5mm Allen wrench.

Contact an authorized Polaris dealer for replacement parts and equipment.

Accessories

Polaris has a wide range of watercraft accessories, from wetsuits and life vests to accessory mirrors, touring and towing gear, and performance parts. Contact your Polaris dealer or visit www.polarisindustries.com to see our full line of available products.

Optional Equipment

See page 101 for a list of Polaris products for servicing your watercraft.

- U.S. Coast Guard-approved fire extinguisher (UL 5-B:C Rating) PN 2871012
- Registration numbers (see your Polaris watercraft dealer)
- Vice grip pliers (needed in towing situations)
- Tow rope (for emergency use) PN 2871310
- Flare gun (for emergency use) PN 2871533
- Safety and riding gear, including approved personal flotation devices for operator and passenger

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Pre-Operation Inspection

Use the Pre-Operation checklist beginning on page 36 to verify that your vehicle is in proper operating condition before each use. Procedures are outlined in further detail on the pages following the checklist.

⚠ WARNING

If a proper inspection is not performed before each use, serious injury or death could result. Always inspect the vehicle as outlined in the checklist before each use to ensure it's in proper and safe operating condition. Always remove the lanyard from the engine stop switch before performing the pre-operation inspection.

⚠ WARNING

Starting or operating the watercraft with a fuel leak can result in an explosion, causing serious injury or death. If you smell fuel in the hull of the craft, *do not start the vehicle.* Take it to your dealer immediately for inspection.

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OPERATION
Pre-Operation Inspection

NOTE: Detailed instructions for how to perform the procedures in the inspection chart are contained on the following pages.

Item	What To Do
Bilge	Drain water from the bilge before placing the watercraft in the water.
Drain plugs/bilge	Inspect; clean; be sure each plug is tight, secure and doesn't leak.
Fuel/oil levels	Check levels of fuel and oil (page 40); add as needed; inspect for presence of water.
Coolant	Check level, add as needed (page 80).
Jet pump water intake	Inspect and remove any debris; ensure intake grate is secure; push rear of craft up and down in the water to flush sand out of water intake before starting.
Throttle	Check for proper operation.
Steering	Check for proper operation; inspect control cable.
Fire extinguisher	Inspect condition/expiration date.

Item	What To Do
Battery	Check fluid level/condition; vent hose must be clear and open.
Switches/buttons	Check for proper operation.
Lanyard cord/stop switch	Check condition and operation.
Loose parts/hoses	Inspect for loose parts/hoses and connections; tighten as needed.
Hull	Inspect hull for damage or cracks; clean off any marine growth.
Storage compartment	Check and secure latches.
Engine cover (seat)	Remove and ventilate engine compartment before starting engine. Secure seat latches.
Loose ropes/ straps/clothing/long hair	Be sure that there are no loose ropes, straps, clothing, etc.; Long hair is tied back and secured.
Riding gear	Check operator and passenger for complete gear and proper fit.
Reverse System	Check for proper operation.

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Pre-Operation Inspection

Fuel

Check the fuel level and refuel as needed before each use of the watercraft. If the fuel level becomes low while operating (with 1/8 tank remaining), a warning light will flash on the NGI display. Refuel promptly.

⚠ WARNING

Gasoline is highly flammable and explosive under certain conditions. Always heed the following warnings pertaining to gasoline and fumes.

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

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OPERATION
Pre-Operation Inspection
Fuel Recommendations

CAUTION

Using a non-recommended fuel may cause serious engine damage. Always use Polaris-recommended fuels for your watercraft engine.

91 Octane

For the best performance from your MSX 110/150, Polaris recommends the use of 91 octane fuel. Performance will be less than optimal with lower octane fuels.

89-90 Octane

Although 89-90 octane fuels are usable in your watercraft, performance will be reduced. Choose a higher octane fuel for better performance.

87-88 Octane

Use of 87-88 octane fuel is not recommended. If no other fuel is available in an emergency situation, 87-88 octane fuel may be used temporarily. However, engine damage can occur if engine speed exceeds 5000 RPM. If 87-88 octane fuel must be used, keep engine speed below 5000 RPM. Do not operate the watercraft at wide open throttle. Return to using a higher octane fuel as soon as possible. *Never use a fuel lower than 87 octane.*

Refueling

⚠ WARNING

Failure to follow proper refueling instructions can result in fire or explosion, causing serious injury or death. Always stop the engine and disconnect the lanyard from the engine stop switch before refueling.

When refueling, always use fresh, seasonal gasoline that has been stored in a clean container. For the best performance from gasoline, purchase only what is needed for a month or less of operation.

1. Stop the engine and disconnect the lanyard from the engine stop switch.
2. Carefully remove the fuel cap.

NOTE: Keep the watercraft horizontal while fueling.

3. Use a funnel or flexible spout to help avoid spilling gasoline on the watercraft. Always wipe up any spills immediately. Wash out the footwells with water if fuel or oil spills in those areas.

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Pre-Operation Inspection

Oil

Check the oil and refill as needed before each use of the watercraft. If the oil pressure becomes low while operating, a warning light will flash on the NGI display. Promptly stop the engine and check the oil as outlined on page 40. Refer to the specifications section or to page 76 for oil recommendations.

CAUTION

If the engine is operated without oil, serious damage will occur. Always check the oil level before each use of the watercraft. If you discover an empty oil reservoir, see an authorized Polaris dealer immediately for service.

Serious engine damage will occur if water becomes mixed into the oil. Always install the oil fill cap and/or dipstick securely after removing for service.

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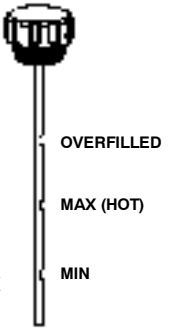
OPERATION
Pre-Operation Inspection
Oil Check
Refer to the specifications section or to page 76 for oil recommendations.

NOTE: Check the oil level when the engine is warm. To get an accurate oil level reading, the watercraft should not be in the water and you should not flush the freshwater cooling system during the procedure. Always check the oil level with the watercraft in a level position.

1. If the engine is cold, start the engine and allow it to idle for at least 30 seconds but no more than 60 seconds.
2. Stop the engine and pull off the lanyard.
3. The oil fill/dipstick is located under the seat in the engine compartment. Remove the dipstick and wipe it clean with a dry cloth.
4. Reinsert the dipstick, but do not screw the cap onto the reservoir. Remove the dipstick and read the oil level.



CAUTION

An overfull oil reservoir may cause serious engine damage. Never allow the oil level to meet or exceed the OVERFILLED mark near the top of the dipstick. Always maintain the oil level between the MIN and MAX marks.

5. Add the recommended oil to the oil reservoir as needed. Wipe up any spills immediately.
6. Reinstall the dipstick and tighten the cap to the reservoir.
7. Reinstall the lanyard and start the engine. Allow it to idle for at least 30 seconds but no more than 60 seconds.
8. Stop the engine and recheck the oil to ensure the level is between the MIN and MAX marks.

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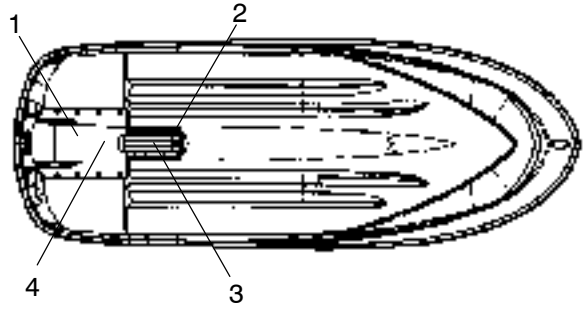
Pre-Operation Inspection

Jet Pump Intake

1. Ride Plate
2. Intake Grate
3. Drive Shaft (behind intake grate)
4. Impeller (behind ride plate)



⚠ WARNING

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

1. Remove the lanyard lock plate from the stop switch and disconnect the battery cables before inspecting the jet pump intake. Disconnect the negative (black) cable first.
2. Carefully check the jet pump intake and remove any weeds, shells or other debris that may restrict the intake of water.
3. After launching, walk the watercraft into water at least two feet (60 cm) deep and bounce the back of the craft up and down several times to flush out any sand and debris that may be in the pump.

CAUTION

A clogged intake or the ingestion of sand into the cooling system will cause engine overheating and result in jet pump or engine damage. If any obstruction cannot be removed, have an authorized Polaris dealer service it immediately. Clear the pump of sand after operating in shallow water or after beaching the watercraft.

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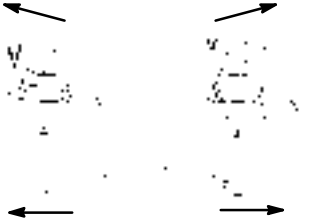
OPERATION
Pre-Operation Inspection
Steering



Check the handlebars for free movement throughout their full range. Make sure the jet pump outlet nozzle changes direction as the handlebars are turned from left to right and vice versa.

Be sure the handlebars and handlebar grips fit snuggly. Visually inspect the control cable to ensure that it's in working condition.

Throttle

Always check throttle operation prior to starting the engine.

Pull or squeeze the throttle several times to be sure the throttle lever moves freely through its full range. It should spring back to its original position when released.

Engine and Storage Compartments

The engine compartment is located beneath the seat. If the watercraft is operated in salt water, spray the inside of the hull (engine and components) with waterproof lubricant spray after every use. See page 101 for part numbers of Polaris products.

Be sure the seat, engine cover and front hood are properly positioned and securely latched before operating the watercraft.

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Pre-Operation Inspection

Loose Parts

Inspect the watercraft for any loose nuts, bolts, fasteners and hoses. Be sure that all hose clamps are tight. Replace cracked or deteriorating hoses.

NOTE: The closed-loop cooling system remains pressurized even when the engine is off. Do not service the cooling system or hoses when coolant is hot. See page 80 for safety warnings and procedures.

Seat

To access the engine/ storage compartment, disengage the rear seat latch (1). Always remove the seat and ventilate the engine compartment before starting the engine. Be sure all seats are properly positioned and secure before operating the watercraft.

NOTE: The seat is not a personal flotation device (PFD) and will not provide life-saving flotation. Always wear a PFD when operating or riding a watercraft.

Fire Extinguisher

The operator of the watercraft is required by law to carry a fire extinguisher on board. Always keep a fully charged and working fire extinguisher within the fire extinguisher holder, which is located under the front hood, beside the storage bucket. To access the fire extinguisher, remove the storage bucket and release the velcro strap securing the extinguisher to the flotation foam.

A fire extinguisher is not standard equipment with this watercraft. Contact your Polaris dealer or a fire extinguisher dealer to purchase a U.S. Coast Guard-approved fire extinguisher with a UL 5-B:C rating.

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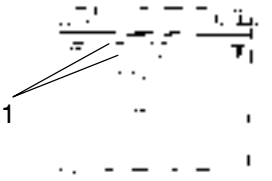
OPERATION
Pre-Operation Inspection
Battery

⚠ WARNING

Causing sparks while servicing the battery or servicing the battery when gas fumes are present can result in an explosion, causing serious injury or death.

Never create a spark while servicing the battery. If you smell fuel in the craft, *do not service the battery.* Take the watercraft to your dealer immediately for inspection.

Confirm that the battery terminal connections are tight, and make sure the battery is securely fastened in its mounting position. Inspect the battery for leaks, and check the vent hose for kinks or blockage.



Check the battery fluid level and add only distilled water if the level is low. Tap water contains minerals that are harmful to a battery. Maintain the fluid level between the upper and lower marks (1) on the battery.

Keep the battery in good condition and fully charged at all times, as a weak battery can leave you stranded. Never operate the watercraft with a battery that's too weak to start the engine or shows signs of loss of power.

Use a trickle charger to maintain the battery's charge during the off season. Doing so will ensure a good battery at the end of the storage period and a longer life for the battery. The battery charger 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 101 for part numbers of Polaris products.

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Pre-Operation Inspection

Hull

Use a non-abrasive cleaner to remove any marine growth and inspect the hull for cracks or damage. Do not operate the watercraft if the hull is damaged.

Drain Plugs and Bilge

Turn each bilge drain plug (1) counterclockwise and remove it. Clean the plug and plug hole of any sand and debris before reinstalling. Do not operate the watercraft if any drain plug is loose or missing.

When the watercraft is out of the water, remove the drain plugs and carefully flush out the bilge with fresh water. Allow the bilge to drain completely. Wipe out the bilge with dry shop towels and reinstall the drain plugs. After launching the craft, remove the seat and check for leaks.

Riding Gear

Be sure all operators and passengers have the appropriate riding gear, including a PFD (see page 16). Make sure all trailing objects are securely tied back or stowed.

⚠ WARNING

Objects trailing from a person in the water or from the watercraft can easily become entangled in the jet pump impeller and cause serious injury or death. Make sure long hair, straps, ropes, clothing and similar objects are tied back and secured.

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OPERATION
Pre-Operation Inspection
Switches/Buttons/Controls
Perform these checks while the watercraft is in the water:

1. Check the inside of the engine compartment for fuel or water leaks. Do not operate the watercraft until any leaks have been repaired and the engine compartment has been ventilated.
2. Start the engine and let it run for a few seconds. Remove the lanyard lock plate (1) from the engine stop switch (2) to test operation. The engine should stop immediately. If it doesn't, press the stop switch to stop the engine. Do not ride the watercraft. See your Polaris dealer for service before operating the watercraft.

3. If removing the lanyard lock plate successfully stopped the engine in the previous step, start the engine again and allow it to run for a few seconds. Depress the engine stop button. If the engine doesn't stop immediately, remove the lanyard lock plate to stop the engine. Do not ride the watercraft. See your Polaris dealer for service before operating the watercraft.

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Principles of Operation

The engine is directly coupled to a driveshaft. When running, the driveshaft rotates the impeller. The impeller is positioned so that water is drawn up from beneath the watercraft. The water travels through the impeller and is accelerated, producing thrust to move the watercraft forward. Pulling or squeezing the throttle lever increases engine speed (watercraft speed).

Turning the handlebar pivots the jet pump nozzle (water outlet) which controls the watercraft's direction. The throttle must be applied in order to turn the watercraft.

⚠ WARNING

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

Operate this vehicle only outdoors or in well-ventilated areas.

Engine Break-in Procedure

The break-in period for your new Polaris watercraft is defined as the first 12 hours of operation. No single action on your part is as important as following the procedures for a proper break-in. Careful treatment of a new engine will result in more efficient performance and longer life for the engine.

CAUTION

Excessive heat build-up during the first 12 hours of operation will damage close-fitting engine parts. Do not operate at full throttle or high speeds for extended periods during the break-in period. Do not carry passengers during the break-in period.

Use of non-recommended oil may cause serious engine damage. Always use the recommended oil for your Polaris watercraft.

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OPERATION
Engine Break-in Procedure

⚠ CAUTION

If the engine is operated while the watercraft is in very shallow water, sand, weeds and debris may be sucked into the jet intake and could cause damage to the impeller or injury to bystanders. Ingesting sand into the cooling system will cause the engine to overheat, which could lead to engine damage.

Whenever starting the engine, always be sure the watercraft is in water at least two feet (60 cm) deep.

Perform the following procedures carefully.

1. Make sure the drain plugs are installed securely and launch the watercraft.
2. Push the rear of the watercraft up and down several times in the water.
3. Check the throttle for free operation.
4. Remove the seat and ventilate the engine compartment.
5. Secure the seat, board the craft and start the engine. Allow it to warm up for about a minute before departing.
6. Operate the watercraft at the lowest possible speed for the first five minutes of operation.
7. Gradually open the throttle to half speed (half throttle).
8. Vary throttle speeds frequently, up to 3/4 speed, during the 12-hour break-in period. Do not operate at full throttle for extended periods during the break-in period.
9. Change the oil and oil filter after 12 hours of operation. See page 77.
10. Have your Polaris dealer inspect and adjust the engine valve lash after 12 hours of operation.

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Navigational Rules

This watercraft must be operated in accordance with all navigational rules and regulations governing it and the waterway on which it's operated. These rules are used and enforced internationally, as well as by the U.S. Coast Guard and local law enforcement. Any operator of this watercraft should be aware of these rules and should obey them when encountering other vessels.

The following rules are condensed and are provided only for your convenience. Consult a U.S. Coast Guard Auxiliary or Department of Motor Vehicles for a complete set of rules governing the waters where you'll be riding. You may also obtain this information when registering your watercraft.

Right-of-way and Give-way

In nautical terms the stand-on (privileged) vessel has the right-of-way and the give-way (burdened) vessel must yield or give way.

Stand-on Vessel

The vessel with the right-of-way has the duty to continue its course and speed, except to avoid an immediate collision. By maintaining course and speed, other vessels should be able to determine how best to avoid interfering with its course.

Give-way Vessel

The give-way vessel is responsible for taking positive action to stay clear of the stand-on vessel. Give-way vessels should not cross in front of stand-on vessels. The give-way vessel should slow down or change direction briefly and cross behind the stand-on vessel. The give-way vessel's actions should be clear and understandable by the stand-on vessel.

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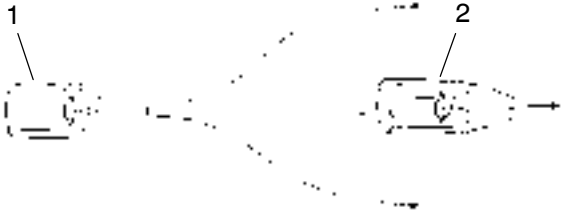
OPERATION
Navigational Rules
Rule 2

Rule 2 is “The General Prudential Rule” of the International Rule. This rule states that all operators have the responsibility of taking action to avoid a collision. All vessels involved in a potential collision become give-way vessels.

Encountering Vessels

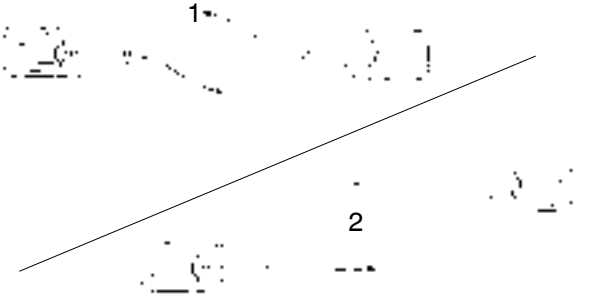
There are three main situations in which you may encounter other vessels:

- Overtaking (passing)
- Meeting (approaching another vessel head-on)
- Crossing (traveling across another vessel’s path)



Meeting Vessels

When meeting another power vessel head-on and a collision appears likely, neither vessel has the right-of-way. Both vessels are obligated to alter course to avoid an accident. Keep the other vessel to your port (left) side and take evasive action to the starboard (right) side (1). This rule does not apply if you’ll be clear of the other vessel by maintaining your course and speed (2).



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Navigational Rules

Overtaking Vessels

If your watercraft is passing another vessel, your craft is the give-way vessel. The other vessel is expected to maintain its course and speed. You must not interfere with its course of travel.

If your craft is the stand-on vessel, maintain your course and speed until the other vessel has passed you.

Crossing Paths

When two power vessels are crossing each other's path close enough to run the risk of collision, the vessel having the other on the starboard (right) side must give way. For example, if the other vessel (4) is on your vessel's (3) starboard (right) side, you must give way. If the other vessel is on your port (left) side, your vessel is the stand-on vessel and should maintain its course and direction. The other vessel must give way. However, always drive defensively in case the give-way vessel fails to give your vessel the proper right-of-way. Always be prepared to stop quickly or take evasive action.

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OPERATION
Navigational Rules
Non-Motorized Craft

Non-motorized craft (sailboats, canoes, etc.) are normally given the right-of-way, with the following exceptions:

- When a non-motorized craft is overtaking a power vessel, the power vessel has the right-of-way.
- Non-motorized craft should stay clear of fishing vessels.
- In a narrow channel, a non-motorized craft should not interfere with the safe passage of a power vessel.

Fishing Vessel Right-of-Way

All vessels that are fishing with nets, lines or trawls are considered “fishing vessels” under International Rules. Vessels with trolling lines are not considered fishing vessels. Fishing vessels have the right-of-way, regardless of position. However, they must not interfere with the passage of other vessels in narrow channels.

Reading Buoys and Markers

United States waters are marked for safe navigation through the use of buoys and markers with various shapes, colors, numbers and lights to guide boaters. The same is true for waters in particular states. Marking may vary by geographic location. Consult local authorities before riding your watercraft in unfamiliar waters.

Launch Ramp Etiquette

Be considerate and efficient when launching your watercraft at a public landing. Prepare your craft in advance, and perform all safety checks before arriving at the landing area. Launch as quickly as possible.

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Navigational Rules

⚠ WARNING

Collisions result in more **INJURIES AND DEATHS** than any other type of accident for personal watercraft (PWC).

TO AVOID COLLISIONS:

SCAN CONSTANTLY for people, objects and other watercraft. Be alert for conditions that limit your visibility or block your vision of others.

OPERATE DEFENSIVELY at safe speeds, and keep a safe distance away from people, objects and other watercraft.

- Do not follow directly behind PWCs or other boats.
- Do not go near others to spray or splash them with water.
- Avoid sharp turns or other maneuvers that make it hard for others to avoid you or understand where you are going.
- Avoid areas with submerged objects or shallow water.

TAKE EARLY ACTION to avoid collisions. Remember, PWCs and other boats do not have brakes.

DO NOT RELEASE THROTTLE WHEN TRYING TO STEER away from objects – you need throttle to steer. Always check throttle and steering controls for proper operation before starting PWC.

Follow navigation rules and all state and local laws that apply to PWCs.

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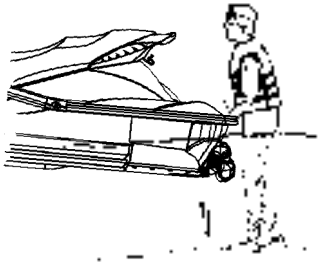
OPERATION
Launching the Watercraft

1. Inspect the drain plugs to ensure they're securely installed.
2. Launch the watercraft in an area free of weeds and debris. Make sure the craft is in at least two feet of water before starting the engine.
3. Push the rear of the watercraft up and down several times to flush out any sand that could be trapped in the pump.

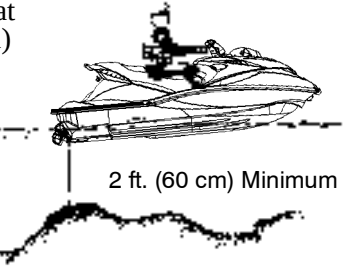


4. Remove the seat to ventilate the engine compartment. Reinstall the seat and latch securely.
5. Carefully board the watercraft and sit down.
6. Start the engine as outlined beginning on page 55.

Stopping the Engine

To ensure that you have steering control, do not turn off the engine until the watercraft has stopped moving. Your watercraft requires engine power for steering, so after the engine has stopped, you'll lose all steering control. Even if the engine is still running, there will be no steering control unless the throttle is applied.

1. Release the throttle lever. When the engine has slowed to an idle and the craft has stopped moving, push in the stop button. The engine should stop immediately. You may also stop the engine by pulling the lanyard lock plate off the engine stop switch.
2. Be sure the water is at least two feet (60 cm) deep when stopping to prevent debris from entering the impeller or cooling system.



3. Remove the lanyard lock plate. Never leave the lanyard attached to an unattended watercraft.

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Before Starting the Engine

Before starting the engine:

1. View the watercraft safety video provided with the watercraft.
2. Read and understand this Owner's Manual.
3. Be familiar with all controls and functions of the watercraft.
4. Perform the pre-operation check found on page 36.

If you have any questions about the features or controls of this watercraft, see your Polaris dealer.

⚠ CAUTION

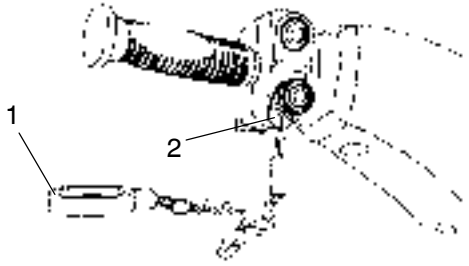
If the engine is run while the watercraft is in very shallow water, sand, weeds and debris may be sucked into the jet intake and could cause damage to the impeller or injury to bystanders. Ingesting sand into the cooling system will cause the engine to overheat, which could lead to engine damage.

Whenever starting the engine, always be sure the watercraft is in water at least two feet (60 cm) deep.

Starting the Engine

1. Attach the lanyard wrist band (1) to your left wrist or PFD.
2. Fasten the lanyard lock plate (2) to the engine stop switch on the handlebars by pushing the lock plate around the barrel of the switch. Be sure the lanyard is not tangled around the handlebars or controls.

NOTE: The engine will not start if the lanyard lock plate is removed from the engine stop switch.



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OPERATION
Starting the Engine

⚠ WARNING

Starting the engine while the watercraft is in the "Forward" mode will immediately generate a forward thrust, which could cause an unprepared operator to fall from the watercraft, causing serious injury or death. Starting a cold engine will result in a larger forward thrust than that of a warm engine due to the higher initial engine speed as a cold engine warms to operating temperature.

To avoid falling from the watercraft during starting:

- Always be seated and alert with both hands on the handlebar when starting.
- Never hold the throttle open while starting.
- Place the watercraft in "Neutral" mode before starting to greatly reduce thrust force.

3. Position the reverse lever in the Neutral position.
4. Push the starter switch with your left thumb.
5. When the engine starts, immediately release the starter switch. Apply just enough throttle as needed to keep the engine running. Allow the engine to warm up for about one minute before operating.

NOTE: If the engine was run out of fuel, it may take two or three attempts to start the engine. Do not run the starter for more than ten seconds at a time or damage to the starter may result.

If the Engine Doesn't Start

If the engine does not start within 10 seconds, release the starter switch. Wait 10 seconds before trying again to avoid damaging the starter.

CAUTION

Engaging the starter improperly may cause starter wear and eventual failure. Do not engage the starter for more than ten seconds at a time. Do not depress the starter switch while the engine is running or while the starter is spinning.

If the engine does not start after several attempts, refer to the troubleshooting section of this manual, beginning on page 96.

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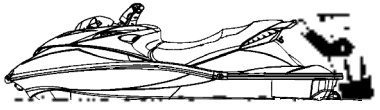
Boarding the Watercraft

Practice boarding the watercraft in shallow water before riding in deep water. Any passengers should also practice boarding in the event they must reboard in deep water.

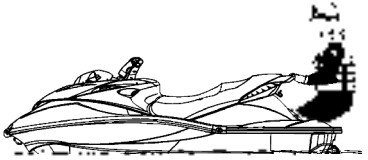
Boarding and Starting in Deep Water (Operator Only)

Make sure the watercraft engine is turned off when boarding in deep water.

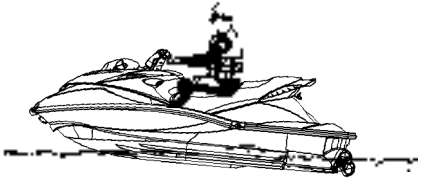
1. Swim to the rear of the watercraft. Grip the boarding handle near the rear of the seat.
2. Pull yourself up onto the boarding platform.
3. Move up to the seat and straddle it.
4. Attach the lanyard lock plate to the engine stop switch and see that the lanyard wrist band is secure on your left wrist before starting the engine.



Step 1



Step 2



Step 3

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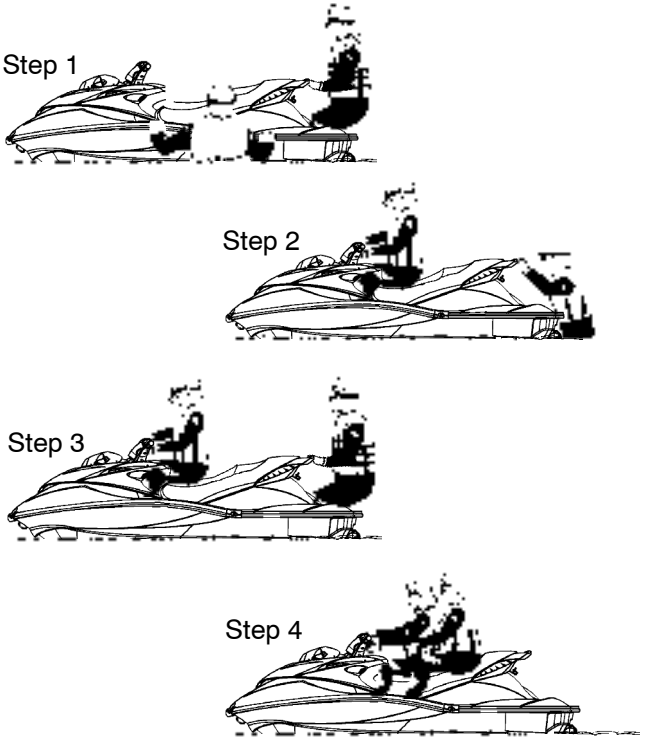
OPERATION
Boarding the Watercraft
Boarding With a Passenger

A watercraft behaves differently with a passenger on board, requiring more operator skill. Practice operating skills alone, before taking a passenger on board. Make sure the watercraft engine is turned off when boarding with a passenger.

1. The operator should board first as outlined on page 57. Attach the lanyard lock plate to the engine stop switch and fasten the lanyard wrist band to the left wrist or PFD. *Do not start the engine yet.*

NOTE: During boarding, the passenger should steady the watercraft while the operator boards. The operator can then help balance it while the passenger boards.

2. The passenger should move (or swim) to the rear of the vehicle.
3. The passenger should pull him/herself on board using the grab handle. Both operator and passenger should try to balance the watercraft while the passenger is boarding.
4. The operator should see that the passenger is holding on tightly and that both feet are on the footrests before starting the engine.



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Reverse Lever Operation

⚠ WARNING

Activating reverse while the craft is moving forward above planing speed could cause loss of control and result in damage to the watercraft or serious injury to the operator or passenger(s).

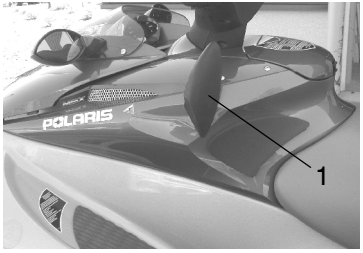
Do not attempt to activate reverse while moving forward above planing speed.

Use reverse only for slow-speed maneuvering.

Place the reverse lever in the forward-most position for operating the watercraft in forward. Always allow the engine to return to idle speed before moving the reverse lever to a different position.

To operate in reverse:

1. Pull the reverse lever all the way upward. The lever will remain in the full up position (1).



2. Apply throttle carefully and turn the handlebars to maintain steering control of the watercraft.

NOTE: Engine RPM is limited during reverse operation.

3. To return to forward operation, allow the engine to return to idle speed, then return the reverse lever to the forward position.
4. To operate in a neutral-like mode, move the lever to the “N” position. This mode is useful while docking or loading the watercraft onto a trailer.

⚠ WARNING

Serious injury from jet pump thrust can occur even when the reverse lever is in the Neutral position. When the engine is running, the jet pump continues to operate in Forward, Reverse and Neutral modes. Do not exceed idle speed if any person in the water is within 50 feet (15 m) of the rear of the watercraft.

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OPERATION
Turning the Watercraft

Turning the watercraft requires using the throttle (thrust from the jet pump) and turning the handlebars at the same time. Do not release the throttle when trying to steer.

Your Polaris MSX watercraft is equipped with Polaris Enhanced Steering Performance (ESP) technology, a system that provides enhanced maneuverability if the operator releases the throttle but still needs steering control.

- ESP will provide thrust should the operator release the throttle and turn the handlebars completely to either the left or right.
- ESP works only when the watercraft is traveling more than 15 miles per hour and the handlebars are turned completely to the left or right. It does not work at slower speeds or when the engine is off.
- ESP is not a substitute for safe riding techniques, which should be followed and are described in the labels attached to the watercraft and in the owner's manual.

See page 33 for more information about ESP.

High thrust makes the watercraft turn more sharply. Lower thrust makes the watercraft turn less sharply.

Making sharp turns at high speeds may cause the watercraft to "spin out" and may cause rider(s) to be ejected from the watercraft. Make gradual turns when operating at higher speeds.

To avoid collisions, always look behind the craft before turning.

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Stopping the Watercraft

⚠ WARNING

Colliding with an object in the water can result in serious injury or death. All riders must keep feet, arms and hands inside the watercraft at all times, especially while approaching a dock, a vessel or another object. Do not turn off the engine while approaching an object. Engine power is required for steering.

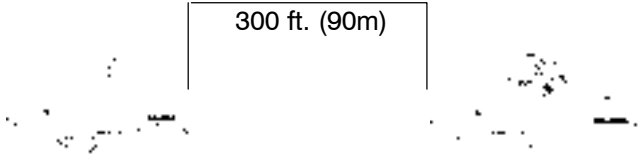
Practice stopping to become familiar with the procedure. Stopping is affected by gross weight (watercraft and rider), vehicle speed, wind direction and water surface conditions.

The watercraft is not equipped with a brake system. When the throttle is released, the natural drag of the water slows and stops the watercraft.

Always keep a safe distance from other vessels, swimmers, objects in the water and the shoreline. Refer to local regulations about safe operating distances for the body of water you operate on.

Allow yourself plenty of room for stopping. When operating at full speed, it could take the watercraft as much as 300 feet (90 m) to come to a stop after the throttle is released.

NOTE: *This distance is approximate and is supplied only for reference. Use good judgement and always allow plenty of room for stopping.*



After releasing the throttle, coast toward the desired stopping area with the engine idling. Be prepared to use the throttle again for steering control.

CAUTION

Stopping the engine without allowing the engine to idle for 60 seconds after full load operation may result in engine damage. Always allow the engine to idle for 60 seconds before stopping the engine.

Allow the engine to idle for 60 seconds after full load operation before pushing the engine stop button. Push the engine stop button before entering shallow water to prevent sand and debris from entering the pump and cooling system.

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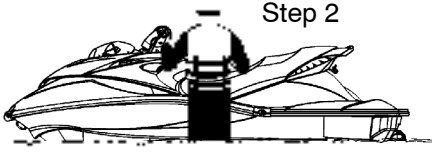
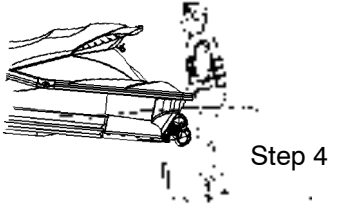
OPERATION
Beaching the Watercraft

CAUTION

Sand, pebbles, weeds and debris can enter the jet pump and cause serious damage to components. Ingestion of sand into the cooling system may cause the engine to overheat and could result in serious engine damage. Never beach the watercraft while the engine is running. Shut off the engine upon entering water less than two feet (60 cm) deep.

1. *Slowly* approach the beaching area and stop the engine in no less than two feet (60 cm) of water. Make sure there are no swimmers, boats or other obstacles close to the watercraft, as it will be impossible to turn the watercraft after stopping the engine.
2. Dismount the watercraft and guide it to the beach.
3. Before restarting, inspect the impeller/jet pump area and speedometer paddle wheel for sand and debris.
4. Move the watercraft to at least two feet (60 cm) of water and push the rear of the watercraft up and down in the water to help flush sand and debris out of the pump.
5. If the craft has been beached with the engine running, flush the system as outlined beginning on page 82.


Step 2


Step 4

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Operating in Rough Conditions

If riding in rough conditions, it's possible for the operator to hit his/her chest or face on the watercraft or handlebars and be injured. If the operator is ejected from the craft, injuries may make it difficult to reboard.

Operating the craft in rough water conditions is not recommended, and it's illegal in some states to operate the watercraft in or near the surf line.

⚠ WARNING

Riding the watercraft in rough water conditions could cause loss of control, resulting in serious injury or death to the operator and/or passenger. Avoid riding in rough water and/or adverse weather conditions. Do not jump waves with the watercraft.

CAUTION

Operating with excessive throttle can result in cavitation damage to the impeller or pump. Do not operate at high throttle settings for extended periods while the watercraft is out of the water, including operation in extremely rough water.

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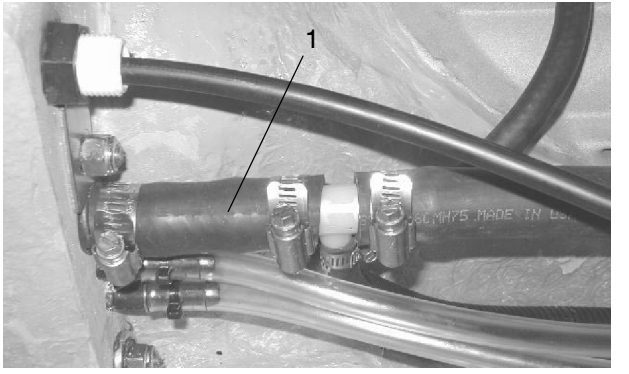
OPERATION
Towing a Disabled Watercraft

If the watercraft becomes inoperable in the water, it can be towed by another watercraft. Before towing, use a vice grip pliers to close off the cooling water inlet hose (1) located at the bottom of the watercraft hull (the hose from the pump box to the exhaust pipe). Clamp it off as near to the T-fitting as possible. *Do not clamp off the hose beyond the T-fitting*, as water will be able to enter the exhaust system through the fitting.



CAUTION

Failure to clamp off the cooling water inlet hose before towing may result in hydrolock, a condition caused by water being drawn or forced into the engine. Always clamp off the water inlet hose before towing a disabled watercraft.

To tow the craft, securely attach about 20 feet (6 m) of tow rope to the eye located on the bow. Slowly tow the watercraft to shore.

NOTE: Be sure to remove the pliers before starting the watercraft to avoid overheating and possible damage to the engine.

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Righting a Capsized Watercraft

Capsizing a watercraft is not recommended by Polaris and should be avoided. Overturning a watercraft is not considered the normal operation for which your vehicle is intended.

⚠ WARNING

This watercraft does not right itself if it has been capsized. If the operator is unable to right a capsized watercraft, operator and passengers may be stranded, which could lead to serious injury or death. Follow the procedures outlined in the owner's manual and on the capsize decal, which is found on the rear of the craft.

CAUTION

Failure to right a capsized craft promptly *and correctly* may result in serious engine damage if the engine is operated with air or water in the lines. A capsized watercraft must be uprighted in a *clockwise* direction as viewed from the rear. If the watercraft has remained in a 180° (capsized) position for more than two minutes, all fuel and oil lines must be inspected for water and/or air.

After righting the craft, prevent engine damage by following the procedures for a submerged (waterlogged) engine beginning on page 70.

1. Be sure the engine is stopped immediately after capsizing. The engine will overheat if it continues to run while the craft is capsized.
2. Upright the vehicle immediately by turning it in a clockwise direction *only* (as viewed from the rear).
3. Board the craft from the rear.
4. Remove the seat and bail all water from the engine compartment.
5. Reinstall the seat, sit down and start the engine.
6. If the engine fails to start shortly after being uprighted, make no further attempts to start it. Serious engine damage could result. Follow the procedures for a submerged (waterlogged) engine on page 70.

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OPERATION
Operating With Passengers

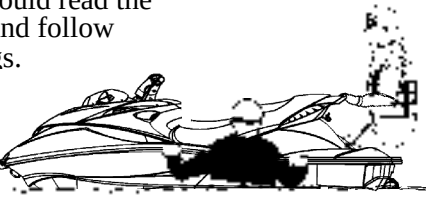
⚠ WARNING

Overloading a watercraft will significantly reduce vehicle stability and control, which could result in an accident and lead to serious injury or death. Never exceed the load capacity for the watercraft.

This Polaris watercraft is designed to carry an operator and up to two passengers. Refer to the capacity decal on your craft and the specifications beginning on page 102. Never exceed the stated capacity for your vehicle.

When more than one person is riding, the watercraft handles differently, which means that the operator must have enough prior riding experience to handle the watercraft with one or more passengers aboard. The operator should be skilled in operation and maneuvers before carrying any passenger.

Passengers should sit behind the operator and face toward the bow of the watercraft. A passenger riding as a spotter in towing situations should face the rear of the craft and hold on to the rear grab handle.



All passengers should read the owner's manual and follow all safety warnings. Passengers must wear an approved personal flotation device and other recommended safety gear. They should be good swimmers and they should be in good physical condition, as reboarding in deep water can be strenuous.

All passengers should firmly hang on to the PFD of the person sitting in front of them and keep both feet on the footwell pads in the gunnel.

The operator should make sure any passenger is properly seated and holding on before accelerating. The operator should also communicate sudden maneuvers to passengers in advance to prevent an ejection from the craft.

No person should operate or ride on a watercraft unless both feet reach the footrests when sitting on (straddling) the seat.

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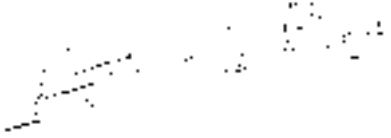
Post Operation Maintenance

Daily Care

Remove the watercraft from the water every day to inhibit marine organism growth on the hull.



1. Remove the watercraft from the water.

CAUTION

The engine may overheat and seize if operated out of water. Never operate the engine for more than five (5) seconds or hold the engine at full throttle while the watercraft is out of the water.

2. Purge residual water from the exhaust system by starting the engine and revving it repeatedly at partial throttle for about five (5) seconds until water no longer comes out.

NOTE: If the craft is towed up or down a steep hill after removing it from the water, this procedure may be repeated.

3. Wash the hull, jet pump intake and outlet with fresh water.
4. Remove the drain plugs to drain the bilge.
5. Remove the seat and rinse the engine compartment with a generous amount of fresh water. After the water has drained, wipe the engine compartment (bilge) dry with clean towels.
6. If the craft is used in salt water, Polaris recommends that the inside of the hull (engine and components) be sprayed with T9 metal protectant after each use. See page 101 for part numbers of Polaris products.
7. Reinstall the seat.
8. Clean the drain plugs and openings and reinstall the plugs.
9. Drain the engine and flush the cooling system as outlined beginning on page 82.

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OPERATION
Post Operation Maintenance
Daily Care

⚠ WARNING

Serious injury and damage to the watercraft will result if the jet pump and impeller are cleaned while the engine is running. Always stop the engine, remove the lanyard lock plate and disconnect the battery before servicing the jet pump and impeller.

10. Stop the engine and disable all starting mechanisms. Clean the jet pump, impeller and speedometer paddle wheel of any weeds and debris that may have collected during operation.
11. Inspect the area for damage. If damage is found, see your Polaris dealer for service.

NOTE: Whenever possible, avoid operating the watercraft in weedy areas. If it's unavoidable, vary the watercraft speed, as weeds tend to accumulate more rapidly at steady and trolling speeds.

Battery

If the watercraft battery is run down, remove it and have it recharged. Refer to battery charging recommendations and service procedures beginning on page 89.

⚠ WARNING

A weak battery may not be able to start the engine and could leave you stranded, which could result in serious injury or death. Never operate the watercraft with a weak battery.

Anti-Corrosion Treatment

Spray all the metal components in the engine compartment with a lubricating type rust inhibitor. We recommend T9 metal protectant.

Apply dielectric grease on battery terminals and connections.

NOTE: Never leave shop cloths or tools in the engine compartment or bilge.

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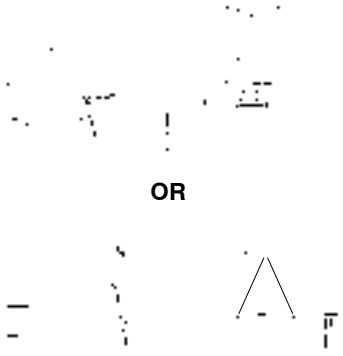
Post Operation Maintenance

Transporting The Watercraft

Do not route ropes or tie downs over the seat as they could damage the seat. Place padding between the tie downs and the watercraft to protect the body.

Be sure the trailer matches the watercraft's weight and design and that it meets trailer laws and regulations. Using the illustrations as a reference, follow the steps below to properly secure the watercraft for trailering.

1. Tie the watercraft securely to the trailer at the bow and stern as shown in the illustrations. Use additional cables if necessary. There should be no movement between the watercraft and trailer.
2. Make sure the seat is securely latched.



We recommend the use of a Polaris watercraft cover for protection from rocks and other debris while transporting.

Temporary Storage

If the watercraft will be stored temporarily (less than 30 days), perform the daily maintenance procedures beginning on page 67 and also perform the following temporary storage procedures.

1. Block the seat (engine compartment) open about 1/2″ (1.3 cm) to provide air circulation and to prevent condensation from forming.
2. If the seat is saturated with water, stand it on end (aft end down) and allow it to dry out. To avoid damaging the seat covering, place a towel or similar item under the seat before placing it on the ground or floor. When dry, store the seat on the craft as outlined in step 1.
3. Check the screen in the pump stationary nozzle for plugging. See instructions on page 93.
4. When storing the watercraft, make sure the nose is positioned upward at a 20° angle for drainage.

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OPERATION
Post Operation Maintenance
Submerged (Waterlogged) Watercraft
If the engine becomes water-flooded, tow the craft to shore. Immediately perform the following procedures. Promptly take the watercraft to an authorized Polaris dealer for additional service to minimize engine damage.

CAUTION

Serious engine damage could result if the engine is operated with air or water in the lines. If the watercraft has remained in a 180° (capsized) position for more than two minutes, all fuel and oil lines must be inspected for water and/or air. Do not attempt to start the engine.

1. Remove the watercraft from the water.
2. Remove the drain plugs and drain all water from the bilge.
3. If the engine was submerged in salt water, spray the engine and bilge with fresh water to reduce the risk of corrosion.
4. Reinstall the drain plugs.
5. Disconnect the lanyard from the lock plate.
6. Remove the ignition coils and spark plugs.

CAUTION

Dirt or foreign matter in the spark plug holes can result in serious engine damage. Do not allow dirt or foreign matter to enter the spark plug holes.

7. Crank the engine with the starter for 10 seconds to eject water from the spark plug holes. Repeat two or three times or until no more water is ejected.
8. Using a clean, dry, lint-free cloth, wipe away any water remaining in the spark plug holes. Reinstall the spark plugs and torque to 20 ft. lbs. (27 Nm).

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Post Operation Maintenance

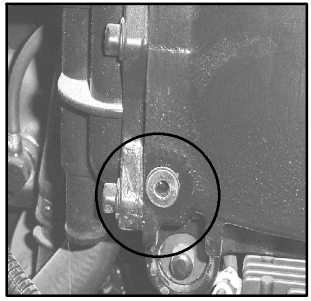
Submerged (Waterlogged) Watercraft (continued)

CAUTION

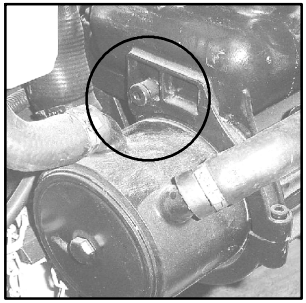
Operating the watercraft without a drain plug can result in serious engine damage. Always ensure that all drain plugs are properly installed before operating the watercraft.

NOTE: The MSX 110 does not have an intercooler drain plug. If your watercraft is an MSX 110, skip the following step. Continue with step 10.

9. On the MSX 150 only, remove the drain plug from the front of the intercooler and tip the boat to allow all water to drain out. Apply marine grade silicone to the threads and reinstall the plug. Hand tighten with a 5mm Allen wrench.



10. Remove the drain plug from the rear of the intake manifold and tip the boat to allow all water to drain out. Apply marine grade silicone to the threads and reinstall the plug. Hand tighten with a 5mm Allen wrench.



11. Promptly take the watercraft to an authorized Polaris dealer for additional service.

CAUTION

Failure to have a submerged watercraft serviced shortly after submersion will result in serious engine damage. Always have an authorized Polaris dealer service a submerged watercraft promptly.

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MAINTENANCE AND LUBRICATION

Emission Control System Warranty Maintenance and Repairs

You are responsible for the proper maintenance of the engine. You should keep all receipts and maintenance records covering the performance of regular maintenance in the event questions arise. These receipts and maintenance records should be transferred to each subsequent owner of the engine. POLARIS reserves the right to deny warranty coverage if the engine has not been properly maintained. Warranty claims will not be denied, however, solely because of the lack of required maintenance or failure to keep maintenance records.

MAINTENANCE, REPLACEMENT OR REPAIR OF EMISSION CONTROL DEVICES AND SYSTEMS MAY BE PERFORMED BY ANY REPAIR ESTABLISHMENT OR INDIVIDUAL; HOWEVER, WARRANTY REPAIRS MUST BE PERFORMED BY A DEALER AUTHORIZED BY POLARIS. THE USE OF PARTS THAT ARE NOT EQUIVALENT IN PERFORMANCE AND DURABILITY TO AUTHORIZED PARTS MAY IMPAIR THE EFFECTIVENESS OF THE EMISSION CONTROL SYSTEM AND MAY HAVE A BEARING ON THE OUTCOME OF A WARRANTY CLAIM.

If other than the parts authorized by POLARIS are used for maintenance replacements or for the repair of components affecting emission control, you should assure yourself that such parts are warranted by their manufacturer to be equivalent to the parts authorized by POLARIS in their performance and durability.

HOW TO MAKE A CLAIM

All repair qualifying under this limited warranty must be performed by a dealer authorized by POLARIS. In the event that any emission-related part is found to be defective during the warranty period, you shall notify Polaris Warranty Department at 1-763-417-8650 and you will be advised of the appropriate warranty service dealer or service providers where the warranty repair can be performed.

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MAINTENANCE AND LUBRICATION

EPA Emissions Regulations

All marine engines sold by Polaris Industries are certified by the United States Environmental Protection Agency for control of air pollution. For this reason, factory procedures for servicing must be strictly followed, and whenever possible, engines must be returned to the original intent of the design. Maintenance, replacement, or repair of the emission control devices and systems may be performed by any marine spark ignition (SI) engine repair establishment or individual. California consumers should refer to the California Emission Control System Warranty Statement beginning on page 111. Consumers in the other 49 states of the United States should refer to the U.S. Federal Emissions Limited Warranty beginning on page 109.

General Maintenance

After washing the engine compartment of the watercraft, protect metal components with a T9 Metal Protectant or another *non-flammable* metal protectant. Do not use flammable sprays or protectants in the engine compartment. Do not use petroleum based protectants or lubricants in the engine compartment, as most are flammable and may also deteriorate rubber components. Replace inlet and outlet hoses and clamps every 100 hours.

Periodic Maintenance Schedule

The periodic maintenance table must be followed to ensure maximum watercraft performance and long-term durability. Certain procedures require advanced mechanical and/or electrical knowledge. These procedures will be noted within the table. If you have any doubts about your ability to perform any procedures correctly, take the watercraft to an authorized Polaris dealer for the service.

Operating a watercraft in saltwater or in rough conditions requires additional service and maintenance. When checked, the procedure must be completed after watercraft operation.

Maintenance Schedule Key

✓ = Requires basic mechanical and/or electrical knowledge.
■ = Requires advanced mechanical and/or electrical knowledge.
R = REPLACE
* = Every 4 years

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MAINTENANCE AND LUBRICATION
Periodic Maintenance Schedule

NOTE: Use this schedule as a guide, refering to the pages following the schedule for detailed procedures.

ITEM	PROCEDURE	BREAK-IN PERIOD (Hours)	REGULAR INTERVAL (Hours)			PRE RIDE	SALT WATER	END OF YEAR
		10 - 12	25	50	100			
Spark Plugs	Adjust Gap / Clean	✓			✓ R			✓
Flame Arrestor	Inspect	✓					✓	
Engine Oil	Inspect Level	✓	✓			✓		✓ R
Engine Oil / Filter	Replace	✓ R	✓ R					✓ R
Wastegate Hose Banjo Fitting	Inspect / Clean	✓		✓				✓
Engine Coolant	Inspect	✓		✓		✓		✓
Engine Coolant	Replace				■ *			
Engine Compression	Inspect	■			■			
Valve Clearance	Inspect / Adjust	■			■			
Cooling / Oil / Air Hoses	Inspect	✓		✓		✓	✓	
Engine Mounts	Inspect	■			■			
Engine Fasteners	Inspect	■			■			
Chassis Fasteners	Inspect	■			■			
Freshwater Loop	Flush	✓		✓			✓	✓
Exhaust System	Inspect	✓		✓			✓	

✓ = Requires basic mechanical and/or electrical knowledge.
■ = Requires advanced mechanical and/or electrical knowledge.
R = REPLACE
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Periodic Maintenance Schedule

ITEM	PROCEDURE	BREAK-IN PERIOD (Hours)	REGULAR INTERVAL (Hours)			PRE RIDE	SALT WATER	END OF YEAR
		10 - 12	25	50	100			
Throttle Cable	Inspect / Adjust / Lubricate	✓		✓		✓	✓	
Reverse Cable	Inspect / Adjust / Lubricate	✓		✓		✓	✓	
Steering Cable	Inspect / Adjust / Lubricate	✓		✓		✓		
Handlebars	Inspect / Adjust	✓		✓		✓		
ESP Function	Inspect	✓				✓		
Impeller / Pump	Inspect / Flush	✓		✓			✓	
Sacrificial Anode	Inspect	✓		✓			✓	✓
Drive Couplers	Inspect	✓			✓			
Bilge Area / Drains	Inspect / Clean / Flush	✓			✓	✓	✓	✓
Battery / Vent	Inspect	✓			✓			✓
Electrical Connections	Inspect	✓			✓			
Fuel System	Inspect	■			■			✓
Fuel / Vent Hoses	Inspect	✓			✓			✓
Fuel Tank	Inspect	■						✓
Fuel Filter	Replace				■			
Fire Extinguisher	Inspect	✓				✓		
Start / Stop Functions	Inspect	✓				✓		

✓ = Requires basic mechanical and/or electrical knowledge.
■ = Requires advanced mechanical and/or electrical knowledge.
R = REPLACE
* = Every 4 years

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MAINTENANCE AND LUBRICATION
Oil Recommendations

CAUTION

Mixing brands or using a non-recommended oil may cause serious engine damage. Polaris recommends the use of 15W-50 synthetic 4-cycle marine oil, API rating SJ, for Polaris Marine Turbo 4-cycle engines. Never mix oil brands.

PS-4 Marine Oil

Polaris Performance Synthetic 4-Cycle (PS-4) 15W-50 Marine Oil was developed for Polaris Marine Turbo 4-cycle engines to provide the ultimate in engine protection. This fully synthetic formula protects your high performance engine at all extremes.

PS-4 15W-50 Marine Oil has a wide operating viscosity range for operation due to the low volatility synthetic base stocks, friction modifiers and corrosion protection. This formula provides the ultimate in protection from the extreme heat of turbo charged engines in marine applications.

See page 101 for the part numbers of Polaris products.

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Oil Change/Oil Filter Change

Polaris recommends that you have an authorized Polaris dealer perform oil and filter changes on your watercraft. These procedures require some mechanical aptitude and general engine knowledge. If you have any doubts about your ability to perform these procedures correctly, take your watercraft to your Polaris dealer for the service.

NOTE: An oil extraction/storage tool is required to perform the oil change.

Perform a break-in oil and filter change after the first 12 hours of operation. Thereafter, Polaris recommends changing the oil and filter every 25 hours, or monthly, whichever comes first. Change the oil and filter more frequently under aggressive riding conditions and always change the oil before end-of-season storage.

CAUTION

The engine may overheat and seize if operated out of water. Never operate the engine for more than five (5) seconds or hold the engine at full throttle while the watercraft is out of the water. To prevent engine damage, always flush the freshwater loop cooling system when the engine is operated out of the water.

1. Remove the oil fill cap from the top of the oil reservoir.
2. Insert the hose from the oil extraction tool into the reservoir.

NOTE: To prevent oil from foaming, a baffle is located inside the reservoir. Verify that the hose passes through one of the baffle holes and reaches the bottom of the reservoir.

⚠ WARNING

Contact with hot oil may result in serious burns. Do not allow hot oil to come into contact with skin.

3. Extract ALL of the oil from the reservoir and place it in the extraction tool storage container. When all oil is extracted, remove the hose from the reservoir and reinstall the oil fill cap.

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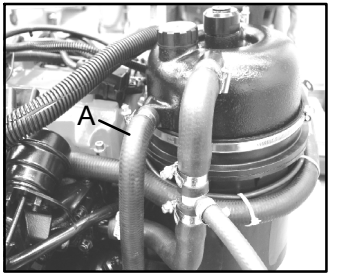
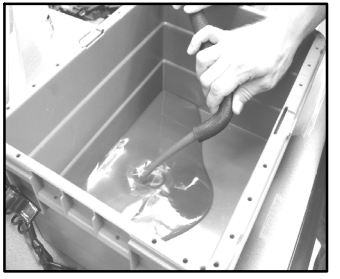
MAINTENANCE AND LUBRICATION
Oil Change/Oil Filter Change

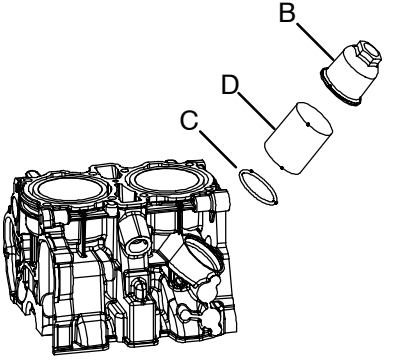
4. Remove both fuel injector wiring harness connectors.
5. Place a two liter plastic bottle in the engine compartment to catch additional used oil, or locate a drain pan and a 5-foot length of hose with a male-to-male hose coupler.



6. Remove the upper oil feed hose (A) from the top of the oil storage reservoir.
7. Insert the hose into the two liter bottle, or install the coupler into the end of the feed hose and hang the extended hose over the side of the watercraft to drain the used oil into a drain pan.



8. Insert the safety lanyard into the stop switch. Press and hold the start button for no more than 15 seconds. Release the start button and wait for at least 30 seconds. Repeat this process three or four times or until little or no oil is pumped out of the sump and into the container.
9. Remove the oil filter cover cap (B). Remove the o-ring (C) and filter element (D). Replace the filter element and o-ring with new parts.



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Oil Change/Oil Filter Change

10. Reinstall the oil filter cover cap and torque to 17 ft. lbs. (24 Nm).
11. Reinstall the oil supply hose to the oil storage reservoir and torque the gear clamp to 35 in. lbs. (4 Nm).
12. Fill the oil reservoir with 3.4 qts. (3.3 l) of the recommended oil and reinstall the oil fill cap. Refer to the specifications section or to page 76 for oil recommendations.

NOTE: Never add more than 4 qts. (3.7 l) to the oil reservoir.

13. Reconnect the fuel injector wiring harness connectors.
14. While flushing the freshwater loop cooling system, start the engine and allow it to idle for 30 seconds.
15. Stop the engine and re-check the oil level on the dipstick.
16. Add the recommended oil until the level is between the MIN and MAX marks on dipstick. Do not overfill.

NOTE: The oil level will increase slightly as the engine warms up to operating temperature.

17. Reinstall the oil fill cap securely.

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MAINTENANCE AND LUBRICATION

Coolant Change (Closed Loop System)

Have your authorized Polaris dealer change the coolant in the closed-loop cooling system every four years.

Coolant Level (Closed Loop System)

We recommend the use of Polaris Premium 50/50 Premix coolant for your watercraft. This coolant premix provides freeze protection down to -26° F (-32° C). The premix is 50% propylene glycol (an environmentally friendly product) and 50% de-ionized water. See page 101 for part numbers of Polaris products.

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

CAUTION

Storing or operating your watercraft with an improper coolant-to-water ratio can result in serious damage to the engine. The 50% propylene glycol and 50% de-ionized water premixed coolant recommended by Polaris provides freeze protection only down to -26° F (-32° C). If your watercraft is stored or operated in colder conditions, you must change the propylene glycol/de-ionized water ratio to provide adequate protection in those conditions. Always return the coolant to the 50/50 ratio before operating in temperatures at or above -26° F (-32° C) as the more concentrated coolant may cause engine damage at normal temperatures.

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Coolant Level (Closed Loop System)

1. Always allow the engine to cool down completely before servicing the cooling system.
2. View the coolant level in the coolant tank. Maintain the coolant level (1) between the MIN and MAX marks (when the fluid is cool).

CAUTION

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

⚠ WARNING

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

3. If coolant is low, slowly open the coolant tank cap.

NOTE: Pressure may remain in the cooling system even after the engine has cooled. Open the cap slowly to allow the pressure to escape.

4. Add the recommended coolant as needed to maintain the level between the MIN and MAX marks (when the fluid is cool).

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MAINTENANCE AND LUBRICATION
Cooling System Flushing (Freshwater Loop System)

CAUTION

Failure to follow the recommended flushing procedure or flushing the engine while it's hot could result in serious engine damage. Always follow the recommended flushing procedures. Always allow the engine to cool sufficiently before flushing. Always flush the freshwater loop cooling system any time the watercraft has been beached with the engine running.

Flush the water passages every day the watercraft is used in salt water or water with impurities, any time the craft has been beached with the engine running and before storing the craft for an extended time.

Polaris recommends the use of Flush Kit PN 2874833 when flushing the freshwater loop cooling system. After installing the flush kit, perform the following steps to flush the system.

1. Attach a garden hose to a faucet and to the female coupler/hose attachment.
2. Snap the male and female coupler together.
3. Start the watercraft engine and immediately turn on the water faucet.
4. Rev the engine intermittently for one minute to completely flush the freshwater loop cooling system.
5. Turn off the water faucet.
6. Allow the engine to run for no more than 10 seconds to allow all water to exit the cooling system, then turn off the engine.
7. Press the release button on the female coupler/hose attachment and separate it from the male coupler.

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Lubrication Recommendations

Proper lubrication and corrosion protection are necessary to maintain optimum performance and ensure years of service from your watercraft. We recommend the use of Polaris All Season Premium Grease. See page 101 for part numbers of Polaris products.

Throttle Cable

1. Lubricate the throttle cable by depressing the throttle lever and squirting grease onto the cable.
2. Push and release the throttle several times to work the grease down the cable.

Steering Cable Joints and Inner Wire

1. Lubricate the steering cable joints on the steering nozzle end.
2. Expose the steering cable inner cable and apply grease. Lubricate the steering nozzle end and the handlebar end.

NOTE: Cable seals can be moved to allow grease into the cable. Make sure the seals are put back in the proper location after applying grease.

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MAINTENANCE AND LUBRICATION

Lubrication Recommendations

Drive Line

The drive line consists of a drive shaft spider coupler and a bearing carrier with a sealed bearing inside. It does not require routine greasing. However, grease is required during reassembly of the system when it's been disassembled for service. Grease must be applied to the drive shaft before it's installed through the bearing carrier.

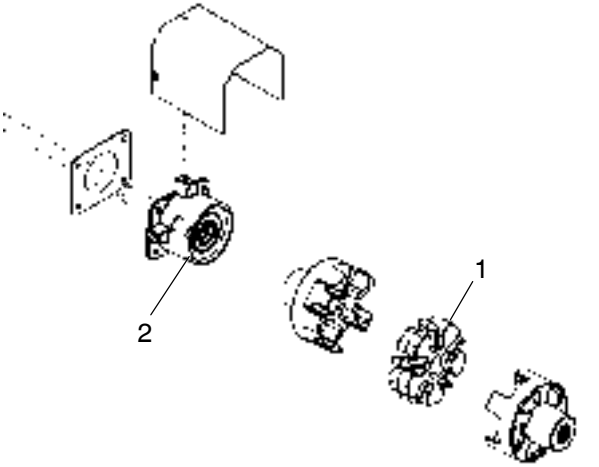
NOTE: We recommend that all drive line service be performed by your Polaris dealer.

CAUTION

Failure to apply grease to the driveshaft during reassembly through the bearing carrier will result in dislodged seals and improper operation of the system. Always apply grease when reassembling.

Inspect the rubber spider coupler (1) monthly. See your Polaris dealer for replacement if wear or damage is found.

Inspect the bearing carrier (2) for water leaks through or around the drive shaft. See your Polaris dealer for replacement if a leak is detected.



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Lubrication Recommendations

Seat Latch and Hooks

Grease the locking mechanism of the seat latch at the rear of the seat opening.

Electrical Connections

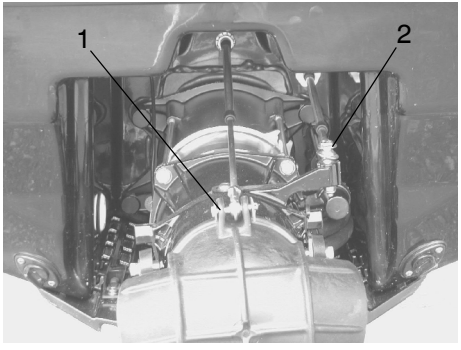
Apply dielectric grease to battery posts.

Reverse Handle Pivot Shaft

Lubricate the handle pivot shaft and bushing (1). Tighten the steering shaft if it's loose.

Steering Nozzle Pivot Shaft

Lubricate the steering nozzle shaft pivot connections (2).



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MAINTENANCE AND LUBRICATION
Spark Plugs

Always use the recommended spark plugs for your Polaris watercraft, and make sure the spark plug gap is within specification. Refer to the specifications section beginning on page 102 for the recommended spark plug type for your watercraft.

CAUTION

Using non-recommended spark plugs can result in serious engine damage. Always use the spark plugs recommended for your Polaris watercraft.

Spark plug condition is indicative of engine operation. The spark plug firing end condition should be read after the engine has been warmed up and the vehicle has been driven at higher speeds. Immediately check the spark plug for correct color.

- A slightly brownish tip is considered normal. The engine is running properly.
- A yellow tip is caused by salt water mist ingestion. This conductive coating will eventually cause fouling. This is a normal situation.

NOTE: If the spark plug tip is black or grey, have the watercraft serviced by an authorized Polaris dealer as soon as possible.

- A black tip indicates several potential problems: the wrong spark plug (wrong heat range) is being used; excessive idling occurs; the oil has been overfilled or the RPM limiter is malfunctioning.
- A light grey or white tip indicates that the wrong spark plug (wrong heat range) is being used; a fuel filter is plugged or an engine seal or gasket is leaking.

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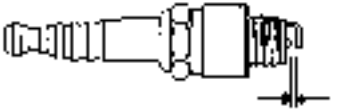
Spark Plugs

A spark plug with cracked porcelain or damaged threads should be changed immediately. If the electrodes are badly worn or burned the plug should also be replaced.

NOTE: Refer to the specifications section beginning on page 102 for the recommended spark plug type for your watercraft.

If the spark plug is in good condition, clean it with a clean shop cloth and/or wire brush. Adjust the gap to the recommended dimension of .028-.031 in. (0.7-0.8 mm) using a wire thickness gauge.



.028-.031 in.
(0.7-0.8 mm)

⚠ WARNING

Removing a spark plug while the engine or exhaust system is hot could result in serious burns. Wait until the engine has cooled or wear protective gloves while servicing a spark plug.

⚠ WARNING

High tension voltage is present in the spark plug wires when the engine is running. Contacting the wires could cause serious injury. Never touch spark plug wires when the engine is being cranked or operated.

1. Wipe any water from the spark plug and the inside of the ignition coil.
2. Install the spark plug and torque to 20 ft. lbs. (27 Nm).
3. Push the ignition coil down on the plug until it clicks.

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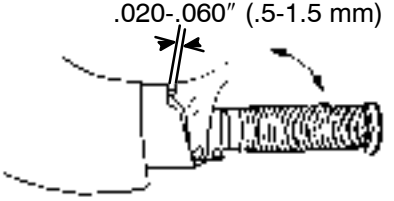
MAINTENANCE AND LUBRICATION

Steering Cable Inspection

1. The handlebars and steering nozzle should operate smoothly. If movement is stiff, see your authorized Polaris dealer for service.
2. Turn the handlebars from lock to lock and check to be sure that the clearances between the steering nozzle and the rear hull are even on both sides. If the alignment is not even, see your authorized Polaris dealer for service.

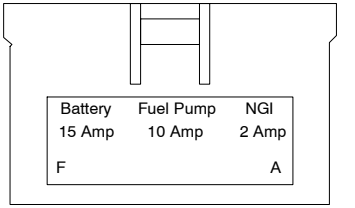
Throttle Cable Inspection

1. Depress and release the throttle lever. It should return to its initial position smoothly. If it doesn't, see your authorized Polaris dealer for service.
2. Throttle lever free-play should not exceed .020″-.060″ (.5-1.5 mm). If it does, see your authorized Polaris dealer for service.

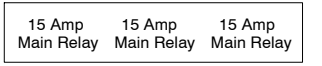


Fuses

After changing a fuse, always reinstall the weather-tight cover to keep the fuses dry.



The NGI is protected by a 2 amp fuse block, which is located near the battery and ECU. There are also two inline fuses on the chassis harness for the fuel pump and any battery powered accessories.



The engine is protected by two other fuse blocks, also located near the battery and ECU. The stator is protected by one 30 amp fuse and the main relay is protected by three 15 amp fuses. See illustration. There are also two spare fuses, a 15 amp and a 30 amp.

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Battery

Battery Maintenance and Charging

⚠ WARNING

Battery electrolyte is poisonous. It contains sulfuric acid. Serious burns can result from contact with skin, eyes or clothing.

Antidote:

External: Flush with water.

Internal: Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call physician immediately.

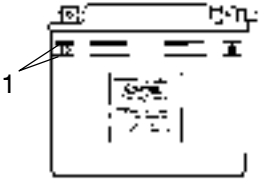
Eyes: Flush with water for 15 minutes and get prompt medical attention.

Batteries produce explosive gases. Keep sparks, flame, cigarettes, etc. away. Ventilate when charging or using in an enclosed space. Always shield eyes when working near batteries. KEEP OUT OF REACH OF CHILDREN.

Keep the battery terminals and connections free of corrosion. If cleaning is necessary, remove the 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. Be careful not to allow cleaning solution or tap water into the battery.

Replenishing Battery Fluid

A poorly maintained battery will deteriorate rapidly. Check the battery fluid level often. The fluid level should be kept between the upper and lower level marks (1).



To refill use only distilled water. Tap water contains minerals that are harmful to batteries.

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MAINTENANCE AND LUBRICATION
Battery

⚠ WARNING

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

Battery Removal

1. Release the battery by loosening the straps (1).
2. Remove the battery vent tube from the battery.
3. Disconnect the black (negative) battery cable first.
4. Disconnect the red (positive) battery cable last.
5. Lift the battery out of the watercraft, being careful not to tip it sideways and spill electrolyte.

CAUTION

If electrolyte spills, immediately wash it off with a solution of one tablespoon baking soda and one cup water to prevent damage to the vehicle.

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Battery

Battery Charging

⚠ WARNING

Batteries produce explosive gases. Any sparks in the area could result in an explosion and cause serious injury or death.

Keep sparks, flame, cigarettes, etc. away.

Never charge a battery while it's in the watercraft. Always remove the battery and charge in a safe area.

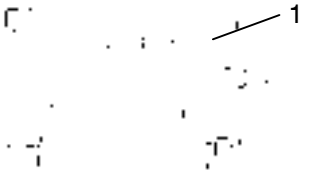
Make sure the battery charger is turned off and unplugged before connecting the cables to a battery.

Ventilate when charging or using in an enclosed space.

Always shield eyes when working near batteries.

Make sure the battery charger is turned off and unplugged before connecting the cables to the battery. This prevents the possibility of sparks at the terminals, which could ignite the battery gases.

1. Remove the caps from the cells (1). Add distilled water, if necessary, to bring the electrolyte up to the proper level.



2. Connect the battery to the charger. Set the charging rate at 1.9 amps, plug in the charger and charge the battery for ten hours.

NOTE: If electrolyte temperature rises above 115° F. (45° C) during charging, reduce the charging rate to lower the temperature. Increase the charging time.

3. After the battery is charged, check the fluid level. If the level has dropped, add distilled water to bring the electrolyte up to the proper level.
4. Check the results of charging. The specific gravity of each cell must be 1.26 at room temperature. The voltage should be 14.5-15.5 V during charging and 12.2-12.8 V after charging.

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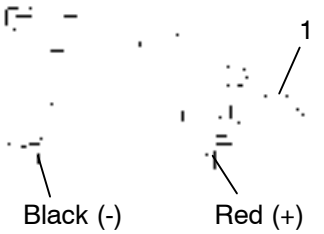
MAINTENANCE AND LUBRICATION

Battery

Battery Installation

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

1. Set the battery in the battery holder.
2. Install the battery vent tube (1), routing it away from the frame and body to prevent corrosion.



⚠ WARNING

Obstructed or improperly secured battery vent tubes can allow battery gases to accumulate and result in an explosion that could cause serious injury or death. Make sure the vent tube is free of obstructions and is securely installed.

3. Connect and tighten the red (positive) cable first.
4. Connect and tighten the black (negative) cable last.
5. Apply dielectric grease to each cable.
6. Reinstall the battery cover and attach the hold-down straps.
7. Verify that cables are properly routed.

Battery Storage

1. Remove the battery. Clean the casing and terminals with baking soda and water (one tablespoon of baking soda to one cup water). Apply dielectric grease or petroleum jelly to battery terminals and all exposed cable connectors.
2. Top off the battery with distilled water and charge it to a specific gravity of 1.26.
3. Recharge the battery monthly to prevent battery discharge and sulfating or use a trickle charger to maintain the charge during the storage period (see page 101 for the part numbers of Polaris products). Follow the instructions provided with the charger.
4. Store the battery in a cool, dry place out of direct sunlight.

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Hull and Deck Care

The use of non-recommended cleaning or polishing products could seriously damage the appearance and/or integrity of your watercraft's gelcoat surface. We recommend the use of the Polaris products listed on page 101. See your Polaris dealer for additional information about the care of your watercraft.

Salt Water and Unclean Water Care

When the watercraft is operated in salt water or water with impurities like silt, sand and other particulates, additional cleaning and maintenance is mandatory after each use. Clean the jet pump water inlet screen and all other affected areas of the watercraft. Flush the cooling system as outlined beginning on page 82.

CAUTION

Failure to perform additional cleaning and maintenance when the watercraft is operated in unclean or salt water will result in damage and corrosion to the watercraft. Clean all affected areas of the watercraft after every use in salt water or unclean water.

Jet Pump Water Inlet Screen

The water inlet screen (1) is located inside the stationary nozzle of the jet pump. Its purpose is to screen out grass and debris that could enter the cooling system.

⚠ WARNING

Serious injury and damage to the watercraft will result if the jet pump and impeller are cleaned while the engine is running. Always stop the engine, remove the lanyard lock plate and disconnect the battery before servicing the jet pump and impeller.

After using the watercraft, visually inspect the screen for buildup of contaminants. Clean as needed by flushing the engine and/or screen. See flushing procedures beginning on page 82.

NOTE: If the screen cannot be cleaned by flushing, see your Polaris dealer for additional cleaning.

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MAINTENANCE AND LUBRICATION

Extended Storage

When the watercraft will not be used for a month or more, preventive maintenance is required to keep components from deteriorating. An authorized Polaris dealer can do the required preventive maintenance or you can do it yourself with a minimum of tools.

NOTE: Fogging the engine is not required.

Perform all of the procedures outlined in this section of your owner's manual before storing the watercraft. See page 101 for part numbers of Polaris products.

Flush the Cooling System

Flush the freshwater loop cooling system as outlined on page 82.

Adjust Coolant/Water Ratio

If your watercraft is stored at temperatures below -26° F (-32° C), adjust the coolant to a higher concentration of propylene glycol. A 60% glycol and 40% de-ionized water mixture will provide freeze protection to -54° F (-48° C).

Always return coolant to the 50/50 ratio before operating the watercraft in conditions above -26° F (-32° C) as the more concentrated coolant may cause engine damage at warmer temperatures.

Drain the Exhaust

Engine draining is automatic, but the exhaust system must be drained by revving the engine to expel excess water. To avoid engine damage, never operate the engine for more than five seconds while the watercraft is out of the water.

Add Fuel Stabilizer

1. Fill the fuel tank.
2. Start and briefly rev the engine (five seconds or less).
3. Add fuel stabilizer to the full fuel tank.
4. Reinstall the fuel cap, but leave it loose to prevent condensation from forming in the fuel tank.

Lubricate

1. Lubricate the throttle and steering cables as outlined on page 83.
2. Lubricate all areas recommended in the maintenance section beginning on page 73.
3. Remove and store the battery as outlined beginning on page 89.

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Extended Storage

Cleaning

CAUTION

Never clean the watercraft with strong detergents, abrasives, degreasers, paint thinner, acetone, window cleaners, ammonia or products containing alcohol. They can damage finishes, decals, vinyl and plastics and accelerate UV breakdown, which could cause color change and premature deterioration of parts.

1. Remove the drain plugs and clean the bilge and engine area with hot water and mild detergent (such as dish soap) or with bilge cleaner. Rinse and drain thoroughly. Wipe up remaining water with clean, dry shop cloths. Do not use abrasive cleaners.

NOTE: Store the watercraft with the drain plugs removed and the seat propped open slightly to inhibit condensation from forming in the engine compartment.

2. Wash the exterior of the watercraft with fresh water and a mild detergent. Rinse thoroughly.

NOTE: Clean metallic gelcoat surfaces gently. Polaris does not recommend the use of power buffers or other power equipment to clean gelcoat surfaces.

3. Inspect and thoroughly clean the jet pump intake, outlet and impeller area. If damage to these areas is visible, see your Polaris dealer for service.
4. After cleaning, protect the watercraft by hand polishing with a regular furniture polish or non-abrasive silicone wax. Protect the seat and handlebar unit with a vinyl protector.
5. Spray the exterior of the engine with T9 metal protectant. (See page 101 for part numbers of Polaris products.)
6. Cover the watercraft with an opaque tarp or Polaris watercraft cover and store the craft in a clean, dry place.

NOTE: Make sure the nose is positioned upward at a 20° angle to allow water drainage during storage.

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ENGINE TROUBLESHOOTING

Engine RPM is Limited

Approximate RPM Limit Value	Gauge Indicator	Cause	Solution
1800 RPM	Flashing red warning light	Mechanical or electrical failure	See your Polaris dealer.
2000 RPM	High Temp (Overheat) Indicator and flashing red warning light	Engine overheat	Clean the water inlet (see page 93). If condition persists, see your Polaris dealer.
3000 RPM	High Temp (Overheat) Indicator and flashing red warning light	Cooling system failure	See your Polaris dealer.
3400 RPM	None	Reverse lever in reverse position	Move reverse lever to forward position.
4500-5500 RPM	None	Engine not warmed up to operating temperature	Allow engine to warm up at idle speed.
4700 RPM	Flashing red warning light, possibly no gauge warning	Turbo overboost or loose hose	See your Polaris dealer.

Engine RPM is Too High With Limited Speed

Possible Cause	Solution	See Page
Clogged jet pump intake	Clean intake	93
Cavitation, impeller damaged or worn	See your Polaris dealer	-

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Engine Doesn't Turn Over

Possible Cause	Solution	See Page
Blown fuse	Replace the fuse	88
Low battery voltage	Recharge battery to 12.8 VDC	91
Loose battery connections or ground	Check all connections and tighten as needed	92
Hydrolock (water in engine)	See your Polaris dealer	-
Loose starter relay (solenoid) connections	Check all connections and tighten	-
Lanyard lock plate not in place	Install lock plate under shut-off switch	55

Engine Turns Over But Doesn't Start

Possible Cause	Solution	See Page
Out of fuel	Refuel with fresh recommended fuel	38
Old or non-recommended fuel	Replace with fresh recommended fuel	38
Fouled or defective spark plugs	Inspect plugs, replace as needed	86
Crankcase filled with water or fuel	See your Polaris dealer	-
Clogged fuel filter	See your Polaris dealer or replace the filter	-
Low battery voltage	Recharge battery to 12.8 VDC	91
Mechanical failure	See your Polaris dealer	-

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ENGINE TROUBLESHOOTING

Engine Runs Irregularly, Stalls or Misfires

Possible Weak Spark Cause	Solution	See Page
Fouled or defective spark plugs	Inspect, clean and/or replace spark plugs	86
Worn or defective spark plug wires	See your Polaris dealer	–
Incorrect spark plug gap or heat range	Set gap to specs or replace plugs	86
Loose spark plug connections	Check all connections and tighten	–
Water present in fuel	Replace with fresh recommended fuel	38
Clogged exhaust pipe orifice fitting	Clean orifice fitting	–
Water in exhaust pipe	Drain exhaust	–
Low battery voltage	Recharge battery to 12.8 VDC	91
Possible Lean Fuel Mixture Cause	**Solution**	**See Page**
Low or contaminated fuel	Refill or replace with fresh recommended fuel, clean the fuel system	38
Low octane fuel	Replace with recommended fuel	38
Clogged fuel filter	See your Polaris dealer or replace the filter	–
Possible Rich Fuel Mixture Cause	**Solution**	**See Page**
Fuel is very high octane	Replace with lower octane recommended fuel	38

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Engine Overheats

Possible Cause	Solution	See Page
Clogged jet pump intake	Clean intake	93
Use of non-recommended fuel or oil	Replace with recommended fluids	38, 76
Sand or debris in cooling system	Flush the cooling system	82
Plugged cooling system	Inspect and clean cooling system	82
Clogged exhaust pipe orifice fitting	Clean orifice fitting	-

Engine Backfires

Possible Cause	Solution	See Page
Weak spark from spark plugs	Inspect, clean and/or replace spark plugs	86
Incorrect spark plug gap	Set gap to specs or replace plugs	86
Old or non-recommended fuel	Replace with fresh recommended fuel	38
Incorrectly installed spark plug wires	See your Polaris dealer	-
Broken valves	See your Polaris dealer	-
Incorrect ignition timing	See your Polaris dealer	-
Mechanical failure	See your Polaris dealer	-

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ENGINE TROUBLESHOOTING

Engine Pings or Knocks

Possible Cause	Solution	See Page
Poor quality or low octane fuel	Replace with fresh recommended fuel	38
Incorrect ignition timing	See your Polaris dealer	–
Incorrect spark plug gap	Set gap to specs or replace plugs	86

Engine Loses Power

Possible Cause	Solution	See Page
Weak spark	Replace spark plugs and/or wires	86
Incorrect fuel or fuel mixture	Replace with fresh recommended fuel	38
Water present in fuel or oil reservoir	Replace with recommended fluids	38, 76
Clogged fuel filter	See your Polaris dealer or replace the filter	–
Clogged jet pump intake	Clean intake	93
Clogged exhaust and/or cooling system	Clean exhaust, flush cooling system	82
Hydrolock	See your Polaris dealer	–
Too much load/weight on craft	Reduce load per vehicle specifications	102
Mechanical failure	See your Polaris dealer	–

Unusual Noise or Vibration From Propulsion System

Possible Cause	Solution	See Page
Weeds or debris lodged in impeller	Clean the impeller	–
Damaged driveshaft	See your Polaris dealer	–
Damaged pump bearings	See your Polaris dealer	–

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Oil and Lubricants	
Oil Pump (Extractor)	2861023
Polaris Performance Synthetic 4-Cycle (PS-4) 15W-50 Marine Oil (API rating SJ)	
Quart	2874862
Gallon	2874863
55 Gallon	2874864
Fuel System Maintenance Products	
Premium Fuel Stabilizer	2870652
Grease	
Grease Gun Kit	2871312
All Season Premium Grease	
3 oz. / 4 pack	2871322
14 oz. Tube	2871423
Starter Grease	2871460
Nyogel Grease	2871329
Retaining / Sealing Products	
Loctite™ Products	
Threadlock 242	2871950
Threadlock 262	2871952
Threadlock 271	2871954
Loctite™ 518	2871961
Marine Grade Silicone	8560054

General Maintenance Products	
Fogging Oil	
12 oz. Aerosol	2870791
Quart	2871517
Multi-Purpose Lubricant	2872891
Electrical Contact Cleaner	2872892
Engine Degreaser	2872893
Revival / Detailing Kit	2871589
Restore Polish / Swirl and Scuff Remover	2871966
Finish Wax	2871965
Vinyl and Rubber Protectant	2871964
T 9 Metal Protectant (waterproof lube)	2871064
Yuasa Battery Charger	2859044
50/50 Premix Coolant (gallon)	2874992

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SPECIFICATIONS

	MSX 110	MSX 150
CAPACITIES / DIMENSIONS		
Fuel Tank	17.8 gal. (67.4 l)	17.8 gal. (67.4 l)
Rider Quantity	1-3 people	1-3 people
Load Limit, Riders	500 lbs. (227 kg)	500 lbs. (227 kg)
Load Limit, Total	565 lbs. (256 kg)	565 lbs. (256 kg)
Length	126.0 in. (320 cm)	126.0 in. (320 cm)
Width	48.3 in. (122.6 cm)	48.3 in. (122.6 cm)
Height	42.5 in. (108 cm)	42.5 in. (108 cm)
Dry Weight	685 lbs. (311 kg)	690 lbs. (313 kg)
Hull Material	Fiberglass Reinforced Composite	Fiberglass Reinforced Composite
ELECTRICAL		
Alternator Output	25 amp / 350 watt @ 5000 RPM	25 amp / 350 watt @ 5000 RPM
Spark Plug Type	Champion RC7PYCB	Champion RC7PYCB
Spark Plug Gap	.028-.031 in. (0.7-0.8 mm)	.028-.031 in. (0.7-0.8 mm)
Spark Plug Torque	20 ft. lbs. (27 Nm)	20 ft. lbs. (27 Nm)
Starting System	Electric Starter	Electric Starter
Battery	12V, 19A	12V, 19A
COOLING		
Engine Cooling	Liquid cooled, closed loop with coolant/water heat exchanger	Liquid cooled, closed loop with coolant/water heat exchanger
Overheat Warning	Warning Light, RPM/Boost Limit	Warning Light, RPM/Boost Limit

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	MSX 110	MSX 150
ENGINE		
Engine Type	Polaris Marine 750 Turbo	Polaris Marine 750 HO Turbo
Induction Type	Intercooled Turbocharger	Intercooled Turbocharger
Exhaust System	Water Cooled, Jacketed	Water Cooled, Jacketed
Lubrication	Dry Sump	Dry Sump
Oil Type	Polaris Performance Synthetic 4-Cycle 15W-50 Marine Oil (API Rating SJ)	Polaris Performance Synthetic 4-Cycle 15W-50 Marine Oil (API Rating SJ)
Oil Capacity (new or rebuilt engine only)	4.75 qts. (4.5 l)	4.75 qts. (4.5 l)
Oil Capacity (for oil change, see page 79)	3.4-4.0 qts. (3.3-3.7 l)	3.4-4.0 qts. (3.3-3.7 l)
Sound Reduction	Turbo PLANET™	Turbo PLANET™
Cylinders	2	2
Bore x Stroke	85 x 66 mm	85 x 66 mm
Displacement	750cc	750cc
Rated Horsepower	110	150
RPM Limiter Operation	Yes	Yes
Ignition System	Bosch Electronic	Bosch Electronic
FUEL DELIVERY		
Fuel Type	91 Octane (recommended) 89-90 Octane (usable/reduced performance) 87-88 Octane (for emergencies only, operate engine below 5000 RPM, see page 38)	91 Octane (recommended) 89-90 Octane (usable/reduced performance) 87-88 Octane (for emergencies only, operate engine below 5000 RPM, see page 38)
Fuel Delivery	Bosch Multi-port EFI	Bosch Multi-port EFI

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SPECIFICATIONS

	MSX 110	MSX 150
PROPULSION		
Impeller, Stainless Steel	3 Blade, Progressive Pitch, Radial Blade	3 Blade, Progressive Pitch, Radial Blade
Propulsion	Jet Drive	Jet Drive
Jet Pump Type	Dominator, Single Stage Axial Flow, Six Vane Stainless Steel Stator	Dominator, Single Stage Axial Flow, Six Vane Stainless Steel Stator
Transmission	Direct Drive	Direct Drive
Reverse System	Standard	Standard
Minimum Water Level for Jet Pump	2 feet (60 cm)	2 feet (60 cm)
Impeller Diameter	5.83 in. (148 mm)	5.83 in. (148 mm)
FEATURES		
Instrumentation	Next Generation Instrument (NGI) 14 Function	Next Generation Instrument (NGI) 14 Function
Ski Tow Hook (Stainless Steel)	Standard	Standard
Throttle	Finger Trigger, Reversible	Finger Trigger, Reversible
Mirrors	Standard, Fixed	Standard, Fixed
Bilge Pump	Siphon	Siphon
Sponsons	Matrix Blade	Matrix Blade
Footwell Pads	Hydro-Turf™	Hydro-Turf™
Seat	Single	Single
Child Grab Handle, Patented	Standard	Standard
Accessories *Go to www.purepolaris.com or visit your dealer for more accessory options.*	Heel Pads, Chrome Windshield, Knee Pads, Boarding Step, Ski Tow Pylon Color Coordinated Rub Rails	Heel Pads, Chrome Windshield, Knee Pads, Boarding Step, Ski Tow Pylon Color Coordinated Rub Rails

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Obtaining Service and Warranty Assistance

Read carefully and understand the service data and the Polaris Warranty contained in this manual. Contact your Polaris dealer in matters pertaining to replacement parts, service, or warranty. Your dealer is constantly kept up-to-date on changes, modifications, and tips on personal watercraft maintenance that may supersede information contained in this manual. Your dealer is familiar with Polaris policies and procedures and will be happy to assist you.

When inquiring about parts, service, or warranty, always include the following information:

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

LIMITED WARRANTY

Polaris Sales Inc., 2100 Highway 55, Medina, MN 55340, gives a ONE YEAR LIMITED WARRANTY on all components of the Polaris personal watercraft against defects in material or workmanship. 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. Upon receipt of this registration, Polaris will record the registration for warranty. No verification of registration will be sent to the purchaser as the copy of the Warranty Registration Form will be the warranty entitlement. If you have not signed the original registration and received the “customer copy”, please contact your dealer immediately. NO WARRANTY COVERAGE WILL BE ALLOWED UNLESS YOUR PERSONAL WATERCRAFT IS REGISTERED WITH POLARIS AND YOU HAVE CONFIRMED THAT YOU HAVE WATCHED THE SAFETY AND OPERATION VIDEO AND REVIEWED THE SUMMARY TRAINING POINTS.

Initial dealer preparation and set-up of your personal watercraft 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.

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WARRANTY

WARRANTY COVERAGE AND EXCLUSIONS:

Limitations of Warranties and Remedies

This Polaris limited warranty covers all parts and components except for impeller damage caused by ingestion of rocks, sand, or gravel or any other damage caused by operation in shallow water. The warranty also excludes any other failures that are not caused by a defect in material or workmanship.

Warranty Policy

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

This warranty does not cover the use of unauthorized lubricants, chemicals, or fuels that are not compatible with the Polaris personal watercraft. In addition, this warranty does not cover stress cracks, submersion or growth of marine organisms on hull and deck.

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

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

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ENGINE FLUIDS

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

Damage resulting from the use of unauthorized lubricants may not be covered by warranty.

HOW TO OBTAIN WARRANTY SERVICE

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

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

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

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

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WARRANTY

Exported Vehicles

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

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

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

This policy does not apply to Safety Recalls.

How to Get Service

In the Country where your vehicle was purchased:

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

Outside the Country where your vehicle was purchased:

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

If You Move:

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

How to Get Service

If Purchased From A Private Party:

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

Notice

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

For questions call Polaris Customer Assistance:

United States: 1-763-417-8650

Canada: 1-204-925-7100

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U.S. FEDERAL EMISSIONS LIMITED WARRANTY

Polaris warrants to the ultimate purchaser and each subsequent purchaser that this new marine spark ignition engine is designed, built, and equipped so as to conform at the time of sale with applicable regulations under section 213 of the Clean Air Act. Polaris warrants that the engine is free from defects in materials and workmanship that would cause the engine to fail to conform with applicable emission regulations during the U.S. Environmental Protection Agency emission warranty period. The federal emission limited warranty period starts on the date the engine is purchased. The emission-related components of this model year 2004 and later marine spark ignition marine engine are warranted for a period of two years or 200 hours of engine use, whichever occurs first. The federal emission limited warranty period ends at that time.

This emissions limited warranty is not conditioned on the ultimate purchaser using any component or service that is identified by brand, trade, or corporate name (other than any components or services provided without charge by Polaris). As the marine Spark Ignition (SI) engine owner, you are responsible for the proper maintenance of the engine as stated in the owner's manual. The maintenance, replacement, or repair of the emission control devices and systems may be performed by any marine SI engine repair establishment or individual. While Polaris recommends that all of your engine service be performed by a Polaris dealer, this emissions limited warranty and the maintenance instructions in the owners manual do not distinguish between service performed by a Polaris dealer and service performed by a qualified independent marine engine repair facility.

OBTAINING EMISSIONS WARRANTY SERVICE

To obtain warranty service, take your engine to the nearest authorized Polaris dealer. Bring your sales receipts indicating date of purchase for this engine. The dealer authorized by POLARIS will perform the necessary repairs or adjustments within a reasonable amount of time and furnish you with a copy of the repair order. All parts and accessories replaced under this warranty become the property of POLARIS.

WHAT IS NOT COVERED

- Conditions resulting from tampering, misuse, improper adjustment (unless they were made by the dealer authorized by POLARIS during a warranty repair), alteration, accident, failure to use the recommended fuel and oil, or not performing required maintenance services.
- The replacement parts used for required maintenance services.
- Consequential damages such as loss of time, inconvenience, loss of use of the engine or equipment, etc.
- Diagnosis and inspection charges that do not result in warranty-eligible service being performed.
- Any non-authorized replacement part, or malfunction of authorized parts due to use of non-authorized parts.

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WARRANTY

U.S. FEDERAL EMISSIONS LIMITED WARRANTY

EMISSION CONTROL SYSTEM WARRANTY MAINTENANCE AND REPAIRS

You are responsible for the proper maintenance of the engine. You should keep all receipts and maintenance records covering the performance of regular maintenance in the event questions arise. These receipts and maintenance records should be transferred to each subsequent owner of the engine. POLARIS reserves the right to deny warranty coverage if the engine has not been properly maintained. Warranty claims will not be denied, however, solely because of the lack of required maintenance or failure to keep maintenance records.

MAINTENANCE, REPLACEMENT OR REPAIR OF EMISSION CONTROL DEVICES AND SYSTEMS MAY BE PERFORMED BY ANY REPAIR ESTABLISHMENT OR INDIVIDUAL; HOWEVER, WARRANTY REPAIRS MUST BE PERFORMED BY A DEALER AUTHORIZED BY POLARIS. THE USE OF PARTS THAT ARE NOT EQUIVALENT IN PERFORMANCE AND DURABILITY TO AUTHORIZED PARTS MAY IMPAIR THE EFFECTIVENESS OF THE EMISSION CONTROL SYSTEM AND MAY HAVE A BEARING ON THE OUTCOME OF A WARRANTY CLAIM.

If other than the parts authorized by POLARIS are used for maintenance replacements or for the repair of components affecting emission control, you should assure yourself that such parts are warranted by their manufacturer to be equivalent to the parts authorized by POLARIS in their performance and durability.

HOW TO MAKE A CLAIM

All repair qualifying under this limited warranty must be performed by a dealer authorized by POLARIS. In the event that any emission-related part is found to be defective during the warranty period, you shall notify Polaris Warranty Department at 1-763-417-8650 and you will be advised of the appropriate warranty service dealer or service providers where the warranty repair can be performed.

OWNER'S WARRANTY RESPONSIBILITIES

As the engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. POLARIS recommends that you retain all receipts covering maintenance on your engine, but POLARIS cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the engine owner, you should, however, be aware that POLARIS may deny warranty coverage if your engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your engine to the nearest dealer authorized by POLARIS when a problem exists.

If you have any questions regarding your warranty rights and responsibilities, you should contact the

Polaris Warranty Department at 1-763-417-8650 for the information.

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CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT

POLARIS LIBERTY MARINE 4-STROKE ENGINES

CALIFORNIA REQUIREMENT (13 CCR §2445.2)

Under the California Air Resources Board regulations, each engine manufacturer must provide a verbatim copy of the following statement with each new California-certified 2002 model year and later spark-ignition personal watercraft engine, using those portions of the statement applicable to the engine.

CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT

YOUR WARRANTY RIGHTS AND OBLIGATIONS: The California Air Resources Board is pleased to explain the emission control system warranty on your model year 2002 and later personal watercraft engine. In California, new personal watercraft engines must be designed, built and equipped to meet the State's stringent anti-smog standards. Polaris must warrant the emission control system on your personal watercraft engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your personal watercraft engine. Your emission control system may include parts such as the carburetor or fuel injection system, the ignition system, and catalytic converter. Also included may be hoses, belts, connectors and other emission-related assemblies. Where a warrantable condition exists, Polaris will repair your personal watercraft engine at no cost to you, including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE: Select emission control parts from model year 2002 and later personal watercraft engines are warranted for 4 years, or for 250 hours of use, whichever occurs first. However, warranty coverage based on the hourly period is only permitted for outboard engines and personal watercraft equipped with appropriate hour meters or their equivalent. If any emission-related part on your engine is defective under warranty, the part will be repaired or replaced by Polaris.

OWNER'S WARRANTY RESPONSIBILITIES: As the personal watercraft engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Polaris recommends that you retain all receipts covering maintenance on your personal watercraft engine, but Polaris cannot deny warranty solely for the lack of receipts or your failure to ensure the performance of all scheduled maintenance. As the personal watercraft engine owner, you should however be aware that Polaris may deny you warranty coverage if your personal watercraft engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications. You are responsible for presenting your personal watercraft engine to a Polaris authorized dealer as soon as a problem exists. The warranty repairs will be completed in a reasonable amount of time, not to exceed 30 days. If you have any questions regarding your warranty rights and responsibilities, you should contact Polaris at 1-800-POLARIS.

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CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT

POLARIS LIBERTY MARINE 4-STROKE ENGINES

POLARIS LIMITED WARRANTY COVERAGE

Polaris, on behalf of the engine manufacturer, warrants its California certified personal watercraft that are sold in California to a California resident, or warranty-registered in California to a California resident, to be:

- Designed, built, and equipped so as to conform, at the time of sale, to all applicable regulations adopted by the California Air Resources Board.
- Free from defects in material and workmanship that cause the failure of a warranted part to be identical in all material respects to that part as described in the engine manufacturer's application for certification. In practical terms, a defect exists when a deficiency in materials or workmanship causes an emission-related part to not function as designed.
- The limited warranty begins on the date the new watercraft is first purchased, or, as in the case of a demonstration engine or watercraft, on the date it is first put in service. The warranty period of the new watercraft engine will be 4 years starting from the date of first purchase of the new watercraft engine or 250 hours of use measured from the date it is first put in service, whichever occurs first. For the purpose of this limited warranty statement, the term "date of first purchase" means the actual first purchase date, unless the purchaser can demonstrate that delivery occurred at a later date.
- Select emission control parts from model year 2002 and later watercraft engines are warranted for 4 years from the date of first purchase, or for 250 hours of use measured from the date it is first put in service, or for the period prior to the first scheduled replacement of the warranted part as required by the maintenance schedule in the owner's manual or other written instructions provided by the engine manufacturer, whichever occurs first. However, warranty coverage based on the hourly period is only permitted for watercraft engines equipped with appropriate hour meters or their equivalent. The electronic engine control unit in your watercraft engine contains a very accurate clock (i.e., hour meter) that accumulates engine run time. This clock will be used by the engine manufacturer to limit warranty coverage to 250 hours of use, within the first 4 years of purchase.

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CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT

POLARIS LIBERTY MARINE 4-STROKE ENGINES

ADDITIONAL OWNER'S WARRANTY RESPONSIBILITIES

Receipts and records pertaining to regular scheduled maintenance may be relevant in the event questions arise concerning maintenance. The receipts should be transferred to each subsequent owner of this watercraft. Notice must be given to an authorized Polaris dealer of any apparent defect(s) within a reasonable time after discovery. It is recommended that any replacement part(s) used for maintenance, replacement, or repair of emission control systems be Polaris parts. Replacement parts equivalent to Polaris parts may be used in the performance of warranty repairs and will be provided without charge to the owner, and with no reduction in the engine manufacturer's warranty obligation. Use of parts that are not equivalent to Polaris parts which causes the warranted part(s) to fail may constitute abuse and/or improper service, thereby invalidating the engine manufacturer's warranty liability. If you have any questions regarding your warranty rights and responsibilities, or to identify the nearest Polaris authorized dealer, you should contact Polaris at 1-800-POLARIS.

WARRANTED PARTS

Your emission control system includes the warranted parts listed below. Where a warrantable condition exists, Polaris will repair your watercraft engine at no cost to you, including diagnosis, parts, and labor. This includes diagnostic labor that is directly associated with a defective emission-related warranted part. The engine manufacturer recommends that diagnosis and repair be performed at an authorized Polaris dealer.

1. Fuel Metering System: fuel injection system, air / fuel ratio feedback system, intake valves
2. Air Induction System: intake manifold, air filter, turbocharger system
3. Ignition System: spark plugs, magneto or electronic ignition system, spark advance / retard system, ignition coil and/or control module

NOTE: The original spark plugs are warranted for the period of replacement indicated in the owner's manual and not for the warranty period of the new watercraft engine.

4. Positive Crankcase Ventilation System: oil filler cap
5. Exhaust System
6. Catalyst or Thermal Reactor System: exhaust valve(s)
7. Miscellaneous items used in above systems: hoses, clamps, fittings, tubing, sealing gaskets or devices, and mounting hardware; vacuum, temperature, check and time sensitive valves and switches; electronic controls
8. Engine components with damage proximately caused by a failure under warranty of any warranted emission-related part.

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CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT
POLARIS LIBERTY MARINE 4-STROKE ENGINES

EXCLUSIONS

The exclusive remedy for breach of this limited warranty shall be, at the exclusive option of Polaris, the repair or replacement of the defective part or component. This limited warranty is void if the direct cause of the need to repair or replace a warranted part is due to owner/operator abuse, neglect, tampering, misuse, or improper maintenance, modification, alteration, or adjustment. Use of parts that are not equivalent to Polaris parts, improper service, or lack of required maintenance which causes the warranted part(s) to fail may constitute abuse and/or improper service, thereby invalidating warranty liability hereunder. In addition, the use of add-on or modified parts will be grounds for disallowing a warranty claim. This limited warranty does not cover damage resulting from accidents, acts of nature, or other events or occurrences beyond Polaris' control. POLARIS EXPRESSLY DISCLAIMS RESPONSIBILITY FOR ANY AND ALL SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, SUCH AS LOSS OF TIME, INCONVENIENCE, LOSS OF USE OF THE WATERCRAFT, OR COMMERCIAL LOSS. ALL IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD DESCRIBED HEREIN. POLARIS DISCLAIMS ALL EXPRESS WARRANTIES NOT STATED IN THIS WARRANTY.

Polaris Industries Inc., 2100 Highway 55, Medina, MN 55340

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CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT

California Star Labels

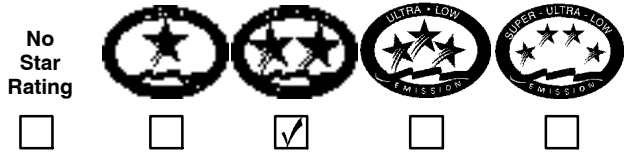
A star label has been applied to your watercraft in accordance with requirements of the California Air Resources Board. The label means *cleaner marine engines*.

Cleaner Air and Water - for healthier lifestyle and environment.

Better Fuel Economy - burns up to 30-40 percent less gas and oil than conventional carbureted two-stroke engines, saving money and resources.

Longer Emission Warranty - protects consumer for worry free operation.

The **MSX 110** engine and the **MSX 150** engine have been certified as:



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CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT

California Star Labels

NOTE: No model year 2004 personal watercraft produced by any manufacturer has been certified at the four-star level.

One Star - Low Emission

The one-star label identifies engines that meet the Air Resources Board's Personal Watercraft and Outboard marine engine 2001 exhaust emission standards. Engines meeting these standards have 75% lower emissions than conventional carbureted two-stroke engines. These engines are equivalent to the U.S. EPA's 2006 standards for marine engines.

Two Stars - Very Low Emission

The two-star label identifies engines that meet the Air Resources Board's Personal Watercraft and Outboard marine engine 2004 exhaust emission standards. Engines meeting these standards have 20% lower emissions than One Star - Low Emission engines.

Three Stars - Ultra Low Emission

The three-star label identifies engines that meet the Air Resources Board's Personal Watercraft and Outboard marine engine 2008 exhaust emission standards or the Sterndrive and Inboard marine engine 2003-2008 exhaust emission standards. Engines meeting these standards have 65% lower emissions than One Star - Low Emission engines.

Four Stars - Super Ultra Low Emission

The four-star label identifies engines that meet the Air Resources Board's Sterndrive and Inboard marine engine 2009 exhaust emission standards. Personal Watercraft and Outboard marine engines may also comply with these standards. Engines meeting these standards have 90% lower emissions than One Star - Low Emission engines.

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