WARRIOR 1000

SERVICE MANUAL

MASSIMO

Maintenance

Following the maintenance schedule in your owner's manual will help keep your vehicle in the safest, most reliable condition. Inspection, adjustment, and lubrication of important components are explained in the maintenance schedules

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

NOTE:

Periodic service and adjustments are critical. If you are not familiar with performing safe service and adjustment procedures, have a qualified dealer perform the required maintenance for you.

NOTE:

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

⚠WARNING

Procedures marked as '■' means If repair is required, have an authorized dealer perform repairs that involve this component or system. Improperly performing the procedure could result in component failure and lead to serious injury or death.

MAINTENANCE

Severe Use Definition

MASSIMO defines severe vehicle use as:

- Frequent immersion in mud, water or sand
- Racing or race-style high RPM use
- Prolonged low speed, heavy load operation
- Extended engine idle
- Short trip cold weather operation
- Vehicles used in commercial operations

For vehicles that are subjected to severe use, reduce all maintenance and service intervals by 50%.

MAINTENANCE

Periodic Maintenance Schedule and Icon Key

Maintenance intervals in the following schedules are based upon average riding conditions and an average operating speed of approximately 12.4 mph (20 km/h). Vehicles subjected to severe or commercial use must be inspected and serviced more frequently.

The following icon keys are used to note special circumstances:

► = Severe Use Item. Reduce interval by 50% on vehicles subjected to severe use.

■ = Have an authorized dealer perform repairs that involve this component or system.

● = Emissions related components. Have an authorized dealer perform repairs that involve this component or system.

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MAINTENANCE

General Recommended Lubrication

Check all components at the intervals outlined in the Periodic Maintenance Schedule. Items not listed in the schedule should be lubricated at the general lubrication interval.

- Change lubricants more often under severe use, such as wet or dusty conditions.
- Use All Season Grease on pivot points.
- Lubricate every 500 miles (800 km), before long periods of storage, after pressure washing, or after submerging drive system.

Item	Lubricant	Method
Engine oil	SAE 10W-40 / SAE 5W-40 / SAE 15W-40 (See page 78 for oil viscosity chart)	Screw off, clean, insert and pull out dipstick to check oil level
Transmission oil	SAE75W-90 GL-5	Screw off, clean, insert and pull out dipstick to check oil level
Brake fluid	DOT4	Keep level between upper and lower lines
Front gear case oil	SAE 80W-90 GL-5	Oil capacity: 11.2 oz. (330mL)
Rear gear case oil	SAE 80W-90 GL-5	Oil capacity: 13.5 oz. (400mL)
Suspension pivots and drive train	All Season Grease	Grease gun - Pump grease until it begins to flow from the pivot point

MAINTENANCE

Pre-Ride Maintenance Checklist

Perform these inspections before operating the vehicle:

Item		Maintenance before operation			
		Hour	Calendar	Miles (km)	Remarks
■	Steering system	-	Pre-Ride	-	Visually inspect, test, or check components. Make adjustments and/ or schedule repairs when required.
■	Throttle return	-	Pre-Ride	-	
	Front suspension and axles	-	Pre-Ride	-	
	Rear suspension and axles	-	Pre-Ride	-	
	Tires	-	Pre-Ride	-	
	Brake fluid level	-	Pre-Ride	-	
	Brake lever / foot brake function	-	Pre-Ride	-	
	Brake system function	-	Pre-Ride	-	
	Wheels / fasteners	-	Pre-Ride	-	
	Engine oil level	-	Pre-Ride	-	
►	Air filter / Air box and connections	-	Pre-Ride	-	Visually inspect. Replace filter when dirty.

► = Severe Use Item. Inspect frequently on vehicles subjected to severe use.

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MAINTENANCE

Item		Maintenance before operation			
		Hour	Calendar	Miles (km)	Remarks
►	Air box sediment tube	-	Pre-Ride	-	Inspect. If deposits are visible, clean intake tubes, air box, and replace air filter.
►	CVT sediment tube	-	Pre-Ride	-	Inspect. If deposits are visible, drain / clean the CVT or have it serviced by a dealer.
■	Headlight aim / General lighting and turn indicators (if equipped)	-	Pre-Ride	-	Inspect. Adjust or replace lights when necessary.
►	Radiator	-	Pre-Ride	-	Inspect for mud or debris blocking airflow. Clean surfaces when necessary.

► = Severe Use Item. Inspect frequently on vehicles subjected to severe use

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MAINTENANCE

Break-In Maintenance Checklist

Perform these maintenance items when the vehicle break-in is completed:

Item		Break-in Maintenance (Perform at the interval that arrives first)			
		Hour	Calendar	Miles (km)	Remarks
	General lubrication	20	-	200 (320)	Lubricate all grease points, pivots, cables, etc.
	Engine oil / oil filter / oil strainer	20	-	200 (320)	Change oil and filter. Clean oil strainer.
►	Engine air filter	20	-	200 (320)	Inspect; replace if dirty; do not clean
■	Engine valve clearance	20	-	200 (320)	Check and adjust as necessary.
	Front / Rear gear case oil	20	-	200 (320)	Check level. Inspect for leaks.
	Coolant	20	-	200 (320)	Check level. Inspect for leaks.
	Transmission oil	20	-	200 (320)	Inspect level.
	Engine hoses, gaskets and seals	20	-	200 (320)	Inspect for leaks.

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MAINTENANCE

Item		Break-in Maintenance (Perform at the interval that arrives first)			
		Hour	Calendar	Miles (km)	Remarks
►	Brake pads	20	-	200 (320)	Inspect pad thickness.
	Battery	20	-	200 (320)	Check terminals, clean, test battery condition if required.
■	Idle condition	20	-	200 (320)	Inspect for proper rpm. See dealer for service if out of spec or erratic.
■	Steering / Wheel Alignment	20	-	200 (320)	Inspect steering system. See dealer for service if wheel alignment is required.
►	Foot brake / Hand brake	20	-	200 (320)	Inspect function. Adjust as necessary.
	Gear cases, CV shafts, Propshafts	20	-	200 (320)	Inspect for leaks.

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MAINTENANCE

Periodic Maintenance Schedule

Perform maintenance at the interval that arrives first after the break-in period:

Item		Periodic Maintenance Intervals (Perform at the interval that arrives first)			
		Hour	Calendar	Miles (km)	Remarks
►	Brake pads	10	Monthly	100 (160)	Inspect pad thickness.
	Battery	20	--	200 (320)	Check terminals. Clean and test battery condition as necessary.
	Engine hoses, gaskets and seals	20	--	200 (320)	Inspect for leaks.
►	Air filter	50h	--	500 (800)	Always inspect pre-ride. Inspect frequently if subjected to severe use. Replace if dirty. Do not clean.
►	CVT air intake filter screen / filter	50h	-	500 (800)	Clean filter screen or filter, replace with new one if necessary.
►	General lubrication	50h	3M	500 (800)	Lubricate all fittings, pivots, cables, etc.

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MAINTENANCE

Item		Periodic Maintenance Intervals (Perform at the interval that arrives first)			
		Hour	Calendar	Miles (km)	Remarks
►	Front gear case oil	100h	12M	1000 (1600)	Inspect level. Change yearly if hours or distance interval is not met.
►	Rear gear case oil	100h	12M	1000 (1600)	Inspect level. Change yearly if hours or distance interval is not met..
►	Engine oil / oil filter / oil strainer	100h	12M	1000 (1600)	Inspect for color change. Change if dirty and clean strainer. Change yearly if hours or distance interval is not met.
	Cooling system	50h	6M	500 (800)	Test coolant strength. Pressure test system yearly.

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MAINTENANCE

Item		Periodic Maintenance Intervals (Perform at the interval that arrives first)			
		Hour	Calendar	Miles (km)	Remarks
►	Radiator	50h	6M	500 (800)	Inspect; clean external surfaces. Clean more frequently if subjected to severe use.
■	Steering system	50h	6M	500 (800)	Inspect. Lubricate.
►	Front suspension	50h	6M	500 (800)	Lubricate. Checkfasteners.
►	Rear suspension	50h	6M	500 (800)	Lubricate. Check fasteners.
►	Gear shift	50h	1M	500 (800)	Inspect, lubricate, adjust as necessary.
► ■	Throttle body / throttle cable	50h	6M	500 (800)	Inspect. Clean carbon deposits. Inspect cable and lubricate frequently if subjected to severe use.

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MAINTENANCE

Item		Periodic Maintenance Intervals (Perform at the interval that arrives first)			
		Hour	Calendar	Miles (km)	Remarks
► ■	CVT drive belt	100h	12M	1000 (1600)	Inspect. Replace as necessary. See dealer for service.
■	CVT drive and driven pulleys	100h	12M	1000 (1600)	Clean and Inspect pulleys. Replace worn parts. See dealer for service.
	Fuel filter and hoses	100h	24M	2000 (3200)	Inspect routing and condition. Replace filter and high-pressure hoses every 4 years.
	Cooling hoses	100h	--	1000 (1600)	Inspect routing and condition.
►	Valve clearance	100h	--	2000 (3200)	Inspect and adjust as necessary. See dealer for service.

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MAINTENANCE

Item		Periodic Maintenance Intervals (Perform at the interval that arrives first)			
		Hour	Calendar	Miles (km)	Remarks
●	Fuel system	100h	12M	500 (800)	Inspect fuel tank, cap, fuel pump and fuel pump relay.
	Spark plug	100h	24M	2000 (3200)	Inspect; Replace if worn or fouled.
■	Engine mounts	100h	12M	1500 (2400)	Inspect condition.
	Exhaust pipe and spark arrestor	100h	12M	500 (800)	Inspect. Clean spark arrestor.
►	Wiring, fuses, connectors, relays, and cables	100h	12M	1000 (1600)	Inspect wire routing for wear, security. Apply dielectric grease as necessary to connectors subjected to water, mud, etc.

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MAINTENANCE

Item		Periodic Maintenance Intervals (Perform at the interval that arrives first)			
		Hour	Calendar	Miles (km)	Remarks
► ■	Wheel bearings	100h	12M	1500 (2400)	Inspect for noise or looseness. Replace as necessary.
►	Safety Belts	100h	12M	2000 (3200)	Visually inspect belts and test latches. Clean latch mechanism more often if used in severe conditions.Replace as necessary.
►	Transmission oil (1000 Engine)	200h	12M	2000 (3200)	Inspect level. Change yearly if hours or distance interval is not met.
	Coolant	200h	24M	4000 (6400)	Change coolant every 2 years if hours or distance interval is not met.

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MAINTENANCE

Item		Periodic Maintenance Intervals (Perform at the interval that arrives first)			
		Hour	Calendar	Miles (km)	Remarks
►	Brake fluid	200h	24M	1000 (1600)	Inspect fluid for color change. Change fluid every two years.
	Idle condition	--	12M	--	Inspect for proper rpm. See dealer for service if out of spec or erratic.
■	Steering / Wheel Alignment	--	12M	--	Inspect steering system. See dealer for service whenever steering parts or wheel alignment are required.
►	Foot brake height	--	12M	--	Inspect. Replace brake pads or adjust height as required.

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MAINTENANCE

Maintenance Procedures

Air Filter

Check and change the air filter at the intervals outlined in the Maintenance Schedule. The air filter element should be cleaned or replaced more often if the vehicle is used in extremely dusty or wet areas. Each time air filter maintenance is performed, check the air inlet of the air filter box for obstructions and debris. Check the air filter housing rubber joint to the throttle body and manifold fittings for an airtight seal. Check that all fittings are secure to avoid the possibility of unfiltered air entering the engine.

Air Filter Housing Inspection

There is a check hose at the bottom of the air filter housing. If dust or water can be viewed in this hose, empty the hose and clean the air filter housing thoroughly. If the vehicle was submerged, please contact your local dealer to check for water inside the engine crankcase.

NOTE:

If a large amount of water is present in the air filter, have your dealer check for water entering the engine crankcase.

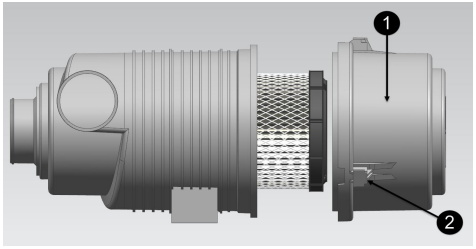
MAINTENANCE

Air Filter Maintenance

1. Lift up the rear cargo box
2. Loosen the clasp and remove the air filter cover.
3. Remove paper filter element.
4. Inspect the paper air filter and verify it is okay to reinstall. Softly brush off accumulated dust if necessary. Install a new filter as necessary.

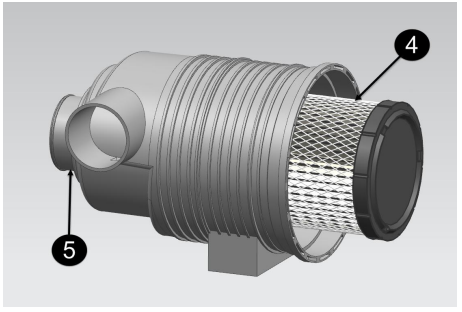
NOTE:

Do not wash paper air filters, or use compressed air to clean the paper filter media.



1	Filter Housing Cover		
2	Clasp	3	Check Hose

5. Apply a thin film of lubricant on the inside diameter of the air filter rubber seal.
6. Reinstall the air filter housing cover. Verify the cover is installed correctly and is sealing properly.



Drying the Air Filter Housing after Submersion

If water has been ingested into the air filter housing, Drain the air filter housing, remove the air filter, and thoroughly dry the components. Do not use compressed air on the paper air filter. Contact your dealer if vehicle performance issues exist.

CAUTION
Do not operate the engine without an air filter element. Unfiltered air entering into the engine can cause engine wear and damage. Driving without an air filter will also decrease performance and can lead to engine overheating.

CAUTION
Major engine damage can result in the vehicle if water has been ingested into the air filter housing, and engine. Have the vehicle serviced by your dealer promptly if your vehicle becomes immersed or stalls in water that exceeds the footrest level. It is important to contact your dealer for service before starting the engine, as water may have been ingested in the air box and engine.

MAINTENANCE

Engine Oil

Always check and change the engine oil at the intervals outlined in the Maintenance Schedule. Change oil more frequently under severe use conditions.

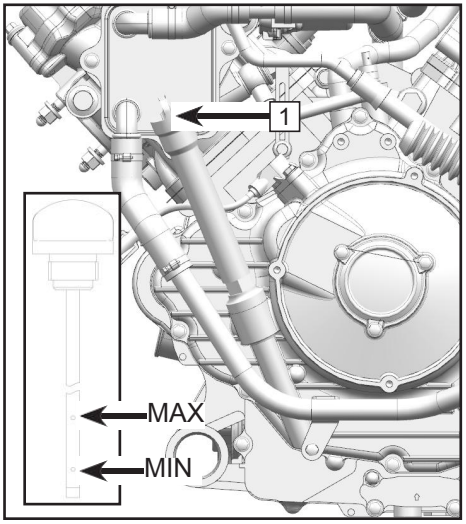
To Check the Engine Oil Level

With vehicle on a level surface, check the oil level as follows:

1. Place the vehicle on the plain ground.
2. Start the engine and allow it to idle for (20~30) seconds. Stop the engine.
3. Wait for a few minutes to allow the engine oil to settle down in crankcase.
4. Lift the rear cargo box to access the engine oil dipstick position.
5. Unscrew the oil dipstick and then wipe it off with a clean rag.
6. Insert the dipstick completely into the oil filler hole, and then remove it again to check the oil level.

NOTE
Engine oil level should be between the upper and lower marks.

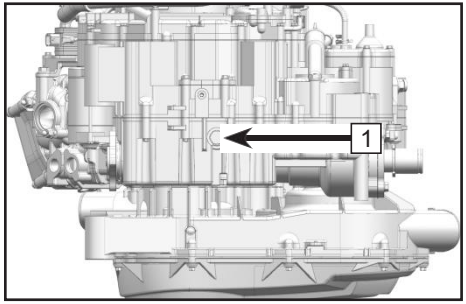
7. If the engine level is below the lower mark, add oil to proper level.
8. Insert the oil dipstick and fully tighten it.
9. Install the service hole plate behind the passenger seat.



1	Oil dipstick, Engine

To Change the Engine Oil

1. Start the engine and allow it to warm up for (2~3) minutes, then stop the engine.
2. Place an oil pan under the engine to collect the used oil, and then remove the dipstick.
3. Remove the engine oil drain bolt (1) to drain the oil from the crankcase.



1	Drain bolt, Engine oil

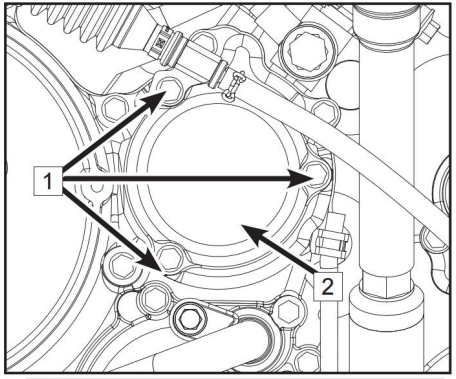
To Change the Oil Filter

1. Remove 3 engine oil bolts (1), open the filter cover (2) to take out the filter.
2. Replace with the new oil filter(3).

NOTE
Make sure the O-ring (4) is well and installed in the box.

3. Install the new oil filter (3) and fix the 3 bolts (1) in the oil filter cover (2). Tighten it to specified torque.

NOTE
Engine oil bolt (1) tightening torque: **7.3 ft-lb. (**10 N·m)



1	Engine oil bolt	2	Filter cover

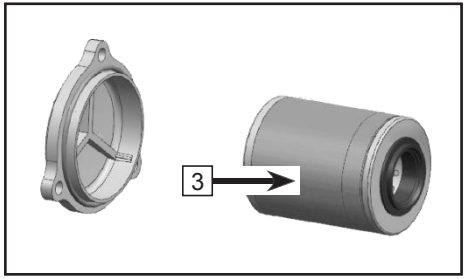
1. Use a new drain bolt washer and tighten it to specified torque.

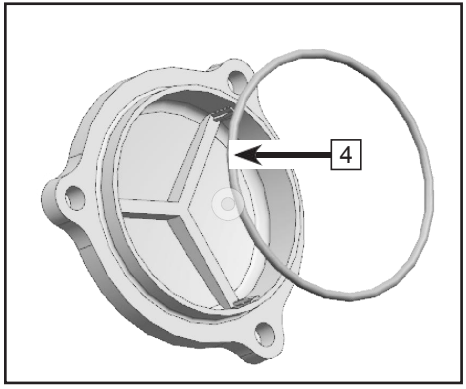
NOTE
Drain bolt tightening torque: 22 ft-lb. (30 N·m)

2. Add recommended oil to specified level and then screw in the oil dipstick.

NOTE
Oil capacity with oil filter replacement: 84.5 oz. (2.5 L)

3. Start the engine and allow it to warm up for a few minutes. Check for oil leakage when the engine is warm. Stop the engine immediately if oil leaks are present.
4. Stop the engine and check the engine level. Revise if necessary.





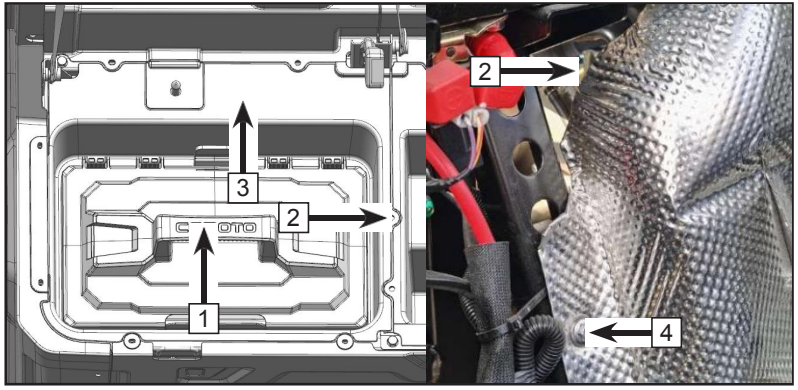
3	Oil filter	4	O-ring

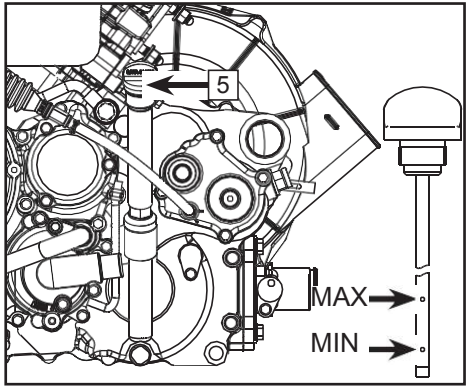
MAINTENANCE

Transmission Oil

Oil Level Check

1. Place the vehicle on a level surface.
2. If the engine was running, wait a sufficient amount of time for the oil to settle and cool.
3. Remove the passenger seat and storage box (1), remove the plastic grommet pin (2), then remove the access panel (3) towards the driver direction.
4. Remove the bolt and washer (4), move heat insulation plate to find the transmission oil dipstick (5).
5. Unscrew the transmission oil dipstick (5), remove it, and wipe off with a clean cloth.
6. Insert the dipstick into the oil filler hole. Do not fully reinstall it.
7. Remove the dipstick and check the oil level indication. Maintain the oil level between the upper and lower indicators.
8. Reinstall the dipstick into the oil filler hole, and hand-tighten it.
9. Reinstall the access panel and return the passenger seat to its original locked position.



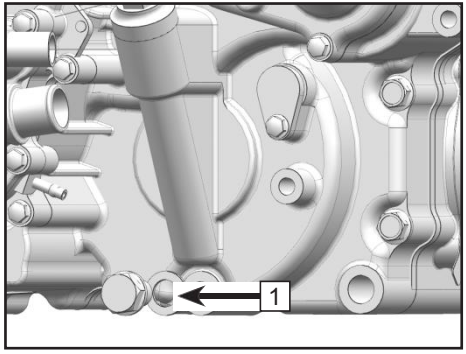


MAINTENANCE

Oil Change

1. Place the vehicle on a level surface.
2. If the engine was running, wait a sufficient amount of time for the oil to settle and cool.
3. Place an oil pan under the engine to collect the used oil.
4. Remove oil dipstick.
5. Remove the transmission oil drain bolt at the bottom of the oil fill location and drain the oil.
6. Place a new sealing washer on the drain bolt, then assemble and tighten the drain bolt to **22 ft-lb. (30 N•m)**.
7. Add the specified amount of recommended transmission oil at the transmission oil dipstick location, and then reinstall the transmission oil dipstick and hand-tighten it.

NOTE: Transmission oil type – SAE75W/90GL-5 Capacity - 20 oz. (0.6L)



1	Drain bolt, Transmission

MAINTENANCE

Engine Valve Clearance Adjustment

The intake and exhaust valve clearances change with use of the vehicle, which can result in improper fuel/air supply or engine noise. To prevent this, the valve clearances must be adjusted according to the maintenance schedule. This adjustment should be performed by a professional service technician. Contact your dealer for service.

NOTE:

Intake valve clearance (cold engine): .**0.0024 in. ~ 0.0055 in. (0.06mm ~0.14mm)**

Exhaust valve clearance (cold engine): .**0.0043 in. ~ 0.0075 in. (0.11mm ~0.19mm)**

Engine Idle Speed

This vehicle is equipped with an electronic fuel injection system. The throttle body is a vital part of the fuel system which requires very sophisticated adjustment, and was set at the factory. There are no consumer provisions to adjust engine idle speed. If the settings are disturbed, poor engine performance and damage may result. Check the engine idle speed for stability or an abnormal engine idle condition and contact your dealer for service if necessary.

Front and Rear Gear Case

The front and rear gear case must be checked for oil leaks before operating. If any leaks are found, have your dealer check and repair the vehicle.

Front Gear Case Oil Check

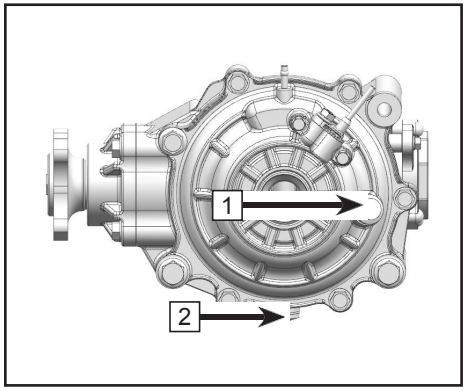
1. Place the vehicle on a level surface.
2. Remove the oil filler bolt (1) and check the oil level. The level should be up to the brim of the hole. If the level is low, add sufficient oil to raise it to the specified level.
3. Install the oil filler bolt and tighten it to 18.4 ft-lb. (25 Nm).

Front Gear Case Oil Change

1. Place the vehicle on a level surface.
2. Place an oil pan under the gear case to collect the used oil.
3. Remove the oil drain bolt (2) at the bottom of the gear case and drain the oil.
4. Install the oil drain bolt and tighten it to 18.4 ft-lb. (25 Nm).
5. Remove the oil filler bolt. Add sufficient oil to raise the level up to the brim of the fill hole (1).
6. Install the oil filler bolt and tighten it to 18.4 ft-lb. (25 Nm).

NOTE:

Approximate front gear case oil capacity: **11 oz. (330 mL)**



1	Fill bolt	2	Drain plug

Rear Gear Case Oil Check

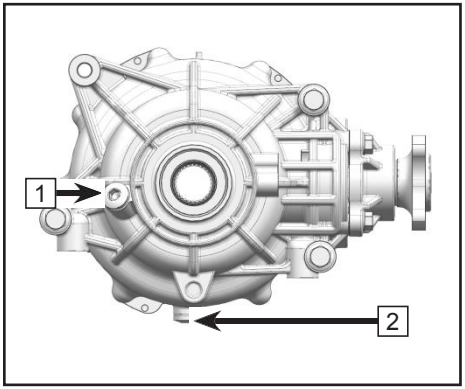
1. Place the vehicle on a level surface.
2. Remove the oil filler bolt (1) and check the oil level. The level should be up to the brim of the hole. If the level is low, add sufficient oil to raise it to the specified level.
3. Install the oil filler bolt and tighten it to 18.4 ft-lb. (25 Nm).

Rear Gear Case Oil Change

1. Place vehicle on a level surface.
2. Place an oil pan under the gear case to collect the used oil.
3. Remove the oil drain bolt (2) at the bottom of the gear case and drain the oil.
4. Install the oil drain bolt and tighten it to 18.4 ft-lb. (25 Nm).
5. Fill with gear case oil by 13.5oz (400ml) into the filler hole (1).
6. Install the oil filler bolt and tighten it to 18.4 ft-lb. (25 Nm).

NOTE:

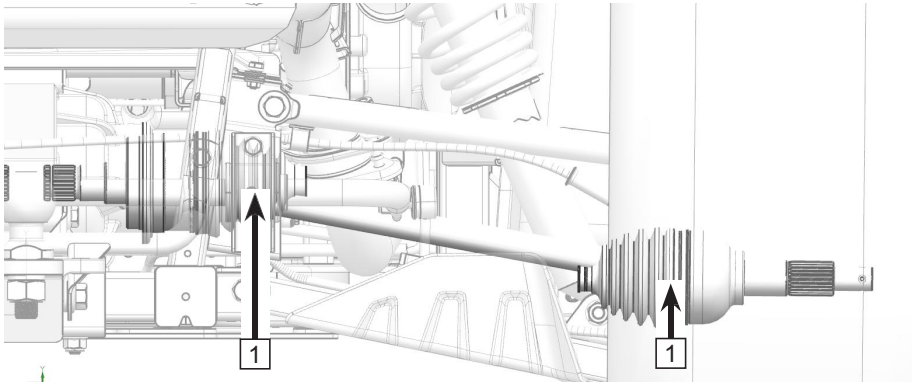
Approximate rear gear case oil capacity: **13.5 oz. (400mL)**



1	Fill bolt	2	Drain plug

Front and Rear Axle Boots

The front and rear axle boots (1) must be checked for holes or wear before operating. If any damage is found, have your dealer repair the vehicle.



1	Axle boots

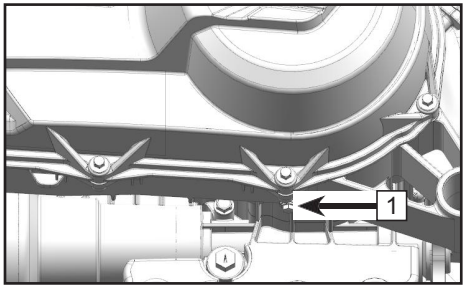
What to do if water collects in the CVT housing

If the vehicle was submerged in water deep enough that water has entered the CVT housing, remove the drain bolt (1) at the bottom of the housing to drain the water from the case.

CAUTION
If water drains from the CVT housing after removing the bolt, have your dealer inspect the vehicle, as water may have affected the CVT system and other engine parts.

Drying a Wet CVT System

If the CVT system was submerged and the drive belt is slipping, any remaining moisture inside the CVT housing after draining can be expelled by running the engine above 2000 RPM in Park or Neutral for 30~60 seconds, then testing for proper CVT function in low gear. Repeat as necessary. If the CVT system continues to slip or have poor performance, contact your dealer.



1	Drain bolt, CVT housing

MAINTENANCE

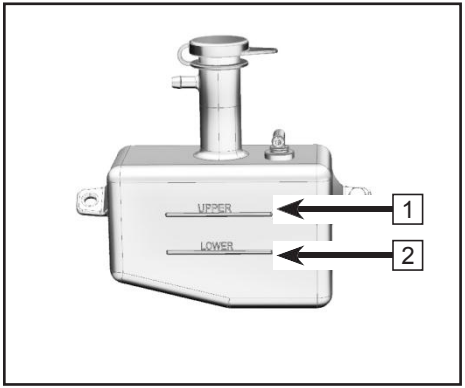
Cooling System

Coolant Level Inspection

1. Place the vehicle on a level surface.
2. Inspect the coolant level in the reservoir.
3. If the coolant is at or below the lower limit mark; remove the access cover and the reservoir cap . Add coolant to the upper limit mark, install the reservoir cap, and then reinstall the access cover.

NOTE:

Check the coolant level in the coolant reservoir when the engine is cold, as the coolant level will vary with engine temperature.



1	UPPER	2	LOWER

CAUTION
If water is added, have your dealer check the antifreeze content of the coolant as soon as possible. Never add hard water or salt water, as it is harmful to the engine. Softened tap water may be used if distilled water is not available. The radiator fan operation is automatically switched on or off according to the coolant temperature in the radiator during operation.

Change the Coolant

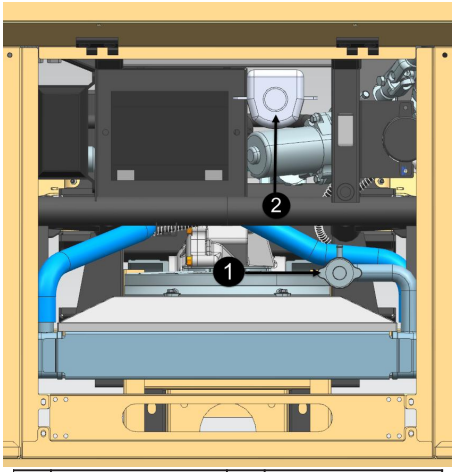
⚠CAUTION
After running the engine, never remove the radiator cap immediately. Wait for the engine to cool down before removing the radiator cap. Hot coolant can cause serious burns.

1. Place the vehicle on a level surface.
2. Remove the front access cover.
3. Remove the radiator cap (1) .
4. Remove the coolant reservoir cap (2).
5. Place a container under the engine, and then remove the coolant drain bolt (3).
6. Disconnect the hose from the coolant reservoir, and drain the coolant into a container.
7. After draining the system, thoroughly flush the system with clean tap water. Allow the water to drain completely.
8. Replace the coolant drain bolt washer if it is damaged, then install and tighten the coolant drain bolt, but do not torque to specification.
9. Reinstall the coolant reservoir hose.
10. Fill the recommended coolant into the radiator until it is full.

NOTE:

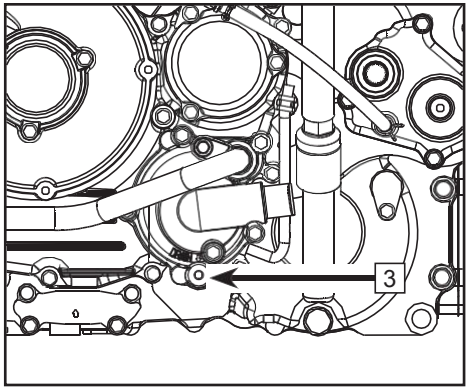
When filling coolant, at the same time loosen the coolant drain bolt to draw out potential air bubbles inside the coolant hose until coolant flows out, then tighten the drain bolt to 7.3 ft-lb. (10 N•m).

11. Install the radiator cap.



1	Radiator cap	2	Reservoir cap

12. Start the engine and let it idle for several minutes. Stop the engine and allow it to cool. Check the coolant level in the radiator. If it is low, add more coolant until it reaches the top of the radiator. Repeat as necessary.
13. Fill the coolant reservoir with coolant up to the upper limit.
14. Install the coolant reservoir cap and check for coolant leaks. If any leaks are found, have your dealer check the cooling system.
15. Reinstall the front access cover.



3	Drain Bolt

NOTE:

Recommended antifreeze:

Any high quality ethylene glycol antifreeze containing corrosion inhibitors for aluminum engines.

Antifreeze and water mixing ratio: **1:1**

Coolant capacity: **4.44 qt. (4.2 L)**

Coolant change: **4.33 qt. (4.1 L)**

Coolant reservoir capacity: **0.32 qt~0.62 qt. (300 mL~590 mL)**

Cleaning the Radiator

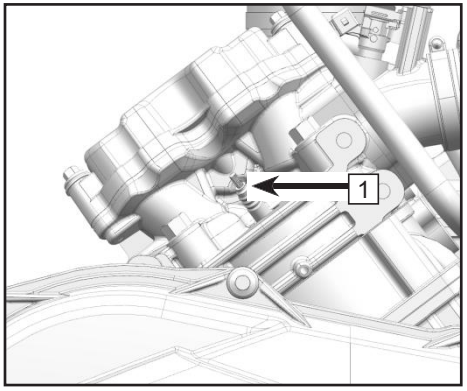
Cleaning the external surfaces of the radiator if it is covered with mud or debris will ensure it continues to efficiently cool the engine. Use only low pressure water to clean the radiator. High pressure washers can damage components. Ensure that water can flow can flow freely through the radiator fins. This is a sign that cooling air will be allowed to pass through.

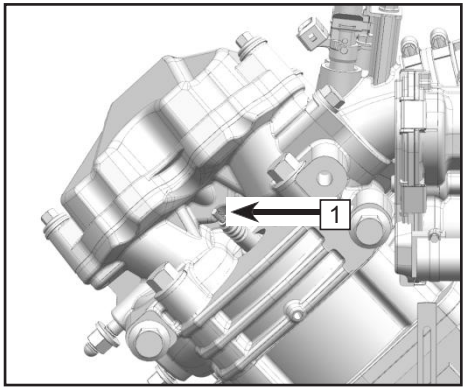
MAINTENANCE

Spark plug(s)

The spark plug (1) is an important engine component that is easy to inspect. The color and condition of the spark plug can indicate the condition of the engine. The ideal color on the insulator around the center electrode is a medium-to-light tan color for an engine that is being operated normally. If electrode erosion becomes excessive, or if carbon and other deposits are excessive, you should replace the spark plug with the specified plug.

Periodically remove and inspect the spark plug(s) for heat damage and deposits that will cause them to break down and erode. Do not attempt to diagnose spark plug color or engine problems yourself. Instead, take the vehicle to your dealer for service.





MAINTENANCE

Spark Plug Removal and Inspection

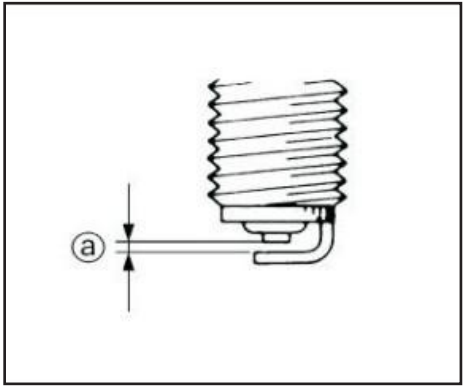
1. Tilt the cargo box.
2. Clean any dirt or debris from the spark plug and cylinder area.
3. Remove the spark plug cap.
4. Use the spark plug socket and wrench from the tool kit to remove the spark plug.
5. Check the spark plug gap (A) using a thickness gauge. Adjust the gap if necessary.

NOTE:

Specified spark plug: **DCPR8E (NGK)**

Spark plug gap: **.031 in~.035 in (0.8 mm~0.9 mm)**

6. Clean the gasket surface. Wipe off any grime from the threads.
7. Install spark plug and tighten to specified torque.



NOTE:

Spark plug torque: **14.8 ft-lb. (20 N•m)**. If a torque wrench is not available when you are installing a spark plug, a good estimation of the correct torque is that, tight the spark plug by finger first, then use tool to tight from 1/4 to 1/2 position.

8. Install the spark plug cap.
9. Install the cargo box access panel. Torque the fasteners to **7.3 ft-lb. (10 N•m)**.

Spark plug removal to expel water from the engine

If water has been ingested into the engine, it is important to remove the water as soon as possible by removing the spark plug(s) and using the starter system to rotate the engine for a short period to expel water out of the cylinder(s). Verify that the air box has been drained of water before attempting to expel water. Have a dealer service the engine immediately.

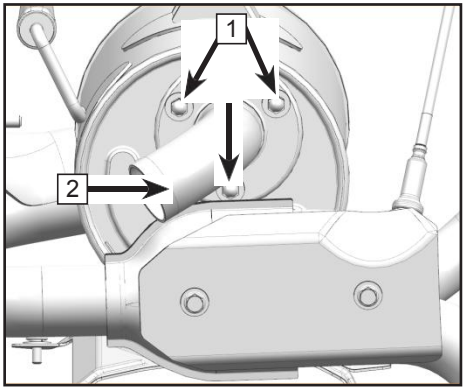
CAUTION
Major engine damage can result in the vehicle if water is ingested into the engine. Have the vehicle serviced by your dealer promptly if your vehicle becomes immersed or stalls in water that exceeds the footrest level. It is important to contact your dealer for service before starting the engine if water has been ingested. Water inside the engine can cause a 'hydraulic lock' effect that can damage the starter and engine components. The engine oil should be checked for water contamination. Drain and refill with new engine oil if water is found in the crankcase.

Exhaust Spark Arrestor

Clean carbon deposits from the spark arrester periodically while the muffler and exhaust are at normal air temperature.

CAUTION

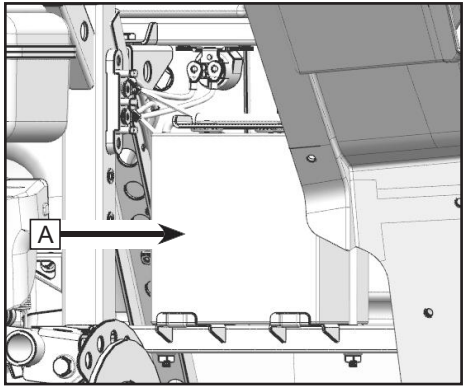
Ensure that the exhaust pipe and muffler are fully cooled down before servicing the spark arrestor.



1. Remove the fasteners (1).
2. Tap the tailpipe lightly to loosen it and remove the spark arrester from the muffler.
3. Use a wire brush to remove any carbon deposits from the spark arrester portion of the tailpipe (2).
4. Insert the tailpipe into the muffler and align the bolt holes.
5. Install and torque the fasteners to **7.3 ft-lb. (10 N•m).**

Battery

This vehicle is equipped with a 12 volt/30 Amp-hour, sealed low-maintenance battery (A), which is located at under the middle hood . Therefore, it is not necessary to check the electrolyte or add distilled water to the battery. If the battery seems to have discharged, consult your dealer. Verify that the battery connections are clean and secured during routine maintenance.



MAINTENANCE

Battery Maintenance Guidelines:

- A special battery charger (constant low voltage/ampere) is required for recharging low-maintenance batteries. Using a conventional battery charger may shorten the battery life.
- If the vehicle will not be used for a month or longer, remove the battery and store it in a cool, dry place. Completely recharge the battery before re-installation.
- Always make sure the cable connections are the correct polarity when reinstalling the battery. RED ('+' positive) / Black ('–' negative). Always disconnect the RED ('+'positive) cable last during removal, and reconnect it first during installation.
- Corroded battery connections can be cleaned with a mixture of baking soda and water.

⚠ WARNING

Avoid contact with skin, eyes or clothing, and always shield eyes when working near batteries. Keep out of reach of children. Keep batteries away from sparks, flames, cigarettes or other sources of ignition. Ventilate the area when charging or using in a closed space.

Battery acid antidote:

EXTERNAL: Flush with water.

INTERNAL: Get prompt medical attention.

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

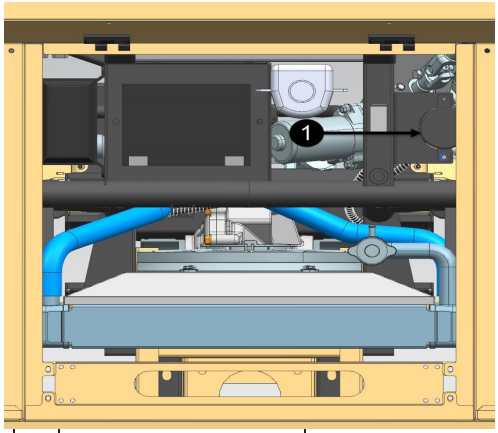
Brakes

Brake Fluid Level Inspection

Before riding, check that the brake fluid level is above the low mark and replenish whenever necessary. Brake fluid reservoir is located under the hood. Insufficient brake fluid may let air enter the brake system, possibly causing the brakes to become ineffective.

Observe These Precautions:

- When checking the fluid level, make sure the vehicle is on a level surface.
- Use only the designated quality brake fluid. Otherwise, the rubber seals may deteriorate, causing leaks and poor brake performance.
- Recommended brake fluid: DOT 4.
- Refill with the same type of brake fluid. Mixing fluids may result in a harmful chemical reaction and may lead to poor brake performance.
- Be careful that water does not enter the master cylinder reservoir. Water will significantly lower the boiling point of the fluid and lead to poor brake performance.
- Brake fluid may deteriorate painted surfaces or plastic parts. Always clean up spilled fluid immediately.
- As the brake pads wear, it is normal for the brake fluid level to gradually go down. A low brake fluid level may indicate worn



1	Brake fluid reservoir

brake pads or brake system leakage. Therefore, be sure to check the brake pads for wear before checking the brake system for leakage.

- Have your dealer check the cause if the brake fluid level goes down unexpectedly.

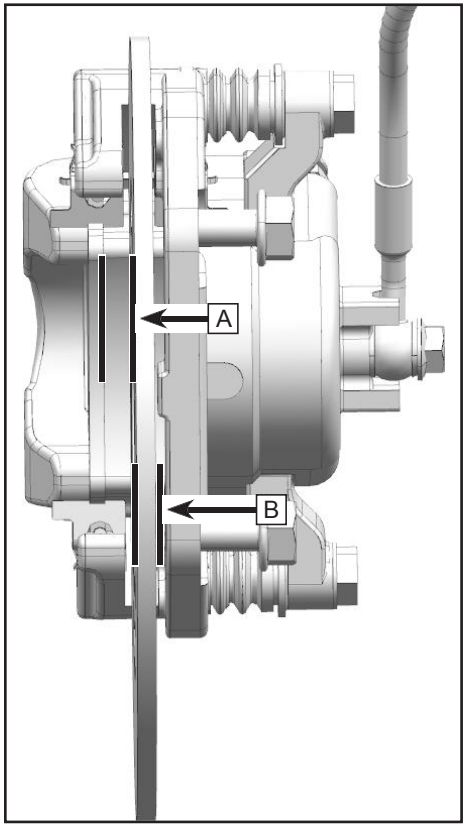
Brake Pad Inspection

Inspect the front and rear brake pads and discs for damage and wear. If the pad thickness (A) is less than 059 in. (1.5mm) or the disc thickness (B) is less than .118 in. (3.0mm), have your dealer replace them. Replacement of brake components requires professional knowledge. These procedures should be performed by your dealer.

NOTE:

Wheels must be removed to check brake pads.

⚠CAUTION
After servicing: • Make sure the brakes operate smoothly and that the lever free play is correct. • Make sure the brakes do not drag and the brake operation is not spongy. • All air is bled from the brake system.



MAINTENANCE

Brake Fluid Change

Complete brake system fluid replacement should be performed only by trained service personnel. Have your dealer replace the following components during periodic maintenance, or when they are damaged or leaking:

- Replace the brake hoses every four (4) years.

Brake Light Switch Operation

The brake light switch is activated by foot brake pedal pressure, and is properly working when the brake light comes on just as braking takes effect. Check that the switch assembly or the electrical circuit is working properly in case of brake light failure.

Suspension

Some front suspension components of the vehicle do not require maintenance or lubrication. Ensure these components are cleaned regularly, and are not loose or damaged before operating the vehicle.

Pivot Lubrication

Lubricate the upper and lower pivots of the front and rear suspension:

- Add grease into the upper and lower pivot grease nipples (1) located at the frame with a grease gun until grease lightly flows from the bushing.

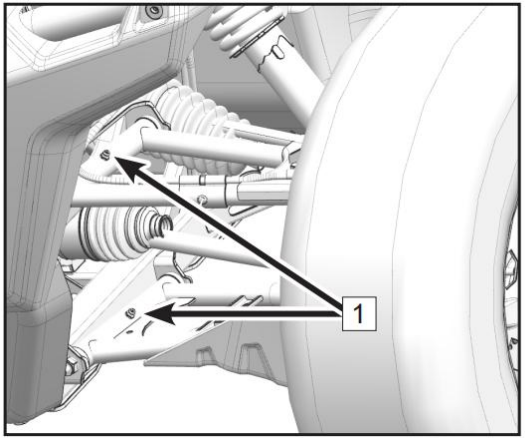
Rear Hub Carrier Lubrication

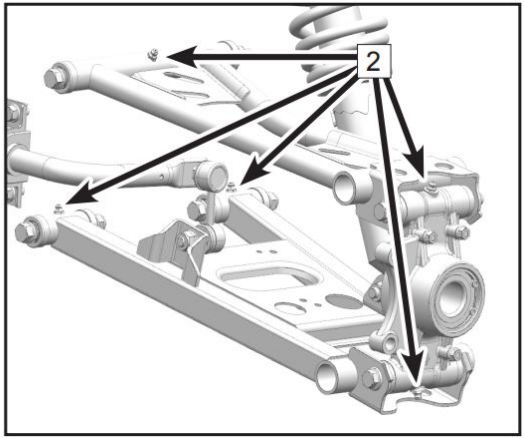
Lubricate the upper and lower pivots of the rear hub carrier:

- Remove the rear wheels.
- Add grease into the hub carrier upper and lower pivot grease nipples (2) with a grease gun until grease lightly flows from the bushing.
- Reinstall the rear wheels. Torque the fasteners to specification.

NOTE:

Recommended lubricant: All Season Grease

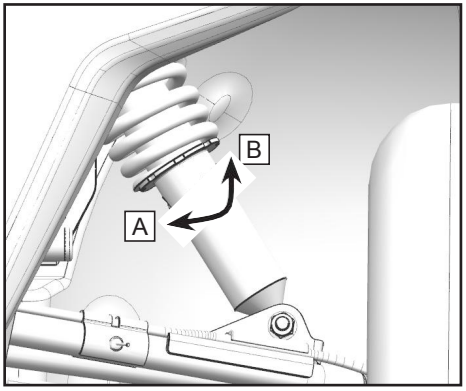




MAINTENANCE

Shock Preload Adjustment

The front and rear shock spring preload and damping can be adjusted to for rider weight, cargo, and riding conditions. Always adjust the shock absorbers on the left and right side to the same setting, and reset them to the initial setting after carrying loads.

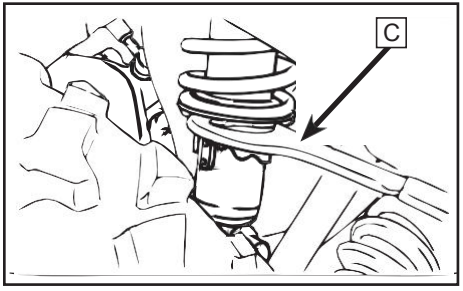


Adjust the spring preload:

A = Soft ~ B = Hard

●To increase the spring preload, loosen the lock nut and turn the adjusting ring in direction 'B'.

●To decrease the spring preload, loosen the lock nut and turn the adjusting ring in direction 'A'.



NOTE:

A special collar wrench 'C' is included in the tool kit to make spring preload adjustments.

MAINTENANCE

Wheels

Tire Pressure

Inspect the tire pressure before operation:

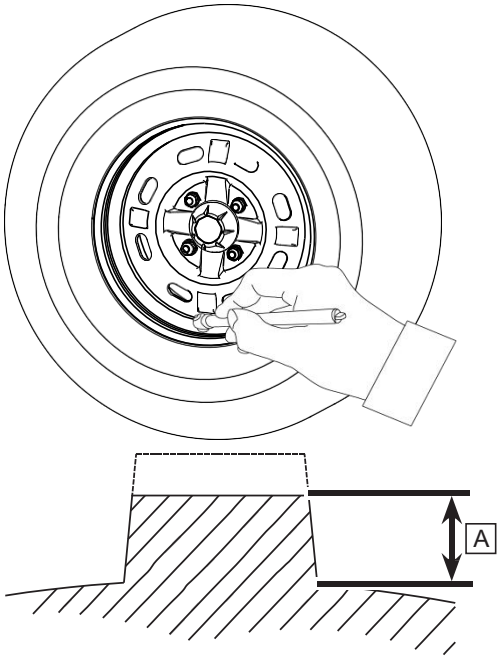
Front: **14 PSI (97 kPa)**

Rear: **18 PSI (124 kPa)**

Tread Depth

Inspect the tread depth regularly and replace the tires if the minimum tread depth is less than:

Minimum tread depth: **3/32 in. (3.0mm)**



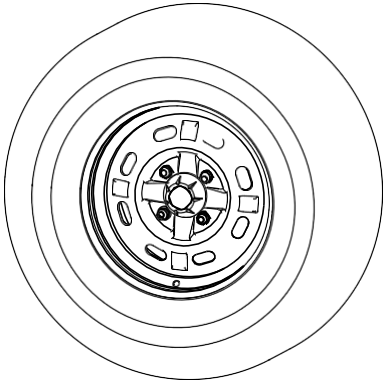
Wheel Bearings

- Lift the vehicle and support it securely under the frame with the tires off the ground.
- Push and pull the wheels at the outer edges to feel for side play or looseness. See your dealer if there is any side play or looseness.

MAINTENANCE

Wheel Removal

- Ensure vehicle is in park.
- Loosen the wheel fasteners.
- Elevate the vehicle and place a suitable support stand under the frame.
- Remove the fasteners from the wheel.
- Remove the wheel.



Wheel Installation

- Ensure vehicle is in park.
- Install the wheel.
- Install the wheel fasteners hand tight.
- Elevate the vehicle, remove the support stand under the frame, and lower the vehicle to the ground.
- Torque the wheel fasteners to specification:

◦Aluminum or Steel wheels - **81 ft-lb~88 ft-lb. (110 N•m~120 N•m)**

NOTE:

If aluminum wheels are used with tapered fasteners, install the fastener with the tapered side facing the wheel.

MAINTENANCE

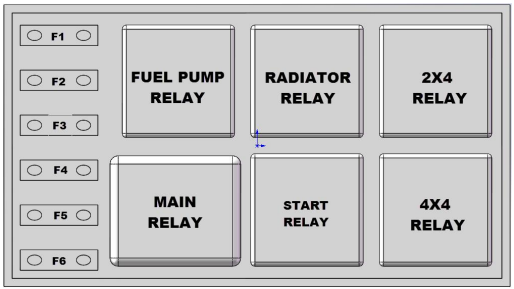
Electrical

Fuses

The fuse box is located under the front access cover. If a fuse is blown, turn off the main switch and install a new fuse of the specified amperage. Turn on the main switch. If the fuse immediately blows again, contact your dealer.

⚠CAUTION
To prevent an accidental short-circuit, turn off the main switch before checking or replacing fuses. Always use a fuse with the correct specified rating. Never use conductive material in place of the proper fuse. Using an improper fuse can cause damage to the electrical system and may lead to a fire.

Ref	FUSE	RATING
F1	EPS	40A
F2	EFI	40A
F3	Radiator and Fuel pump	30A
F4	Brake and USB power	15A
F5	Electric Dump Bed	15A
F6	Lights and Horn	15A



Main Fuse and EPS Fuse

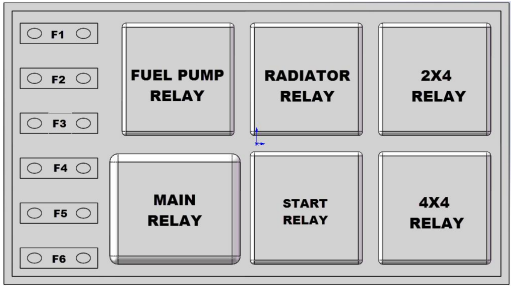
A 40 Amp main fuse and a 40 Amp EPS fuse are located to the left of the battery If the fuse is blown, turn off the main switch and install a new fuse of the specified amperage. Turn on the main switch. If the fuse immediately blows again, contact your dealer.

Relays

Electrical relays help operate the various vehicle system functions vehicle, and are located under the front access cover. They are located on the front access panel. For relay replacement or diagnosis, contact your dealer.

Relay Control Functions:

Main relay	Start relay
Radiator relay	Fuel pump relay
2x4 relay	4x4 relay

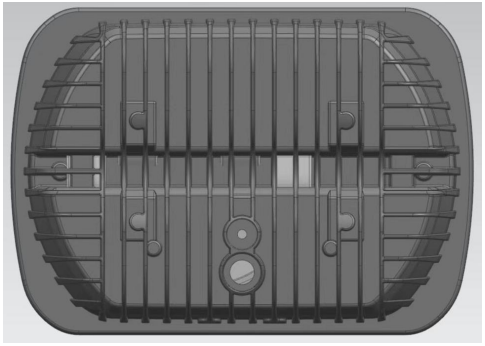


MAINTENANCE

Head Light Adjustment

To adjust the head lights:

- Turn screws to adjust the high beam direction beam vertically and horizontally.
- Turn screw to adjust the low beam vertically.



⚠ WARNING
It is advisable to have your dealer perform headlight adjustments. Improper adjustment could lead to an accident resulting in serious injury or death.

NOTE: The headlight and taillight assemblies are an LED structure which cannot be repaired if damaged or failed. Have your dealer replace the entire assembly if an LED is damaged or has failed.

Tail/Brake, Position, and Turn Signal Lamp Replacement

Brake/tail lights, front position lights, and turn signals (if equipped) are LED type. Have your dealer replace the entire assembly if an LED is damaged or has failed.

Fuel Evaporation System (EVAP)

Your vehicle contains a fuel evaporation system (EVAP) that prevents fuel vapors from entering the atmosphere from the fuel tank and fuel system. Never modify any part of this system, which will violate fuel evaporation emission regulations.

During routine maintenance, visually inspect all connections for leaks and blockage, and inspect the hoses for kinks or damage.

No other maintenance is necessary. Contact your dealer if repair is required.

NOTE: Information applies only to vehicles equipped with a fuel evaporation system.

5. **TRANSFER OR CONTINUATION OF WARRANTY:** This warranty is transferable only under the following conditions:
   - Transfer information must be provided to an authorized MASSIMO Motor, Inc. dealer, who will then forward the information to MASSIMO Motor, Inc.;
   - The complete model and serial number as shown on the original warranty document must be provided.
   - The name and address of the existing and new owners must be provided.
   - The original delivery date of the vehicle must be provided.
   - The new owner must indicate in writing that he/she has received and read the vehicle's Owner's Manual and the MASSIMO Motor, Inc. Warranty Policy.

6. **WARRANTY REGISTRATION:** The Dealer must complete a PDI form and warranty register the vehicle online and provide the completed registration form to MASSIMO Motor, Inc., within seven (7) days of completing the sale of the vehicle. Please note that NO warranty claims will be processed unless the product warranty online registration form is completed and the form is received by MASSIMO Motor, Inc., from the Dealer.

7. **DEALER RESPONSIBILITIES:** A MASSIMO authorized Dealer must perform warranty coverage repairs at no charge to the customer, even if they are not the dealer that sold the MASSIMO vehicle to the customer, and must use MASSIMO OEM parts for all warranty repairs. All vehicles sold by the dealer must be inspected and tested by the dealer to ensure proper performance and operation prior to delivery to the customer. No vehicles may be delivered to a customer without first passing a dealer inspection and an operational test.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