GRAVELY™

Treker

Owner/Operator Manual

Models

996123 – 420RX
996125 – 420RT
996146 – 440RX
996147 – 440CX

Gasoline containing up to 10% ethanol (E10) or up to 10% MTBE (methyl tertiary butyl ether) is acceptable for use in this machine.
The use of any gasoline exceeding 10% ethanol (E10) or 10% MTBE will void the product warranty.

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INTRODUCTION

THE MANUAL

Before operation of unit, carefully and completely read your manuals. The contents will provide you with an understanding of safety instructions and controls during normal operation and maintenance.

All reference to left, right, front, or rear are given from operator standing in operation position and facing the direction of forward travel.

ENGINE MANUAL

The engine on this unit is covered by a separate manual specific to the engine. This manual is included in the literature package that shipped with the unit. Refer to this manual for engine service recommendations. If the engine manual is not available, contact the engine manufacturer for a replacement manual.

MODEL AND SERIAL NUMBERS

When ordering replacement parts or making service inquiries, know the Model and Serial numbers of your unit and engine.

Numbers are located on the product registration form in the unit literature package. They are printed on a serial number label, located on the frame of your unit.

Serial Number Label

Figure 1

Vehicle Information

Model No. _____

Serial No. _____

Engine Model No. _____

Engine Serial No. _____

PRODUCT REGISTRATION

The Gravely dealer must register the product at the time of purchase. Registering the product will help the company process warranty claims or contact you with the latest service information. All claims meeting requirements during the limited warranty period will be honored, whether or not the product registration card is returned. Keep a proof of purchase if you do not register your unit.

Customer Note: If the Dealer does not register your product, please fill out, sign and return the product registration card to Gravelyor go to www.gravely.com on the internet.

UNAUTHORIZED REPLACEMENT PARTS

Use only Gravelyreplacement parts. The replacement of any part on this vehicle with anything other than a Gravely authorized replacement part may adversely affect the performance, durability, or safety of this unit and may void the warranty. Gravely disclaims liability for any claims or damages, whether warranty, property damage, personal injury or death arising out of the use of unauthorized replacement parts. To locate your nearest Gravely Dealer, go to www.gravely.com on the internet.

DISCLAIMER

Gravely reserves the right to discontinue, make changes to, and add improvements upon its products at any time without public notice or obligation.The descriptions and specifications contained in this manual were in effect at printing. Equipment described within this manual may be optional. Some illustrations may not be applicable to your unit.

DEALER DELIVERY

Dealer should:

1. Check all controls for proper function.
2. Fill out Original Purchaser Registration Card and return the card to Gravely.
3. Explain Limited Warranty Policy.
4. Explain recommended lubrication and maintenance. Advise customer on adjustments.
5. Instruct customer on controls and operation of unit. Discuss and emphasize the Safety Precautions. Give customer Owner/Operator, Parts, and Engine Manuals. Advise customer to thoroughly read and understand them.

EMISSION CONTROL SYSTEM

This equipment and/or its engine may include exhaust and evaporative emissions control system components required to meet U.S. Environmental Protection Agency (EPA) and/or California Air Resources Board (CARB) regulations. Tampering with emission controls and components by unauthorized personnel may result in severe fines or penalties. Emission controls and components can only be adjusted by an Ariens Company dealer or an authorized engine manufacturer's service center. Contact your Ariens Company Equipment Retailer concerning emission controls and component questions.

SAFETY

SAFETY ALERTS

Look for these symbols to point out important safety precautions. They mean:

Attention!

Personal Safety Is Involved!

Become Alert!

Obey The Message!

The safety alert symbols above and signal words below are used on decals and in this manual.

Read and understand all safety messages.

DANGER: IMMINENTLY HAZARDOUS SITUATION! If not avoided, WILL RESULT in death or serious injury.

WARNING: POTENTIALLY HAZARDOUS SITUATION! If not avoided, COULD RESULT in death or serious injury.

CAUTION: POTENTIALLY HAZARDOUS SITUATION! If not avoided, MAY RESULT in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTATIONS

NOTE: General reference information for proper operation and maintenance practices.

IMPORTANT: Specific procedures or information required to prevent damage to unit or attachment.

PRACTICES AND LAWS

Practice usual and customary safe working precautions, for the benefit of yourself and others. Understand and follow all safety messages. Be alert to unsafe conditions and the possibility of minor, moderate, or serious injury or death. Learn applicable rules and laws in your area, including those that may restrict the age of the operator.

REQUIRED OPERATOR TRAINING

Original purchaser of this unit was instructed by the seller on safe and proper operation. If unit is to be used by someone other than original purchaser; loaned, rented or sold, ALWAYS provide this manual and any needed safety training before operation.

SAFETY DECALS AND LOCATIONS

ALWAYS replace missing or damaged safety decals. Refer to Figure 2 for safety decal locations.

1. Keep all safety decals clean and legible.
2. Replace all damaged or missing decals. Order new safety decals through your Gravely dealer.

1. DANGER! GUARD MISSING

Do not operate vehicle without guards in place.

2. WARNING! ROLLOVER - FALLING OFF HAZARD

- Always wear seat belts
- Drive very slowly when turning.
- Always use brakes when going down a slope.
- Reduce speed on rough or hilly ground.
- Never attempt wheelies, jumps or other stunts.

3. DANGER! BATTERY

- Avoid battery acid spills. Do not get battery acid on eyes, face or other body parts.
- Do not add water or other liquids to battery.
- Battery fumes are explosive

4. DANGER! TRAILER TOWING INFORMATION

- Tow load at speed slow enough to maintain control.
- Do not exceed towing capacity or tongue weight.

5. WARNING! HOT SURFACES!

- DO NOT touch parts which are hot from operation. ALWAYS allow parts to cool.

6. CAUTION!

- DO NOT exceed rated current of 12V 20A.

7. CAUTION!

Before leaving vehicle:

- Stop engine
- Set parking brake
- Remove key

8. WARNING!

To prevent serious injury or death:

- Read and understand Operator's Manual before using and review annually.
- Do not operate without proper training or instructions.
- Operate only with guards installed and in good condition.
- Keep away from moving parts.
- NEVER operate with passenger - except in seat or seats provided (one person per seat position). Passengers affect balance and steering and increase risk of losing control.
- Support vehicle securely before working beneath.
- keep arms, legs, loose clothing and other appendages inside vehicle at all times.
- do not operate vehicle in a dangerous manner. When ascending or descending hills - travel slowly, travel straight up and down, and avoid turning if possible.
- Use caution and slow down when approaching wet, loose, slippery surfaces or unfamiliar terrain.
- Avoid sudden stops, starts turns or direction so as not to shift your load, endanger your passengers or lose control of the vehicle.
- Under all day or night travel conditions: operate this vehicle at speeds that will permit it to be brought to a stop in a safe manner.
- Prior to each use: inspect tires, engine oil level, brakes, steering mechanism and overall vehicle condition. If any problem exists, DO NOT OPERATE vehicle until safe operation can be restored.
- DO NOT EXCEED PAYLOAD recommendations and avoid loads which can not be centered and secured.
- This vehicle is built for off-road use only as speeds NOT TO EXCEED 25 mph. Any attempt to make unauthorized modifications of the original manufacturer's design will make the modifying party immediately and totally responsible, henceforth, for meeting compliance with all applicable Federal, State and Local laws, guidelines and regulations.

9. WARNING!

Before filling tank with gasoline:

- let engine cool.
- Gas vapors can ignite and explosion can occur.

10. WARNING! 2WD DO NOT OVERLOAD!

- Overloading can cause loss of control.

11. WARNING! 4WD DO NOT OVERLOAD!

- Overloading can cause loss of control.

12. WARNING! CAB ROLLOEVER PROTECTION

- Vehicle rollover could cause severe injury or death. This cab frame is not designed or intended to provide rollover protection.
- Always wear seat belts.

13. WARNING! IMPROPER USE CAN RESULT IN SEVERE INJURY OR DEATH!

- Use an approved motorcycle helmet and protective gear when warranted.
- Never use on public roads, streets or highways.
- Never carry passengers, except in seat provided.
- Never use drugs or alcohol.
- No driver under age of 16.

General Safety

For Your Protection

Thoroughly read and understand the instructions given in this manual before operation. Refer to the “Safety Label” section, read all instructions noted on the decals.

Do not allow anyone to operate this equipment who has not fully read and comprehended this manual and who has not been properly trained in the safe operation of the equipment.

Before Operating

This unit is not to be driven on public roads. Operating this unit on public roads could be against the law and may be hazardous. Injury or death may result.

Do not operate this vehicle under the influence of alcohol or drugs.

Always inspect the vehicle before operating it. See "Pre-Start Check List" on page 11.

Do not operate this machine unless all safety shields are in place and all badly worn, broken or missing parts have been properly replaced.

Wear appropriate protective gear and clothing such as safety helmet, goggles, gloves, coveralls, etc., when conditions warrant.

No driver under age of 16.

Practice Safe Maintenance

Understand procedure before doing work. Use proper tools and equipment. Refer to this manual for additional information.

Work in a clean, dry area.

Place the vehicle in neutral, set parking brake, turn off engine and remove key before performing maintenance. Chock wheels if you must perform maintenance on a slope.

Make sure all moving parts have stopped and all system pressure is relieved.

Allow the engine to cool completely.

Disconnect battery ground cable (-) before servicing or adjusting electrical systems or before welding.

Inspect all parts. Make sure parts are in good condition and installed properly.

Remove build-up of grease, oil or debris.

Remove all tools and unused parts from the unit before operation.

Prepare for Emergencies

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctor, ambulance, hospital and fire department near phone.

Wear Protective Equipment

Wear protective clothing and equipment.

Wear clothing and equipment appropriate for the job. Avoid loose-fitting clothing.

Because prolonged exposure to loud noise can cause hearing impairment or hearing loss, it is best to wear suitable hearing protection such as earmuffs or earplugs.

Because operating equipment safely requires your full attention, avoid wearing radio headphones while operating machinery.

Wear seat belts at all times when operating vehicle.

Tire Safety

Tire changing can be dangerous and should be performed by trained personnel using correct tools and equipment.

- When inflating tires, use a clip-on chuck and extension hose long enough for you to stand to one side–not in front of or over tire assembly. Use a safety cage if available.
- When removing and installing wheels, use wheel-handling equipment adequate for weight involved.

Safe Operating Procedures

The safe operation of any machinery is an important concern to all consumers. Your vehicle has been designed with many built-in safety features. However, no one should operate this vehicle before carefully reading this Operator’s Manual. Also read all instructions noted on the safety decals.

Personal Safety

Be familiar with all functions of this vehicle.

Do not allow anyone to operate this vehicle who has not fully read and comprehended this manual and who has not been properly trained in the safe operation of this vehicle.

Do not operate vehicle while drinking or under the influence of alcohol or drugs.

Do not allow anyone under 16 years of age to operate this vehicle even under adult supervision. All passengers must be at least 80 pounds and exceed a height of 4’ 9" (57 inches). Any passenger must be able to comfortably reach the floor with their feet and grab handles with their hands.

Do not run engine indoors except when starting engine and transporting attachment in or out of a building. Carbon monoxide gas is colorless, odorless and deadly.

Operate with both hands on the steering wheel.

Keep all bystanders away from this vehicle during operation. Keep children out of the operating area and under the watchful eye of another responsible adult.

Riders may, without knowing it, place their foot on the accelerator pedal while bracing themselves against a rough ride. This makes it impossible to slow down the vehicle until the passenger removes his foot from the pedal. Inform passenger to keep his foot off the accelerator and always slow down before the ride gets rough.

No riders are allowed except in factory designed and supplied seating and no more than one person in a bucket seat and three people in a bench seat. Do not use cargo bed for carrying people. Maximum vehicle occupancy including driver is one person per seat position.

Operate vehicle from driver’s seat only.

Do not leave vehicle unattended with engine running.

Do not dismount a moving vehicle as serious injury or death could occur.

Wear snug-fitting clothing to avoid entanglement with moving parts.

Keep hands, feet, long hair, clothing and jewelry away from moving parts and obvious pinch points to avoid getting caught.

Keep hands, arms, feet and all bodily appendages safely inside the confines of the vehicle. Always be aware of and avoid tree limbs and brush that have a potential of hitting and/or poking individuals riding the vehicle. Serious body harm could result.

Some conditions may warrant extra safety gear to be worn such as safety helmets and/or goggles.

Do not touch engine, engine exhaust pipe and/or muffler while they are hot.

Avoid pinch point hazards. Cargo bed and seat platform hinge creating pinch points.

Battery fumes are explosive. A spark will ignite battery fumes. Wear a face shield when charging or jumping a battery. Follow all battery safety rules outlined in this manual.

Avoid battery acid spills. Do not get battery acid on eyes, face, or other body parts. Flush eyes and other body parts immediately with water for at least 15 minutes if battery acid has gotten on them.

This product is equipped with an internal combustion type engine. DO NOT use unit on or near any unimproved, forest-covered or brush covered land unless exhaust system is equipped with a spark arrester meeting applicable local, state or federal laws. A spark arrester, if it is used, must be maintained in effective working order by operator.

Fuel is highly flammable and its vapors are explosive. Handle with care. Use only an approved gasoline container with an appropriately sized dispensing spout.

NO smoking, NO sparks, NO flames. ALWAYS allow engine to cool before servicing.

NEVER fill fuel tank when engine is running or hot from operation.

NEVER fill or drain fuel tank indoors.

NEVER OVERFILL fuel tank. See See Filling Fuel Tank on page 23.

Replace fuel cap securely and clean up spilled fuel.

Properly remove fuel before tipping unit.

NEVER fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground away from your vehicle before filling.

When practical, remove gas-powered equipment from the truck or trailer and refuel it on the ground. If this is not possible, then refuel such equipment on a trailer with a portable container, rather than from a gasoline dispenser nozzle.

Keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.

If fuel is spilled on clothing, change clothing immediately.

Do not smoke while handling fuel.

Do not fill tank with engine running or while engine is hot. Allow engine to cool before filling. Spilling fuel over engine, muffler, or a hot object may result in a fire or explosion.

Allow engine to cool before servicing the fuel system.

Clean up any gasoline spills immediately.

Keep fuel away from open flame or spark.

Store vehicle away from open flame or spark if there is fuel in the tank.

Use extra caution when handling gasoline and other fuels. They are flammable and vapors are explosive.

Refuel in well ventilated areas.

Never attempt to start engine when there is a strong odor of gasoline fumes present. Locate and correct cause.

Store gasoline in an approved container and keep it out of children’s reach.

Gasoline is harmful or fatal if swallowed.

Long-term exposure to vapors can cause serious injury and illness.

Avoid prolonged breathing of vapors.

Keep face away from nozzle and gas tank opening.

Keep gas away from eyes and skin.

Support this vehicle securely before working beneath. Chock wheels to prevent vehicle from rolling.

Mechanical Safety

Do not operate a vehicle with damaged or worn parts. Repair all damages and worn parts before putting vehicle back in to service.

Never attempt to make any adjustments while engine is running or hot. Keep clear of all rotating parts.

Make sure engine surface, cooling fins and fan screen are clean of all debris including dirt, trash and oil.

Always operate vehicle with drive belt enclosure installed. Do not leave pulleys and belts exposed.

Never modify any parts on the vehicle without authorization. Unauthorized modifications will void warranty to all parts directly and indirectly affected by the modification.

Do not use cargo tail gate as a seat.

Do not use cargo bed as a working platform.

The power lift is designed to dump cargo only. Do not use it to lift other objects.

Never attempt “wheelies”, jumps, or other stunts. Never drive recklessly. Always operate your vehicle at a safe speed that will allow you to maintain control.

Do not use vehicle as an anchor device.

Do not mount a receiver hitch type carrier platform to the vehicle.

Front bumper and cargo bed are not designed as pusher bars. Do not attempt to push other vehicles or implements or damage may result.

Always maintain proper tire inflation. See Tire Maintenance on page 20.

Always disconnect negative battery terminal before making adjustments to vehicle electrical system or welding on this vehicle.

Always check wheel lug nut torque values two hours after initial operation and two hours after each tire repair or replacement. Routinely check lug nut torque every 100 hours of operation. See Torque on page 20.

Do not shift transaxle unless this vehicle is fully stopped and engine is at idle or damage may occur.

Keep safety decals clean of dirt and grime.

Replace all missing, illegible, or damaged safety decals. See list of safety decals in this manual.

Transporting Safety

Most accidents with off road vehicles occur when traveling up, down, or across the face of a slope. Refer to operation instructions and safety video for proper operation procedures.

Use extreme caution when driving through dry grass, brush and other fire hazard materials. Never stop or park over combustible materials. Keep grass and brush from collecting on and around engine and muffler parts.

Be aware of cargo shifting when stopping or moving. Make sure all cargo is properly secured and tied down. Injury could result from loose cargo.

Avoid sudden stops, starts and turns.

Always make sure vehicle pathway is clear of all objects when backing up. Know location of persons around vehicle and especially location of small children. Take extra precautions when rear view is hindered by cargo.

Do not attach an implement, trailer or other device to the hitch that will produce negative tongue weight.

Reduce speed and payload on hilly, rough, wet, slick or unstable ground.

Reduce speed when loaded with cargo. Heavy cargo load takes longer to stop.

Always make turns at a speed that will maintain control of vehicle. Never make turns at full speed. Reduce speed when turning empty and reduce speed even more when turning loaded. The heavier the cargo load, the slower the turn should be.

The four-post accessory bar is not a certified ROPS (Roll Over Protection Structure). Always avoid roll-overs.

Do not load four-post accessory bar with heavy equipment. Rollover could result from such loading.

Always park on level ground, stop engine, set parking brake and remove ignition key before leaving vehicle. Chock tires if condition warrants.

Use extreme caution when cresting hills, approaching blind corners, shrubs, trees or other obstructions that might limit visibility. Proceed slowly until you are sure trail conditions immediately ahead are safe. Use extra care when approaching obstructions that might hide children.

Be especially observant of operating area and terrain. Watch for holes, rocks, or other hidden hazards. Do not operate vehicle near the edge of drop-offs or banks.

Keep front wheels straight when cresting hills or going over bumps.

Do not stop, start suddenly or over accelerate on hills. Loss of control and rollover could result.

Use extreme caution when descending hills, running on loose slippery surfaces, or when towing at maximum capacity. Towing, braking and tractive capabilities are greatly diminished.

Avoid changing direction or making sharp steering corrections on slopes or rollover may occur.

If this vehicle begins to tip when crossing a slope, turn front wheels downhill to regain stability and control.

Do not operate vehicle on slopes over 15^{o}.

When crossing a slope on soft terrain, turn front wheels slightly uphill and maintain a constant speed to maintain a straight line of travel.

When descending hills or slopes apply steady pressure to the foot brake to avoid potential of freewheeling or runaway.

Never allow vehicle to coast or free wheel in neutral or loss of control may result.

If vehicle loses power and stops on a hill, immediately engage foot brake and back slowly down the hill maintaining a straight downhill line of travel. Do not attempt to turn vehicle sideways on the hill or a rollover could result.

Never operate vehicle without good visibility and lighting. When traveling at night always use your headlights and reduce speed according to visibility, trail and terrain conditions.

Do not operate this vehicle on highways, public roads, or where it may be a hazard to faster moving traffic.

Exercise extreme caution when operating on or crossing a gravel drive, walks, or roads. Stay alert for hidden hazards or traffic.

Avoid water crossings when possible and never cross a body of water where depth is unknown. Loss of power will occur if drive belt becomes submerged or wet. Unnecessary crossing of streams and waterways erodes shore line and damages water-born habitat. If you must cross, do it at a point where banks are not steep and proceed at a slow and steady speed. Do not travel in water that is higher than the bottom wheel lug nuts. Water higher than the bottom wheel lug nut can damage the brake system and get the drive belt wet stalling the vehicle. However, ***intermittent*** stream crossings where depth of water briefly comes into contact with bottom of floorboards is acceptable. See Going Out on the Trail on page 17.

Never use vehicle for racing and never modify engine to exceed 25 MPH vehicle speed.

Towing Safety

Follow all towing instructions in this manual when towing the unit behind another vehicle. Do not tow the vehicle faster than 25 MPH. See Towing Safety on page 9.

Beware, tow ropes, cables and chains can break when pulling another vehicle or object causing serious injury or death to anyone in line with the whipping action created when they break. Never jerk when pulling, always ease into a pull gently. Always stay clear of tow line. Never be in line with tow line.

Safe Load Capacities

See SPECIFICATIONS on page 35.

Do not exceed total payload capacity of this vehicle.

Do not pull a trailer or implement exceeding maximum towing capacity and/or maximum tongue weight.
Loss of control may result.

CONTROLS AND FEATURES

Features	Benefits
Subaru OHV V-Twin Engine	For Proven Power & Dependability.
25 MPH Top Speed	Able to go from job site to job site at a reasonable speed.
4-Wheeled Independent Suspension	For Soft Ride & Excellent Stability.
Rack & Pinion Automotive-Type Steering	For Easy Handling & Quick Response.
4-Post Accessory Bar	Offers Accessory Mounting Capabilities & Added Protection from Limbs & Branches.
9 1/2" Minimum Ground Clearance	For Traversing Rough Terrain.
1,400 lb. Total Payload	For Maximum Cargo and Gear Hauling Capabilities.
4-Wheeled Automotive Style Braking	For Maximum Stopping Power & Control.
Constantly Variable Transmission	For Rapid Response & Easy Shifting.
Large Open Operator's Platform	For Maximum Operator & Passenger Comfort.
8-Gallon Fuel Tank	For Extended Operating Range.
58" Overall Width at Rear Tires	For Maximum Stability.
Cargo Bed with Power Lift	For added convenience and maximum productivity.
Full Bench Seat	More Spacious Seating.
Wide Range Of Accessories	To Meet Individual Customer Needs.
Enclosed CVT	For enhanced stream crossing capability.
Auto-Lock Differential	For maximum traction capability.
Overrunning Clutch	For environmental friendly traction and easy handling.
Seat Belts	For extra measure of safety.
Front Receiver	For added versatility.
High Mounted Air Intake	For enhanced stream crossing capability.
Dash Mounted Cup Holders	For added convenience.
Locking Deep Well Glove Box	For added security and convenience.
Column Mounted Shifter	For added convenience.
Removable Cargo Bed Sides	For added versatility.
Headlights and Taillights	For added versatility.

OPERATION

WARNING: AVOID INJURY. Read and understand the entire *Safety* section before proceeding.

SAFETY FIRST

This unit is designed and built for work, recreation and enjoyment; however, improper and irresponsible operation could result in serious injury or death. Since this is an off-road vehicle, operators will seldom see road safety and warning signs they are accustomed to seeing on highways and public streets. This places additional responsibility on the driver to operate this vehicle well within safe operational limits and capabilities of the unit.

This manual contains instructions on safe and responsible operation. Read, understand and follow all safety instructions about this vehicle. If you do not understand any part of this manual, contact your local dealer for additional information and clarification. As the operator of this equipment, you are in complete control. Only you can prevent an accident from happening.

Operator Responsibilities

WARNING: It is the operator's responsibility to have read this manual thoroughly and to know how to operate this vehicle safely in all situations. See 1. DANGER! GUARD MISSING on page 4.

Pre-Start Check List

- Lubricate vehicle as indicated in LUBRICATION on page 28.
- Make sure engine cooling fan screen is clean of all debris including dirt, trash and oil. Also, make sure engine surface and cooling fins are clean. See Engine Maintenance on page 24.
- Make sure exhaust system is clean of all dirt, trash and oil.
- Check tire pressure as indicated in the See Tire Inflation Chart on page 20.
- Make sure wheel lug bolts/nuts are tightened to 73 ft-lbs (99 N•m).
- All nuts, bolts, screws and fasteners should be checked.
- Turn on headlights to make sure battery has a charge and electrical lighting circuit is working.
- Check tail lights and brake lights.
- Step on foot brake to make sure there is plenty of pedal and that brakes hold pressure and do not bleed off. Add brake fluid as indicated in on page 29 and bleed brakes if required.
- Check parking brake to make sure it will engage, hold and release.
- Check steering by executing a full lock to lock turn in each direction.
- Check to make sure neutral start feature is working by trying to start unit with the shift selector located in forward and reverse positions or service brake released. (Unit should not start.)
- Check engine oil level at the dipstick. Add oil as indicated in Engine Oil and Oil Filter on page 28 if oil is at or below the add mark on the dipstick. Do not overfill or plug fouling will occur.
- Check differential oil level at the differential oil plug. Add gear lube as indicated in OIL LEVEL CHECK on page 28.
- Check fuel level to make sure there is at least 1/8 of a tank of gas prior to performing initial starting operations.
- Check air intake filtering system. Clean or replace filtering system per instructions for Engine Air Filter Maintenance on page 25 and CVT Breather Hose on page 27.
- Make sure low engine idle speed is set between 1250 and 1350 rpm and that maximum engine static speed does not exceed 3800 rpm. ***Modifying or adjusting carburetor to increase vehicle speed above factory set specification is a safety violation and could void the warranty***.

General Operation

DANGER: Avoid injury or death from entanglement in the rotating drive belt. All shields must be in place and secure when operating. Keep all persons away from rotating drive line.

To start the engine, follow the starting procedures noted below.

IMPORTANT: The shifter must be in neutral and the brake pedal needs to be pressed to start the engine.

1. Ensure that the column shifter is in Neutral.
2. Press the brake pedal.
3. Pull choke fully out and hold when engine is cold.
4. Turn ignition switch fully clockwise and hold until engine starts.
5. Release ignition switch to run position and choke to normal operating position immediately after engine starts.
6. Turn ignition switch counterclockwise to stop engine.

The column-mounted shifter provides forward and reverse direction control. The parking brake must be released before moving the column shifter into forward or reverse or the engine will quit.

A manual choke control under the seat assists in quick cold weather starting. The infinitely variable torque converter drive system means there is no clutching. Shift into either forward or reverse when the vehicle is stopped and step on the throttle pedal to go at speeds up to 25 mph in forward. Never shift while vehicle is moving.

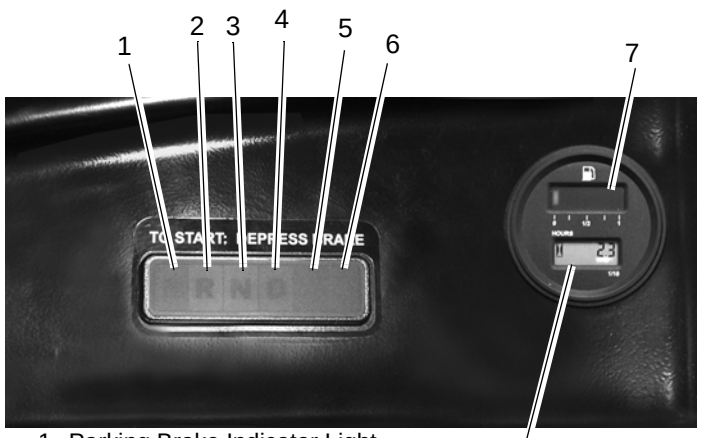
Braking is accomplished by pressing the brake pedal located on the floorboard. This activates the rear hydraulic drum brakes and front hydraulic disc brakes.

The parking brake is located in the center of the panel below the seat. Pull the lever up to engage the parking brake. A dash-mounted indicator light will remain lit until parking brake is disengaged.

Indicating Lights and Gauges

1. **Parking Brake Indicator Light:** illuminates when the parking brake is engaged. The light shuts off when the parking brake is released.
2. **Reverse Indicator Light:** Indicates that transmission is in reverse. Unit will move in reverse when the parking brake is disengaged and the throttle is depressed.
3. **Neutral Indicator Light:** Indicates that transmission is in neutral.
4. **Drive Indicator Light:** Indicates that transmission is in forward (drive). Unit will move forward when the parking brake is disengaged and the throttle is depressed.
5. **Headlight-On Indicator Light:** Indicates that the unit headlights and taillights are on.
6. **Service Engine Light:** Indicates low oil pressure (below 14 psi) or low voltage (below 11.7 volts) when illuminated. Stop engine immediately. Check oil level and add if low. See your authorized Gravely dealer if oil light stays on and engine is full of oil. It is normal for the oil light to illuminate whenever the ignition switch is turned on and will stay lit until engine is running.
7. **Fuel Level Gauge:** Displays the approximate amount of fuel in the fuel tank from empty (0) to full (1). The gauge provides the most accurate reading when the vehicle is positioned on level surface.
8. **Hour Meter:** Indicates number of hours, to the nearest 1/10 of an hour, the vehicle has run.

IMPORTANT: Hour meter continues to run if ignition switch is on position and engine not running. ALWAYS turn ignition switch to the OFF position when the engine is not running.



1. Parking Brake Indicator Light
2. Reverse Indicator Light
3. Neutral indicator Light
4. Drive indicator Light
5. Headlamp-On Indicator Light
6. Service Engine Light
7. Fuel Level Gauge
8. Hour Meter

Figure 3

Switches and Accessories

1. **Ignition Switch:** Starts and stops engine. Vertical position is off. Turn switch key clockwise to start engine. See General Operation on page 11 for correct vehicle starting procedures.
2. **Headlight Switch:** Turns on head and tail lights. Press top of switch to turn lights ON and bottom of switch to turn lights OFF.
3. **Four-Wheel Drive Switch**: Engages the four-wheel drive system. Press top of switch to engage four-wheel drive and bottom of switch to disengage four-wheel drive. The four-wheel drive system should be used only when required to navigate difficult terrain or in low-traction situations. When four-wheel drive is not engaged only the rear wheels propel the vehicle.

NOTE: Four-wheel drive should not be engaged at transport speed or on hard surface roads.

4. **Four-wheel Drive Indicator Light:** Lamp illuminates when four-wheel drive is engaged.
5. **Electric Cargo Bed Lift Switch:** An electric-powered hydraulic cylinder raises and lowers the cargo bed. Press top of switch and hold to raise cargo bed. Press bottom of switch and hold to lower cargo bed. Release switch at any position to stop cargo bed. Release switch immediately if cylinder makes a ratchet noise.

IMPORTANT: The bed lift is protected by an internal clutch in both directions and will make a loud “ratchet” noise when end of travel has been reached or the cylinder is overloaded. Release the switch immediately when this noise is heard.

6. **Auxiliary Electrical Switch Blank:** Removed to allow installation of an ON-OFF switch for controlling electrical accessories such as winches.

7. **Auxiliary Power Outlet:** There are two auxiliary 12-volt power outlets available for powering accessories such as lights, cell phones or GPS units. One is located below the switches in the center of the control panel and the other is located inside the storage enclosure.

CAUTION: Avoid Damage! The combined maximum power load for the two power outlets is rated at 12 volts and 20 amps. Exceeding the 12 volt, 20 amp maximum power load can damage the electrical system.

1. Ignition Switch
2. Headlight Switch
3. Four-Wheel Drive Switch
4. Four-Wheel Drive indicator Light
5. Electric Bed Lift Switch
6. Auxiliary Power Switch Blank
7. Auxiliary Power Outlet
8. Storage Enclosure

Figure 4

Controls

1. **Engine Choke Control:** The knob for controlling the engine choke is located under the driver's seat. Use to choke engine when starting. Pull on knob to start a cold engine. Release knob after engine has started. Do not choke an engine that is hot from operating, as engine flooding may result.
2. **Parking Brake Lever:** Pull the lever up fully to engage the parking brake. Push the button on top of the lever and move the lever fully toward the floorboard to release the parking brake. The parking brake must be disengaged before placing the column shifter in Reverse or Drive or the engine will stop.

1. Choke Control Knob
2. Parking Brake Lever

Figure 5

Floor Pedals

1. **Brake Pedal:** Applying pressure to brake pedal while releasing pressure on the accelerator pedal will slow down and/or stop vehicle. Do not rest foot on the pedal unnecessarily while in motion to avoid premature brake wear.
2. **Accelerator Pedal:** Changes engine rpm and vehicle ground speed. Press down on the accelerator pedal to increase speed and release pressure on the pedal to decrease speed. Vehicle should not move when engine is idling. Adjust engine idle speed if vehicle moves while accelerator pedal is not being depressed.

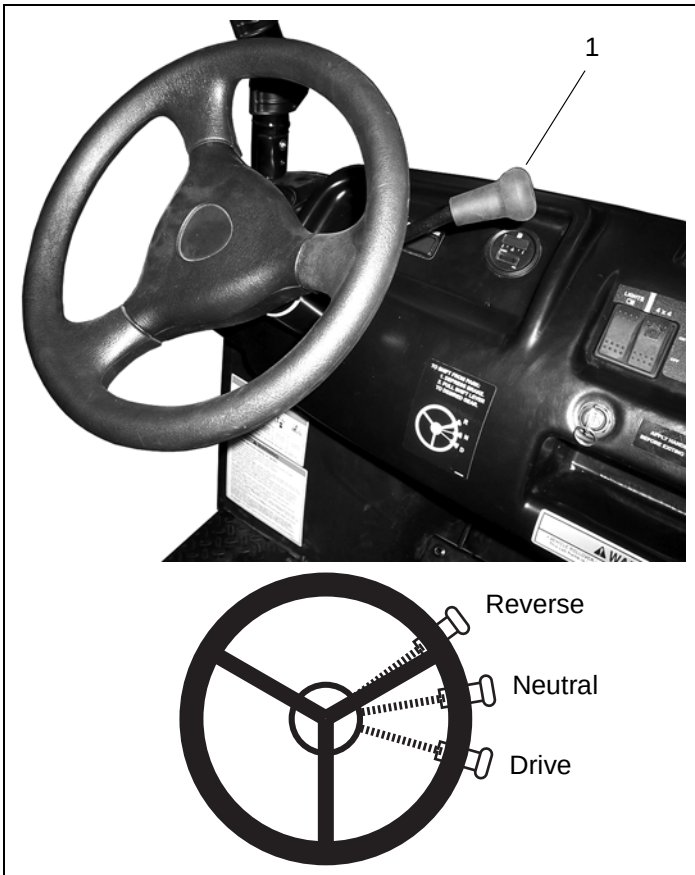
1. Brake Pedal
2. Accelerator Pedal

Figure 6

Shift Selector Lever

1. **Shift Selector**: Changes the transmission from neutral to forward or reverse. Always start engine neutral. The selector position will be shown in the indicator panel in front of the operator.

   Move the transmission shift selector from neutral to reverse or drive by rotating the lever up or down to the desired transmission gear.



1. Shift Selector Lever

Figure 7

Make a full stop by releasing pressure on accelerator pedal and applying brakes. Be sure the unit is at a full stop before returning shift selector to neutral or switching from reverse to forward and forward to reverse.

Seat Belts

CAUTION: Seat belts should fit snugly and as low around the hips as possible. Wearing seat belts high around the waist greatly increases the chances of that person being injured in a dangerous situation.

Never use a seat belt for more than one person and never buckle the seat belt to a buckle designed to receive the other seat belt.

The seat has a seat belt for the operator and a seat belt for the passenger. Make sure seat is fully lowered and seat belts are properly fastened when operating the vehicle.

1. **Seat Belt:** The seat belt is the belt that extends from the retractor when pulled across the lap to be buckled. It is located on the left side of the driver's seat and right side of the passenger's seat.
2. **Buckle:** Both operator and passenger buckles are located in the middle. It secures the seat belt in place.

1. Seat Belt
2. Seat Belt Buckle

Figure 8

Seat Belt Operation

Pull the seat belt across your hips and insert its tongue into the buckle until you hear it snap. Release the seat belt by pressing the release button in the center of the buckle. Guide the seat belt to its original position as it retracts to keep it aligned and to prevent its tongue from striking and damaging surfaces on the vehicle.

Cargo Bed

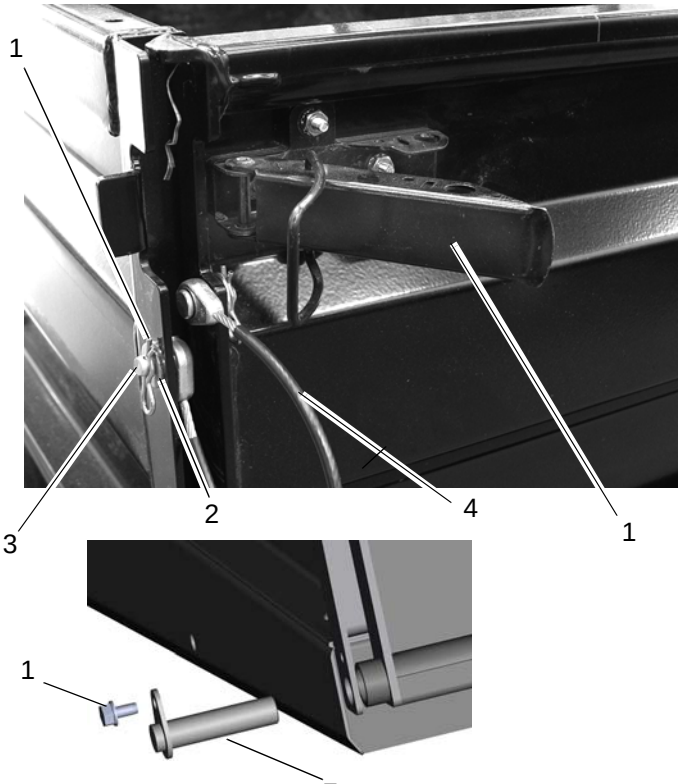
CAUTION: Always load front of cargo bed first and back last. Never load back with more weight than the front.

DANGER: Make sure area behind cargo bed is clear of bystanders before raising the cargo bed. Bodily harm can result from being pinched between cargo bed and another object or from a load dumping and/or rolling onto a bystander.

The cargo bed has a removable tailgate and side panels for use as a flatbed.

Remove Tailgate

1. Remove cotter pins (item 4), flat washers (item 3) and tailgate cable pins (item 5) retaining tailgate cable (item 6) to cargo bed on both sides. Retain washers and cotter pins for reinstallation. It is not necessary to remove the connections to the tailgate.
2. Remove 1/4” hex bolts (item 2) and tailgate pivots (item 7) from cargo bed on both sides.
3. Support tailgate and release tailgate lock lever (item 1) on both sides and remove gate from cargo bed.
4. Replace flat washers and cotter pins in tailgate cable for storage.

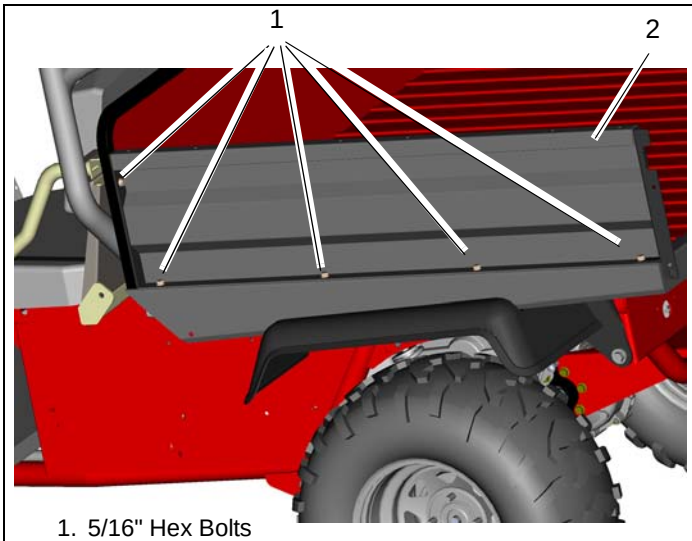


1. Tailgate Lock Lever
2. 1/4" Hex Bolt
3. Flat Washers
4. Cotter Pins
5. Tailgate Cable Pin
6. Tailgate Cable
7. Tailgate Pivot

Figure 9

Remove Cargo Bed Side Panel

1. Remove five 5/16” hex bolts (item 1) retaining left-side panel (item 2).
2. Remove left-side panel.
3. Repeat step 1 for right-side panel.



1. 5/16" Hex Bolts
2. Cargo Bed Side Panel

Figure 10

OPERATION AND USE

Towing

This vehicle is capable of being towed behind a tractor or another vehicle as long as certain precautions are followed:

- The ignition switch must be turned off.
- The gear selector must be placed in neutral position.
- The vehicle must be towed with a rigid tow-bar that is designed to tow the gross weight of the vehicle. See SPECIFICATIONS on page 35 for vehicle gross weight.
- The tow-bar must be securely attached to the vehicle at a location that will not cause damage or come loose from the vehicle.
- Owner/user takes on all responsibility and liability resulting from attaching tow-bar to the unit and to the tow vehicle.
- Do not allow anyone to ride in the unit while it is being towed.
- Do not tow a trailer or vehicle behind the vehicle that is being towed.
- Do not tow vehicle at speeds over 25 mph (40.2 km/h). The vehicle is designed to travel up to 25 mph (40.2 km/h). Higher speeds may result in damage to the unit, tow vehicle and personnel.
- Slow down when turning to prevent loss of control and rollovers.
- Obey all state and local laws for towing vehicles.

Engine Performance

All small gas engines need fuel, air, and spark in exactly the right proportions in order to run properly at peak performance. Bad or stale fuel, a fouled spark plug, a wet or corroded spark plug wire, a dirty carburetor, a wet or dirty air filter, a low oil situation, incomplete fuel combustion, carburetor icing, high oil situation (gas in the oil reservoir), and low engine temperature are all causes of small gas engine problems or diminished performance.

Fuel Quality

The normal shelf life of gasoline from the time it leaves the refinery is about 30 days. Unused gas that is stored too long can oxidize and break down causing formation of gum and varnish deposits in carburetors, needle valves, jets and venturis. This stops or chokes off flow of proper fuel/air mixture.

Draining the tank or running the engine until the tank is empty can result in dried out gaskets that, when dry, will crack and leak. Also, emptying metal fuel tanks and storage containers can result in corroded containers and contaminated fuel.

Gravely highly recommends using a fuel stabilizer or oxygen inhibitor such as Gravely fuel stabilizer p/n 00592900.

Incomplete Combustion

Incomplete combustion is when fuel is not fully burned in the engine combustion chamber. This condition can occur when an engine is started but is not allowed to run long enough to reach full operating temperature. Cold weather can accelerate this condition. Also, fouled spark plugs, wet electrical circuits and/or a plugged air filter will prevent fuel from being fully burned.

Unburned fuel pools on top of the piston and seeps down the cylinder walls into the oil reservoir. Often the oil dipstick will show an oil over-fill condition as fuel accumulates in the reservoir.

The oil reservoir filling up with gas can foul the spark plugs. If left unchecked, oil will become so diluted with gasoline that it can no longer function as a lubricant. It is extremely important to change oil and oil filter often whenever there is a high frequency of gas getting into the oil reservoir. Not changing oil and oil filter often can result in premature wear on cylinder walls and piston rings.

Also, replace fouled spark plugs, regap weak plugs, check electrical system for capability of delivering a strong spark and clean the air filter when dirty.

Cold Weather Operation

Small gasoline engines must get up to operating temperature before they will operate properly. Most air cooled engines draw a large volume of air through their intake fan. In sub-zero temperatures or freezing weather it can become almost impossible for an engine to reach normal operating temperature unless intake air is restricted or warmer air is fed into the carburetor. Gravely offers a cold weather kit that directs air warmed from the exhaust manifold into the carburetor.

Chokes, throttle cables, and other mechanical linkages are also subject to freezing and sticking in cold weather. Use spray lubricants to ensure these items work freely. Whenever possible, park the unit in a warm, dry environment to allow time for the linkages to dry out.

Traveling Tips

If the work project or recreational trip leads to an extended ride deep into the wilderness or way out on the prairie, consider the following tips from experienced pros about safety, gear, clothing, supplies and driving techniques.

Preparation

Do a complete equipment check as follows:

1. Ensure there is sufficient fuel and oil to make the trip and return home.
2. Ensure that the tires are properly inflated, lug bolts are tight and that a spare tire and the tools to change, repair and inflate a tire are available. Adding a puncture sealant to the tires is one preventative measure to consider.
3. Check for loose or missing parts and make needed repairs before starting a trip. It is especially important to check steering, braking, throttle, electrical and engine components thoroughly.

Planning

1. Plan route, destination and rendezvous points before starting out.
2. Do not travel alone if possible. Taking someone else along reduces the potential for loss of life or major injury from inclement weather, animal attacks, or accidents.
3. Obtain trail or area maps of travel routes to and from the destination. Communicate travel plans to responsible friends and or proper authorities. Plan rendezvous points at conspicuous landmarks along the route in case of unexpected trouble.
4. Be sure to take a weather radio and two-way communication devices such as cell phones or long range-two way radios. It is also good to have ground flares, a flare gun, a smoke canister, emergency strobe light, a reflecting mirror, matches for a signal fire and a compass.

Plan Traveling Gear

1. Check the short and long range weather forecast and take protective gear and clothing to cover all conditions. Take or wear appropriate eye and head protection, gloves, boots, long-sleeve shirt, long pants, jacket, rain gear, dry socks and full change of dry clothing.
2. Plan for the best and worst of environmental conditions.
3. Pack a first aid kit, sun blocker, lip balm, insect repellent, personal medications, water, tarp or tent, flash light, survival knife, binoculars, camera, tool kit, rope, duct tape, tow strap, winch, eating utensils, cooking utensils and high-energy trail food.
4. Tie and lash down gear and supplies securely. Keep the bulk of the weight centered and mounted as low as possible on the vehicle in order to maintain a low center of gravity for safe and stable off-road travel.
5. Store a spare ignition key in a protected accessible location.

Going Out on the Trail

Operate safely:

1. Brief passenger on proper safety procedures like keeping hands, arms, feet and other bodily appendages inside the vehicle. Passengers should only be transported in factory supplied seating.
2. Operator and passenger should wear seat belts at all times.
3. Avoid operating on excessively steep hills and especially on hills that are steeper than 15 degrees. Avoid crossing slopes if possible and don’t make sharp uphill steering corrections or a rollover could result. If the vehicle starts to tip over on a slope turn the front wheels quickly down hill to regain stability and control. The best way to climb most hills is to approach them straight on while maintaining a steady ground speed and constant engine rpm.

   The best way to descend most hills is straight down while using steady pressure on the brakes without locking. Locking the brakes in a steep downhill situation can result in loss of traction, steering and control. When a slope on soft terrain must be crossed, keep the front wheels turned slightly uphill and maintain a constant speed and a straight line of travel.
4. Driving too fast, being inattentive and turning too sharply on slippery surfaces can result in rollovers and accidents almost quicker than any other ground condition. Snow cover, wet trails, loose gravel and frozen ground can all contribute to this dangerous condition. In these conditions maintain sharp focus on the trail ahead. Don’t make sharp turns and avoid the need for hard braking. If the vehicle begins to slide turn the front wheels in the direction of the skid to regain control.

5. Avoid paved surfaces. Gravely vehicles are designed exclusively for off-road use. Occasionally it may be necessary to cross public roads or right of ways to gain access to work or recreation sites. In these situations keep clear of faster traffic and cross quickly and safely. When driving on paved surfaces use caution. Cargo loads and drive modes (2WD and 4WD) can affect handling.
6. This vehicle with its shielded torque converter is capable of making ***intermittent*** stream crossings where the depth of water briefly comes into contact with the bottom of floorboard, but with these cautions:
    - Know the depth of the water and the strength of the current.
    - Cross where there is a gradual incline for entry and exit and the bottom is fairly clean and free of obstacles.
    - Maintain a slow steady speed disturbing the stream bed as little as possible
    - If the engine or the whole vehicle becomes submerged, DO NOT attempt to start the vehicle.Take it to the nearest Gravely dealer immediately.
    - After intermittent stream or shallow water crossings, dry out the brake linings and drive belt by slightly accelerating the engine rpm while riding the brakes momentarily until full drive power and braking are restored.
    - Forward momentum and power may be lost if water gets into the sealed torque converter and drive belt through the enclosure's vents. Always remove the CVT drain cap to drain any water that may have entered the enclosure. Replace cap once all water is drained.
7. Backing up in an off-road situation might seem a simple thing to do to a novice, but having to back down a hill is a very dangerous situation. If the vehicle is on level ground always look behind and back up slowly. If necessary to back down a hill, apply the brakes very lightly. Hard braking can cause total loss of control and a rollover situation. Attempt to back straight down the hill without turning. Turning in this situation can also cause a rollover.
8. Whenever possible, park the vehicle on a level surface, place the shift selector in Neutral, engage the parking brake and remove the ignition key. If necessary to park on a hillside be sure to chock the rear wheels on the downhill side to prevent a roll away.
9. Never operate a vehicle under the influence of drugs or alcohol.

Maintenance Schedule

Maintenance Operation	Daily	Every 100 Hrs.	Every 300 Hrs.	Every 500 Hrs.	Every 6 Mos.	Every Year	Refer to Page
Check Engine Oil level (2)	X						28
Check Tire Pressure	X						20
Clean Engine and Exhaust (9)	X						24 & 27
Inspect All Nuts and Bolts for Tightness	X						20
Check and Clean Area Around Engine Air Intake	X						25
Check Fuel Line Hoses, Clamps, & Tank for Leaks	X					X	24
Check Wheel Lug Nuts (Torque 73 – 80 lb-ft) (1)		X					20
Check Master Cylinder Brake Fluid Level		X					29
Check Battery Charge and Water Level		X					22
Check In-line Fuel Filter (8)		X			X		24
Check CVT Snorkel Filter (3)		X			X		27
Change Engine Oil (2)							
Change Engine Oil Filter (2)							
Check & Regap Spark Plugs (2)							
Check Rear Trans-axle Case Fluid Level (6)		X			X		28
Check Center Transfer Case Fluid Level (6)		X			X		29
Check Front Differential Case Fluid Level (6)		X			X		29
Check Driven Pulley Wear Buttons		X					25
Inspect Drum Brakes (5)			X				
Inspect Parking Brake (5)			X				
Replace Air Cleaner Filter Element (4)			X			X	25
Replace Spark Plugs (2)							
Check and Adjust Engine Idle Speed (2)							
Check Valve Clearance (2)							
Replace In-line Fuel Filter			X			X	24
Clean Combustion Chamber (2)							
Clean Battery and Terminals						X	22
Check Drive Belt and Pulleys						X	24

Reference Notes for above Maintenance Operation:

(1) Check tightness after first 2 hours of initial operation and after removal for repair and replacement.

(2) Refer to engine manual.

(3) Service every 50 hours or 6 months (whichever comes first).

(4) Replace air cleaner filter element if damaged, every 300 hours or ever season (whichever comes first). Replace more frequently when used in dusty conditions.

(5) Have a Gravely dealer perform this service every year or every 300 hours (whichever comes first).

(6) Change every year or every 400 hours (whichever comes first). Change immediately if contaminated with water.

(7) Have a Gravely dealer perform this service every year or every 500 hours (whichever comes first).

(8) Replace fuel filter immediately if excessive water accumulation or sediment is found.

(9) Maker certain engine and exhaust are cool before cleaning. Check and clean engine fan cooling screen often when traveling in dirty terrain.

General Maintenance

WARNING: Read and observe all safety warnings in this manual and in the engine service manual.

WARNING: Except when checking or changing components, always keep protective shields on for safety and component protection.

WARNING: Keep engine clean of oil, grease and debris which can cause engine overheating, fires and belt wear. Clean only after engine has completely cooled. Wear gloves to protect hands from cuts, puncture wounds and burns.

WARNING: DO NOT have engine running when servicing or making adjustments to the vehicle. Stop engine, place transmission in neutral, engage parking brake and remove ignition key.

DANGER: Repairs or maintenance specifically requiring engine power should be performed by trained personnel only. Transmission gear should be set in neutral with tires properly chocked or with drive tires properly supported off the floor. Enclosed areas should be properly ventilated to prevent carbon monoxide poisoning.

DANGER: Exercise extreme caution when working with and around the belt drive. Make certain the engine cannot be accidentally started. Stop engine and remove ignition key for maximum safety. Repairs or maintenance requiring engine power should be performed by trained personnel only.

Regular maintenance is the best prevention for costly downtime or expensive, premature repair. The following pages contain suggested maintenance information and schedules which the operator should follow on a routine basis.

Remain alert for unusual noises; they could be signaling a problem. Visually inspect vehicle for any abnormal wear or damage. A good time to detect potential problems is while performing scheduled maintenance service. Correcting the problem as quickly as possible is the best insurance.

Some repairs require the assistance of a trained service mechanic and should not be attempted by unskilled personnel. Consult your Gravely dealer when assistance is needed.

Securing Vehicle for Maintenance

Before servicing the vehicle the following procedure must be met to secure the vehicle:

1. Park vehicle on a level surface. **Do not work under or around a vehicle parked on an incline**.
2. Set shift selector in Neutral.
3. Engage parking brake.
4. Turn ignition switch off and remove switch key.
5. Chock front and back side of the wheels not being raised off the ground when jacking a vehicle or when ground surface slopes.
6. Always use jack stands with sufficient capacity to support the vehicle when working under the vehicle.
7. Always secure cargo bed in the up position when working under the cargo bed.

Wheels and Tires

Torque

DANGER: Particular attention must be given to tightening the wheel lug nuts. Not torquing these items correctly may result in loss of a wheel, which can cause personal injury and damage to the vehicle.

Torque Values		
	Lb-Ft	**N•m**
Wheel lug nuts	73 – 80	99 – 108

Always check wheel lug nut torque values two hours after initial operation and two hours after each tire repair and/or replacement. Routinely check lug nut torque valves every 100 hours of operation. See Maintenance Schedule on page 19.

Tire Maintenance

Use only tires recommended by Gravely.

Always ensure that all tires have the correct air pressure. Check air pressure in all four tires before each use. Visually inspect tires for loss of air throughout each day of operation. See Tire Inflation Chart below for correct tire pressure.

Tire Inflation Chart	
Tire	**Inflation**
Front Tires	10 psi*
Rear Tires	14 psi*

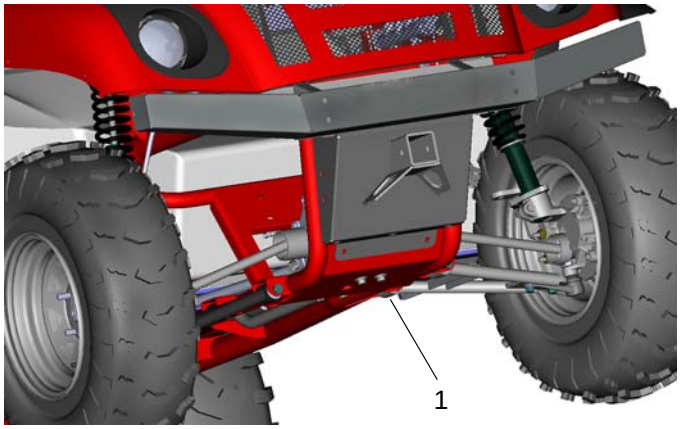
* Tire pressure may be increased to accommodate additional cargo load. Maximum tire pressure is noted on tire side wall.

Lifting the Vehicle

DANGER: A lifted vehicle must be supported properly with jack stands of suitable capacity before working under and around it. Also the wheels on the ground must be chocked on both sides to prevent vehicle from rolling forward or backward.

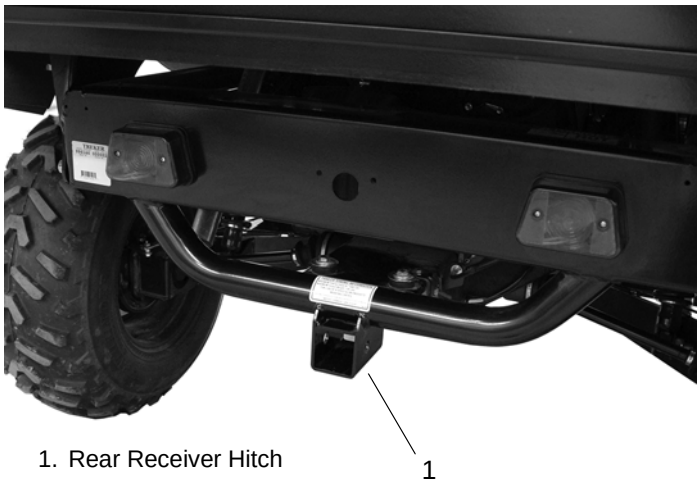
IMPORTANT: Use a hydraulic jack, floor jack, or scissor type jack to lift vehicle. Do not lift using the bumper, body, rear transaxle, or axles.

1. Secure vehicle for maintenance. See Securing Vehicle for Maintenance on page 20.
2. Loosen the lug nuts on a wheel being removed approximately 1/2 turn counterclockwise while it is still on the ground.
3. See important note above. Place proper jack under vehicle as follows:
   - **Front tires:** Position jack under the front skid plate (see Figure 11).
   - **Rear tires:** Center the jack under the rear receiver hitch (see Figure 12).
4. Jack vehicle only high enough to do the work intended.
5. Support vehicle securely with jack stands before working under or around the vehicle.
6. Work may now be performed on the vehicle. Be sure to properly torque all bolts that were loosened. Wheel bolts should be torqued after vehicle is lowered to the ground.
7. Lower vehicle by first jacking vehicle up high enough to remove jack stands. Then carefully lower jack until vehicle is on the ground.
8. Remove wheel chocks.



1. Front Skid Plate

Figure 11



1. Rear Receiver Hitch

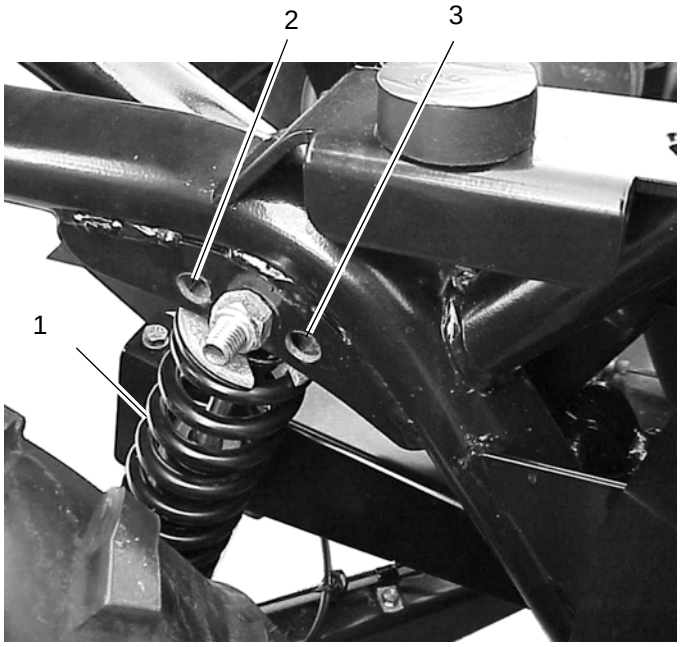
Figure 12

Shock Absorber Adjustment

Traveling fast or carrying heavy loads may cause shock absorbers to bottom-out making the ride rough. The mounting position of the rear shocks is adjustable to increase or decrease firmness of ride. Typically, they are set soft for slow speeds and light loads. Fast speeds and heavy loads require a firmer setting.

Adjust rear shock absorber position as follows:

1. Refer to Lifting the Vehicle on page 21 for instructions on lifting vehicle before repositioning the rear shocks.
2. Locate three top mounting holes for shock absorber (see Figure 13).
3. Remove lock nut and hex bolt securing shock absorber to the vehicle frame.
4. Position rear shocks backward or forward to change load-carrying capacity:
   - Mounting the shock absorber in the rear hole increases ride firmness and load-carrying capacity.
   - Mounting the shock absorber in the front hole results in a softer ride and decreases load-carrying capacity.
5. Lower vehicle as outlined in the instructions for Lifting the Vehicle on page 21.

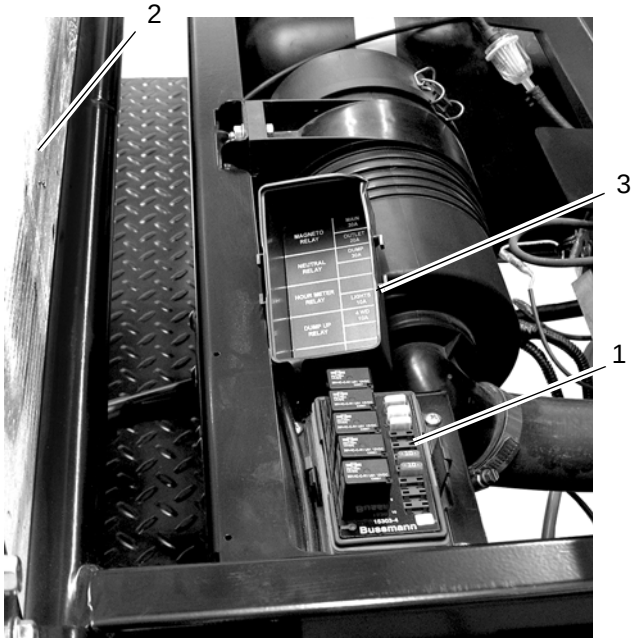


1. Rear Shock Absorber
2. Upper Rear Mounting Hole
3. Upper Front Mounting Hole

Figure 13

Electrical System

The electrical system is protected by fuses located in the fuse box under the driver's seat. Lift the seat to access the fuse box, and then press in the two tabs located on the side of the bed to open it. A diagram on the lid shows the fuses and their locations. Fuses may be purchased through your Gravely Dealer.



1. Fuse Box
2. Seat
3. Fuse Location Diagram

Figure 14

Common circuit problems are shorts, corroded or dirty terminals, loose connections, defective wire insulation or broken wires. Switches, solenoids and ignition components can also not function, causing a short or open circuit.

Before attempting any fault diagnosis of the electrical system, use a test light or voltmeter to check battery voltage. If battery voltage is satisfactory, check cleanliness and tightness of terminals and ground connections. A general understanding of electrical servicing and use of basic test equipment is necessary for troubleshooting and repair.

Battery

WARNING: Acid can cause serious injury to skin and eyes. Avoid skin contact with battery acid and always wear eye protection when checking the battery. Flush area with clean water and call a physician immediately. Acid will also damage clothing.

Incorrect battery cable connections can damage vehicle's electrical system and cause battery cables to spark. Sparks around a battery can result in a battery gas explosion and personal injury.

- Always disconnect negative (black) battery cable before disconnecting positive (red) cable.
- Always reconnect positive (red) battery cable to positive (+) post before reconnecting negative (black) cable to negative (-) post.

Keep battery terminals from touching any metal parts when removing or installing the battery. Do not allow metal tools to short between battery terminals and metal vehicle parts. Sparks can cause a battery gas explosion which will result in personal injury.

Do not allow an open flame near the battery when charging. Hydrogen gas forms inside the battery. This gas is both toxic and flammable and may cause an explosion if exposed to a flame.

The battery is located under the seat. Gravely recommends a 12-Volt maintenance-free battery size U1 with a minimum 400 CCA. The battery support is designed to hold a larger automotive-style battery if desired. Simply reposition the J-hooks to the higher holes when installing a larger battery. Always follow manufacturer's maintenance, safety, storing and charging specifications.

Charging the Battery

Batteries that are severely discharged may not take or indicate a charge immediately. Some automatic chargers need a minimum voltage before they will start charging and some will not indicate a charging condition at the meter until the battery reaches a minimum charge. Refer to the charger manual for specific instructions.

When recharging batteries, please follow these important safety precautions:

1. Secure vehicle for maintenance. See Securing Vehicle for Maintenance on page 20.
2. Read manufacturer's instructions for the charger.
3. Leave battery charger unplugged until its cables are connected to the battery.
4. Choose the correct battery charger to properly charge a battery.
5. Put on protective eye wear, rubber gloves, work clothes and remove all jewelry.
6. Don't charge a frozen battery. Allow battery to warm up to about 60 degrees F before charging.
7. Charge batteries in a well-ventilated area.
8. Never smoke while charging a battery.
9. Set charger to 12 volts.
10. Plug in and turn on charger.
11. Don't wiggle connections to check contact while charger is turned on or plugged in.
12. Choose lowest amperage setting initially. Once charger is on and battery is charging a higher amp setting may be used to reduce charging time. Always follow the charger maker's recommendations.

Jump-Starting

Gravely does not recommend jump-starting your unit. Jump-starting can damage engine and electrical system components. See your engine manual for more detailed information.

FUEL SYSTEM

Filling Fuel Tank

To add fuel to the fuel tank:

1. Clean fuel cap and surrounding area to prevent dust, dirt, and debris from entering fuel tanks.
2. Remove fuel cap.

IMPORTANT: Refer to Engine Manual for correct type and grade of fuel.

3. Fill fuel tank to the bottom of filler neck. See SPECIFICATIONS on page 35 for fuel tank capacity.

IMPORTANT: DO NOT OVERFILL! This equipment and/or its engine may include evaporative emissions control system components, required to meet EPA and/or CARB regulations, that will only function properly when the fuel tank has been filled to the recommended level. Overfilling may cause permanent damage to evaporative emissions control system components. Filling to the recommended level ensures a vapor gap required to allow for fuel expansion. Pay close attention while filling the fuel tank to ensure that the recommended fuel level inside the tank is not exceeded. Use a portable gasoline container with an appropriately sized dispensing spout when filling the tank. Do not use a funnel or other device that obstructs the view of the tank filling process.

4. Replace fuel cap and tighten.
5. ALWAYS clean up spilled fuel.

GASOLINE

IMPORTANT: ALWAYS use gasoline that meets the following guidelines:

- Clean, fresh gasoline.
- A minimum of 87 octane/87 AKI (91 RON). High altitude use may require a different octane. Consult your engine manual.
- Gasoline with up to 10% ethanol (gasohol) or up to 10% MTBE (methyl tertiary butyl ether) is acceptable.
- Use of any gasoline other than those approved above will void the engine warranty. If the pumps are not marked for the content of alcohol or ethers, check ethanol and MTBE levels with the fuel supplier.
- Do not modify the fuel system to use different fuels.
- Never mix oil and gasoline.

NOTE: All gasoline is not the same. If the engine experiences starting or performance problems after using a new gasoline, switch to a different fuel provider or fuel brand.

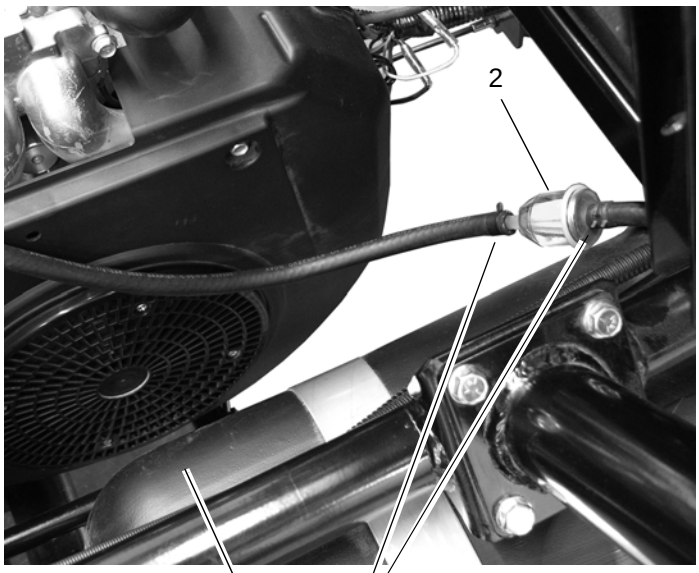
IMPORTANT: Excessively oxygenated or reformulated fuels (fuels blended with alcohols or ethers) can damage the fuel system or cause performance problems. If any undesirable operating problems occur, use a gasoline with a lower percentage of alcohol or ether.

Fuel Stabilizer

Gasoline left in the fuel system for extended periods without a stabilizer will deteriorate, resulting in gum deposits in the system. These deposits can damage the carburetor and the fuel hoses, filter and tank. Prevent deposits from forming in the fuel system during storage by adding a quality fuel stabilizer to the fuel. Follow the recommended mix ratio found on the fuel stabilizer container.

Fuel Filter Maintenance

The fuel filter is installed in the fuel line between the fuel tank and engine. Check it every 100 hours for excessive water accumulation or sediment and replace if necessary. Otherwise replace after every 300 hours of operation or annually, whichever occurs first. Also check fuel tank and fuel line for cracks and leaks every 100 hours.



1. Fuel Tank
2. Fuel Filter
3. Clamp

Figure 15

1. Secure vehicle for maintenance. See Securing Vehicle for Maintenance on page 20.
2. Following all Fuel Safety Cautions and Warnings, remove clamps (item 3) securing fuel filter (item 2) and remove fuel filter for inspection.
3. Check fuel filter for sediment and water accumulation. Check fuel lines for cracks and leaks.
4. Replace damaged fuel lines with new ones.
5. Replace fuel filter when sediment or excessive water is present.
6. Reattach fuel filter to fuel line with arrow on filter pointing in the same direction fuel flows in the line. Fuel flows towards the engine.
7. Install hose clamps.
8. Start engine and inspect for fuel leaks.
9. Stop engine. Remove blocks securing cargo bed up and lower cargo bed.
10. Remove wheel chocks if used.

Engine Maintenance

General Information

Prevent engine fires. Clean engine compartment daily. Clean cooling fan screen of all debris including dirt, trash and oil. Make sure engine surface and cooling fins are clean. Check engine compartment often for cleanliness when traveling over areas that produce high amounts of airborne combustible materials.

Refer to the engine manual for all maintenance recommendations.

Drive Belt Replacement

Replace drive belt when it shows signs of severe cuts, tears, excessive weather checking, cracking and/or burns caused by slipping. Slight raveling of belt covering does not require belt replacement. Trim raveling with a sharp knife.

Inspect belt pulley grooves and flanges for wear. A new belt, or one in good condition, should never run against bottom of pulley groove except when engine is idling. Replace pulley when this is the case, otherwise belt will lose power and slip excessively.

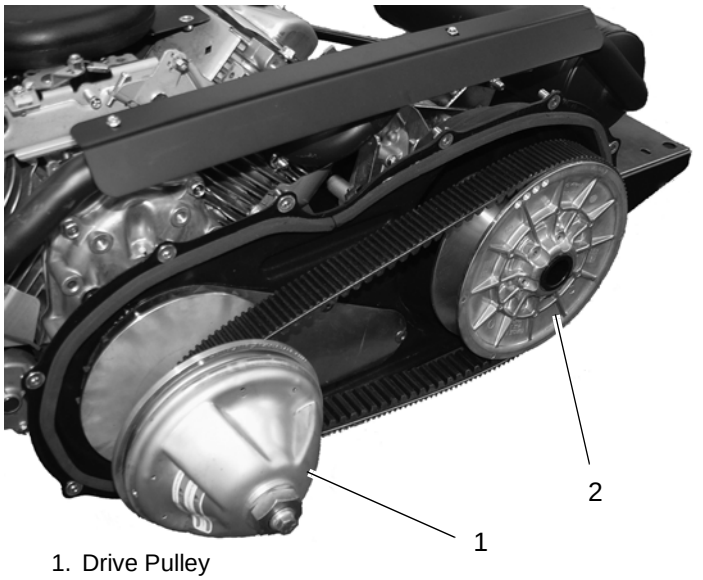
Never pry a belt to get it on a pulley as this will cut or damage the belt fibers.

Keep oil and grease away from belts and never use belt dressings. Any of these will destroy the belt composition in a very short time.

CAUTION: Securely support cargo bed in the up position to prevent injury when working under the cargo bed.

Make certain to keep fingers from getting caught between belt and pulley when rotating belt over pulley.

1. Secure vehicle for maintenance. See Securing Vehicle for Maintenance on page 20.
2. Remove hardware securing drive belt cover and remove cover. See Figure 16.



1. Drive Pulley
2. Driven Pulley

Figure 16

3. Hand squeeze the belt together between drive pulley and driven pulley to force belt into the driven pulley. This should open driven pulley side walls allowing room to remove the belt.
4. Remove belt by rolling it off over the driven pulley and then lifting it up off the drive pulley.
5. Reinstall new belt by placing it over the drive pulley and then rolling it over the variable driven pulley.
6. Reinstall belt cover and fasteners.
7. Reconnect battery negative cable.
8. Remove blocks securing cargo bed up and lower cargo bed.

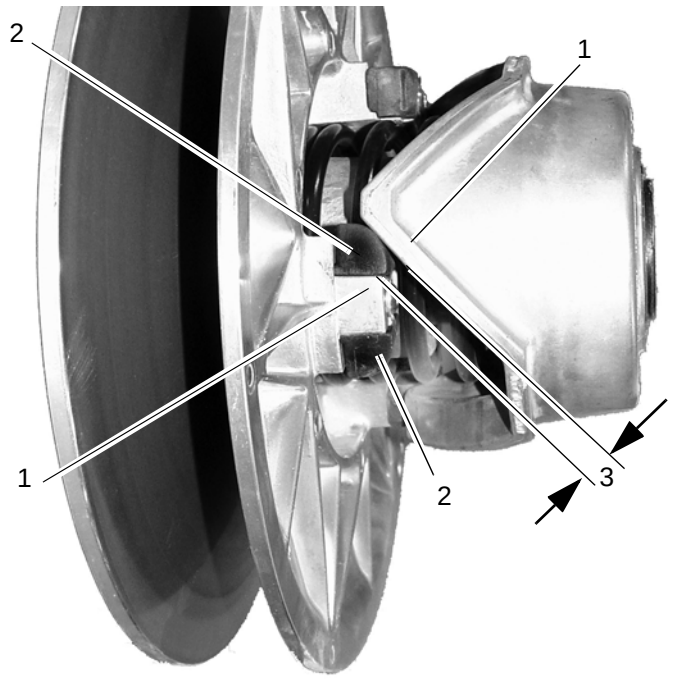
Driven Pulley Maintenance

The driven pulley should be inspected for wear at the cam shoes to prevent damage to pulley and pulley compression spring.

1. Secure vehicle for maintenance. See Securing Vehicle for Maintenance on page 20.
2. Remove screws securing drive belt cover. Pull cover back to inspect.
3. Check cam shoes on driven pulley every 100 hours or less for wear. Cam shoes should be at least 1/16” (1.6 mm) above aluminum hub when measuring parallel to the cam incline.

DANGER: Do not replace cam shoes without contacting your Gravely dealer for assistance. The compression spring can cause bodily injury if replacement is done incorrectly.

4. Replace all cam shoes if there is less than 1/16” (1.6 mm) clearance between aluminum housings. Contact your nearest Gravely vehicle dealer for replacement assistance.



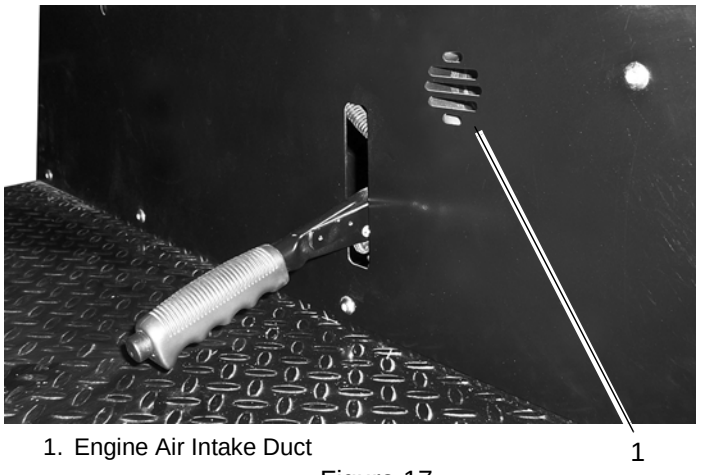
1. Aluminum Housing
2. Cam Shoe (3 Required)
3. Housing-to-Housing Clearance. Replace if clearance is less than 1/16" (1.6 mm)

Figure 16

Engine Air Filter Maintenance

NOTE: Do not operate engine with a damaged air filter or without an air filter element. Dirt will enter engine causing dust ingested engine problems.

NOTE: Do not block air intake port leading to air cleaner. Placing an object on the platform in front of the air intake duct or allowing loose clothing to drape over the duct could block the duct opening.

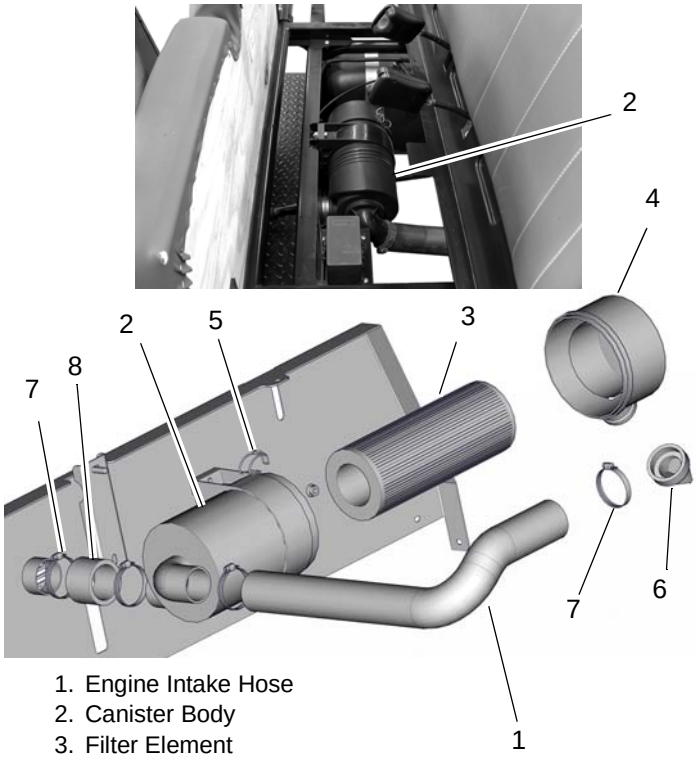


1. Engine Air Intake Duct

Figure 17

1. Release retaining clips (item 5) to remove canister access cover (item 4) and filter element (item 3). Clean canister (item 2) with a damp cloth.

2. Before installing new filter element, inspect it by placing a bright light inside and rotate element slowly, looking for any holes and tears in the paper. Also check gaskets for cuts or tears. Do not attempt to use a damaged element. A damaged element will allow abrasive particles to enter the engine.
3. Install new filter element (item 3) with open end first.
4. Reinstall canister access cover (item 4). Make sure it seals all around canister body (item 2) before tightening retaining clips (item 5).
5. Check rubber debris discharge cap (item 6). Clean if plugged.
6. Check all fittings and clamps periodically for tightness. Inspect hoses for holes or cracks.
7. Periodically check engine intake hose (item 1) for signs of ingested dust. Locate and repair source of ingested dirt.
8. Never operate vehicle without a filter element (item 3).



1. Engine Intake Hose
2. Canister Body
3. Filter Element
4. Access Cover
5. Retaining Clip
6. Debris Discharge Cap
7. Hose Clamp
8. Air Intake Coupling

Figure 18

Engine Air Filter Handling

A specially designed dry filter supplies clean combustion air to the engine.

Prevent costly and non-warrantable premature engine damage by maintaining the air filter properly. Many engine problems are due to improper handling of the air filter. Dust and dirt that gets pass the air filter will damage engine cylinder, piston and bearings in a few hours.

Prevent costly and non-warrantable premature engine problems by avoiding the following common mishandling:

- Over servicing
- Improper installation
- Damaged air filtering system
- Incorrect air filter element

Over Servicing

Over servicing occurs when an air filter element is inspected and/or replaced too often. Dust and dirt can fall off the filter element onto the canister where it can be sucked into the intake system. Only a few grams of dirt getting into an engine during each filter inspection can prematurely produce dust ingested engine problems.
A partially dirty air filter element is not harmful to the engine as long as the air flow to the engine is not restricted.

The air filter element should be changed before it becomes too dirty and restricts air flow to the engine hindering its performance. Replace air filter element immediately should this happen. Engines that do not get proper amounts of air will draw in excessive amounts of gas causing premature engine problems.

The frequency of needing to change the air filter is largely determined by driving conditions. Dusty conditions will require more frequent servicing.

A dirty filter element should always be replaced with a new element. Improper cleaning procedures can get dust on the inside of the filter causing dirt ingestion and engine problems.

Improper Installation

Improper installation occurs when dust leaks past the seals. The filter element must be aligned within the canister and properly seated on both ends to prevent dirt from entering the engine.

Damaged Air Filtering System

A damaged air filtering system often occurs from mishandling the filter element and driving the vehicle in areas that could damage the canister.

Banging and/or bumping the filter element against a solid object such as a tire or blowing the element with air can damage the seals and/or force dust and dirt particles through the filter media creating a hole for dirt to pass through to the engine.

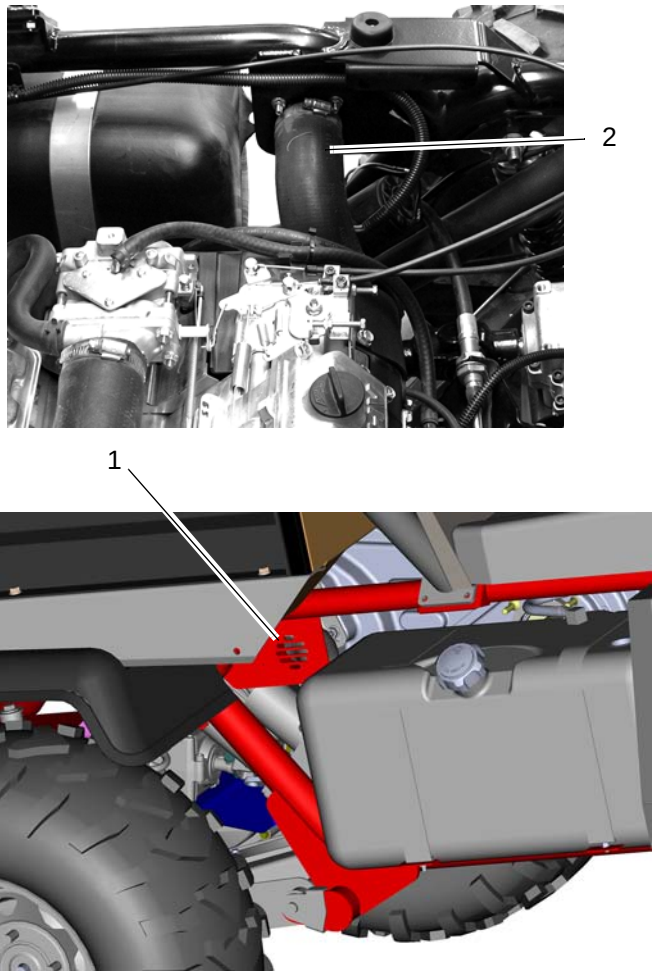
Driving the vehicle carelessly over rough terrain, jutting sticks, heavy brush and severe rocks can damage the air cleaner canister. Periodically inspect the air cleaner canister for external damage and replace if necessary.

Incorrect Air Filter Element

The air filter must remain intact to block passage of dirt and foreign particles. It must be of sufficient size and construction to withstand stresses, caused by rapid cycling of air volume demanded by the engine, without cracking or tearing under fatigue and pressure. Its filter elements must have the correct media composition, filter area, micron size and dimensions to properly filter the air of dirt while at the same time passing sufficient air to the engine.

CVT Breather Hose

1. The inlet port for the CVT breather hose is located on the right side of the unit just behind the fuel tank. Ensure that the slotted opening stays clean and clear of debris.



1. CVT Breather Hose Inlet
2. CVT Breather Hose

Figure 19

Exhaust System

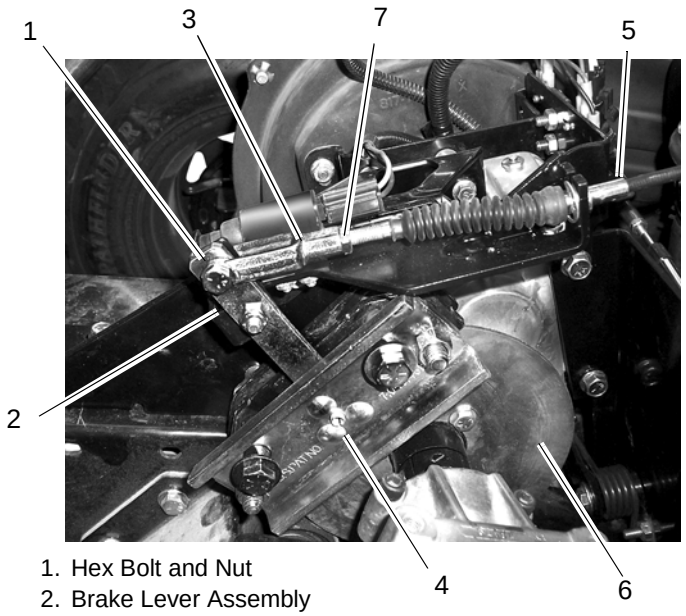
Prevent exhaust fires. Clean exhaust system daily while cold of all dirt and trash. Check exhaust system often for cleanliness especially while traveling over areas that produce high amounts of airborne combustible materials.

Parking Brake Adjustment

When adjusted properly, the parking brake will prevent the vehicle from rolling when the shift lever is in neutral.

IMPORTANT: Make certain the wheels are chocked and the cargo bed is securely supported in the up position before working on the parking brake.

1. Park vehicle on a level surface. **Do not work under or around a vehicle parked on an incline**.
2. Set shift selector in Neutral.
3. Chock front and back of rear wheels.
4. Secure cargo bed in the up position.
5. Turn ignition switch off and remove key.
6. Ensure that parking brake lever is fully released position.
7. Remove hex bolt and nut (item 1) retaining parking brake yoke (item 2) to brake lever assembly (item 3). Retain hardware.
8. Loosen jam nut (item 7).
9. Allow the brake lever assembly to seat itself in the ball detent (item 4). Ensure that lever assembly is fully seated.
10. Adjust yoke in or out until yoke holes align with hole in brake lever assembly.
11. Install hex bolt and nut and tighten.
12. Tighten jam nut against yoke.
13. Check parking brake adjustment:
    a. Engage parking brake lever fully and check that the brake pads are seated tightly against the brake disc. The vehicle should not move with parking brake engaged.
    b. Release the parking brake and check that the brake pads do not contact the brake disc.
    c. If necessary, additional adjustment can be made at the parking brake lever. Loosen the jam nuts and adjust the cable tension in or out to achieve the desired tension. Tighten the jam nuts.
14. Engage the parking brake, lower cargo box and remove wheel chocks.



1. Hex Bolt and Nut
2. Brake Lever Assembly
3. Yoke
4. Ball Detent
5. Parking Brake Cable
6. Brake Disc
7. Jam Nut

Figure 20

LUBRICATION

Engine Oil and Oil Filter

See the engine manual for detailed service recommendations.

Differential, Transfer & Transaxle Case Oil

Follow these general recommendations for the driveline gear cases.

Maintenance Schedule

- Check housings for damage and possible oil leakage after each use.
- Check oil level every 6 months or every 100 hours, whichever comes first.
- Change oil yearly or every 400 hours, whichever comes first.

OIL LEVEL CHECK

The transfer case and rear transaxle oil levels are checked at the fill plug with a clean rod. The rod should be long enough so that it will not fall into the fill opening, clean and not easily broken.

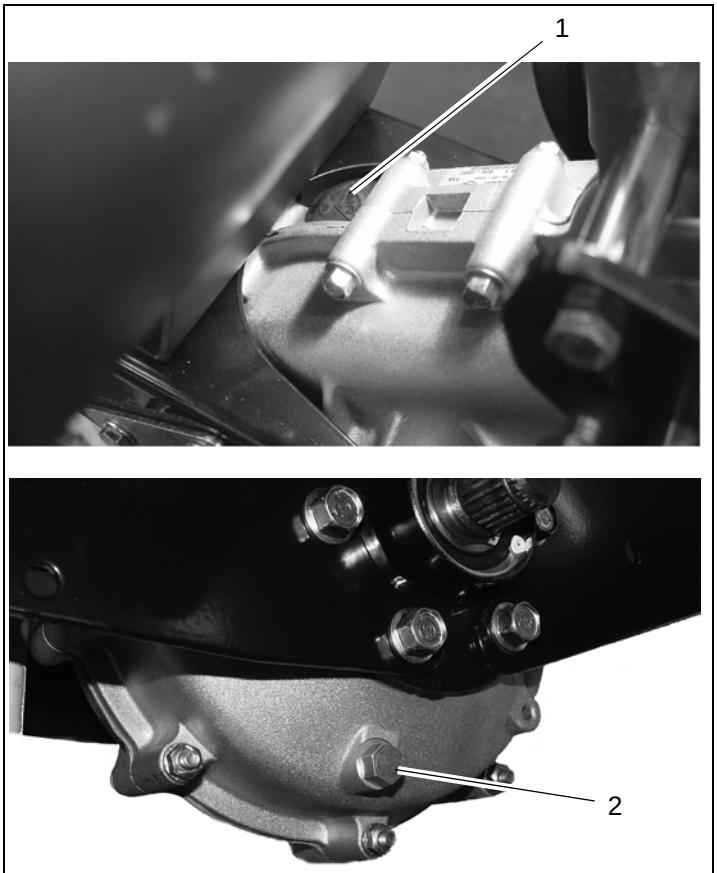
1. Park vehicle on a level surface, set parking brake, turn off ignition switch and remove key.
2. Clean area around check and fill plug.
3. Remove fill plug and measure oil level in case. Levels should be:
   - **Rear Tranasxle:** 4 1/2” (11.4 cm) from the top of the fill hole to the oil level.
   - **Transfer Case (Four-Wheel Drive Only):** 2” (5.1 cm) from the top of the fill hole to the oil level.
   - **Front Differential (Four-Wheel Drive Only)**: 1/4” (.64 cm) from bottom of fill opening.
4. Add correct lubricant if needed (do not overfill.)
5. Replace fill cap and tighten securely.

CHANGING OIL

Warm oil drains faster and more completely than cold oil. Drain used oil while it is still warm as follows:

1. Park vehicle on a level surface, set parking brake, turn off ignition switch and remove switch key.
2. Place a suitable container below housing to catch used oil. Remove fill cap and drain plug.
3. Allow used oil to drain completely and then reinstall drain plug and tighten securely.
4. Properly dispose of used oil. Do not throw used oil in the trash, pour it on the ground, or down a drain.
5. Fill gear cases. See SPECIFICATIONS on page 35.
6. Replace fill cap and tighten securely.

Rear Transaxle Case (See Figure 21)

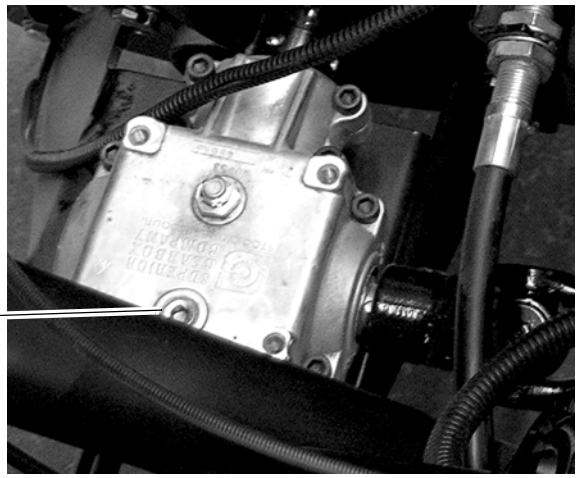


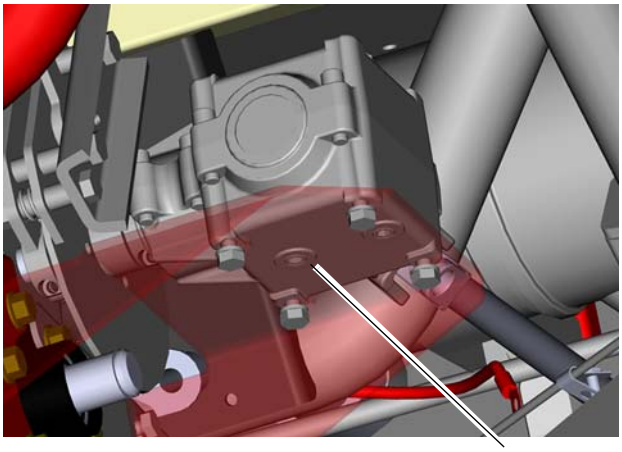
1. Rear Transaxle Oil Check and Fill Plug
2. Rear Transaxle Oil Drain Plug

Figure 21

Transfer Case (See Figure 22)

(Four-Wheel Drive Units Only)



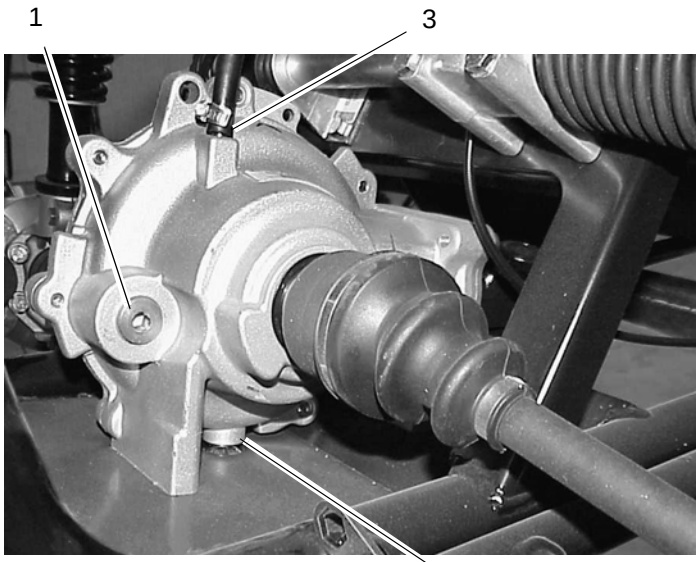


1. Transfer Case Oil Check and Fill Plug
2. Transfer Case Oil Drain Plug (Transfer case must be removed from vehicle to access drain plug)

Figure 22

Front Differential Case (See Figure 23)

(4-Wheel Units Only)



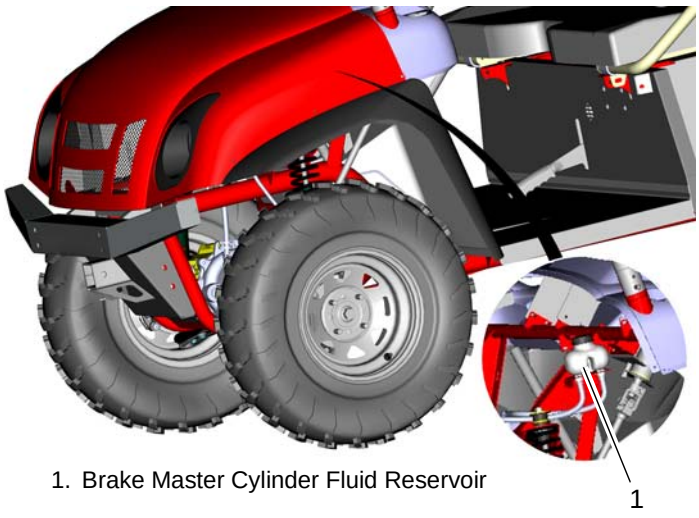
1. Check and Fill Plug
2. Drain Plug
3. Breather Hose. Oil may be added here by removing hose. Make sure check plug is open when adding oil. Always reinstall breather hose when finished.

Figure 23

Brake Fluid (See Figure 24)

The master cylinder fluid reservoir is attached to the body frame under the front hood on the driver's side. Visually inspect fill line on the reservoir by turning the steering wheel to the left and looking under the driver's side wheel well. Remove cap and add DOT 3 fluid to the reservoir through the wheel well with a squeeze bottle and tube inserted into the reservoir. Fill to line on reservoir.

See SPECIFICATIONS on page 35.



1. Brake Master Cylinder Fluid Reservoir

Figure 24

STORAGE

WARNING: AVOID INJURY. Read and understand the entire *Safety* section before proceeding.

Engine Preparation for Storage

CAUTION: Fuel vapors are flammable and explosive. Do not store a vehicle with fuel in the tank in a building where fumes can reach a spark or an open flames (i.e. plug-in sockets, light switches, light fixtures, power tools, welders, pilot lights and stoves).

Engine exhaust fumes contain carbon monoxide. Do not run a vehicle inside a building any longer than what it takes to move it. Serious illness or death may result from prolong exposure to carbon monoxide.

Short Term Storage

IMPORTANT: NEVER clean unit with high-pressure water or store unit outdoors.

Remove all dirt, grease, leaves, etc. Store in a clean dry area.

Inspect unit for signs of wear or damage. Ensure all fasteners are properly tightened.

Long Term Storage

Follow all instructions under *Short Term Storage.*

Remove and fully charge battery. Store in a clean dry area.

Refer to engine manual for proper engine storage procedures.

Touch up all scratched or chipped paint surfaces.

Fuel System

Gasoline left in the fuel system for extended periods without a stabilizer will deteriorate, resulting in gum deposits in the system. These deposits can damage the carburetor and the fuel hoses, filter and tank. Prevent deposits from forming in the fuel system during storage by adding a quality fuel stabilizer to the fuel. Follow the recommended mix ratio found on the fuel stabilizer container.

To treat the fuel system for storage:

1. Add fuel stabilizer according to manufacturers's instructions.
2. Run engine for at least 10 minutes after adding stabilizer to allow it to reach the carburetor.

NEVER store the engine with fuel in the fuel tank inside of a building with potential sources of ignition.

Vehicle Storage Preparation

1. Perform separate engine preparations listed previously before storing vehicle.
2. Place shift selector in Neutral, engage parking brake and remove ignition key before dismounting from vehicle.
3. Always allow vehicle to cool before working on or around it.
4. Check thoroughly for any worn or damaged parts that need replacing including decals and order them from your Gravely Dealer.
5. Thoroughly lubricate vehicle according to lubrication instructions. LUBRICATION on page 28.
6. Lift and support vehicle to take weight off the tires. Ensure jack stands are of sufficient capacity. See Lifting the Vehicle on page 21.

NOTE: Do not deflate tires.

7. Clean battery and battery posts. Remove battery or protect from freezing temperatures. Occasionally recharging battery during storage will extend battery life.
8. Install a waterproof cover over the vehicle if it must be stored outside.

Vehicle Removal From Storage Preparation

1. Remove waterproof cover if used.
2. Clean vehicle, removing trash and dirt accumulation.
3. Install all safety shields and review safety precautions listed in this manual.
4. Refer to the engine manual fro recommendations for removal from storage.
5. Check transaxle oil level. If 4-wheel drive, check 4-wheel transfer case and front differential oil level. See OIL LEVEL CHECK on page 28.
6. Charge battery and install if removed.
7. Fill fuel tank with fresh gasoline.
8. Check and inflate tires to correct air pressure.
9. Run vehicle at slow speed for 5 minutes, checking operation of steering control levers.
10. Stop engine and check for oil leaks, loose fittings and overall condition of vehicle.
11. Tighten any fasteners that may have loosened.

TROUBLESHOOTING

Symptoms	Probable Causes	Suggested Remedies
Battery is dead	Key switch was not left in the off position.	Switch key to off position. Disconnect and recharge battery.
	Battery is worn out or defective.	Replace battery.
	Starter solenoid defective.	Replace starter solenoid.
Battery will not charge	Battery connections are loose or corroded.	Clean and tighten battery connections.
	Battery is worn out or defective.	Replace battery as soon as possible.
Brakes are sticking (won't release)	Master cylinder linkage is out of adjustment.	Adjust master cylinder linkage.
	Master cylinder return spring is broken.	Replace master cylinder return spring.
	Ground debris in brake linkage.	Clean debris from brake linkage.
Brakes don't function	Master cylinder oil level is low.	Add brake fluid to the master cylinder.
	Brake line is broken.	Replace brake line and bleed brake system.
	Brake line has air in it.	Bleed brake system and add brake fluid.
	Master cylinder is defective.	Replace master cylinder.
Electrical System does not work	Electrical fuse is blown or missing.	Replace electrical fuse.
	Battery connections are loose or corroded.	Clean and tighten battery connections.
	Battery is worn out or defective.	Replace battery.
	Ignition switch is defective.	Replace ignition switch.
Engine backfires	Spark plug is fouled.	Replace or clean spark plug.
	Fuel solenoid is stuck.	See Engine Manual.
	Air intake restrictor upstream of air cleaner is missing or incorrectly installed.	Replace or correctly install air intake restrictor.
	Throttle cable is defective or out of adjustment.	Clean and oil throttle cable. Replace worn or damaged cable.
Engine knocks	Engine speed is set too low.	See your Gravely dealer.
	Fuel is stale or dirty.	Replace fuel with new fuel.
Engine overheats	Engine cooling fins are plugged.	Allow engine to cool. Clean cooling fins with high pressure air.
	Engine oil level is low.	Add specified engine oil.
	Carburetor air intake tube is plugged.	Clean air intake tube.
	Air cleaning element is plugged or missing.	Replace or clean air cleaner with air.
Engine loses power	Throttle cable is faulty, sticking or out of adjustment.	Clean, adjust and oil throttle cable. Replace worn or damaged cable.
	Choke cable is sticking.	Clean and oil choke cable. Replace worn or damaged cable.
	Spark plugs are defective.	Replace spark plugs.
	Spark plugs are fouled.	Clean spark plugs or replace.
	Fuel supply is restricted.	Check for dirt in fuel filter and tank.
	Fuel line is plugged, pinched, or kinked.	Clean or replace fuel line.
	Fuel leaks into the crankcase.	Clean or replace fouled spark plugs. Verify that choke is not stuck on.
	Engine oil level is high.	Drain excess oil, check for gas in the oil. Change if gas is present.
	Fuel octane is incorrect.	See engine owners manual
	Air cleaning element is plugged.	Replace or clean air cleaner with air.
	Engine is overheating.	See Symptoms for engine overheating.

Symptoms	Probable Causes	Suggested Remedies
Engine runs unevenly	Electrical connections are loose.	Inspect and repair electrical connections.
	Engine cooling fins are plugged.	Allow engine to cool. Clean cooling fins with high pressure air.
	Throttle cable is sticking.	Clean and oil throttle cable. Replace worn or damaged cable.
	Choke cable is sticking.	Clean and oil choke cable. Replace worn or damaged cable.
	Fuel is stale or dirty.	Replace fuel with new fuel.
	Fuel line or filter are plugged.	Clean fuel line. Replace fuel filter.
	Fuel type is incorrect.	Refer to engine manual.
	Fuel leaks into the crankcase.	Clean or replace fouled spark plugs. Verify that choke is not stuck on.
	Spark plug wires defective.	Replace spark plug wires.
	Spark plug is defective.	Replace spark plugs.
	Spark plug is fouled.	Clean spark plugs or replace.
	Carburetor is not adjusted correctly.	See your Gravely dealer.
	Air cleaner is plugged.	Replace air cleaner.
Engine starts in gear	Neutral switch is adjusted incorrectly.	Adjust neutral switch to be engaged with shift selector in neutral.
	Shifter link is out of adjustment.	With shift selector in neutral, adjust shifter link at engine to be in neutral position.
Engine stops running	Fuel tank is empty.	Refill fuel tank. See Filling Fuel Tank on page 23.
	Spark plug wires defective.	Replace spark plug wires.
	Ignition switch is defective.	Replace ignition switch.
	Battery is worn out or defective.	Replace battery.
	Crankshaft is broke.	See your Gravely dealer.
Shift Selector is malfunctioning	Foot feed throttle spring is loose or broken.	Reattach disconnected foot feed spring. Replace defective spring.
	Throttle cable is sticking.	Clean and oil throttle cable. Replace worn or damaged cable.
	Engine idle return spring is loose or broken.	Reattach disconnected engine idle spring. Replace defective spring.
	Engine idle set too high.	See your Gravely dealer
	Governor spring is loose or broken.	Reattach disconnected governor spring. Replace defective spring.
	Drive Clutch does not disengaged.	Clean drive clutch by blowing air through it.
	Shift selector jumps out of gear.	With shift selector in neutral, adjust shifter link at engine to be in neutral position.
Parking brake doesn't work	Parking brake cable is not adjusted correctly.	Adjust parking brake cable at the caliper.
	Parking brake cable is broken.	Replace parking brake cable.
	Parking brake cable is jammed with debris.	Clean debris from parking brake cable.
Starter cranks slowly	Battery power is low.	Recharge battery.
	Battery connections are loose or corroded.	Clean and tighten battery connections.
	Battery is worn out or defective.	Replace battery.
	Harness connections are loose.	Inspect and connect harness connections.
	Harness pin connections are bent.	Straighten harness pins.
	Harness is defective.	Replace harness.
	Ignition switch is defective.	Replace ignition switch.
	Starter is defective.	Replace starter.
	Engine oil is too heavy.	Refer to engine manual for suggested grades.

Symptoms	Probable Causes	Suggested Remedies
Starter does not work	Neutral switch is not engaged.	Adjust neutral switch to be engaged with shift selector in neutral.
	Neutral switch is defective.	Replace neutral switch.
	Battery power is low.	Recharge battery.
	Battery connections are loose or corroded.	Clean and tighten battery connections.
	Battery is worn out or defective.	Replace battery.
	Harness connections are loose.	Reconnect harness connections.
	Harness pin connections are bent.	Straighten harness pins.
	Harness is defective.	Replace harness.
	Ignition switch is defective.	Replace ignition switch.
	Starter is defective.	Replace starter switch.
Steering does not track correctly	Improper tire inflation.	Inflate all tires to correct tire pressure.
	Tie rods not adjusted correctly.	Adjust front tie rods. Front tires should toe in a total of 0 – 1/8" less at the front than at the back.
	Damaged frame steering or suspension parts.	Inspect thoroughly and repair before operating vehicle.
Steering play is excessive	Pinion shaft is improperly attached.	Realign pinion shaft.
	Pinion shaft is loose.	Tighten pinion shaft bolts.
	Tie rod ends are loose.	Align and tighten tie rod ends.
Vehicle speed does not reach 25 MPH	Throttle cable housing is set too close to engine preventing proper cable movement.	Reposition cable housing toward seats until all cable slack is removed between cable housing and engine.
	Carburetor is icing up.	Install cold weather kit.
Vehicle loses ground speed without losing engine speed	Normal condition when climbing grades as the CVT will downshift automatically allowing the engine to run in its horsepower band.	None required.
	Drive belt is wet and slips.	Rev engine in neutral for one minute.
	Drive belt is worn.	Replace drive belt.

ACCESSORIES

Part No.	Description
79600100	Full-Tilt Windshield
79600200	3500-lb Receiver-Mount Winch Kit
79600400	Front Brush Guard Kit
79600700	60" Plow Kit
79616500	Backscreen, Expanded Metal
79616900	Top, Black ABS Canopy
79616300	Headrest Kit, For use with Back Screen
79616600	Headrest Kit, For use without Back Screen
79611000	Gun Rack
79617000	Kit, Vertical Gun Case
79611100	Rear Receiver Hitch
79612600	Mud Flaps - Two, Rear
79612800	Bed Liner Mat, Masticated Rubber
79613200	Front Boot Guard Kit, Black
79613300	Rear Boot Guard Kit, Black
79613500	Kit, Skid Plate, Black
79614000	Lift Motor for 60" Snow Plow
79617900	Kit, Turf Tires, Set of 4
79615700	Seat Belt Kit - Mid Bench
79616000	Back-up Alarm Kit
79616100	Back-up Light Kit
79619000	Kit, Gear Grips (2) with Bracket
79619100	Kit, Utility Gear Rail
79619200	Kit, Gear Rail Bracket
79619800	Kit, Rhino Grip Single with Bracket
79619300	Kit, Rhino Grips Double (2) with Bracket
79619400	Kit, Chainsaw Press with Bracket
79619500	Kit, Fuel Pack Jr. 1.5 gallon
79619600	Kit, Fuel Pack 4 gallon
79619700	Kit, Fuel Pack Mount
00592900	Fuel Stabilizer 4 oz.

SERVICE PARTS

Part No.	Qty	Description
T816-546	1	Belt, CVT
T6030-3001	3	Driven Pulley Cam Shoe

SPECIFICATIONS

Engine			
Engine Model	Subaru EH 65	**Lubrication**	Pressurized
Engine Type	4 stroke - air cooled	**Engine Oil Type**	Refer to engine manual.
Displacement	653 cc	**Engine Oil Capacity**	52.5 oz (1.5L)
Max. Torque	33.6 ft-lb@2500 (45.6 N•m @ 2500)	**Cooling**	Air
Cylinders	2, Overhead Valve	**ACG Output**	12V/30A
Fuel And Oil			
Fuel Capacity	8 gallons (30.3L)	**Rear Transaxle Case**	Capacity: 20 oz. (0.6L) Type: US Mobil 424
Fuel Type	Unleaded. Refer to engine manual.	**Transfer Case**	Capacity: 6 oz. (0.18L) Type: US 80/90 gear lube
Brake Fluid	DOT 3	**Front Differential Case**	Capacity: 5 oz. (0.15L) Type: US Mobil 424
Vehicle			
Headlights	Two	**4-Post Accessory Bar**	Standard
Tail Lights	Two LED	**Max. Speed**	25 mph
Battery Type	12 volt	**Approximate Curb Weight**	Two-Wheel Drive: 925 lbs. (925 kg) Four-Wheel Drive: 1050 (476 kg)
Belt Drive	Enclosed CVT (Constantly Variable Transmission)	**Base Unit Total Payload***	1400 lbs. (636 kg)
Ignition	Keyed (Starts only in neutral with brake pedal pressed and parking brake engaged.)	**Gross Vehicle Weight**	Two-Wheel Drive: 2225 lbs. (1009.2 kg) Four-Wheel drive: 2350 lbs. (1066kg)
Gear Selection	Forward/Neutral/Reverse	**Rear Cargo Bed Capacity**	1000 lbs. (454 kg)
Rear Parking Brake	Mechanical handle centered below bench seat	**Maximum Tongue Weight**	100 lbs. (45.4 kg)
Brake Type	Front: Hydraulic disc Rear: Hydraulic drum	**Max. Towing Capacity**	1000 lbs. (453.6 kg)
Steering Type	Rack & Pinion	**Wheel Base**	78” (198 cm)
Steering Wheel Dia.	15" (38.1 cm)	**Tread Center Front**	46.5" (115.6 cm)
Frame Construction	Tube & channel	**Tread Center Rear**	47.5" (120.7 cm)
Front Suspension	Independent A-arms, MacPherson struts	**Width at front tires**	54" (137.2 cm)
Rear Suspension	Independent trailing arms Coil-over adjustable shocks	**Width at rear tires**	58” (147.3 cm)
Floorboard	Steel safety plate	**Height**	With All-Terrain tires: 71" (180.3 cm) With Turf tires: 70” (177.8 cm)
Body Cowling	ABS Composite	**Length**	120” (304.8 cm)
Rear Hitch	2” receiver	**Floorboard Height**	All-Terrain tires: 14" (35.6 cm) Turf tires: 13” (33.0 cm)
Front Hitch	2” receiver	**Min. Ground Clearance**	10.25” (26 cm)
Seating	Bench seat with two seat belts.	**Tire Pressure**	Front/Rear = 10/14 psi*
Fenders	Front: Integral with body Rear: Mounted to cargo bed	**Tire Type & Size (Front)**	All-Terrain tread: 25 x 8-12 (option) Turf tread: 23 x 8.5-12 (option)
		Tire Type & Size (Rear)	All-Terrain tread: 25 x 10-12 (option) Turf tread: 23x10.5-12 (option)

* Tire pressure may be increased to accommodate additional cargo load. Max.tire pressure is noted on tire side wall.

Sno-Thro®, Sno-Tek® and Chore Performing Equipment Limited Warranty

Ariens Company (Ariens) warrants to the **original purchaser** that Ariens, Gravely, Parker, and Countax brand chore performing equipment (including Sno-Thro® and Sno-Tek® equipment) sold on or after 1/1/2011 will be free from defects in material and workmanship for the time period noted in the chart below. Equipment put to personal use around a single household or residence is considered "Consumer Use"; equipment put to any business use (agricultural, commercial, or industrial) or used at multiple locations is considered "Commercial Use." If any product is rented or leased, then the duration of these warranties shall be 90 days after the date of purchase.

An authorized Ariens dealer (Ariens brand products), Gravely dealer (Gravely brand products), Parker dealer (Parker brand products), or Countax dealer (Countax brand products) will repair any defect in material or workmanship, and repair or replace any defective part, subject to the conditions, limitations and exclusions set forth herein. Such repair or replacement will be free of charge (labor and parts) to the original purchaser except as noted below.

Warranty Code	Product Group	Warranty Period Consumer Use	Warranty Period Commercial Use
PA	Log Splitters, Brushes, String Trimmers, Edgers	3 Years	90 Days
PB	Professional Powered Brushes	3 Years	1 Year
PC	Tillers	2 Years	90 Days
PD	Vacuums, Blowers, Sweepers, Truck Loaders, Lawn Rakes, Sprayers, Aerators, etc.	1 Year	1 Year
SA	Professional Sno-Thro®	3 Years	1 Year
SB	Compact, Deluxe, Platinum, AMP™ Sno-Thro®	3 Years	90 Days
SC	Sno-Tek®	2 Years	90 Days
UA	Utility Vehicles	1 Year	1 Year
N/A	Service (Replacement) Parts	90 Days (no labor)	90 Days (no labor)

Special Extensions

The chart below details special extensions to this warranty:

Warranty Code	Warranty Exception	Warranty Period	Use	Detail
SB	Batteries for AMP™ Sno-Thro®	2 Years	Consumer	100% first year; prorated second year.

Exceptions and Limitations

The chart below details special exceptions to this warranty:

Warranty Code	Warranty Exception	Warranty Period	Use	Detail
All	Batteries	1 Year	All	Prorated
All	Belts, Muffler, Tires	None	Commercial	These components are not covered when used commercially.
All	Cloth, Plastic, and Rubber Components (Including Belts and Cables)	Maximum 2 Years	All	Warranty is limited to 2 years for consumer use. (1 year for warranty code "PD".) Except as noted above, these components are covered for defect, not for wear.
SA, SB, SC	Idlers	Maximum 2 Years	All	Warranty is limited on idlers to 2 years for consumer use.
All	Engines	See Engine Manufacturer's Warranty	All	Engines are covered by engine manufacturer's warranty. Refer to engine manufacturer's warranty statement.

Customer Responsibilities

Register the product immediately at the time of sale. If the dealer does not register the product, the customer must complete the product registration card in the literature package and return it to the Ariens Company, or register the unit online at www.ariens.com, www.gravely.com, www.countax.com, www.parkersweeper.com.

To obtain warranty service, the **original purchaser** must:

- Perform the maintenance and adjustments explained in the owner's manual.
- Promptly notify Ariens or an authorized Ariens, Gravely, Parker or Countax service representative of the need for warranty service.
- Transport the product to and from the place of warranty service at owner's expense.
- Have the warranty service performed by an authorized Ariens, Gravely, Parker or Countax service representative.

To Find an Authorized Service Representative:

In the U.S. and Canada:		
Use the dealer locator on our websites: www.ariens.com • www.gravely.com		
Or contact us by mail or by phone:		
In the U.S., Canada, Mexico, Caribbean, Central and South America:	**In Europe, Asia, Africa or the Middle East:**	**In Australia or New Zealand:**
Ariens Company 655 W. Ryan Street Brillion, WI 54110 Phone: (920) 756 - 4688 www.ariens.com	Countax Ltd, Countax House Great Haseley, Oxfordshire, OX44 7PF Phone: 0800 597 7777 www.countax.com	109-111 Abbot House Hallam, Victoria 3803 Australia Phone: (03) 9796 4244 1800 335 489 www.bynorm.com.au

Exclusions - Items Not Covered by This Warranty

- Parts that are not genuine Ariens, Gravely, Parker or Countax service parts are not covered by this warranty and may void the warranty.
- Damages resulting from the installation or use of any part, accessory, or attachment which is not approved by the Ariens Company for use with product(s) identified herein are not covered by this warranty.
- The following maintenance, service and replacement items are not covered by this warranty unless they are noted in the Limitations section above: lubricants, spark plugs, oil, oil filters, air filters, fuel filters, brake linings, brake arms, brake shoes, skid shoes, scraper blades, shear bolts, mower blades, mower vanes, brushes, headlights, light bulbs, knives, cutters.
- Any misuse, alteration, improper assembly, improper adjustment, neglect, or accident which requires repair is not covered by this warranty.
- **Use of gasoline blends exceeding 10% ethanol voids any and all warranties.**
- Products are designed to the specifications in the area that the product was originally distributed. Different areas may have significantly different legal and design requirements. This warranty is limited to the requirements in the area in which the unit was originally distributed. Ariens Company does not warrant this product to the requirements of any other area. Warranty service is limited to service within the area originally distributed.
- In countries other than the United States and Canada, contact the Ariens Company dealer for warranty policies that govern within your country. Rights may vary from country to country and within any one country.

Special Exclusions on Utility Vehicles

The following uses void the warranty terms on Utility Vehicles (Warranty Code UA):

- Renting or leasing the utility vehicle.
- Using the utility vehicle to tow or carry loads in excess of the limits specified in the owner/operator manual.
- Modifying the utility vehicle with parts and accessories that are not genuine or authorized Ariens or Gravely parts or accessories.
- Modifying the utility vehicle without express written authorization from the Ariens Company.
- Operating the utility vehicle when it has not been completely and properly assembled and pre-delivered by an authorized Gravely dealer.

Disclaimer

Ariens Company may from time to time change the design of its products. Nothing contained in this warranty shall be construed as obligating the Ariens Company to incorporate such design changes into previously manufactured products, nor shall such changes be construed as an admission that previous designs were defective.

LIMITATION OF REMEDY AND DAMAGES

Ariens Company's liability under this warranty, and under any implied warranty that may exist, is limited to repair of any defect in workmanship, and repair or replacement of any defective part. Ariens Company shall not be liable for incidental, special, or consequential damages (including lost profits). Some states do not allow the exclusion of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

DISCLAIMER OF FURTHER WARRANTY

Ariens Company makes no warranty, express or implied, other than what is expressly made in this warranty. If the law of your state provides that an implied warranty of merchantability, or an implied warranty of fitness for particular purpose, or any other implied warranty, applies to Ariens Company, then any such implied warranty is limited to the duration of this warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

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

California Evaporative Emission Control Warranty Statement

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board and Ariens Company are pleased to explain the evaporative emission control system's warranty on your 2011 model year small off-road equipment. In California, new equipment that use small off-road engines must be designed, built, and equipped to meet the State's stringent anti-smog standards. Ariens Company must warrant the evaporative emission control system on your small off-road equipment for the period listed below provided there has been no abuse, neglect or improper maintenance of your equipment.

Your evaporative emission control system may include parts such as: fuel tanks, fuel lines, fuel caps, valves, canisters, filters, vapor hoses, clamps, connectors, and other associated components.

Manufacturer's Warranty Coverage:

This evaporative emission control system is warranted for two years. If any evaporative emission-related part on your equipment is defective, the part will be repaired or replaced by Ariens Company.

Owner's Warranty Responsibilities:

- As the small off-road equipment owner, you are responsible for the performance of the required maintenance listed in your Owner's Manual. Ariens Company recommends that you retain all receipts covering maintenance on your small off-road equipment, but Ariens Company cannot deny warranty solely for the lack of receipts.
- As the small off-road equipment owner, you should however be aware that the Ariens Company may deny you warranty coverage if your evaporative emission control system part has failed due to abuse, neglect, or improper maintenance or unapproved modifications.
- You are responsible for presenting your small off-road equipment to an authorized Ariens service representative as soon as the problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days. If you have a question regarding your warranty coverage, you should contact Ariens Company Technical Service Center at 1-920-756-2141

Defects Warranty Requirements:

(a) The warranty period begins on the date the small off-road equipment is delivered to an ultimate purchaser.

(b) General Evaporative Emissions Warranty Coverage. Ariens Company warrants to the ultimate purchaser and any subsequent owner that the evaporative emission control system when installed was:

(1) Designed, built, and equipped so as to conform with all applicable regulations; and

(2) Free from defects in materials and workmanship that causes the failure of a warranted part for a period of two years.

(c) The warranty on evaporative emissions-related parts will be interpreted as follows:

(1) Any warranted part that is not scheduled for replacement as required maintenance in the written instructions must be warranted for the warranty period defined in subsection (b)(2). If any such part fails during the period of warranty coverage, it must be repaired or replaced by the Ariens Company. Any such part repaired or replaced under the warranty must be warranted for a time not less than the remaining warranty period.

(2) Any warranted part that is scheduled only for regular inspection in the written instructions must be warranted for the warranty period defined in subsection (b)(2). A statement in such written instructions to the effect of "repair or replace as necessary" will not reduce the period of warranty coverage. Any such part repaired or replaced under warranty must be warranted for a time not less than the remaining warranty period.

(3) Any warranted part that is scheduled for replacement as required maintenance in the written instructions must be warranted for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part must be repaired or replaced by the Ariens Company. Any such part repaired or replaced under warranty must be warranted for a time not less than the remainder of the period prior to the first scheduled replacement point for the part.

(4) Repair or replacement of any warranted part under the warranty provisions of this article must be performed at no charge to the owner at an authorized Ariens service representative.

(5) Notwithstanding the provisions of subsection (4) above, warranty services or repairs must be provided at authorized Ariens service representatives that are franchised to service the subject small off-road equipment.

(6) The owner must not be charged for diagnostic labor that leads to the determination that a warranted part is in fact defective, provided that such diagnostic work is performed at a authorized Ariens service representative.

(7) Throughout the evaporative emission control system's warranty period set out in subsection (b)(2), the Ariens Company must maintain a supply of warranted parts sufficient to meet the expected demand for such parts.

(8) Manufacturer approved replacement parts must be used in the performance of any warranty maintenance or repairs and must be provided without charge to the owner. Such use will not reduce the warranty obligations of the manufacturer issuing the warranty.

(9) The use of any add-on or modified parts will be grounds for disallowing a warranty claim made in accordance with this article. The manufacturer issuing the warranty will not be liable under this Article to warrant failures of warranted parts caused by the use of an addon or modified part.

(10)The Ariens Company shall provide any documents that describe the warranty procedures or policies within five working days of request by the Air Resources Board.

GRAVELY
655 West Ryan Street
Brillion, WI 54110-1072
920-756-4688
Fax 920-756-2407
www.gravely.com

⚠ WARNING ⚠

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

An Ariens Company Brand