section 4 maintenance

REPLACEMENT PARTS, ACCESSORIES AND SERVICE

Most replacement parts and accessories are typically available from your dealer. Because of immediate availability and convenience, it is recommended that items be ordered from an authorized dealer. Take this manual and all supplements to the dealer when ordering parts in person.

If replacement parts are not available from a dealer, they may be ordered directly from American LandMaster by contacting Customer Service at 1-800-643-7332 or online at www.americanlandmaster.com. Orders may be subject to a minimum fee. A listing of authorized service providers in your area is also available online at www.americanlandmaster.com or from our Customer Service department. Installation of non-ASW approved parts or accessories could create a substantial safety hazard and increase risk of injury. Only use authorized ASW parts.

Record the Model, Vehicle Identification Number (VIN) and Serial Number in the spaces provided at the front of this Manual.

AIR FILTER ELEMENTS REPLACEMENT PARTS	
Description	**Part No.**
Briggs & Stratton Air Filter (479cc)	16170
Honda Paper Filter Element (390cc)	2-20153
Honda Foam Filter Element (390cc)	2-20154
Kohler Air Filter / Pre Cleaner (277cc / 429cc)	15771 / 15769
Kohler Air Filter / Pre Cleaner (674cc)	16522 / 16527

OIL FILTER REPLACEMENT PARTS	
Description	**Part No.**
Briggs & Stratton 479cc	16172
Kohler 674cc Spin-on	16525

TUNE UP KITS (kits include all needed filters, fluids)	
Description	**Part No.**
KOHLER 277cc	16162
HONDA 390cc	16163
KOHLER 429cc	16872
BRIGGS & STRATTON 479cc	16164
KOHLER 674cc	16935

SPARK PLUG REPLACEMENT PARTS	
Description	**Part No.**
BRIGGS & STRATTON 479cc	
NGK	BPR6ES
HONDA 390cc	
NGK	BPR6ES
CHAMPION	RN9YC
AUTOLITE	4263 / 63
DENSO	W20EPR-U
KOHLER 277/674cc	
CHAMPION	RC12YC
NGK	BCP5EV
KOHLER	12 132 02-5
KOHLER 429cc	
CHAMPION	RC12LC4
NGK	2262
KOHLER	25 132 27-S

PERIODIC CHECKS & SERVICES

The general maintenance intervals in the following table are based upon average driving conditions. Driving in unusually dusty areas may require more frequent servicing. Refer to the engine operation manual for detailed information specific to engine maintenance.

VEHICLE MAINTENANCE SCHEDULE

FLUID LEVEL CHECK AND CHANGE	INSPECTION INTERVAL	MAINTENANCE INTERVAL
Engine Oil	Pre-Ride Inspection	See Engine Mfg Recommendations
Transaxle Oil	6 Months or 200 hours	Yearly or 600 hours
90 deg Gear Box	Monthly	Yearly or 600 hours
Front Differential	Monthly	200 Hours
Brake Master Cylinder	Pre-Ride Inspection	N/A
MECHANICAL	**INSPECTION INTERVAL**	**MAINTENANCE INTERVAL**
Cables (brake, throttle, choke, shift, etc.)	Pre-Ride Inspection	Lubricate Monthly (or as required by Pre-Ride Inspection)
Air Filter	Monthly	As required by inspection
Spark Plug	Quarterly	Yearly
Fuel Filter	Annually	Annually or every 400 hours
Fuel Hose	Monthly	As required by inspection
Oil Filter	N/A	With Oil Change
Drive Belt	Monthly	As required by inspection
Drive System (CVT)		
Fasteners	Pre-Ride Inspection	As required by inspection
Tires	Pre-Ride Inspection	As required by inspection
Tire Pressure	Pre-Ride Inspection	As required by inspection
Suspension	Pre-Ride Inspection	As required by inspection
Brakes	Pre-Ride Inspection	As required by inspection

ENGINE MAINTENANCE

Your vehicle has been supplied with an engine manufacturers manual. Follow all guidelines and recommended mainentance procedures. If for some reason you did not receive an engine manufacturers manual, please contact American Landmaster at 800-643-7332. Manuals are also available for free download at americanlandmaster.com.

General Information

Detailed instructions and recommendations for break-in and regular maintenance are specified in the engine operator's manual. Engine warranty is backed by the engine manufacturer. Please refer to engine manufacturer's manual for engine servicing, lubricating oil levels, oil quality and viscosity recommendations, bolt torques, etc. Special attention should be paid to applicable data that is not duplicated here.

ENGINE OIL

NOTE GAS MODELS

OIL LEVELS:

- Running engine low on oil can cause engine damage and void engine warranty.
- Overfilling of oil level can cause loss of power, engine damage and void engine warranty.

Engine Oil Fill and Drain Locations

Refer to the engine manufacturers manual for oil fill & drain locations.

To access oil check, fill and drain locations, flip the seat bottom forward and remove (figure 4.1).

figure 4.1 (seat removal - pull forward and lift up)

If equipped, also remove the underseat storage tray to expose the engine (figure 4.2 and figure 4.3).

figure 4.2 (underseat storage tray removal - lift up and pull out.)

figure 4.3 (exposed engine)

Engine Oil Level Check

Check engine oil daily with filler cap/dipstick as follows:

1. Park Vehicle on a level surface, set park brake, turn off ignition switch, and remove key.
2. Remove filler cap/dipstick and wipe it clean.
3. Insert and remove dipstick. Check oil level shown on dipstick.

NOTE: Some models may require you to screw the dipstick into the fill neck. (refer to the engine manual)

4. Fill to edge of oil fill hole or to the **FULL** mark on the dipstick with recommended oil when oil levels are low.
5. Replace filler cap/dipstick and tighten securely.

ENGINE MAINTENANCE CONT.

Engine Oil Change

Warm oil drains quickly and completely. Therefore, drain used engine oil while engine is still warm as follows:

1. Park vehicle on a level surface, set park brake, turn off ignition switch, and remove key.
2. Place a suitable container below engine to catch used oil. Remove filler cap/dipstick and drain plug.
3. Allow used oil to drain completely and then reinstall and tighten drain plug securely. If unit is equipped with a spin-on oil filter, remove and replace **BEFORE moving to step 4**.
4. Dispose of used motor oil in a manner that is compatible with the environment. ***Do not throw used oil in the trash. Do not pour it on the ground, or down a drain.***
5. Fill oil to the outer edge of the oil fill hole, using a funnel, per engine manual, with recommended oil.
   Engine must be level when filling.
6. Replace filler cap/dipstick and tighten securely.

⚠ NOTICE - HIGH ALTITUDE USE

CARBURETED MODELS ONLY

Continual operation of your vehicle in altitudes in excess of 5000 feet, will require the installation of a high altitude jet kit. This service should be performed by an authorized service center. Please refer to your engine owner manual or call American LandMaster customer service at 800-643-7332

Air Filter Change

1. 2WD air filters can be accessed by tilting the dump bed.
2. 4WD models will require removal of the seat bottom and underseat storage tray to access filter.
3. Replace filter per instructions included in your engine owner manual.

DRIVETRAIN MAINTENANCE

DRIVE BELT

Drive Belt - 2WD / 4WD

The drive belt is considered a wearable item. Replacement intervals depend on vehicle use and environment. If your belt is slipping it may require replacement.

1. Park vehicle on a level surface, set park brake, place shifter in Neutral, turn off ignition switch, and remove key.
2. Remove the belt covers.
3. "Walk" the belt off of the rear pulley as shown in figure 4.4.
4. Install the new belt on the front pulley first and "walk" it onto the rear pulley.
5. Reinstall the belt guards as shown in figure 4.5.

Attention: Failure to reinstall the belt guards may void your warranty.

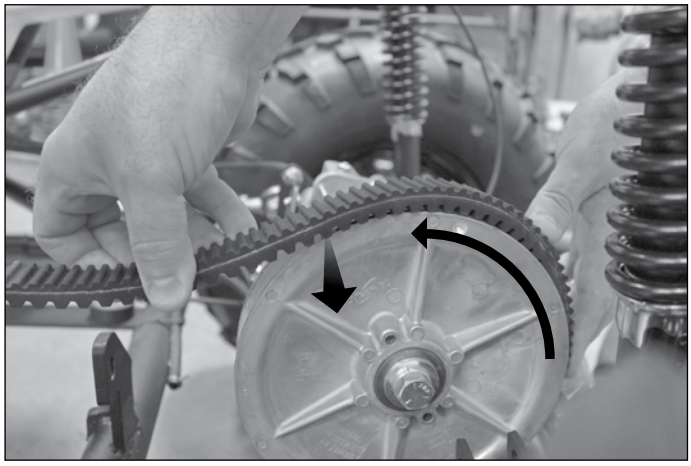


figure 4.4 (removing the exposed drive belt)

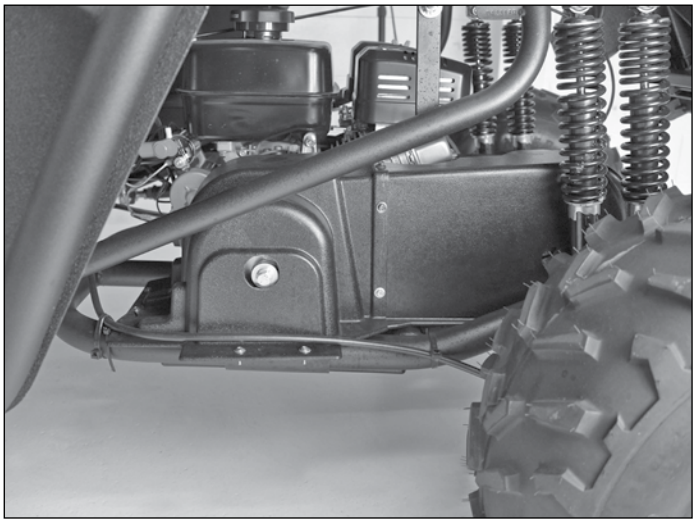


figure 4.5 (drive belt cover - 2WD unit shown)

DRIVETRAIN MAINTENANCE CONT.

TRANSAXLE OIL

NOTE ALL MODELS

LOW TRANSAXLE OIL:
Running vehicle low on transaxle oil can damage transaxle and void warranty.

Transaxle Oil Type, Fill, and Drain (Refer to figures 4.6 and 4.7)

SAE 30W oil is used in the transaxle. Oil should be changed after one year of normal use, and every other year after.

- Fill cap location: At rear driver side (see figure 4.6)
- Drain plug location: At bottom center of transaxle.
- Type of Lubrication: SAE 30W oil.
- Transaxle Lubrication Capacity: 20 oz.

Transaxle Oil Maintenance Schedule

- Check transaxle housing for damage and possible oil leakage after each use.
- Check transaxle oil level every 6 months or every 200 hours (whichever comes first).

Park vehicle on a level surface, set park brake, turn off ignition switch, and remove key. Use a clean long bladed screw driver at least 7" long (or similar object). Insert into filler hole until it touches the bottom of gear case. Remove the screw driver. There should be approximately 2 1/4" to 2 1/2" of oil visible on screw driver. Refer to figure 4.7

- Change transaxle oil once a year or every 600 hours (whichever comes first).

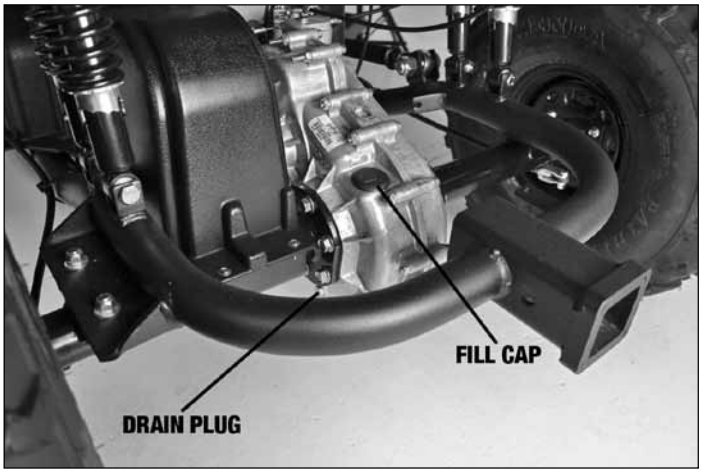


figure 4.6 (transaxle oil fill cap location)

Transaxle Oil Change

Warm oil drains quickly and completely. Therefore, drain used transaxle oil while transaxle housing is still warm as follows:

1. Park vehicle on a level surface, set park brake, turn off ignition switch, and remove key.
2. Place a suitable container below the transaxle case to catch used oil. Remove fill cap and drain plug.

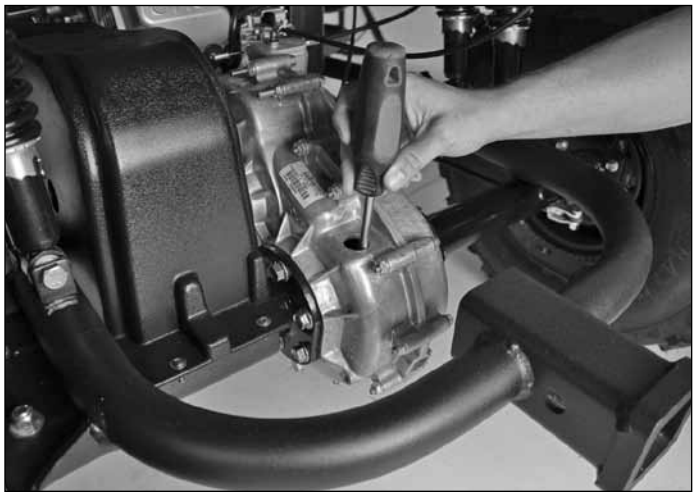


figure 4.7 (checking transaxle oil level)

Transaxle Oil Change cont.

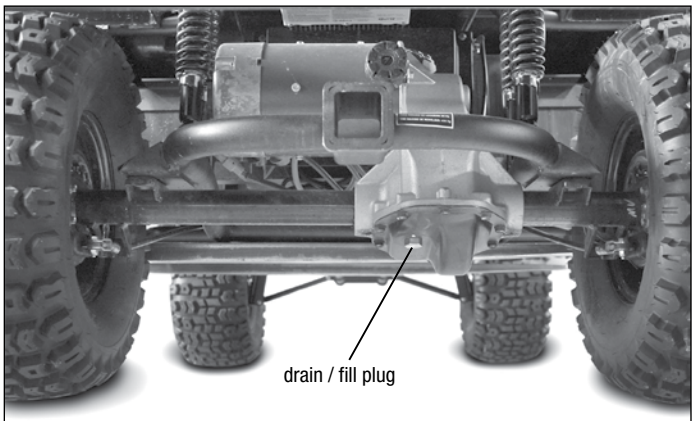
3. Allow used oil to drain completely and then reinstall drain plug and tighten it securely.
4. Dispose of used transaxle case oil in a manner that is compatible with the environment. Do not throw used oil in the trash, pour it on the ground, or down a drain.
5. Fill transaxle housing with 20 oz. SAE 30W oil.
6. Replace fill cap and tighten securely.

Transaxle Oil - 48 Volt Units (Refer to Figure 4.8)

The 48 volt transaxle requires removal from the vehicle to replace the oil. Oil can be drained from the plug on the lower transaxle cover. Refill the transaxle oil with 10-12 oz. of Mobil fluid 424 using the drain / fill hole.

NOTE 48 VOLT MODELS

48 VOLT TRANSAXLE REQUIRES REMOVAL FROM VEHICLE TO REPLACE THE OIL:
If you are unsure of your ability to remove the transaxle, please use an authorized service provider.



Below dump bed on an electric unit

figure 4.8 (transaxle fill / drain plug location)

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DRIVETRAIN MAINTENANCE CONT.

Front Differential Gear Box - 4WD Models

It is recommended that the oil be changed once every 2000 miles (about 150 to 200 hours). To change the oil, follow each step on the procedure listed below.

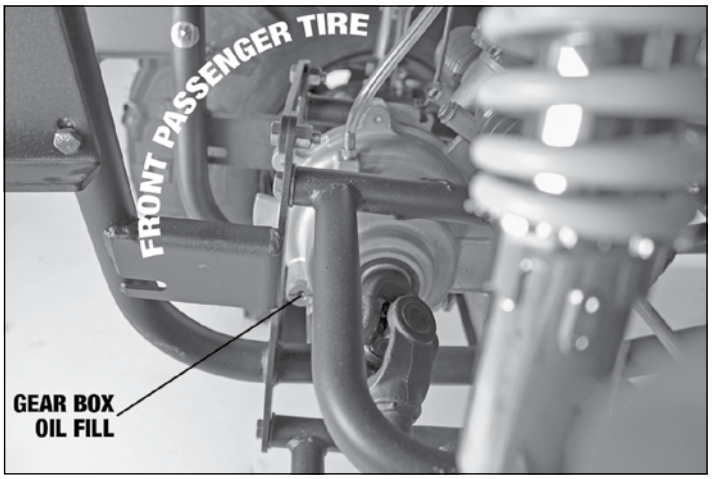


figure 4.9

1. Remove the oil drain plug located on the bottom of the gear case using a 7/16" socket.
2. Let all the oil drain out of the unit. Catch and discard the oil properly.
3. Be sure to clean off any debris on the drain plug and reinstall using a new nylon washer (part # 2-20843). Torque the oil drain plug to 9 ft*lbs.
4. Remove the oil fill plug using a 5/16" hex key wrench.
5. Add 150 ml. (5 oz.) of Mobil fluid 424 American LandMaster part # 2-20848 ***(note: do not use any other type of oil in this system or the 4WD will not operate properly!)***
6. Reassemble the oil fill plug into the gear case and torque to 10 ft*lbs.

90˚ Transfer Gear Box – It is recommended that the oil be changed once a year or after 600 hours. Refer to figure 4.10.

1. Remove the oil drain plug located on the bottom of the gear case using a ¼" hex key wrench.
2. Let all the oil drain out of the unit. Catch and discard the oil properly.
3. Be sure to clean off any debris on the drain plug and reinstall. Torque oil drain plug to 10 ft*lbs.
4. Remove the oil fill plug using a ¼" hex key wrench.
5. Add 200 ml. (7 oz.) of 80W90 gear oil.
6. Reassemble the oil fill plug into the gearcase and torque to 10 ft*lbs.

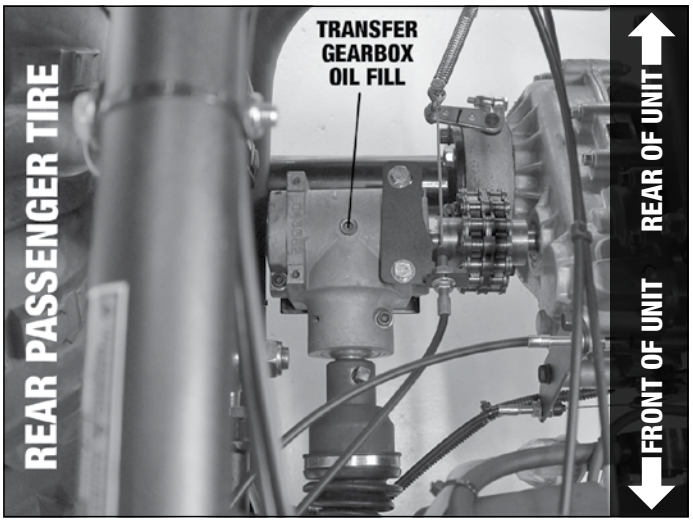


figure 4.10

PULLEY CLEANING

Driver Pulley Maintenance

The following pulley cleaning instructions are provided by CVTech, the pulley manufacturer.

IMPORTANT NOTICE!

- **A mechanically skilled individual should carry out Variable-Speed Drive maintenance and repair operations.**
- **Identifies operations where a risk of serious injury exists when instructions are not properly followed.**
- **Identifies a step where there exists a risk of part deterioration or component malfunction.**
- **The Tightening Torque Values shown must be precisely applied.**
- **The images are used for representations purposes only. Items may differ from illustration.**

Limit of Liability

In no event shall CVTech be liable for damage or injury due to poor text interpretation, improper Variable-Speed Drive handling or misuse of the recommended tools.

Maintenance Frequency

The CVTech Variable-Speed Drive requires no lubrication. It is designed to run dry. However, basic cleanliness rules apply when handling in order to avoid products or particulates getting in contact with Variable-Speed Drive components during reassembling.

Recommendation

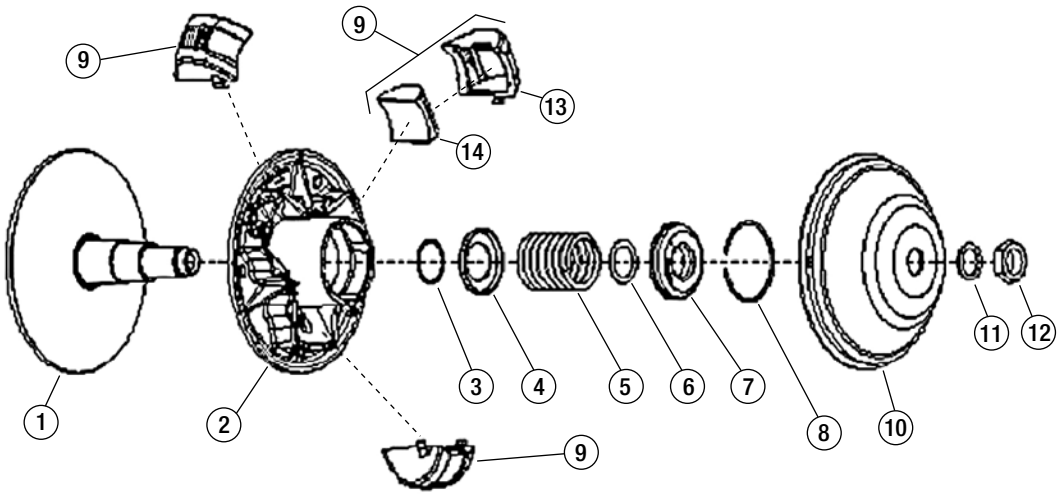
To increase the life of the drive and maintain performance, it is strongly recommended to make a visual check of the CVT:

• Every 150 hours for commercial utility vehicles.

DRIVETRAIN MAINTENANCE CONT.

Exploded view of the pulley 0600 (ALM part number 2-20662)

Ref	Description	Qty
1	Fixed Flange	1
2	Sliding Flange	1
3	Washer	1
4	Spring Seat	1
5	Spring	1
6	Washer	1
7	Spring Cover	1
8	Snap Ring	1
9	Block Assembly	3
10	Cap	1
11	Flat Washer	1
12	Nut	1
13	Block	3
14	Weight	3



Pulley removal from the vehicle

1. Remove the bolt from the engine crankshaft.

Mark the direction of Belt Rotation

2. **Taper Shaft -** Remove the fixed flange using the puller suited for the pulley. Screw in the puller until the pulley is freed from the engine shaft.
3. **Straight Shaft -** Remove the fixed flange by pulling.

NEVER HIT THE DRIVE PULLEY WITH A HAMMER OR OTHER TOOL TO REMOVE THE PULLEY OFF THE VEHICLE PTO.

Cleaning the pulley

Removing the cap and block centrifugal

Remove the nut (12) and washer (11). Cap and centrifugal blocks are now released.

Pulley which nut and washer are removed

Not to unbalance the pulley, it is best to note the location of the centrifugal blocks in order to place them in the same location during reassembly.

Pulley with the cap are removed

Cleaning the cap

1. Clean the cap with compressed air.
2. Clean to remove any dust or dirt that can remain on the cap.
3. Pass a scrubbing pad of very fine grade on the cap.
4. Clean the cap with a solvent (brake cleaner) and a cloth.
5. Clean again the parts with compressed air.

Before cleaning cap

DRIVETRAIN MAINTENANCE CONT.

Cleaning the cap - cont.

After cleaning cap

Cleaning the blocks

1. Clean the blocks with compressed air.
2. Clean to remove any dust or dirt that can remain on the blocks.
3. Pass a scrubbing pad of very fine grade on the blocks.

4. Clean the blocks with a solvent (brake cleaner) and a cloth.
5. Clean again the parts with compressed air.

block before cleaning **block after cleaning**

Cleaning the flanges

1. Clean the flanges with compressed air.
2. Clean to remove any dust or dirt that can remain on the flanges.
3. Pass a scrubbing pad of very fine grade on the angle flanges.
4. Clean the flanges with a solvent (brake cleaner) and a cloth
5. Clean again the flanges with compressed air.

fixed flange before cleaning **fixed flange after cleaning**

sliding flange before cleaning **sliding flange after cleaning**

Cleaning the ramps

1. Clean the sliding flange ramps with compressed air.
2. Clean to remove any dust or dirt that can remain on the sliding flange ramps.
3. Pass a scrubbing pad of very fine grade on the sliding flange ramps
4. Clean the sliding flange ramps with a solvent (brake cleaner) and a cloth
5. Clean again the sliding flange ramps with compressed air.

the sliding flange ramps once cleaned

DRIVETRAIN MAINTENANCE CONT.

Assembling the cap and block centrifugal

Put the blocks in their respective location previously noted during disassembly in the sliding flange. Make sure that the tabs are positioned upside up as shown in the figure below.

tab positoning on sliding flange

reassembled pulley

Block on the right position with tabs upside up

Now install the cap, the washer and nut into postion.

Apply a torque of 95 Nm at 108 Nm with a torque wrench.

Reassembly of the pulley on the vehicle

Put the pulley on the vehicle and tighten the bolt holding the pulley with a torque wrench as specified by the vehicle manufacturer.

CHASSIS, STEERING, SUSPENSION MAINTENANCE

CABLES

Several cables are used on your vehicle and should be inspected and maintained on a regular basis:

- Throttle cable
- Shift cables
- Differential lock cable
- Brake cables (2WD models)
- Park brake cable (4WD models)
- choke cable

Cable Lubrication

Stiff or sticking cables can cause the vehicle to not operate properly. Before attempting to adjust the cables ensure they are lubricated. To lubricate the cables, slide the rubber dust caps up the cable. Drip or spray penetrating oil into the cable housing while working the cable. Do this several times as the oil soaks into the housing. Test the vehicle. If cable is bound or frozen, the cable may require replacement.

Center Console Removal

1. 4WD models require removal of drive shaft guard prior to console removal.
2. To remove drive shaft guard, remove (4) bolts as shown in figure 4.11.
3. To remove center console, unscrew perimeter fasteners.
4. Remove center plate by lifting park brake and applying pressure on the back side of the cover and pushing forward (bowing it slightly). Once tab is disengaged, lift cover off of console as shown in figure 4.12.
5. Lower parking brake handle and carefully slide console out toward passenger side.

figure 4.11 (4WD drive shaft location)

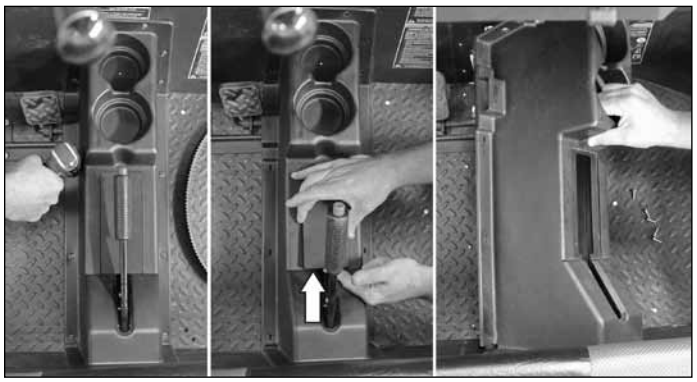


figure 4.12 (center console removal)

Pedals

The pedals on your vehicle require inspection before each use. Pedals should depress and return freely. Pedals may need lubricated with a lithium grease at the locations shown in figure 4.13.

Non-returning pedals should have the return springs inspected. Center console must be removed to inspect springs.

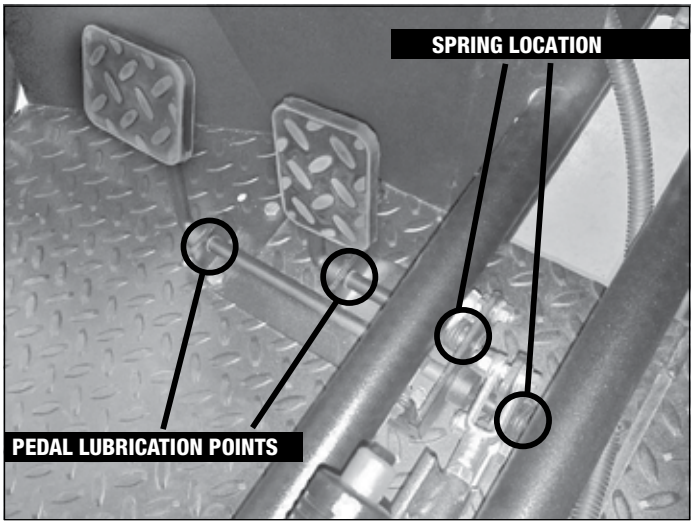


figure 4.13 (pedal lubrication points) NOTE: center console removed.

HOOD REMOVAL

The hood of the vehicle can be removed with 4 fasteners.

1. Using ½" wrenches, remove the (2) front hood fasteners and the (2) rear fasteners as shown in Fig 4.14.
2. Gently pull the hood up and forward to remove from the vehicle. Note the rear edge of the hood is attached to the dash portion with Hook and Loop attachment points.

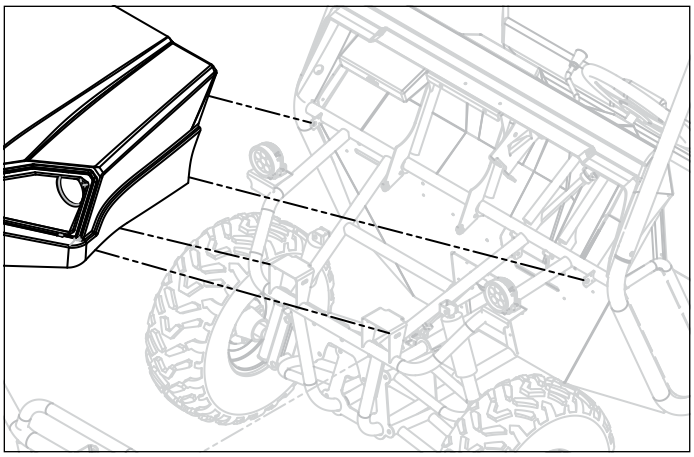


figure 4.14 (hood removal)

WHEEL ALIGNMENT

Front Wheel Alignment (Refer to figure 4.15)

The front wheels should be set with a "toe-in" from 1/4" to 3/8". At the centerline of the tires, measure the Distance A and the Distance B. For proper toe adjustment, Dimension A should be 1/4" – 3/8" GREATER than Dimension B.

To make adjustments:
a. Loosen the lock nuts on both sides of Front Tie Rods.
b. Ensure the steering wheel is centered, and adjust Dimension B by equally rotating the tie rods in or out with a 12mm wrench.
c. After adjusting to the desired length, tighten the lock nuts against the rod end.
d. Recheck the dimensions for proper alignment.

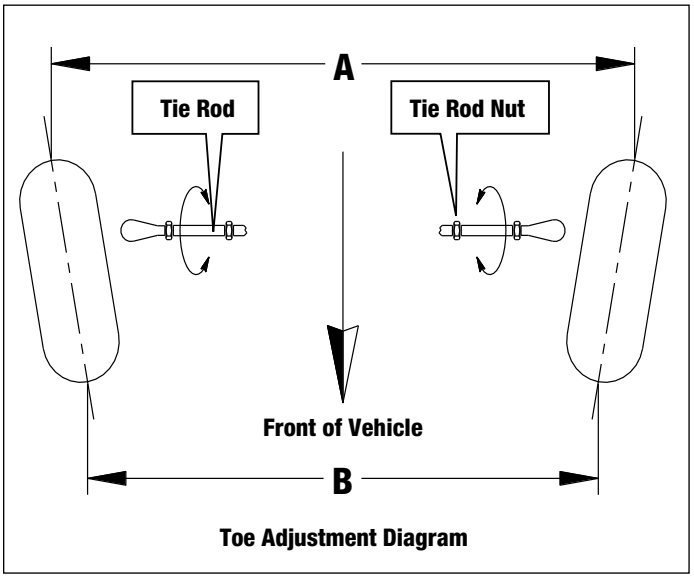


figure 4.15 (front wheel alignment)

SHOCK ADJUSTMENT

Adjustment of Front and Rear Shocks (Ref figure 4.16)

There are five adjustable positions on each shock. The center notch is the default position as set by the manufacturer. Use a round nut spanner wrench to adjust the shock. To **INCREASE** the shock stiffness, rotate the ring to the highest (longest) setting. To **DECREASE** the shock stiffness, rotate the ring to the lowest (shortest) setting.
Shock stiffness adjustments should be made based on the overall weight of the rider, occupant and cargo.

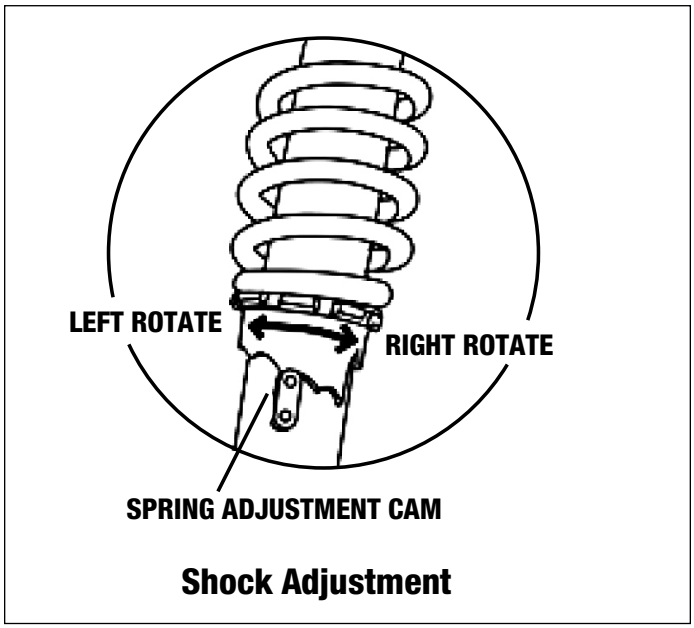


figure 4.16 (shock absorber adjustment)

BRAKES, TIRES MAINTENANCE

Tires

Check tire pressure before each use. Prior to operating the vehicle check and adjust tire pressure to the proper operating pressure as indicated on the sidewall of each tire or in the Specifications section of the Operator's Safety Manual. A "low pressure" tire gauge is required to obtain accurate readings.

Routinely inspect tires for damage, nails, unusual wear or excessive tread wear. NEVER operate a vehicle on bald or damaged tires, or when cording is exposed.

Mechanical Brakes - 2WD (refer to figure 4.17)

This system is a cable operated mechanical drum brake setup. The primary adjustment is between the brake pedal and the cable connections. Removal of the center console is required (see page 29).

1. Brake adjustment is achieved by loosening or tightening the cable tension on the brake rod.
2. To adjust, loosen the clevis jam nuts and remove fastener from the either end of the brake rod.
3. Change length of brake rod to loosen or tighten cables by threading clevis in or out accordingly.
4. Re-attach clevis with fastener. **NOTE: This may require use of a pry bar to apply initial pressure to the cable assembly.**

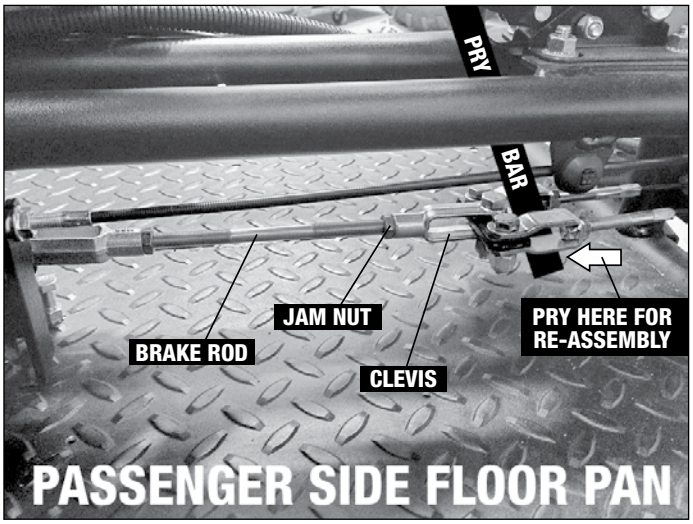


figure 4.17 (2WD brake adjustment)

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BRAKES, TIRES MAINTENANCE CONT.

Hydraulic Brakes - 4WD (refer to figure 4.18)

Hydraulic Brakes use fluid pressure to transfer the braking force to the wheels. Before driving the vehicle each day, check the fluid level in the reservoir. The reservoir is located under the hood behind the front differential gear box. Fill to the MAX line with DOT 3 brake fluid. If you notice that the brake pedal feels spongy or the vehicle is not stopping well, take the vehicle to a qualified service center.

Authorized ASW service centers in your area can be found by visiting www.americanlandmaster.com or by calling customer service toll free at 800-643-7332

figure 4.18 (hydraulic brake reservoir location)

VEHICLE CARE

Fuel Hose

Inspect fuel hose monthly for cracks, leaks or other damage. Replace immediately if any damage is suspected.

Cleaning the Windshield (if applicable)

- Rinse windshield with lukewarm water; wash gently with mild soap or detergent and lukewarm water, using a soft cloth or sponge. DO NOT SCRUB or use brushes or squeegees.
- Rinse again. Dry with soft cloth or moist cellulose sponge to prevent water spotting.
- Abusive cleaning procedures by hand washing or automated washing equipment will eventually result in visual hazing, loss of light transmission and coating contamination.

Compatible Cleaning Agents

Aqueous Solutions (Mix With Water) of Soaps and Detergents

Fantastik, Formula 409, Hexcel, F.O. 554, Joy, Lysol, Mr. Clean, Neleco-Placer, Pine-Sol, Top Job, Windex.

Washing your vehicle (ALL GAS MODELS)

See page 34.

Headlight Adjustment / Replacement

The headlights on your vehicle are sealed LED lights and must be replaced if damaged as a complete assembly. Headlight adjustment is achieved by loosening the fasteners as shown in figure 4.19, adjusting and re-tightening.

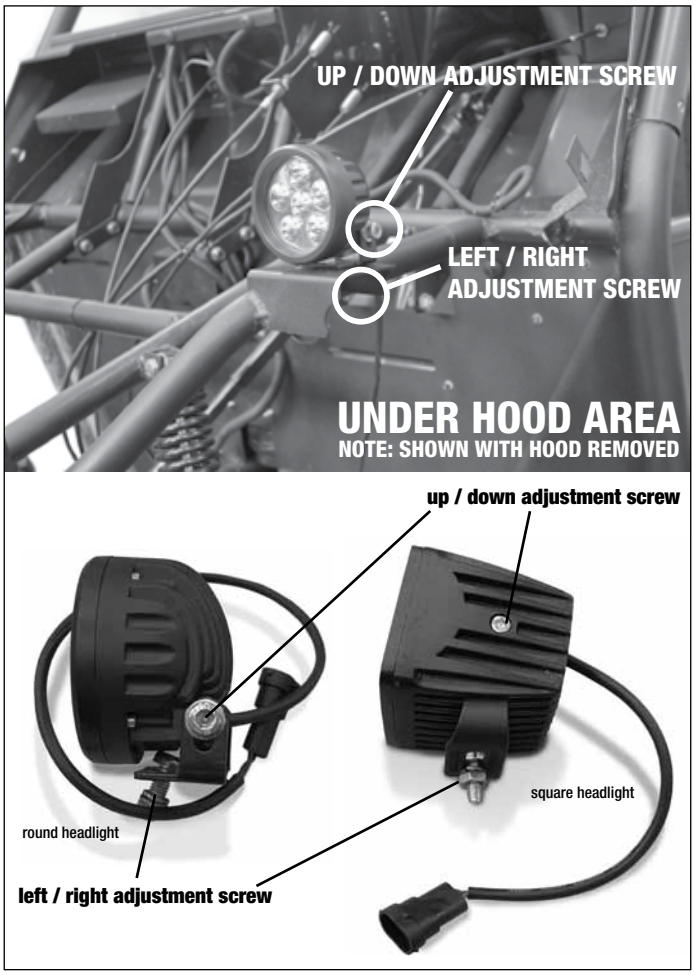


figure 4.19 (headlight adjustment screw locations)

TRANSPORTATION & STORAGE

If your vehicle is going to be trailered or in storage for an extended period of time, follow the instructions below for best results.

MAINTAINING FUEL SYSTEM

Using a fuel stabilizer/conditioner in the vehicle can provide benefits such as:

- **Keeps gasoline fresh during storage of 90 days or less. For longer storage, drain the fuel tank.**
- **Cleans the engine during operation.**
- **Eliminates gum-like varnish build-up in the fuel system.**

Add the correct amount of fuel stabilizer/conditioner to the gas. Follow the fuel stabilizer/conditioner manufacturer's directions for best results.

Engine Fuel Valves (Ref to figures 4.20, 4.21 & 4.22)

American Landmaster recommends closing the fuel valve whenever the unit is trailered to avoid fuel flooding.

On single cylinder models the engine has a fuel valve that opens and closes the passage between the fuel tank and carburetor. Leave fuel valve lever in the OFF position when the engine is not in use to prevent carburetor flooding and reduce possibility of fuel leakage into the cylinder cavity and engine oil reservoir. Turn fuel valve lever to the ON position when running the engine.

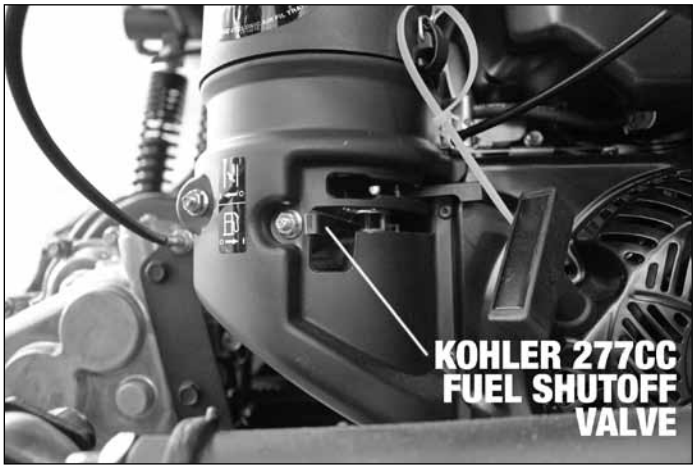


figure 4.20 (engine fuel shutoff valve located on 277cc Kohler)

figure 4.21 (engine fuel shutoff valve located on 390cc Honda)

Inline fuel valves

On V-Twin models, an in-line fuel shut-off is standard and located on the fuel line between the fuel tank and the engine as shown in figure 4.22.

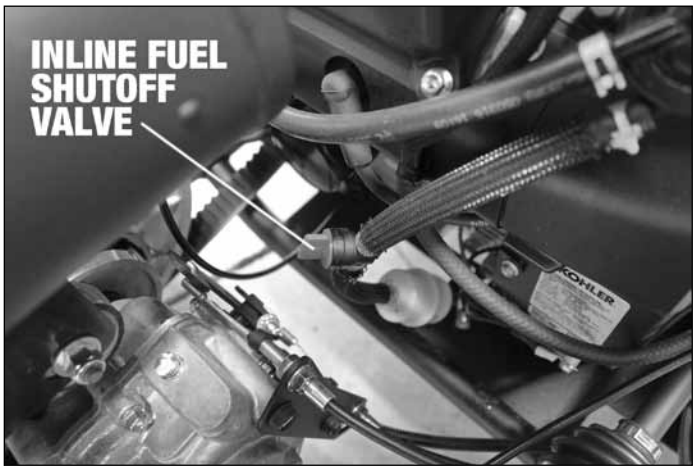


figure 4.22 (inline fuel shutoff valve - shown on a 674cc Kohler in the "ON" position)

LONG TERM STORAGE

If you plan to store (and not operate) your vehicle for a period in excess of 30 days, or at the end of each driving season, the unit should be set up for storage as follows:

a. Drain fuel tank and carburetor by allowing the engine to run completely out of fuel.
b. Lubricate the engine cylinder by removing the air cleaner and spraying an engine fogging oil through the carburetor.
c. Do NOT save or store gasoline over the winter. Using old gasoline, which will deteriorate from storage, will make the engine difficult to start and affect the performance of the engine.
d. Remove the battery from the unit and apply a periodic trickle charge to maintain the battery at a proper voltage level for the next riding season.
e. To protect the paint, plastics and upholstery, we recommend covering the unit when not in use.

BATTERY & ELECTRICAL

Battery Charging - Gas Models

Use a trickle charger to maintain battery voltage as needed.

Battery Charging - 48V Models (Refer to Figure 4.23)

- A charging port is located on the seat surround below the driver side of the bench seat. Use an AWG 12 gauge cord to charge.
- The charger will come on and begin to charge on its own.
- A fully discharged battery set will take 9-12 hours to fully recharge.

Battery Watering

Flooded batteries need water. More importantly, watering must be done at the right time and in the right amount or else the battery's performance and longevity suffers. Water should always be added after fully charging the battery. Prior to charging, there should be enough water to cover the plates. If the battery has been discharged (partially or fully), the water level should also be above the plates. Keeping the water at the correct level after a full charge will prevent having to worry about the water level at a different state of charge. Depending on the local climate, charging methods, application, etc. Trojan (the battery manufacturer) recommends that batteries be checked once a month until you get a feel for how thirsty your batteries are.

Important things to remember:

1. Do not let the plates get exposed to air. This will damage (corrode) the plates.

2. Do not fill the water level in the filling well to the cap. This most likely will cause the battery to overflow acid, consequently losing capacity and causing a corrosive mess.

3. Do not use water with a high mineral content. Use distilled or deionized water only.

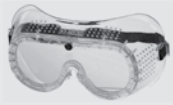
⚠ WARNING

The electrolyte is a solution of acid and water so skin contact should be avoided.

Step by step watering procedure:

⚠ WARNING

REMEMBER: Always wear a safety shield or approved safety goggles when adding water or charging batteries.



a. Open the vent caps and look inside the fill wells.
b. Check electrolyte level; the minimum level is at the top of the plates.
c. If necessary add just enough water to cover the plates at this time.
d. Put batteries on a complete charge before adding any additional water (refer to the Charging section).
e. Once charging is completed, open the vent caps and look inside the fill wells.
f. Add water until the electrolyte level is 1/8" below the bottom of the fill well.
g. A piece of rubber can be used safely as a dipstick to help determine this level.
h. Clean, replace, and tighten all vent caps.

figure 4.23 (battery charging port)

⚠ WARNING

NEVER jump the battery with an automotive battery

Battery Disposal

Lead-acid batteries are completely recyclable. Return whole scrap battery to distributor, manufacturer or lead smelter for recycling. For information on returning batteries to Trojan Battery Company for recycling call 800-423-6569. For neutralized spills, place residue in acid-resistant containers with sorbent material, sand or earth and dispose of in accordance with local, state and federal regulations for acid and lead compounds. Contact local and/or state environmental officials regarding disposal information.

FUSES

Fuse Locations (Refer to figures 4.24, 4.25 & 4.26)

Your 48V Vehicle has fused protection for the main motor circuit, along with the low amperage 48 volt circuit, and the 12 volt circuit. Shown in figure 4.23 (next page) is the 500 amp main fuse. This fuse will blow in the event of a short across the battery posts, or a catasatrophic failure in the motor or controller. Should this fuse blow, it must be replaced with a like 500 amp fuse. These fuses are available through your dealer.

Fuse Replacement

Your unit is equipped with fuses to protect the electrical system from excessive load conditions. Units are equipped with 20 amp fuses located just forward of the engine.

Replace fuses by opening the sealed fuse holder. Remove fuses and replace. Close the fuse holder. Fuse replacement is part number 2-70029.

BATTERY & ELECTRICAL CONT.

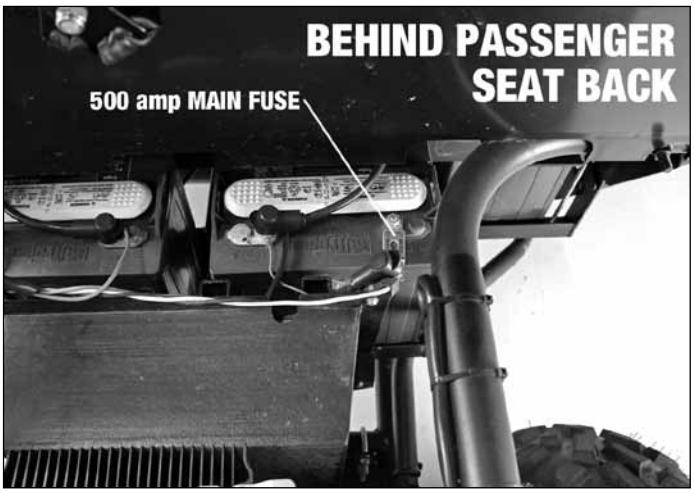


figure 4.24 (battery charger)

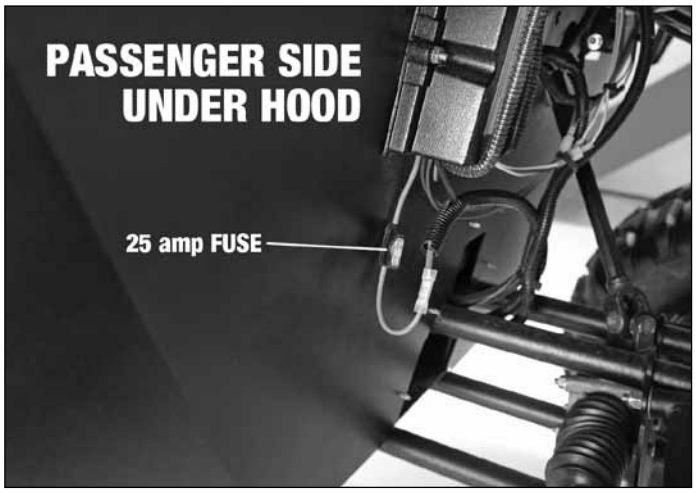


figure 4.25 (25 amp fuse)

NOTE — ALL MODELS

FUSES:

• In addition to the main fuse, there are three smaller fuses to protect the 12 volt and 48 volt circuits. These fuses are shown in figures 4.25 & 4.26. Should these fuses blow and need replacement, a replacement fuse of the same rating must be used.

figure 4.26 (10 amp & 20 amp fuses)

CAUTION — 48V MODELS

ACCESSORY WIRING

Accessories must NOT be grounded to chassis. Damage to converter will occur. Ground to distribution block ground (neg) terminal only (see wiring diagram for proper distribution block location)

Washing your vehicle (ALL GAS MODELS)

It is acceptable to wash your utility vehicle, though a pressure washer should not be used, and common sense should be exercised. The air intake system should be protected during washing by placing a plastic bag or other protection over the top of it and securing underneath prior to washing as shown figure 4.27. Avoid direct water or spray contact with wiring harness, system components, or any electrical component especially if the vehicle is equipped with EFI. Remember that the electronics of a fuel injection system are sensitive to water and corrosion.

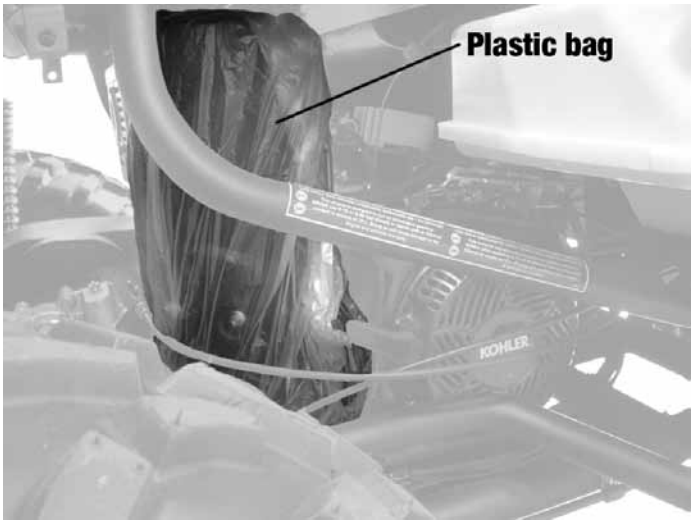


figure 4.27 (protecting the air intake)

CAUTION

Washing or operating the vehicle in freezing temperatures can result in water freezing in the throttle cable conduit, the throttle, and/or the engine's throttle mechanism.

a. This may result in the throttle sticking which can cause the engine to continue to run and result in loss of control.