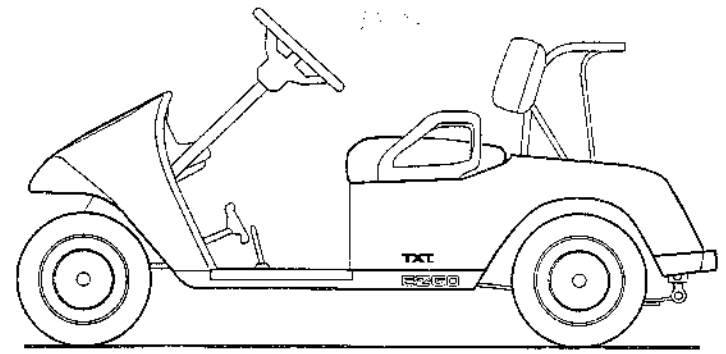
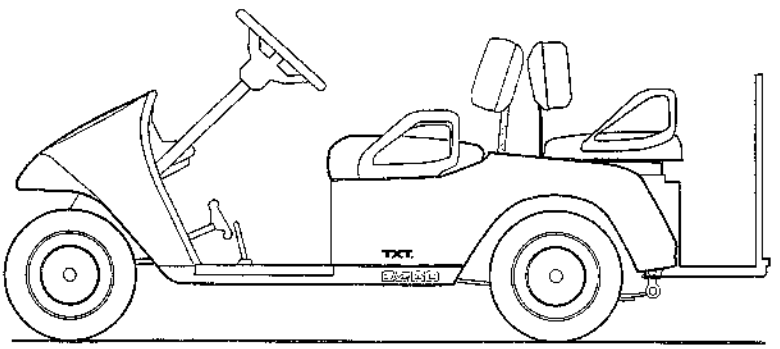
EZGO

a TEXTRON Company

TECHNICIAN'S REPAIR AND SERVICE MANUAL





GASOLINE POWERED TXT VEHICLES

MANUAL: 28410-G01 MODEL YEAR: 1997 - 1998 ISSUED: 07/15/96

TECHNICIAN'S REPAIR AND SERVICE MANUAL

TXT GASOLINE VEHICLES

VEHICLES

TXT FLEET

TXT FREEDOM

TXT FREEDOM HP

TXT 4 CADDY

CUSTOMER SERVICE DEPARTMENT IN USA PHONE: 1-800-241-5855, FAX: 1-800-448-8124
OUTSIDE USA PHONE: 010-1-706-798-4311, FAX: 010-1-706-771-4609
E-Z-GO DIVISION OF TEXTRON, INC., P.O. BOX 388, AUGUSTA, GEORGIA USA 30903-0388

NOTES

TO OBTAIN A COPY OF THE LIMITED WARRANTY THAT IS APPLICABLE TO THE VEHICLE, CALL OR WRITE THE LOCAL DISTRIBUTOR, E-Z-GO BRANCH OR E-Z-GO WARRANTY DEPARTMENT WITH VEHICLE SERIAL NUMBER AND MANUFACTURER'S CODE.

THE USE OF NON E-Z-GO PARTS MAY VOID THE WARRANTY.

TAMPERING WITH OR ADJUSTING OF GOVERNOR TO PERMIT VEHICLE TO OPERATE AT ABOVE FACTORY SETTINGS OF 12 - 15 MPH, 19 - 24 KPH (16 - 18 MPH, 26 - 29 KPH FREEDOM HP) WILL VOID THE VEHICLE WARRANTY.

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SAFETY INFORMATION

The Repair and Service Manual has been designed to assist in maintaining the vehicle in accordance with procedures developed by E-Z-GO. Adherence to these procedures and trouble-shooting tips will ensure the best possible service from the product. To reduce the chance of personal injury and/or property damage, the following instructions must be carefully observed:

GENERAL

Many vehicles are used for a variety of tasks beyond the original intended use of the vehicle; therefore it is impossible to anticipate and warn against every possible combination of circumstances that may occur. No warnings can take the place of good common sense and prudent driving practices.

Good common sense and prudent driving practices do more to prevent accidents and injury than all of the warnings and instructions combined. E-Z-GO strongly suggests that the owner-operator read this entire Owner's Guide and the Technician's Repair and Service Manual paying particular attention to the CAUTIONS and WARNINGS contained therein. It is further recommended that employees and other operators be encouraged to do the same.

If you have any questions, contact your closest E-Z-GO representative, call the E-Z-GO Customer Service Department at 1-800-241-5855 or write to the address on the back cover of this publication.

- E-Z-GO Division of Textron is not liable for errors in this manual or for incidental or consequential damages that result from the use of the material in this manual.
- E-Z-GO Division of Textron reserves the right to make design changes without obligation to make these changes on units previously sold and the information contained in this manual is subject to change without notice.
- This vehicle conforms to the current applicable standard for safety and performance requirements.
- These vehicles are designed and manufactured for off-road use. They do not conform to Federal Motor Vehicle Safety Standards or EPA regulations and are not equipped for operation on public streets. Some communities may permit these vehicles to be operated on their streets on a limited basis and in accordance with local ordinances.
- With electric powered vehicles, be sure that all electrical accessories are grounded directly to the battery (-) post. **NEVER USE THE CHASSIS OR BODY AS A GROUND CONNECTION.**
- Vehicle capacity is limited to a maximum of two persons per seat.
- **Never modify the vehicle in any way that will alter the weight distribution of the vehicle, its stability or increases the speed beyond the factory specification. Such modifications can cause serious personal injury or death. Modifications that increase the speed and or weight of the vehicle will extend the stopping distance and may reduce the stability of the vehicle. Do not make any such modifications or changes. E-Z-GO prohibits and disclaims responsibility for any such modifications or any other alteration which would adversely affect the safety of the vehicle.**

Some vehicles may exceed the 15 mph maximum normally associated with golf course use. Higher speeds will result in increased stopping distances and less stability than similar slower vehicles. Vehicles that are capable of higher speeds must limit their speed substantially to no more than the speed of other vehicles when used in a golf course environment. Additionally, speed should be further moderated by the environmental conditions, terrain and common sense.

GENERAL OPERATION

- Always use the vehicle in a responsible manner and maintain the vehicle in safe operating condition.
- Always read and observe all warnings and operation instruction labels affixed to the vehicle.

- Always follow all safety rules established in the area where the vehicle is being operated.
- Always reduce speed to compensate for poor terrain or conditions.
- Always apply service brake to control speed on steep grades.
- Always maintain adequate distance between vehicles.
- Always reduce speed in wet areas.
- Always use extreme caution when approaching sharp or blind turns.
- Always use extreme caution when driving over loose terrain.
- Always use extreme caution in areas where pedestrians are present.

MAINTENANCE

- Always maintain your vehicle in accordance with the manufacturer's periodic service schedule.
- Always ensure that mechanics performing repairs are trained and qualified to do so.
- Always follow the manufacturer's directions if you do any maintenance on your vehicle. Be sure to disable the vehicle before performing any maintenance. Disabling includes removing the key from the key switch and removal of a battery wire.
- Always insulate any tools used to remove the battery from its wiring in order to prevent sparks or battery explosion caused by shorting the battery terminals or associated wiring. Remove the batteries or cover exposed terminals with an insulating material.
- Always check the polarity of each battery terminal and be sure to rewire the batteries correctly.
- Always use specified replacement parts. Never use replacement parts of lesser quality.
- Always use recommended tools.
- Always determine that tools and procedures not specifically recommended by the manufacturer will not compromise the safety of personnel nor jeopardize the safe operation of the vehicle.
- Never get under a vehicle that is supported by a jack.
- Always support the vehicle using wheel chocks and safety stands. Lift the vehicle in accordance with the manufacturer's instructions.
- Always empty the fuel tank or plug fuel hoses to prevent fuel leakage.
- Never attempt to maintain a vehicle in an area where exposed flame is present or persons are smoking.
- Always be aware that a vehicle that is not performing as designed is a potential hazard and must not be operated.
- The manufacturer cannot anticipate all situations, therefore people attempting to maintain or repair the vehicle must have the skill and experience to recognize and protect themselves from potential situations that could result in severe personal injury or death and damage to the vehicle. Use extreme caution and, if unsure as to the potential for injury, refer the repair or maintenance to a qualified mechanic.
- Always test drive the vehicle after any repairs or maintenance. All tests must be conducted in a safe area that is free of both vehicular and pedestrian traffic.

- Always replace damaged or missing warning, caution or information labels.
- Always keep complete records of the maintenance history of the vehicle.

VENTILATION

- Hydrogen is explosive in concentrations as low as 4% and is generated in the charging cycle of electric vehicles. Because it is lighter than air, it will collect in the ceiling of buildings necessitating proper ventilation. Air exchanges of 5 changes per hour is considered the minimum requirement.
- Always store gasoline vehicles in a well ventilated area. Ventilation prevents gasoline fumes from accumulating.
- Never charge or fuel a vehicle in an area that is subject to flame or spark. Pay particular attention to natural or propane water heaters and furnaces.
- Always use a dedicated 15 amp circuit for each battery charger. Do not permit other appliances to be plugged into the receptacle when the charger is in operation.

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LIST OF ILLUSTRATIONS

SERIAL NUMBER PLATE LOCATION

(See Fig. A-1 "Serial No. Plate Location" on page A-1)

The serial and manufacturing numbers are stamped on a plate on the passenger side of the dash housing of the vehicle.

Always provide these numbers to the dealer when ordering parts for the vehicle.

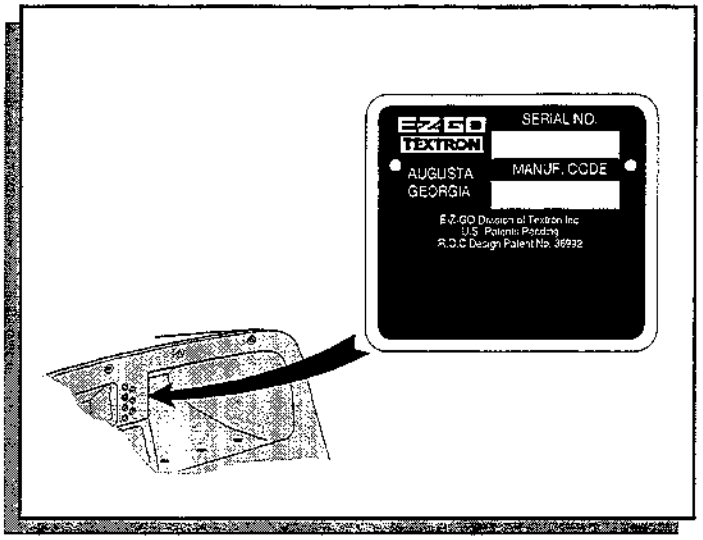

Fig. A-1 Serial No. Plate Location

CONTROLS

The controls on the vehicle consist of a key/headlight switch, direction selector lever, choke, accelerator pedal and combination service brake and parking (PARK) brake pedal.

Key/Headlight Switch

(See Fig. A-2 "Key/Headlight Switch" on page A-1)

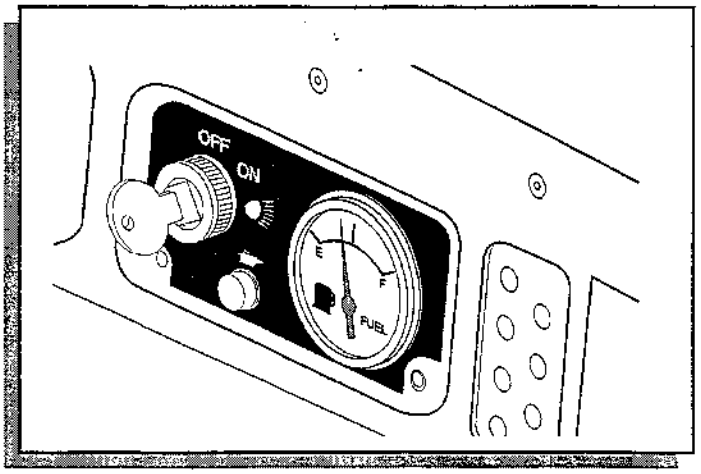

Fig. A-2 Key/Headlight Switch

Located on the four cup console, this switch enables the basic electrical system of the vehicle to be turned on and off by turning the key. If the vehicle is equipped with lights, this switch also has a position for operating the lights.

For added security when the vehicle is left unattended, the key should be removed while in the 'OFF' position, preventing inadvertent operation of the vehicle.

NOTE

If the vehicle is equipped with E-Z-GO installed custom accessories, some accessories remain operational with the key switch in the 'OFF' position.

Direction Selector

(See Fig. A-3 "Direction Selector" on page A-1)

Located on the seat support panel, this lever permits the selection of either forward or reverse.

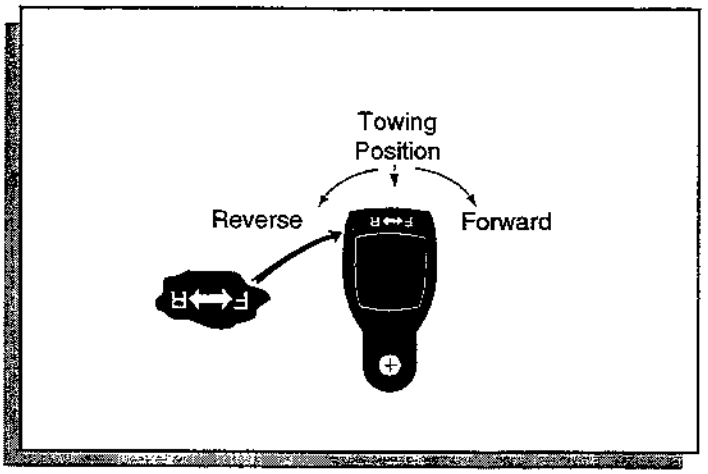

Fig. A-3 Direction Selector

CAUTION

THE VEHICLE MUST BE COMPLETELY STOPPED BEFORE MOVING THE DIRECTION SELECTOR.

Choke

(See Fig. A-4 "Choke" on page A-2)

Located on the seat support panel, the choke is used to aid cold starting. Pull the choke knob out for the first start of the day, or if the vehicle does not start within ten seconds after partially depressing the accelerator pedal. Do not operate at full throttle until engine has reached operating temperature.

Starting a cold engine **may** require use of the choke. Depress the accelerator approximately 1" (2.5 cm) or until the starter just begins to operate. Pull the choke out as required. Accelerate slowly and push the choke in completely when the engine runs smoothly.

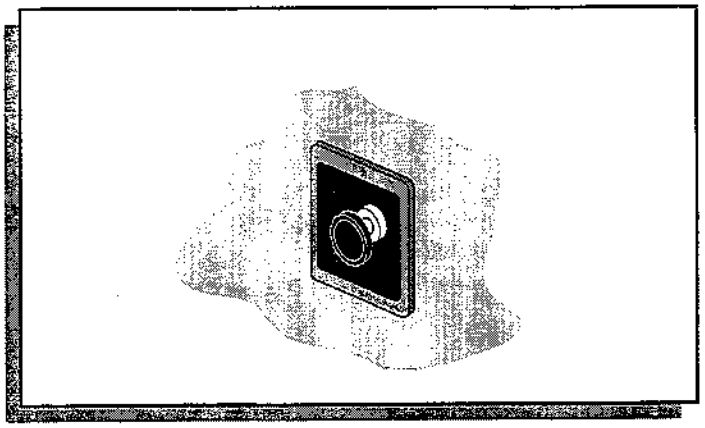

Fig. A-4 Choke

NOTE

Hold vehicle on hill using the service brake until engine starts.
The engine is started by partially depressing the accelerator pedal, it will start with the key in the 'ON' position and with either forward or reverse selected. As soon as the engine runs smoothly, push the choke completely in.

Accelerator Pedal

(See Fig. A-5 "Accelerator and Brake Controls" on page A-2)

Depressing the accelerator pedal will release the parking (PARK) brake if it is engaged. This is a feature to assure the vehicle is not driven with the parking (PARK) brake engaged.

NOTE

Depressing the bottom of the brake pedal is the preferred method of releasing the parking (PARK) brake to assure the longest service life of brake components.

Depressing the accelerator pedal starts the engine. When the pedal is released, the engine will stop.

Combination Brake and Parking (PARK) Brake Pedal

(See Fig. A-5 "Accelerator and Brake Controls" on page A-2)

The brake pedal incorporates a parking (PARK) brake feature. To engage, push down on the top section of the pedal until it locks in place. The parking (PARK) brake will release when the brake pedal is depressed. Use the BOTTOM section of the brake pedal to operate the service brake system.

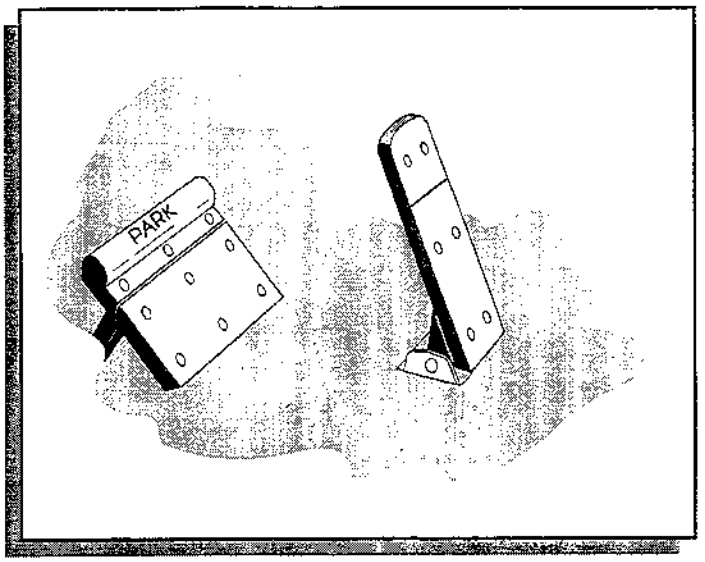

Fig. A-5 Accelerator and Brake Controls

BEFORE ENTERING VEHICLE

1. Check for correct tire inflation.
2. Inspect for fluid leaks.
3. Be sure everything is properly stored and secured.

BEFORE STARTING

Be sure you understand the vehicle, its equipment and how to use it safely. Although E-Z-GO vehicles have been designed to provide safe and reliable operation, maintaining good performance depends to a large extent on the operator.

CAUTION

IMPROPER USE OR OPERATION OF THE VEHICLE OR THE LACK OF PROPER MAINTENANCE MAY RESULT IN DECREASED PERFORMANCE OR DAMAGE TO THE VEHICLE.

BEFORE INITIAL USE, REMOVE CLEAR PLASTIC SEAT COVERINGS. SEE SEATS, PAGE A-6.

NOTE

Read and understand the following warnings before attempting to operate the vehicle:

⚠ WARNING ⚠

WHEN VEHICLE IS TO BE LEFT UNATTENDED, TURN THE KEY TO THE 'OFF' POSITION, REMOVE THE KEY AND ENGAGE THE PARKING (PARK) BRAKE. PLACE THE DIRECTION SELECTOR IN THE FORWARD POSITION.

DRIVE THE VEHICLE ONLY AS FAST AS TERRAIN AND SAFETY CONSIDERATIONS ALLOW. CONSIDER THE TERRAIN AND EXISTING TRAFFIC CONDITIONS. CONSIDER THE ENVIRONMENTAL FACTORS WHICH EFFECT THE TERRAIN AND YOUR ABILITY TO CONTROL THE VEHICLE.

DO NOT ALLOW THE VEHICLE TO COAST (TAKE OUT OF GEAR WHILE IN MOTION).

AVOID DRIVING FAST DOWN HILL. A SUDDEN STOP OR CHANGE OF DIRECTION MAY RESULT IN LOSS OF CONTROL. USE BRAKE TO CONTROL SPEED WHEN TRAVELING DOWN AN INCLINE.

USE EXTRA CARE AND REDUCED SPEED WHEN DRIVING ON POOR SURFACES, SUCH AS LOOSE DIRT, WET GRASS, GRAVEL, ETC.

ALL TRAVEL SHOULD BE DIRECTLY UP OR DOWN HILLS.

USE EXTRA CARE WHEN DRIVING THE VEHICLE ACROSS ANY INCLINE.

STAY IN DESIGNATED AREAS AND AVOID STEEP SLOPES. USE THE PARKING (PARK) BRAKE WHENEVER THE VEHICLE IS PARKED.

KEEP FEET, LEGS, HANDS AND ARMS INSIDE THE VEHICLE AT ALL TIMES.

AVOID EXTREMELY ROUGH TERRAIN.

CHECK AREA BEHIND THE VEHICLE BEFORE OPERATING IN REVERSE.

MAKE SURE THE DIRECTION SELECTOR IS IN THE CORRECT POSITION BEFORE ATTEMPTING TO START THE VEHICLE.

STANDARD VEHICLE IS LIMITED TO TWO (2) OCCUPANTS MAXIMUM PER SEAT.

⚠ WARNING ⚠

SLOW DOWN BEFORE AND DURING TURNS. ALL TURNS SHOULD BE EXECUTED AT REDUCED SPEED.

ALWAYS BRING THE VEHICLE TO A COMPLETE STOP BEFORE SHIFTING THE DIRECTION SELECTOR.

ALWAYS REMAIN SEATED AND HOLD ON WHILE THE VEHICLE IS IN MOTION.

BEFORE ATTEMPTING ANY SERVICE OPERATIONS, READ AND UNDERSTAND ALL NOTES, CAUTIONS AND WARNINGS IN THIS MANUAL.

WEAR EYE PROTECTION WHEN WORKING ON ANYTHING THAT COULD EXPOSE THE EYES TO POTENTIAL INJURY. IN PARTICULAR, USE CARE WHEN WORKING AROUND THE BATTERY, WHEN USING SOLVENTS OR COMPRESSED AIR.

STARTING A VEHICLE WITH A DISCHARGED BATTERY

⚠ WARNING ⚠

DO NOT ATTEMPT TO 'JUMP START' A VEHICLE USING ANOTHER VEHICLE. THE ENGINE MUST BE OPERATED ONLY WITH FORWARD OR REVERSE SELECTED.

The vehicle is equipped with a starter/generator. When starting the engine, the starter/generator functions as a starter and with the engine running, it functions as a generator.

With the short running times associated with this kind of vehicle, the generator is more than adequate to maintain the battery charge level. The generator is not designed to charge a discharged battery.

Since the engine stops when the accelerator is released, **jump starting is not recommended.**

If the vehicle battery has become discharged, it must be charged using a 12V charger that is rated at 10 amps or less.

Observe all instructions provided by the manufacturer of the charger.

STARTING THE GASOLINE VEHICLE

Depressing the accelerator pedal energizes the starter and ignition circuits which cause the engine to run. To start the gasoline vehicle: Apply the service brake, place the key in the key switch and turn it to the 'ON' position. Move the direction selector to the direction desired. Release the parking (PARK) brake by depressing and holding the service brake pedal. Slowly depress the accelerator pedal to start the engine.

Cold Starting

Starting a cold engine **may** require use of the choke. Depress the accelerator approximately 1" (2.5 cm) or until the starter just begins to operate. Pull the choke out as required. Accelerate slowly and push the choke in completely when the engine runs smoothly.

NOTE

When the direction selector is in the reverse position, a warning signal will sound. This is a device to indicate that the vehicle is ready to start and run in reverse.

CAUTION

DO NOT ALLOW THE STARTER TO OPERATE CONTINUOUSLY FOR MORE THAN 30 SECONDS. ALLOW 10 SECONDS BEFORE ATTEMPTING A SECOND TIME. IF THE VEHICLE DOES NOT START ON THE THIRD ATTEMPT, YOU SHOULD TURN THE KEY SWITCH OFF, LOCK THE PARKING BRAKE, AND DETERMINE THE CAUSE OF THE PROBLEM.

When the accelerator pedal is released, the ignition circuit is de-energized and the engine stops. To stop the vehicle more quickly, depress the BOTTOM OF THE BRAKE PEDAL.

When leaving the vehicle unattended, engage the parking (PARK) brake by depressing the TOP of the brake pedal until it locks in place. To release the parking (PARK) brake, depress the BOTTOM portion of the brake pedal.

CAUTION

TO AVOID COMPONENT DAMAGE, THE VEHICLE MUST BE BROUGHT TO A COMPLETE STOP BEFORE SHIFTING THE DIRECTION SELECTOR.

If the vehicle has been running and the engine does not start within ten seconds, use the choke. To change direction, bring the vehicle to a complete stop before moving the direction selector to the direction desired. Proceed by depressing the accelerator pedal.

COASTING

On steep hills, it is possible for the vehicle to coast at greater than normal speeds encountered on a flat surface. To prevent loss of vehicle control, speeds should be limited to no more than the maximum governed speed on level ground (see vehicle specification). Limit speed by releasing accelerator and applying service brake. Severe damage to the drive train components may result due to excessive speed. Damage caused by excessive speed may cause a loss of control, is costly to repair, is considered abuse and will not be covered under warranty.

FUEL

Fuel Gauge

(See Fig. A-2 "Key/Headlight Switch" on page A-1)

The fuel gauge is a gauge/cap combination. Located under the passenger seat, it is a direct reading mechanical float type. The gauge vent should be inspected and cleaned on a periodic basis.

⚠ WARNING ⚠

WHEN REFUELING, INSPECT THE FUEL GAUGE/ CAP FOR LEAKS OR BREAKS IN THE INDICATOR HOUSING THAT COULD RESULT IN FUEL SPILLAGE.

Fuel Gauge/Low Fuel Indicator Light (Optional)

(See Fig. A-2 "Key/Headlight Switch" on page A-1)

Theoptional fuel gauge or low fuel indicator light is located to the right side of the key/headlight switch.

⚠ WARNING ⚠

DO NOT HANDLE FUEL IN AN AREA THAT IS NOT ADEQUATELY VENTILATED. DO NOT PERMIT ANYONE TO SMOKE IN AN AREA WHERE VEHICLES ARE BEING FUELED.

Engine Fuel

(See Fig. A-6 "Fuel Tank Location" on page A-5)

Fill tank with fresh, clean, automotive grade, unleaded, 87 octane gasoline. High altitude or heavy use/load applications may benefit from higher octane gasoline.

CAUTION

DO NOT OVER FILL THE FUEL TANK. ALLOW ADEQUATE SPACE FOR THE EXPANSION OF GASOLINE. LEAVE AT LEAST 1" (2.5 cm) SPACE BELOW BOTTOM OF FILLER NECK.

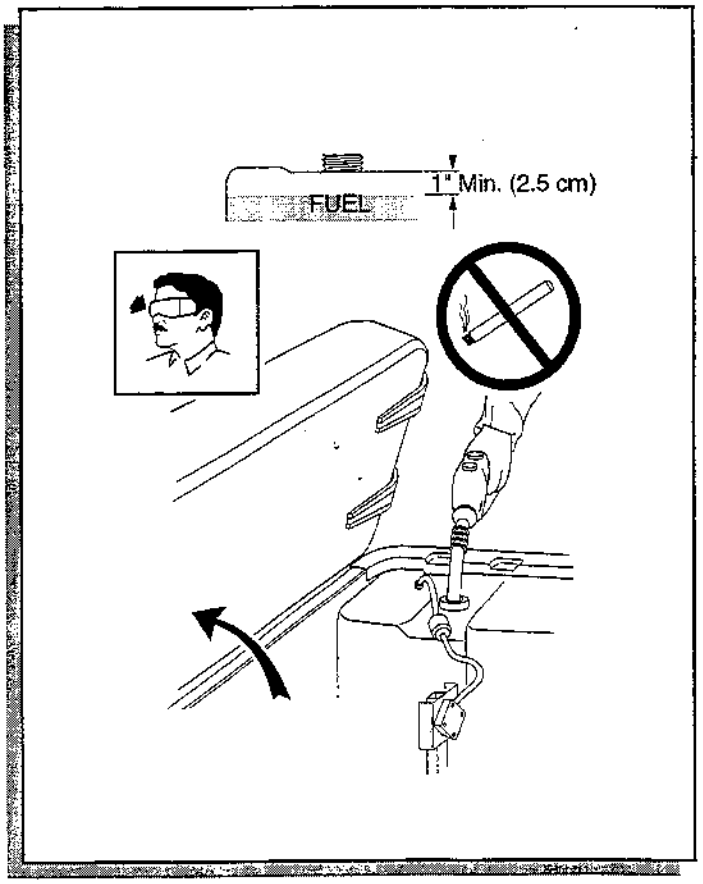

Fig. A-6 Fuel Tank Location

TOWING

(See Fig. A-3 "Direction Selector" on page A-1)

NOTE

It is recommended that the drive belt be removed (Ref. Fig. A-7) before towing the vehicle because the direction selector could change position during transit.

⚠ WARNING ⚠

DO NOT START OR RUN THE VEHICLE WITH THE DIRECTION SELECTOR IN THE TOWING POSITION. INADVERTENT MOVEMENT OF THE DIRECTION SELECTOR MAY CAUSE PERSONAL INJURY AS A RESULT OF SUDDEN AND UNEXPECTED VEHICLE MOVEMENT.

To tow the vehicle: Move the direction selector to the towing position (a point between the 'F' and 'R' positions). Push the vehicle by hand to insure that the transmission is not engaged. The vehicle may now be towed.

CAUTION

IF THE VEHICLE IS TO BE TOWED, THE DRIVE BELT MUST BE REMOVED.

A MAXIMUM OF FOUR VEHICLES (INCLUDING THE TOW VEHICLE) MAY BE TOWED AT A TIME.

USE EXTRA CAUTION WHEN TOWING VEHICLE. DO NOT TOW A VEHICLE AT SPEEDS IN EXCESS OF 12 MPH (19 KPH).

TOW BARS ARE NOT INTENDED FOR OFF-COURSE USE.

DO NOT RIDE ON TOWED VEHICLES.

Tow bars are available from the E-Z-GO Service Parts Department.

Removing the Drive Belt

(See Fig. A-7 "Removing the Drive Belt" on page A-6)

With the vehicle on level ground, remove the drive belt by pulling the belt upwards which causes the driven clutch to open and loosen the belt. The belt may be rolled off the driven clutch.

SERVICING THE GASOLINE VEHICLE

No formal break in period is required with this vehicle, but it is necessary to check for any obvious oil or fuel leaks that could have developed in shipment.

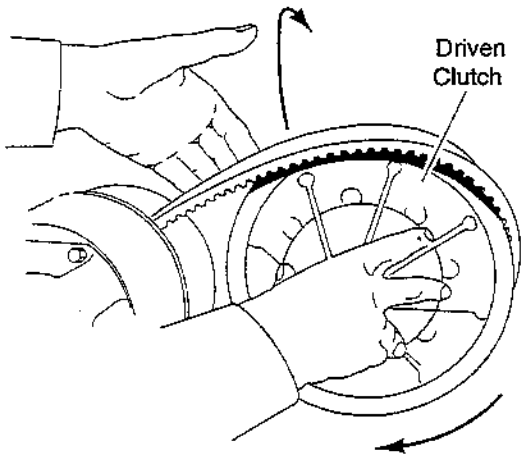

Fig. A-7 Removing the Drive Belt

⚠ WARNING ⚠

BEFORE ATTEMPTING ANY SERVICE OPERATION, READ AND UNDERSTAND ALL THE NOTES, CAUTIONS AND WARNINGS IN THIS MANUAL.

CAUTION

IT IS IN THE BEST INTEREST OF BOTH THE VEHICLE OWNER AND SERVICING DEALER TO CAREFULLY FOLLOW THE PROCEDURES RECOMMENDED IN THIS MANUAL. ADEQUATE PREVENTATIVE MAINTENANCE APPLIED AT REGULAR INTERVALS IS THE BEST GUARANTEE FOR KEEPING THE E-Z-GO VEHICLE BOTH DEPENDABLE AND ECONOMICAL.

Remove any debris from around the engine oil dipstick (located behind the air cleaner enclosure). Remove the dipstick and wipe off with a lint free cloth. Insert the dipstick into the engine block and seat firmly. Remove the dipstick and check the oil level. Add oil if required. The correct level is between 'add' and 'full' (Ref. Fig. A-16). **DO NOT OVERFILL.** Install the dipstick and be sure that it is completely seated. Check that the oil fill cap is firmly in place.

INITIAL SERVICE CHART	
ITEM	SERVICE OPERATION
Battery	Check charge level, terminals, connections
Seats	Remove protective plastic covering
Brakes	Check operation and adjust if necessary
Fuel	Fill tank with correct fuel
Tires	Check pressure
Engine	Check oil level

Before a new vehicle is put into operation, it is recommended the items shown in the INITIAL SERVICE CHART be inspected.

NOTE

Both the oil dipstick and fill cap must be in place before operating the engine. Failure to install the dipstick and fill cap will result in oil being discharged into the engine compartment.

SEATS

Preparation of Seats for Service

Remove the protective plastic coverings from the seats before placing the vehicle in service. The **ONLY** function of the plastic covering is to protect the seat bottom and back rest during shipping. If the plastic covering is left on the seat and becomes torn, dirt may get under the plastic covering and be ground into the cover material. Water getting under the plastic covering can become trapped and eventually will damage the seat assembly.

If only the front or rear of the vehicle is to be raised, place the chocks in front and behind each wheel not being raised in order to stabilize the vehicle.

ROUTINE MAINTENANCE

NOTE

Some maintenance items must be serviced more frequently on trucks used under severe driving conditions.

This vehicle will give years of satisfactory service, providing it receives regular maintenance. Refer to the periodic maintenance schedule for appropriate service intervals.

WERTRAIN MAINTENANCE

)irection Selector

See Fig. A-8 "Shift Cable Adjustment" on page A-7)

'he direction selector is a mechanical device that operates cables connected to the transmission. The cables re sealed and do not require lubrication, but may require ccasional adjustment. (Ref. Fig. A-8) The only other aintenance required is periodic lubrication of the linkge and related moving parts.

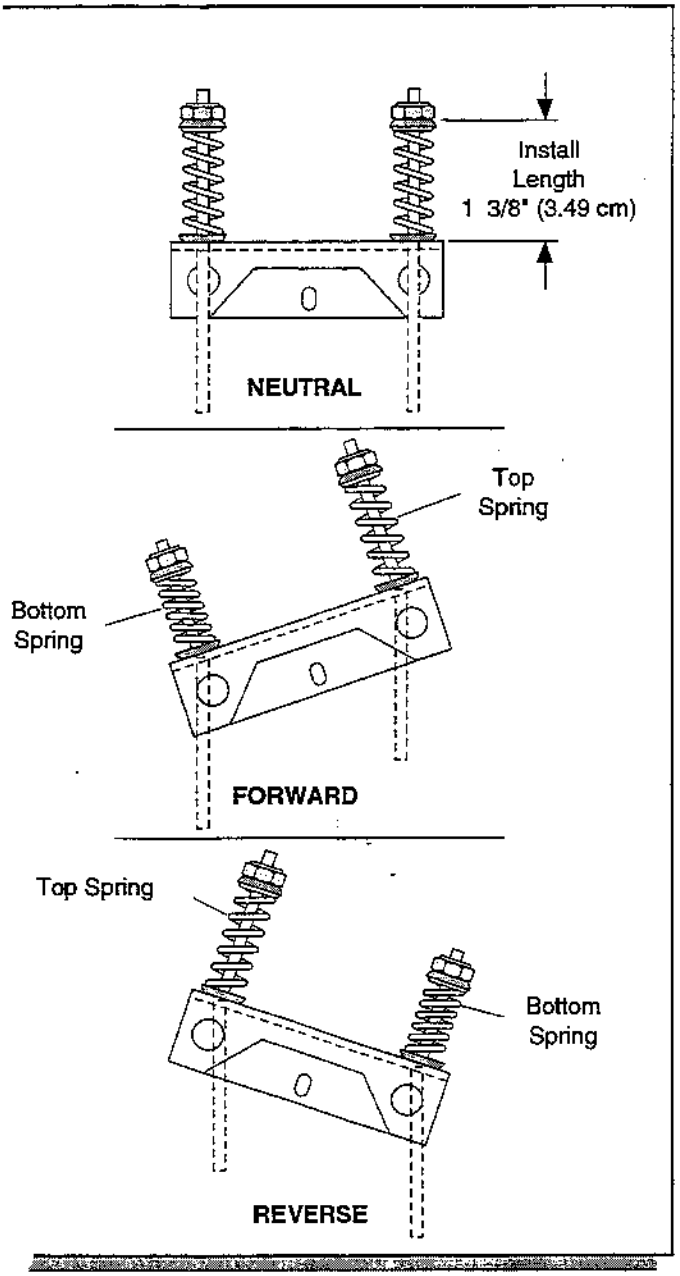

Fig. A-8 Shift Cable Adjustment

Engine

Changing the Oil

(See Fig. A-9 "Cleaning the Top of the Engine" on page A-8)

(See Fig. A-10 "Cleaning the Oil Filter" on page A-8)

(See Fig. A-11 "Blowing Out Oil Filter" on page A-8)

(See Fig. A-12 "Oil Viscosity Chart" on page A-9)

(See Fig. A-13 "Adding Engine Oil" on page A-9)

(See Fig. A-16 "Check Oil Level on Dipstick" on page A-10)

Tool List	Qty. Required
Wrench, 10mm	1
Floor jack	1
Jack stands	4
Wheel chocks	4

For maximum performance and longevity, the engine oil should be replaced after the first 100 hours of operation. After the initial oil change, it should be repeated every 200-250 hours of operation or yearly, whichever comes first. Vehicles used under harsh or dirty conditions should change oil every 100-150 hours of operation. **Never** exceed 300 hours of operation before an oil change.

NOTE

The vehicle can be stored for the winter with the old oil left in the engine. The oil should be changed as part of spring maintenance. This will remove any moisture that has accumulated during storage.

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The vehicle can be stored for the winter with the old oil left in the engine. The oil should be changed as part of spring maintenance. This will remove any moisture that has accumulated during storage.

TO CHANGE THE OIL:

⚠ WARNING ⚠

WEAR EYE PROTECTION TO PREVENT SPLASHED SOLVENT FROM CONTACTING THE EYES. WEAR RUBBER GLOVES TO PROTECT SKIN FROM EXPOSURE TO THE OLD OIL AND DEGREASER.

Park the vehicle on a level surface, lock the parking (PARK) brake and remove the key. Place a drain pan under the engine and wipe the top of the engine clean

with a cloth (Ref. Fig. A-9). Remove the oil fill cap. Clean the area around the filter. Remove the three bolts securing the oil filter to the engine using a 10mm wrench. Remove the filter by pulling it from the engine and allow the oil to drain. (The 'O' ring may remain on the engine or the filter). Inspect the filter. At the first oil change, small metal chips and lint may be found. This is normal, resulting from the break-in period. Inspect the filter at every oil change. The presence of large metal chips could indicate possible damage to the engine. Clean the filter by washing in any shop degreaser and brushing the metal screen clean with a soft brush (Ref. Fig. A-10).

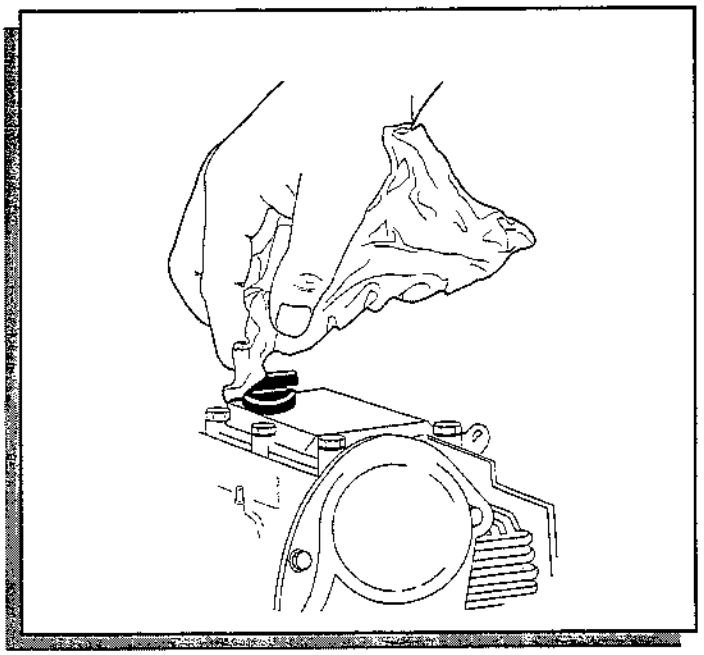


Fig. A-9 Cleaning the Top of the Engine

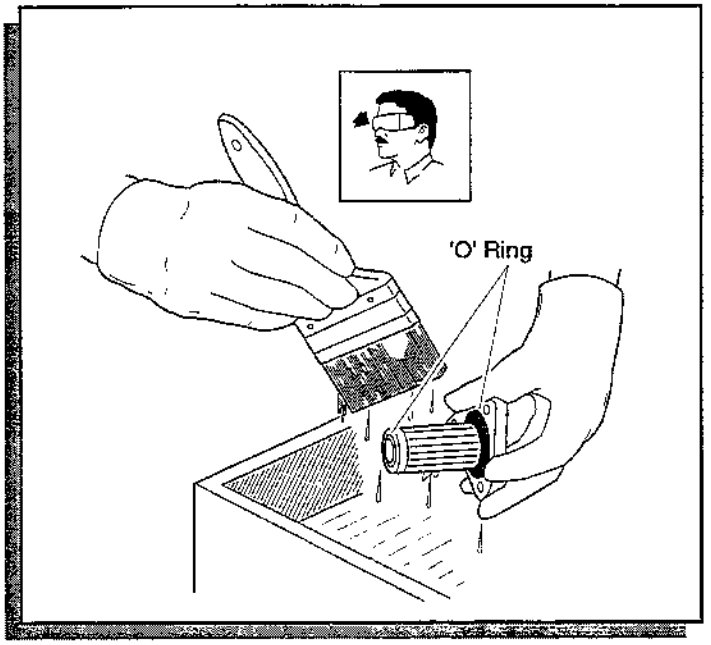


Fig. A-10 Cleaning the Oil Filter

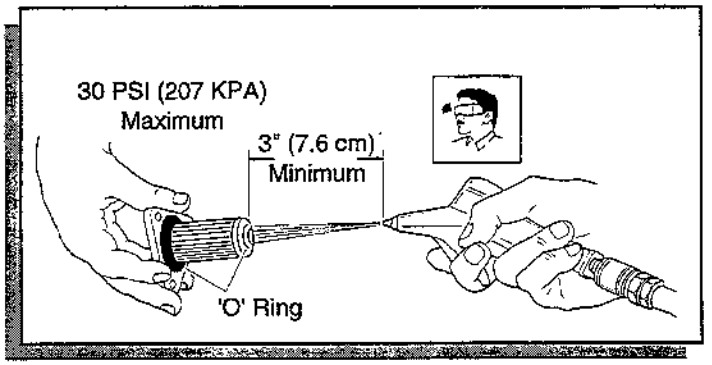


Fig. A-11 Blowing Out Oil Filter

Blow out the filter with low pressure air (30 psi or less from no closer than 3") and allow to dry (Ref. Fig. A-11).

Wipe the area around the filter mount with a lint free cloth and inspect both filter 'O' rings for damage; replace if necessary. Install the filter into the engine. The filter engages over a short nipple in the engine. The filter should slide easily onto the nipple and seat against the engine using light hand pressure only. Align the holes in the filter mounting plate with the holes in the engine. Install and snug the bolts before tightening them firmly.

Fill the engine with approximately 1 1/2 quarts of a high quality oil that meets or exceeds API SF, SG, CC standards and check the oil level with the dipstick. **DO NOT OVERFILL.**

The selection of oil is dependent upon the service that the vehicle will perform. Most trucks require 10W30 oil, whereas trucks used for capacity or near capacity load applications will utilize 10W40 oil after a break in period of 100 hours. (Ref. Fig. A-12).

Inspect the oil fill cap 'O' ring for damage and replace the 'O' ring if necessary. (Ref. Fig. A-13)

Install the oil fill cap.

As a final check, the oil level should be checked with the vehicle on level ground. Like all liquids, oil increases in volume when warm. The full 'F' mark on the dipstick is calibrated for an engine at operating temperature. When the engine is cold, the oil will be below the full mark. (Ref. Fig. A-16). The engine can be operated safely as long as the oil is within the safe operating range indicated by the cross hatch marks on the dipstick. **DO NOT OPERATE VEHICLE IF OIL LEVEL IS IN THE "LOW" AREA ON THE DIPSTICK.**

Run the vehicle for one or two minutes and check the filter for oil leaks.

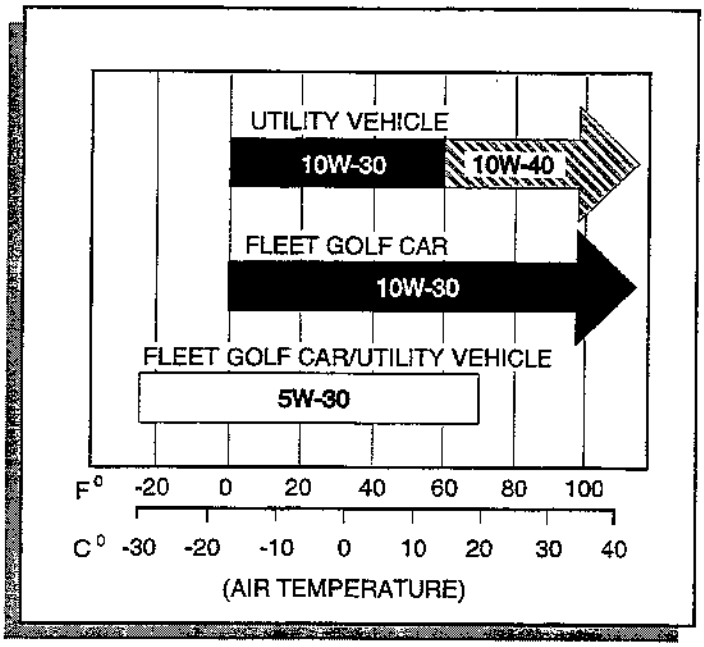


Fig. A-12 Oil Viscosity Chart

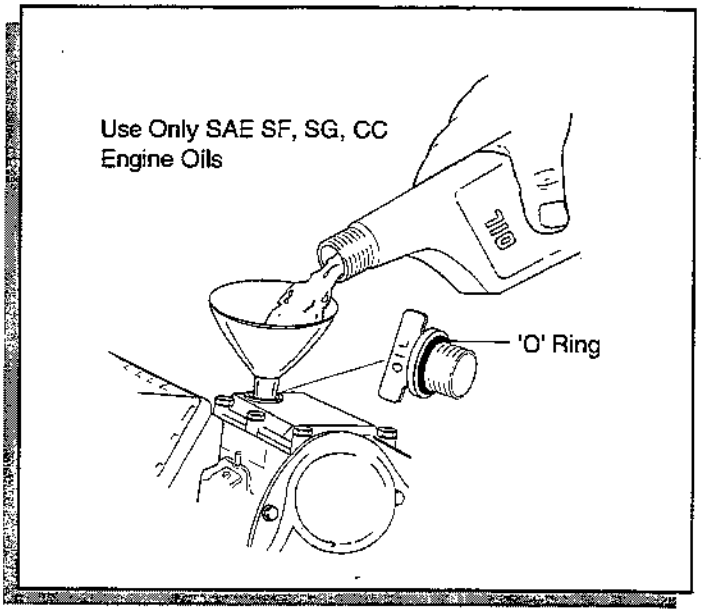


Fig. A-13 Adding Engine Oil

CHECKING THE OIL LEVEL

(See Fig. A-14 "Cleaning Around Oil Dipstick" on page A-9)

(See Fig. A-15 "Clean Entire Dipstick" on page A-9)

(See Fig. A-16 "Check Oil Level on Dipstick" on page A-10)

The oil should be checked with the engine warm and the vehicle on a level surface with the parking (PARK) brake locked. Allow adequate time for oil to drain into the crankcase before checking.

CAUTION

DO NOT OVERFILL ENGINE. TOO MUCH OIL MAY CAUSE SMOKING OR ALLOW OIL TO ENTER THE AIR FILTER ENCLOSURE.

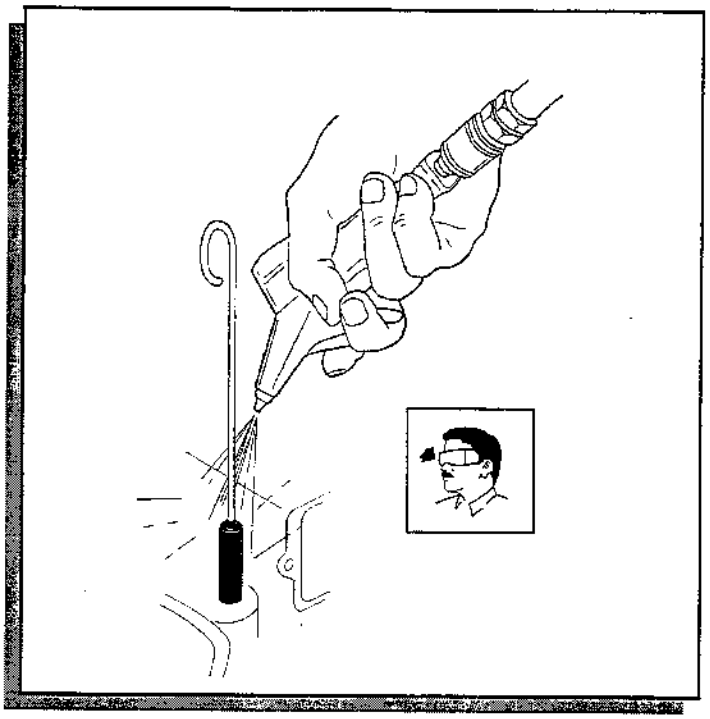


Fig. A-14 Cleaning Around Oil Dipstick

Before checking the oil, the area around the dipstick should be blown off or cleaned with a parts brush (Ref. Fig. A-14). This is necessary to prevent debris from falling into the dipstick hole when the dipstick is removed. Remove the dipstick and wipe off the entire area indicated with a lint free cloth. (Ref. Fig. A-15)

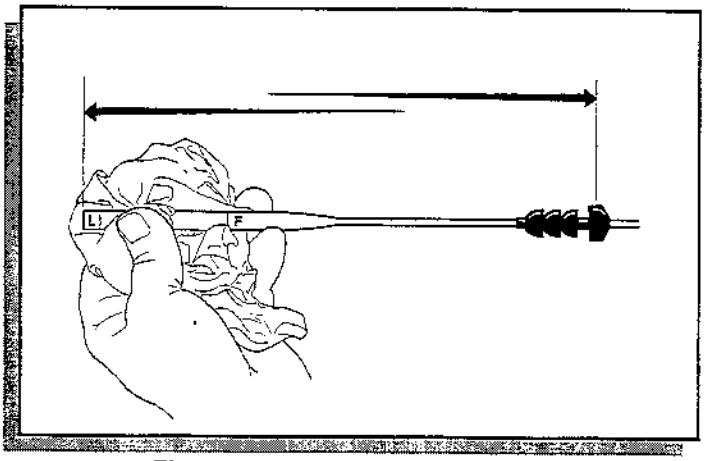


Fig. A-15 Clean Entire Dipstick

Insert the dipstick FULLY into the dipstick hole and remove. Examine the level of the oil on the dipstick. Oil should be added to bring the level into the safe operating range. Remember that oil expands as it gets hot. (Ref. Fig. A-16)

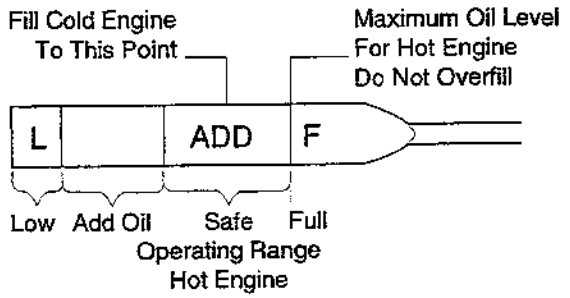


Fig. A-16 Check Oil Level on Dipstick

AIR CLEANER INSPECTION/ REPLACEMENT

(See Fig. A-17 "Air Cleaner" on page A-10)

NOTE

The air cleaner unit on the vehicle is a washable dry unit. DO NOT use oil on the filter element or any part of the unit.

The air cleaner element is accessible by unsnapping the top clips from the air box and swinging the cover open to remove it. If the element is in acceptable condition, loose dirt may be removed by tapping the filter ***lightly***. The air cleaner element may be washed if required. Gently wash the element in a mixture of non sudsing cleaner and water. Rinse in 'non-pressurized' clear water.

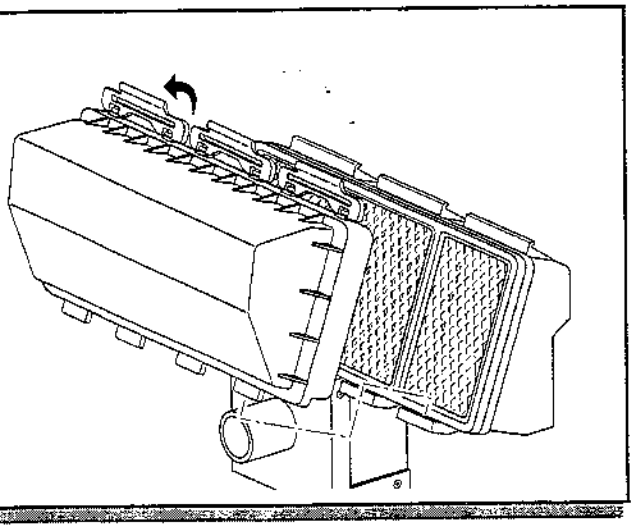


Fig. A-17 Air Cleaner

Allow to air dry completely before reinstalling. Do not force dry the filter. The element may be washed four or five times. Replacement is necessary at the first signs of filter paper deterioration or if the element has holes in it.

CAUTION

DO NOT USE PRESSURIZED WATER OR COMPRESSED AIR TO CLEAN THE AIR FILTER. DOING SO WILL DAMAGE THE FILTER AND MAY DAMAGE THE ENGINE.

After the initial cleaning, the following cleanings may need to be more frequent. Install the element in the same way it was removed, being sure that gaskets are correctly installed. Attach the lower portion of the enclosure and swing it up into place. Squeeze housing together and secure with the top clips.

REAR AXLE

(See Fig. A-18 "Rear Axle Lubricant Add, Check and Drain" on page A-10)

The only maintenance required for the first five years is the periodic inspection of the lubricant level. The rear axle is provided with a lubricant level check plug located on the driver's side at the rear of the housing. Unless leakage is evident, the lubricant should only be checked at 500 hour intervals or after five years, whichever comes first.

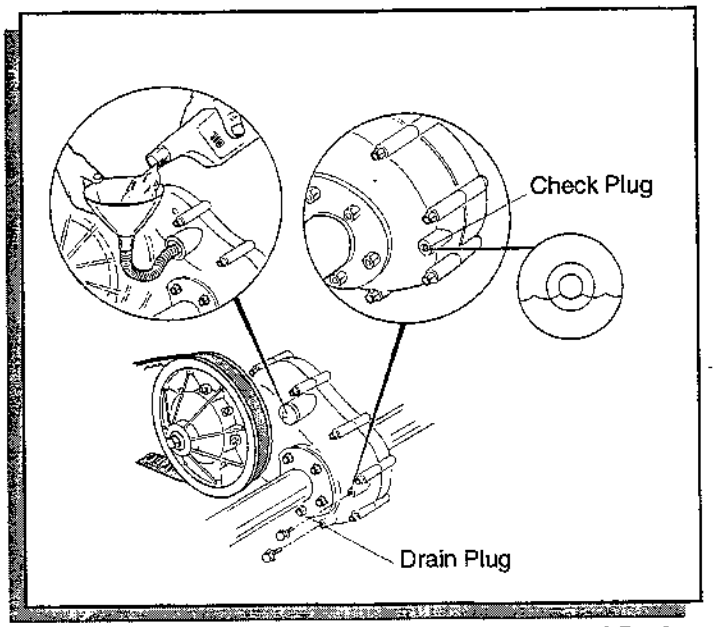


Fig. A-18 Rear Axle Lubricant Add, Check and Drain

Checking the Lubricant Level

Tool List	Qty. Required
Socket, 13mm, 3/8" drive	1
Ratchet, 3/8" drive	1
Funnel	1

Clean the area around the check and fill plugs. The check plug should be removed using a 13mm wrench. The correct lubricant level is just below the bottom of the threaded hole. If lubricant is to be added, remove the fill plug and add lubricant (SAE 30 wt. oil) using a funnel. Add lubricant slowly until lubricant starts to seep from the check plug. Install the check plug and the fill plug. In the event that the lubricant is to be replaced, a drain plug is provided at the bottom of the differential housing. Capacity of axle is 40 oz.

WINTER OR PROLONGED STORAGE

⚠ WARNING ⚠

KEEP HANDS, CLOTHING AND JEWELRY AWAY FROM MOVING PARTS. USE CARE NOT TO CONTACT HOT OBJECTS. RAISE THE REAR OF THE VEHICLE AND SUPPORT ON JACK STANDS BEFORE ATTEMPTING TO RUN THE ENGINE.

Preparing the engine for winter or a prolonged storage calls for a few simple steps to prevent a build up of varnish and gum in the carburetor and corrosion in the engine.

Raise the rear of the vehicle and support on jack stands. Add fuel stabilizer to the tank in accordance with the manufacturer's recommendations. Disconnect the fuel line from the engine **AT THE FUEL TANK.** With proper area of ventilation, start the engine and allow to run until the engine stops due to lack of fuel. Drain carburetor bowl using the drain screw and re-tighten the drain screw. Remove the air filter and spray a commercial fogging or cylinder oil into the carburetor while operating the starter for 2-3 seconds. Reinstall the air filter and attach the fuel line to the tank.

STARTER/GENERATOR BELT TENSION

(See Fig. A-19 "Checking Belt Tension with Gauge" on page A-11)

(See Fig. A-20 "Checking Belt Tension with Finger" on page A-12)

(See Fig. A-21 "Adjusting the Belt tension" on page A-12)

Tool List	Qty. Required
Krikit (belt tension indicator)	1
Wrench, 3/4"	1
Wrench, 9/16"	2
Ratchet, 3/8" drive	1
Socket, 3/4", 3/8" drive	1

The starter/generator belt tension should be checked after the first 15-20 hours of use and set to 75-80 lbs.

NOTE

A loose belt can cause audible vibration and squeal.

Tighten a **NEW** starter/generator belt to 90-110 lbs. (41 - 50 kg) tension when a gauge (Gates 'Krikit' available from NAPA automotive parts store or equivalent) is applied half way between the two pulleys.

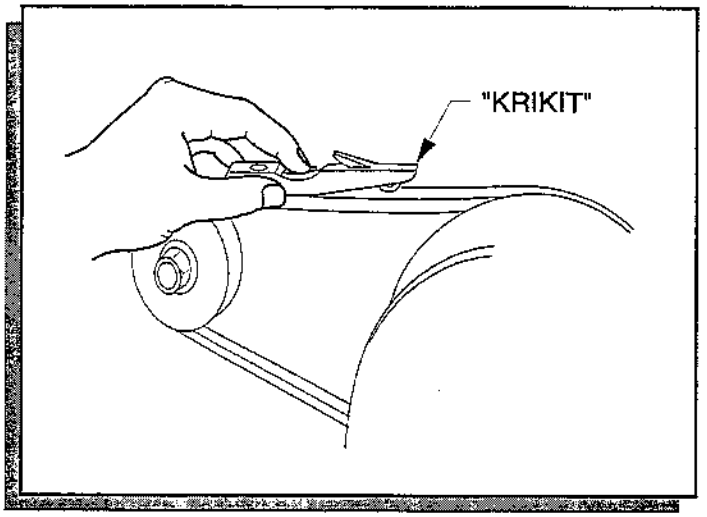


Fig. A-19 Checking Belt Tension with Gauge

Although not as accurate, the belt may be depressed with a finger. A maximum deflection of 3/8" (1 cm) is acceptable.

Re-tighten an **EXISTING** belt to 75-80 lbs. (34 - 36 kg) tension using the same technique. A maximum deflection of 1/2" (1.3 cm) is acceptable.

Adjusting the Belt

(See Fig. A-21 "Adjusting the Belt tension" on page A-12)

Using a 3/4" socket and open end wrench, loosen the starter/generator pivot bolt.

Use a 9/16" wrench to hold the nut on top of the adjuster mounting bracket, while rotating the adjuster counterclockwise with a second 9/16" wrench. Jam nuts together after adjustment is achieved.

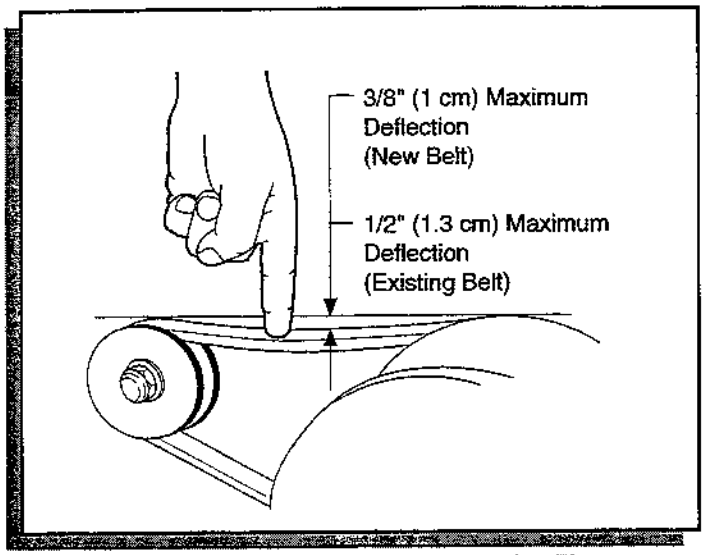


Fig. A-20 Checking Belt Tension with Finger

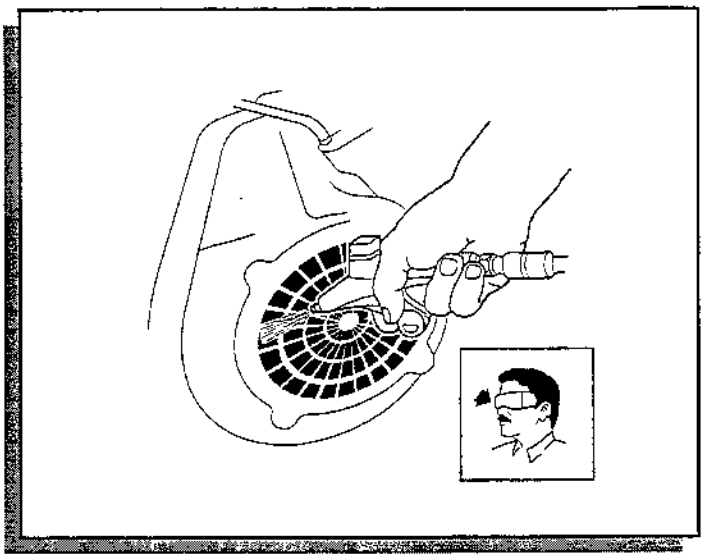


Fig. A-22 Cleaning Air Intake

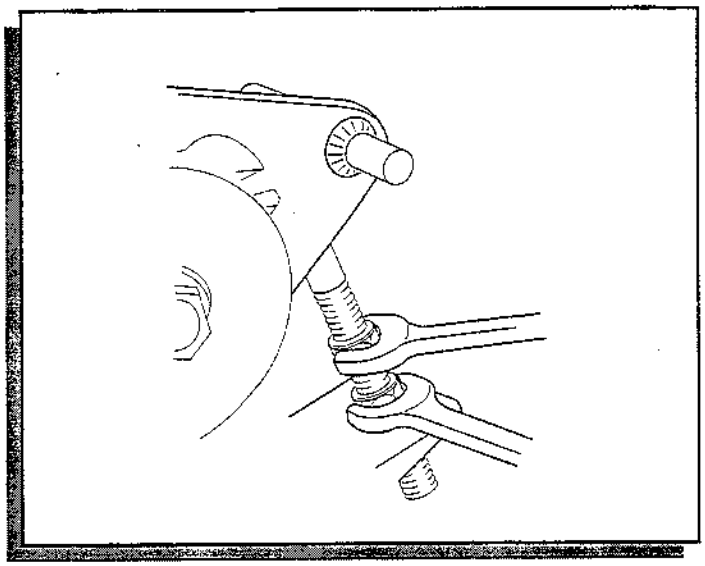


Fig. A-21 Adjusting the Belt tension

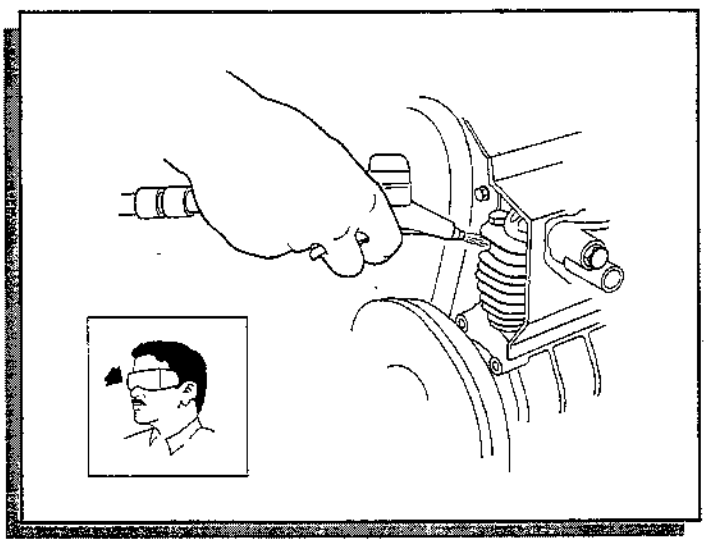


Fig. A-23 Cleaning the Cooling Fins

Using a 3/4" socket and open end wrench, tighten the starter/generator pivot bolt.

COOLING FINS

(See Fig. A-22 "Cleaning Air Intake" on page A-12)

(See Fig. A-23 "Cleaning the Cooling Fins" on page A-12)

Every 20 hours, check for a build up of debris in the air intake and cooling fins. Blow or brush out debris from these areas.

SPARK PLUGS

(See Fig. A-24 "Gapping the Spark Plug" on page A-13)

Tool List	Qty. Required
Spark plug wrench, 13/16"	1
Plug gauge, wire type	1

Using an appropriate 13/16" (2.1 cm) spark plug wrench, remove the spark plugs at 250-300 hours or annually and inspect. Clean and gap to .028-.030 (.71 - .76 mm). If a plug has been burned beyond .035 (.89 mm), it should be replaced.

Fouled spark plugs are indicated by a wet, black appearance. This could be caused by a dirty air filter element or other restrictions in the air intake system. Incorrectly adjusted valves, spark plug wires in poor condition or poor quality fuel could also contribute to the problem. Gap new spark plugs to .028 - .030 (.71 - .76 mm) (NGK P/N BP4ES). For vehicles requiring resistor plugs, use NGK P/N BPR4ES.

Tighten to 18 ft. lbs. (24.4 Nm) torque.

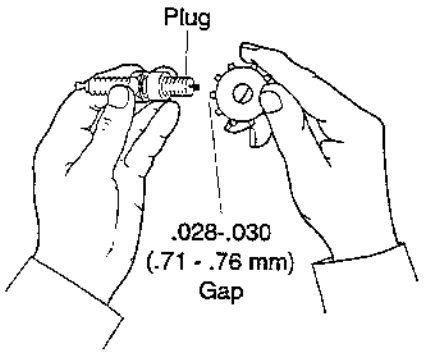


Fig. A-24 Gapping the Spark Plug

CAUTION

USE CARE NOT TO OVER TIGHTEN THE PLUG. OVER TIGHTENING CAN CAUSE DAMAGE TO THE ALUMINUM CYLINDER HEAD THREADS.

GENERAL PREVENTATIVE MAINTENANCE

WEEKLY, QUARTERLY, SEMI-ANNUAL AND ANNUAL service requirements are detailed in the 'Periodic Service Schedule'.

NOTE

Some maintenance items must be serviced more frequently on trucks used under severe driving conditions.

Daily Check List

After the vehicle has been put into service, it is recommended that the following items be checked daily. The driver can be a great asset to a proper maintenance program if he makes a point to look, listen and feel for an unusual situation. This practice can be a great help in solving many maintenance problems in the minor stages while they can be corrected by simple adjustments.

1. Perform the DAILY BRAKING PERFORMANCE TEST.

To determine the adequacy of the vehicles brake system, the following test should be performed daily:

Owner/Operator

The recommended way of performing the daily brake test and determining a vehicles braking performance is to

⚠ WARNING ⚠

ALL DRIVING BRAKE TESTS MUST BE DONE IN A SAFE LOCATION WITH REGARD FOR THE SAFETY OF ALL PERSONNEL.

latch the park brake at a COMMON POINT on a paved surface while traveling at maximum governed speed. The vehicle stopping location must be observed. If the vehicle stops in a significantly greater distance or pulls to one side, the vehicle should IMMEDIATELY be removed from service and inspected by a qualified mechanic.

Mechanic

The mechanic should perform a 'panic' stop on the suspect vehicle(s) by applying maximum force and travel to the brake pedal while traveling at full speed. He should observe if either of the rear wheels fails to 'lock up'. If one wheel fails to lock, it is reasonable to assume that a problem exists with the service brake system and the ANNUAL BRAKE MAINTENANCE (as described in the Operation and Service Manual) must be performed in its entirety. If both wheels lock, the parking (PARK) brake must be adjusted and the vehicle re-tested per the DAILY BRAKE TEST.

If the vehicle is to be used commercially, it is recommended that lists 2 and 3 also be followed.

2. INSPECT THE FOLLOWING:
   - Check the tires for cuts, wear and proper air pressure.
   - Be sure the engaged parking (PARK) brake will hold on a hill and when disengaged, does not drag or prevent the vehicle from rolling freely.
   - Ensure all switches are operating normally.
   - Listen for noises, such as rattles due to loose hardware, scraping sounds such as brakes dragging, unusual engine noises and be sensitive to abnormal performance.
   - Damaged or missing equipment.
   - Mechanical damage.
   - Torn seats.
   - Check the engine oil.
   - Check the fuel level and fill if required.

3. CLEAN THE VEHICLE
   - Wipe seats.
   - Clean floormat.
   - Remove trash from dash tray.
   - Visually check the appearance of the vehicle for dents, scratches and loose equipment.
   - Wash accumulated dirt from engine compartment and underbody.

NOTE

If the engine does not start or runs improperly after washing, remove the spark plug wires (by pulling the spark plug boots, NEVER the wires) and blow them dry. Reinstall the wires. Remove moisture from ignition coil by blowing across top.

TIRES

Tire condition should be inspected on a daily basis. Inflation pressures should be checked on a weekly basis when the tires are cool.

Tire inflation should be governed by the condition of the terrain, generally within a range of 18 - 22 psi (124 - 152 kPa). For outdoor applications with major use on grassy areas, the following should be considered. On hard turf, it is desirable to have a **slightly** higher inflation pressure. On very soft turf, a lower pressure prevents tires from cutting into the turf. **All tires** should have the same pressure for optimum handling characteristics. Be careful not to overinflate. Due to the low volume of these small tires, overinflation can occur in a matter of seconds. Be sure to install the valve dust cap after checking or inflating.

WEEKLY, QUARTERLY, SEMI-ANNUAL AND ANNUAL service requirements are detailed in the 'Periodic Service Schedule'.

CARE AND CLEANING OF THE VEHICLE

CAUTION

DO NOT USE ANY ABRASIVE OR VOLATILE SOLVENTS TO CLEAN PLASTIC PARTS.

It is important that proper techniques and cleaning materials be used.

Normal cleaning of vinyl seats and plastic or rubber trim requires the use of a mild soap solution applied with a sponge or soft brush and the subsequent removal of the material with a damp cloth.

Removal of oil, tar, asphalt, shoe polish, etc. will require the use of a commercially available vinyl/rubber cleaner.

The painted surfaces of the vehicle provide attractive appearance and durable protection. Frequent washing with lukewarm or cold water is the best method of preserving the painted surfaces.

Do not use hot water, strong soap or harsh chemical detergents.

Rubber parts should be cleaned with non-abrasive household cleaner.

Occasional cleaning and waxing with non-abrasive products designed for 'clear coat' automotive finishes will enhance the appearance and durability of the painted surfaces.

Corrosive materials used as fertilizers or for dust control can collect on the underbody of the vehicle. These materials could cause corrosion of underbody parts. It is recommended that the underbody be flushed occasionally with plain water. Thoroughly clean any areas where mud or other debris can collect. Sediment packed in closed areas should be loosened to ease its removal, taking care not to chip or otherwise damage paint.

WINDSHIELD (IF EQUIPPED)

Cleaning

Clean with lots of water and a clean cloth. Minor scratches may be removed using a commercial plastic polish.

Trailering

If the vehicle is to be transported on a trailer at highway speeds, it is recommended that the windshield be removed and the seat bottom secured. Always check that the vehicle and contents are adequately secured before trailering the vehicle.

TORQUE SPECIFICATIONS FOR UNSPECIFIED HARDWARE

ALL TORQUE FIGURES ARE IN FT.LBS.
Unless otherwise noted in the text, tighten all hardware in accordance with this chart

BOLT SIZE	1/4"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	3/4"	7/8"	1"
Grade 2	4	8	15	24	35	55	75	130	125	190
Grade 5	6	13	23	35	55	80	110	200	320	480

Fig. A-25 Torque Specifications

Generally, two grades of hardware are used in the vehicle. Grade 5 hardware can be identified by the three marks on the hexagonal head. Unmarked hardware is Grade 2.

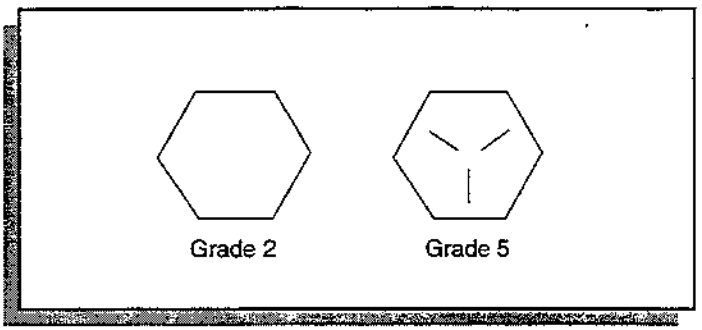


Fig. A-26 Bolt Grades

NOTE

The table above specifies 'lubricated' torque figures. Fasteners that are plated or lubricated when installed are considered 'wet' and require approximately 80% of the torque required for 'dry' fasteners.

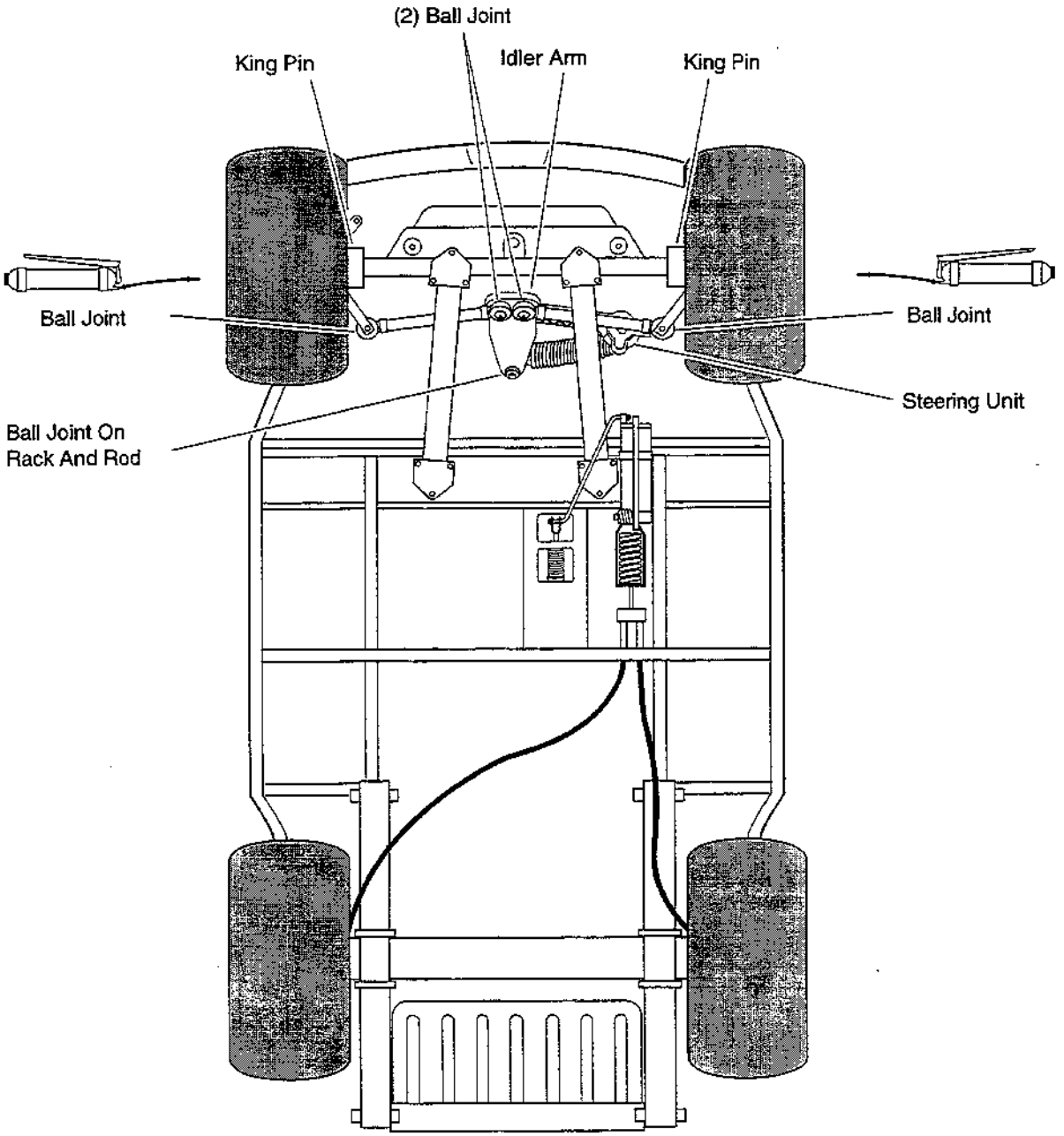


Fig. A-27 Lubrication Points

SYSTEM	DAILY	WEEKLY	MONTH 20 HRS	3 MONTH 50 HRS	SEMIANNUAL 125 HRS	ANNUAL 250-300 HRS
BRAKES						
Pedal	• Check for smooth operation and correct free travel					
Service Brake	• Check brake performance and adjust if required					
Parking Brake	• Check brake performance and adjust if required					
REVERSE WARNING DEVICE	• Check operation when direction selector is in reverse					
TIRES	• Examine for cuts, excessive wear and pressure					
WHEELS	• Check for bent rims, missing/loose lug nuts					
FUEL GAUGE	• Check for proper operation of fuel gauge (at each fueling). Check that fuel cap vent is free of dirt					
ENGINE OIL	• Check at each fueling. DO NOT OVERFILL					
BATTERY	♦ Clean with baking soda and water solution, 1/4 cup baking soda to 1 1/2 gallons water, rinse with clear water					
	• Check charge condition and connections to battery					
CONTROL LINKAGES						
Accelerator Cable	• Check for smooth movement - Do not lubricate cable					
Choke Cable	• Check for smooth movement and adjustment - Do not lubricate cable					
Carburetor Linkage	♦ Check attachment, adjust as required					
Direction Selector	♦ Check attachment, adjust as required					
COOLING FAN	• Check for buildup of foreign matter inside blower housing and cooling fins, clean if required					
ENGINE	• Check for unusual noise, vibration, acceleration, oil leaks					
STARTER/GENERATOR BELT	• Check for tension, wear, cracks					
STEERING ASSEMBLY	• Check for abnormal play, tightness of all hardware					
TIE RODS/LINKAGES	• Check for excessive play, bent components or loose connections					
WIRING	• Check all wiring for loose connections and broken/missing insulation					
FRONT AXLE	• Check for damage to axle and loose or missing hardware					
FRONT SHOCK ABSORBERS	• Check for oil leakage and loose fasteners					
FRONT SPRINGS	• Check for loose hardware, cracks at attachment points					
FRONT WHEEL ALIGNMENT	• Check if tire wear is unusual, align per Service Manual					
PARKING (PARK) BRAKE	• Check for bent/binding linkage rod and damage or wear to latch arm or catch bracket					
	♦ Lubricate, use light oil. DO NOT LUBRICATE CABLES OR BRAKE LATCH.					
REAR SHOCK ABSORBERS	• Check for oil leakage, loose mounting hardware					
ENGINE ELECTRICAL SYSTEM	• Check coil/spark plug wires for cracks/loose connections					
FUEL SYSTEM	• Check for leaks at tank cap, lines, filters, pump, carburetor Check fuel lines for cracks/deterioration					
THROTTLE/GOVERNOR LINKAGE	• Check operation and governed speed					

• Check ♦Clean, Adjust etc. ▲ Replace

Some maintenance items must be serviced more frequently on vehicles used under severe driving conditions.

Fig. A-28 Periodic Service Schedule

SYSTEM	DAILY	WEEKLY	MONTH 20 HRS	3 MONTH 50 HRS	SEMIANNUAL 125 HRS	ANNUAL 250-300 HRS
BODY						♦ Clean body components and wax all painted surfaces
DIRECTION SELECTOR						♦ Check for wear and smooth movement (lubricate shaft with light oil if required)
SPINDLE PINS						• Check for excessive play and tightness of retaining nuts
						♦ Lubricate, use Shell Alvania EP-2
STEERING ASSEMBLY						♦ Lubricate linkage, use Shell Alvania EP-2
TIE RODS / LINKAGES						♦ Lubricate, use Shell Alvania EP-2
AIR CLEANER						• Check filter element, clean/replace as required
TRANSAXLE						• Check for unusual noise and mounting hardware
SERVICE BRAKES						♦ Clean and adjust per Service Manua
ENGINE OIL						▲ Replace, DO NOT OVER-FILL SAE 10W-30, 5W-30 or 10W-40, SF, SG, CC Oil
FRONT WHEEL BEARINGS						♦ Adjust, see Service Manual
						♦ Pack, use Shell Alvania® EP-2 multipurpose grease
FUEL FILTER						• Check for dirt buildup
						▲ Replace as required
MUFFLER / EXHAUST						• Check mounting hardware, leaks at head and muffler gaskets
OIL FILTER						♦ Clean in solvent (at oil change), replace 'O' ring if required
SPARK PLUGS						▲ Gap (replace if required) .028 - .030
TIMING BELT						• Check tension, signs of wear/damage
						▲ Replace only if worn or damaged
TRANSAXLE						• Check lubricant if oil seepage is evident, add rear axle lubricant as required
						▲ Replace after 5 years
VALVES						• Check cold at cam (intake/exhaust)
						▲ Adjust as required

• Check ♦Clean, Adjust etc. ▲ Replace

Some maintenance items must be serviced more frequently on vehicles used under severe driving conditions.

Fig. A-29 Periodic Service Schedule (cont.)

TABLE OF CONTENTS FOR SECTION 'B'

LIST OF ILLUSTRATIONS

Notes:

GENERAL

The following text is provided as recommended by part II of ANSI / GCMA Z130.1 - 1993. E-Z-GO as a member of the Golf Car Manufacturers Association (GCMA) strongly endorses the contents of this specification.

PART II

MAINTENANCE AND OPERATIONS

5. GENERAL SAFETY PRACTICES

5.1. Introduction

Like other machines, golf cars can cause injury if improperly used or maintained. This section contains broad safety practices recommended for safe golf car operations. Before operation, the controlling party should establish such additional specific safety practices as may be reasonably required for safe operations.

Experience has shown that golf cars which comply with the provisions stated in Part III of this standard are safe when properly operated in accordance with the safety and operation warnings affixed to every golf car. The safe operation is enhanced when the golf cars are operated within a specific set of operation instructions, safety rules and practices established to meet actual operating terrain and conditions.

The safety information contained in Part II is intended to provide the controlling party with basic safety information and to encourage the controlling party to implement a golf car safety program.

It is suggested and recommended that Part II be reprinted in the golf car manufacturer's operation and service manuals to encourage safe operations and practices at the controlling party's facility.

5.2. Safety Survey

The controlling party shall perform a safety survey periodically, and as conditions warrant to their premises, to identify areas where golf cars should not be operated and to identify possible hazards.

5.2.1. Steep Grade

In areas where steep grades exist, golf car operations should be restricted to the designated golf car pathways where possible, and shall be identified with a suitable warning giving the following information: "Warning, steep grade, descend slowly with one foot on brake."

5.2.2. Wet Areas

Wet grassy areas may cause a golf car to lose traction and may affect stability. Wet areas shall be chained or roped off to prevent golf car operations or be identified by a suitable warning not to operate golf cars in this area due to wet terrain.

5.2.3. Sharp Turns, Blind Corners, Bridge Approaches

Sharp turns, blind spots, bridge approaches and other potentially hazardous areas shall be either chained or roped off to prevent golf car operations or identified with a suitable warning to the operator of the nature of the hazard and stating the proper precautions to be taken to avoid the hazard.

5.2.4. Loose Terrain

Loose terrain may cause a golf car to lose traction and may affect stability. Areas of loose terrain should be repaired if possible, or chained or roped off to prevent golf car operation or identified by a suitable warning to operators not to operate golf cars in this area due to loose terrain or possible hazardous conditions.

5.2.5. Golf Car/Pedestrian Interference Areas

Areas where pedestrians and golf cars interfere shall be avoided whenever possible by rerouting the golf car traffic or the pedestrian traffic to eliminate the interference. If elimination of the interference is not possible or is highly impractical, signs shall be erected warning pedestrians of the golf car traffic and golf car operators of the pedestrian traffic and to drive slowly and use extreme caution.

6. MAINTENANCE

6.1. Introduction

6.1.1. Golf cars may become hazardous if maintenance is neglected or improperly performed. Therefore, maintenance facilities, trained personnel and procedures in accordance with the manufacturer's recommendations should be provided by the controlling party.

6.2. Preventive Maintenance

A regularly scheduled inspection and preventive maintenance program in accordance with the manufacturer's recommendations should be established. Such a pro-

gram will be a valuable tool in providing the golfing patron with a safe, properly operating golf car and thereby help to avoid accidents.

6.2.1. Personnel.

Only qualified, trained and authorized personnel shall be permitted to inspect, adjust and maintain golf cars.

6.2.2. Parts and Materials.

Only manufacturer's recommended replacement parts and materials shall be used.

6.2.3. Ventilation.

Maintenance and storage areas shall be properly ventilated to avoid fire hazards in accordance with applicable fire codes and ordinances.

6.2.3.1. Ventilation for gasoline powered golf cars shall be provided to remove flammable vapors, fumes and other flammable materials. Consult applicable fire codes for specific levels of ventilation.

6.2.3.2. Ventilation for electric powered golf cars shall be provided to remove the accumulation of flammable hydrogen gas emitted during the charging process. The amount of hydrogen gas emitted depends upon a number of factors such as the condition of the batteries, the output rate of the battery charger and the amount of time the batteries are on charge. Hydrogen emissions are generally considered to be in the area of 10 to 20 cubic liters per car per charge. Because of the highly volatile nature of hydrogen gas and its propensity to rise and accumulate at the ceiling in pockets, a minimum of 5 air changes per hour is recommended. The controlling party shall consult applicable fire and safety codes for the specific ventilation levels required as well as the use of explosion-proof electrical apparatus.

6.2.4. Maintenance Procedures.

All maintenance shall be performed in accordance with the manufacturer's recommended maintenance procedures as outlined in the manufacturer's operation and service manuals.

6.2.5. Maintenance Safety Procedures

All maintenance shall be performed in accordance with the manufacturer's recommended safety procedures as outlined in the manufacturer's operation and service manuals. The following list of recommended safety procedures are general in nature and in no way supersede the manufacturer's specific instructions.

6.2.5.1. Follow manufacturer's instructions for immobilizing golf car before beginning any maintenance.

6.2.5.2. Block chassis before working underneath golf car.

6.2.5.3. Before disconnecting any part of the fuel system, drain the system and turn all shut off valves to the 'OFF' position to prevent leakage or accumulation of flammable fuels in the work area.

6.2.5.4. Avoid fire hazards and have fire protection equipment available.

6.2.5.5. Before performing any maintenance on an electric golf car, disable the electrical system in accordance with the manufacturer's instructions.

6.2.5.6. Use only properly insulated tools when working on electrically powered golf cars or around batteries.

6.2.5.7. Brakes, steering mechanisms, warning devices, governors and all other safety devices shall be inspected and maintained in a safe and proper operating condition and shall not be modified as supplied by the manufacturer.

6.2.5.8. After each maintenance or repair, the golf car shall be driven by qualified, trained and authorized personnel to ensure proper operation and adjustment.

6.2.5.9. Driving golf car to check for proper operation and adjustment after repair shall be performed in an area that is free of vehicular and pedestrian traffic.

6.2.5.10. Record all maintenance performed in a maintenance record log by date, name of person performing maintenance and type of maintenance. Controlling party management should periodically inspect maintenance log to ensure currency and completeness of entries.

6.2.5.11. Provide operator comment cards to assist in identifying non-periodic maintenance needs for specific golf cars.

6.2.6. The controlling party shall maintain in a legible condition all nameplates, warnings and instructions which are supplied by the manufacturer.

6.2.7. The controlling party shall not perform any modification or addition which affects capacity or safe operation, or make any change not in accordance with the owner's manual without the manufacturer's prior written authorization. Where authorized modifications have been made, the controlling party shall ensure that capacity, operation, warning and maintenance instruction plates, tags, or decals are changed accordingly.

6.2.8. As required under paragraphs 6.2.6 and 6.2.7, the manufacturer shall be contacted to secure new nameplates, warnings or instructions, which shall then be affixed in their proper place on the golf car.

7. FUELS HANDLING AND STORAGE/ BATTERY CHARGING

7.1. The controlling party shall supervise the storage and handling of liquid fuels in accordance with applicable fire and safety requirements.

7.2. Storage and handling of liquefied petroleum gas fuels shall be in accordance with American Gas Association recommendations and applicable fire safety requirements.

7.3. The controlling party shall require battery changing and charging facilities and procedures to be in accordance with applicable ordinances or regulations (also see paragraph 6.2.3.2).

7.4. The controlling party shall periodically inspect facilities and review procedures to be certain that the procedures in paragraphs 6.2.3.2 and 7.3 are being followed.

8. OPERATING SAFETY RULES AND PRACTICES

8.1. Operator Qualifications

8.1.1. Only authorized persons shall be allowed to operate golf cars. It is recommended that no persons be allowed to operate golf cars except those persons who posses a valid motor vehicle driver's license.

8.1.2. The controlling party shall display the operation and safety instructions as recommended by the golf car manufacturers and the golf course safety rules in a conspicuous place near the golf car rental area or golf car pick-up area. It is also recommended, as with all motor vehicles, that the warning "Do not operate golf cars when under the influence of alcohol or drugs." be posted in a conspicuous location.

GENERAL MAINTENANCE

When any maintenance procedure or inspection is performed, it is important that care be exercised to insure the safety of the technician/mechanic or bystanders and to prevent damage to the vehicle.

Always read and observe all of the NOTES, **CAUTIONS** and **WARNINGS** that are detailed in this manual.

Always read and understand the relevant manual section before attempting any inspection or service.

IMPORTANT SAFETY WARNING

In any product, components will eventually fail to perform properly as the result of normal use, age, wear or abuse.

It is virtually impossible to anticipate all possible component failures or the manner in which each component may fail.

Be aware that a vehicle requiring repair indicates that the vehicle is no longer functioning as designed and therefore may be considered potentially hazardous. Use extreme care when working on any vehicle. When diagnosing, removing or replacing any components that are not operating correctly, take the time to consider the safety ramifications if the component should move unexpectedly.

Some components are heavy, spring loaded, highly corrosive, explosive or may produce high amperage or reach high temperatures. Gasoline, carbon monoxide, battery acid and hydrogen gas could result in serious bodily injury to the technician/mechanic and bystanders if not treated with utmost caution. Be careful not to place hands, face, feet or body in a location that could expose them to injury should an unforeseen situation occur.

NOTES, CAUTIONS and WARNINGS

Throughout this manual, the following NOTES, **CAUTIONS** and **WARNINGS** are used. For the protection of all personnel and the vehicle, be aware of and observe the following:

NOTE

A Note indicates a condition that should be observed.

CAUTION

A CAUTION INDICATES A CONDITION THAT MAY RESULT IN DAMAGE TO THE VEHICLE.

⚠ WARNING ⚠

A WARNING INDICATES A HAZARDOUS CONDITION WHICH COULD RESULT IN SERIOUS INJURY OR DEATH.

BEFORE SERVICING THE VEHICLE

Before attempting to inspect or service a vehicle, be sure to read and understand the following warnings:

⚠ WARNING ⚠

BEFORE WORKING ON THE VEHICLE:

REMOVE ALL JEWELRY (WATCHES, RINGS ETC.)

BE SURE THAT NO LOOSE CLOTHING OR HAIR CAN BECOME CAUGHT IN THE MOVING PARTS OF THE POWERTRAIN.

USE CARE NOT TO CONTACT HOT OBJECTS.

BEFORE ATTEMPTING TO OPERATE OR ADJUST THE POWERTRAIN, THE REAR OF THE VEHICLE MUST BE RAISED AND SUPPORTED ON JACK STANDS.

WEAR O.S.H.A. APPROVED CLOTHING AND EYE PROTECTION WHEN WORKING ON ANYTHING THAT COULD EXPOSE THE BODY OR EYES TO POTENTIAL INJURY. IN PARTICULAR, USE CARE WHEN WORKING WITH OR AROUND BATTERIES, COMPRESSED AIR OR SOLVENTS.

ALWAYS TURN THE KEY SWITCH TO 'OFF' AND REMOVE THE KEY BEFORE DISCONNECTING A LIVE CIRCUIT.

WHEN CONNECTING BATTERY CABLES, PAY PARTICULAR ATTENTION TO THE POLARITY OF THE BATTERY TERMINALS. NEVER CONFUSE THE POSITIVE AND NEGATIVE CABLES

SET THE 'PARK' BRAKE BEFORE PERFORMING ANY WORK ON THE VEHICLE.

EXHAUST GAS (CARBON MONOXIDE) IS DEADLY.

Additional Warnings

Before working on an engine, be sure to read and understand the following warnings that pertain to engine repair or maintenance:

⚠ WARNING ⚠

KEEP ALL SMOKING MATERIALS, OPEN FLAME OR SPARKS AWAY FROM GASOLINE OR BATTERIES.

IF REPAIRS ARE TO BE MADE THAT WILL REQUIRE WELDING OR CUTTING, THE BATTERY AND FUEL TANK MUST BE REMOVED AND THE FUEL SYSTEM DRAINED.

NEVER WORK AROUND OR OPERATE A VEHICLE IN AN ENVIRONMENT THAT DOES NOT VENTILATE EXHAUST GASES FROM THE AREA.

CARBON MONOXIDE IS AN ODORLESS GAS THAT IS FORMED AS A NATURAL PART OF THE INCOMPLETE COMBUSTION OF HYDROCARBON FUELS. CARBON MONOXIDE IS A DANGEROUS GAS THAT CAN CAUSE UNCONSCIOUSNESS AND IS POTENTIALLY LETHAL.

THE FOLLOWING ARE SYMPTOMS OF CARBON MONOXIDE INHALATION:

- **DIZZINESS**
- **VOMITING**
- **INTENSE HEADACHE**
- **MUSCULAR TWITCHING**
- **WEAKNESS AND SLEEPINESS**
- **THROBBING IN THE TEMPLES**

IF EXPERIENCING ANY OF THESE SYMPTOMS, GET FRESH AIR IMMEDIATELY.

NEVER OPERATE THE STARTER WITH THE SPARK PLUGS REMOVED UNLESS THE IGNITION SYSTEM HAS BEEN DISABLED AND THE ENGINE/ EXHAUST ARE COLD. FUEL EXPELLED FROM THE CYLINDERS COULD BE IGNITED BY THE IGNITION SYSTEM OR THE HOT EXHAUST SYSTEM.

NEVER TEST THE IGNITION SYSTEM WITHOUT EITHER CONNECTING THE SPARK PLUG LEAD TO A TESTER OR SPARE GROUNDED SPARK PLUG.

NEVER WORK ON AN ENGINE THAT IT HOT.

⚠ WARNING ⚠

IF THE SPARK FUNCTION IS TO BE OBSERVED AT THE SPARK PLUG, BE SURE TO INSTALL A SPARE SPARK PLUG INTO THE OPEN CYLINDER BEFORE OPERATING THE STARTER.

NEVER TEST THE FUNCTION OF A FUEL PUMP IN THE VICINITY OF A HOT ENGINE OR OTHER SOURCE OF FLAME OR COMBUSTION.

NEVER SWITCH THE HOSES TO AND FROM THE FUEL PUMP. VERIFY THAT THE CARBURETOR AND PULSE LINES ARE CORRECTLY INSTALLED BEFORE STARTING THE ENGINE.

Starting a Vehicle with a Discharged Battery

⚠ WARNING ⚠

DO NOT ATTEMPT TO 'JUMP' START A VEHICLE FROM ANOTHER VEHICLE. THE ENGINE WILL ONLY START IN THE FORWARD OR REVERSE DIRECTIONS.

The vehicle is equipped with a starter/generator. When starting the engine, the starter/generator functions as a starter; however once the engine has started it functions as a generator.

With the limited running times associated with golf car or similar applications, the generator is designed to ***maintain*** the state of charge of the battery. The generator is ***not*** designed to charge a discharged battery.

Jump starting is not practical since the engine will only operate with forward or reverse selected and the engine stops when the accelerator pedal is released.

⚠ WARNING ⚠

ALWAYS FOLLOW THE DIRECTIONS PROVIDED WITH THE CHARGER.

If the vehicle battery becomes discharged, it must be recharged using a 12V charger that is rated at 10 amps or less.

Battery Removal

Tool List	Qty. Required
Insulated wrench, 1/2"	1
Socket, 1/2", 3/8" drive	1
Extension, 12", 3/8" drive	1
Ratchet, 3/8" drive	1
Battery carrier	1

NOTE

In the following text, there are references to removing/installing bolts etc. Additional hardware (nuts, washers etc.) that are removed must always be installed in their original positions unless otherwise specified. Non-specified torques are as shown in the table contained in Section "A".

⚠ WARNING ⚠

ALWAYS USE INSULATED WRENCHES WHEN WORKING ON BATTERY CONNECTIONS. DO NOT ALLOW WRENCHES TO CONTACT METAL BODY COMPONENTS.

At the battery, remove hardware from the negative (-) cable before removing the positive (+) cable. Remove the bolt from the battery hold down and remove the battery.

Installation is in the reverse order of removal. **Connect negative (-) battery cable last.**

Be sure to remove all corrosion from terminals and hardware. After installing battery, coat terminals with commercially available terminal protectorate.

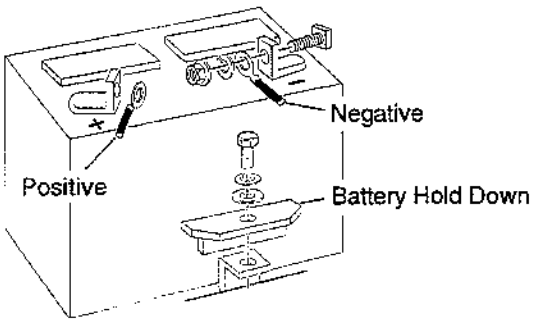


Fig. B-1 Battery Removal

LIFTING THE VEHICLE

(See Fig. B-2 "Lifting the Vehicle" on page B-7)

Some servicing operations may require that the rear wheels or the entire vehicle be raised.

Tool List	Qty. Required
Floor jack	1
Jack stands	2
Chocks	4

⚠ WARNING ⚠

ANY SERVICING REQUIRING ADJUSTMENTS TO BE MADE TO THE POWERTRAIN WHILE THE ENGINE IS RUNNING MUST BE MADE WITH BOTH DRIVE WHEELS RAISED.

CAUTION

WHEN LIFTING THE VEHICLE; POSITION JACKS AND JACK STANDS ONLY ON THE AREAS INDICATED. **NEVER** LIFT OR SUPPORT THE VEHICLE ON THE ENGINE FRAME COMPONENTS.

⚠ WARNING ⚠

BE SURE THE VEHICLE IS ON A FIRM AND LEVEL SURFACE. NEVER GET UNDER A VEHICLE WHILE IT IS SUPPORTED BY A JACK. USE SAFETY STANDS AND TEST THE STABILITY OF THE VEHICLE ON THE STANDS. ALWAYS PLACE CHOCKS IN FRONT AND BEHIND THE WHEELS NOT TO BE RAISED. USE EXTREME CARE SINCE THE VEHICLE IS EXTREMELY UNSTABLE DURING THE LIFTING PROCESS.

Install chocks in front and behind each front wheel. Center the jack under the rear bumper. Raise the vehicle and locate a jack stand under the outer end of each rear axle.

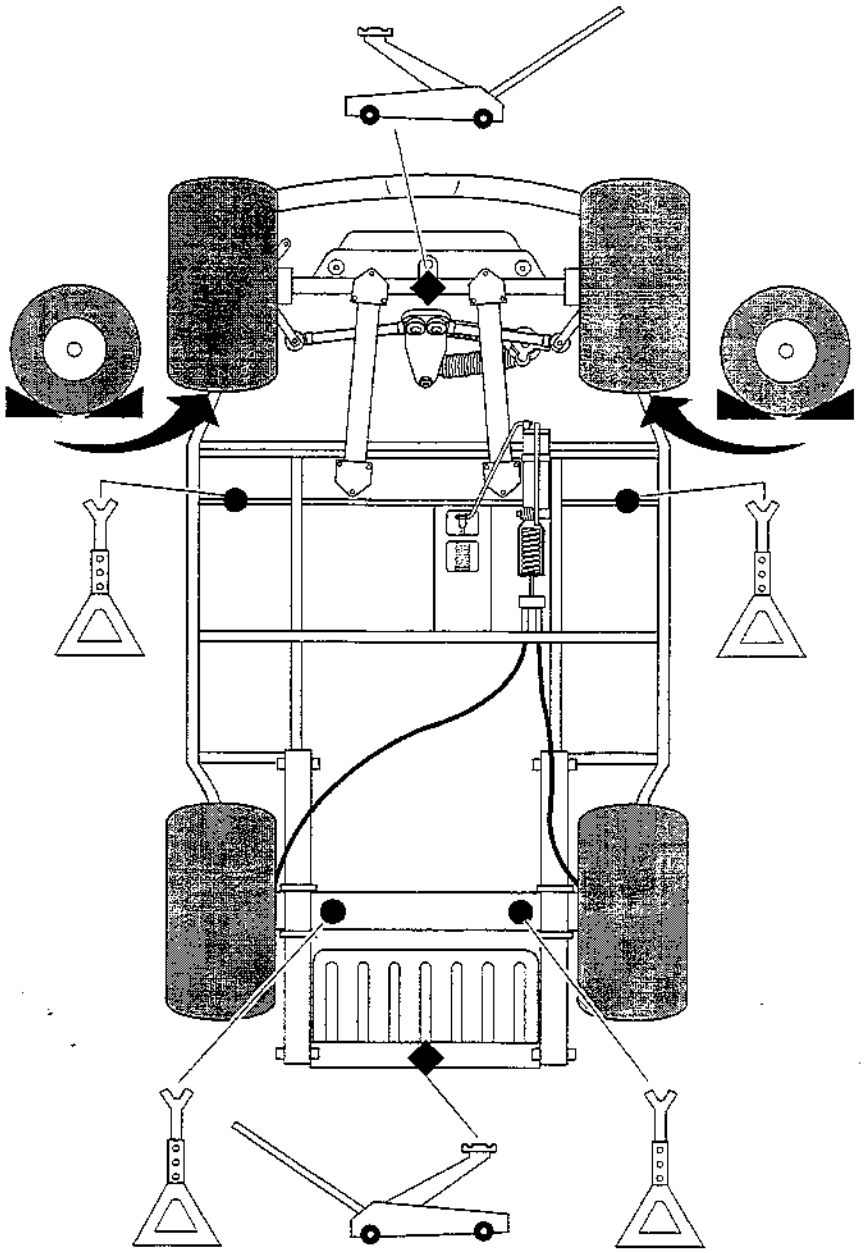
Lower the jack and test the stability of the vehicle on the two jack stands.

Place the jack at the center of the front axle. Raise the vehicle and position jack stands under the frame crossmember as indicated.

Lower the jack and test the stability of the vehicle on the four jack stands.

If only the front or rear of the vehicle is to be raised, place the chocks in front and behind each wheel that is not to be raised in order to stabilize the vehicle.

Lower the vehicle by reversing the lifting sequence.



View from underside of vehicle

Fig. B-2 Lifting the Vehicle

Notes:

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SECTION TITLE **PAGE NO.**

LIST OF ILLUSTRATIONS

Notes:

NOTE

*This section contains references to components that may be applicable to **either** gasoline or electric vehicles and may not be appropriate to both.*

BODY

NOTE

In the following text, there are references to removing/installing bolts etc. Additional hardware (nuts, washers etc.) that are removed must always be installed in their original positions unless otherwise specified. Non-specified torques are as shown in the table in Section A.

General

(See Fig. C-1 "Drill Out Metal Rivet" on page C-1)

(See Fig. C-2 "Drive Rivet Removal" on page C-1)

(See Fig. C-3 "Removing 'Christmas Tree' Fasteners" on page C-1)

⚠ WARNING ⚠

BATTERIES SHOULD ALWAYS BE REMOVED BEFORE ANY SERVICING THAT COULD RESULT IN SPARKS BEING GENERATED. THE FUEL TANK MUST ALWAYS BE PROTECTED TO PREVENT IT BEING PUNCTURED BY A DRILL BIT.

In general, body component replacement can be accomplished with a minimum of specialized tools. Most body components are held in place with conventional removable hardware (nuts, bolts, washers and screws). Some components are mounted with 'pop' rivets which require that the rivet head be removed in order to push out the shank of the rivet. The rivet head is easily removed by drilling into the head with a ***sharp*** drill bit that is ***slightly*** larger than the shank of the rivet. Care must be exercised when drilling to prevent the drill from being forced through the plastic body components where it could damage components located immediately behind the rivet. The best way to prevent this occurring is to use a sharp drill bit that requires very little pressure to cut successfully and to place a piece of protective sheet metal between the surface being drilled and components directly behind it.

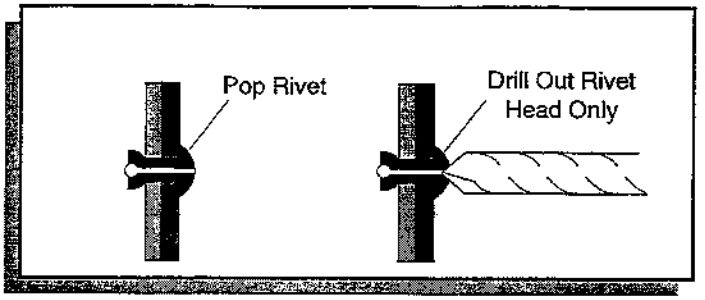

Fig. C-1 Drill Out Metal Rivet

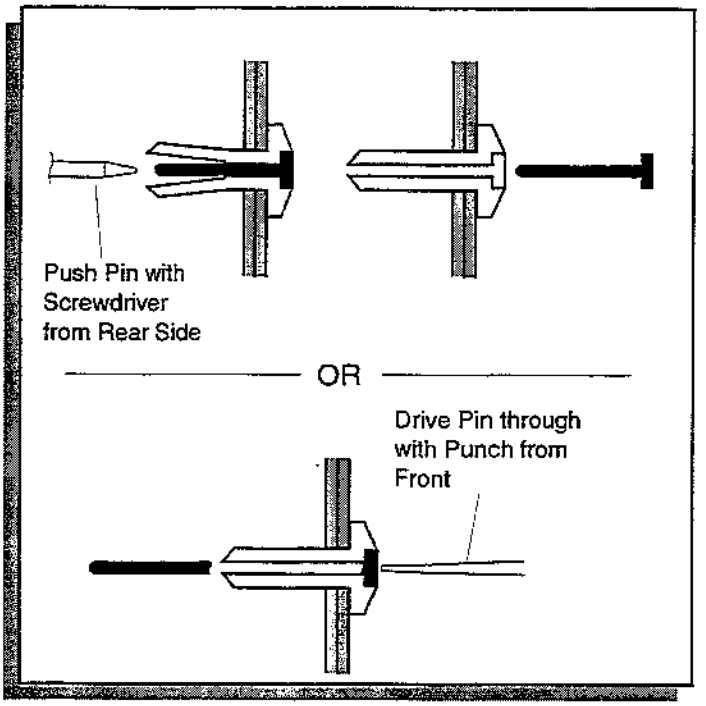

Fig. C-2 Drive Rivet Removal

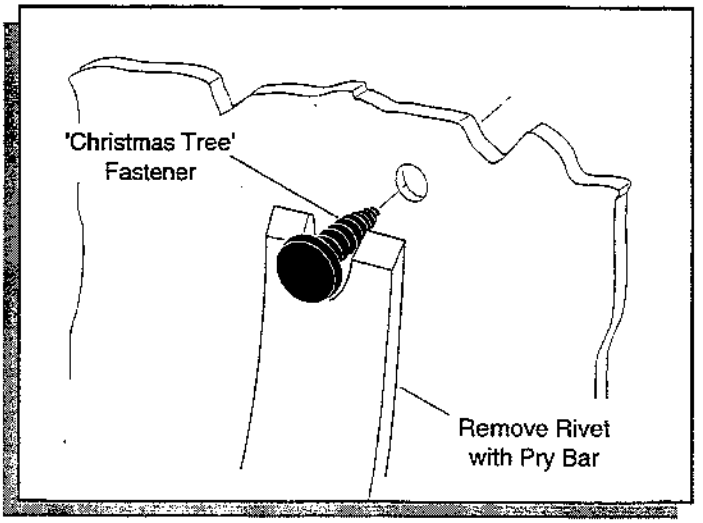

Fig. C-3 Removing 'Christmas Tree' Fasteners

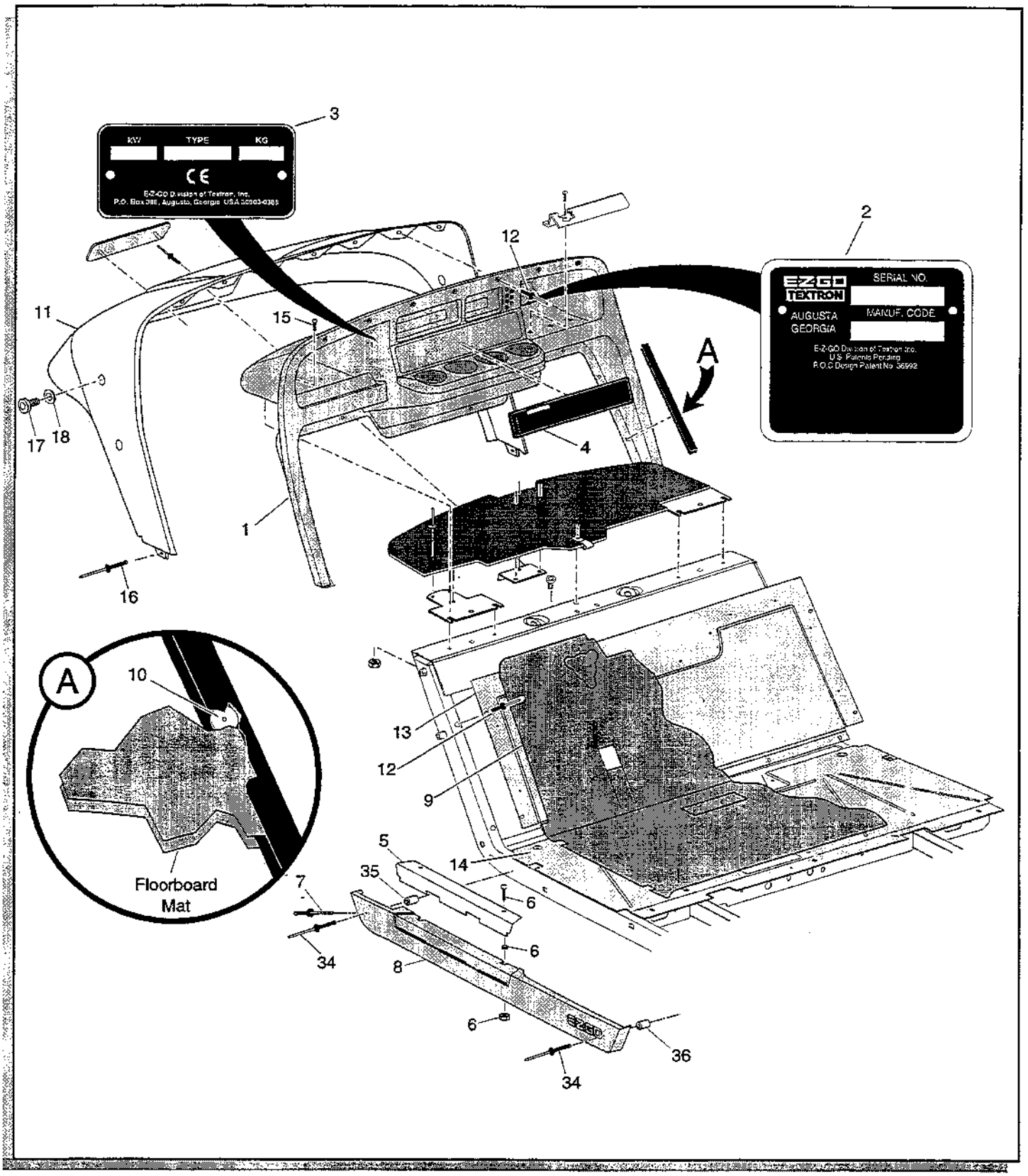

Fig. C-4 Body Components (Front)

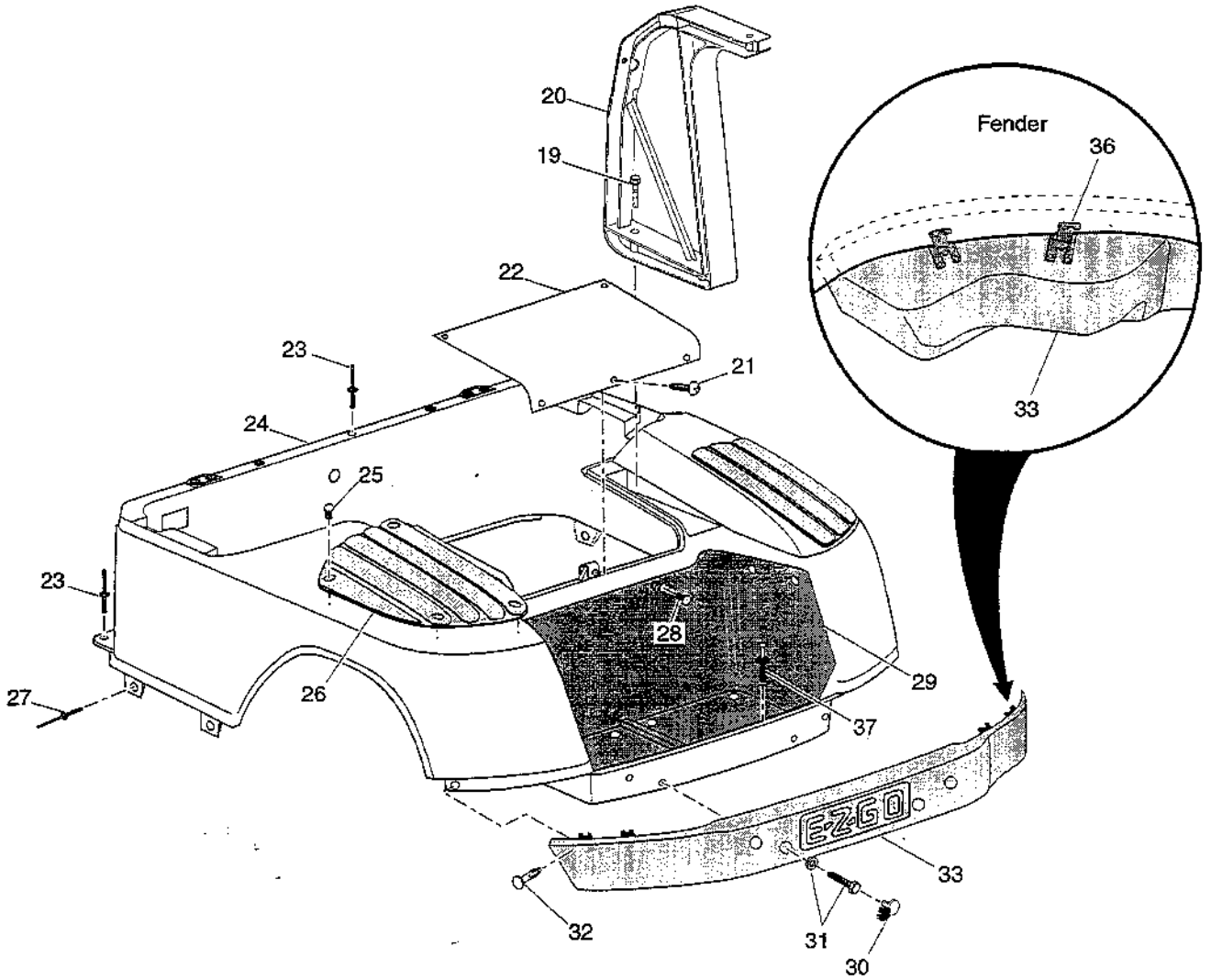

Fig. C-5 Body Components (Rear)

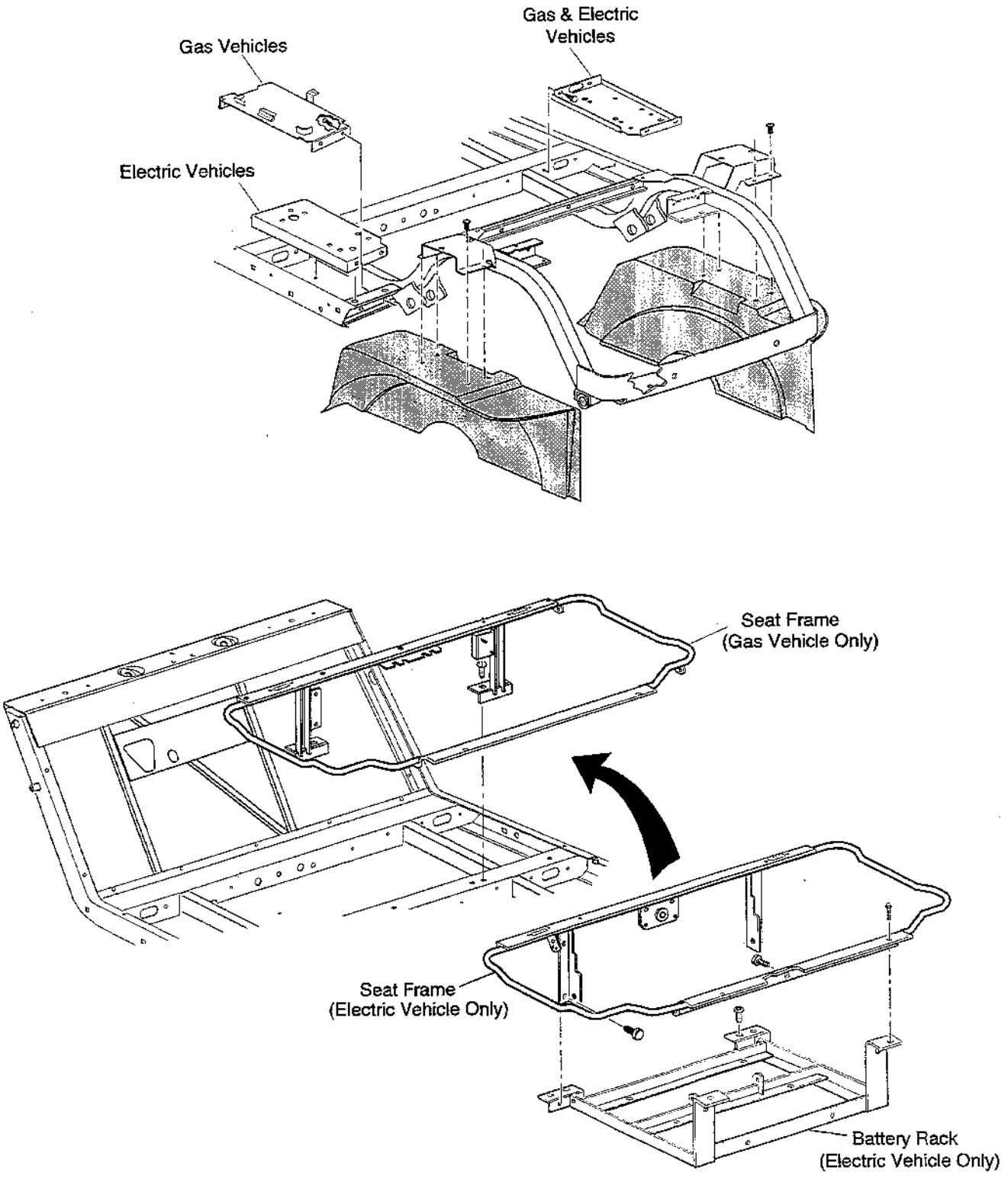

Fig. C-6 Electric and Gasoline Body Component Differences

Body Component Differences

(See Fig. C-6 "Electric and Gasoline Body Component Differences" on page C-4)

Refer to Fig. C-6 and note the differences between the electric and gasoline vehicles.

The seat support frames differ between the electric and gasoline vehicles.

The battery rack is added to the electric vehicle only.

Sound insulation foam is used around the trunk lid and behind the front area of the rear body panel on the gasoline vehicle only (not illustrated).

Splash panels differ. The electric vehicle uses the same panel on both sides but installs one with the flanges up and the other with the flanges facing down.

Be sure to consult the Service Parts Manual for specific part numbers and applications.

Instrument Panel Removal/Installation

(See Fig. C-4 "Body Components (Front)" on page C-2)

NOTE

If the instrument panel is to be replaced, the serial number plate and CE plate must be removed from the old instrument panel and reinstalled on the replacement panel.

Tool List	Qty. Required
Electric/air drill	1
Drill bit, 7/32"	1
Socket, 3/8", 3/8" drive	1
Ratchet, 3/8" drive	1
Rivet gun	1
Punch	1
Phillips Screwdriver	1
Small pry bar	1
Socket, 7/16", 1/4" drive	1
Ratchet, 1/4" drive	1

NOTE

The instrument panel may be removed without removing the cowl or may be removed as part of the cowl.

If the instrument panel (1) is to be replaced, the serial number plate (2) and CE plate (3) must be removed from the old instrument panel and reinstalled on the replacement panel. When installing a replacement instrument panel, a new console safety label (4) **MUST** be ordered and placed on the new instrument panel. When ordering a replacement instrument panel, provide vehicle serial number to the E-Z-GO Service Parts Representative and they will provide the correct part number for the safety label.

⚠ WARNING ⚠

TO PREVENT THE POSSIBILITY OF INJURY DUE TO LACK OF VEHICLE INFORMATION, THE CORRECT SAFETY LABEL MUST BE ON THE INSTRUMENT PANEL AT ALL TIMES.

Remove the rocker panel sill plates (5) by removing the hardware (6) securing them to the frame.

Remove the rivet (7) at the front edge of the rocker panel (8). Remove the rivets (34) along the side of the rocker panel. Pull the rocker panel away from the vehicle frame which will release the spacers (35,36) securing the rocker panel to the frame. Be sure to note the location of each length of spacer.

Pull the front of the floor mat (9) up to expose the rivets (10) that secure the instrument panel (1) and cowl (11) to the floor. (See Detail A.) Drill out the rivets (12) located in the floor panels (13,14), and across the top of the instrument panel.

Remove the four screws (15) located within the instrument panel pockets.

The instrument panel may now be pulled away from the cowl by 'rotating' it around the steering column.

Reassembly is the reverse order of disassembly and will require new rivets to be installed.

Cowl Removal/Installation

(See Fig. C-4 "Body Components (Front)" on page C-2)

Tool List	Qty. Required
Electric/air drill	1
Drill bit, 7/32"	1
Socket, 3/8", 3/8" drive	1
Ratchet, 3/8" drive	1
Rivet gun	1
Punch	1

Phillips screwdriver 1
Small pry bar 1
Socket, 7/16", 1/4" drive 1
Ratchet, 1/4" drive 1
Duct tape 1
Allen key, 3/16" 1
Allen key, 7/32" 1

NOTE

If the cowl is to be removed, it is recommended that the instrument panel be left in place until the entire cowl and instrument panel has been removed as an assembly.

Remove the rocker panel sill plates (5) by removing the hardware (6) securing them to the frame.

Remove the rivet (7) at the front edge of the rocker panel (8). Remove the rivets (34) along the side of the rocker panel. Pull the rocker panel away from the vehicle frame which will release the spacers (35,36) securing the rocker panel to the frame. Be sure to note the location of each length of spacer.

Pull the front of the floor mat (9) up to expose the rivets (10) that secure the instrument panel (1) and cowl (11) to the floor. (See Detail A.) Drill out the rivets (12) located in the upper floor panel (13).

Drill out the rivets (16) securing the sides of the cowl to the frame.

Remove the four screws (15) located within the instrument panel pockets.

Remove the bolts (17) and washers (18) from the sides of the cowl and lift the cowl assembly from the vehicle.

Reassembly is the reverse order of disassembly except that the instrument panel should be riveted to the cowl before assembly to the vehicle. The bolts (17) and washers (18) reinstalled into the cowl should be tightened to 8 - 12 ft. lbs. The bottom of the instrument panel should be temporarily held in place with duct tape until the entire assembly has been riveted in place.

Rear Body Removal/Installation

(See Fig. C-4 "Body Components (Front)" on page C-2)

(See Fig. C-5 "Body Components (Rear)" on page C-3)

Tool List **Qty. Required**

Electric/air drill 1
Drill bit, 7/32" 1
Drill bit, 1/4" 1
Socket, 9/16", deepwell, 3/8" drive 1
Socket, 3/8", 3/8" drive 1
Ratchet, 3/8" drive 1
Rivet gun 1
Punch 1
Phillips Screwdriver 1
Small pry bar 1
Socket, 7/16", 1/4" drive 1
Ratchet, 1/4" drive 1
Duct tape 1
Allen key, 3/16" 1

⚠ WARNING ⚠

IN ELECTRIC VEHICLES, IN ORDER TO ELIMINATE THE POSSIBILITY OF BATTERY EXPLOSION RESULTING FROM SPARKS CREATED BY VARIOUS TOOLS, THE BATTERIES MUST BE REMOVED BEFORE ANY REPAIRS TO THE BODY ARE UNDERTAKEN.

Remove the rocker panel sill plates (5) by removing the hardware (6) securing them to the frame.

Remove the rivet (7) at the front edge of the rocker panel (8). Remove the rivets (34) along the side of the rocker panel. Pull the rocker panel away from the vehicle frame which will release the spacers (35,36) securing the rocker panel to the frame. Be sure to note the location of each length of spacer.

NOTE

To avoid damage to the plastic body component, remove or install the seat support brackets by sliding to the open end of the molded channel. Do not force the seat support brackets into or out of the channels from above. (See Fig. C-5)

Remove the four bolts (19) that secure the seat supports (20) to the vehicle frame.

Remove the rivets (32) located at each end of the bumper securing the bumper to the body panel.

If the trunk lid is to be reused, remove the hardware (21) securing the trunk lid (22) to the body panel. Remove the trunk lid.

Remove the rivets (37) that secure the floor of the bag-well area to the frame underneath.

At the front of the rear body panel, remove the rivets (23) securing the body panel (24) to the frame and floorboard area. Drill out the rivets (25) to remove the scuff guards (26). Drill out the heads of the large headed rivets (27) that secure the bottom of the body panel to the side of the vehicle. Remove body panel.

⚠ WARNING ⚠

IT IS IMPORTANT TO USE A SHARP DRILL BIT WHEN REMOVING THE RIVETS ON THE PASSENGER SIDE OF THE GAS POWERED VEHICLE. EXTREME CARE MUST BE USED WHEN DRILLING OUT THE RIVETS LOCATED IN THE FRONT OF THE BODY PANEL AND THE BOTTOM SIDE OF THE BODY PANEL. EXCESSIVE PRESSURE COULD RESULT IN THE DRILL BIT BEING FORCED THROUGH THE BODY PANEL AND PENETRATING THE FUEL TANK. AS EXTRA PROTECTION, IT IS RECOMMENDED THAT A PROTECTIVE PIECE OF SHEET METAL BE PLACED BETWEEN THE FUEL TANK AND THE RIVET. USE OF A DRILL DEPTH STOP WILL PROVIDE ADDITIONAL PROTECTION.

Body Panel Installation

(See Fig. C-5 "Body Components (Rear)" on page C-3)

Installation of rear body panel are in the reverse order of disassembly using new rivets. Install the bolts (19) into the seat supports (20) and tighten to 21 - 25 ft. lbs.

Sound Insulation Foam Installation

On gasoline vehicles, install sound insulation foam (available through E-Z-GO Service Parts Department-check Service Parts manual for part number) behind the front panel of the body panel and underneath the trunklid. Pull backing off foam to expose adhesive surface. Align and place on dust free surface.

Fender Scuffguard Replacement

(See Fig. C-5 "Body Components (Rear)" on page C-3)

Remove the rivets (25) securing the scuffguard (26) to the rear body panel. Align holes in replacement scuffguard with existing holes in fender of body panel. Install using new rivets.

Bagwell Replacement

(See Fig. C-5 "Body Components (Rear)" on page C-3)

Remove the rivets (28 and 37) securing the bagwell (29) to the rear body panel. Install replacement bagwell with new rivets.

Rear Bumper Removal

(See Fig. C-5 "Body Components (Rear)" on page C-3)

Remove the plastic snap fasteners (32) located at each end of the rear bumper (33). Carefully remove the plugs (30) with a screwdriver. Remove the shoulder bolts and washers (31) underneath the plugs. Pull the rear bumper downward to disengage bumper clips (36).

Rear Bumper Installation

(See Fig. C-5 "Body Components (Rear)" on page C-3)

Engage the top of bumper with the underside of the fenders. Push bumper upward as fender slides between the bumper clips and the bumper. Push plastic snap fastener into the holes at each end of the bumper and through the fender. Insert shoulder bolts with washers and tighten to 9 - 12 ft. lbs. torque. Replace the plugs.

Front Shield Replacement

(See Fig. C-7 "Front Shield Replacement" on page C-7)

The front shield (38) does not need to be removed to replace any other body components. If the front shield is damaged, remove hardware (39) securing the front shield and brace (40) to the frame. Install replacement shield in the reverse order of disassembly.

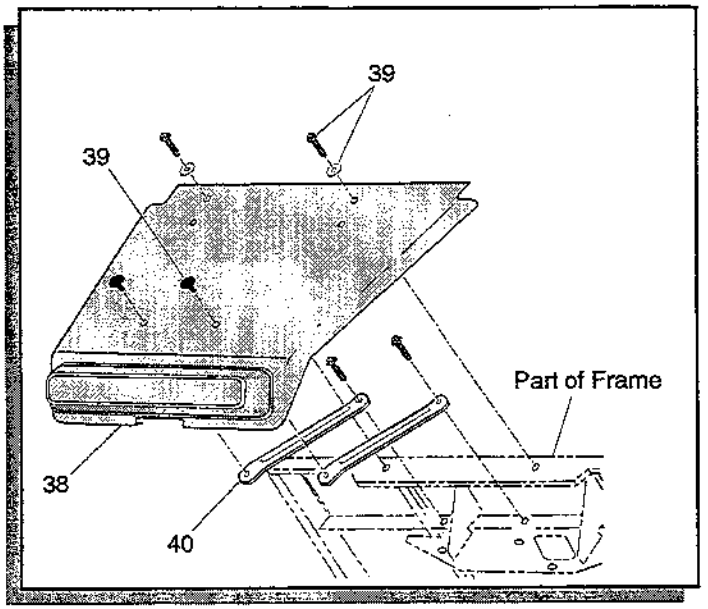

Fig. C-7 Front Shield Replacement

Rocker Panel Replacement

Remove the rocker panel sill plates (5) by removing the hardware (6) securing them to the frame.

Remove the rivet (7) at the front edge of the rocker panel (8). Remove the rivets (34) along the side of the rocker panel. Pull the rocker panel away from the vehicle frame which will release the spacers (35,36) securing the rocker panel to the frame. Be sure to note the location of each length of spacer.

Align the replacement rocker panel with spacers in place and install new rivets.

Replace the rocker panel sill plate in reverse order of disassembly.

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LIST OF ILLUSTRATIONS

Notes:

WHEEL AND TIRE SERVICE

Tools List	Qty. Required
Lug wrench, 3/4" end	1
Impact socket, 3/4", 1/2" drive	1
Impact wrench, 1/2" drive	1
Torque wrench, 1/2" drive, ft. lbs.	1

Tire Service

The vehicle is fitted with low pressure tubeless tires mounted on one piece rims.

In general, the most cost effective way to repair a flat tire that is the result of a puncture in the tread portion of the tire, is to use a commercial tire plug.

NOTE

Tire plug tools and plugs are available at most automotive parts outlets and have the advantage of not requiring that the tire be removed from the wheel.

Should a tire repair be necessary, proceed as follows: If the tire is flat, remove the wheel and inflate the tire to the maximum recommended pressure for the tire. Immerse the tire in water to locate the leak and mark with chalk. Insert tire plug in accordance with manufacturer's specifications.

The decision to remove a worn or non repairable tire from its wheel will vary from location to location.

The minimal cost differential between the cost of a tire alone versus a wheel and tire assembly, is offset by the labor and equipment costs required to replace the tire alone. Some locations may chose to accumulate a number of wheel and tire assemblies and have a local tire outlet replace the worn/damaged tires, while other large locations may chose to purchase a tire mounting/demounting machine.

If the tire is to be removed or mounted, the tire changing machine manufacturer's recommendations must be followed in order to minimize the possibility of personal injury.

CAUTION

DO NOT OVERINFLATE TIRES. DUE TO THE LOW VOLUME OF THESE SMALL TIRES, OVERINFLATION CAN OCCUR IN A MATTER OF SECONDS.

Wheel Installation

(See Fig. D-1 "Wheels and Tires" on page D-2)

Install wheel on vehicle as shown. Inflate to 18-22 psi.

⚠ WARNING ⚠

TO PREVENT INJURY CAUSED BY A BROKEN SOCKET, USE ONLY SOCKETS DESIGNED FOR IMPACT WRENCH USE. NEVER USE A CONVENTIONAL SOCKET.

CAUTION

DO NOT TIGHTEN LUG NUTS TO MORE THAN 60 FT. LBS.

⚠ WARNING ⚠

TO SEAT BEADS, USE A SMALL AMOUNT OF AIR INTERMITTENTLY AND NEVER EXCEED THE TIRE MANUFACTURER'S RECOMMENDATION.

WHEN REMOVING VALVE CORE, KEEP FACE AND EYES AWAY FROM ESCAPING AIR.

BE SURE MOUNTING/DEMOUNTING MACHINE IS ANCHORED TO FLOOR.

WEAR SAFETY EQUIPMENT WHEN MOUNTING/DEMOUNTING TIRES.

FOLLOW ALL INSTRUCTIONS AND SAFETY WARNINGS PROVIDED BY THE MOUNTING/DEMOUNTING MACHINE MANUFACTURER.

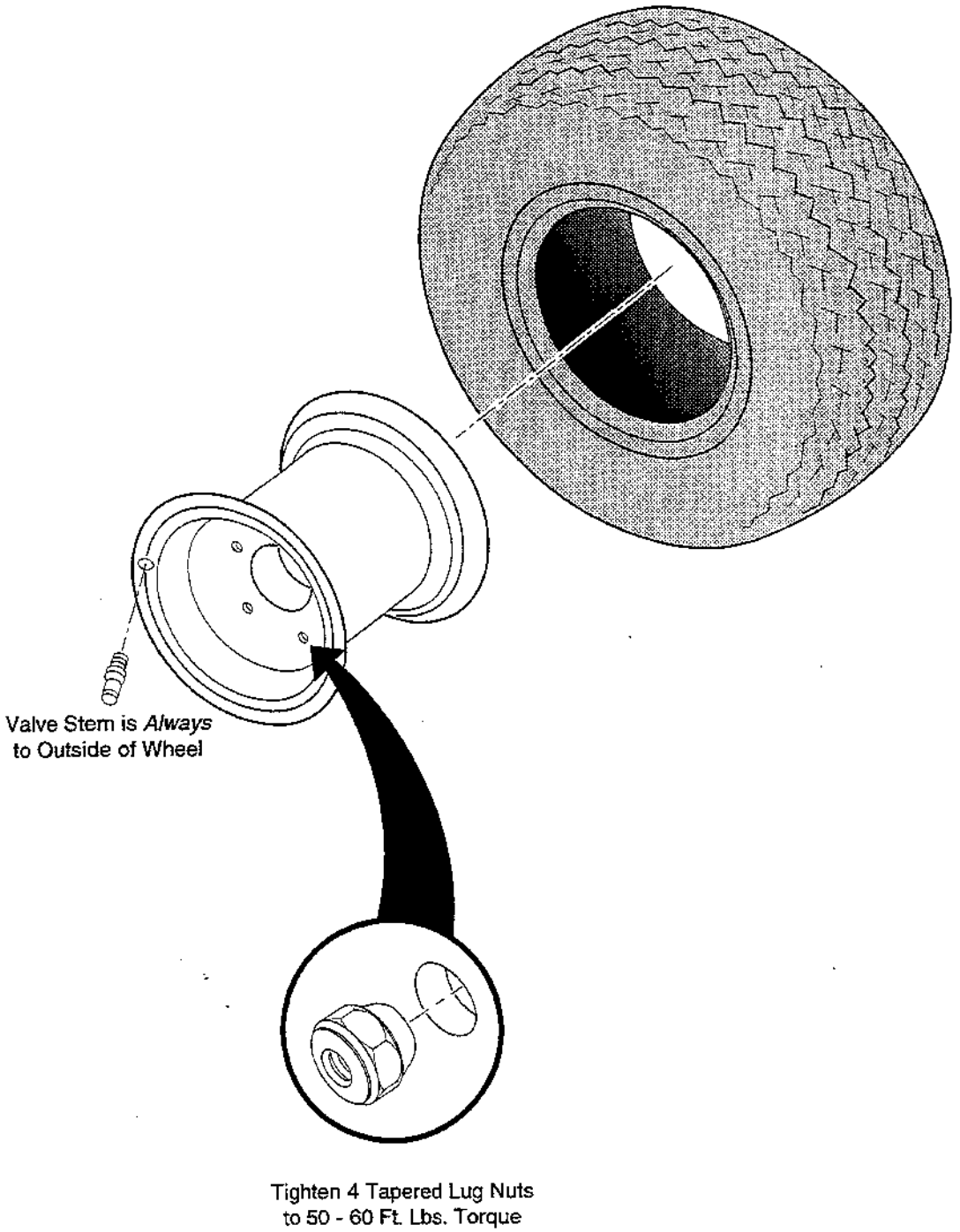


Fig. D-1 Wheels and Tires

TABLE OF CONTENTS FOR SECTION 'F'

LIST OF ILLUSTRATIONS

Notes:

FRONT SUSPENSION

NOTE

In the following text, there are references to removing/installing bolts etc. Additional hardware (nuts, washers etc.) that are removed must always be installed in their original positions unless otherwise specified. Non-specified torque specifications are as shown in the table contained in Section A.

For all front suspension repairs, raise the front end using the procedures described in Section 'B' (Safety) of this manual and support the vehicle frame on jack stands.

⚠ WARNING ⚠

TO REDUCE THE POSSIBILITY OF PERSONAL INJURY, FOLLOW THE LIFTING PROCEDURE IN SECTION B OF THIS MANUAL. PLACE WHEEL CHOCKS IN FRONT OF AND BEHIND THE REAR WHEELS. CHECK THE STABILITY OF THE VEHICLE ON THE JACK STANDS BEFORE STARTING ANY REPAIR PROCEDURE. NEVER WORK ON A VEHICLE THAT IS SUPPORTED BY A JACK ALONE.

Tool List	Qty. Required
Floor jack	1
Jack stands	2
Wheel chocks	4
Wrench, 3/8"	1
Wrench, 5/8"	1
Wrench, 9/16"	1
Drift punch	1
Pin punch	1
Ball peen hammer	1
Plastic faced hammer	1
Ratchet, 1/2" drive	1
Torque wrench, 1/2" drive, ft.lbs.	1
Impact wrench, 1/2" drive	1
Impact Socket, 3/4", 1/2" drive	1
Socket, 1", 1/2" drive	1
Socket, 15/16", 1/2" drive	1
Socket, 11/16", 1/2" drive	1
Socket, 5/8", 1/2" drive	1
Socket, 9/16", 1/2" drive	1
Pliers	1
Internal snap ring pliers	1
External snap ring pliers	1
Ball joint separator	1
Extension, 10", 1/2" drive	1
Internal puller	1
Straight blade screwdriver	1
Phillips screwdriver	1
Thread locking adhesive	AR

Front Shock Absorber Removal

(See Fig. F-1 "Suspension Components" on page F-2)

(Ref. Fig. F-1) Remove the nut from the bottom of the shock absorber (1) at the front axle (2).

Bend the tabs that secure the flexible grass shield (3) to the cowl down and pull the grass shield down to provide access to the top of the shock absorber.

Loosen the nut (4) securing the top of the shock absorber to the vehicle frame and then rotate the shock absorber while holding the nut in place with a wrench.

Remove the shock absorber.

Installation of Shock Absorber

(See Fig. F-1 "Suspension Components" on page F-2)

The installation of the shock absorber is the reverse of disassembly, except that the mounting nuts should be tightened until the rubber bushings (5) expand to the diameter of the shock absorber washers (6).

Front Axle Removal

(See Fig. F-1 "Suspension Components" on page F-2)

Remove the front wheels and then the bottom attachment of the shock absorbers. Remove the cotter pin (7) from the spindle pin (8). Loosen the nut (9) until the threaded end of spindle pin is protected. Tap the nut with a plastic faced hammer to loosen the spindle pin.

NOTE

The thrust washer is located on top of the spindle bushing.

Remove the nut (9) and washer (23) from the spindle pin. Remove the spindle pin (8), washer (21), thrust washer (10) and spindle sleeve (22) from the spindle and swing it to the side.

Remove the hardware (12) that secures the front of the leaf spring to the front axle.

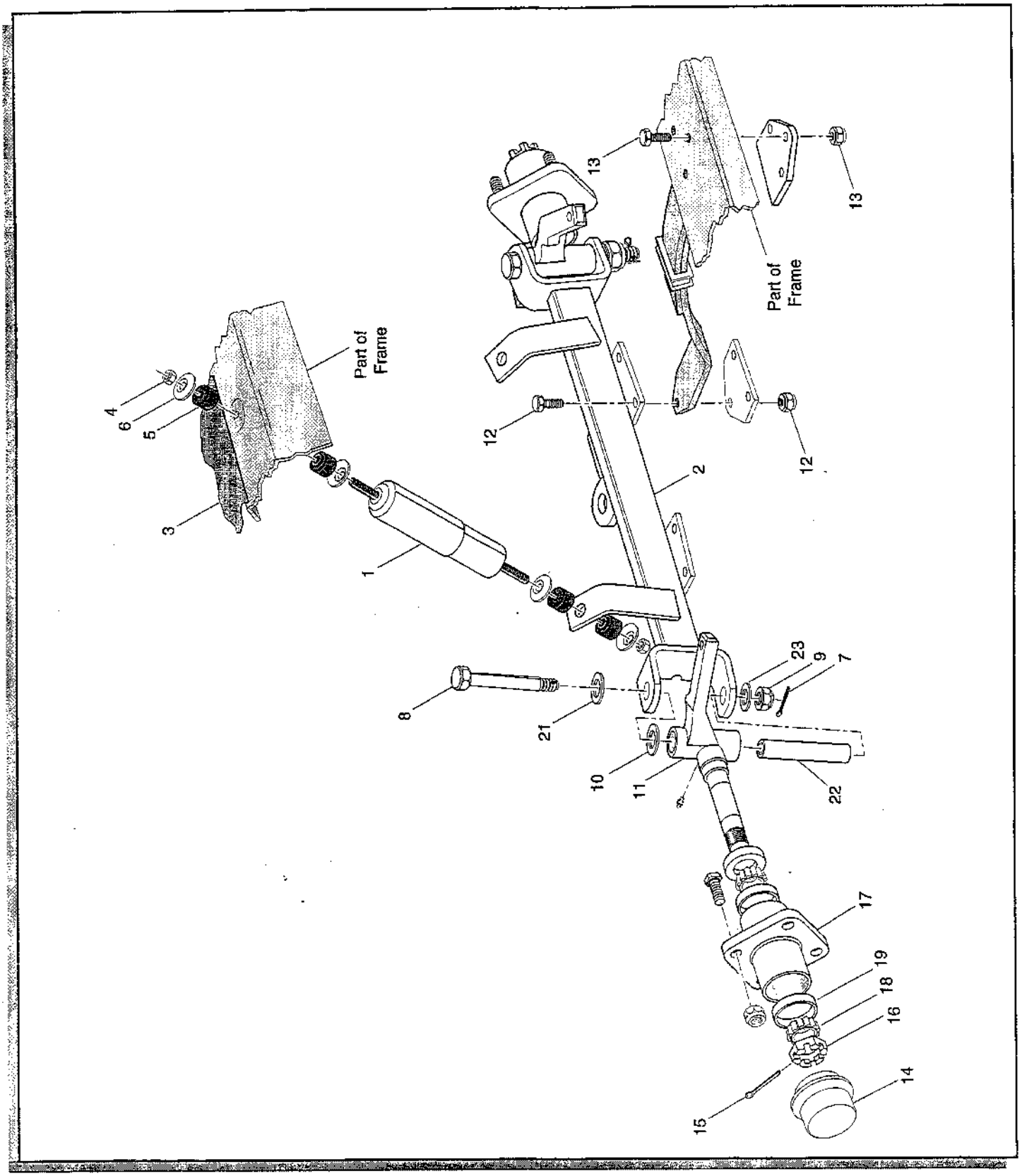


Fig. F-1 Suspension Components

Front Axle Installation

(See Fig. F-1 "Suspension Components" on page F-2)

Front axle installation is in the reverse order of disassembly.

Tighten the spindle pin nut to 40 - 50 ft. lbs torque.

Tighten leaf spring hardware to 35 - 50 ft. lbs torque.

Tighten the shock absorber mounting hardware until the rubber bushings expand to the diameter of the shock absorber washer.

Replace the spindle pin cotter pin with new ones.

Front Spring Removal

(See Fig. F-1 "Suspension Components" on page F-2)

Remove the front wheel on the side of the vehicle that is to have the spring replaced.

Remove the hardware (12) securing the front of the leaf spring to the axle.

Pull the top of the floor mat down and locate and remove the hardware (13) securing the rear of the spring to the vehicle frame.

Front Spring Installation

(See Fig. F-1 "Suspension Components" on page F-2)

(See Fig. F-2 "Front Axle Alignment" on page F-3)

Install a new spring by first attaching the front of the spring to the axle with hardware (12) and then installing the rear hardware (13). Tighten the spring hardware to 35 - 50 ft. lbs. torque. (Ref. Fig. F-1)

NOTE

*If a spring is to be replaced, the axle will need to be aligned to the frame. This is **NOT** a wheel alignment.*

If a spring is to be replaced, the front axle must be aligned to the frame. The distance from the rear inner left spring bolt to the front inner right spring bolt must be the same as the distance from the rear inner right spring bolt to the front inner spring bolt of the left spring. (Ref. Fig. F-2)

Tie Rod and Spindle Pin Inspection

Lift the front of the vehicle and support on jack stands as per Section 'B' (Safety).Grasp the tie rod and check for any vertical motion which would indicate a worn condition and require replacement. Grasp the top and bottom of the wheel and use a rocking motion to check for spindle pin movement which indicates a worn condition.

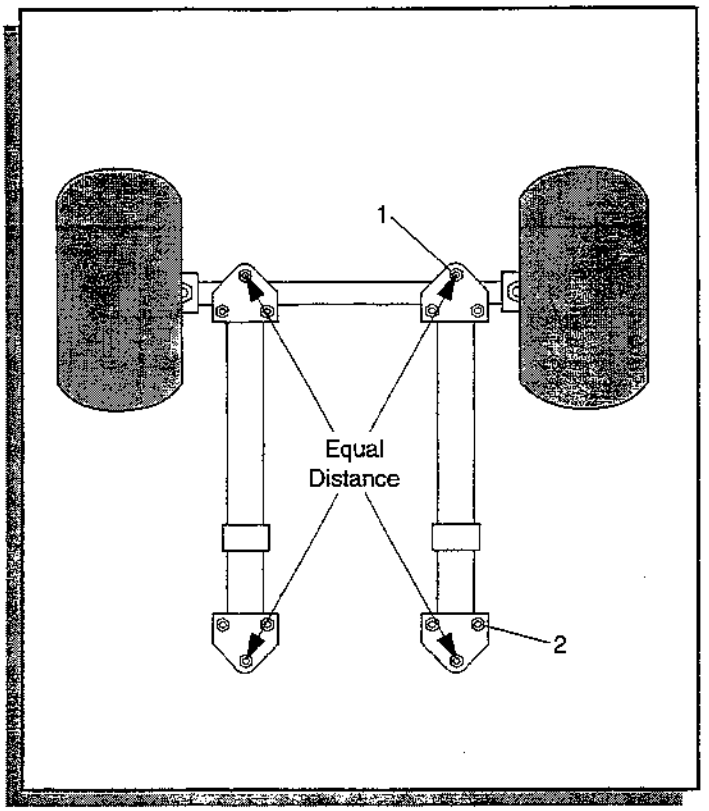


Fig. F-2 Front Axle Alignment

Tie Rod Removal

(See Fig. F-3 "Tie Rod Removal" on page F-4)

Remove the cotter pin (1) from the ball joint (2) and remove the castellated nut (3). Insert a ball joint separator between the ball joint and the linkage and separate the ball joint from the linkage at both ends.

NOTE

Be sure that the new tie rod is adjusted to the same length as the one that has been removed.
If any doubt exist regarding the adjustment of the new tie rod, the vehicle will require a wheel alignment before being returned to service.

Tie Rod Installation

(See Fig. F-3 "Tie Rod Removal" on page F-4)

A correctly adjusted tie rod should be installed in the reverse order of disassembly. The castellated nut (3) should be tightened to a minimum of 35 ft. lbs. torque and tightened as required in order to insert a new cotter pin. Maximum torque is 50 ft. lbs.

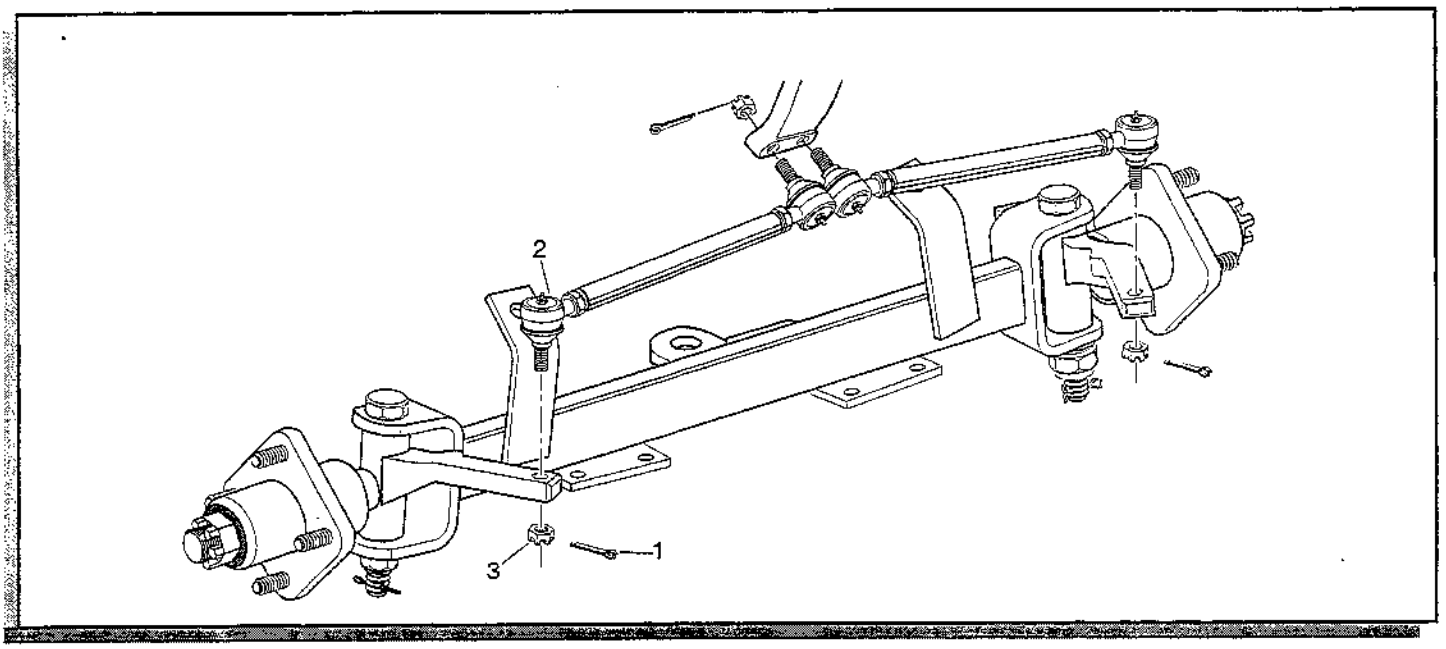


Fig. F-3 Tie Rod Removal

STEERING

Steering Wheel Removal

(See Fig. F-4 "Steering Wheel Removal" on page F-4)

Remove the two screws (1) that attach the clipboard assembly (2) to the steering wheel (3) and remove the score card holder. Remove the steering wheel nut (4) and remove steering wheel.

Steering Wheel Installation

(See Fig. F-4 "Steering Wheel Removal" on page F-4)

With the wheels straight ahead, align the steering wheel (3) on the steering shaft. Tighten the steering wheel nut (4) to 10 - 15 ft. lbs. torque. Tighten the clipboard screws to 6 in. lbs. torque maximum.

Steering Removal

(See Fig. F-5 "Steering Components" on page F-5)

Except for major damage to the steering assembly housing, there is no need to remove the housing from the vehicle to perform repair or component replacement. The only component replacement that would require removing the housing from the vehicle would be the replacement of the bearing (1) and bushing (22). The bearing and bushing must be pressed out and will require the housing to be removed from the vehicle by removing the steering wheel, four mounting bolts (2) and washers (26) and removing the unit from the underside of the vehicle.

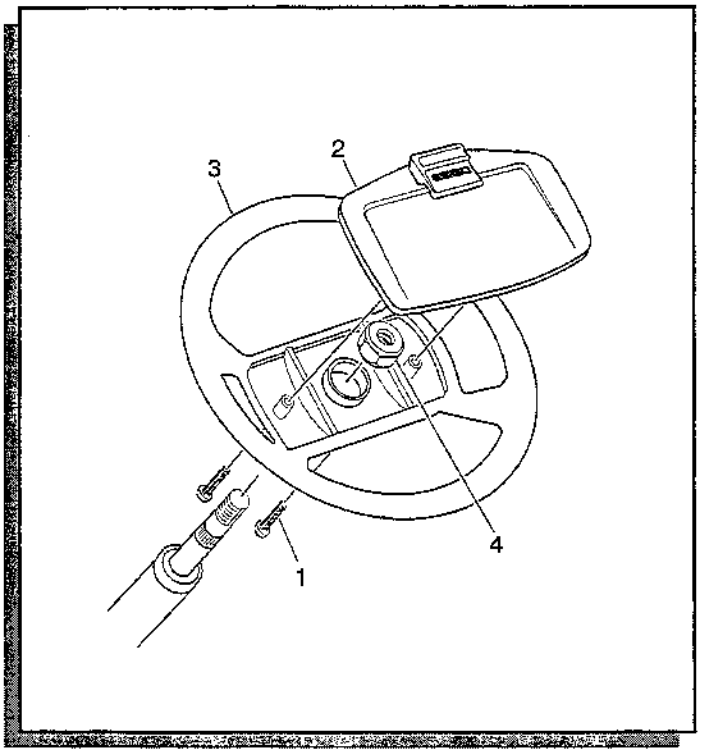


Fig. F-4 Steering Wheel Removal

Steering Installation

(See Fig. F-5 "Steering Components" on page F-5)

Tighten mounting bolts (2) to 34 - 42 ft.lbs. torque. Tighten nut (23) to 70 - 80 ft.lbs. torque. Insert new cotter pin (24).

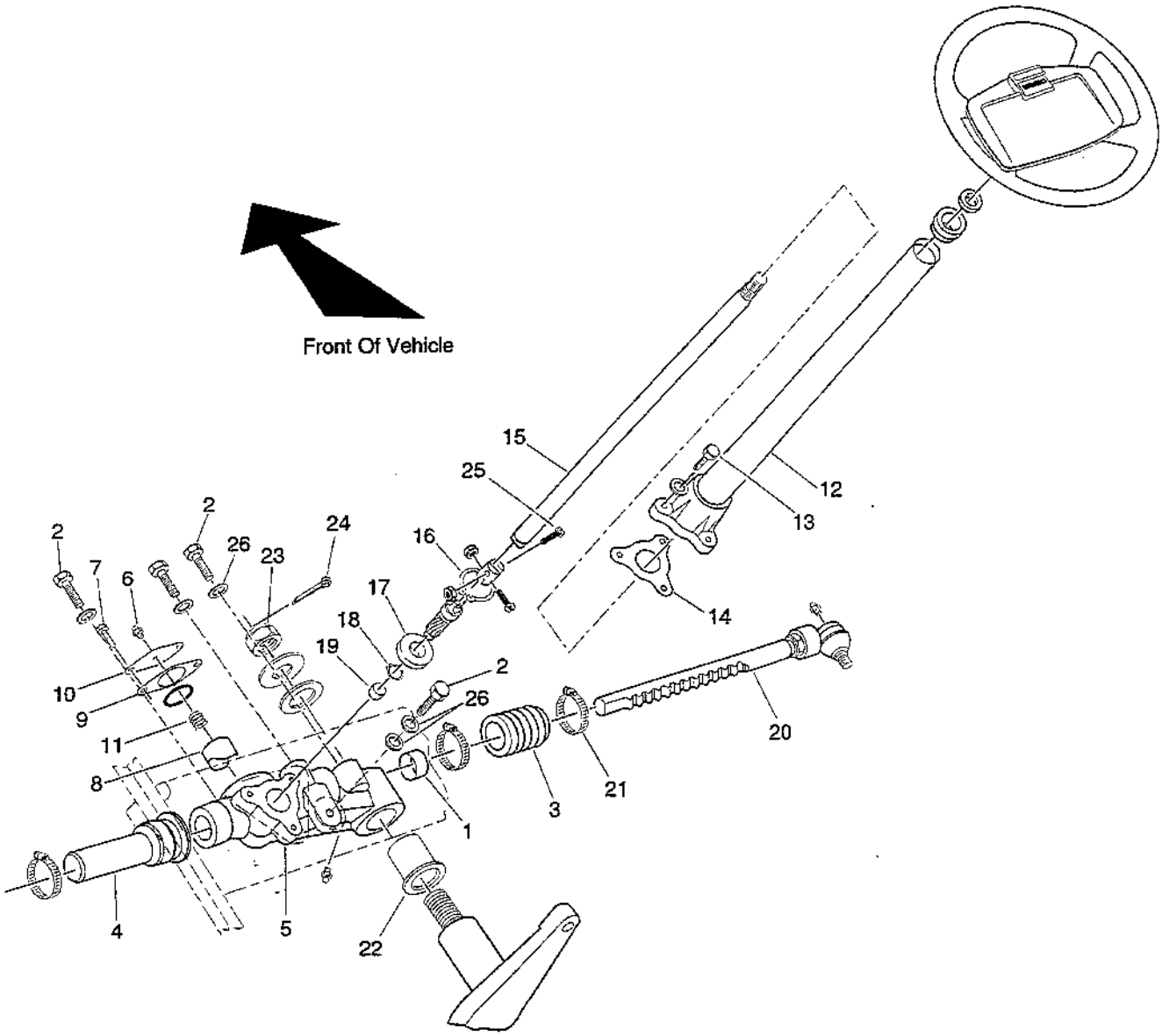


Fig. F-5 Steering Components

Rack Tensioner

(See Fig. F-5 "Steering Components" on page F-5)

In general, there is no need to remove the rack tensioner unless the rack bellows (3) and or the rack cover (4) have been torn or damaged and there is reason to believe that water or dirt has entered the housing (5). The tensioner can be greased through a right angle grease fitting (6) located on the steering housing directly behind the front shield. The tensioner (8) does need to be removed in order to replace the rack. The rack can be 'pulled' into place by inserting the rack against the steering pinion, loosening the tensioner bolts (7) and rotating the steering wheel. To remove the tensioner, remove the hardware (7), gasket (9) and the cover plate (10) that secures the rack tensioner.

Remove the spring (11) and tensioner.

Steering Shaft Removal

(See Fig. F-5 "Steering Components" on page F-5)

⚠ WARNING ⚠

TO PREVENT LOSS OF STEERING CONTROL, ALWAYS USE NEW RETAINING RINGS WHEN ASSEMBLING.

DO NOT OVERSTRESS RETAINING RINGS DURING INSTALLATION. TEST BY CHECKING FOR ZERO CLEARANCE BETWEEN RETAINING RING AND GROOVE.

Remove the steering wheel. Remove the steering column (12) by removing the three bolts (13) that secure the steering column to the steering housing (5) and remove the column and gasket (14) from the steering shaft (15). Remove the bolts (25) from the coupling and remove shaft.

Steering Shaft Pinion Ball Bearing Removal

(See Fig. F-5 "Steering Components" on page F-5)

Remove the internal snap ring (16) from the steering housing and pull the bearing and pinion as an assembly from the housing.

Steering Shaft Bearing Replacement

(See Fig. F-5 "Steering Components" on page F-5)

The steering pinion bearing (17) can be removed from the pinion gear by removing the external snap ring (18) and pressing the bearing from the shaft. The steering pinion gear bushing (19) is designed to last the life of the vehicle. If in the unlikely event that it should require replacement, a competent machine shop must remove the bushing without damage to the bore. A new pinion bearing can then be inserted.

Rack Removal

(See Fig. F-5 "Steering Components" on page F-5)

The rack (20) can be removed by removing rack ball joint from the idler and loosening the tensioner bolts (7). Remove the large clamp (21) that secures the rack bellows (3) to the steering housing (5). The rack and the bellows may be pulled from the steering housing.

Rack Ball Joint Removal

(See Fig. F-6 "Rack Ball Joint Installation" on page F-6)

The rack end ball joint (1) can be removed by loosening the jam nut (2) and unthreading the ball joint.

Rack Ball Joint Installation

(See Fig. F-6 "Rack Ball Joint Installation" on page F-6)

Apply thread locking adhesive to rack ball end before attachment to steering rack. The ball joint (1) and jam nut (2) should be threaded into the rack until the dimension between the end of the rack and the center of the ball joint stud is 14-27/32". Tighten the jam nut to 25 - 30 ft.lbs. torque.

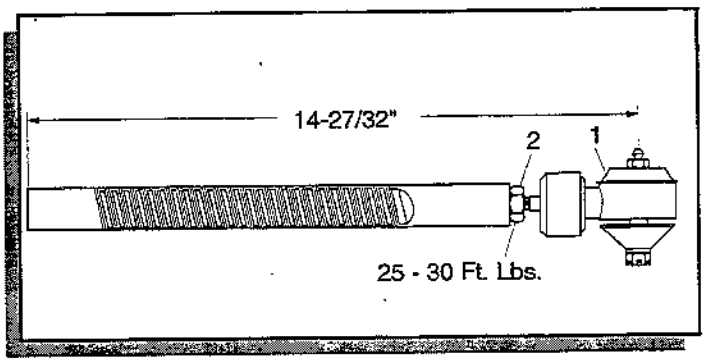


Fig. F-6 Rack Ball Joint Installation

MAINTENANCE

Good routine maintenance of the front suspension and steering consists of routine lubrication (See Lubrication Chart and the Periodic Service Schedule in Section 'A'). Be sure to use only the recommended lubricants. Maintain the correct adjustment of the front bearings and repack them in accordance with the periodic maintenance schedule or if a bearing replacement is required. Routine examination of the tires will provide indications that an alignment is required.

Lubrication

(See Fig. F-1 "Suspension Components" on page F-2)

(See Fig. F-5 "Steering Components" on page F-5)

Tool List	Qty. Required
Floor jack	1
Jack stands	2
Wheel chocks	4
Grease gun	1
Bearing packer	1

Routinely grease the rack tensioner (8), the idler bushing (22) all ball joints (Ref. Fig. F-5), and spindle pin bushings (20) (Ref. Fig. F-1).

Packing and Adjusting Wheel Bearings

(See Fig. F-8 "Front Spindle and Bearing" on page F-8)

The front wheel bearings are tapered roller type and must be packed with grease at installation, or any time that the bearing is removed for inspection. It is recommended that a bearing packer attached to a grease gun be used; however, manual packing is acceptable if done correctly. To pack a bearing manually requires that a dab of grease be placed in the palm of the hand and the bearing be dipped in the grease. Force the grease up through and around all of the rollers until the entire bearing is coated in grease. Fill the area between the rollers with grease and apply a light coating to the bearing race. Install and adjust the bearing.

Bearing Inspection

(See Fig. F-1 "Suspension Components" on page F-2)

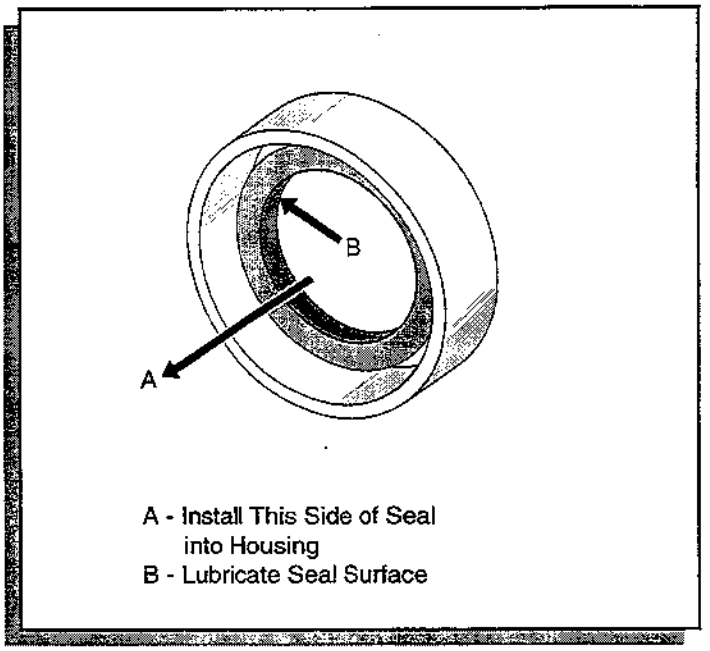
Tool List	Qty. Required
Floor jack	1
Jack stands	2
Wheel chocks	4
Bearing packer	1
Grease gun	1
Wrench, 1 1/2"	1
Needle nose pliers	1
Non-ferrous punch	1
Ball peen hammer	1
Socket, 3/4", 1/2" drive	1
Extension, 6", 1/2" drive	1

Lift the front of the vehicle and support on jack stands as per Section 'B' (Safety). Rotate the front wheel and feel for any roughness. Grasp the outside of the tire and rock it. If any movement is detected the wheel bearing may require replacement/adjustment. Remove the dust cap (14), cotter pin (15) and castellated nut (16) and remove the hub assembly (17). Remove the inner bearing (18) and seal (19) by tapping out the bearing using a soft non ferrous punch and tapping lightly around the bearing. Clean all bearings, seal, hub and dust cap in solvent and dry thoroughly. Inspect for signs of damage. Pitting or a blue coloration of the rollers will require replacement of the bearing. If the roller portion of the bearing is to be replaced, the race must also be replaced. The old race may be tapped out of the hub using a punch inserted through the bore. Tap the punch in a circular pattern to avoid damaging the bore of the hub. Install a new bearing after packing the bearing.

Seal Installation

(See Fig. F-7 "Seal Installation" on page F-7)

Clean the hub seal surface to remove grease and press the seal into place with the flange side of the seal facing into the bore. Tap gently into place with a seal installation tool until it is flush with the outside of the hub assembly. Lubricate the seal surface with a light oil.



A - Install This Side of Seal into Housing
B - Lubricate Seal Surface

Fig. F-7 Seal Installation

Bearing Adjustment

(See Fig. F-8 "Front Spindle and Bearing" on page F-8)

Rotate the wheel while tightening the castellated nut (1). Tighten until the wheel becomes noticeably resistant to being rotated.

Rotate the wheel 2 - 3 more turns to displace excess grease. If the cotter pin hole in the spindle (2) aligns with a slot in the castellated nut (1), insert a new cotter pin (3). If the hole does not align, the castellated nut must be ***loosened to align with the closest available slot in the nut.***

Check for smooth rotation of the wheel and an absence of play when the wheel is grasped by the outside of the tire. Bend the cotter pin (3) against the flats of the castellated nut (1) and cut off any excess.

Replace the dust cap (4).

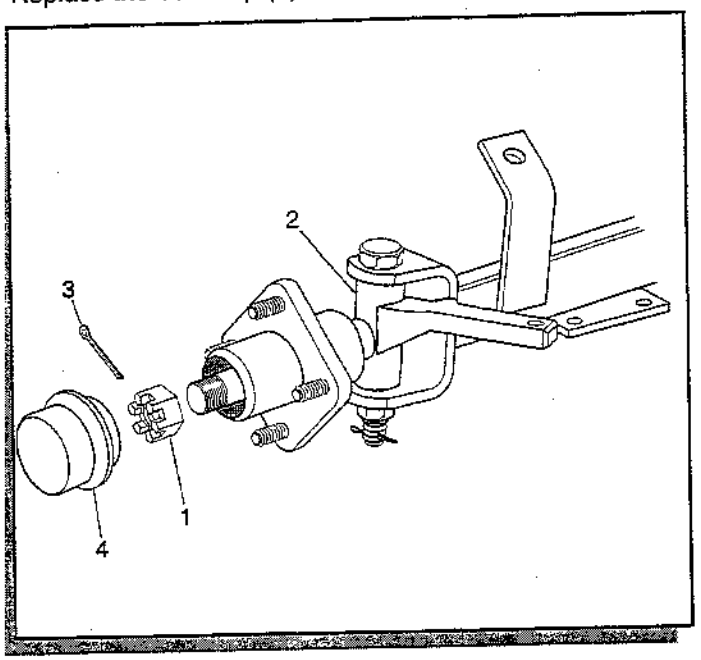


Fig. F-8 Front Spindle and Bearing

Wheel Alignment

(See Fig. F-2 "Front Axle Alignment" on page F-3)

(See Fig. F-9 "Front End Alignment" on page F-8)

Tool List	Qty. Required
Floor jack	1
Jack stands	2
Wheel chocks	4
Wrench, 1 1/2"	1
Tape measure	1
Chalk	1

Lift the front of the vehicle and support on jack stands as per Section 'B' (Safety). Confirm the alignment of the springs as shown in "Front Spring Installation".

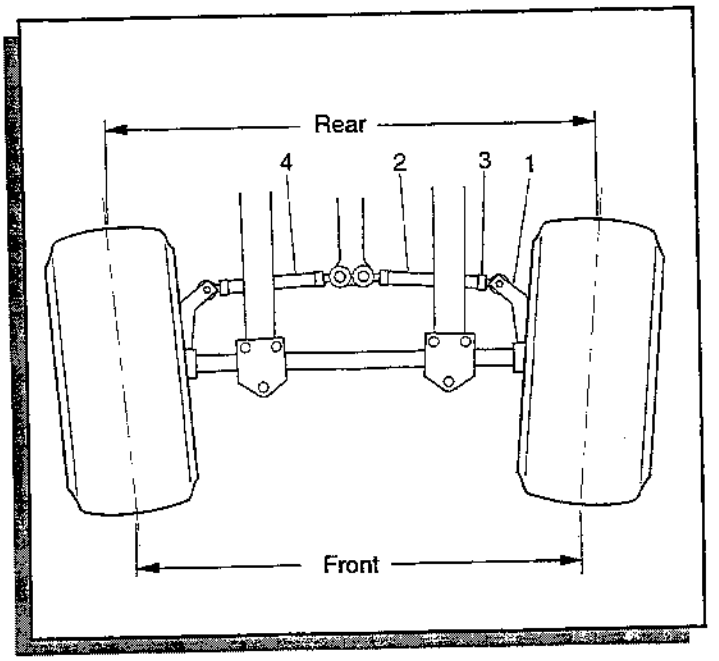


Fig. F-9 Front End Alignment

Rotate each wheel and scribe or chalk a line around the circumference of the tire at the center of the tread pattern. **Lower the vehicle** and roll it forward approximately five feet in order to allow the tires to take their normal running position.

Measure the distance between the chalk lines at both the front and rear of the tires. The measurement taken at the front of the tire should be 1/4" ± 1/8" less than the rear. Manufacturing tolerances may cause some variance, however typical dimensions would be 33 1/2" front and 33-3/4" rear.

To adjust the wheel alignment first turn the steering wheel to the left until it stops. Look at the drivers side spindle arm (1) and see if it is touching the 'U' shaped bracket at the front axle. If not, adjust the driver's side tie rod (2). Loosen the tie rod jam nuts (3) and adjust the driver's side tie rod (2) until the spindle arm contacts the 'U' bracket with the steering wheel turned fully to the left. Lock the tie rod jam nuts (25 - 30 ft. lbs. torque). Turn the wheel all the way to the right and confirm that the passenger side spindle arm is touching the 'U' shaped bracket at the front axle.

Center the steering wheel and adjust the passenger side tie rod (4) until the correct alignment is achieved. Lock the tie rod jam nuts (25 - 30 ft. lbs. torque).

Test drive the vehicle and confirm that the steering wheel is correctly centered. If not remove steering wheel and rotate it to the correct position.

Spindle Pin Bearing Inspection/Replacement

(See Fig. F-1 "Suspension Components" on page F-2)

Tool List	Qty. Required
Floor jack	1
Jack stands	2
Wheel chocks	4
Pliers	1
Wrench, 15/16"	1
Sizing reamer, .875"	1
Socket, 15/16", 1/2" drive	1
Torque wrench, ft. lbs., 1/2" drive	1
Inside micrometer, 1"	1

Remove the spindle assembly and clean the spindle pin bushings with solvent. If the inside diameter of the bushings are worn to .880" or greater, the bushings should be replaced. Press out the old bushings and press new ones into the spindle until flush with the spindle housing.

NOTE

As a result of the press operation, the bushing inside diameter may close slightly. If a reaming operation is required, use a .875" diameter sizing reamer to correctly size the new bushings.

Reinstall the spindle and tighten the spindle pin nut to 40 ft. lbs. torque. If a cotter pin cannot be aligned with the nut and the king pin, continue tightening the nut until a cotter pin can be inserted.

Notes:

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ACCELERATOR, GOVERNOR AND CARBURETOR LINKAGE

System Components

(See Fig. G-1 "Accelerator and Governor System" on page G-2)

NOTE

The linkages that control the accelerator mechanism, governor and carburetor are designed to operate as an integrated assembly. Any adjustment to one portion of the system will have an effect on the other components within the system.

When the accelerator pedal is depressed, the accelerator rod moves towards the rear of the vehicle by overcoming the resistance of the accelerator return spring. The rear end of the accelerator rod is joined to the control arm link, which in turn is attached to the control arm with a pin which slides within a slot in the control arm link.

As the accelerator rod moves to the rear of the vehicle, the control arm rotates and pulls the accelerator cable.

At the other end of the accelerator cable, the cable pulls against a compression spring which is compressed until it overcomes the resistance of the rear axle mounted governor and the governor return spring. The remaining linkage rods and bellcranks transfer the motion of the governor arm to the carburetor throttle plate.

System Operation

(See Fig. G-1 "Accelerator and Governor System" on page G-2)

When the accelerator cable pulls against the accelerator cable/governor spring, the spring compresses until it overcomes the resistance exerted by the governor mechanism and its extension spring, the carburetor torsion spring and the friction of the linkage rod ball joints. As the accelerator cable/governor spring overcomes these forces, the governor bellcrank moves and the motion is transferred to the carburetor throttle plate.

As the accelerator pedal moves, the parking brake is released as the micro switch closes and activates the ignition circuit.

Governor Operation

(See Fig. G-3 "Governor to Carburetor Linkage" on page G-4)

Until the vehicle reaches its governed speed of 12 - 15 mph, the vehicle will continue to accelerate in a direct relationship to the accelerator pedal position. When the governed speed is reached, the ground speed governor in the rear axle assembly operates *against* the accelerator cable/governor spring and closes the carburetor until the correct governed speed is achieved.

CAUTION

TAMPERING WITH OR ADJUSTING THE GOVERNOR TO PERMIT THE VEHICLE TO OPERATE AT ABOVE THE FACTORY SETTING (12 - 15 MPH) WILL VOID THE WARRANTY.

IN CASES WHERE THE GOVERNOR REQUIRES SERVICE, THE VEHICLE MUST BE SERVICED BY AN AUTHORIZED E-Z-GO SERVICE BRANCH OR DISTRIBUTOR WHO WILL RESEAL THE GOVERNOR AFTER CALIBRATION.

It is the force of the accelerator cable/governor compression spring in response to accelerator pedal and governor bellcrank position which controls the position of the carburetor throttle plate. The compression spring provides cushioning of sudden changes in throttle linkage position to provide smooth power transmission.

System Troubleshooting

Erratic acceleration and performance that does ***NOT*** include a notable increase in governed speed, indicates the need for a linkage adjustment check.

NOTE

Other factors may effect the performance characteristics of the vehicle but they should be investigated only after confirming the linkage adjustment.

Symptoms that include an increase in governed speed indicate a possible governor failure within the rear axle or could result from worn components in the governor system.

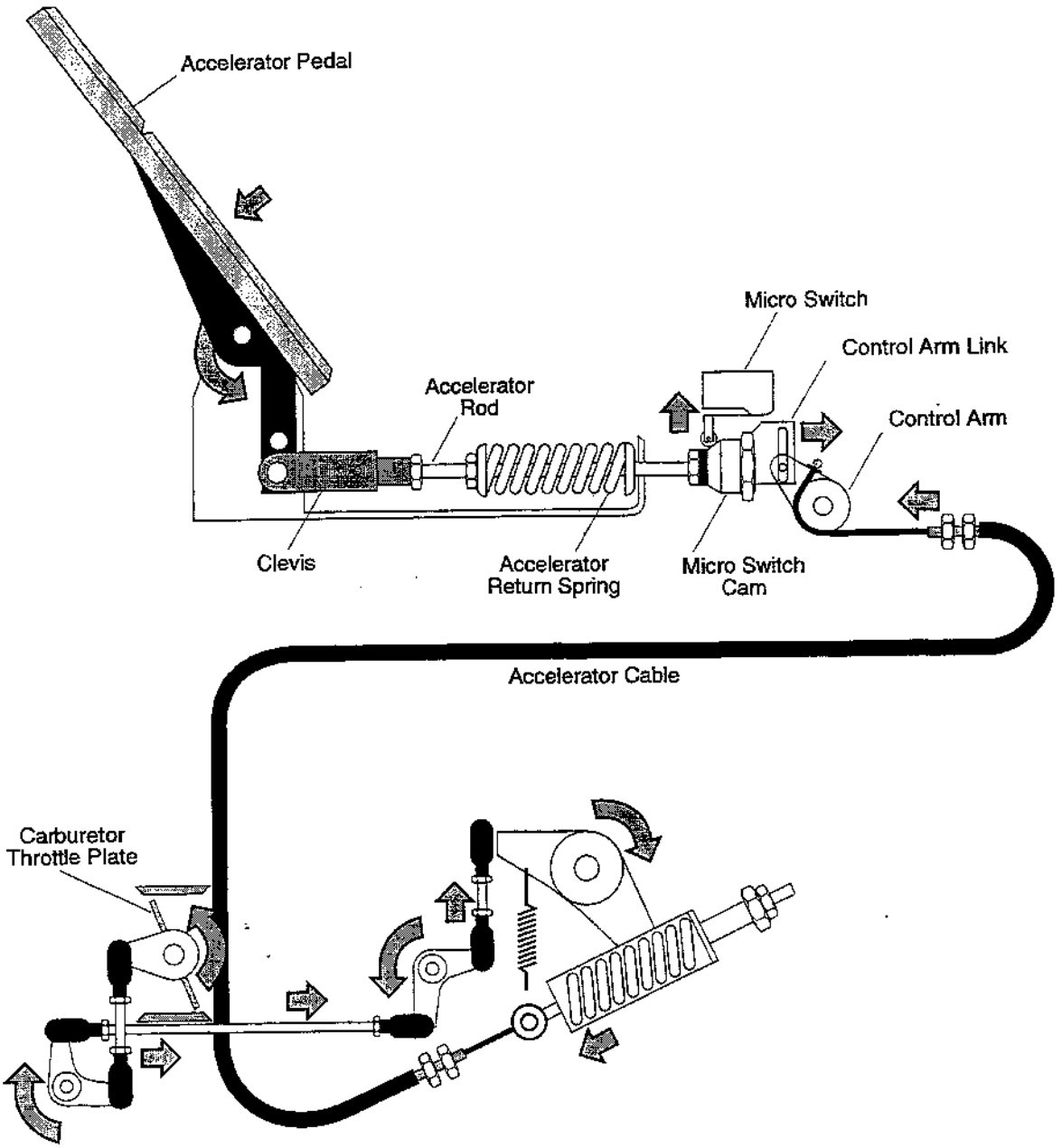


Fig. G-1 Accelerator and Governor System

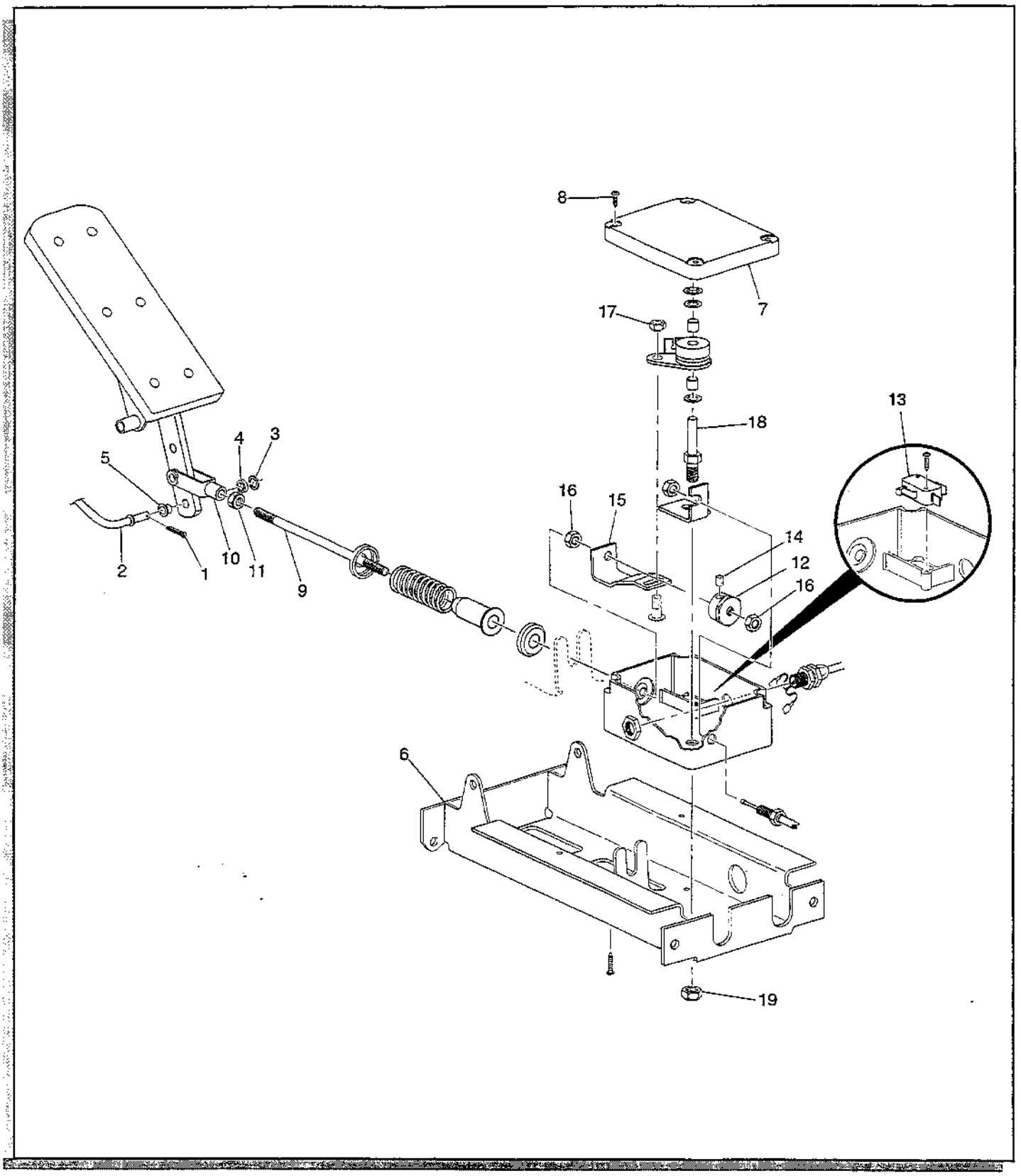
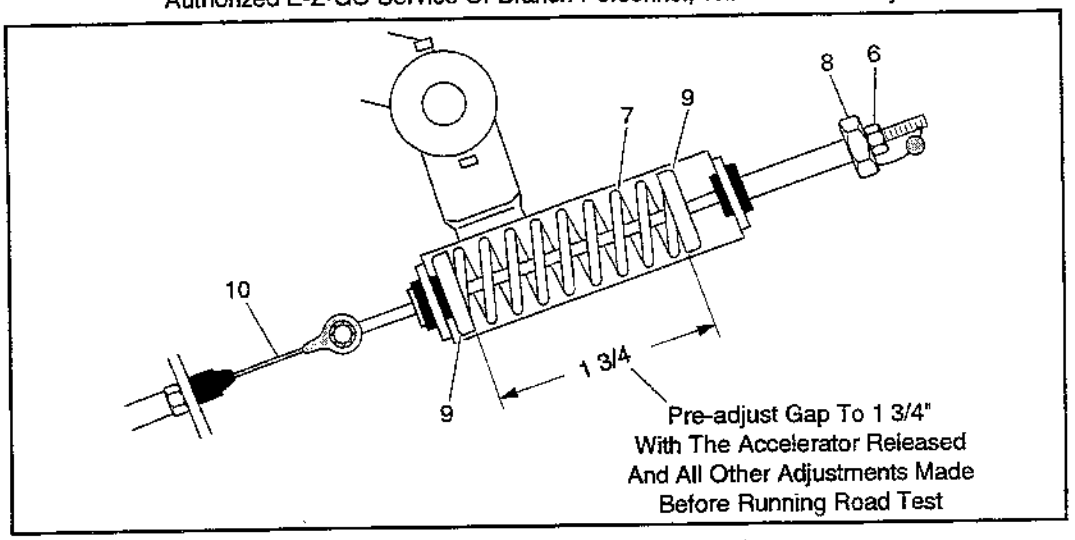


Fig. G-2 Accelerator Pedal Box Assembly

Note: Tampering With, Or Removal Of Governor Seal By Other Than Authorized E-Z-GO Service Or Branch Personnel, Will Void Warranty.



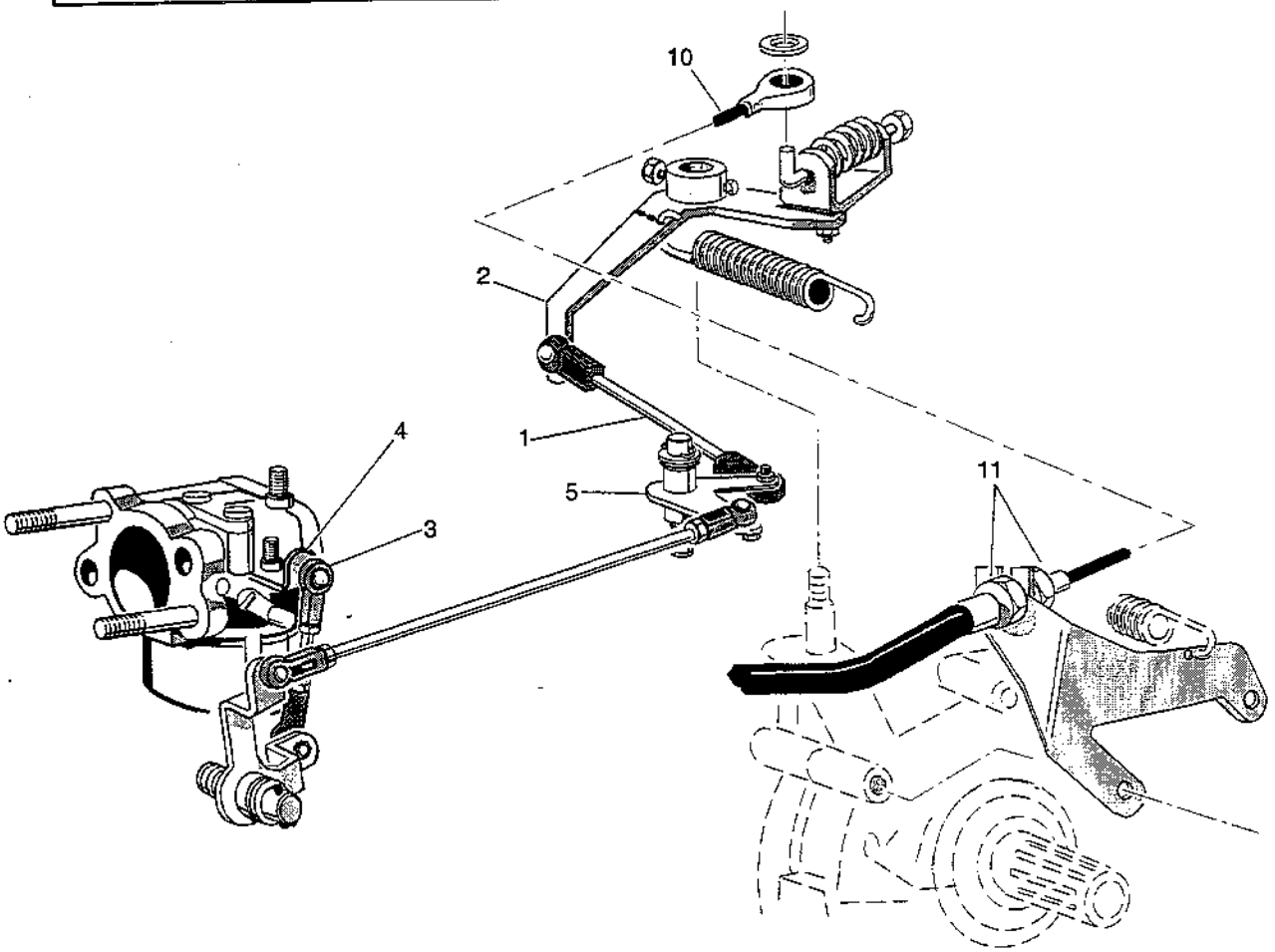


Fig. G-3 Governor to Carburetor Linkage

Linkage Adjustment

(See Fig. G-2 "Accelerator Pedal Box Assembly" on page G-3)

(See Fig. G-3 "Governor to Carburetor Linkage" on page G-4)

Tool List	Qty. Required
Tape measure	1
Needle nose pliers	1
Slip joint pliers	1
Straight blade screwdriver	1
Open end wrench, 9/16"	1
Open end wrench, 1/2"	1
Open end wrench, 3/8"	1

⚠ WARNING ⚠

TO PREVENT INADVERTENT MOVEMENT OF THE VEHICLE AND THE POSSIBLE PERSONAL INJURY THAT MAY RESULT, REMOVE THE NEGATIVE (-) BATTERY CABLE AT THE BATTERY. REFER TO SECTION "B" OF THIS MANUAL FOR ADDITIONAL CAUTIONS AND WARNINGS.

Remove the cotter pin (1) from the park brake kick off linkage (2) that is located in the bottom hole in the accelerator pedal arm. Observe the location of the washers (3, 4) and bushing (5), then remove the linkage from the accelerator pedal.

NOTE

When the system is in correct adjustment, the micro switch in the accelerator pedal box will click when the top of the accelerator pedal moves approximately 1/2". The accelerator cable (as seen at the rear axle) should have some slack present and not show any movement until after the micro switch clicks.

At rest, the front of the accelerator pedal arm should contact the front of the accelerator pedal bracket (6). If the arm does not contact the bracket, the accelerator cable should be checked at the governor bellcrank (2) (Ref. Fig. G-3). The accelerator cable (10) should have some slack and not be applying any force to the governor arm or the governor arm spring (7). If the cable has no slack and is under tension, it should be adjusted by rotating the two lock nuts (11) at the rear axle. Correct cable length will permit the top of the accelerator pedal to move approximately 5/8" (15.8 mm) before any cable movement can be detected.

After adjusting the accelerator cable, check if the accelerator pedal arm is contacting the accelerator pedal bracket. If there is no contact, the accelerator rod assembly must be adjusted.

(Ref. Fig. G-2) Remove the cover (7) of the pedal box by removing the four screws (8). The accelerator rod (9) should be threaded into the clevis (10) until the threads show on the other end of the clevis barrel.

NOTE

Note that the factory applies a thread sealant to the accelerator rod threads before threading the rod into the clevis.

The jam nut (11) should be firmly tightened.

Micro Switch Adjustment

(See Fig. G-2 "Accelerator Pedal Box Assembly" on page G-3)

The micro switch cam (12) must be adjusted to permit 5/8" of accelerator travel (measured at the top of the pedal with the accelerator pedal arm contacting the accelerator pedal bracket) before the micro switch (13) clicks. Be sure that the set screw (14) in the micro switch cam does not contact the micro switch actuator and tighten the set screw to 64 - 70 in. lbs. torque.

Control Arm Link

(See Fig. G-2 "Accelerator Pedal Box Assembly" on page G-3)

Be sure that the control arm link (15) is parallel with the bottom of the pedal box and tighten the jam nuts (16) 10 - 11 ft. lbs.

Apply a thin coating of white lithium grease to the slot in the control link. If the control arm has been removed from the control link, tighten the nut (17) to 25 - 43 in. lbs. torque and be sure that the arm rotates smoothly on its shaft. If the shaft (18) has been removed from the pedal box, it should be installed and the nut (19) tightened to 10 - 12 ft. lbs. torque.

NOTE

If the accelerator linkage rod has required adjustment, the accelerator cable may need to be readjusted.

Be sure that the accelerator pedal moves smoothly and that the accelerator cable pulls smoothly on the governor arm.

Linkage Inspection

(See Fig. G-3 "Governor to Carburetor Linkage" on page G-4)

Service Tip: To remove the female plastic portion of the ball joint linkage, place a 3/8" open end wrench on the jam nut and rotate clockwise until the black plastic section separates from the ball.

CAUTION

WHEN REMOVING/INSTALLING THE LINKAGES TO ANY OF THE BELLCRANKS OR LEVERS, USE EXTREME CARE NOT TO BEND OR DAMAGE THE BELLCRANK OR LEVER ARMS. SUPPORT THE ARMS AND SQUEEZE THE COMPONENTS TOGETHER. FAILURE TO OBSERVE THIS CAUTION MAY RESULT IN SERIOUS DAMAGE TO THE GOVERNOR, CARBURETOR OR OTHER COMPONENTS AND RESULT IN EXPENSIVE AND TIME CONSUMING REPAIR.

(See Fig. G-4 "Ball Joint Attachment" on page G-6)

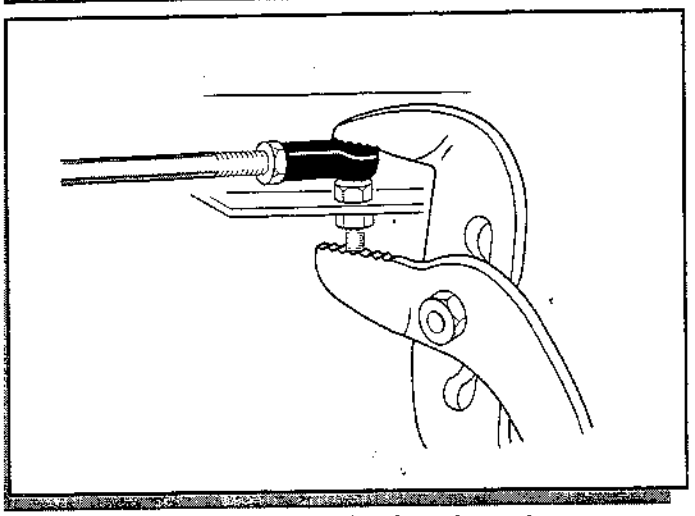


Fig. G-4 Ball Joint Attachment

Governor

(See Fig. G-3 "Governor to Carburetor Linkage" on page G-4)

(See Fig. G-5 "Ball Joint Removal" on page G-6)

At the governor ball joint, remove the solid linkage (1). Move the bellcrank (2) and check for smooth operation against the return spring.

Carburetor

(See Fig. G-3 "Governor to Carburetor Linkage" on page G-4)

At the carburetor, remove the solid linkage (3) at the carburetor end. Move the throttle lever (4) and check for smooth action and verify that the carburetor torsion spring closes the carburetor.

Linkage Rod Adjustments

(See Fig. G-3 "Governor to Carburetor Linkage" on page G-4)

(See Fig. G-6 "Ball Joint Adjustment" on page G-6)

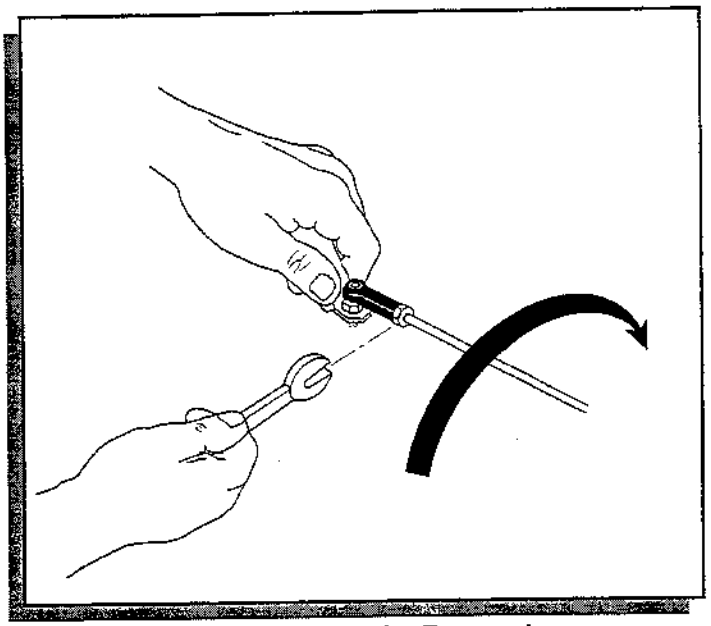


Fig. G-5 Ball Joint Removal

NOTE

When making linkage adjustments be sure to follow the sequence indicated

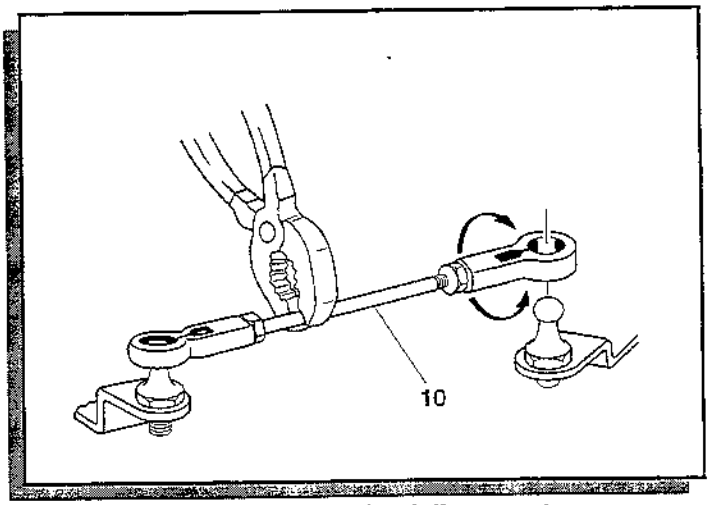


Fig. G-6 Ball Joint Adjustment

1. Clean all of the ball joints. Inspect and replace any worn ball joint sockets. Hold the governor bellcrank closed to be sure that the governor lever return spring is fully closing the governor. Adjust the horizontal linkage rod (1) that is situated between the governor bellcrank and the engine mounted bellcrank. Adjust by removing one end of the linkage rod from the ball and loosen the jam nut (10) (Ref. Fig. G-6). Rotate the ball joint socket to either lengthen or shorten the linkage rod. The correct adjustment is achieved when the arm of the engine mounted bellcrank (5) is parallel to the engine shroud and the governor bellcrank is held in the closed position. Firmly tighten the jam nut.
2. Remove the vertical linkage rod from the carburetor and check that the throttle stop screw is correctly adjusted. Adjust by backing out the screw until contact is lost between the screw and the throttle plate arm. Tighten the screw until it contacts the arm and then continue turning 1/4 turn.
3. While holding the governor closed, check to see that the carburetor ball joint socket aligns with the carburetor ball. If an exact alignment requires an adjustment to the rod, adjust by removing one end of the linkage rod from the ball and loosen the jam nut. Rotate the ball joint socket to either lengthen or shorten the linkage rod. The correct adjustment is achieved when the ball on the throttle plate arm of the carburetor is closed against the throttle stop screw and the governor bellcrank is in the closed position. Firmly tighten the jam nut.
4. Adjust the accelerator cable as previously described and confirm that the carburetor is fully open when the accelerator pedal is fully depressed and contacting the throttle stop when the pedal is in the released (up) position.

Governor Spring Adjustment

(See Fig. G-3 "Governor to Carburetor Linkage" on page G-4)

1. Refer to the proceeding caution and loosen the compression spring jam nut (6).
2. Pre-adjust the governor compression spring (7) by rotating the adjuster (8) until a dimension of 1 3/4" (4.45 cm) is achieved between the inside of the cup washers (9). Tighten the jam nut. This dimension is a pre-adjustment and may be further adjusted after the road test.

CAUTION

TAMPERING WITH OR ADJUSTING THE GOVERNOR TO PERMIT THE VEHICLE TO OPERATE AT ABOVE THE FACTORY SETTING (12 - 15 MPH, 19-24 KPH) WILL VOID THE WARRANTY.

IN CASES WHERE THE GOVERNOR REQUIRES SERVICE, THE VEHICLE MUST BE SERVICED BY AN AUTHORIZED E-Z-GO SERVICE BRANCH OR DISTRIBUTOR WHO WILL RESEAL THE GOVERNOR AFTER CALIBRATION.

HOLD THE GOVERNOR COMPRESSION SPRING ADJUSTER ROD WHEN REMOVING/ADJUSTING THE COMPRESSION SPRING JAM NUT. FAILURE TO HOLD THIS JOINT WILL RESULT IN THE ACCELERATOR CABLE TWISTING WHICH MAY RESULT IN PREMATURE FAILURE.

Road Test

Install the negative (-) battery cable. Test drive the vehicle and confirm that the compression spring adjustment results in a speed of 12-15 mph (19-24 kph) when driven at governed speed (100 yards in 17-14 seconds). If the speed is not within the specified speed range, stop the vehicle and adjust the governor compression spring. Repeat the test and adjustment until the factory recommended governed speed is achieved. Tightening the spring results in a speed increase while loosening will result in a speed decrease.

Seal the governor after calibrating the vehicle.

Notes:

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LIST OF ILLUSTRATIONS

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NOTE

To assure correct braking performance, all periodic maintenance, inspections and procedures must be performed as indicated in the Periodic Service Schedule in Section 'A' of this manual. ***It is most important that a Daily Brake Performance Test be performed and the entire brake system be serviced in accordance with the Periodic Service Schedule.***

GENERAL

(See Fig. H-1 "Brake System" on page H-2)

The brake system is mechanical and consists of actuating linkages and self adjusting wheel brake assemblies. The actuating linkages require periodic adjustment to compensate for the normal wear of system components. Replacement of any linkage components will also require a linkage adjustment.

The wheel brake units are self adjusting which automatically adjust to compensate for brake shoe wear (see Periodic Service Schedule in Section 'A' of this manual). The brake **does** require routine inspection to determine the rate of wear to the brake shoe linings. Normal wear applications require lubrication and complete inspection during brake shoe replacement only.

NOTE

If ***any*** *brake system component is replaced, the* ***entire*** *brake system must be adjusted.*

To determine the adequacy of the vehicles brake system, a brake performance test should be performed daily.

DAILY BRAKE PERFORMANCE TEST

⚠ WARNING ⚠

ALL BRAKE TESTS MUST BE DONE IN A SAFE LOCATION WITH REGARD FOR THE SAFETY OF ALL PERSONNEL.

General

Since weather conditions and terrain frequently vary, no specific braking distance can be specified. The test is intended to compare similar vehicles by applying the parking brake (to eliminate different pedal pressures) at a common point to determine if any vehicle shows significantly different braking characteristics from other vehicles being tested.

Since loss of braking performance can deteriorate over a prolonged period, brake performance characteristics should also be compared to the performance of a new vehicle.

Test Method

On a dry paved surface that is free of gravel, sand, etc., approach a marker at governed speed. Engage and latch the parking (Park) brake at the marker and observe the stopping distance of the vehicle. Any vehicle that stops in a significantly greater distance than an acceptable vehicle should be tested again. If it again fails to stop in an acceptable distance, it should be immediately removed from service and inspected by a qualified mechanic.

The brake pedal free travel should be inspected on a daily basis (1" - 1 1/2" (2.5 - 3.8 cm) free travel before any resistance is detected). Excessive pedal travel is an indication of one or both of the wheel brakes failing to adjust. Hard pedal is an indication that the linkage system has become too tight and may indicate a damaged cable or bracket.

The mechanic should sit in the center of the seat to equalize weight distribution and perform a 'panic stop' by applying maximum force and travel to the service brake pedal while moving at full governed speed. If both wheels lock as the result of the panic stop, it is reasonable to assume that the problem originates in the parking brake system and the parking brake should be adjusted. If one wheel fails to lock, it is reasonable to suspect the service brake system and a complete brake maintenance (described elsewhere in this section) must be performed.

Test the vehicle before returning it to service.

HOW THE BRAKE SYSTEM WORKS

Wheel Brake Servo Action

NOTE

The wheel brakes are 'servo acting' and should not require any adjustment for brake shoe wear. Periodic inspection and lubrication of the wheel brake is required as part of the routine brake maintenance procedure.
The actuating linkage may require periodic adjustment to compensate for normal component wear or the replacement of individual components.

With the vehicle moving forwards, depressing the brake pedal pulls the brake cables. The brake cable pulls the wheel brake actuating lever which pushes the rear brake shoe against the brake drum. Continuing pressure causes the actuating lever to move which pushes the front shoe against the brake drum. As both shoes contact

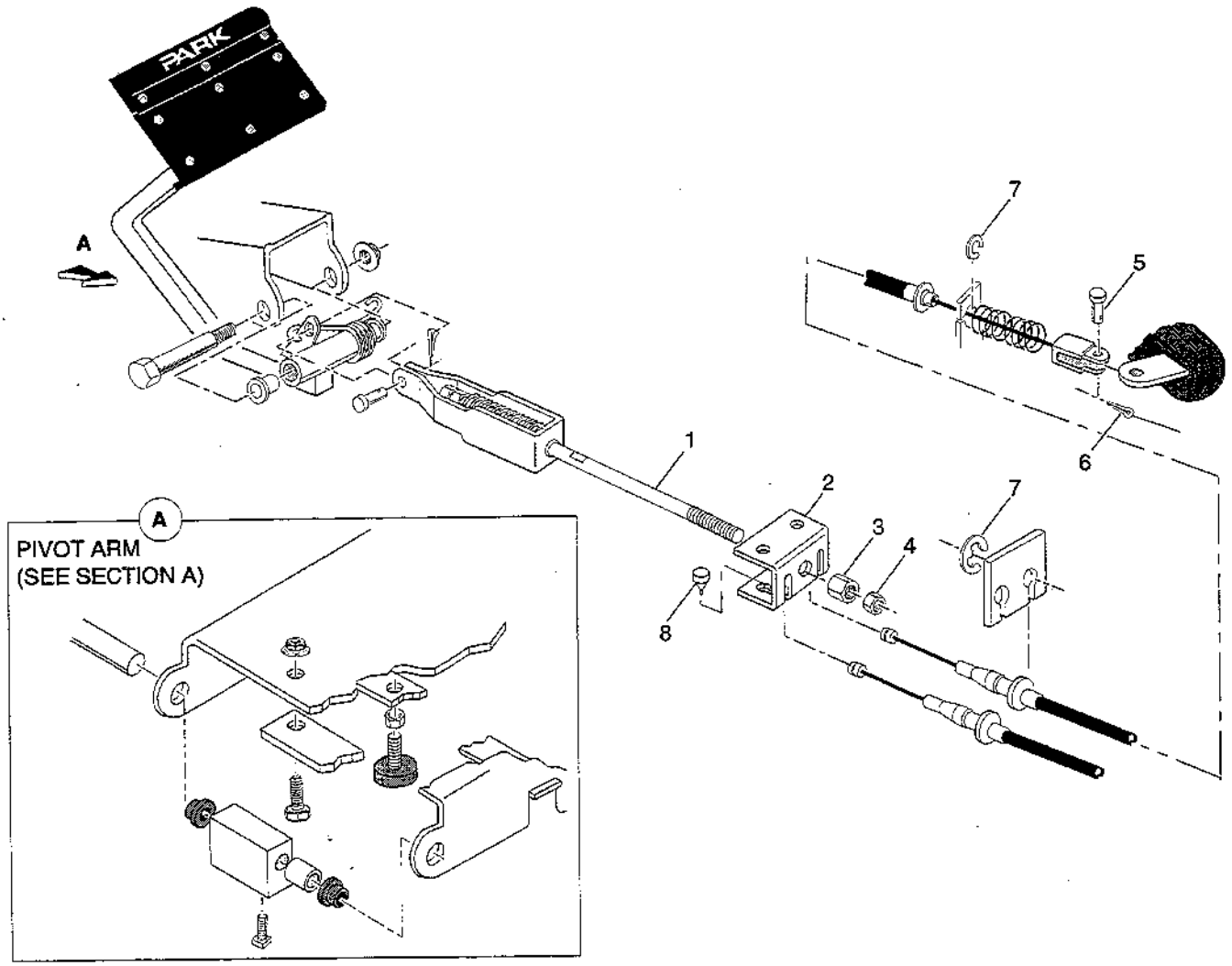


Fig. H-1 Brake System

the drum, 'servo action' takes place which causes the rear brake shoe to move upwards and apply pressure to the upper rear portion of the brake drum. The front shoe moves downwards and applies pressure to the lower front portion of the brake drum. The action reverses when the vehicle is operating in reverse.

Wheel Brake Adjuster

The wheel brakes are equipped with an automatic adjuster mechanism that is designed to compensate for brake shoe wear and eliminate the need for brake shoe adjustment.

In the initial break in period, the brake shoes wear at a more rapid rate than normal. This is the result of the shoes burnishing (seating) to the contour of the brake drum. Until the high spots have been worn away, automatic brake adjustment will be more frequent than that of a seated brake shoe. As the brake shoe becomes seated to the brake drum, the shoe cures and becomes harder.

The adjusting mechanism is activated by movement of the brake lever that is attached to the brake cable. The movement of this lever activates the brake adjuster lever. If adjustment is required, the brake adjuster lever engages and rotates the 'star wheel'. Rotation of the star wheel causes the threaded adjuster screw to move outwards against the brake shoes which moves the brake shoes into correct adjustment. Note that the adjustment occurs when the brake cable is ***released*** by releasing the brake pedal.

With the brake shoes in correct adjustment, the adjusting levers motion is limited to approximately 1/8" (3.2 mm) and cannot move enough to engage the next tooth on the star wheel. The adjuster lever moves on top of the flat of the star wheel tooth and no rotation of the star wheel takes place. As the brake shoes wear, the motion of the adjusting lever increases until it reaches the point that it engages the next tooth of the star wheel and rotates it to expand the adjuster screw and the brake shoes. The process is then repeated as the shoes continue to wear Brake Pedal and Linkage.

Brake Pedal and Linkage

(See Fig. H-2 "Compensator and Equalizer" on page H-3)

The brake pedal provides a mechanical advantage which is a relationship between the length of the brake pedal and the length of the arm that the brake cables and compensator are attached to.

The brake compensator assembly applies a preload to the system that insures that the parking brake remains under tension whenever it is engaged. As the service brake pedal is engaged the spring within the compensator linkage is compressed until the linkage engages the tube within the spring and becomes solid. The linkage between brake pedal and wheel brake transfers foot pressure to the wheel brake.

The left and right brake cables are joined to the compensator linkage with an equalizer link. Due to variations in individual wheel brake adjustment and friction within the driver's and passenger side brake cables, the equalizer may be slightly misaligned. This misalignment is normal, however misalignment that exceeds 1/8" (3.2 mm) per side, 1/4" (6.4 mm) total is an indication of a damaged brake cable or a wheel brake that is not adjusting correctly. The routine brake inspection will identify the suspect component(s).

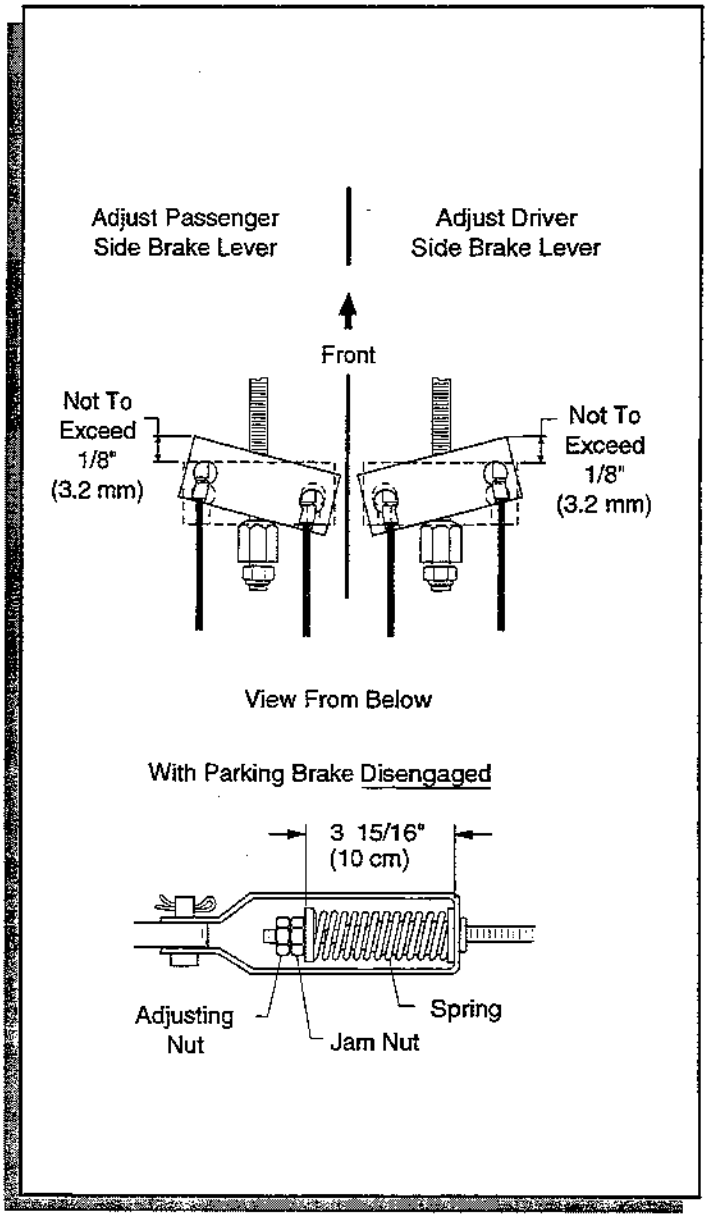


Fig. H-2 Compensator and Equalizer

NOTE

Brake Maintenance should include the inspection and adjustment of all brake components. The following tool list includes the tools required to perform all maintenance.

BRAKE MAINTENANCE

Tool List	Qty. Required
Floor jack, hydraulic	1
Jack stands	4
Wheel chocks	4
Socket, 1/2", 1/2" drive	1
Socket, 3/4", 1/2" drive	1
Socket, 11/16", 1/2" drive	1
Socket, 1/4", 3/8" drive	1
Torque wrench, 1/2" drive ft. lbs.	1
Torque wrench, 3/8" drive, in. lbs.	1
Extension, 6", 1/2" drive	1
Ratchet, 1/2" drive	1
Open end wrench, 1/4"	1
Open end wrench, 1/2"	1
Straight blade screwdriver	1
Straight blade screwdriver, narrow	1
Pliers	1
Ball peen hammer	1
Plastic tipped hammer	1
Puller (E-Z-GO P/N 15947-G1)	1
Pry bar	1

New Vehicles

(See Fig. H-1 "Brake System" on page H-2)

NOTE

A brake problem that occurs before the routine maintenance should be carefully evaluated. A component change or repair may be in order, however if the routine maintenance time is imminent, it is recommended that the entire maintenance be performed.

A new vehicle will undergo an initial break in of components that will include brake cables and the seating of the brake shoes. In this initial break in period, the brake shoes wear at a more rapid rate than normal. This is the result of the shoes burnishing (seating) to the contour of the brake drum. Until the high spots have been worn away, automatic brake adjustment will be more frequent than the wear of a seated brake shoe. As the brake shoe becomes seated to the brake drum, the shoe cures and becomes harder.

In this break in period it is not uncommon for the brake pedal free travel to be diminished and the effort required to latch the parking brake may rise to an unacceptable level. The timing of this situation varies due to the terrain that the vehicle is used on and the driving habits of the operator(s). If this occurs, the brake linkage should be adjusted. The adjustment is made at the compensating rod (1) **at the equalizer (2) end only.** Adjust the spherical nut (3) until the brake pedal free play meets specification. Tighten the jam nut (4) to 10 - 11 ft. lbs torque. Inspect both wheel brake actuating levers to determine if the levers are returning fully with the brake pedal released. If the operation is satisfactory, return the vehicle to service.

Troubleshooting Brake Problems

⚠ WARNING ⚠

EACH OF THE FOLLOWING PROBLEMS MAY BE INDIVIDUALLY CORRECTED, HOWEVER THE DAILY BRAKE PERFORMANCE TEST MUST BE PERFORMED TO DETERMINE THAT THE BRAKING SYSTEM HAS BEEN RETURNED TO AN ACCEPTABLE CONDITION.

SATISFACTORY BRAKE PERFORMANCE DOES NOT ELIMINATE THE NEED FOR ROUTINE BRAKE MAINTENANCE AS DESCRIBED IN THE PERIODIC MAINTENANCE SCHEDULE.

1. Hard pedal (No free play)
   - Linkage Adjustment or improper wheel brake actuator motion
2. Spongy pedal (Too much free play)
   - Linkage adjustment or wheel brake adjuster not functioning correctly
3. Dragging brake
   - Brake shoe not retracting or brake cable not returning
4. Inadequate braking (One wheel will not lock)
   - Wheel brake adjuster not functioning correctly or brake lever not returning
5. Inadequate braking (General)
   - Requires total periodic maintenance

6. Parking brake hard to latch
   - Adjust pedal free play and check that wheel brake actuators are returning fully.

7. Parking brake will not stay latched
   - Worn latch mechanism, no preload (adjust linkage) or incorrectly adjusted accelerator kick off cam

8. Parking brake will not hold on grade (Normal braking O.K.)
   - Adjust linkage

⚠ WARNING ⚠

IT IS IMPORTANT TO PERFORM THE FOLLOWING BRAKE MAINTENANCE IN THE SEQUENCE DESCRIBED.

FAILURE TO FOLLOW THE PRESCRIBED SEQUENCE COULD RESULT IN IMPROPER BRAKE OPERATION THAT COULD CAUSE SEVERE INJURY.

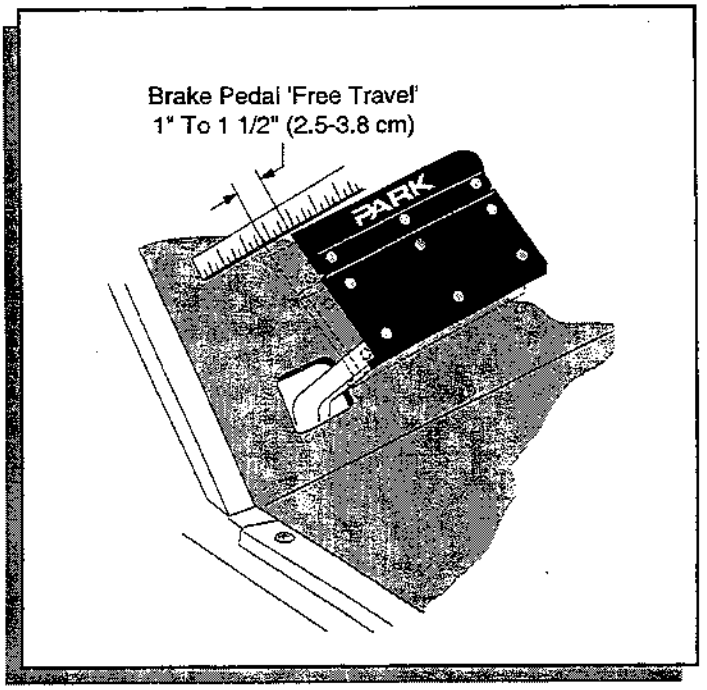


Fig. H-4 Brake Pedal 'Free Travel'

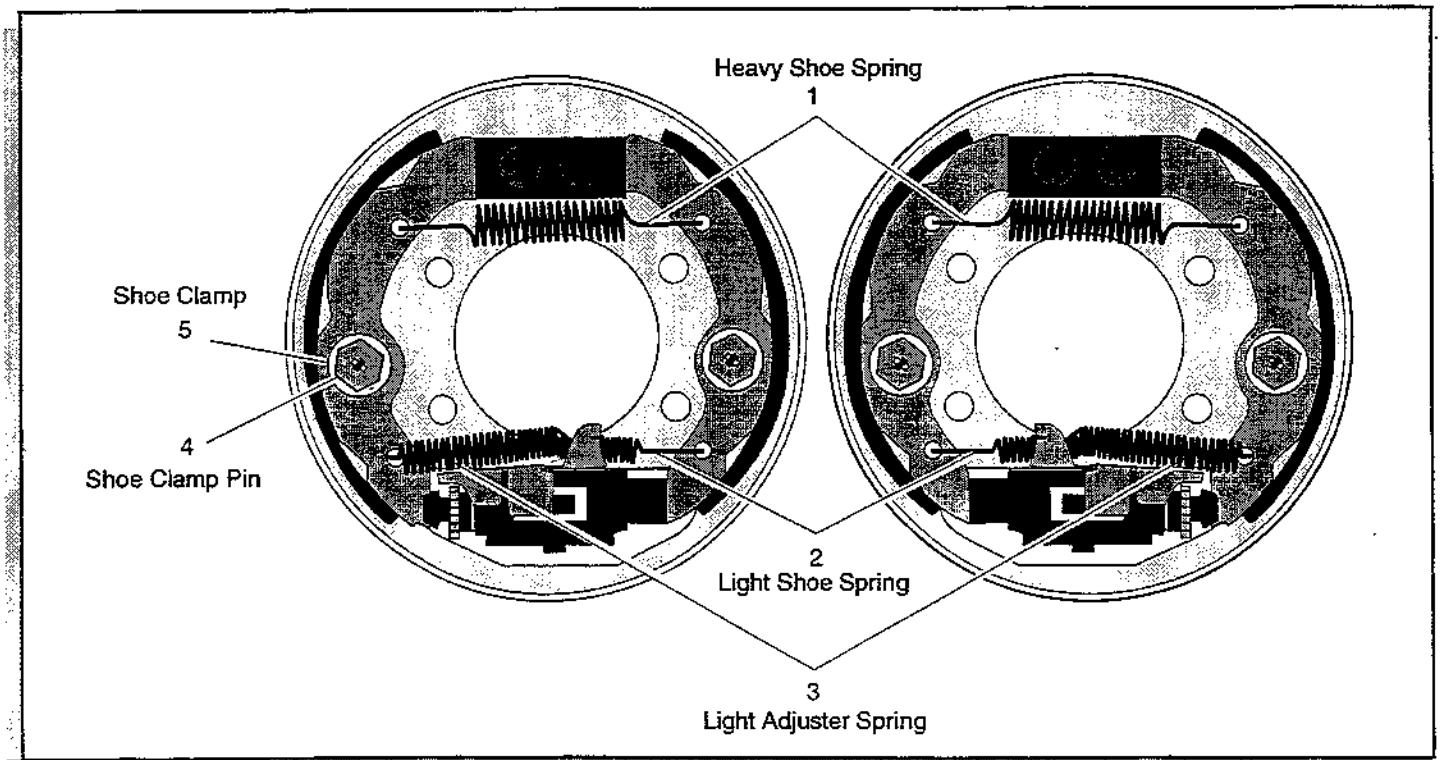


Fig. H-3 Wheel Brake Driver's and Passenger Side

Periodic Brake Maintenance

(See Fig. H-1 "Brake System" on page H-2)

(See Fig. H-4 "Brake Pedal 'Free Travel'" on page H-5)

Refer to Periodic Service Schedule for service interval (perform more frequently under severe conditions).

1. Raise the entire vehicle as specified in the Safety Procedures in Section 'B' of this manual.
2. Determine that the free pedal travel is within specification (1" to 1 1/2" (2.5 - 3.8 cm) of movement at the brake pedal before any movement of the brake levers takes place). Adjust if required per 'New Vehicles' elsewhere in this section. Rotate each rear wheel by hand and feel for smooth rotation of the wheel and brake drum. Any roughness indicates a dragging brake shoe which will require correction.
3. Remove the clevis pin from both brake cables where they attach to the wheel brake levers.
4. Rotate the wheel by hand and compare the motion with step # 3.
   - If there is no drag in either step 3 or 5, the brake shoes are not dragging and the brake cables are not binding.
   - If the brake dragged in step 3, but does not drag when the brake cable is disconnected, the brake cable **must** be replaced. Brake cable replacement consists of removing the retaining rings (7) at either end of the outer brake cable and removing the rubber plug (8) at the equalizer (2). The cable can then be removed and a new one installed. Do not connect to the brake until the wheel brake has been disassembled and serviced. (Ref. Fig. H-1)
   - If the brake dragged in step 3, and continues to drag with the brake cable disconnected, the wheel brake is the cause.

Brake Drum Removal

(See Fig. H-5 "Wheel Brake" on page H-6)

(See Fig. H-6 "Removing Castellated Nut" on page H-6)

Remove the dust cap (1) to gain access to the castellated nut (2) and the cotter pin (3). Remove the cotter pin and remove the castellated nut as shown. **Do not apply the brake** when removing nut. (Ref. Fig. H-6) Remove the washer (4) and adapter (5).

Slide the hub and drum (6) off the axle shaft. Tap the drum with a plastic hammer to loosen it from the axle shaft or use drum puller (E-Z-GO P/N 15947-G1).

Note the presence of the washer (7) inside the brake drum, which may be on the axle shaft or attached to the rear of the drum hub. This washer must be reinstalled when the brake is reassembled.

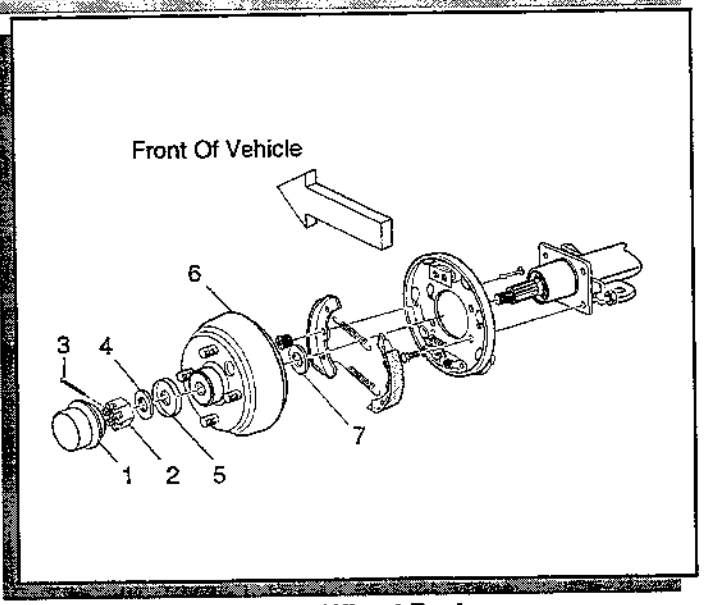


Fig. H-5 Wheel Brake

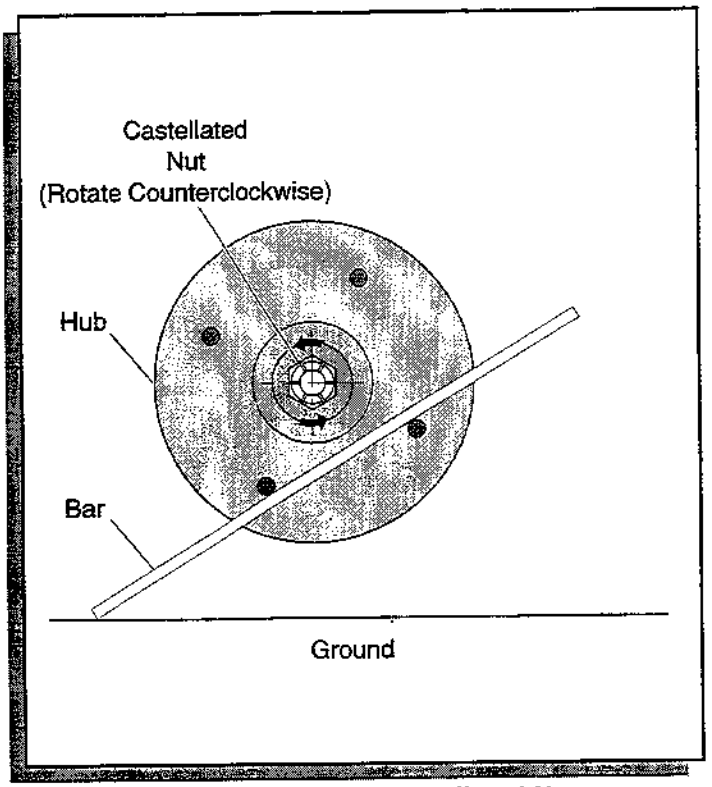


Fig. H-6 Removing Castellated Nut

NOTE

If the hub and drum does not slide from the brake assembly, the brake shoes must be retracted. Rotate the hub so that the approximately 1" (2.54 cm) hole is in the six o'clock position which is directly over the brake mechanism. Use two small straight blade screwdrivers to move the adjusting lever free from the adjusting wheel while rotating the star wheel upwards.

Brake Shoe Removal/Inspection

(See Fig. H-3 "Wheel Brake Driver's and Passenger Side" on page H-5)

(See Fig. H-7 "Brake Shoe Wear" on page H-7)

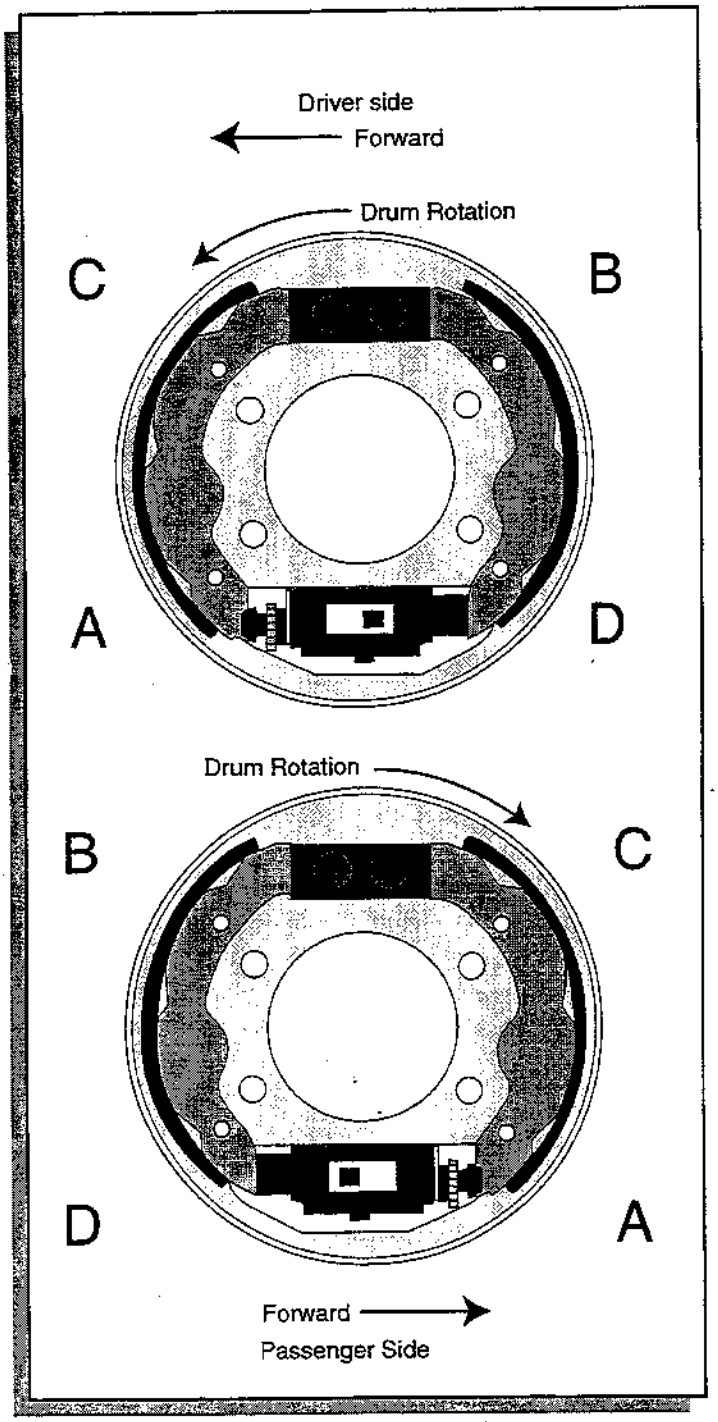


Fig. H-7 Brake Shoe Wear

The pattern of normal brake shoe wear is shown in quadrant 'A', 'B', 'C' & 'D' with quadrant 'A' showing the most wear. Quadrant 'B' will show the second most wear. Quadrant 'A' and 'B' will always show the most wear.

Remove the three brake shoe springs (1,2,3) being sure to note the location of the heavy spring and the adjuster spring. Hold the shoe clamp pin (4) and compress and rotate the shoe clamp (5) 90 degrees to release it from the shoe clamp pin. Remove the brake shoes.

Measure the brake shoe thickness at the most worn area. Brake shoe thickness **must never be less than .060" (1.52 mm)** at any point on the shoe. If the brake shoe thickness is approaching the .060" (1.52 mm) dimension, it would be prudent to replace the shoes at this time.

Backing Plate Inspection/Lubrication

(See Fig. H-8 "Lubricating Backing Plate and Adjuster" on page H-8)

⚠ WARNING ⚠

A BACKING PLATE ASSEMBLY THAT SHOWS ANY INDICATION OF GALLING OR GOUGING IS NOT REPAIRABLE AND MUST BE REPLACED.

WEAR EYE PROTECTION AND A MASK WHEN CLEANING BRAKE COMPONENTS.

Operate the brake lever to check for free motion. Remove the rubber boot that covers the adjuster and clean any accumulated brake dust. Check that the star wheel moves freely and clean and lubricate the adjuster mechanism. Clean any accumulated brake dust from the backing plate. If the shoes are to be replaced, the adjuster should be returned to minimum extension. Operate the sliding portion of the adjuster against the backing plate and check for free movement. Lubricate the backing plate with a commercially available brake component lubricant in the areas indicated being careful to lubricate the slider completely and the friction surfaces for the brake shoes.

CAUTION

IT IS IMPORTANT THAT THE FRICTION AREAS BETWEEN THE BACKING PLATE AND THE BRAKE SHOES BE LUBRICATED. BE CAREFUL NOT TO ALLOW LUBRICANT TO CONTACT THE BRAKING PORTION OF THE BRAKE SHOES OR THE FRICTION SURFACE OF THE BRAKE DRUM.

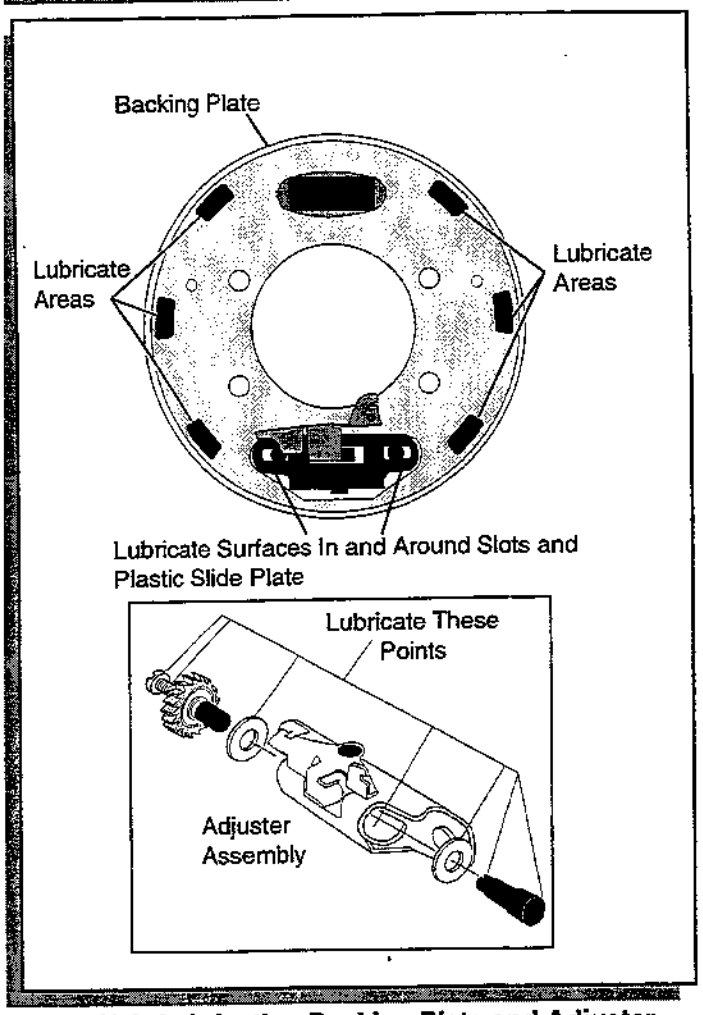


Fig. H-8 Lubricating Backing Plate and Adjuster

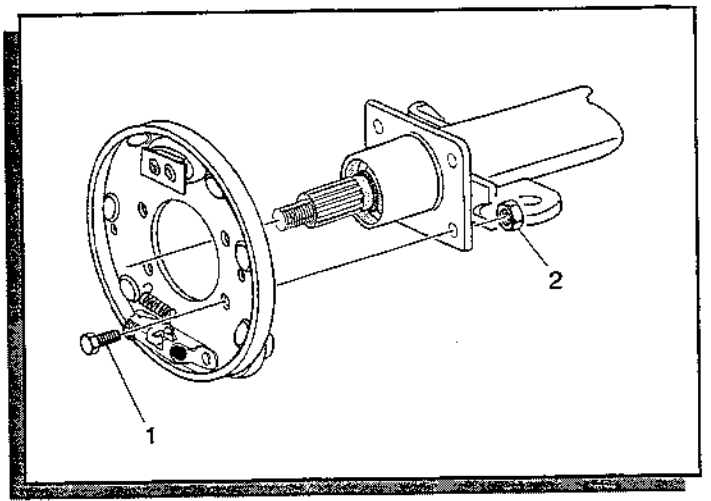


Fig. H-9 Backing Plate Installation

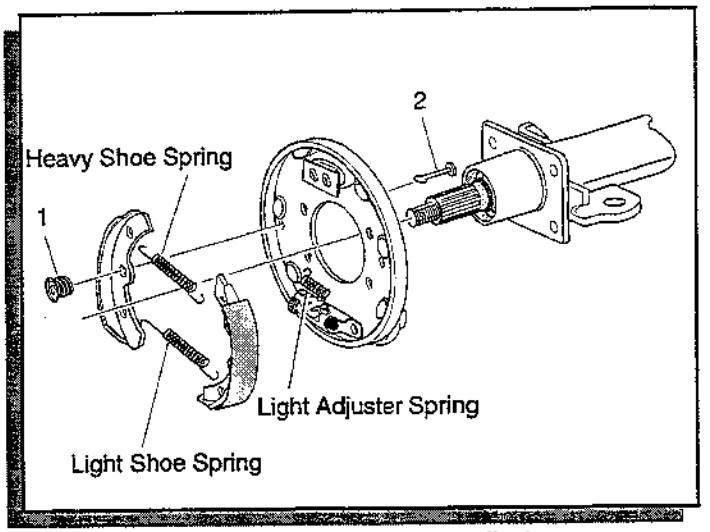


Fig. H-10 Brake Shoe Installation

Backing Plate Installation

(See Fig. H-9 "Backing Plate Installation" on page H-8)

If the backing plate has been removed for replacement or as part of an axle bearing or seal replacement, the hardware (1, 2) should be tightened to 23 - 35 ft. lbs torque.

Brake Shoe Installation

(See Fig. H-10 "Brake Shoe Installation" on page H-8)

NOTE

The metal frame of the brake shoes differs between the front and rear shoes. The shoe with the straight end engages in the slot in the adjusting screw. The identical end of the shoes engage with the fixed anchor. The shoe with the triangular end engages with the rear of the adjuster mechanism.

The brake springs must be installed with the light spring closest to the adjuster with the long hook installed down through the rear brake shoe. The heavy top spring is installed with the spring hooks facing in. The long hooked end of the adjuster spring is inserted through the front of the front shoe and hooked to the adjuster with the hook end facing out.

Install the shoes as indicated in the note on the previous page and install the shoe clamp (1) over the shoe clamp pin (2) and rotate 90 degrees to lock them in place.

Brake Drum Replacement

(See Fig. H-5 "Wheel Brake" on page H-6)

(See Fig. H-11 "Brake Drum Installation" on page H-9)

(See Fig. H-12 "Wheel Brake Lever Adjustment" on page H-9)

Clean the axle shaft to remove dirt, grease and any foreign matter. Apply a small amount of anti-seize compound to the spline. Retract the brake shoes enough to permit the brake drum to be installed. Install the thin washer (7) and slide the brake drum (6) into place. Check

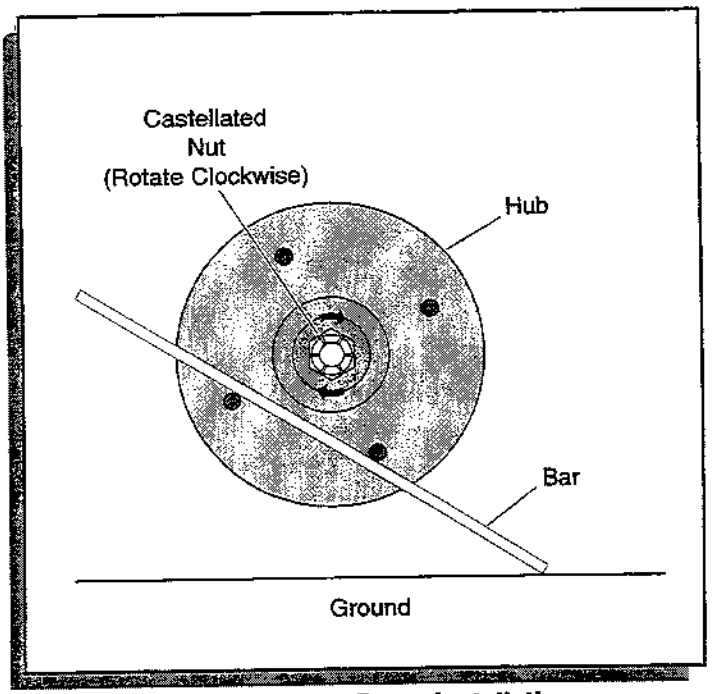


Fig. H-11 Brake Drum Installation

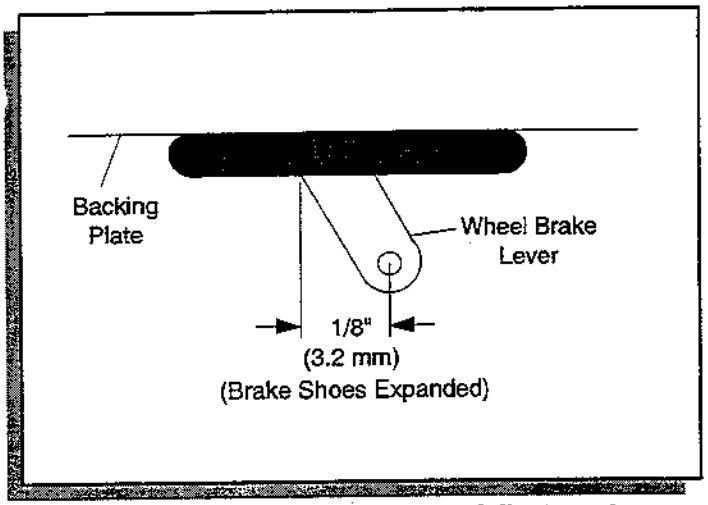


Fig. H-12 Wheel Brake Lever Adjustment

to ensure the nose of drum hub is beyond the end of the axle splines. If not, install additional washers as needed to obtain required spacing. **Do not** apply the brake when installing nut. (Ref. Fig. H-11) Install the remaining hardware and tighten the nut to 80-90 ft. lbs. Continue to tighten until a cotter pin can be installed through the castellated nut and the hole in the axle. Maximum torque is 140 ft. lbs. Install a new cotter pin. **DO NOT BACK OFF NUT TO INSTALL THE COTTER PIN.**

Using a suitable tool such as a hammer handle, actuate the wheel brake lever and release fully. Repeat the process until the brake lever travel is approximately 1/8" (3.2 mm) which indicates that the brake shoes have adjusted to their correct position. Install the brake cables using clevis pin and a new cotter pin.

Compensating Link Adjustment

(See Fig. H-13 "Equalizer Position" on page H-9)

(See Fig. H-1 "Brake System" on page H-2)

1. (Ref. Fig. H-13) Check the position of the equalizer with the parking brake engaged.

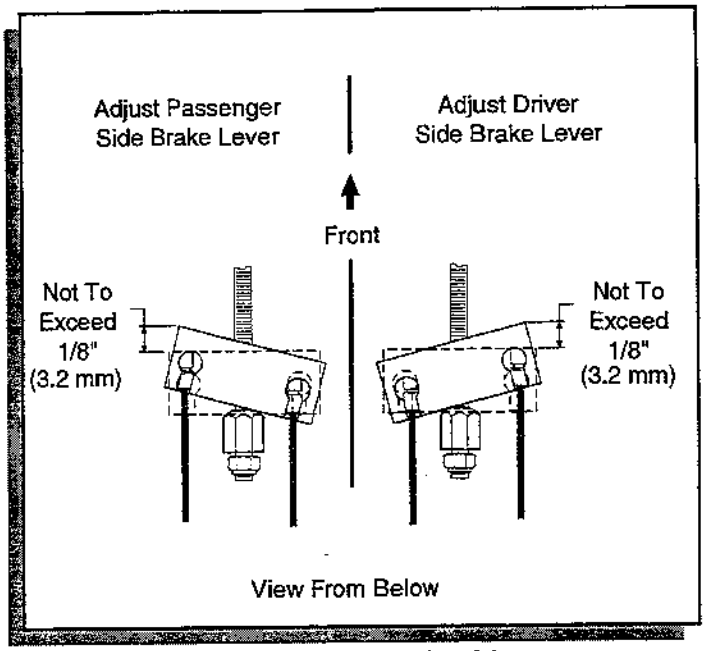


Fig. H-13 Equalizer Position

- If dimension exceeds 1/8" (3.2 mm) go to step 2.
- If dimension is less than 1/8" (3.2 mm) go to "Adjusting the Compensating Spring" on page H-9.

2. (Ref. Fig. H-1) Release the parking brake and remove the wheel indicated by the equalizer position. Remove the clevis pin (5) and cotter pin (6) from the wheel brake lever.
3. Using a suitable tool such as a hammer handle, actuate the wheel brake lever and release fully. Repeat the process until the brake lever travel becomes approximately 1/8" (3.2 mm) which indicates that the brake shoes have adjusted to their correct position.
4. Install the brake cable using clevis pin (5) and a new cotter pin (6).

Adjusting the Compensating Spring

(See Fig. H-14 "Compensating Spring Adjustment" on page H-10)

In general, no adjustment will need to be made since the spring is factory calibrated. With the parking brake **DISENGAGED** check that the compensating spring length is 3 15/16" (10 cm). If an adjustment is required it is made

at the nuts at the spring facing the front of the vehicle. Tighten the jam nut firmly after adjusting.

Adjusting Brake Pedal 'Free Travel'

(See Fig. H-15 "Brake Pedal 'Free Travel'" on page H-10)

Measure the free play of the pedal and determine if it is between 1" to 1 1/2" (2.5 - 3.8 cm). If an adjustment is required, it must be made at the spherical nut (1) behind the equalizer. Release the jam nut (2) and adjust the spherical nut to achieve the correct pedal free play. Tighten the jam nut to 10 - 11 ft. lbs. torque.

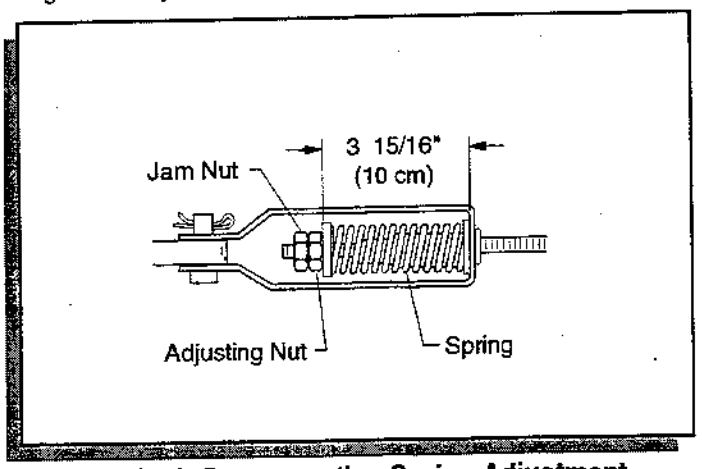


Fig. H-14 Compensating Spring Adjustment

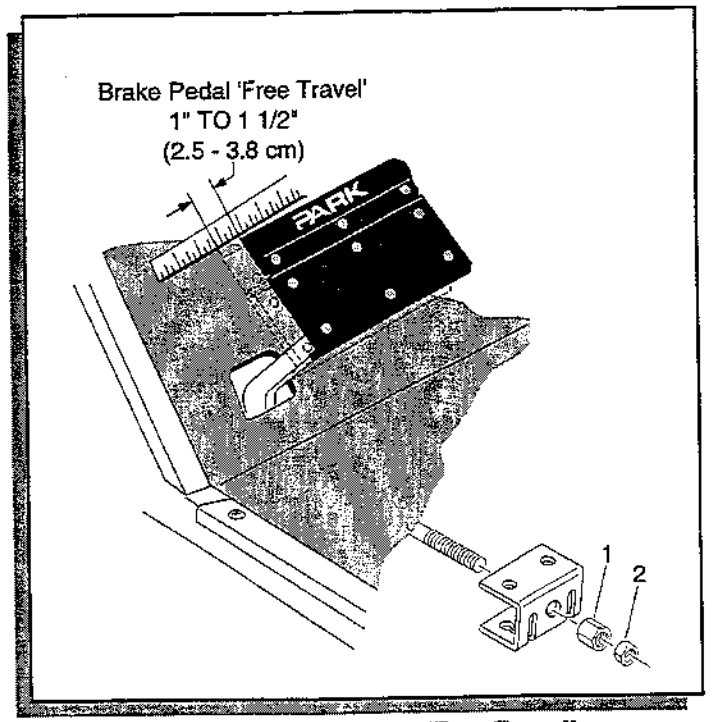


Fig. H-15 Brake Pedal 'Free Travel'

Checking for 'Free Travel' Movement

(See Fig. H-16 "Removing the Brake Pedal" on page H-11)

Check that the brake pedal returns against the pedal bumper when released. If the pedal does not release fully or is sluggish, the brake pedal should be inspected. Check that the torsion spring (4) is hooked around the pedal and the frame. If the spring is correctly installed and the pedal does not return satisfactorily, the pedal will need to be removed.

Brake Pedal Removal

(See Fig. H-16 "Removing the Brake Pedal" on page H-11)

1. Remove the compensator spring assembly (1) by removing the cotter pin (2) and the clevis pin (3). Unplug the wiring harness on Freedom models.
2. Unhook the torsion spring (4) by inserting a thin blade screwdriver between the small hook and the bracket. Move the hook back and to the side to release the torsion spring (4).
3. Remove the lock nut (5) and the shoulder bolt (6) and remove the brake pedal. Inspect the shoulder bolt for signs of corrosion that could bind with the bushings (7). This is a plated bolt, therefore it must be replaced with a new one if corrosion is found. Inspect the bushings (7) for signs of wear resulting from corrosion to the bolt. If any damage is found, replace the bushings.

Parking Brake Pedal Removal

(See Fig. H-16 "Removing the Brake Pedal" on page H-11)

Note the location of the two torsion springs (8). Remove the push nut (9) and remove the pin (10).

Parking Brake Pedal Installation

(See Fig. H-16 "Removing the Brake Pedal" on page H-11)

Installation is in the reverse order of disassembly. Use a new push nut.

Brake Pedal Installation

(See Fig. H-16 "Removing the Brake Pedal" on page H-11)

Brake pedal installation is in the reverse order of disassembly. Tighten the nut (5) to 25 - 29 ft. lbs. torque and use a new cotter pin when installing the compensator linkage.

Adjusting the Pedal Bumper

(See Fig. H-17 "Pedal Bumper Adjustment" on page H-11)

When the brake pedal is released it will contact the pedal bumper. The dimension from the top of the pedal arm to the setscrew heads in the kick off cam should be approx-

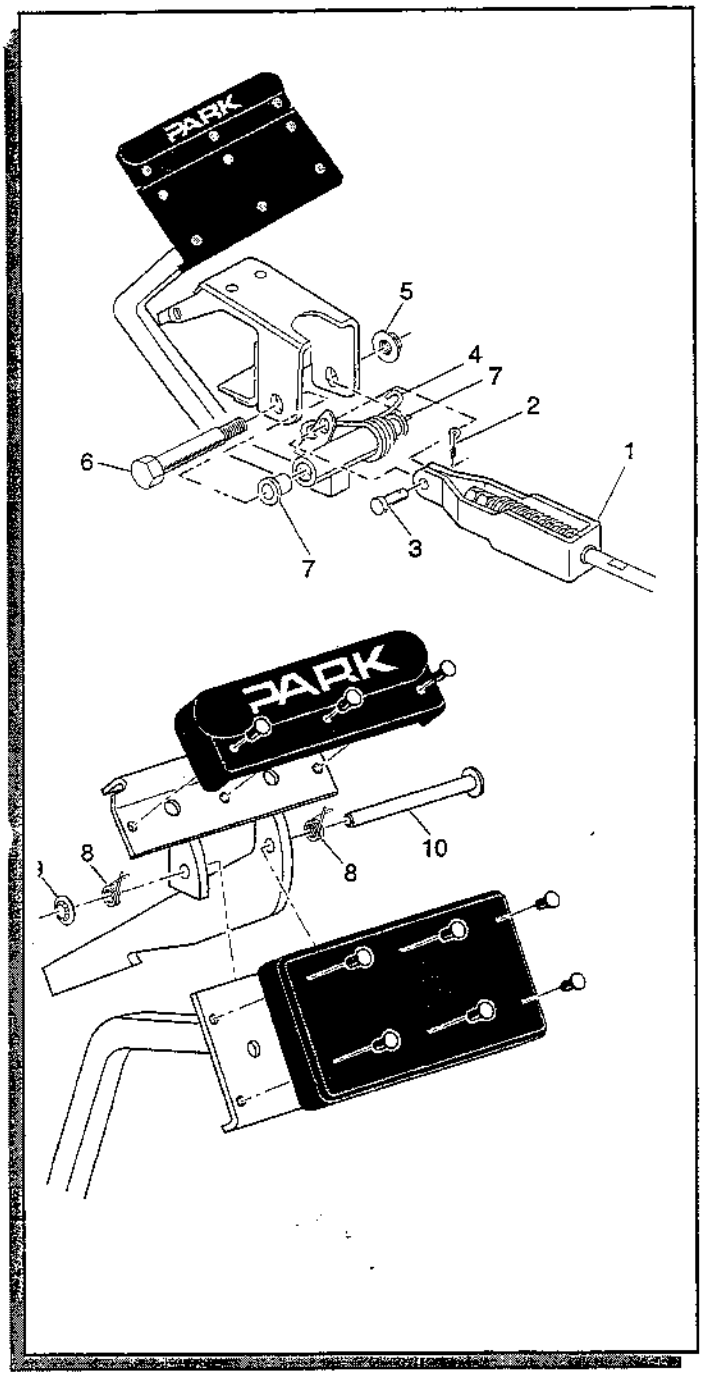


Fig. H-16 Removing the Brake Pedal

imately 1/4" (6.4 mm). If an adjustment to the pedal bumper is required, the bumper lock nut should be loosened and the bumper adjusted by rotating it. Tighten the lock nut to 12 - 14 ft. lbs.

Adjusting and Seating Brake Components

(See Fig. H-18 "Checking Accelerator Rod Adjustment" on page H-11)

1. Engage and release the parking brake 20 times, being sure to release the pedal and allow it to return each time.

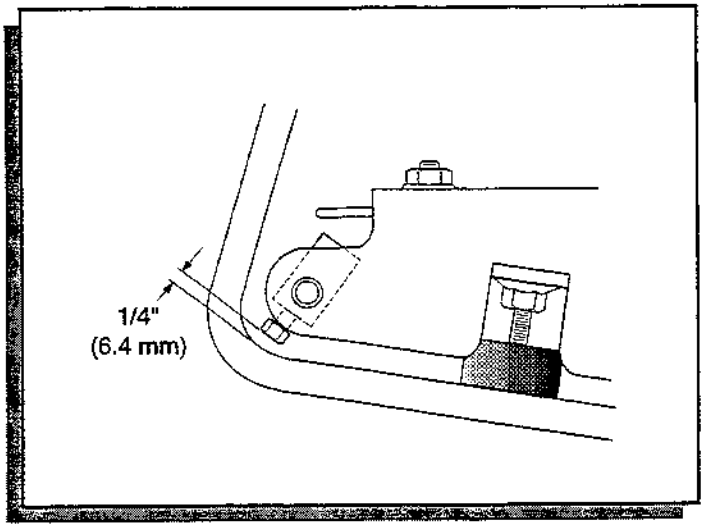


Fig. H-17 Pedal Bumper Adjustment

2. Engage the parking brake and check that the dimension behind the compensator linkage frame and the flange on the rod is 3/32" (2.4 mm). If the dimension is incorrect, the free travel must be readjusted until the correct dimension is achieved.

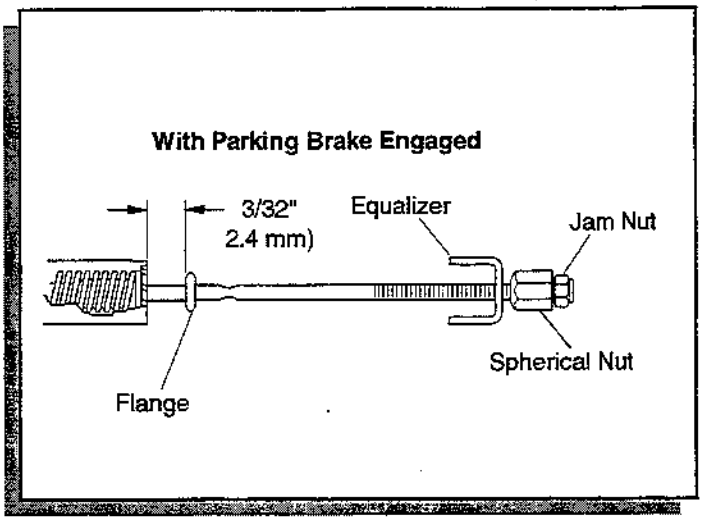


Fig. H-18 Checking Accelerator Rod Adjustment

Parking Brake Adjustment

1. The parking brake must be adjusted after the service brake has been adjusted.
2. Remove the seat and place the direction selector in the 'F' position. Engage the parking brake and turn the key switch 'ON'.
3. Slowly depress the accelerator pedal until the 'click' of the solenoid is heard. If the solenoid is activated **after**

⚠ WARNING ⚠

TO PREVENT INADVERTENT VEHICLE MOVEMENT, BE SURE THAT BOTH REAR WHEELS ARE RAISED BEFORE PERFORMING THIS TEST.

the parking brake has released, the parking brake is functioning correctly. If the solenoid is activated before the parking brake is released, the following must be inspected:

- An improperly adjusted parking brake kick off cam.
- The catch bracket or latch arm are worn or damaged.

Latch Pedal and Latch Arm Inspection/ Replacement

(See Fig. H-19 "Catch Bracket Adjustment" on page H-13)

1. Remove the drivers side front wheel to gain improved access to the brake pedal release mechanism.

⚠ WARNING ⚠

WORN LATCH ARMS AND CATCH BRACKETS ARE HARDENED PARTS. DO NOT GRIND OR FILE THEM. NEW PARTS MUST BE USED.

2. Inspect the latch bracket and pedal latch arm for signs of wear or damage. If the latch arm requires replacement, refer to "Brake Pedal Removal" page H-12.
3. If the catch bracket requires replacement remove the two bolts (1) and nuts (2) which secure the catch bracket. Replace the catch bracket with a new one and tighten the hardware to 85 - 95 in. lbs. torque
4. Inspect the kick off cam (3) for correct adjustment. With the parking brake engaged and fully latched, there must be no gap between the top of the cam and the latch arm.
5. To adjust the kick off cam (3), engage the parking brake and loosen the two cam set screws (4) and rotate the cam until it contacts the latch arm. Tighten the set screws to 45-55 in. lbs. torque.

Parking Brake Release Linkage Removal

(See Fig. H-20 "Parking Brake Release Linkage" on page H-13)

1. To remove the linkage rod (1), remove the cotter pin (2), washers (3) and bushings (4) from linkage rod.
2. Loosen the two setscrews (5) from the cam (6) and remove the cam pivot (7), cam (6) and spacer (8).
3. Inspect the bushings (9,10) and spacer (8). If they are worn replace them with new ones.

Parking Brake Release Linkage Installation

(See Fig. H-19 "Catch Bracket Adjustment" on page H-13)

(See Fig. H-20 "Parking Brake Release Linkage" on page H-13)

Installation is in the reverse order of disassembly. To adjust the kick off cam (3), engage the parking brake and loosen the two cam set screws (4) and rotate the cam until it contacts the latch arm. Tighten the set screws to 45-55 in. lbs. torque.

Final Test

Lower the vehicle and perform the daily braking test. If the test indicates inadequate brake performance, the brake shoes must be burnished to conform to the brake drum.

Burnishing Brake Shoes

⚠ WARNING ⚠

ALL BRAKE TESTS MUST BE DONE IN A SAFE LOCATION WITH REGARD FOR THE SAFETY OF ALL PERSONNEL.

To burnish the brakes, the vehicle must be operated in the forward direction at maximum governed speed and the brakes applied as hard as possible without locking the wheel(s). When the vehicle has come to a full stop, the vehicle should be operated at maximum speed in reverse and the brakes applied as hard as possible without locking the wheel(s). This braking operation in both directions is considered as one burnishing cycle. Repeat the cycle a minimum of 50 times for complete seating of brake shoes. If the brake performance is satisfactory after burnishing, the vehicle may be returned to service. If the performance is not satisfactory, there is a problem with the maintenance and it **must** be performed again in its entirety.

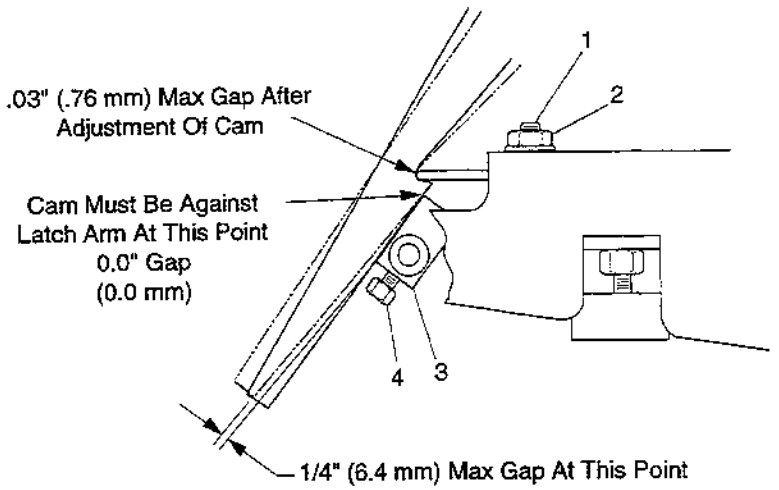


Fig. H-19 Catch Bracket Adjustment

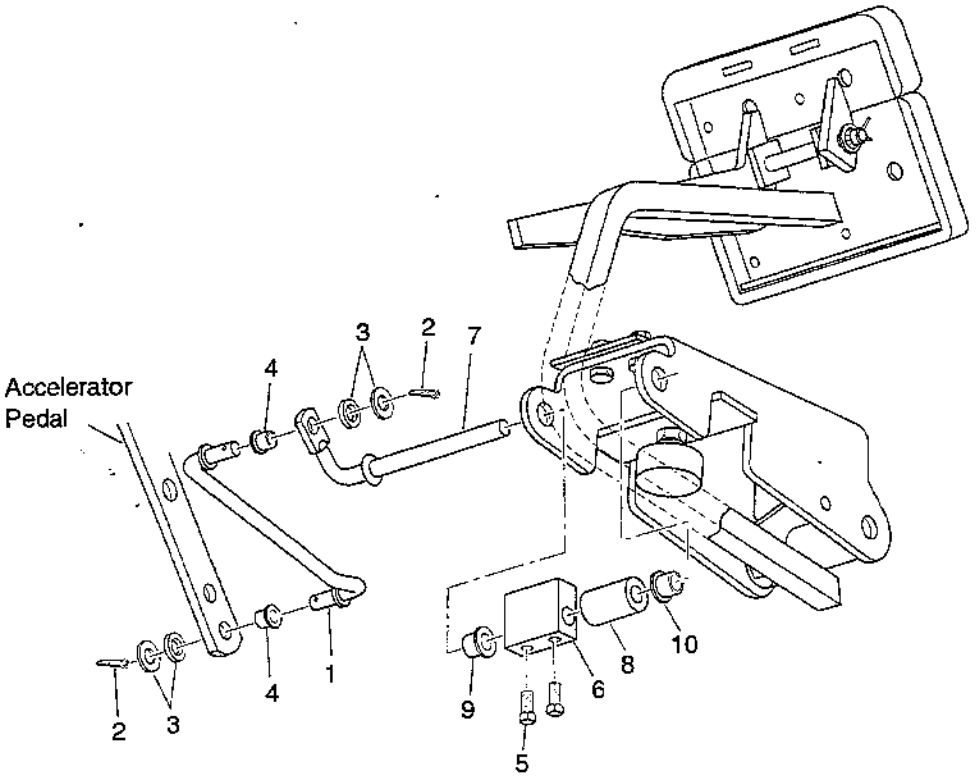


Fig. H-20 Parking Brake Release Linkage

Notes:

TABLE OF CONTENTS FOR SECTION 'J'

LIST OF ILLUSTRATIONS

Notes:

For further engine information, see Four Cycle Engine Shop Rebuild and Service Parts Manual, E-Z-GO P/N 27615-G01.

FOUR CYCLE ENGINE

Engine Specifications

Engine model	EH29
Type	Four cycle, overhead cam, OHC
Number of cylinders	2 (In-line)
Displacement	295 cc
Rated horsepower	9.0
Spark plug type	NGK BP4ES
Spark plug gap	.028" - .030" (.71-.76 mm)
Cooling	Fan
Oil Filter	Washable, permanent
Oil Pump	Gerotor

Engine Description

(See Fig. J-1 "Overhead Valve/Cam System" on page J-2)

The engine is a four cycle air cooled, in line, twin cylinder, overhead cam unit. It incorporates pressure lubrication, a washable permanent oil filter and counter rotating balance shaft.

An electronic ignition system fires both spark plugs simultaneously which eliminates the need for a distributor. The pistons are aligned together which means that they both are at TDC (Top Dead Center) and BDC (Bottom Dead Center) at the same time.

Engine Operation

(See Fig. J-1 "Overhead Valve/Cam System" on page J-2)

(See Fig. J-2 "Four Cycle Operation" on page J-3)

A four cycle engine has a power stroke for each piston every four strokes or two revolutions of the crankshaft. Since this engine has two pistons, the engine is timed to have one power stroke for every rotation of the crankshaft. To understand the operation of a four cycle engine, it is easiest to consider a single cylinder engine.

The first cycle (stroke) takes place with the piston moving down and the intake valve open. Fuel is drawn into the combustion chamber from the carburetor and through the intake valve and is known as the **intake stroke**. As the piston reaches the bottom (BDC) of its travel and starts to move upwards, the second cycle begins. The intake valve closes which seals the combustion chamber since the exhaust valve is already closed and causes the fuel air mixture to be compressed as the piston rises. This is known as the **compression stroke.** Just before the piston reaches BTDC (Before Top Dead Center) the spark plug fires which causes a rapid burning of the air fuel mixture. The temperature rises rapidly which causes the air fuel mixture to expand. The piston has been carried through TDC by centrifugal force and is now forced downwards into the third, or **power stroke** by the expanding gases. As the piston reaches BDC it enters the fourth cycle. The exhaust valve opens and the piston rises forcing burned gases from the combustion chamber in what is known as the **exhaust stroke.** As the piston moves through TDC and starts down, the first cycle is repeated.

In the E-Z-GO engine, there are two pistons that rise and fall simultaneously, however the valve cycles are staggered. When one piston is in the compression stroke the other is in the exhaust stroke. When the spark plugs fire, only one cylinder is on the power stroke.

In any engine there is vibration caused by the reciprocal motion of the pistons. In this engine the vibration is minimized by a counter rotating balancer that is driven from the crankshaft and is synchronized with the power strokes.

The camshaft is driven from the crankshaft by a toothed timing belt. The ignition timing is controlled by an electrical pulse received from a timing trigger which is activated by the crankshaft flywheel hub.

Valve Adjustment

(See Fig. J-3 "Overhead Valve Adjustment" on page J-4)

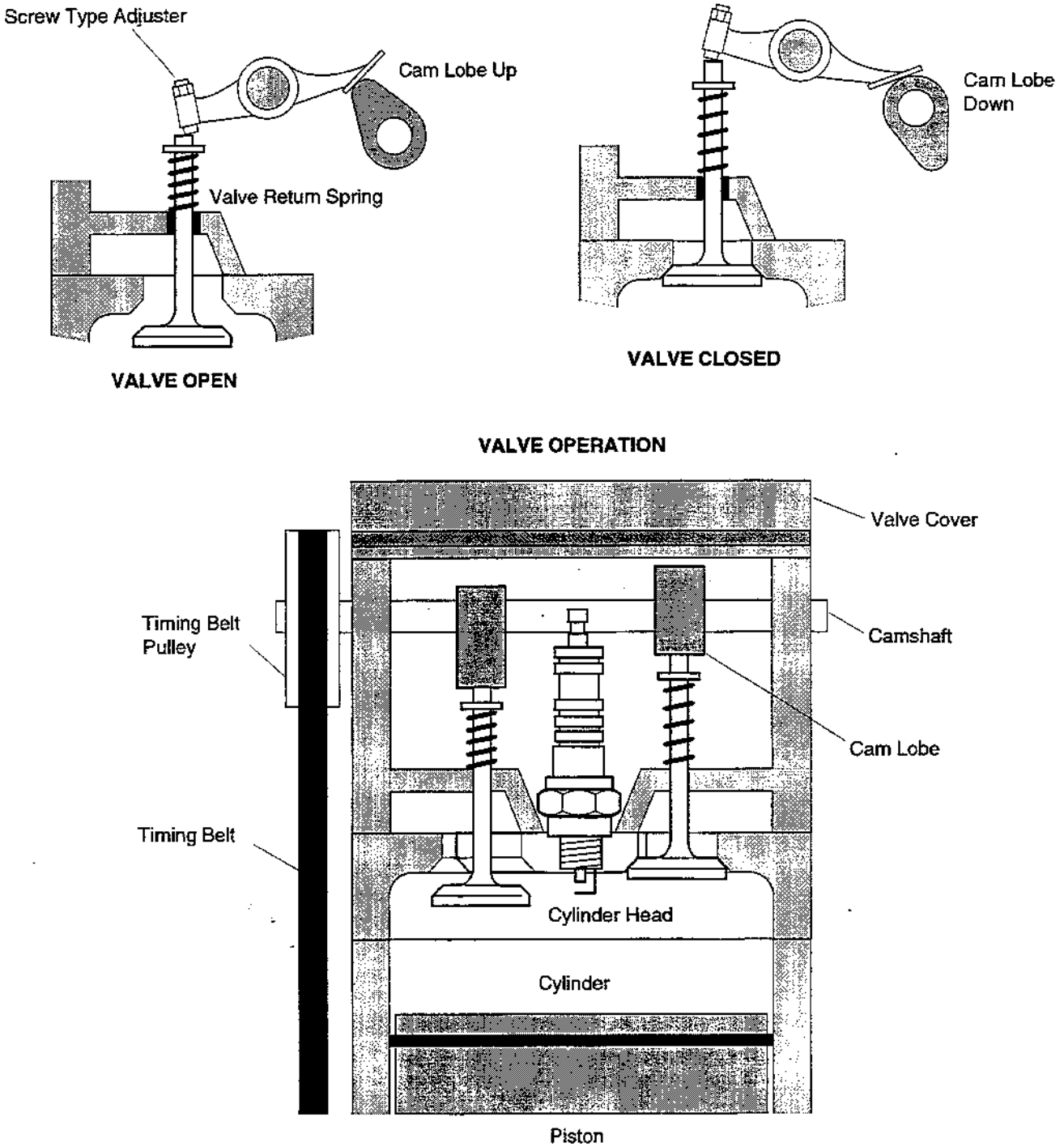
Tool List	Qty. Required
Flat feeler gauge	1
Straight blade screwdriver	1
Box end wrench, 10mm	1

The valves should be checked annually (250 Hours) to insure that they are in adjustment. A valve that is set too tight can cause excessive wear to the cam and rocker and may result in a burned valve. The same is true for a valve that is set too loose. The valve that is set too loose may make itself known by a clacking or tapping noise. The noise can often be masked by other mechanical noises and go undetected. Poor performance and fouled spark plugs can result from poor valve adjustment.

Adjustment Procedure

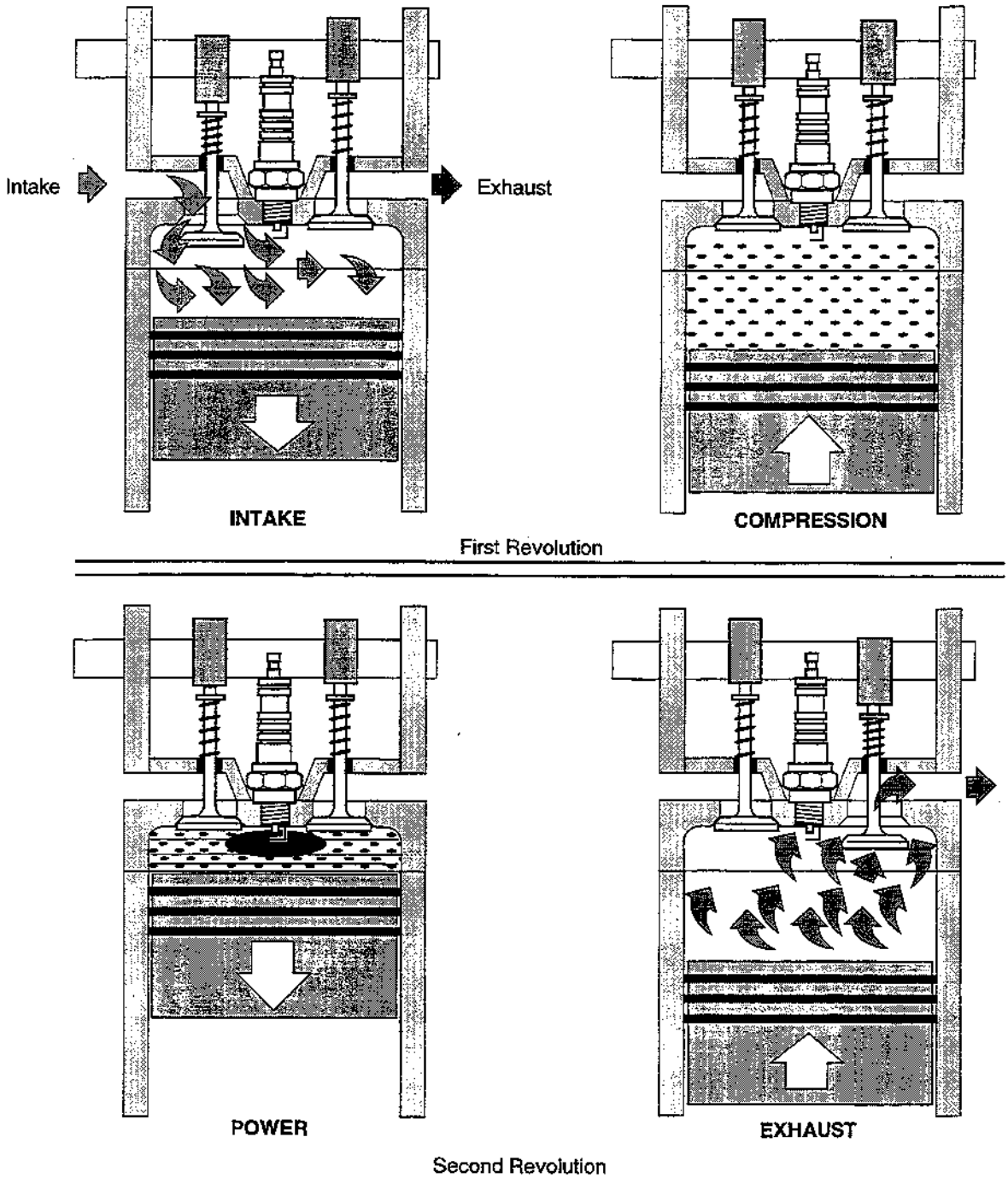
(See Fig. J-3 "Overhead Valve Adjustment" on page J-4)

The valve clearances are adjustable from the top of the engine and should be done with the engine cold. As an annual (250 hour) inspection, the valve clearance check consists of removing the valve cover and sliding a .004" (.10 mm) flat feeler gauge between the valve rocker and



NOTE: This Is A Simplified Diagram For Explanatory Use Only. Rockers, Guides, Seals, Etc. Have Been Omitted.

Fig. J-1 Overhead Valve/Cam System



**NOTE: This is A Simplified Diagram For Explanatory Use Only.
Rockers, Guides, Seals, Etc. Have Been Omitted.**

Fig. J-2 Four Cycle Operation

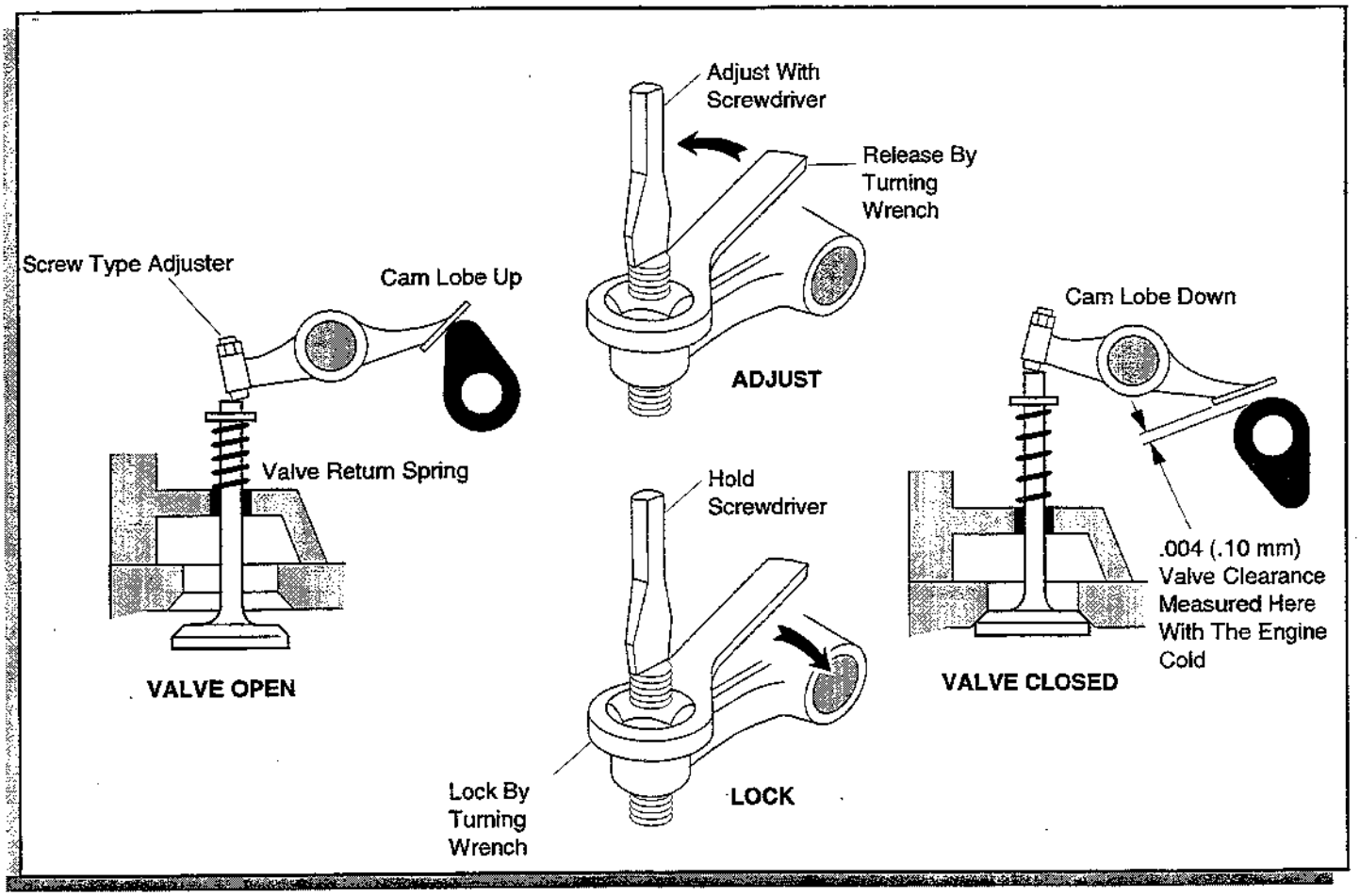


Fig. J-3 Overhead Valve Adjustment

the heel (lowest portion) of the cam. If the gauge slides in and out with some light drag felt, the valve does not require any adjustment.

⚠ WARNING ⚠

TO PREVENT ENGINE FROM INADVERTENTLY STARTING, THE NEGATIVE CABLE MUST BE REMOVED FROM BATTERY.

If the gauge is hard to insert or withdraw, the valve is too tight. Similarly if the gauge slides in and out with no resistance, the valve is too loose. To correct either of these undesirable conditions, loosen the jam nut of the adjuster and loosen or tighten the adjuster using a snug fitting straight blade screwdriver. Slide the feeler gauge back and forth between the rocker and cam until light resistance is felt. Hold the adjuster with the screwdriver and tighten the jam nut with a box wrench. Confirm the adjustment using the feeler gauge and readjust as necessary.

Manually rotate the engine until the cam lobe for the next valve is in the fully down position and check/adjust the valve as previously described. Repeat the process with the remaining two valves.

Valve Cover Installation

(See Fig. J-4 "Valve Cover Tightening Sequence" on page J-5)

Tool List	Qty. Required
Socket, 10mm, 3/8" drive	1
Torque wrench, 3/8" drive (in. lbs.)	1

It is important to use proper tightening procedures when replacing the valve cover, since distortion of the valve cover may result in oil leakage.

Examine the 'O' ring gasket for nicks, tears or other damage and replace if any damage is found. Wipe the valve cover and gasket clean, paying special attention to the inner groove surface. Position the gasket in the groove in the valve cover and apply a light coat of oil to the gasket.

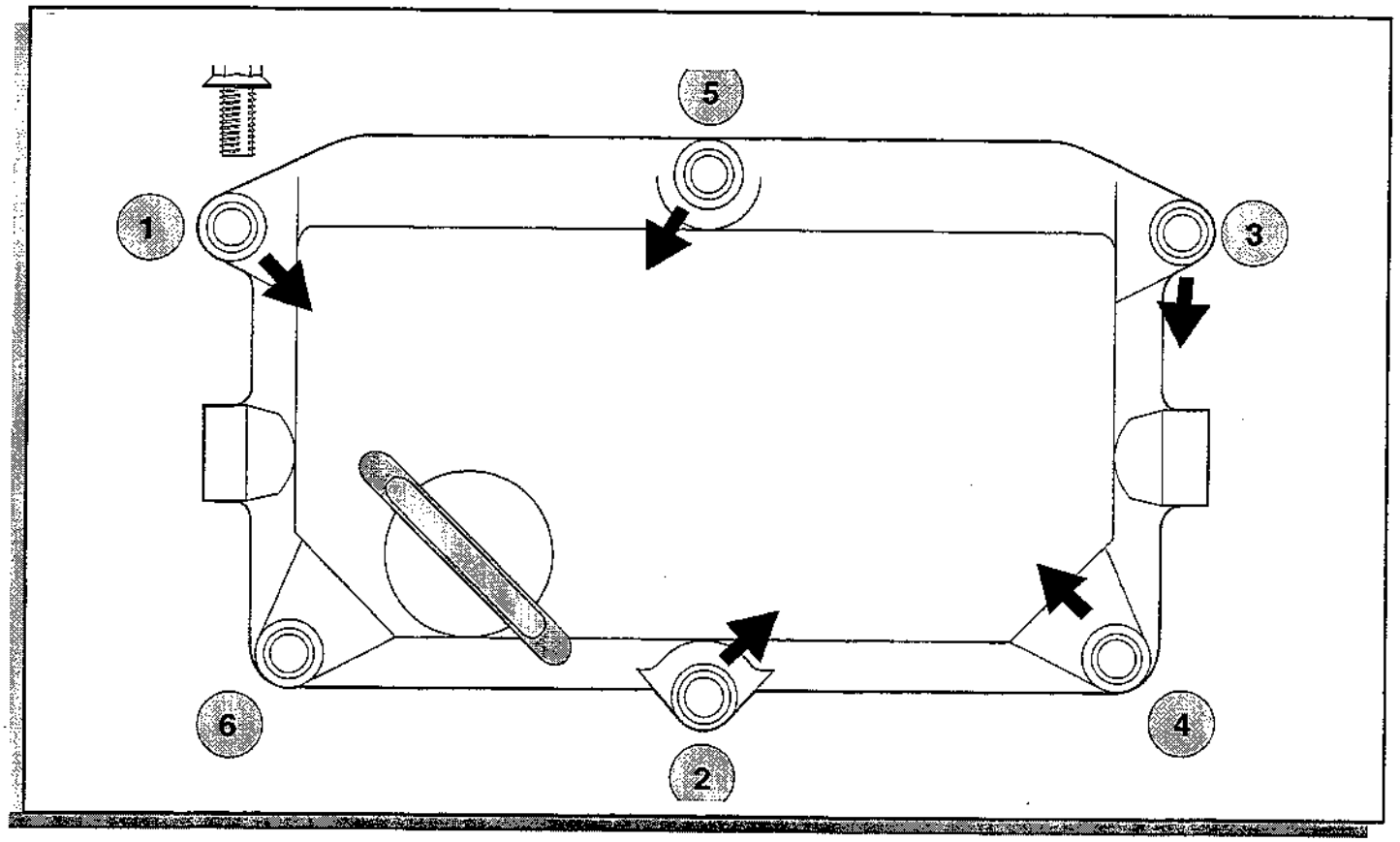


Fig. J-4 Valve Cover Tightening Sequence

Install the valve cover and bolts 'finger tight'. Stage tighten the bolts in the sequence shown to 60 - 65 in. lbs. torque.

Timing Belt Adjustment

(See Fig. J-5 "Timing Belt Adjustment" on page J-6)

⚠ WARNING ⚠

TO PREVENT THE ENGINE FROM INADVERTENTLY STARTING, THE NEGATIVE CABLE MUST BE REMOVED FROM BATTERY.

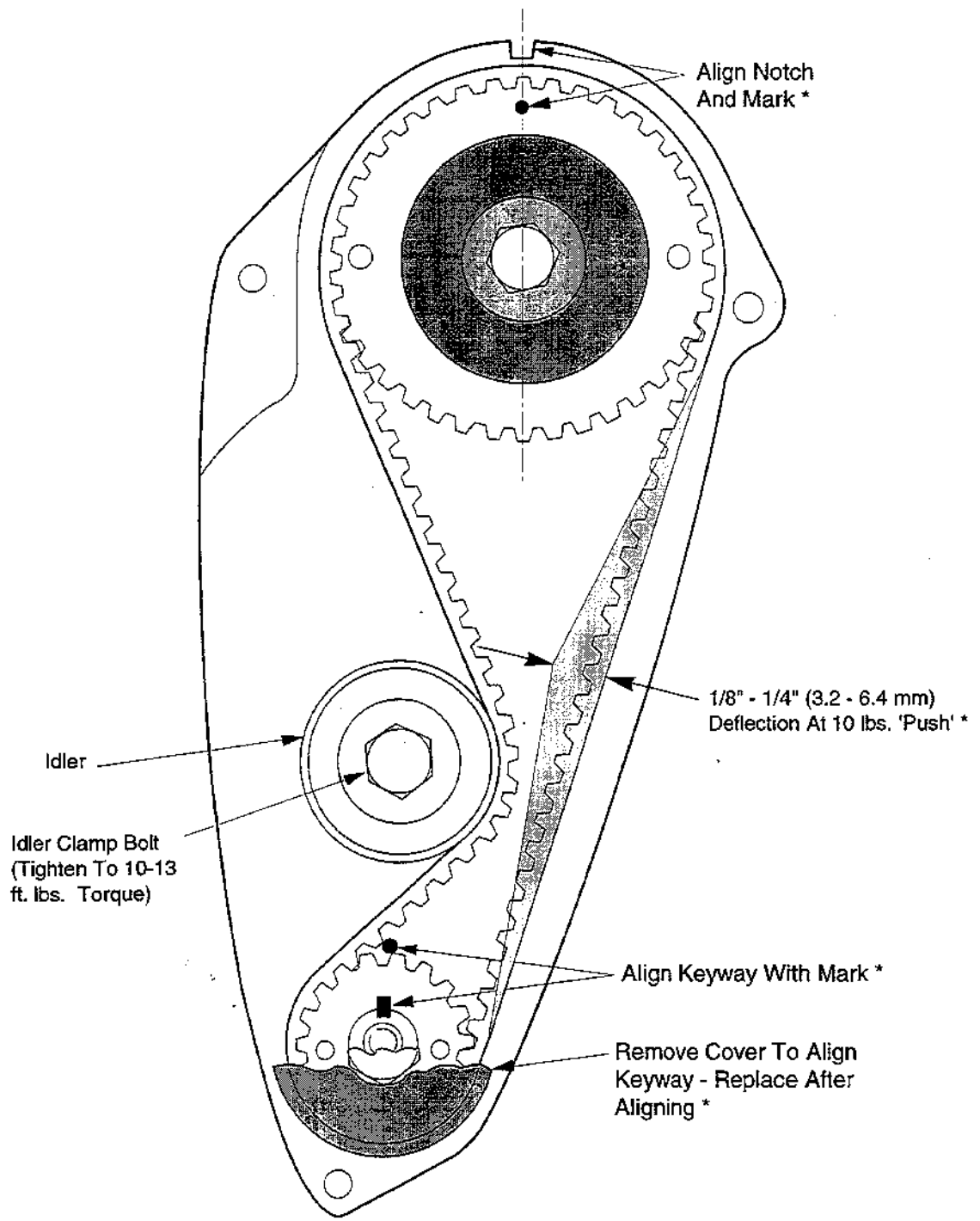
Tool List	Qty. Required
Socket, 12mm, 3/8" drive	1
Ratchet, 3/8" drive	1
Screwdriver, straight blade	1
Extension, 3", 3/8" drive	1
Torque wrench, 3/8" drive, in. lbs.	

At yearly intervals, the timing belt tension should be adjusted. To do this, remove the rubber plug in the timing cover to provide access to the idler pulley adjusting bolt. Loosen the tensioning bolt (1/4 - 1/2 turn). Rotate the engine one full turn which will allow the spring to apply tension to the belt. Tighten the idler adjusting nut to 10 - 13 ft.lbs torque. Spray the rubber plug with a vinyl protective spray in order to ease the installation of the plug.

ENGINE REMOVAL

(See Fig. J-6 "Engine Assembly" on page J-8)

Tool List	Qty. Required
Socket, 10mm, 3/8" drive	1
Socket, 12mm, 3/8" drive	1
Socket, 1/2", 3/8" drive	1
Socket, 5/8", 3/8" drive	1
Open end wrench, 9/16"	2
Open end wrench, 5/16"	1
Extension 3", 3/8" drive	1
Extension 6", 3/8" drive	1
Ratchet, 3/8" drive	1



* Indicates Notes That Relate To Timing Belt Replacement, For More Information See Four Cycle Engine Shop Rebuild And Service Parts Manual (E-Z-GO P/N 27615-G01).

Fig. J-5 Timing Belt Adjustment

Straight blade screwdriver 1
Phillips screwdriver 1
Side cutters 1

NOTE

In the following text, there are references to removing/installing bolts etc. Additional hardware (nuts, washers etc.) that are removed must always be installed in their original positions unless otherwise specified. Non specified torque specifications are as shown in the table contained in Section "A".

NOTE

This operation will remove the engine from the top of the engine compartment. The weight of the engine exceeds normal OSHA limits for one person; therefore, a second person or an engine hoist will be needed to remove the engine. If a hoist is employed, it may be necessary to remove the sun canopy (if equipped).

Safety

Disconnect the negative cable at the battery.

Remove and plug the fuel line at the fuel pump.

Muffler Removal

(See Fig. J-6 "Engine Assembly" on page J-8)

Loosen the bolt (3) securing the muffler (4) to the rear engine frame (5).

NOTE

It is not necessary to remove the muffler as part of the engine removal.

If the muffler (4) is to be removed, the four bolts(2) securing the muffler (4) to the exhaust manifold must be removed and the muffler (4) rotated up and through the engine compartment.

Skid Plate Removal

(See Fig. J-7 "Engine Mounting" on page J-9)

Remove the skid plate by cutting the wire tie that secures the shift cables to the skid plate and remove the four bolts (14) that secure the plate to the bottom of the engine. Do not operate vehicle without skid plate installed.

Controls and Wiring

Unplug the wiring harness from the engine and cut the wire tie securing the accelerator cable to the engine. Remove the choke cable from the carburetor. Remove the push nut at the governor and discard the nut. Remove the pulse line from the fuel pump. Remove the ground strap from the engine. Loosen the starter/generator and remove the belt. Remove the short control rod from the bellcrank and the governor. Remove the short rod from the bellcrank to the carburetor.

Removing the Engine from the Vehicle

(See Fig. J-7 "Engine Mounting" on page J-9)

NOTE

Place suitable blocks under the engine frame for support. Although the blocks are not required for engine removal, they will help maintain the alignment of the frames and simplify engine installation.

Remove the four bolts (15) that secure the engine to the engine support castings. Lift the engine and drive clutch vertically through the engine compartment using a hoist or with the assistance of another person.

Engine Installation

CAUTION

WHEN INSTALLING THE FUEL AND PULSE LINES, PAY PARTICULAR ATTENTION TO ASSURE THAT THE LINES ARE NOT CONFUSED. BE SURE TO USE A NEW PUSH NUT WHEN INSTALLING THE ACCELERATOR CABLE TO THE GOVERNOR.

With the assistance of a hoist or another person, lower the engine into position over the engine support castings.

Install one rear horizontal and one front bottom engine bolt through the casting and engine and lightly snug in place.

Install the remaining horizontal engine bolts and tighten all of the mounting bolts to 45 ft. lbs. torque.

Remove the front bottom bolt and reinstall the skid plate. Tighten the mounting bolts to 45 ft. lbs. torque.

The remaining installation is in the reverse order of disassembly using standard torque specifications.

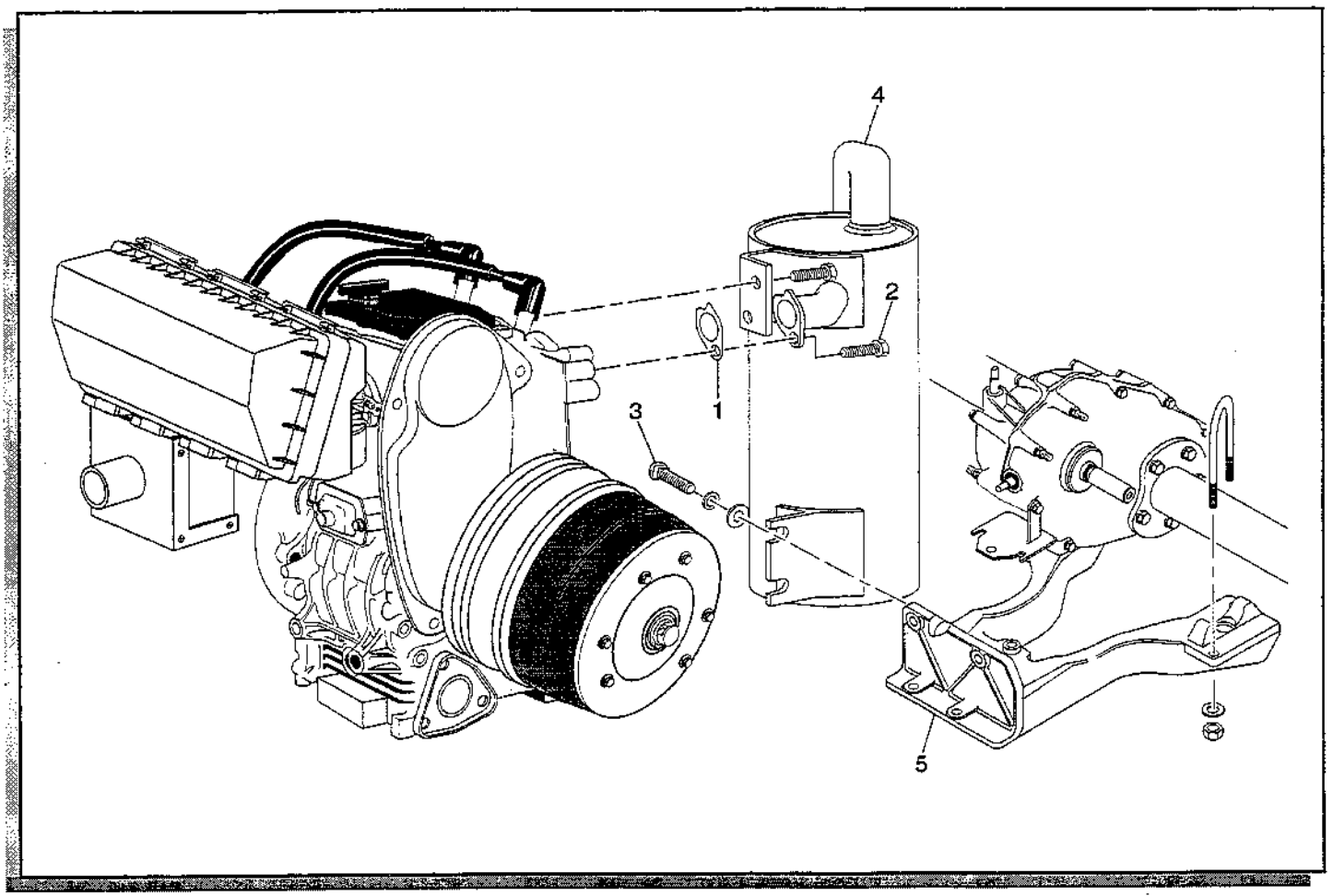


Fig. J-6 Engine Assembly

DRIVE CLUTCH REMOVAL

⚠ WARNING ⚠

TO PREVENT THE POSSIBILITY OF PERSONAL INJURY, USE ONLY IMPACT SOCKETS WHEN USING AN IMPACT WRENCH.

Tool List	Qty. Required
Socket, 5/8", 3/8" drive	1
Ratchet, 3/8" drive	1
Impact wrench, 1/2" drive	1
Socket, impact, 13/16", 1/2" drive	1
Clutch puller, (E-Z-GO P/N 19779-G2)	1

Remove the clutch bolt.

NOTE

In some extreme cases, the clutch will be resistant to removal. In stubborn cases the clutch removal tool should be removed and the cavity filled with grease. Install the clutch puller and use the impact wrench to drive off the clutch. The combination of hydraulic pressure (grease) and the impact wrench will remove the most stubborn clutch. To prevent damage to the clutch, be sure to remove all grease from the body of the clutch since grease penetrating the seal may cause premature clutch failure.

Install a well lubricated clutch puller into the clutch and hand tighten for several turns. Remove the clutch by driving it off with the impact wrench and the clutch puller.

It is not necessary to remove the engine to remove the clutch. Refer to the clutch section for removal and installation with the engine installed in the vehicle.

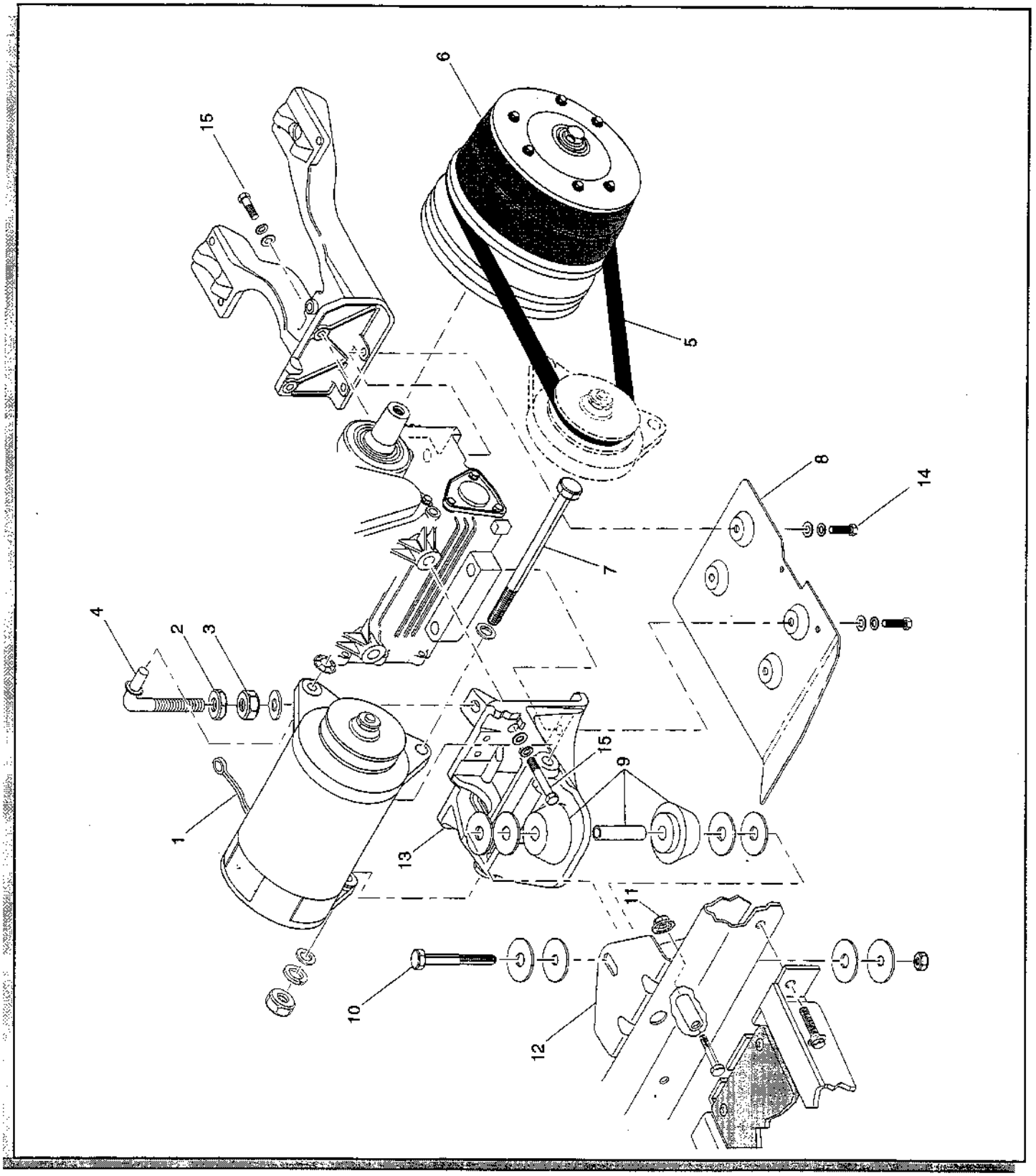


Fig. J-7 Engine Mounting

Cooling System Cleaning

(See Fig. J-8 "Cleaning Cooling System with Air" on page J-10)

(See Fig. J-9 "Cleaning Cooling System with Water" on page J-10)

(See Fig. J-10 "Air Drying Cooling System" on page J-10)

NOTE

Avoid spraying water on electrical components.

At least once a year or more often under adverse conditions the cooling system should be cleaned. Cleaning will assure an adequate supply of air to the cooling fins. Compressed air may be used for routine cooling system maintenance (Ref. Fig. J-8). Operation in wet or damp weather or over freshly cut grass may result in a variety of debris accumulating and adhering to the internal shroud and fins of the cooling system. If this condition exist, proceed as follows:

With the engine cold, direct a strong stream of water at the cylinder head cooling fins beside the timing belt cover (Ref. Fig. J-9). Allow the water to flow freely over the cooling fins and through the blower housing. After flushing, dry with low pressure compressed air (Ref. Fig. J-10).

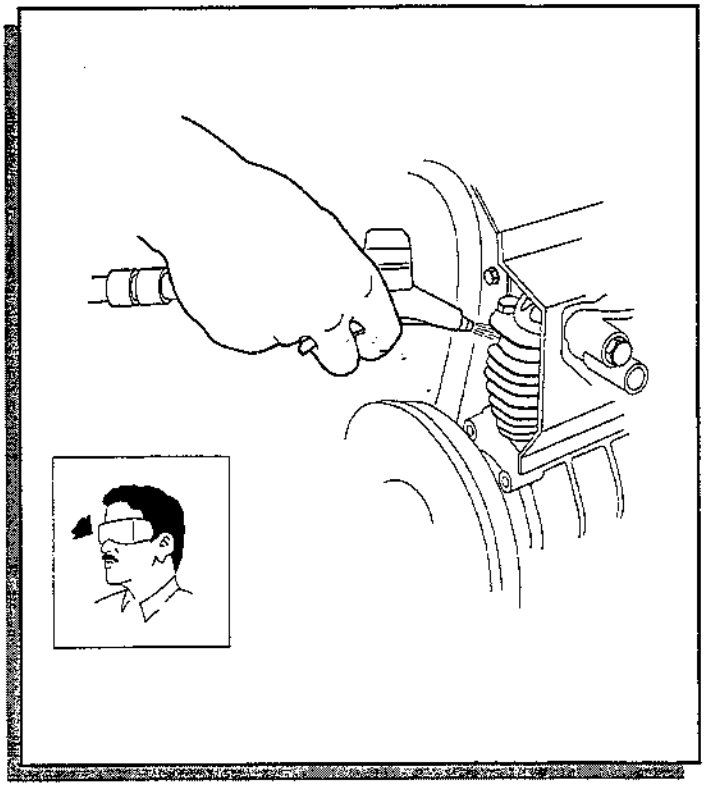


Fig. J-8 Cleaning Cooling System with Air

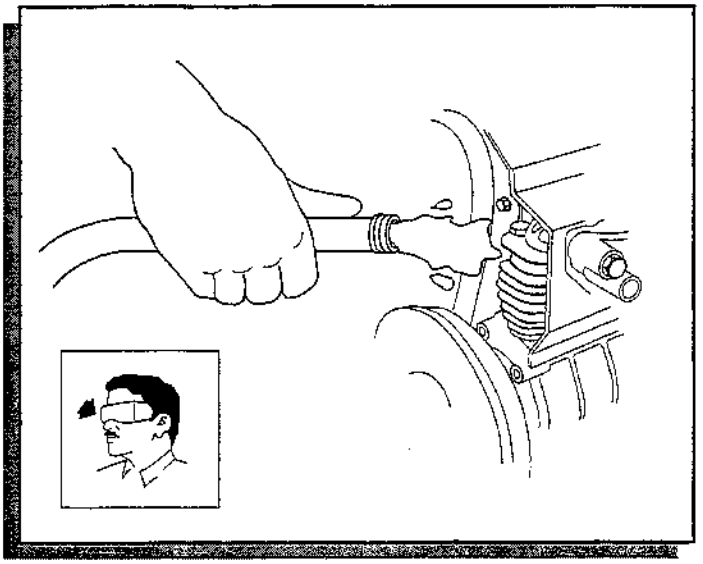


Fig. J-9 Cleaning Cooling System with Water

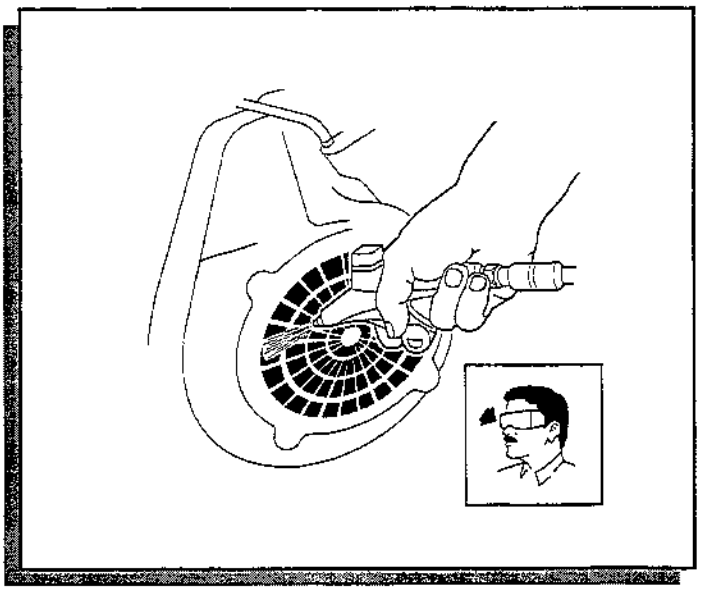


Fig. J-10 Air Drying Cooling System

Starter/Generator Removal

(See Fig. J-7 "Engine Mounting" on page J-9)

Tool List	Qty. Required
Socket, 3/4", 3/8" drive	1
Ratchet, 3/8" drive	1
Wrench, 8 mm	1
Wrench, 10 mm	1
Wrench, 9/16"	2
Wrench, 3/4"	1
Torque wrench, ft. lbs., 3/8" drive	1

⚠ WARNING ⚠

TO PREVENT ENGINE FROM INADVERTENTLY STARTING, THE NEGATIVE CABLE MUST BE REMOVED FROM THE BATTERY.

Remove the wiring from the starter/generator (1). Loosen the jam nut (2) and the adjusting nut (3) securing the starter/generator adjuster (4) until the starter/generator belt (5) can be removed from the drive clutch (6). Remove the starter/generator pivot bolt (7) and lift starter/generator from the vehicle.

Starter/Generator Installation

(See Fig. J-7 "Engine Mounting" on page J-9)

(See Fig. J-11 "Checking Belt Tension with Gauge" on page J-11)

(See Fig. J-12 "Checking Belt Tension Manually" on page J-11)

(See Fig. J-13 "Starter/Generator Wiring" on page J-11)

Install the starter/generator pivot bolt (7) and hardware loosely in place and install the belt (5) (Ref. Fig. J-7). Adjust the tensioner until the belt tension reaches 100 - 110 lbs tension for a **new** belt or 75 - 80 lbs tension for an **existing** belt (Ref. Fig. J-11) and (Ref. Fig. J-12). Tighten the jam nut (2) securely and tighten the pivot bolt (7) to 44-46 ft. lbs. (Ref. Fig. J-7)

Install the wiring and tighten the terminals firmly into place (Ref. Fig. J-13). Reconnect the battery.

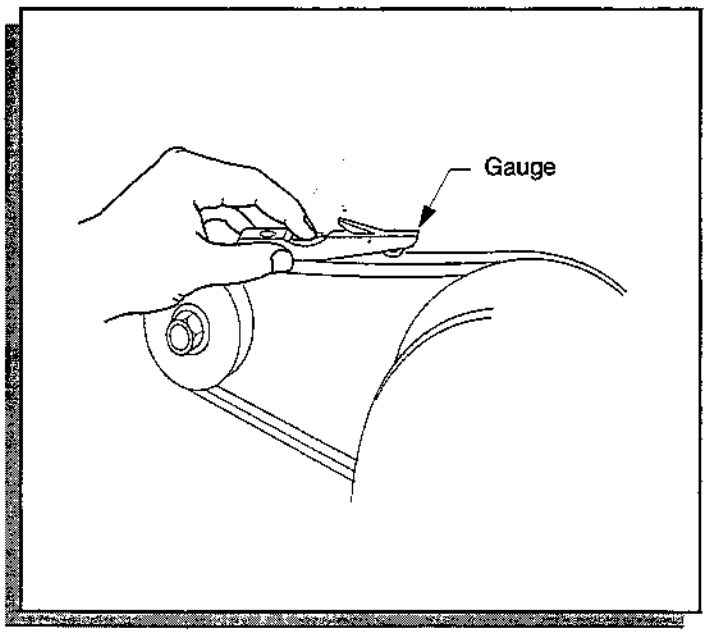


Fig. J-11 Checking Belt Tension with Gauge

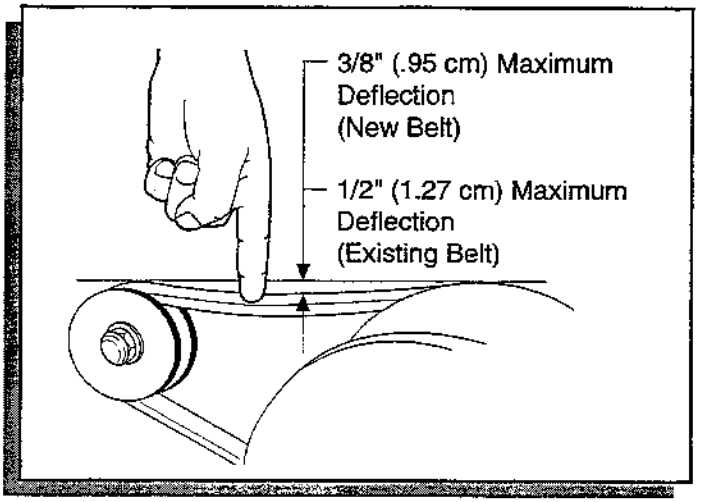


Fig. J-12 Checking Belt Tension Manually

FROM	TO
A1	Ground
A2	F1
F1	A2
F2	A On Solenoid
DF	Green From Voltage Regulator

Fig. J-13 Starter/Generator Wiring

Engine Isolation Mount Removal

(See Fig. J-7 "Engine Mounting" on page J-9)

Tool List	Qty. Required
Floor jack	1
Socket, 9/16", 3/8" drive	1
Wrench, 9/16"	1
Ratchet, 3/8" drive	1
Phillips screwdriver	1
Torque wrench, ft. lbs. 3/8" drive	1

Pull back the floormat and remove the access cover and the cover of the accelerator switch enclosure.

Place a floor jack under the skid plate (8) and raise it just enough to remove the load from the isolation mount (9).

Remove the isolation mount bolt (10).

Remove the flanged nuts (11) that attach the isolation mount bracket (12) to the vehicle frame.

Remove the isolation mount bracket and disassemble the isolation mount.

Engine Isolation Mount Installation

(See Fig. J-7 "Engine Mounting" on page J-9)

Installation of the isolation mount is in the reverse order of disassembly.

Loosely attach the isolation mount (9) and hardware to the isolation mount bracket (12) and engine frame (13). Attach the isolation bracket to the vehicle frame and tighten the flanged nuts (11) to 21 - 25 ft. lbs. torque.

Tighten the isolation mount bolt (10) to 21 - 25 ft. lbs. torque.

NOTE

In cases where the rear springs or the rear axle to engine frame junction has been disturbed, the isolation mount should be allowed to 'float' until all other assembly has been completed. After the natural alignment of the powertrain components is established, the isolation mount should be tightened to 21 - 25 ft. lbs. torque.

Muffler Removal

(See Fig. J-6 "Engine Assembly" on page J-8)

Tool List	Qty. Required
Socket, 12mm, 3/8" drive	1
Wrench, 12mm	1
Socket, 1/2", 3/8" drive	1
Wrench, 1/2"	1
Ratchet, 3/8" drive	1
Torque wrench, ft. lbs. 3/8" drive	1

NOTE

It is not necessary to remove the engine in order to remove the muffler.

Remove the trunk lid.

Remove the bottom bolt (3) securing the muffler (4) to the engine frame (5). Remove the muffler to manifold mounting bolts (2) and remove the muffler by rotating it upwards through the engine compartment.

Muffler Installation

(See Fig. J-6 "Engine Assembly" on page J-8)

Installation is in the reverse order of disassembly. Install a new gasket (1) and tighten the muffler to manifold bolts (2) to 16 - 18 ft. lbs. torque. Tighten the muffler to engine frame bolts (3) to 10 - 12 ft. lbs. torque.

Compression Tests

⚠ WARNING ⚠

TO PREVENT INADVERTENT MOVEMENT OF VEHICLE, REMOVE DRIVE BELT PER SECTION A.

Compression tests are one of the most accurate methods of analyzing engine performance. To obtain maximum efficiency from the fuel explosion, the combustion chamber must be sealed. Efficiency can be affected by problems with rings, pistons, head gaskets and valves. Most problems associated with these components can be detected with a cylinder compression gauge. Incorrect use of a compression gauge can result in unnecessary work and expenditures.

Compression gauge E-Z-GO part number 72524-G01 is recommended.

To properly perform an accurate compression test:

1. .Remove belt to clutch.
2. Remove the air filter to eliminate the possibility of a restricted air passage.
3. A well charged good battery should be used. Weak batteries may not allow the correct cranking RPM's.
4. Starter belts that drag or slip will affect the compression reading.
5. Fully open the choke and accelerator baffle plate. Should either of these baffle plates be partly closed, the compression reading may be inaccurate and indicate low.
6. The engine must be at normal operating temperature in order for the components to expand.
7. Remove one spark plug at a time. Removing both spark plugs may cause the engine to rotate faster than normal indicating a false reading **and could be a severe safety problem.**
8. Use the starter to rotate the engine until the compression gauge reading does not change (usually no more than ten seconds) This is referred as a *dry* compression test.
9. Record the gauge reading.
10. Pour approximately one half ounce of thirty weight oil in the cylinder (through the spark plug hole) and repeat the test. Record the result. The oil added to the cylinder will cause a temporary seal between the piston rings, piston and cylinder wall. This is known as *wet* compression.

NOTE

Thin or very thick oils may cause a false reading.

11. Compare the dry test reading with the wet test reading. A higher wet test reading indicates poor ring sealing or a leaking head gasket (look for oil leakage around the head gasket). No change between the dry and wet test indicates valve sealing problems.

All readings should be compared with the engine manufactures specification. Engine cylinder specifications are usually provided for unseated rings. As a general rule, the compression will increase twenty pounds above the rated PSI for an engine with seated rings. Compression readings twenty pounds below the rated PSI indicates poor cylinder sealing.

Compression Test Readings

(See Fig. J-14 "Compression Test Reading" on page J-13)

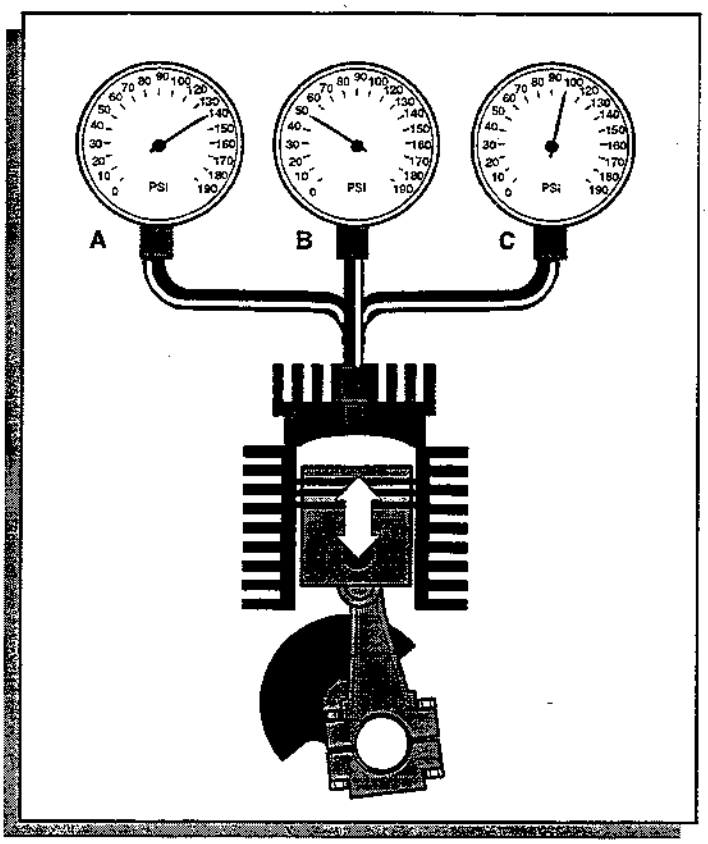


Fig. J-14 Compression Test Reading

A. Indicates 140 psi. Compression is good and the engine may be new or rebuilt. If the engine is new or rebuilt, the compression will rise to approximately 160 psi as the rings seat. If the engine has had extensive use, a reading of 140 psi may indicate that the engine compression is in decline and may need to be rebuilt when compression falls to approximately 100 psi.

B. Indicates 50 - 60 psi. The rings are in very bad condition or leaking valves are indicated. Pour approximately one half ounce of thirty weight oil into the cylinder through the spark plug hole and recheck. If the compression increases 10 psi or more the rings are in poor condition. If little or no increase in compression is indicated, the valves are leaking.

C. Indicates 100 psi. This indication could be an engine with many hours of use. Adding oil to the cylinder and rechecking should cause an increase in compression. If so, a top end overhaul should be considered. Refer to Engine Rebuild manual, E-Z-GO part number 27615-G01.

Notes:

TABLE OF CONTENTS FOR SECTION 'K'

LIST OF ILLUSTRATIONS

Notes:

GENERAL

(See Fig. K-2 "Fuel System" on page K-2)

The fuel system consists of a fuel tank, fuel lines, fuel filter, fuel pump and carburetor.

CARBURETOR OPERATION

The carburetor is constructed with four different systems: the float system, the pilot jet system, the main jet system and the choke system.

Float System

The float chamber is located on the underside of the carburetor and the correct fuel level is maintained by means of the float and needle valve.

As the fuel flows from the fuel pump it must pass through the needle valve and into the float chamber. As the fuel enters the float chamber, the float starts to rise against the needle valve. When the buoyancy of the float exceeds the fuel pressure on the needle valve, the float closes the needle valve. The float is adjustable to maintain the correct fuel level within the float chamber. As fuel is consumed from the float chamber, the float drops which allows the needle valve to admit additional fuel.

Pilot Jet System

The pilot jet system function is to deliver fuel to the engine during low speed operation. The fuel flow is determined by the pilot jet size and the setting of the pilot screw.

Main Jet System

The main jet system function is to deliver fuel to the engine during acceleration and heavy load conditions. Fuel flow is determined by the main jet. Air is mixed with fuel that passes through the bleed opening in the main nozzle. This mixture passes into the carburetor venturi as atomized air/fuel and is mixed with intake air and delivered to the engine.

Choke System

The choke functions to make initial starting of the engine easier in cold weather conditions. The choke plate restricts the air flow into the carburetor which richens the air/fuel ratio.

Choke Operation

Pull the choke knob out to operate the choke during cold weather starts. Check that the cable operates smoothly and that the cable returns when the knob is released. The motion should be smooth throughout the entire operating range. If there is any binding or sharp bends, the choke cable assembly must be replaced.

FUEL SYSTEM COMPONENT SERVICE AND REPLACEMENT

NOTE

In the following text, there are references to removing/installing bolts etc. Additional hardware (nuts, washers etc.) that are removed must always be installed in their original positions unless otherwise specified. Non specified torque specifications are as shown in the table contained in Section A.

Choke Cable and Housing Removal

(See Fig. K-1 "Choke Cable Attachment" on page K-1)

Tool List	Qty. Required
Open end wrench, 1/2"	2
Open end wrench, 7/8"	1
Phillips Screwdriver	1

NOTE

Do not attempt to lubricate the choke cable since the lubricant will tend to retain dirt on the moving parts which will cause premature deterioration of the cable.

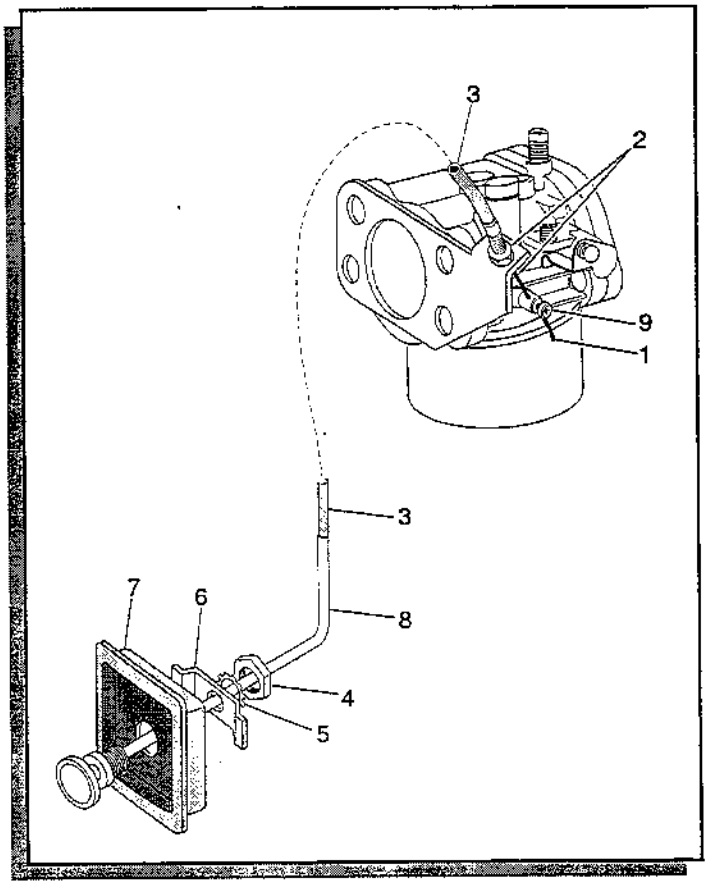


Fig. K-1 Choke Cable Attachment

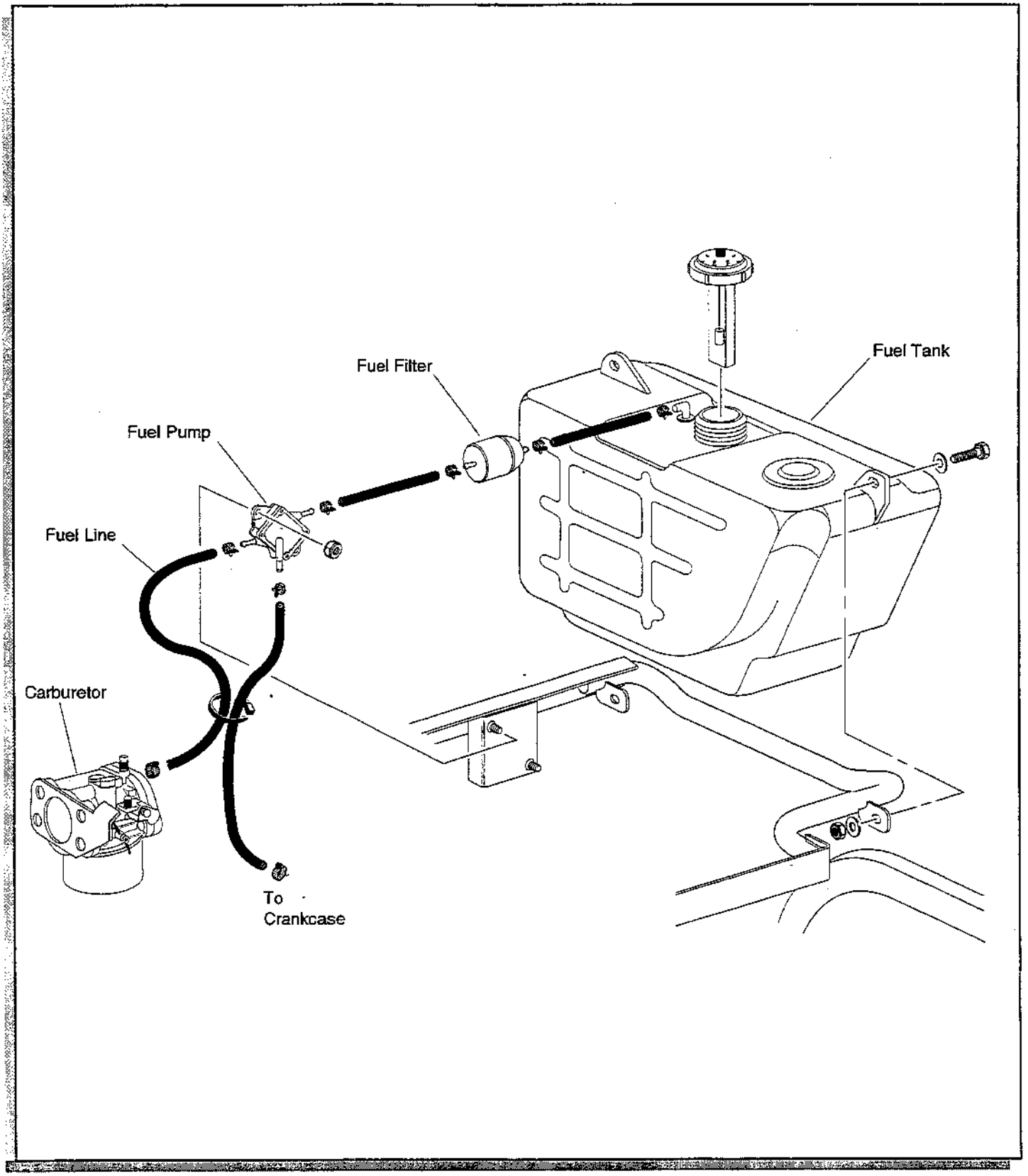


Fig. K-2 Fuel System

Loosen the screw (9) attaching the carburetor choke shaft to the inner choke cable (1). Remove the nuts (2) securing the outer choke cable (3) to its bracket. At the vertical seat support remove the nut (4) and lock washer (5) securing the outer cable to the bezel retaining bracket (6) on the vertical seat support. Slide the nut, lock washer and bezel retaining bracket over the choke cable. Remove the choke cable assembly and bezel (7) from the vertical seat support.

Choke Cable and Housing Installation

(See Fig. K-1 "Choke Cable Attachment" on page K-1)

Feed the choke cable assembly (8) through the hole in the bezel (7) and insert the cable and bezel into the vertical seat support and install the bezel retaining bracket (6), lock washer (5) and nut (4) finger tight. Slide the threaded portion of the housing through the carburetor mounted bracket and attach the nuts (2) to the choke cable housing finger tight. Pass the choke cable through the choke arm swivel and tighten the swivel screw (9) after being sure that the choke and choke knob are both in the open position.

Adjust the position of the curved portion of the cable housing to ensure that the cable does not contact the belts or other moving parts. Check the cable to be sure that there are no sharp bends or kinks in the cable before firmly tightening the nuts at both ends of the cable.

Carburetor Service

(See Fig. K-7 "Carburetor" on page K-7)

Before determining that servicing the carburetor is required, be sure that the ignition system is functioning correctly.

⚠ WARNING ⚠

TO PREVENT AN IGNITION SPARK WHICH COULD IGNITE GASOLINE FROM THE FUEL SYSTEM, THE NEGATIVE BATTERY CABLE MUST BE REMOVED FROM BATTERY. (SEE SECTION "B").

Removal of Carburetor from Engine

(See Fig. K-3 "Ball Joint Attachment" on page K-4)

(See Fig. K-4 "Ball Joint Removal" on page K-4)

(See Fig. K-6 "Air Filter on Air Intake System" on page K-6)

Tool List	Qty. Required
Socket, 10 mm, 1/4" drive	1
Ratchet, 1/4" drive	1
Extension, 3", 1/4" drive	1
Parallel jaw pliers	1
Straight blade screwdriver	1
Phillips screwdriver	1
Open end wrench, 9/16"	2
Open end wrench, 3/8"	1
Socket, 3/4", 3/8" drive	1
Ratchet, 3/8" drive	1
Extension, 3", 3/8" drive	1
Torque wrench, 3/8" drive, in. lbs.	1

Unsnap the three retaining clips (1) securing the cover (2) to the air box (3). Remove the cover and remove the air filter element (4).

Remove the PCV valve hose (5) from the rear of the air box.

Disconnect the fuel line (6) from the carburetor (7) and plug the fuel line. Disconnect the solid linkage (8) from the carburetor throttle lever. Remove the choke cable (9) from the choke lever swivel (10).

CAUTION

WHEN REMOVING/INSTALLING THE LINKAGES TO ANY OF THE BELLCRANKS OR LEVERS, USE EXTREME CARE NOT TO BEND OR DAMAGE THE BELLCRANK OR LEVER ARMS. SUPPORT THE ARMS AND SQUEEZE THE COMPONENTS TOGETHER. FAILURE TO OBSERVE THIS CAUTION MAY RESULT IN SERIOUS DAMAGE TO THE GOVERNOR, CARBURETOR OR OTHER COMPONENTS AND RESULT IN EXPENSIVE AND TIME CONSUMING REPAIR.

(See Fig. K-3 "Ball Joint Attachment" on page K-4)

Service Tip: To remove the female plastic portion of the ball joint linkage, place a 3/8" open end wrench on the jam nut and rotate clockwise until the black plastic section separates from the ball. *(Ref. Fig. K-4)*

Remove the linkage from the carburetor as detailed elsewhere in this manual.

Remove the hardware (11) that secures the air box to the bracket mounted to the passenger side of the vehicle.

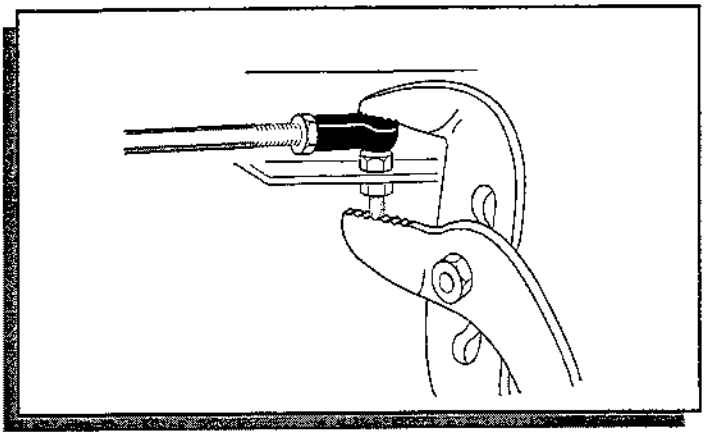


Fig. K-3 Ball Joint Attachment

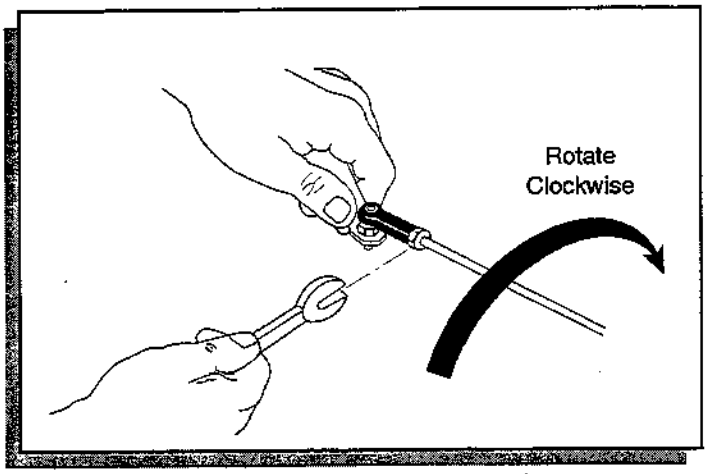


Fig. K-4 Ball Joint Removal

Remove the two nuts (12), lock washers (13) and flanged bolts (14) securing the air box to the carburetor.

Remove the choke bracket (15) and slide the carburetor from the engine studs.

NOTE

If the carburetor contacts the starter/generator, it will be necessary to remove the starter belt and tilt the starter generator to permit carburetor removal. See the starter/generator adjustment instructions elsewhere in this manual.

CAUTION

DO NOT LET THE CARBURETOR VENT HOSES BECOME CLOGGED OR KINKED. ENGINE HEAT WILL CAUSE THE FUEL IN THE CARBURETOR BOWL TO EXPAND AND MAY RESULT IN FUEL BEING EXPELLED FROM THE CARBURETOR IF UNABLE TO VENT THROUGH THE VENT TUBE.

⚠ WARNING ⚠

CLOGGED OR KINKED CARBURETOR VENT HOSES ARE NOT ONLY DETRIMENTAL TO THE PROPER OPERATION AND PERFORMANCE OF THE VEHICLE, BUT CAN ALSO BE A SAFETY HAZARD IN THE CASE OF FUEL LEAKING ON A HOT ENGINE.

Installation of Carburetor to Engine

(See Fig. K-3 "Ball Joint Attachment" on page K-4)

(See Fig. K-6 "Air Filter on Air Intake System" on page K-6)

If the carburetor is going to be disassembled, proceed to **Carburetor Disassembly.** If a new carburetor is to be installed, assembly is in the reverse order of disassembly. Use a new gasket to ensure good sealing of the carburetor. Observe CAUTION when locating vent hoses. Tighten all carburetor and air box hardware to 50-70 in. lbs. torque.

Carburetor Disassembly

(See Fig. K-7 "Carburetor" on page K-7)

Tool List	Qty. Required
Socket, 12 mm, 1/4" drive	1
Ratchet, 1/4" drive	1
Pliers	1
Straight blade screwdriver, (narrow)	1

NOTE

Before disassembling the carburetor, drain the fuel bowl and clean the outside of the carburetor thoroughly with solvent. All work should be done on a clean surface. Care should be taken when disassembling the carburetor or removing the jets. Most carburetor malfunctions are due to wear or clogging of internal passages with foreign material.
DO NOT bend the float pin during removal.
The pilot screw is factory set. It MUST be reinstalled to the SAME factory setting. See Troubleshooting.

Remove the float bowl (1) by removing the retaining screw.

Inspect the bowl gasket (2) for nicks or cuts. Carefully press out the float pin (3), float (4) and the inlet valve. Inspect the tip for wear at its tip.

Remove the main jet (5).

Remove the main nozzle (6) and inspect the holes. Blow the nozzle clean with compressed air.

Remove the pilot screw (7) and the pilot jet (8).

Wash all parts in solvent and blow through all passages with compressed air. Replace all gaskets and any parts which show any wear or damage.

Float Level Adjustment

(See Fig. K-5 "Float Adjustment" on page K-5)

NOTE

When adjusting the float, NEVER bend the float arm, always bend tang #1.

Invert the carburetor (turn upside down). Remove the bowl. With the carburetor inverted, the 'B' side top edge of a properly adjusted float will be slightly above parallel to the bowl gasket surface and both sides of the float will be level with each other. If the sides of the float are not parallel or if the 'B' side of the float is not slightly above parallel with the bowl gasket surface, an adjustment is required. Adjust by inserting needle nose pliers into the slot on the top of tang #1 and hold firmly while adjusting the black floats by gently lifting or pushing with the other hand. Reinstall the bowl, copper gasket and the screw. Check for leaks.

After adjusting the float level, reassemble the carburetor in the reverse order of assembly. Assemble the pilot screw being sure to replace it to the original factory setting.

Check for free movement of the choke shaft before installing the carburetor. Lubricate the bushings with WD-40 oil or equivalent.

Throttle Shaft Adjustment

(See Fig. K-7 "Carburetor" on page K-7)

To adjust the throttle shaft (9) and throttle valve (10), turn the throttle stop screw (11) counterclockwise until it no longer contacts the tab on the throttle shaft. Hold the throttle shaft in the closed position, then turn the throttle stop screw clockwise until it contacts the tab on the throttle shaft; turn the screw clockwise 1/4 turn.

Carburetor Installation

(See Fig. K-6 "Air Filter on Air Intake System" on page K-6)

Replace carburetor and air box in reverse order of disassembly. Use a new gasket to ensure sealing of carburetor. Tighten hardware to 50 - 70 in. lbs.

NOTE

To adjust the belt tension after installing the carburetor. See the starter/generator adjustment elsewhere in this manual.

CAUTION

DO NOT LET THE CARBURETOR VENT HOSES BECOME CLOGGED OR KINKED. ENGINE HEAT WILL CAUSE THE FUEL IN THE CARBURETOR BOWL TO EXPAND AND MAY RESULT IN FUEL BEING EXPELLED FROM THE CARBURETOR IF UNABLE TO VENT THROUGH THE VENT TUBE SYSTEM.

⚠ WARNING ⚠

CLOGGED OR KINKED CARBURETOR HOSES ARE NOT ONLY DETRIMENTAL TO THE PROPER OPERATION AND PERFORMANCE OF THE VEHICLE, BUT CAN ALSO BE A SAFETY HAZARD IN THE CASE OF FUEL LEAKING ON A HOT ENGINE.

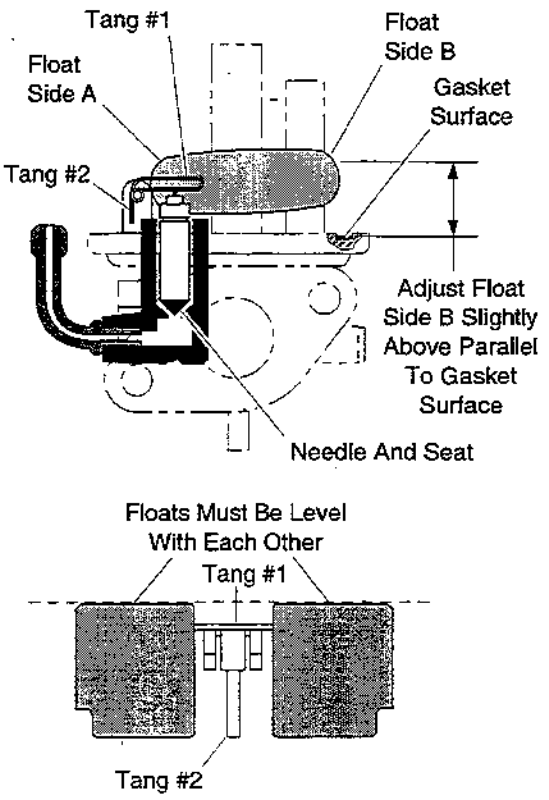


Fig. K-5 Float Adjustment

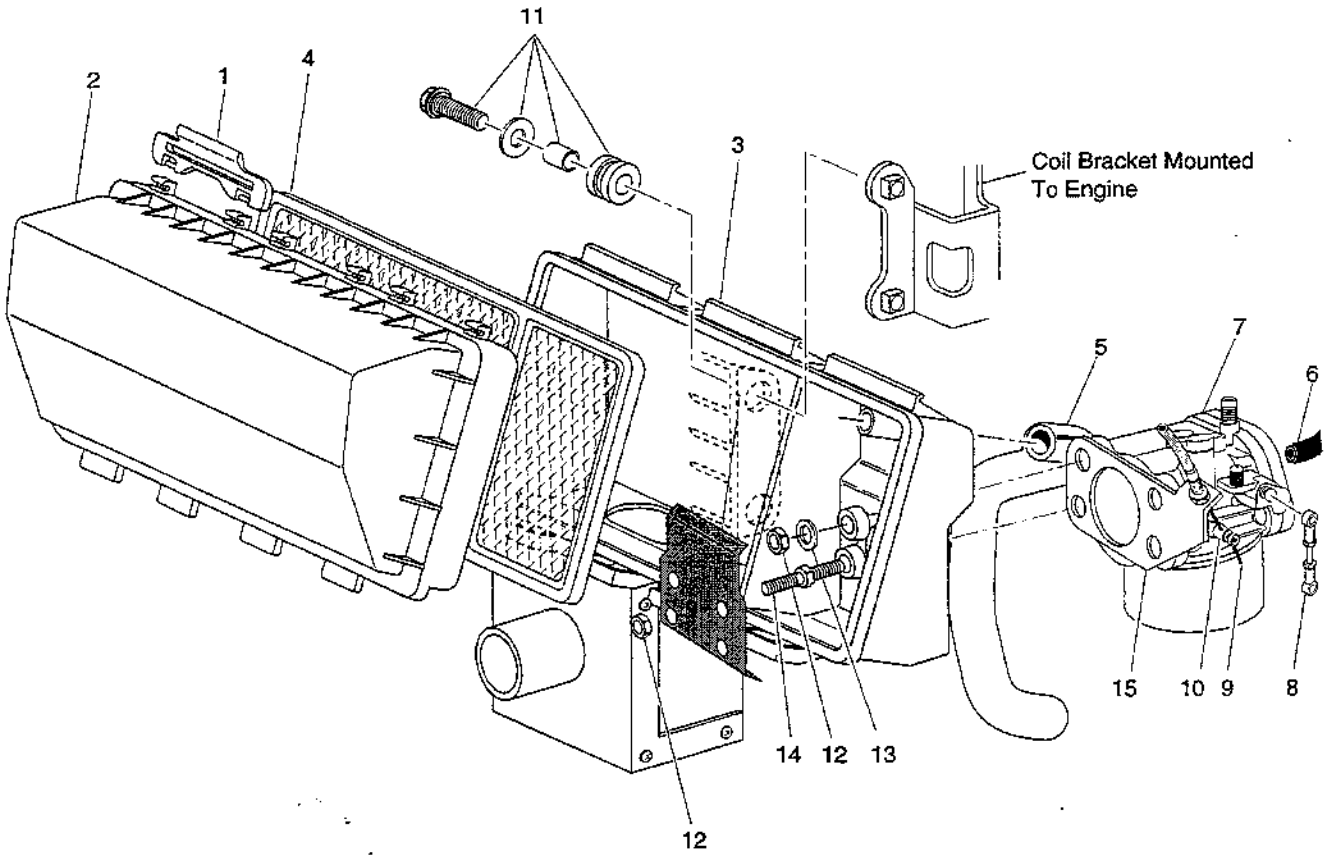


Fig. K-6 Air Filter on Air Intake System

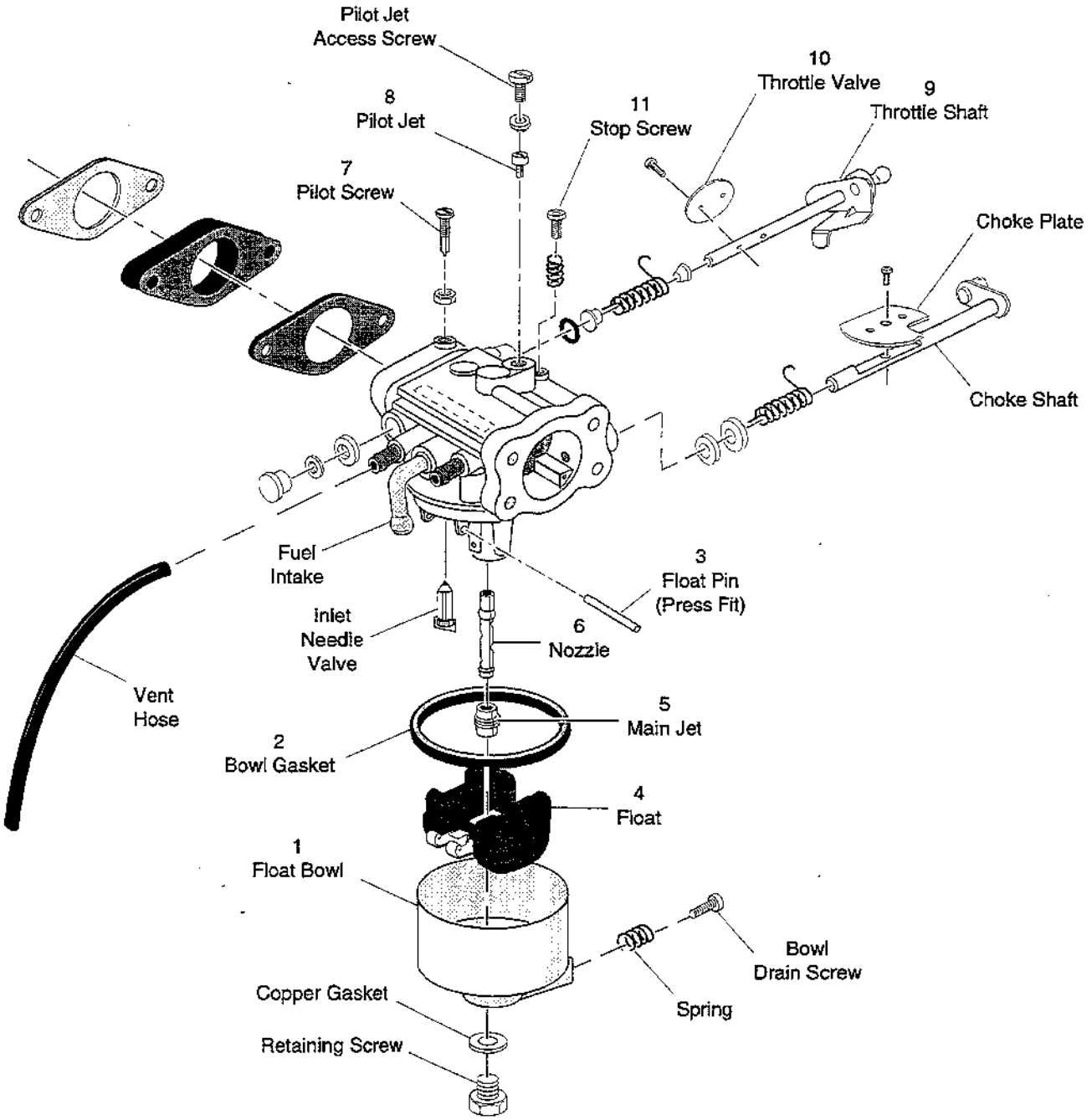


Fig. K-7 Carburetor

FUEL PUMP

⚠ WARNING ⚠

TESTS THAT INVOLVE FUEL FLOW SHOULD BE AVOIDED IF AT ALL POSSIBLE. IF A TEST TO DETERMINE FUEL/VAPOR PRESENCE OR FLOW IS REQUIRED, THE IGNITION SYSTEM MUST BE DISABLED BY REMOVING THE INPUT WIRES TO THE COIL IN ORDER TO PREVENT AN IGNITION SPARK THAT COULD IGNITE THE FUEL/VAPOR. NEVER PERMIT SMOKING OR AN OPEN FLAME IN AN AREA THAT CONTAINS FUEL/VAPOR. CLEAN UP ALL FUEL SPILLS IMMEDIATELY.

Fuel Pump Operation

(See Fig. K-8 "Fuel Pump" on page K-8)

The fuel pump is mounted on the vertical seat support on the passenger side and is operated by crankcase pressure impulses from the engine. As the pistons move up in the cylinders, a negative pressure moves the diaphragm (1) within the fuel pump. This movement draws fuel from the fuel tank into the fuel pump chamber (2) through the inlet valve (3). This action also close the outlet valve (4) which prevents fuel backflowing from the carburetor.

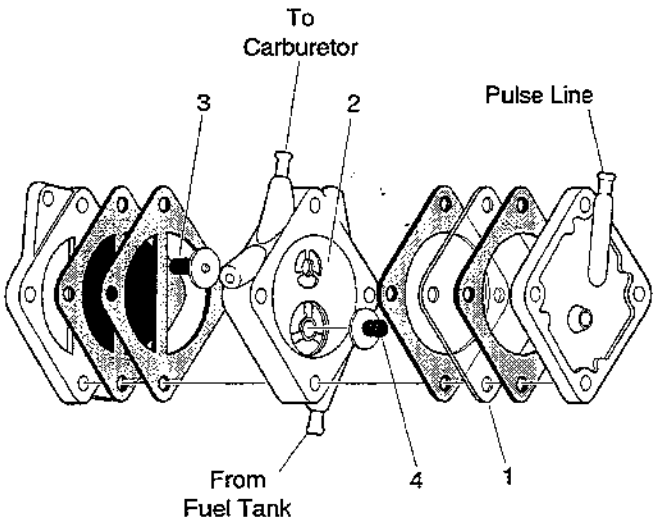


Fig. K-8 Fuel Pump

As the pistons move down in the cylinder, a positive pressure is formed in the crankcase which causes the diaphragm to move in the opposite direction (away from the engine). This action forces the inlet valve to close and the oulet valve to open and supply fuel to the carburetor float bowl.

Fuel Pump Replacement

(See Fig. K-9 "Fuel Pump Installation" on page K-8)

Tool List	Qty. Required
Socket, 7/16", 3/8" drive	1
Ratchet, 3/8" drive	1
Needle nose pliers	1
Straight blade screwdriver	1

Observe and identify the supply and pulse hoses. Remove the hoses and remove the pump by removing the two mounting nuts (1) and removing the pump from the mounting studs.

Fuel Pump Installation

(See Fig. K-9 "Fuel Pump Installation" on page K-8)

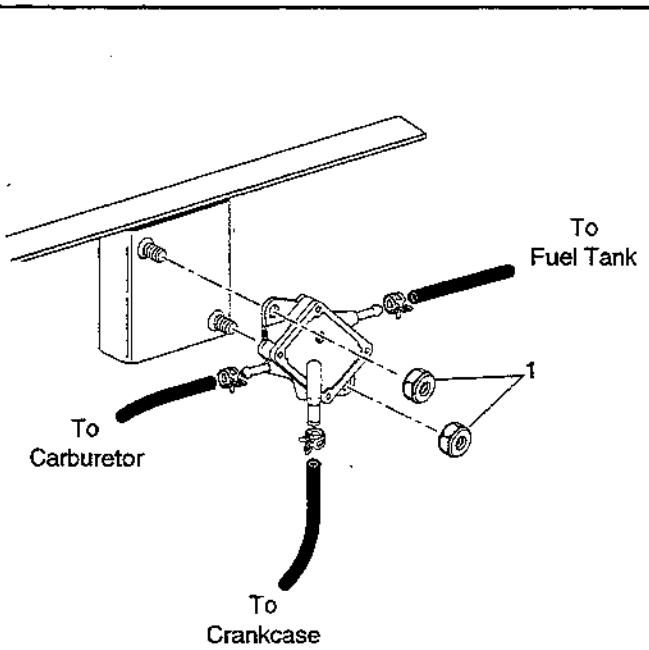


Fig. K-9 Fuel Pump Installation

NOTE

The length of the pulse hose from the fuel pump is important for efficient pump operation. If the hose is to be replaced, be sure to replace with a hose of the same length.

CAUTION

DO NOT CONFUSE PULSE AND FUEL LINES. ATTEMPTING TO OPERATE ENGINE WITH LINES REVERSED WILL RESULT IN FUEL ENTERING THE CRANKCASE AND DILUTING THE OIL.

Installation is in the reverse order of disassembly. Be sure to connect the pulse line to the correct location on the pump.

FUEL LINES AND FILTER

(See Fig. K-10 "Fuel Lines and Filters" on page K-10)

Tool List	Qty. Required
Needle nose pliers	1
Straight blade screwdriver	1

Fuel is supplied to the fuel pump and carburetor through flexible fuel hoses. An in-line filter (1) is installed in the hose between the fuel tank (2) and the fuel pump (3).

The fuel filter, tank, hoses and cap should be checked frequently for leaks, or signs that the cap vent or filter have become clogged. The filter should be replaced as required with the replacement period not to exceed one year (250 hours.)

CAUTION

THE FILTER IS MARKED WITH A FLOW DIRECTION ARROW. BE SURE THAT THE ARROW POINTS TOWARDS THE FUEL PUMP.

FUEL AND STORAGE

Fuel should be fresh, clean unleaded 87 (minimum) octane.

Methanol and other alcohol based fuels and additives can attack the aluminum fuel pump and carburetor, and should be avoided.

Off Season Storage

In the past, many people advocated filling the fuel tank for winter or long term storage in order to prevent condensation that contributed to the rusting of fuel tanks and fuel lines. With our plastic tank and hose formulation, rust presents no problem; therefore, there is no reason to fill the fuel tank.

The recommended storage method is to operate the vehicle for the later part of the operational season with fuel stabilizer added to the bulk storage tank according to the manufacturers directions. Maintain as little fuel as possible in the individual vehicle tank. For winter or prolonged storage, siphon fuel from the tank if practical. If fuel is to be left in the tank it should have an additional treatment of fuel stabilizer added in accordance with the manufacturers directions. The carburetor float bowl drain valve should be opened to remove fuel from the carburetor and reduce the build up of varnish. Close drain valve.

When the vehicle is to be used again, the carburetor bowl float drain valve must be closed and the fuel tank filled with fresh 87 (minimum) octane fuel. The addition of fresh fuel mixed with the small quantity of stabilized fuel left in the fuel tank will provide satisfactory fuel to operate the vehicle.

The fuel tank can be removed only by removing the passenger's side fender, seat support panel and seat frame and unbolting the tank (See Body Section "C").

⚠ WARNING ⚠

NEVER ATTEMPT TO REPAIR A DAMAGED OR LEAKING FUEL TANK. IT MUST BE REPLACED.

Troubleshooting

Refer to the following pages for symptoms, possible causes and remedies.

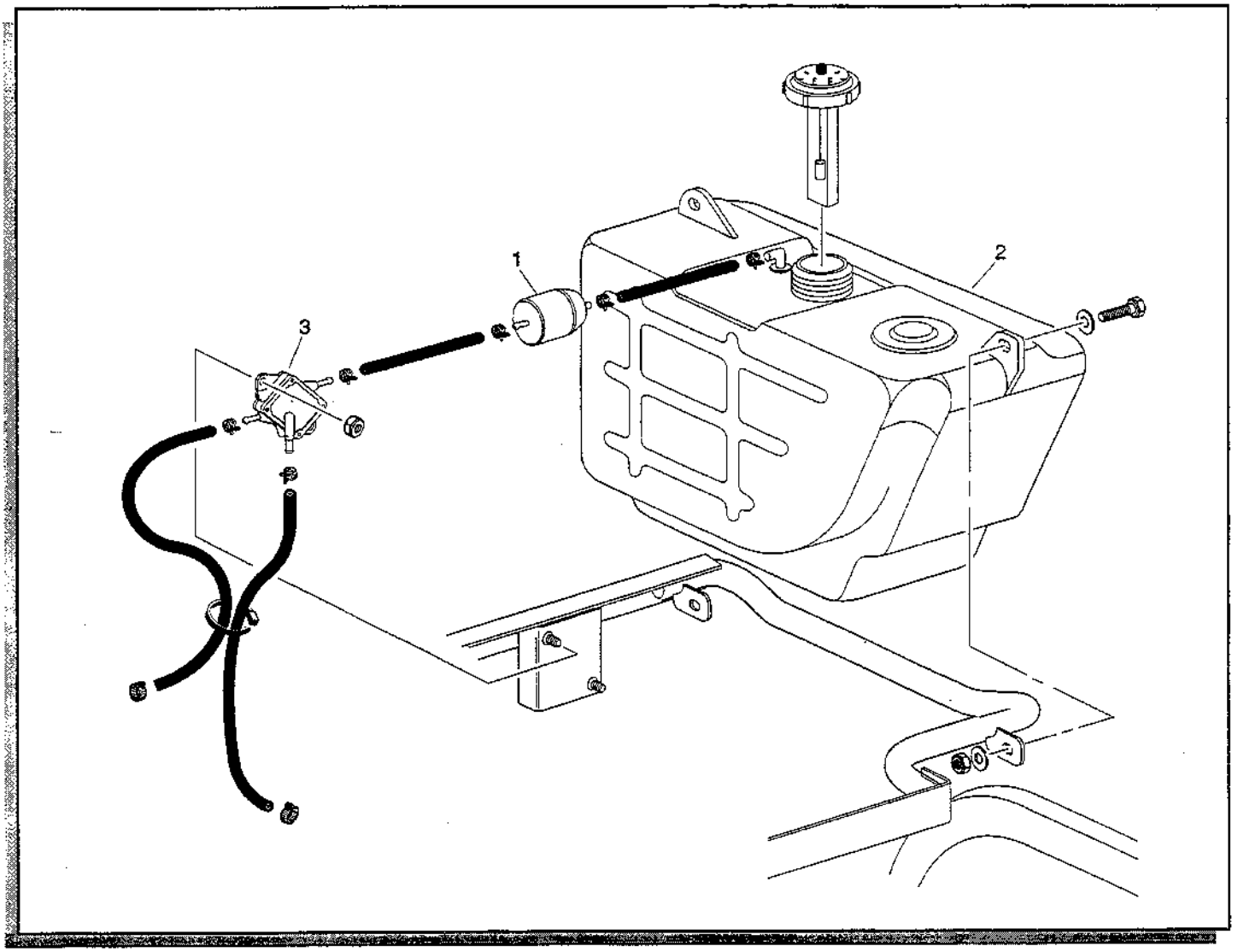


Fig. K-10 Fuel Lines and Filters

CARBURETOR TROUBLESHOOTING

⚠ WARNING ⚠

TESTS THAT INVOLVE FUEL FLOW SHOULD BE AVOIDED IF AT ALL POSSIBLE. IF A TEST TO DETERMINE FUEL / VAPOR PRESENCE OR FLOW IS REQUIRED, THE IGNITION SYSTEM MUST BE DISABLED BY REMOVING THE INPUT WIRES TO THE COIL IN ORDER TO PREVENT AN IGNITION SPARK THAT COULD IGNITE THE FUEL/VAPOR. NEVER PERMIT SMOKING OR AN OPEN FLAME IN AN AREA THAT CONTAINS FUEL/VAPOR. CLEAN UP ALL FUEL SPILLS IMMEDIATELY.

Condition	Possible Cause	Correction
OVERFLOW / LEAK	Worn inlet valve or dirty valve seat	Replace valve or clean valve seat
	Improper fuel level in float bowl	Adjust float
	Worn float mounting tang	Replace float
	Worn float pin	Replace pin
	Damaged float bowl gasket	Replace gasket
	Damaged float	Replace float
	Plugged or kinked vent tubes	Replace
POOR LOW SPEED PERFORMANCE	Pilot screw improperly adjusted	Adjust pilot screw
	Clogged pilot port	Clean
	Clogged low speed jet	Clean
	Loose low speed jet	Tighten jet
POOR FUEL ECONOMY	Fuel level too high	Adjust float
	Loose jets	Tighten
	Choke not opening fully	Adjust
	Dirty air cleaner	Clean/replace air filter
	Poor fuel quality	Replace with fresh fuel
POOR ACCELERATION	Clogged fuel passages	Clean
	Clogged low speed jet or bleed tube	Clean
	Fuel level too low	Adjust float
	Dirty air cleaner	Clean/replace air filter
HARD STARTING	Choke plate not operating properly	Adjust choke system
	Dirty carburetor	Clean
	Loose carburetor	Tighten
	Fuel overflow	Inspect float and valve. Repair or replace
	Faulty fuel pump	Repair/replace

Condition	Possible Cause	Correction
HARD STARTING (CONTINUED)	Poor fuel quality	Replace with fresh fuel
POOR HIGH SPEED OPERATION	Fuel pump faulty	Repair or replace
	Loose main jet	Tighten
	Incorrect fuel level in float bowl	Adjust float
	Dirt in fuel tank or hoses	Clean
	Clogged fuel filter	Replace
	Clogged main jet or main jet air passage	Clean
	Dirty air filter	Clean/replace filter element
ABNORMAL COMBUSTION (FUEL MIXTURE)	Dirty carburetor	Clean
	Dirt in fuel tank, hoses or filter	Clean or replace
	Clogged air or fuel filter	Replace
	Poor fuel quality	Replace with fresh fuel
LOSS OF POWER (INSUFFICIENT FUEL)	Faulty fuel pump	Repair or replace
	Dirty carburetor	Clean
	Dirt in fuel tank or hoses	Clean
	Clogged fuel filter	Replace
	Air leak in system	Check mounting hardware and gaskets. Repair or replace
LOSS OF POWER (INSUFFICIENT AIR)	Dirty air cleaner	Clean/replace filter element
	Throttle linkage	Adjust or Repair
	Blocked air intake tube	Clean
SURGING	Sticking governor linkage	Adjust

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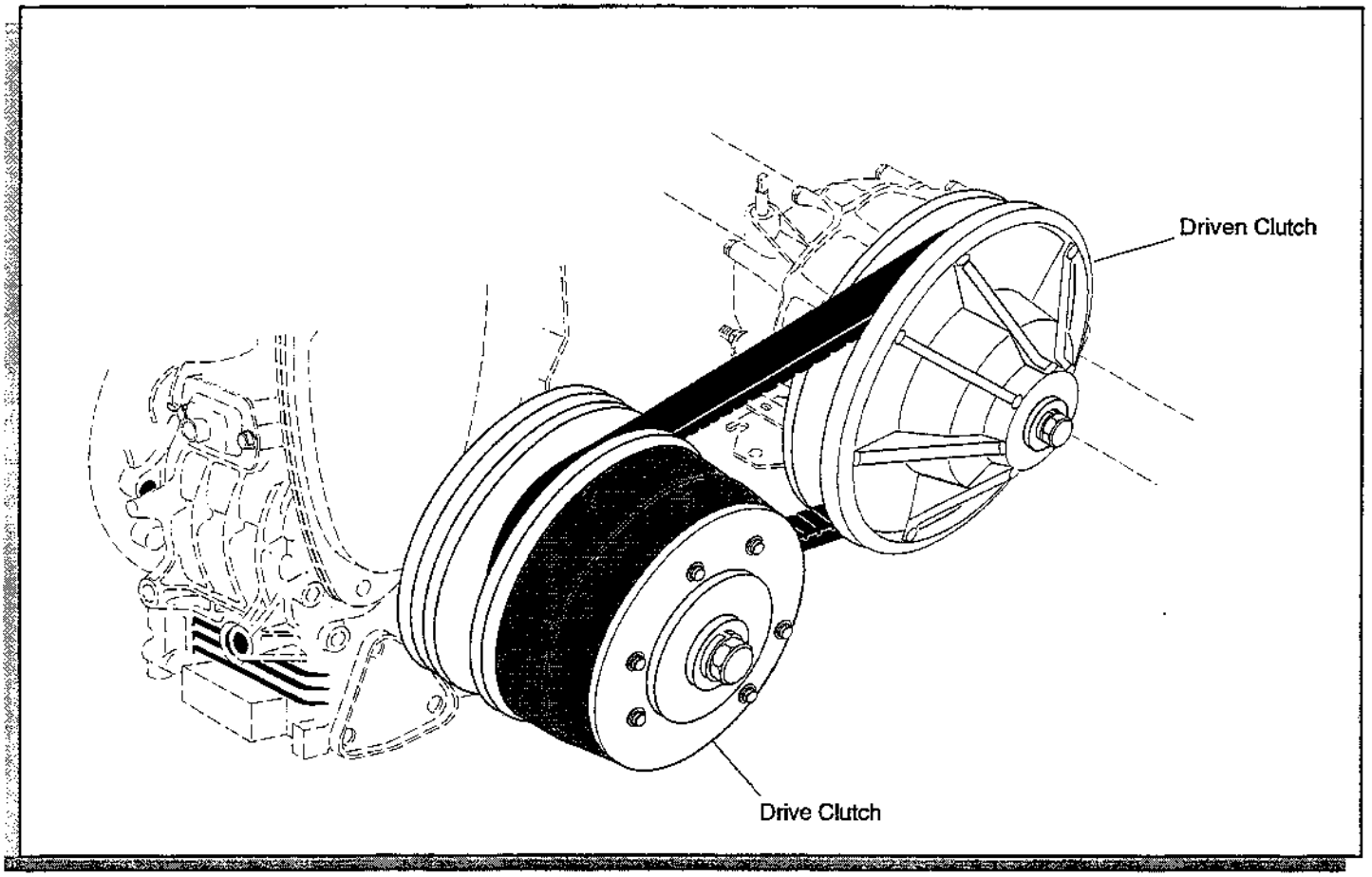

Fig. L-1 Continuously Variable Transmission System (CVT)

GENERAL

(See Fig. L-1 "Continuously Variable Transmission System (CVT)" on page L-1)

Power transmission from the engine to the rear axle is by means of a continuously variable transmission (CVT). The CVT consists of two matched clutch units joined by a drive belt. The engine mounted drive clutch is a centrifugal unit that responds to engine RPM and the rear axle mounted driven clutch is a load sensing unit.

CLUTCHES

Drive Clutch

(See Fig. L-1 "Continuously Variable Transmission System (CVT)" on page L-1)

When the accelerator is depressed, the engine RPM is increased which causes the cams (weights) within the centrifugal drive clutch to move outwards and force the moveable sheave inwards. The drive belt is engaged by the clutch sheaves and begins to rotate. At this point, the ratio between drive and driven clutch is approximately 3:1.

As the engine speed continues to rise, the drive clutch sheave continues to move inwards forcing the drive belt to the outer diameter of the drive clutch sheaves which increases the speed of the belt. The ratio is greatly decreased and provides maximum speed.

When the accelerator is released, the engine RPM is decreased and the cams exert less pressure on the moveable sheave which is forced outwards against the cams by a compression spring. The drive belt disengages from the clutch sheave when engine RPM is reduced to the point where the cams exert less force than the spring.

Driven Clutch

(See Fig. L-1 "Continuously Variable Transmission System (CVT)" on page L-1)

The driven clutch sheaves are closed at rest which results in the drive belt being held at the outer diameter of the driven clutch. The driven clutch has no weights but is held closed by a torsion spring which is joined to the moveable sheave and a torque ramp (cam) that is

attached to the fixed sheave. The moveable sheave slides against the cam with the three points of contact provided by low friction 'buttons'.

As the drive belt starts to rotate, the driven clutch starts to rotate. As the speed of the drive clutch increases and the belt starts to climb the sheaves, the driven clutch responds by being forced open in order to permit the belt to ride lower in the driven clutches sheaves. The sheaves overcome the pressure exerted by the torsion spring and cam.

As the driven clutch slows, the belt rides lower in the drive clutch sheaves. The driven clutch compensates by closing in response to the torsion spring and cam.

Increased Load

When the vehicle is at governed speed and starts to climb a grade or is subjected to other increased load conditions, the drive belt friction is overcome by the additional load and the belt seeks a point where it can achieve adequate friction to overcome its slippage. The belt moves outwards on the driven clutch which closes due to the torsion spring moving the moveable sheave against the torque ramps. The movement of the drive belt overcomes some of the centrifugal force exerted by the cams in the drive clutch. This forces the belt lower into the drive clutch which increases the drive ratio. This 'downshifting' applies more torque to the rear axle without an appreciable change to the engine RPM since the governor opens the carburetor in direct response to the reduction in ground speed.

Equilibrium

The CVT functions because the drive and driven clutches maintain equilibrium. Clutch sets are tuned to the vehicle that they are designed to operate. Changes in vehicle weight or desired performance characteristics require that both clutches be tuned to the needs of the vehicle and remain compatible with each other.

Drive Clutch Removal

(See Fig. L-2 "CVT Components" on page L-4)

Tool List	Qty. Required
Plastic tipped hammer	1
Socket, 5/8", 3/8" drive	1
Ratchet, 3/8" drive	1
Clutch puller (E-Z-GO P/N 19779-G2)	1
Impact socket, 1 1/8", 1/2" drive	1
Impact wrench, 1/2" drive (air or electric)	1
Thread locking sealant	AR
Torque wrench, 1/2" drive, ft. lbs.	1

⚠ WARNING ⚠

TO PREVENT THE ENGINE FROM INADVERTENTLY STARTING, DISABLE THE ELECTRICAL SYSTEM BEFORE ATTEMPTING TO REMOVE THE DRIVE BELT.

TO PREVENT BURNS, BE SURE THAT THE ENGINE AND EXHAUST COMPONENTS HAVE COOLED BEFORE ATTEMPTING ANY SERVICE

DO NOT ALLOW FINGERS TO BECOME TRAPPED BETWEEN THE BELT AND CLUTCH SHEAVE.

TO PREVENT POSSIBLE INJURY THAT COULD RESULT FROM A BROKEN SOCKET, USE ONLY SOCKETS DESIGNED FOR USE WITH AN IMPACT WRENCH. NEVER USE A SOCKET INTENDED FOR USE WITH HAND TOOLS.

Remove the drive belt (1). (Refer to 'Removing The Drive Belt' procedure elsewhere in this section.)

Remove the clutch bolt (2), lock washer (3) and pilot washer (4). Insert a greased clutch puller and tighten (clockwise) using an impact wrench which will remove the clutch from the engine crankshaft.

Service Tip: In some extreme cases, the clutch may not separate from the crankshaft. Remove the clutch puller and fill the cavity with grease. Replace the clutch puller and tighten it with the impact wrench. The combined mechanical and hydraulic effect will remove the clutch. Remove all excess grease.

Drive Clutch Installation

(See Fig. L-2 "CVT Components" on page L-4)

CAUTION

DO NOT INSTALL THE BOLT WITH AN IMPACT WRENCH.

Clean both the engine crankshaft and the drive clutch bore. Slide the clutch onto the engine crankshaft and

rotate the clutch while lightly pushing the moveable sheave in and out several times to seat the clutch with the tapered crankshaft.

Install the lock washer (3) and the large pilot washer (4) onto the clutch bolt (2).

Apply thread sealant to the threads of the clutch bolt and install and tighten to 40-44 ft. lbs. torque.

Driven Clutch Removal

(See Fig. L-2 "CVT Components" on page L-4)

Tool List	Qty. Required
External snap ring pliers	1
Socket, 5/8", 1/2" drive	1
Ratchet, 1/2" drive	1
Thread locking sealant	AR
Phillips screwdriver	1
Torque wrench, 1/2" drive, ft. lbs.	1

⚠ WARNING ⚠

TO PREVENT THE ENGINE FROM INADVERTENTLY STARTING, DISABLE THE ELECTRICAL SYSTEM BEFORE ATTEMPTING TO REMOVE THE DRIVE BELT.

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Remove the drive belt (1). (Refer to 'Removing The Drive Belt' procedure elsewhere in this section.)

Remove the trunk lid. Remove the clutch bolt (5), the lock washer (6) and the pilot washer (7) and slide the clutch from the rear axle input shaft.

Driven Clutch Repair

(See Fig. L-2 "CVT Components" on page L-4)

NOTE

Parts must be reassembled in same position as their original position. Mark all components to facilitate accurate reassembly.

Some minor field repairs may be made to the driven clutch. Remove the retaining ring (8) and remove the torque ramp. Remove the spring (10) and the moveable sheave (11).

Inspect the shaft for signs of wear and inspect the bushings for signs of deterioration. If there is wear to the point of causing vibration, the clutch must be replaced.

Torque Ramp Buttons

(See Fig. L-2 "CVT Components" on page L-4)

Remove any fragments and dirt. Remove the ramp button (12) by removing the screw (13). The buttons are replaced by inserting a new button and screw and tightening firmly. It is good practice to replace all buttons as a set.

Driven Clutch assembly

(See Fig. L-2 "CVT Components" on page L-4)

Assemble the moveable sheave (11)to the fixed sheave (14) and insert the spring (10) in the pilot hole in the moveable sheave. Insert the other end of the spring in the torque ramp (9) and rotate the ramp counterclockwise 140° before engaging the splines and inserting the retaining ring (8).

Driven Clutch Installation

(See Fig. L-2 "CVT Components" on page L-4)

Coat the rear axle input shaft with a light coating of anti-seize compound and slide the clutch onto the shaft. Install the lock washer (6) and pilot washer (7) to the clutch bolt (5) and apply thread sealant to the threads of the clutch bolt. Install the bolt and tighten to 14-17 ft. lbs. torque.

STORAGE

If the vehicle is to be out of service due to off season storage, the clutches should ***not*** be coated with any protecting spray. The drive clutch sheaves may develop some surface rust which will be removed within a few minutes of running time. The driven clutch is aluminum and requires no treatment.

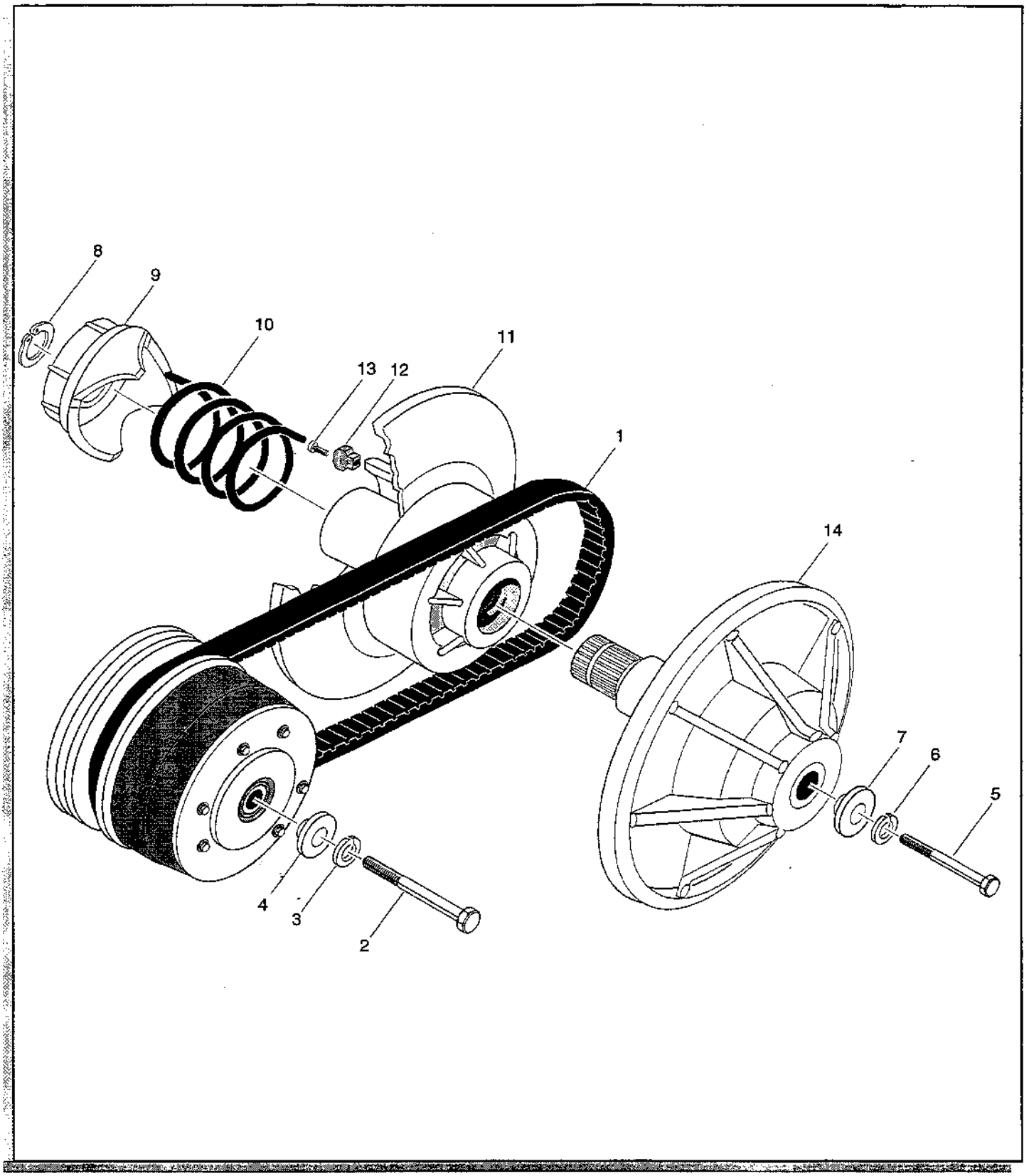

Fig. L-2 CVT Components

TOWING

The drive belt should always be removed from the clutches before attempting to tow a vehicle. For additional information on towing, see Section 'A' of this manual.

DRIVE BELT

Removing the Drive Belt

(See Fig. L-3 "Removing the Drive Belt" on page L-5)

With the vehicle on level ground, remove the drive belt by pulling the belt upwards which will cause the driven clutch sheaves to open and loosen the belt tension. The belt may then be rolled off the driven clutch.

Drive Belt Service

The drive belt will require no service unless the vehicle has been operated in an extremely dusty or muddy location in which case it should be washed with plain water. If the belt becomes frayed or badly worn, it must be replaced.

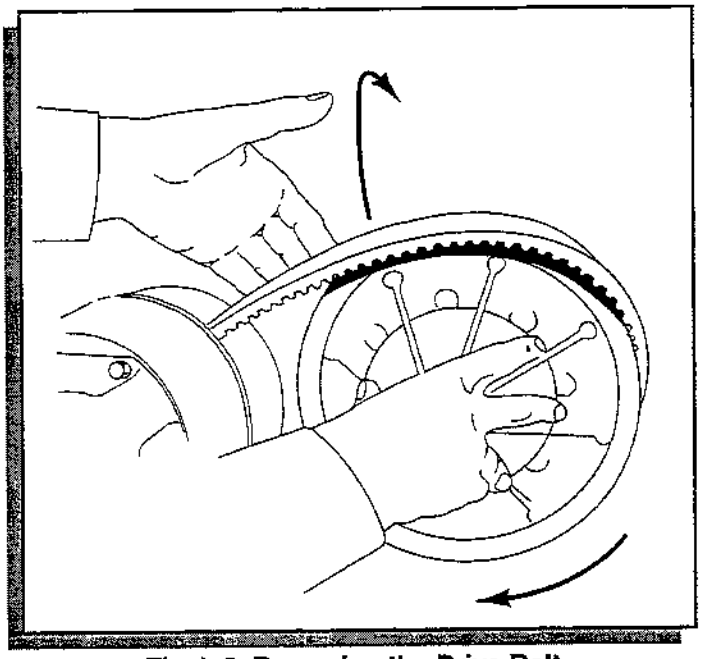

Fig. L-3 Removing the Drive Belt

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CIRCUITS AND CONTROLS

(See Fig. M-1 "Electrical System Wiring Diagram" on page M-2)

(See Fig. M-4 "Electrical System (Physical Location)" on page M-8)

The electrical system is a 12 volt negative ground system consisting of a battery, starter/generator, voltage regulator, solenoid, ignitor, ignition coil, accelerator limit switch, fuse, key switch and pulser coil.

⚠ WARNING ⚠

ALL TESTS PERFORMED REQUIRING STARTER/GENERATOR OR ENGINE TO ROTATE MUST BE PERFORMED WITH THE REAR WHEELS RAISED (SEE SECTION "B"). TO REMOVE DRIVE BELT, SEE SECTION "A".

TO REDUCE THE POSSIBILITY OF PERSONAL INJURY, FOLLOW THE LIFTING PROCEDURE IN SECTION "B" OF THIS MANUAL. PLACE WHEEL CHOCKS IN FRONT OF AND BEHIND THE REAR WHEELS AND CHECK THE STABILITY OF THE VEHICLE ON THE JACK STANDS BEFORE STARTING ANY REPAIR PROCEDURE. NEVER WORK ON A VEHICLE THAT IS SUPPORTED BY A JACK ALONE.

STARTER

(See Fig. M-4 "Electrical System (Physical Location)" on page M-8)

When starting the engine, the field coils are in series with the armature and the starter/generator operates as a motor. This circuit is controlled by a key switch, fuse, accelerator limit switch and a solenoid. With the key in the ***'ON'*** position, battery current is available to the accelerator limit switch which remains open until the accelerator pedal is pressed. When the pedal is pressed, the plunger on the switch is released, the contacts close and the ignition circuit is energized. Battery current then energizes the solenoid which closes the contacts and energizes the starter circuit. The starter/generator now functions as a motor to start the engine.

GENERATOR

(See Fig. M-4 "Electrical System (Physical Location)" on page M-8)

When the engine is running, the starter/generator functions as a generator. This is used for charging the battery and for the ignition system. Generated output is controlled by the voltage regulator at 14.25 - 14.75 V, without regard to engine RPM. However, the charging current will vary depending on the condition of the battery. If it is fully charged, current is controlled at 3 to 5 amps.

WIRING

⚠ WARNING ⚠

BEFORE MAKING ANY TEST OF WIRING COMPONENTS, DISCONNECT THE BATTERY CABLES FROM THE BATTERY POSTS (SEE PROCEDURE IN SECTION B).

Electrical tests of the wiring for continuity may be made with a digital 'VOM' (Volt Ohm Meter) available through the E-Z-GO Service Parts Department (E-Z-GO P/N 27481-G01). Any digital VOM may be used, however the controls, displays and features may vary depending on the make and model. Set the meter selector to the ohms scale and check continuity between each circuit component as indicated. Example: If a switch is open or if there is a break in the wiring, the meter will display a flashing "30.00" or read infinity (∞).

TESTING IGNITION CIRCUIT

NOTE

This section assumes that the fuel system is functioning and that the engine is receiving fuel.

Tool List	Qty. Required
Digital VOM	1
Spark plug	1
Spark plug tester	1

⚠ WARNING ⚠

NEVER OPERATE THE STARTER UNLESS BOTH SPARK PLUGS ARE INSTALLED OR THE IGNITION SYSTEM IS DISABLED. FUEL DRAWN INTO THE CYLINDERS WILL BE EXPELLED THROUGH THE SPARK PLUG OPENING AND COULD BE IGNITED BY THE IGNITION SYSTEM OR ANOTHER SOURCE, RESULTING IN A FIRE.

The engine incorporates a solid state ignition system that fires both plugs simultaneously. There is no distributor.

The engine can be stopped by turning the key switch to the ***'OFF'*** position. When the accelerator pedal is released, the limit switch contacts open and the ignition circuit is de-energized.

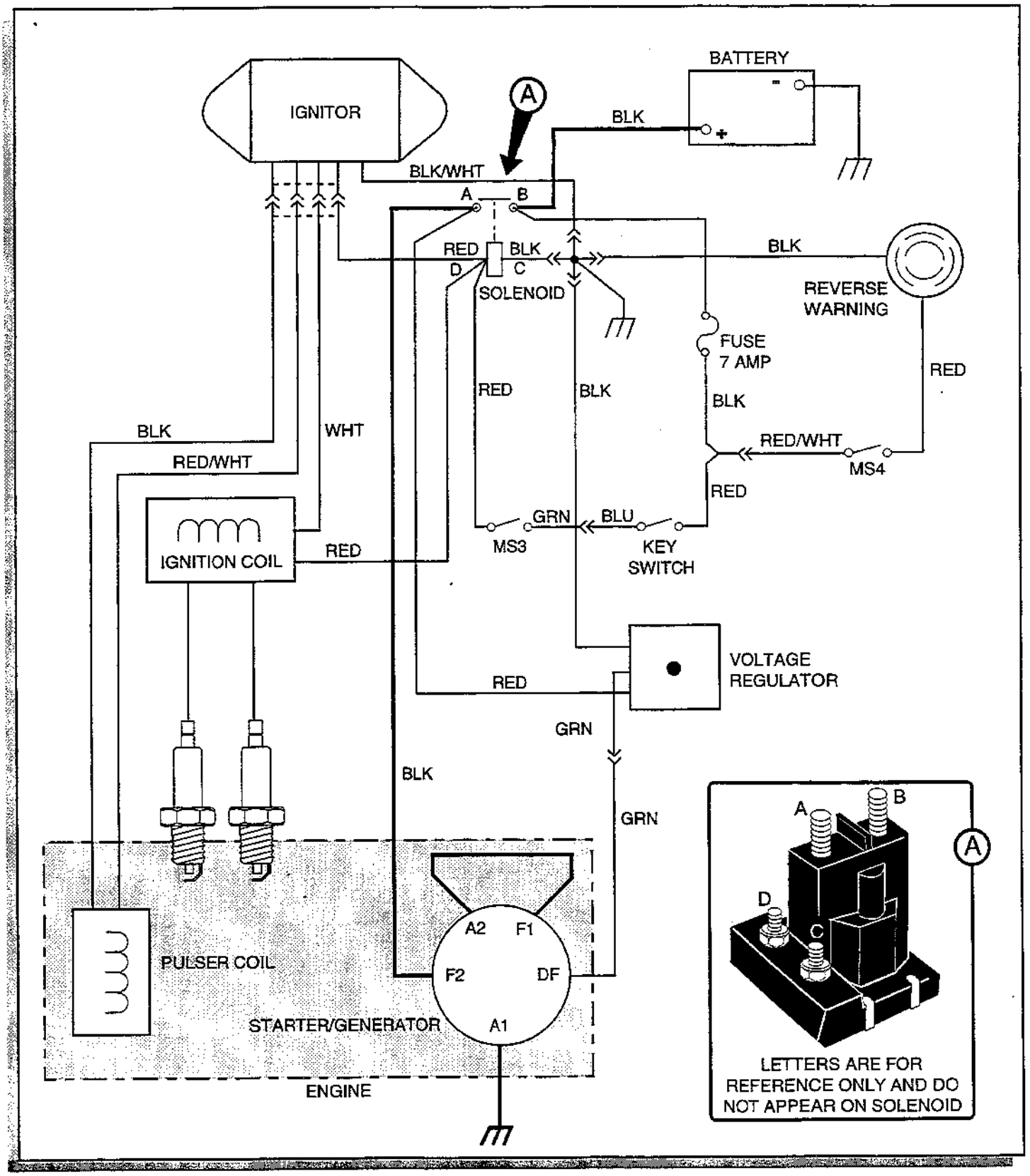


Fig. M-1 Electrical System Wiring Diagram

CAUTION

DO NOT ARC SPARK PLUG WIRE TO GROUND. CONNECT TO A KNOWN GOOD SPARK PLUG AND GROUND PLUG TO A CLEAN METAL SURFACE (MUFFLER, CYLINDER, ETC.). PERMANENT DAMAGE MAY BE CAUSED TO THE COIL OR IGNITOR IF THE PLUG IS NOT GROUNDED PROPERLY.

If the engine will ***NOT*** run, but the starter will turn the engine, proceed as follows:

1. Check for loose terminals, wires and connections.
2. Check for an electrical discharge through the spark plug wire as follows: Using a spark plug that is known good and with spark plugs installed in both cylinders, place on a clean grounded engine surface, (muffler, cylinder, etc.) and turn over the engine with the starter. Look for a blue electrical arc at the spark plug electrodes.
3. If there is either a weak arc or no arc, try a new spark plug, then check the condition and the tightness of the spark plug wires. Plug wires can be checked by substituting them with good ones.
4. Replace the plugs if necessary. Gap the spark plug .028" - .030" (.71 - .76 mm) using a wire type spark plug gauge.

Testing the Ignition Coil

(See Fig. M-2 "Ignition Coil Check Method" on page M-4)

Set the meter to the ohms scale, measure the resistance between both primary wire terminals and between the secondary wires. A normal reading would be: Primary (+ and -); 3.7 - 5.2 ohms and Secondary (A and B); 10 - 17 K ohms. If any readings obtained are out of the above ranges, replace the ignition coil.

Testing the Pulser Coil

Unplug the connector leading into the engine. Place the (-) probe from the VOM (set to the ohms scale) on the red/white wire from the pulser coil, and the (+) probe on the black wire also from the pulser coil. A reading of 19 - 21 ohms should be observed. If the measurement obtained is out of this range or if a reading of no continuity is displayed, replace the pulser coil. Make certain that the air gap is correct. Set with a .032" (.81 mm) feeler gauge. There is no timing adjustment.

TESTING STARTING CIRCUIT

(See Fig. M-1 "Electrical System Wiring Diagram" on page M-2)

⚠ WARNING ⚠

DISCONNECT BATTERY FOR STEPS 1 THROUGH 8 (SEE PROCEDURE IN SECTION B).

Tool List	Qty. Required
Digital VOM	1

If the engine will not turn over, proceed as following:

1. Check the battery for a voltage reading which should be between 12.2 and 12.5 volts. Inspect for loose or dirty battery post connections.
2. Check for a blown in line fuse and replace if necessary with a 7 amp fuse.
3. Check for loose wires at all terminal connections.
4. Check the complete electrical system for correct circuitry.
5. Inspect for worn insulation or bare wires touching the frame. Bare wires will cause a short circuit.
6. Check for continuity through the key switch. Set the VOM to the ohms scale. Detatch wires. Place positive (+) probe on one terminal and negative (-) probe on the other terminal. The reading on the meter should be "0" ohms with the switch key in the ***'ON'*** position and a flashing "30.00" (∞) with the switch in the ***'OFF'*** position. If the meter does not register, replace the switch. Reconnect the wires.
7. Turn the key switch to ***'OFF'***.
   a) Place one probe of the VOM (set to ohms scale) on the red wire at the solenoid. Place the other probe on the key switch terminal with the blue wire.
   b) Press the accelerator and observe the VOM. A reading of less than 2 ohms indicates a good limit switch. A reading of greater than 2 ohms indicates that the switch terminals should be checked. A reading of infinity a flashing "30.00" (∞) indicates that the switch must be replaced. Connect the battery.
8. Check the starting solenoid operation. Turn the key switch to the ***'ON'*** position.
   a) Place the VOM (set to the appropriate DC volts scale) negative (-) probe on terminal "A" of the solenoid. Place the positive (+) probe on terminal "B". The VOM should indicate approximately 12 V.
   b) Press the accelerator pedal. The VOM will indicate "0" voltage if the solenoid contacts are

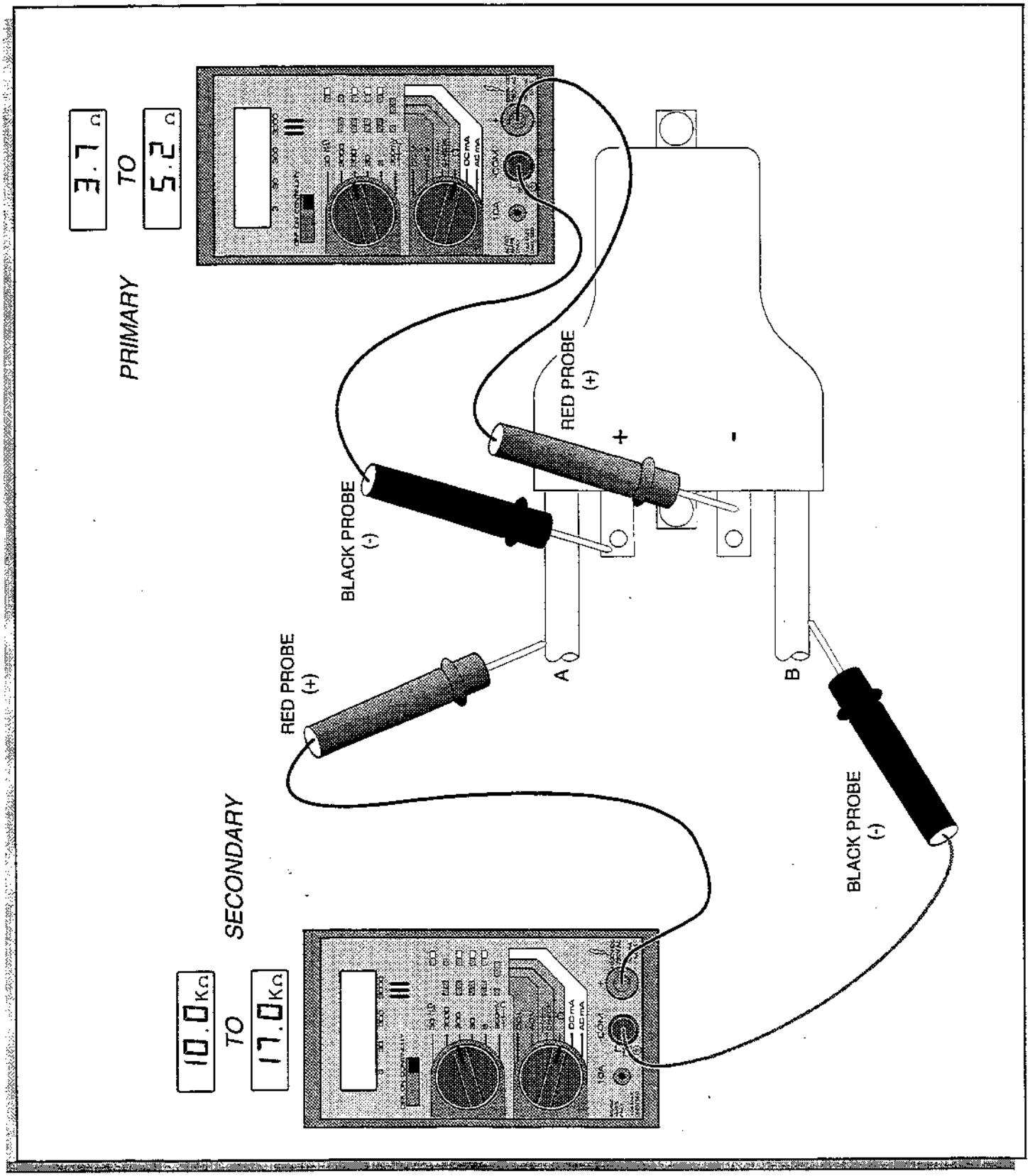


Fig. M-2 Ignition Coil Check Method

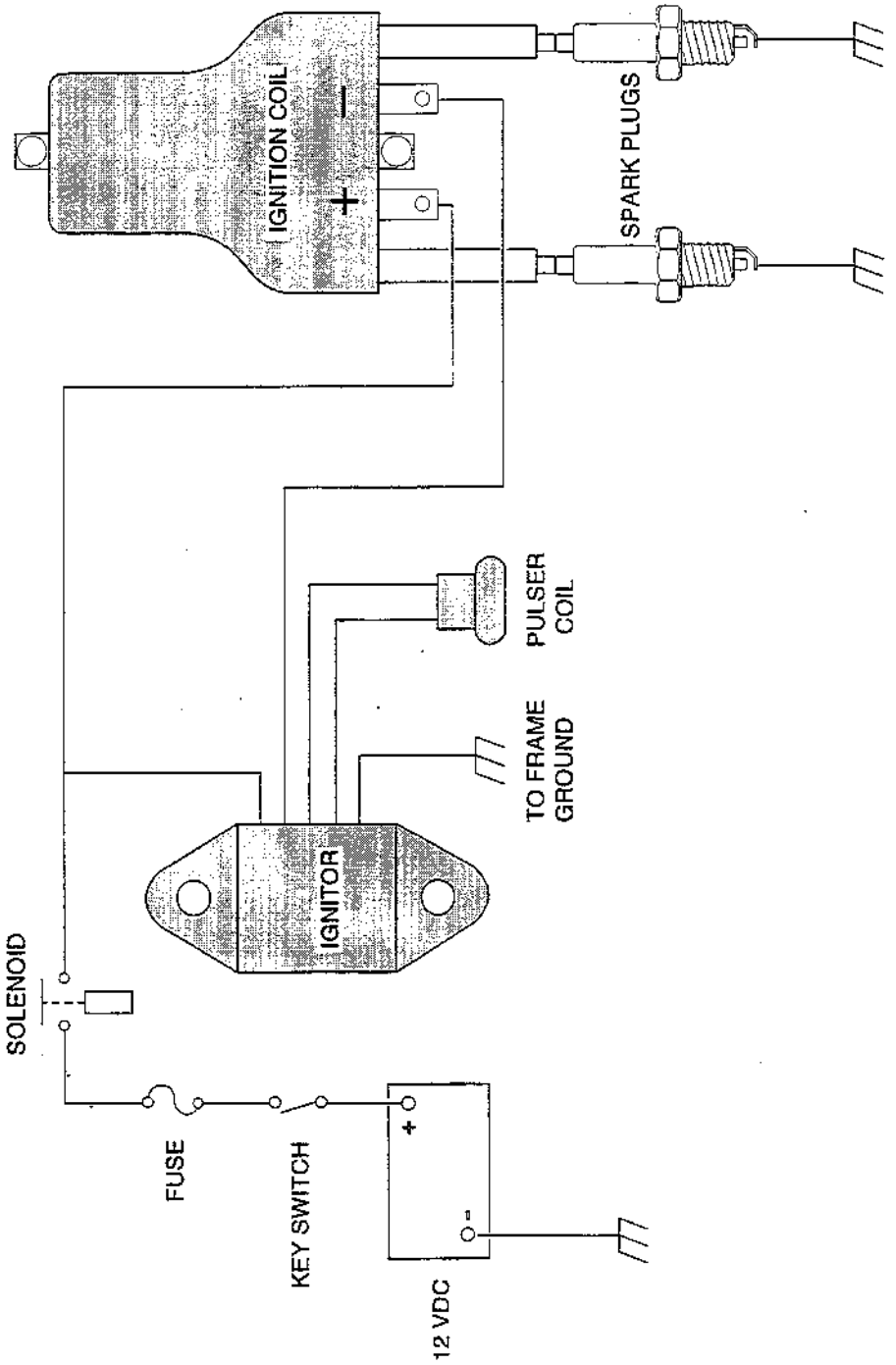


Fig. M-3 Normal Circuit

closed.

c) If "0" voltage is not indicated while the accelerator pedal is pressed, replace the solenoid.

TESTING CHARGING CIRCUIT

(See Fig. M-1 "Electrical System Wiring Diagram" on page M-2)

Tool List	Qty. Required
Digital VOM	1

⚠ WARNING ⚠

TO PREVENT THE POSSIBILITY OF INJURY RESULTING FROM VEHICLE INADVERTENTLY STARTING, THE DRIVE BELT MUST BE REMOVED OR BOTH REAR WHEELS RAISED (SEE PROCEDURE IN SECTION B).

The charging circuit consists of a starter/generator, voltage regulator and battery. The solenoid must be functional in order to start the vehicle, but is not considered part of the charging circuit.

1. If the battery charge is inadequate (less than 11 VDC), proceed as follows:
   a) Check the battery voltage and inspect for loose or corroded terminal posts and connections. Check electrolyte level.
   b) Check charging circuit component terminals for proper, clean, tight connections.
   c) Check for charging voltage as follows:
      1) Raise the vehicle (see procedure in Section B) so that both rear wheels are free to rotate.
      2) With the engine off, measure the voltage at the battery's terminals by placing the negative (-) probe on the negative (-) post and the positive (+) probe on the positive (+) post of the battery. Note the reading.
      3) Attach the DC voltmeter across the regulator's red and black leads.
      4) Start the engine and accelerate to governed speed.
      5) The meter should read higher than before starting the engine. In a reasonable amount of time, the reading should settle between 14 and 15 volts, indicating the regulator is functioning properly.
      6) If no increase over battery voltage is observed, there is a malfunction in the charging circuit.
      7) If the reading is *above* 15 volts, check to assure the wiring harness and generator field winding (green lead) is not grounded. If it is not, replace the regulator.
      8) If the reading is *below* 14 volts, disconnect the regulator's green field wire from the system harness. Temporarily connect the green field wire to ground. If the voltage rises above its prior reading, replace the regulator.
      9) If the above procedures do not correct the problem, check for faults in the vehicles wiring harness and/or generator.

STARTER/GENERATOR REMOVAL

See Engine and Controls.

Starter/Generator Disassembly

(See Fig. M-5 "Starter/Generator" on page M-9)

(See Fig. M-6 "Starter/Generator Brush Removal" on page M-10)

(See Fig. M-7 "Bearing Removal" on page M-10)

Tool List	Qty. Required
Digital VOM	1
Wrench, 24 mm	1
Wrench, 10 mm	1
Socket, 10 mm, 3/8" drive	1
Phillips impact bit, 1/2" drive	1
Two jaw puller	1
Straight blade screwdriver	1
Impact wrench, 1/2" drive	1
Ratchet, 3/8" drive	1

NOTE

In general, starter/generator service is best performed by trained motor technicians who have the knowledge and equipment to overhaul the unit. Some checks and repairs however, can be accomplished by a skilled mechanic. Make your own evaluation of the equipment and skills available before starting disassembly.

Hold the pulley (1) and remove the pulley nut (2). Remove the pulley, screws (4) and front cover (3).

Remove the brush covers (6) by prying out with a screwdriver. Pull up on the brush springs and move to the side of brushes, slide the brushes out approximately 1/4". Remove the through bolts (7) and the rear cover (8). Remove the frame and field coils (9). Remove the 5 mm

screws from the brush holder and 6 mm nuts from A1 and A2 terminals. Remove the brush holder. If the bearing needs to be replaced, use an automotive style two jaw puller to remove the bearing from armature.

Starter/Generator Inspection

1. Inspect the commutator for wear or damage.
2. Inspect the brush assembly for wear and damage to the brush holder insulators. Check the brushes for length, 11/16" (1.7 cm) and signs of carbonization.
3. Inspect the armature for distortion or broken wires.
4. Inspect the field coil insulators and lead wire.
5. Check the bearings for free rotation and lack of end play on shaft. Replace if necessary.

Starter /Generator Repair

Tool List	Qty. Required
Digital VOM	1
Torque wrench, 3/8" drive, ft. lbs.	1
Torque wrench, 3/8" drive, in. lbs.	1
Clean cloth	1
Socket, 3/8" drive	1

1. Commutator - Clean with a soft, clean cloth.
2. Replace any damaged or cracked brush holders or brushes worn to less than 11/16" (1.7 cm) in length.
3. Test the insulation between the core and the commutator segments and shaft with a circuit tester. If continuity is indicated, the insulation is defective and the armature must be replaced.
4. If the brushes are removed, using a VOM, check the field coils for continuity between 'F1' and 'F2' and 'DF' and 'F1'. If an open circuit exists, replace the field coils. Check for continuity between all four terminals and the frame (outer shell). If continuity is indicated, the field coils are grounded against the frame and the field coils must be replaced.
5. Clean all parts to be reinstalled and reassemble in the reverse order of disassembly. Tighten bolts and nuts to the following values:

   4 mm - torque to 15 - 21 in. lbs. (17 - 24 kg/cm)
   5 mm - torque to 30 - 43 in. lbs. (35 - 50 kg/cm)
   6 mm - torque to 52 - 74 in. lbs. (60 - 85 kg/cm)
   14mm - torque to 33-40 ft. lbs. (450 - 550 kg/cm)

Tighten **terminal nuts** to the following torques:

F1 - F2 - torque to 43 - 52 in. lbs. (50 - 60 kg/cm)
DF - torque to 26 - 35 in. lbs. (30 - 40 kg/cm)

BATTERY REMOVAL

See procedure in Section "B".

Battery Voltage Test

Battery voltage can be checked using a volt ohm meter. Attach the negative (-) lead of the VOM to the ground terminal of the battery. The positive (+) lead is then attached to the positive battery terminal. The voltage reading obtained should be 12 volts or above. If the reading is below 12 volts, the battery requires either charging or replacement.

⚠ WARNING ⚠

THE HYDROGEN GAS FORMED DURING BATTERY CHARGING IS EXPLOSIVE. AVOID ANY ELECTRICAL SPARK OR OPEN FLAME NEAR BATTERIES.

NOTE

If the temperature of the battery or the ambient temperature is below 60 °F, the capacity of the battery will be less. It will require more time to charge. A cold battery will build up voltage and more rapidly reduce the charging rate.

CAUTION

DO NOT OVERCHARGE BATTERY.

NOTE

Batteries that are new or have been stored must be fully charged before being tested or placed in vehicle.

Storage Of Batteries

Batteries that are removed from service for storage must be cared for as follows:

Charge fully. Cover terminals with petroleum jelly to prevent oxidation (use commercially available battery protectorate when installed in vehicle). Store in a cool place not below 32°F or above 80°F. Batteries should be charged every 30 days using a 2 amp trickle charger.

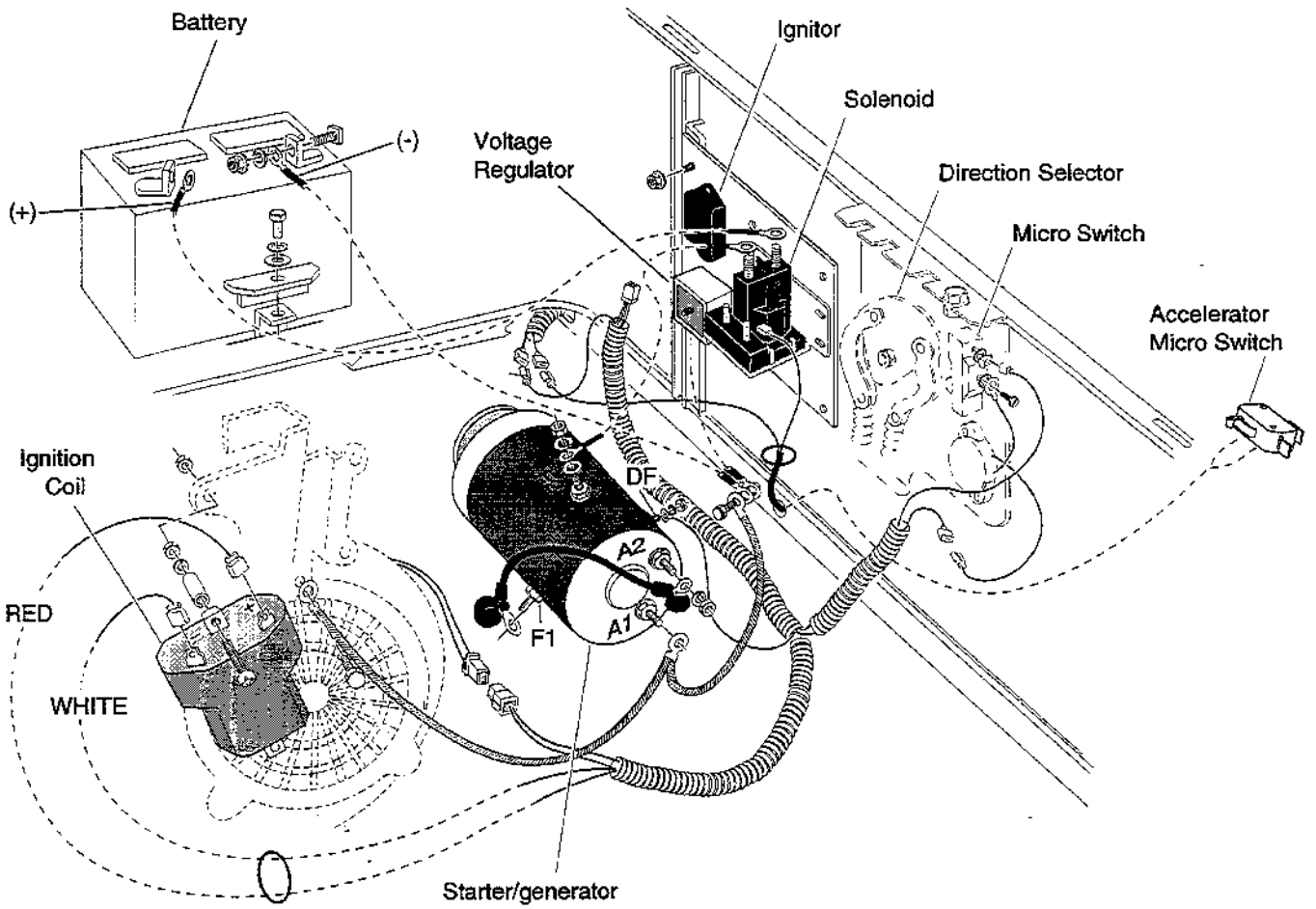


Fig. M-4 Electrical System (Physical Location)

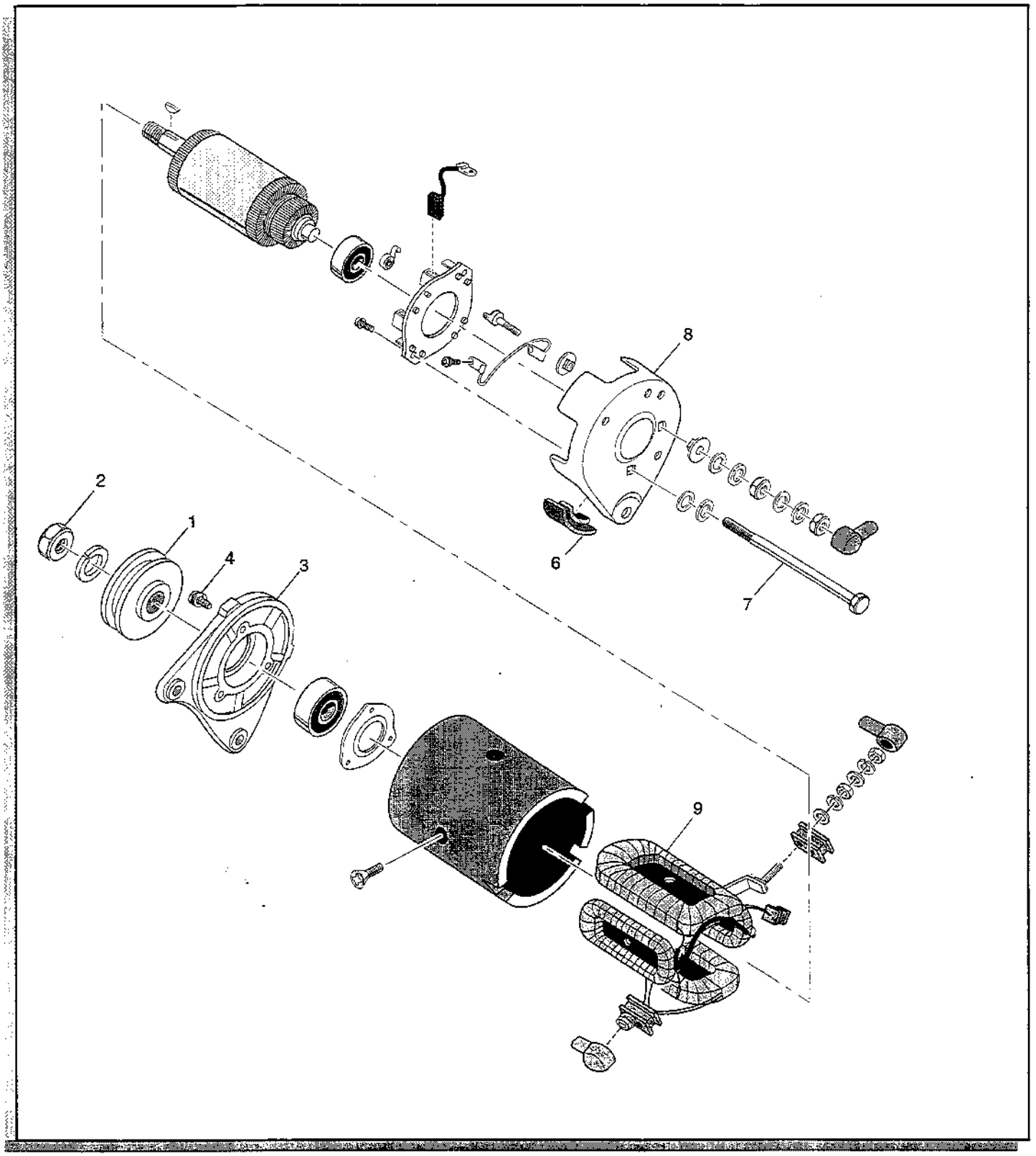


Fig. M-5 Starter/Generator

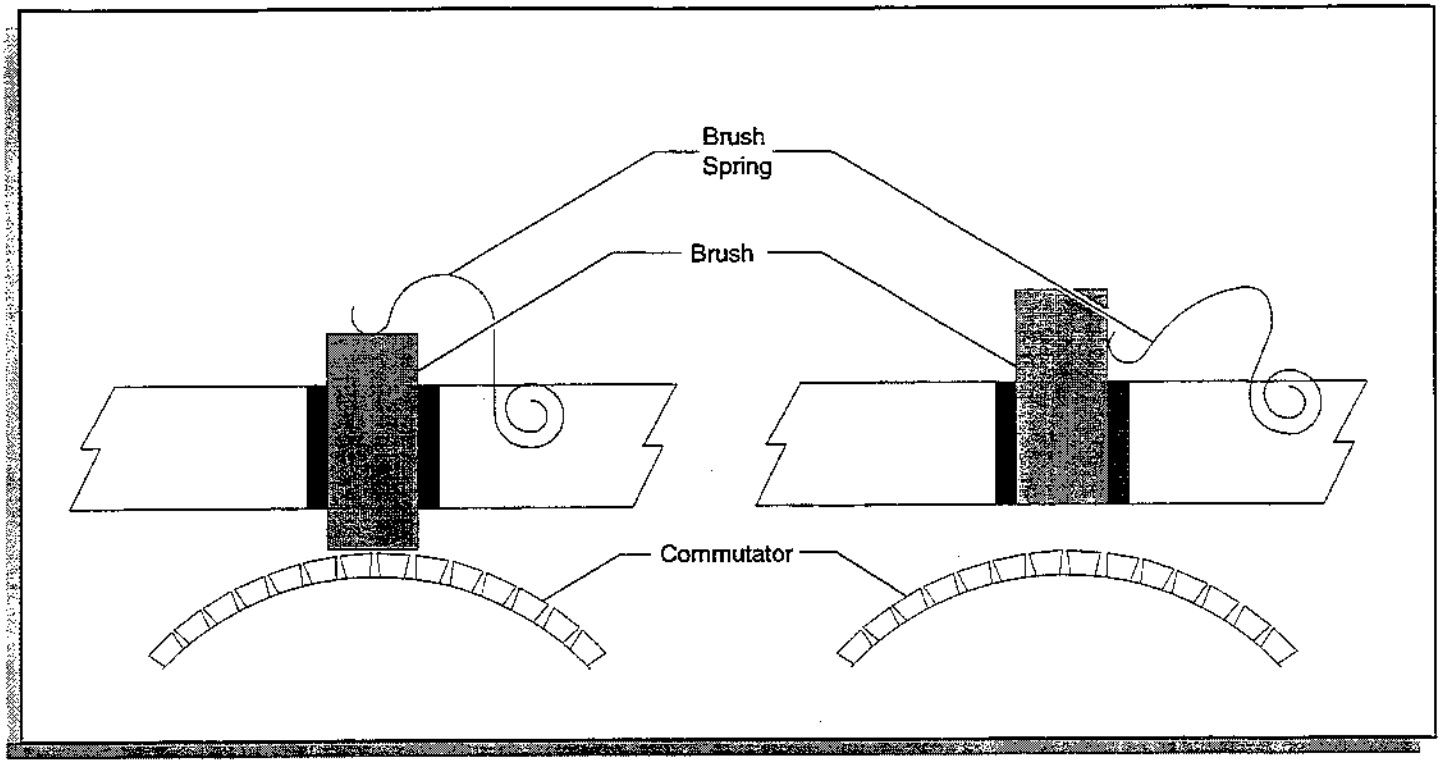


Fig. M-6 Starter/Generator Brush Removal

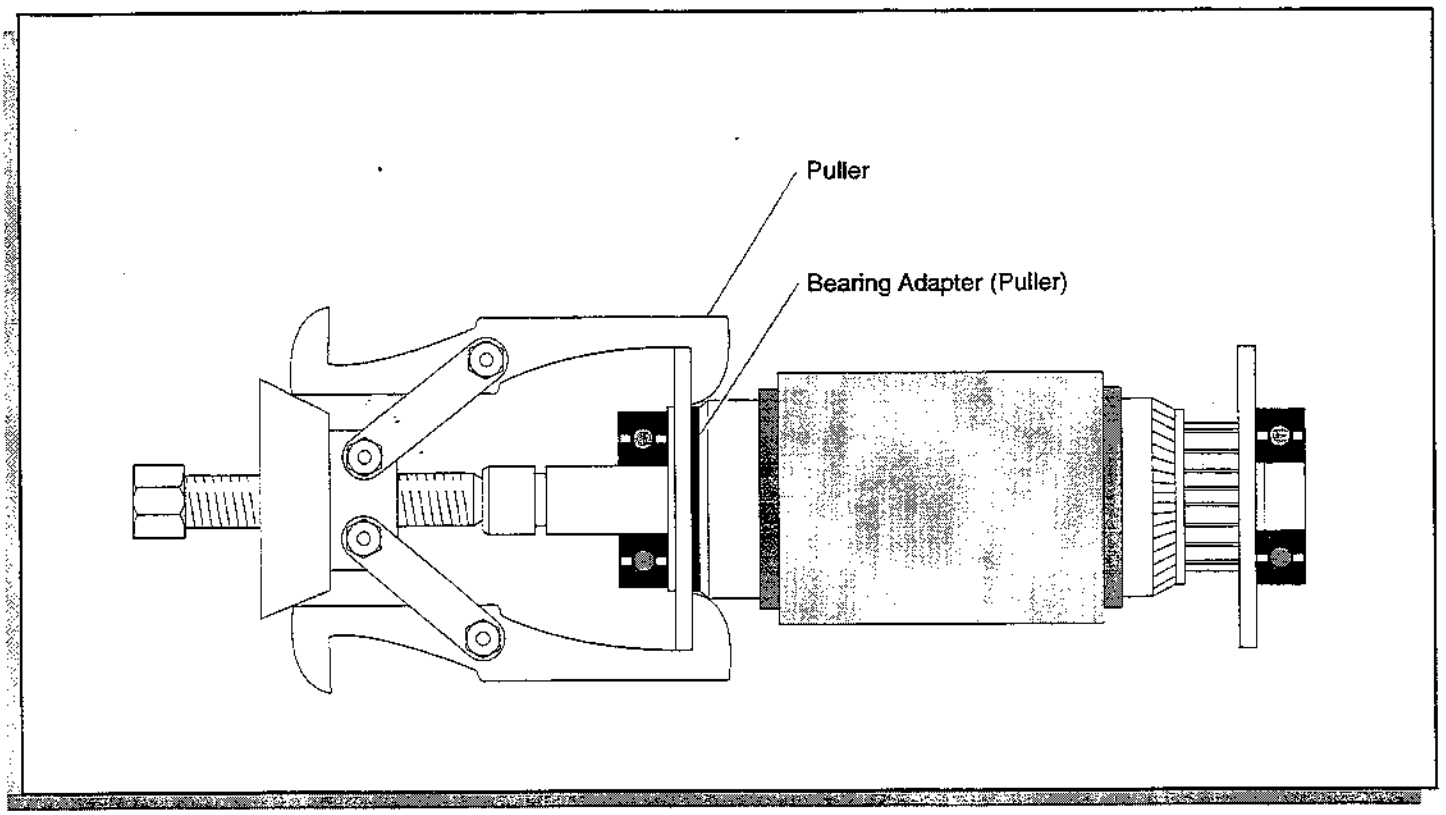


Fig. M-7 Bearing Removal

TABLE OF CONTENTS FOR SECTION 'N'

LIST OF ILLUSTRATIONS

Notes:

The VOM shown and recommended is available through the E-Z-GO Service Parts Department as P/N 27481-G01. For the purpose of this section, the red probe (+) and black probe (-) are used. Any digital VOM may be used, however the controls, displays, accuracy and features may vary depending on the make and model. Always follow the meter manufacturer's recommendations and instructions for the use and care of the meter.

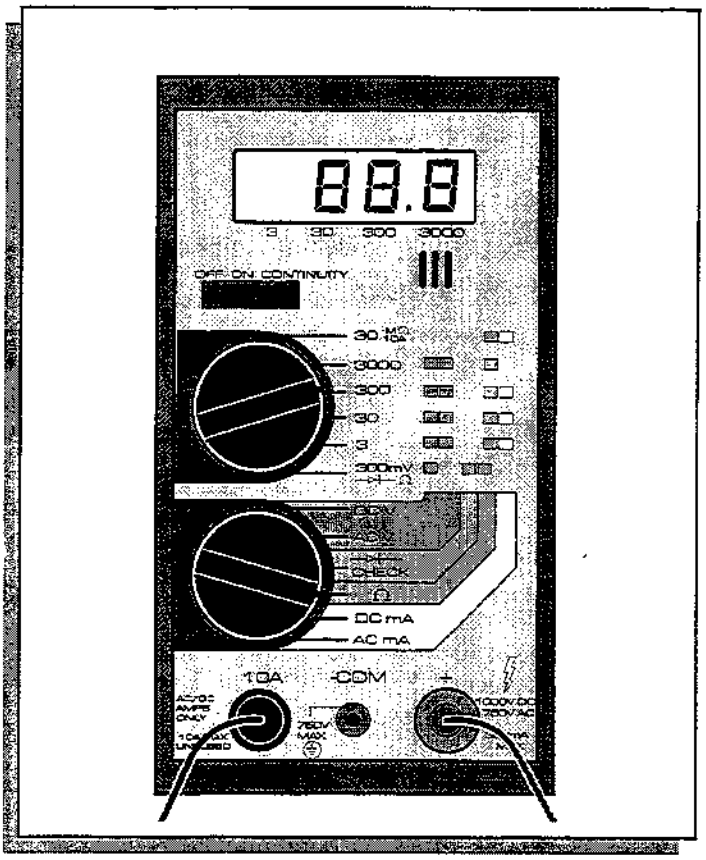


Fig. N-1 VOM

HORN CIRCUIT (IF EQUIPPED)

The horn circuit is a 12 volt system and consists of a horn switch, fuse block, fuse, horn and accessory wiring harness.

When the horn switch is depressed, the horn circuit is completed permitting current to flow from the battery to the fuse and through the horn causing it to sound. The horn will operate if the key switch is in either the 'ON' or 'OFF' position.

Testing the Horn Circuit

Tool List	Qty. Required
VOM, digital	1

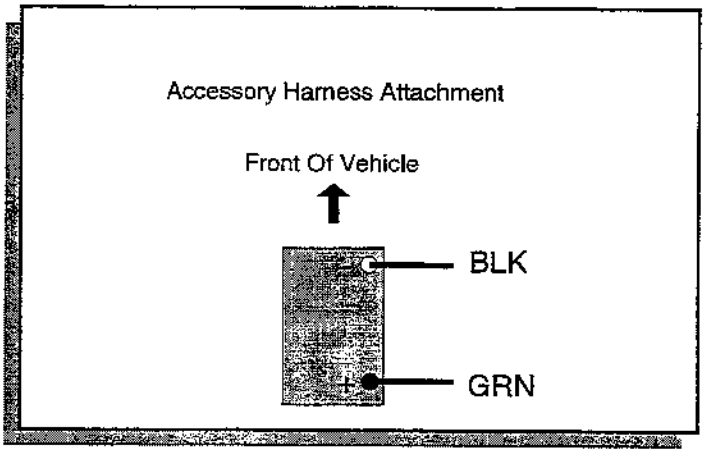


Fig. N-2 Accessory Harness Power Connection

1. CHECK FOR LOOSE OR BARE WIRES

Check for loose wires at each terminal connection and for worn insulation or bare wires touching the frame. BARE WIRES MAY CAUSE A SHORT CIRCUIT.

2. CHECK BATTERY CONDITION

(See Fig. N-1 "VOM" on page N-1)

(See Fig. N-2 "Accessory Harness Power Connection" on page N-1)

Check for adequate battery volts (nominal 12 VDC) by setting VOM to 30 VDC range and place the red probe (+) on the battery post with the green wire attached. Place the black probe (-) on the battery post with the black wire attached. A reading of 11 VDC or greater indicates adequate battery condition. No reading indicates (a) a poor connection between the probes and the battery terminals; (b) a faulty VOM. A voltage reading below 11 volts indicates poor battery condition and the vehicle should be recharged before proceeding with the test.

NOTE

Due to the resistance of the wires involved within the harness, voltage readings may be somewhat lower than battery voltage. A reading of 1 volt below battery voltage is acceptable.

3. CHECK GREEN POWER WIRE

Firmly attach the black probe (-) to the battery post with the black wire attached and the red probe (+) to the green terminal at the fuse block. A reading of battery voltage indicates that the green wire is in good condition.

NOTE

Green wire supplies power to the entire fuse block.

4. CHECK FUSE

Place the red probe (+) to the orange/white wire terminal on the fuse block. A reading of battery voltage indicates that the fuse is in good condition. No reading indicates a faulty fuse; replace with a good 15 amp fuse.

5. CHECK WIRE TO SWITCH

Place the red probe (+) to the orange/white connection at the horn switch. A reading of battery voltage indicates that the orange/white wire supplying power to the switch is in good condition. If no reading is indicated, the orange/white wire is faulty.

6. CHECK SWITCH

Place the red probe (+) to the other horn switch terminal (yellow wire) and depress horn switch button. A reading of battery voltage indicates a good switch. No reading indicates a faulty switch; replace it with a good horn switch.

7. CHECK YELLOW WIRE TO HORN

Place the red probe (+) to the horn terminal with the yellow wire. Depress horn button. A reading of battery voltage indicates a good yellow wire. No reading of battery voltage indicates a faulty yellow wire.

8. CHECK BLACK WIRE TO HORN

Remove the black wire from the horn. Select continuity (K ohms) 1 position on the VOM. Place the red probe (+) to the terminal of the black wire. A reading of .00 or less than .02 ohms indicates that the black wire is in good condition. All wiring has now been checked; therefore the horn is faulty. Replace with a good horn.

HEADLIGHT AND TAILLIGHT CIRCUIT (IF EQUIPPED)

The headlight and taillight circuit is a 12 volt system and consists of a light switch incorporated in the key switch, fuse block, fuse, headlights, taillights and accessory wiring harness.

When the key switch is turned to the 'light' position, the circuit is completed permitting current to flow from the battery to the fuse and through the lights causing them to illuminate.

Testing the Headlights and Taillights Circuit

Tool List	Qty. Required
VOM, digital	1

If the vehicle runs but the headlights and taillights are inoperative: Proceed to Step 1;

If any lights are functional proceed to Step 11.

1. CHECK FOR LOOSE OR BARE WIRES

Check for loose wires at each terminal connection and for worn insulation or bare wires touching the frame. BARE WIRES MAY CAUSE A SHORT CIRCUIT.

> **NOTE**
>
> *If any VOM readings indicate a faulty wire, it is recommended that the condition of the terminals and wire junction be examined. A faulty wire should be replaced with one of the same gauge and color and wired between the correct components and wire tied to the harness bundle. The faulty wire should be cut back close to the harness and the ends protected with vinyl electrical tape.*

2. CHECK BATTERY CONDITION

(See Fig. N-1 "VOM" on page N-1)

(See Fig. N-2 "Accessory Harness Power Connection" on page N-1)

Check for adequate battery volts (nominal 12 VDC) by setting VOM to the 30 VDC range and place the red probe (+) on the battery post with the green wire attached. Place the black probe (-) on the battery post with the black wire attached. A reading of 11 VDC or better indicates adequate battery condition. No reading indicates (a) a poor connection between the probes and the battery terminals; (b) a faulty VOM. A voltage reading below 11 volts indicates poor battery condition and the vehicle should be recharged before proceeding with the test.

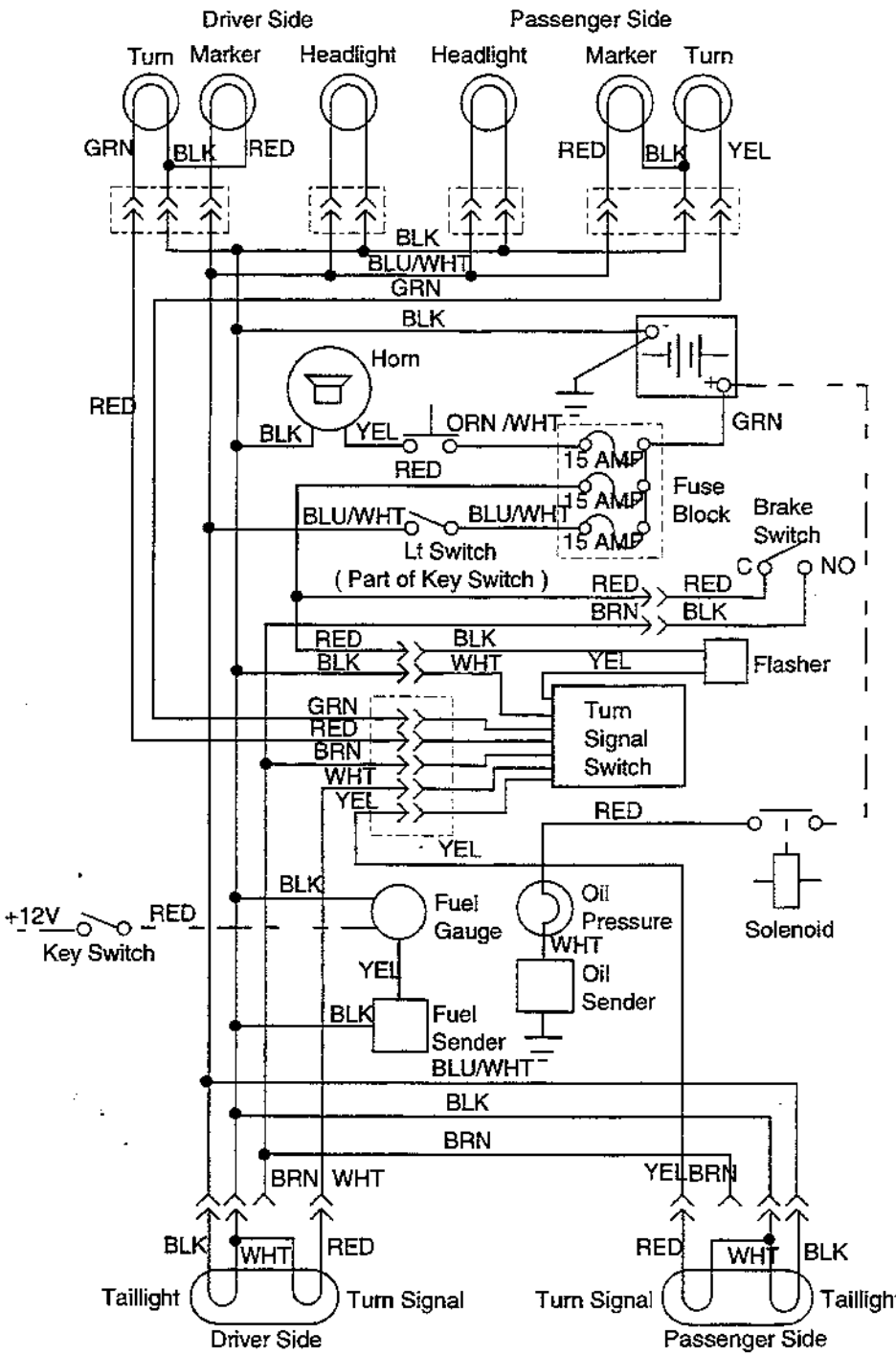
> **NOTE**
>
> *Due to the resistance of the wires involved within the harness, voltage readings may be somewhat lower than battery voltage. A reading of 1 volt below battery voltage is acceptable.*

3. CHECK GREEN POWER WIRE

Firmly attach the black probe (-) to the battery post with the black wire attached to perform Steps 3 through 4 and the red probe (+) to the green terminal at the fuse block. A reading of battery voltage indicates that the green wire is in good condition.

4. CHECK FUSE

Place the red probe (+) to the blue/white wire terminal on the fuse block. A reading of battery voltage indicates that the fuse is in good condition. No reading indicates a faulty fuse, replace with a good 15 amp fuse.



For Vehicles Without Turn Signals, Remove WHT Wire from Left Rear Turn Signal and Remove YEL Wire from Right Rear Turn Signal. Connect BRN Wire To RED

– – —— – – —— Indicates Wire Not Included In Harness

• Indicates Butt Connection Within Wiring Harness

Fig. N-3 Vehicle Schematic

NOTE

This wire supplies power to the entire fuse block.

5. CHECK POWER TO HEADLIGHTS

(See Fig. N-4 "Headlight Connector" on page N-4)

Turn lights on and disconnect a connector at the headlamp. Place the red probe (+) to the blue/white wire end and the black probe (-) to the black wire end of the harness going to the headlamps. If battery voltage is indicated then the key switch is good and the bulb must be replaced. If NO voltage is indicated then the switch is suspect and must be checked.

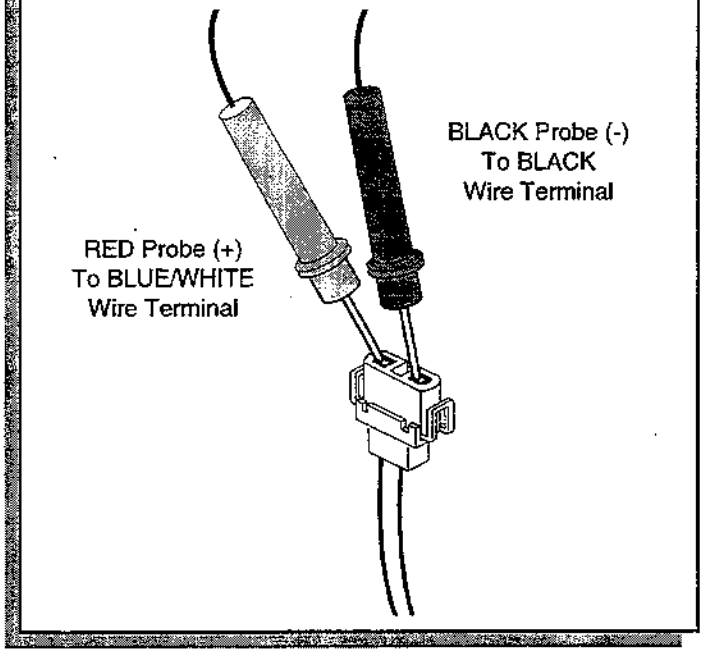


Fig. N-4 Headlight Connector

6. REMOVE KEY/LIGHT SWITCH PLATE

Drive out the plastic push rivets on the key switch plate and pull out the key switch plate.

7. CHECK BLUE/WHITE WIRE FROM FUSEBLOCK

(See Fig. N-5 "Key/Light Switch" on page N-4)

With the key switch 'OFF', place the red probe (+) to the blue/white connections at the key switch and the black probe (-) to the battery post with the black wire attached to perform steps 7 - 11. A reading of battery voltage from one of these connections indicates that the blue/white wire from the fuse is in good condition. If no battery voltage is indicated, the blue/white wire from the fuse is faulty and must be replaced.

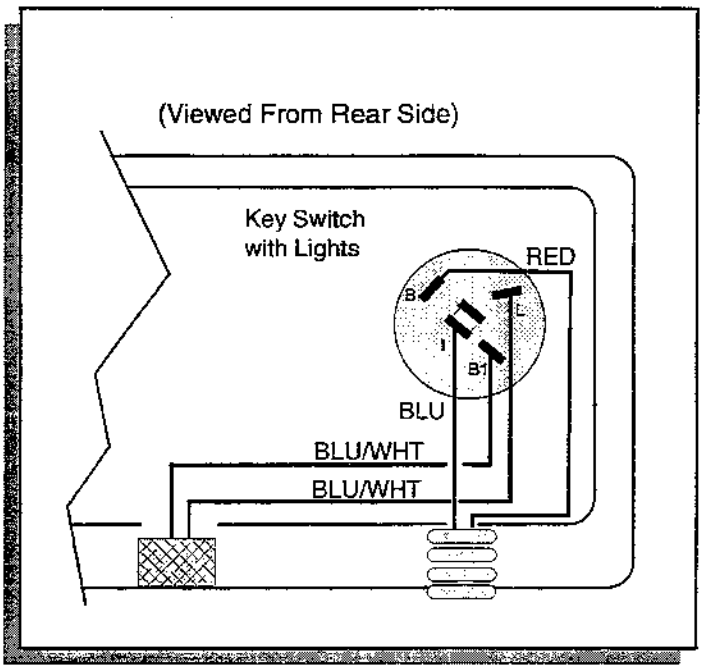


Fig. N-5 Key/Light Switch

8. CHECK KEY/LIGHT SWITCH

Place the red probe (+) to the blue/white wire terminal that did not have voltage and turn the key switch to lights. An indication of battery voltage indicates a good key switch. No voltage indicates a faulty switch.

9. CHECK BLUE/WHITE WIRE TO HEADLIGHTS

Turn lights on and move the red probe (+) to each of the blue/white wire terminals at the connections of the headlights. If no battery voltage is shown it indicates that the blue/white wire is faulty and must be replaced. The blue/white wires are joined internally in the harness. One may be faulty and the other good.

10. CHECK BLUE/WHITE WIRE TO TAILLIGHTS

Turn lights on and place the red probe (+) at the blue/white wire connections at the taillights. If battery voltage is not indicated, the blue/white wire is faulty and must be replaced.

11. IF ONE OR MORE LIGHTS ARE OPERATIONAL

Check for faulty wiring or a faulty bulb. Turn lights on and check for battery voltage at each of the blue/white terminals at the headlights and taillights. Place the red probe (+) on the blue/white wire terminals and the black probe (-) on the battery post with the black accessory harness wire attached. A reading of battery voltage indicates that either the socket is corroded or faulty, or that the bulb is faulty. Replace the bulb after inspecting the socket and reconnect the wiring.

BRAKE LIGHT CIRCUIT (IF EQUIPPED)

The brake light circuit is a 12 volt system and consists of a brake pedal operated micro switch, a fuse block, fuse, brake lights and an accessory wiring harness.

When the service brake pedal is depressed, a micro switch is closed which completes the brake light circuit which permits current to flow to the brake lights. The brake lights will operate if the key switch is in either the 'ON' or 'OFF' position.

A difference does exist in the brake/turn signal wiring. In vehicles with turn signals, the brown wire to the taillights will be disconnected, and the white wire on the driver's side and the yellow wire on the passenger side will be connected to the red wires from the taillight.

Testing the Brake Light Circuit

Tool List **Qty. Required**

VOM, digital..... 1

If the vehicle runs but the headlights and taillights are inoperative: Proceed to Step 1;

If any lights are functional proceed to Step 9.

1. CHECK FOR LOOSE OR BARE WIRES

Check for loose wires at each terminal connection and for worn insulation or bare wires touching the frame. BARE WIRES MAY CAUSE A SHORT CIRCUIT.

2. CHECK BATTERY CONDITION

(See Fig. N-1 "VOM" on page N-1)

(See Fig. N-2 "Accessory Harness Power Connection" on page N-1)

Check for adequate battery volts (nominal 12 VDC) by setting VOM to the 30 VDC range and place the red probe (+) on the battery post with the green wire attached. Place the black probe (-) on the battery post with the black wire attached. A reading of 11 VDC or better indicates adequate battery condition. No reading indicates (a) a poor connection between the probes and the battery terminals; (b) a faulty VOM. A voltage reading below 11 volts indicates poor battery condition and the vehicle should be recharged before proceeding with the test.

NOTE

Due to the resistance of the wires involved within the harness, voltage readings may be somewhat lower than battery voltage. A reading of 1 volt below battery voltage is acceptable.

3. CHECK GREEN POWER WIRE

Firmly attach the black probe (-) to the battery post with the black wire attached to perform Steps 3 through 4 and the red probe (+) to the green terminal at the fuse block. A reading of battery voltage indicates that the green wire is in good condition.

NOTE

This wire supplies power to the entire fuse block.

NOTE

If any VOM readings indicate a faulty wire, it is recommended that the condition of the terminals and wire junction be examined. A faulty wire should be replaced with one of the same gauge and color and wired between the correct components and wire tied to the harness bundle. The faulty wire should be cut back close to the harness and the ends protected with vinyl electrical tape.

4. CHECK FUSE

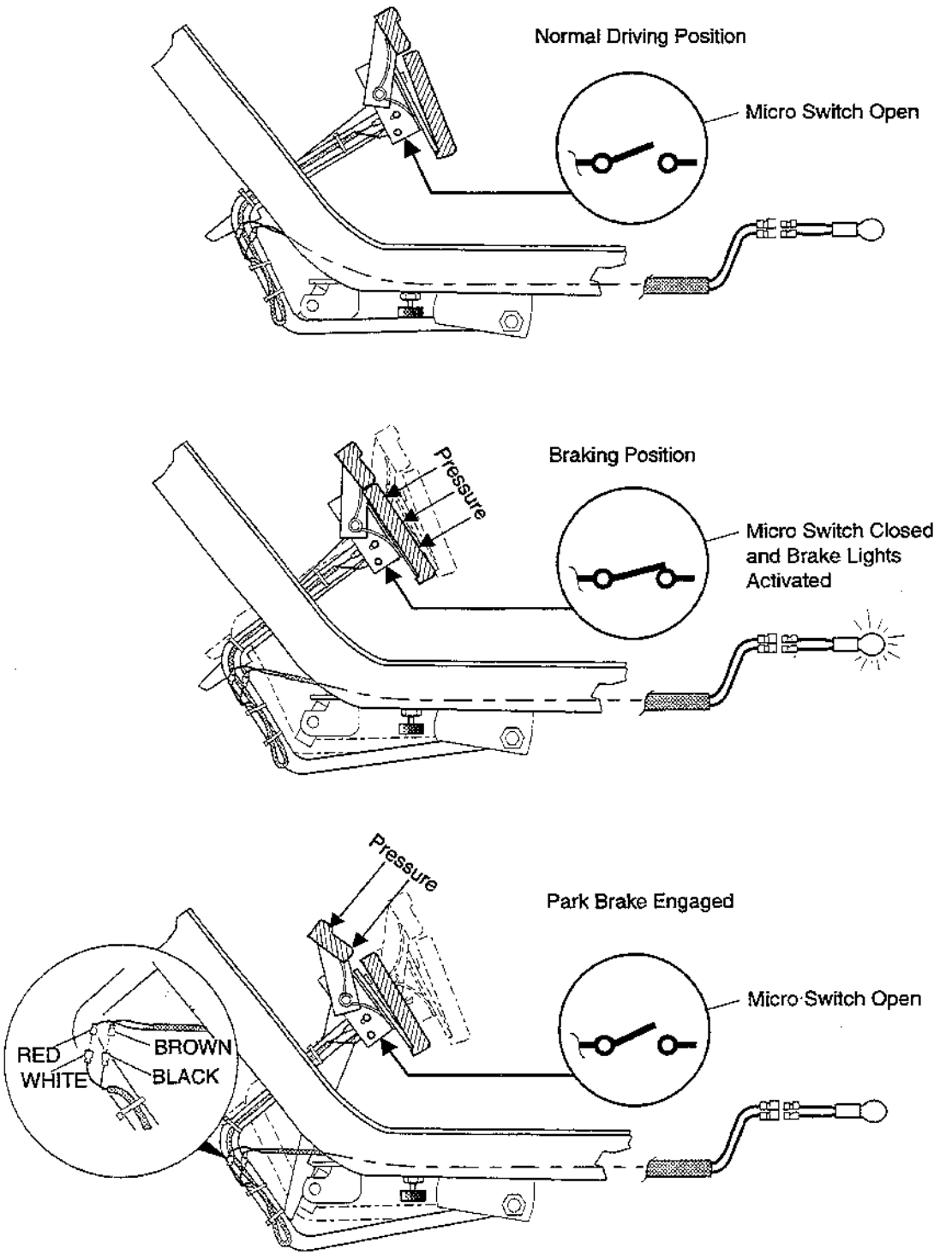
Place the red probe (+) to the red wire terminal on the fuse block. A reading of battery voltage indicates that the fuse is in good condition. No reading indicates a faulty fuse, replace with a good 15 amp fuse.

5. CHECK FUNCTION OF BRAKE PEDAL MICRO SWITCH

Depress service brake pedal and listen for audible click from micro switch. Release pedal and listen for an audible click. An audible click in both the up and down pedal positions indicates a correct micro switch adjustment. If the switch is not activated and released correctly, it may be adjusted by loosening the two bolts that secure the micro switch and moving the switch until the appropriate adjustment is achieved. If the switch is in correct adjustment and the brake lights are not activated, it is necessary to check for faulty wiring or components.

6. CHECK MICRO SWITCH

Set the VOM to the 30 VDC range and attach the black probe (-) to the negative battery post with the black wire attached. Place the red probe (+) to the micro switch terminal with the brown wire attached. Depress the brake pedal. A reading of battery voltage indicates that the service brake micro switch is operating correctly. If no voltage is indicated, the micro switch must be tested. Move the red probe (+) to the service brake micro switch terminal with the red wire attached. A reading of battery voltage indicates that the red wire is in good condition. Move the red probe (+) to the other terminal of the service brake micro



NOTE: Audible Click While Applying and Releasing Brakes Indicates Proper Switch Adjustment.

Fig. N-6 Brake Pedal Micro Switch Operation

switch and manually activate the switch by pressing the roller of the actuating arm toward the switch until an audible click is heard. A reading of battery voltage indicates that the switch is in good condition. No reading indicates that the micro switch needs replacement.

7. CHECK BROWN WIRE

Move to the rear of the vehicle and access the taillights. Move the red probe (+) to the brake light connector at the brown wire. Depress the service brake. A reading of battery voltage indicates that the brown wire is in good condition. No voltage indicates the brown wire is faulty. Replace. Check both brake lights. If either brake light does not come on, replace bulb.

8. REPLACE LAMP

Unplug the lamp from the plug and replace with new bulb. Replace all wires disconnected in the test.

9. IF ONLY ONE BRAKE LIGHT INOPERATIVE

The overall system is functional; therefore the following steps should be followed. Assure that the brown wire from the harness is attached to the white wire from the inoperative lamp plug. If the lamp still fails to light when the brake pedal is depressed, separate the brown wire from the lamp connector. Select the 30 VDC range of the VOM. Place the red probe (+) to the brown wire and the black probe (-) to the black wire connection at the battery. Depress the brake pedal. A reading of battery voltage indicates that the lamp is faulty. Replace lamp and reconnect all wires disconnected in the test.

TURN SIGNALS AND FLASHER CIRCUIT (IF EQUIPPED)

The turn signal and flasher is a 12 volt system and consists of a turn signal/flasher switch, fuse block, fuse, front and rear lamps and an accessory wiring harness.

When the turn signal/flasher switch is activated, the circuit is completed permitting current to flow from the battery to the fuse and through the flasher causing the appropriate lights to flash. The turn signal/flasher will operate if the key switch is in either the 'ON' or 'OFF' position.

Testing the Turn Signal/Flasher Circuit

A difference does exist in the turn signal wiring in that vehicles with turn signals, the brown wire to the taillights will be disconnected and the white wire on the driver's side and the yellow wire on the passenger side will be connected to the red wires from the taillight.

Tool List	Qty. Required
VOM, digital	1

If the vehicle runs but all turn signals and flasher are inoperative: Proceed to Step 1;

If any lights are functional proceed to Step 7.

1. CHECK FOR LOOSE OR BARE WIRES

Check for loose wires at each terminal connection and for worn insulation or bare wires touching the frame. BARE WIRES MAY CAUSE A SHORT CIRCUIT.

2. CHECK BATTERY CONDITION

(See Fig. N-1 "VOM" on page N-1)

(See Fig. N-2 "Accessory Harness Power Connection" on page N-1)

Check for adequate battery volts (nominal 12 VDC) by setting VOM to the 30 VDC range and place the red probe (+) on the battery post with the green wire attached. Place the black probe (-) on the battery post with the black wire attached. A reading of 11 VDC or better indicates adequate battery condition. No reading indicates (a) a poor connection between the probes and the battery terminals; (b) a faulty VOM. A voltage reading below 11 volts indicates poor battery condition and the vehicle should be recharged before proceeding with the test.

> **NOTE**
> *Due to the resistance of the wires involved within the harness, voltage readings may be somewhat lower than battery voltage. A reading of 1 volt below battery voltage is acceptable.*

3. CHECK GREEN POWER WIRE

Firmly attach the black probe (-) to the battery post with the black wire attached to perform Steps 3 through 4 and the red probe (+) to the green terminal at the fuse block. A reading of battery voltage indicates that the green wire is in good condition.

> **NOTE**
> *This wire supplies power to the entire fuse block.*

4. CHECK FUSE

Place the red probe (+) to the red wire terminal on the fuse block. A reading of battery voltage indicates that the fuse is in good condition. No reading indicates a faulty fuse, replace with a good 15 amp fuse.

NOTE

If any VOM readings indicate a faulty wire, it is recommended that the condition of the terminals and wire junction be examined. A faulty wire should be replaced with one of the same gauge and color and wired between the correct components and wire tied to the harness bundle. The faulty wire should be cut back close to the harness and the ends protected with vinyl electrical tape.

5. CHECK FLASHER

Drive out the plastic push rivets on the key switch plate and pull out the key switch plate. The wiring to the flasher is most easily reached by accessing the harness in this position. Reach through the opening and gently pull harness out of the opening in the console of the key switch plate until the flasher is seen. Remove the flasher from its socket. Select K ohms (continuity) position on the VOM. Place the red probe (+) on one of the flasher terminals and the black probe (-) on the other flasher terminal. A reading of .00 to .20 indicates that the flasher is in good condition. Inspect the flasher socket for corrosion before replacing the flasher.

6. CHECK TURN SIGNAL CONNECTOR

Separate the harness to turn signal connector and inspect for corrosion and correct placement of pins and sockets in the connector housing. Check that the black wire from the flasher socket is attached to the red wire from the harness and that the white wire from the turn signal is attached to the black wire from the harness, and the yellow wire from the flasher is attached to the turn signal. If the system does not function after the above check, the turn signal switch must be replaced.

7. IF LEFT, RIGHT OR EMERGENCY FLASHER WORKS

Select the 30 VDC range of the VOM. Place the black probe (-) to the black wire connection at the negative post of the battery and place the red probe (+) to:

Left front .....Red wire

Left rear..... White wire

Right front..... Green wire

Right rear ..... Yellow wire

Turn on the appropriate turn signal. A pulsating reading of the battery voltage indicates that power is available to the light, therefore, the light module is faulty. If no voltage is present a faulty wire is indicated.

NOTE

If any VOM readings indicate a faulty wire, it is recommended that the condition of the terminals and wire junction be examined. A faulty wire should be replaced with one of the same gauge and color and wired between the correct components and wire tied to the harness bundle. The faulty wire should be cut back close to the harness and the ends protected with vinyl electrical tape.

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LIST OF ILLUSTRATIONS

Notes:

REAR SUSPENSION

NOTE

In the following text, there are references to removing/installing bolts etc. Additional hardware (nuts, washers etc.) that are removed must always be installed in their original positions unless otherwise specified. Non specified torque specifications are as shown in the table contained in Section "A".

General

(See Fig. P-1 "Rear Suspension" on page P-2)

Tool List	Qty. Required
Wheel chocks	4
Jack stands	4
Floor jack	1
Wrench, 9/16"	1
Wrench, 3/4"	1
Socket, 9/16", 3/8" drive	1
Socket, 9/16", deepwell, 3/8" drive	1
Extension, 3", 3/8" drive	1
Ratchet, 3/8" drive	1
Torque wrench, ft. lbs., 3/8" drive	1

The rear suspension consists of the rear axle and attachments that secure it to the springs and shock absorbers. In addition the rear axle is secured to the rear of the engine by means of a casting that is bolted to the engine and mounted to the rear axle with 'U' bolts. This section is confined to the removal and replacement of the springs and shock absorbers.

Shock Absorber Removal

(See Fig. P-1 "Rear Suspension" on page P-2)

⚠ WARNING ⚠

TO REDUCE THE POSSIBILITY OF PERSONAL INJURY, FOLLOW THE LIFTING PROCEDURE IN SECTION "B" OF THIS MANUAL. PLACE WHEEL CHOCKS IN FRONT OF AND BEHIND THE FRONT WHEELS AND CHECK THE STABILITY OF THE VEHICLE ON THE JACK STANDS BEFORE STARTING ANY REPAIR PROCEDURE. NEVER WORK ON A VEHICLE THAT IS SUPPORTED BY A JACK ALONE.

Raise the rear of the vehicle in accordance with the instructions provided in Section "B" (Safety) of this manual and support the rear of the vehicle on the outer ends of the rear bumper.

Remove the bottom shock absorber nut (1).

Compress the shock absorber (2) and remove the top shock absorber nut (3).

Remove the shock absorber (2).

Shock Absorber Installation

(See Fig. P-1 "Rear Suspension" on page P-2)

Shock absorber installation is in the reverse order of disassembly except that the shock absorber nuts (1,3) must be tightened until the shock absorber bushings (4) expand to the diameter of the shock absorber washer (5).

Rear Spring Removal

(See Fig. P-1 "Rear Suspension" on page P-2)

NOTE

It is not required to completely remove the shock absorber for rear spring removal.

Remove the bottom shock absorber nut (1).

Place a floor jack under the center section of the rear axle (6) and raise just enough to place a second set of jack stands under the axle tubes. With both the rear axle and the frame supported, the 'U' bolt (7) and the hardware (8) can be removed.

Remove the rear spring shackle assembly (9) and the front spring mounting hardware (10).

Remove the spring (11).

Rear Spring Installation

(See Fig. P-1 "Rear Suspension" on page P-2)

Spring installation is in the reverse order of disassembly.

NOTE

When installing the rear spring shackles, be sure that the cupped side of the shackle plate faces the spring.

The shock absorber nuts (1,3) must be tightened until the shock absorber bushings (4) expand to the diameter of the shock absorber washer (5).

Tighten the front spring hardware (10) to 21 - 25 ft. lbs. torque.

Tighten all other hardware to 18 - 22 ft. lbs. torque.

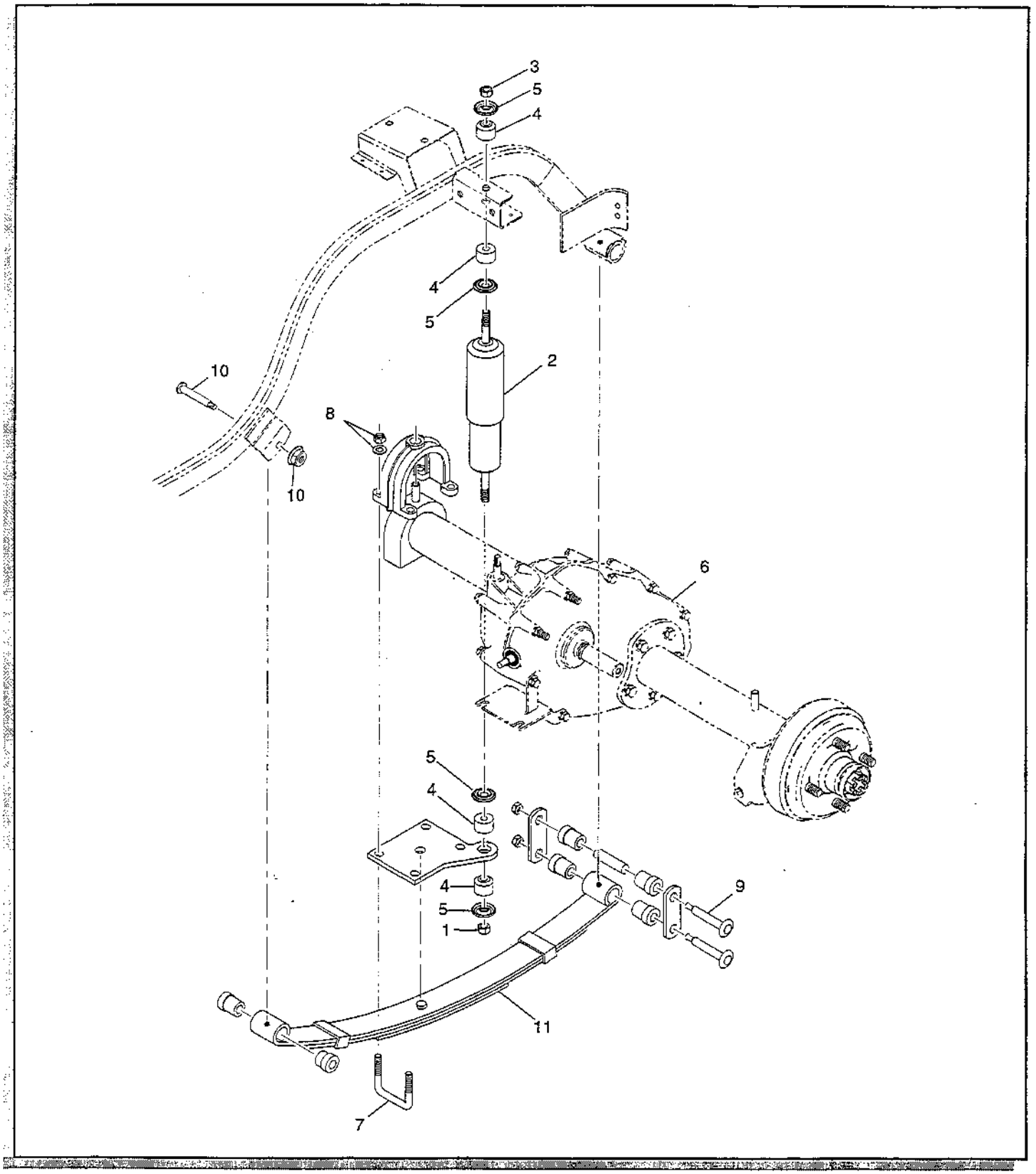

Fig. P-1 Rear Suspension

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LIST OF ILLUSTRATIONS

Notes:

For further axle information, see Four Cycle Transaxle Shop Rebuild and Service Parts Manual E-Z-GO P/N 27660-G01.

Refer to rear suspension (Section P) for axle removal.

REAR AXLE DISASSEMBLY

CAUTION

THE REAR AXLE/MOTOR IS A PRECISION ASSEMBLY, AND THEREFORE ANY REPAIR OR REPLACEMENT OF PARTS MUST BE DONE WITH EXTREME CARE IN A CLEAN ENVIRONMENT. BEFORE ATTEMPTING TO PERFORM ANY SERVICE ON THE AXLE, READ AND UNDERSTAND ALL OF THE FOLLOWING TEXT AND ILLUSTRATIONS BEFORE ADJUSTING OR DISASSEMBLING THE UNIT.

HANDLE ALL GEARS WITH EXTREME CARE SINCE EACH IS PART OF A MATCHED SET. DAMAGE TO ONE WILL REQUIRE REPLACEMENT OF THE ENTIRE SET OR RESULT IN AN UNACCEPTABLY HIGH NOISE LEVEL.

SNAP RINGS MUST BE REMOVED/INSTALLED WITH CARE TO PREVENT DAMAGE OF BEARINGS, SEALS AND BEARING BORES.

NOTE

It is recommended that whenever a bearing, seal or 'O' ring is removed, it be replaced with a new one regardless of mileage. Always wipe the seals and 'O' rings with a light oil before installing.

Removal of the brake assemblies are not required for the disassembly of the rear axle.

⚠ WARNING ⚠

TO REDUCE THE POSSIBILITY OF PERSONAL INJURY, FOLLOW THE LIFTING PROCEDURE IN SECTION "B" OF THIS MANUAL. PLACE WHEEL CHOCKS IN FRONT OF AND BEHIND THE FRONT WHEELS AND CHECK THE STABILITY OF THE VEHICLE ON THE JACK STANDS BEFORE STARTING ANY REPAIR PROCEDURE. NEVER WORK ON A VEHICLE THAT IS SUPPORTED BY A JACK ALONE.

Axle Shaft Removal and Disassembly

(See Fig. R-1 "Removing/Installing Outer Snap Ring" on page R-1)

(See Fig. R-2 "Removing/installing Axle Shaft" on page R-2)

(See Fig. R-3 "Pressing Bearing from Axle Shaft" on page R-2)

(See Fig. R-5 "Cut Away of Outer Bearing and Brake Drum" on page R-3)

Tool List	Qty. Required
Arbor press	1
Needle nose pliers	1
Internal sanp ring pliers	1
Slide hammer, E-Z-GO P/N 18753-G1	1

For BRAKE DRUM REMOVAL, see page H-7.

Remove the outer snap ring from the axle tube. (Ref. Fig. R-1)

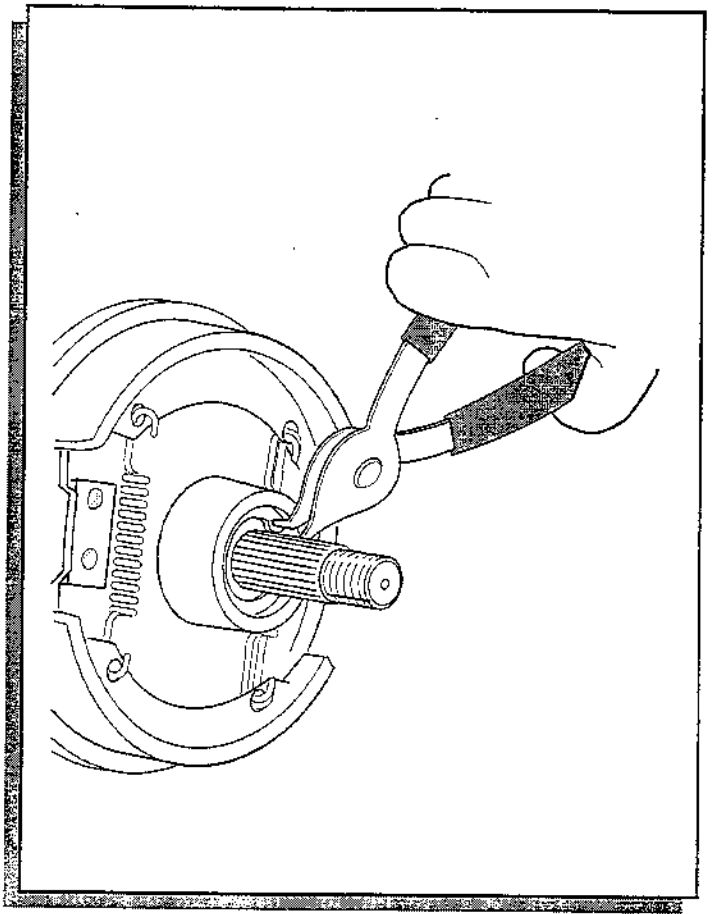

Fig. R-1 Removing/Installing Outer Snap Ring

Attach a slide hammer to the axle shaft thread and remove the axle and bearing from the axle tube. (Ref. Fig. R-2)

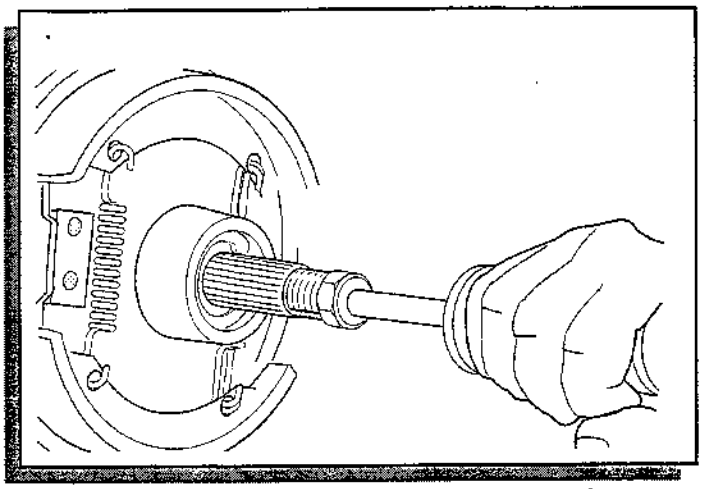

Fig. R-2 Removing/Installing Axle Shaft

Remove the bearing by supporting the inner race of the bearing on an arbor press bed and apply pressure to the threaded end of the axle shaft. (Ref. Fig. R-3)

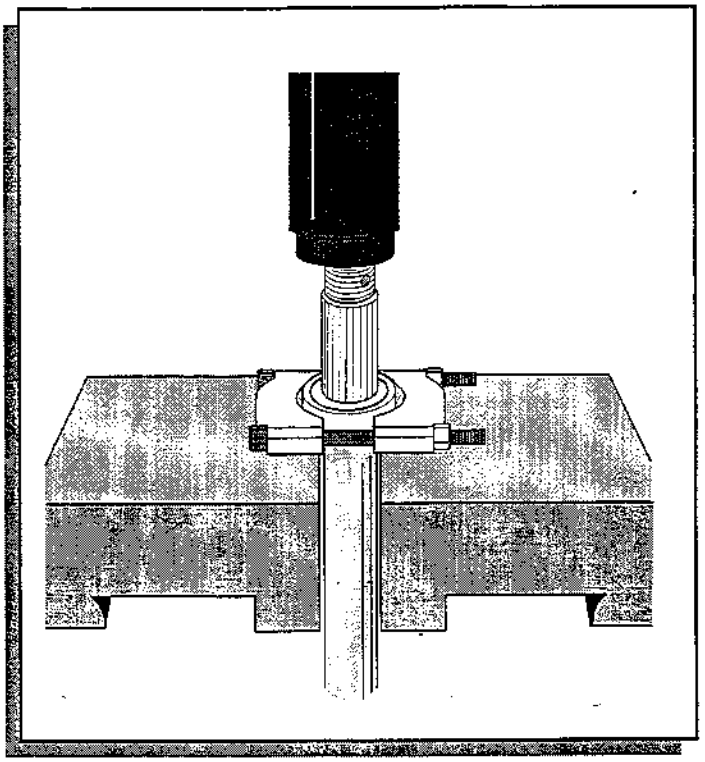

Fig. R-3 Pressing Bearing from Axle Shaft

Axle Shaft Seal Removal and Replacement

(See Fig. R-4 "Removing/Installing Seal" on page R-2)

Tools List	Qty. Required
Internal snap ring pliers	1
Seal puller	1
Plastic faced hammer	1
Ratchet, 3/8" drive	1
Socket, 17mm, 3/8" drive	1
Torque wrench, 3/8" drive, ft. lbs	1

Using snap ring pliers, remove the bearing retaining ring (1) from the end of the axle tube (2).

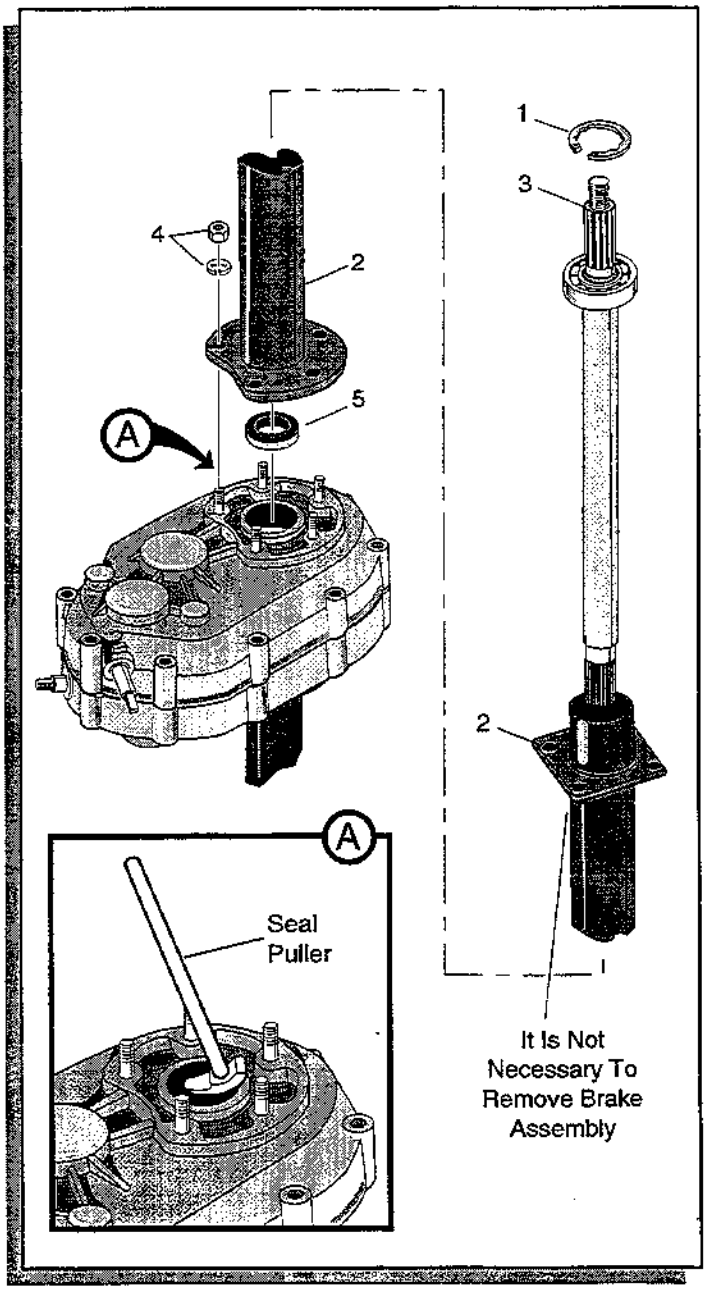

Fig. R-4 Removing/Installing Seal

Carefully pull the axle shaft (3) and bearing out of the tube.

Using a 17 mm socket, remove the hardware (4) attaching the axle tube to the casing and carefully lift the tube from the casing studs.

Using a seal puller, remove the axle shaft seal (5) from the casing.

CAUTION

DO NOT SCRATCH, SCORE OR DAMAGE THE SEAL BORE IN ANY WAY. THIS COULD CAUSE THE SEAL TO FAIL.

Replace the seal by lightly tapping around the circumference with a plastic faced hammer. Tighten nuts (4) to 26 - 31 ft. lbs. torque.

Axle Shaft Replacement

(See Fig. R-1 "Removing/Installing Outer Snap Ring" on page R-1)

(See Fig. R-5 "Cut Away of Outer Bearing and Brake Drum" on page R-3)

Carefully insert the axle shaft and bearing through the oil seal. Rotate the shaft until the spline engages with the differential side gears. Install the outer snap ring.

Coat the outboard spline of the axle with an anti-seize compound. Install the brake hub and drum, thrust washer, nut and new cotter pin.

NOTE

Tighten the castellated axle nut to 70 ft. lbs. torque minimum, 140 ft. lbs. torque maximum. Continue to tighten until the slot in the nut aligns with the cotter pin hole.

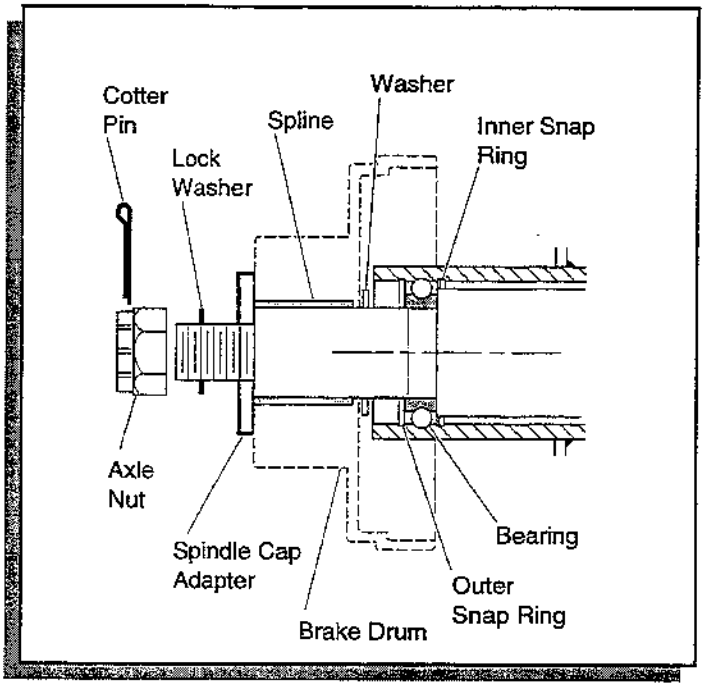

Fig. R-5 Cut Away of Outer Bearing and Brake Drum

Notes:

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Notes:

PAINTING

For small scratches, E-Z-GO suggests that rough edges be removed by ***lightly*** sanding with sandpaper not exceeding 120 grit. Clean the area with alcohol and thoroughly dry.

Using the brush in the cap of touch up paint, apply the paint to the scratch. In cases of deep scratches, multiple coats may be applied to build up the area. Always remember to shake the bottle for a minimum of one minute to mix the paint and achieve the best color match.

For larger abrasions, E-Z-GO suggests that rough edges be removed by lightly sanding with sandpaper not exceeding 120 grit. Clean the area with alcohol and thoroughly dry.

Apply spray touch up paint in light even overlapping strokes. Multiple coats may be applied to provide adequate coverage and finish. Always remember to shake the can for a minimum of one minute to mix the paint and achieve the best color match.

In situations where large areas must be painted, touch up paint is not recommended. In such cases professional painting or panel replacement is called for. E-Z-GO suggests body panel replacement be considered as a cost effective alternative to painting. If the decision to repaint is taken, the task can be accomplished by any paint and body shop with experience in painting 'TPE' panels. TPE is a common material in modern automobile bodies and all body shops should be familiar with the materials and processes required.

The finish will include an application of a primer coat, a base color coat and a clear coat. E-Z-GO does not supply these materials due to the variety of paint manufacturers and the preferences of the individual painter.

Most paint manufacturers can perform a computer paint match to assure accurate color matching.

PPG Industries have color matched the vehicle colors and assigned the following part numbers:

Green PPG P/N E-Z-GO 100

Champagne PPG P/N E-Z-GO 400

Notes:

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Notes:

GASOLINE VEHICLE PERFORMANCE

Condition	Possible Cause	Correction
STARTER DOES NOT TURN	1. Weak or bad battery	Recharge or replace as necessary
	2. Terminals are loose or corroded	Clean and retighten
	3. Poor wiring connections	Repair or replace wire and/or connections
	4. Blown fuse	Investigate cause and replace fuse
	5. Solenoid faulty	If no audible 'click' is heard check power and ground. Replace solenoid if power and ground is good
	6. Accelerator micro switch	Check and adjust if no 'click' is heard. Replace if adjustment does not work
	7. Starter/generator terminals are loose or corroded	Tighten or clean
	8. Leads are broken or faulty ground	Check for breaks at bend or joint. Replace or repair leads
	9. Field coils are open	Repair (Section M) or replace
	10. Armature coil is open	Repair (Section M) or replace
STARTER TURNS SLOWLY	1. Terminals are loose or corroded	Retighten or clean
	2. Weak battery	Charge battery
	3. Leads are nearly broken or connections are faulty	Check for any defect of leads at bend or joint. Replace leads or repair connections
	4. Mechanical problem inside starter/generator	Check (Section M)
	5. Internal engine damage	Inspect (Section J)
	6. Crankcase over filled with oil	Drain and fill to recommended level with approved oil (Section A)
STARTER ROTATES BUT VEHICLE WILL NOT START OR HARD TO START	1. Weak Battery	Recharge or replace as necessary
	2. Corroded or loose battery connections	Clean and tighten battery connections. Apply a coat of battery protectorate to terminals
	3. Check for adequate fuel level	Fill with correct grade gasoline to 1" below bottom of filler neck
	4. No spark at spark plugs. Broken or disconnected spark plug wiring	Check and replace if required
	5. Spark plugs fouled	Clean or replace (Section A)
	6. Broken or disconnected coil wires	Check or replace (Section M)
	7. Faulty ignitor	Check or replace (Section M)
	8. Faulty pulser unit	Check or replace (Section M)
	9. Incorrect spark plug gap/type	Set gap correctly (Section A)

Condition	Possible Cause	Correction
(CONT.) STARTER ROTATES BUT VEHICLE WILL NOT START OR HARD TO START	10. Fuel pump faulty	Repair or replace (Section K)
	11. Fuel line clogged or clamp loose	Clean or replace if required
	12. Cracked or broken fuel line	Replace with new hose
	13. Main jet blocked	Clean jet (Section K)
	14. Throttle lever motion restricted	Check all linkages (Section K)
	15. Dirt or water in fuel line or carburetor	Clean lines and carburetor. Replace filter
	16. Clogged fuel filter	Check and replace if required
	17. Incorrect carburetor float settings	Adjust float level - check seats (Section K)
	18. Engine flooded	Push choke in. Clean/or replace spark plugs
	19. Engine fuel starved	Use choke and push in as soon as engine runs smoothly
	20. Air intake tube is blocked	Repair or clean
	21. Clogged air filter	Wash or replace as required
	22. Plugged muffler or pipe	Repair or replace
	23. Low compression in engine	Check and repair (See Engine Manual)
ENGINE RUNS ROUGH OR LOSS OF POWER	1. Dirty or clogged air filter element	Wash or replace as required
	2. Incorrect choke adjustment	Adjust choke (Section K)
	3. Dirty or incorrectly gapped spark plug	Clean plug and set gap (Section A)
	4. Faulty Ignitor	Check and/or replace (Section M)
	5. Leak in carburetor gasket	Inspect and replace if required (Section K)
	6. Faulty ignition wiring	Repair/replace correct wiring
	7. Faulty coil	Test and replace if necessary (Section M)
	8. Incorrect valve lash	Check and adjust if required (Section J)
	9. Weak or damaged valve springs	Replace (See engine manual)
	10. Damaged intake/exhaust valves	Replace (See engine manual)
	11. Incorrect carburetor float setting	Adjust float setting (Section K)
	12. Dirt or water in fuel line, carburetor	Clean lines, carburetor and replace filter
	13. Plugged fuel tank vent	Clean or replace vent cap
	14. Muffler damaged or plugged	Repair or replace
	15. Fuel pump vent dirty	Clean and replace if required (Section K)
	16. Fuel pump has a ruptured diaphragm	Replace (Section K)
	17. Low compression	Check engine (See Engine Manual)
	18. Poor quality of fuel	Drain and replace with correct clean fuel

Condition	Possible Cause	Correction
POOR LOW SPEED PERFORMANCE	1. Plugged gas tank vent	Clean or repair
	2. Choke on	Push choke in
	3. Carburetor float level incorrect	Adjust (Section K)
	4. Pilot screw	Clean or adjust as necessary (Section K)
	5. Fuel pump faulty	Repair or replace (Section K)
	6. Insufficient fuel level	Add fuel
	7. Air leak at carburetor gasket	Repair component (Section K)
	8. Spark plug fouled	Clean or replace (Section A)
	9. Weak spark	Check ignition coil (Section M)
	10. Incorrect valve lash	Check and adjust (Section J)
POOR MIDRANGE OR HIGH SPEED PERFORMANCE	1. Spark plug fouled	Clean or replace (Section A)
	2. Weak spark	Check ignition coil (Section J)
	3. Faulty ignitor	Check and adjust (Section J)
	4. Carburetor float not level	Adjust (Section K)
	5. Incorrect or plugged main jet	Check size for appropriate altitude. Clean
	6. Dirty air filter	Clean or replace (Section K)
	7. Brake dragging	Readjust brakes (Section H)
	8. Low compression	Check engine (See engine manual)
	9. Governor misadjusted	Adjust (Section G)
ENGINE OVERHEATING	1. Foreign matter in cylinder fins and blower housing	Clean (Section A)
	2. Damaged blower housing or fins	Replace
	3. Damaged or plugged muffler	Repair or replace
	4. Inadequate oil supply	Check oil system, inspect oil pump, change oil and fill to correct level (Sec. A)
REPEATED SPARK PLUG FOULING	1. Wrong spark plug type	Replace with correct spark plug (Sec. A)
	2. Wrong spark plug gap	Check and adjust if required (Sec. A)
	3. Faulty coil	Check and replace if required (Sec. M)
	4. Faulty ignitor	Check and replace if required (Sec. M)
	5. Poor quality gasoline	Use correct fuel, check bulk storage tank for proper storage and handling
	6. Air leak allowing dirt to enter system	Repair (Section K)
	7. Choke sticking closed	Repair (Section K)
	8. Wrong main jet for conditions (high altitude operations)	Replace with correct altitude jet for conditions (Section K)

Condition	Possible Cause	Correction
CARBURETOR FLOODS ENGINE	1. Inlet valve/seat dirty	Clean or replace (Section J)
	2. Fuel contamination	Clean fuel system/carburetor (Section K)
	3. Incorrect float level	Adjust (Section K)
	4. Vent hose pinched or clogged	Clear or replace (Section K)
	5. Clogged air filter element	Clean or replace (Section K)
EXCESSIVE SMOKING	1. Wrong oil weight	Replace with recommended oil (Section A)
	2. Dirty oil	Change (Section A)
	3. Crankcase overfilled with oil	Drain and fill to recommended level (Section A)
	4. Clogged PCV valve	Replace (Section K)
	5. Piston rings worn or broken	Replace (See engine manual)
	6. Valves worn	Replace (Section J)
	7. Valve seals or valve guides worn	Replace (Section J)
BACKFIRING	1. Accelerator limit switch out of adjustment	Adjust (Section G)
	2. Loose muffler or leaking gasket	Repair (Section J)
	3. Carburetor throttle lever motion restricted	Repair (Section K)
	4. Carburetor throttle lever not closing fully	Adjust (Section K)
	5. Throttle stop preventing throttle from closing fully	Adjust (Section K)
	6. Carburetor throttle valve spring weak or broken	Replace (Section K)
	7. Incorrect adjustment of accelerator, governor and carburetor linkages	Adjust (Section G)
	8. Carburetor throttle lever shaft bent	Replace or rebuild carburetor (Section K)
	9. Governor torsion spring weak or broken	Replace (Section G)
	10. Faulty plug wires	Replace
	11. Faulty ignitor	Replace (Section M)
	12. Faulty coil	Replace (Section M)
ERRATIC, SURGING, OR SUDDEN CHANGE IN GOVERNED SPEED	1. Governor bracket spring dragging	Clean and/or oil
	2. Problem with adjustment of accelerator, governor and carburetor linkage	Adjust (Section G)
	3. Bent governor arm	Repair or replace (Section G)
	4. Bent governor shaft	Replace (Section G)
	5. Governor failure within the rear axle	Repair (Section G)

STARTER / GENERATOR

Condition	Possible Cause	Correction
STARTER IS NOISY	1. Bolts are loose	Retighten (Section M)
	2. Starter/generator has foreign matter inside	Clean starter/generator interior (Section M)
	3. Bearings are faulty	Replace (Section M)
	4. Bearings contain foreign matter	Replace (Section M)
	5. Bearing needs grease	Replace (Section M)
RECTIFICATION IS IMPERFECT	1. Load exceeds specification	Adjust load to specification
	2. Armature bent	Repair or replace if necessary (Section M)
	3. Brushes are worn beyond limits	Replace (Section M)
	4. Commutator is excessively rough	Smooth with sandpaper(#500~600)(Section M)
	5. Incorrect voltage output	Check and replace any components if required (Section M)
	6. Commutator is dirty with oil or dust	Clean with a cleaner and dry cloth (Section M)
	7. Field coil is shorted or broken	Repair or replace (Section M)
GENERATOR DOES NOT CHARGE	1. Corroded or loose battery connections	Clean and tighten battery connections
	2. Incorrect voltage regulator output	Replace (Section M)
	3. Poor voltage regulator ground connection	Repair (Section M)
	4. Open or short circuit	Repair or replace (Section M)
	5. Faulty starter/generator	Repair starter/generator (Section M)

SUSPENSION AND STEERING

Condition	Possible Cause	Correction
UNEVEN TIRE WEAR	1. Incorrect tire pressure	Inflate to recommended pressure
	2. Improper alignment (Incorrect toe in)	Align vehicle (Section F)
STIFF STEERING	1. Water has entered steering box and may freeze in cold conditions	Remove steering column and remove water before adding grease Inspect gasket for good seal (Section F)
	2. Excessive grease in steering box has migrated into steering rack bellows	Raise the vehicle and observe the rack bellows while moving the steering from lock to lock Any distortion of the bellows may indicate that an excess of grease has built up in the bellows Remove the bellows and remove excess grease (Section F)
	3. Insufficient lubricant in spindle pins, rod ends idler bushing or steering box	Add one shot of lubricant to each grease fitting and operate steering from lock to lock. **DO NOT OVER GREASE** If steering does not return to acceptable condition proceed to next step
	4. Bent rack	Remove rack and place on surface with rack teeth up If a .010 feeler gauge will pass under the rack, the rack must be replaced (Section F)
PLAY IN STEERING	1. Steering wheel loose	Inspect splines - replace if required Tighten steering wheel nut (Section F)
	2. Steering components worn	Repair or replace (Section F)
	3. Loose wheel bearings	Adjust or replace (Section F)
VIBRATION	1. Steering components worn	Repair or replace (Section F)
	2. Loose wheel bearings	Adjust or replace (Section F)
	3. Out of round tires, wheels, or brake drums	Inspect and replace if required (Section F)
STEERING PULLS TO ONE SIDE	1. Incorrect tire pressure	Inflate to recommended pressure
	2. Dragging wheel brakes	Adjust (Section H)
	3. Suspension component failure	Repair (Section F)
	4. Alignment incorrect	Adjust

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LIST OF ILLUSTRATIONS

Notes:

TXT GASOLINE

WEIGHT (dry fuel tank)	669 lbs. (304 kg)
LENGTH	92.6 in. (235 cm)
WIDTH	46.5 in. (118 cm)
HEIGHT (at top of steering wheel)	48.6 in. (123 cm)
WHEEL BASE	65.5 in. (166 cm)
FRONT WHEEL TREAD	33.5 in. (85 cm)
REAR WHEEL TREAD	38 in. (97 cm)
TURNING CLEARANCE DIAMETER	18.9 ft. (5.72 m)
TIRES (4 ply rated)	18 x 8.50 x 8
TIRE PRESSURE	18 - 22 psi (124 - 152 kPa)
LOAD CAPACITY (including operator, passenger, cargo and accessories)	800 lbs. (362 kg)
CHASSIS	Welded high yield strength tubular steel with powder coat paint
BODY & FINISH	Durashield™ body of automotive quality injection molded TPE (thermoplastic elastomer). Molded in color with automotive color coat/clear coat finish
SAFETY	Dash mounted key switch, reverse warning indicator, 'deadman' accelerator control, integral handgrip on hip restraints, manual forward/reverse selector with 'neutral'
STEERING WHEEL	Dual handgrips and pencil holder integrated with clipboard
BRAKES	Dual rear wheel mechanical drum brakes, self-adjusting with non-asbestos linings. Automatic park brake release with self-compensating system
FRONT SUSPENSION	Leaf springs with hydraulic shock absorbers
REAR SUSPENSION	Leaf springs with hydraulic shock absorbers
STEERING	Self-compensating single reduction rack and pinion
DASH PANEL	Scuff resistant tee, ball and four drink holders
SEATING	Formed fabric backed vinyl covers over cushion foam Seating for operator and one passenger

GENERAL SPECIFICATIONS

ENGINE	9 HP (6.7 kw) rated, 4 cycle, 295cc twin cylinder air cooled
VALVE TRAIN	Overhead valve, overhead cam, belt drive
LUBRICATION	Pressurized oil system, washable permanent filter
BALANCER	Internal counter rotating balance shaft
IGNITION	Solid State, electronic timing advance and RPM limiter
CARBURETOR	Fixed jet
AIR CLEANER	Engine mounted with washable panel filter element
DRIVE TRAIN	Direct motor shaft connected to transaxle pinion shaft
ELECTRICAL SYSTEM	Solid state regulator, 12 volt maintenance free battery, 430 CCA, 60 minute reserve
TRANSAXLE	High efficiency differential with helical gears, 13.32:1 ratio
FUEL SYSTEM	6 gallon (22.7 l) tank
SPEED	12 mph (19 kph) governed speed

* Specifications subject to change without notice

TXT GASOLINE - FREEDOM

WEIGHT (dry fuel tank)	679 lbs. (308 kg)
LENGTH	92.6 in. (235 cm)
WIDTH	46.5 in. (118 cm)
HEIGHT (at top of steering wheel)	48.6 in. (123 cm)
WHEEL BASE	65.5 in. (166 cm)
FRONT WHEEL TREAD	33.5 in. (85 cm)
REAR WHEEL TREAD	38 in. (97 cm)
TURNING CLEARANCE DIAMETER	18.9 ft. (5.72 m)
TIRES (4 ply rated)	18 x 8.50 x 8
TIRE PRESSURE	18 - 22 psi (124 - 152 kPa)
LOAD CAPACITY (including operator, passenger, cargo and accessories)	800 lbs. (362 kg)
CHASSIS	Welded high yield strength tubular steel with powder coat paint
BODY & FINISH	Durashield™ body of automotive quality injection molded TPE (thermoplastic elastomer). Molded in color with automotive color coat/clear coat finish
SAFETY	Dash mounted key switch, reverse warning indicator, 'deadman' accelerator control, integral handgrip on hip restraints, manual forward/reverse selector with 'neutral'
LIGHTING PACKAGE	Headlights, taillights, brake lights and horn
STEERING WHEEL	Dual handgrips and pencil holder integrated with clipboard
BRAKES	Dual rear wheel mechanical drum brakes, self-adjusting with non-asbestos linings. Automatic park brake release with self-compensating system
FRONT SUSPENSION	Leaf springs with hydraulic shock absorbers
REAR SUSPENSION	Leaf springs with hydraulic shock absorbers
STEERING	Self-compensating single reduction rack and pinion
DASH PANEL	Scuff resistant tee, ball and four drink holders
SEATING	Formed fabric backed vinyl covers over cushion foam Seating for operator and one passenger

GENERAL SPECIFICATIONS

ENGINE	9 HP (6.7 kw) rated, 4 cycle, 295cc twin cylinder air cooled
VALVE TRAIN	Overhead valve, overhead cam, belt drive
LUBRICATION	Pressurized oil system, washable permanent filter
BALANCER	Internal counter rotating balance shaft
IGNITION	Solid State, electronic timing advance and RPM limiter
CARBURETOR	Fixed jet
AIR CLEANER	Engine mounted with washable panel filter element
DRIVE TRAIN	Direct motor shaft connected to transaxle pinion shaft
ELECTRICAL SYSTEM	Solid state regulator, 12 volt maintenance free battery, 430 CCA, 60 minute reserve
TRANSAXLE	High efficiency differential with helical gears, 13.32:1 ratio
FUEL SYSTEM	6 gallon (22.7 l) tank with dash mounted analog fuel gauge
SPEED	12 mph (19 kph) governed speed

* Specifications subject to change without notice

TXT GAS - 4 CADDY

WEIGHT (dry fuel tank)	765 lbs. (347 kg)
LENGTH (incliuding footrest)	105 in. (267 cm)
WIDTH	46.5 in. (118 cm)
HEIGHT (at top of steering wheel)	48.6 in. (123 cm)
WHEEL BASE	65.5 in. (166 cm)
FRONT WHEEL TREAD	33.5 in. (85 cm)
REAR WHEEL TREAD	38 in. (97 cm)
TURNING CLEARANCE DIAMETER	18.9 ft. (5.72 m)
TIRES (4 ply rated)	18 x 8.50 x 8
TIRE PRESSURE	18 - 22 psi (124 - 152 kPa)
LOAD CAPACITY (including operator, passenger, cargo and accessories)	800 lbs. (362 kg)
CHASSIS	Welded high yield strength tubular steel with powder coat paint
BODY & FINISH	Durashield™ body of automotive quality injection molded TPE (thermoplastic elastomer). Molded in color with automotive color coat/clear coat finish
SAFETY	Dash mounted key switch, reverse warning indicator, 'deadman' accelerator control, integral handgrip on hip restraints, manual forward/reverse selector with 'neutral'
LIGHTING	Headlights, taillights, brake lights and horn
STEERING WHEEL	Dual handgrips and pencil holder integrated with clipboard
BRAKES	Dual rear wheel mechanical drum brakes, self-adjusting with non-asbestos linings. Automatic park brake release with self-compensating system
FRONT SUSPENSION	Leaf springs with hydraulic shock absorbers
REAR SUSPENSION	Leaf springs with hydraulic shock absorbers
STEERING	Self-compensating single reduction rack and pinion
DASH PANEL	Scuff resistant tee, ball and four drink holders
SEATING	Formed fabric backed vinyl covers over cushion foam Seating for operator and one passenger. Flip up rear seat for storage access

ENGINE	9 HP (6.7 kw) rated, 4 cycle, 295cc twin cylinder air cooled
VALVE TRAIN	Overhead valve, overhead cam
LUBRICATION	Pressurized oil system, washable permanent filter
BALANCER	Internal counter rotating balance shaft
IGNITION	Solid State, electronic timing advance and RPM limiter
CARBURETOR	Fixed jet
AIR CLEANER	Engine mounted with washable panel filter element
DRIVE TRAIN	Direct motor shaft connected to transaxle pinion shaft
ELECTRICAL SYSTEM	Solid state regulator, 12 volt maintenance free battery, 430 CCA, 60 minute reserve
TRANSAXLE	High efficiency differential with helical gears, 13.32:1 ratio
FUEL SYSTEM	6 gallon (22.7 l) tank with dash mounted analog fuel gauge
SPEED	18 mph (29 kph) governed speed

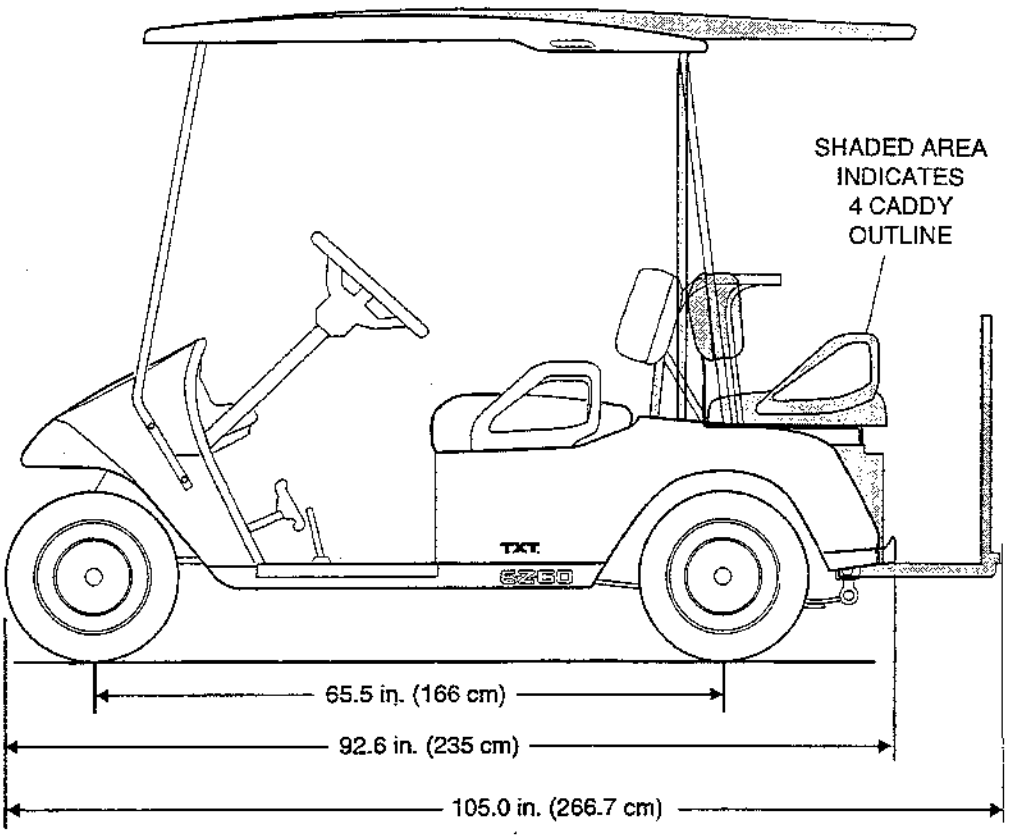
* Specifications subject to change without notice

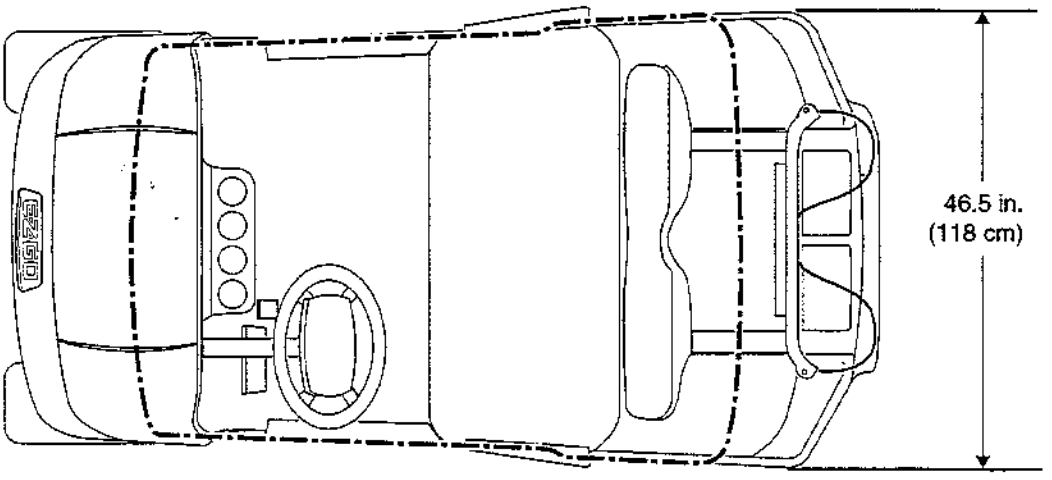
TXT GASOLINE- FREEDOM HP

WEIGHT (dry fuel tank)	679 lbs. (308 kg)
LENGTH	92.6 in. (235 cm)
WIDTH	46.5 in. (118 cm)
HEIGHT (at top of steering wheel)	48.6 in. (123 cm)
WHEEL BASE	65.5 in. (166 cm)
FRONT WHEEL TREAD	33.5 in. (85 cm)
REAR WHEEL TREAD	38 in. (97 cm)
TURNING CLEARANCE DIAMETER	18.9 ft. (5.72 m)
TIRES (4 ply rated)	18 x 8.50 x 8
TIRE PRESSURE	18 - 22 psi (124 - 152 kPa)
LOAD CAPACITY (including operator, passenger, cargo and accessories)	800 lbs. (362 kg)
CHASSIS	Welded high yield strength tubular steel with powder coat paint
BODY & FINISH	Durashield™ body of automotive quality injection molded TPE (thermoplastic elastomer). Molded in color with automotive color coat/clear coat finish
SAFETY	Dash mounted key switch, reverse warning indicator, 'deadman' accelerator control, integral handgrip on hip restraints, manual forward/reverse selector with 'neutral'
LIGHTING	Headlights, taillights, brake lights and horn
STEERING WHEEL	Dual handgrips and pencil holder integrated with clipboard
BRAKES	Dual rear wheel mechanical drum brakes, self-adjusting with non-asbestos linings. Automatic park brake release with self-compensating system
FRONT SUSPENSION	Leaf springs with hydraulic shock absorbers
REAR SUSPENSION	Leaf springs with hydraulic shock absorbers
STEERING	Self-compensating single reduction rack and pinion
DASH PANEL	Scuff resistant tee, ball and four drink holders
SEATING	Formed fabric backed vinyl covers over cushion foam Seating for operator and one passenger
ENGINE	9 HP (6.7 kw) rated, 4 cycle, 295cc twin cylinder air cooled
VALVE TRAIN	Overhead valve, overhead cam, belt drive

LUBRICATION	Pressurized oil system, washable permanent filter
BALANCER	Internal counter rotating balance shaft
IGNITION	Solid State, electronic timing advance and RPM limiter
CARBURETOR	Fixed jet
AIR CLEANER	Engine mounted with washable panel filter element
DRIVE TRAIN	Direct motor shaft connected to transaxle pinion shaft
ELECTRICAL SYSTEM	Solid state regulator, 12 volt maintenance free battery, 430 CCA, 60 minute reserve
TRANSAXLE	High efficiency differential with helical gears, 13.32:1 ratio
FUEL SYSTEM	6 gallon (22.7 l) tank with dash mounted analog fuel gauge
SPEED	18 mph (29 kph) governed speed

* Specifications subject to change without notice





INDICATES OUTLINE OF SUN TOP

Fig. V-1 Vehicle Dimensions

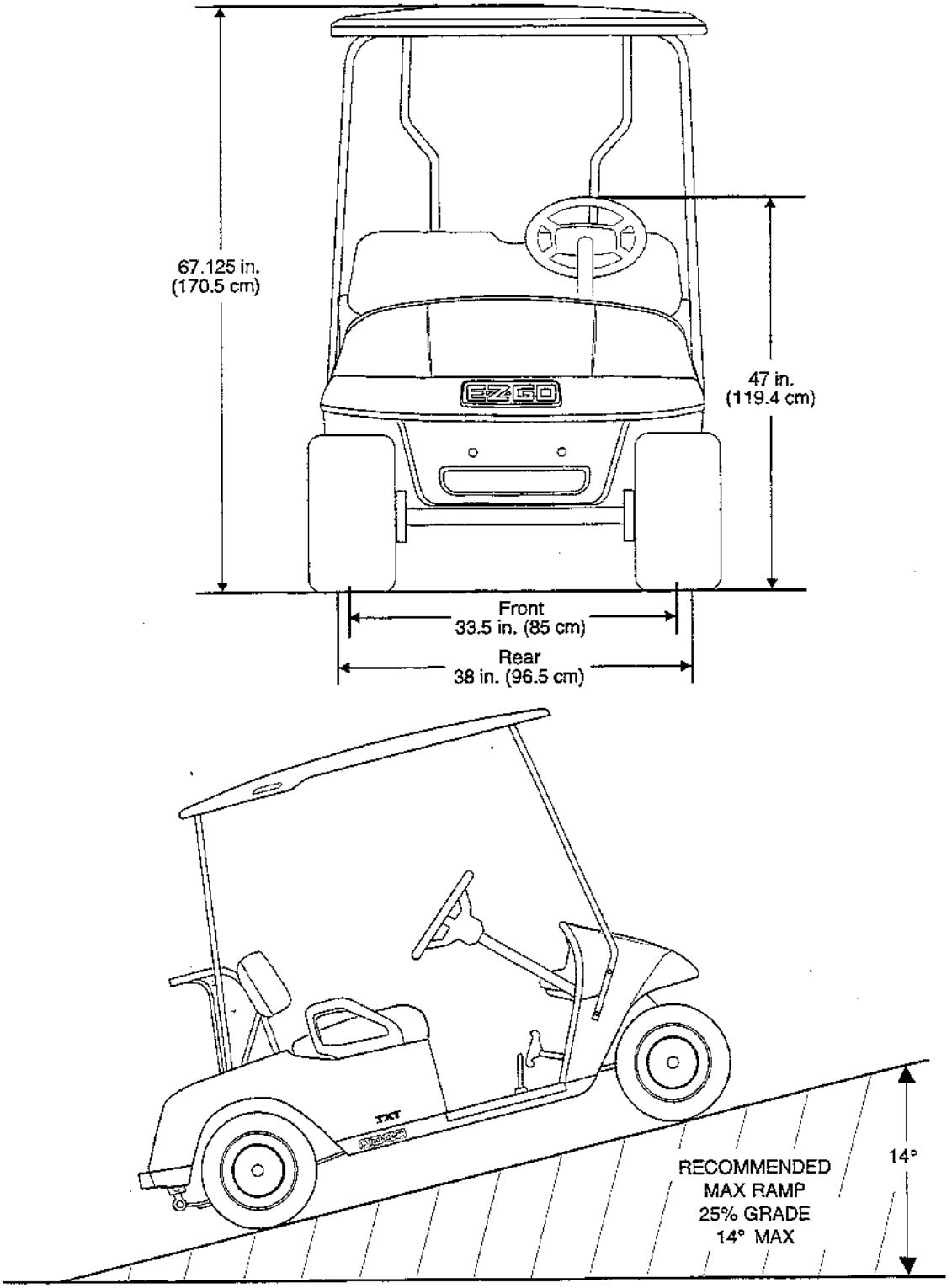


Fig. V-2 Vehicle Dimensions and Incline Specifications

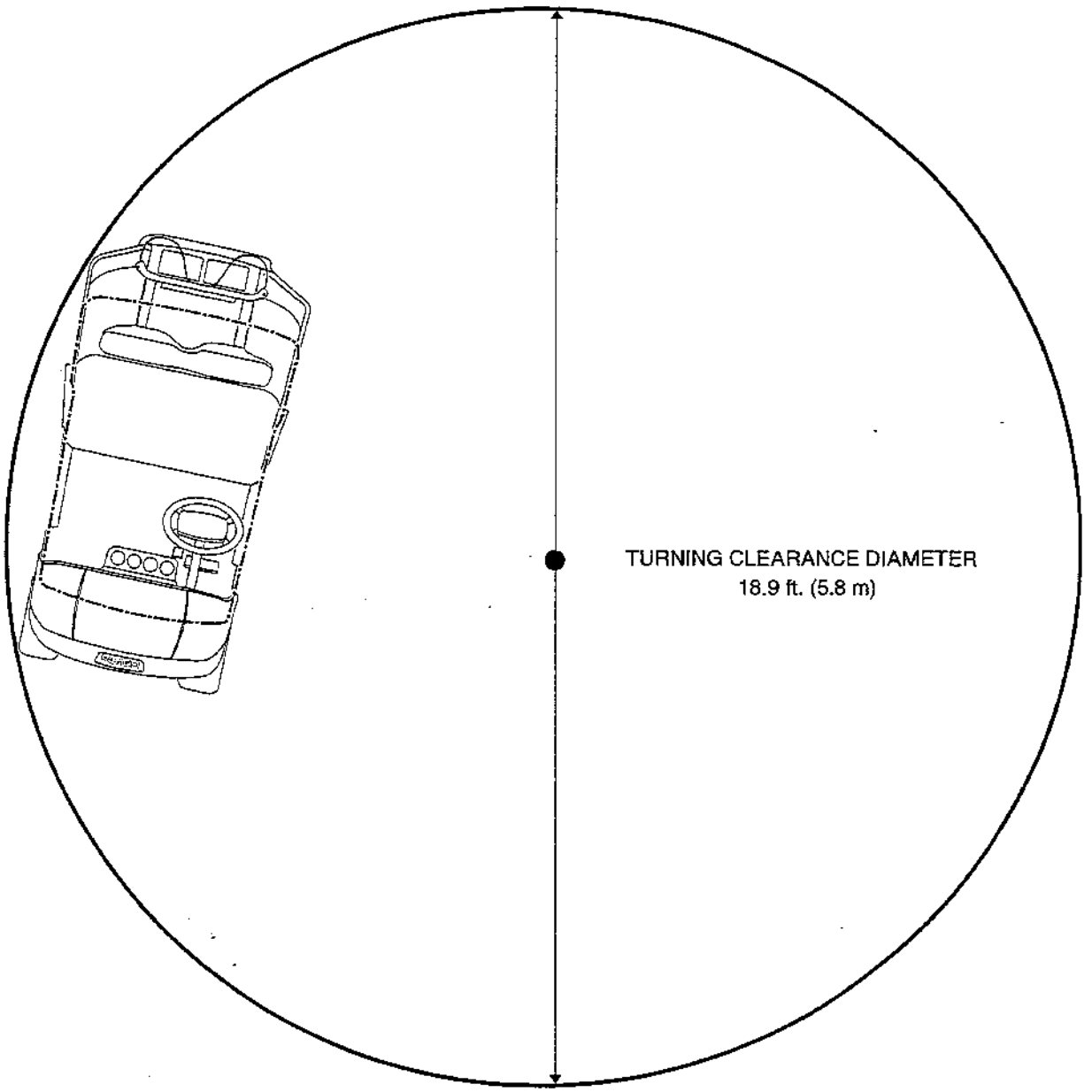


Fig. V-3 Vehicle Turning Clearance Diameter

Notes:

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CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board and Fuji Heavy Industries Ltd. (herein "FUJI") are pleased to explain the emission control system warranty on your 1995 and later specialty vehicle engine (herein "engine"). In California, the engine must be designed, built and equipped to meet the State's stringent anti-smog standards. FUJI must warrant the emission control system on your engine for the period of time described below, provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the carburetor and the ignition system. Also included may be hoses, connectors and other emission-related assemblies.

Where a warrantable condition exists, FUJI will repair your engine at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE:

The 1995 and later engines are warranted for two (2) years. If any emission related part on your engine is defective, the part will be repaired or replaced by FUJI.

OWNER'S WARRANTY RESPONSIBILITIES:

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

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

You are responsible for presenting your engine to a dealer, distributor or warranty station authorized by E-Z-GO DIVISION OF TEXTRON, INC. Augusta, Georgia, (herein "E-Z-GO") to which FUJI supplies the engine as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact the E-Z-GO Warranty Department at 1-800-241-5855.

LIMITED WARRANTY

on Emission Control Systems

- California Only -

FUJI, Tokyo, Japan, warrants to the owner of the 1995 and later engine that the engine (1) has been designed, built and equipped so as to conform at the time of manufacture with the applicable regulations of the California Air Resources Board, and (2) is free from defects in materials and workmanship which could cause it to fail to conform with those regulations as may be applicable in the terms and conditions stated below.

A. WARRANTY COMMENCEMENT DATE

The warranty period begins on the date the engine is delivered to a first retail purchaser.

B. LENGTH OF COVERAGE

FUJI warrants to a first retail purchaser and each subsequent purchaser that the engine is free from defects in materials and workmanship which could cause the failure of a warranted emission-related part for a period of two (2) years after the date of delivery to the first retail purchaser.

C. WHAT IS COVERED:

1. REPAIR OR REPLACEMENT PARTS

Repairs and replacement of any warranted part will be performed at no charge to you by an authorized dealer, distributor or a warranty station. You may contact the E-Z-GO Warranty Department at 1-800-241-5855 to get the nearest appropriate location where your warranty repairs are performed.

2. WARRANTY PERIOD

This warranty continues for a period of two (2) years and shall apply only to the repair, replacement or adjustment of the component parts which are not scheduled for replacement as required maintenance. Further, component parts which are scheduled only for regular inspection to the effect of "repair or replace as necessary" shall be warranted for the warranty period. Any warranted part which is scheduled for replacement as required maintenance shall be warranted for the period of time up to the first scheduled replacement point for that part.

3. DIAGNOSIS

You shall not be charged for diagnostic labor which leads to the determination that a warranted part is defective, if the diagnostic work is performed at an authorized dealer, distributor or warranty station.

4. CONSEQUENTIAL DAMAGES

If a warranted part failed causing damages to other engine components, consult a warranty station.

D. WHAT IS NOT COVERED

1. This limited warranty does not cover any part which malfunctions, fails or is damaged due to failure to follow the maintenance and operating instructions set forth in the 1995 and later Owner's Manual including:
   (1) improper or inadequate scheduled engine inspection and maintenance
   (2) improper or inadequate maintenance of any warranted parts
   (3) improper installation, adjustment or repair of the engine or of any warranted part unless performed by an authorized dealer
   (4) failure to follow recommendations on fuel use contained in the 1995 and later Owner's Manual
   (5) repairs performed outside of the authorized warranty service facilities
   (6) use of parts which are not authorized by FUJI.

2. Add-on or modified parts

This warranty does not cover any part which malfunctions, fails or is damaged due to alterations by changing, adding to or removing parts from the engine.

3. Expenses incurred by processing warranty claims

FUJI, any authorized dealer, distributors and warranty station shall not be liable for any loss of use of the engine, for any alternative usage, for any damage to goods, loss of time or inconvenience.

E. HOW TO FILE A CLAIM

All repairs qualifying under this Limited Warranty must be performed by a dealer who sold you the engine or distributors or warranty stations authorized by E-Z-GO. In the event that any emission-related part is found to be defective during the warranty period, you should notify E-Z-GO Warranty Department at 1-800-241-5855 and you will be given the appropriate warranty service facilities where the warranty repair is performed.

F. WHERE TO GET WARRANTY SERVICE

It is recommended that warranty service be performed by the authorized dealer who sold you the engine, although warranty service will be performed by any authorized dealers, distributors and warranty stations anywhere in the United States. When warranty repair is needed, the engine must be brought to an authorized dealer, distributorship or warranty station's place of business during normal business hours. In all cases, a reasonable time, not to exceed 30 days, must be allowed for the warranty repair to be completed after the engine is received by the authorized dealer, distributor or service station.

G. MAINTENANCE, REPLACEMENT AND REPAIR OF EMISSION-RELATED PARTS

Only warranted engine replacement parts approved by FUJI should be used in the performance of any warranty maintenance or repairs on emission-related parts. If other than authorized parts are used for maintenance, replacement or repair of components affecting emission control, you should assure yourself that such parts are warranted by their manufacturer to be equivalent to authorized parts in performance and durability. FUJI, however, assumes no liability under this warranty with respect to parts other than authorized parts. The use of non-authorized replacement parts does not invalidate the warranty on other components unless the non-authorized parts cause damage to warranted parts.

H. PARTS COVERED UNDER THE CALIFORNIA EMISSIONS WARRANTY

(1) Fuel Metering System
   (i) Carburetor and internal parts
   (ii) Choke System
   (iii) Fuel filter (annual maintenance item)
(2) Air Induction System
   (i) Air filter element (annual maintenance item)
(3) Ignition System
   (i) Spark plug (annual maintenance item)
   (ii) Ignition Coil
   (iii) Ignitor Complete

(iv) Pulser Coil
(4) Exhaust Manifold
(5) Miscellaneous Items Used in Above Systems
(i) Fuel hoses, clamps and sealing gaskets

I. MAINTENANCE STATEMENTS

It is your responsibility to have all scheduled inspection and maintenance services performed at the times recommended in the 1995 and later Owner's Manual and to retain proof that inspection and maintenance services are performed at the times when recommended. FUJI will not deny a warranty claim solely because you have no record of maintenance; however, FUJI may deny a warranty claim if your failure to perform required maintenance resulted in the failure of warranted part. The proof which you maintain should be given to each subsequent owner of the engine. You are responsible for performing the scheduled maintenance described in the Periodic Service Schedule of this manual. The scheduled maintenance is based on the normal engine operating schedule.

FEDERAL EMISSION COMPONENT DEFECT WARRANTY

EMISSION COMPONENT DEFECT WARRANTY COVERAGE - This emission warranty is applicable in all states, except the State of California.

Fuji Heavy Industries Ltd. (herein "FUJI") and E-Z-GO Division OF TEXTRON, INC. Augusta, Georgia, (herein "E-Z-GO") warrant to the initial retail purchaser and each subsequent owner, that specialty vehicle engine (herein "engine") was designed, built, and equipped to conform at the time of initial sale to all applicable regulations of the U.S. Environmental Protection Agency (EPA), and that the engine is free of defects in materials and workmanship which would cause this engine to fail to conform with EPA regulations during its warranty period.

For the components listed under PARTS COVERED, the dealer or service center authorized by E-Z-GO will, at no cost to you, make the necessary diagnosis, repair, or replacement necessary to ensure that the engine complies with applicable U.S. EPA regulations.

EMISSION COMPONENT DEFECT WARRANTY PERIOD

The warranty period for this engine begins on the date of sale to the initial purchaser and continues for a period of 2 years.

PARTS COVERED

Listed below are the parts covered by the Emission Component Defect Warranty. Some of the parts listed below may require scheduled maintenance and are warranted up to the first scheduled replacement point for that part.

1) Fuel Metering System
   (i) Carburetor and internal parts
   (ii) Choke System
   (iii) Fuel filter (annual maintenance item)
2) Air Induction System
   (i) Air filter element (annual maintenance item)
3) Ignition System
   (i) Spark plug (annual maintenance item)
   (ii) Ignition Coil
   (iii) Ignitor Complete
   (iv) Pulser Coil
4) Exhaust Manifold
5) Miscellaneous Items Used in Above Systems
   (i) Fuel Hoses, clamps and sealing gaskets

OBTAINING WARRANTY SERVICE

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

WHAT IS NOT COVERED

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

OWNER'S WARRANTY RESPONSIBILITIES:

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

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

You are responsible for presenting your engine to a dealer, distributor or warranty station authorized by E-Z-GO when a problem exists.

If you have any questions regarding your warranty rights and responsibilities, you should contact the E-Z-GO Warranty Department at 1-800-241-5855 for the information.

THINGS YOU SHOULD KNOW ABOUT THE EMISSION CONTROL SYSTEM WARRANTY

MAINTNANCE AND REPAIRS

You are responsible for the proper use and maintenance of the engine. You should keep all receipts and maintenance records covering the performance of maintenance records should be transferred to each subsequent owner of the engine. E-Z-GO reserves the rights to deny warranty coverage if the engine has not been properly maintained. Warranty claims will not be denied, however, solely because of the lack of required maintenance or failure to keep maintenance records.

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

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

HOW TO MAKE A CLAIM

All repairs qualifying under this limited warranty must be performed by a dealer or service center authorized by E-Z-GO. In the event that any emission-related parts is found to be defective during the warranty period, you shall notify E-Z-GO Warranty Department at 1-800-241-5855 and you will be given the appropriate warranty service facilities where the warranty repair can be performed.

Notes:

a TEXTRON Company

E-Z-GO Division of Textron Inc.
P.O. Box 388 Augusta, Georgia USA 30903-0388
Inside USA Phone: 1-800-241-5855, FAX: 1-800-448-8124
Outside USA Phone: 010-1-706-798-4311, FAX: 010-1-706-771-4609