


COLUMBIA Par Car 

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COLUMBIA Par Car 

Owner's and Operator's Manual

Gasoline and Electric
Golf and Industrial
Vehicles

Part No. 99466-96C

PREFACE

Welcome, and congratulations on your choice of Columbia ParCar as your golf and industrial vehicle! Your Columbia ParCar vehicle has been manufactured in full compliance with all applicable American National Standards Institute (ANSI) standards. Your safe use and operation of your vehicle is important to us. Any alteration of your Columbia ParCar vehicle that results in the vehicle being in noncompliance with applicable ANSI standards is strictly prohibited. Columbia ParCar is not responsible or liable for any damage that results from any such alteration, and all warranties for any such altered vehicles are null and void.

These vehicles are not designed for over-the-road use. They do not conform to Federal Motor Vehicle Safety Standards or EPA regulations, and are not equipped for operation on public streets, roads, or highways.

To the best knowledge of Columbia ParCar Corp., the material contained herein is accurate as of the date this publication was approved for printing. Columbia ParCar Corp. 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. Columbia ParCar Corp. reserves the right to change specifications, equipment or designs at any time without notice and without incurring obligation.

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WARNING

- The modification of any Columbia ParCar vehicle is not recommended.
- Exceeding load capacities or recommended speed may result in possible injury or property damage.
- For golf course user, your vehicle has a designated maximum speed of 15 mph and is not designed or intended to be used on public roadways or highways.
- Only trained technicians should repair or service this vehicle. When performing even minor repairs or service, follow the correct procedures and obey the warnings in this manual, as well as, in the related service manual.
- Always wear eye protection when servicing the vehicle.
- Always turn keyswitch to "OFF", remove key, block tires and disconnect battery(ies) prior to servicing.
- Use only insulated tools when working around batteries or electrical connections.

2.0 RULES FOR SAFE OPERATION

2.1 Getting Started

Before operating Columbia ParCar vehicles, it is the operator's responsibility to read, understand and follow the safety, operating and maintenance instructions in this manual for personal safety. If you are responsible for the use or rental of the vehicle, it is your responsibility to inform the person or persons using the vehicle about the following basic rules of operation for their personal safety.

2.2 Safety Guidelines

If the vehicle is to be rented or is part of a fleet, observe the following guidelines for safe operation:

- Define *where* vehicles may be driven.
- Define *who* should be allowed to drive the vehicle.
- Instruct first-time drivers.
- Maintain vehicles in a safe driving condition.
- Enforce safe-driving rules.

2.3 Basic Rules of Operation



DANGER

Do not operate gasoline vehicle in an enclosed area. Gasoline engines produce carbon monoxide, which is an odorless, deadly gas.



WARNING

For personal safety and to maintain vehicle stability and control, operate this vehicle under these conditions only. Failure to comply with these warnings may result in bodily injury and property damage.

- All vehicles should be operated from driver's side by authorized persons only and only in designated areas.
- Never exceed the capacity ratings of the vehicle. Exceeding these limits may endanger occupants.
- Personal injury may result if arms, legs, or other parts of body are not kept inside vehicle while moving.
- Do not start until all occupants are seated. Remain seated and hold on to hand hold while vehicle is in motion.
- Before leaving your seat, bring vehicle to a complete stop and lock parking brake to prevent vehicle from moving. If vehicle is to be left unattended, switch key to "OFF" and remove key.
- Do not use accelerator to hold vehicle on an incline - use the brake.
- Make sure safety directional keyswitch/shift control lever is in position for desired direction of travel before depressing accelerator. **DO NOT CHANGE THE SAFETY DIRECTIONAL KEYSWITCH/SHIFT LEVER WHILE VEHICLE IS MOVING.**
- Drive slowly straight up and down grades and in turns.
- Do not operate while under the influence of alcohol or drugs.
- This vehicle is not Federal or State DOT approved and is not equipped to be operated on public roads or highways.
- To avoid the risk of severe personal injury, use extreme care and operate at maximum speed **ONLY** on smooth, flat uncongested roadways or paved pathways.
- Allow additional stopping distance when traveling at higher speeds.

These basic rules of operation, combined with courtesy and common sense, will help to make driving your Columbia ParCar vehicle a safe and pleasant experience.

3.0 CONTROLS AND OPERATION

3.1 Location of Controls

Figure 3-1 shows the location of your Columbia ParCar controls.

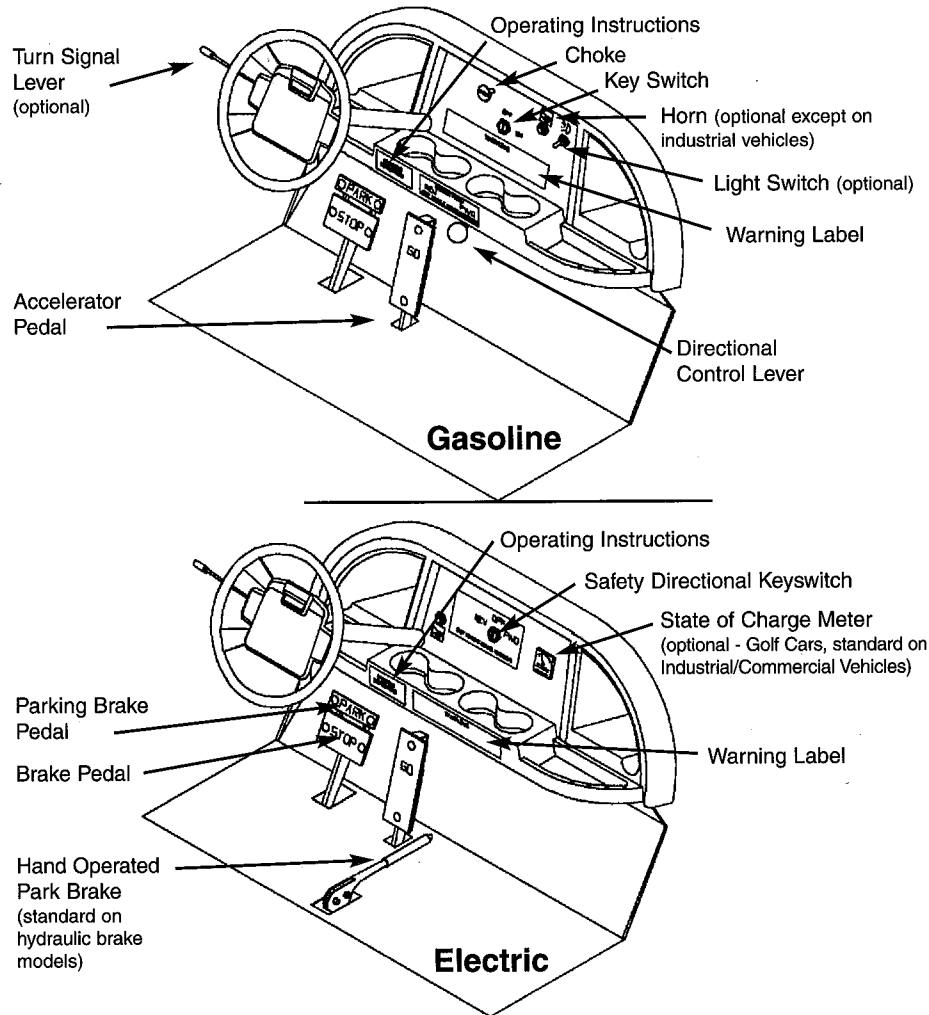


Figure 3-1 Location of Controls

Simple controls make it easy to operate your Columbia ParCar vehicle. To drive, move Safety Directional Keyswitch/Shift Control to desired position, and depress accelerator with right foot. Depress brake pedal to slow or stop vehicle.



WARNING

- On electric models, be sure safety directional keyswitch is in desired direction of travel before depressing accelerator.
- On gasoline vehicles, be sure the safety directional shift control is in the desired direction of travel before depressing accelerator.

• Safety Directional Keyswitch/Shift Control

a. Gasoline Vehicles

This vehicle requires a key to operate. Insert key, and turn to ON position. The key can be removed only when in the OFF position. The switch locks automatically when the key is removed.

The safety directional shift control located on the console is used to select forward or reverse. Move the shift control to the right for forward direction. Move the shift control to the left for reverse. Warning buzzer sounds when in reverse.

NOTE: If the directional shift control does not move completely to the forward or reverse position, the engine will not start. If this should occur, move the control back to its original position, and then back again.

b. Electric Vehicles

This vehicle requires a key to operate. Insert key, and turn to FWD position to run vehicle forward. Turn to REV position to run vehicle in reverse. Warning buzzer sounds when in reverse. Key can be removed only when in the OFF position. Switch locks automatically when key is removed.



CAUTION

- Do not change direction until vehicle has come to a complete stop.
- Always turn key OFF before exiting the vehicle. Always remove key when leaving the vehicle unattended.

- **Accelerator**

- a. **Gasoline Vehicles**

The accelerator pedal starts the engine automatically when depressed. Further movement of pedal operates vehicle at desired speed. The engine stops running when pedal is released completely. To slow or stop vehicle, depress the brake.

- b. **Electric Vehicles**

The accelerator pedal operates the vehicle in selected speeds when the pedal is depressed. With the key in the desired position, depress the accelerator to operate the vehicle at the desired speed. To slow or stop the vehicle, depress the brake.

- **Foot Brake**

Depress the brake pedal to slow or stop the vehicle. If equipped with a foot-operated parking brake, the parking brake lock is controlled by a bar located across the top of the brake pedal. To lock foot brake for parking, depress pedal and bar at the same time. *Always apply parking brake when leaving the vehicle.* Parking brake remains applied until automatically released by depressing the accelerator pedal. Parking brake can also be released by momentarily depressing the brake pedal, and then releasing it.

- **Hand Parking Brake**

If your vehicle is equipped with a hand operated parking brake, depress the brake pedal to slow or stop the vehicle. To lock the parking brake, pull the brake lever upward. *Always apply the parking brake when leaving the vehicle.* The parking brake remains applied until manually released for vehicle operation.

**CAUTION**

Do not operate the vehicle with the hand operated parking brake applied. Damage to the vehicle could result.

- **Choke (Gasoline Vehicles)**

On gasoline models, the choke knob is located on the front console next to the ON/OFF switch. Use the choke knob when starting a cold engine. Pull knob out to choke.

NOTE: Choke is spring-returned to the open position. Make sure that it returns properly. It should not be necessary to use the choke again unless the engine has completely cooled off. This vehicle should not require choking except when cold. Excessive choking of the engine may cause it to flood and not start.

4.0 TRAILERING YOUR VEHICLE

**WARNING**

When trailering your vehicle, observe the following safety precautions:

- Use trailers specifically designed to carry your Columbia ParCar vehicle that meets all federal, state and local requirements.
- Secure vehicle to trailer following trailer manufacturer's instructions. The key should be removed from your Columbia ParCar vehicle and the parking brake firmly locked.
- On vehicles equipped with windshield, cab or suntop, be certain windshield, cab or suntop is secured properly to vehicle to prevent loss or damage while trailering. Also secure vehicle body to chassis as it may raise as a result of air flow on suntop while trailering. Increased trailering speed adds stress to windshield, cab or suntop and subsequently increases chance of loss or damage.
- On industrial vehicles with removable seat base and deck plates, secure or fasten seat base and deck plate to body to prevent injury, loss, or damage when trailering.

5.0 SERVICING YOUR VEHICLE

5.1 Brakes and Parking Brake

5.1.1 Mechanical Brake System

Models: P4E, FE, C6E, 911E, EU4, EUXB, ED4, P4G, FG, C6G, 911G, GU4, GUXB and GD4

- a. Your vehicle is equipped with auto-adjust rear wheel drum brakes.
- b. Check brake pedal free travel and braking action. Maximum allowable pedal free travel is 2 inches (5 cm). Measure free travel from the top of the brake pedal.
- c. To adjust brake and park brake for the auto adjust brake systems.
 - (1) Check the pedal free travel and braking action. The brake shoes will adjust automatically or advance as wear occurs, and no adjustments are normally required. Free travel should not be less than a minimum of 1/2 inch. Measure the free travel from the top of the brake pedal, not from the parking brake bar.
 - (2) Should the free travel or the stopping action of the brakes be in question, stop and do not use the vehicle. **Contact your Columbia ParCar Dealer for qualified service assistance.**

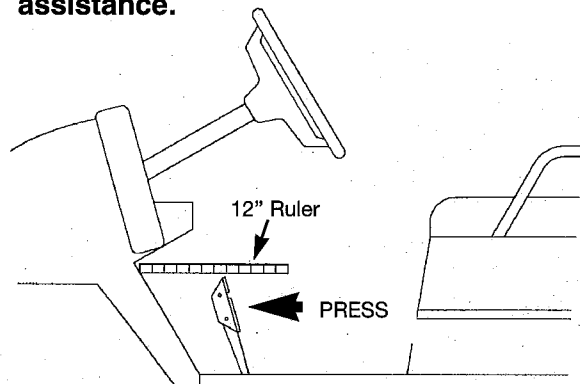


Figure 5-1 Brake Pedal Measurement

5.1.2 Hydraulic Brake System

Models: EU2400, EU2400XB, C10E, GU2400, GU2400XB and C10G

These vehicles are equipped with two rear wheel hydraulic brakes as standard, or optional four wheel hydraulic brakes. A hand operated (mechanical) brake is utilized on these vehicles.

Before each use:

Check the brake pedal free travel and brake operation. Also, check for "spongy" feel when force is applied to the pedal. Brake pedal free travel should not exceed 3/4 inch, measured from the top of the pedal horizontally to the upper portion of the floor panel. If the total pedal movement exceeds 5 inches, adjustment or servicing may be required. Refer to figure 5-1.

Vehicles using the Hydraulic Brake System utilize a Hand Operated Park Brake. To use the Hand Operated Park Brake, pull up firmly on the handle. To release, depress the button at the end of the handle, and let the handle down to the original position.



DANGER

Should the pedal feel spongy and not feel firm under pressure, or should the free travel exceed the limits listed above, do not use the vehicle. Refer to the Columbia ParCar Service Manual for detailed servicing information, or contact your Columbia a ParCar Dealer for service. Failure to do so could result in accident, injury or death.

5.2 Gasoline Vehicle Service

5.2.1 Engine Fuel



DANGER

Gasoline is extremely flammable and highly explosive under certain conditions. Do not fill fuel tank while engine is running. Do not smoke or allow open flames or sparks near vehicle when refueling.

This engine will operate satisfactorily using any automobile gasoline. Use clean, fresh, lead-free gasoline with a minimum of 85 octane. (Leaded gasoline may be used if it is commercially available, and if lead-free is not available.) Purchase fuel in quantity for use within 30 days. See Storage Instructions, section 6.1.

Do not mix oil with gasoline.

NOTE: We do not recommend using gasoline that contains alcohol, such as gasohol. If gasoline with alcohol is used (such as oxygenated or MTBE ethanol fuel additives), it must contain less than 10% ethanol and must be removed from engine during storage. Do not use gasoline that contains methanol.

5.2.2 Engine Lubrication

Oil has four purposes:

1. It cools.
2. It cleans.
3. It seals.
4. It lubricates.

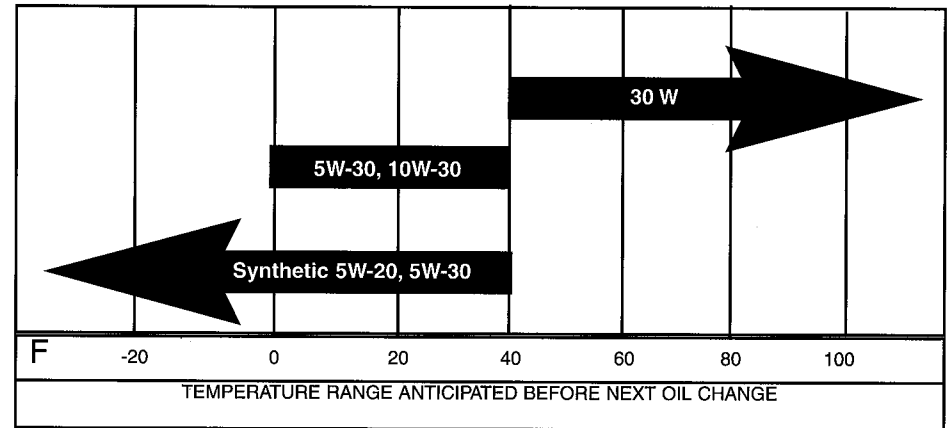
The engine in your Columbia ParCar vehicle is lubricated with a connecting rod dipper for "Splash Type" lubrication. There are no additional moving parts requiring routine maintenance or inspection.

We recommend the use of high-quality detergent oil, classified "For Service SC, SD, SE, SF, SG".

Detergent oils keep the engine cleaner and retard formation of gum and varnish deposits.

No special additives are necessary with recommended oils.

SAE Viscosity Grades



Air-cooled engines run hotter than liquid-cooled engines. Use of multi-viscosity oils (10W-30, etc.) above 40 degrees F will result in high oil consumption and possible engine damage. Check oil level more frequently if using these types of oils.

SAE 30 oil, if used below 40 degrees F will result in hard starting and possible engine bore damage caused by inadequate lubrication.

The crankcase oil capacity is approximately 36 ounces (drained and refilled) to 41 ounces (dry engine assembly).

BE SURE CORRECT OIL LEVEL IS MAINTAINED.

5.2.3 Change Oil (Crankcase)

1. Be sure oil level is maintained. Check oil level every eight (8) hours of operation or monthly. When checking oil level, move vehicle to a level surface to ensure an accurate oil level reading. Clean area around dipstick to prevent foreign matter from entering filler hole when dipstick is removed. Push dipstick in slowly until cap bottoms on filler neck - do not tighten cap when checking oil level.

2. All new gasoline vehicles should have an oil change after the first eight (8) hours of operation. Thereafter for golf vehicles, change the oil every 200 rounds (100 hours), or annually, whichever comes first. For industrial/commercial vehicles, change the oil every 100 hours. More frequent oil changes are recommended when used in extremely dusty, dirty, hot or heavy-load conditions.

3. To change engine crankcase oil, if possible, run engine just before changing oil because warm oil flows better and carries more contaminants than cold oil.



WARNING

Always turn vehicle to "OFF", remove key, block tires, and disconnect the negative battery cable before performing any vehicle service to avoid accidental start-up of vehicle and possible personal injury.

Always wear eye protection when servicing the vehicle.

Use only insulated tools when working around batteries or electrical connections. Remove watches and rings to avoid electric shock.

- Lock parking brake of vehicle to ensure it does not move.
- Clean area around oil drain plug. Next, slide oil drain pan below drain and then remove oil drain plug, (figure 5-2).
- After oil is drained, reinstall drain plug.
- Remove oil dipstick and, using a funnel, fill crankcase with oil (approximately 36 ounces). Check oil level to prevent over-filling. Refer to section 5.2.2 for proper grade of engine oil.



CAUTION

Engines that have been drained of oil will retain some oil inside of the engine. Refill to full mark on dipstick.

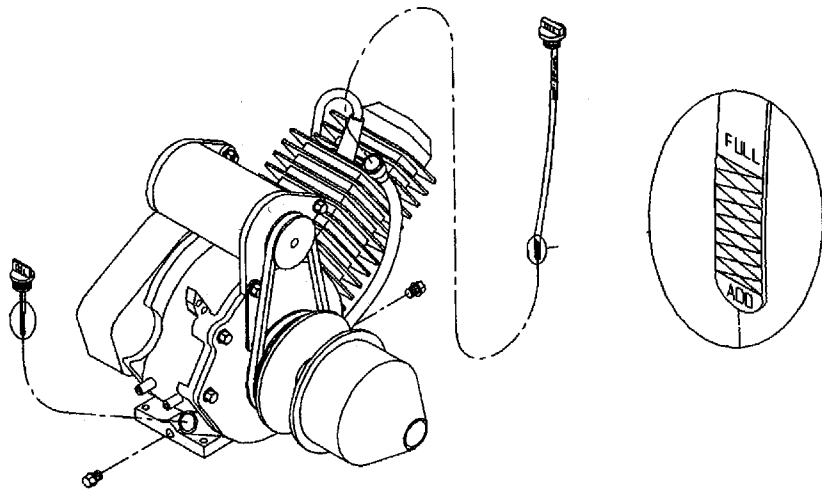


Figure 5-2 Location of Crankcase Dipstick and Drain Plug

5.2.4 Gasoline Vehicle Recommended Maintenance Procedures

The following maintenance procedures are recommended when servicing your Columbia ParCar gasoline vehicle. Refer to section 5.2.6 for frequency of service. Perform only those maintenance instructions described in this manual. If major repairs are ever needed, contact your local Columbia ParCar Dealer for assistance. Your Columbia ParCar Dealer has the technical experience, training and original Columbia ParCar parts for your vehicle. Always use original Columbia ParCar parts when servicing your vehicle.



WARNING

Always turn vehicle to "OFF", remove key, block tires, and disconnect the negative battery cable before performing any vehicle service to avoid accidental start-up of vehicle and possible personal injury.

Always wear eye protection when servicing the vehicle.

Use only insulated tools when working around batteries or electrical connections. Remove watches and rings to avoid electric shock.

a. Engine Air Intake Screen

Remove debris from cooling air intake screen in front of engine, particularly after operating vehicle through grass clippings, dry dandelions, weeds, etc.

b. Vehicle Cleaning

(1) Wash underside of vehicle to remove all dirt and debris. DO NOT hose wash electronic control devices, switches, and solenoids.

(2) Wash body and seats with a mild detergent only. DO NOT use abrasives (bodies are painted).

(3) Acid soaked dirt on the battery tops causes current leakage, reduced battery efficiency and higher self-discharge during storage.

Hose wash battery tops periodically with clean, low-pressure water to keep them free of acid spillage, dirt, grass cuttings and other debris. Make sure vent caps are secure before washing. DO NOT hose wash electronic controllers, switches, solenoids, and other electrical control devices.

Wash the tops with a baking soda mixture (1/2 cup per quart of water) and a stiff bristle brush if a low-pressure hose does not remove the dirt. Rinse with clean water. Take care to ensure that the baking soda mixture does not enter the vent opening in the battery caps.

Make sure that the battery tops are clean and dry before putting them into storage.

c. Tire Pressure

18 x 8.5 x 8 tires: Check pressure and inflate to 18 psi (1.2 atm)
5.70 x 8 tires: Check pressure and inflate to 50 psi (3.4 atm)

d. Spark Plug

Replace spark plug with NGK FR5 or BKR5E or (equivalent), gapped to exactly .030 inch (.9 mm to 1.0 mm).

e. Starter-Generator Belts

(1) On new vehicles, or vehicles with newly installed belts, belt tension must be checked at least within the first hour of operation to account for any initial stretch or seating of components. Tighten new belts to 110+/-10 lbs. (43.3+/- 4.5 kg) tension. Retighten belts to 90+/-10 lbs (40.8+/- 4.5 kg) tension. Do not allow belt tension to drop below 70 lbs (31.8 kg).

(2) Check belt tension. Do not allow belt tension to drop below 70 lbs (31.8 kg). Retighten belt to 90+/-10 lbs (40.8+/- 4.5 kg) tension.

f. Drive Belt

Your Columbia ParCar vehicle is equipped with an automatic variable-pitch, V-belt torque converter. The drive belt width measures 1.19 inches. Replace belt if cracks, splits or fraying are observed, or if the test width drops below 1.06 inches.

g. Air Cleaner

Your Columbia ParCar gasoline vehicle is equipped with the exclusive Micro-Cleansm air filtration system. Service the Air Cleaner (figure 5-3) monthly or more often under dirty operating conditions or if power loss is noted.



CAUTION

If air cleaner primary and secondary elements are not tightened firmly against their gaskets, contaminants will enter the engine. This will damage the engine and void the warranty.

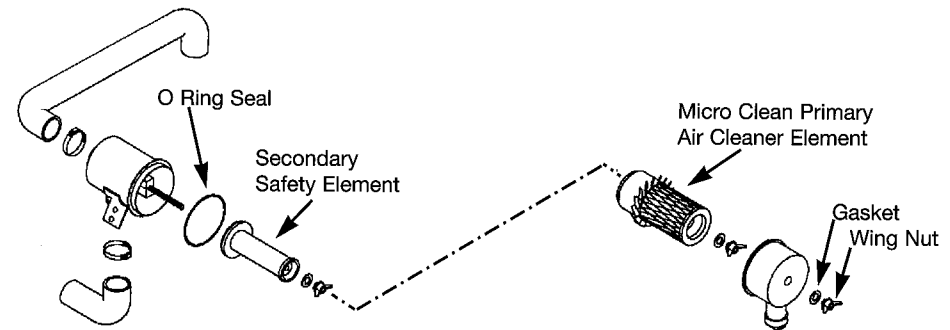


Figure 5-3 Air Cleaner Assembly

To replace the primary air cleaner element, (part #29131-96), observe the following seven steps:

1. Remove the Old Element Carefully

Gently pull the dirty primary element straight out of its housing. Avoid tapping or bumping the filter while removing it - this will ensure that no dirt or dust is dropped into housing before the new filter can do its job. Inspect inner (secondary) element. If it appears dirty, remove and replace it. The secondary element may not be cleaned, it must be replaced, (part #29146-96), when it becomes dirty.

2. Clean the Inside of the Housing Thoroughly

To protect your engine, the housing must be perfectly clean. Particles left in the clean air side of the housing cannot be trapped by the new filter element, and that spells trouble for your engine. Use a clean, damp cloth and wipe every surface clean.

3. Clean the Gasket Sealing Surfaces of the Housing

Properly fitted gaskets prevent dirt from getting into the housing. Use a clean, damp cloth to remove any hard ridges of dirt around the old gasket sealing area on the top and bottom of the housing.

4. Inspect the Old Element for Uneven Patterns of Dirt

Uneven patterns of dirt on the clean side of the old element are a sure sign that the gasket seal was not perfect. If you do Step 3 properly, and you still see tell-tale dirt patterns, check your housing carefully for an even sealing area.

5. Test the New Gasket for Resilience

Apply pressure to the new filter gasket with your finger. When you let up, the gasket should spring back instantly to its original shape.

6. Make Sure the Gasket Seats Firmly

When you slide in the new filter, the gasket should form a perfect seal on the housing. If it doesn't, make sure that the sealing surface is clean and that you have the correct replacement filter part #29131-96. Remember, without a perfect seal no filter can protect an engine.

7. Inspect All Connections and Ducts for a Leak-Proof Fit

From the clean air side of the air cleaner to the engine, all clamps, flange and duct joints, and air cleaner mounting bolts must be securely tightened. If you find a leak, seal it immediately to prevent dirt from directly entering the engine.

8. To Service the Air Cleaner Element Properly, Observe the Following Five "Don'ts":

(1.) Don't Rap an Element to Clean It

Shaking or rapping a filter to remove dirt actually does more harm than good. Leave your old filter alone until you install a replacement.

(2.) Don't Judge an Element's Life by Appearance.

A filter apparently full of dirt and dust may have plenty of life left in it. The reverse may be true when the filter may be contaminated with carbon which cannot be detected by a visual inspection. For optimal engine protection, monitor your filter changes with a restriction gauge or use a time-interval service program.

(3.) Don't leave an Air Cleaner Open any Longer Than Necessary.

An open air cleaner is an open invitation for dirt to get into your engine. When you take out an old filter, put the new one in right away. If an open cleaner is not serviced or reassembled immediately, cover the opening.

(4.) Don't Install a Defective Element.

A new element that has been dented or punctured will not protect your engine from contamination. A dented element may not seal properly and may also have damaged paper.

(5.) Don't Use the Wrong Replacement Part

A fraction of an inch difference in the length of an element - invisible to the eye- can make a firm seal impossible. It's better to keep using a dirty element than to replace it with the wrong replacement part. Use only original Columbia ParCar replacement parts available from your Columbia ParCar Dealer.

h. Lubrication

1. Oil All Body Hinges

2. Grease Vehicle Chassis

Columbia ParCar vehicles have seven (7) grease fittings; three on each side on the front suspension, and one on the brake pedal pivot which should be greased with high quality chassis grease. Remove the weight from the front suspension before lubricating to ensure proper grease distribution to suspension components.

3. Differential Oil

Check differential oil level and fill to the fill level check hole with SAE #30 oil.

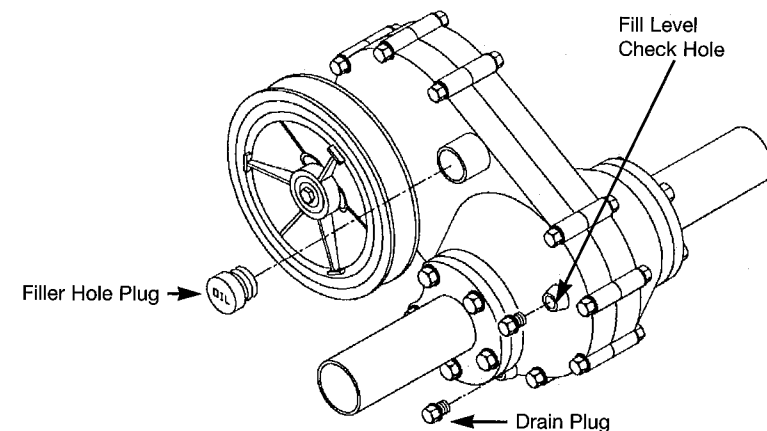


Figure 5-4 Differential Oil Fill and Check Hole

4. Forward and Reverse Shifting System

Check that the forward and reverse shifting lever operates smoothly, without jamming or binding. Some resistance is normal when changing directional shift-lever. Operate vehicle in forward and reverse to assure system is operating correctly. If system does not operate correctly, contact your Columbia ParCar Dealer for technical assistance.

5. Engine Crank Case Oil

Use a high-quality detergent oil classified "For Service SC, SD, SE, SF, SG". See section 5.2.2 for details

NOTE: Detergent oils keep the engine cleaner and retard the formation of gum and varnish deposits. No special additives need to be used with recommended oils.

See Section 5.2.3 for engine oil change instructions.

5.2.5 Gasoline Vehicle General Specifications

Engine: 9 Horsepower

Type:	4 cycle, single cylinder, fan air-cooled, OHV
Bore and Stroke:	3.15 in. (80 mm) x 2.32 in. (59 mm)
Lubrication System:	Splash type lubrication
Displacement:	18.5 cu. in. (296 cm ³)
Air Cleaner:	Dry-type, micro-clean, primary and secondary element
Spark Plug:	
Type:	NGK FR5 or BKR5E
Gap:	.030 in. (.76 mm)
Torque:	15-20 ft-lbs (2-2.7 kg/m)
Ignition Timing:	Fixed
Capacities:	
Fuel Tank:	7 gals. (26.5 ltr)

Engine: 13 Horsepower

Type:	4 cycle, single cylinder, fan air-cooled, OHV
Bore and Stroke:	3.50 in. (89 mm) x 2.48 in. (63 mm)
Lubrication System:	Splash type lubrication
Displacement:	24.4 cu. in. (391 cm ³)
Air Cleaner:	Dry-type, micro-clean, primary and secondary element
Spark Plug:	
Type:	NGK FR5 or BKR5E
Gap:	.030 in. (.76 mm)
Torque:	15-20 ft-lbs (2-2.7 kg/m)
Ignition Timing:	Fixed
Capacities:	
Fuel Tank:	7 gals. (26.5 ltr)

Power Transmission:

Automatic, variable-pitch V-belt torque converter and automotive-type, helical gear rear axle. Governed to a maximum speed of 15 mph (24.1 kph) for golf vehicles, 17 mph (kph) for industrial/commercial vehicles with 13 hp engines.

Brakes:

Models: P4G, FG, C6G, 911G, GU4, GUXB and GD4

Mechanically operated drum brakes on rear wheels. Pedal actuated parking brake with automatic release controlled by accelerator is standard. Hand actuated parking brake is optional.

Models: GU2400, GU2400XB, C10G (Tram)

Hydraulically operated drum brakes in rear wheels. Hand activated parking brake is standard.

Tires:

High floatation 18 x 8.5 x 8 tires inflated to 18psi (1.2 atm) pressure. Industrial 5.7 x 8 tires inflated to 50psi (3.4 atm) pressure.

Electrical Equipment:

Starter-generator, solid state voltage regulator, magneto ignition. Battery - 12 volt BCI group size 70 with 360 CCA minimum (9 hp engines).
12 volt BCI group size 70 with 720 CCA minimum (13 hp engines).

See your Columbia ParCar Dealer for the full line of Genuine Columbia ParCar replacement parts, accessories, service aids and service tools.

5.2.6 Service and Frequency Summary - Gasoline Powered Vehicles

Service Interval Service Description

Service Method/Owners Manual Reference

Before each use Steering and linkages
check: Brake operation
Park brake latches and releases properly
All warning labels in place
Tires for wear and damage
Engine for proper operation
Accelerator/governor linkage for free movement and return
Reverse warning buzzer for proper operation
Engine air intake screen to be sure it is not clogged
Fuel tank, lines, cap, pump, and carburetor for fuel leakage

- Test Drive
- Test Drive - 5.1
- Test Drive - 5.1
- Visual
- Visual - 5.2.4.c
- Test Drive
- Test Drive
- Test Drive
- Visual - 5.2.4.a
- Visual

Weekly Check: Speed of vehicle
Clean battery terminals and wash dirt off battery case
Wash engine compartment and underside of vehicle
Electrical wires and ground wires for tightness or damage
For loose hardware and tighten as required

- Test Drive
- 5.2.4.b
- 5.2.4.b
- Manual
- Manual

Monthly Check: Exhaust system for leaks
Brake pedal and park brake for operation
Tire pressure
Brake cables for damage
Oil leakage from engine or differential
Engine oil level

- Test Drive
- Test Drive - 5.1
- 5.2.4.c
- Visual
- Visual
- 5.2.3

Quarterly Check: Lubricate chassis
Air intake hose for leaks
Engine oil level

- 5.2.4.h
- 5.2.4.g
- 5.2.3

Semi-Annual,
Every 100 Golf
Rounds or 50
Hours of
Operation
Check: Clean and adjust brakes
Front wheel alignment and camber
Battery electrolyte level
Spark plug wire and boot for damage and proper routing
Head and exhaust connection gasket for leaks
Starter/generator belt tension and adjust as necessary
Inspect drive belt, replace as required
Differential lubricant level

- 5.1
- Visual
-
- Visual
-
- 5.2.4.e
- 5.2.4.f
- 5.2.4.h

Annual, Every
200 Golf Rounds
or 100 Hours of
Operation
Check: Inspect starter/generator brush length
Inspect and clean spark plugs
Check accelerator micro switch adjustment
Replace fuel filters
Change engine crankcase oil
Axle nut tightness
Check rear brake drum/axle nut torque (60 ft. lb.)

-
- 5.2.4.d
-
-
- 5.2.3
-
-

- It is recommended that these items be serviced by a Columbia ParCar Dealer. This manual does not contain information regarding this procedure.
Maintenance and/or repair to fuel metering systems, air induction systems, ignition system, exhaust system (including connectors and assembling) could affect emissions controls on the Columbia ParCar/Briggs & Stratton engine. Contact your Columbia ParCar Dealer or Columbia ParCar at (800) 222-4653 for instruction and or recommendations before proceeding.



DANGER

IF ANY PROBLEMS ARE FOUND, DO NOT OPERATE VEHICLE UNTIL REPAIRS ARE MADE. Failure to make necessary repairs could result in fire, severe personal injury, property damage, or death. Consult your local Columbia ParCar Dealer for professional service.

5.2.7 Gasoline Vehicle Capacities and Dimensions

	P4G	FG	C6G	C10G	911G Ambulance	GD4
Maximum Number of Occupants	2	4	4	10	3	2
Rated Capacity, lbs. (kg)	750 (340)	1200 (544)	1200 (544)	2000 (907)	1200 (544)	1200 (544)
Empty Weight, lbs. (kg)	741 (337)	866 (394)	878 (399)	996 (453)	932 (424)	806 (366)
Turning Radius, ft. (m)	10.5 (3.2)	13.5 (4.1)	13.5 (4.1)	13.5 (4.1)	13.5 (4.1)	11.5 (3.5)
Ground Clearance, in. (cm)	4 (10.2)	4 (10.2)	4 (10.2)	4 (10.2)	4 (10.2)	4 (10.2)
Wheel Base, in. (cm)	64 (162.6)	89 (226.1)	89 (226.1)	89 (226.1)	89 (226.1)	74 (188.0)
Overall Length, in. (cm)	94 (238.8)	119 (302.3)	119 (302.3)	126 (320)	132 (335.3)	105 (266.7)
Overall Width, in. (cm)	44.25 (112.4)	44.25 (112.4)	44.25 (112.4)	67 (170.2)	44.25 (112.4)	44.25 (112.4)
Overall Height, in. (cm)	47.5 (120.7)	47.5 (120.7)	47.5 (120.7)	47.5 (120.7)	47.5 (120.7)	47.5 (120.7)

	GU2400	GU2400XB	GUXB	GU4
Maximum Number of Occupants	2	2	2	2
Rated Capacity, lbs. (kg)	2400 (1305)	2400 (1305)	1200 (544)	1200 (544)
Empty Weight, lbs. (kg)	852 (387)	924 (420)	916 (417)	844 (384)
Turning Radius, ft. (m)	11.5 (3.5)	13.5 (4.1)	13.5 (4.1)	11.5 (3.5)
Ground Clearance, in. (cm)	4 (10.2)	4 (10.2)	4 (10.2)	4 (10.2)
Wheel Base, in. (cm)	74 (188.0)	89 (226.1)	89 (226.1)	74 (188.0)
Overall Length, in. (cm)	105 (266.7)	125 (317.5)	125 (317.5)	105 (266.7)
Overall Width, in. (cm)	44.25 (112.4)	44.25 (112.4)	44.25 (112.4)	44.25 (112.4)
Overall Height, in. (cm)	47.5 (120.7)	47.5 (120.7)	47.5 (120.7)	47.5 (120.7)

5.3 Electric Vehicle Service

When servicing your electric Columbia ParCar vehicle, always observe the following:



DANGER

When adding water or acid to battery, always wear eye and hand protection.

Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing.

Antidote:

External- Flush with water for 15 minutes and get immediate medical attention.

Internal- Drink large quantities of milk or water followed by milk of magnesia, vegetable oil or beaten eggs. Call doctor immediately.

Eyes- Flush with water for 15 minutes and get immediate medical attention.



WARNING

Always turn vehicle to "OFF", remove key, block tires, and disconnect the negative battery cable before performing any vehicle service to avoid accidental start-up of vehicle and possible personal injury.

Always wear eye protection when servicing the vehicle.

Use only insulated tools when working around batteries or electrical connections. Remove watches and rings to avoid electric shock.



CAUTION

Do not overcharge battery. Overcharging could cause damage to battery cells.

Battery wire terminals that are damaged or corroded should be replaced or cleaned as necessary. Failure to do so may cause them to overheat during operation.

5.3.1 Electric Vehicle (EV) Charger Operation (Automatic Charger)

a. Battery Charging

DANGER

Batteries produce explosive hydrogen gas at all times, especially when being charged. To avoid personal injury, keep cigarettes, open flame and sparks away from the battery at all times. Ventilate area when charging battery. Raise body or seats over batteries while charging vehicle to allow hydrogen gas to escape freely.

Ventilation fans should be located at the highest point in the room, and must be capable of changing the total volume of air in the room five (5) times per hour. Consult a local HVAC engineer.

WARNING

Each charger should have its own dedicated 20 ampere (15 ampere in Canada) maximum branch circuit protection (circuit breaker or fuse) in accordance with the National Electrical Code ANSI/NFPA 70, and local codes and ordinances.

Do not use an adapter to plug the charger with a three-prong plug into a two-prong outlet or extension cord. Improper connection of the equipment-grounding conductor can result in a fire or an electrical shock.

Only trained technicians should repair or service the charger. Contact your Columbia ParCar Dealer.

Do not operate the charger if it has received a sharp blow, was dropped, or otherwise damaged in any way.

Have worn, cut or damaged power cords or wires replaced immediately.

Do not use near fuels, grain, dust, solvents, thinners, or other flammables. Chargers can ignite flammable materials and vapors.

Do not expose to rain or any liquid. Keep the charger dry.

WARNING

Never push objects of any kind into the charger through cabinet slots. They may touch dangerous voltage points or cause an electrical short that could result in fire or electrical shock.

Do not disconnect the DC outplug from the battery receptacle when the charger is on. The resulting arcing and burning could damage the plug and receptacle and could cause batteries to explode. If the charger must be stopped, disconnect the AC supply plug from the wall outlet before disconnecting the charger DC output plug.

CAUTION

Do not block or cover slots and openings in the back and bottom cabinet. They provide ventilation and protect the charger from overheating.

Do not allow clothing, blankets, or other material to cover the charger. Provide adequate ventilation for the charger.

Do not leave DC plug plugged in while unattended for more than two (2) days in a row. Severe overheating and damage to the batteries may result if the charger does not turn off.

Install surge arrestors on incoming AC power lines. Surge arrestors will help protect electrical/electronic components in the charger and the vehicle from all but direct or very close lightning strikes.

Each electric vehicle is supplied with a fully automatic battery charger as standard equipment. The AC cord to each charger is to be connected to a source capable of supplying 10 amperes minimum per charger.

The battery charger must be grounded to reduce the risk of electrical shock. The charger is equipped with an AC electric cord having an equipment-grounding conductor and a grounded type plug and is for use on a nominal 115 volt 60 Hertz circuit, unless otherwise noted on the charger. The plug must be grounded to an appropriate dedicated receptacle that is properly installed and grounded in accordance with the National Electric Code ANSI/NFPA 70, and all local codes and ordinances.

The use of an extension cord with the charger should be avoided. If an extension cord must be used, use a three conductor No. 12 AWG heavy duty with a ground conductor in good electrical condition. Keep it as short as possible (no more than twelve (12) feet). Locate all cords so that they will not be stepped on, tripped over, or otherwise subject to damage or stress.

Ventilation fans should be located at the highest point in the room, and must be capable of changing the total volume of air in the room five (5) times per hour. Consult a local HVAC engineer.

Correct charging methods extend battery life and vehicle range between charges.

Charge brand new EV batteries completely before they are used for the first time. Charging time will vary based on conditions noted below but will probably be at least 12 hours. New batteries need up to four hours more charging time than "mature" batteries.

Schedule enough charging time, if possible, so that the charger shuts off automatically. Charging time is affected by age of battery, condition of battery, state of discharge, temperature of electrolyte, AC line voltage level, and other variables.

Limit the use of brand new batteries between charging for the first 15-20 cycles. New batteries have less capacity than batteries which have been broken in. New golf car batteries should be limited to 18 holes between charges. New industrial vehicle batteries should not be discharged more than 20-30% (37.38-37.08 volts) before recharging. Following this practice will prevent premature battery failure.

b. Prolonging Battery Life

Whenever possible, for longest battery life, recharge EV batteries as soon as they become 20% discharged (1.1233 SG/37.38 volts). Never allow EV batteries to fall below 80% discharged (1.148 SG/35.94 volts). Deep discharging significantly reduces battery life.

Batteries in storage self-discharge and should be recharged whenever the specific gravity falls below 1.240. Refer to section 6.2 for proper battery storage.

Battery state-of-charge can be determined by using a hydrometer, or by connecting the charger and observing the charging rate. If the charger ammeter needle jumps smartly to 20-25 amps and then tapers below 14 amps within 15 minutes, the battery is fully charged.

If performance service per charge is affected by the charger electrical supply, check facility for proper wire size, and that the circuit breaker is adequate for charging while giving protection from overload. Check charger instructions, local codes, and your Columbia ParCar Dealer for full details.

5.3.2 Electric Vehicle Recommended Maintenance Procedures

The following maintenance procedures are recommended when servicing your Columbia ParCar electrical vehicle. Refer to section 5.3.4 for frequency of service. Perform only those maintenance instructions described in this manual. If major repairs are ever needed, contact your local Columbia ParCar Dealer for assistance. Your Columbia ParCar Dealer has the technical experience, training and original Columbia ParCar parts for your vehicle. Always use original Columbia ParCar parts when servicing your vehicle.



WARNING

Always turn vehicle to "OFF", remove key, block tires, and disconnect the negative battery cable before performing any vehicle service to avoid accidental start-up of vehicle and possible personal injury.

Always wear eye protection when servicing the vehicle.

Use only insulated tools when working around batteries or electrical connections. Remove watches and rings to avoid electric shock.

The following maintenance procedures are recommended when servicing your Columbia ParCar Electric Vehicle.

a. Battery Charging

Batteries may be recharged if vehicle has been driven 15 minutes or more since the previous charge. Before charging, be sure keyswitch is off, key is removed from the switch, and that the park brake is set. Refer to section 5.3.1.a for correct charging procedure.

Check electrolyte level. If it is low, add sufficient distilled or low-mineral-content water to cover plates before charging (refer to section 5.3.2.b). Do not fill to the marker until the battery is charged. Electrolyte expands during charging and could overflow if filled to the marker before charging.



DANGER

When adding water or acid to battery, always wear eye and hand protection.

Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing.

Antidote:

External- Flush with water for 15 minutes and get immediate medical attention.

Internal- Drink large quantities of milk or water followed by milk of magnesia, vegetable oil or beaten eggs. Call doctor immediately.

Eyes- Flush with water for 15 minutes and get immediate medical attention.

b. Battery Watering

Correct watering procedures extend battery life.

Check the electrolyte level on brand new batteries before putting them into service, and at least monthly on batteries in service. Water use increases as batteries age.

Never allow the electrolyte level to fall below the top of the plates. If the plates are exposed, add only enough distilled water to cover the plates before charging.

Do not overfill batteries. Electrolyte expands and can overflow during charging. Water added to replace the spillage dilutes the electrolyte and reduces its specific gravity. Cells with lower specific gravity have lower charging capacity. Make sure the electrolyte covers the plates before charging and fill cells to the markers only after batteries are charged.

Use only distilled water. Electric vehicle batteries may use up to 16 quarts of water during their useful lives and non-distilled water may contain harmful minerals that will have a cumulative adverse effect on battery performance.

c. Vehicle Cleaning

(1) Battery Cleaning

Acid-soaked dirt on the battery tops causes current leakage, reduced battery efficiency and higher self-discharge during storage.

Hose wash battery tops periodically with clean, low-pressure water to keep them free of acid spillage, dirt, grass cuttings and other debris. Make sure vent caps are secure before washing. **DO NOT** hose wash electronic controllers, switches, solenoids, and other electrical control devices.

Wash the tops with a baking soda mixture (1/2 cup per quart of water) and a stiff bristle brush if a low-pressure hose does not remove the dirt. Rinse with clean water. Take care to ensure that the baking soda mixture does not enter the vent opening in the battery caps.

Make sure that the battery tops are clean and dry before putting them into storage.

(2) Wash underside of vehicle to remove all dirt and debris. **DO NOT** direct high pressure water at the controller, speed switches, or tops of the batteries. Dry the controller and top surfaces of the batteries immediately after washing.

(3) Wash body and seats with a mild detergent only. **DO NOT** use abrasives (bodies are painted).

d. Tires

18 x 8.5 x 8 tires: Check pressure and inflate to 18 psi (1.2 atm)

5.70 x 8 tires: Check pressure and inflate to 50 psi (3.4 atm)

e. Lubrication

1. Oil all Body Hinges.

2. Grease Vehicle Chassis

Columbia ParCar vehicles have nine (9) grease fittings: three on each side of front suspension, and one on the brake pedal pivot which should be greased with high-quality chassis grease. Remove the weight from the front suspension before lubricating to ensure proper grease distribution to suspension components.

3. Differential Oil

Check differential oil level and fill to filler opening with Light Weight Gear Lubricant SAE #30 oil.

5.3.3 Electric Vehicle General Specifications

Motor Type: DC reversible, with NEMA Class H Insulation
Rating: 3.2 HP @ 2800 RPM Continuous duty
(@ 36 volt)
8.8 HP @ 1500 RPM intermittent duty
(@ 36 volt)

Control Systems:

Solid-state infinitely variable speed control system as standard equipment.

Batteries:

Type: 6 Volt electric vehicle (EV) lead storage battery
Rating: 105 minutes (75 amp discharge at 80° F to 5.25 volts)
Quantity: 6 per vehicle
Charge Rate: Maximum: 30 amperes with automatic charger reduction to low rate.
(total 6 batteries in series)

Power Transmission:

Direct drive motor to helical gear rear axle with a drive ratio of 12.44:1. Optional ratios of 14.76:1 or 19.19:1 could apply.

Brakes:

Models: P4E, FE, C6E, 911E, EU4, EUXB, ED4 and PowerMaster versions of these models

Mechanically operated auto-adjust drum brakes on rear wheels. Pedal actuated parking brake with automatic release controlled by accelerator is standard. Hand actuated parking brake is optional.

Models EU2400, EU2400XB, C10E (Tram) and PowerMaster version of these models

Hydraulically operated drum brakes on rear wheels. Hand actuated parking brake is standard.

Tires:

High flotation 18 x 8.5 x 8 tires, inflate to 18 psi (1.2 atm).
High speed 5.70 x 8 load range B tires, inflate to 50 psi (3.4 atm).

5.3.4 Service and Frequency Summary - Electric Powered Vehicles

Service Method/Owners Manual Reference

Service Interval Service Description

Before each use Steering and linkages
 Check: Brake operation
 Park brake latches and releases properly
 All warning labels in place
 Tires for wear and damage
 Accelerator linkage for free movement and return
 Reverse warning buzzer for proper operation
 Charger plug and receptacle for damage and snug fit
 Charge batteries

- Test Drive
- Test Drive - 5.1
- Test Drive - 5.1
- Visual
- Visual - 5.3.2.d
- Test Drive
- Test Drive
- 5.3.1.a
- 5.3.1.a

Weekly Check: Speed of vehicle
 Clean battery terminals and wash off battery case
 Battery electrolyte level
 Wash engine compartment and underside of vehicle
 Electrical wires and ground wires for tightness or damage
 For loose hardware and tighten as required

- Test Drive
- 5.3.2.c
- 5.3.2.b
- 5.3.2.c
- Manual
- Manual

Monthly Check: Brake pedal and park brake for operation
 Brake cables for damage
 Tire pressure
 Oil leakage from differential

- Test Drive - 5.1
- Visual
- 5.3.2.d
- Visual

Quarterly Check: Lubricate chassis

5.3.2.e

Semi-Annual, every 100 golf rounds or 50 hours Clean and adjust brakes
 Front wheel alignment and camber.
 Test batteries
 Differential lubricant level

- 5.1
- Visual
- 5.3.1.b
- 5.3.2.e

Annual, every 200 golf rounds or 100 hours of operation Check: Motor brushes and commutator
 Accelerator micro switch adjustment
 Rear axle nut torque, minimum 65 to 75 ft. lb. (88 to 101.5 N.m.)

-
- Visual
-

• It is recommended that these items be serviced by a Columbia ParCar Dealer. This manual does not contain information regarding this procedure.



DANGER

IF ANY PROBLEMS ARE FOUND, DO NOT OPERATE VEHICLE UNTIL REPAIRS ARE MADE. Failure to make necessary repairs could result in fire, severe personal injury, property damage, or death. Consult your local Columbia ParCar Dealer for professional service.

5.3.5 Electric Vehicle Capacities and Dimensions

	P4EXP Plus/ P4E-PM	FEXP Plus/ FE-PM	C6E/ C6E-PM	C10E/ C10E-PM	911E Ambulance
Maximum Number of Occupants	2	4	4	10	3
Rated Capacity, lbs. (kg)	750 (340)	1100 (499)	1100 (499)	2000 (907)	1100 (499)
Empty Weight, lbs. (kg) (without batteries)	988 (448)	976 (443)	1149 (521)	1192 (541)	1310 (596)
Turning Radius, ft. (m)	10.5 (3.2)	13.5 (4.1)	13.5 (4.1)	14 (4.3)	13.5 (4.1)
Ground Clearance, in. (cm)	4 (10.2)	4 (10.2)	4 (10.2)	4 (10.2)	4 (10.2)
Wheel Base, in. (cm)	64 (162.6)	89 (226.1)	89 (226.1)	89 (226.1)	89 (226.1)
Overall Length, in. (cm)	92.5 (235.0)	119 (302.3)	119 (302.3)	126 (320)	132 (335.3)
Overall Width, in. (cm)	44.25 (112.4)	44.25 (112.4)	44.25 (112.4)	67 (170.2)	44.25 (112.4)
Overall Height, in. (cm)	47.5 (120.7)	47.5 (120.7)	47.5 (120.7)	47.5 (120.7)	46 (116.8)
	EU4/ EU4-PM	EUXB/ EUXB-PM	EU2400/ EU2400-PM	EU2400XB/ EU2400XB-PM	ED4/ ED4-PM
Maximum Number of Occupants	2	2	2	2	2
Rated Capacity, lbs. (kg)	1100 (499)	1100 (499)	2400 (1305)	2400 (1305)	1100 (499)
Empty Weight, lbs. (kg) (with batteries)	1158 (526)	1230 (560)	1166 (529)	1238 (562)	1158 (526)
Turning Radius, ft. (m)	11.5 (3.5)	13.5 (4.1)	11.5 (3.5)	13.5 (4.1)	11.5 (3.5)
Ground Clearance, in. (cm)	4 (10.2)	4 (10.2)	4 (10.2)	4 (10.2)	4 (10.2)
Wheel Base, in. (cm)	74 (188.0)	89 (226.1)	74 (188.0)	89 (226.1)	74 (188.0)
Overall Length, in. (cm)	105 (266.7)	125 (317.5)	105 (266.7)	125 (317.5)	105 (266.7)
Overall Width, in. (cm)	44.25 (112.4)	44.25 (112.4)	44.25 (112.4)	44.25 (112.4)	44.25 (112.4)
Overall Height, in. (cm)	47.5 (120.7)	47.5 (120.7)	47.5 (120.7)	47.5 (120.7)	47.5 (120.7)

6.0 VEHICLE STORAGE



WARNING

- TURN KEY SWITCH "OFF" AND REMOVE KEY DURING STORAGE. This is to prevent unintentional starting of the vehicle.
- Always wear eye protection when servicing the vehicle.
- Use only insulated tools when working around batteries or electrical connections. Remove watches and rings to avoid electrical shock.

6.1 Gasoline Vehicles



DANGER

- Gasoline is extremely flammable and highly explosive under certain conditions. Do not fill fuel tank while engine is running. Do not smoke or allow open flames or sparks near vehicle when refueling. Store vehicle in well ventilated area away from heat.
- Do not operate gasoline vehicle in an enclosed area. Gasoline engines produce carbon monoxide, which is an odorless, deadly gas.
- Never attempt to drain gasoline when the engine is hot or while it is running. Be sure to clean up any spilled gasoline before operating the vehicle.
- Store gasoline in an approved gasoline container only. Store in a well ventilated area away from sparks, open flames, heaters, or heat sources.
- Keep gasoline out of the reach of children.
- Do not siphon gasoline from the vehicle.



WARNING

- DO NOT ATTEMPT TO CHARGE A BATTERY IF IT IS FROZEN OR IF THE CASE IS BULGED. Discard battery. Frozen batteries can explode.



CAUTION

- BATTERIES IN A LOW STATE OF CHARGE WILL FREEZE AT LOW TEMPERATURES.

To prepare your vehicle for extended off season storage:

1. Store vehicle in a cool, dry place. This will prevent self discharge of the battery. If the battery appears to be weak, have it charged using an automotive type 12 volt battery charger rated 10 amps or less.
2. Drain carburetor and seal the fuel tank.
 - (1) Remove drive belt.
 - (2) Disconnect fuel line from the gas tank side of the fuel pump.
 - (3) Run the engine until fuel remaining in the carburetor and fuel lines is consumed and the engine stalls.
 - (4) Reconnect fuel line to fuel pump.
3. To protect the engine, remove the spark plug and pour 1/2 ounce of SAE 10 weight oil into the engine through the sparkplug hole. Rotate the engine's crank shaft several times and then re-install the spark plug.
4. Add a good quality fuel stabilizer to the remaining fuel in fuel tank per the manufacturer's recommendation on the container. We use Briggs & Stratton "Fresh Start™" gas additive in gasoline powered Columbia ParCar vehicles and strongly recommend its use.

Fresh Start™:

 - Promotes quick starting
 - Keeps carburetor and fuel systems clean
 - Reduces gum and varnish build-up
 - Improves engine performance
 - Stabilizes gasoline up to 24 months
5. Maintain tire pressure at 20 psi during storage for 18 x 8.5 x 8 tires and at 50 psi for 5.70 x 8 tires.
6. Grease front suspension and continue quarterly lubrication during storage period. Refer to section 5.2.6.
7. Clean body, seats, engine compartment, and vehicle underside.
8. Do not engage park brake. Block tires to prevent movement.



WARNING

Turn key to "OFF" and remove key when storing your Columbia Par Car vehicle.

To Return the stored vehicle to service:

1. Restore fuel system to operation.
 - (a) Crank the engine until fuel is pumped into the carburetor and fuel lines and the engine starts. When running the engine for the first time after storage, it may smoke excessively due to the oil added to the engine.
 - (b) Reinstall drive belt.
2. Readjust tire pressure.
3. Perform initial periodic maintenance per summary section 5.2.6.

6.2 Electric Vehicles



WARNING

- TURN KEY SWITCH "OFF" AND REMOVE KEY DURING STORAGE. This is to prevent unintentional starting of the vehicle
- DO NOT ATTEMPT TO CHARGE FROZEN BATTERIES OR BATTERIES WITH BULGED CASES. Discard battery. Frozen batteries can explode.



CAUTION

- BATTERIES IN A LOW STATE OF CHARGE WILL FREEZE AT LOW TEMPERATURES.
- IF BATTERY WIRE TERMINALS ARE DAMAGED OR CORRODED, THEY SHOULD BE REPLACED OR CLEANED AS NECESSARY. Failure to do so may cause them to overheat during operation.

To prepare your vehicle for extended off season storage:

Electric vehicles stored over six to eight weeks must be protected to maintain battery life. Several guidelines should be observed when storing your Columbia ParCar electric vehicle. These are summarized below:

1. Fully charge batteries. With electrolyte up in all cells, store batteries in as cold a place as possible. If stored above 50 degrees F (10° C), check state of charge every 8 to 10 weeks and charge as necessary to maintain 1.250 to 1.270 specific gravity. Use the chart below to determine freezing point of battery and maximum recommended storage temperature. Refer to section 5.3.1.a for charging procedure.

Specific Gravity	1.260		1.230		1.200		1.117		1.110	
Freezing Point of Electrolyte	F	C	F	C	F	C	F	C	F	C
	-70	-57	-39	-39	-16	-26	-2	-19	+17	-8

2. Wash off any corrosion around the terminals with a solution of baking soda and water. (Do not allow this solution to enter the batteries).
3. Store vehicle in a cool, dry place to prevent battery discharge.
4. Maintain tire pressure at 20 psi during storage for 18 x 8.5 x 8 tires and at 50 psi for 5.70 x 8 tires.
5. Grease front suspension and continue quarterly lubrication during storage period. Refer to section 5.3.4.
6. Clean vehicle body, seats, battery compartment, and vehicle underside.
7. Do not engage park brake. Block tires to prevent movement.
8. Periodically (every 6-8 weeks) charge battery during storage to prevent damage to battery.

To Return the Stored Vehicle to Service:

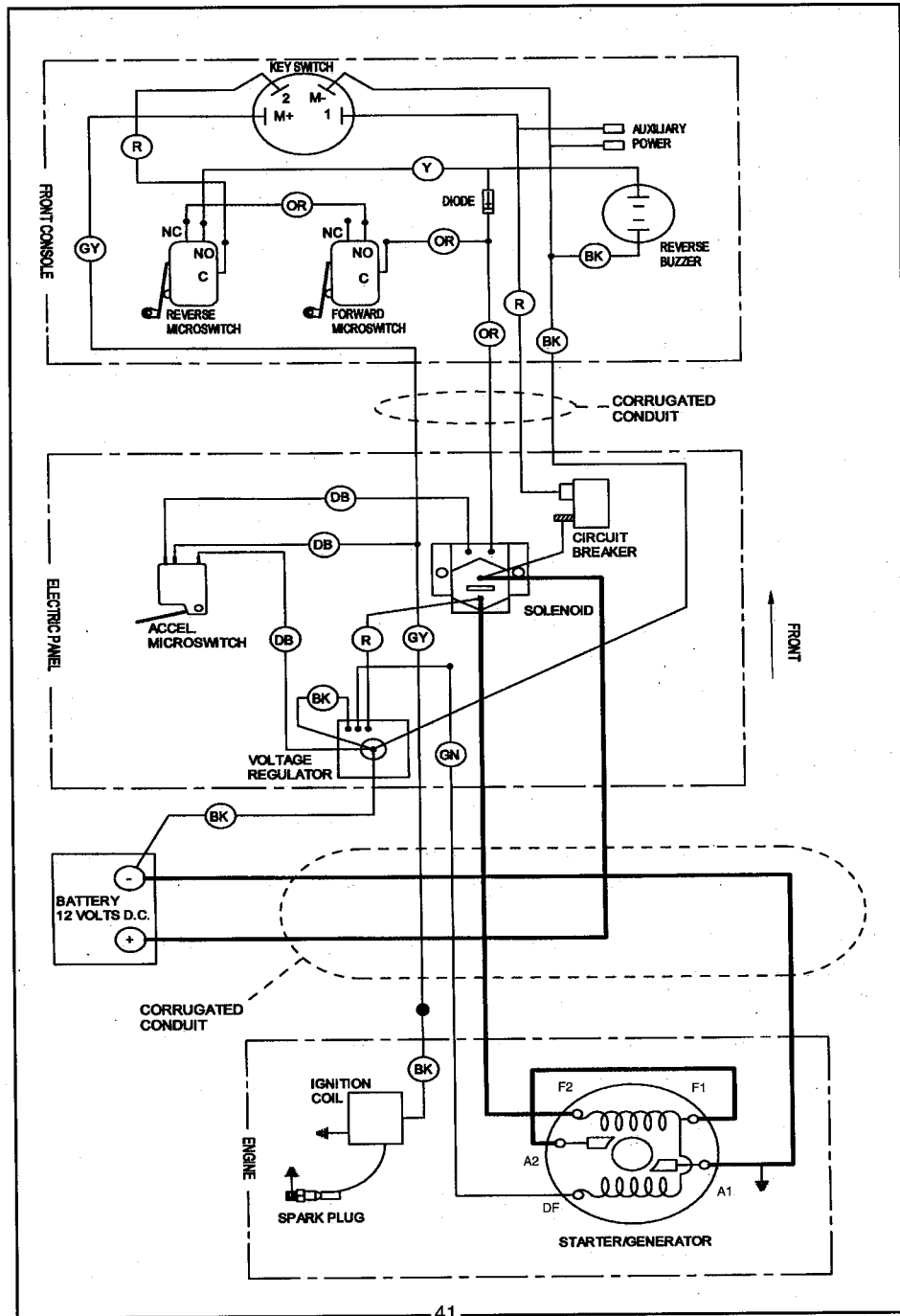
1. Fully charge batteries.
2. Readjust tire pressure.
3. Perform initial periodic maintenance per summary 5.3.4.

7.0 Basic Wire Diagrams

(See pages #41 through #44)

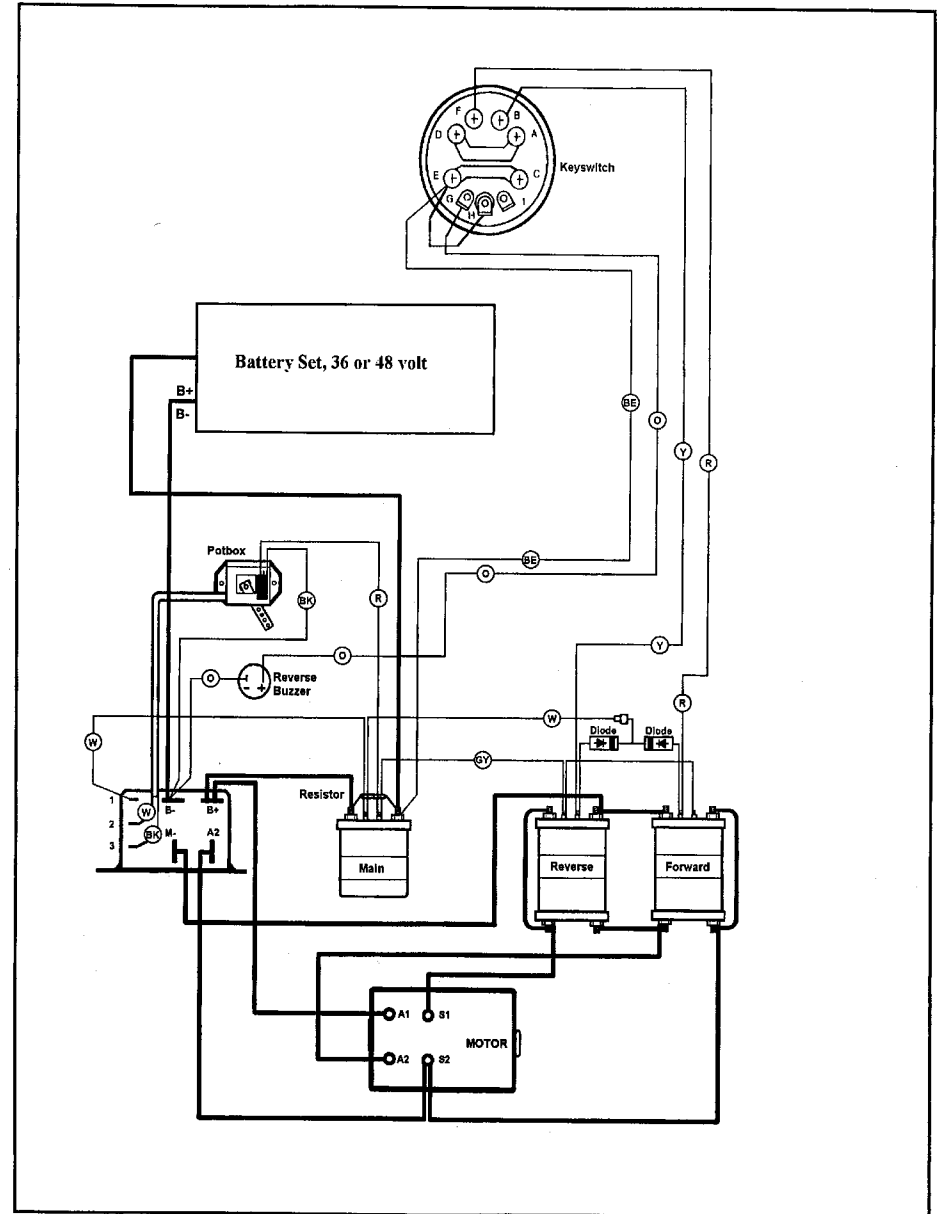
GAS VEHICLES

All models, gas powered vehicles



ELECTRICAL VEHICLES

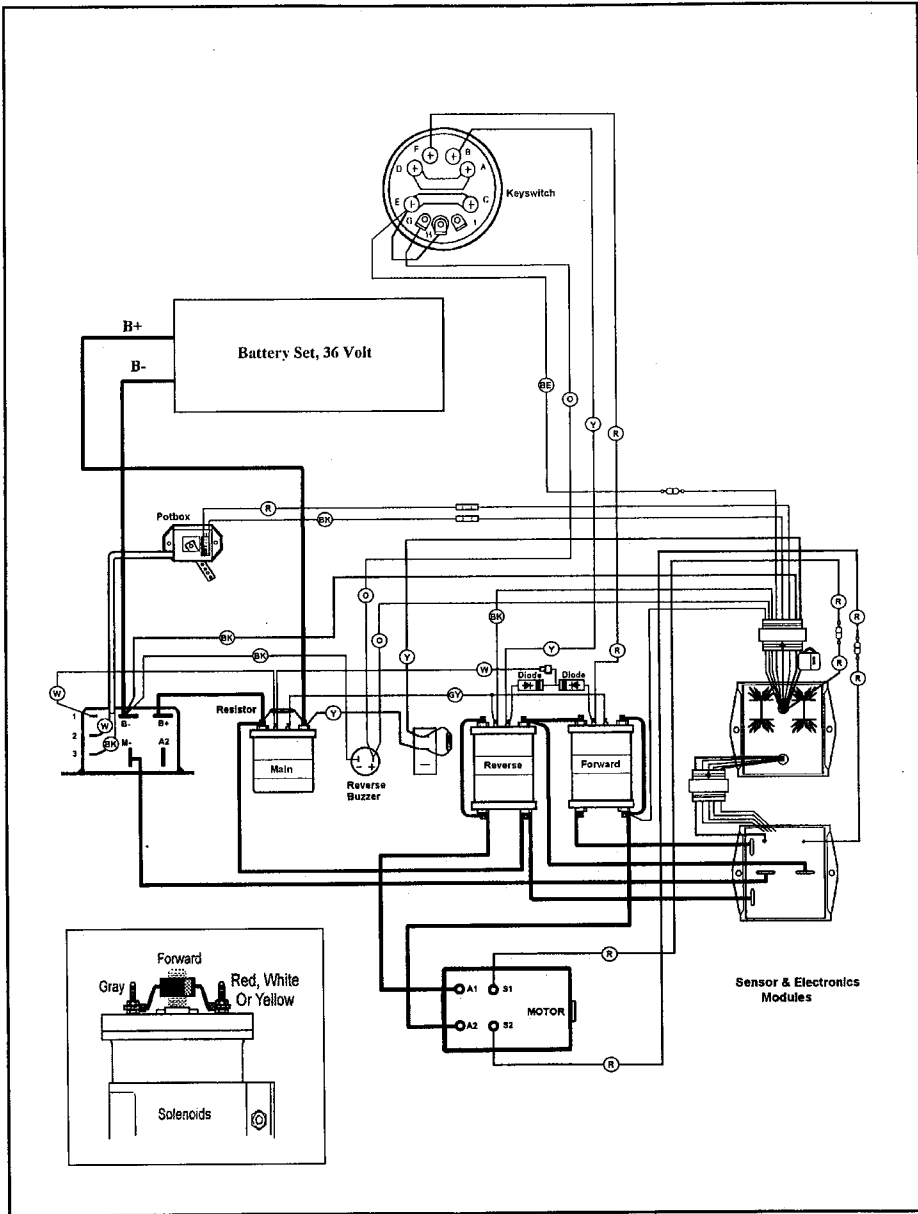
XP Plus - Solid State Infinitely Variable Speed



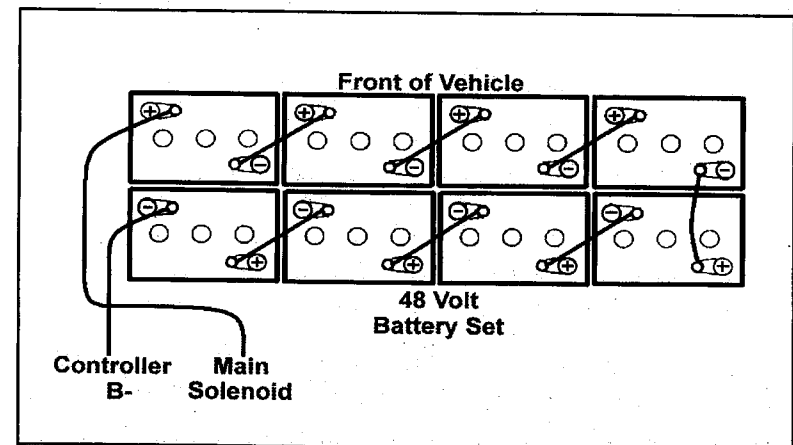
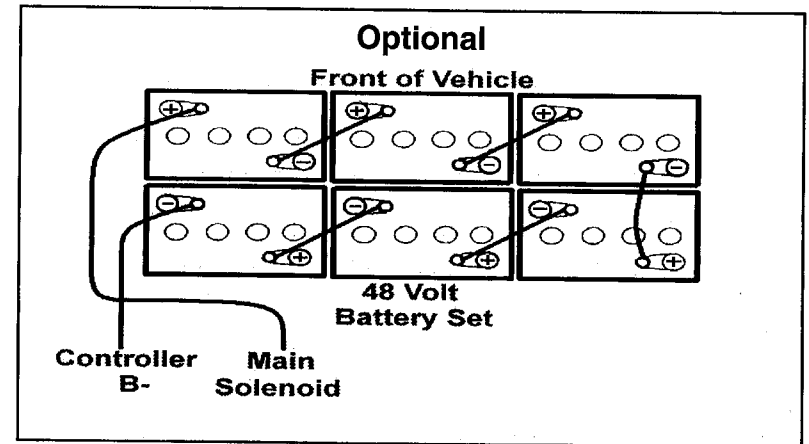
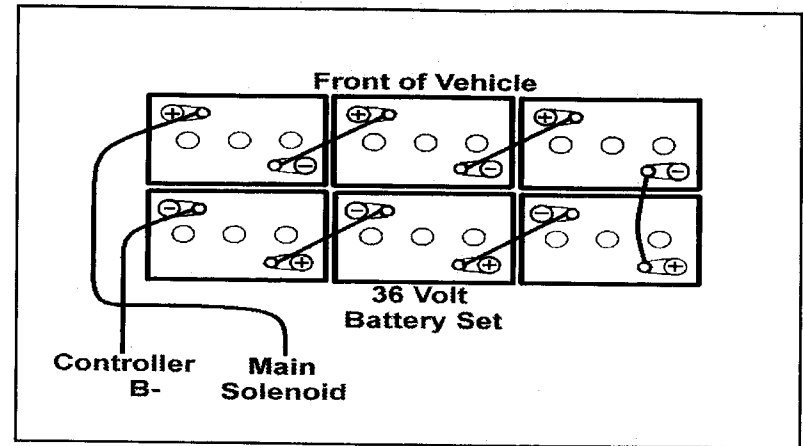
Note: Built in charger, or charge receptacle, wire directly to controller B- and to main solenoid B+ terminals.

ELECTRICAL VEHICLES

Power Master System - Solid State Infinitely Variable System



Note: Built in charger, or charge receptacle, wire directly to controller B- and to main solenoid B+ terminals.



NOTES/SERVICE

NOTES/SERVICE