



CHAMPION

BUS, INC.

Thor Industries Commercial Bus Division

MAINTENANCE MANUAL

CHALLENGER



For Parts & Service call or Email:

Phone: (800) 331-5761 ext. 562

www.championbus.com



CHAMPION BUS, INC.

Thor Industries Commercial Bus Division

Congratulations on your new Champion Bus, Inc. bus. If this is your first, let me extend a warm welcome to the Champion Bus family. If you are one of the many Americans and Canadians for whom Champion Bus ownership has become a tradition, we believe that your new Champion Bus will surpass your high expectations for a motor coach. It's no exaggeration to say that your new Champion Bus represents major improvements in design and construction since the company began making buses.

Please take a few minutes to acquaint yourself with your new coach. In this manual, along with the chassis, and other O.E.Ms., you will learn a great deal about your new vehicle and any options it may have.

If you have additional questions, don't hesitate to contact your National Bus Sales Dealer or the Service Department on the following page.

Please count on us to deliver the unparalleled support you should expect as a Champion Bus, Inc. bus owner.

Sincerely yours,

John Resnik
President, Champion Bus, Inc.



**CHAMPION
BUS, INC.**

Thor Industries Commercial Bus Division

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About this manual...

This Maintenance Manual identifies service related issues for your Champion Bus Challenger. These issues are the most common general maintenance issues. Information in this manual is listed in sections. These sections include; Chassis, Interior, Seats, Doors, Windows, and More.

Use the Bookmark Tab to navigate through the manual or you can use the "Find" command to search for a particular installation or part.

Service Instructions...

All inquiries must include: Customer, the Unit's Number and Serial Number, Part Number and description of problem. Address all correspondence to the following addresses of:

Mail: Champion Bus, Inc.
 331 Graham Road
 Imlay city MI 48444

Phone: 800-776-1943 ext. 562

Fax: 810-724-6478

Note:

**This manual covers general maintenance on the modified portion of the bus. The chassis section is generic and specific service inquiries are to be directed to the original manufacturer of the chassis.

*****Specifications, descriptions and illustrations in this manual is as accurate as known at the time of publication.*****



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SECTION 1

General Information

General Coach America, Inc. Serial Number

The GCA Serial Number is different from the Vehicle Identification Number (VIN). The GCA Serial Number is located on a plate in the engine compartment. It is used by the manufacturer to identify the bus and its options. When contacting the dealer for service or for a warranty claim, be sure to provide the serial number for identification. Refer to Fig. 2 for an example of a serial number.



Fig. 1-1 Serial Number Plate

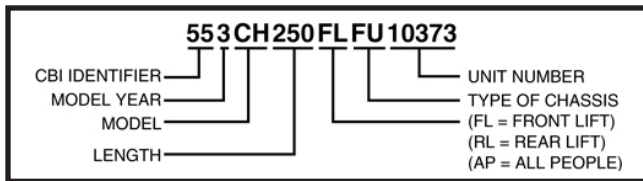


Fig. 1-2 Example of GCA Serial Number

CAB AREA

The driver operates the bus from the cab area. To control the many electrical systems, wiring harnesses are routed from the power distribution center (as shown in Fig. 3), behind the cab's interior trim panels to other areas throughout the bus.

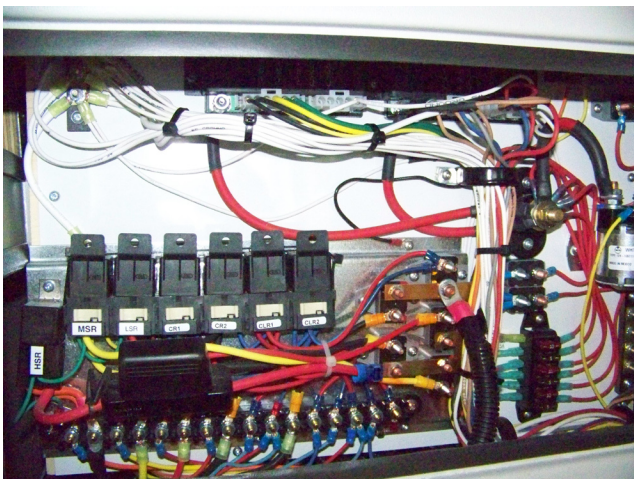


Fig. 1-3 Power Distribution Center

CAUTION

WIRING HARNESS ARE LOCATED BEHIND THE CAB'S INTERIOR TRIM PANELS...NEVER PUNCTURE OR ATTACH TO TRIM PANELS WITHOUT FIRST CONSULTING YOUR DEALER. SEVERE DAMAGE TO THE BUS'S ELECTRICAL SYSTEM MAY RESULT.

SECTION 1

General Information

VEHICLE'S DASH PANEL

Details on Vehicle Dashboard instrumentation, steering, or other chassis controls are covered in the Ford Owner's manual included with your bus. Please read the manual to become familiar with the Vehicle's Dashboard before operating the bus.



Fig. 1-4 Dash Panel

CONTROL CONSOLE

The Control Console (Fig. 5) allows the driver to control some of the electrical components of the bus. It also houses warning lights and buzzers that let the driver know if something is ajar, etc. The Control Console is mounted to the dash board, within easy reach and clear view of the driver. Controls and displays vary, depending on how the bus is equipped, but all controls and switches are clearly labelled for easy reference.

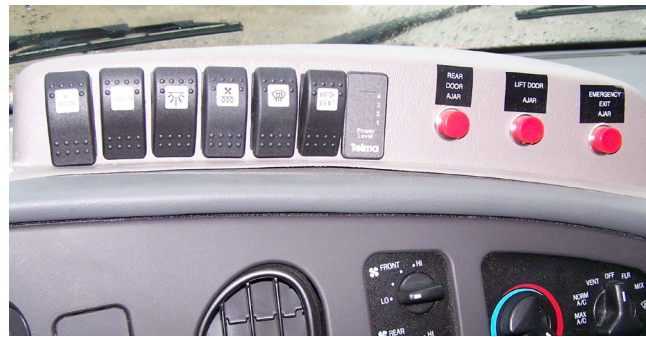


Fig. 1-5 Dash Mounted Control Console

CAB AREA HEATING & COOLING

Cab Area Heating and Cooling Controls are located on the dashboard, within easy reach of the driver. Operational and maintenance information on particular system can be found in the chassis owner's manual.

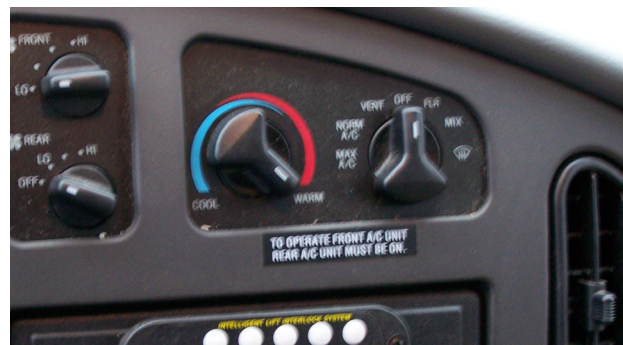


Fig. 1-6 Cab Heating & Cooling Controls

SECTION 1

General Information

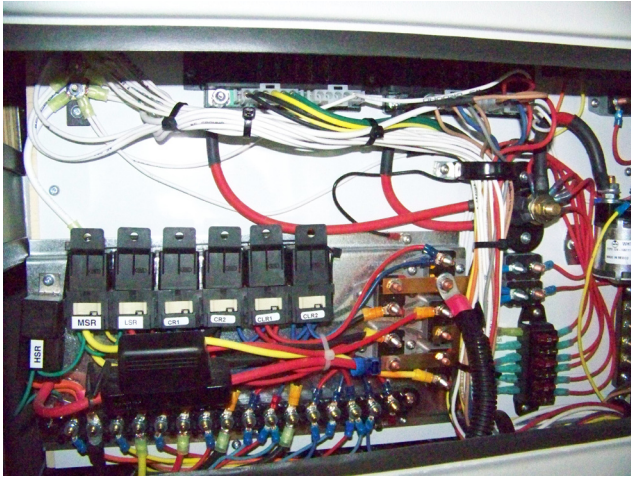


Fig. 1-7 Power Distribution Center

POWER DISTRIBUTION CENTER

The Power Distribution Center (Fuse Panel) provides power to different electrical systems within the bus. They are located throughout the bus. These places are: Within the Dash, inside the Underfloor Luggage, Battery Box and the “Pro Heat Compartment”.

⚠ CAUTION

ELECTRICAL POWER IS ALWAYS “LIVE” IN THE POWER DISTRIBUTION CENTER. USE CAUTION WHEN PERFORMING REPAIRS OR WHEN THE ACCESS DOOR IS “OPEN”. NEVER OPERATE THE BUS WITH THE ACCESS DOOR “OPEN”, A SHORT CIRCUIT TO THE ELECTRICAL SYSTEM COULD OCCUR

IN CASE OF AN EMERGENCY

Hazard Warning Lights

Activate the Hazard Warning Lights. Refer to the GCA/ABC Operator’s Manual for instructions.

⚠ CAUTION

DO NOT tow unbraked vehicles of the combined weight of both vehicles is more than the sum of the gross axle weight ratings (GAWRs) of the towing vehicle. Otherwise brake capacity of the towing vehicle will be compromised, which could result in personal injury or death.

Towing

When it is necessary to tow the vehicle, make sure the following instructions are used to prevent damage to the vehicle. Front Tow Hookup

SECTION 1

General Information

FRONT TOW HOOKUP

1. Disconnect battery ground cable.
2. If vehicle is to be lifted and towed, remove drive axle shaft.

CAUTION

Failure to remove the drive axle shaft when towing the vehicle with the rear wheels on the ground could result in damage to the transmission and other components.

3. Attach to towing device. Due to the many variables that exist in towing, positioning the lifting and towing devices is the sole responsibility of the towing-vehicle operator, who must be familiar with the towing industry safety standards.
4. Lift the bus and secure the safety towing chains. If additional clearance is needed, remove the front wheels.

CAUTION

Before releasing the parking brake, make sure the connection to the towing vehicle is secured, or chock the disabled vehicle's tires. Failure to do so could result in hazardous conditions because the vehicle could suddenly roll and injury could occur.

5. Connect clearance, tail, and signal lights to the towing vehicle's wire harness. Connect any special towing lights required by local regulations.
6. Release the parking brake.

Rear Towing Hookup

1. Place the front tires straight facing forward and secure the steering wheel into this position.
2. Disconnect the battery ground cable.
3. Attach to towing device. Due to the many variables that exist in towing, positioning the lifting and towing devices is the sole responsibility of the towing-vehicle operator, who must be familiar with the towing industry safety standards.
4. Lift the vehicle and secure the safety towing chains, if additional clearance is needed, remove the bumper extension, if equipped.
5. Connect clearance, tail, and signal lights to the towing vehicle's wire harness. Connect any special towing lights required by local regulations.

SECTION 1

General Information

⚠ CAUTION

Vehicle batteries produce hydrogen gas and can create sparks, possibly leading to an explosion. **DO NOT** allow the vehicles to touch each other and keep sparks, flames, cigarettes, etc. away from the batteries. **DO NOT** lean over the batteries when making connections and keep all other persons away from the batteries, otherwise severe personal injury could result from explosion and or acid burns.

⚠ CAUTION

Make sure both starting systems have the same voltage outputs and avoid making sparks. Otherwise the vehicle charging systems could be severely damaged. Also **DO NOT** attempt to charge isolated, deep-cycled batteries with jumper cables; follow the manufacturer's instructions when charging deep cycle batteries.

Emergency Starting with Jumper Cables

When using jumper cables, use the following instructions:

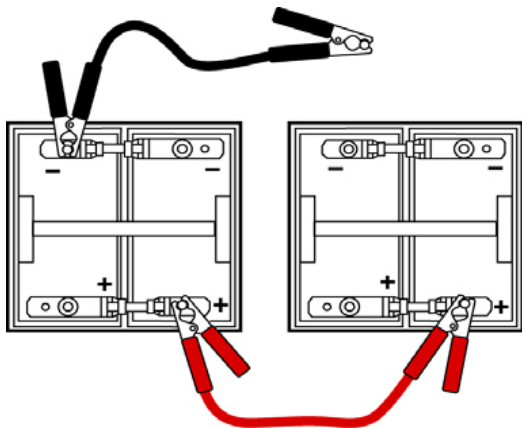


Fig. 1-8 Battery Cable Connection

1. Apply vehicle's parking brake and turn "OFF" any exterior or interior lights that may be "ON" and any other electrical loads.
2. Connect the (+) positive cable end of the booster battery to the (+) positive terminal of the discharged battery.
3. Connect the (-) negative cable end of the booster battery to the (-) negative terminal end (ground) at least 12 inches (300mm) away from the discharged batteries. The vehicle frame usually provides a good ground. **DO NOT** connect the cable to or near the discharged batteries.
4. Start engine from the booster batteries and let engine run a few minutes to charge the discharged batteries.
5. Shut "OFF" the engine, then attempt to start engine. **DO NOT** operate the starter longer than 30 seconds and wait at least two (2) minutes between starting attempts to allow the starter to cool.
6. When the engine starts. Let it idle a few minutes.

⚠ CAUTION

Perform the next tasks exactly as instructed and **DO NOT** allow the clamp of one cable to touch the clamp of the other cable, otherwise a spark could occur near a battery, possibly resulting in severe personal injury from explosion and acid burns.

SECTION 1

General Information

Emergency Starting with Jumper Cables (cont)

7. Disconnect ground (-) negative jumper cable from frame or other non-battery location, then disconnect other end of (-) negative cable from booster battery.
8. Disconnect (+) positive jumper cable end from vehicle's newly charged battery first; then disconnect other cable end from booster battery.

Reflective Triangle Warning Kit

 **CAUTION**

BEFORE LEAVING DISABLED VEHICLE ALWAYS ACTIVATE THE VEHICLE'S EMERGENCY FLASHERS

Emergency Reflective Triangle Warning Kit

On a straight highway Two (2) Lane:

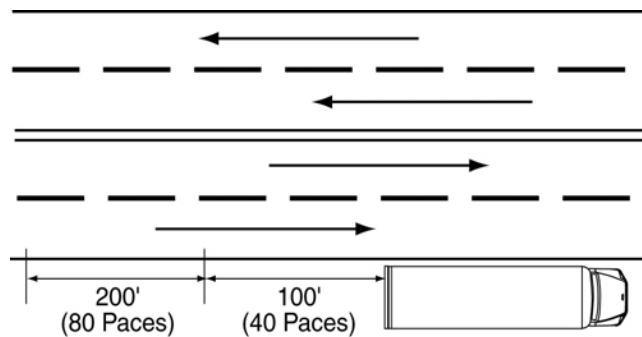
1. On side of road, place one (1) Reflective Triangle 100 ft. in front of disabled vehicle (approx. 40 paces).
2. Then place another Reflective Triangle 100 ft. from rear of disabled vehicle (approx. 40 paces).

On a divided highway:

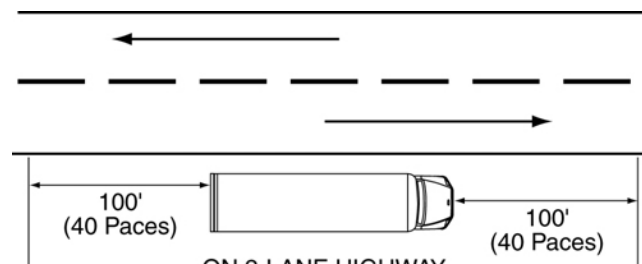
1. Place two (2) Reflective Triangles on side of road one at 100 ft. and the other at 200 ft. from rear of disabled vehicle. (approx. 40 paces & 80 paces)

To assemble Triangle:

1. Raise two (2) arms of triangle and snap pin into slot.
2. Turn base 90° to it's "Stop" position.



ON DIVIDED HIGHWAY
PLACE REFLECTIVE TRIANGLES
100' & 200' REAR OF DISABLED VEHICLE
Divided Highway



ON 2-LANE HIGHWAY
PLACE REFLECTIVE TRIANGLES
100' IN FRONT & REAR OF DISABLED VEHICLE
Two-Lane Highway



Fig. 1-10 Emergency Reflective Triangle

Running Out Of Fuel

CAUTION

Fuel is highly flammable. Whenever you approach a vehicle and a smell of fuel is present, immediately shut off all engine and ignition sources. Avoid causing sparks and stay away from arcing switches and equipment. Extinguish any cigarettes, pilot lights, flames, or other sources of ignition in the area. Immediately provide extra ventilation to the area. DO NOT start the equipment or any other type of equipment until the fuel leak is corrected and the area cleared of leaked fuel. Failure to perform these actions could lead to ignition of the fuel, which could cause severe bodily harm and property damage and death.

If your vehicle runs out of fuel, stop the vehicle on a level surface away from traffic. The engine may be restarted by adding at least two (2) gallons (8 liters) of fuel to the fuel tank. If the vehicle is not level, up to six (6) gallons (22 liters) of fuel may be required. Prolonged engine cranking may be required to pump fuel from the fuel tank to the engine before the engine will start. Diesel engines have “priming” pumps. See your OEM Chassis Manual for this operation.

IMPORTANT

DO NOT crank the engine for more than 30 seconds at a time. Wait (2) two minutes after each try to allow the starter time to cool. Failure to do so could result in starter damage. If your vehicle will not start by cranking the engine, the fuel system may need to be primed. Contact your service center for fuel system priming information.

Emergency Escape Exits



Fig. 1-9 Escape Hatch

Roof Escape Hatch

To open the roof top emergency escape hatch from the inside of the vehicle, follow the steps listed below:

1. Turn the handle clockwise to the “OPEN” position.
2. Push up on the hatch to open.
To close the hatch, pull down on the hatch on turn the handle to the “Latch” position to secure.

Note:

The roof escape hatch can also be used for ventilation, simply push up at the sides of the escape hatch and it will pop up for ventilation. Pull down and it will snap shut to close.

SECTION 1

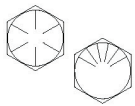
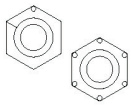
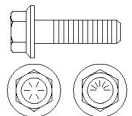
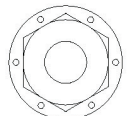
General Information

Bolt Torque Guide

Champion Bus, Inc and General Coach America, Inc uses American Standard, Grade 8 bolts.

The following is to be used as a generic guide for bolt torque measurement. Champion Bus, General Coach and any affiliates or dealers do not take responsibility for any of the information.

from Freightliner Maintenance Guide

Thread Diameter–Pitch	Grade 8 or 8.2 Bolt	Grade 8 or C Nut	Grade 8 or 8.2 Bolt	Grade G Nut
	Torque: lbf-ft (N·m)		Torque: lbf-ft (N·m)	
	 f230004	 f230005	 f230008	 f230009
1/4–20	10 (14)		—	
1/4–28	12 (16)		—	
5/16–18	22 (30)		22 (30)	
5/16–24	25 (34)		—	
3/8–16	40 (54)		40 (54)	
3/8–24	45 (61)		—	
7/16–14	65 (88)		65 (88)	
7/16–20	70 (95)		—	
1/2–13	95 (129)		95 (129)	
1/2–20	110 (149)		—	
9/16–12	140 (190)		140 (190)	
9/16–18	155 (210)		—	
5/8–11	190 (258)		190 (258)	
5/8–18	215 (292)		—	
3/4–10	340 (461)		340 (461)	
3/4–16	380 (515)		—	
7/8–9	540 (732)		—	
7/8–14	600 (813)		—	
1–8	820 (1112)		—	
1–12	900 (1220)		—	
1–14	915 (1241)		—	



Section 2 - Chassis

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SECTION 2

Chassis



GENERAL INFORMATION

Champion Bus, Inc. buses are built on a variety of chassis. This Model Bus is built on Ford E-350 or E-450 model chassis.

For more specific chassis information, all persons responsible for the operation and maintenance of the vehicle should read and understand the guidelines presented in the OEM Chassis Owner's/Maintenance Manuals that are included with your vehicle. All questions regarding chassis operation or maintenance

should be directed to your bus dealer or a local chassis dealer.

LUBRICATION

The chassis manufacturer's recommendations should be followed regarding chassis and engine lubrication schedules and specifications. Note that special requirements may exist for severe driving conditions such as heat, cold, dust, mud, or sustained high power output.

FILTERS

Filters should be changed on a regular basis, according to the manufacture's specifications, using only approved filters. Note that frequently driven buses may require more frequent filter changes to maintain proper operating systems.

FUELS

Use only high quality low sulfur diesel fuel that meets or exceeds the minimum specifications of the engine manufacturer. Failure to do so may result in damage to engine components.

FUELING THE VEHICLE

Use only fuels that meet or exceed the engine manufacturer's specifications. Fuel should be free of water and other contaminants. Avoid running the fuel tank near "Empty" as this can lead to condensation and fuel system problems.

- Clean the exterior of the fuel cap and filler spouts before removing cap.
 - Remove the fuel cap, place the fuel nozzle in the filler spout and proceed with fueling the vehicle.
 - When full, remove fuel nozzle, replace fuel cap, and turn to tighten. Remove any spilled fuel from bus body
- ** Do NOT "top off" fuel tank.****

SECTION 2

Chassis

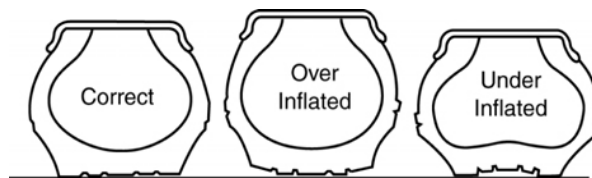
CAUTION

USE OF UNAUTHORIZED LUBRICANTS, FILTERS, FLUIDS, FUELS OR PARTS AND/OR NEGLECT OF SCHEDULED MAINTENANCE MAY VOID THE WARRANTIES FOR YOUR VEHICLE.

WHEELS & TIRES

Your bus is equipped with high-quality tires that meet the vehicle usage specifications. Tires are warranted by the tire manufacturer as described in the documents provided with your vehicle.

- Inspect tires daily for evidence of damage such as cuts, scuffs, cracked sidewalls or any signs of rubber separating from the tire. Also, inspect for abnormal wear and report any problems immediately.
- Check tire inflation pressure at least once per week while the tire is cold. If necessary, adjust the tire pressure by adding or removing air until the designated pressure range for the tire is achieved. Always use an accurate tire pressure gauge.



- Never attempt to check or adjust tire pressure while the tire is hot. Tire pressure increases with higher temperature and subsequent readings will be faulty. Under-inflation may result from hot tire pressure check.
- Note that low tire pressure reduces the load carrying capacity and may lead to the overheating of tires and/or potential tire failure. Similarly, excessive tire pressure affect vehicle handling and increases the risk of tire failure.
- Tires should be rotated on a regular basis using a recommended rotation pattern. Rotating tires should result in more uniform tread wear and may lengthen tire life. However, do not put a worn tire and a high-tread tire on the same axle. Keep tire treads matched as closely as possible.
- If abnormal wear occurs, have the steering and wheel alignment checked by qualified service technicians. Tire rotation will only temporarily disguise the problem if steering or alignment is off.
- With dual wheels, the outside tire will wear faster than the inner tire. To equalize wear, reverse the tire positions on a regular mileage schedule. If one dual wheel must be replaced, always replace both duals to keep wear equalized.
- Keep Lug Nuts tight. Loose lug nuts will quickly ruin a wheel and can result in loss of the wheel, thus creating a dangerous situation for driver and passengers. If you suspect a loose wheel, pull off the road and inspect the lug nuts immediately.
- Inspect lug nut at every chassis lubrication and inspection. If your bus is fitted with wheel covers, remove them prior to inspection. Lug nuts should always be installed clean and dry. Never lubricate lug nuts. Hubs should be clean dry, and free of rust and excess paint. Firm metal-to-metal contact is necessary to ensure that wheels remain securely fastened.

SECTION 2

Chassis

WHEELS & TIRES (cont.)

- On new dual wheels, re-torque lug nuts at 100 miles and again at 500 miles.
- Replacement tires should equal or exceed load specifications of the original equipment. Do not mix tire sizes and do not mix bias ply and radial tire construction. Dangerous vehicle handling conditions may result.
- Wheels should be replaced if bent, badly rusted, or if loose lug nuts have caused excessive wear in the hub area. Use only replacement wheels approved by the chassis manufacturer. Make sure the new wheels match the original wheel size and load carrying capacity and that they are designed for the same size and type of tires needed on your vehicle.

Tire Rotation

If tires are wearing irregularly, rotate them. If the front steering axle tires become irregularly worn, move them to the drive axle. Have the front axle alignment checked to determine the cause of irregular tire wear. In a dual assembly, if one tire wears faster than its mate, reverse the positions of the two tires.



For more information on tire specifications, refer to the Recreational Vehicle Tire and Care Guide provided with your chassis manuals. OEM Manuals override all information provided by ABC and General Coach.

CAUTION

If a flat tire occurs while driving, gradually decrease vehicle speed. Holding the steering wheel firmly, move to a safe place on the side of the road.

Changing a Flat Tire (Refer to your OEM Chassis Manual for Jacking)

1. If possible, stop the vehicle on a level surface, away from traffic.
2. Apply the parking brake and turn "OFF" the ignition.
3. Turn "ON" the emergency flashers.
4. Remove spare tire, jack, handle, and lug wrench from storage, if equipped.

SECTION 2

Chassis

5. Block the diagonally opposite the wheel being changed.

Note:

The jacking point for the front and rear wheels is directly under the axle.

6. Place the jack on a solid surface. Insert the jack handle and pump the handle to slightly raise the vehicle. **DO NOT RAISE THE WHEEL OFF THE GROUND.** Loosen the wheel lug nuts, but do not remove them.

Note:

The dual rear wheels are attached using two-element lug nuts. The larger nut retains the outer dual. The inner square stud retains the inner dual. Remove and install these nuts separately. The rear dual outer lug nut must be loosened to check and retighten the inner nut.

7. Raise the vehicle until the wheel is off the ground. Remove the lug nuts and the wheel.

8. Install the spare wheel and lug nuts. Make sure the beveled sides of the nuts face inward.

9. In a “star” pattern, tighten the nuts evenly until snug.

10. Lower the vehicle until the wheel touches the ground. Tighten the lug nuts in the same pattern 126 to 170 ft/lbs. (170 to 230 N·m)

CAUTION

Failure to tighten the wheel nuts in a star pattern can result in high brake disc runout, which will speed up the development brake roughness, shudder and vibration.

11. Finish lowering the vehicle to the ground, then remove the jack.

12. Remove the block from the opposite tire of the repaired tire, then stow the jack, handle and lug wrench.

13. After operating the vehicle for 50 to 100 miles (80 to 160 km), retighten the nuts to 126 to 170 ft/lbs. (170 to 230 N·m)

JACKING LOCATIONS

Lift vehicle at locations painted Yellow at either the front axle or rear axle. At Front Axle the Yellow painted areas are located near the wheel assemblies. The Rear Axle Yellow painted locations are near the rear wheel assemblies.

Raise the vehicle with an automotive type jack at the points painted “Yellow” by the manufacturer. Use these lifting points to avoid any vehicle damage, serious injury, when components are being removed from the vehicle.

Refer to your OEM Chassis Maintenance Manual provided with your bus for more information.



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SECTION 3

Flooring & Interior

FLOORING

General Coach America, Inc. buses are constructed of $\frac{3}{4}$ " exterior grade plywood, supported by steel cross-members. This construction provides a lightweight, durable floor that insulates passengers from road noise and the elements.

RUBBER FLOOR COVERING

The standard floor covering is transit-type and/or smooth rubber matting. Rubber flooring is durable and easy to clean. With proper care, rubber flooring covering should last the life of the bus.

- Clean rubber flooring with a damp mop. A soap/water solution will clean most spills and stains. Tough stains may require gentle scraping or use of a scrub brush.
- DO NOT clean bus floors by spraying water from a hose. Water may leak under the flooring seal and cause floors to deteriorate.
- DO NOT use petroleum-based solvents on rubber flooring. They may present a fire hazard and will damage the floor rubber.

INTERIOR WALLS & CEILING

- Interior Walls and Ceiling Panels should be cleaned every week with a mild soap/water solution. Foam type cleaners and many plastic and vinyl cleaners also work well to remove any marks or stains from walls or ceiling.
- Always follow the directions on cleaner labels and dry-off damp surfaces as soon as possible to remove excess liquid.



Fig. 5.1 - Interior Walls & Ceiling

SECTION 3

Flooring & Interior

MODESTY PANELS

Modesty Panels are provided for passengers' privacy and protection. The standard modesty panels are attached to the stanchions at the front of the passenger area and are covered with material that coordinates with the bus's interior sidewall color and/or Feature Panel pattern.

- Modesty Panels should be cleaned on a weekly basis with a mild soap/water solution. Many plastic and vinyl cleaners will work as well.
- Inspect Modesty Panels daily for secure attachment. Screws at attachment points may work themselves loose causing the panel to shake and/or fail. Loose screws should be tightened, as needed, to assure safety.

INTERIOR TRIM

The driver operates the bus from the cab area. To control its many systems, wire harnesses route from the cab area to other areas throughout the bus. The interior trim panels help to finish off the interior of the cab but also cover and protect the wiring harnesses.

- Interior trim panels should be cleaned every week or when needed. Interior Trim Panels may be cleaned with a soap/water solution or a vinyl cleaner (follow manufacturer's directions).
- Avoid soaking Interior Trim Panels with cleaning solutions as deterioration may result.



Fig. 5.2 Modesty Panels



Fig. 5.3 - Interior Trim

SECTION 3 Flooring & Interior



Fig. 5.4 - Typical Ceiling Wiring

WIRE HARNESS ROUTING

The busses Wire Harnesses are routed behind the Interior Sidewalls, Ceiling and the flooring as indicated in the photos, Most wiring can be accessed by removing the trim panels. Your local dealer can recommend the best removal procedures.

Because the gap between the interior trim panels and wiring harnesses is minimal, DO NOT puncture the panels or secure anything to the trim panels as the electrical system may be easily damaged and severe problems may result.

Some wiring harnesses and A/C lines run down along the back corners of the bus. Interior Trim Panels can be removed to access the wiring and A/C lines, if necessary.

Kick panels run along the floor to cover some wiring and other wiring harnesses are routed behind the ceiling panels. Wiring for speakers, interior lights and other systems are routed inside the overhead parcel racks.

CAUTION

BECAUSE WIRING HARNESS ARE LOCATED BEHIND THE CAB AREA INTERIOR TRIM PANELS AVOID PUNCTURING THE TRIM PANELS OR SECURING ANYTHING TO THE PANELS WITHOUT FIRST CALLING YOUR DEALER FOR ASSISTANCE. SEVERE DAMAGE TO THE BUSES SYSTEMS MAY RESULT.



Section 4 - Seats

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SECTION 4

Seats

GENERAL INFORMATION

General Coach America, Inc. offers a wide variety of high-quality standard and custom seating options. However, because of the number of seating alternatives, “standard” seating features are defined by the bus owner. Regardless of seating styles, all seating meets or exceeds federally established safety standards. Seat frames meet FMVSS #207 for crash protection and all seat coverings meet FMVSS #302 for burn resistance.

Seat coverings are available in either vinyl, fabric or vinyl/fabric combinations and numerous colors and designs. Seat cushions are made of dense, non-allergenic, air-blown urethane foam and offer a comfortable ride.

General information regarding seating options and maintenance is included in this section. Specific option details also follow in this section, as provided by the seat manufacturer.

DRIVER’S SEATING

Many driver’s and co-pilot’s seating options are available with General Coach America, Inc. buses. Driver’s seats may have a manual slide base or a two-way or six-way electric adjustable base and a fixed or swivel base. A reclining bucket seat can also be chosen as another option.

Details regarding your particular driver’s seat, is provided by the seat manufacturer, by visiting their website. Please refer to this information for operational and maintenance instructions.

PASSENGER SEATING

Passenger seating is available in bench, bucket, reclining bucket, folding, and perimeter styles. While most passenger seating is modular in design and can be removed for repair, replacement, or reconfiguration of the passenger seating area, seats are fastened securely in place for the safety and comfort of all passengers.

Details regarding passenger seating options for your bus follow this section. Please refer to this information, provide by the seat manufacturer, for operation and maintenance instructions.

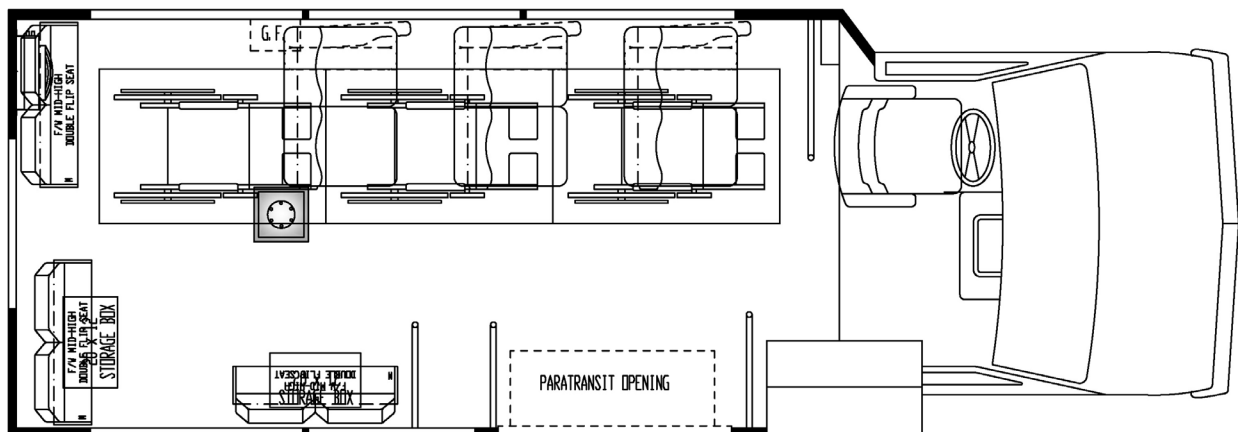


Figure 4.1 Seating Floor Plan

SECTION 4

Seats

MAINTENANCE

- Inspect the seating area daily for tears, rips, or stains. Check seats for secure attachments. Tighten any loose bolts to assure safety and prevent rattling.
- Vinyl seats should be wiped down one to two times per month with a soap and water solution of other mild cleaning agent recommended for vinyl. Use of stronger solvents on vinyl seats is not recommended as they reduce the strength of the vinyl and cause premature cracking.
- Vacuum fabric-covered seats one to two times per month to remove loose surface dirt as well as dirt that has settled to the bottom of the fabric pile. A commercial grade or heavy duty vacuum is recommended. Spot clean stains (as soon as possible) with a soap and water solution or mild cleaning agent recommended for fabric.
- Steam-clean fabric cover seats every six months to restore the fabric pile and to remove stains and odors. Spot clean stains, if necessary, before steam-cleaning.

Passenger Seating & Safety Requirements

Champion Bus, Inc. offers a wide variety of custom seating options. Regardless of your seating configuration, seating meets or exceeds federally established Safety Standards. Weight Distribution and Payload Certification. This vehicle, as manufactured, conforms to the weight distribution and payload requirements in Mid-Size Bus Manufacturers Association (MSBMA) recommended practice 001.

It is the user's responsibility not to load the vehicle above the number of designated seating positions and luggage allowance.

Configuration A:

Manufacturer: General Coach America, Inc. Imlay City, Michigan

VIN/Body Serial #: _____

Number of designated seating positions: 40*

Number of designated Wheelchair positions: 0

Note: Number of designated seating positions is calculated using 150 lb. (68 KG) per designated seating position, 20lb. (91KG) for wheelchair position, including driver. Luggage allowance is calculated using 5 lb. (11.3KG) of luggage per designated seating position if vehicle is equipped with luggage compartment and 5 lb. (2.3KG) if vehicle is equipped with an overhead shelf.

All seating exceeds all FMVSS standards. For identification of seating manufacturer, please see the manufacturer label located underneath each seat assembly.

*Number of Seating Positions May Vary depending on specific model of bus. Number is derived from Maximum amount of passengers Plus Driver.

SAFETY RESTRAINTS

FMVSS Compliance #209 specifies seat belt assembly characteristics in regards to adjustability, width, colorfastness, breaking strength, elongation and resistance to abrasion, light and microorganisms. Performance requirements to include ability of the complete assembly to withstand prescribed forces and to resist excessive stretching. OEM meets these requirements. General Coach America, Inc. does not change OEM seat belt assemblies, OEM seat belts are attached according to OEM specifications. Passenger seat belts have met the testing requirements of FMVSS #207.

WHEELCHAIR TIEDOWNS

Install wheelchair restraints in accordance with OEM manufacturer's Driver/Operator Instruction Guide included with the vehicle.

Holdsworth Fabric Care

Holdsworth have established the following care and maintenance instructions for fabrics. Considerable thought and development work has gone into the production of our fabrics to enable them to withstand the rigorous use on public transport vehicles. We felt therefore, a few hints on the care and cleaning would help you to obtain the best possible life from your fabric.

One of the main advantages of these fabrics is their construction which allows dirt to fall to the base of the pile. This presents a relatively clean surface to your passenger which is obviously very important.

Routine Cleaning.

All that is required to remove the dirt is gentle beating with the hand or the back of a brush. This will bring the dirt to the surface where it is easily removed by a vacuum cleaner or a soft brush. It is preferable to vacuum or brush in the direction of the pile which can easily be recognized by running a hand lightly over the pile. Cleaning should be carried out as often as possible. If the fabric becomes excessively dirty, then particles of grit will cause gradual wear to take place, thus reducing the life of the moquette.

Steam Cleaning.

Occasional steam cleaning will breathe new life into tired upholstery. Portable steam cleaners are readily available from hire shops to rent or buy, and we have many examples showing how a vacuum and steam clean can rejuvenate a drab interior. (The need to follow safe operating procedures when steam cleaning is vital to prevent risk of scalding.)

FABRIC MAINTENANCE

With proper care your upholstery will provide years of beautiful service. To help keep your upholstery looking new, certain precautions and cleaning instructions should be followed. By giving your upholstery a little extra attention, it will stay looking great for years!

According to the Environmental Protection Agency your upholstery serves as a magnet that collects a variety of pollutants and contaminants from various sources. Internal sources include air conditioners, heaters, tobacco smoke and food particles. Outdoor sources include pollen and spores from trees, plants and other vegetation as well as exhaust fumes from cars, fireplaces and other form of pollution.

Satisfactory results are usually achieved by cleaning with a non-water-based foam cleaner, provided that manufacturer's directions are carefully adhered to. Any product or technique should always be tested on an inconspicuous area before attempting overall cleaning.

CLEANING OF UPHOLSTERY

The seat cushion and back covering may be fabricated of different materials, consisting of both synthetic and natural fabrics. Vinyl coated fabrics cannot be machine washed (laundered).

For cleaning of the seat upholstery in view of the above limitations, the following procedure is suggested:

SECTION 4

Seats

Woven Fabrics

- Frequent and thorough vacuum cleaning.
- Occasional steam cleaning.
- To the cover (not removed) apply a thick layer of soap (non-alkaline) or approved foam type cleaner. Suds are to be scrubbed into fabric using a stiff bristle brush or a sponge.
- After scrubbing sponge the suds from the fabric with a clean sponge or cloth dampened with water. Rinse sponge or cloth frequently with clean water.
- Do not water soak fabric, as this will cause shrinkage.

Method 1

Apply a non-inflammable solvent (trichlorethylene) with a clean, white, absorbent material, treating small areas working from the outer edge towards the center of the stain. Blot frequently with a dry cloth to avoid rings.

OPEN WINDOWS AND DOORS TO ALLOW FUMES TO DISPERSE.

Method 2

Sponge the stain with a solution of household detergent and lukewarm water. **DO NOT SOAK.** Follow this by rubbing with a damp cloth, rinsing cloth between each treatment.

Warning:

DO NOT USE SOAP, WASHING POWDER, AMMONIA, SODA, BLEACH OR ANY PRODUCTS WHICH CONTAIN THEM.

Alcoholic Liquids

Sponge with water followed by Method 2

Battery Acid

Saturate with a solution of sodium bicarbonate, leave for several minutes before drying out. It is important for the above treatment to be carried out immediately to avoid serious damage to the moquette.

Beverage Stains

Use Method 1. If stain persists, try methylated spirits.

Blood Stains

Use Method 2

Burns

Scrape blackened area with a knife and treat with Method 2. Extensive burns require expert attention.

Chewing Gum

Soften with cyclohexanone and scrape off carefully with a knife.

Cosmetics

Use Method 1, followed by Method 2.

Writing Ink

Use Method 2. If brown stain remains, treat as for rust.

SECTION 4

Seats

Copying Ink

Treat with methylated spirits, blotting frequently to avoid ink spreading. Use cleaning Method 2 to complete the treatment.

Ballpen Ink

Treat as copying ink.

Marking Ink (Felt-tipped pens)

Treat with Methyl Ethyl Ketone (M.E.K.), followed by Method 2.

Oil, Grease and Paint Marks

Remove surplus substance with a knife or spoon, then treat with Method 1, followed by Method 2. Should stains reappear, repeat cleaning process.

Rust

Use Method 2, followed by a warm solution of oxalic acid. Complete treatment by sponging with water.

Tar

Soften with benzene and then treat with Method 1, followed by Method 2.

Urine

Use Method 2.

Vomit

Use Method 2.

NOTE: Prompt and correct cleaning will remove most stains. Wrong treatment will only increase the damage. In cases where there is doubt, always seek expert advice. Information is to the best of our knowledge true and accurate, but all recommendations or suggestions are made without guarantee since the conditions of use are beyond our control.

We suggest that no matter the type or size of the stain, the cleaning process should go step by step, You should start using the easy & simple to the complex solvents. In all cases, we suggest to clean and brush in the pile direction.

Trim Maintenance

Cleaning of trim parts - Aisle End Panel & Rear Shell

Minor stains may be removed from trim parts with a good quality toilet soap. More severe cleaning problems require the use of diverse cleaning agents and polishes. Most household cleaners, automotive waxes, and polishes can be adapted to this job. Solvents and spray type household cleaners containing hydrocarbons, will attack A.B.S. materials and should be used sparingly, if at all.

A cleaning solution should be applied sparingly with a clean, relatively dry cloth and wiped over the material gently. It is recommended that the cleaning be accomplished by repeated applications of the cleaner rather than one heavy application. All normal soaps and detergents may be considered safe for removing dirt and grease from A.B.S. materials.

CAUTION:

Never soak panels in cleaning solution or allow them to remain wet with solution for any length of time.

Do not use waxes which dry with a bloom as they are extremely difficult to remove after application

SECTION 4

Seats

PASSENGER SEATS ADJUSTMENTS

Passenger seat positions are non adjustable. Modifying position of seats may cause vehicle to exceed GVWR.

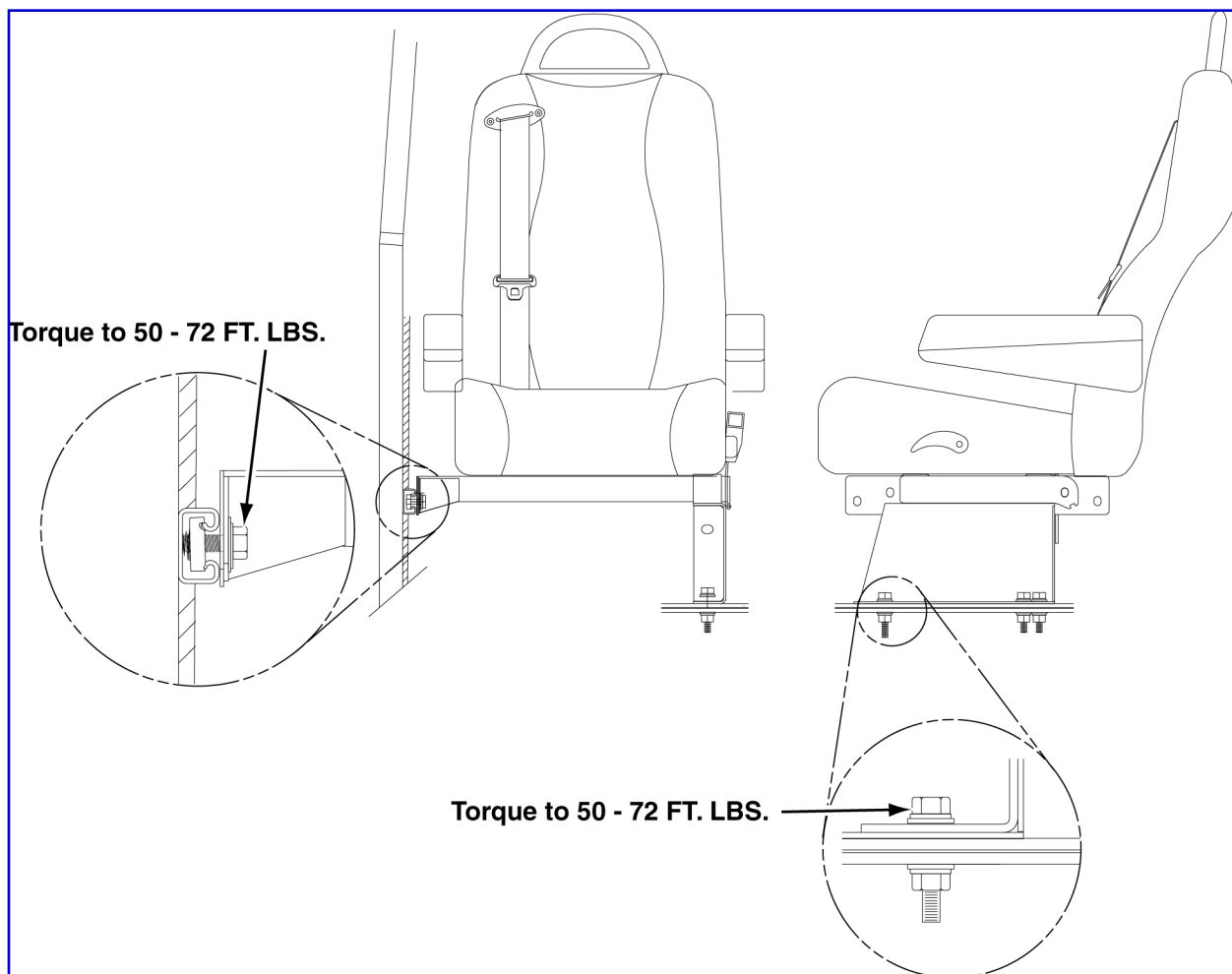


Figure 4.2 - 3pt. Mid-High Recliner Seat Shown (Others Similar)

CAUTION

MAKE SURE ALL BOLTS ARE ENGAGED AND TORQUED TO THEIR SPECIFICATIONS BEFORE ALLOWING PASSENGERS TO OCCUPY THE SEATS

CAUTION

DO NOT MODIFY THE STRUCTURE OR POSITION OF ANY SEAT. MODIFYING SEATS MAY VOID MANUFACTURERS' WARRANTIES, RAISE LIABILITY ISSUES, AND ENDANGER PASSENGERS.

SECTION 4

Seats

**The following material was supplied by
RECARO North America...**

PREVENTATIVE MAINTENANCE SCHEDULE

ERGO METRO DRIVER'S SEAT

This maintenance schedule is intended to serve as a guide for inspection and service.

This schedule is not a complete list of all-possible inspections or services required. Action should be taken immediately whenever a problem with the seat occurs.

The intervals of inspection or service that have been established should be considered maximum intervals, and shorter intervals may be necessary depending on the environment or particular situation in which the vehicle is operated.

The M3035 is not equipped with a Recaro brand seat. However, the following information has value.

ITEM	TYPE OF INSPECTION OR SERVICE	MILES KMS HOURS	6,000 11,000 1200	12,000 22,000 2400	24,000 43,000 4800	48,000 76,000 9600
Section 1	Seat Belt Assembly					
	Check Anti-Cinch on Retractor		X	X	X	X
	Check for Wear on Belt		X	X	X	X
	Check for Proper Locking of Seat Belt Latch		X	X	X	X
	Check Torque of Mounting Nuts (37 FT-lbs)				X	X
Section 2	Tracks					
	Manually Check Fore and Aft Travel of Tracks		X	X	X	X
	Visually Check for Dirty or Non-Lubricated Tracks			X	X	X
	Lubricate with Grease (Premium Moly-Lith Grease)			X	X	X
	Check Bolts for Correct Torque (16 FT-lbs.)			X		X
	Check Tracks for Proper Lock Engagement		X	X	X	X
	Check Tracks for Misalignment, Binding, or Wear			X		X
	Check Auto Actuator Switch for Proper Stroke - Option		X	X	X	X
Section 3	Control Panel					
	Check for Dirt in Air Switches			X		X
	Check Tightness of Control Panel Attachment Screws			X		X
	Check Air Lines into Panel for Wear or Cracks			X		X

SECTION 4

Seats

ITEM	TYPE OF INSPECTION OR SERVICE	MILES KMS HOURS	6,000	12,000	24,000	48,000
			11,000 1200	22,000 2400	43,000 4800	76,000 9600
Section 4	Suspension					
	Check "UP" and "DOWN" Travel of Suspension		X	X	X	X
	Check Airlines for Wear or Leaks					X
	Check for Broken or Cracked Knobs					X
	Check Rake Adjustment for Full Adjustment		X	X	X	X
	Check Bellows for Cracks, Holes, or Tears			X		X
	Check Air Springs for Wear and Leakage			X		X
	Inspect Shocks for Leakage			X		X
	Check Shock Mounts for Cracks or Breaks					X
	Check all Bushings for Wear		X	X	X	X
	Lubricate All Bushings		X	X	X	X
Section 5	Seat Back					
	Check Lumbar Bags for Leaks			X		X
	Check Torque of Mounting Bolts on Each Side (37 FT-lbs.)					X
	Check Proper Function of Recline			X	X	X
Section 6	Covers & Foam					
	Check Covers for Abnormal Wear & Tear			X		X
	Check Foam for Breakdown (Deterioration, Rips, Tears, Etc.)			X		X
Section 7	Headrest					
	Check Fore & Aft Tilt			X		X
	Check "UP" & "DOWN" Travel			X		X
	Check for Abnormal Wear & Tear			X		X



Section 5 - Exterior Maintenance

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EXTERIOR BODY PANELS

Exterior Body Panels (Roadside, Curbside, and Roof) are made up of a painted steel material and are attached to the body frame structure with a ManusBond Adhesive.

The inside of the Exterior Body Panels (Roadside, Curbside, and Roof) are sprayed with an expandable foam material to form a sound deadening barrier and provide some strength. Once the foam has cured luan substrates are installed over the inner walls of the frame structure.

ManusBond is used to seal the exterior seams between body panels and to seal exterior skirt and fender flare seams.

FRONT FIBERGLASS CAPS

The Front Cap and the Rear Corners are made up of fiberglass. A gel coating over the outer layer of the fiberglass gives the exterior a smooth, glossy surface that is corrosion resistant. With regular cleaning, these fiberglass panels should retain their bright appearance for years.

ManusBond or equivalent is also used to seal the seams between the fiberglass caps and the metal exterior body panels (Sidewalls & Roof). Repairs to windows that have been removed from the bus body can be resealed on the exterior by reapplying a bead of Sikaflex® or equivalent to the seam. This material forms a flexible, water-resistant barrier to eliminate leakage between seams.

CLEANING THE EXTERIOR

- Wash the exterior body panels, windows, doors, and wheels on a regular basis with warm, soapy water and a soft cloth or sponge. A power-wash wand may also be used to clean the exterior. Avoid using brushes as they collect dirt that may scratch exterior surfaces. Any standard body wax may also be used to achieve a high gloss finish.
- Heavy film or smudges on the gel coated front or rear fiberglass caps may be removed using a light liquid abrasive. Avoid harsh abrasives that will dull the gel coat finish.
- Wash the undercarriage of the bus often by spraying with warm soapy water. Dirt accelerates the corrosion of frame, suspension, and exhaust components, as well as brake and fuel lines and fasteners. If salt is used to melt snow and ice during winter months, it is especially important to wash the undercarriage frequently and thoroughly.
- If your bus is equipped with a skirt-mounted condenser, inspect for road-dirt buildup on the condenser fins. Leaves and debris that reduce cooling efficiency can usually be removed with jet of water or high-pressure air. Before cleaning, ensure that the engine is "OFF" and the NO electrical power is being supplied to the condenser unit.
- Check that window and door water drain holes are clean and clear of debris so that water entering the window and door tracks drain properly. A thin, pointed object can be placed gently into the drain holes to dislodge any objects blocking proper drainage.
- Windows should be cleaned daily to assure visibility. Exterior door glass and window surfaces should be cleaned using a household ammonia solution or other glass cleaner and a soft, nonabrasive cloth, sponge, or chamois to remove dirt or film.

SECTION 5

Exterior

MINOR FIBERGLASS DAMAGE REPAIR

1. Remove loose dirt and broken fragments from the damaged area. Use a grinder or power sander with medium grade sandpaper to prep area for body filler.
2. Apply filler as directed by the manufacturer's recommendations, smoothing it out as you fill.
3. After filler has hardened, power sand area with a fine grade sandpaper and repaint or gel coat.

MAJOR FIBERGLASS REPAIR

It is recommended that repair of wide cracks or areas where the fiberglass has separated from the frame structure be completed by an GCA dealer or authorized body shop. Complete front and rear caps are available for purchase through your local GCA dealer.

REPAIR OF STRESS CRACKS

Thin stress cracks ("spider webs"), caused by minor impacts, may only require repair of the gel coat without repair to the fiberglass substrate.

Repair by rough sanding and cleaning the damaged area, then reapplying the gel coat. Allow gel coat to cure, then finish sand until area is smooth to the touch. Buff to a gloss finish.

REFINISHING THE REPAIRED AREA

When repairs are complete, it is necessary to refinish the repaired area to color match the original finish. Consult with your local GCA dealer for appropriate finish instructions and materials. When refinishing is complete, use a rubbing compound to blend the repair area to the existing finish.



Section 6 - Doors

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SECTION 6

Doors

GENERAL INFORMATION

GCA installs bus Doors, except for the driver's door, according to options specific to how the bus was ordered. Passenger Entry Doors, Cargo Doors, and Emergency Exit Doors are available for various applications throughout the bus. Regardless of the Door Type, regular inspections and routine maintenance will help keep Bus Doors operating properly and looking good.

STANDARD DOORS

CHASSIS CAB DOORS

The Chassis Cab Doors are a typical automotive style door with a standard release handle, window crank, and door locking mechanism. GCA does not modify the Chassis Cab Door in any way. For additional information regarding the operation and maintenance of these doors, consult the chassis owner's manual.

PASSENGER ENTRY DOOR

The Passenger Entry Door is located on the curbside of the bus and can be opened by an electric motor. The steel door frame and stepwell are fixture-welded to form a single unit which offers strength and durability. Door panels open outward and are mounted in the door fram with pivot pins at both the top and bottom. Opening, closing, and locking procedures, as well as door adjustment instructions and maintenance schedules for your Passenger Entry Door can be found with the door information specific to your bus that follows in this section.

DOOR ACTUATOR TRIM PANEL

The Door Actuator Trim Panel is located above the passenger entry door. This Trim Panel protects the door linkage, actuator, and door motor (Electric Doors Only) for manual, pneumatic, and electric doors. To access the door mechanism, turn knobs, lift slightly and remove.



Fig. 2.1 - Cab Doors



Fig. 2.2 - Passenger Entry Door



Fig. 2.3 - Door Actuator Trim Panel

SECTION 6

Doors

GENERAL MAINTENANCE

- **DOOR SEALS** - Inspect door seals every week for material quality and tight fit. Repair or replace damaged seals, as necessary. Spray door seal surfaces with a light coating of silicone every 12,000 miles or 3 months to keep seals soft and supple. If door seals do not close tight and they do not show excessive wear, adjust the closing mechanism according to the diagrams in this manual.

- **HINGE & CLOSING MECHANISMS** - Lubricate hinges and closing mechanisms monthly with one (1) or two (2) drops of light machine oil. This helps prolong the life of hinge pins and closing mechanisms, prevents corrosion, binding, and squeaks. SAE 5 weight non-detergent motor oil and/or WD-40™ spray work well for these lube applications. White lithium grease is also recommended to lubricate the closing mechanism linkage. For all applications, avoid over-lubrication as excess oil or grease tend to collect dirt and soil clothing.

- **DOOR ALIGNMENT** - Check door alignment weekly. Over time, worn door pins and loose fasteners may allow door hinges to shift. Tighten loose nuts, replace worn parts, and/or realign door panels as necessary. Door diagrams, indication points of adjustment for your door, follow in this section.

- **KEY LOCKS & SWITCHES** - Lubricate key locks with a lubricant that is recommended for door locks. DO NOT use lightweight or detergent-type lubricants as they may wash the original graphite lubricants out of the lock tumblers, harming the function of the key locks.

- **WINDOWS** - Windows on bus doors should be cleaned on a regular basis to assure visibility and passenger safety. Interior and exterior door glass surfaces should be cleaned daily using a household ammonia solution or other glass cleaner and a soft nonabrasive cloth, sponge, or chamois to remove any dirt or film.



Fig. 2.4 - Door Seals

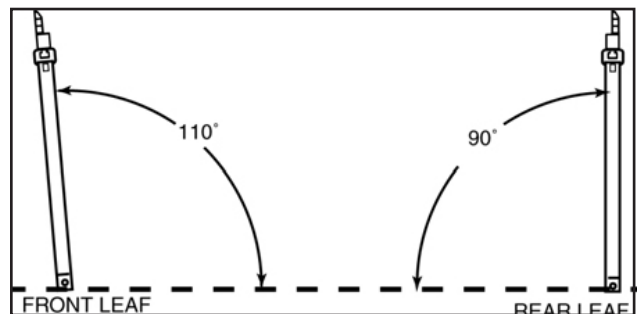


Fig. 2.5 - Door Alignment Check

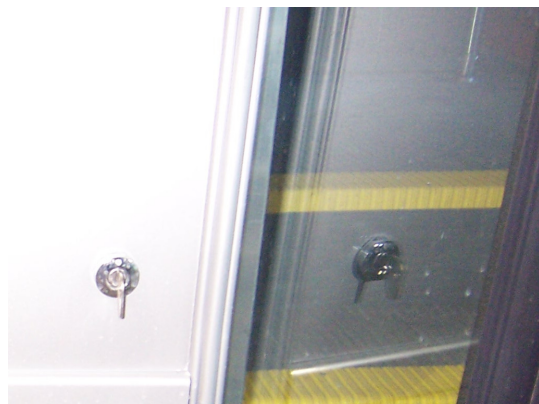


Fig. 2.6 - Outside Door Switch

SECTION 6

Doors

ENTRY DOOR LEAF ADJUSTMENTS.

1. Optimum Door Leaf Operation:

- a. Open Door's Rear Leaf so that it "Opens" 90° to the door header.
- b. When you "OPEN" the Door's Rear Leaf the Door's Front Leaf will open somewhere between 5° to 10° past 90°.

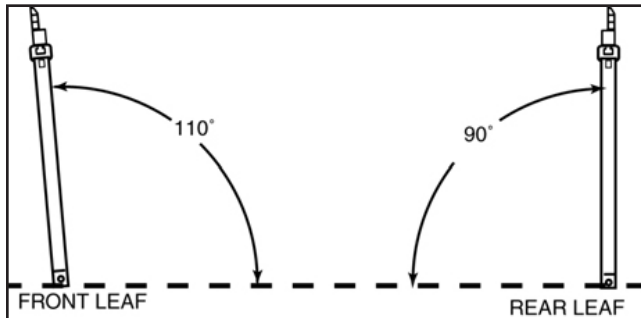


Fig. 2.7 - Door Alignment Check

ADJUST

1. Adjust Door's Control Rod's Length:

- a. Remove Cotter Pin and Clevis Pin from Control Rod's "Still" end.
- b. To Adjust Control Rod's length...loosen Yoke's Locknut and turn Yoke "Clockwise" to shorten or "Counterclockwise" to lengthen the Rod.
- c. It is recommended that you only turn the Yoke 2-complete revolutions and check the door operation each time you make and adjustment.
- d. After you achieved Door Leaf Optimal Operation as mentioned in step 1b, tighten locknut to secure adjustment.

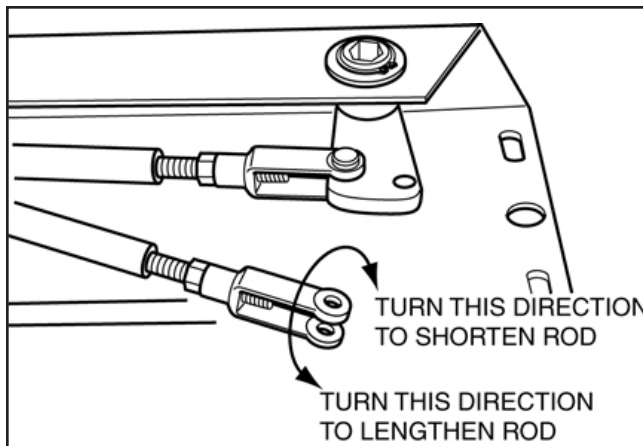


Fig. 2.8 - Door Adjustment Rod

2. Check for Proper Adjustment:

- a. Close Door's Rear Leaf until it bottoms out at the door header, the Door's Front Leaf Edge Seal should be 4" away from the Rear Leaf's Edge Seal (Rubber).
- b. If everything falls within these specs. Then Mechanical Adjustment has been achieved.

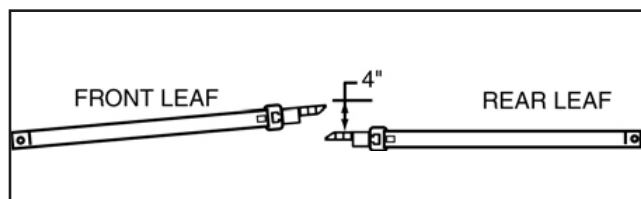


Fig. 2.9 - Proper Adjustment

SECTION 6

Doors

PARATRANSIT DOOR

The Bi-Fold Paratransit Door consists of two panels fastened to the bus with upper and lower pivots. Each door panel has its own handle that rotates locking rods, away from the door jamb allowing the door to open “outward”. Typically, two bi-fold door leaf assemblies are used in a door portal, one each opening to the right and left sides, respectively. (Refer to Fig. 10) The Bi-Fold Door panels may also have Gas Struts or “dampeners” installed to restrict the free movement of the door leaves after opening.



Fig. 2.10 - Paratransit Door

ELECTRIC PASSENGER ENTRY DOOR

The electric passenger entry door consists of two door panels that are opened by an electric switch mounted on the drivers control console. The rack and pinion drive mechanism, located at the top of the door, allows both door panels to be moved when the switch is activated.

To operate the Electric Entry Door, the vehicle must be in “PARK”. The door can then be opened and closed by using the toggle or rocker switch (depending on the option) located driver’s control panel.

To “OPEN” the entry door, hold the toggle or rocker switch in the “OPEN” position until the door panels open to a full travel.

To “CLOSE”, hold the toggle or rocker switch in the “CLOSED” position until the door panels close tightly.

For passenger safety, ensure that exiting passengers have moved away from the bus and/or all boarding passengers are seated before closing the entry door and taking the bus out of “PARK”.

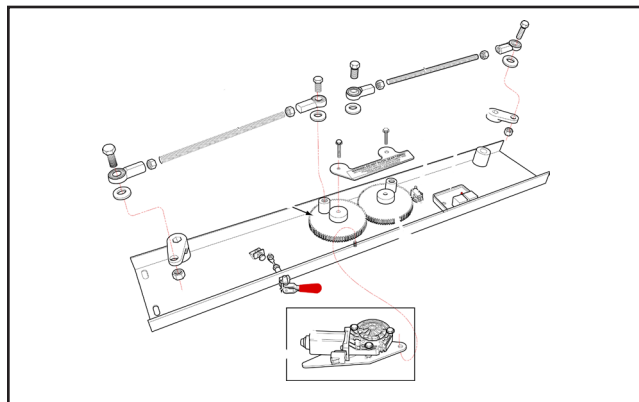


Fig. 2.11 - Electric Door Assembly



Section 7 - Windows

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GENERAL INFORMATION & MAINTENANCE

Safety glass is used for all windows in this bus. Windows in the passenger area also have tint to reduce sun glare and heat. When windows are installed in the passenger area of the bus, the window frames are sealed to the bus body by a compressed, adhesive-backed rubber seal. This seal forms a water and air tight seal between the inside of the bus to the outside of the bus.

- Windows should be cleaned and maintained on a regular basis to assure visibility and passenger safety. Interior and exterior glass surfaces should be cleaned daily using a household ammonia solution or other glass cleaner and a soft, nonabrasive cloth, sponge or chamois to remove any dirt or film.
- Latches and seals around sliding or hinged panels should be checked and windows should be opened and closed daily as the windows are cleaned. Special attention should be given to egress (emergency exit) windows to assure that release handles are in the fully locked position. Apply silicone lubricant to release handles on egress windows as needed. If release handles become difficult to operate, consult your GCA Dealer for recommended service.
- If leaks occur, apply ManusBond window weld, or a silicone-based sealant around window frames and/or glass. For best results, clean surfaces thoroughly before application.
- Replacement windows and other window parts may be obtained through your GCA Dealer.

EGRESS (EMERGENCY EXIT) WINDOWS

GCA Buses are equipped with egress, or emergency exit, windows in the passenger area. Egress windows are easily identified by window decals and/or option red lights above the windows and two-release handles either along the sides or at the bottom of the window frame.

To operate these windows, rotate the red release handles away from the window frame and push out on the window. The frame has a fixed hinge at the top that allows the egress window to swing out for emergency exit and swing back to close. Operating instructions are provided on window decals.

- Egress window release handles should be checked daily to assure they are in the fully locked position.

Apply silicone lubricant to the release handles if they become difficult to operate.



Figure 7.1 - Egress Handle

⚠ CAUTION

**DO NOT OPEN EGRESS WINDOWS WHILE THE BUS IS IN MOTION!
PERSONAL INJURY OR BUS DAMAGE MAY RESULT.**

SECTION 7

Windows

SLIDING WINDOWS

Most passenger windows can be “OPENED” for ventilation. This sliding window will be located either at the top or bottom of the window frame.

To “OPEN”, push “DOWN” on the lock release latch (located at the center of the sliding window frame) and pull the sliding window pane to the side. “CLOSE” the window gently - by pushing the sliding window pane to the side until closed and lock into position by push “UP” on the lock release.

- Clean and apply silicone lubricate to the window groove every two (2) months, or as needed, to help keep sliding window’s action smooth.



Fig. 7.2 - “OPEN” Slider Window

PLUG WINDOW

The Plug Window is located in front of the Entry Door on the curbside of the bus, Plug Windows allow the driver, while seated in the driver’s seat, to observe the curb and passengers who may be standing in front of the entry door.

Plug Windows are installed using an adhesive sealant that holds the window in place and forms a water-resistant and air resistant barrier around the window. A rubber trim panels around the window helps seal the window to the bus body.

- Plug windows should be cleaned every day, as dirt and grime from daily driving may collect on the window and block visibility.



Fig. 7.3 - “LOCK” Slider Window



Fig. 7.4 - Plug Window



Section 8 - Electrical & Lighting

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Section 8 - Electrical & Lighting

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SECTION 8

Electrical & Lighting

GENERAL INFORMATION

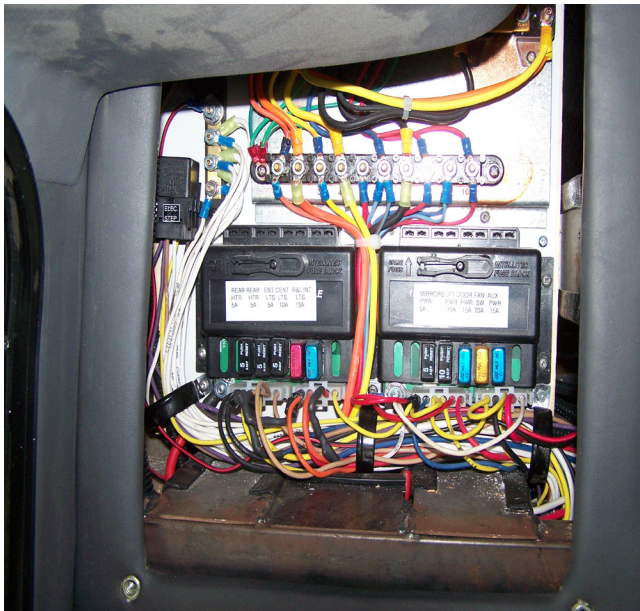
This section contains information on portions of the electrical system and lighting that are unique to the GCA bus. All bus circuits are connected to the chassis 12-Volt Negative Ground Electrical System. The ignition switch activates most of the bus circuits.

Information on the chassis circuits and wiring, including headlights, turn signals, dashboard lighting, and fuse panel may be found in the manuals provided by the chassis manufacturer. In addition, the chassis owner's manual includes a listing of bulbs and fuses used for chassis related components. Chassis service literature, including wiring diagrams and electrical troubleshooting manuals, are available from your local Ford or Chevy dealer or by using the order forms in the chassis owner's manual.

Bus Reversing Aid (if applicable)

1. USE CAUTION WHEN TESTING. A trained driver with assistance in a secured area is recommended.
2. Engage reverse gear. The Bus Reversing Aid will activate automatically.
3. Drive backward slowly until voice distance indicator is heard.
4. Keep sensors clean of dirt and other debris.

POWER DISTRIBUTION CENTER (FUSE PANEL)



The Power Distribution Center (Fuse Panel) provides power to different electrical systems within the bus.

Wiring diagrams or schematics of the Power Distribution Center (Fuse Panel) clearly identify the circuits and are shipped with of your vehicles. All wiring for the body conversion (except wires less than 12 inches in length) is color-coded and stamped every 12 inches with circuit numbers and abbreviated codes, making circuit tracing easier. Most wiring is bundled into "wiring harnesses" that are routed from the Power Distribution Center (Fuse Panel) into the parcel racks. The wires usually are routed the shortest distance to the area where power is being supplied. Removable interior trim panels protect and allow access to the wiring that is routed throughout the bus.

AUTOMATIC-RESET CIRCUIT BREAKERS

Automatic-reset Circuit Breakers, located in the Power Distribution Center (Fuse Panel), are an optional feature that protect heavy power demand circuits. A power draw overload will cause a brief interruption in electrical power before the circuit breaker automatically resets itself.

- If a breaker is frequently interrupted or if the circuit breaker "cycles", look for a "short" or other problem before returning the bus to service.

SECTION 8

Electrical & Lighting

ELECTRICAL SYSTEM REPAIR

Electrical system troubleshooting should begin with the Fuse Panel. Wiring diagrams included with the bus indicate wiring colors, the stamped circuit numbers, and the circuit schematics.

- Wiring repairs should only be performed by a qualified technicians.
- Consult your local GCA dealer before performing any electrical, or other repairs. Unauthorized repairs may void bus warranties.
- Use replacement fuses of the specified type and amperage rating only. Using other fuses may cause damage to electrical systems and increase the risk of electrical fires.
- When repairing circuits, be sure that wiring is protected from damage.
- Use ring terminals, spade connectors, or butt connectors as a last resort. Solder all connections and heatshrink to insulate whenever possible.
- Place repaired wire back into loom and secure with plastic wire-ties. Avoid routing wire harness close to major heat sources or sharp edges.
- The cigarette lighter receptacle may be used as a power source for accessories.

CAUTION

ELECTRICAL POWER IS ALWAYS “LIVE” IN THE POWER DISTRIBUTION CENTER (FUSE PANEL). USE CAUTION WHEN PERFORMING REPAIRS. DO NOT OPERATE THE VEHICLE WITH THE ACCESS DOOR OPENED. DOING SO MAY ENDANGER PASSENGERS AND COULD SHORT CIRCUIT THE VEHICLE’S ELECTRICAL SYSTEM.

EXTERIOR LIGHTING

LED Exterior Lighting is designed to assure the visibility of the bus to other drivers and pedestrians. Exterior lighting consists of front and rear clearance lights, rear tail, brake, backup, and stop lights, license plate light, side marker lights, and headlights.

Wiring Harnesses for exterior lighting originate in the Power Distribution Center (Fuse Panel) and are routed throughout the bus. Most wiring can be accessed by removing the interior trim panels.

SECTION 8

Electrical & Lighting

HEADLIGHTS

The vehicle's Headlight Control Knob is located on the dash. Headlights should be turned "ON" when driving at night, or whenever weather or safety conditions require that headlights be "ON".

LED MARKER LIGHTS

The incandescent Marker Light consists of a circular red lens on a circular base. One light is located on either side of the rear of the bus. The incandescent Marker Lights indicate the exterior side wall of the bus and provide noticeability at night and in less than desirable driving conditions.

Standard Front Marker Lights are a component of the body lighting system. These amber colored lights are located at the front corners of the bus and are activated when the headlights are turned "ON". These lights are combined with the parking lights and also flash "ON/OFF" when turn signals are activated.



- Marker Lights should be inspected daily for proper operation.
- To replace burned-out Marker Lights, pry out from rubber grommet.
- Disconnect wire harness connector from Marker Light and discard light.
- Connect new Marker Light to wire harness connector.
- Apply a bead of silicone around perimeter of Marker Light, align holes in light to holes in bus body. Push in until secure.

INTERIOR LIGHTING

Interior Lighting consists of Incandescent Lights that are attached to the ceiling. There are also LED Lights attached to the parcel racks. These lights provide an even cabin illumination for passenger and driver safety.

- Interior Lighting should be inspected daily for proper operation.



Champion Electrical Manual

2008



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7-10	Connector Locations
11	Troubleshooting

Wire Stamping and Coding

Color Codes	
T	Tan
I	Pink
Y	Yellow
O	Orange
E	Grey
W	White
K	Black
B	Blue
R	Red
P	Purple
G	Green
N	Brown

Wire Stamping and Coding

STAMPING CODES											
AC	Air Conditioner	CH	Chime	FD	Field	LO	Low	PW	Power	TA	Tail
AJ	Ajar	CB	Circuit Breaker	FO	Fluorescent	LT	Light	PA	Public Address	TH	Throttle
AL	Alarm	CI	Cigarette	FT	Front	LU	Laminator	PR	Pressure	TI	Timer
AS	Accessory	DF	Defrost	FE	Fuel	LV	Lavatory	PU	Pump	TO	Toilet
AT	Actuator	DK	Docking	GR	Ground	LTR	Lighter	RE	Rear	TM	Transmission
AR	Air	DM	Dome	GA	Gauge	MC	Micro	RA	Radio	TN	Turn
AX	Auxiliary	DA	Dash	GE	Generator	MD	Medium	RD	Reading	TP	Tap
AU	Auto	DN	Destination	GU	Guard	MK	Marker	RM	Remote	TV	Television
ALT	Alternator	DR	Door	HD	Head	MR	Mirror	RL	Relay	TG	Tag
AM	Amber	DS	Disconnect	HI	High	MS	Master	RQ	Request	TX	Tag Axel
BK	Brake	DV	Driver	HL	Hold	MT	Mid Turn	RS	Reset	TE	Temperature
BU	Back-up	DE	Deceleration	HT	Heat	MY	Memory	RT	Right	TL	Telma
BX	Box	EG	Energize	HO	Hood	ME	Meter	RG	Regulator	VL	Valve
BZ	Buzzer	EN	Entry	HR	Hour	MA	Main	SA	Safety	VR	Vortec
BR	Braun	EX	Exit	ID	Idle	MO	Motor	SG	Signal	VC	Videocassette Rec.
BT	Battery	ENG	Engine	IG	Ignition	NU	Neutral	SL	Solenoid	VT	Volt
CD	Cord	ED	Edge	IL	Interlock	OF	Off	SN	Sign	VM	Vacuum
CG	Cargo	FA	Fare	IN	Interlock	OH	Overhead	SP	Spare	WC	Wheelchair
CN	Control	FH	Fresh	IM	Illumination	OP	Open	SR	Sensor	WN	Window
CL	Close	FU	Full	IS	Isolation	OI	Oil	ST	Starter	WP	Wiper
CC	Circuit	FN	Fan	IT	Interrupt	OR	Override	SW	Switch	WA	Water
CS	Constant	FR	Frost	KN	Kneeler	PG	Plug	SH	Shot	WR	Warning
CT	Clutch	FS	Fast	LF	Left	PK	Park	SO	Stop	WE	Well
CR	Courtesy	FI	Fire	LG	Luggage	PL	Pull	SE	step		
CO	Cut out	FL	Flasher	LI	Lift	PN	Panel	SV	Sensitive		
CM	Compressor	FG	Fog	LM	Limit	PS	Passenger	STA	Stator		

Wire Stamping and Coding

WHITE			PINK			BLACK		
01	W	DRIVER FAN LOW	01	I	DOOR MOTOR	03	K	SINGLE CONDENSER
02	W	DRIVER FAN HIGH	04	I	RIGHT READING LIGHT	04	K	HOOD LIGHT
03	W	DUAL CONDENSOR	07	I	EXIT LIGHT	07	K	IN GEAR
04	W	MOTOR GROUND	08	I	WHEELCHAIR SWITCH	08	K	DOME LIGHT
05	W	OIL	08A	I	WHEELCHAIR SWITCH	09	K	STOP REQUEST
06	W	12V STARTER	09	I	ENTRY DOOR	09A	K	STOP REQUEST
07	W	TEMP	11	I	WHEELCHAIR ALARM	11	K	TAG AXLE VACUUM
09	W	DOOR CLOSE	12	I	BRAUN INTERLOCK SL	12	K	RAMP STOW
11	W	STOP REQUEST	16	I	ALTERNATOR IGNITION	20	K	DEFROST POWER
13	W	DRIVER LIGHT	23	I	PULL CORD			
18	W	BUZZER ALARM	23A	I	PULL CORD			
25	W	AIR CONDITIONER	24	I	WINDOW AJAR			
30	W	ENGINE KILL						BLUE
31	W	ENGINE KILL			GRAY	02	B	COMPRESSION AMPLIFIER
		BROWN	01	E	DASH LIGHT	03	B	SINGLE COMPRESSO
02	N	DOOR MOTOR	03	E	LUGGAGE DOOR AJAR	04	B	READING LIGHT
06	N	LOW AIR	10	E	WHEELCHAIR DOOR SL	08	B	COURTESY LIGHT
07	N	MAP LIGHT	14	E	DESTINATION SIGN	09	B	BRAKE LIGHT
09	N	MARKER LIGHT	14A	E	HOOD LIGHT	10	B	WHEELCHAIR DOOR
11	N	12V RUN	15	E	LUGGAGE LIGHT	12	B	STOP REQUEST
24	N	FARE BOX	29	E	DOCKING LIGHT	15	B	TRANSMISSION HOLD

Wire Stamping and Coding

RED			YELLOW			ORANGE			PURPLE		
02	R	DOME LIGHT POWER	01	Y	12V BATTERY	04	O	HEATER #2 HIGH	02	P	AUXILIARY POWER
04	R	HEATER #2 POWER	04	Y	HEATER #2 MEDIUM	05	O	HEATER VALVE	03	P	DUAL COMPRESSOR
05	R	LEFT READING LIGHT	05	Y	SIGH MOTOR	06	O	TAG AXLE POWER	04	P	HEATER #2 LOW
06	R	VOLT METER	07	Y	HEATER #1 MEDIUM	07	O	HEATER #1 HIGH	06	P	PUBLIC ADDRESS POWER
07	R	HEATER #1 POWER	09	Y	DOOR OPEN	08	O	TM SWITCH	07	P	HEATER #1 LOW
08	R	RIGHT READING LIGHT	10	Y	OEM COURTESY LIGHT	09	O	STEP LIGHT	09	P	IGNITION SIGNAL
09	R	DOOR POWER	18	Y	LEFT TURN SIGNAL	10	O	WHEELCHAIR DOOR	10	P	IGNITION INTERLOCK POWER
10	R	AUXILIARY DOOR POWER	19	Y	7" LIGHT	10A	O	AJAR LIGHT	12	P	PASSENGER SIGNAL
11	R	RADIO IGNITION	19A	Y	FRONT 7" LIGHT	12	O	PULL CORD	13	P	DRIVER DOME LIGHT
12	R	RADIO BATTERY	20	Y	FRONT FO	12A	O	PULL CORD	15	P	PARK BRAKE
13	R	DESTINATION SIGN	21	Y	MEDIUM FO	13	O	WHEELCHAIR POWER	18	P	7" LIGHT
15	R	TM SOLENOID POWER	22	Y	REAR FO	16	O	VORTEC SL SIGNAL	19	P	IGNITION SIGNAL
18	R	RIGHT TURN SIGNAL	23	Y	WINDOW AJAR	18	O	7" LIGHT	20	P	IGNITION SIGNAL
23	R	PASSENGER PULL CORD	24	Y	WINDOW AJAR	18A	O	REAR 7" LIGHT	21	P	DRIVER FAN
23A	R	PASSENGER PULL CORD	25	Y	BUZZER GROUND	21	O	IGNITION LOW	22	P	DRIVER FAN
24	R	WINDOW AJAR	26	Y	IGNITION LOW	22	O	IGNITION LOW	29	P	TEMPERATURE ALARM
25	R	WHEELCHAIR PULL CORD	27	Y	IGNITION LOW				30	P	OIL ALARM
25A	R	WHEELCHAIR PULL CORD	30	Y	STARTER DISABLE						
30	R	RAMP DEPLOY	31	Y	STARTER DISABLE						

Wire Stamping and Coding

TAN			Green		
03	T	LUGGAGE LIGHT	No Stamping Required.		
04	T	LUGGAGE LIGHT SWITCH	May be coded with the letter "G" and a		
05	T	RUN ACCESSORIES	suffix of manufacturers specifications.		
07	T	PASSENGER SIGNAL			
08	T	LIFT LIGHT			
15	T	TM ENTRY			
25	T	IL ALARM SIGNAL	SPEAKERS (TAGS)		
27	T	TELMA	28	P	RT REAR SPEAKER
STRIPED			28	P/K	RT REAR SPEAKER
02	W/B	DRIVER THERMOSTAT	28	G	LEFT REAR SPEAKER
03	K/W	AC DEM THERMOSTAT	28	G/K	LEFT REAR SPEAKER
03	E/W	DUAL AC OEM THERMOSTAT	28	E	RIGHT FRONT SPEAKER
03	O/W	A/C FAN HI SPEED	28	E/K	RIGHT FRONT SPEAKER
03	R/W	A/C FAN LOW SPEED	28	W	LEFT FRONT SPEAKER
03	W/B	A/C FAN POWER	28	W/K	LEFT FRONT SPEAKER
03	Y/W	A/C FAN MEDIUM SPEED	SPK5C	EXTERNAL SPEAKER	
12	I	BRAUN INTERLOCK SL	SPK5T	EXTERNAL SPEAKER	
16	I	ALTERNATOR IGNITION	SPK6C	RE PUBLIC ADDRESS SPEAKER	
23	I	PULL CORD	SPK6T	RE PUBLIC ADDRESS SPEAKER	
23A	I	PULL CORD	SPK7C	FT PUBLIC ADDRESS SPEAKER	
24	I	WINDOW AJAR	SPK7T	FT PUBLIC ADDRESS SPEAKER	

Connector Locations

Connector	Function	Harness	Location
C 100	Console	Front Floor	Right side of the engine access cover
C 100A	Console	Front Floor	Right side of the engine access cover
C 100B	Console	Front Floor	Right side of the engine access cover
C 100C	Console	Front Floor	Right side of the engine access cover
C 101	Entry Feed	Front Floor	Behind electrical center panel
C 102	Front Cap	Front Floor	Behind electrical center panel
C 103	RH O/H	Front Floor	Behind electrical center panel
C 104	RH O/H	Front Floor	Behind electrical center panel
C 105	LH Dome Lights	Left Overhead	Above entry door behind cover
C 106	Rear Cap	RH O/H	Passenger side rear corner
C 107	Heater 1	RH O/H	Behind electrical center panel
C 108	Heater 2	Front Floor	Behind electrical center panel
C 109	LH Interior Lights	RH O/H	Above entry door behind cover
C 110	RH Interior Lights	RH O/H	Above entry door behind cover
C 111	Rear Cap	RH O/H	Passenger side rear corner
C 112	Tag Axle	Rear Cap	Driver side rear corner
C 113	Electric Door Motor	Entry Door	Above entry door behind cover
C 114	Floor Courtesy Lights	RH O/H	Above entry door behind cover
C 115	Restroom	Rear Cap	Driver side rear corner
C 116	Rmt. Entry Door	Entry Feed	Above entry door behind cover
C 117	RH/LH Reading Lights	Int. Lt.	Above entry door behind cover
C 118	RH/LH Dome Lights	Int. Lt.	Above entry door behind cover
C 119	I/P	Rear Evap AE	Behind driver switch panel
C 120	Engine Alarm	Front Floor & I/P AE	Behind driver switch panel
C 121	Top Relay Row	Front Cap	On main electrical panel

Connector Locations

Connector	Function	Harness	Location
C 122	Entry Door	Front Floor AEN	Above entry door behind cover
C 123	I/P to RH O/H	I/P AE	Behind driver switch panel
C 124	Left Front Speaker	Front Cap	Driver side wing panel
C125	Trans Interlock	Front Floor (Not AT/AL)	not used
C126	Trans Interlock	Front Floor	not used
C127	Fuse Block	Front Cap	above driver wing pad
C128	Fuse Block	Front Cap	above driver wing pad
C129	Right Front Speaker	Front Cap	right side top of front cap
C130	Sensitive Edge	Entry Door	above entry door behind cover
C131	Park Brake/Low Air	Front Floor / I/P AE	center dash behind radio
C132	Rear Door Ajar	Front Floor	center rear of rear cap
C133	Window Ajar	Front Floor / I/P AE	behind electrical center panel
C134	Pass Pull Cord	Front Floor / I/P AE	behind electrical center panel
C135	WC Pull Cord	Front Floor / I/P AE	behind electrical center panel
C136	EN DR AR VL		not used
C137	Radio	Front Floor	center dash behind radio
C138	LH Exit Lights	Left Overhead	driver side rear corner
C139	Ramp	Entry Feed - AA	behind electrical center panel
C140	RH Brake & Tail	Rear Cap	passenger side rear middle
C141	RH Mid Turn/Marker	Rear Cap	passenger side rear middle
C142	RH Turn	Rear Cap	passenger side rear middle
C143	RH Brake & Tail	Rear Cap	passenger side rear middle
C144	RH Back-up	Rear Cap	passenger side rear middle
C145	CTR Brake	Rear Cap	top center rear
C146	LH Brake & Tail	Rear Cap	passenger side left middle

Connector Locations

Connector	Function	Harness	Location
C147	LH Mid Turn/Marker	Rear Cap	passenger side left middle
C148	LH Turn	Rear Cap	passenger side left middle
C149	LH Brake & Tail	Rear Cap	passenger side left middle
C150	LH Back-up	Rear Cap	passenger side left middle
C151	RH Pwr.	Rear Cap	not used
C152	LH Pwr.	Rear Cap	not used
C153	Tag Light	Rear Cap	driver side bottom rear corner
C154	RH Dome Lights	Front Cap	above entry door behind cover
C155	Rear Brake	Front Floor	behind electrical center panel
C156	Engine & STR Kill	Front Floor	behind electrical center panel
C157	RH Exit Lights	Front Cap	above entry door behind cover
C158	Right Rear Speaker	Rear Cap	passenger side rear corner
C159	Left Rear Speaker	Rear Cap	driver side rear corner
C160	Tow Plug	Rear Cap	driver side bottom rear corner
C161	Ford Connector	Rear Cap	driver side bottom rear corner
C162	Entry Door	Entry Feed	above entry door behind cover
C163	Lift Door	Entry Feed	above entry door behind cover
C164	I/P	Entry Feed AE	behind driver switch panel
C165	Step Well Light	Entry Feed	below entry door sides
C166	Tag Light	Rear Cap	driver side bottom rear corner
C167	Engine & STR Kill	Front Floor	behind electrical center panel
C168	Farebox	Front Floor	behind electrical center panel
C169	Reverse Alarm	Rear Cap	driver side bottom rear corner
C170	Rear Door Switch	Rear Cap	Center top of rear cap
C171	Grounds	Rear Cap	driver side bottom rear corner

Connector Locations

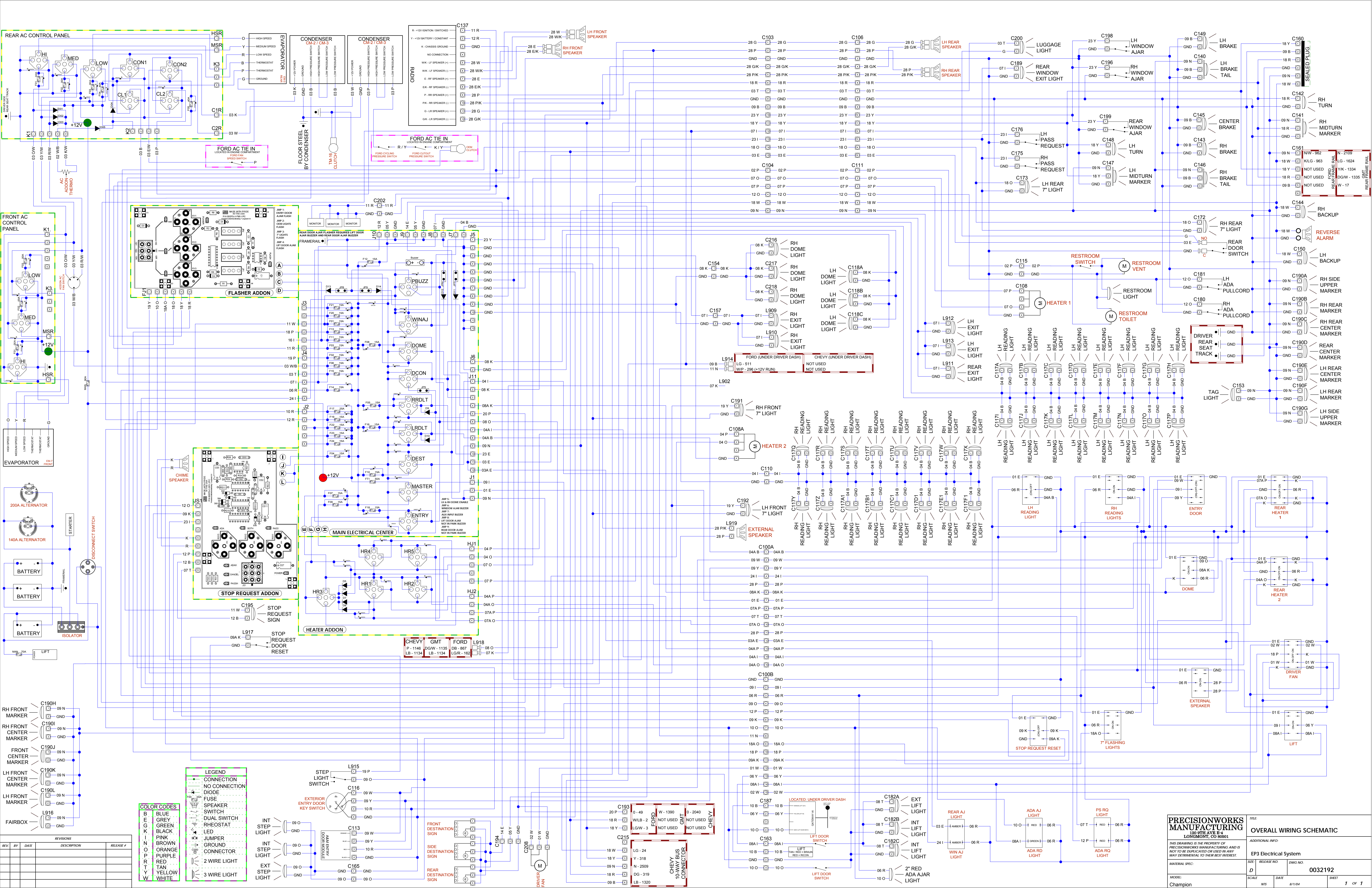
Connector	Function	Harness	Location
C172	RH Rear 7" Light	Rear Cap	passenger side top rear corner
C173	LH Rear 7" Light	Rear Cap	driver side top rear corner
C174	Grounds	Front Cap	above entry door behind cover
C175	RH Pass Pull Cord	Rear Cap	passenger side rear corner
C176	LH Pass Pull Cord	Rear Cap	driver side rear corner
C178	PA/Radio	Front Floor	behind electrical center panel
C180	RH WC Pull Cord	Rear Cap	passenger side rear corner
C181	LH WC Pull Cord	Rear Cap	driver side rear corner
C188	Ign. Sol	Front Floor	behind electrical center panel
C189	Rear WDO Exit Light	Rear Cap	Center top of rear cap
C190	Marker Light	Front & Rear Caps	top of rear cap
C191	RH Front 7" Light	Front Cap	passenger side top front corner
C192	LH Front 7" Light	Front Cap	driver side top front corner
C194	Dest. Sign	Front Cap	driver side top front corner
C195	Stop Reg. Sign	Front Cap	driver side top front corner
C196	RH Window Ajar	Rear Cap	passenger side rear corner
C197	I/P	Front Cap AE	behind electrical center panel
C198	LH Window Ajar	Rear Cap	driver side rear corner
C199	Rear Window Ajar	Rear Cap	Center top of rear cap
C200	Rear Luggage Light	Rear Cap	Center top of rear cap

Troubleshooting

1. **RED LED** is on if the item is “in use” and the fuse is blown.
2. **YELLOW LED** is on if the “switch” is activated.
3. **GREEN LED** means the relay is fine.

To Troubleshoot the board:

- Make sure you have the activation ground or power to the item in question.
 - If it is missing then the problem is in the wiring and not the power center.
- If the inputs are there and the output is missing, disconnect the output connector.
- Check for power or ground on the output (whichever is required).
 - If it exists then the problem is not the power center.



REVISIONS

REV	BY	DATE	DESCRIPTION	RELEASE #

COLOR CODES

B	BLUE
E	GREY
G	GREEN
K	BLACK
I	PINK
N	BROWN
O	ORANGE
P	PURPLE
R	RED
T	TAN
Y	YELLOW
W	WHITE

LEGEND

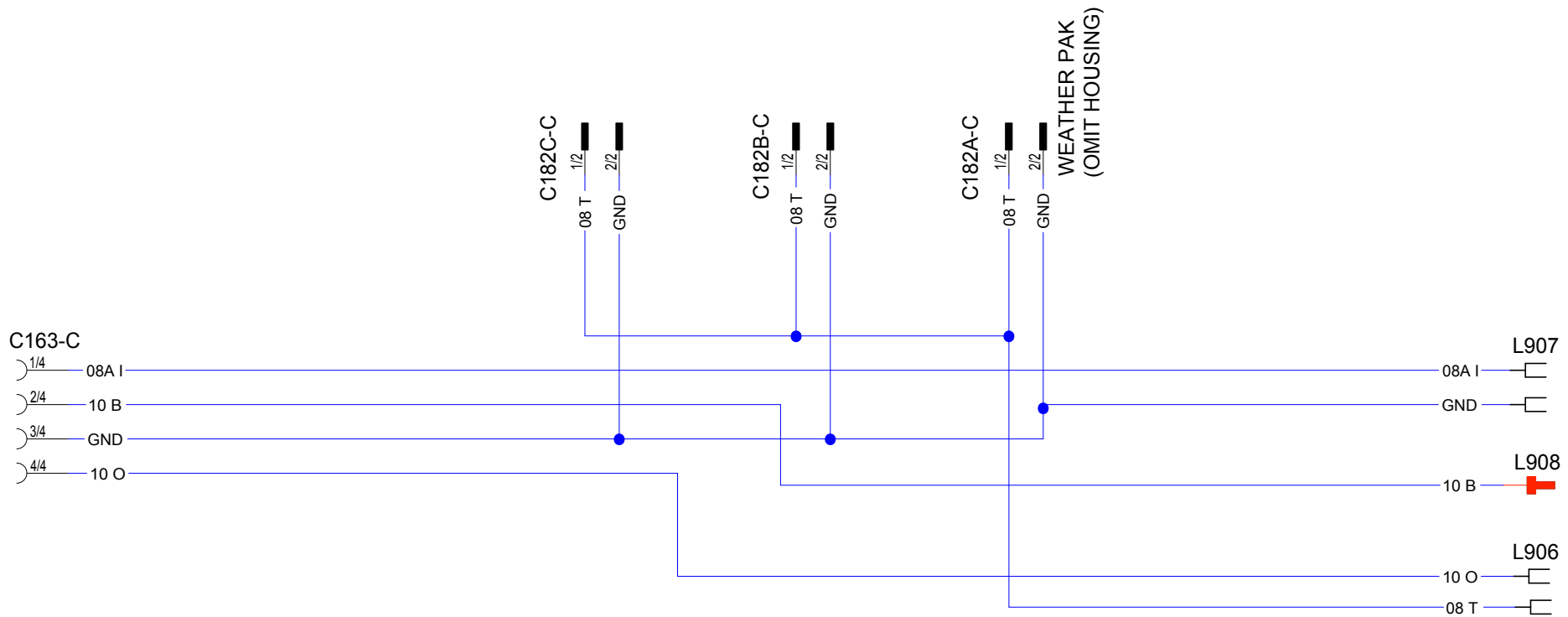
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- - - NO CONNECTION
- ▷ DIODE
- ⊞ FUSE
- ⊞ SWITCH
- ⊞ DUAL SWITCH
- ⊞ RH/STAT
- ⊞ JUMPER
- ⊞ GROUND
- ⊞ CONNECTOR
- ⊞ 2 WIRE LIGHT
- ⊞ 3 WIRE LIGHT

PRECISIONWORKS MANUFACTURING
 180 0TH AVE S.E.
 LONGMONT, CO 80501

EP3 Electrical System

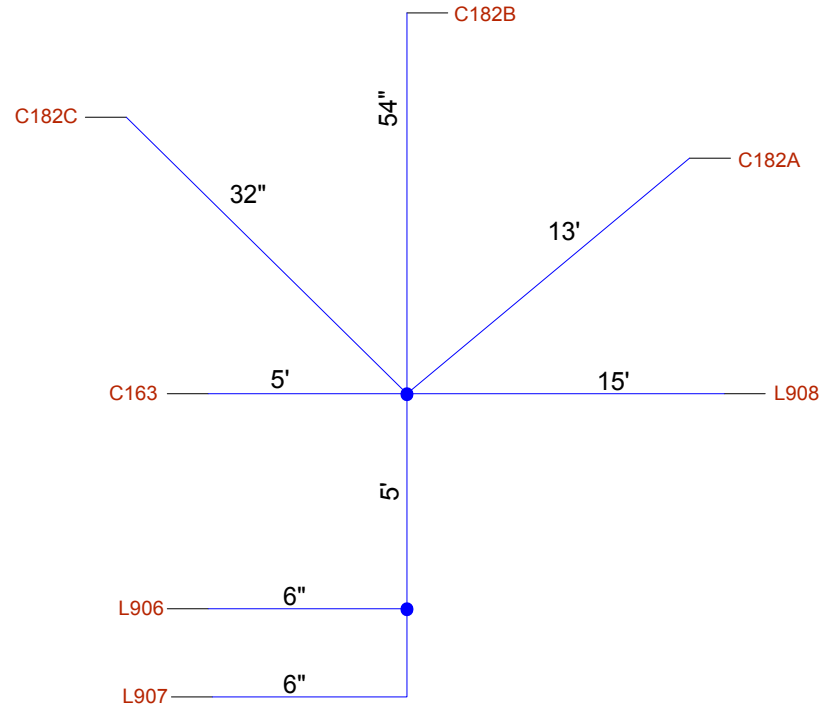
0032192

DATE: 8/1/04
 SCALE: NTS
 SHEET: 1 OF 1



REVISIONS				
REV.	BY	DATE	DESCRIPTION	RELEASE #

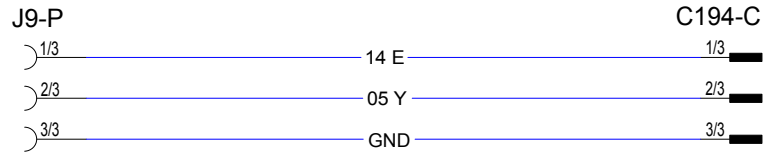
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		LIFT DOOR HARNESS, EP3	
THIS DRAWING IS THE PROPERTY OF PRECISIONWORKS MANUFACTURING AND IS NOT TO BE DUPLICATED OR USED IN ANY WAY DETRIMENTAL TO THEIR BEST INTEREST.		ADDITIONAL INFO:	
		MATERIAL SPEC:	SIZE: A
MODEL: Champion	SCALE NTS	DATE 5/7/08	SHEET 1 OF 2



- NOTES:
 1. HARNESS IS TO BE LOOMED.
 2. ALL WIRES ARE 14 AWG EXCEPT 08 T AND 02 G AT C182 ARE 16 AWG.

REVISIONS				
REV.	BY	DATE	DESCRIPTION	RELEASE #

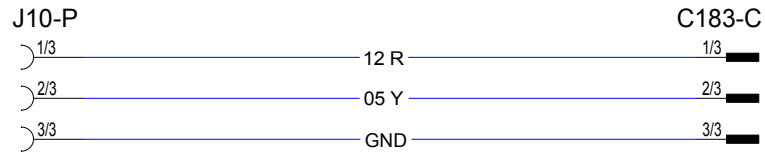
PRECISIONWORKS MANUFACTURING 120 9TH AVE E-4 LONGMONT, CO 80501		TITLE:		
		LIFT DOOR HARNESS, EP3		
THIS DRAWING IS THE PROPERTY OF PRECISIONWORKS MANUFACTURING AND IS NOT TO BE DUPLICATED OR USED IN ANY WAY DETRIMENTAL TO THEIR BEST INTEREST.		ADDITIONAL INFO:		
		MATERIAL SPEC:	SIZE: A	RELEASE NO. 00000
MODEL: Champion	SCALE: NTS	DATE: 5/7/08	SHEET: 2 OF 2	



- NOTES:
1. HARNESS IS TO BE LOOMED.
 2. HARNESS IS 5' IN LENGTH.
 3. ALL WIRES ARE 14 AWG.

REVISIONS				
REV.	BY	DATE	DESCRIPTION	RELEASE #

PRECISIONWORKS MANUFACTURING 120 9TH AVE E-4 LONGMONT, CO 80501		TITLE:		
		DESTINATION SIGN HARNESS, FRONT EP3		
THIS DRAWING IS THE PROPERTY OF PRECISIONWORKS MANUFACTURING AND IS NOT TO BE DUPLICATED OR USED IN ANY WAY DETRIMENTAL TO THEIR BEST INTEREST.		ADDITIONAL INFO:		
		MATERIAL SPEC:	SIZE:	RELEASE NO.
MODEL:		A	00000	0032192-110
Champion		SCALE	DATE	SHEET
		NTS	5/7/08	1 OF 1



- NOTES:
 1. HARNESS IS TO BE LOOMED.
 2. HARNESS IS 5' IN LENGTH.
 3. ALL WIRES ARE 14 AWG.

REVISIONS				
REV.	BY	DATE	DESCRIPTION	RELEASE #

PRECISIONWORKS MANUFACTURING 120 9TH AVE E-4 LONGMONT, CO 80501		TITLE:		
		AUX RADIO HARNESS, EP3		
THIS DRAWING IS THE PROPERTY OF PRECISIONWORKS MANUFACTURING AND IS NOT TO BE DUPLICATED OR USED IN ANY WAY DETRIMENTAL TO THEIR BEST INTEREST.		ADDITIONAL INFO:		
		MATERIAL SPEC:	SIZE: A RELEASE NO. 00000	DWG NO. 0032192-115
MODEL: Champion		SCALE NTS	DATE 5/7/08	SHEET 1 OF 1

C221-P

■ 1/2 28 P _____

■ 2/2 28 P/K _____

NOTES:

1. HARNESS IS TO BE LOOMED.
2. HARNESS IS 8' IN LENGTH.
3. ALL WIRES ARE 18 AWG.
4. UNTERMINATED ENDS ARE BLUNT CUT.

REVISIONS				
REV.	BY	DATE	DESCRIPTION	RELEASE #

PRECISIONWORKS MANUFACTURING 120 9TH AVE E-4 LONGMONT, CO 80501		TITLE:		
		SPEAKER HARNESS, EXTERNAL EP3		
THIS DRAWING IS THE PROPERTY OF PRECISIONWORKS MANUFACTURING AND IS NOT TO BE DUPLICATED OR USED IN ANY WAY DETRIMENTAL TO THEIR BEST INTEREST.		ADDITIONAL INFO:		
		MATERIAL SPEC:	SIZE: A RELEASE NO. 00000	DWG NO. 0032192-116
MODEL: Champion	SCALE NTS	DATE 5/22/08	SHEET 1 OF 1	

C215-CP

- 1/6
- 2/6 18 W
- 3/6 18 Y
- 4/6 09 N
- 5/6 18 R
- 6/6 09 B

4450M

- 1/6
- 2/6
- 3/6
- 4/6 09 N
- 5/6 18 W
- 6/6

NAVISTAR HOUSING:
PN # 2039312C91
NAVISTAR TERMINAL:
PN # 2033912C1

4460M

- 1/3 18 Y
- 2/3 18 R
- 3/3 09 B

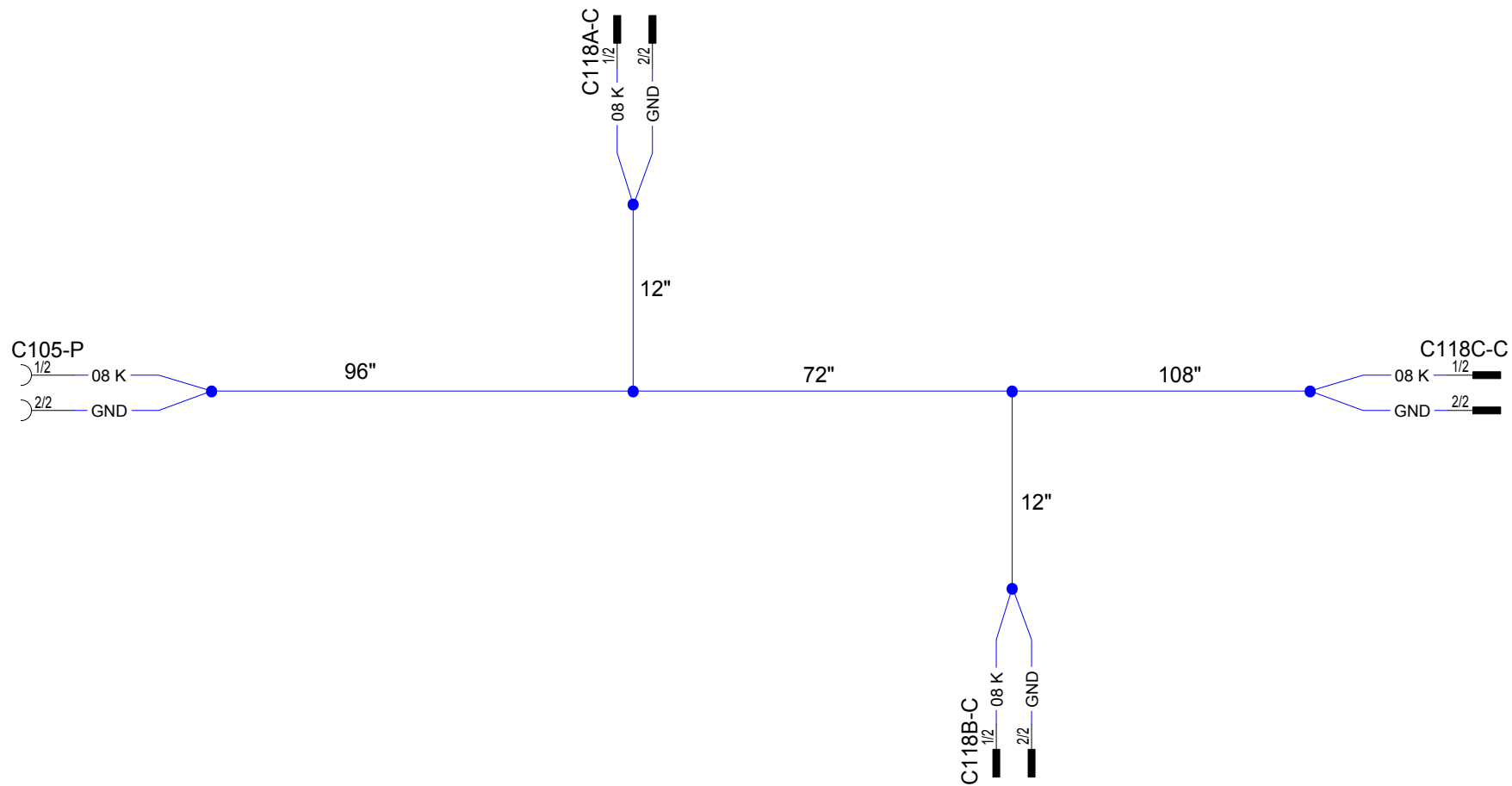
NAVISTAR HOUSING:
PN # 3553961C1
NAVISTAR TERMINAL:
PN # 2033912C1

NOTES:

1. HARNESS IS TO BE LOOMED.
2. HARNESS IS 15' IN LENGTH.
3. ALL WIRES ARE 14 AWG.

REVISIONS				
REV.	BY	DATE	DESCRIPTION	RELEASE #

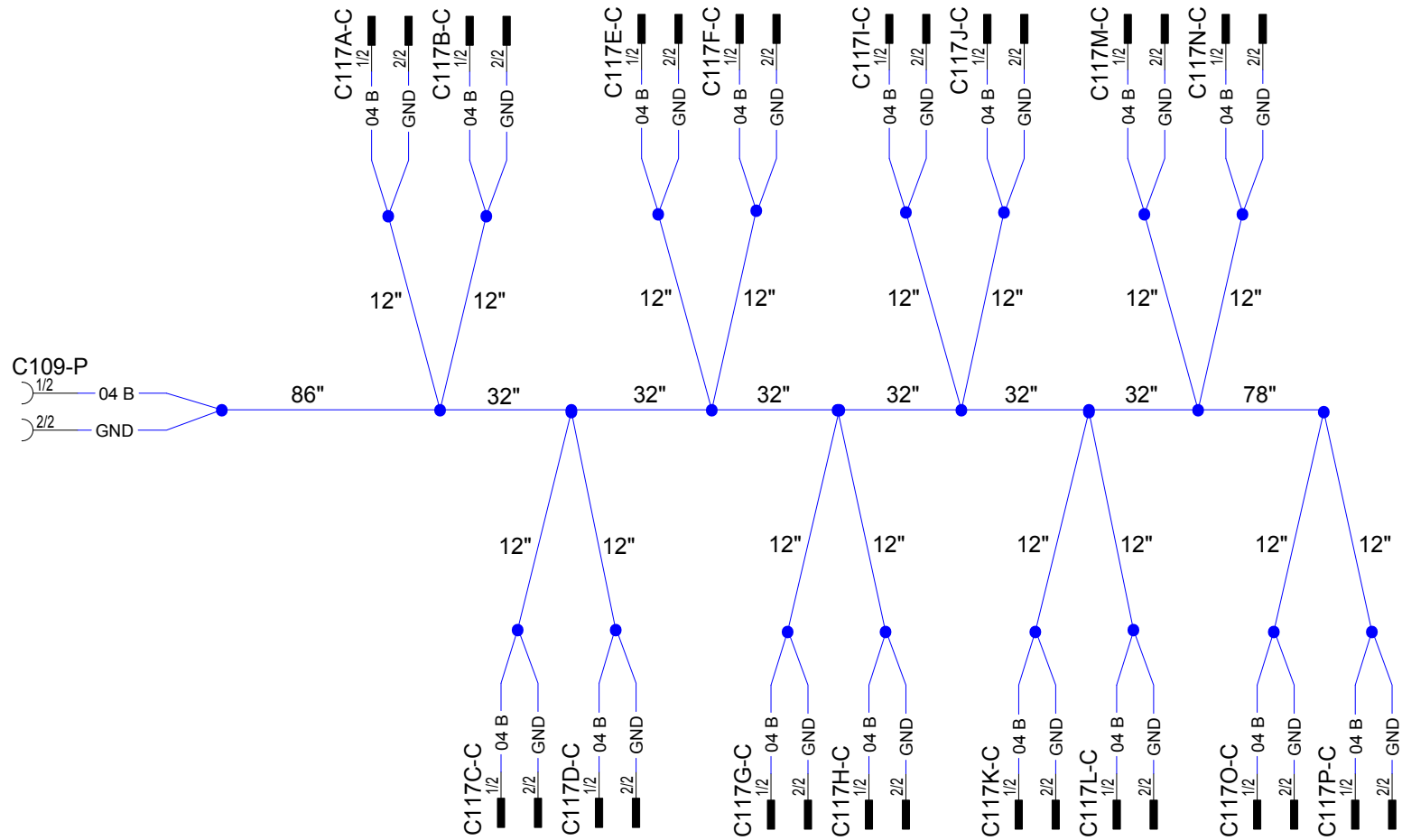
PRECISIONWORKS MANUFACTURING 120 9TH AVE E-4 LONGMONT, CO 80501		TITLE:		
		CHASSIS TIE IN HARNESS		
THIS DRAWING IS THE PROPERTY OF PRECISIONWORKS MANUFACTURING AND IS NOT TO BE DUPLICATED OR USED IN ANY WAY DETRIMENTAL TO THEIR BEST INTEREST.		ADDITIONAL INFO:		
		NAVISTAR		
MATERIAL SPEC:		SIZE:	RELEASE NO.	DWG NO.
		A		0032192-120
MODEL: Champion		SCALE	DATE	SHEET
		NTS		1 OF 1



NOTE:
 1) SEE 0032192 FOR SCHEMATIC.
 2) ALL DIMENSIONS ARE SHOWN IN INCHES.

REVISIONS				
REV.	BY	DATE	DESCRIPTION	RELEASE #

PRECISIONWORKS MANUFACTURING 120 9TH AVE E-4 LONGMONT, CO 80501		TITLE:		
		DOME LIGHT HARNESS, EP3		
THIS DRAWING IS THE PROPERTY OF PRECISIONWORKS MANUFACTURING AND IS NOT TO BE DUPLICATED OR USED IN ANY WAY DETRIMENTAL TO THEIR BEST INTEREST.		ADDITIONAL INFO:		
		SIZE:	RELEASE NO.	DWG NO.
MATERIAL SPEC:		A	00000	0032192-150
MODEL:		SCALE	DATE	SHEET
Champion		NTS	12/4/07	1 OF 1

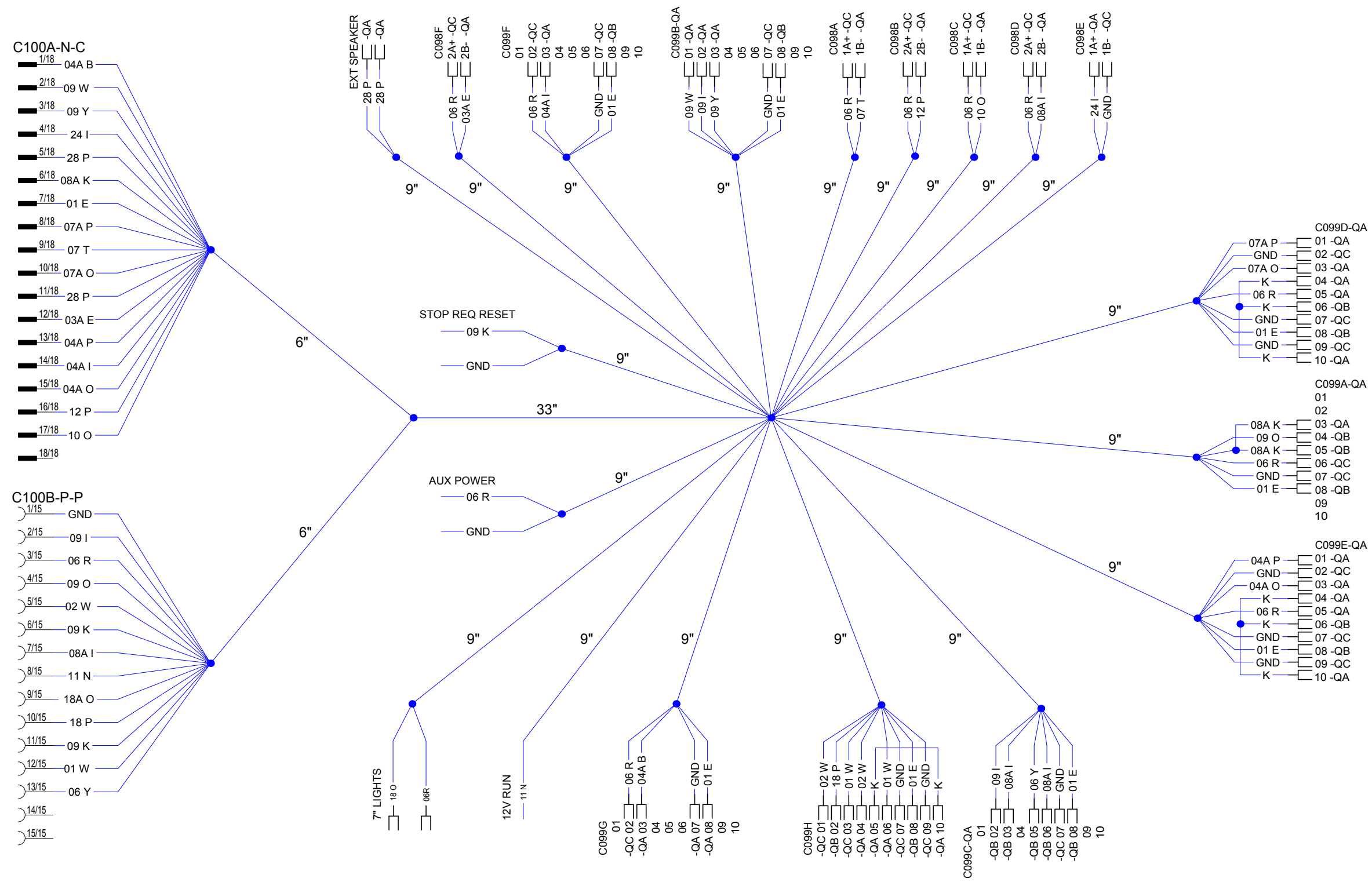


NOTE:

- 1) SEE 0032192 FOR SCHEMATIC.
- 2) ALL DIMENSIONS ARE SHOWN IN INCHES.

REVISIONS				
REV.	BY	DATE	DESCRIPTION	RELEASE #

PRECISIONWORKS MANUFACTURING 120 9TH AVE E-4 LONGMONT, CO 80501		TITLE:	
		READING LIGHT HARNESS, EP3	
THIS DRAWING IS THE PROPERTY OF PRECISIONWORKS MANUFACTURING AND IS NOT TO BE DUPLICATED OR USED IN ANY WAY DETRIMENTAL TO THEIR BEST INTEREST.		ADDITIONAL INFO:	
MATERIAL SPEC:		SIZE:	DWG NO.
		A 00000	0032192-160
MODEL:		SCALE	DATE
Champion		NTS	12/4/07
		SHEET	
		1 OF 1	



REVISIONS				
REV.	BY	DATE	DESCRIPTION	RELEASE #

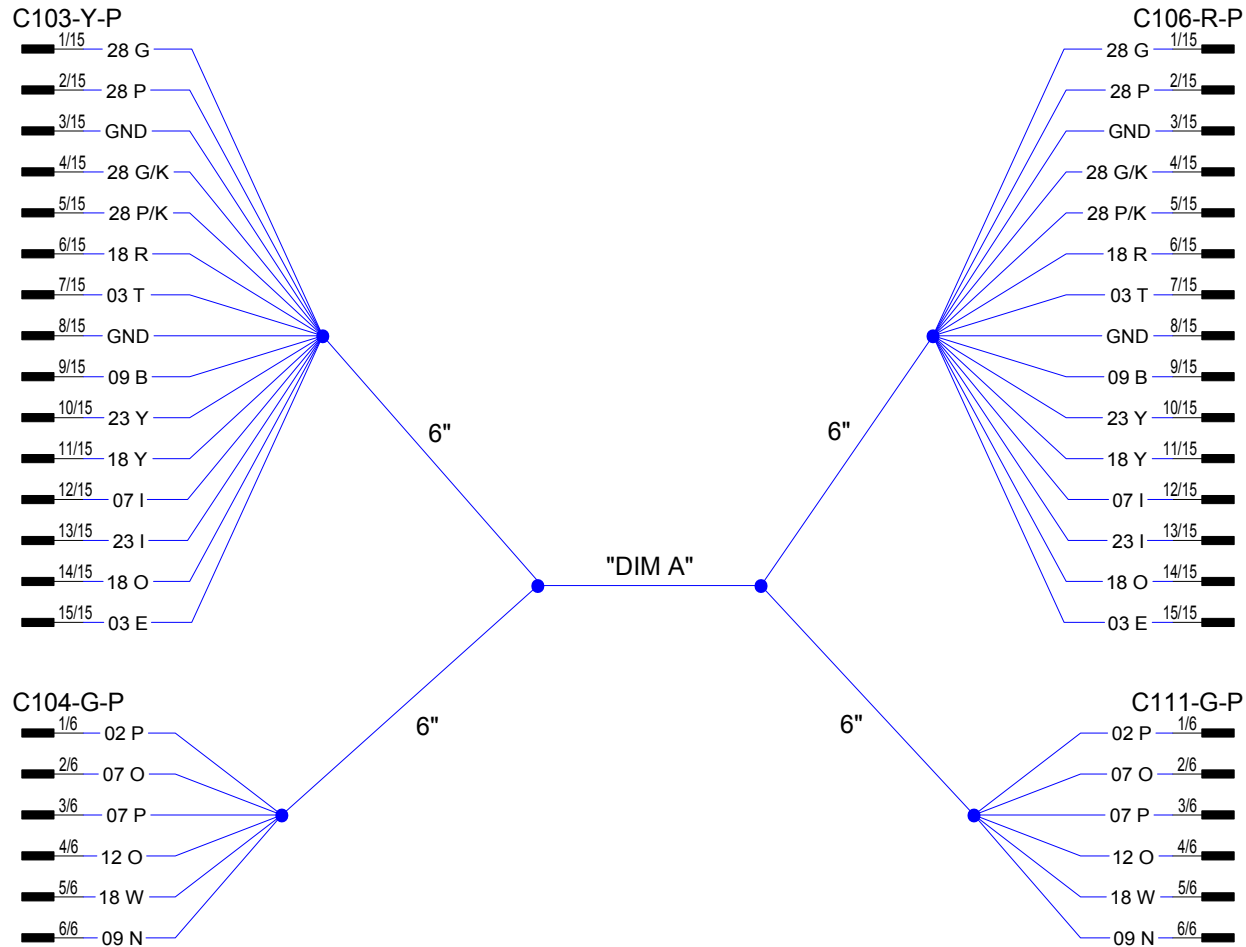
NOTE:
 1) SEE 0032192 FOR SCHEMATIC.
 2) ALL DIMENSIONS ARE SHOWN IN INCHES.

PRECISIONWORKS MANUFACTURING
 120 9TH AVE E-4
 LONGMONT, CO 80501

THIS DRAWING IS THE PROPERTY OF PRECISIONWORKS MANUFACTURING AND IS NOT TO BE DUPLICATED OR USED IN ANY WAY DETRIMENTAL TO THEIR BEST INTEREST.

MATERIAL SPEC:
 MODEL: **Champion**

TITLE: CONSOLE HARNESS, EP3			
ADDITIONAL INFO:			
MATERIAL SPEC:	SIZE: B	RELEASE NO.: 00000	DWG NO.: 0032192-190
SCALE: NTS	DATE:	SHEET: 1 OF 1	



ELDORADO PN	DIM A	UNIT SIZE
0032192-122	214"	190/200/210/220
0032192-125	239"	240/250
0032192-129	268"	270/290
0032192-130	276"	300
0032192-132	300"	320
0032192-135	336"	350

NOTE:
 1) SEE 0032192 FOR SCHEMATIC.
 2) ALL DIMENSIONS ARE SHOWN IN INCHES.

REVISIONS				
REV.	BY	DATE	DESCRIPTION	RELEASE #

PRECISIONWORKS MANUFACTURING 120 9TH AVE E-4 LONGMONT, CO 80501		TITLE:	
		LEFT OVERHEAD HARNESS (LENGTH) EP3	
THIS DRAWING IS THE PROPERTY OF PRECISIONWORKS MANUFACTURING AND IS NOT TO BE DUPLICATED OR USED IN ANY WAY DETRIMENTAL TO THEIR BEST INTEREST.		ADDITIONAL INFO:	
MATERIAL SPEC:		SIZE:	RELEASE NO.
		A	00000
		DWG NO.	
		0032192-LENGTH	
MODEL:		SCALE	DATE
Champion		NTS	12/4/07
		SHEET	
		1 OF 1	

WIRING INFORMATION:

08HAB: Connectors are located inside the driver's side frame rail at the BOC.

08HAE: Connectors are located inside the driver's side frame rail at the EOF.

7-Way Connector Information						
Wire Number	Cavity	Gauge	Color	Description	Fuse Rating (Amps)	Available Current (Amps)
N68BB	A	14	Brown	Tail Light	20	20
N56BB	B	16	Yellow	Left Turn Light	10	8
N57BB	C	16	Light Green	Right Turn Light	10	8
N54BB	D	14	Brown	Marker Light	20	20
N71BB	E	16	Light Blue	Back-up Light	10	6
N12BB	F	14	Light Blue	Accessory Feed	20	20
N11-GD	G	12	White	GND	-	

More 7-Way Connector Information		
Description	Chassis Harness	Body Builder Harness
(4450) 7-Way Connector	2039311C91	2039312C91
Lock	2039342C1	
12 Gauge Seals	589390C1	
14 Gauge Seals	589391C1	
16 Gauge Seals	1652325C1	
12 Gauge Terminals	2039344C1	1687848C1
14 Gauge Terminals	3535486C1	2033912C1
16 Gauge Terminals	2039343C1	2033911C1

3-Way Connector Information

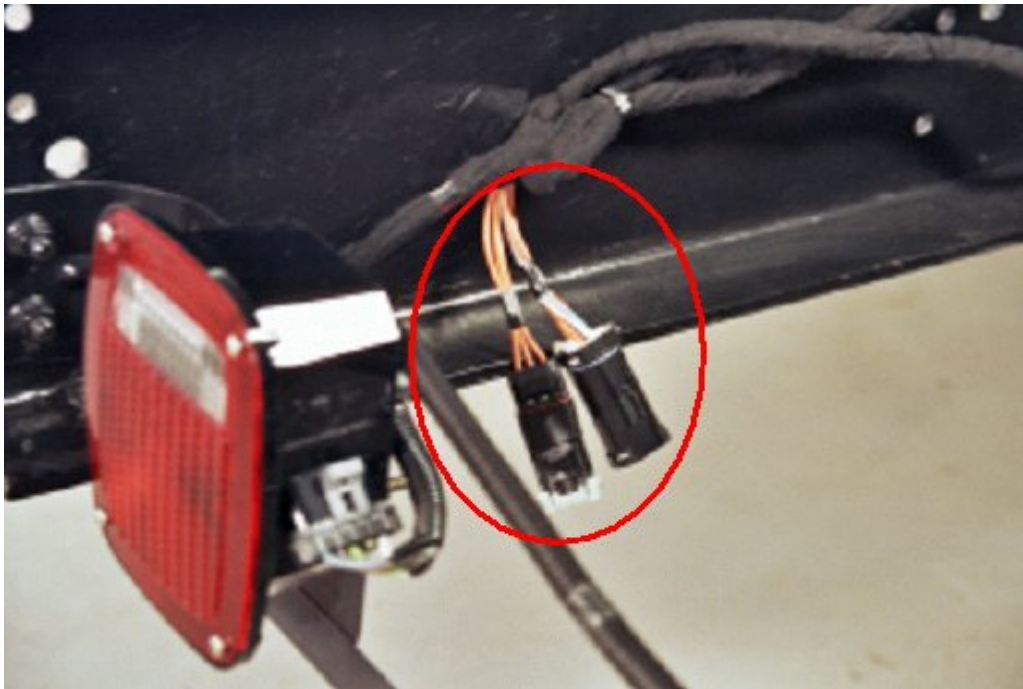
Wire Number	Cavity	Gauge	Color	Description	Fuse Rating (Amps)	Available Current (Amps)
N56BC	A	16	Orange	Left Turn Light	10	6
N57BC	B	16	Orange	Right Turn Light	10	6
N70BB	C	14	Orange	Stop Light	15	15

More 3-Way Connector Information

Description	Chassis Harness	Body Builder Harness
(4460) 3-Way Connector	1686834C1	3553961C1
Lock	1664408C1	3554019C1
14 Gauge Seals	589391C1	
16 Gauge Seals	1652325C1	
14 Gauge Terminals	2033816C1	2033912C1
16 Gauge Terminals	2033819C1	2033911C1



7-Way and 3-Way Connectors for 08HAB (BOC)



7-Way and 3-Way Connectors for 08HAE (EOF)



Section 9 - HVAC & Plumbing

<i>FACTORY AIR CONDITIONING.....</i>	<i>62</i>
<i>PASSENGER AREA AIR CONDITIONING.....</i>	<i>62</i>
<i>ROUTINE PREVENTATIVE MAINTENANCE.....</i>	<i>63</i>
<i>UNDER-THE-HOOD INSPECTION</i>	<i>63</i>
<i>UNDER-THE-BUS INSPECTION.....</i>	<i>63</i>
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<i>PASSENGER HEATING</i>	<i>64</i>

AIR CONDITIONING — “IN-DASH” DRIVER AIR

The front HVAC unit supplies fresh outside air or recirculated inside air, heated or cooled, to the driver, to the front part of the vehicle and to the windshield for defrosting.

The front HVAC unit is located below the dash panel, at the curbside of the vehicle.

Air from the exterior or interior of the coach is forced through the evaporator, the heater core, and the ducts to the windshield, the driver’s feet, driver’s upper body, and to the front of the vehicle.

The driver may adjust the air outlets to the desired position.

A 3-position switch (OFF/LOW/HIGH) controls the blower speed. The blower motor cannot be rebuilt. When blower is faulty, noisy or when there is excessive play on motor shaft, replace complete motor and blower wheel assembly.

The rear evaporator on some buses is ducted to divert some of the A/C output to adjustable aircraft-style vents located above the windows at each side of the bus. This offers passengers a degree of individual control, but, overall the main A/C output is directed down the center aisle through louvers in the evaporator. So keep passenger comfort high on your list of priorities and check the “climate” frequently — especially in extremely hot weather.

All buses equipped with an optional air conditioning system have a single belt-driven compressor. Condensers are located in the engine compartment and/or skirt mounted. Passenger -system evaporators are located overhead at the rear of the passenger seating compartment.

AIR CONDITIONING UNIT - PASSENGER AREA

Buses equipped with passenger air conditioning have an evaporator assembly mounted on the ceiling at the rear of the bus, with separate thermostat and fan-speed controls on the Driver’s Control Console.

For maximum cooling when the bus is first placed into service on a hot day, turn the thermostat and fan-speed controls to their highest settings. The driver should be sure to monitor passenger comfort and adjust the controls accordingly. This is especially important in busses that have both passenger and in-dash air conditioning. These “dual” systems allow the driver to set the temperature and fan controls mounted on the dashboard to cool the cab area. Always keep in mind that the temperature in the passenger compartment is regulated by the two Control Consoles and influenced by passenger proximity to entry doors, large windows and the rear evaporator. Become familiar with the settings that maintain a comfortable and well-balanced climate for all on-board the bus. Refer to included Carrier’s website or your nearest Carrier dealer for more details.

NOTE: The Control Console’s thermostat control activates the compressor and must be turned “ON” for either the passenger or driver’s in-dash air conditioning to operate.

SECTION 9

HVAC & Plumbing

ROUTINE PREVENTATIVE MAINTENANCE

Maintenance on these three basic A/C components can be divided into three areas. You'll need to check under the hood for the compressor and "In-Dash" A/C components, under the bus for the skirt-mounted condenser, and underneath the Overhead Cover on the ceiling mounted Evaporator Unit.

UNDER-THE-HOOD INSPECTION

Whether your bus has passenger air, in-dash air, or both you'll need to periodically inspect components under the hood. With the engine "OFF", check to see that all A/C fitting, hose clamps, and mounting hardware are properly tightened. Signs of oil or dirt buildup at a fitting could indicate a leak in the system. Inspect hoses for signs of wear. Make sure they are not exposed to exhaust heat or routed so they are not rubbing against rough metal edges.

Check the compressor belt for wear, alignment, and proper tension. Loose or improperly aligned pulleys will cause belts to vibrate and "dance". If the belt is correctly tensioned (with engine "OFF"), it should deflect no more than $\frac{1}{2}$ " when pulled "UP" or pushed "DOWN" with a firm hand. Finally, check the sight glass on the condenser for proper charge. To do this, run the engine at fast idle and engage the compressor clutch by turning the A/C on high. Let the A/C unit run for several minutes and observe the refrigerant flow through the glass. If it appears "milky" or "cloudy", you may need to recharge the system.

UNDER-THE-BUS INSPECTION

This step is necessary if you have one of the larger passenger compartment air conditioners. These units have a skirt mounted condenser. With the engine "OFF" and no electrical power supplied to the unit, check for built-up road dirt on the condenser fins. Leaves and other debris that reduce cooling efficiency can usually be removed with a jet stream of water or high pressure air.

Use a water hose to clean fins by spraying water through the fins from the fan motor side, opposing the airflow pattern. Turn fans by hand to make sure they rotate freely. Have any damage to fan blades or guards repaired by your dealer. Check hoses and wiring for signs of wear or improper routing. Keep hoses as far as possible from exhaust heat. Check hose clamps, electrical connections, and fittings for tightness. Also check fitting for telltale dirt and oil that could indicate leakage.

Next, start your engine and run at fast idle. Turn the A/C on high and let the unit run for several minutes before checking the condenser sight glass. Persistent cloudiness indicates low Freon™ charge. Your A/C condenser has safety cutoffs to protect the unit from overheating, but that can be small consolation on a hot day. So have your dealer or qualified service technician add refrigerant as soon as possible whenever it is needed.

While the unit is operating, note the air flow across the condenser fins. If hot air is being recirculated, have your dealer investigate the problem. Carefully touch the hose fitting on the discharge hose (hot gas in). If everything is functioning correctly, it should be hot. Then touch the hose fitting on the liquid line (liquid out). It should run at air ambient temperature and may be slightly warm to the touch.

SECTION 9

HVAC & Plumbing

EVAPORATOR INSPECTION

When the bus is hot, routinely turn “UP” the fan speed control to be sure that the evaporator blower operates at all three settings. This assures that it can handle a variety of warm weather demands. Note that an automatic thermal control switch cuts out the highest fan speed when the air temperature inside the bus drops to moderately cool level.

Check the temperature differential between the air entering and leaving the evaporator. When all major A/C system components are operating properly, the temperature drop between air “IN” and “OUT” will be between 15° to 20° F.

For a thorough inspection, the evaporator housing must be removed. It is secured with screws. You may want to refer to the A/C manual supplied by the manufacturer for specific details on removing the housing and inspecting the evaporator. With the housing removed, make sure the drain lines are secured in place and run downhill for proper drainage.

Also check the drain pan; it should slope down toward the rear of the bus. If the slope needs adjustment, loosen the drain pan screws, pull “down” on the rear edge of the pan, and retighten the screws. Make sure hose clamps and expansion valve fittings are tight. Check hoses for signs of wear and improper routing (rubbing against metal) and fittings for signs of oil or dirt buildup that might indicate a leak. Removable interior trim panels along the roadside of the bus provide access to the hoses routing from the condenser to the evaporator.

With the engine at fast idle and the A/C running, check the sight-glass on the liquid line at the expansion valve. If needed, have a qualified technician add refrigerant, following manufacturer’s recharging procedures. While you have the A/C running check the strainer-drier by alternately touching the inlet and outlet sides of the drier. If both sides feel about the same temperature, the drier is okay. If there is an extreme temperature change, warm “IN” and cold “OUT”, the drier may be clogged. If so, it should be replaced. Replace the evaporator housing when your inspection is complete. A screwdriver is the only tool needed.

For more information visit: www.transportaircon.carrier.com.

PASSENGER HEATING

Concern for passenger comfort should apply in cold weather as well as hot. Your bus may be outfitted with one or more low-profile, floor mounted heaters located underneath passenger seating. The heat source for these optional heaters is the same hot engine “coolant” that circulates through the chassis heater core in the driver’s area. A switch located on the Driver’s Control Console operates a variable-speed fan that draws inside air across the heating coils of the floor mounted heater. The driver’s in-dash temperature control must be switched to the warm or hot air range to assure proper coolant flow to the passenger area heater. Drivers should be mindful that the ambient temperature in the cab may differ considerably from that in the passenger area. They should experiment with adjustments of the in-dash and floor heater settings until both give suitable comfort levels.

Be sure to check heater fan, hoses, and connections whenever your chassis maintenance schedule recommends inspecting or servicing the engine coolant system. Hoses are normally routed at the underbody. Make sure that the hoses are correctly routed and do not rub against metal edges — and that all hose clamps are tight.



Section 10 - Optional Equipment

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TELMA ROUTINE MAINTENANCE 67

BRAUN LIFT..... 68-72

NHSTA OPERATIONS CHECKLIST..... 68

MAINTENANCE AND LUBRICATION..... 68

MAINTENACE AND LUBRICATION SCHEDULE.....70-72

SECTION 10

Optional Equipment

OVERVIEW

There are many options available to your Champion Bus. The following is maintenance information for the options ordered on this bus.

Telma Brake Retarder

The TELMA is a very low maintenance device. However, there are several general maintenance procedures that can improve the life and performance of your TELMA.

Routine Maintenance Checklist

It is recommended that the TELMA maintenance checklist be incorporated into the regular vehicle maintenance schedule. The maintenance intervals may vary depending upon the severity of operation and the annual mileage of the vehicle. The following maintenance schedule is recommended:

	MILES	3,000	12,500	40,000
Grease TELMA (Driveline Mount) <i>NOTE: TELMA's sealed grease fittings do not require greasing.</i>				✓
Check End Play in Rotor and Stator		✓	✓	✓
Check Air Gap Measurement		✓	✓	✓
Check Grease Seal (Driveline Mount)			✓	✓
Check Axle Pinion Seal (Focal Mount)			✓	✓
Check Fastener Tightness – Driveline and Brackets		✓	✓	✓
Check Condition on Rubber (Shock) Mounts				✓
Verify Grounds and Wiring Condition		✓	✓	✓
Check Relay Box Function		✓	✓	✓
Check Relay Box Contacts and Terminal Condition			✓	✓
Verify Retarder Amperage				✓
Check Hydraulic Brake Foot Pedal Adjustment		✓	✓	✓
Verify Dashboard Indicator Light Function		✓	✓	✓
Verify that the TELMA Disengages When Vehicle Stops		✓	✓	✓

Note:

IMPORTANT! In the case of any abnormalities, consult Champion Bus, Inc. or the factory as soon as possible for assistance in the maintenance of your vehicle.

SECTION 10

Optional Equipment

Braun Lift

The Following information has been provided by the Braun Corporation.

NHTSA Operations Checklist

- Vehicle movement is prevented unless the platform is fully stowed.
- Lift operation shall be prevented unless the vehicle is stopped and vehicle movement is prevented.
- The platform will not fold/stow when at least 50 pounds is on the platform.
- The inner rollstop will not raise if occupied by at least 25 pounds.
- The outer barrier will not raise if occupied by at least 25 pounds.
- Verify platform lighting* when lift is deployed and pendant illumination when lift is powered.
- An audio warning (and visual warning for public lifts) will activate if at least 25 pounds is on the threshold area when the platform is at least one inch below floor level.
- Lowering the platform beyond the inner rollstop locking position is allowed only when the inner rollstop is locked in position.
- Raising the platform more than 3" off of the ground is prevented unless the outer barrier is raised.

Note:

Public use vehicle manufacturers are responsible for complying with the lift lighting requirements in Federal Motor Vehicle Safety Standard No. 404, Platform Lift Installations in Motor Vehicles (49 CFR 571.404).

Maintenance and Lubrication

Proper maintenance is necessary to ensure safe, troublefree operation. Inspecting the lift for any wear, damage or other abnormal conditions should be a part of all transit agencies's daily service program. Simple inspections can detect potential problems. The maintenance and lubrication procedures specified in the following schedule must be performed by a Braun authorized service representative at the scheduled intervals according to the number of cycles.

NCL Series lifts are equipped with hardened pins and self-lubricating bushings to decrease wear, provide smooth operation and extend the service life of the lift. When servicing the lift at the recommended intervals, inspection and lubrication procedures specified in the previous sections should be repeated.

Clean the components and the surrounding area before applying lubricants. LPS2 General Purpose Penetrating Oil is recommended where Light Oil is called out. Use of improper lubricants can attract dirt or other contaminants which could result in wear or damage to the components. Platform components exposed to contaminants when lowered to the ground may require extra attention. Lift components requiring grease are lubricated during assembly procedures. When these components are replaced, grease must be applied during installation procedures. Specified lubricants are available from The Braun Corporation.



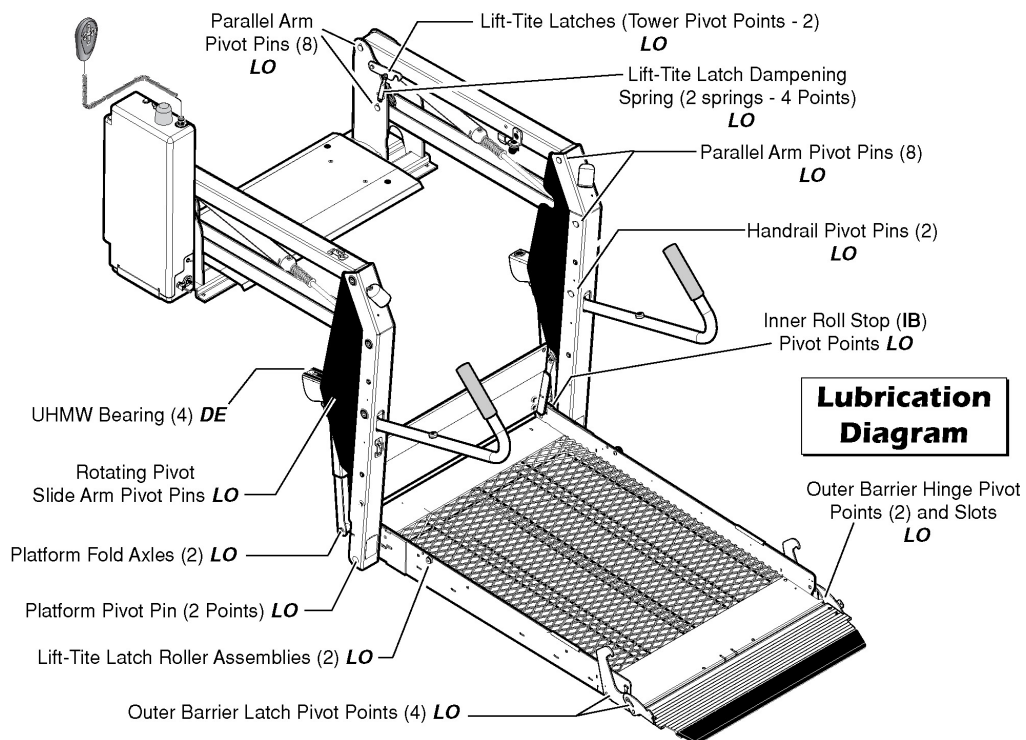
SECTION 10

Optional Equipment

**Maintenance and lubrication procedures must be performed as specified by an authorized service technician. Failure to do so may result in serious bodily injury and/or property damage.

All listed inspection, lubrication and maintenance procedures should be repeated at "750 cycle" intervals following the scheduled "4500 Cycles" maintenance. These intervals are a general guideline for scheduling maintenance procedures and will vary according to lift use and conditions. Lifts exposed to severe conditions (weather, environment, contamination, heavy usage, etc.) may require inspection and maintenance procedures to be performed more often than specified.

Discontinue lift use immediately if maintenance and lubrication procedures are not properly performed, or if there is any sign of wear, damage or improper operation. Contact your sales representative or call The Braun Corporation at 1-800-THE LIFT. One of our national Product Support representatives will direct you to an authorized service technician who will inspect your lift.



SECTION 10

Optional Equipment

Maintenance and Lubrication Schedule

750 Cycles	Outer barrier hinge pivot points (2)	Apply Light Oil - See Lubrication Diagram
	Outer barrier latch (pivot/slide points)	Apply Light Oil - See Lubrication Diagram
	Outer barrier latch lever pivot points	Apply Light Oil - See Lubrication Diagram
	Lift-Tite™ latches (tower pivot points - 2)	Apply Light Oil - See Lubrication Diagram
	Lift-Tite™ latch gas (dampening) spring pivot points (2 springs - 4 points)	Apply Light Oil - See Lubrication Diagram
	Inspect Lift-Tite™ latches and gas springs for wear or damage (bent, deformed or misaligned), positive securement (external snap rings) and proper operation	Resecure, replace defective parts or otherwise correct as needed. Note: Apply Light Grease to Lift-Tite™ latch tower pivot point if replacing latch.
	Inspect outer barrier for proper operation	Correct or replace defective parts.
	Inspect outer barrier latch for proper operation, positive securement, and detached or missing spring	Correct or replace defective parts and/or relubricate. See Lubrication Diagram
Inspect lift for wear, damage or any abnormal condition	Correct as needed.	
Inspect lift for rattles	Correct as needed.	

1500 Cycles	<i>Perform all procedures listed in previous section also</i>	
	Platform pivot pin bearings (2)	Apply Light Oil - See Lubrication Diagram
	Platform fold axles (2)	Apply Light Oil - See Lubrication Diagram
	Inner roll stop (IB) lever bearings (2)	Apply Light Oil - See Lubrication Diagram
	Inner roll stop (IB) lever slot (2)	Apply Light Oil - See Lubrication Diagram
	Rotating pivot slide arm pivot pins (2)	Apply Light Oil - See Lubrication Diagram
	Parallel arm pivot bearings (16)	Apply Light Oil - See Lubrication Diagram
	Handrail pivot pin bearings (4)	Apply Light Oil - See Lubrication Diagram
	Hydraulic cylinder bushings (8)	Apply Light Oil - See Lubrication Diagram
	Inspect Lift-Tite™ latch rollers for wear or damage, positive securement and proper operation (2)	Correct, replace defective parts and/or relubricate.
	Inspect inner roll stop (IB) for: <ul style="list-style-type: none"> • Wear or damage • Proper operation. Roll stop should just rest on top surface of the base plate. • Positive securement (both ends) 	Resecure, replace or correct as needed. See Platform Angle Instructions and Microswitch Adjustment Instructions.

continued

SECTION 10

Optional Equipment

Maintenance and Lubrication Schedule

continued	<i>Perform all procedures listed in previous section also</i>	
1500 Cycles	Inspect handrail components for wear or damage, and for proper operation	Replace defective parts.
	Inspect microswitches for securement and proper adjustment.	Resecure, replace or adjust as needed. See Microswitch Adjustment Instructions.
	Make sure lift operates smoothly	Realign towers and vertical arms. Lubricate or correct as needed.
	Inspect external snap rings: <ul style="list-style-type: none"> • Handrail pivot pins (2 per pin) • Platform slide/rotate pivot pins (2 per pin) • Platform fold axles (1 per axle) • Inner roll stop (IB) lever bracket pins (1 per pin) • Lift-Tite™ latch gas (dampening) spring (2 per spring) 	Resecure or replace if needed.
	Inspect platform fold axles and bearings for wear or damage and positive securement	Replace defective parts and resecure as needed. Apply Light Oil.

1500 Cycles	Remove pump module cover and inspect: <ul style="list-style-type: none"> • Hydraulic hoses, fittings and connections for wear or leaks • Harness cables, wires, terminals and connections for securement or damage • Control board, circuit breaker, power switch and lights for securement or damage 	Resecure, replace or correct as needed.
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continued	<i>Perform all procedures listed in previous sections also</i>	
4500 Cycles	Inspect cotter pins on platform pivot pin (2)	Resecure, replace or correct as needed
	Hydraulic Fluid (Pump) - Check level. Note: Fluid should be changed if there is visible contamination. Inspect the hydraulic system (cylinder, hoses, fittings, seals, etc.) for leaks if fluid level is low.	Use Dextron III transmission fluid. Check fluid level with platform lowered fully and roll stop unfolded fully . Fill to within 1/2" of the bottom of the 1-1/2" fill tube (neck).
	Inspect cylinders, fittings and hydraulic connections for wear, damage or leaks	Tighten, repair or replace if needed.
	Inspect outer barrier cylinder hose assembly (hose, fasteners, connections, etc.) for wear, damage or leakage (if equipped)	Tighten, repair or replace if needed.

SECTION 10

Optional Equipment

Maintenance and Lubrication Schedule

continued	<i>Perform all procedures listed in previous section also</i>	
4500 Cycles	Inspect parallel arms, bushings and pivot pins for visible wear or damage	Replace if needed.
	Inspect parallel arm pivot pin mounting bolts (8)	Tighten or replace if needed.
	Inspect platform pivot pin, bushings and vertical arms for wear, damage and positive securement	Replace defective parts and resecure as needed. Apply Light Grease during reassembly procedures.
	Inspect upper/lower fold arms, rotating pivot slide arms, slide support arms and associated pivot pins, bushings, and bearings for visible wear or damage	Replace if needed.
	Inspect gas springs (cylinders) for wear or damage, proper operation and positive securement (IB)	Tighten, replace or correct as needed
	Inspect rotating pivot slide arm UHMW slide bearings (buttons)	Apply Door-Ease or replace if needed. See Lubrication Diagram.
	Inspect vertical arm plastic covers	Resecure or replace if needed.
Inspect power cable	Resecure, repair or replace if needed.	

4500 Cycles	Mounting	Check to see that the lift is securely anchored to the vehicle and there are no loose bolts, broken welds, or stress fractures.
	Decals and Antiskid	Replace decals if worn, missing or illegible. Replace antiskid if worn or missing. See Decals and Antiskid section on pages 35-37.

Consecutive 750 Cycle Intervals	Repeat all previously listed inspection, lubrication and maintenance procedures at 750 cycle intervals.	
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Typical Maintenance Schedule

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<i>DRIVER'S RESPONSIBILITIES.....</i>	<i>75</i>
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SECTION 11

Maintenance Checklists

BUS MAINTENANCE

The following pages contain checklists that show when certain maintenance procedures should be completed to help maintain a properly operating bus. These checklists are intended as supplements — not substitutes — for the maintenance schedules provided by the manufacturers of the vehicle's chassis or other major components.

These checklists focus on bus maintenance rather than chassis maintenance. The lists are not comprehensive and do not cover many critical areas such as engine or chassis lubrication. As such, it is the bus owner's responsibility to consult the materials assembled in the General Coach America, Inc. Operation, Service, and Parts Manuals for more complete information on keeping your bus in top condition.

Furthermore, technicians responsible for chassis maintenance should follow the recommendations on service intervals, maintenance procedures, lubrication specifications, and approved service replacement parts that are provided either in the chassis Parts, Service or Maintenance manuals. Failure to do so may void the chassis manufacturers' warranties.

The following checklists are organized into Daily, Weekly, Monthly, Semi-Annual, Annual and Cyclical (dependant on cycles, mileage or hours) tables so that the lists can be copied and kept in the bus for convenient up-to-date records. Please note that some items on the checklists may not be applicable to your vehicle and that copies and alterations can be made as needed for each unit being maintained.

DRIVER'S RESPONSIBILITIES

Regardless of who is responsible for bus maintenance, it is the driver's responsibility to report—in writing—any problems they encounter while operating the vehicle. Anything that might affect the safe operation of the bus should be reported promptly. System malfunctions or unusual conditions including, but not limited to, the following should be reported immediately:

- Steering
- Lights
- Tires
- Suspension
- Windows
- Seat Belts
- Unusual Vibrations
- Unusual Odors (for example; Hot Rubber or Burning Insulation)
- Brakes
- Windshield Washer & Wipers
- Power Train (Engine, Transmission)
- Doors
- Wheelchair Lifts & Restraints
- Unusual Noises
- Unusual Exhaust Noise or Fumes

SECTION 11

Maintenance Checklists

DAILY MAINTENANCE CHECKLIST

ITEM	SUGGESTED INSPECTION	ACCEPTED REJECTED	INITIALS
FUEL	FILL FUEL TANK WITH ENGINE "OFF". FILL DAILY OR AS NEEDED		
DRIVER'S COMPARTMENT	CLEAN & INSPECT		
DRIVER'S SEAT	CHECK OPERATION OF ADJUSTING MECHANISM		
DRIVER'S WINDOW (CHASSIS)	CHECK OPERATION		
DRIVER'S DOOR (CHASSIS)	CHECK ALIGNMENT, LATCH & SEAL		
WINDSHIELD, DRIVER'S DOOR WINDOW	CLEAN & INSPECT FOR DAMAGE		
FIRE EXTINGUISHER	CHECK MOUNTING & CHARGE PRESSURE		
FIRST AID KIT	CHECK CONTENTS. REPLENISH AS NEEDED		
FLARE & REFLECTIVE HAZARD SIGN KIT	CHECK CONTENTS		
FLOOR COVERING	INSPECT FOR DAMAGE, WEAR & TEARS. CLEAN		
MIRRORS (INTERIOR)	INSPECT FOR DAMAGE. ADJUST FOR OPTIMAL VIEW.		
MIRRORS (EXTERIOR)	INSPECT FOR LOOSE OR DAMAGED SUPPORT ARMS & BRACKETS. ADJUST FOR OPTIMAL VIEW.		
DESTINATION SIGNS	INSPECT FOR DAMAGE & LEAKS. CHECK LIGHT.		
SUN VISOR	CHECK TO SEE IF VISOR STAYS IN PLACE. TIGHTEN IF NECESSARY.		
WINDSHIELD WIPERS & WASHER	CHECK BLADES FOR STREAKING. FILL WASHER FLUID RESERVOIR AS NEEDED.		
DEFROSTER & FRONT HEATER BLOWER	CHECK OPERATION, BY TURNING "ON" THE FAN & DEFROSTER WITH THE ENGINE RUNNING.		
DASHBOARD WARNING LIGHTS	WARM UP ENGINE. NO RED LIGHTS SHOULD SHOW AND NO BUZZER SHOULD SOUND.		
FRONT HEATER	CHECK OPERATION WITH ENGINE RUNNING.		
FAST IDLE SWITCH	CHECK ENGINE RPMS. ADJUST DAILY OR AS NEEDED		

SECTION 11 Maintenance Checklists

DAILY MAINTENANCE CHECKLIST (CONT'D)

ITEM	SUGGESTED INSPECTION	ACCEPTED REJECTED	INITIALS
ROOF ESCAPE HATCH	CHECK OPERATION, THEN CLOSE & LATCH. INSPECT SEALS		
WHEELCHAIR LIFT	CHECK OPERATION		
PARATRANSIT DOORS & PARKING BRAKE INTERLOCK	CHECK OPERATION BY TRYING TO MOVE THE BUS WITH THE DOOR "OPENED".		
ENTRY DOOR SWITCH	CHECK OPERATION		
ENTRY DOOR CONTROLS	"OPEN/CLOSE" DOOR. INSPECT ACTION OF DOOR.		
ENTRANCE STEPS	CLEAN & INSEPECT FOR LOOSE TREADS.		
ENTRY DOOR SEALS	INSPECT FOR DAMAGE.		
REAR EMERGENCY EXIT DOOR	CHECK OPERATION, BE SURE INSTRUCTION ARE CLEARLY VISABLE.		
DOOR FLAP (LEAF) ALIGNMENT	CHECK & ADJUST IF NEEDED		
PASSENGER SEATS	CLEAN. INSPECT FOR DAMAGE & LOOSE MOUNTING FASTENERS.		
PASSENGER AREA	CHECK FOR DAMAGE, MISPLACED ITEMS & PERSONAL EFFECTS LEFT BEHIND BY PASSENGERS.		
CARPETING	VACUUM. CLEAN UP ANY SPILLS. CHECK FOR DAMAGE TO CARPETING (RIPS, TEARS, STAINS, ETC.)		
FLOOR RUBBER	CLEAN USING WARM WATER/SOAP SOLUTION. AVOID EXCESSIVE USE OF WATER. CHECK FOR DAMAGE TO FLOOR RUBBER (RIPS, TEARS, STAINS, ETC.)		
CLOSURES, ACCESS DOORS	INSPECT FOR SECURE LATCHING		
REFLECTORS	INSPECT FOR DAMAGE. CLEAN AS NEEDED TO ASSURE VISIBILITY.		
BODY EXTERIOR	CLEAN BODY & WINDOWS		
EXTERIOR FINISH	INSPECT FOR SCRATCHES, DENTS, OR CRACKS. RETOUCH & REPAIR AS NEEDED.		
RUB RAILS	INSPECT FOR DAMAGE		
SKIRT PANELS	INSPECT FOR DAMAGE		

SECTION 11

Maintenance Checklists

DAILY MAINTENANCE CHECKLIST (CONT'D)

ITEM	SUGGESTED INSPECTION	ACCEPTED REJECTED	INITIALS
BACK-UP ALARM	INSPECT FOR SOUND WHEN BACKING UP.		
CLEARANCE, SIDEMARKER & IDENTIFICATION LIGHTS	CHECK OPERATION AND CLEAN LENSES IF NECESSARY.		
CURB LIGHTS	CHECK OPERATION AND CLEAN LENSES IF NECESSARY.		
DIRECTIONAL LIGHTS	CHECK OPERATION AND CLEAN LENSES IF NECESSARY.		
HAZARD WARNING LIGHTS	PLACE HAZARD SWITCH TO 'ON' & CHECK OPERATION OF FRONT, SIDE, AND REAR LIGHTS		
HEADLIGHTS	CHECK 'HIGH' & 'LOW' BEAM OPERATION		
HORN	CHECK OPERATION		
INTERIOR LIGHTS	CHECK OPERATION		
STEPWELL LIGHTS	CHECK OPERATION, CLEAN LENSES.		
EMERGENCY EXIT LIGHTS	CHECK OPERATION		
READING LIGHTS	CHECK AND REPAIR AS NEEDED.		
EXTERIOR LIGHTS	CHECK OPERATION, MOUNTING AND LENSES.		
TIRES	CHECK 'COLD' FOR PROPER AIR PRESSURE. LOOK FOR BULGES, KNOTS, CUTS, PUNCTURES, ABRASIONS, OR SEPARATIONS.		
TIRES	INSPECT FOR DAMAGED VALVE STEMS. REPLACE MISSING VALVE STEM CAPS.		
WHEELS	INSPECT RIMS & WHEELS FOR DAMAGE.		
AIR CONDITIONING CONTROL SYSTEM	CHECK OPERATION BY PLACING THE A/C SYSTEM SWITCH TO 'ON' AND THE A/C CONTROL TO 'COOL'.		
PASSENGER HEATER	CHECK OPERATION USING 'IN-DASH' TEMPERATURE CONTROL & CONSOLE FAN.		

SECTION 11 Maintenance Checklists

DAILY MAINTENANCE CHECKLIST (CONT'D)

ITEM	SUGGESTED INSPECTION	INITIALS
Emergency Exit Windows	Inspect Latches & Operation. Emergency Exit Windows must open freely. Lubricate as needed.	
Handrails, Stanchions, Modesty Panels	Inspect for damage and loose mounting screws.	
Interior Trim	Inspect for damage and/or missing screws.	
Underbody	Flush with water to remove road debris.	

SECTION 11

Maintenance Checklists

WEEKLY MAINTENANCE CHECKLIST

ITEM	SUGGESTED INSPECTION	ACCEPTED REJECTED	INITIALS
BATTERY MOUNTING	INSPECT HOLD DOWN CLAMPS FOR TIGHTNESS AND IF THEY ARE IN GOOD WORKING CONDITION.		
AIR CIRCULATION SYSTEM	CLEAN AIR INTAKE AND EXHAUST GRILLES		
LOUVERS - INSIDE AIR	CLEAN		

SECTION 11 Maintenance Checklists

MONTHLY MAINTENANCE CHECKLIST

ITEM	SUGGESTED INSPECTION	ACCEPTED REJECTED	INITIALS
ALL DOOR SEALS	APPLY A LIGHT COAT OF SILCONE TO KEEP RUBBER SUPPLE.		
DOOR MOTOR & BASE PLATE	CHECK MOUNTING BOLT & CONTROL ROD'S JAM NUTS FOR TIGHTNESS.		
DOOR OPENING & CLOSING SPEEDS	INSPECT FOR PROPER SPEED. ADJUST IF NECESSARY.		

ANNUAL MAINTENANCE CHECKLIST

ITEM	SUGGESTED INSPECTION	ACCEPTED REJECTED	INITIALS
WHEELCHAIR LIFT	HAVE DEALER INSPECT & SERVICE. CHANGE PUMP OIL.		

SECTION 11

Maintenance Checklists

CYCLICAL MAINTENANCE CHECKLIST

ITEM	SUGGESTED INSPECTION	FREQUENCY	ACCEPTED REJECTED	INITIAL
PASSENGER ENTRY DOOR	INSPECT FOR DAMAGE, LUBRICATE LOWER HINGE PINS	2000 CYCLES		
PASSENGER ENTRY DOOR	INSPECT FOR DAMAGE & LOOSE BOLTS. LUBRICATE UPPER HINGE PINS.	6000 CYCLES		
SKIRT MOUNTED CONDENSER	INSPECT, CLEAN COIL & FINS WITH JET OF WATER. STRAIGHTEN BENT FINS WHEN NECESSARY.	100 HOURS		
AIR CONDITIONING COMPRESSOR	CHECK COMPRESSOR DRIVE BELT CONDITION & TENSION	100 HOURS		
AIR CONDITIONING COMPRESSOR	CHECK COMPRESSOR CYLINDER UNDER LOAD CONDITIONS. ADJSUT IF NECESSARY.	100 HOURS		
AIR CONDITIONING COMPRESSOR CLUTCH ASSEMBLY	CHECK FOR SIGNS OF OVERHEATING OR SLIPPAGE.	100 HOURS		
AIR CONDITIONING SYSTEM	INSPECT HOSES, HOSE CLAMPS, FAN, FAN GUARD. INSPECT BELTS & FITTINGS FOR TIGHTNESS.	300 HOURS		
AIR CONDITIONING REFRIGERENT LEVEL	CHECK REFRIGERENT LEVEL AT RECEIVING TANK SIGHT GLASS. CHECK FOR REFRIGERENT OIL LEAKS. CHECK A/C CHARGE.	600 HOURS		
CONDENSER FAN DRIVE MOTORS	INSPECT FAN BLADES FOR DAMAGE & PROPER CLEARANCE TO SHROUD. INSPECT BRUSHES FOR WEAR.	600 HOURS		
EVAPORATOR	CHECK AIR TEMPERATURE AT "IN" & "OUT". TEMPERATURE SHOULD SHOULD BE 15°F TO 20°F.	600 HOURS		
EVAPORATOR FINS	CLEAN COIL & STRAIGHTEN BENT FINS	600 HOURS		
REFRIGERENT SYSTEM	CHECK HOSES & TUBING FOR LEAKS	600 HOURS		
AIR CONDITIONING COMPRESSOR	CHECK COMPRESSOR & PLATFORM MOUNTING BOLTS FOR TIGHTNESS	600 HOURS		
AIR CONDITIONING COMPRESSOR CLUTCH	CHECK WIRING HARNESS	600 HOURS		
REFRIGERENT PRESSURE	CHECK WITH MANIFOLD GAUGE	1000 HOURS		
DUAL WHEEL LUG NUTS	CHECK TORQUE. TIGHTEN AS NEEDED.	100 MILES 500 MILES 6000 MILES		

SECTION 11 Maintenance Checklists

SEMI-ANNUAL MAINTENANCE CHECKLIST

ITEM	SUGGESTED INSPECTION	FREQUENCY	ACCEPTED REJECTED	INITIAL
WHEEL LUG NUTS	CHECK TORQUE. TIGHTEN AS NEEDED	500 MILES 6000 MILES		
AIR RIDE SUSPENSION	CHECK TORQUE ON NUTS, BOLTS & FITTINGS. TIGHTEN OR REPLACE AS NEEDED.	1000 MILES 3000 MILES 12,000 MILES		
BRAKE RETARDER	INSPECT & PERFORM MECHANICAL MAINTENANCE	REFER TO OEM MANUAL		
DRIVER'S SEAT	CHECK SEAT MOUNTING BOLTS FOR TIGHTNESS	6000 MILES		
BATTERY, LOW MAINTENANCE TYPE	INSPECT. ADD ELECTROLYTES AS NEEDED.	6000 MILES		
PASSENGER SEATS	INSPECT SEAT MOUNTING BOLTS AND BRACKETS.	12,000 MILES		
UNDERBODY	INSPECT WELDS AT FRAME & OUTRIGGERS, BULKHEADS & BODY FRAME.	12,000 MILES		
BATTERY	CLEAN & INSPECT	12,000 MILES		
TIRES	ROTATE TIRES	12,000 MILES		
WHEEL MOUNTING STUDS	INSPECT FOR DAMAGED THREADS.	12,000 MILES		
AIR RIDE SPRING & SHOCK ABSORBERS	INSPECT FOR DAMAGE OR WEAR. REPLACE IF NECESSARY. CORRECT ANY CONDITION CAUSING ABRASION OF AIR BAGS.	12,000 MILES		
TAG AXLE & FRONT PIVOT CONNECTIONS	CHECK FOR LOOSNESS. RE-TORQUE OR REPLACE PARTS AS NEEDED.	12,000 MILES		
BATTERY CABLES	INSPECT FOR FRAYED, LOOSE, CORRODED OR DAMAGED CABLES.	24,000 MILES		
HEADLIGHTS	INSPECT HEADLIGHT ALIGNMENT. ADJUST IF NECESSARY.	24,000 MILES		
WIRING	CHECK HARNESSSES & CABLES HAVE ENOUGH CLEARANCE FROM SHARP OBJECTS, HEAT SOURCES, AND MOVING PARTS.	24,000 MILES		
HEATER CORE	CLEAN & STRAIGHTEN BENT FINS.	24,000 MILES		
BRAKE RETARDER	CHECK WITH AUTHORIZED SERVICE DEPARTMENT TO INSURE PROPER OPERATION.	30,000 MILES		



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