DEFENDER CommutER bus
DIEsEL INtERNAtIoNAL CHAssIs
mAINtENANCE mANuAL

IC CoRpoRAtIoN
model: HC-series

Issued: 04/08

FoRwARD

Schedule maintenance provides a key element for safe operation of your vehicle. A proper maintenance program also helps to minimize downtime and to safeguard warranties. This maintenance manual provides information necessary for years of safe, reliable, and cost-efficient vehicle operation.

Perform daily pre-trip inspections and maintenance as outlined in the vehicle manual. Perform the operations in the maintenance manual at scheduled intervals based upon distance traveled or hours of operation. Your authorized servicing dealer has the qualified technicians and equipment to perform this maintenance for you. Your dealership can also set up a scheduled maintenance program tailored specifically to your needs.

ImpoRtANt: Descriptions and specifications in this manual were in effect at the time of printing. General Coach America, Inc. reserves the right to discontinue models at any time, or change specifications and design without notice and without incurring obligation.

ENvIRoNmENtAL CoNCERNs AND RECommENDAtIoNs

Whenever you see instructions in this manual to discard materials, you should attempt to reclaim and recycle them. To preserve our environment, follow appropriate environmental rules and regulations when disposing of materials.

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Customer Service 01

CustomER sERvICE

When calling General Coach America, Inc. please verify which department you are calling, i.e.:

- Parts Department
- Service Department
- Warranty Authorization
- Delivery/Transportation (Vehicle Deliveries, Title, Invoicing)
- Technical Publications

pARts DEpARtmENt

The General Coach America Parts Department stocks a complete line of conversion parts. To order parts call Toll Free (800) 331-5761. Hours are 8:00 A.M. to 5:00 P.M. Eastern Standard Time weekdays, with a 24-hour electronic answering machine to process orders after regular hours.

sERvICE DEpARtmENt

The General Coach America, Inc. Service Department is always ready to assist you with any service problems you may have. Depending on your location, you may desire to obtain service at your local area.

If you should have a problem and need help and/or information, please call our Service Department at (810) 724-1753 during the hours of 8:00 A.M. to 5:00 P.M. (Eastern Standard Time).

We at General Coach America, Inc. are interested in complete customer satisfaction and are eager to help you with all your maintenance needs. If a service or repair problem is not resolved to your satisfaction we suggest you do the following:

- Discuss the situation with our factory service, warranty, or parts technicians. Make him or her aware of your problem and allow them the opportunity to assist you.
- If no satisfaction is received from the above mentioned personnel, contact the Parts & Service Manager.

wARRANtY CLAIms pRoCEDuREs

General Coach America, Inc. takes great pride and care in the manufacturing of its shuttle busses. We not only build high quality products by using the best available materials and the latest transportation technology, we support our products with unparalleled service and the best warranties offered in the industry today.

Normally, any situation that arises in connection with the safe operation and service of your vehicle will be handled effectively by your local General Coach America dealer.

We recognize, however, that despite the best intentions of everyone concerned, misunderstandings may occur. To further assure your complete satisfaction, we have developed the following procedures for prompt service and reimbursement:

wARRANtY AutHoRIZAtIoN pRoCEDuRE

1. Establish an IN-SERVICE-DATE and have mileage and the General Coach America body serial number available.

2. Prior to repairs and/or work being performed for each transaction, you must obtain an **AUTHORIZATION NUMBER** and dollar approval for all parts and labor for warranty work. EXCEPTION: No prior authorization is needed if total repair does not exceed $200.00.

3. Bus body repairs require (2) two estimates and photos of the damaged area(s) are to be included with estimates.

4. Purchased parts are to be bought through the General Coach America, Inc.'s Parts Department:
   - Parts are to be paid for when ordered and total cost submitted on warranty claim.
   - Defective parts are to be returned with parts tag attached, unless otherwise directed by General Coach's Service Department.
   - General Coach America, Inc. pays for NORMAL GROUND SHIPPING ONLY! Any other means of shipping is the customer's responsibility.

5. General Coach America, Inc. Warranty Claims are to be filled out completely, then submitted to General Coach America, Inc.'s Service Department:
   - Claims are to be submitted within 30 days of repair.
   - General Coach America, Inc. will pay component warranty for amount allowed by O.E.M.

6. The customer has the right to resubmit any rejected or reduced claim:
   - General Coach America, Inc. will furnish a reason for all rejected or reduced claims.
   - The customer must resubmit warranty claim within 30 days with full explanation.

7. The OEM manufacturer covers chassis warranty claims.

8. When phoning in a Warranty Claim you **MUST** have the **GENERAL COACH AMERICA, INC.'S SERIAL NUMBER, MILEAGE, AND "IN-SERVICE" OR DELIVERY DATE.** Upon receipt of your call you will be directed to the

nearest authorized service facility, if one is available in your area. For authorization, contact the General Coach America, Inc.'s Service Department at **(810) 724-1753.**

REpLACEmENt pARts

1. All replacement parts will be billed and invoiced upon shipment. All freight for parts ordered from General Coach America, Inc. will be billed at that time, unless otherwise specified.

2. Defective merchandise will be credited and must be returned with thirty (30) days in order to receive credit, and **MUST** include copy of invoice to the original shipment.

3. All defective parts must be sent to; Warranty Parts Return. This must include a copy of the invoice of the original shipment. Each part **MUST** be tagged with proper identification as listed below:

Date: _____

Customer Name: _____

Description of Part: _____

Bus Serial Number: _____

"In-Service" Date: _____

wARRANtY EXCLusIoN

General Coach America, Inc. only uses the finest national brand components of those manufacturers who offer widespread warranty centers. Therefore, General Coach America, Inc. does not warranty beyond faulty installation such as:

- Tires - contact local tire dealer.
- Air Conditioners - contact applicable manufacturer.
- Lifts - contact applicable manufacturer.
- Audio, Video - contact applicable manufacturer.

CustomER AssIstANCE

01 Customer Service

Once again, we request your cooperation in conforming to these procedures. They are designed to afford you the maximum in service and satisfaction.

If a special circumstance arises, or any help is required after you have followed the above procedures, please contact: Parts & Service Manager

Phone: (810) 724-1753 x561, between the hours of 8:00 A.M. to 5:00 P.M. (Eastern Standard Time).

pARts AND sERvICE DIRECtoRY

General Coach America, Inc.
331 Graham Rd.
Imlay City, MI 48444

Phone: (810) 724-6474

(800) 331-5761

Direct Dial: (810) 724-1753 + ext. or (800) 776-4943 + ext.

Fax: (810) 724-6478

Email: service@championbus.com

Phone:	**All parts and service Calls:**	**ext. 561**
	Warranty:	Dick Cutcher ext. 333
	Parts & Service Supervisor:	Rodney Friday ext. 394

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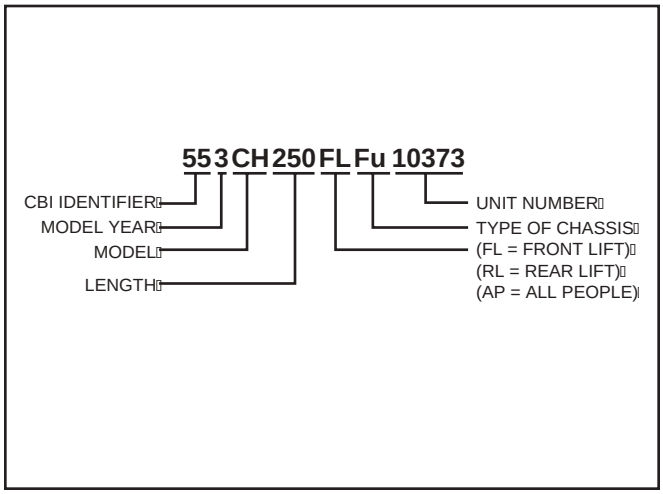
Fig. 1 - Serial Number Plate

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 on the driver's door opening pillar. It is used by the manufacturer to identify the bus and it's 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.



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.

vEHICLE's DAsH pANEL

Fig. 3 -

⚠ 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.

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

Vehicle Dashboard Options specific to your bus are discussed in Section 4 - Electrical & Lighting.

Fig. 4 - Dash Panel

muLtIpLEX CoNtRoL CoNsoLE

The **Multiplex 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 lets the driver know if something is ajar, etc. The **Multiplex 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. 5 - Dash Mounted Multiplex 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.

If your bus is equipped with Passenger Area Heating and Cooling systems, refer to their sections for detailed information on operation and maintenance.

Fig. 6 - Cab Area Heating/Cooling

powER DIstRIbutIoN CENtER

The **Power Distribution Center (Fuse Panel)** provides power to different electrical systems within the bus. On the International chassis, the Fuse Panel is mounted to

Fig. 7 - Power Distribution Center

Activate the Hazard Warning Lights. Refer to the Chassis Owners Manual for instructions.

! ImpoR t ANt 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

1. Disconnect battery ground cable.

⚠ CAUTION

Do Not tow uNbRAKED vEHICLEs IF 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.

the right of the Entry Door opening. All **Power Distribution Centers (Fuse Panels)** are totally enclosed and have hinged access doors for easy access to the fuse block and electrical relays.

IN CAsE oF AN EmERgENCY

HAZARD wARNINg LIgHts

⚠ 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

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 towing device. Due to the many variables that exist in towing, position 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.
5. Connect clearance, tail, and signal lights to the towing vehicle's wire harness. Connect any special towing lights required by local regulations.

⚠ 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.

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, position 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.

EmERgENCY stARtINg wItH JumpER CAbLEs

⚠ 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.

When using jumper cables, use the following instructions:

1. Apply vehicle's parking brake and turn "OFF" any exterior or interior lights that may be "ON" and any other electrical loads.
2. Remove cover from Booster Battery Receptacle. (Refer to Fig. 8).
3. Insert the Standard Type Plug from a your booster battery.
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 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.

CHANgINg A FLAt tIRE (REFER to YouR oEm CHAssIs mANuAL FoR JACKINg poINts)

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.
5. Block the diagonally opposite the wheel being changed.

Note:

⚠ 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.

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 450 to 500 lbs ft. (610 to 678 N·m).
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 450 to 500 lbs ft. (610 to 678 N·m)

RuNNINg out oF FuEL

DIEsEL ENgINEs

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 **! ImpoRt ANt** will start.

⚠ CAUTION

DIEsEL FuEL Is HIgHLY FLAmmAbLE. wHENEvER You AppRoACH A vEHICLE AND A smELL oF FuEL Is pREsENt, ImmEDIAtELY sHut oFF ALL ENgINEs 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.

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

RooF EsCApE HAtCH

To open the root 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.

Fig. 9 - Escape Hatch

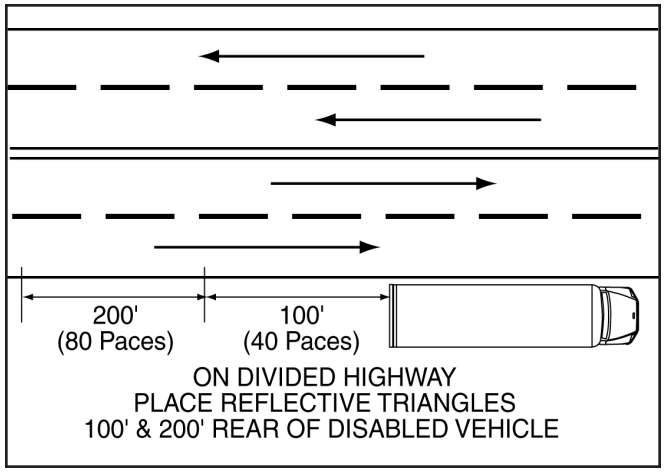
EmERgENCY REFLECtIvE tRIANgLE wARNINg KIt

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:

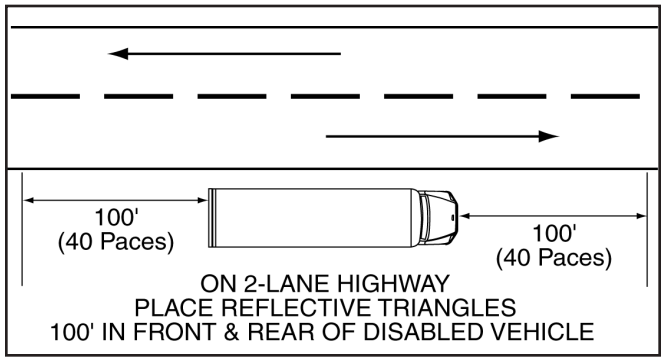
1. Place two (2) Reflective Triangles on side of road one at 100 ft. and the other at 200 ft. from rear of disabled vehicle. (approx. 40 paces & 80 paces)



Two-Lane Highway

to AssEmbLE tRIANgLE:

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



Divided Highway

⚠ CAUTION

bEFoRE LEAvINg DIsAbLED vEHICLE ALwAYs ACtIvAtE tHE vEHICLE's EmERgENCY FLAsHERs.

Fig. 10 - Emergency Reflective Triangle

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03 Engine Drive Belt

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Engine Drive Belt 03

ENgINE DRIvE bELt INspECtIoN

⚠WARNING

tHE ENgINE AND tHE bELt must bE CooL bEFoRE You CHECK tHE bELt. HANDLINg A Hot bELt CAN CAusE pERsoNAL INJuRY.

1. Measure the belt deflection at the longest span of the belt.
   The maximum belt deflection is 3/8" to 1/2" (9.5mm to 12.7mm).

2. Inspect the belt for damage.

   - Transverse (across the belt width) cracks are acceptable.

   - Longitude (direction of belt length) cracks that intersect with transverse cracks are unacceptable.

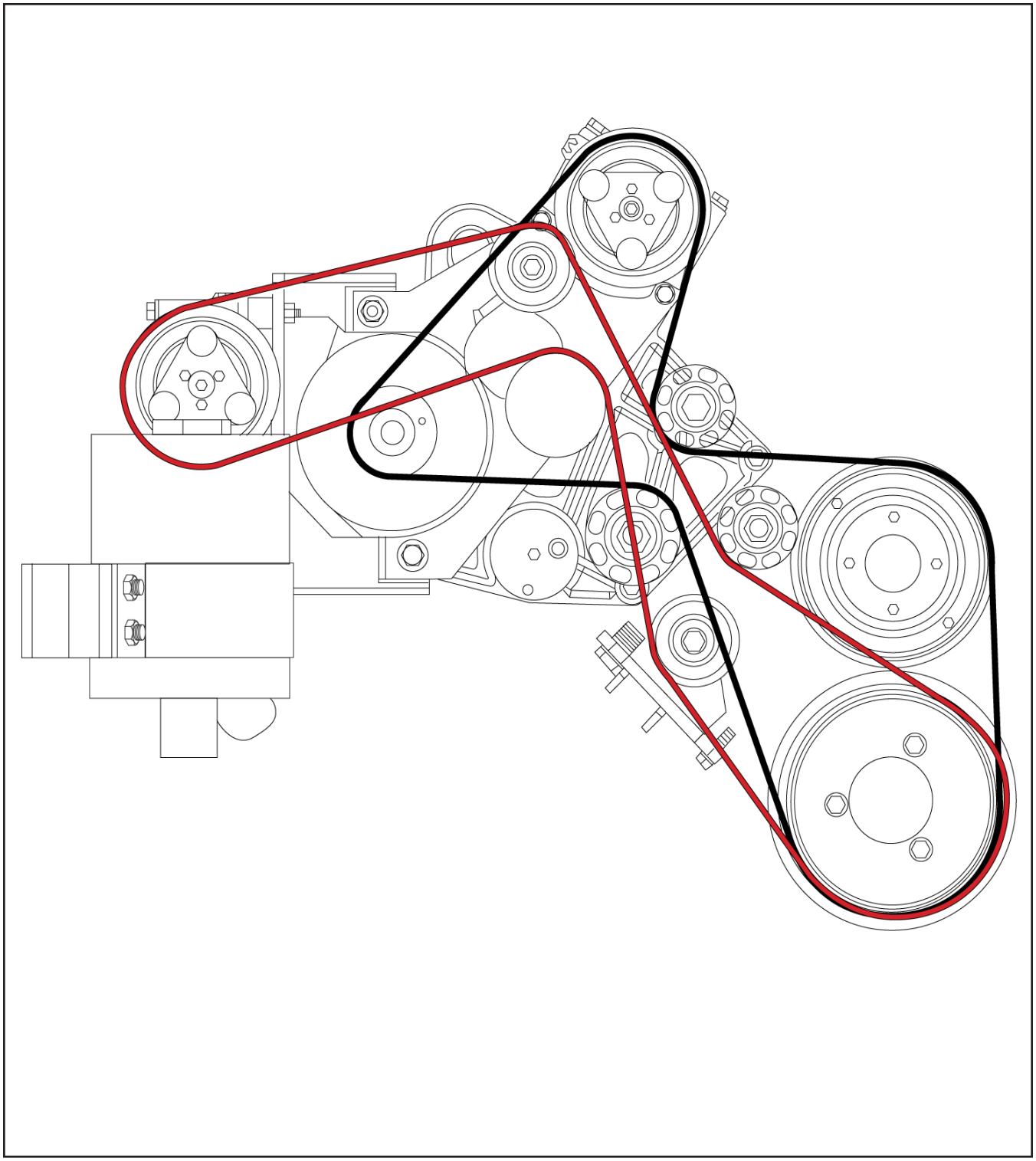
3. Replace the belt if it has unacceptable cracks, is frayed, or has pieces of material missing.

4. Route belts onto idlers, tensioners, and pulleys as shown in Fig. 1.

5. Center belt grooves onto the pulleys.

For additional engine information, refer to your International Operation and Maintenance Manual.

DRIvER bELt(s) RoutINg



EXHAust sYstEm INspECtIoN

The exhaust system must be free of leaks, binding, grounding, and excessive vibrations.

These conditions are usually caused by loose, broken or misaligned clamps, brackets, or pipes. If any of these conditions exist, check the exhaust system components and alignment. Align or replace as necessary. For alignment or adjustment procedures refer to your International chassis workshop manual.

NotEs:

Engine Drive Belt 03

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ELECtRICAL LIgHtINg sYstEm CHECKs

Check all lighting assemblies and wiring for loose connections, corrosion, poor grounds, loose mounting , and pinched damaged wires…repair or replace as needed.

bAttERY, bAttERY boX AND CAbLE CHECKINg AND CLEANINg

⚠WARNING

bAttERIEs RELEAsE A gAs mIXtuRE tHAt Is EXpLosI vE. Do Not smoKE w HEN w oRKINg ARouND bAttERIEs . put out ALL FLAmEs, AND REmo vE ANY souRCE o F spARKs oR INtENsE HEAt . mAKE suRE tHE bAttERY CompARtmENt HAs bEEN CompLEtELY vENtED bEFoRE DIsCoNNECtINg oR CoNNECtINg bAttERY CAbLEs.

bAttERY ACID Is EXtREmELY HARmFuL IF spLAsHED IN tHE EYEs oR oN tHE sKIN . ALw AYs w EAR sAFEtY gLAssEs wHEN woRKINg ARouND bAttERIEs.

1. Remove any corrosion from the battery box and the top of the battery.
   Use distilled ammonia or a soda solution to neutralize any acid present. Flush the ammonia or soda solution with clean water.

2. Check the battery cases for cracks. Replace a battery if its case is cracked.

3. Disconnect the battery cables from the battery posts and check for corrosion. If corrosion is present, clean the terminals and posts, using a wire brush and a solution of baking soda and water. Use solution sparingly.

4. Apply dielectric grease liberally to all battery terminals pads. Connect the cables to the batteries and tighten them to 10 to 15 lbs ft. (14 to 20 N·m). Cover terminals and spray each connection with dielectric red enamel.

5. Inspect the batteries cables; look for kinks, corrosion, breaks in the insulation, and heat damage. Check that cable clamps are not bent, damaged, or stripped of insulation.

! IMPORTANT

If a battery cable is damaged, replace the entire cable. Never splice a battery cable.

6. Check the battery hold downs for tightness. The battery hold downs must be kept in good condition to hold the batteries securely and to keep them from moving.

gRouND CAbLE INspECtIoN AND CLEANINg

⚠WARNING

FAILuRE to KEEp tHE bAttERIEs HELD sECuRELY IN pLACE CouLD REsuLt IN bAttERY DAm - AgE, suCH As LoosE pLAtEs oR posts.

Check that the grounding cables are clean, undamaged, and tight. If needed, disconnect them, clean the mating surfaces with a soda solution, then reconnect them securely. Spray the ground cable connections with dielectric red enamel.

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gENERAL mAINtENANCE

- **DOOR SEALS** - Inspect door seals every week for their material quality and tight fit. Repair or replace damaged seals, as necessary. Spray door seals surfaces with a light coating of silicone every 12,000 miles or 3 months to keep seals soft and supple. If doors 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 MECHANISM** - 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 style of door, follow in this section.

- **KEY LOCKS** - Lubricate key locks with a graphite-type 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.

Entry Door Leaf Adjustment

ElEctric HEadEr assEmbly door lEaf adjustmEnt

1. Using a carpenters framing square, measure the door “OPEN” angle. Adjust the length of the push-pull rod as required to achieve 90º Rear Leaf open angle and a 110° Front Leaf open angle. By shortening the rod, the door leaf moves open. By lengthening the rod, the door leaf moves closed.

2. Disconnect the Rod End from the Actuator Arm only. Loosen the Rod End's Lock Nut and adjust the actuator arm end of the push-pull rod.

2. Counter-rotate rod ends in relation to each other and tighten the jam nut. Push-pull assembly must have slight axial rotation just so as not to bind the assembly. This procedure will eliminate the risk of the switch actuator tab missing the limit switches.

3. Adjust the position of the switch actuating tab so it activates the open limit and auxiliary switch. Tighten the jam nuts for the switch tab. Make sure the tab actuates the switch at full axial rotation each way of the push-pull assembly.

4. Cycle the door “CLOSED” and then back “OPEN”, measure the door opening angle to assure it is opening a full 90º.

5. By relocating the switch tab forward, the door stops sooner. By moving the tab aft the door stops later. The drive motor should stop exactly at 90º door open.

6. By operating the door leaves manually both leaves should achieve the fully open position (90º) at the same time. The aft door leaf must lead the forward door leaf during the closing operation. If this condition is not true, recheck the adjustment.

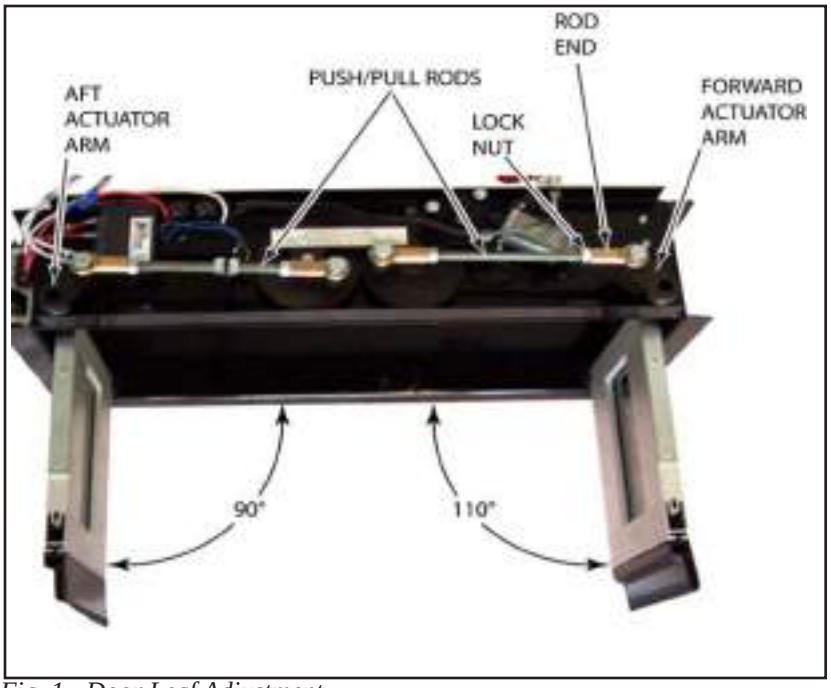

Fig. 1 - Door Leaf Adjustment

motoR CoNtRoL pC boARD wItH Auto REopEN

This PC board functions identically to the standard controller with one exception. If the door system detects an object in its closing path the door automatically returns to the open position even if the driver holds the door close switch closed. Using the current sensing system designed into the standard PC board, the drive motor reverses direction when the door leaf makes contact with an object

and returns it to the open position. At that time the door may be closed simply be pressing the door close switch. The system is equipped with one additional limit switch that actuates when the door reaches 95% closed and disables the auto reopen.

pERIoDIC tEstINg oF sYstEm

It is recommended that the Auto Reopen system be inspected for function during preventive maintenance cycles. This can be easily accomplished by placing a resistance on the door leaf during the close cycle and ensuring that the door system reopens.

tRoubLEsHootINg

- *Door closes completely and then reopens on its own.*

  Inspect "Null Switch" for proper function. This switch is actuated by the rod end spacer at approximately the 95% closed position.

- *Door starts to close and then automatically reopens.*

  Observe the red L.E.D. mounted on the PC board and if it illuminates than the current sensing trip point set too low. Gain access to the current sensing adjusting potentiometer and turn clockwise to increase set point. This potentiometer is located to the left of the red L.E.D.

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 leafs after opening. (Refer to Fig. 11)

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gENERAL INFoRmAtIoN & mAINtENANCE

Safety glass is used for all windows in this bus. Windows in the passenger area also have standard 13% tint to reduce sun glare and heat.

When windows are installed in the passenger area of the bus, the windows frames are sealed to the bus body by a compressed, bonded rubber seal. This seal forms a water and air tight seal between the inside and the outside of the bus.

CLEAN

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 household detergent solution or other glass cleaner and soft nonabrasive cloth, sponge or chamois to remove any dirt or film.

INSPECT

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 lubricate 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 Sikaflex®, 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 optional red lights above the windows and the 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" from inside emergency exit and swing back to close. Operating instructions are provided on window decals.

INSPECT

Egress window release handles should be checked daily to assure they are in the fully locked position. Apply silicone lubricate to the release handles if they become difficult to operate.

sLIDINg wINDow

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.

To “CLOSE”…push the sliding window pane to the side until it closes and locks into position by pushing “UP” on the lock release.

CLEAN

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

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07 Cleaning

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Cleaning 07

EXtERIoR boDY pANELs

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

The insides of the Exterior Body Panels are sprayed with an expandable foam material to form a sound deadening barrier and provide some strength. Then once the foam has cured luan substrates are installed over the inner frame structure.

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

mINoR FIbERgLAss DAmAgE REpAIR

1. Remove loose dirt and broken fragments from the damaged area. Use a grinder to 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 fiberglass 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 needing 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 repair 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.

FRoNt AND REAR FIbERgLAss CAps

The front and rear caps 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.

Manus-Bond 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 jets of water or high-pressure air. Before cleaning, ensure that the engine if “OFF” and that 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 with a soft, nonabrasive cloth, sponge, or chamois to remove dirt or film.

INtERIoR CLEANINg

INtERIoR wALLs & CEI  CLEANINg

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

stANCHIoNs

Modesty panels are provided for passengers' privacy and protection. Standard modesty panels are attached to the stanchions at the front of the passenger area and are covered with material that coordinated with the bus's interior sidewall color.

 CLEAN

- 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

- 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.

CAb AREA INtERIoR tRIm

The driver operates the bus from the cab area. To control it's 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.

 CLEAN

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

FLooRINg

sub-FLooRINg

General Coach America's buses are constructed of 5/8" exterior grade plywood (3/4" optional), supported by steel cross-members. This construction provides a lightweight, durable floor that insulates passengers from road noise and the elements.

RubbER FLooR

The following information is provided by Tarabus Corporation

Common with all heavy-duty floorings, correct and regular maintenance is required.

Cleaning procedures tailormade to your special needs are essential to ensure the optimum life-span of the floor covering.

REguLAR mAINtENANCE

1. Equipment

- Broom or industrial vacuum cleaner.
- Damp mop.

2. procedure

- Remove dust and loose debris with an industrial vacuum cleaner.
- Mop the floor with clean water and a neutral detergent.
- The detergent dilution should be in accordance with the manufacturers's instructions.
- With a mop which has been thoroughly rinsed, remop the floor with completely clean water so that all detergent residues are removed.

3. Frequency

- Daily or several times a week depending on the amount of foot traffic.

INtENsIvE mAINtENANCE

1. Equipment

- Broom or industrial vacuum cleaner.

- Damp mop.
- Medium stiff bristled brush or broom.

2. procedure

- Remove dust and loose debris with an industrial vacuum cleaner.
- Scrub the floor using a medium stiff bristled broom, a rotary floor scrubbing machine such as “Rotowash” (see www.rotowash.com for more information) or an electric scrubber (450 tr/min with a green or blue disc brush) with an alkaline detergent if necessary.
- The detergent dilution should be in accordance with the manufacturer's instructions.
- Rinse liberally with clean water to remove all detergent residues.
- Dry with a mop or wet-functioning vacuum cleaner.

3. Frequency

- A minimum of once a month or more frequently depending on the amount of

⚠CAUTION

traffic.

- Do not leave detergent residues on the floor. Always rinse the floor thoroughly with clean water. Cleaning agents which have not been cleaned off can affect the slip resistance properties of the floor.
- Do not use an electric scrubber.
- Do not use a high pressure water jet.
- Do not use industrial stain removers without first testing them on a small concealed area to prevent any possible damage.
- To remove stains, use only alcohol “C Oil” or recommended industrial stain removers such as: “Write Off” from Certified Laboratories or “Grafforange Bio” from MC2 Chimmie-Dercam.

  Wax or surface dressings should not be applied to bus floor coverings as they are detrimental to slip resistance.
- TARABUS products are resistant to diluted acids and bases, but not to PVC solvents.

NotE:

- Chewing gum can be mechanically scraped off but must first be chilled using a compressed nitrogen spray or else with a special orange gum remover.
- Adhesive can generally be removed with White Spirit (Mineral Spirit). Rinse thoroughly afterwards with diluted detergent.
- Oil and grease spots can be removed with an alkaline detergent, so too can food stains such as ketchup or fizzy drinks.

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RECommENDED CLEANINg pRoCEDuREs FoR mARQuEsA ® LANA FAbRICs

Dry or wet soil can easily be removed with regular prescribed maintenance procedures on Absescon Mills contract fabrics of Marquesa® Lana fiber. Since Olefin fibers absorb virtually no moisture, most stains remain on the surface of the fabric and thus are easily removed by confrontational means.

- Treat spots and stains promptly, to prevent any damage to the fabric and facilitate easy cleaning. Blot wet spills with an absorbent paper towel or cloth. If the spill has crusted, tap the spot to break up the encrustation and remove as much as possible before using a cleaning agent.
- Try to determine the nature of the stain so appropriate cleaning agent can be chosen.
- Use least amount of the appropriate cleaning agent necessary to remove the stain. To much moisture leads to quicker re-soiling and damages the component materials. Be sure to dry the fabric thoroughly after each step of treatment to prevent re-soiling.
- Spot the fabric with cold water to determine if fabric has been treated with a fluorocarbons such as “Scotchgard” or “Teflon”. If fabric repels the water this means it is fluorocarbon protected. Follow these procedures:

  1. Blot the stained area with a clean dampened cloth (water only). Dry thoroughly and check for stain.
  2. If stain remained, repeat spot cleaning using a dry cleaning type solvent such as 1,1,1 trichloroethylene.
  3. If stain persists, repeat procedure using the appropriate cleaning agent for the suspected content of the stain as shown in the following chart. If cold water is absorbed by the fabric, this indicated that the fabric is not fluorocarbons protected and should be handled as follows:

     3a.Wet entire cushion panel with a clean damp cloth to see if the stain can be removed with water only.

     3b. if not successful, professional cleaning is advised. The Bane-Clean System, including cleaner/vacuum extractor and specialized cleaning agents, were found to be effective in cleaning polypropylene upholstery.

sEAt FAbRIC CLEANINg CHARt

This information is made available to you as a guide to the care and maintenance of fabrics made by Marquesa®, Lana fiber offered by Abeson Mills. It is based on the best available data and is subject to revision upon the receipt of updated technology. Absecon Mills and Champion Bus, Inc. make no guarantee as to the results and assumes no responsibility in regards to this information, nor are they responsible for any damage sustained by the cleaning component materials.

tYpE oF stAIN	CLEANINg AgENt
CHOCOLATE, BLOOD	A,B,C
GRAPE, ICE, INK (WASHABLE) BERRY STAIN, MUCILAGE	A, B
VOMIT, WATER COLORS	A, B, F
RUBBER CEMENT, SHOE POLISH	A, B, D
TEA, MILK, MUSTARD, GRAVY, EGG, COLA DRINK	B
CATSUP, CARBON BLACK, BUTTER, CHEWING GUM, LINSEED OIL, NAIL POLISH	D
CRAYON, LIPSTICK, PAINT (OIL BASE)	E
BEER, URINE	B, F
WINE	A, C, F
PAINT (LATEX)	A, B, E
OIL	D, E
IRON RUST	A, G
INK (PERMANENT/BALL POINT)	B, D, E
FURNITURE POLISH	B, E
COFFEE	B, D, F
CLEANINg AgENt CoDEs:	
A	WATER
B	DETERGENT SOLUTION
C	DETERGENT/AMMONIA (3-6%) SOLUTION
D	VOLTILE TYPE SOLUTION
E	PAINT, OIL OR GREASE REMOVER
F	UNDILUTED WHITE VINEGAR
G	CITRIC ACID OR OXALIC ACIDS

FREEDmAN - vINYL CLEANINg guIDE

Vinyl coated fabrics are perhaps the most maintenance-free produced and certainly will provide exceptional service life if given proper care. Almost all vinyl manufacturers provide information concerning the necessary cleaning procedures for their products.

EvERYDAY soIL

A mixture of mild soap and warm water will generally dissipate most common soil. Using a soft cloth…wash are to be cleaned and rinse. If stubborn dirt remains, for instance a stain imbedded in the grain of the vinyl, use a soft brush, and if necessary, a touch of cleaning powder. In both situations, rinse and dry with a soft cloth.

gum

Remove as much chewing gum as possible prior to application of Naptha or Kerosene. If gum cannot be removed, ice may be used to harden gum so it can be separated from the vinyl surface. (This method also used to remove wax.)

INK spots

You must work quickly! Magic Marker, India Ink, and Ball Point immediately will affect pigments and for the most part are difficult to remove. It is recommended that a solution of water and rubbing alcohol be applied and gently rubbed on the spot as soon as possible. Hair sprays containing alcohol are sometimes effective in emergencies for removing ink.

NAIL poLIsH & poLIsH REmovER

These products will immediately damage vinyl surfaces. To retard further damage, they should be carefully wiped clean.

pAINt

Try to remove as soon as possible. It is NOT recommended that any paint removers or brush cleaners be used. Clean oil base paint with soft clean cloth and Naphtha. To clean Latex base paints, use the same method as recommended for everyday soil.

tAR, AspHALt, EtC.

Petroleum based products will stain all vinyl's if allowed to stand too long. Clean as soon as possible with cloth followed by the immediate application of Naphtha or Kerosene.

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. Champion Bus, 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.

pAssENgER sEAtINg ADJustmENts

Passenger seat positions are non adjustable.

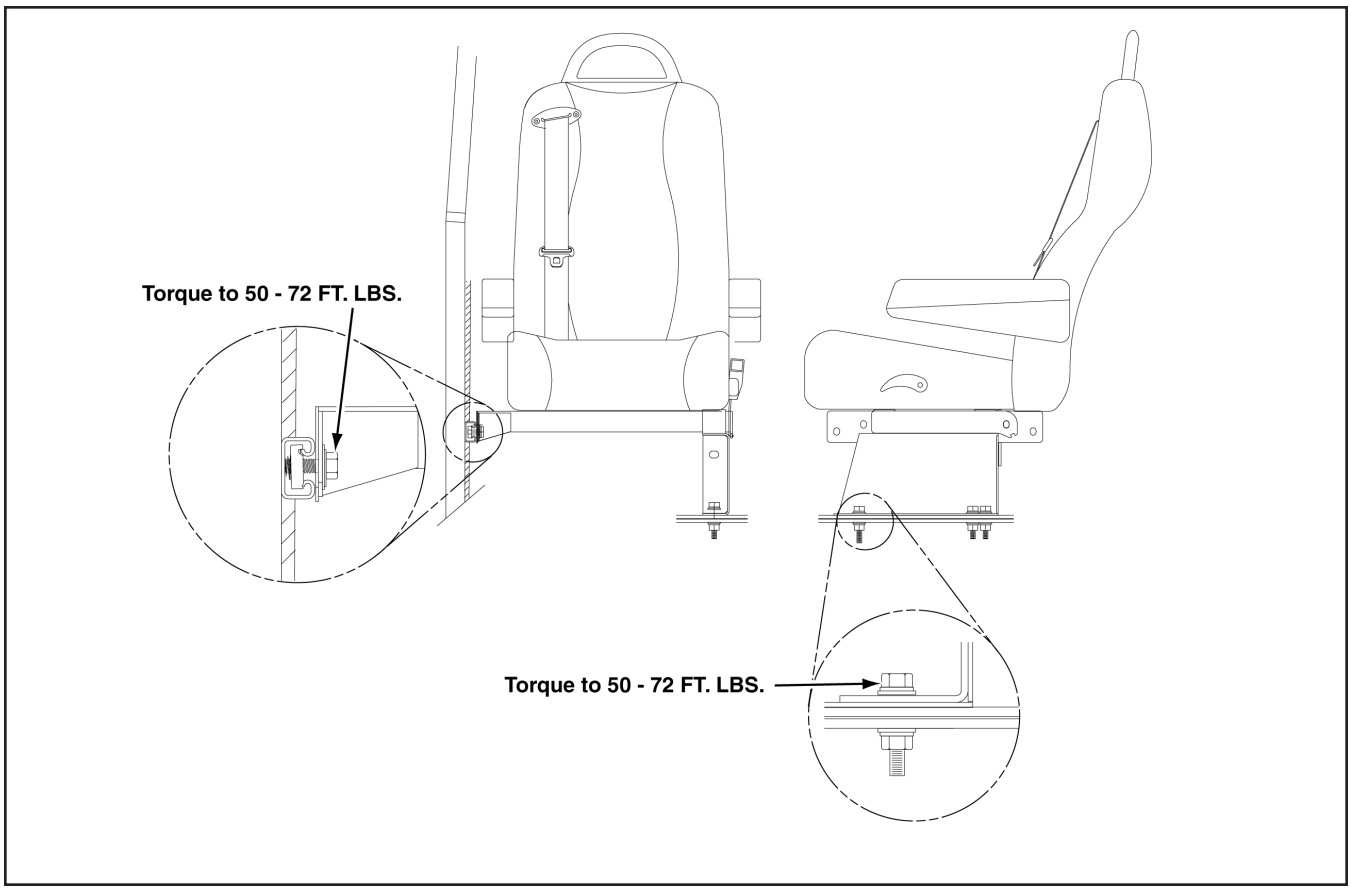

Fig. 2, 3pt. Mid-High Recliner Seat Shown (Others Simular)

⚠ 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 oF ANY sEAt. moDIFYINg sEAts mAY voID mANuFACtuREs' wARRANtIEs, RAIsE LIAbILItY IssuEs, AND ENDANgER pAssENgERs.

DRIvER's sEAt

the following material was supplied by RECARo North America...

PREVENTATIVE MAINTENANCE SCHEDULE

ERGO METRO DRIVER'S SEAT

This maintenance schedule is instended 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 instervals of inspection or service that have been established should be considered maximum intervals, and shorter intervals may be necessary depending on the enviroment or particular situation in which the vehicle is operated.

It Em	t YpE o F INs pECt Io N o R s ERv ICE	mILEs Kms Ho u Rs	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	**t racks**					
	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 g rease**)			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

It Em	t YpE o F INs pECt Io N o R s ERv ICE	mILEs Kms Ho u Rs	6,000 11,000 1200	12,000 22,000 2400	24,000 43,000 4800	48,000 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 Cracksor 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

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gENERAL INFoRmAtIoN

For chassis-specific information, all persons responsible for the operation and maintenance of the vehicle should read and understand the guidelines presented in the Chassis Owner's Manuals and/or Maintenance Schedules that are include with your vehicle. All questions regarding chassis operation or maintenance should be directed to your GCA dealer or 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 gas or diesel engines or severe driving conditions such as heat, cold, dust, mud, or sustained high power output.

FILtERs

⚠ CAUTION

usE oF uNAutHoRIZED LubRICANts, FILtERs, FLuIDs, FuELs oR pARts AND/ oR NEgLECt oF sCHEDuLED mAINtENANCE mAY voID tHE wARRANtIEs FoR YouR vEHICLE.

Filters should be changed on a regular basis, accordingly 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 gas or diesel fuel that meets at least 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 by cleaning the area with soapy water. Failure to remove fuel from the body may result in paint damage.

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 if 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.
- Always use lug nuts supplied by the chassis manufacturer. If wheels have been removed, torque lug nuts to 400 ft. lbs.

- A new wheel will often times loosen, even though lug nuts were firmly torqued. Recheck lug nuts every 100 miles following a tire change to ensure tightness.

- 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 replace 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.

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AIR CONDITIONING SYSTEM

When troubleshooting air conditioning problems, refer to the manual supplied with your bus. While every precaution has been taken in the preparation of this documentation, General Coach America, Inc. assumes no responsibility for errors or omissions, or for damages resulting from the use of this information contained herein.

The information includes the latest at the time of publication, however General Coach America, Inc. and their Original Equipment Manufacturers may make improvements and/or changes to their products described in this manual at any time without notice.

For further information concerning your A/C System contact your nearest Carrier, Trans/Air, or ThermoKing Dealer.

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11 Lift Information

bRAuN wHEELCHAIR LIFt

REFER bRAuN's wEb sItE FoR INstRuCtIoNs.

http://www.braunlift.com/commercial/Millennium/owners_man/L915-06-OM/index.html

RICoN wHEELCHAIR LIFt

REFER RICoN's wEb sItE FoR INstRuCtIoNs.

http://www.riconcorp.com/pdfs/32dsss01/32DSSS01A.pdf

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12 General Maintenance Schedules

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General Maintenance Schedules 12

gENERAL mAINtENANCE sCHEDuLE INFoRmAtIoN

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 General Coach America's Operation, Service, and Parts manuals for more complete information on keeping your bus in top condition.

Furthermore, technician responsible for chassis maintenance should follow the recommendations on service intervals, maintenance procedures, lubrication specifications, and approved service replacement parts that are provided in the International Parts, Service and Maintenance manuals. Failure to do so may void the chassis manufacturer's 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 alternations 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 bus. 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
- Brakes
- Windshield Washer & Wipers
- Power Train (Engine, Transmission)
- Doors
- Wheelchair Lifts & Restraints
- Unusual Noises
- Unusual Exhaust Noise or Fumes
- Unusual Orders (for example; Hot Rubber or Burning Insulation)

DAILY mAINtENANCE CHECKLIst

12 General Maintenance Schedules

Vehicle's Unit Number: Date of Inspection:

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. ADJSUT DAILY OR AS NEEDED		

DAILY mAINtENANCE CHECKLIst (CoNt'D)

Vehicle's Unit Number: _____ Date of Inspection: _____

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 & INSEPCT FOR LOOSE TREADS.		
ENTRY DOOR SEALS	INSPECT FOR DAMAGE.		
REAR EMERGENCY EXIT DOOR	CHECK OPERATION, BE SURE INSTRUCTION ARE CLEARLY VISABLE.		
DOOR FLOP (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		

DAILY mAINtENANCE CHECKLIst (CoNt'D)

Vehicle's Unit Number: _____ Date of Inspection: _____

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 OOPERATION		
INTERIOR LIGHTS	CHECK OPERATION		
STEPWELL LIGHTS	CHECK OPERATION, LEAN LENSES.		
EMERGENCY EXIT LIGHTS	CHECK OPERATION		
EMERGENCY EXIT WARNING LIGHTS	OPEN EMERGENCY EXIT DOOR OR WINDOW WITH IGNITION "ON". WARNING LIGHT AND/OR BUZZER SHOULD SOUND.		
READING LIGHTS	CHECK AND REPAIR AS NEEDED.		
EXTERIOR LIGHTS	CHECK OPERATION, MOUNTING AND LENSES.		
TIRES	CHECK "COLD" FOR PROPER AIR PRESSURE. LOOK FOR BULDGES, 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.		
LUGGAGE RACK	CHECK FOR RIGIDITY AND/OR LOOSE MOUNTING.		

DAILY mAINtENANCE CHECKLIst (CoNt'D)

Vehicle's Unit Number: _____ Date of Inspection: _____

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 OOPERATION		
INTERIOR LIGHTS	CHECK OPERATION		
STEPWELL LIGHTS	CHECK OPERATION, LEAN LENSES.		
EMERGENCY EXIT LIGHTS	CHECK OPERATION		
EMERGENCY EXIT WARNING LIGHTS	OPEN EMERGENCY EXIT DOOR OR WINDOW WITH IGNITION "ON". WARNING LIGHT AND/OR BUZZER SHOULD SOUND.		
READING LIGHTS	CHECK AND REPAIR AS NEEDED.		
EXTERIOR LIGHTS	CHECK OPERATION, MOUNTING AND LENSES.		
TIRES	CHECK "COLD" FOR PROPER AIR PRESSURE. LOOK FOR BULDGES, 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.		
LUGGAGE RACK	CHECK FOR RIGIDITY AND/OR LOOSE MOUNTING.		

DAILY mAINtENANCE CHECKLIst (CoNt'D)

Vehicle's Unit Number: _____ Date of Inspection: _____

ITEM	SUGGESTED INSPECTION	ACCEPTED REJECTED	INITIALS
LUGGAGE COMPARTMENT	CLEAN & INSPECT FOR DAMAGE & PROPER LATCHING. CHECK LIGHTS, LOCKS, & WARNING SIGNALS.		
PUBLIC ADDRESS SYSTEM	TURN "ON". CHECK OPERATION & ADJUST VOLUME. INSPECT MICROPHONE BRACKET IS SECURE.		
AUDIO VISUAL CENTER	CLEAN, CHECK WIRING CONNECTIONS & FASTENERS.		
DESTINATION SIGN	CLEAN AND CHECK LIGHTING & SIGN DISPLAY.		
FARE BOX	CLEAN & CHECK LIGHTING. KEEP BOX LOCKED WHEN IN-SERVICE.		
FRESH WATER SUPPLY	FILL ONLY WITH POTABLE WATER DAILY OR AS NEEDED. KEEP ACCESS DOOR LOCKED. DRAIN WHEN CENTER IS NOT IN USE.		
HOLDING TANK	DRAIN INTO A SUITABLE DISPOSAL FACILITY DAILY OR AS NEEDED.		
RESTROOM SINK	CLEAN WITH HOUSEHOLD DETERGERENT OR CLEANER RECOMMENDED FOR PLASTICS.CLEAN BELL TRAP IF NECESSARY. CHECK PUMP OPERATION.		
RECIRCULATING TOILET	RECHARGE WITH FRESH WATER, ADD DEORDORANT. CHECK FLUSHING ACTION. EVACUTE IN A DESIGNATED BLACK WATER DISPOSAL FACILITY. CLEAN WITH DETERGENT OR CLEANER RECOMMENDED FOR PLASTICS.		
WATER SYSTEMS	DRAIN & RINSE FREQUENTLY. WINTERIZE FOR COLD WEATHER SERVICE.		
REFRESHMENT CENTER SINK & REFRIGERATOR	CLEAN REFRIGERATOR, SINK & CABINATE DAILY OR AS NEED USING A MILD DETERGENT. AVOID ABRASIVE CLEANSERS. CHECK OPERATION OR WATER PUMP. CLEAN BELL TRAP, IF NECESSARY.		

moNtHLY mAINtENANCE CHECKLIst

Vehicle's Unit Number: _____ Date of Inspection: _____

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

12 General Maintenance Schedules

sEmI-ANNuAL mAINtENANCE CHECKLIst

Vehicle's Unit Number: _____ Date of Inspection: _____

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

Vehicle's Unit Number: _____ Date of Inspection: _____

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

12 General Maintenance Schedules

CYCLICAL mAINtENANCE CHECKLIst

Vehicle's Unit Number: _____ Date of Inspection: _____

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		

CYCLICAL mAINtENANCE CHECKLIst (CoNt'D)

Vehicle's Unit Number: _____ Date of Inspection: _____

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 MAINTENCE 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 HARNESSES & CABLES HAVE ENOUGHT 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		

12 General Maintenance Schedules

NotEs :

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webasto
Coolant Heater

The following manual was supplied by the Webasto Products N.A., Inc. and while every precaution has been taken in the preparation of this documentation, General Coach America, Inc. assumes no responsibility for errors or omissions, or for damages resulting from the use of this informaion contained herein.

The information includes the latest at the time of publication, however General Coach America, Inc. and their Original Equipment Manufacturers may make improvements and/or changes to their products described in this manual at any time without notice.

For further information concerning you Webasto Cooant Heat call the following:

Webasto

Feel the drive

Webasto Product N.A., Inc.
Technical Assistance Hotline
USA: (800) 555-4518
Canada: (800) 667-8900

www.webasto.us

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Coolant Heater 13

mAINtENANCE oF tHE HEAtER

ANNuAL mAINtENANCE

The TSL 17 Heater requires a minimum of maintenance to keep it in good operating condition. The following maintenance procedures should be performed annually before each heating season.

> **NotE:**
> For major repairs and spare parts, return to your authorized Webasto Thermosystems Specialist

ENCLosuRE boX AND HEAtER

— Clean the heater and enclosure box from any accumulated debris or dust with compressed air.

— Inspect all components for wear and damage.

ELECtRICAL sYstEm

— Check wiring harnesses for damage, repair or replace if damages.

— Check the condition of the batteries and the connections.

— Load test the batteries and replace if necessary.

> **NotE:**
> The heater will not function properly with weak batteries.

CombustIoN AIR sYstEm

— Check for obstructions at air intake port.

— Check air intake tube carefully for restrictions or damage. Replace or replace if damaged.

EXHAust sYstEm

— Check the exhaust system carefully fir restrictions or corrosion. Replace damaged parts.

FuEL sYstEm

— Change fuel filter if equipped. Inspect fuel line for damage, restrictions, routing or loose connections. Repair or replace if damaged.

CooLANt sYstEm

— Inspect all coolant lines and clamps for leakage, restrictions or damage. Repair or replace.

— Inspect coolant circulation pump for leakage. Repair or replace if damaged.

opERAtIoNAL tEst

— Run your heating system for at least 15 minutes.

— Check water and fuel connections for leakage. Retighten hose clamps if necessary.

NotE:
Operate your Webasto Heater at least once a month for 10 minutes.

bAsIC tRoubLEsHootINg

gENERAL INFoRmAtIoN

This section describes trouble shooting procedures for the TSL 17 Coolant Heater. Troubleshooting is normally limited to the isolation of defective components.

CAutIoN
Troubleshooting requires profound knowledge about structure and theory of operation of the heater's components and may only be performed by skilled personnel.

gENERAL FAILuRE sYmptoms

bEFoRE tRoubLEsHootINg, CHECK FoR AND ELImINAtE tHEsE DEFECts:

- Blown fuses
- Fuel supply (plugged fuel filter)
- Corrosion on battery terminals, electrical wiring, connections and fuses.
- Loose contact on connectors
- Wrong crimping on connectors
- Shut-down initiated by temperature limiter.

NotE:
After any correction of a defect, a functional test has to be performed in the vehicle.

The following table lists possible failure symptoms:

FAILuRE sYmptom	pRobAbLE CAusE	REmEDY
Coolant heater switches “OFF” automatically (Fault lockout)	No combustion after start or automatic repeat start	Switch off heater momentarily and switch “ON” once again
	Flame extinguishes during operation	Switch off heater momentarily and switch “ON” once again.
	Heater overheats	Check coolant lines for obstructions, closed valves and kinks. Check coolant level. Allow heater to cool down, reset over heat limiter, switch “OFF” heater momentarily and switch “ON” again
	Vehicle electrical system voltage too low.	Charge battery Switch “OFF” heater momentary and switch “ON” once again.
Heater expels black fumes from exhaust	Combustion air and/or exhaust ducting blocked	Check combustion and exhaust ducting for obstructions

bAsIC tRoubLEsHootINg

HEAtER LoCKout REsEt pRoCEDuRE

The TSL 17 is designed with a lockout safety feature built into the control unit. After 3 consecutive unsuccessful startup attempts, the heater will lock itself out from any further start attempts. The heater may also enter the lockout mode after experiencing an overheat condition.

The following procedure will clear the lockout mode and reset the heater for normal operation:

1. Remove F1 (20 Amp), refer to wiring diagram (next page) for identification. Wait 10 seconds before reinserting. This is done to prepare the control unit for resetting.
2. Wait a further 10 seconds after reinserting fuse F1. Now turn the heater “ON” using the ON/OFF switch or the “Instant On” button of the optional timer.
3. Wait 10 seconds after turning the heater on and remove the F1 fuse again.
4. Wait a further 30 seconds and then turn the heater “OFF” at the switch or optional timer.
5. Reinsert fuse F1 after waiting 3 to 10 seconds of shutting off the heater.
6. Wait a further 10 seconds and turn the heater back on again.

The lockout mode should now be canceled and the heater operating normally.

pC DIAgNostIC KIt

CAutIoN
Diagnostics equipment is intended for use by Webasto trained personnel at a authorized Webasto Distributer, Dealer and End User service facility.

It is possible to read and remove (reset) stored fault codes from the TSL 17 memory. This achieved through the use of a diagnostic interface kit connected to the TSL 17 and an IBM compatible computer having the necessary software installed.

The PC Diagnostic Interface Kit comes complete with connecting hardware, software and instructions.

PC Diagnostics Kit Part Number: 92542A

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