SUPPORT DOCUMENTATION

For

ELKHART COACH BUS (Small and Large Transit)

The documents in this section are being submitted as required in the RFP document for the Low Floor Mini Van. Each is listed below and is referenced by location in the RFP where they can be found and are in the same order as the RFP.

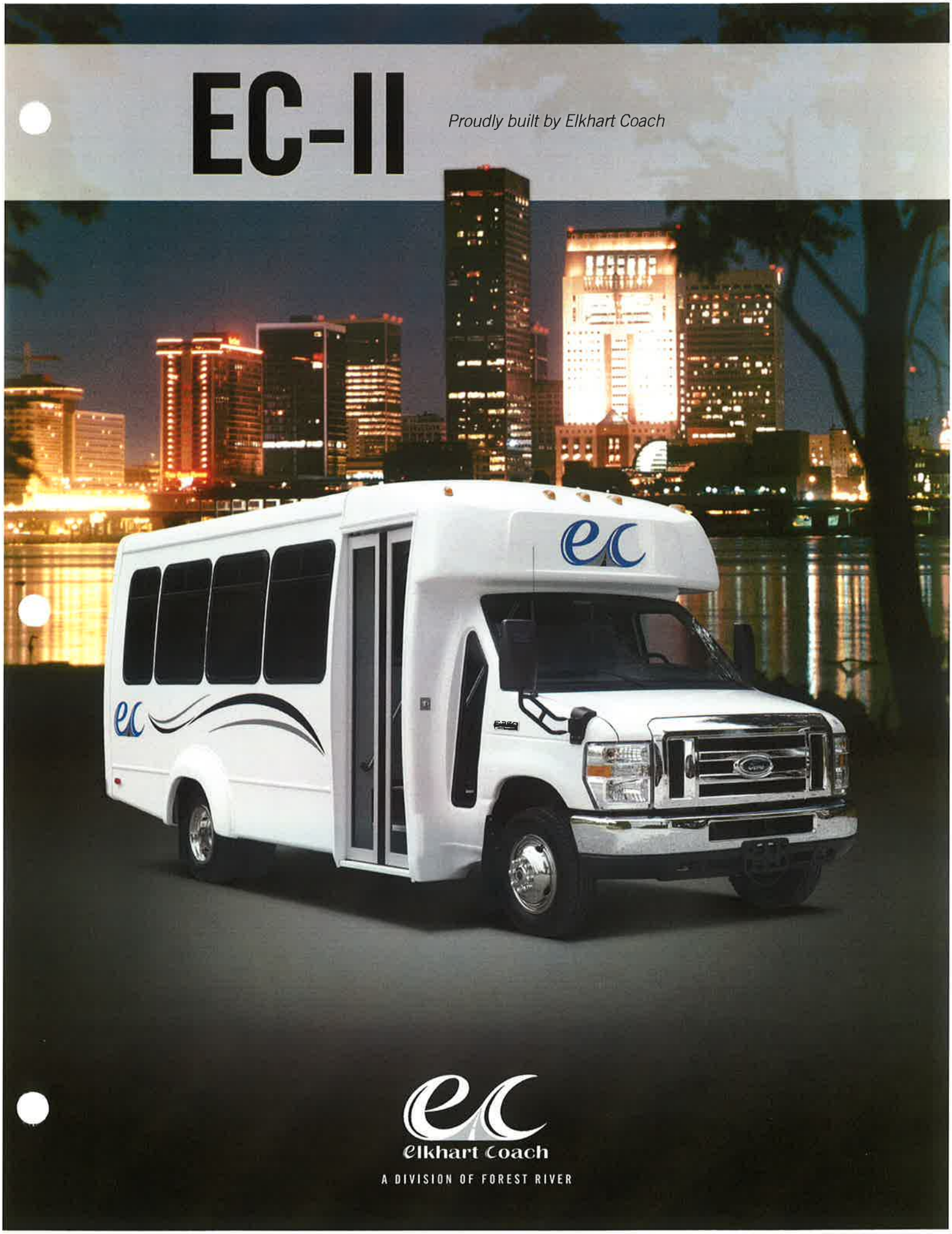
1. Attachment H, page 1 item 6: Specifications and accessory option sheets
   (Also see item 11 (b) for more information)
2. Attachment H, page 2, item 7: Vehicle warranty information
3. Attachment H, page 2 item 8: Vehicle recommended maintenance schedule(s)
4. Attachment H, page 2, item 13: Certification of standard safety equipment included
5. Attachment H, page 2, item 16: Certification of no dealer plates installed.
6. Attachment I, page 24 & 43: Description of air conditioning. This will be found under #11 (m) below,
7. Attachment I, page 32 & 51: Description of lift. This will be found under #11 (i) below
8. Attachment I, page 34 & 53: Detailed description of Securement systems. This will be found under #11 (j) below.
9. Attachment I, page 35 & 54: Descriptive literature of occupant restraint systems. This will be found under 11 (k) below.
10. Attachment I, page 70: Copy of letter for DBE goals filed with FTA.
11. Attachment I, section 2.4
    - (a): List of any exceptions or deviations
    - (b): Description of vehicle and equipment
    - (c): Certification of Federal Motor Vehicle Compliance (FMVSS)
    - (d): Copy of test report from Altoona, PA
    - (e): Copies of proposed floor plans
    - (f): List of standard or available exterior paint colors
    - (g): List of authorized service facilities per section 2.5 of Attachment I (see Tab #5 Exhibit F-2)
    - (i): Lift information
    - (j): Securement system information
    - (k): Occupant restraint information
    - (l): Forward facing fold-a-way seat information
    - (m): Descriptive literature on air conditioning
    - (n): Buy America certification, documentation

ITEM #1

SPECIFICATIONS
and
ACCESSORIES
OPTION
SHEETS

EC-II

Proudly built by Elkhart Coach



Elkhart Coach

A DIVISION OF FOREST RIVER

FORD EC-II STANDARDS AND OPTIONS

STANDARD CHASSIS FEATURES

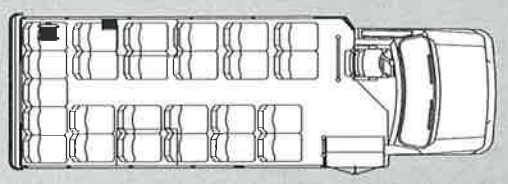
- Ford E-450 & E-350 DRW Cut-Away Chassis
- Electronic 5-Speed Automatic Transmission
- 55 or 40 Gallon Fuel Tank
- Ford V-10 6.8L Gas Engine
- Ford V-8 5.4L Gas Engine
- OEM Installed Dash Air Conditioning & Heat
- 225 or 155 Amp Alternator
- 138", 158", 176", 186" or 190" Wheelbases
- Heavy Duty Engine Cooling Package
- Chrome Front Bumper & Grill
- 14,500, 12,500 & 11,500 GVWR
- Dual Electric Horns
- Driver Air Bag
- Heavy Duty Suspension
- Power Steering/Brakes
- LT225 / 75RX16E Tires
- Dual 650 CCA Batteries
- Tilt Steering Wheel/Cruise Control
- Dual Beam Headlights

STANDARD BODY FEATURES

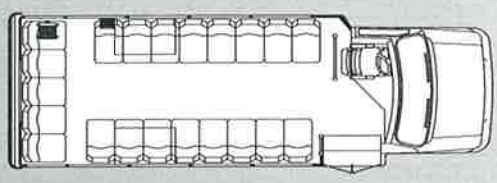
- FMVSS Certified
- STURAA Tested for 7 Years/200,000 Miles
- Insulated Roof & Exterior Walls
- Mor-View Right Side Cab Window
- Smooth Rubber Floor w/ Ribbed-Rubber Aisles
- Rear ABS Fender Flares
- Powder Coated Rear Steel Bumper
- Rear Mud Flaps
- Entrance Door & Driver Modesty Panels
- All Aluminum Sidewalls and Skirts
- Dual Drive Shaft Guards
- Entry Door Assist Handles
- Fully Welded Unitized Steel Cage Body Structure
- Undercoating
- Swing-A-Way Exterior Flat Mirrors with Integrated Convex Panels
- Drip Rail Over Passenger Windows & Entry Doors
- White or Yellow Step Nosing – All Entry Steps
- Color/Function Coded Wiring Harness
- Laminated Steel Reinforced Composite Construction
- Master Electronic Printed Circuit Control Panel
- Emergency Side Egress Windows
- Stylized ABS Rear Trim
- 91" Interior Width & 77" Headroom
- Large 36" x 36" & 24" x 36" Upper T-Slider Windows
- 22" x 64" Rear Egress Window
- Single Piece Seamless FRP Roof
- Smooth FRP Interior Walls
- FRP Ceiling

POPULAR OPTIONS

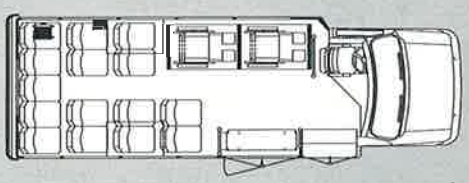
- Rear Heat System
- Front and Side Destination Signs
- Mor/Ryde Suspension
- Individual Reading Lights
- Spare Tire & Wheel
- Interior Luggage Rack
- Interior Convex Mirror
- Back-Up Alarm
- Overhead Luggage Racks
- Exterior Rear Center Mount Brake Light
- Rear Luggage Compartment
- Ceiling Grab Rails
- AM/FM Radio w/ CD Player
- "Flat Floor" (No Wheel Well Risers)
- DVD Player w/ Flip Down Monitor
- Heated/Remote Exterior Mirrors
- High-Back or Mid-High Seats with Armrests
- Front Mud Flaps
- Ground Plane For Two-Way Radio Installation
- Paging System
- Rear Emergency Door with Ajar Package
- LED Interior & Exterior Lighting
- Rear A/C System
- Roof Escape Hatch
- Stainless Steel Wheel Inserts
- ADA Mobility Compliance Package
- All FRP Exterior
- Driver Running Board
- Electric Entry Door



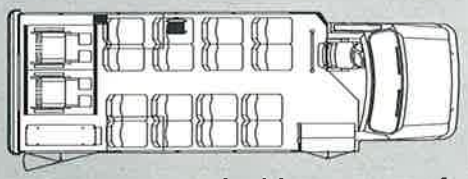
25 Passenger - Forward Facing Seating



21 Passenger Perimeter Seating



15 Passenger - 2 Wheelchairs - Front Lift



16 Passenger - 2 Wheelchairs - Rear Lift

Elkhart Coach

YOUR DEALER

Forest River, Inc. 55470 C.R. 1 Elkhart, IN 46515-3030
574.389.4600 www.forestriverinc.com www.forestriveraccessories.com

ITEM #2

WARRANTY INFORMATION

Ford
E-Series Van/Cutaway
Quality/Reliability/Durability

Warranties

New Vehicle Limited Warranties

- 3-year/36,000-mile Bumper-to-Bumper; no deductible
- 5-year/60,000-mile Powertrain Limited Warranty
- 5-year/unlimited-mileage Corrosion Perforation
- 5-year/60,000-mile Safety Restraint
- Refer to the vehicle Warranty Guide for details about what is covered and limitations of the New Vehicle Limited Warranty

Powertrain Limited Warranty

- Powertrain Limited Warranty for Ford vehicles is 5 years or 60,000 miles, whichever comes first
- That's an additional 2 years/24,000 miles of coverage beyond the Bumper-to-Bumper coverage for components such as the engine, transmission and front- or rear-wheel-drive parts

NOTE: See **www.motorcraftservice.com** for a link to a printable PDF of the Warranty Guide.

WARRANTY INFORMATION

WARRANTY INFORMATION - 2015 Fleet/Non-Retail

WARRANTY
Basic:
3 Years/36,000 Miles

Drivetrain:
5 Years/100,000 Miles

Corrosion:
3 Years/36,000 Miles
Rust-Through
6 Years/100,000 Miles

Roadside Assistance:
5 Years/100,000 Miles

Maintenance:
2 Years/24,000 Miles

A Division of Forest River, Inc.
55470 County Road 1
P.O. Box 3030
Elkhart, IN 46515-3030

LIMITED THREE (3) YEAR 36,000 MILE WARRANTY

WARRANTY:
Forest River Inc; Elkhart Coach Division, (hereafter referred to as Warrantor), warrants to the original purchaser, (hereafter referred to as Owner), that this product shall be free of SUBSTANTIAL DEFECTS in material and workmanship, attributable to Warrantor, under normal use and service. The warranty period is for a period of Three (3) years or (36,000) miles, whichever occurs first.

WARRANTY PERFORMANCE:
Owner's exclusive remedy under this warranty shall be repair of Substantial Defects, free of charge to the Owner. Owner shall bear all expenses arising out of or relating to transporting the product to the appropriate Warranty Service location. Performance will be completed within thirty (30) calendar days of the date the product is delivered for Warranty Service pursuant to appropriate Warranty Claims Procedures. Warrantor reserves the right to change parts and designs of its product without notice with no obligation to make corresponding changes to previously manufactured products.

WARRANTY VALIDATION:
Return of the Owner's Registration Card is required to validate product warranty, **(Failure to return Owner's Registration Card voids this Warranty)**.

EXPLICIT WARRANTY EXCLUSIONS:
This Warranty **does not cover** the following items:

1. Damage or deterioration to the physical appearance of the unit if such damage is the result of normal use, wear and tear, or exposure to the elements.
2. Damage caused by misuse, abuse, negligence, accidents or act of God. Usage of this product in a manner inconsistent with its design intentions or inconsistent with the manufacturer's instructions and recommendations will void this warranty with respect to damage caused by or relating to such inconsistent usage.
3. Products, which have been repaired, altered or modified by any party other than Warrantor.
4. Accessories or parts not manufactured by Warrantor, including but not limited to; the chassis and its component parts.
5. Expenses arising out of, or related to, the transporting of the product to an appropriate Warranty Service Location for service.
6. Damage resulting from, or related to, the product being towed or towing another vehicle. (Use of product to tow another vehicle is prohibited).

WARRANTY TERMINATION:
The following actions or events will result in the automatic termination of this Warranty and relieve Warrantor from any and all obligations under this Warranty:

1. Misuse or neglect of the product, failure to provide reasonable and necessary maintenance, unauthorized alteration or modification, accident, or improper loading.
2. Sale of product, (Warranty is non-transferable).
3. The expiration of the warranty period(s) set out herein.

WARRANTY CLAIM PROCEDURES:
All Warranty Service is to be performed at Warrantor's factory or at an authorized Warranty Service location. Warrantor must authorize all Warranty Service in writing, prior to performance, for any claim over $250.00. Such written authorization instructing Owner as to where and when to deliver the product for Warranty Service will be given within (2) working days of receipt of notification of a defect or malfunction provided the Warranty covers such defects or malfunction and all other terms of this Warranty have been satisfied in full. Notice shall be presented in writing to Elkhart Coach Division, Forest River Inc., 52807 County Road 7, Elkhart, Indiana 46514, and must be submitted on or before the date of expiration of the appropriate Warranty period. Notice shall give Owner's name and address, a brief description of the problem, the product model and serial number, the date of purchase, product mileage, the name of the dealer who sold the product, the current product location and Owner's location for contact during regular business hours.

DAMAGE RECOVERY LIMITATION:
NO PERSON SHALL BE ENTITLED TO RECOVER FROM WARRANTOR FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES ARISING OUT OF OR RELATING TO ANY DEFECT IN THE PRODUCT.
These limitation include, but are not limited to, loss of time; loss of use; loss of revenues, salaries or commissions; towing charges; bus fares; car rentals; gasoline expenses; telephone charges; inconvenience or other incidental damages.

WARRANTY DISCLAIMER:
WARRANTOR HEREBY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR PARTICULAR PURPOSE.
There are no Warranties of any nature, expressed or implied, made by Warrantor beyond the contents of this Limited Warranty. No person has authority to enlarge, amend or modify this Warranty.

LEGAL RIGHTS:
This Warranty gives only those legal rights specifically enumerated herein. Owner may have other legal rights, which vary from state to state.
SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR OF THE DURATION OF IMPLIED WARRANTIES, SO THE ABOVE LIMITATION MAY NOT APPLY.

EXTENDED WARRANTY ON STRUCTURAL ITEMS:
Warrantor warrants to the first registered Owner for a period of six (6) years or seventy-two thousand, (72,000), miles whichever comes first, that this product shall be free of SUBSTANTIAL DEFECTS arising out of or relating to the structural portion of the product. The terms of this structural Warranty shall be the exact same terms as set out above in Warrantors Limited Three (3) Year Warranty, except as such terms relate to the duration of coverage. This Structural Warranty is intended to only cover the performance of the steel cage structure of the product. For further information concerning such warranty, please contact Warrantor.

ACC Climate Control

2 Year Unlimited/3 Year 75,000 Mile Warranty

ACC Climate Control, hereinafter referred to as "ACC", warrants its products to the original purchaser, subject to normal use and service, for a period of 24 months w/unlimited mileage or 36 months 75000 miles and while in possession of the original owner.

ACC agrees to repair or replace with a new or repaired part, any part of an ACC unit which, after inspection has proven to fail because of a manufacturing defect, within the warranty period. Replacement of a defective part within the warranty period will include labor for replacement at factory established rates if performed at any authorized Service Center. Compensation at factory established rates for loss of refrigerant will be paid only when caused by a defective part and if the defective part itself was under warranty at the time of failure.

CONDITIONS OF WARRANTY

1. **Handling of Warranty Claims.**
   - A. Should a failure occur to an ACC component under warranty, call ACC at (574) 264-2190 and Return the vehicle to the installer or dealer from whom the air conditioning was purchased. Present your copy of the warranty registration card. He will make the necessary repairs to the system or replacement parts as covered by the warranty.
   - B. If it is not possible to return to the original dealer, take the vehicle to any convenient ACC dealer and present your Warranty Card. He will contact the factory for authorization for the necessary repairs. Should you be unable to locate an authorized ACC dealer, contact the factory and you will be assisted.

2. **EXCLUSIONS FROM WARRANTY**

THIS WARRANTY SHALL NOT APPLY TO:

- A. Any part or parts of products becoming defective as a result of negligence, accident, or other casualty.
- B Owner's failure to provide normal maintenance such as lubrication of engine, tightening belts, cleaning coils, loss of refrigerant, drier replacement or improper voltage or electrical connections.
- C. Improper installation, repair, or alterations.
- D Operation in a manner contrary to ACC's printed instructions
- E. Any parts or products which have been repaired or altered outside of ACC's factory unless specific written authorization for such repair or alteration has been issued by ACC.

2. **Conditions.**
   - A. ACC neither assumes nor authorizes any person to assume for it, any obligations or warranty other that that herein stated.
   - B. ACC reserved the right to make changes in design or improvements of its products or parts thereof without obligations to make or install such changes or improvements in or upon products covered in this warranty.
   - C Remedies available to the owner for breach of the A/C Factory Warranty are expressly limited to an action to recover the cost of repairs or replacement due hereunder.
   - D. Repair or replacement of any part or parts of the products under this Warranty shall not extend this Warranty with respect to such repaired or replaced part or parts beyond the warranty period.
   - E ACC does not warrant the workmanship of the installer and will not bear any cost due to faulty or incorrect installation or shipping damage.
   - F ACC will not be liable for loss of time, labor, equipment, rental, or other expenses while products are out of service.
   - G. ACC shall credit authorized dealers for labor for replacement or repair of defective parts discovered during the warranty period according to the published schedule of labor allowance in the Warranty Policy and Procedures Manual.
   - H This Warranty shall remain in effect during the warranty period when the equipment is properly installed, serviced and operated under normal conditions according to ACC's instructions.
   - I. **Items such as filters, belts, driers, lubricants, motor brushes, etc. are considered expendable and not covered under warranty.**

ACC DISCLAIMS ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF USE OF THE VEHICLE, LOSS OF TIME, INCONVENIENCE; EXPENSE FOR TRAVEL, LODGING, LOST INCOME OR REVENUE, TRANSPORTATION CHARGES OR LOSS OR DAMAGE OF PERSONAL PROPERTY.

SOME STATES DO NOT ALLOW EXCLUSIONS OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE EXCLUSIONS MAY NOT APPLY TO YOU.

THIS WARRANTY IS THE ONLY EXPRESSED WARRANTY BY ACC AND NO DEALER OR SERVICE FACILITY IS AUTHORIZED BY ACC TO MODIFY OR EXTEND IT. ANY IMPLIED WARRANTIES, INCLUDING WARRANTY OF FITNESS FOR PARTICULAR PURPOSE, OR WARRANTY OF MERCHANTABILITY, ARE EXPRESSLY LIMITED IN DURATION TO THE SAME PERIOD AS THE EXPRESSED WARRANTY. SOME STATES DO NOT ALLOW LIMITATIONS ON IMPLIED WARRANTIES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

THIS WARRANTY IS NULL AND VOID UNLESS THE WARRANTY REGISTRATION CARD IS COMPLETED AND MAILED TO ACC WITHIN THIRTY DAYS OF THE DATE OF ORIGINAL RETAIL PURCHASE.

IN ADDITION TO THE ABOVE RIGHTS, THE PURCHASER HAS CERTAIN LEGAL REMEDIES PROVIDED BY THE MAGNUSON MOSS WARRANTY ACT, PUBLIC LAW 93-637. YOU MAY ALSO HAVE CERTAIN RIGHTS UNDER STATE LAW.

Braun® Limited Warranty

WARRANTY COVERAGE AND WARRANTY COVERAGE TIME PERIODS

The Braun Corporation ("Braun") warranty covers certain parts of this wheelchair lift for three (3) years or 10,000 cycles and the cost of labor to repair or replace those parts for one (1) year or 3,000 cycles. If The Braun Corporation receives the warranty registration card within 20 days after the lift is put into service, the warranty labor coverage will increase from one (1) year or 3,000 cycles to three (3) years or 10,000 cycles. In addition, providing the warranty registration card is returned as noted above, the following lift's power train parts are warrantied for five (5) years or 15,000 cycles: Cable, Cylinder, Flow Control, Gear Box, Motor, Pump, Hydraulic Hose and Fittings. This limited warranty covers substantial defects in materials and workmanship of the lift, provided that the lift is operated and maintained properly and in conformity with the owner's manual. The warranty period begins on the date that the product is delivered to the first retail purchaser by an independent, authorized dealer of Braun, or, if the dealer places the product into any type of service prior to retail sale, on the date the dealer first places the product in such service. This limited warranty applies only to the first purchaser. It may not be transferred.

WHAT BRAUN WILL DO TO CORRECT PROBLEMS

In the event that a substantial defect in material or workmanship, attributable to Braun, is found to exist during the first year of warranty coverage, it will be repaired or replaced, at Braun's option, without charge for parts or labor to the owner, in accordance with the terms, conditions and limitations of this limited warranty. If the substantial defect in material or workmanship, attributable to Braun, is found to exist during the second or third year of warranty coverage, it will be repaired or replaced, at Braun's option, without charge to the owner for parts, only, in accordance with the terms, conditions and limitations of this limited warranty. Providing the warranty card is returned within 20 days as outlined above, the labor warranty period will be extended by two years of coverage in accordance with the terms, conditions, and limitations of this limited warranty. In addition, if a substantial defect in material or workmanship, attributable to Braun, is found to exist during the fourth or fifth year of warranty coverage to the following lift's power train parts: Cable, Cylinder, Flow Control, Gear Box, Motor, Pump, Hydraulic Hose and Fittings, it will be repaired or replaced, at Braun's option, without charge to the owner for parts, only, in accordance with the terms, conditions and limitations of this limited warranty. The cost of labor for repair or replacement at any time after the warranty coverage detailed above is the sole responsibility of the owner.

Braun's obligation to repair or replace defective materials or workmanship is the sole obligation of Braun under this limited warranty. Braun reserves the right to use new or remanufactured parts of similar quality to complete any work, and to make parts and design changes from time to time without notice to anyone. Braun reserves the right to make changes in the design or material of its products without incurring any obligation to incorporate such changes in any previously manufactured product. Braun makes no warranty as to the future performance of this product, and this limited warranty is not intended to extend to the future performance of the product. In addition, the owner's obligation to notify Braun, or one of its authorized, independent dealers, of a claimed defect does not modify any obligation placed on the owner to contact Braun directly when attempting to pursue remedies under state or federal law.

LIMITATIONS, EXCLUSIONS AND DISCLAIMER OF IMPLIED WARRANTIES

ANY IMPLIED WARRANTY THAT IS FOUND TO ARISE BY WAY OF STATE OR FEDERAL LAW, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR ANY IMPLIED WARRANTY OF FITNESS, IS LIMITED IN DURATION TO THE TERMS OF THIS LIMITED WARRANTY AND IS LIMITED IN SCOPE OF COVERAGE TO THE SCOPE OF COVERAGE OF THIS LIMITED WARRANTY. Braun disclaims any express or implied warranty, including any implied warranty of fitness or merchantability, on items excluded from coverage as set forth in this limited warranty. Braun makes no warranty of any nature beyond that contained in this limited warranty. No one has authority to enlarge, amend or modify this limited warranty, and Braun does not authorize anyone to create any other obligation for it regarding this product. Braun is not responsible for any representation, promise or warranty made by any independent dealer or other person beyond what is expressly stated in this limited warranty. Any selling or servicing dealer is not Braun's agent, but an independent entity.

Braun® Limited Warranty

BRAUN SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES THAT MAY RESULT FROM BREACH OF THIS LIMITED WARRANTY OR ANY IMPLIED WARRANTY. THIS EXCLUSION OF CONSEQUENTIAL AND INCIDENTAL DAMAGES SHALL BE INDEPENDENT OF ANY FAILURE OF THE ESSENTIAL PURPOSE OF ANY WARRANTY, AND THIS EXCLUSION SHALL SURVIVE ANY DETERMINATION THAT THIS LIMITED WARRANTY OR ANY IMPLIED WARRANTY HAS FAILED OF ITS ESSENTIAL PURPOSE. This warranty does not cover, and in no event shall Braun be liable for towing charges, travel, lodging, or any other expense incurred due to the loss of use of the product or other reason.

Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

HOW TO GET SERVICE

To obtain warranty service the owner must do all of the following:

1. Notify an authorized service center, of the claimed defect attributable to Braun, within the warranty coverage period designated above
2. Provide the notification mentioned in (1), above, within ten (10) days of when the owner discovered, or should have discovered, the claimed defect
3. Promptly schedule an appointment with and take the product to an authorized service center for service.
4. Pay any transportation costs and all expenses associated with obtaining warranty service.

Since Braun does not control the scheduling of service work at the independent dealerships you may encounter some delay in scheduling or completion of work. If you need assistance you may contact Braun, at 631 West 11th Street, Winamac, Indiana 46996; 1-800-THE-LIFT, (843-5438).

If two (2) or more service attempts have been made to correct any covered defect that you believe impairs the value, use or safety of the product, or if it has taken longer than thirty (30) days for repairs to be completed, you must, to the extent permitted by law, notify Braun directly, in writing, at the above address, of the unsuccessful repair(s) of the alleged defect(s) so that Braun can become directly involved in providing service pursuant to the terms of this limited warranty.

WHAT IS NOT COVERED

This Limited Warranty does not cover any of the following: defects in materials, components or parts of the product not attributable to Braun, any material, component or part of the product that is warranted by another entity (Note: the written warranty provided by the manufacturer of the material, component or part is the direct responsibility of that manufacturer); items that are added or changed after the product leaves Braun's possession; additional items installed at any dealership, or other place of business, or by any other party, other than Braun; normal wear, tear, usage, maintenance, service, periodic adjustments, the effects of condensation or moisture from condensation; mold or any damage caused by mold; imperfections that do not affect the product for its intended purpose; items that are working as designed but that you are unhappy with; problems related to mis-operation, misuse, mishandling, neglect or abuse, including failure to maintain the product in accordance with the owner's manual, or other routine maintenance such as inspections, lubricating, adjustments, tightening of screws, sealing, wheel alignments or rotating tires; damage due to accident or collision, including any acts of weather or damage or corrosion due to the environment; theft, vandalism, fire, or other intervening acts not attributable to Braun; damage resulting from tire wear or tire failure; defacing, scratches, dents or chips on any interior or exterior surface of the product, including those caused by rocks or other road hazards, damage caused by off road use, overloading or alteration of the product, or any of its components or parts.

Defects and/or damage to interior and exterior surfaces and other appearance items may occur at the factory or when the product is in transit. These items are usually detected and corrected at the factory or by

a dealer prior to delivery to the purchaser. You must inspect the product for this type of damage when you take delivery. If you find any such defect or damage you must notify the selling dealer, or Braun, at the time of delivery to have these items covered by this limited warranty and to have work performed on the items at no cost to you as provided by this limited warranty.

EVENTS DISCHARGING BRAUN FROM OBLIGATION UNDER WARRANTY

The following shall completely discharge Braun from any express or implied warranty obligation to repair or replace anything and void this warranty: misuse, neglect, collision, accidents, failure to provide routine maintenance (See Owner's Manual), unauthorized alteration, off road use, Acts of Nature, damage from weather or the environment, theft, vandalism, tampering, fire, explosions, overloading the product and odometer tampering.

LEGAL REMEDIES

Any action to enforce any portion of this limited warranty, or any implied warranty, must be commenced within six (6) months after expiration of the warranty coverage period designated above or the action will be barred because of the passage of time. Any performance of repairs shall not suspend this limitation period from expiring. Any performance of repairs after the warranty coverage period has expired, or performance of repairs regarding any thing excluded from coverage under this limited warranty shall be considered "good will" repairs, and they will not alter the terms of this limited warranty, or extend the warranty coverage period or the filing limitation period in this paragraph. In addition, since it is reasonable to expect that the product will need some service during the warranty period; this warranty does not extend to future performance. It only sets forth what Braun will do and does not guarantee anything about the product for any time period. Nothing in this warranty, or any action of Braun, or any agent of Braun, shall be interpreted as an extension of any warranty period or the filing limitation period in this paragraph. Some states do not allow a reduction in the statute of limitations, so this reduction may not apply to you.

WARRANTY REGISTRATION and MISCELLANEOUS

Your warranty registration records should be completed and delivered to the appropriate companies, including the Braun Delivery Checklist & Warranty form. That form must be returned to Braun within twenty (20) days of purchase. The Braun warranty will not be registered unless this warranty registration is completed and received by Braun. Failure to file this warranty registration with Braun will not affect your rights under this limited warranty as long as you can present proof of purchase, but it can cause delays in obtaining the benefits of this limited warranty, and it changes the start date of the warranty to the date of final assembly of the product by Braun.

Braun agrees to repair or replace any of its factory installed parts found to have substantial defects within the appropriate warranty period designated above, provided that the repair is authorized by Braun and carried out by an authorized service center (a Braun labor schedule determines the cost allowance for repairs). Braun will not honor any warranty claim for repairs or replacement of parts unless the claim is submitted with the appropriate paperwork, and the work is completed by an independent, factory authorized service center. The appropriate paperwork can be obtained by written or phone contact with Braun at the contact information in this warranty.

Braun reserves the right to designate where any warranty work can be performed. Braun also reserves the right to examine any defective workmanship or part prior to giving any authorization for warranty work. Braun's return authorization procedure must be adhered to in order to process any warranty claims.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS THAT VARY FROM STATE TO STATE.

Luminator TwinVision

A Luminator Technology Group Company

BUS PRODUCTS WARRANTY

MobiLite Electronic Destination Sign System

1-YEAR LIMITED WARRANTY

1-Year Parts

This Warranty is Effective October 1, 2013

SELLER HEREBY EXPRESSLY EXCLUDES ALL EXPRESS AND IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS OR OTHERWISE, except such express warranties as are set forth in this paragraph below. ANY COMPONENT SUPPLIED BY PARTIES OVER WHOM SELLER HAS NO CONTROL AS TO THE QUALITY OF THE MANUFACTURE IS HEREBY EXPRESSLY EXCLUDED FROM ALL EXPRESS AND IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS OR OTHERWISE, except as set forth in the express written warranty of the supplier of such component.

Luminator-TwinVision (the "Seller") warrants to Buyer that each new amber or silver "MobiLite" Destination Sign System product to be free from defects in material and workmanship, under normal use, for a period of **1 years**, or 12 months.

This warranty begins at the in-service date of the vehicle or 90 days after the original shipment date of the product from the Seller's manufacturing facility, whichever comes first. Seller warrants that the Electronic Destination Sign System product will conform to the contract description and that the goods supplied hereunder will be fit for the stated purpose.

Seller warrants to the Buyer spare part and repair part manufactured by Seller to be free from defects of material and workmanship for a period of **ninety days (90)** from date of shipment from Seller's plant provided the products are operated under normal conditions and within the limits of the specifications of the products.

Seller will correct within a reasonable time after receipt of the defective part, parts or product, any defect in any product sold hereunder which it finds to be defective, at Seller's option either by repairing or replacing the defective part, parts or product and such action shall be accepted by Buyer as full performance of the Warranty during the original **one (1) year** period.

This warranty is limited to material and workmanship and will not cover any product failures as a result of:

- Damage caused by accident, abuse, misuse or improper installation.
- Damage cause by environmental conditions including, but not limited to: fire, vandalism, water, temperature, humidity, dust, etc.
- Damage caused by service completed by personnel other than Seller or Seller authorized technicians.
- Modification to product completed without prior written approval by Seller.

WARRANTY REPAIR PROCESS: Product to be returned for repair must have a service dispatch (SD) number. No items will be accepted without a SD number. The SD number should be noted on the box and on the paperwork that accompanies the returned product. This number can be obtained by contacting Luminator-TwinVision Repair Service at (972) 516-3120. Material should be shipped to:

Luminator Holding, LP
Attn: Repair
900 Klein Road
Plano, TX 75074, USA

The return of any product shall be at the expense of the Buyer. Product returned to Seller under warranty must be properly packaged. Seller will not be responsible for damage to a product during transit or packages lost in transit.

LIMITATION OF PROCEEDINGS: No action of any kind may be commenced against Seller more than one (1) year from the date Buyer's claim or cause of action against Seller first arose.

WAIVER: Waiver by Seller of a breach by Buyer of any provision of this warranty shall not be deemed a waiver of future compliance therewith and such provision as well as all other provisions hereunder shall remain in full force and effect.

DAMAGES: Seller's liability shall in no event, except in the case of non-delivery, exceed the cost of repairing or replacing such part, parts or products or the amount of the purchase price paid with respect to the product on which the claim for damage is based, whichever is the lesser (Buyer is to return to Seller any product with regard to which Buyer receives the amount of the purchase price paid) in the case of non-delivery Seller's liability shall not exceed the difference if any between the contract price and the market price on the contract day of delivery of the product to be delivered.

SELLER IN NO EVENT SHALL HAVE ANY LIABILITY WHATSOEVER FOR PAYMENT OF INCIDENTAL, CONSEQUENTIAL, INDIRECT OR SPECIAL DAMAGES, INCLUDING BUT NOT LIMITED TO DAMAGES FOR LOSS OF PROFIT OR DAMAGES RESULTING FROM PERSONAL INJURY, DEATH OR DAMAGE TO, OR LOSS OF USE OF ANY PROPERTY, INCLUDING BUT NOT LIMITED TO ANY PRODUCT SOLD HEREUNDER.

WARRANTY POLICY

Q'Straint belts/ retractor are inspected and tested thoroughly. The product is warranted to be free from defects in workmanship and materials for the periods from the date of purchase:

- **Q'POD – 5 years** (with warranty card submitted & proof of maintenance)
- **QRT-360 – 5 years** (with warranty card submitted)
- **QUBE – 3 years** (with warranty card submitted & proof of maintenance)
- **QRT Max – 3 years** (with warranty card submitted)
- **QRT Deluxe – 3 years** (with warranty card submitted)
- **QRT Standard – 2 years** (with warranty card submitted)
- **QLK-150 – 3 years** (with warranty card submitted & proof of maintenance)
- **QLK-110 – 2 years** (with warranty card submitted & proof of maintenance)
- **Q-5000 – 2 years**
- **M-Series – 2 years**
- **Anchorages** (track) – **1 year**
- **Accessories – 1 year**

Should any of the belts fail to operate properly during the warranty period, return the COMPLETE belt/ retractor, freight prepaid, to Q'Straint or an authorized dealer. In some situations, we will determine to provide a replacement at a charge while we receive and inspect the item claimed. If inspection shows that improper operation is caused by defective workmanship or material, Q'Straint will repair or replace the belt/ retractor only, at no charge. Otherwise, invoice for replacement is due and payable within 45 days from ship date. Q'Straint does not warranty labor charges.

This warranty does not apply where:

- normal maintenance is required
- repairs shave been made or attempted by user
- the belts/ retractors have been abused, misused or improperly maintained
- alterations have been made to the Q'Straint belts/retractors by user or installer

A warranty card is enclosed with each Q'Straint kit.
Please register the product online at: **www.qstraint.com/registration**

Please contact us with any questions or concerns.

5553 Ravenswood Road . Bldg. 110 . Ft. Lauderdale, Florida 33312
Toll-Free: 1-800-987-9987 • Tel: 954-986-6665 • Fax: 954-986-0021 • **www.qstraint.com**

ITEM #3

MAINTENANCE SCHEDULES

GENERAL MAINTENANCE INFORMATION

Why Maintain Your Vehicle?

Carefully following the maintenance schedule helps protect against major repair expenses resulting from neglect or inadequate maintenance and may help to increase the value of your vehicle when you sell or trade it. Keep all receipts for completed maintenance with your vehicle.

We have established regular maintenance intervals for your vehicle based upon rigorous testing. It is important that you have your vehicle serviced at the proper times. These intervals serve two purposes; one is to maintain the reliability of your vehicle and the second is to keep your cost of owning your vehicle down.

It is your responsibility to have all scheduled maintenance performed and to make sure that the materials used meet the specifications identified in this owner's manual. See **Capacities and Specifications** (page 190).

Failure to perform scheduled maintenance invalidates warranty coverage on parts affected by the lack of maintenance.

Why Maintain Your Vehicle at Your Dealership?

Factory-trained Technicians

Service technicians participate in extensive factory-sponsored certification training to help them become experts on the operation of your vehicle. Ask your dealership about the training and certification their technicians have received.

Genuine Ford and Motorcraft Replacement Parts

Dealerships stock Ford, Motorcraft and Ford-authorized branded re-manufactured replacement parts. These parts meet or exceed our specifications. Parts installed at your dealership carry a nationwide 24-month or unlimited mile (kilometer) parts and labor limited warranty.

If you do not use Ford authorized parts they may not meet our specifications and depending on the part, it could affect emissions compliance.

Convenience

Many dealerships have extended evening and Saturday hours to make your service visit more convenient and they offer one stop shopping. They can perform any services that are required on your vehicle, from general maintenance to collision repairs.

Note: *Not all dealers have extended hours or body shops. Please contact your dealer for details.*

Protecting Your Investment

Maintenance is an investment that pays dividends in the form of improved reliability, durability and resale value. To maintain the proper performance of your vehicle and its emission control systems, make sure you have scheduled maintenance performed at the designated intervals.

Your vehicle is very sophisticated and built with multiple, complex, performance systems. Every manufacturer develops these systems using different specifications and performance features. That is why it is important to rely upon your dealership to properly diagnose and repair your vehicle.

Ford Motor Company has recommended maintenance intervals for various parts and component systems based upon engineering testing. Ford Motor Company relies upon this testing to determine the most appropriate mileage for replacement of oils and fluids to protect your vehicle at the lowest overall cost to you and recommends against maintenance schedules that deviate from the scheduled maintenance information.

We strongly recommend the use of only genuine Ford, Motorcraft or Ford-authorized re-manufactured replacement parts engineered for your vehicle.

Additives and Chemicals

This owner's manual and the Ford Workshop Manual list the recommended additives and chemicals for your vehicle. We do not recommend using chemicals or additives not approved by us as part of your vehicle's normal maintenance. Please consult your warranty information.

Oils, Fluids and Flushing

In many cases, fluid discoloration is a normal operating characteristic and, by itself, does not necessarily indicate a concern or that the fluid needs to be changed. However, a qualified expert, such as the factory-trained technicians at your dealership, should inspect discolored fluids that also show signs of overheating or foreign material contamination immediately.

Make sure to change your vehicle's oils and fluids at the specified intervals or in conjunction with a repair. Flushing is a viable way to change fluid for many vehicle sub-systems during scheduled maintenance. It is critical that systems are flushed only with new fluid that is the same as that required to fill and operate the system or using a Ford-approved flushing chemical.

Owner Checks and Services

Make sure you perform the following basic maintenance checks and inspections every month or at six-month intervals.

Check every month
Engine oil level.
Function of all interior and exterior lights.
Tires (including spare) for wear and proper pressure.
Windshield washer fluid level.

Check every six months
Battery connections. Clean if necessary.
Body and door drain holes for obstructions. Clean if necessary.
Cooling system fluid level and coolant strength.
Door weatherstrips for wear. Lubricate if necessary.

Check every six months
Hinges, latches and outside locks for proper operation. Lubricate if necessary.
Parking brake for proper operation.
Safety belts and seat latches for wear and function.
Safety warning lamps (brake, ABS, airbag and safety belt) for operation.
Washer spray and wiper operation. Clean or replace blades as necessary.

Multi-point Inspection

In order to keep your vehicle running right, it is important to have the systems on your vehicle checked regularly. This can help identify potential issues and prevent major problems. We recommend having the following multi-point inspection performed at every scheduled maintenance interval to help make sure your vehicle keeps running great.

Multi-point inspection	
Accessory drive belt(s)	Horn operation
Battery performance	Radiator, cooler, heater and A/C hoses
Engine and cabin air filter	Suspension component for leaks or damage
Exhaust system	Steering and linkage
Exterior lamps and hazard warning system operation	Tires (including spare) for wear and proper pressure**
Fluid levels*; fill if necessary	Windshield for cracks, chips or pits
For oil and fluid leaks	Washer spray and wiper operation

* Brake, coolant recovery reservoir, automatic transmission, power steering and window washer.

**If your vehicle is equipped with a temporary mobility kit, check the tire sealant expiration Use By date on the canister. Replace as needed.

Be sure to ask your dealership service advisor or technician about the multi-point vehicle inspection. It is a comprehensive way to perform a thorough inspection of your vehicle. Your checklist gives you immediate feedback on the overall condition of your vehicle.

NORMAL SCHEDULED MAINTENANCE

Every 7500 miles (12000 km) or six months (whichever comes first)
Change engine oil and filter.
Rotate tires*, inspect tire wear and measure tread depth.
Inspect wheels and related components for abnormal noise, wear, looseness or drag.
Perform multi-point inspection (recommended).

* Vehicles with dual rear wheels should rotate the front wheels when specified; rear wheels only if unusual wear is noted.

Every 15000 miles (24000 km) or 12 months (whichever comes first)
Inspect automatic transmission fluid level. Consult dealer for requirements.
Inspect brake pads, rotors, hoses and parking brake.
Inspect engine cooling system strength and hoses.
Inspect exhaust system and heat shields.
Inspect steering linkage, ball joints, suspension, tie-rod ends, driveshaft and U-joints.

Other maintenance items	
Every 30000 miles (48000 km)	Replace engine air filter.
	Replace cabin air filter, if equipped.
Every 60000 miles (96000 km)	Change automatic transmission fluid and filter (5-Speed Transmission only). Consult dealer for requirements.
	Replace front wheel bearing grease and grease seal if non-sealed bearings are used.
Every 97500 miles (156000 km)	Replace spark plugs.

Other maintenance items	
Every 105000 miles (168000 km)	Change engine coolant.*
	Replace rear axle fluid.
	Inspect accessory drive belt(s).**
Every 150000 miles (240000 km)	Change automatic transmission fluid.
	Change automatic transmission filter.***
	Replace accessory drive belt(s) if not replaced within the last 100000 miles (160000 km).
	Replace front wheel bearings and seals if non-sealed bearings are used.
Every two years	Replace brake fluid.

* Initial replacement at six years or 105000 miles (168000 kilometers), then every three years or 45000 miles (72000 kilometers).

** If not replaced, inspect every 15000 miles (24000 kilometers).

*** Rear-wheel drive vehicles only.

SPECIAL OPERATING CONDITIONS SCHEDULED MAINTENANCE

If you operate your vehicle **primarily** in any of the following conditions, you need to perform extra maintenance as indicated. If you operate your vehicle **occasionally** under any of these conditions, it is not necessary to perform the extra maintenance. For specific recommendations, see your dealership service advisor or technician.

Towing a trailer or using a car-top carrier	
Inspect frequently, service as required	Inspect U-joints.
	See axle maintenance items under **Exceptions**.
Every 5000 miles (8000 km)	Inspect the wheels and related components for abnormal noise, wear, looseness or drag.
	Rotate tires*, inspect tires for wear and measure tread depth.
Every 5000 miles (8000 km) or six months	Change engine oil and filter.
	Inspect U-joints.
Every 30000 miles (48000 km)	Replace front wheel bearing grease and grease seals if non-sealed bearings are used.
Every 60000 miles (96000 km)	Replace spark plugs.

*Vehicles equipped with dual rear wheels should rotate the front wheels when specified; rear wheels only if unusual wear is noted.

Extensive idling or low-speed driving for long distances, as in heavy commercial use (such as delivery, taxi, patrol car or livery)	
Every 5000 miles (8000 km)	Inspect brake system.
	Inspect wheels and related components for abnormal noise, wear, looseness or drag.
	Rotate tires*, inspect tires for wear and measure tread depth.
Every 5000 miles (8000 km) or six months	Inspect U-joints.

Extensive idling or low-speed driving for long distances, as in heavy commercial use (such as delivery, taxi, patrol car or livery)	
Every 5000 miles (8000 km) or six months or 200 engine hours	Change engine oil and filter.
Every 30000 miles (48000 km)	Replace front wheel bearing grease and grease seals if non-sealed bearings are used.
Every 60000 miles (96000 km)	Replace spark plugs.

*Vehicles equipped with dual rear wheels should rotate the front wheels when specified; rear wheels only if unusual wear is noted.

Operating in dusty or sandy conditions (such as unpaved or dusty roads)	
Inspect frequently, service as required	Replace engine air filter.
	Replace cabin air filter, if equipped.
Every 5000 miles (8000 km)	Inspect the wheels and related components for abnormal noise, wear, looseness or drag.
	Rotate tires*, inspect tires for wear and measure tread depth.
Every 5000 miles (8000 km) or six months	Change engine oil and filter.
	Inspect U-joints.
Every 30000 miles (48000 km)	Replace front wheel bearing grease and grease seals if non-sealed bearings are used.
Every 50000 miles (80000 km)	Change rear axle fluid.

*Vehicles equipped with dual rear wheels should rotate the front wheels when specified; rear wheels only if unusual wear is noted.

Exceptions

There are several exceptions to the Normal Schedule:

Normal vehicle axle maintenance: Rear axles and power take-off units with synthetic fluid and light-duty trucks equipped with Ford-design axles are lubricated for life; do not check or change fluid unless a leak is suspected, service is required or the assembly has been submerged in water. During long periods

of trailer towing with outside temperatures above 70°F (21°C) and at wide-open throttle for long periods above 45 mph (72 km/h), change non-synthetic rear axle fluid every 3000 miles (4800 kilometers) or three months, whichever comes first. This interval can be waived if the axle is filled with 75W140 synthetic gear fluid meeting Ford specification WSL-M2C192-A, part number F1TZ-19580-B, or equivalent. Add friction modifier XL-3 (EST-M2C118-A) or equivalent for complete refill of Traction-Lok rear axles. See **Capacities and Specifications** (page 190).

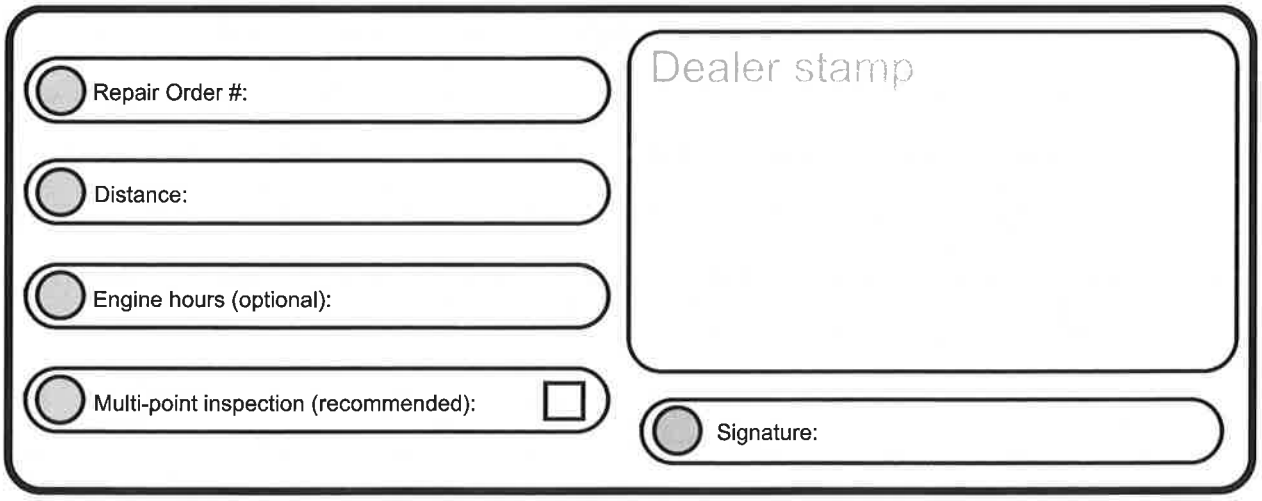
California fuel filter replacement: If you register your vehicle in California, the California Air Resources Board has determined that the failure to perform this maintenance item does not nullify the emission warranty or limit recall liability before the completion of your vehicle's useful life. Ford Motor Company, however, urges you to have all recommended maintenance services performed at the specified intervals and to record all vehicle service.

Hot climate oil change intervals: Vehicles operating in the Middle East, North Africa, Sub-Saharan Africa or locations with similar climates using an American Petroleum Institute (API) Certified for Gasoline Engines (Certification mark) oil of SM or SN quality, the normal oil change interval is 5000 miles (8000 kilometers).

If the available API SM or SN oils are not available, then the oil change interval is 3000 miles (4800 kilometers).

Engine air filter and cabin air filter replacement: The life of the engine air filter and cabin air filter is dependent on exposure to dusty and dirty conditions. Vehicles operated in these conditions require frequent inspection and replacement of the engine air filter and cabin air filter.

SCHEDULED MAINTENANCE RECORD



CONTENTS

Warning

This manual contains important information, which the owner and driver must know and understand for safe operation of your Elkhart Coach vehicle. Therefore, your Elkhart Coach bus should not be driven or occupied prior to the operator's reading and thorough understanding of the information and warnings contained herein. Failure to read and study this manual before operation or occupancy could result in costly damage to your bus and serious personal injury or even death to you and others.

Never leave children unattended in or about the motor vehicle or allow children to gain access to vehicle without adult supervision. Leaving children unattended in or about any motor vehicle poses a serious risk of personal injury or even death to such children and others. An Elkhart Coach bus is no exception. Indeed, your Elkhart Coach conversion has many unique features, which are designed for adult operation and use only after a careful and complete reading of the instructions and information contained in this Operation Manual. Such features could present a substantial risk of personal injury or death to children left unattended in or about the vehicle.

If questions arise after reading this manual, contact:

Elkhart Coach Customer Support,
1-866-478-7652

Note: All information and specifications in this Operation Manual are current at the time of printing. However, due to the Elkhart Coach policy of continuous product improvement, we reserve the right to make changes at any time without written notice or obligation. This operation manual explains the operation of Elkhart Coach's standard and optional equipment. Therefore, you may find information for equipment not installed in your vehicle.

Note: The information and specifications contained in this operation manual are intended to supplement any manuals supplied by the vehicle manufacturer and/or accessories manufacturer's manual. Refer to these manuals for operating information.

Owner Assistance

This section explains the warranty coverage on your Elkhart Coach bus. It is important that you read and understand the information contained here. Retain this manual in your vehicle for future reference. This manual and warranty information does not apply to any chassis manufacture coverage. Problems or questions relating to the chassis should be directed to the dealership from whom you bought the vehicle. Any assistance you require on the Elkhart Coach conversion should first be requested from your selling dealer. Should you have any difficulty in getting a matter resolved, contact the Elkhart Coach Customer Support Department.

Elkhart Coach Limited Warranty

The terms and conditions of the limited warranty are set forth in the Elkhart Coach Limited Warranty, located in the information packet included with your Elkhart Coach. Please read your Elkhart Coach Limited Warranty carefully and familiarize yourself with what it covers. If you haven't received a copy of the complete Limited Warranty statement, request a copy from your dealer or call us at 1-574-264-6928. The Elkhart Coach Limited Warranty warrants the material and workmanship that are included in our manufacturing process.

The chassis and certain other components in an Elkhart Coach bus are under warranty by the chassis manufacturer and/or component manufacturers.

This Owner's Manual is NOT a warranty.

Chassis Warranty

Your vehicle chassis is warranted by the manufacturer (Ford Motor Company). The information packet included in your bus will contain the chassis Owner's Manual and warranty information for the bus chassis.

Other Warranties

Some of the components in or on your bus have their own warranties. Your owner's information packet contains the specific warranties for these components. In some cases, separate warranty cards may need to be completed and mailed to activate these warranties.

If, after reviewing the warranties in your Owner's Packet, you have questions about coverage included in the Elkhart Coach Limited Warranty, coverage by the chassis manufacturer or warranty coverage by others, please ask your dealer.

Elkhart Coach Warranty Coverage

Repairs covered

Elkhart Coach warrants repairs to correct material or workmanship-related problems, properly noted and recorded during the warranty period, as it relates to the conversion portion of the vehicle. Elkhart Coach will allow for repairs to the conversion portion during the warranty periods in accordance with the terms, conditions and limitations of the warranty.

Component Replacement/Exchange

Elkhart Coach reserves the right to replace defective components with new, re-manufactured, reconditioned or repaired components. These replacement parts are covered for the remainder of the warranty period.

Overview

Elkhart Coach does not warranty the automotive chassis. The repair or replacement of items such as soft trim, interior trim and other appearance items manufactured and installed by Elkhart Coach is confined to cases where the item is defective and not to cases involving wear, neglect or accident. Imperfections in body paint, rocker panel paint, exterior moldings or graphics applied by Elkhart Coach are normally apparent during new vehicle inspection by the dealer and/or retail customer and are to be corrected at that time. Any and all parts supplied with the automotive chassis by the chassis manufacturer are strictly not covered by Elkhart Coach. These include, but are not limited to, engine, transmission, factory heater and air conditioner, axles, brakes, suspension, tires, batteries, etc.... Consult the chassis manufacturer's warranty with regard to these items.

Repair or Replacement Items

Elkhart Coach retains the right to repair or replace components found to be defective. Repaired or replaced items are covered for the remainder of the warranty period.

Corrosion/Rust

Surface rust caused by scratches or stone chips are not covered by this warranty. Rust that results from defects in the conversion process is covered by the warranty.

Warranty Repairs

Elkhart Coach requires that a service order and warranty claim be completed on all repairs done to the Elkhart Coach conversion. That document should be signed by you and a copy retained by you. Elkhart Coach recommends that the selling dealer or an agent they recommend do any warranty work. In order to obtain performance of the obligation under this warranty, the owner must promptly (in no event later than thirty (30) days after discovery of the defect and within the warranty period) give notice of the defect to Elkhart Coach or an authorized service center.

Appearance Items

Defects in paint, trim, upholstery items, if they exist, are normally discovered during the dealer new vehicle inspection and corrected. Any defects found by the owner should be reported to the dealer immediately. Defects due to use, exposure or misuse are not covered by the warranty.

Alterations

This warranty does not cover alterations or equipment added to the Elkhart Coach conversion or chassis by the dealer or other sources or problems with other components related to such alterations or additions.

Product/Design Changes

Elkhart Coach reserves the right to make changes to its product at any time without incurring any obligation to make similar changes to product previously built.

Rental, Loaner Vehicle/Incidental Charges

The Elkhart Coach warranty does not include rental, loaner vehicle or incidental (such as motels, meals) expenses.

Adjustments

Owner maintenance: Normal maintenance items are not covered and are done at the owner's expense. Damage or premature wear caused by lack of maintenance or owner abuse are not covered.

Damage due to accident, misuse, fire or alteration of any of the conversion is not covered. Stated coverages will not apply if the odometer has been disconnected or its reading altered or the mileage cannot be accurately determined.

Corrosion is limited to perforation. Fallout and/or application of chemicals or sealants subsequent to manufacture is not covered by this warranty. This includes all interior and exterior components of the conversion. Normal oxidation due to the lack of maintenance or age of conversions is not considered a warrantable item.

Other non-warrantable items include loss of vehicle use, inconvenience, storage, payment of lost time or pay, vehicle rental expense, lodging, meals or any other related travel expense. Warranty repairs are limited to flat rate operations and part cost or replacement for the geographical area involved. Normal shipping cost between Elkhart Coach and the dealer are considered part of warranty. However, special shipping arrangements such as, next day air, overnight, overseas, duty taxes, etc… are considered the responsibility of the owner and are not covered.

Unit Identification Numbers

Elkhart Coach Production Number

You will find this number at the top of the Manufacturer's Vehicle Safety Standard Certification label. This sticker is located on the driver door jamb.

This production number does not coincide with the Vehicle Identification Numbers (VIN) supplied by the chassis manufacturer but is specific to the bus body.

Vehicle Identification Number (VIN)

This number is the identification number for the chassis manufacturer. The VIN is located on the Vehicle Safety Certification Label and also stamped on a tag located in the upper driver side corner of the dash at the windshield area.

Safety Warnings and Precautions

Your Elkhart Coach bus is designed and manufactured to provide you with various custom features as well as provide you with comfortable and safe transportation. We have indicated throughout this Owner's Manual how to safely operate and use the variety of features on your bus. Please take time to read this Owner's Manual, as well as the Chassis Owner's Manual, to become familiar with the features of your vehicle and please pay special attention to the notes and instructions that explain important safety precautions.

Caution Symbol

Whenever you see this "CAUTION", exercise caution and follow the instruction provided throughout this manual. Failure to do so could cause you or other people to be seriously injured or killed.

NOTICE: This indicates that there is something that could damage your vehicle.

We Care About Our Customers

Because we care about you and your passengers, we urge you to review and follow the safety warnings and precautions listed on below.

Safety Alert

1. Read your vehicle Chassis Owner's Manual. It covers many important safety points in addition to operating instructions.
2. Make sure the seating is properly secured before the vehicle is put into motion.
3. Never disconnect safety devices installed on your Elkhart Coach. These devices are for your protection and should not be tampered with.

4. All seat release, slide and recline mechanisms must be fully engaged and locked when the bus is in motion.
5. Have passengers keep fingers and hands away from any pivot points or moving components to avoid personal injury.
6. Entry steps, bumper steps and running boards may become slippery when wet, snowy or icy conditions and caution needs to be used during these conditions.
7. Don't overload the bus. Refer to weight and loading restrictions.
8. Check clearances for any overhead obstructions like bridges, branches, overhead doors, low hanging wires, etc.

Be Prepared for Emergencies

To provide maximum safety for you and your passengers, it is important that everyone using and riding in the vehicle is familiar with emergency features such as the location of exits. It is the **driver's responsibility** to make sure everyone is familiar with and understands the escape routes of the bus.

Escape Routes

Emergency Escape Windows - Are marked with a red sticker that states **"EMERGENCY EXIT"** and has bright red release latches. Instructions are listed on the window.

Emergency Escape Hatch - Located in the ceiling with release handles to help open. Instructions are listed on the hatch.

Emergency Doors - Can be located in the rear, side or front and with a red **"EMERGENCY EXIT"** sticker above them. They are opened by turning the handle and pushing outward.

Electric Entry Door Release Lever - In the case of a power outage, the electric doors can be opened manually by pulling the red release lever located at the top of the door in the header as directed on the instruction label.

Fire Extinguisher(s)

Fire extinguishers are recommended for small fires only.

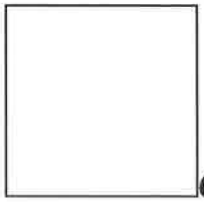
Read the labels for basic instructions and the owner's guide supplied with the fire extinguisher for complete details on proper use and operation before using the bus, as it is too late when you are in an emergency.

Fire Prevention Suggestions:

- DO NOT overload electrical wiring.
- DO NOT replace a fuse with one of a higher amp rating.
- DO NOT store flammable liquids inside the vehicle.
- DO NOT park over papers, leaves, dry grass or other things that can be ignited if touched by hot exhaust parts under your vehicle.

Park Safely

During heavy snow or blizzard conditions, make sure you clear away any snow around the base of your vehicle, especially anything blocking the exhaust pipe. Keep checking to make sure snow has not collected there.



CAUTION: Engine exhaust can kill you and others in the vehicle. It contains the gas carbon monoxide (CO), which you cannot see or smell. It will cause unconsciousness and/or death. If you ever suspect exhaust is entering the vehicle, have it checked and repaired immediately.

Vehicle Safety Standard Certification Labels

Chassis manufacturer labels are located on the driver doorjamb.

Tire and Rim Certification Label

This label provides Tire and Rim information as well as the recommended tire pressure specifications, PSI (Pounds Square Inch).

Vehicle Weight and Loading Restrictions Label

Provides the following information:

*Name of the body manufacturer (MFG. BY)
*The month and year the body was manufactured (DATE OF MFG.)
*Weight and Loading Restrictions: (GVWR, GAWR-FRONT, GAWR-REAR)
*Certification Statement (MO. and YR.)
*Vehicle Identification Number
*Vehicle Type

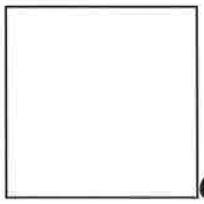
The Weight and Loading restrictions are specified by the chassis manufacturer.

These loads are defined by the Gross Axle Weight Rating (GAWR). The GAWR is the value of the load carrying capacity of a single axle system. It is measured by the tire/ground interface, plus the Gross Vehicle Weight Rating (GVWR), which is the maximum permissible load/weight of the bus.

Weighing the Unit

The weight of the empty vehicle will vary based on the equipment and options, which are installed on your particular bus. Properly loaded vehicles will perform better, handle more safely and give you peak performance from your tires.

It is your responsibility to weigh the vehicle while empty, and again when fully loaded including fuels and other fluids, to ensure it stays within weight limitations. Weigh the unit from time to time to make sure the bus stays within the gross vehicle weight limitations.



CAUTION : DO NOT exceed the GVWR. Overloading can cause a potential safety hazard. The driving ability and the handling of the unit could be greatly altered or affected if your unit is overloaded.

CAUTION: Overloading can cause your tires to overheat resulting in too much friction and you could have an air-out, which could result in a serious accident. Be sure that the overall weight, including passengers, equipment and supplies, etc., does not cause your bus to exceed axle loads as well as the overall vehicle loads specified for your particular bus.

Notice: Overloading can cause parts to break and/or shorten the life of your vehicle. Your warranty does not cover parts or components that have failed due to overloading.

Pre-Travel Instructions

It is the **driver's responsibility** to understand the complete operation of the bus. Failure to follow the proper procedures could affect the performance of the bus and/or affect the safety of the passengers.

Towing/Trailer Hitches

Elkhart Coach does not recommend the installation of trailer hitches.

Review this Operations/Service Manual

It is important for you as well as your passengers to understand and be familiar with the operations, procedures, preparations and check lists that are recommended throughout this manual. Knowing the vehicle is the key to gaining maximum efficiency.

Read the Chassis Owner's Manual

The Chassis Owner's Manual will explain all of the features of the factory instrument panel as well as the warning systems that let you know everything is working properly and what to check if not. It will also have driving tips and other useful tips such as information on starting, shifting, braking, and roadside emergency information.

Before You Drive Away

Plan your trip and prepare as much as you can before you leave. Chart your route by consulting maps and guidebooks as to the condition of the roads and other circumstances such as low bridges or tunnels. Listed below are recommendations concerning some of the things you may want to do before you set out on your trip.

- Check your tires, wheels and lug nuts for proper tightness or excessive wear.
- Check all fluid levels and hoses for damage or wear.
- Check mechanical functions such as proper brake operations, etc.
- Check battery(s) for proper charge and proper cable connections or physical damage.
- Check for the proper amount of antifreeze/coolant in your radiator.
- Test lights inside and out including clearance, stop, turn signals, flashers and backup, etc.
- Close and secure all doors.

Driving Tips

- Allow for the length and width of the vehicle.
- Always allow extra room when turning a corner or changing lanes.
- Check the side mirrors often. Learn to use the view of the roadway behind, as seen through the side mirrors, as a reference to keep a good lane position.
- Avoid sudden maneuvers when passing another vehicle. Check rear view mirrors and signal lane change before passing.
- Drive with consideration on the highway, observing speed and safety regulations.
- Allow a safe distance in which to stop your vehicle, never follow another vehicle too close.
- Observe proper vehicle speeds when ascending or descending hills and always operate in the proper transmission range.
- Allow for the extra height of your vehicle and avoid areas having low overhead clearance.

The Bus Construction

Utilizing the manufacturers chassis (Ford Motor Company), Elkhart Coach constructs and attaches the bus body. The bus body is comprised of many different components. Throughout this manual, you will find information concerning the basic body structure, standard and optional equipment and some references to the chassis components.

NOTE: For more information on the chassis components, refer to the manuals provided by the chassis manufacturer.

NOTE: In order to maintain high quality standards, it may become necessary to change the standard equipment and/or options of the Elkhart Coach models without notice. Elkhart Coach assumes no responsibility for any errors in type or print reproduction of the features, specifications and options in this literature. Equipment and specifications on the chassis from the Original Equipment Manufacturer (OEM) may vary. Elkhart Coach assumes no responsibilities for these OEM variances.

Exterior Components

This section explains the basic features of the exterior components and will help you become familiar with operations, procedures and recommended care and maintenance.

Daily washing will not only enhance the look of the bus, but also help maintain the exterior components.

- Using a hose to wet it down and wiping the surface with a sponge or cloth can easily clean the exterior.
- Paint or vinyl graphics damaged by high-pressure washes are not covered by the Elkhart Coach body warranty.
- Never use harsh abrasives or strong solvents on the exterior.

Roof Area

The sealants and adhesives used on the roof area are formulated to remain waterproof under the sustained effects of the weather and road vibrations.

Periodically inspect the roof, paying special attention to possible scrapes or cuts caused by tree limbs or other overhanging obstructions.

NOTE: If there is evidence of cuts or scrapes in the sealants or adhesives, please contact your dealer for repair or to provide the correct materials to make a repair yourself.

Fiberglass or ABS Areas

The components such as the front cap area are made either with fiberglass or ABS materials. Exposure to sunlight, water, dust and chemicals can cause chalking, discoloration or yellowing.

Proper maintenance of these areas will minimize these problems:

- Wash often with a mild detergent.
- Wax at least once a year with a wax that is specifically produced for fiberglass or ABS plastics.

Seams and Moldings

The sealants and adhesives used on the seams are formulated to remain waterproof under the sustained effects of the weather and road vibrations.

- At least every 90 days check all seams and moldings for missing areas, damages, scrapes, cuts or cracking.
- If there is evidence of missing areas damage, cuts or scrapes in either the sealant or adhesive, please contact your dealer for repair or for the correct materials to make a repair yourself.

Emergency Escape Routes

Escape Hatch

It is located in the roof area to be used only in the event of an emergency and is equipped with release handles that open the hatch.

NOTE: Instructions are listed on hatch. For everyone's safety, check proper operations often.

NOTICE: Some models have a vent that can be opened during travel. Refer to your escape hatch owner's manual to see if this option is available to you. Except for the vented position, never ever allow an emergency egress window or hatch to be open or opened unless in the vented position when the unit is in motion. This could result in damage to the window, hatch or the vehicle.

Emergency Exit Egress Window

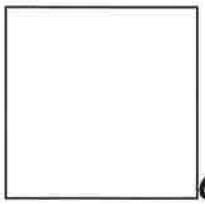
Can be identified by the "Emergency Exit" label on the glass and has two (2) red release handles.

- In an emergency, release red handles, rotate them away from the window and push out to swing window up.
- To close, reverse the operation and make sure the window is tight against the frame.

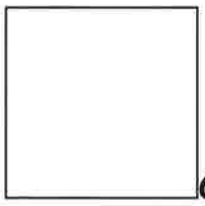
NOTE: Instructions are on each window. For everyone's safety, check operations often.

Daily inspect operations and mechanisms to ensure they are all in good working order. If any problems are found, have repaired immediately to help ensure the safety of your passengers.

- Latches and Mechanisms - Inspect for damage, worn or loose parts. Replace as necessary. Lubricate hard to move latches with white lithium grease.
- Emergency Decal - Check to see that the decals are in place and the instructions are legible. If decals are missing or cannot be clearly read, call your dealer to order new.
- Seals - Inspect for damages and worn or loose areas and replace as necessary. Using a silicone-based spray will clean and condition seals.
- Glass and Shrouding - Inspect for cracks and chips. Clean windows with all-purpose glass cleaner and use a mild soap on the ABS shrouding.



CAUTION: Emergency Windows and Escape Hatch must be checked for proper operations before each trip. Someone could be seriously injured and/or killed if the window or hatch operations failed and they were unable to escape the bus during an emergency.



CAUTION: Never allow an emergency egress window or hatch to be open or opened when the unit is in motion. This could result in someone being seriously injured and/or killed.

Passenger Windows

T-Slide Window (Non-Egress)

A full window is a full window that has sliding vent window(s) located at either the top or the bottom of the window that slides open. To open, push the release handle (center of the window) down and pull window to slide. To close, slide back and push the release handle back into place to lock.

Full View Curb Window

This window is located in front of the entry door curbside, which allows the driver to see the curb and any passengers in that area while in a seated position.

Window Maintenance

Daily check all moving parts on and around the window and latch areas.

Glass – Inspect daily for damages, cracks or chips that could result from road debris, such as stones. Repair or replace the glass as necessary. Clean by using a standard glass cleaner or ammonia based solution and a soft cloth to remove the road film and dirt.

Slider track – Inspect daily and remove any dirt debris that may have developed in the track. To ensure the slide will move freely in the track, use a small amount of silicone based spray in the track to help keep the slider moving freely.

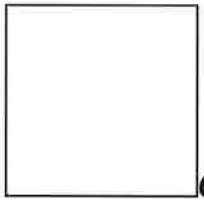
Weep holes – (Small holes located at the bottom seal of the window for drainage) Check for dirt and debris that may have lodged in the drain holes. Use a small thin object to insert into the drain holes to remove any obstructions.

Doors

The original chassis manufacturer's driver's door is utilized on all bus models.

Manual Bi-Fold Entry Door

This is a two-panel door opened by using the manual door mechanism located in the cab area next to the driver. To open, lift the retaining lever holding the door handle in place and push the handle outward. To close pull handle back until the handle is properly secured back into the retaining lever.



CAUTION: Driving without the handle properly secured in the retaining lever could allow the door to open causing injury. It could also cause damage to the door or handle.

Electric Bi-Fold Entry Door

The control switch is located on the switch console adjacent to the driver's seating position on the engine cover assembly.

Simply press up on the door control switch to activate the electric motor and the door will open outward; press down to close the door.

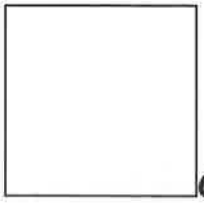
NOTE: The ignition key must be in the 'On' or 'Accessory' position for this feature to work.

Electric Entry Door Key Switch

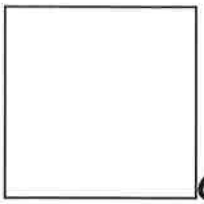
Use this switch to open and close door from the outside of the bus (located on the exterior panel in front of entrance door). To open, place the key in the lock and turn to the horizontal position. Turn the key back to the vertical position to close.

Door Emergency Release Handle

This release handle is used to disengage the electric door mechanism allowing the door to be manually opened in the vent of a loss of power. It is located above the door and is marked by an "Emergency Exit" label with instruction on releasing. To release pull as directed on the label.



CAUTION: Do not move the bus if the Emergency Release handle is not in the secured locked position. The door could open while driving and injure someone. It could also cause damage to the door area



CAUTION: Make sure the outer door area is clear. Doors open outward, which could cause anyone in that area to be struck by the doors causing injury.

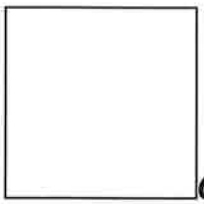
Wheel Chair Lift Door

This door is used to access the wheel chair lift and is a two panel door, with a window and a locking handle on the outside of the door. If so equipped, an interlock sensor is included to assure the bus will not move when the door is open.

Rear Exit Doors

Standard Door: A manually operated single panel door, may be equipped with up to two windows, a locking door handle and a shock at the top of the door to secure the door when open. Simply turn the handle to open or close.

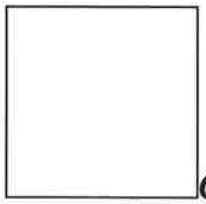
Emergency Exit Door: A manually operated single panel door, may be equipped with up to two windows, a non-locking door handle and a shock at the top to secure the door when open. The door is marked with an "Emergency Exit" label above it. Simply turn the handle to open.



CAUTION: Do not block the Emergency Exit doors with luggage or other items that could restrict the use of the door in an emergency.

Rear Luggage Compartment Door

A manually operated single panel door equipped with locking handle and a shock at the top to secure door when open. Doors are equipped with a door ajar light and/or buzzer as an option.



CAUTION: Use caution when opening luggage doors as luggage may have shifted while the bus was in motion.

Battery Box Door

The auxiliary battery box door is located on the lower skirt curbside

Turn thumb latch(s) to open.

Maintaining the Doors

Before each trip, inspect the door operations to ensure they are working properly. The following are items that need to be frequently inspected to ensure the doors remain in good working order.

Manual Door Operations – Inspect daily the door mechanism for loose or damaged parts. Open and close to see that the door is moving smoothly, closes properly and the door mechanism (handle) latches properly when closed. Repair, replace or adjust as necessary.

Electric Door Operations – Inspect daily to ensure the door power mechanisms are working properly. Open and close the door using the console switch and then again using the exterior key switch, if so equipped. If door is not operating properly have adjusted or repaired as necessary.

Emergency Door Release (Red Handle) – Inspect daily to ensure that door opens manually when red handle is released, then secure handle and check interior and exterior switch operation. Verify daily that the Emergency Door decal is in place. If missing or unreadable, contact dealer.

Lift door/Interlock system – Check daily for proper operation. If equipped with interlock system, slightly open the door, check that door light is functioning, then try to move forward and/or backwards. If light doesn't function or if you can move the bus, the system is not operating properly - must be adjusted and or repaired.

Door Alignment – Check daily to ensure the door closes properly and that the seals are in proper alignment when closed. Check all nuts and bolts for tightness and have realigned as necessary.

Door Handle Operation – Check daily, adjust or replace as necessary.

Lock Sets, Latches and Hardware – Check daily for damage or worn areas, replace as necessary. Apply lubricants at least every 6 months. If vehicle is exposed to salt air lubricate more often.

- Key holes — Lubricate with powdered graphite squirted directly in the keyhole.
- Latches — Lubricate with white lithium grease applied on all attaching mechanisms.
- Hinges — Lubricate with a Silicon-based product directly applied to the hinges.
- Door Pins — Lubricate with light machine oil.

Glass Panels/Windows – Daily inspect for damage or looseness. Clean daily or as needed. Use a standard ammonia based solution or glass cleaner and a soft cloth to remove road film and dirt.

Pivot Points – Inspect daily for damaged, worn or loose parts. Tighten any loose areas such as bolts, hinges, pins, nuts, etc or replace parts as necessary.

Aluminum Components – Clean as needed. Use a mild all purpose cleaner and wipe dry.

Door Seals – Check daily and replace if damaged or worn. Use a silicone based spray weekly to lightly coat the door seal surfaces.

Rubber or Neoprene Extrusions – Check daily for cracks/worn areas, replace as necessary. Clean regularly using nonabrasive, noncorrosive allpurpose cleaner, followed by vinyl protector.

CAUTION: Before each trip, inspect the latches, handles, and mechanical operations of the Emergency Doors. If these items are not in proper working order and an accident occurs, someone could be trapped inside the bus resulting in serious injuries and/or death.

Mirrors

Mirrors should be properly adjusted so you can get maximum view around/behind the vehicle.

Manual mirrors need to be adjusted manually at the mirror head.

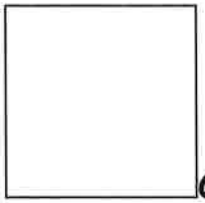
Power and or heated mirrors can be adjusted by pushing the switch on the interior console.

- Inspect daily to ensure that the mirror's heads brackets and support arms are secure and the bolts and mounting brackets are not damaged or loose. Secure or replace items as necessary.
- Adjust daily to ensure there is a clear view for the driver.
- Check power operations mechanisms where applicable. Adjust as necessary.
- Clean glass with standard glass cleaner, the mirror head/brackets with a nonabrasive detergent.

Exterior Lights/Reflectors

For everyone's safety it is imperative that all lights such as, emergency directional, hazard, clearance, marker and other identifying lights, are in working order and that reflectors are intact.

- Review the Chassis Owners Manual for information on circuits, wiring, including headlights, turn signals, dashboard and drivers area lights, as well as the factory fuse panel.
- Daily inspect all lights and reflectors.
  NOTE: It is recommended to have someone outside the bus to check the operation of each as someone inside activates each function. If a helper is not available to check, activate the particular function from the inside and go outside the bus to view.
- Replace any blown or damaged bulbs and/or fixtures and missing reflectors immediately.
- Check at least every 6 months for frayed or damaged wires and or loose connections.
- Clean the lenses and reflectors with window cleaner and/or a nonabrasive detergent.



CAUTION: Driving without the proper warning, marker, clearance, hazard and directional lights, reflectors, etc. is dangerous. Due to lack of signals or lights could result in the misunderstanding of other drivers and an accident could occur causing you, your passengers or others to be injured and/or killed.

Skirting

Visually check the surface for damage, cracks, scratched paint and repair as necessary.
If your unit has steel skirts that have been hit or damaged, check to ensure they are not being pushed back into the tires and/or restricting any other function under the bus.

Lower A/C Condenser Unit

This unit is located in the lower portion of the bus. Dirt, leaves and debris can build up on the condenser, which would restrict the efficiency of the unit.

- Inspect the unit daily for items that may be trapped in this area.
- By using a high-pressure air/water hose, you should remove most items that may be trapped.

NOTICE: To avoid damage to the unit, be sure the engine is off and no power is supplied to the unit before attempting to clean.

Batteries/Battery Box

- Read the information provided by the battery manufacturer as to the care, maintenance and check point. This information is in your owner's information packet.
- Daily inspect the battery box area to make sure it has not been damaged.
- At least every 30 days inspect the slide mechanism and mounting brackets to ensure it is in proper working order, and repair or adjust as necessary.
- Lubricate the slide mechanism at least every 30 days with white lithium grease.

Underbody Area

Road debris, dirt and salt on the underbody can accelerate corrosion of the components under the vehicle such as the frame, suspension, exhaust parts, etc.

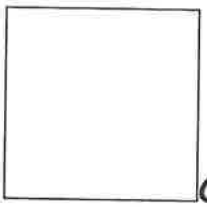
Daily inspection for road debris, dirt and salt on the underbody should be performed. If necessary spray wash the underside of the bus with warm soapy water to remove the dirt, etc.

Complete underbody inspection is recommended between every 12,000 to 15,000 miles. This check would include the complete framing, welds, out-riggers, exhaust system, mounting brackets, puck mounts where applicable, tag axle and front pivot connections as well as the complete suspension.

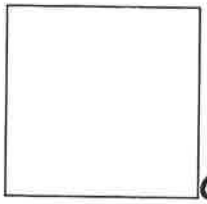
Wheels and Rims

Refer to the chassis owners' manual for information on wheel replacement and torque specifications and additional information on care and maintenance.

- Daily inspect for damaged or loose, missing or stripped mounting bolts and/or lug nuts. Repair or replace items as necessary and properly torque. A replacement wheel should have the same load carrying capacity, diameter, width, offset and mount as the one replacing.
- To clean wheels, use a wheel cleaner (diluting the products 50% before using), and rinse completely to prevent discoloration or peeling of the wheel covers. To clean aluminum wheel covers, use a mild detergent and warm water or an aluminum cleaner specifically made for wheel covers. Do not use abrasive cleaners.



CAUTION: Using the wrong replacement wheels, bolts or nuts can affect the braking and handling of your vehicle. Using wrong replacement wheels can also cause the tires to lose air, possibly causing the loss of vehicle control resulting in a serious accident.

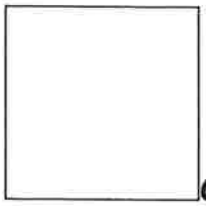


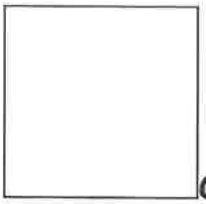
CAUTION: Check lug nuts for proper torque value after rotations as loose lug nuts could cause the wheel to become loose and possibly fall off.

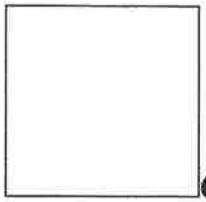
Tires

Refer to the manufacturers owners' manual for more information on care, maintenance and other tire specifications. Rotate as recommended by the tire and/or chassis manufacturer.

- Daily inspect for the wear, cuts, punctures, bulges, damage or tread separation, damaged valve stems and/or missing valve caps – replace as necessary.
- Tire pressure should be checked at least once a month or especially before a long trip.
- To clean tire, use a tire cleaner (diluting the products 50% before using) and be sure to rinse completely to prevent discoloration or peeling of the wheel covers.

 **CAUTION**: **Under-inflated tires can cause the tire to overheat. This can result in the tire losing air suddenly and/or catching on fire. Under inflated tires can result in poor handling, which could result in a serious accident. Over-inflated tires are more likely to be cut, punctured or broken by sudden impact (such as a pothole) and result in a serious accident. Check all tires frequently to maintain the recommended air pressure.**

 **CAUTION**: **Overloading your vehicle can cause your tires to overheat resulting in too much friction. This can cause an "air-out" resulting in a serious accident.**

 **CAUTION**: **Mixing different sizes or types of tires (radial and bias-belted) can cause the vehicle to handle improperly which could cause you to lose control while driving resulting in a serious accident. You must use the same size and types of tires on all wheels.**

NOTICE: Failure to keep the tires properly inflated can cause needless wear of tires.

Custom Paint Graphics

Custom paint should not be waxed within 90 days of the manufacturing production date of the bus. The complex chemistry of today's automotive paints continues to cure and harden during this time.

After its final curing period, a high-quality hand-applied wax designed for automotive finishes may be used on the body and fiberglass parts.

It is recommended to wax the unit at least every 6 months to enhance and protect the paint.

NOTICE Applying a wax within 90 days of the manufacturing production date can result in damaging the integrity of the paint.

Vinyl Graphics

- To avoid the possibility of damaging the vinyl graphics, do not clean with any solvent or cleaner other than a mild detergent designed for automotive finishes.
- Mechanical power spray washers should not be used directly on the vinyl graphics.
- Automotive wax should not be applied to the tape as it may result in an unattractive buildup to the color.

NOTICE Using a high-powered spray washer directly on the vinyl graphics could result in tearing or lifting of the vinyl graphics.

Destination Signs

A destination sign will be located in the overhead cab. The sign can be one with a decal adhered on the inside of the Plexiglass or a scrolled sign that is attached to a tube and changed by turning the handle to the desired information.

To access a removable or scrolled sign with a light, open the door in the front overhead panel. The door has two screw latches that will turn to allow the door to open outward.

- For a lighted sign, be careful not to scratch the sign or Plexiglass when changing the bulb.
- For the removable or scrolled sign, periodically check to ensure the sign is straight.
- The Plexiglas can be cleaned with a warm soap and water based solution or a standard glass cleaner.

Interior Components and Operations

This section explains the features of the interior components and will help you become familiar with the operations, procedures and recommended care and maintenance.

Walls and Ceilings

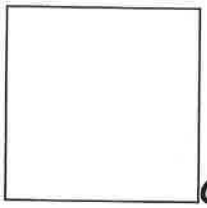
Your unit may be equipped with either vinyl covered luan panels or panels that are covered with coordinating fabrics. Attachments may differ depending on the application.

- Daily inspect the walls and ceiling for small tears, excess wear and damages. Have repaired as necessary.
- Inspect the fastener and/or securement for loose or missing parts. Have secured or replace as necessary.
- Vinyl Covered Luan Panels – Clean with a soap and water solution. For stains and heavy soiled areas, a vinyl cleaner can be used.
- Fabric Panels – Clean by vacuuming or with a warm water and soap solution. If using a spray fabric cleaner, be sure to test a small area to make sure it is color safe before using throughout.

Stanchion/Modesty Panel or Grab Rails

Your unit is equipped with a passenger side stainless steel stanchion with a fabric/Vinyl covered modesty panel located on the front curbside entry door to provide extra support for your passenger when entering and exiting the bus.

- Daily inspect all attachments making sure all mounting bolts and screws are intact and secure. Replace any missing or damaged items and tighten any loose areas.
- Stainless steel – To clean, wipe down with a damp cloth of warm water and soap solution and dry completely. Window cleaner may also be used, but be sure to dry completely after cleaning.
- Vinyl Covered Luan Panels – Clean with a soap and water solution for stains and heavy soiled areas you can use a vinyl cleaner.
- Fabric Panels – Clean by vacuuming or with a warm water and soap solution. If using a spray fabric cleaner, be sure to test a small area to make sure it is color safe before using throughout.



CAUTION: Daily check the attachments for the stanchions and grab rails. The continual use as support could allow the screws and attachments to become loose. Loose attachments and or screws could cause someone to lose their balance and fall, injuring themselves and/or others.

Flooring

The flooring material is glued on the plywood floor in the aisle and step area and under the seats. NOTE: There are many different options that apply such as ribbed rubber, smooth rubber, carpeting and/or rubber throughout, but all are glued into place.

- Inspect flooring daily for cuts, tears, damages or lifted or frayed areas for carpeting and rubber flooring. Repair or replace as necessary.

- Rubber Flooring – Clean the flooring with a warm soap and water solution; scrub, rinse and dry. Do not allow the solutions to stay on or soak on the flooring for a long period of time. This could damage the flooring.

- Carpeting – Vacuum as necessary. Small spots can be cleaned by using a soap and water solution and a scrub brush. If using carpet cleaner, test a small area to ensure it will not cause damage to the color.

Interior Luggage Racks

Your bus may be equipped with a freestanding luggage rack(s) or overhead luggage racks. The framing rails for the luggage racks are stainless steel with either fabric/vinyl-covered plywood for the shelving portion (base where luggage sits) depending on the type of unit.

It is the driver's responsibility to ensure luggage is secured properly and not hanging over the edges before putting the bus in motion. If not properly secured, luggage could fall during the ride or a passenger could walk into the items hanging over the edges.

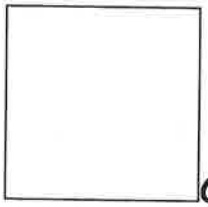
- Daily inspect the racks to ensure that the attachment bolts, screws and mounting hardware and panels are intact and secure. Replace any missing or damaged items and secure any loose items or panels.

- Routinely inspect lights for proper operation. Replace bulbs or fixtures as needed.

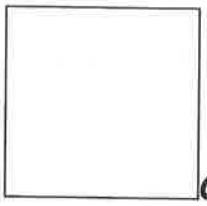
- Lights Lens – Clean using a standard window cleaner.

- Stainless Steel – Clean using a solution of mild soap and warm water and dry completely.

- Panels – Clean with a soap and water solution. Stains and heavy soiled areas can be cleaned using a vinyl cleaner.



CAUTION: Before moving the vehicle, check to see that all luggage in the overhead compartments and/or the open-style luggage rack is secure and is not hanging over the railing. Luggage and other objects that are not secure could fall.



CAUTION: Reposition any item that is hanging over or sticking out past the railing/racking system into the aisle. Someone walking past these items could be hit and injured.

NOTE: For information on the undercarriage luggage system refer to the exterior section.

Electrical Systems

Using switches located on your console you can easily control all of the functions for the lights, electronics, heat and air. The electronics are accessible by controls located overhead or by using a voyager system if installed.

Factory Installed Lights, Signals and Equipment

The information for care and maintenance for the factory installed components such as the dashboard lights and gauges including horn, turn signals, headlights, fuses, circuits, bulbs, wiring, etc. can be found in the chassis owner's manual provided with your unit.

It is recommended that a daily inspection of the headlight, turn signals, warning lights, etc. be performed and any faulty items be replaced or repaired as needed.

Switch Panel

Depending on the option content in your unit, you may find a variety of toggle switches, indicator lights and A/C knobs; each is labeled as to its function.

Switch Panel Maintenance and Care

A daily inspection of the interior lights; including reading lights, step well lights, entry lights and any emergency lights should be performed.

Replace any bulbs that may have burnt out and repair (or have repaired) any damaged wiring.

During a regular scheduled maintenance of your unit, preferably every 12,000 miles, have the wiring connections and circuits checked.

Electric Door Switch: Open and close the electric door with the inner switch as well as the exterior key switch. If the door is not moving correctly or the switch does not activate the door, check the Emergency Door release to make sure it is secured properly. If it is still not working, contact your local dealer.

Door Ajar Light/Buzzer: Open the individual doors, lift door and/or rear doors to make sure the light is activated as it should be. If the light is not working immediately, contact your dealer for a replacement switch or a wiring repair.

Heat and/or A/C Controls: Turn on and check each level of the switches to see that they function properly when activated.

Electric Audio/Video Systems

There are different sizes and styles of TV monitors, video players and/or radios that are connected to the speaker system and can be controlled at the units or by a voyager system, if installed. The electronics may be located overhead or beside the driver seat.

Owner's manuals for each individual component can be found in the information packet supplied with your vehicle. Review the individual manual for proper operations and maintenance.

Voyager System

The voyager system is not only a PA system but also allows many different functions of the radio, TV or VCP to be controlled from the driver's area. The following are basic operations instructions for the different features that may be in your unit. For further information refer to the Voyager manual located in your owner's manual packet.

Bass Knob: Turn clockwise to increase and counterclockwise to decrease the bass.

Treble Knob: Turn clockwise to increase and counterclockwise to decrease the treble.

On/Vol Knob: Turns the Voyager on and off and to control the volume.

Radio Button: The radio must be turned on to operate. Press the button then you can adjust the desired volume level at both the radio and at the voyager. Once the initial adjustment is made, you will then be able to control, bass and treble on the voyager. **NOTE**: The channels can only be changed on the radio unit.

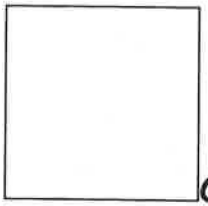
VCP Button: Turn on the VCP to operate (indicator will be lit when activated) then the TV, next select the VCP function on the voyager. Press the VCP button and the VCP power button to turn on. You will then be able to control the VCP from the voyager by pressing the desired functions such as play, rewind, etc.

PA Button: To operate, plug the microphone into the input jack on front panel. Turn the PA to the "ON" position. Depress the switch on the side of the microphone and hold in while speaking. Indicator will be lit when activated. NOTE: When the PA system is activated (by pressing the talk button), the TV, VCP or radio will be interrupted and the speakers are automatically connected to the microphone amplifier allowing your voice to come through.

TV: To operate, turn on the TV either at the unit or with the remote. After the TV is on, the volume, bass and treble can be adjusted on the voyager system. The VCP button must be on to activate the monitor. Channels must be changed on the TV unit or by using the remote. NOTE: if the TV has been turned off at the voyager or at the remote, you will have to turn the TV back on to reactivate the voyager functions.

NOTE: To use radio, the other features such as TV or VCP must be turned off and visa versa, to use the VCP the TV must be turned on at the unit.

Paging Mode: If your unit is equipped with an external pager, this button allows you to switch back and forth from the internal speaker to the internal/external speakers.



CAUTION: To reduce the risk of electrical shock, do not remove cover (or back). There are no user serviceable parts inside. Refer servicing to qualified service personnel.

Chassis Dash Air Conditioning System

Your vehicle is equipped with the chassis manufacturer's in-dash air conditioning system. Operations and maintenance will be found in the manufacturers owners' manual located in your information packet.

Auxiliary Air Conditioning System

Your unit may be equipped with the passenger auxiliary air conditioning system, which works with the factory system. The air conditioning system for the passenger system will have an evaporator mounted in the ceiling at the rear of the bus with the condenser being located outside the lower skirting area.

To control the individual systems, use the controls located on the engine cover console. The left switch is the fan speed control switch and the right side is the temperature control switch. Turn to the desired settings.

To gain maximum cooling, use the in-dash system along with the passenger system.

For proper care and maintenance, review the manufacturers owners' manual on the air conditioning.

Heating System

If the bus is equipped with the in-floor additional heating system, the unit will be located under the passenger seating. Like the air conditioning system, this system works in conjunction with the factory system.

The controls will be located in the switch panel area.

The in-dash system must be switched to the heat system and ranging from warm to high heat before the passenger system will work properly.

To gain maximum heating, use the in-dash system along with the passenger system.

Fast Idle

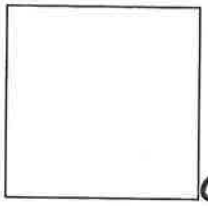
The fast idle is designed to keep the battery charged by increasing the engine idle speed while the bus is standing idle.

- The vehicle needs to be running and the emergency brake needs to be engaged before you can activate the fast idle.
- Press the fast idle switch on the console to start the fast idle.
- Press on the brake pedal to disengage the fast idle; you will still need to release the emergency brake before driving.

Seating

Driver's Seating

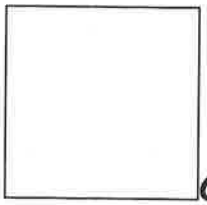
The seat itself may or may not be equipped with the lumbar support system. The following information will help you adjust to fit your individual needs.



CAUTION: You can lose control of the vehicle if you are trying to adjust the driver's seat while the vehicle is moving. The sudden movement could startle or confuse you, or make you push a pedal when you don't want to. ADJUST THE DRIVER'S SEAT ONLY WHEN THE TRANSMISSION IS IN THE "PARK POSITION" and always make sure the seat is locked in place.

Forward and Back

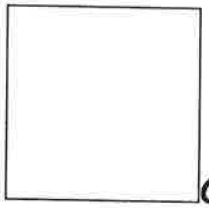
1. Grab the slide release bar located underneath the front of the seat.
2. Pull up on the handle and slide the seat to the desired position.
3. Release the handle to lock the seat in place.



CAUTION: All seat release mechanisms must be firmly engaged and locked when the unit is in motion to avoid the seat to suddenly move and startle or confuse you, which could result in you losing control of the vehicle.

Reclining the Seat Back

1. Grab the seat recline adjustment (hook-shaped lever) found on the lower left-hand side of the seat.
2. Lift the lever and lean back or forward to adjust to the desired position.
3. Release the lever to lock the seat back in place.



CAUTION: Sitting in a reclined position when your vehicle is in motion can be dangerous. Even if you buckle up, your safety belts can't do their job when you're reclined. NEVER recline your seat while the vehicle is in motion.

Lumbar Support

When the driver's seat is equipped with a lumbar support system, the knob used to control the system can be either on the left or right side of the seat bottom, depending on the seat style.

For more support, increase the firmness by turning the support control knob clockwise.
For less support, increase the softness by turning the control knob counterclockwise.

Passenger Seating

Passenger Rear Seats

NOTE: The number of seats for each model varies according to the order, the length of the bus and other factors, such as the Gross Vehicle Weight, etc. (listed on your front door jamb). The number of seats determines the amount of passengers allowed. The tag on the driver's doorjamb notes the number of seat positions for the vehicle. There are several styles and types of rear passenger seats that can be provided for you unit. You may have one or more of the following features provided in your bus. The seat frames are attached to the seat track mounted into the floor area and the sidewall.

Armrest

Flip Style

To use, simply lift the arm and push upward. To reposition for use, push the armrest down.

Fold-Down Style

"Non Use Position" (folded completely down)
Pull arm backwards and then push the arm down.

"Use Position" pull arm up until it clicks and locks into place

Seat Recline/Side Release Handle

1. Grab hook-shaped lever located at the outer seat bottom cushion.

2. Pull the handle up and lean back or forward until you reach the desired position.
3. Release handle to lock into place.

Other Types of Seating and Seating Operations

Side Slide Seat, To Slide the Seats Out For More Room

1. Grab the slide handle located under the seat
2. Push the handle toward the inner side of the seat(s).
3. Push outward or inward depending on the position desired.
4. Release the slide handle to lock into position.

Flip Seats

To flip seat bottom up or down

1. Grab the handle under the front corner of seat and pull forward.
2. Pull seat to upright position and release the handle to lock in place.

To release seat

1. Grab the handle
2. Pull forward lower the cushion and release handle to lock into place.

Fold-Away Seat

To raise:

1. Push lever "A" forward and fold the back cushion down against the seat cushion until the lever has snapped back into the locked position.

2. Push lever "B" upward and lift the seat into the foldaway position. Rotate the truss lock "C" to lock the assembly in place.

To lower:

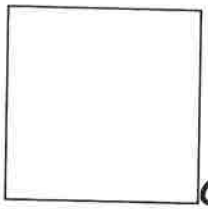
1. Rotate the truss lock "C" to unlock the assembly then push lever "D" and pull the top of the seat toward the aisle until it is locked in the down position.

2. Push lever "A" forward and lift the back cushion until the lever "A" has snapped back into position.

Wheel Chair Restraints and Securement, Wheelchair Lift

There are different types of Wheelchair lift and wheelchair restraints that could be used in your vehicle. Due to the different applications, check your operation manuals and other instructions for each individual system.

Inspect daily the lift control and electrical cable. Check mounting bolts, hardware and securement belts. Immediately secure any loose bolts or mounting brackets as well as replacing any damaged, torn or frayed belts.



CAUTION: Read the operation instructions for proper attachment and positioning for the chair and belts. Read all of the safety information. Improper attachments and/or positioning of the seat belt could cause injuries to the passenger. The park brake must be used when using wheelchair lift. SEE INSTRUCTIONS PROVIDED BY THE MANUFACTURER(S).

Seating Care

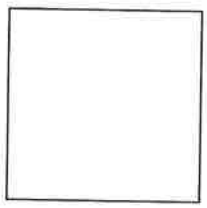
Driver Seat and Passenger Seat Areas

Inspect the mounting bolts for seats and seat belts. Make sure they are intact and tight and that seat belts work properly. Replace any damaged and/or secure any loose hardware.

Seat Fabrics

Daily inspect the seats for ripped, torn, frayed or damaged areas. Replace or repair as necessary. Regular cleaning at least once a month, can prolong the life of the fabrics.

Vinyl Covered Seats can be cleaned by using mild vinyl cleaner or a soap and water solution followed by rinsing and wiping down the seats. Other cleaners may damage fabrics by causing the vinyl to dry and can cause cracking of the material. Read the label information carefully. **Fabric Covered Seats** can be cleaned by using a vacuum. Clean spots with soda water solution recommended for fabrics. Use a steam cleaner to remove odors or deep clean fabric.



Reporting Safety Defects.

The primary objective in designing this manual is to ensure safe and dependable operation of your Elkhart Coach vehicle, and to support the National Highway Transportation Safety Administration (NHTSA) efforts to make our nation's roads and highways safer for all who use them. One NHTSA objective is to monitor the safety of all motor vehicles. Please direct your attention to the following NHTSA procedure:

If you believe that your vehicle has a defect, which could cause a crash or could cause injury or death to personnel operating or being transported in the vehicle, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) and Elkhart Coach, a division of Forest River Inc.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Elkhart Coach, a division of Forest River Inc.

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at: 1- 800- 424- 9393 or write to:

NHTSA

U.S. Department of Transportation

Washington, DC 20590.

You can also obtain other information about motor vehicle safety from the Hotline or the NHTSA office.

Service and Maintenance

General Information

This maintenance section applies to vehicles with a gasoline engine. For diesel engine vehicles, see the maintenance schedule section in the Duramax diesel supplement.

Your vehicle is an important investment. This section describes the required maintenance for the vehicle. Follow this schedule to help protect against major repair expenses resulting from neglect or inadequate maintenance. It may also help to maintain the value of the vehicle if it is sold. It is the responsibility of the owner to have all required maintenance performed.

Your dealer has trained technicians who can perform required maintenance using genuine replacement parts. They have up-to-date tools and equipment for fast and accurate diagnostics. Many dealers have extended evening and Saturday hours, courtesy transportation, and online scheduling to assist with service needs.

Your dealer recognizes the importance of providing competitively priced maintenance and repair services. With trained technicians, the dealer is the place for routine maintenance such as oil changes and tire rotations and additional maintenance items like tires, brakes, batteries, and wiper blades.

⚠ Caution

Damage caused by improper maintenance can lead to costly repairs and may not be covered by the vehicle warranty. Maintenance intervals, checks, inspections, recommended fluids, and lubricants are important to keep the vehicle in good working condition.

The Tire Rotation and Required Services are the responsibility of the vehicle owner. It is recommended to have your dealer perform these services every 12 000 km/7,500 mi. Proper vehicle maintenance helps to keep the vehicle in good working condition, improves fuel economy, and reduces vehicle emissions.

Because of the way people use vehicles, maintenance needs vary. There may need to be more frequent checks and services.

Normal Service

All maintenance services, including those listed under Additional Required Services, are for vehicles that:

- Carry passengers and cargo within recommended limits on the Tire and Loading Information label. See *Vehicle Load Limits on page 9-9*.
- Are driven on reasonable road surfaces within legal driving limits.
- Use the recommended fuel. See *Fuel on page 9-39*.

Severe Service

In addition to the normal service schedule, some vehicles require service more often. Severe service is for vehicles that are:

- Mainly driven in heavy city traffic in hot weather.
- Mainly driven in hilly or mountainous terrain.
- Frequently towing a trailer.
- Used for high-speed or competitive driving.
- Used for taxi, police, or delivery service.

⚠ Warning

Performing maintenance work can be dangerous and can cause serious injury. Perform maintenance work only if the required information, proper tools, and equipment are available. If they are not, see your dealer to have a trained technician do the work. See *Doing Your Own Service Work on page 10-3*.

Maintenance Schedule

Owner Checks and Services

At Each Fuel Stop

- Check the engine oil level. See *Engine Oil on page 10-6*.

Once a Month

- Check the tire inflation pressures. See *Tire Pressure on page 10-50*.
- Inspect the tires for wear. See *Tire Inspection on page 10-56*.
- Check the windshield washer fluid level. See *Washer Fluid on page 10-21*.

Engine Oil Change

When the CHANGE ENGINE OIL SOON message displays, have the engine oil and filter changed within the next 1 000 km/600 mi. If driven under the best conditions, the engine oil life system may not indicate the need for vehicle service for up to a year. The engine oil and filter must be changed at least once a year and the oil life system must be reset. Your trained dealer technician can perform this work. If the engine oil life system is reset accidentally, service the vehicle within 5 000 km/3,000 mi since the last service. Reset the oil life system when the oil is changed. See *Engine Oil Life System on page 10-8*.

Tire Rotation and Required Services Every 12 000 km/ 7,500 mi

Rotate the tires, if recommended for the vehicle, and perform the following services. See *Tire Rotation on page 10-56*.

- Check engine oil level and oil life percentage. If needed, change engine oil and filter, and reset oil life system. See *Engine Oil on page 10-6* and *Engine Oil Life System on page 10-8*.
- Check engine coolant level. See *Engine Coolant on page 10-14*.
- Check windshield washer fluid level. See *Washer Fluid on page 10-21*.

- Visually inspect windshield wiper blades for wear, cracking, or contamination. See *Exterior Care on page 10-80*. Replace worn or damaged wiper blades. See *Wiper Blade Replacement on page 10-28*.
- Check tire inflation pressures. See *Tire Pressure on page 10-50*.
- Inspect tire wear. See *Tire Inspection on page 10-56*.
- Visually check for fluid leaks.
- Inspect engine air cleaner filter. See *Engine Air Cleaner/Filter on page 10-12*.
- Inspect brake system.
- Visually inspect steering, suspension, and chassis components for damaged, loose, or missing parts or signs of wear. See *Exterior Care on page 10-80*.
- Check restraint system components. See *Safety System Check on page 3-16*.
- Visually inspect fuel system for damage or leaks.
- Visually inspect exhaust system and nearby heat shields for loose or damaged parts.
- Lubricate body components. See *Exterior Care on page 10-80*.
- Check starter switch. See *Starter Switch Check on page 10-26*.
- Check automatic transmission shift lock control function. See *Automatic Transmission Shift Lock Control Function Check on page 10-27*.
- Check ignition transmission lock. See *Ignition Transmission Lock Check on page 10-27*.
- Check parking brake and automatic transmission park mechanism. See *Park Brake and P (Park) Mechanism Check on page 10-27*.
- Check accelerator pedal for damage, high effort, or binding. Replace if needed.
- Visually inspect gas strut for signs of wear, cracks, or other damage. Check the hold open ability of the strut. See your dealer if service is required.
- Lubricate the steering linkage (greasable joints) on 2500/3500 series vehicles. See Normal and Severe Maintenance Schedules.

Maintenance Schedule Additional Required Services - Normal	12 000 km/7,500 mi	24 000 km/15,000 mi	36 000 km/22,500 mi	48 000 km/30,000 mi	60 000 km/37,500 mi	72 000 km/45,000 mi	84 000 km/52,500 mi	96 000 km/60,000 mi	108 000 km/67,500 mi	120 000 km/75,000 mi	132 000 km/82,500 mi	144 000 km/90,000 mi	156 000 km/97,500 mi	168 000 km/105,000 mi	180 000 km/112,500 mi	192 000 km/120,000 mi	204 000 km/127,500 mi	216 000 km/135,000 mi	228 000 km/142,500 mi	240 000 km/150,000 mi
Rotate tires and perform Required Services. Check engine oil level and oil life percentage. Change engine oil and filter, if needed. Lubricate the steering linkage (6).	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Inspect evaporative control system. (1)						✓						✓						✓		
Replace engine air cleaner filter. (2)						✓						✓						✓		
Replace spark plugs. Inspect spark plug wires.													✓							
Drain and fill engine cooling system. (3)																				✓
Visually inspect accessory drive belts. (4)																				✓
Replace brake fluid. (5)																				✓

Footnotes — Maintenance Schedule Additional Required Services - Normal

(1) Check all fuel and vapor lines and hoses for proper hook-up, routing, and condition.

(2) Or every four years, whichever comes first.

(3) Or every five years, whichever comes first. See *Cooling System on page 10-14*.

(4) Or every 10 years, whichever comes first. Inspect for fraying, excessive cracking, or damage; replace, if needed.

(5) Or every 10 years, whichever comes first.

(6) 2500/3500 series vehicles only. For severe commercial use vehicles, see *Special Application Services on page 11-7*.

Maintenance Schedule Additional Required Services - Severe	12 000 km/7,500 mi	24 000 km/15,000 mi	36 000 km/22,500 mi	48 000 km/30,000 mi	60 000 km/37,500 mi	72 000 km/45,000 mi	84 000 km/52,500 mi	96 000 km/60,000 mi	108 000 km/67,500 mi	120 000 km/75,000 mi	132 000 km/82,500 mi	144 000 km/90,000 mi	156 000 km/97,500 mi	168 000 km/105,000 mi	180 000 km/112,500 mi	192 000 km/120,000 mi	204 000 km/127,500 mi	216 000 km/135,000 mi	228 000 km/142,500 mi	240 000 km/150,000 mi
Rotate tires and perform Required Services. Check engine oil level and oil life percentage. Change engine oil and filter, if needed. Lubricate the steering linkage (7).	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Inspect evaporative control system. (1)						✓						✓						✓		
Replace engine air cleaner filter. (2)						✓						✓						✓		
Change automatic transmission fluid and filter.						✓						✓						✓		
Change transfer case fluid, if equipped with AWD. (3)						✓						✓						✓		
Replace spark plugs. Inspect spark plug wires.													✓							
Drain and fill engine cooling system. (4)																				✓
Visually inspect accessory drive belts. (5)																				✓
Replace brake fluid. (6)																				✓

Footnotes — Maintenance Schedule Additional Required Services - Severe

(1) Check all fuel and vapor lines and hoses for proper hook-up, routing, and condition.

(2) Or every four years, whichever comes first.

(3) Do not directly power wash the transfer case output seals. High pressure water can overcome the seals and contaminate the transfer case fluid. Contaminated fluid will decrease the life of the transfer case and should be replaced.

(4) Or every five years, whichever comes first. See *Cooling System on page 10-14*.

(5) Or every 10 years, whichever comes first. Inspect for fraying, excessive cracking, or damage; replace, if needed.

(6) Or every 10 years, whichever comes first.

(7) 2500/3500 series vehicles only. For severe commercial use vehicles, see *Special Application Services on page 11-7*.

Special Application Services

- Vehicles with Dual Wheels: Check dual wheel nut torque at 160, 1 600 and 10 000 km (100, 1,000 and 6,000 mi) of driving. Repeat this service whenever a tire/wheel is serviced or removed.
- Severe Commercial Use Vehicles Only: Lubricate chassis components every 5 000 km/ 3,000 mi.
- Have underbody flushing service performed. See "Underbody Maintenance" in *Exterior Care on page 10-80*.

Additional Maintenance and Care

Your vehicle is an important investment and caring for it properly may help to avoid future costly repairs. To maintain vehicle performance, additional maintenance services may be required.

It is recommended that your dealer perform these services — their trained dealer technicians know your vehicle best. Your dealer can also perform a thorough assessment with a multi-point inspection to recommend when your vehicle may need attention.

The following list is intended to explain the services and conditions to look for that may indicate services are required.

Battery

The battery supplies power to start the engine and operate any additional electrical accessories.

- To avoid break-down or failure to start the vehicle, maintain a battery with full cranking power.
- Trained dealer technicians have the diagnostic equipment to test the battery and ensure that the connections and cables are corrosion-free.

Belts

- Belts may need replacing if they squeak or show signs of cracking or splitting.
- Trained dealer technicians have access to tools and equipment to inspect the belts and recommend adjustment or replacement when necessary.

Brakes

Brakes stop the vehicle and are crucial to safe driving.

- Signs of brake wear may include chirping, grinding, or squealing noises, or difficulty stopping.
- Trained dealer technicians have access to tools and equipment to inspect the brakes and recommend quality parts engineered for the vehicle.

Fluids

Proper fluid levels and approved fluids protect the vehicle's systems and components. See *Recommended Fluids and Lubricants on page 11-11* for GM approved fluids.

- Engine oil and windshield washer fluid levels should be checked at every fuel fill.
- Instrument cluster lights may come on to indicate that fluids may be low and need to be filled.

Hoses

Hoses transport fluids and should be regularly inspected to ensure that there are no cracks or leaks. With a multi-point inspection, your dealer can inspect the hoses and advise if replacement is needed.

Lamps

Properly working headlamps, taillamps, and brake lamps are important to see and be seen on the road.

- Signs that the headlamps need attention include dimming, failure to light, cracking, or damage. The brake lamps need to be checked periodically to ensure that they light when braking.
- With a multi-point inspection, your dealer can check the lamps and note any concerns.

Shocks and Struts

Shocks and struts help aid in control for a smoother ride.

- Signs of wear may include steering wheel vibration, bounce/sway while braking, longer stopping distance, or uneven tire wear.
- As part of the multi-point inspection, trained dealer technicians can visually inspect the shocks and struts for signs of leaking, blown seals, or damage, and can advise when service is needed.

Tires

Tires need to be properly inflated, rotated, and balanced. Maintaining the tires can save money and fuel, and can reduce the risk of tire failure.

- Signs that the tires need to be replaced include three or more visible treadwear indicators; cord or fabric showing through the rubber; cracks or cuts in the tread or sidewall; or a bulge or split in the tire.
- Trained dealer technicians can inspect and recommend the right tires. Your dealer can also provide tire/wheel balancing services to ensure smooth vehicle operation at all speeds. Your dealer sells and services name brand tires.

Vehicle Care

To help keep the vehicle looking like new, vehicle care products are available from your dealer. For information on how to clean and protect the vehicle's interior and exterior, see *Interior Care on page 10-85* and *Exterior Care on page 10-80*.

Wheel Alignment

Wheel alignment is critical for ensuring that the tires deliver optimal wear and performance.

- Signs that the alignment may need to be adjusted include pulling, improper vehicle handling, or unusual tire wear.
- Your dealer has the required equipment to ensure proper wheel alignment.

Windshield

For safety, appearance, and the best viewing, keep the windshield clean and clear.

- Signs of damage include scratches, cracks, and chips.
- Trained dealer technicians can inspect the windshield and recommend proper replacement if needed.

Wiper Blades

Wiper blades need to be cleaned and kept in good condition to provide a clear view.

- Signs of wear include streaking, skipping across the windshield, and worn or split rubber.
- Trained dealer technicians can check the wiper blades and replace them when needed.

Recommended Fluids

Recommended Fluids and Lubricants

This maintenance section applies to vehicles with a gasoline engine. If the vehicle has a diesel engine, see the maintenance schedule section in the Duramax diesel supplement.

Fluids and lubricants identified below by name, part number, or specification can be obtained from your dealer.

Usage	Fluid/Lubricant
Engine Oil	Use only engine oil licensed to the dexos1® specification of the proper SAE viscosity grade. ACDelco dexos1 Synthetic Blend is recommended. See *Engine Oil on page 10-6*.
Engine Coolant	50/50 mixture of clean, drinkable water and use only DEX-COOL® Coolant. See *Engine Coolant on page 10-14*.
Hydraulic Brake System	DOT 3 Hydraulic Brake Fluid (GM Part No. 19299818, in Canada 19299819).
Windshield Washer	Automotive windshield washer fluid that meets regional freeze protection requirements.
Parking Brake Cable Guides	Chassis Lubricant (GM Part No. 12377985, in Canada 88901242) or lubricant meeting requirements of NLGI #2, Category LB or GC-LB.
Power Steering System	GM Power Steering Fluid (GM Part No. 89021185, in Canada 89021186).
Automatic Transmission	DEXRON®-VI Automatic Transmission Fluid.

Usage	Fluid/Lubricant
Key Lock Cylinders	Multi-Purpose Lubricant, Superlube (GM Part No. 12346241, in Canada 10953474).
Chassis Lubrication	Chassis Lubricant (GM Part No. 12377985, in Canada 88901242) or lubricant meeting requirements of NLGI #2, Category LB or GC-LB.
Front Wheel Bearings	Wheel bearing lubricant meeting requirements of NLGI #2, Category GC or GC-LB (GM Part No. 1051344, in Canada 993037).
Front and Rear Axle	SAE 75W-90 Synthetic Axle Lubricant (GM Part No. 88900401, in Canada 89021678).
Transfer Case	DEXRON®-VI Automatic Transmission Fluid.
Hood Hinges	Multi-Purpose Lubricant, Superlube (GM Part No. 12346241, in Canada 10953474).
Weatherstrip Conditioning	Weatherstrip Lubricant (GM Part No. 3634770, in Canada 10953518) or Dielectric Silicone Grease (GM Part No. 12345579, in Canada 10953481).
Weatherstrip Squeaks	Synthetic Grease with Teflon, Superlube (GM Part No. 12371287, in Canada 10953437).

Maintenance Replacement Parts

If the vehicle has the Duramax diesel engine, see the Duramax diesel supplement.

Replacement parts identified below by name, part number, or specification can be obtained from your dealer.

Part	GM Part Number	ACDelco Part Number
Engine Air Cleaner/Filter	22909882	A3097C
Engine Oil Filter	89017524	PF48
Spark Plugs	12621258	41-110
Wiper Blades – 56.0 cm (22 in)	15214346	—

BRAUN CENTURY 2 SERIES

Service Manual for:

NCL Century 2 Series

Public Use Wheelchair Lifts

Series EA

DOT — Public Use Lift

"DOT — Public Use Lift" verifies that this platform lift meets the "public use lift" requirements of FMVSS No. 403. This lift may be installed on all vehicles appropriate for the size and weight of the lift, but must be installed on buses, school buses, and multi-purpose passenger vehicles other than motor homes with a gross vehicle weight rating (GVWR) that exceeds 4,536 kg (10,000 lb).

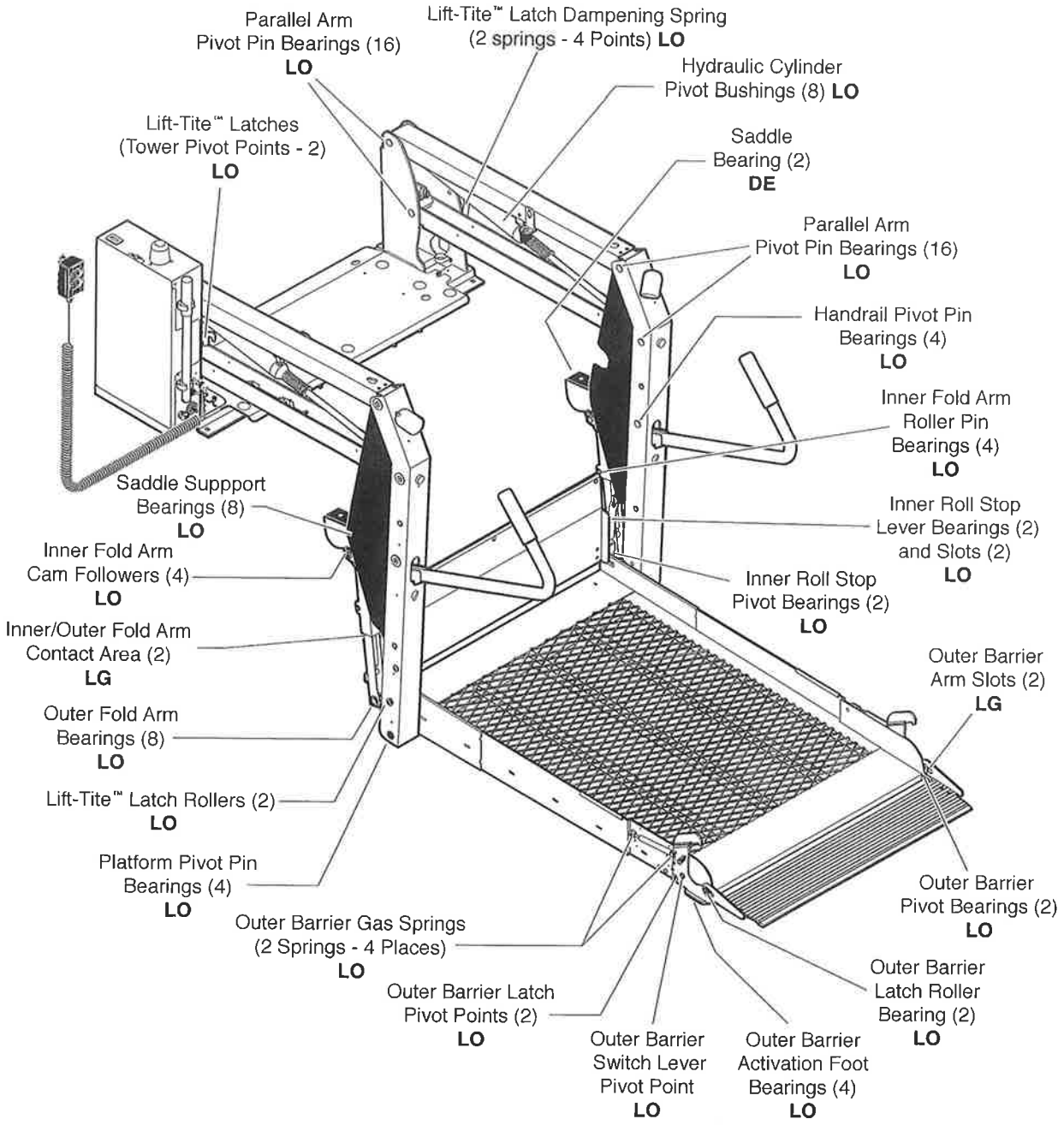
THE BRAUN CORPORATION®
"Providing Access to the World"®
International Corporate Hdqrs: P.O. Box 310 Winamac, IN 46996 USA
1-800-THE LIFT® (574) 946-6153 FAX: (574) 946-4670

37432 Rev. A
April 2012

Braun Century 2 Series

Maintenance and Lubrication

Lubrication Diagram



See the Maintenance/Lubrication Schedule for recommended applications per number of cycles.

Lubricant	Type	Specified (recommended) Lubricant	Available Amount	Braun Part No.
LO - Light Oil	Light Penetrating Oil (30 Weight or equivalent)	LPS2, General Purpose Penetrating Oil	16 oz. Aerosol Can	15807
DE - Door-Ease	Stainless Stick Style (tube)	Door-Ease Stick (tube)	1.68 oz.	15806
LG - Light Grease	Light Grease (Multipurpose)	Lubriplate	14 oz. Can	15805

Maintenance and Lubrication Schedule

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 the transit agency daily service program. Simple inspections can detect potential problems.

The maintenance and lubrication procedures specified in this schedule must be performed by a Braun authorized service representative at the scheduled intervals according to the number of cycles.

Braun dual parallel arm 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 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 (part numbers provided on previous page).

⚠WARNING

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 cycle maintenance procedures. 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.

Cycle Counter: NCL-2 Series lift models are equipped with a cycle counter located on the top of the pump module. This cycle counter allows the lift attendant/operator to easily track the number of cycles during daily inspections of the lift.

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. One of our national Product Support representatives will direct you to an authorized service technician who will inspect your lift.

750 Cycles	Outer barrier pivot points (2)	Apply Light Oil - See Lubrication Diagram
	Outer barrier latch pivot points (2)	Apply Light Oil - See Lubrication Diagram
	Outer barrier switch lever pivot point	Apply Light Oil - See Lubrication Diagram
	Outer barrier latch roller bearing (2)	Apply Light Oil - See Lubrication Diagram
	Outer barrier arm slots (2)	Apply Light Grease - See Lubrication Diagram
	Outer barrier gas springs (2 springs - 4 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 (dampening) springs for wear or damage (bent, deformed or misaligned), positive securement (lock nuts / external snap rings) and proper operation	Resecure, replace damaged parts or otherwise correct as needed. Note: Apply Light Grease to Lift-Tite™ latch tower pivot point if replacing latch.
continued	Inspect outer barrier for proper operation	Correct or replace damaged parts.

Maintenance and Lubrication Schedule

continued	Inspect outer barrier latch for proper operation, positive securement, and detached or missing spring(s)	Correct or replace damaged parts and/or relubricate. See Lubrication Diagram
750 Cycles	Adjust fold pressure	See Platform Fold Pressure Adjustment
	Verify FMVSS 403/404 Certification Checklist	See Certification Checklist Diagnostic Procedures
	Inspect lift for wear, damage or any abnormal condition	Correct as needed.
	Inspect lift for rattles	Correct as needed.
	Perform all procedures listed in previous section also	
	Inner/outer fold arms (2)	Apply grease (synthetic) to contact areas between inner/outer fold arms. See Lubrication Diagram
	Platform pivot pin bearings (4)	Apply Light Oil - See Lubrication Diagram
	Outer fold arm bearings (8)	Apply Light Oil - See Lubrication Diagram
	Inner roll stop pivot bearings (2)	Apply Light Oil - See Lubrication Diagram
	Inner roll stop lever bearings (2)	Apply Light Oil - See Lubrication Diagram
	Inner roll stop lever slot (2)	Apply Light Oil - See Lubrication Diagram
	Saddle support bearings (8)	Apply Light Oil - See Lubrication Diagram
	Inner fold arm roller pin bearings (4)	Apply Light Oil - See Lubrication Diagram
	Inner fold arm cam followers (4)	Apply Light Oil - See Lubrication Diagram
	Parallel arm pivot pin bearings (16)	Apply Light Oil - See Lubrication Diagram
1500 Cycles	Handrail pivot pin bearings (4)	Apply Light Oil - See Lubrication Diagram
	Hydraulic cylinder pivot 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 damaged parts and/or relubricate. See Lubrication Diagram.
	Inspect inner roll stop for: • Wear or damage • Proper operation. Roll stop should just rest on top surface of the threshold plate. • Positive securement (both ends)	Resecure, replace or correct as needed. See Platform Angle Instructions and Tower Microswitch Adjustment Instructions.
	Inspect handrail components for wear or damage, and for proper operation	Replace damaged 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.
continued	Inspect inner roll stop locks (2) and torsion springs (2) for wear or damage and for proper operation	Replace damaged parts. Apply Light Oil to inner roll stop lock pivot point.

Maintenance and Lubrication Schedule

continued	Inspect external snap rings: • Outer fold arms (6) • Lift-Tite™ latch rollers (2) • Lift-Tite™ latch gas (dampening) springs (4) • Outer barrier latch gas springs (2) • Outer barrier latch pivots (2) • Outer barrier switch lever pivot (1) • Outer barrier latch rollers (2) • Inner fold arm cam followers (4) • Inner fold arm roller pins (4) • Inner roll stop lever bracket pins (2)	Resecure or replace if needed.
1500 Cycles	Inspect outer fold arm pins (2), axles (2) and bearings (8) for wear or damage and positive securement	Replace damaged parts and resecure as needed. Apply Light Oil.
	Remove pump module cover and inspect: • Hydraulic hoses, fittings and connections for wear or leaks • Harness cables, wires, terminals and connections for securement or damage • Relays, fuses, power switch and lights for securement or damage	Resecure, replace or correct as needed.

	Perform all procedures listed in previous section also	
	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 Braun 32840-QT (Exxon® Univis HVI 26). Do not mix with Dextron III or other hydraulic fluids. Check fluid level with platform lowered fully. Fill to maximum fluid level indicated on reservoir (specified on decal). Do not overfill. If fliud level decal is not present - measure 1-3/8" from the fill port to locate fluid level.
	Inspect cylinders, fittings and hydraulic connections for wear, damage or leaks	Tighten, repair or replace if needed.
4500 Cycles	Inspect parallel arms, bearings 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 pins, bearings and vertical arms for wear, damage and positive securement	Replace damaged parts and resecure as needed. Apply Light Grease during reassembly procedures.
	Inspect inner/outer fold arms, saddle, saddle support and associated pivot pins and bearings for visible wear or damage	Replace if needed.
	Inspect gas springs (cylinders - 6) for wear or damage, proper operation and positive securement	Tighten, replace or correct as needed
	Inspect saddle bearing (UHMW - 2)	Apply Door-Ease or replace if needed. See Lubrication Diagram.
continued	Inspect vertical arm plastic covers	Resecure or replace if needed.

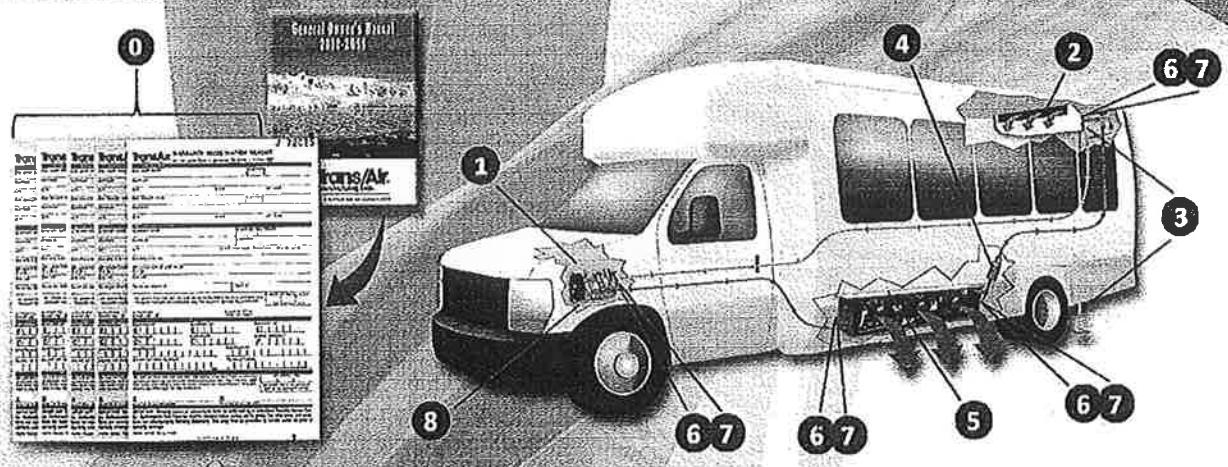
Maintenance and Lubrication Schedule

continued **4500 Cycles**	Inspect power cable	Resecure, repair or replace if needed.
	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.
Consecutive 750 Cycle Intervals	Repeat all previously listed inspection, lubrication and maintenance procedures at 750 cycle intervals.	

Trans/Air Manufacturing Corporation

Bus Air Conditioning

Preventative Maintenance Schedule & Guidelines



Use extreme caution around engine compartment and any other moving parts.
Have system maintenance and service performed by a Qualified Technician.

#	Maintenance Item	What to Check / Do	Schedule
0	System General Awareness	Make sure system registered at trans/Air for warranty	At Delivery
	Ensure that Driver's are trained in proper system operation. Know the nearest Authorized Service Center.		
1	Charge Level / Pressure	Use Pressure / Temperature Chart	Yearly
	The correct pressure, at ambient temperature, verifies proper refrigerant charge. Recharge as needed using the most current revision of the Trans/Air Charging Chart # 501264 found at www.transairmfg.com under Support Documents / Installation (Recharging must be done by a QUALIFIED TECHNICIAN).		
2	Evaporator Filter(s)	Cleanliness	Weekly
	A properly maintained, clean filter maximizes air flow and system performance.		
2	Evaporator Coil(s)	Cleanliness	Monthly
	A properly maintained, clean evaporator coil will ensure maximum heat transfer and system performance.		
2	Evaporator Blower(s)	General Function	Monthly
	Proper air flow across evaporator coil allows for efficient heat transfer. Check to make sure all blowers are actually operating.		
3	Evaporator Drain Line(s)	Kazoo & Hose secured / Free from debris	Yearly
	Properly located drain line will keep water from collecting in the evaporator drain pan. On a hot humid day the evaporator should drip water under the vehicle.		
4	Sight Glass / Moisture Indicator(s)	Color	Monthly
	Deep Green OR Purple= Absence of Moisture *Yellow OR Pink = Moisture is present - IMMEDIATE SYSTEM SERVICE IS REQUIRED TO PREVENT SYSTEM DAMAGE*		
5	Condenser Coil(s)	Cleanliness	Monthly
	A properly maintained, clean condenser coil will ensure maximum heat transfer and system performance. Clean with non-caustic cleaner.		
5	Condenser Fan(s)	General Function	Monthly
	Proper air flow across condenser coil allows for efficient heat transfer. Check to make sure all fans are actually operating when compressor is engaged.		
6	Hoses / Piping	Secured and protected	Monthly
	Properly supported hoses prevent the possibility of refrigerant leaks. Check for residue around connections (sign of refrigerant leak) / hose wear from rubbing other objects / loose or missing clamping.		
7	Wiring Harness(es)	Secured and protected	Monthly
	Properly supported & protected harnesses prevents the possibility of electrical issues.		
8	Compressor Belt(s)	Tension and wear	Weekly
	Properly tensioned belts ensures maximum compressor performance and belt life.		

Climate Control For School & Commercial Buses
Design | Manufacture | Install | Service

800-673-2446
www.transairmfg.com

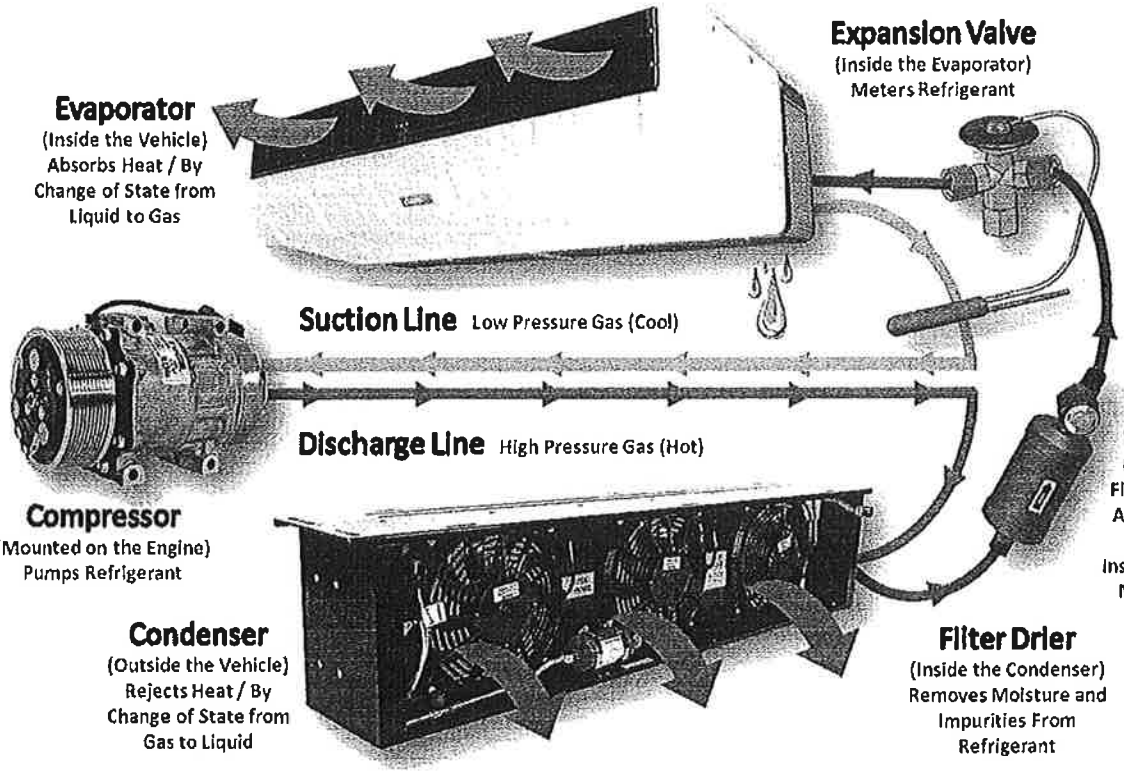
Trans/Air®
Manufacturing Corporation

Bus Air Conditioning
Preventative Maintenance Schedule & Guidelines

The following conditions require immediate service by a Qualified Technician:

- Vibration and/or noise from engine compartment
- Oil around refrigeration hose connections
- Water dripping in passenger area from Evaporator/Ducts
- Vibration and/or noise from evaporator area
- Noticeable decrease in system performance
- Reduced air flow

Air Conditioning Operation & Refrigeration Cycle Reference



FM 39947

Trans/Air Manufacturing Corporation is an ISO 9001 registered firm committed to providing world class climate control products and services to the bus and commercial vehicle markets.

480 East Locust Street
Dallastown, PA 17313
800-673-2446
www.transairmfg.com

Trans/Air Manufacturing

Preventive Maintenance Check List

Bus # _____ Date: _____

Engine Compartment

- Tension and inspect belts ☐
- Inspect hoses and fittings for leaks and wear ☐
- Check compressor mount ☐

Condenser (s)

- Clean condenser coil ☐
- Check condenser coil for damage ☐
- Check operation of condenser fans ☐
- Inspect hoses & fittings for leaks and wear ☐
- Check sight glass for moisture indicator ☐

Evaporator (s)

- Clean filter ☐
- Check operation of evaporator blowers ☐
- Inspect hoses & fittings for leaks and wear ☐
- Check condensate drain lines ☐

ITEM #4

CERTIFICATION
OF
STANDARD
SAFETY
EQUIPMENT

Certification

This to certify that the vehicles proposed under this contract are equipped with all standard equipment installed by the OEM chassis manufacture related to safety and operation. We further certify that none of the OEM standard equipment related to safety and operation is removed from the vehicles.

Midwest Transit Equipment Inc.

Thomas D. Boldwin
Director of Governmental Sales

Date: September 18, 2015

ITEM #5

CERTIFICATION
OF
NO
DEALER
PLATES

Certification

This to certify that no dealer plates will be issued with any vehicles purchased under this contract.

Midwest Transit Equipment Inc.

Thomas D. Boldwin
Director of Governmental Sales

Date: September 18, 2015

ITEM #6 &11 (m)

DESCRIPTION

OF

AIR

CONDITIONING

(Located in tab #11 under Item 11 (m)

ITEM #7 & 11 (i)

DESCRIPTION

OF

WHEELCHAIR

LIFT

(Located in tab #11 under Item 11 (i)

ITEM #8 & 11 (j)

DESCRIPTION
OF
SECUREMENT
SYSTEMS

(Located in tab #11 under Item 11 (j)

ITEM #9 & 11 (k)

DESCRIPTION

OF

OCCUPANT

SECUREMENT

SYSTEMS

(Located in tab #11 under Item 11 (k)

ITEM #10

DBE/FTA
GOALS
LETTER

U.S. Department
of Transportation
**Federal Transit
Administration**

Headquarters

East Building, 5th Floor – TCR
1200 New Jersey Avenue, SE
Washington, DC 20590

September 18, 2014

Forest River, Inc. (Elkhart Coach)
52807 County Road 7
Elkhart, IN 46514

Attn: Joe Goeglein

Re: TVM DBE Goal Concurrence – Fiscal Year 2015

Dear Mr. Goeglein:

This letter is to inform you that the Federal Transit Administration's (FTA) Office of Civil Rights has received Elkhart Coach's Disadvantaged Business Enterprise (DBE) goal and methodology for FY 2015 for the period of October 1, 2014–September 30, 2015. This goal submission is required by the U.S. Department of Transportation's DBE regulations at 49 CFR Part 26 and must be implemented in good faith.

We have reviewed your FY 2015 DBE goal and determined that it is compliant with DOT's DBE regulations. You are eligible to bid on FTA-funded transit contracts. This letter or a copy of the TVM listing on FTA's website may be used to demonstrate your compliance with DBE requirements when bidding on federally funded vehicle procurements.

FTA reserves the right to remove/suspend this concurrence if your DBE program or FY 2015 DBE goal is not implemented in good faith. In accordance with this good faith requirement, you must submit your DBE Uniform Report to FTA by December 1, 2014. This report should reflect all FTA-funded contracting activity for the second period of FY 2014 (i.e., from April 1 to September 30).

Please also be mindful that your FY 2016 DBE goal methodology must be submitted to FTA by August 1, 2015. Therefore, you should publish your goal on or before June 17, 2015. Thank you for your cooperation. If you have any questions regarding this approval, please contact Britney Berry via e-mail at *britney.berry@dot.gov*.

Sincerely,

Dawn Sweet
Acting Title VI/DBE Team Leader
Office of Civil Rights

ITEM #11 (a)

LIST
OF
VEHICLE
DEVIATIONS
OR
ACCEPTIONS

(THERE ARE NONE TAKEN)

ITEM #11 (b)

DESCRIPTION
OF
VEHICLE
AND
EQUIPMENT

DETAILS OF FEATURES
AND
OPTIONS INCLUDED
IN BASE BUSES
PER SPECIFICATIONS

IDOA RFP #16-011

SMALL TRANSIT SHUTTLE BUS 8 + 2 WHEELCHAIRS

CHASSIS SPECIFICATIONS

- FORD E350 SUPER DUTY CHASSIS
- 6.8L GASOLINE ENGINE, 255 HP
- AUTOMATIC OVER DRIVE TRANSMISSION
- 11,500 # GVWR
- MOR/RYDE REAR SUSPENSION
- FRONT AND REAR STABILIZER BAR
- 138" WHEELBASE
- 6=LT225/75R16D RADIAL TIRES
- POWER DISC BRAKES, ANTILOCK
- POWER STEERING W/TILT FEATURE
- CRUISE CONTROL
- 225 AMP ALTERNATOR
- DUAL BATTERIES
- 40 GALLON FUEL TANK
- HD COOLING PACKAGE
- BLOCK HEATER
- TINTED GLASS
- INTERIOR HOOD RELEASE
- INTERMITTENT WIPERS
- DRIVERS AIR BAG
- GAUGES: FUEL, TEMP, OIL PRESSER, VOLTMETER
- CHROME FRONT BUMPER AND GRILLE ACCENT
- DASH HEAT/DEFROST/AIR CONDITIONING

BODY SPECIFICATIONS

CLIMATE CONTROL

- 65,000 BTU FLOOR HEATER
- 55,000 BTU REAR AIR CONDITIONER W/DUAL COMPRESSORS
- SILICONE HEATER HOSES

DOORS AND WINDOWS

- DARK TINT TOP T-SLIDER SIDE WINDOWS
- EMERGENCY WINDOWS SIDE
- REAR EMERGENCY DOOR W/2 WINDOWS AND DOOR AJAR ALARM SYSTEM (LIGHT AND BUZZER)
- ELECTRIC ENTRANCE DOOR W/FULL TEMPERED GLASS
- LARGE VIEWING WINDOW IN FRONT OF ENTRANCE DOOR

ELECTRICAL EXTERIOR

- ICC LIGHTING MARKER LIGHTS
- LED ROUND SEALED TAIL, STOP AND BACKUP LIGHTS
- LED LICENSE PLATE LIGHT
- LIGHTS MEET FEDERAL AND STATE REQUIREMENTS
- REVERSE ALARM
- LED HIGH MOUNT CENTER BRAKE LIGHT
- LED MID SHIP TURN/MARKER LIGHTS
- LED 4" REAR AMBER FLASHERS W/SEPARATE SWITCH
- LED HOODED LIGHT AT ENTRANCE DOOR

ELECTRICAL INTERIOR

- ENTRANCE STEP WELL LIGHTS
- DRIVER COURTESY LIGHT

FEATURES EXTERIOR

- RUBBERIZED REAR HELP STYLE BUMPER
- FRONT AND REAR MUD FLAPS
- REAR TOW HOOKS
- UNITIZED STEEL CAGE CONSTRUCTION W/ALUMINUM SIDE WALL AND REAR CAP, FRP ROOF AND FRONT CAP
- COMPLETE BODY UNDERCOATING
- EURO STYLE EXTERIOR MIRRORS W/ CONVEX, HEATED & REMOTE
- BATTERY BOX WITH SLIDEOUT TRAY
- DRIVER SIDE RUNNING BOARD

FEATURES INTERIOR

- SAFETY STANCHION ENTRANCE
- ENTRANCE ASSIST HAND RAILS, LEFT AND RIGHT OF STEP WELL
- DRIVERS CONTROL CONSOLE WITHIN REACH OF DRIVER
- ENTRANCE/DRIVER MODESTY PANELS
- SINGLE OVERHEAD HANDRAIL (DRIVER'S SIDE)
- INTERIOR PASSENGER VIEW MIRROR

FLOORING, STD. WITH WHEELWELLS

- GREY RUBBER FLOORING RIBBED STEPS AND AISLE AND WHEELCHAIR AREAS / SMOOTH UNDER SEATS
- YELLOW SAFETY STEP NOSING
- STANDEE LINE
- ¾" EXTERIOR GRADE PLYWOOD SUB FLOOR
- ALUMINUM BELLY PAN

PAINT

- BRIGHT WHITE BODY AND CAB

SEATS:

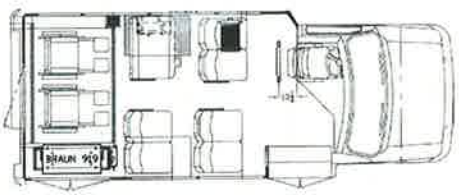
- TRACK SEATING
- HIGH BACK RECLINING DRIVERS SEAT W/ARM RESTS AND LUMBAR SUPPORT VINYL COVERED
- 3 = MID HIGH BACK TWO PASSENGER SEATS
- 1 = TWO PASSENGER FOLD A WAY SEAT OVER STREETSIDE WHEELWELL
- 4 = AISLE SIDE SEAT BACK ASSIST RAILS
- 4 = AISLE SIDE FLIP ARMREST
- 8 = LAP RETRACTABLE SEAT BELTS
- 2 = SEAT BELT EXTENDERS 12"

MISCELLANEOUS

- SAFETY EQUIPMENT: 5# FIRE EXTINGUISHER, ROAD FLARES, REFLECTOR TRIANGLES, FIRST AID KIT, BODY FLUID KIT, BELT CUTTER
- AM/FM/CD RADIO
- SPARE TIRE AND WHEEL SHIPPED LOOSE
- NOSE CONE STORAGE COMPARTMENT
- STREETSIDE EXHAUST
- INTERIOR HEIGTH DECAL

PARATRANSIT EQUIPMENT:

- DUAL PANEL LIFT DOORS
- BRAUN CENTURY NCL 1000 WHEELCHAIR LIFT
- INTERLOCK SYSTEM W/FAST IDLE FEATURE
- 2 SETS OF Q-STRAINT DELUX WHEELCHAIR/PASSENGER SECUREMENT SYSTEMS Q10007 WITH 4 QRT 360 TIE DOWNS
- 2 BELT STORAGE POUCHES
- PRIORITY SEATING DECALS
- 8=WHEELCHAIR BELT LOOPS



IDOA RFP # 16-011

LARGE TRANSIT SHUTTLE BUS 16+ 2 WHEELCHAIRS

CHASSIS SPECIFICATIONS

- FORD E450 SUPER DUTY CHASSIS
- 6.8L GASOLINE ENGINE, 255 HP
- AUTOMATIC OVER DRIVE TRANSMISSION
- 14,500 # GVWR
- MOR/RYDE REAR SUSPENSION
- FRONT AND REAR STABILIZER BAR
- 186" WHEELBASE
- 6=LT225/75R16D RADIAL TIRES
- POWER DISC BRAKES, ANTILOCK
- POWER STEERING W/TILT FEATURE
- CRUISE CONTROL
- 225 AMP ALTERNATOR
- DUAL BATTERIES
- 55 GALLON FUEL TANK
- HD COOLING PACKAGE
- BLOCK HEATER
- TINTED GLASS
- INTERIOR HOOD RELEASE
- INTERMITTENT WIPERS
- DRIVERS AIR BAG
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ELECTRICAL EXTERIOR

- ICC LIGHTING MARKER LIGHTS
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- LED LICENSE PLATE LIGHT
- LIGHTS MEET FEDERAL AND STATE REQUIREMENTS
- REVERSE ALARM
- LED HIGH MOUNT CENTER BRAKE LIGHT
- LED MID SHIP TURN/MARKER LIGHTS
- LED 4" REAR AMBER FLASHERS W/SEPARATE SWITCH
- LED HOODED LIGHT AT ENTRANCE DOOR

ELECTRICAL INTERIOR

- ENTRANCE STEP WELL LIGHTS
- DRIVER COURTESY LIGHT

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PAINT

- BRIGHT WHITE BODY AND CAB

SEATS:

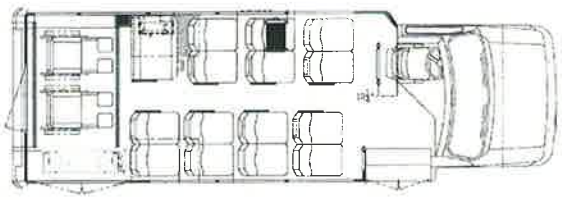
- TRACK SEATING
- HIGH BACK RECLINING DRIVERS SEAT W/ARM RESTS AND LUMBAR SUPPORT VINYL COVERED
- 7 = MID HIGH BACK TWO PASSENGER SEATS
- 1 = TWO PASSENGER FOLD A WAY SEAT OVER STREETSIDE WHEELWELL
- 8 = AISLE SIDE SEAT BACK ASSIST RAILS
- 8 = AISLE SIDE FLIP ARMREST
- 16 = LAP RETRACTABLE SEAT BELTS
- 2 = SEAT BELT EXTENDERS 12"

MISCELLANEOUS

- SAFETY EQUIPMENT: 5# FIRE EXTINGUISHER, ROAD FLARES, REFLECTOR TRIANGLES, FIRST AID KIT, BODY FLUID KIT, BELT CUTTER
- AM/FM/CD RADIO
- SPARE TIRE AND WHEEL SHIPPED LOOSE
- NOSE CONE STORAGE COMPARTMENT
- STREETSIDE EXHAUST
- INTERIOR HEIGTH DECAL

PARATRANSIT EQUIPMENT;

- DUAL PANEL LIFT DOORS
- BRAUN CENTURY NCL 1000 WHEELCHAIR LIFT
- INTERLOCK SYSTEM W/FAST IDLE FEATURE
- 2 SETS OF Q-STRAINT DELUX WHEELCHAIR/PASSENGER SECUREMENT SYSTEMS Q10007 WITH 4 QRT 360 TIE DOWNS
- 2 BELT STORAGE POUCHES
- PRIORITY SEATING DECALS
- 8=WHEELCHAIR BELT LOOPS



IDOA RFP #16-011

LARGE TRANSIT SHUTTLE BUS 12+ 2 WHEELCHAIRS

CHASSIS SPECIFICATIONS

- FORD E450 SUPER DUTY CHASSIS
- 6.8L GASOLINE ENGINE, 255 HP
- AUTOMATIC OVER DRIVE TRANSMISSION
- 14,500 # GVWR
- MOR/RYDE REAR SUSPENSION
- FRONT AND REAR STABILIZER BAR
- 158" WHEELBASE
- 6=LT225/75R16D RADIAL TIRES
- POWER DISC BRAKES, ANTILOCK
- POWER STEERING W/TILT FEATURE
- CRUISE CONTROL
- 225 AMP ALTERNATOR
- DUAL BATTERIES
- 55 GALLON FUEL TANK
- HD COOLING PACKAGE
- BLOCK HEATER
- TINTED GLASS
- INTERIOR HOOD RELEASE
- INTERMITTENT WIPERS
- DRIVERS AIR BAG
- GAUGES: FUEL, TEMP, OIL PRESSER, VOLTMETER
- CHROME FRONT BUMPER AND GRILLE ACCENT
- DASH HEAT/DEFROST/AIR CONDITIONING

BODY SPECIFICATIONS

CLIMATE CONTROL

- 65,000 BTU FLOOR HEATER
- 70,000 BTU REAR AIR CONDITIONER W/DUAL COMPRESSORS
- SILICONE HEATER HOSES

DOORS AND WINDOWS

- DARK TINT TOP T-SLIDER SIDE WINDOWS
- EMERGENCY WINDOWS SIDE
- REAR EMERGENCY DOOR W/2 WINDOWS AND DOOR AJAR ALARM SYSTEM (LIGHT AND BUZZER)
- ELECTRIC ENTRANCE DOOR W/FULL TEMPERED GLASS
- LARGE VIEWING WINDOW IN FRONT OF ENTRANCE DOOR

ELECTRICAL EXTERIOR

- ICC LIGHTING MARKER LIGHTS
- LED ROUND SEALED TAIL, STOP AND BACKUP LIGHTS
- LED LICENSE PLATE LIGHT
- LIGHTS MEET FEDERAL AND STATE REQUIREMENTS
- REVERSE ALARM
- LED HIGH MOUNT CENTER BRAKE LIGHT
- LED MID SHIP TURN/MARKER LIGHTS
- LED 4" REAR AMBER FLASHERS W/SEPARATE SWITCH
- LED HOODED LIGHT AT ENTRANCE DOOR

ELECTRICAL INTERIOR

- ENTRANCE STEP WELL LIGHTS
- DRIVER COURTESY LIGHT

FEATURES EXTERIOR

- RUBBERIZED REAR HELP STYLE BUMPER
- FRONT AND REAR MUD FLAPS
- REAR TOW HOOKS
- UNITIZED STEEL CAGE CONSTRUCTION W/ALUMINUM SIDE WALL AND REAR CAP, FRP ROOF AND FRONT CAP
- COMPLETE BODY UNDERCOATING
- EURO STYLE EXTERIOR MIRRORS W/ CONVEX, HEATED & REMOTE
- BATTERY BOX WITH SLIDEOUT TRAY
- DRIVER SIDE RUNNING BOARD

FEATURES INTERIOR

- SAFETY STANCHION ENTRANCE
- ENTRANCE ASSIST HAND RAILS, LEFT AND RIGHT OF STEP WELL
- DRIVERS CONTROL CONSOLE WITHIN REACH OF DRIVER
- ENTRANCE/DRIVER MODESTY PANELS
- SINGLE OVERHEAD HANDRAIL (DRIVER'S SIDE)
- INTERIOR PASSENGER VIEW MIRROR

FLOORING, STD. WITH WHEELWELLS

- GREY RUBBER FLOORING RIBBED STEPS AND AISLE AND WHEELCHAIR AREAS / SMOOTH UNDER SEATS
- YELLOW SAFETY STEP NOSING
- STANDEE LINE
- ¾" EXTERIOR GRADE PLYWOOD SUB FLOOR
- ALUMINUM BELLY PAN

PAINT

- BRIGHT WHITE BODY AND CAB

SEATS:

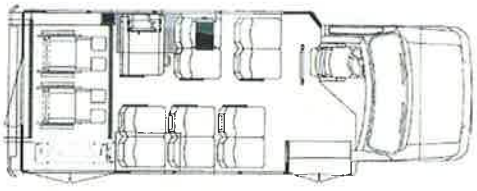
- TRACK SEATING
- HIGH BACK RECLINING DRIVERS SEAT W/ARM RESTS AND LUMBAR SUPPORT VINYL COVERED
- 5 = MID HIGH BACK TWO PASSENGER SEATS
- 1 = TWO PASSENGER FOLD A WAY SEAT OVER STREETSIDE WHEELWELL
- 6 = AISLE SIDE SEAT BACK ASSIST RAILS
- 6 = AISLE SIDE FLIP ARMREST
- 12 = LAP RETRACTABLE SEAT BELTS
- 2 = SEAT BELT EXTENDERS 12"

MISCELLANEOUS

- SAFETY EQUIPMENT: 5# FIRE EXTINGUISHER, ROAD FLARES, TRIANGLE REFLECTORS, FIRST AID KIT, BODY FLUID KIT, BELT CUTTER
- AM/FM/CD RADIO
- SPARE TIRE AND WHEEL SHIPPED LOOSE
- NOSE CONE STORAGE COMPARTMENT
- STREETSIDE EXHAUST
- INTERIOR HEIGTH DECAL

PARATRANSIT EQUIPMENT:

- DUAL PANEL LIFT DOORS
- BRAUN CENTURY NCL 1000 WHEELCHAIR LIFT
- INTERLOCK SYSTEM W/FAST IDLE FEATURE
- 2 SETS OF Q-STRAINT DELUX WHEELCHAIR/PASSENGER SECUREMENT SYSTEMS Q10007 WITH 4 QRT 360 TIE DOWNS
- 2 BELT STORAGE POUCHES
- PRIORITY SEATING DECAL
- 8=WHEELCHAIR BELT LOOPS



IDOA RFP #16-011

SMALL TRANSIT SHUTTLE BUS 12 PASSENGER

CHASSIS SPECIFICATIONS

- FORD E350 SUPER DUTY CHASSIS
- 6.8L GASOLINE ENGINE, 255 HP
- AUTOMATIC OVER DRIVE TRANSMISSION
- 11,500 # GVWR
- MOR/RYDE REAR SUSPENSION
- FRONT AND REAR STABILIZER BAR
- 138" WHEELBASE
- 6=LT225/75R16D RADIAL TIRES
- POWER DISC BRAKES, ANTILOCK
- POWER STEERING W/TILT FEATURE
- CRUISE CONTROL
- 225 AMP ALTERNATOR
- DUAL BATTERIES
- 40 GALLON FUEL TANK
- HD COOLING PACKAGE
- BLOCK HEATER
- TINTED GLASS
- INTERIOR HOOD RELEASE
- INTERMITTENT WIPERS
- DRIVERS AIR BAG
- GAUGES: FUEL, TEMP, OIL PRESSER, VOLTMETER
- CHROME FRONT BUMPER AND GRILLE ACCENT
- DASH HEAT/DEFROST/AIR CONDITIONING

BODY SPECIFICATIONS

CLIMATE CONTROL
- 65,000 BTU FLOOR HEATER
- 55,000 BTU REAR AIR CONDITIONER W/DUAL COMPRESSORS
- SILICONE HEATER HOSES

DOORS AND WINDOWS
- DARK TINT TOP T-SLIDER SIDE WINDOWS
- EMERGENCY WINDOWS SIDE
- REAR EMERGENCY DOOR W/2 WINDOWS AND DOOR AJAR ALARM SYSTEM (LIGHT AND BUZZER)
- ELECTRIC ENTRANCE DOOR W/FULL TEMPERED GLASS
- LARGE VIEWING WINDOW IN FRONT OF ENTRANCE DOOR

ELECTRICAL EXTERIOR
- ICC LIGHTING MARKER LIGHTS
- LED ROUND SEALED TAIL, STOP AND BACKUP LIGHTS
- LED LICENSE PLATE LIGHT
- LIGHTS MEET FEDERAL AND STATE REQUIREMENTS
- REVERSE ALARM
- LED HIGH MOUNT CENTER BRAKE LIGHT
- LED MID SHIP TURN/MARKER LIGHTS
- LED 4" REAR AMBER FLASHERS W/SEPARATE SWITCH
- LED HOODED LIGHT AT ENTRANCE DOOR

ELECTRICAL INTERIOR
- ENTRANCE STEP WELL LIGHTS
- DRIVER COURTESY LIGHT

FEATURES EXTERIOR
- RUBBERIZED REAR HELP STYLE BUMPER
- FRONT AND REAR MUD FLAPS
- REAR TOW HOOKS
- UNITIZED STEEL CAGE CONSTRUCTION W/ALUMINUM SIDE WALL AND REAR CAP, FRP ROOF AND FRONT CAP
- COMPLETE BODY UNDERCOATING
- EURO STYLE EXTERIOR MIRRORS W/ CONVEX, HEATED & REMOTE
- BATTERY BOX WITH SLIDEOUT TRAY
- DRIVER SIDE RUNNING BOARD

FEATURES INTERIOR
- SAFETY STANCHION ENTRANCE
- ENTRANCE ASSIST HAND RAILS, LEFT AND RIGHT OF STEP WELL
- DRIVERS CONTROL CONSOLE WITHIN REACH OF DRIVER
- ENTRANCE/DRIVER MODESTY PANELS
- SINGLE OVERHEAD HANDRAIL (DRIVER'S SIDE)
- INTERIOR PASSENGER VIEW MIRROR

FLOORING, STD. WITH WHEELWELLS
- GREY RUBBER FLOORING RIBBED STEPS AND AISLE SMOOTH UNDER SEATS
- YELLOW SAFETY STEP NOSING
- STANDEE LINE
- ¾" EXTERIOR GRADE PLYWOOD SUB FLOOR
- ALUMINUM BELLY PAN

PAINT
- BRIGHT WHITE BODY AND CAB

SEATS:
- TRACK SEATING
- HIGH BACK RECLINING DRIVERS SEAT W/ARM RESTS AND LUMBAR SUPPORT VINYL COVERED
- 12 = MID HIGH BACK TWO PASSENGER SEATS
- 6 = AISLE SIDE SEAT BACK ASSIST RAILS
- 6 = AISLE SIDE FLIP ARMREST
- 12 = LAP RETRACTABLE SEAT BELTS
- 2 = SEAT BELT EXTENDERS 12"

MISCELLANEOUS
- SAFETY EQUIPMENT: 5# FIRE EXTINGUISHER, ROAD FLARES, REFLECTOR TRIANGLES, FIRST AID KIT, BODY FLUID KIT, BELT CUTTER
- AM/FM/CD RADIO
- SPARE TIRE AND WHEEL SHIPPED LOOSE
- NOSE CONE STORAGE COMPARTMENT
- STREETSIDE EXHAUST
- INTERIOR HEIGTH DECAL

IDOA RFP # 16-011

LARGE TRANSIT SHUTTLE BUS 24 PASSENGER

CHASSIS SPECIFICATIONS

- FORD E450 SUPER DUTY CHASSIS
- 6.8L GASOLINE ENGINE, 255 HP
- AUTOMATIC OVER DRIVE TRANSMISSION
- 14,500 # GVWR
- MOR/RYDE REAR SUSPENSION
- FRONT AND REAR STABILIZER BAR
- 186" WHEELBASE
- 6=LT225/75R16D RADIAL TIRES
- POWER DISC BRAKES, ANTILOCK
- POWER STEERING W/TILT FEATURE
- CRUISE CONTROL
- 225 AMP ALTERNATOR
- DUAL BATTERIES
- 55 GALLON FUEL TANK
- HD COOLING PACKAGE
- BLOCK HEATER
- TINTED GLASS
- INTERIOR HOOD RELEASE
- INTERMITTENT WIPERS
- DRIVERS AIR BAG
- GAUGES: FUEL, TEMP, OIL PRESSER, VOLTMETER
- CHROME FRONT BUMPER AND GRILLE ACCENT
- DASH HEAT/DEFROST/AIR CONDITIONING

BODY SPECIFICATIONS

CLIMATE CONTROL
- 65,000 BTU FLOOR HEATER
- 70,000 BTU REAR AIR CONDITIONER W/DUAL COMPRESSORS
- SILICONE HEATER HOSES

DOORS AND WINDOWS
- DARK TINT TOP T-SLIDER SIDE WINDOWS
- EMERGENCY WINDOWS SIDE
- REAR EMERGENCY DOOR W/2 WINDOWS AND DOOR AJAR ALARM SYSTEM (LIGHT AND BUZZER)
- ELECTRIC ENTRANCE DOOR W/FULL TEMPERED GLASS
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ELECTRICAL EXTERIOR
- ICC LIGHTING MARKER LIGHTS
- LED ROUND SEALED TAIL, STOP AND BACKUP LIGHTS
- LED LICENSE PLATE LIGHT
- LIGHTS MEET FEDERAL AND STATE REQUIREMENTS
- REVERSE ALARM
- LED HIGH MOUNT CENTER BRAKE LIGHT
- LED MID SHIP TURN/MARKER LIGHTS
- LED 4" REAR AMBER FLASHERS W/SEPARATE SWITCH
- LED HOODED LIGHT AT ENTRANCE DOOR

ELECTRICAL INTERIOR
- ENTRANCE STEP WELL LIGHTS
- DRIVER COURTESY LIGHT

FEATURES EXTERIOR
- RUBBERIZED REAR HELP STYLE BUMPER
- FRONT AND REAR MUD FLAPS
- REAR TOW HOOKS
- UNITIZED STEEL CAGE CONSTRUCTION W/ALUMINUM SIDE WALL AND REAR CAP, FRP ROOF AND FRONT CAP
- COMPLETE BODY UNDERCOATING
- EURO STYLE EXTERIOR MIRRORS W/ CONVEX, HEATED & REMOTE
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- DRIVER SIDE RUNNING BOARD

FEATURES INTERIOR
- SAFETY STANCHION ENTRANCE
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FLOORING, STD. WITH WHEELWELLS
- GREY RUBBER FLOORING RIBBED STEPS AND AISLE SMOOTH UNDER SEATS
- YELLOW SAFETY STEP NOSING
- STANDEE LINE
- ¼" EXTERIOR GRADE PLYWOOD SUB FLOOR
- ALUMINUM BELLY PAN

PAINT
- BRIGHT WHITE BODY AND CAB

SEATS:
- TRACK SEATING
- HIGH BACK RECLINING DRIVERS SEAT W/ARM RESTS AND LUMBAR SUPPORT VINYL COVERED
- 24 = MID HIGH BACK TWO PASSENGER SEATS
- 12 = AISLE SIDE SEAT BACK ASSIST RAILS
- 12 = AISLE SIDE FLIP ARMREST
- 24 = LAP RETRACTABLE SEAT BELTS
- 2 = SEAT BELT EXTENDERS 12"

MISCELLANEOUS
- SAFETY EQUIPMENT: 5# FIRE EXTINGUISHER, ROAD FLARES, REFLECTOR TRIANGLES, FIRST AID KIT, BODY FLUID KIT, BELT CUTTER
- AM/FM/CD RADIO
- SPARE TIRE AND WHEEL SHIPPED LOOSE
- NOSE CONE STORAGE COMPARTMENT
- STREETSIDE EXHAUST
- INTERIOR HEIGTH DECAL

FORD CHASSIS SPECIFICATIONS
FOR
VARIOUS WHEELBASES USED

Sutton Ford Lincoln, Inc.
21315 Central Avenue, Matteson, Illinois, 60443
Office: 708-720-8000

2016 E-350 Cutaway, SD Chassis
SD Chassis 138" WB DRW Base(E3F)

Selected Options

Code	Description
Base Vehicle	
E3F	Base Vehicle Price (E3F)
Packages	
780A	Order Code 780A
Powertrain	
99S	Engine: 6.8L EFI Triton V10
44P	Transmission: 6-Speed Automatic w/OD *Includes tow haul.*
X52	4.10 Axle Ratio
20Y	GVWR: 11,500 lbs Payload Package
Wheels & Tires	
T67	Tires: LT225/75Rx16E BSW AS
646	Wheels: 16" x 6" White Painted Steel
Seats & Seat Trim	
21B	Passenger Seat Delete *Deletes passenger seat and harness restraint system.* *Includes:* *- Passenger Side Air Bag Delete*
X	No Seat Trim
Other Options	
PAINT	Monotone Paint Application
138WB	138" Wheelbase
672	Maximum Front GAWR: 4600 lbs. *Requires Business Assistance Center approval.*
63N	Extra Heavy-Duty 225-Amps Alternator
634	Dual Heavy-Duty 78-Amp Batteries
60X	Right Hand Door Delete *Deletes passenger side A-pillar grab handle, right hand seat belt system and hardware, passenger side air bag, under-seat stowage, passenger side sun visor, passenger side speaker and headliner.* *Includes:* *- Exterior Mirrors Delete* *- Passenger Seat Delete* *Deletes passenger seat and harness restraint system.* *- Passenger Side Air Bag Delete*
41H	Engine Block Heater *Single element. Recommended when minimum temperature is 10 degrees Fahrenheit or below.*
153	License Plate Bracket
54F	Exterior Mirrors Delete
625	Day/Night Interior Rearview Mirror
559	Frame Pucks (Isolators) *Includes 12 body mounts.*
525	Cruise Control

Selected Options (cont'd)

Code	Description
58Y	Radio Delete
47Z	Ambulance Prep Package Not Required REQUIRED on orders not destined for ambulance use.
18A	High Series Exterior Upgrade Package
47B	Shuttle Bus Prep Package
162	Vinyl Floor Covering w/47B/47M
57J	Auxiliary Heater Connector Package (LPO) *Includes rear fan controls.*

Primary Colors

YZ	Oxford White

Selected Equipment & Specs

Dimensions

* Exterior length: 241.1"
* Exterior height: 80.3"
* Front track: 69.4"
* Turning radius: 24.3'
* Front headroom: 42.0"
* Front shoulder room: 68.1"
* Exterior width: 79.4"
* Wheelbase: 138.0"
* Rear track: 75.4"
* Front legroom: 40.0"
* Front hiproom: 65.6"

Powertrain

* Triton 305hp 6.8L SOHC 20 valve V-10 engine with SMPI
* federal
* Rear-wheel drive
* Fuel Economy Highway: N/A
* Recommended fuel : regular unleaded
* TorqShift 6 speed automatic transmission with overdrive
* Fuel Economy Cty: N/A

Suspension/Handling

* Front Twin I-Beam independent suspension with anti-roll bar, HD shocks
* Hydraulic power-assist re-circulating ball Steering
* LT225/75SR16 EBSW AS front and rear tires
* Rear rigid axle leaf spring suspension with HD shocks
* Front and rear 16 x 6 painted steel wheels
* Dual rear wheels

Body Exterior

* 1 doors
* Chrome bumpers
* Front and rear 16 x 6 wheels
* Driver and passenger door mirrors
* Clearcoat paint

Convenience

* Manual air conditioning
* Cruise control with steering wheel controls
* Manual door locks
* Day-night rearview mirror
* Driver and passenger door bins
* Auxiliary rear heater
* Manual front windows
* Manual tilt steering wheel
* Front cupholders

Seats and Trim

* Seating capacity of 1
* 4-way driver seat adjustment
* Driver armrest
* Front driver bucket temporary driver seat
* Fixed passenger seat

Entertainment Features

* Fixed antenna

Lighting, Visibility and Instrumentation

* Halogen aero-composite headlights
* Light tinted windows
* Voltmeter
* Trip odometer
* Variable intermittent front windshield wipers
* Tachometer
* Oil pressure gauge

Safety and Security

* 4-wheel ABS brakes
* Driver front impact airbag supplemental restraint system
* Fixed front head restraints
* 4-wheel disc brakes
* Manual door locks

Selected Equipment & Specs (cont'd)

Dimensions

General Weights

Curb	4987 lbs.	GVWR	11500 lbs.
Front GAWR	4600 lbs.	Rear GAWR	7800 lbs.
Payload	6327 lbs.	Front curb weight	2794 lbs.
Rear curb weight	2193 lbs.	Front axle capacity	5000 lbs.
Rear axle capacity	7800 lbs.	Front spring rating	4600 lbs.
Rear spring rating	7800 lbs.	Front tire/wheel capacity	5000 lbs.
Rear tire/wheel capacity	9460 lbs.		

General Trailering

Towing capacity	7000 lbs.	GCWR	18500 lbs.

Fuel Tank type

Capacity	40 gal.

Rear Frame

Height loaded	26 "

Powertrain

Engine Type

Brand	Triton	Block material	Iron
Cylinders	V-10	Head material	Aluminum
Ignition	Electronic	Injection	Sequential MPI
Liters	6.8L	Orientation	Longitudinal
Recommended fuel	Regular unleaded	Valves per cylinder	2
Valvetrain	SOHC		

Engine Spec

Bore	3.55"	Compression ratio	9.0:1
Displacement	415 cu.in.	Stroke	4.16"

Engine Power

Output	305 HP @ 4,250 RPM	Torque	420 ft.-lb @ 3,250 RPM
Torque at clutch engagement	350 lb.-ft.		

Alternator

Type	HD	Amps	225

Battery

Amp hours	78	Cold cranking amps	750
Type	Dual		

Engine Extras

Block heater	Yes

Transmission

Electronic control	Yes	Lock-up	Yes
Overdrive	Yes	Speed	6
Type	Automatic		

Transmission Gear Ratios

1st	3.974	2nd	2.318
3rd	1.516	4th	1.149
5th	0.858	6th	0.674
Reverse Gear ratios	3.128		

Selected Equipment & Specs (cont'd)

Transmission Torque Converter			
Stall ratio	1.90		
Transmission Extras			
Driver selectable mode	Yes	Oil cooler	Regular
Drive Type			
Type	Rear-wheel		
Drive Axle			
Ratio	4.1		
Exhaust			
Material	Stainless steel	System type	Single
Emissions			
CARB	Federal	EPA	Tier 2 Bin 8
fuel Economy			
Fuel type	Gasoline		

Driveability

Brakes			
ABS	4-wheel	ABS channels	3
Type	4-wheel disc	Vented discs	Front
Suspension Control			
Ride	Regular		
Front Suspension			
Independence	Twin I-Beam independent	Anti-roll bar	Regular
Front Spring			
Type	Coil	Grade	Regular
Front Shocks			
Type	HD		
Rear Suspension			
Independence	Rigid axle	Type	Leaf
Rear Spring			
Type	Leaf	Grade	Regular
Rear Shocks			
Type	HD		
Steering			
Activation	Hydraulic power-assist	Type	Re-circulating ball
Steering Specs			
# of wheels	2		

Exterior

Front Wheels			
Diameter	16"	Width	6.00"
Rear Wheels			

Selected Equipment & Specs (cont'd)

Diameter	16"	Width	6.00"
Dual	Yes		

Front and Rear Wheels

Appearance	Painted	Material	Steel

Front Tires

Aspect	75	Diameter	16"
Sidewalls	BSW	Speed	S
Tread	AS	Type	LT
Width	225mm	LT load rating	E
RPM	709		

Rear Tires

Aspect	75	Diameter	16"
Sidewalls	BSW	Speed	S
Tread	AS	Type	LT
Width	225mm	LT load rating	E
RPM	709		

Wheels

Front track	69.4"	Rear track	75.4"
Turning radius	24.3'	Wheelbase	138.0"

Body Features

Front license plate bracket	Yes	Body material	Fully galvanized steel
Side impact beams	Yes		

Body Doors

Door count	1

Exterior Dimensions

Length	241.1"	Body width	79.4"
Body height	80.3"	Cab to axle	80.0"
Axle to end of frame	68.5"	Frame section modulus	5.7cu.in.
Frame yield strength (psi)	36000.0	Cab to end of frame	148.5"
Front bumper to back of cab	92.5"		

Safety

Airbags

Driver front-impact	Yes

Seatbelt

Height adjustable	Front	Pre-tensioners	Front
Pre-tensioners (#)	1		

Seating

Front Seats

Split	Driver bucket	Type	Temporary driver seat

Driver Seat

Fore/aft	Manual	Reclining	Manual
Way direction control	4		

Front Head Restraint

Type	Fixed

Selected Equipment & Specs (cont'd)

Front Armrest
Driver: Yes

Front Seat Trim
Material: None
Back material: None

Convenience

AC And Heat Type
Air conditioning: Manual
Auxiliary rear heater: Provision

Audio Antenna
Type: Fixed

Cruise Control
Cruise control: With steering wheel controls

Convenience Features
12V DC power outlet: 3

Door Lock Activation
Type: Manual

Instrumentation Type
Display: Analog

Instrumentation Gauges
Tachometer: Yes
Oil pressure: Yes
Engine temperature: Yes
Voltmeter: Yes

Instrumentation Warnings
Oil pressure: Yes
Engine temperature: Yes
Battery: Yes
Lights on: Yes
Key: Yes
Low fuel: Yes
Service interval: Yes

Instrumentation Feature
PRND in IP: Yes
Trip odometer: Yes

Steering Wheel Type
Material: Urethane
Tilting: Manual

Front Side Windows
Window 1st row activation: Manual

Window Features
Tinted: Light

Front Windshield
Wiper: Variable intermittent
Sun visor strip: Yes

Interior

Rear View Mirror
Day-night: Yes

Floor Trim
Coverage: Front
Covering: Vinyl/rubber

Trim Feature

Selected Equipment & Specs (cont'd)

Gear shift knob	Urethane		
Lighting			
Variable IP lighting	Yes		
Other Console Storage			
Storage	Yes	Type	Engine cover
Storage			
Driver door bin	Yes	Front Beverage holder(s)	Yes
Glove box	Yes	Passenger door bin	Yes
Legroom			
Front	40.0"		
Headroom			
Front	42.0"		
Hip Room			
Front	65.6"		
Shoulder Room			
Front	68.1"		

Sutton Ford Lincoln, Inc.
21315 Central Avenue, Matteson, Illinois, 60443
Office: 708-720-8000

2016 E-450 Cutaway, SD Chassis
SD Chassis 176" WB DRW Base(E4F)

Selected Options

Code	Description
Base Vehicle	
E4F	Base Vehicle Price (E4F)
Packages	
782A	Order Code 782A
Powertrain	
99S	Engine: 6.8L EFI Triton V10
44P	Transmission: 6-Speed Automatic w/OD *Includes tow haul.*
X83	4.56 Axle Ratio
20F	GVWR: 14,500 lb Payload Package
Wheels & Tires	
T67	Tires: LT225/75Rx16E BSW AS
646	Wheels: 16" x 6" White Painted Steel
Seats & Seat Trim	
21D	Manual Seat Prep Package *Includes 2-way adjuster. Provides manual pedestal, pretensioning restraint system and unique seat tracks for driver side only. Temporary driver seat provided.* *Includes:* *- No Seat Trim* *- Passenger Side Air Bag Delete*
X	No Seat Trim
Other Options	
PAINT	Monotone Paint Application
176WB	176" Wheelbase
63N	Extra Heavy-Duty 225-Amps Alternator
634	Dual Heavy-Duty 78-Amp Batteries
60X	Right Hand Door Delete *Deletes passenger side A-pillar grab handle, right hand seat belt system and hardware, passenger side air bag, under-seat stowage, passenger side sun visor, passenger side speaker and headliner.* *Includes:* *- Exterior Mirrors Delete*
41H	Engine Block Heater *Single element. Recommended when minimum temperature is 10 degrees Fahrenheit or below.*
153	License Plate Bracket
625	Day/Night Interior Rearview Mirror
559	Frame Pucks (Isolators) *Includes 12 body mounts.*
525	Cruise Control
58Y	Radio Delete
54F	Exterior Mirrors Delete

Selected Options (cont'd)

Code	Description
47Z	Ambulance Prep Package Not Required REQUIRED on orders not destined for ambulance use.
18A	High Series Exterior Upgrade Package
47B	Shuttle Bus Prep Package
162	Vinyl Floor Covering
57J	Auxiliary Heater Connector Package (LPO) *Includes rear fan controls.*
Interior Colors	
XE	Medium Flint
Primary Colors	
YZ	Oxford White

Selected Equipment & Specs

Dimensions

* Exterior length: 261.1"
* Exterior width: 79.4"
* Exterior height: 80.0"
* Wheelbase: 176.0"
* Front track: 69.4"
* Rear track: 77.7"
* Turning radius: 30.2'
* Front legroom: 40.0"
* Front headroom: 42.0"
* Front hiproom: 65.6"
* Front shoulder room: 68.1"

Powertrain

* Triton 305hp 6.8L SOHC 20 valve V-10 engine with SMPI
* Recommended fuel : regular unleaded
* federal
* TorqShift 6 speed automatic transmission with overdrive
* Rear-wheel drive
* Fuel Economy Cty: N/A
* Fuel Economy Highway: N/A

Suspension/Handling

* Front Twin I-Beam independent suspension with anti-roll bar, HD shocks
* Rear rigid axle leaf spring suspension with HD shocks
* Hydraulic power-assist re-circulating ball Steering
* Front and rear 16 x 6 painted steel wheels
* LT225/75SR16 EBSW AS front and rear tires
* Dual rear wheels

Body Exterior

* 1 doors
* Driver and passenger door mirrors
* Chrome bumpers
* Clearcoat paint
* Front and rear 16 x 6 wheels

Convenience

* Manual air conditioning
* Auxiliary rear heater
* Cruise control with steering wheel controls
* Manual front windows
* Manual door locks
* Manual tilt steering wheel
* Day-night rearview mirror
* Front cupholders
* Driver and passenger door bins

Seats and Trim

* Seating capacity of 1
* Front temporary driver seat
* 2-way driver seat adjustment
* Fixed passenger seat

Entertainment Features

* Fixed antenna

Lighting, Visibility and Instrumentation

* Halogen aero-composite headlights
* Variable intermittent front windshield wipers
* Light tinted windows
* Tachometer
* Voltmeter
* Oil pressure gauge
* Trip odometer

Safety and Security

* 4-wheel ABS brakes
* 4-wheel disc brakes
* Driver front impact airbag supplemental restraint system
* Manual door locks
* Fixed front head restraints

Selected Equipment & Specs (cont'd)

Dimensions

General Weights

Curb	5368 lbs.	GVWR	14500 lbs.
Front GAWR	5000 lbs.	Rear GAWR	9600 lbs.
Payload	9033 lbs.	Front curb weight	3004 lbs.
Rear curb weight	2364 lbs.	Front axle capacity	5000 lbs.
Rear axle capacity	9600 lbs.	Front spring rating	5000 lbs.
Rear spring rating	9600 lbs.	Front tire/wheel capacity	5000 lbs.
Rear tire/wheel capacity	9460 lbs.		

General Trailering

Towing capacity	7500 lbs.	GCWR	22000 lbs.

Fuel Tank type

Capacity	55 gal.

Rear Frame

Height loaded	26 "

Powertrain

Engine Type

Brand	Triton	Block material	Iron
Cylinders	V-10	Head material	Aluminum
Ignition	Electronic	Injection	Sequential MPI
Liters	6.8L	Orientation	Longitudinal
Recommended fuel	Regular unleaded	Valves per cylinder	2
Valvetrain	SOHC		

Engine Spec

Bore	3.55"	Compression ratio	9.0:1
Displacement	415 cu.in.	Stroke	4.16"

Engine Power

Output	305 HP @ 4,250 RPM	Torque	420 ft.-lb @ 3,250 RPM
Torque at clutch engagement	350 lb.-ft.		

Alternator

Type	HD	Amps	225

Battery

Amp hours	78	Cold cranking amps	750
Type	Dual		

Engine Extras

Block heater	Yes

Transmission

Electronic control	Yes	Lock-up	Yes
Overdrive	Yes	Speed	6
Type	Automatic		

Transmission Gear Ratios

1st	3.974	2nd	2.318
3rd	1.516	4th	1.149
5th	0.858	6th	0.674
Reverse Gear ratios	3.128		

Selected Equipment & Specs (cont'd)

Transmission Torque Converter

Stall ratio	1.90

Transmission Extras

Driver selectable mode	Yes	Oil cooler	Regular

Drive Type

Type	Rear-wheel

Drive Axle

Ratio	4.56

Exhaust

Material	Stainless steel	System type	Single

Emissions

CARB	Federal	EPA	Tier 2 Bin 8

fuel Economy

Fuel type	Gasoline

Driveability

Brakes

ABS	4-wheel	ABS channels	3
Type	4-wheel disc	Vented discs	Front

Suspension Control

Ride	Regular

Front Suspension

Independence	Twin I-Beam independent	Anti-roll bar	Regular

Front Spring

Type	Coil	Grade	Regular

Front Shocks

Type	HD

Rear Suspension

Independence	Rigid axle	Type	Leaf

Rear Spring

Type	Leaf	Grade	Regular

Rear Shocks

Type	HD

Steering

Activation	Hydraulic power-assist	Type	Re-circulating ball

Steering Specs

# of wheels	2

Exterior

Front Wheels

Diameter	16"	Width	6.00"

Rear Wheels

Selected Equipment & Specs (cont'd)

Diameter	16"	Width	6.00"
Dual	Yes		

Front and Rear Wheels

Appearance	Painted	Material	Steel

Front Tires

Aspect	75	Diameter	16"
Sidewalls	BSW	Speed	S
Tread	AS	Type	LT
Width	225mm	LT load rating	E
RPM	709		

Rear Tires

Aspect	75	Diameter	16"
Sidewalls	BSW	Speed	S
Tread	AS	Type	LT
Width	225mm	LT load rating	E
RPM	709		

Wheels

Front track	69.4"	Rear track	77.7"
Turning radius	30.2'	Wheelbase	176.0"

Body Features

Front license plate bracket	Yes	Body material	Fully galvanized steel
Side impact beams	Yes		

Body Doors

Door count	1

Exterior Dimensions

Length	261.1"	Body width	79.4"
Body height	80.0"	Cab to axle	118.0"
Axle to end of frame	50.5"	Frame section modulus	6.4cu.in.
Frame yield strength (psi)	36000.0	Cab to end of frame	168.5"
Front bumper to back of cab	92.5"		

Safety

Airbags

Driver front-impact	Yes

Seatbelt

Height adjustable	Front	Pre-tensioners	Front
Pre-tensioners (#)	1		

Seating

Front Seats

Type	Temporary driver seat

Driver Seat

Fore/aft	Manual	Way direction control	2

Front Head Restraint

Type	Fixed

Front Seat Trim

Selected Equipment & Specs (cont'd)

Material	None	Back material	None

Convenience

AC And Heat Type

Air conditioning	Manual	Auxiliary rear heater	Provision

Audio Antenna

Type	Fixed

Cruise Control

Cruise control	With steering wheel controls

Convenience Features

12V DC power outlet	3

Door Lock Activation

Type	Manual

Instrumentation Type

Display	Analog

Instrumentation Gauges

Tachometer	Yes	Oil pressure	Yes
Engine temperature	Yes	Voltmeter	Yes

Instrumentation Warnings

Oil pressure	Yes	Engine temperature	Yes
Battery	Yes	Lights on	Yes
Key	Yes	Low fuel	Yes
Service interval	Yes		

Instrumentation Feature

PRND in IP	Yes	Trip odometer	Yes

Steering Wheel Type

Material	Urethane	Tilting	Manual

Front Side Windows

Window 1st row activation	Manual

Window Features

Tinted	Light

Front Windshield

Wiper	Variable intermittent	Sun visor strip	Yes

Interior

Rear View Mirror

Day-night	Yes

Floor Trim

Coverage	Front	Covering	Vinyl/rubber

Trim Feature

Gear shift knob	Urethane

Lighting

Variable IP lighting	Yes

Selected Equipment & Specs (cont'd)

Other Console Storage

Storage	Yes	Type	Engine cover

Storage

Driver door bin	Yes	Front Beverage holder(s)	Yes
Glove box	Yes	Passenger door bin	Yes

Legroom

Front	40.0"

Headroom

Front	42.0"

Hip Room

Front	65.6"

Shoulder Room

Front	68.1"

Sutton Ford Lincoln, Inc.
21315 Central Avenue, Matteson, Illinois, 60443
Office: 708-720-8000

2016 E-450 Cutaway, SD Chassis
SD Chassis 158" WB DRW Base(E4F)

Selected Options

Code	Description
Base Vehicle	
E4F	Base Vehicle Price (E4F)
Packages	
782A	Order Code 782A
Powertrain	
99S	Engine: 6.8L EFI Triton V10
44P	Transmission: 6-Speed Automatic w/OD *Includes tow haul.*
X83	4.56 Axle Ratio
20F	GVWR: 14,500 lb Payload Package
Wheels & Tires	
T67	Tires: LT225/75Rx16E BSW AS
646	Wheels: 16" x 6" White Painted Steel
Seats & Seat Trim	
21D	Manual Seat Prep Package *Includes 2-way adjuster. Provides manual pedestal, pretensioning restraint system and unique seat tracks for driver side only. Temporary driver seat provided.* *Includes:* *- No Seat Trim* *- Passenger Side Air Bag Delete*
X	No Seat Trim
Other Options	
PAINT	Monotone Paint Application
158WB	158" Wheelbase
63N	Extra Heavy-Duty 225-Amps Alternator
634	Dual Heavy-Duty 78-Amp Batteries
60X	Right Hand Door Delete *Deletes passenger side A-pillar grab handle, right hand seat belt system and hardware, passenger side air bag, under-seat stowage, passenger side sun visor, passenger side speaker and headliner.* *Includes:* *- Exterior Mirrors Delete*
41H	Engine Block Heater *Single element. Recommended when minimum temperature is 10 degrees Fahrenheit or below.*
153	License Plate Bracket
625	Day/Night Interior Rearview Mirror
559	Frame Pucks (Isolators) *Includes 12 body mounts.*
525	Cruise Control
58Y	Radio Delete
54F	Exterior Mirrors Delete

Selected Options (cont'd)

Code	Description
47Z	Ambulance Prep Package Not Required REQUIRED on orders not destined for ambulance use.
18A	High Series Exterior Upgrade Package
47B	Shuttle Bus Prep Package
162	Vinyl Floor Covering
57J	Auxiliary Heater Connector Package (LPO) *Includes rear fan controls.*

Interior Colors

XE	Medium Flint

Primary Colors

YZ	Oxford White

Selected Equipment & Specs

Dimensions

* Exterior length: 261.1"
* Exterior width: 79.4"
* Exterior height: 80.0"
* Wheelbase: 158.0"
* Front track: 69.4"
* Rear track: 77.7"
* Turning radius: 27.4'
* Front legroom: 40.0"
* Front headroom: 42.0"
* Front hiproom: 65.6"
* Front shoulder room: 68.1"

Powertrain

* Triton 305hp 6.8L SOHC 20 valve V-10 engine with SMPI
* Recommended fuel : regular unleaded
* federal
* TorqShift 6 speed automatic transmission with overdrive
* Rear-wheel drive
* Fuel Economy Cty: N/A
* Fuel Economy Highway: N/A

Suspension/Handling

* Front Twin I-Beam independent suspension with anti-roll bar, HD shocks
* Rear rigid axle leaf spring suspension with HD shocks
* Hydraulic power-assist re-circulating ball Steering
* Front and rear 16 x 6 painted steel wheels
* LT225/75SR16 EBSW AS front and rear tires
* Dual rear wheels

Body Exterior

* 1 doors
* Driver and passenger door mirrors
* Chrome bumpers
* Clearcoat paint
* Front and rear 16 x 6 wheels

Convenience

* Manual air conditioning
* Auxiliary rear heater
* Cruise control with steering wheel controls
* Manual front windows
* Manual door locks
* Manual tilt steering wheel
* Day-night rearview mirror
* Front cupholders
* Driver and passenger door bins

Seats and Trim

* Seating capacity of 1
* Front temporary driver seat
* 2-way driver seat adjustment
* Fixed passenger seat

Entertainment Features

* Fixed antenna

Lighting, Visibility and Instrumentation

* Halogen aero-composite headlights
* Variable intermittent front windshield wipers
* Light tinted windows
* Tachometer
* Voltmeter
* Oil pressure gauge
* Trip odometer

Safety and Security

* 4-wheel ABS brakes
* 4-wheel disc brakes
* Driver front impact airbag supplemental restraint system
* Manual door locks
* Fixed front head restraints

Selected Equipment & Specs (cont'd)

Dimensions

General Weights

Curb	5359 lbs.	GVWR	14500 lbs.
Front GAWR	5000 lbs.	Rear GAWR	9600 lbs.
Payload	9040 lbs.	Front curb weight	2919 lbs.
Rear curb weight	2440 lbs.	Front axle capacity	5000 lbs.
Rear axle capacity	9600 lbs.	Front spring rating	5000 lbs.
Rear spring rating	9600 lbs.	Front tire/wheel capacity	5000 lbs.
Rear tire/wheel capacity	9460 lbs.		

General Trailering

Towing capacity	7500 lbs.	GCWR	22000 lbs.

Fuel Tank type

Capacity	55 gal.

Rear Frame

Height loaded	26 "

Powertrain

Engine Type

Brand	Triton	Block material	Iron
Cylinders	V-10	Head material	Aluminum
Ignition	Electronic	Injection	Sequential MPI
Liters	6.8L	Orientation	Longitudinal
Recommended fuel	Regular unleaded	Valves per cylinder	2
Valvetrain	SOHC		

Engine Spec

Bore	3.55"	Compression ratio	9.0:1
Displacement	415 cu.in.	Stroke	4.16"

Engine Power

Output	305 HP @ 4,250 RPM	Torque	420 ft.-lb @ 3,250 RPM
Torque at clutch engagement	350 lb.-ft.		

Alternator

Type	HD	Amps	225

Battery

Amp hours	78	Cold cranking amps	750
Type	Dual		

Engine Extras

Block heater	Yes

Transmission

Electronic control	Yes	Lock-up	Yes
Overdrive	Yes	Speed	6
Type	Automatic		

Transmission Gear Ratios

1st	3.974	2nd	2.318
3rd	1.516	4th	1.149
5th	0.858	6th	0.674
Reverse Gear ratios	3.128		

Selected Equipment & Specs (cont'd)

Transmission Torque Converter

Stall ratio	1.90

Transmission Extras

Driver selectable mode	Yes	Oil cooler	Regular

Drive Type

Type	Rear-wheel

Drive Axle

Ratio	4.56

Exhaust

Material	Stainless steel	System type	Single

Emissions

CARB	Federal	EPA	Tier 2 Bin 8

fuel Economy

Fuel type	Gasoline

Driveability

Brakes

ABS	4-wheel	ABS channels	3
Type	4-wheel disc	Vented discs	Front

Suspension Control

Ride	Regular

Front Suspension

Independence	Twin I-Beam independent	Anti-roll bar	Regular

Front Spring

Type	Coil	Grade	Regular

Front Shocks

Type	HD

Rear Suspension

Independence	Rigid axle	Type	Leaf

Rear Spring

Type	Leaf	Grade	Regular

Rear Shocks

Type	HD

Steering

Activation	Hydraulic power-assist	Type	Re-circulating ball

Steering Specs

# of wheels	2

Exterior

Front Wheels

Diameter	16"	Width	6.00"

Rear Wheels

Selected Equipment & Specs (cont'd)

Diameter	16"	Width	6.00"
Dual	Yes		

Front and Rear Wheels

Appearance	Painted	Material	Steel

Front Tires

Aspect	75	Diameter	16"
Sidewalls	BSW	Speed	S
Tread	AS	Type	LT
Width	225mm	LT load rating	E
RPM	709		

Rear Tires

Aspect	75	Diameter	16"
Sidewalls	BSW	Speed	S
Tread	AS	Type	LT
Width	225mm	LT load rating	E
RPM	709		

Wheels

Front track	69.4"	Rear track	77.7"
Turning radius	27.4'	Wheelbase	158.0"

Body Features

Front license plate bracket	Yes	Body material	Fully galvanized steel
Side impact beams	Yes		

Body Doors

Door count	1

Exterior Dimensions

Length	261.1"	Body width	79.4"
Body height	80.0"	Cab to axle	100.0"
Axle to end of frame	68.5"	Frame section modulus	6.4cu.in.
Frame yield strength (psi)	36000.0	Cab to end of frame	168.5"
Front bumper to back of cab	92.5"		

Safety

Airbags

Driver front-impact	Yes

Seatbelt

Height adjustable	Front	Pre-tensioners	Front
Pre-tensioners (#)	1		

Seating

Front Seats

Type	Temporary driver seat

Driver Seat

Fore/aft	Manual	Way direction control	2

Front Head Restraint

Type	Fixed

Front Seat Trim

Selected Equipment & Specs (cont'd)

Material	None	Back material	None

Convenience

AC And Heat Type

Air conditioning	Manual	Auxiliary rear heater	Provision

Audio Antenna

Type	Fixed

Cruise Control

Cruise control	With steering wheel controls

Convenience Features

12V DC power outlet	3

Door Lock Activation

Type	Manual

Instrumentation Type

Display	Analog

Instrumentation Gauges

Tachometer	Yes	Oil pressure	Yes
Engine temperature	Yes	Voltmeter	Yes

Instrumentation Warnings

Oil pressure	Yes	Engine temperature	Yes
Battery	Yes	Lights on	Yes
Key	Yes	Low fuel	Yes
Service interval	Yes		

Instrumentation Feature

PRND in IP	Yes	Trip odometer	Yes

Steering Wheel Type

Material	Urethane	Tilting	Manual

Front Side Windows

Window 1st row activation	Manual

Window Features

Tinted	Light

Front Windshield

Wiper	Variable intermittent	Sun visor strip	Yes

Interior

Rear View Mirror

Day-night	Yes

Floor Trim

Coverage	Front	Covering	Vinyl/rubber

Trim Feature

Gear shift knob	Urethane

Lighting

Variable IP lighting	Yes

Selected Equipment & Specs (cont'd)

Other Console Storage

Storage	Yes	Type	Engine cover

Storage

Driver door bin	Yes	Front Beverage holder(s)	Yes
Glove box	Yes	Passenger door bin	Yes

Legroom

Front	40.0"

Headroom

Front	42.0"

Hip Room

Front	65.6"

Shoulder Room

Front	68.1"

CHEVROLET CHASSIS SPECIFICATIONS
FOR
VARIOUS WHEELBASES USED

SELECTED MODEL & OPTIONS

SELECTED MODEL - 2016 Fleet/Non-Retail CG33503 3500 Van 139"

SMALL TRANSIT

Code	Description
CG33503	2016 Chevrolet Express Commercial Cutaway 3500 Van 139"

SELECTED VEHICLE COLORS - 2016 Fleet/Non-Retail CG33503 3500 Van 139"

Code	Description
-	Interior: No color has been selected.
-	Exterior 1: No color has been selected.
-	Exterior 2: No color has been selected.

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33503 3500 Van 139"

CATEGORY Code	Description
BODY CODE	
ZW9	BODY, STANDARD (STD)
REAR WHEEL CONFIGURATION	
R05	WHEEL CONFIGURATION, REAR, DUAL (Standard on the CG33803 and CG33903 models. Available on the CG33503 model with (9N2) 10,050 lbs. (4559 kg.) GVWR or (C7N) 12,300 lbs. (5579 kg.) GVWR. Not available with (C4M) 9900 lbs. (4490 kg) GVWR, (JFF) 10,100 lbs. (4581 kg) GVWR or (JL4) StabiliTrak.)
EMISSIONS	
YF5	EMISSIONS, CALIFORNIA STATE REQUIREMENTS
ENGINE	
L96	ENGINE, VORTEC 6.0L V8 (342 hp [255.0 kW] @ 5400 rpm, 373 lb-ft of torque [503.6 N-m] @ 4400 rpm) (Standard on the CG33903 models. Available on CG33503 or CG33803 model. Includes external oil cooler. Reference the Engine/Axle page for availability.)

Report content is based on current data version referenced. Any performance-related calculations are offered solely as guidelines. Actual unit performance will depend on your operating conditions.

Customer File:

SELECTED MODEL & OPTIONS

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33503 3500 Van 139"

CATEGORY	Code	Description
TRANSMISSION		
	MYD	TRANSMISSION, 6-SPEED AUTOMATIC, HEAVY-DUTY electronically controlled with overdrive and tow/haul mode and internal transmission oil cooler (STD) (Reference the Engine/Axle page for availability.)
GVWR		
	C7N	GVWR, 12,300 LBS. (5579 KG) (Includes (R05) dual rear wheel configuration on the CG33503 model. Not available with (R04) single rear wheel combination. Reference the Engine/Axle page for availability.)
AXLE		
	GT4	REAR AXLE, 3.73 RATIO (Standard on CG33803 model and CG33903 model. With CG33503 model, requires (9N2) 10,050 lbs. (4559 kg) GVWR or (C7N) 12,300 lbs. (5579 kg) GVWR or (YF2) Ambulance Package. Reference the Engine/Axle page for availability.)
PREFERRED EQUIPMENT GROUP		
	1WT	1WT PREFERRED EQUIPMENT GROUP Includes Standard Equipment
WHEELS		
	QT4	WHEELS, 6 - 16" X 6.5" (40.6 CM X 16.5 CM) 8-LUG PAINTED STEEL, HEAVY DUTY (Only available with (R05) dual rear wheel configuration)
FRONT TIRES		
	XHF	TIRES, FRONT LT225/75R16E ALL-SEASON, BLACKWALL (Requires (R05) dual rear wheel configuration.) Jack and spare tire equipment bracket are not included.
REAR TIRES		
	YHF	TIRES, REAR LT225/75R16E ALL-SEASON, BLACKWALL (Requires (R05) dual rear wheel configuration. Jack and spare tire equipment bracket are not included.)
PAINT SCHEME		
	ZY1	PAINT, SOLID
PAINT		
	GAZ	SUMMIT WHITE
SEAT TRIM		

Report content is based on current data version referenced. Any performance-related calculations are offered solely as guidelines. Actual unit performance will depend on your operating conditions.

SELECTED MODEL & OPTIONS

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33503 3500 Van 139"

CATEGORY	Code	Description
SEAT TRIM		
	93G	MEDIUM PEWTER, CUSTOM CLOTH SEAT TRIM
SEATING ARRANGEMENT		
	ZX1	SEATING ARRANGEMENT, DRIVER-ONLY HIGH-BACK BUCKET includes head restraint and vinyl or cloth trim (Deletes passenger-side air bag, seat and safety belt. Components cannot be added back later. Includes (AJ3) driver-side only frontal air bag. Requires (AS5) front bucket seats with Custom Cloth trim or (AR7) front bucket seats with vinyl trim.) *CREDIT*
AIR CONDITIONING		
	C60	AIR CONDITIONING, SINGLE-ZONE MANUAL (STD)
RADIO		
	UXZ	AUDIO SYSTEM, RADIO PROVISIONS ONLY. Includes alarm warning chimes, radio wiring harness, radio antenna and 2 front door speakers (Not available with (U0F) AM/FM stereo with MP3 player, (U0H) AM/FM stereo with MP3 player and USB port, (US8) AM/FM stereo with CD/MP3 player or (UI8) Chevrolet MyLink with Navigation.)
ADDITIONAL EQUIPMENT		
	ANC	SHUTTLE BUS PACKAGE (Includes (ZR7) Chrome Appearance Package, (BNC) soft-mount donut and bolt, (ZQ3) Convenience Package, (V4D) stop/turn signal circuits, (ENC) HVAC system auxiliary rear heat provisions, (KW5) 220 amp alternator, (TP2) isolated 2nd battery and SEO (RGI) front instrument panel routing grommet. With (R05) dual rear wheel configuration, includes (XHF) LT225/75R16E all-season front tires. Not available with (YF2) Ambulance Package, (YF1) RV Package, (B3D) School Bus Package or (L20) Vortec 4.8L V8 engine. Not available on the CG33903 model, CG33503 model or CG33803 model with (JFF) 10,100 lbs. (4581 kg) GVWR.)
	ZR7	CHROME APPEARANCE PACKAGE (Includes (V46) front chrome bumper and (V22) chrome grille with dual composite halogen headlamps. Included with (YF1) RV Package or (YF2) Ambulance Package or (ANC) Shuttle Bus Package.)

SELECTED MODEL & OPTIONS

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33503 3500 Van 139"

CATEGORY

Code	Description
ADDITIONAL EQUIPMENT	
ZQ3	CONVENIENCE PACKAGE, TILT-WHEEL AND (K34) CRUISE CONTROL (Included with (YF1) RV Package or (ANC) Shuttle Bus Package. Required with (UF3) High idle switch on models not ordered with (YF2) Ambulance Package.)
V10	COLD CLIMATE PACKAGE includes engine block heater
K05	ENGINE BLOCK HEATER (Included with (V10) Cold Climate Package.)
TP2	BATTERY, ISOLATED 2ND allows 2nd battery to be used when the vehicle is not running without affecting ability to start the vehicle (Included with (YF2) Ambulance Package, (YF1) RV Package, (B3D) School Bus Package or (ANC) Shuttle Bus Package.)
KW5	ALTERNATOR, 220 AMPS (Required with (YF2) Ambulance Package. Included with (YF1) RV Package, (B3D) School Bus Package or (ANC) Shuttle Bus Package.)
V4D	CIRCUITS, STOP/TURN SIGNAL body control module calibration that allows the stop and turn signals to be operated separately (Included with (YF2) Ambulance Package, (B3D) School Bus Package or (ANC) Shuttle Bus Package.)
BNC	BODY, SOFT-MOUNT DONUT AND BOLT (for mounting Upfit body to chassis) (Included with (YF1) RV Package or (ANC) Shuttle Bus Package.)
40P	WHEEL FINISH, PAINTED WHITE. White-painted wheels in lieu of standard Gray-painted wheels.
V46	BUMPER, FRONT CHROME WITH STEP-PAD (Included with (ZR7) Chrome Appearance Package.)
V22	GRILLE, CHROME WITH DUAL COMPOSITE HALOGEN HEADLAMPS (Included and only available with (ZR7) Chrome Appearance Package.)
AS5	SEATS, FRONT BUCKET WITH CUSTOM CLOTH TRIM, HEAD RESTRAINTS AND INBOARD ARMRESTS (Requires (**G) trim. Not available with SEO (ZP0) driver and passenger seat delete. Includes only driver high-back bucket seat with Custom Cloth trim when ordered with (ZX1) driver-only high-back bucket seating arrangement.)

Customer File:

SELECTED MODEL & OPTIONS

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33503 3500 Van 139"

CATEGORY

Code	Description
ADDITIONAL EQUIPMENT	
K34	CRUISE CONTROL (Included and only available with (ZQ3) Convenience Package or (YF2) Ambulance Package or (YF1) RV Package or (UF3) High idle switch.)
ENC	HVAC SYSTEM, AUXILIARY PROVISIONS (Included with (YF2) Ambulance Package or (B3D) School Bus Package or (ANC) Shuttle Bus Package. For model CG33503 with (L20) Vortec 4.8L V8 SFI engine, included and only available with (B3D) School Bus Package or (ANC) Shuttle Bus Package. Not available with (L20) Vortec 4.8L V8 SFI engine on CG33803 model.)
D31	MIRROR, INSIDE REARVIEW MANUAL DAY/NIGHT
AJ3	AIR BAG, FRONTAL, DRIVER-SIDE ONLY (deletes passenger-side) (Included and only available with (ZX1) driver-only high-back bucket seat. Not available with (ZX2) driver and front passenger high-back bucket seats. NOTE: Passenger seat is removed when ordered. Always use safety belts and the correct child restraints. Children are safer when properly secured in a rear seat in the appropriate child restraint. See the Owner's Manual for more information.) *CREDIT*
U05	HORN, DUAL-NOTE HIGH AND LOW (Included with (B3D) School Bus Package or (YF2) Ambulance Package.)
VQ2	FLEET PROCESSING OPTION
DEALER INSTALLED / PROCESSING OPTIONS	
.DLR	ADMINISTRATIVE FEE
.R6D	SUTTLE BUS INCNEITVE -IDOA
SPECIAL EQUIPMENT OPTIONS	
8R2	TIRE VALVE STEMS, LONG, BRASS, FOR INSIDE DUAL REAR WHEELS (Brass metal 3-3/8" long valve stems on the inner wheels of dual rear wheel axles for easy air inflation.) (Requires SEO (Q8C) air-thru valve caps. Requires RPO (R05) dual rear wheels. Not available with RPO (YF1) RV Package.)

SELECTED MODEL & OPTIONS

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33503 3500 Van 139"

CATEGORY

Code	Description
SPECIAL EQUIPMENT OPTIONS	
Q8C	TIRE VALVE STEM CAPS, AIR THRU (Air through valve caps on the tire air valves) (Included with SEO (8R2) long, brass tire valve stems.)
9T7	DOOR, PASSENGER SIDE DELETE, UPFITTER OPTION Deletes the passenger door and replaces it with a temporary plastic shipping cover. Passenger side radio speaker is shipped loose (Requires one of the following upfitter order types; FRC, SRV, TSC, TSD, TSR, TSM, FRV and RPO (ZX1) driver only high-back bucket seating or SEO (ZP1) temporary driver only seating also RPO (D28) Mirrors, outside delete. Not available with RPO (ASF) Air bags, head/side-curtain, SEO (5H1) Key equipment, two additional keys for single key system , SEO (8X1) Label, fasten safety belts or RPO (ZQ2) Convenience Package.) *CREDIT*
RGI	ROUTING GROMMET, FRONT INSTRUMENT PANEL (Included with (YF2) Ambulance Package, (YF1) RV Package, (B3D) School Bus Package and (ANC) Shuttle Bus Package. Not available with RPO (9L7) 2-30 amp wire leads.)

OPTIONS TOTAL

An underlined code indicates that the options have been applied by the dealer. All sales prices established solely by dealer.

SELECTED MODEL & OPTIONS

SELECTED MODEL - 2016 Fleet/Non-Retail CG33903 4500 Van 177"

LARGE TRANSIT 16+2WC

Code	Description
CG33903	2016 Chevrolet Express Commercial Cutaway 4500 Van 177"

SELECTED VEHICLE COLORS - 2016 Fleet/Non-Retail CG33903 4500 Van 177"

Code	Description
-	Interior: No color has been selected.
-	Exterior 1: No color has been selected.
-	Exterior 2: No color has been selected.

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33903 4500 Van 177"

CATEGORY	Code	Description
BODY CODE		
	ZW9	BODY, STANDARD (STD)
EMISSIONS		
	YF5	EMISSIONS, CALIFORNIA STATE REQUIREMENTS
ENGINE		
	L96	ENGINE, VORTEC 6.0L V8 (342 hp [255.0 kW] @ 5400 rpm, 373 lb-ft of torque [503.6 N-m] @ 4400 rpm) (STD) (Standard on the CG33803 and CG33903 models. Includes external oil cooler. Reference the Engine/Axle page for availability.)
TRANSMISSION		
	MYD	TRANSMISSION, 6-SPEED AUTOMATIC, HEAVY-DUTY electronically controlled with overdrive and tow/haul mode and internal transmission oil cooler (STD) (Reference the Engine/Axle page for availability.)
GVWR		

Report content is based on current data version referenced. Any performance-related calculations are offered solely as guidelines. Actual unit performance will depend on your operating conditions.

Customer File:

SELECTED MODEL & OPTIONS

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33903 4500 Van 177"

CATEGORY	Code	Description
GVWR		
	C7I	GVWR 14,200 LBS. (6441 KG) (STD) (Requires CG33803 or CG33903 models, (L96) Vortec 6.0L V8 SFI engine or (LC8) 6.0L V8 SFI Gaseous engine, (GT5) 4.10 rear axle ratio, (XHF) front LT225/75R16E all-season blackwall tires and (YHF) rear LT225/75R16E all-season blackwall tires. Available with (KO7) Dedicated Liquefied Petroleum Gas (LPG) system on CG33803 model.)
AXLE		
	GT5	REAR AXLE, 4.10 RATIO
PREFERRED EQUIPMENT GROUP		
	2WT	2WT PREFERRED EQUIPMENT GROUP Includes Standard Equipment
PAINT SCHEME		
	ZY1	PAINT, SOLID
PAINT		
	GAZ	SUMMIT WHITE
SEAT TRIM		
	93G	MEDIUM PEWTER, CUSTOM CLOTH SEAT TRIM
SEATING ARRANGEMENT		
	ZX1	SEATING ARRANGEMENT, DRIVER-ONLY HIGH-BACK BUCKET includes head restraint and vinyl or cloth trim (Deletes passenger-side air bag, seat and safety belt. Components cannot be added back later. Includes (AJ3) driver-side only frontal air bag. Requires (AS5) front bucket seats with Custom Cloth trim or (AR7) front bucket seats with vinyl trim.) *CREDIT*
AIR CONDITIONING		
	C60	AIR CONDITIONING, SINGLE-ZONE MANUAL (STD)
RADIO		

SELECTED MODEL & OPTIONS

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33903 4500 Van 177"

CATEGORY	Code	Description
RADIO		
	UXZ	AUDIO SYSTEM, RADIO PROVISIONS ONLY. Includes alarm warning chimes, radio wiring harness, radio antenna and 2 front door speakers (Not available with (U0F) AM/FM stereo with MP3 player, (U0H) AM/FM stereo with MP3 player and USB port, (US8) AM/FM stereo with CD/MP3 player or (UI8) Chevrolet MyLink with Navigation.)
ADDITIONAL EQUIPMENT		
	ANC	SHUTTLE BUS PACKAGE (Includes (ZR7) Chrome Appearance Package, (BNC) soft-mount donut and bolt, (ZQ3) Convenience Package, (V4D) stop/turn signal circuits, (ENC) HVAC system auxiliary rear heat provisions, (KW5) 220 amp alternator, (TP2) isolated 2nd battery and SEO (RGI) front instrument panel routing grommet. With (R05) dual rear wheel configuration, includes (XHF) LT225/75R16E all-season front tires. Not available with (YF2) Ambulance Package, (YF1) RV Package, (B3D) School Bus Package, CG33903 model, CG33503 model or CG33803 model with (JFF) 10,100 lbs. (4581 kg) GVWR.)
	ZR7	CHROME APPEARANCE PACKAGE (Includes (V46) front chrome bumper and (V22) chrome grille with dual composite halogen headlamps. Included with (YF1) RV Package or (YF2) Ambulance Package or (ANC) Shuttle Bus Package.)
	ZQ3	CONVENIENCE PACKAGE, TILT-WHEEL AND (K34) CRUISE CONTROL (Included with (YF1) RV Package or (ANC) Shuttle Bus Package. Required with (UF3) High idle switch on models not ordered with (YF2) Ambulance Package.)
	V10	COLD CLIMATE PACKAGE includes engine block heater
	K05	ENGINE BLOCK HEATER (Included with (V10) Cold Climate Package.)
	TP2	BATTERY, ISOLATED 2ND allows 2nd battery to be used when the vehicle is not running without affecting ability to start the vehicle (Included with (YF2) Ambulance Package, (YF1) RV Package, (B3D) School Bus Package or (ANC) Shuttle Bus Package. Not available with (KO7) Dedicated Liquefied Petroleum Gas (LPG) system.)

SELECTED MODEL & OPTIONS

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33903 4500 Van 177"

CATEGORY

Code	Description
ADDITIONAL EQUIPMENT	
KW5	ALTERNATOR, 220 AMPS (Required with (YF2) Ambulance Package. Included with (YF1) RV Package, (B3D) School Bus Package or (ANC) Shuttle Bus Package.)
V4D	CIRCUITS, STOP/TURN SIGNAL body control module calibration that allows the stop and turn signals to be operated separately (Included with (YF2) Ambulance Package, (B3D) School Bus Package or (ANC) Shuttle Bus Package.)
BNC	BODY, SOFT-MOUNT DONUT AND BOLT (for mounting Upfit body to chassis) (Included with (YF1) RV Package or (ANC) Shuttle Bus Package.)
NE7	FUEL TANK CAPACITY, APPROXIMATELY 57 GALLONS (215.7L). As part of the base design, includes the auxiliary feed fuel fitting and in tank return line. (Not available with (K50) auxiliary feed in fuel tank return line fuel fitting or (B3D) School Bus Package.)
40P	WHEEL FINISH, PAINTED WHITE. White-painted wheels in lieu of standard Gray-painted wheels.
V46	BUMPER, FRONT CHROME WITH STEP-PAD (Included with (ZR7) Chrome Appearance Package.)
V22	GRILLE, CHROME WITH DUAL COMPOSITE HALOGEN HEADLAMPS (Included and only available with (ZR7) Chrome Appearance Package.)
AS5	SEATS, FRONT BUCKET WITH CUSTOM CLOTH TRIM, HEAD RESTRAINTS AND INBOARD ARMRESTS (Requires (**G) trim. Not available with SEO (ZP0) driver and passenger seat delete. Includes only driver high-back bucket seat with Custom Cloth trim when ordered with (ZX1) driver-only high-back bucket seating arrangement.)
K34	CRUISE CONTROL (Included and only available with (ZQ3) Convenience Package or (YF2) Ambulance Package or (YF1) RV Package or (UF3) High idle switch.)
ENC	HVAC SYSTEM, AUXILIARY PROVISIONS (Included with (YF2) Ambulance Package or (B3D) School Bus Package or (ANC) Shuttle Bus Package.)

SELECTED MODEL & OPTIONS

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33903 4500 Van 177"

CATEGORY

Code	Description
ADDITIONAL EQUIPMENT	
D31	MIRROR, INSIDE REARVIEW MANUAL DAY/NIGHT
AJ3	AIR BAG, FRONTAL, DRIVER-SIDE ONLY (deletes passenger-side) (Included and only available with (ZX1) driver-only high-back bucket seat. Not available with (ZX2) driver and front passenger high-back bucket seats. NOTE: Passenger seat is removed when ordered. Always use safety belts and the correct child restraints. Children are safer when properly secured in a rear seat in the appropriate child restraint. See the Owner's Manual for more information.) *CREDIT*
U05	HORN, DUAL-NOTE HIGH AND LOW (Included with (B3D) School Bus Package or (YF2) Ambulance Package.)
VQ2	FLEET PROCESSING OPTION
DEALER INSTALLED / PROCESSING OPTIONS	
.DLR	ADMINISTRATIVE FEE
.R6H	SHUTTLE BUS INCENTIVE - IDOA
SPECIAL EQUIPMENT OPTIONS	
8R2	TIRE VALVE STEMS, LONG, BRASS, FOR INSIDE DUAL REAR WHEELS (Brass metal 3-3/8" long valve stems on the inner wheels of dual rear wheel axles for easy air inflation.) (Requires SEO (Q8C) air-thru valve caps. Requires RPO (R05) dual rear wheels. Not available with RPO (YF1) RV Package.)
Q8C	TIRE VALVE STEM CAPS, AIR THRU (Air through valve caps on the tire air valves) (Included with SEO (8R2) long, brass tire valve stems.)

Customer File:

SELECTED MODEL & OPTIONS

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33903 4500 Van 177"

CATEGORY

Code	Description
SPECIAL EQUIPMENT OPTIONS	
9T7	DOOR, PASSENGER SIDE DELETE, UPFITTER OPTION Deletes the passenger door and replaces it with a temporary plastic shipping cover. Passenger side radio speaker is shipped loose (Requires one of the following upfitter order types; FRC, SRV, TSC, TSD, TSR, TSM, FRV and RPO (ZX1) driver only high-back bucket seating or SEO (ZP1) temporary driver only seating also RPO (D28) Mirrors, outside delete. Not available with RPO (ASF) Air bags, head/side-curtain, SEO (5H1) Key equipment, two additional keys for single key system , SEO (8X1) Label, fasten safety belts or RPO (ZQ2) Convenience Package.) *CREDIT*
RGI	ROUTING GROMMET, FRONT INSTRUMENT PANEL (Included with (YF2) Ambulance Package, (YF1) RV Package, (B3D) School Bus Package and (ANC) Shuttle Bus Package. Not available with RPO (9L7) 2-30 amp wire leads.)

OPTIONS TOTAL

An underlined code indicates that the options have been applied by the dealer. All sales prices established solely by dealer.

Customer File:

2016 Fleet/Non-Retail Chevrolet Express Commercial Cutaway 4500 Van 15

SELECTED MODEL & OPTIONS

SELECTED MODEL - 2016 Fleet/Non-Retail CG33803 4500 Van 159"

LARGE TRANSIT 12+2 W @

Code	Description
CG33803	2016 Chevrolet Express Commercial Cutaway 4500 Van 159"

SELECTED VEHICLE COLORS - 2016 Fleet/Non-Retail CG33803 4500 Van 159"

Code	Description
-	Interior: Medium Pewter
-	Exterior 1: Summit White
-	Exterior 2: No color has been selected.

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33803 4500 Van 159"

CATEGORY	Code	Description
BODY CODE	ZW9	BODY, STANDARD (STD)
EMISSIONS	YF5	EMISSIONS, CALIFORNIA STATE REQUIREMENTS
ENGINE	L96	ENGINE, VORTEC 6.0L V8 (342 hp [255.0 kW] @ 5400 rpm, 373 lb-ft of torque [503.6 N-m] @ 4400 rpm) (STD) (Standard on the CG33803 and CG33903 models. Includes external oil cooler. Reference the Engine/Axle page for availability.)
TRANSMISSION	MYD	TRANSMISSION, 6-SPEED AUTOMATIC, HEAVY-DUTY electronically controlled with overdrive and tow/haul mode and internal transmission oil cooler (STD) (Reference the Engine/Axle page for availability.)
GVWR		

Report content is based on current data version referenced. Any performance-related calculations are offered solely as guidelines. Actual unit performance will depend on your operating conditions.

Customer File:

SELECTED MODEL & OPTIONS

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33803 4500 Van 159"

CATEGORY	Code	Description
GVWR		
	C7I	GVWR 14,200 LBS. (6441 KG) (STD) (Requires CG33803 or CG33903 models, (L96) Vortec 6.0L V8 SFI engine or (LC8) 6.0L V8 SFI Gaseous engine, (GT5) 4.10 rear axle ratio, (XHF) front LT225/75R16E all-season blackwall tires and (YHF) rear LT225/75R16E all-season blackwall tires. Available with (KO7) Dedicated Liquefied Petroleum Gas (LPG) system on CG33803 model.)
AXLE		
	GT5	REAR AXLE, 4.10 RATIO
PREFERRED EQUIPMENT GROUP		
	2WT	2WT PREFERRED EQUIPMENT GROUP Includes Standard Equipment
PAINT SCHEME		
	ZY1	PAINT, SOLID
PAINT		
	GAZ	SUMMIT WHITE
SEAT TRIM		
	93G	MEDIUM PEWTER, CUSTOM CLOTH SEAT TRIM
SEATING ARRANGEMENT		
	ZX1	SEATING ARRANGEMENT, DRIVER-ONLY HIGH-BACK BUCKET includes head restraint and vinyl or cloth trim (Deletes passenger-side air bag, seat and safety belt. Components cannot be added back later. Includes (AJ3) driver-side only frontal air bag. Requires (AS5) front bucket seats with Custom Cloth trim or (AR7) front bucket seats with vinyl trim.) *CREDIT*
AIR CONDITIONING		
	C60	AIR CONDITIONING, SINGLE-ZONE MANUAL (STD)
RADIO		

SELECTED MODEL & OPTIONS

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33803 4500 Van 159"

CATEGORY	Code	Description
RADIO		
	UXZ	AUDIO SYSTEM, RADIO PROVISIONS ONLY. Includes alarm warning chimes, radio wiring harness, radio antenna and 2 front door speakers (Not available with (U0F) AM/FM stereo with MP3 player, (U0H) AM/FM stereo with MP3 player and USB port, (US8) AM/FM stereo with CD/MP3 player or (UI8) Chevrolet MyLink with Navigation.)
ADDITIONAL EQUIPMENT		
	ANC	SHUTTLE BUS PACKAGE (Includes (ZR7) Chrome Appearance Package, (BNC) soft-mount donut and bolt, (ZQ3) Convenience Package, (V4D) stop/turn signal circuits, (ENC) HVAC system auxiliary rear heat provisions, (KW5) 220 amp alternator, (TP2) isolated 2nd battery and SEO (RGI) front instrument panel routing grommet. With (R05) dual rear wheel configuration, includes (XHF) LT225/75R16E all-season front tires. Not available with (YF2) Ambulance Package, (YF1) RV Package, (B3D) School Bus Package, CG33903 model, CG33503 model or CG33803 model with (JFF) 10,100 lbs. (4581 kg) GVWR.)
	ZR7	CHROME APPEARANCE PACKAGE (Includes (V46) front chrome bumper and (V22) chrome grille with dual composite halogen headlamps. Included with (YF1) RV Package or (YF2) Ambulance Package or (ANC) Shuttle Bus Package.)
	ZQ3	CONVENIENCE PACKAGE, TILT-WHEEL AND (K34) CRUISE CONTROL (Included with (YF1) RV Package or (ANC) Shuttle Bus Package. Required with (UF3) High idle switch on models not ordered with (YF2) Ambulance Package.)
	V10	COLD CLIMATE PACKAGE includes engine block heater
	K05	ENGINE BLOCK HEATER (Included with (V10) Cold Climate Package.)
	TP2	BATTERY, ISOLATED 2ND allows 2nd battery to be used when the vehicle is not running without affecting ability to start the vehicle (Included with (YF2) Ambulance Package, (YF1) RV Package, (B3D) School Bus Package or (ANC) Shuttle Bus Package. Not available with (KO7) Dedicated Liquefied Petroleum Gas (LPG) system.)

Report content is based on current data version referenced. Any performance-related calculations are offered solely as guidelines. Actual unit performance will depend on your operating conditions.

SELECTED MODEL & OPTIONS

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33803 4500 Van 159"

CATEGORY

Code	Description
ADDITIONAL EQUIPMENT	
KW5	ALTERNATOR, 220 AMPS (Required with (YF2) Ambulance Package. Included with (YF1) RV Package, (B3D) School Bus Package or (ANC) Shuttle Bus Package.)
V4D	CIRCUITS, STOP/TURN SIGNAL body control module calibration that allows the stop and turn signals to be operated separately (Included with (YF2) Ambulance Package, (B3D) School Bus Package or (ANC) Shuttle Bus Package.)
BNC	BODY, SOFT-MOUNT DONUT AND BOLT (for mounting Upfit body to chassis) (Included with (YF1) RV Package or (ANC) Shuttle Bus Package.)
NE7	FUEL TANK CAPACITY, APPROXIMATELY 57 GALLONS (215.7L). As part of the base design, includes the auxiliary feed fuel fitting and in tank return line. (Not available with (K50) auxiliary feed in fuel tank return line fuel fitting or (B3D) School Bus Package.)
40P	WHEEL FINISH, PAINTED WHITE. White-painted wheels in lieu of standard Gray-painted wheels.
V46	BUMPER, FRONT CHROME WITH STEP-PAD (Included with (ZR7) Chrome Appearance Package.)
V22	GRILLE, CHROME WITH DUAL COMPOSITE HALOGEN HEADLAMPS (Included and only available with (ZR7) Chrome Appearance Package.)
AS5	SEATS, FRONT BUCKET WITH CUSTOM CLOTH TRIM, HEAD RESTRAINTS AND INBOARD ARMRESTS (Requires (**G) trim. Not available with SEO (ZP0) driver and passenger seat delete. Includes only driver high-back bucket seat with Custom Cloth trim when ordered with (ZX1) driver-only high-back bucket seating arrangement.)
K34	CRUISE CONTROL (Included and only available with (ZQ3) Convenience Package or (YF2) Ambulance Package or (YF1) RV Package or (UF3) High idle switch.)
ENC	HVAC SYSTEM, AUXILIARY PROVISIONS (Included with (YF2) Ambulance Package or (B3D) School Bus Package or (ANC) Shuttle Bus Package.)

Report content is based on current data version referenced. Any performance-related calculations are offered solely as guidelines. Actual unit performance will depend on your operating conditions.

Customer File:

SELECTED MODEL & OPTIONS

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33803 4500 Van 159"

CATEGORY

Code	Description
ADDITIONAL EQUIPMENT	
D31	MIRROR, INSIDE REARVIEW MANUAL DAY/NIGHT
AJ3	AIR BAG, FRONTAL, DRIVER-SIDE ONLY (deletes passenger-side) (Included and only available with (ZX1) driver-only high-back bucket seat. Not available with (ZX2) driver and front passenger high-back bucket seats. NOTE: Passenger seat is removed when ordered. Always use safety belts and the correct child restraints. Children are safer when properly secured in a rear seat in the appropriate child restraint. See the Owner's Manual for more information.) *CREDIT*
U05	HORN, DUAL-NOTE HIGH AND LOW (Included with (B3D) School Bus Package or (YF2) Ambulance Package.)
VQ2	FLEET PROCESSING OPTION
DEALER INSTALLED / PROCESSING OPTIONS	
.DLR	ADMINISTRATIVE FEE
.R6H	SHUTTLE BUS INCENTIVE - IDOA
SPECIAL EQUIPMENT OPTIONS	
8R2	TIRE VALVE STEMS, LONG, BRASS, FOR INSIDE DUAL REAR WHEELS (Brass metal 3-3/8" long valve stems on the inner wheels of dual rear wheel axles for easy air inflation.) (Requires SEO (Q8C) air-thru valve caps. Requires RPO (R05) dual rear wheels. Not available with RPO (YF1) RV Package.)
Q8C	TIRE VALVE STEM CAPS, AIR THRU (Air through valve caps on the tire air valves) (Included with SEO (8R2) long, brass tire valve stems.)

SELECTED MODEL & OPTIONS

SELECTED OPTIONS - 2016 Fleet/Non-Retail CG33803 4500 Van 159"

CATEGORY

Code	Description
SPECIAL EQUIPMENT OPTIONS	
9T7	DOOR, PASSENGER SIDE DELETE, UPFITTER OPTION Deletes the passenger door and replaces it with a temporary plastic shipping cover. Passenger side radio speaker is shipped loose (Requires one of the following upfitter order types; FRC, SRV, TSC, TSD, TSR, TSM, FRV and RPO (ZX1) driver only high-back bucket seating or SEO (ZP1) temporary driver only seating also RPO (D28) Mirrors, outside delete. Not available with RPO (ASF) Air bags, head/side-curtain, SEO (5H1) Key equipment, two additional keys for single key system , SEO (8X1) Label, fasten safety belts or RPO (ZQ2) Convenience Package.) *CREDIT*
RGI	ROUTING GROMMET, FRONT INSTRUMENT PANEL (Included with (YF2) Ambulance Package, (YF1) RV Package, (B3D) School Bus Package and (ANC) Shuttle Bus Package. Not available with RPO (9L7) 2-30 amp wire leads.)

OPTIONS TOTAL

An underlined code indicates that the options have been applied by the dealer. All sales prices established solely by dealer.

Customer File:

ITEM #11 (c)

CERTIFICATION
OF
FMVSS
COMPLIANCE

Elkhart Coach
a division of Forest River Inc.

FMVSS/CMVSS Compliance Summary - 2006-2007

The following information describes briefly the FMVSS standards and the Compliance Action that has been taken by either Elkhart Coach, the chassis manufacturer or both. This summary is not intended to replace the standards on file at Elkhart Coach, but is intended to briefly describe and summarize them.

FMVSS No.	Standard Description	Compliance Action
101	Control Location, Identification and Illumination	Elkhart Coach does not alter the OEM controls or displays. Any added components, controls or displays subject to the standard meet this standard.
102	Transmission Shift Lever Sequence, Starter Interlock & Transmission Braking Effect	Compliance is deferred to the chassis manufacturer.
103	Windshield Defrosting & Defogging Systems	Compliance is deferred to the chassis manufacturer.
104	Windshield Wiping & Washing Systems	Compliance is deferred to the chassis manufacturer.
105	Hydraulic Brake Systems	Test data kept on file for vehicles that have had the frame stretched, or have had other system modifications.
106	Brake Hoses	Brake hoses are not altered. Compliance is deferred to the chassis manufacturer.
108	Lamps, Reflective Devices & Associated Equipment	Elkhart Coach does not alter OEM lighting. Additional lighting to include brake, turn, clearance and reverse lamps meet standard. Data on file.
111	Rear View Mirrors	All aftermarket mirrors installed by Elkhart Coach meet this standard and DOT regulations.
112	Headlamp Concealment Devices	Elkhart Coach does not manufacture vehicles with headlamp concealment devices.
113	Hood latch system.	Compliance is deferred to the chassis manufacturer.
114	Theft Protection	Compliance is deferred to the chassis manufacturer.
115	Vehicle Identification Number	Compliance is deferred to the chassis manufacturer.
116	Hydraulic Brake Fluids	Elkhart Coach does not alter brake systems. Vehicles with stretched frames have additional fluid added by the facility performing the chassis stretch using OEM instruction and materials. At other system modifications utilize only OEM approved fluid.
118	Power Operated Window, Partition, and Roof Panel Systems	Compliance is deferred to the chassis manufacturer.
120	Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars	Compliance is deferred to the chassis manufacturer.
121	Air Brake Systems	All vehicles manufactured by Elkhart Coach are not equipped with air brake systems.
124	Accelerator Control Systems	Elkhart Coach does not alter the OEM accelerator system, with the exception of the addition of aftermarket fast idle systems on some vehicles. These systems meet this standard when installed in accordance with instructions.
203	Impact Protection for the Driver from the Steering Control System	Compliance is deferred to the chassis manufacturer.

Elkhart Coach
a division of Forest River, Inc.

FMVSS/CMVSS Compliance Summary - 2006-2007

The following information describes briefly the FMVSS standards and the Compliance Action that has been taken by either Elkhart Coach, the chassis manufacturer or both. This summary is not intended to replace the standards on file at Elkhart Coach, but is intended to briefly describe and summarize them.

FMVSS No.	Standard Description	Compliance Action
204	Steering Control Rearward Displacement	Compliance is deferred to the chassis manufacturer
205	Glazing Materials	No modifications are made to the OEM Glazing materials. Additional glazing materials meet the standard. Test data on file.
207	Seating System	All seating installed by Elkhart Coach meets this standard. Test data on file
208	Occupant Crash Protection	No alterations are made to the OEM seat belts, air bag systems or associated hardware. Any seat belt systems added meet the standard. Test data on file
209	Seat Belt Assemblies	No alterations are made to the OEM seat belts or associated hardware. Any seat belt systems added meet the standard. Test data on file.
210	Seat Belt Assembly Anchorage	No alterations are made to the OEM seat belts or associated hardware. Seat belt systems and their installation meet the standard. Test data on file.
212	Windshield Mounting	Compliance is deferred to the chassis manufacturer
217	Bus Window Retention and Release	No modifications are made to the OEM windows. Additional windows meet the standard. Test data on file.
219	Windshield Zone Intrusion	Compliance is deferred to the chassis manufacturer
220	School Bus Rollover Testing	All vehicles manufactured by Elkhart Coach are not completed to be used as school buses, however, Elkhart Coach has tested to this standard.
221	School Bus Body Joint Strength	All vehicles manufactured by Elkhart Coach are not completed to be used as school buses, however, Elkhart Coach has tested to this standard. Test data on file.
222	School Bus Passenger Seating and Crash Protection	All vehicles manufactured by Elkhart Coach are not completed to be used as school buses.
225	Child Restraint Anchorage Systems	All vehicles manufactured by Elkhart Coach exceed the applicability of this Standard (10,000 lbs GVWR). Elkhart Coach makes no statement as to conformity to this Standard.
302	Flammability of Interior Materials	All materials installed in the interior of Elkhart Coach products meet the standard. Test data on file.
303	Fuel System Integrity of Compressed Natural Gas Systems	Elkhart Coach does not typically produce vehicles with CNG systems. All vehicles equipped with CNG systems exceed the applicability (10,000 lbs. or less) of this standard.
304	Compressed Natural Gas Fuel Container Integrity	Elkhart Coach does not typically produce vehicles with CNG systems. All vehicles equipped with CNG systems exceed the applicability (10,000 lbs. or less) of this standard.
404	Platform Lift Installation on Motor Vehicles	Elkhart Coach installs wheelchair lifts according to manufacturer instructions and direction. Installations are verified and tested. Elkhart Coach has performed load testing to verify compliance. Test data on file.

ITEM #11 (d)

ALTOONA
TESTING
REPORT

ALT-001

STURAA TEST

7 YEAR

200,000 MILE BUS

from

ELKHART COACH
DIVISION OF FOREST RIVER INC.

MODEL ECII 186/313

DECEMBER 2005

PTI-BT-R0516

PENNSTATE

The Pennsylvania Transportation Institute

201 Research Office Building
The Pennsylvania State University
University Park, PA 16802
(814) 865-1891

Bus Testing and Research Center

2237 Old Route 220 N.
Duncansville, PA 16635
(814) 695-3404

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EXECUTIVE SUMMARY

Elkhart Coach submitted a model ECII 186/313, diesel-powered 19 seat (including the driver) 26-foot bus, for a 7 yr/200,000 mile STURAA test. The odometer reading at the time of delivery was 095.0 miles. Testing started on September 13, 2005 and was completed on December 9, 2005. The Check-In section of the report provides a description of the bus and specifies its major components.

The primary part of the test program is the Structural Durability Test, which also provides the information for the Maintainability and Reliability results. The Structural Durability Test was started on September 22, 2005 and was completed on November 29, 2005.

The interior of the bus is configured with seating for 19 passengers including the driver and one wheel chair position. Free floor space will accommodate 9 standing passengers resulting in a potential load of 28 persons + 1 wheel chair position. At 150 lbs per person, this load results in a measured gross vehicle weight of 4,200 lbs. + 600 lbs (1 wheel chair position) = 4,800 lbs. In order to avoid exceeding the GAWR (9,450 lbs) of the rear axle, ballast for all 9 standing passengers was eliminated. This reduction from full capacity resulted in an adjusted measured gross vehicle weight of 13,820 lbs and was used for all dynamic testing. The middle segment was performed at a seated load weight of 13,820 lbs and the final segment was performed at a curb weight of 10,300 lbs. Durability driving resulted in unscheduled maintenance and failures that involved a variety of subsystems. A description of failures, and a complete and detailed listing of scheduled and unscheduled maintenance are provided in the Maintainability section of this report.

Accessibility, in general, was adequate. With the exception of the alternator, components covered in Section 1.3 (repair and/or replacement of selected subsystems), along with all other components encountered during testing, were found to be readily accessible and no restrictions were noted. Access to the alternator was very limited.

The Reliability section compiles failures that occurred during Structural Durability Testing. Breakdowns are classified according to subsystems. The data in this section are arranged so that those subsystems with more frequent problems are apparent. The problems are also listed by class as defined in Section 2. The test bus encountered no Class 1 or Class 2 failures. Of the 13 reported failures, seven were Class 3 and six were Class 4.

The Safety Test, (a double-lane change, obstacle avoidance test) was safely performed in both right-hand and left-hand directions up to a maximum test speed of 45 mph. The performance of the bus is illustrated by a speed vs. time plot. Acceleration and gradeability test data are provided in Section 4, Performance. The average time to obtain 50 mph was 16.19 seconds.

The Shakedown Test produced a maximum final loaded deflection of 0.266 inches with a permanent set ranging between 0.001 to 0.006 inches under a distributed static load of 11,100 lbs. The Distortion Test was completed with all subsystems, doors

and escape mechanisms operating properly. No water leakage was observed throughout the test. All subsystems operated properly.

The test bus was not equipped with any type of tow eyes or tow hooks, therefore, the Static Towing Test was not performed. The Dynamic Towing Test was performed by means of a front-lift tow. The towing interface was accomplished using a hydraulic under-lift wrecker. The bus was towed without incident and no damage resulted from the test. The manufacturer does not recommend towing the bus from the rear, therefore, a rear test was not performed. The Jacking and Hoisting Tests were also performed without incident. The bus was found to be stable on the jack stands, and the minimum jacking clearance observed with a tire deflated was 8.1 inches.

A Fuel Economy Test was run on simulated central business district, arterial, and commuter courses. The results were 6.46 mpg, 6.90 mpg, and 10.65 mpg respectively; with an overall average of 7.43 mpg.

A series of Interior and Exterior Noise Tests was performed. These data are listed in Section 7.1 and 7.2 respectively.

ABBREVIATIONS

ABTC	-	Altoona Bus Test Center
A/C	-	air conditioner
ADB	-	advance design bus
ATA-MC	-	The Maintenance Council of the American Trucking Association
CBD	-	central business district
CW	-	curb weight (bus weight including maximum fuel, oil, and coolant; but without passengers or driver)
dB(A)	-	decibels with reference to 0.0002 microbar as measured on the "A" scale
DIR	-	test director
DR	-	bus driver
EPA	-	Environmental Protection Agency
FFS	-	free floor space (floor area available to standees, excluding ingress/egress areas, area under seats, area occupied by feet of seated passengers, and the vestibule area)
GVL	-	gross vehicle load (150 lb for every designed passenger seating position, for the driver, and for each 1.5 sq ft of free floor space)
GVW	-	gross vehicle weight (curb weight plus gross vehicle load)
GVWR	-	gross vehicle weight rating
MECH	-	bus mechanic
mpg	-	miles per gallon
mph	-	miles per hour
PM	-	Preventive maintenance
PSBRTF	-	Penn State Bus Research and Testing Facility
PTI	-	Pennsylvania Transportation Institute
rpm	-	revolutions per minute
SAE	-	Society of Automotive Engineers
SCH	-	test scheduler
SEC	-	secretary
SLW	-	seated load weight (curb weight plus 150 lb for every designed passenger seating position and for the driver)
STURAA	-	Surface Transportation and Uniform Relocation Assistance Act
TD	-	test driver
TECH	-	test technician
TM	-	track manager
TP	-	test personnel

TEST BUS CHECK-IN

I. OBJECTIVE

The objective of this task is to log in the test bus, assign a bus number, complete the vehicle data form, and perform a safety check.

II. TEST DESCRIPTION

The test consists of assigning a bus test number to the bus, cleaning the bus, completing the vehicle data form, obtaining any special information and tools from the manufacturer, determining a testing schedule, performing an initial safety check, and performing the manufacturer's recommended preventive maintenance. The bus manufacturer must certify that the bus meets all Federal regulations.

III. DISCUSSION

The check-in procedure is used to identify in detail the major components and configuration of the bus.

The test bus consists of an Elkhart Coach, model ECII 186/313. The bus is built on a Ford E450 Super Duty chassis. The bus has an O.E.M. driver's door and passenger entrance rear of the front axle, and a dedicated handicap entrance rear of the rear axle which is equipped with a Braun Corp. model NCL917F1B wheel chair lift. Power is provided by a diesel-fueled, Ford model 6.0 L Power Stroke engine coupled to a Ford model 5 Speed Auto OD-Torq-Shift transmission.

The measured curb weight is 3,920 lbs for the front axle and 6,380 lbs for the rear axle. These combined weights provide a total measured curb weight of 10,300 lbs. There are 19 seats including the driver, 1 wheel chair position and room for 9 standing passengers bringing the total passenger capacity to 28 + 1 wheel chair. Gross load is 150 lb x 28 = 4,200 lbs + 600 lbs (wheel chair position) = 4,800 lbs. At full capacity, the measured gross vehicle weight is 15,290 lbs. This value was used for all static tests. In order to avoid exceeding the GARW (9,450 lbs) of the rear axle, ballast for all 9 standing passengers was eliminated. This reduction from full capacity resulted in an adjusted measured gross vehicle weight of 13,820 lbs and was used for all dynamic testing.

VEHICLE DATA FORM

Bus Number: 0516	Arrival Date: 9-13-05
Bus Manufacturer: Elkhart Coach	Vehicle Identification Number (VIN): 1FDXE45P25HB31819
Model Number: EC II 186/313	Date: 9-13-05
Personnel: T.S. & S.C.	Chassis: Ford / E450 Super Duty

WEIGHT: * Values in parentheses indicate the adjusted weights necessary to avoid exceeding the GAWR. These values were used for all dynamic testing.

Individual Wheel Reactions:

Weights (lb)	Front Axle		Middle Axle		Rear Axle	
	Right	Left	Right	Left	Right	Left
CW	1,920	2,000	N/A	N/A	3,520	2,660
SLW	2,020	2,330	N/A	N/A	5,030	4,440
GVW	2,140 (2,020)	2,500 (2,330)	N/A	N/A	5,520 (5,030)	5,130 (4,440)

Total Weight Details:

Weight (lb)	CW	SLW	GVW	GAWR
Front Axle	3,920	4,350	4,640 (4,350)	4,600
Middle Axle	N/A	N/A	N/A	N/A
Rear Axle	6,380	9,470	10,650 (9,470)	9,450
Total	10,300	13,820	15,290 (13,820)	GVWR: 14,050

Dimensions:

Length (ft/in)	26 / 3.0
Width (in)	96.0
Height (in)	113.0
Front Overhang (in)	30.25
Rear Overhang (in)	97.5
Wheel Base (in)	167.25
Wheel Track (in)	Front: 69.0
	Rear: 77.5

Bus Number: 0518	Date: 9-13-05

CLEARANCES:

Lowest Point Outside Front Axle	Location: Steering stabilizer	Clearance(in): 11.1
Lowest Point Outside Rear Axle	Location: Tailpipe	Clearance(in): 14.8
Lowest Point between Axles	Location: Step well	Clearance(in): 8.9
Ground Clearance at the center (in)	11.8	
Front Approach Angle (deg)	23.0	
Rear Approach Angle (deg)	8.6	
Ramp Clearance Angle (deg)	7.2	
Aisle Width (in)	15.8	
Inside Standing Height at Center Aisle (in)	77.0	

BODY DETAILS:

Body Structural Type	Integral		
Frame Material	Steel		
Body Material	Aluminum & fiberglass		
Floor Material	Plywood		
Roof Material	Fiberglass		
Windows Type	■ Fixed	☐ Movable	
Window Mfg./Model No.	Spec-Temp / ASE M10 DOT 243		
Number of Doors	1 Front	1 Rear	1 Handicap
Mfr. / Model No.	A & M / 133.2		
Dimension of Each Door (in)	Front- 32.5 x 81.0	Driver's – 31.0 x 54.5 Handicap – 47.0 x 72.0	
Passenger Seat Type	☐ Cantilever	■ Pedestal	☐ Other (explain)
Mfr. / Model No.	Freedman Seating / Hi-Back Double Seats		
Driver Seat Type	☐ Air	☐ Spring	■ Other (explain)
Mfr. / Model No.	Freedman Seating / Hi-Back		
Number of Seats (including Driver)	19 + 1 wheelchair position		

Bus Number: 0516	Date: 9-13-05

BODY DETAILS (Contd..)

Free Floor Space (ft^2)	14.9			
Height of Each Step at Normal Position (in)	Front 1. 11.2	2. 8.9	3. 9.1	4. N/A
	Middle 1. N/A	2. N/A	3. N/A	4. N/A
	Rear 1. N/A	2. N/A	3. N/A	4. N/A
Step Elevation Change - Kneeling (in)	N/A			

ENGINE

Type	■ C.I.	☐ Alternate Fuel	
	☐ S.I.	☐ Other (explain)	
Mfr. / Model No.	Ford Motor Co. / 6.0 Liter Power Stroke		
Location	■ Front	☐ Rear	☐ Other (explain)
Fuel Type	☐ Gasoline	☐ CNG	☐ Methanol
	■ Diesel	☐ LNG	☐ Other (explain)
Fuel Tank Capacity (indicate units)	60 gals		
Fuel Induction Type	■ Injected	☐ Carburetion	
Fuel Injector Mfr. / Model No.	Ford Motor Co. / 6.0 Liter Power Stroke		
Carburetor Mfr. / Model No.	N/A		
Fuel Pump Mfr. / Model No.	Ford Motor Co. / 6.0 Liter Power Stroke		
Alternator (Generator) Mfr. / Model No.	Ford-Motorcraft / VR42/4G		
Maximum Rated Output (Volts / Amps)	14.4 / 140		
Air Compressor Mfr. / Model No.	N/A		
Maximum Capacity (ft^3 / min)	N/A		
Starter Type	■ Electrical	☐ Pneumatic	☐ Other (explain)
Starter Mfr. / Model No.	Visteon / 5B24C		

Bus Number: 0516	Date: 9-13-05

TRANSMISSION

Transmission Type	☐ Manual	■ Automatic	
Mfr. / Model No.	Ford Motor Co. / 5 Speed Auto OD-Torq-Shift		
Control Type	■ Mechanical	☐ Electrical	☐ Other
Torque Converter Mfr. / Model No.	Ford Motor Co. / 5 Speed Auto OD-Torq-Shift		
Integral Retarder Mfr. / Model No.	N/A		

SUSPENSION

Number of Axles	2		
Front Axle Type	■ Independent	☐ Beam Axle	
Mfr. / Model No.	Ford Motor Co. / Twin I-Beam		
Axle Ratio (if driven)	N/A		
Suspension Type	☐ Air	■ Spring	☐ Other (explain)
No. of Shock Absorbers	2		
Mfr. / Model No.	Motorcraft / 1C2418045		
Middle Axle Type	☐ Independent	☐ Beam Axle	
Mfr. / Model No.	N/A		
Axle Ratio (if driven)	N/A		
Suspension Type	☐ Air	☐ Spring	☐ Other (explain)
No. of Shock Absorbers	N/A		
Mfr. / Model No.	N/A		
Rear Axle Type	☐ Independent	■ Beam Axle	
Mfr. / Model No.	Dana / Full Floating 10.5 HD		
Axle Ratio (if driven)	4:10		
Suspension Type	☐ Air	■ Spring	☐ Other (explain)
No. of Shock Absorbers	2		
Mfr. / Model No.	Motorcraft / XC25-180-80		

Bus Number: 0516	Date: 8-13-05

WHEELS & TIRES

Front	Wheel Mfr./ Model No.	Accuride / 16 x 6.25
	Tire Mfr./ Model No.	Michelin LTX / LT 225/75R16
Rear	Wheel Mfr./ Model No.	Accuride / 16 x 6.25
	Tire Mfr./ Model No.	Michelin LTX / LT 225/75R16

BRAKES

Front Axle Brakes Type	☐ Cam	■ Disc	☐ Other (explain)
Mfr. / Model No.	Motorcraft / 13.03"		
Middle Axle Brakes Type	☐ Cam	☐ Disc	☐ Other (explain)
Mfr. / Model No.	N/A		
Rear Axle Brakes Type	☐ Cam	■ Disc	☐ Other (explain)
Mfr. / Model No.	Motorcraft / 12.9"		
Retarder Type	N/A		
Mfr. / Model No.	N/A		

HVAC

Heating System Type	☐ Air	■ Water	☐ Other
Capacity (Btu/hr)	35,000		
Mfr. / Model No.	Pro-Air / 50-000-508		
Air Conditioner	■ Yes	☐ No	
Location	Front – dash Rear - Interior ceiling		
Capacity (Btu/hr)	60,000		
A/C Compressor Mfr. / Model No.	Trans-Air / 512226		

STEERING

Steering Gear Box Type	Hydraulic gear
Mfr. / Model No.	Ford / 6C22 3504 AA
Steering Wheel Diameter	15.5
Number of turns (lock to lock)	4.0

Bus Number: 0516	Date: 9-13-05

OTHERS

Wheel Chair Ramps	Location: N/A	Type: N/A
Wheel Chair Lifts	Location: Right rear	Type: Platform lift
Mfr. / Model No.	The Braun Corp. / NCL917F1B	
Emergency Exit	Location: Windows Doors	Number: 3 2

CAPACITIES

Fuel Tank Capacity (units)	60 gals
Engine Crankcase Capacity (gallons)	3.75
Transmission Capacity (gallons)	4.4
Differential Capacity (gallons)	2.1
Cooling System Capacity (quarts)	6.9
Power Steering Fluid Capacity (gallons)	Not available.

VEHICLE DATA FORM

Bus Number: 0516	Date: 9-13-05

List all spare parts, tools and manuals delivered with the bus.

Part Number	Description	Qty
Michelin LTX LT225/75R16	Mounted tires	6
Motorcraft BRR29	Brake rotor	2 sets
Motorcraft BR 1276	Brake pads	1 set
Motorcraft BR 48 B	Brake pads	1 set
Motorcraft AT-164-G	Shocks	2
Motorcraft AT-163-G	Shocks	2
XC2Z2C026 BB	Brake rotors	2
Motorcraft FA-1769	Air cleaner	1
Motorcraft FT-144	Screen	1
Motorcraft FD-4606	Water separator	1
Motorcraft FL-2016	Oil filter	1
Motorcraft FT-145	Transmission filter	1

COMPONENT/SUBSYSTEM INSPECTION FORM

Bus Number: 0516	Date: 9-13-05

Subsystem	Checked	Comments
Air Conditioning Heating and Ventilation	✔	
Body and Sheet Metal	✔	
Frame	✔	
Steering	✔	
Suspension	✔	
Interior/Seating	✔	
Axles	✔	
Brakes	✔	
Tires/Wheels	✔	
Exhaust	✔	
Fuel System	✔	Diesel
Power Plant	✔	
Accessories	✔	
Lift System	✔	
Interior Fasteners	✔	
Batteries	✔	

CHECK - IN

ELKHART COACH
MODEL ECII 186/313

CHECK - IN CONT.

ELKHART COACH
MODEL ECII 186/313 EQUIPPED WITH A BRAUN
MODEL NCL917F1B HANDICAP LIFT

1. MAINTAINABILITY

1.1 ACCESSIBILITY OF COMPONENTS AND SUBSYSTEMS

1.1-I. TEST OBJECTIVE

The objective of this test is to check the accessibility of components and subsystems.

1.1-II. TEST DESCRIPTION

Accessibility of components and subsystems is checked, and where accessibility is restricted the subsystem is noted along with the reason for the restriction.

1.1-III. DISCUSSION

Accessibility, in general, was adequate. With the exception of the alternator, components covered in Section 1.3 (repair and/or replacement of selected subsystems), along with all other components encountered during testing, were found to be readily accessible and no restrictions were noted. Access to the alternator was very limited.

ACCESSIBILITY DATA FORM

Bus Number: 0516	Date: 12-6-05

Component	Checked	Comments
ENGINE :		
Oil Dipstick	✔	
Oil Filler Hole	✔	
Oil Drain Plug	✔	
Oil Filter	✔	
Fuel Filter	✔	
Air Filter	✔	
Belts	✔	
Coolant Level	✔	
Coolant Filler Hole	✔	
Coolant Drain	✔	
Spark / Glow Plugs	✔	
Alternator	✔	Limited access.
Diagnostic Interface Connector	✔	
TRANSMISSION :		
Fluid Dip-Stick	✔	
Filler Hole	✔	Fill through dip tube.
Drain Plug	✔	
SUSPENSION :		
Bushings	✔	
Shock Absorbers	✔	
Air Springs	✔	
Leveling Valves	✔	
Grease Fittings	✔	

ACCESSIBILITY DATA FORM

Bus Number: 0516	Date: 12-6-05

Component	Checked	Comments
HVAC :		
A/C Compressor	✔	
Filters	✔	
Fans	✔	
ELECTRICAL SYSTEM :		
Fuses	✔	
Batteries	✔	
Voltage regulator	✔	
Voltage Converters	✔	
Lighting	✔	
MISCELLANEOUS :		
Brakes	✔	
Handicap Lifts/Ramps	✔	
Instruments	✔	
Axles	✔	
Exhaust	✔	
Fuel System	✔	
OTHERS :		

1.2 SERVICING, PREVENTIVE MAINTENANCE, AND REPAIR AND MAINTENANCE DURING TESTING

1.2-I. TEST OBJECTIVE

The objective of this test is to collect maintenance data about the servicing, preventive maintenance, and repair.

1.2.-II. TEST DESCRIPTION

The test will be conducted by operating the NBM and collecting the following data on work order forms and a driver log.

1. Unscheduled Maintenance
   a. Bus number
   b. Date
   c. Mileage
   d. Description of malfunction
   e. Location of malfunction (e.g., in service or undergoing inspection)
   f. Repair action and parts used
   g. Man-hours required

2. Scheduled Maintenance
   a. Bus number
   b. Date
   c. Mileage
   d. Engine running time (if available)
   e. Results of scheduled inspections
   f. Description of malfunction (if any)
   g. Repair action and parts used (if any)
   h. Man-hours required

The buses will be operated in accelerated durability service. While typical items are given below, the specific service schedule will be that specified by the manufacturer.

A. Service
   1. Fueling
   2. Consumable checks
   3. Interior cleaning

B. Preventive Maintenance
   4. Brake adjustments
   5. Lubrication
   6. 3,000 mi (or equivalent) inspection

7. Oil and filter change inspection
8. Major inspection
9. Tune-up

C. Periodic Repairs
1. Brake reline
2. Transmission change
3. Engine change
4. Windshield wiper motor change
5. Stoplight bulb change
6. Towing operations
7. Hoisting operations

1.2-III. DISCUSSION

Servicing and preventive maintenance were performed at manufacturer specified intervals. The following Scheduled Maintenance Form lists the mileage, items serviced, the service interval, and amount of time required to perform the maintenance. Table 1 is a list of the lubricating products used in servicing. Finally, the Unscheduled Maintenance List along with Unscheduled Maintenance related photographs is included in Section 5.7, Structural Durability. This list supplies information related to failures that occurred during the durability portion of testing. The Unscheduled Maintenance List includes the date and mileage at which the malfunction occurred, a description of the malfunction and repair, and the time required to perform the repair.

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SCHEDULED MAINTENANCE

Elkhart Coach #0516

DATE	TEST MILES	SERVICE	ACTIVITY	DOWN TIME	HOURS
09-29-05	1,056	P.M. / Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
10-17-05	1,940	P.M. / Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
10-26-05	3,224	P.M. / Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
11-04-05	4,315	P.M. / Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
11-09-05	4,716	P.M. / Inspection Fuel Economy Prep	Linkage, tie rods, universals/u-joints all lubed. Oil changed. Oil, fuel, and air filters changed. Transmission oil and filter changed.	8.00	8.00
11-17-05	5,680	P.M. / Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
11-21-05	6,110	P.M. / Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
12-02-05	7,500	P.M. / Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00

Table 1. STANDARD LUBRICANTS

The following is a list of Texaco lubricant products used in bus testing conducted by the Penn State University Altoona Bus Testing Center.

ITEM	PRODUCT CODE	TEXACO DESCRIPTION
Engine oil	#2112	URSA Super Plus SAE 30
Transmission oil	#1866	Automatic Trans Fluid Mercon/Dexron II Multipurpose
Gear oil	#2316	Multigear Lubricant EP SAE 80W90
Wheel bearing & Chassis grease	#1935	Starplex II

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS

1.3-I. TEST OBJECTIVE

The objective of this test is to establish the time required to replace and/or repair selected subsystems.

1.3-II. TEST DESCRIPTION

The test will involve components that may be expected to fail or require replacement during the service life of the bus. In addition, any component that fails during the NBM testing is added to this list. Components to be included are:

1. Transmission
2. Alternator
3. Starter
4. Batteries
5. Windshield wiper motor

1.3-III. DISCUSSION

During the test, several additional components were removed for repair or replacement. Following is a list of components and total repair/replacement time.

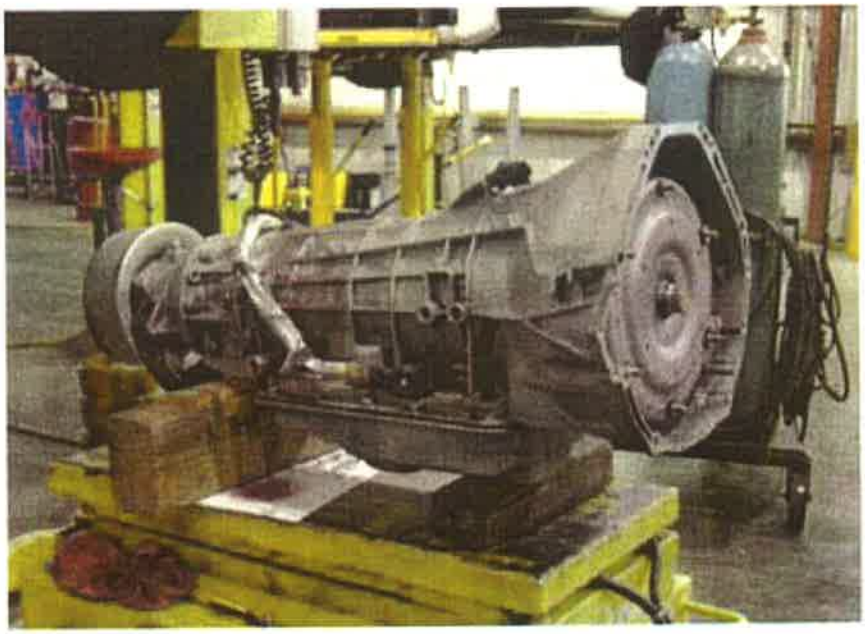
	MAN HOURS
3 tail pipe hangers.	0.50
Power-train control module.	3.00
Rear spring beam center bolt.	1.50
Engine cover mounting lug.	1.00
Right front radius arm isolator.	1.00

At the end of the test, the remaining items on the list were removed and replaced. The transmission assembly took 9.0 man-hours (two men 4.5 hrs) to remove and replace. The time required for repair/replacement of the four remaining components is given on the following Repair and/or Replacement Form.

REPLACEMENT AND/OR REPAIR FORM

Subsystem	Replacement Time
Transmission	9.00 man hours
Wiper Motor	0.75 man hours
Starter	0.50 man hours
Alternator	2.00 man hours
Batteries	0.50 man hours

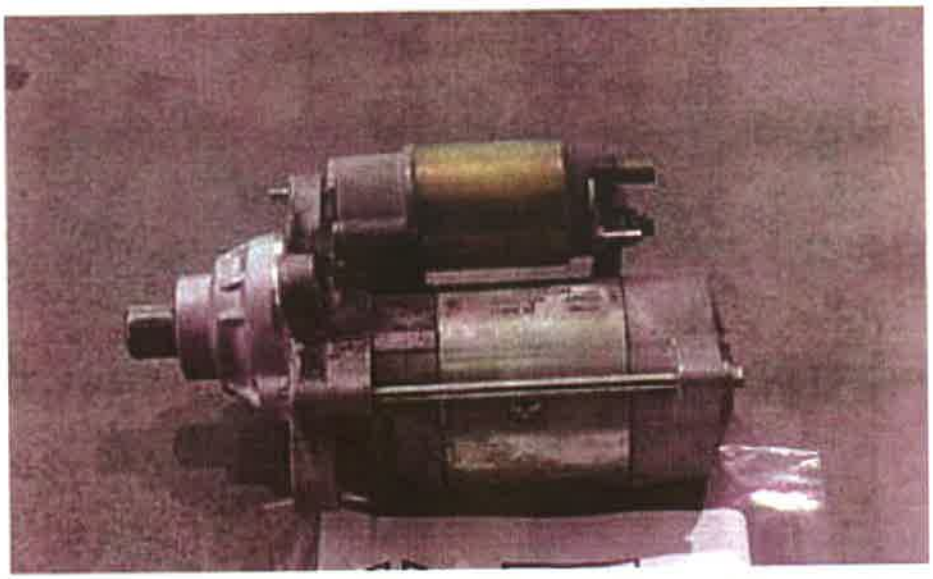
1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS



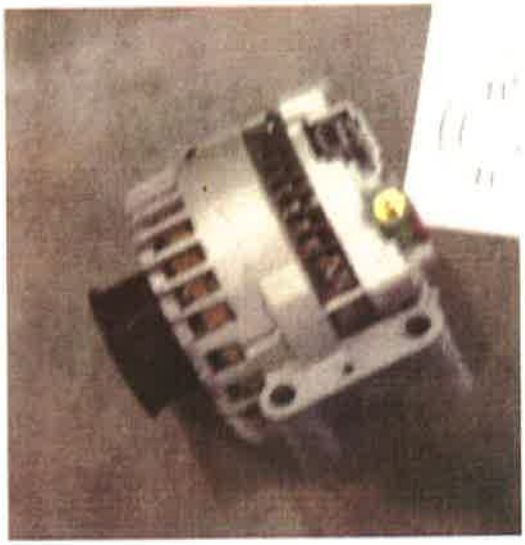
TRANSMISSION REMOVAL AND REPLACEMENT (9.00 MAN HOURS)

WIPER MOTOR REMOVAL AND REPLACEMENT (0.75 MAN HOURS)

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS CONT.



STARTER REMOVAL AND REPLACEMENT (0.50 MAN HOURS)



ALTERNATOR REMOVAL AND REPLACEMENT (2.00 MAN HOURS)

2. RELIABILITY - DOCUMENTATION OF BREAKDOWN AND REPAIR TIMES DURING TESTING

2-I. TEST OBJECTIVE

The objective of this test is to document unscheduled breakdowns, repairs, down time, and repair time that occur during testing.

2-II. TEST DESCRIPTION

Using the driver log and unscheduled work order forms, all significant breakdowns, repairs, man-hours to repair, and hours out of service are recorded on the Reliability Data Form.

CLASS OF FAILURES

Classes of failures are described below:

(a) Class 1: Physical Safety. A failure that could lead directly to passenger or driver injury and represents a severe crash situation.

(b) Class 2: Road Call. A failure resulting in an en route interruption of revenue service. Service is discontinued until the bus is replaced or repaired at the point of failure.

(c) Class 3: Bus Change. A failure that requires removal of the bus from service during its assignments. The bus is operable to a rendezvous point with a replacement bus.

(d) Class 4: Bad Order. A failure that does not require removal of the bus from service during its assignments but does degrade coach operation. The failure shall be reported by driver, inspector, or hostler.

2-III. DISCUSSION

A listing of breakdowns and unscheduled repairs is accumulated during the Structural Durability Test. The following Reliability Data Form lists all unscheduled repairs under classes as defined above. These classifications are somewhat subjective as the test is performed on a test track with careful inspections every two hours. However, even on the road, there is considerable latitude on deciding how to handle many failures.

The Unscheduled Repair List is also attached to provide a reference for the repairs that are included in the Reliability Data Forms.

The classification of repairs according to subsystem is intended to emphasize those systems which had persistent minor or more serious problems. There were no Class 1 or 2 failures. Of the seven Class 3 failures, three involved electrical problems, two occurred in the exhaust system and one each with the engine and suspension system. These, and the remaining six Class 4 failures are available for review in the Unscheduled Maintenance List, located in Section 5.7 Structural Durability.

RELIABILITY DATA FORMS

Bus Number: 0516	Date: 11-29-05
Personnel: Bob Reifsteck	

	Failure Type					
Subsystems	Class 4 Bad Order Mileage	Class 3 Bus Change Mileage	Class 2 Road Call Mileage	Class 1 Physical Safety Mileage	Man Hours	Down Time
Electrical	534				1.00	1.00
		1,528			1.00	17.00
		1,686			3.00	94.00
		1,889			1.00	10.00
Doors/Windows	5,027				1.00	8.00
	5,240				1.00	1.00
	5,680				0.50	0.50
Exhaust System		1,405			1.00	1.00
		1,889			0.50	0.50
Suspension		3,675			1.50	18.00
	6,109				1.00	1.00
Engine		3,279			0.50	8.00
Handicap Device	7,500				1.00	0.00

3. SAFETY - A DOUBLE-LANE CHANGE (OBSTACLE AVOIDANCE)

3-I. TEST OBJECTIVE

The objective of this test is to determine handling and stability of the bus by measuring speed through a double lane change test.

3-II. TEST DESCRIPTION

The Safety Test is a vehicle handling and stability test. The bus will be operated at SLW on a smooth and level test track. The bus will be driven through a double lane change course at increasing speed until the test is considered unsafe or a speed of 45 mph is reached. The lane change course will be set up using pylons to mark off two 12 foot center to center lanes with two 100 foot lane change areas 100 feet apart. The bus will begin in one lane, change to the other lane in a 100 foot span, travel 100 feet, and return to the original lane in another 100 foot span. This procedure will be repeated, starting first in the right-hand and then in the left-hand lane.

3-III. DISCUSSION

The double-lane change was performed in both right-hand and left-hand directions. The bus was able to safely negotiate the test course in both the right-hand and left-hand directions up to the maximum test speed of 45 mph.

SAFETY DATA FORM

Bus Number: 0516	Date: 11-14-05
Personnel: B.S., T.S. & E.L.	

Temperature (°F): 60	Humidity (%): 43
Wind Direction: W	Wind Speed (mph): 3
Barometric Pressure (in.Hg): 30.33	

SAFETY TEST: DOUBLE LANE CHANGE	
Maximum safe speed tested for double-lane change to left	45 mph
Maximum safe speed tested for double-lane change to right	45 mph
Comments of the position of the bus during the lane change: A safe profile was maintained through all portions of testing.	
Comments of the tire/ground contact patch: Tire/ground contact was maintained through all portions of testing.	

3. SAFETY

RIGHT - HAND APPROACH

LEFT - HAND APPROACH

4. PERFORMANCE - AN ACCELERATION, GRADEABILITY, AND TOP SPEED TEST

4-I. TEST OBJECTIVE

The objective of this test is to determine the acceleration, gradeability, and top speed capabilities of the bus.

4-II. TEST DESCRIPTION

In this test, the bus will be operated at SLW on the skid pad at the PSBRTF. The bus will be accelerated at full throttle from a standstill to a maximum "geared" or "safe" speed as determined by the test driver. The vehicle speed is measured using a Correvit non-contacting speed sensor. The times to reach speed between ten mile per hour increments are measured and recorded using a stopwatch with a lap timer. The time to speed data will be recorded on the Performance Data Form and later used to generate a speed vs. time plot and gradeability calculations.

4-III. DISCUSSION

This test consists of three runs in both the clockwise and counterclockwise directions on the Test Track. Velocity versus time data is obtained for each run and results are averaged together to minimize any test variability which might be introduced by wind or other external factors. The test was performed up to a maximum speed of 50 mph. The fitted curve of velocity vs. time is attached, followed by the calculated gradeability results. The average time to obtain 50 mph was 16.19 seconds.

PERFORMANCE DATA FORM

Bus Number: 0516	Date: 11-14-05
Personnel: B.S., T.S. & E.L.	
Temperature (°F): 54	Humidity (%): 43
Wind Direction: W	Wind Speed (mph): 3
Barometric Pressure (in.Hg): 30.33	
Air Conditioning compressor-OFF	✔ Checked
Ventilation fans-ON HIGH	✔ Checked
Heater pump motor-Off	✔ Checked
Defroster-OFF	✔ Checked
Exterior and interior lights-ON	✔ Checked
Windows and doors-CLOSED	✔ Checked

ACCELERATION, GRADEABILITY, TOP SPEED

Counter Clockwise Recorded Interval Times

Speed	Run 1	Run 2	Run 3
10 mph	3.13	3.18	3.31
20 mph	5.53	4.55	4.42
30 mph	7.55	7.27	6.89
40 mph	11.40	11.05	10.36
Top Test Speed(mph) 50	17.02	16.55	15.80

Clockwise Recorded Interval Times

Speed	Run 1	Run 2	Run 3
10 mph	3.40	3.24	3.10
20 mph	4.59	4.40	4.71
30 mph	7.05	6.81	6.96
40 mph	10.96	10.65	10.95
Top Test Speed(mph) 50	15.30	15.99	16.49

PERFORMANCE SUMMARY SHEET

BUS MANUFACTURER :Elkhart Coach
BUS MODEL :ECII 186/313
BUS NUMBER :0516
TEST DATE :11/14/05

TEST CONDITIONS :

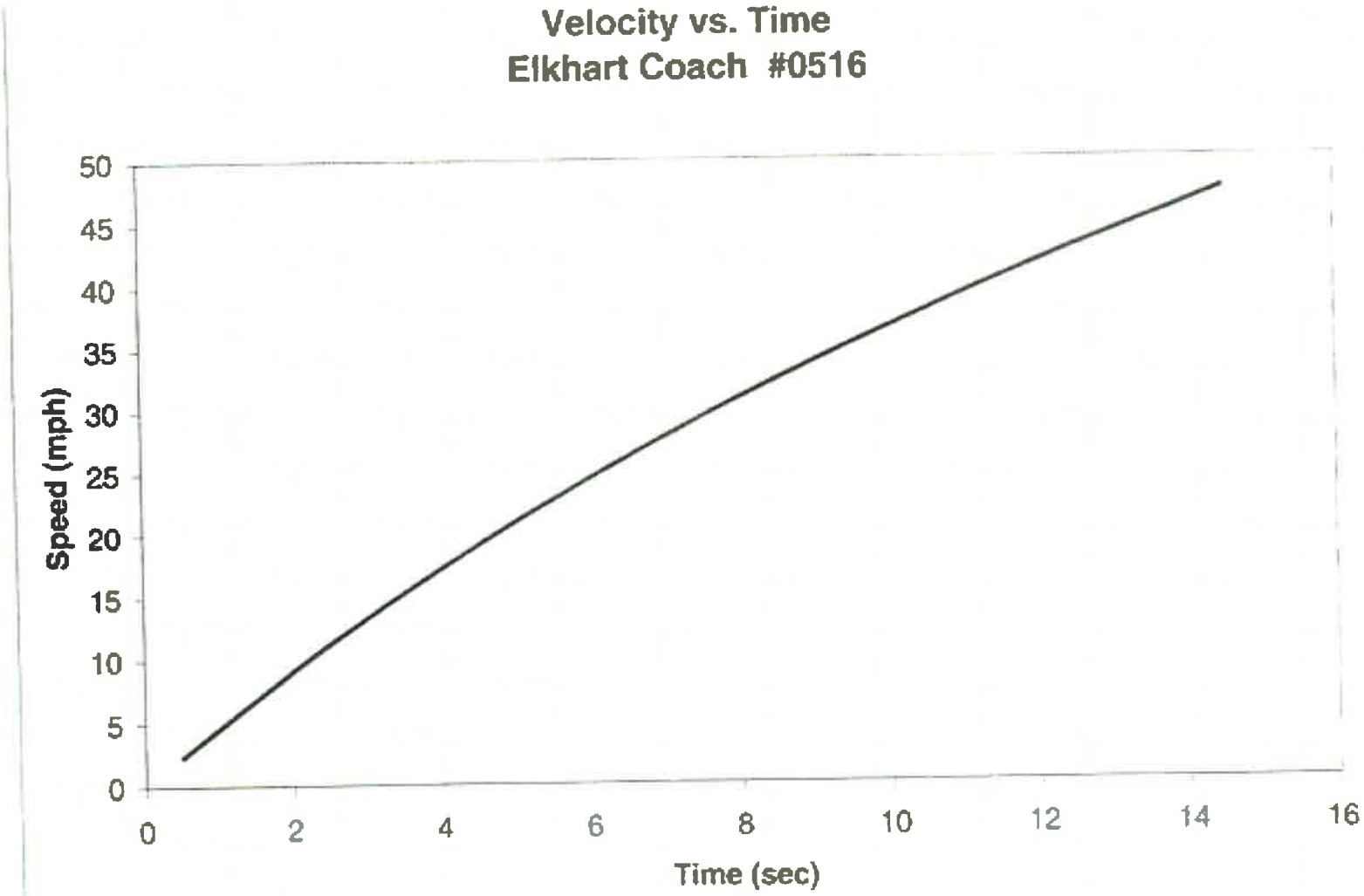
TEMPERATURE (DEG F)	: 54.0
WIND DIRECTION	: W
WIND SPEED (MPH)	: 3.0
HUMIDITY (%)	: 43
BAROMETRIC PRESSURE (IN. HG)	: 30.3

VEHICLE SPEED	AVERAGE TIME (SEC)		
(MPH)	CCW DIRECTION	CW DIRECTION	TOTAL
10.0	3.21	3.25	3.23
20.0	4.83	4.57	4.70
30.0	7.24	6.94	7.09
40.0	10.94	10.85	10.90
50.0	16.46	15.93	16.19

TEST SUMMARY :

VEHICLE SPEED (MPH)	TIME (SEC)	ACCELERATION (FT/SEC^2)	MAX. GRADE (%)
1.0	.21	7.0	22.3
5.0	1.07	6.7	21.1
10.0	2.21	6.2	19.6
15.0	3.43	5.8	18.2
20.0	4.76	5.3	16.8
25.0	6.19	4.9	15.4
30.0	7.75	4.5	14.1
35.0	9.46	4.1	12.8
40.0	11.35	3.7	11.6
45.0	13.43	3.3	10.4
50.0	15.76	3.0	9.3

NOTE : Gradeability results were calculated from performance test data. Actual sustained gradeability performance for vehicles equipped with auto transmission may be lower than the values indicated here.


Velocity vs. Time
Elkhart Coach #0516
Speed (mph)
50
45
40
35
30
25
20
15
10
5
0
0
2
4
6
8
10
12
14
16
Time (sec)

5. STRUCTURAL INTEGRITY

5.1 STRUCTURAL STRENGTH AND DISTORTION TESTS - STRUCTURAL SHAKEDOWN TEST

5.1-I. DISCUSSION

The objective of this test is to determine certain static characteristics (e.g., bus floor deflection, permanent structural deformation, etc.) under static loading conditions.

5.1-II. TEST DESCRIPTION

In this test, the bus will be isolated from the suspension by blocking the vehicle under the suspension points. The bus will then be loaded and unloaded up to a maximum of three times with a distributed load equal to 2.5 times gross load. Gross load is 150 lb for every designed passenger seating position, for the driver, and for each 1.5 sq ft of free floor space. For a distributed load equal to 2.5 times gross load, place a 375-lb load on each seat and on every 1.5 sq ft of free floor space. The first loading and unloading sequence will "settle" the structure. Bus deflection will be measured at several locations during the loading sequences.

5.1-III. DISCUSSION

This test was performed based on a maximum passenger capacity of 28 people including the driver and 1 wheelchair position. The resulting test load is (28 x 375 lb) = 10,500 lbs + 600 lbs (wheelchair position) = 11,100 lbs. The load is distributed evenly over the passenger space. Deflection data before and after each loading and unloading sequence is provided on the Structural Shakedown Data Form.

The unloaded height after each test becomes the original height for the next test. Some initial settling is expected due to undercoat compression, etc. After each loading cycle, the deflection of each reference point is determined. The bus is then unloaded and the residual (permanent) deflection is recorded. On the final test, the maximum loaded deflection was 0.266 inches at reference point 8. The maximum permanent deflection after the final loading sequence ranged from 0.001 inches at reference point 12 to 0.006 inches at reference point 2.

STRUCTURAL SHAKEDOWN DATA FORM

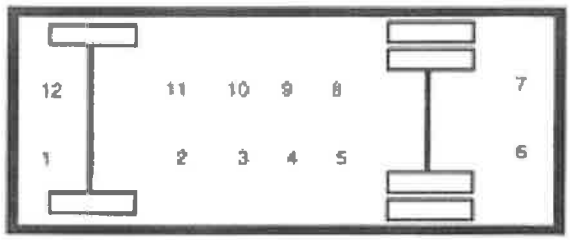
Bus Number: 0516	Date: 9-14-05
Personnel: T.S., E.L. & S.C.	Temperature (°F): 67
Loading Sequence: ■ 1 ☐ 2 ☐ 3 (check one) Test Load (lbs): 11,100	

Indicate Approximate Location of Each Reference Point

Right

Front of Bus

Left



Top View

Reference Point No.	A (in) Original Height	B (in) Loaded Height	B-A (in) Loaded Deflection	C (in) Unloaded Height	C-A (in) Permanent Deflection
1	0	-.036	-.036	-.003	-.003
2	0	.043	.043	.024	.024
3	0	.113	.113	.033	.033
4	0	.260	.260	.039	.039
5	0	.288	.288	.045	.045
6	0	-.090	-.090	-.016	-.016
7	0	-.097	-.097	-.023	-.023
8	0	.279	.279	.044	.044
9	0	.258	.258	.041	.041
10	0	.235	.235	.061	.061
11	0	.119	.119	.023	.023
12	0	-.100	-.100	-.018	-.018

STRUCTURAL SHAKEDOWN DATA FORM

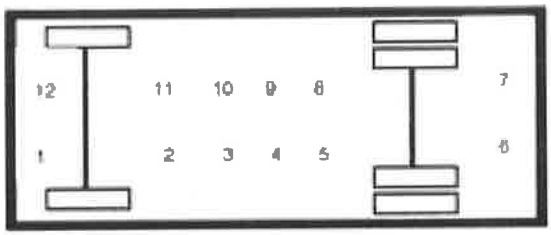
Bus Number: 0516	Date: 9-19-05
Personnel: D.L., T.S., S.C. & E.L.	Temperature (°F): 74
Loading Sequence: ☐ 1 ■ 2 ☐ 3 (check one) Test Load (lbs): 11,100	

Indicate Approximate Location of Each Reference Point

Right

Front of Bus

Left



Top View

Reference Point No.	A (in) Original Height	B (in) Loaded Height	B-A (in) Loaded Deflection	C (in) Unloaded Height	C-A (in) Permanent Deflection
1	-.003	-.058	.055	-.008	.005
2	.024	.143	.119	.030	.006
3	.033	.220	.187	.036	.003
4	.039	.271	.232	.042	.003
5	.045	.307	.262	.050	.005
6	-.016	-.095	.079	-.020	.004
7	-.023	-.097	.074	-.027	.005
8	.044	.310	.266	.048	.004
9	.041	.287	.246	.044	.003
10	.061	.259	.198	.064	.003
11	.023	.128	.105	.028	.005
12	-.018	-.112	-.106	-.019	.001

5.1 STRUCTURAL SHAKEDOWN TEST

BUS LOADED TO 2.5 TIMES GVL
(11,100 LBS)

5.2 STRUCTURAL STRENGTH AND DISTORTION TESTS - STRUCTURAL DISTORTION

5.2-I. TEST OBJECTIVE

The objective of this test is to observe the operation of the bus subsystems when the bus is placed in a longitudinal twist simulating operation over a curb or through a pothole.

5.2-II. TEST DESCRIPTION

With the bus loaded to GVWR, each wheel of the bus will be raised (one at a time) to simulate operation over a curb and the following will be inspected:

1. Body
2. Windows
3. Doors
4. Roof vents
5. Special seating
6. Undercarriage
7. Engine
8. Service doors
9. Escape hatches
10. Steering mechanism

Each wheel will then be lowered (one at a time) to simulate operation through a pothole and the same items inspected.

5.2-III. DISCUSSION

The test sequence was repeated ten times. The first and last test is with all wheels level. The other eight tests are with each wheel 6 inches higher and 6 inches lower than the other three wheels.

All doors, windows, escape mechanisms, engine, steering and handicapped devices operated normally throughout the test. The undercarriage and body indicated no deficiencies. No water leakage was observed during the test. The results of this test are indicated on the following data forms.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 0516	Date: 9-22-05
Personnel: T.S., G.M., B.S. & S.C.	Temperature(°F): 80

Wheel Position : (check one)		
All wheels level	■ before	□ after
Left front	□ 6 in higher	□ 6 in lower
Right front	□ 6 in higher	□ 6 in lower
Right rear	□ 6 in higher	□ 6 in lower
Left rear	□ 6 in higher	□ 6 in lower
Right center	□ 6 in higher	□ 6 in lower
Left center	□ 6 in higher	□ 6 in lower

	Comments
■ Windows	No deficiencies.
■ Front Doors	No deficiencies.
■ Rear Doors	No deficiencies.
■ Escape Mechanisms/ Roof Vents	No deficiencies.
■ Engine	No deficiencies.
■ Handicapped Device/ Special Seating	No deficiencies.
■ Undercarriage	No deficiencies.
■ Service Doors	No deficiencies.
■ Body	No deficiencies.
■ Windows/ Body Leakage	No deficiencies.
■ Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 0516	Date: 9-22-05
Personnel: T.S., G.M., B.S. & S.C.	Temperature(°F): 80

Wheel Position : (check one)		
All wheels level	☐ before	☐ after
Left front	■ 6 in higher	☐ 6 in lower
Right front	☐ 6 in higher	☐ 6 in lower
Right rear	☐ 6 in higher	☐ 6 in lower
Left rear	☐ 6 in higher	☐ 6 in lower
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 6 in higher	☐ 6 in lower

	Comments
■ Windows	No deficiencies.
■ Front Doors	No deficiencies.
■ Rear Doors	No deficiencies.
■ Escape Mechanisms/ Roof Vents	No deficiencies.
■ Engine	No deficiencies.
■ Handicapped Device/ Special Seating	No deficiencies.
■ Undercarriage	No deficiencies.
■ Service Doors	No deficiencies.
■ Body	No deficiencies.
■ Windows/ Body Leakage	No deficiencies.
■ Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 0516	Date: 9-22-05
Personnel: T.S., G.M., B.S. & S.C.	Temperature(°F): 80

Wheel Position : (check one)		
All wheels level	☐ before	☐ after
Left front	☐ 6 in higher	☐ 6 in lower
Right front	■ 6 in higher	☐ 6 in lower
Right rear	☐ 6 in higher	☐ 6 in lower
Left rear	☐ 6 in higher	☐ 6 in lower
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 6 in higher	☐ 6 in lower

	Comments
■ Windows	No deficiencies.
■ Front Doors	No deficiencies.
■ Rear Doors	No deficiencies.
■ Escape Mechanisms/ Roof Vents	No deficiencies.
■ Engine	No deficiencies.
■ Handicapped Device/ Special Seating	No deficiencies.
■ Undercarriage	No deficiencies.
■ Service Doors	No deficiencies.
■ Body	No deficiencies.
■ Windows/ Body Leakage	No deficiencies.
■ Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 0516	Date: 9-22-05
Personnel: T.S., G.M., B.S. & S.C.	Temperature(°F): 80

Wheel Position : (check one)		
All wheels level	☐ before	☐ after
Left front	☐ 6 in higher	☐ 6 in lower
Right front	☐ 6 in higher	☐ 6 in lower
Right rear	■ 6 in higher	☐ 6 in lower
Left rear	☐ 6 in higher	☐ 6 in lower
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 6 in higher	☐ 6 in lower

	Comments
■ Windows	No deficiencies.
■ Front Doors	No deficiencies.
■ Rear Doors	No deficiencies.
■ Escape Mechanisms/ Roof Vents	No deficiencies.
■ Engine	No deficiencies.
■ Handicapped Device/ Special Seating	No deficiencies.
■ Undercarriage	No deficiencies.
■ Service Doors	No deficiencies.
■ Body	No deficiencies.
■ Windows/ Body Leakage	No deficiencies.
■ Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM
(Note: Ten copies of this data sheet are required)

Bus Number: 0516	Date: 9-22-05
Personnel: T.S., G.M., B.S. & S.C.	Temperature(°F): 80

Wheel Position : (check one)		
All wheels level	☐ before	☐ after
Left front	☐ 6 in higher	☐ 6 in lower
Right front	☐ 6 in higher	☐ 6 in lower
Right rear	☐ 6 in higher	☐ 6 in lower
Left rear	■ 6 in higher	☐ 6 in lower
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 6 in higher	☐ 6 in lower

	Comments
■ Windows	No deficiencies.
■ Front Doors	No deficiencies.
■ Rear Doors	No deficiencies.
■ Escape Mechanisms/ Roof Vents	No deficiencies.
■ Engine	No deficiencies.
■ Handicapped Device/ Special Seating	No deficiencies.
■ Undercarriage	No deficiencies.
■ Service Doors	No deficiencies.
■ Body	No deficiencies.
■ Windows/ Body Leakage	No deficiencies.
■ Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 0516	Date: 9-22-05
Personnel: T.S., G.M., B.S. & S.C.	Temperature(°F): 80

Wheel Position : (check one)		
All wheels level	☐ before	☐ after
Left front	☐ 6 in higher	☐ 6 in lower
Right front	☐ 6 in higher	☐ 6 in lower
Right rear	☐ 6 in higher	☐ 6 in lower
Left rear	☐ 6 in higher	■ 6 in lower
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 6 in higher	☐ 6 in lower

	Comments
■ Windows	No deficiencies.
■ Front Doors	No deficiencies.
■ Rear Doors	No deficiencies.
■ Escape Mechanisms/ Roof Vents	No deficiencies.
■ Engine	No deficiencies.
■ Handicapped Device/ Special Seating	No deficiencies.
■ Undercarriage	No deficiencies.
■ Service Doors	No deficiencies.
■ Body	No deficiencies.
■ Windows/ Body Leakage	No deficiencies.
■ Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 0516	Date: 9-22-05
Personnel: T.S., G.M., B.S. & S.C.	Temperature(°F): 80

Wheel Position : (check one)		
All wheels level	☐ before	☐ after
Left front	☐ 6 in higher	☐ 6 in lower
Right front	☐ 6 in higher	☐ 6 in lower
Right rear	☐ 6 in higher	■ 6 in lower
Left rear	☐ 6 in higher	☐ 6 in lower
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 6 in higher	☐ 6 in lower

	Comments
■ Windows	No deficiencies.
■ Front Doors	No deficiencies.
■ Rear Doors	No deficiencies.
■ Escape Mechanisms/ Roof Vents	No deficiencies.
■ Engine	No deficiencies.
■ Handicapped Device/ Special Seating	No deficiencies.
■ Undercarriage	No deficiencies.
■ Service Doors	No deficiencies.
■ Body	No deficiencies.
■ Windows/ Body Leakage	No deficiencies.
■ Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM
(Note: Ten copies of this data sheet are required)

Bus Number: 0516	Date: 9-22-05
Personnel: T.S., G.M., B.S. & S.C.	Temperature(°F): 80

Wheel Position : (check one)		
All wheels level	☐ before	☐ after
Left front	☐ 6 in higher	☐ 6 in lower
Right front	☐ 6 in higher	■ 6 in lower
Right rear	☐ 6 in higher	☐ 6 in lower
Left rear	☐ 6 in higher	☐ 6 in lower
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 6 in higher	☐ 6 in lower

	Comments
■ Windows	No deficiencies.
■ Front Doors	No deficiencies.
■ Rear Doors	No deficiencies.
■ Escape Mechanisms/ Roof Vents	No deficiencies.
■ Engine	No deficiencies.
■ Handicapped Device/ Special Seating	No deficiencies.
■ Undercarriage	No deficiencies.
■ Service Doors	No deficiencies.
■ Body	No deficiencies.
■ Windows/ Body Leakage	No deficiencies.
■ Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 0516	Date: 9-22-05
Personnel: T.S., G.M., B.S. & S.C.	Temperature(°F): 80

Wheel Position : (check one)		
All wheels level	☐ before	☐ after
Left front	☐ 6 in higher	■ 6 in lower
Right front	☐ 6 in higher	☐ 6 in lower
Right rear	☐ 6 in higher	☐ 6 in lower
Left rear	☐ 6 in higher	☐ 6 in lower
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 6 in higher	☐ 6 in lower

	Comments
■ Windows	No deficiencies.
■ Front Doors	No deficiencies.
■ Rear Doors	No deficiencies.
■ Escape Mechanisms/ Roof Vents	No deficiencies.
■ Engine	No deficiencies.
■ Handicapped Device/ Special Seating	No deficiencies.
■ Undercarriage	No deficiencies.
■ Service Doors	No deficiencies.
■ Body	No deficiencies.
■ Windows/ Body Leakage	No deficiencies.
■ Steering Mechanism	No deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 0516	Date: 9-22-05
Personnel: T.S., G.M., B.S. & S.C.	Temperature(°F): 80

Wheel Position : (check one)		
All wheels level	☐ before	■ after
Left front	☐ 6 in higher	☐ 6 in lower
Right front	☐ 6 in higher	☐ 6 in lower
Right rear	☐ 6 in higher	☐ 6 in lower
Left rear	☐ 6 in higher	☐ 6 in lower
Right center	☐ 6 in higher	☐ 6 in lower
Left center	☐ 6 in higher	☐ 6 in lower

	Comments
■ Windows	No deficiencies.
■ Front Doors	No deficiencies.
■ Rear Doors	No deficiencies.
■ Escape Mechanisms/ Roof Vents	No deficiencies.
■ Engine	No deficiencies.
■ Handicapped Device/ Special Seating	No deficiencies.
■ Undercarriage	No deficiencies
■ Service Doors	No deficiencies.
■ Body	No deficiencies.
■ Windows/ Body Leakage	No deficiencies.
■ Steering Mechanism	No deficiencies.

5.2 STRUCTURAL DISTORTION TEST

RIGHT FRONT WHEEL SIX INCHES HIGHER

LEFT FRONT WHEEL SIX INCHES LOWER

5.3 STRUCTURAL STRENGTH AND DISTORTION TESTS - STATIC TOWING TEST

5.3-I. TEST OBJECTIVE

The objective of this test is to determine the characteristics of the bus towing mechanisms under static loading conditions.

5.3-II. TEST DESCRIPTION

Utilizing a load-distributing yoke, a hydraulic cylinder is used to apply a static tension load equal to 1.2 times the bus curb weight. The load will be applied to both the front and rear, if applicable, towing fixtures at an angle of 20 degrees with the longitudinal axis of the bus, first to one side then the other in the horizontal plane, and then upward and downward in the vertical plane. Any permanent deformation or damage to the tow eyes or adjoining structure will be recorded.

5.3-III. DISCUSSION

The test bus submitted for testing was not equipped with any type of tow eyes or tow hooks, therefore, the Static Towing Test was not performed.

5.4 STRUCTURAL STRENGTH AND DISTORTION TESTS - DYNAMIC TOWING TEST

5.4-I. TEST OBJECTIVE

The objective of this test is to verify the integrity of the towing fixtures and determine the feasibility of towing the bus under manufacturer specified procedures.

5.4-II. TEST DESCRIPTION

This test requires the bus be towed at curb weight using the specified equipment and instructions provided by the manufacturer and a heavy-duty wrecker. The bus will be towed for 5 miles at a speed of 20 mph for each recommended towing configuration. After releasing the bus from the wrecker, the bus will be visually inspected for any structural damage or permanent deformation. All doors, windows and passenger escape mechanisms will be inspected for proper operation.

5.4-III. DISCUSSION

The bus was towed using a heavy-duty wrecker. The towing interface was accomplished by incorporating a hydraulic under lift. A front lift tow was performed. Rear towing is not recommended. No problems, deformation, or damage was noted during testing.

DYNAMIC TOWING TEST DATA FORM

Bus Number: 0516	Date: 12-6-05
Personnel: S.C. & E.L.	

Temperature (°F): 32	Humidity (%): 46
Wind Direction: W	Wind Speed (mph): 9
Barometric Pressure (in.Hg): 30.19	

Inspect tow equipment-bus interface.
Comments: A safe and adequate connection was made between the tow equipment and the bus
Inspect tow equipment-wrecker interface.
Comments: A safe and adequate connection was made between the tow equipment and the wrecker.
Towing Comments: Front lift tow was performed incorporating a hydraulic under lift wrecker.
Description and location of any structural damage: None noted.
General Comments: No problems were encountered with the tow or towing interface.

5.4 DYNAMIC TOWING TEST

TOWING INTERFACE

TEST BUS IN TOW

5.5 STRUCTURAL STRENGTH AND DISTORTION TESTS – JACKING TEST

5.5-I. TEST OBJECTIVE

The objective of this test is to inspect for damage due to the deflated tire, and determine the feasibility of jacking the bus with a portable hydraulic jack to a height sufficient to replace a deflated tire.

5.5-II. TEST DESCRIPTION

With the bus at curb weight, the tire(s) at one corner of the bus are replaced with deflated tire(s) of the appropriate type. A portable hydraulic floor jack is then positioned in a manner and location specified by the manufacturer and used to raise the bus to a height sufficient to provide 3-in clearance between the floor and an inflated tire. The deflated tire(s) are replaced with the original tire(s) and the hack is lowered. Any structural damage or permanent deformation is recorded on the test data sheet. This procedure is repeated for each corner of the bus.

5.5-III. DISCUSSION

The jack used for this test has a minimum height of 8.75 inches. During the deflated portion of the test, the jacking point clearances ranged from 8.1 inches to 17.5 inches. No deformation or damage was observed during testing. A complete listing of jacking point clearances is provided in the Jacking Test Data Form.

JACKING CLEARANCE SUMMARY

Condition	Frame Point Clearance
Front axle – one tire flat	16.1"
Rear axle – one tire flat	17.2"
Rear axle – two tires flat	17.5"

JACKING TEST DATA FORM

Bus Number: 0516	Date: 9-13-05
Personnel: T.S. & S.C.	Temperature (°F): 85

Record any permanent deformation or damage to bus as well as any difficulty encountered during jacking procedure.

Deflated Tire	Jacking Pad Clearance Body/Frame (in)	Jacking Pad Clearance Axle/Suspension (in)	Comments
Right front	18.3 " I 16.2 " D	10.6 " I 8.1 " D	None noted.
Left front	18.2 " I 16.1 " D	10.7 " I 8.2 " D	None noted.
Right rear—outside	19.6 " I 17.2 " D	11.8 " I 11.2 " D	None noted.
Right rear—both	19.6 " I 17.5 " D	11.8 " I 9.5 " D	None noted.
Left rear—outside	19.7 " I 17.2 " D	11.8 " I 11.2 " D	None noted.
Left rear—both	19.7 " I 17.5 " D	11.8 " I 9.5 " D	None noted.
Right middle or tag—outside	NA	NA	
Right middle or tag—both	NA	NA	
Left middle or tag—outside	NA	NA	
Left middle or tag—both	NA	NA	

Additional comments of any deformation or difficulty during jacking:
None noted.

5.6 STRUCTURAL STRENGTH AND DISTORTION TESTS - HOISTING TEST

5.6-I. TEST OBJECTIVE

The objective of this test is to determine possible damage or deformation caused by the jack/stands.

5.6-II. TEST DESCRIPTION

With the bus at curb weight, the front end of the bus is raised to a height sufficient to allow manufacturer-specified placement of jack stands under the axles or jacking pads independent of the hoist system. The bus will be checked for stability on the jack stands and for any damage to the jacking pads or bulkheads. The procedure is repeated for the rear end of the bus. The procedure is then repeated for the front and rear simultaneously.

5.6-III. DISCUSSION

The test was conducted using four posts of a six-post electric lift and standard 19 inch jack stands. The bus was hoisted from the front wheel, rear wheel, and then the front and rear wheels simultaneously and placed on jack stands.

The bus easily accommodated the placement of the vehicle lifts and jack stands and the procedure was performed without any instability noted.

HOISTING TEST DATA FORM

Bus Number: 0516	Date: 9-13-05
Personnel: T.S. & S.C.	Temperature (°F): 86

Comments of any structural damage to the jacking pads or axles while both the front wheels are supported by the jack stands:
None noted.
Comments of any structural damage to the jacking pads or axles while both the rear wheels are supported by the jack stands:
None noted.
Comments of any structural damage to the jacking pads or axles while both the front and rear wheels are supported by the jack stands:
None noted.

5.7 STRUCTURAL DURABILITY TEST

5.7-I. TEST OBJECTIVE

The objective of this test is to perform an accelerated durability test that approximates up to 25 percent of the service life of the vehicle.

5.7-II. TEST DESCRIPTION

The test vehicle is driven a total of 7,500 miles; approximately 5,000 miles on the PSBRTF Durability Test Track and approximately 2,500 miscellaneous other miles. The test will be conducted with the bus operated under three different loading conditions. The first segment will consist of approximately 3,000 miles with the bus operated at GVW. The second segment will consist of approximately 1,500 miles with the bus operated at SLW. The remainder of the test, approximately 3,000 miles, will be conducted with the bus loaded to CW. If GVW exceeds the axle design weights, then the load will be adjusted to the axle design weights and the change will be recorded. All subsystems are run during these tests in their normal operating modes. All recommended manufacturers servicing is to be followed and noted on the vehicle maintainability log. Servicing items accelerated by the durability tests will be compressed by 10:1; all others will be done on a 1:1 mi/mi basis. Unscheduled breakdowns and repairs are recorded on the same log as are any unusual occurrences as noted by the driver. Once a week the test vehicle shall be washed down and thoroughly inspected for any signs of failure.

5.7-III. DISCUSSION

The Structural Durability Test was started on September 22, 2005 and was conducted until November 29, 2005. The first 3,000 miles were performed at a GVW of 13,820 lbs. The number of standing passengers was reduced from 9 to 0. The ballast for 9 standing passengers was eliminated. This reduction in passenger weight was necessary to avoid exceeding the GAWR (9,450 lbs) of the rear axle. The GVW segment was completed on October 24, 2005. The next 1,500 mile SLW segment was performed at the same 13,820 lbs and completed on November 7, 2005, and the final 3,000 mile segment was performed at a CW of 10,300 lbs and completed on November 29, 2005.

The following mileage summary presents the accumulation of miles during the Structural Durability Test. The driving schedule is included, showing the operating duty cycle. A detailed plan view of the Test Track Facility and Durability Test Track are attached for reference. Also, a durability element profile detail shows all the measurements of the different conditions. Finally, photographs illustrating some of the failures that were encountered during the Structural Durability Test are included.

ELKHART COACH - TEST BUS #0516
MILEAGE DRIVEN/RECORDED FROM DRIVERS' LOGS

DATE	TOTAL DURABILITY TRACK	TOTAL OTHER MILES	TOTAL
09/19/05 TO 09/25/05	152.00	59.00	211.00
09/26/05 TO 10/02/05	1143.00	51.00	1194.00
10/03/05 TO 10/09/05	268.00	13.00	281.00
10/10/05 TO 10/16/05	144.00	59.00	203.00
10/17/05 TO 10/23/05	289.00	71.00	360.00
10/24/05 TO 10/30/05	122.00	1271.00	1393.00
10/31/05 TO 11/06/05	816.00	37.00	853.00
11/07/05 TO 11/13/05	353.00	191.00	544.00
11/14/05 TO 11/20/05	801.00	148.00	949.00
11/21/05 TO 11/27/05	846.00	140.00	986.00
11/28/05 TO 12/04/05	66.00	461.00	527.00
TOTAL	5000.00	2501.00	7501.00

Table 4. Driving Schedule for Bus Operation on the Durability Test Track

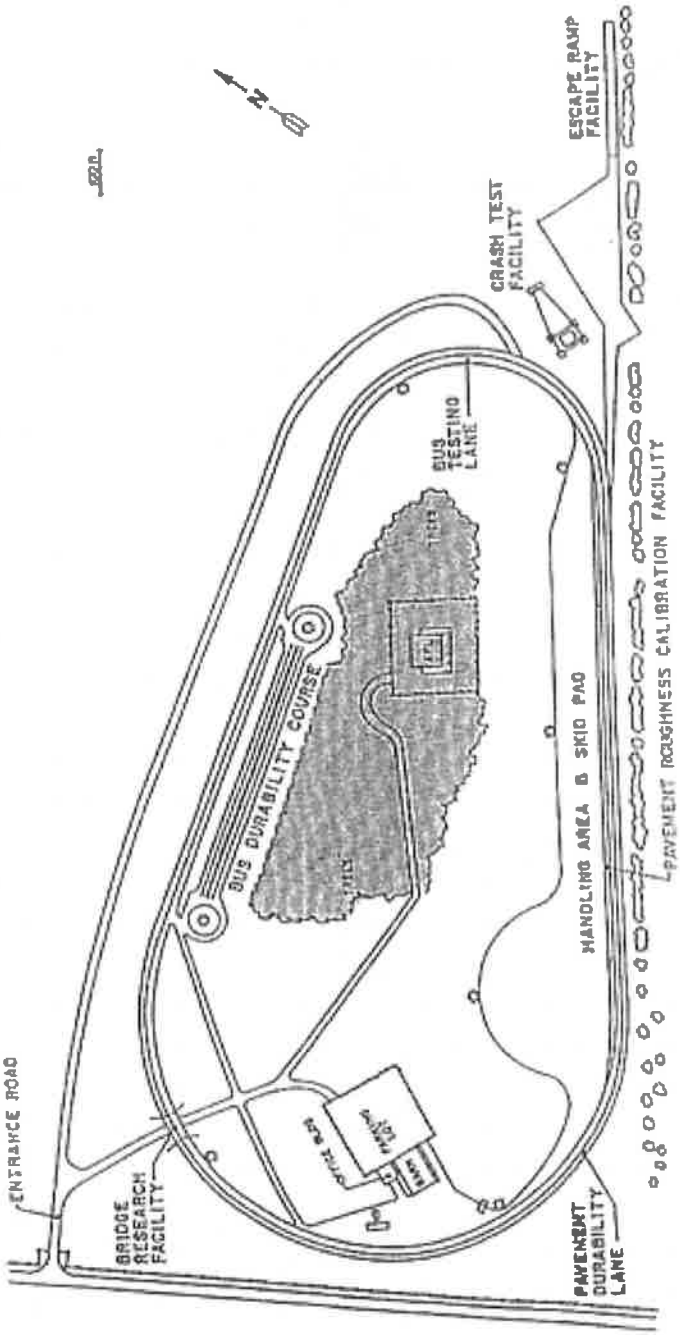
STANDARD OPERATING SCHEDULE

Monday through Friday

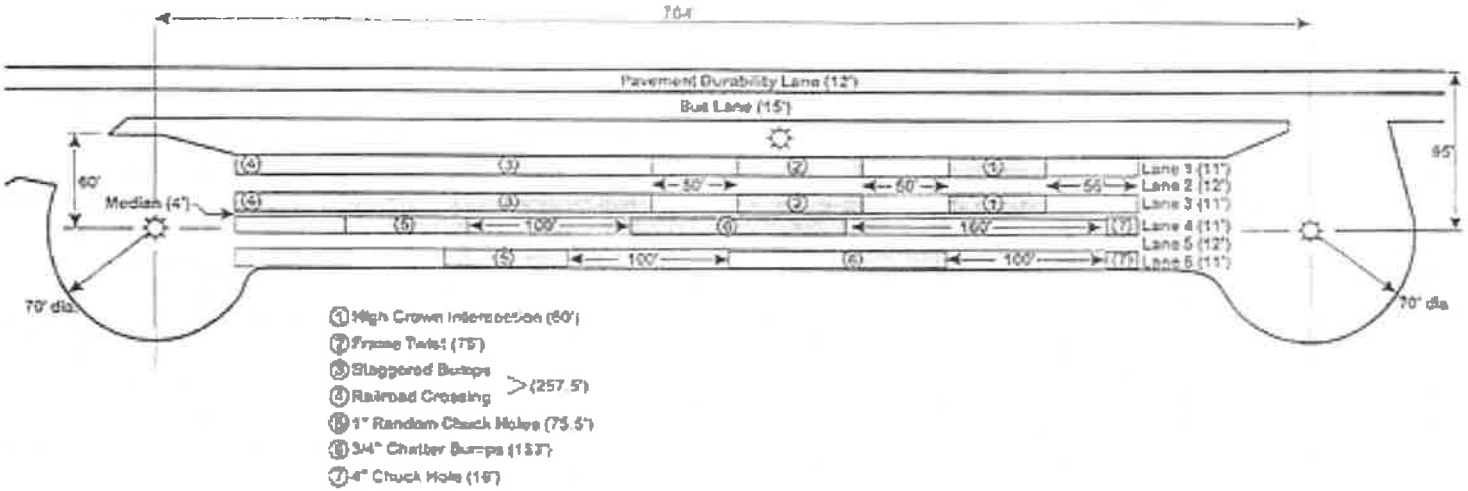
	HOUR	ACTION
Shift 1	midnight	D
	1:40 am	C
	1:50 am	B
	2:00 am	D
	3:35 am	C
	3:45 am	B
	4:05 am	D
	5:40 am	C
	5:50 am	B
	6:00 am	D
	7:40 am	C
	7:50 am	F
Shift 2	8:00 am	D
	9:40 am	C
	9:50 am	B
	10:00 am	D
	11:35 am	C
	11:45 am	B
	12:05 pm	D
	1:40 pm	C
	1:50 pm	B
	2:00 pm	D
	3:40 pm	C
	3:50 pm	F
Shift 3	4:00 pm	D
	5:40 pm	C
	5:50 pm	B
	6:00 pm	D
	7:40 pm	C
	7:50 pm	B
	8:05 pm	D
	9:40 pm	C
	9:50 pm	B
	10:00 pm	D
	11:40 pm	C
	11:50 pm	F

B—Break
C—Cycle all systems five times, visual inspection, driver's log entries
D—Drive bus as specified by procedure
F—Fuel bus, complete driver's log shift entries

"PLAN VIEW OF PENN STATE BUS TESTING AND RESEARCH FACILITY"



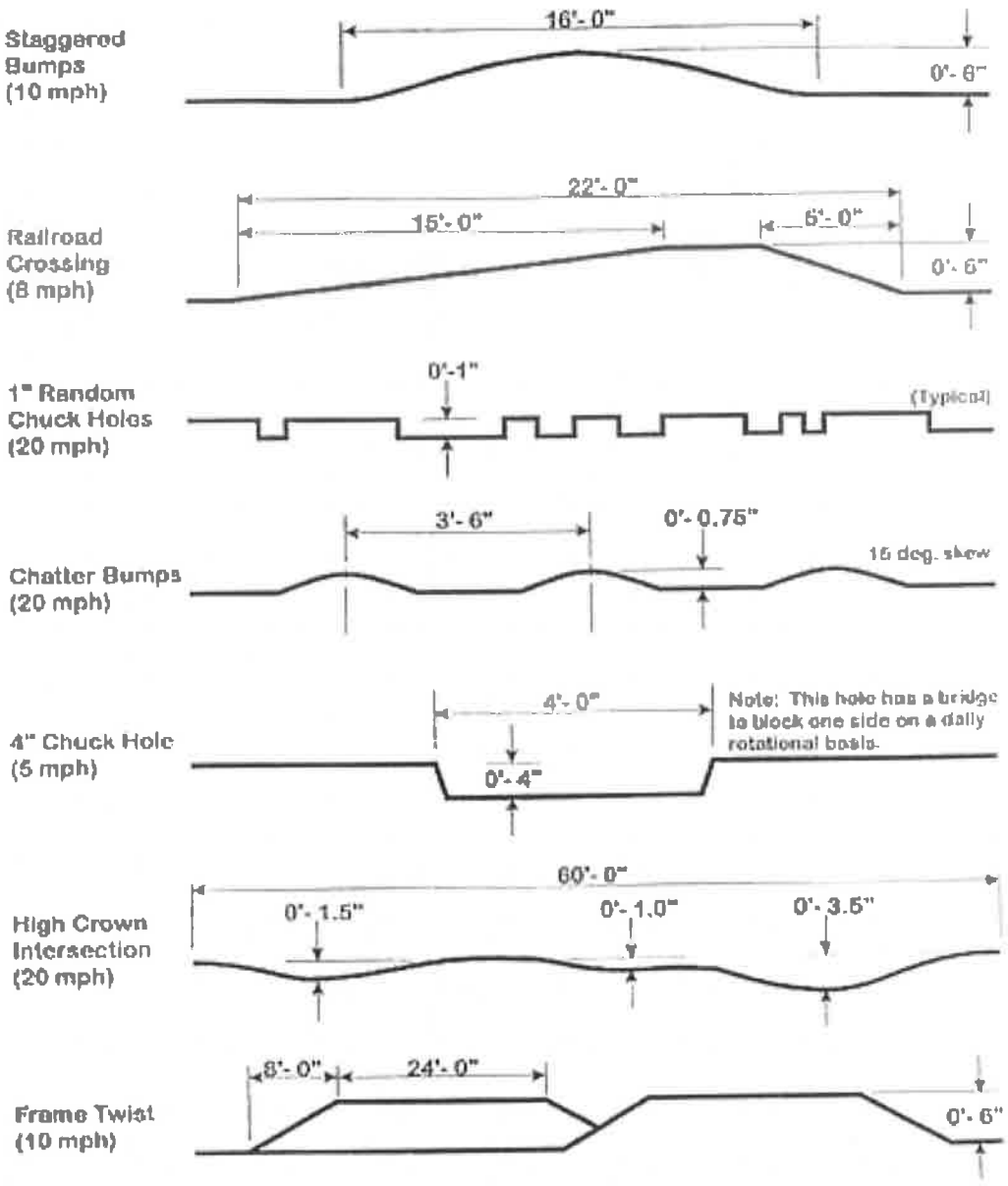
BUS TESTING AND RESEARCH TEST TRACK
UNIVERSITY PARK, PA



Plan View

Vehicle Durability Test Track

The Pennsylvania Transportation Institute
Penn State



Durability Element Profiles

The Pennsylvania Transportation Institute
Penn State

UNSCHEDULED MAINTENANCE

Elkhart Coach 0516

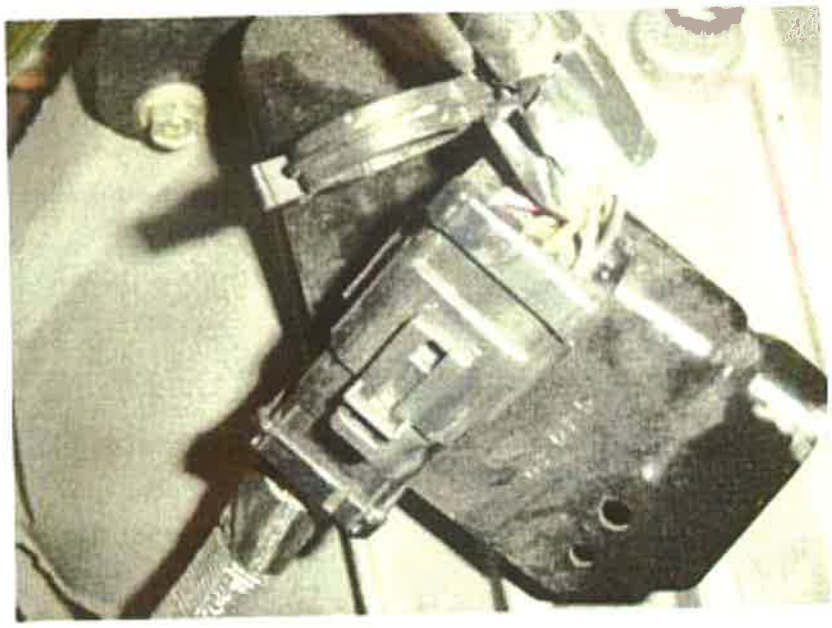
DATE	TEST MILES	SERVICE	ACTIVITY	DOWN TIME	HOURS
09-27-05	534	The batteries are loose in the battery box.	Secured batteries in battery box.	1.00	1.00
10-03-05	1,405	Three tail pipe hangers are broken.	Replaced three tail pipe hangers.	1.00	1.00
10-05-05	1,528	Bus shut down on durability track. Found positive cable to batteries broken.	Installed new terminal on battery cable.	17.00	1.00
10-13-05	1,686	Bus cranks but will not start. Troubleshooting found power train control module failed.	Manufacturer's representative replaced power-train control module.	94.00	3.00
10-17-05	1,889	Three tail pipe hangers are broken.	Replaced three tail pipe hangers.	0.50	0.50
10-17-05	1,889	"Transmission Fail" light is on. #1 wire on the transmission wire harness has chaffed through.	Repaired chaffed wire.	10.00	1.00
10-27-05	3,279	Troubleshoot "loss of power" condition. Air charge hose is disconnected at the air cooler side.	Reconnected air charge hose.	8.00	0.50
11-01-05	3,675	The spring plys of the right rear spring beam have shifted.	Replaced broken center bolt in the right rear spring beam.	18.00	1.50
11-11-05	5,027	The handicap lift door is loose.	Replaced broken rivets in door hinge.	8.00	1.00

UNSCHEDULED MAINTENANCE

Elkhart Coach 0516

DATE	TEST MILES	SERVICE	ACTIVITY	DOWN TIME	HOURS
11-15-05	5,240	The console is loose in the engine cover.	Broken mounting lug repaired on the engine cover.	1.00	1.00
11-17-05	5,680	The right front exterior rear-view mirror anchor hole has torn out.	Drilled new holes in fender and remounted mirror.	0.50	0.50
11-21-05	6,109	The right front radius arm isolator is worn.	Replaced right front radius arm isolator.	1.00	1.00
11-29-05	7,500	Handicap lift is inoperative.	Circuit board in tower shorted out. No repair.	1.00	0.00

UNSCHEDULED MAINTENANCE



CHAFFED WIRE IN TRANSMISSION HARNESS
(1,889 TEST MILES)

6. FUEL ECONOMY TEST - A FUEL CONSUMPTION TEST USING AN APPROPRIATE OPERATING CYCLE

6-I. TEST OBJECTIVE

The objective of this test is to provide accurate comparable fuel consumption data on transit buses produced by different manufacturers. This fuel economy test bears no relation to the calculations done by the Environmental Protection Agency (EPA) to determine levels for the Corporate Average Fuel Economy Program. EPA's calculations are based on tests conducted under laboratory conditions intended to simulate city and highway driving. This fuel economy test, as designated here, is a measurement of the fuel expended by a vehicle traveling a specified test loop under specified operating conditions. The results of this test will not represent actual mileage but will provide data that can be used by recipients to compare buses tested by this procedure.

6-II. TEST DESCRIPTION

This test requires operation of the bus over a course based on the Transit Coach Operating Duty Cycle (ADB Cycle) at seated load weight using a procedure based on the Fuel Economy Measurement Test (Engineering Type) For Trucks and Buses: SAE 1376 July 82. The procedure has been modified by elimination of the control vehicle and by modifications as described below. The inherent uncertainty and expense of utilizing a control vehicle over the operating life of the facility is impractical.

The fuel economy test will be performed as soon as possible (weather permitting) after the completion of the GVW portion of the structural durability test. It will be conducted on the bus test lane at the Penn State Test Facility. Signs are erected at carefully measured points which delineate the test course. A test run will comprise 3 CBD phases, 2 Arterial phases, and 1 Commuter phase. An electronic fuel measuring system will indicate the amount of fuel consumed during each phase of the test. The test runs will be repeated until there are at least two runs in both the clockwise and counterclockwise directions in which the fuel consumed for each run is within $\pm$ 4 percent of the average total fuel used over the 4 runs. A 20-minute idle consumption test is performed just prior to and immediately after the driven portion of the fuel economy test. The amount of fuel consumed while operating at normal/low idle is recorded on the Fuel Economy Data Form. This set of four valid runs along with idle consumption data comprise a valid test.

The test procedure is the ADB cycle with the following four modifications:

1. The ADB cycle is structured as a set number of miles in a fixed time in the following order: CBD, Arterial, CBD, Arterial, CBD, and Commuter. A separate idle fuel consumption measurement is performed at the beginning and end of the fuel economy test. This phase sequence permits the reporting of fuel consumption for each of these phases separately, making the data more useful to bus manufacturers and transit properties.

2. The operating profile for testing purposes shall consist of simulated transit type service at seated load weight. The three test phases (figure 6-1) are: a central business district (CBD) phase of 2 miles with 7 stops per mile and a top speed of 20 mph; an arterial phase of 2 miles with 2 stops per mile and a top speed of 40 mph; and a commuter phase of 4 miles with 1 stop and a maximum speed of 40 mph. At each designated stop the bus will remain stationary for seven seconds. During this time, the passenger doors shall be opened and closed.

3. The individual ADB phases remain unaltered with the exception that 1 mile has been changed to 1 lap on the Penn State Test Track. One lap is equal to 5,042 feet. This change is accommodated by adjusting the cruise distance and time.

4. The acceleration profile, for practical purposes and to achieve better repeatability, has been changed to "full throttle acceleration to cruise speed".

Several changes were made to the Fuel Economy Measurement Test (Engineering Type) For Trucks and Buses: SAE 1376 July 82:

1. Sections 1.1, and 1.2 only apply to diesel, gasoline, methanol, and any other fuel in the liquid state (excluding cryogenic fuels).

1.1 SAE 1376 July 82 requires the use of at least a 16-gal fuel tank. Such a fuel tank when full would weigh approximately 160 lb. It is judged that a 12-gal tank weighing approximately 120 lb will be sufficient for this test and much easier for the technician and test personnel to handle.

1.2 SAE 1376 July 82 mentions the use of a mechanical scale or a flowmeter system. This test procedure uses a load cell readout combination that provides an accuracy of 0.5 percent in weight and permits on-board weighing of the gravimetric tanks at the end of each phase. This modification permits the determination of a fuel economy value for each phase as well as the overall cycle.

2. Section 2.1 applies to compressed natural gas (CNG), liquefied natural gas (LNG), cryogenic fuels, and other fuels in the vapor state.

2.1 A laminar type flowmeter will be used to determine the fuel consumption. The pressure and temperature across the flow element will be monitored by the flow computer. The flow computer will use this data to calculate the gas flow rate. The flow computer will also display the flow rate (scfm) as well as the total fuel used (scf). The total fuel used (scf) for each phase will be recorded on the Fuel Economy Data Form.

3. Use both Sections 1 and 2 for dual fuel systems.

FUEL ECONOMY CALCULATION PROCEDURE

A. For diesel, gasoline, methanol and fuels in the liquid state.

The reported fuel economy is based on the following: measured test quantities--distance traveled (miles) and fuel consumed (pounds); standard reference values--density of water at 60°F (8.3373 lbs/gal) and volumetric heating value of standard fuel; and test fuel specific gravity (unitless) and volumetric heating value (BTU/gal). Those combine to give a fuel economy in miles per gallon (mpg) which is corrected to a standard gallon of fuel referenced to water at 60°F. This eliminates fluctuations in fuel economy due to fluctuations in fuel quality. This calculation has been programmed into a computer and the data processing is performed automatically.

The fuel economy correction consists of three steps:

1.) Divide the number of miles of the phase by the number of pounds of fuel consumed

phase	miles per phase	total miles per run
CBD	1.9097	5.7291
ART	1.9097	3.8193
COM	3.8193	3.8193

$$FEo_{mi/lb} = \text{Observed fuel economy} = \frac{\text{miles}}{\text{lb of fuel}}$$

2.) Convert the observed fuel economy to miles per gallon [mpg] by multiplying by the specific gravity of the test fuel Gs (referred to water) at 60°F and multiply by the density of water at 60°F

$$FEo_{mpg} = FEc_{mi/lb} \times Gs \times Gw$$

where **Gs** = Specific gravity of test fuel at 60°F (referred to water)
Gw = 8.3373 lb/gal

3.) Correct to a standard gallon of fuel by dividing by the volumetric heating value of the test fuel (H) and multiplying by the volumetric heating value of standard reference fuel (Q). Both heating values must have the same units.

$$FEc = FEo_{mpg} \times \frac{Q}{H}$$

where

H = Volumetric heating value of test fuel [BTU/gal]
Q = Volumetric heating value of standard reference fuel

Combining steps 1-3 yields

$$\Rightarrow FEc = \frac{miles}{lbs} \times (Gs \times Gw) \times \frac{Q}{H}$$

4.) Covert the fuel economy from mpg to an energy equivalent of miles per BTU. Since the number would be extremely small in magnitude, the energy equivalent will be represented as miles/BTUx10^6.

Eq = Energy equivalent of converting mpg to mile/BTUx10^6.

$$Eq = ((mpg)/(H))x10^6$$

B. CNG, LNG, cryogenic and other fuels in the vapor state.

The reported fuel economy is based on the following: measured test quantities--distance traveled (miles) and fuel consumed (scf); density of test fuel, and volumetric heating value (BTU/lb) of test fuel at standard conditions (P=14.73 psia and T=60 °F). These combine to give a fuel economy in miles per lb. The energy equivalent

(mile/BTUx10^6) will also be provided so that the results can be compared to buses that use other fuels.

1.) Divide the number of miles of the phase by the number of standard cubic feet (scf) of fuel consumed.

phase	miles per phase	total miles per run
CBD	1.9097	5.7291
ART	1.9097	3.8193
COM	3.8193	3.8193

$FEo_{mi/scf}$ = Observed fuel economy = $\frac{\text{miles}}{\text{scf of fuel}}$

2.) Convert the observed fuel economy to miles per lb by dividing FEo by the density of the test fuel at standard conditions (Lb/ft^3).

Note: The density of test fuel must be determined at standard conditions as described above. If the density is not defined at the above standard conditions, then a correction will be needed before the fuel economy can be calculated.

$$FEo_{mi/lb} = FEo / Gm$$

where Gm = Density of test fuel at standard conditions

3.) Convert the observed fuel economy (FEomi/lb) to an energy equivalent of (miles/BTUx10^6) by dividing the observed fuel economy (FEomi/lb) by the heating value of the test fuel at standard conditions.

$$Eq = ((FEomi/lb)/H)x10^6$$

where

Eq = Energy equivalent of miles/lb to mile/BTUx10^6
H = Volumetric heating value of test fuel at standard conditions

6-III. DISCUSSION

This is a comparative test of fuel economy using diesel fuel with a heating value of 20214.0 btu/lb. The driving cycle consists of Central Business District (CBD), Arterial (ART), and Commuter (COM) phases as described in 6-II. The fuel consumption for each driving cycle and for idle is measured separately. The results are corrected to a reference fuel with a volumetric heating value of 127,700.0 btu/gal.

An extensive pretest maintenance check is made including the replacement of all lubrication fluids. The details of the pretest maintenance are given in the first three Pretest Maintenance Forms. The fourth sheet shows the Pretest Inspection. The next sheet shows the correction calculation for the test fuel. The next four Fuel Economy Forms provide the data from the four test runs. Finally, the summary sheet provides the average fuel consumption. The overall average is based on total fuel and total mileage for each phase. The overall average fuel consumption values were; CBD – 6.46 mpg, ART – 6.90 mpg, and COM – 10.65 mpg. Average fuel consumption at idle was 2.84 lb/hr (0.45 gph).

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Bus Number: 0516	Date: 11-7-05	SLW (lbs): 13,820
Personnel: T.S. & S.C.		

FUEL SYSTEM	OK	Date	Initials
Install fuel measurement system	✔	11/7/05	S.C.
Replace fuel filter	✔	11/7/05	S.C.
Check for fuel leaks	✔	11/7/05	S.C.
Specify fuel type (refer to fuel analysis)	Diesel		
Remarks: None noted.			
BRAKES/TIRES	OK	Date	Initials
Inspect hoses	✔	11/7/05	S.C.
Inspect brakes	✔	11/7/05	S.C.
Relube wheel bearings	✔	11/7/05	T.S
Check tire inflation pressures (mfg. specs.)	✔	11/7/05	S.C.
Remarks: None noted.			
COOLING SYSTEM	OK	Date	Initials
Check hoses and connections	✔	11/7/05	S.C.
Check system for coolant leaks	✔	11/7/05	S.C.
Remarks: None noted.			

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Bus Number: 0516	Date: 11-7-05	SLW (lbs): 13,820
Personnel: T.S. & S.C.		

FUEL SYSTEM	OK	Date	Initials
Install fuel measurement system	✔	11/7/05	S.C.
Replace fuel filter	✔	11/7/05	S.C.
Check for fuel leaks	✔	11/7/05	S.C.
Specify fuel type (refer to fuel analysis)	Diesel		
Remarks: None noted.			
BRAKES/TIRES	**OK**	**Date**	**Initials**
Inspect hoses	✔	11/7/05	S.C.
Inspect brakes	✔	11/7/05	S.C.
Relube wheel bearings	✔	11/7/05	T.S
Check tire inflation pressures (mfg. specs.)	✔	11/7/05	S.C.
Remarks: None noted.			
COOLING SYSTEM	**OK**	**Date**	**Initials**
Check hoses and connections	✔	11/7/05	S.C.
Check system for coolant leaks	✔	11/7/05	S.C.
Remarks: None noted.			

FUEL ECONOMY PRE-TEST MAINTENANCE FORM (page 2)

Bus Number: 0516	Date: 11-7-05
Personnel: T.S. & S.C.	

ELECTRICAL SYSTEMS	OK	Date	Initials
Check battery	✔	11/7/05	S.C.
Inspect wiring	✔	11/7/05	S.C.
Inspect terminals	✔	11/7/05	S.C.
Check lighting	✔	11/7/05	S.C.
Remarks: None noted.			

DRIVE SYSTEM	OK	Date	Initials
Drain transmission fluid	✔	11/7/05	T.S.
Replace filter/gasket	✔	11/7/05	T.S.
Check hoses and connections	✔	11/7/05	T.S.
Replace transmission fluid	✔	11/7/05	T.S.
Check for fluid leaks	✔	11/7/05	T.S.
Remarks: None noted.			

LUBRICATION	OK	Date	Initials
Drain crankcase oil	✔	11/7/05	T.S.
Replace filters	✔	11/7/05	T.S.
Replace crankcase oil	✔	11/7/05	T.S.
Check for oil leaks	✔	11/7/05	T.S.
Check oil level	✔	11/7/05	T.S.
Lube all chassis grease fittings	✔	11/7/05	T.S.
Lube universal joints	✔	11/7/05	T.S.
Replace differential lube including axles	✔	11/7/05	T.S.
Remarks: None noted.			

FUEL ECONOMY PRE-TEST MAINTENANCE FORM (page 3)

Bus Number: 0516	Date: 11-7-05		
Personnel: T.S. & S.C.			
EXHAUST/EMISSION SYSTEM	**OK**	**Date**	**Initials**
Check for exhaust leaks	✔	11/7/05	S.C.
Remarks: None noted.			
ENGINE	**OK**	**Date**	**Initials**
Replace air filter	✔	11/7/05	T.S.
Inspect air compressor and air system	N/A	11/7/05	T.S.
Inspect vacuum system, if applicable	✔	11/7/05	S.C.
Check and adjust all drive belts	✔	11/7/05	S.C.
Check cold start assist, if applicable	✔	11/7/05	S.C.
Remarks: None noted.			
STEERING SYSTEM	**OK**	**Date**	**Initials**
Check power steering hoses and connectors	✔	11/7/05	S.C.
Service fluid level	✔	11/7/05	S.C.
Check power steering operation	✔	11/7/05	S.C.
Remarks: None noted.			
	OK	**Date**	**Initials**
Ballast bus to seated load weight	✔	11/7/05	S.C.
TEST DRIVE	**OK**	**Date**	**Initials**
Check brake operation	✔	11/7/05	S.C.
Check transmission operation	✔	11/7/05	S.C.
Remarks: None noted.			

FUEL ECONOMY PRE-TEST INSPECTION FORM

Bus Number: 0516	Date: 11-9-05
Personnel: S.C.	

PRE WARM-UP	If OK, Initial
Fuel Economy Pre-Test Maintenance Form is complete	S.C.
Cold tire pressure (psi): Front 80 Middle N/A Rear 80	S.C.
Tire wear:	S.C.
Engine oil level	S.C.
Engine coolant level	S.C.
Interior and exterior lights on, evaporator fan on	S.C.
Fuel economy instrumentation installed and working properly.	S.C.
Fuel line -- no leaks or kinks	S.C.
Speed measuring system installed on bus. Speed indicator installed in front of bus and accessible to TECH and Driver.	S.C.
Bus is loaded to SLW	S.C.
WARM-UP	**If OK, Initial**
Bus driven for at least one hour warm-up	S.C.
No extensive or black smoke from exhaust	S.C.
POST WARM-UP	**If OK, Initial**
Warm tire pressure (psi): Front 80 Middle N/A Rear 82	S.C.
Environmental conditions Average wind speed <12 mph and maximum gusts <15 mph Ambient temperature between 30°F(-1C°) and 90°F(32°C) Track surface is dry Track is free of extraneous material and clear of interfering traffic	S.C.

FUEL ECONOMY DATA FORM (Liquid Fuels)

Bus Number: 0516	Manufacturer: Elkhart Coach	Date: 11-8-05
Run Number: 1	Personnel: B.S., T.S. & S.C.	
Test Direction: □CW or ■CCW	Temperature (°F): 61	Humidity (%): 56
SLW (lbs): 13,820	Wind Speed (mph) & Direction: 5 / W	Barometric Pressure (in.Hg): 30.10

Cycle Type	Time (min:sec)		Cycle Time (min:sec)	Fuel Temperature (°C)	Load Cell Reading (lb)		Fuel Used (lbs)
	Start	Finish		Start	Start	Finish	
CBD #1	0	8:23	8:23	21.5	0	1.85	1.85
ART #1	0	4:04	4:04	24.0	0	1.74	1.74
CBD #2	0	8:19	8:19	24.5	0	1.81	1.81
ART #2	0	4:00	4:00	24.5	0	1.71	1.71
CBD #3	0	8:29	8:29	25.5	0	1.75	1.75
COMMUTER	0	6:19	6:19	26.5	0	2.13	2.13
							Total Fuel = 10.99 lbs

20 minute idle : Total Fuel Used = 0.95 bs

Heating Value = 20,214.0 BTU/LB

Comments: None noted.

FUEL ECONOMY DATA FORM (Liquid Fuels)

Bus Number: 0516	Manufacturer: Elkhart Coach	Date: 11-8-05
Run Number: 2	Personnel: B.S., T.S. & S.C.	
Test Direction: ■CW or □CCW	Temperature (°F): 61	Humidity (%): 56
SLW (lbs): 13,820	Wind Speed (mph) & Direction: 5 / W	Barometric Pressure (in.Hg): 30.10

Cycle Type	Time (min:sec)		Cycle Time (min:sec)	Fuel Temperature (°C)	Load Cell Reading (lb)		Fuel Used (lbs)
	Start	Finish		Start	Start	Finish	
CBD #1	0	8:40	8:40	20.5	0	1.86	1.86
ART #1	0	3:56	3:56	21.0	0	1.74	1.74
CBD #2	0	8:25	8:25	21.5	0	1.89	1.89
ART #2	0	4:01	4:01	22.5	0	1.69	1.69
CBD #3	0	8:31	8:31	23.0	0	1.88	1.88
COMMUTER	0	6:00	6:00	23.5	0	2.30	2.30
						Total Fuel =	11.36 lbs

20 minute Idle : Total Fuel Used = N/A lbs

Heating Value = 20,214.0 BTU/LB

Comments: None noted.

FUEL ECONOMY DATA FORM (Liquid Fuels)

Bus Number: 0516	Manufacturer: Elkhart Coach	Date: 11-9-05
Run Number: 3	Personnel: B.S., T.S. & S.C.	
Test Direction: □CW or ■CCW	Temperature (°F): 61	Humidity (%): 56
SLW (lbs): 13,820	Wind Speed (mph) & Direction: 5 / W	Barometric Pressure (in.Hg): 30.10

Cycle Type	Time (min:sec)		Cycle Time (min:sec)	Fuel Temperature (°C)	Load Cell Reading (lb)		Fuel Used (lbs)
	Start	Finish		Start	Start	Finish	
CBD #1	0	8:27	8:27	23.5	0	1.94	1.94
ART #1	0	3:56	3:56	23.0	0	1.80	1.80
CBD #2	0	8:25	8:25	24.0	0	1.85	1.85
ART #2	0	3:53	3:53	25.0	0	1.80	1.80
CBD #3	0	8:27	8:27	25.5	0	1.89	1.89
COMMUTER	0	6:04	6:04	25.5	0	2.33	2.33
							Total Fuel = 11.61 lbs

20 minute idle : Total Fuel Used = N/A lbs

Heating Value = 20,214.0 BTU/LB

Comments: None noted.

FUEL ECONOMY DATA FORM (Liquid Fuels)

Bus Number: 0516	Manufacturer: Elkhart Coach	Date: 11-9-05
Run Number: 4	Personnel: T.S., B.S. & S.C.	
Test Direction: ■CW or □CCW	Temperature (°F): 62	Humidity (%): 55
SLW (lbs): 13,820	Wind Speed (mph) & Direction: 4 / W	Barometric Pressure (in.Hg): 30.10

Cycle Type	Time (min:sec)		Cycle Time (min:sec)	Fuel Temperature (°C)	Load Cell Reading (lb)		Fuel Used (lbs)
	Start	Finish		Start	Start	Finish	
CBD #1	0	8:35	8:35	24.0	0	1.85	1.85
ART #1	0	4:03	4:03	24.5	0	1.68	1.68
CBD #2	0	8:38	8:38	24.5	0	1.82	1.82
ART #2	0	3:59	3:59	25.0	0	1.73	1.73
CBD #3	0	8:40	8:40	25.0	0	1.87	1.87
COMMUTER	0	6:05	6:05	25.5	0	2.24	2.24
						Total Fuel =	11.19 lbs

20 minute idle : Total Fuel Used = 0.94 lbs

Heating Value = 20,214.0 BTU/LB

Comments: None noted.

FUEL ECONOMY SUMMARY SHEET

BUS MANUFACTURER :Elkhart Coach
BUS MODEL :EC II 186/313

BUS NUMBER :0516
TEST DATE :11/8/05

FUEL TYPE : DIESEL
SP. GRAVITY : .8095
HEATING VALUE : 20214.00 BTU/Lb
Standard Conditions : 60 deg F and 14.7 psi
Density of Water : 8.3373 lb/gallon at 60 deg F

CYCLE	TOTAL FUEL USED (Lb)	TOTAL MILES	FUEL ECONOMY M/Lb(Measured)	FUEL ECONOMY MPG(Corrected)
Run # :1, CCW				
CBD	5.41	5.73	1.06	6.64
ART	3.45	3.82	1.11	6.94
COM	2.13	3.82	1.79	11.24
TOTAL	10.99	13.37	1.22	7.63
Run # :2, CW				
CBD	5.63	5.73	1.02	6.38
ART	3.43	3.82	1.11	6.98
COM	2.30	3.82	1.66	10.41
TOTAL	11.36	13.37	1.18	7.38
Run # :3, CCW				
CBD	5.68	5.73	1.01	6.32
ART	3.60	3.82	1.06	6.65
COM	2.33	3.82	1.64	10.28
TOTAL	11.61	13.37	1.15	7.22
Run # :4, CW				
CBD	5.54	5.73	1.03	6.48
ART	3.41	3.82	1.12	7.02
COM	2.24	3.82	1.71	10.69
TOTAL	11.19	13.37	1.19	7.49

IDLE CONSUMPTION

First 20 Minutes Data : .95 Lb Last 20 Minutes Data : .94 Lb
Average Idle Consumption : 2.84 Lb/Hr

RUN CONSISTENCY: % Difference from overall average of total fuel used

Run 1 : 2.6 Run 2 : -.6 Run 3 : -2.9 Run 4 : .9

SUMMARY

Average Idle Consumption : .45 G/Hr
Average CBD Phase Consumption : 6.46 MPG
Average Arterial Phase Consumption : 6.90 MPG
Average Commuter Phase Consumption : 10.65 MPG
Overall Average Fuel Consumption : 7.43 MPG
Overall Average Fuel Consumption : 54.44 Miles/ Million BTU

7. NOISE

7.1 INTERIOR NOISE AND VIBRATION TESTS

7.1-I. TEST OBJECTIVE

The objective of these tests is to measure and record interior noise levels and check for audible vibration under various operating conditions.

7.1-II. TEST DESCRIPTION

During this series of tests, the interior noise level will be measured at several locations with the bus operating under the following three conditions:

1. With the bus stationary, a white noise generating system shall provide a uniform sound pressure level equal to 80 dB(A) on the left, exterior side of the bus. The engine and all accessories will be switched off and all openings including doors and windows will be closed. This test will be performed at the ABTC.

2. The bus accelerating at full throttle from a standing start to 35 mph on a level pavement. All openings will be closed and all accessories will be operating during the test. This test will be performed on the track at the Test Track Facility.

3. The bus will be operated at various speeds from 0 to 55 mph with and without the air conditioning and accessories on. Any audible vibration or rattles will be noted. This test will be performed on the test segment between the Test Track and the Bus Testing Center.

All tests will be performed in an area free from extraneous sound-making sources or reflecting surfaces. The ambient sound level as well as the surrounding weather conditions will be recorded in the test data.

7.1-III. DISCUSSION

This test is performed in three parts. The first part exposes the exterior of the vehicle to 80.0 dB(A) on the left side of the bus and the noise transmitted to the interior is measured. The overall average of the six measurements was 46.7 dB(A); ranging from 45.7 dB(A) in line with the middle speaker to 47.7 dB(A) at the driver's seat. The interior ambient noise level for this test was < 34.0 dB(A).

The second test measures interior noise during acceleration from 0 to 35 mph. This noise level ranged from 68.0 dB(A) at the rear passenger seats to 73.0 dB(A) at the driver's seat. The overall average was 71.3 dB(A). The interior ambient noise level for this test was < 34.0 dB(A).

The third part of the test is to listen for resonant vibrations, rattles, and other noise sources while operating over the road. No vibrations or rattles were noted.

INTERIOR NOISE TEST DATA FORM
Test Condition 1: 80 dB(A) Stationary White Noise

Bus Number: 0516	Date: 9-13-05
Personnel: T.S. & S.C.	
Temperature (°F): 82	Humidity (%): 88
Wind Speed (mph): 5	Wind Direction: N
Barometric Pressure (in.Hg): 30.12	
Initial Sound Level Meter Calibration: ■ checked by: S.C.	
Interior Ambient Noise Level dB(A): <34.0	Exterior Ambient Noise Level dB(A): 48.4
Microphone Height During Testing (in): 48.0	

Measurement Location	Measured Sound Level dB(A)
Driver's Seat	47.7
Front Passenger Seats	47.2
In Line with Front Speaker	45.8
In Line with Middle Speaker	45.7
In Line with Rear Speaker	46.2
Rear Passenger Seats	47.4

Final Sound Level Meter Calibration: ■ checked by: S.C.

Comments: All readings taken in the center aisle.

INTERIOR NOISE TEST DATA FORM
Test Condition 2: 0 to 35 mph Acceleration Test

Bus Number: 0516	Date: 11-14-05
Personnel: B.S., T.S. & E.L.	
Temperature (°F): 54	Humidity (%): 43
Wind Speed (mph): 3	Wind Direction: W
Barometric Pressure (in.Hg): 30.33	
Initial Sound Level Meter Calibration: ■ checked by: S.C.	
Interior Ambient Noise Level dB(A): <34.0	Exterior Ambient Noise Level dB(A): 37.9
Microphone Height During Testing (in): 48.0	

Measurement Location	Measured Sound Level dB(A)
Driver's Seat	73.0
Front Passenger Seats	71.9
Middle Passenger Seats	72.3
Rear Passenger Seats	68.0

Final Sound Level Meter Calibration: ■ checked by: S.C.

Comments: All readings taken in the center aisle.

INTERIOR NOISE TEST DATA FORM
Test Condition 3: Audible Vibration Test

Bus Number: 0516	Date: 11-14-05
Personnel: B.S., T.S. & E.L.	
Temperature (°F): 54	Humidity (%): 43
Wind Speed (mph): 3	Wind Direction: W
Barometric Pressure (in.Hg): 30.33	

Describe the following possible sources of noise and give the relative location on the bus.

Source of Noise	Location
Engine and Accessories	None noted.
Windows and Doors	None noted.
Seats and Wheel Chair lifts	None noted.

Comment on any other vibration or noise source which may have occurred that is not described above: None noted.

7.1 INTERIOR NOISE TEST

TEST BUS SET-UP FOR 80 dB(A)
INTERIOR NOISE TEST

7.2 EXTERIOR NOISE TESTS

7.2-I. TEST OBJECTIVE

The objective of this test is to record exterior noise levels when a bus is operated under various conditions.

7.2-II. TEST DESCRIPTION

In the exterior noise tests, the bus will be operated at a SLW in three different conditions using a smooth, straight and level roadway:

1. Accelerating at full throttle from a constant speed at or below 35 mph and just prior to transmission up shift.
2. Accelerating at full throttle from standstill.
3. Stationary, with the engine at low idle, high idle, and wide open throttle.

In addition, the buses will be tested with and without the air conditioning and all accessories operating. The exterior noise levels will be recorded.

The test site is at the PSBRTF and the test procedures will be in accordance with SAE Standards SAE J366b, Exterior Sound Level for Heavy Trucks and Buses. The test site is an open space free of large reflecting surfaces. A noise meter placed at a specified location outside the bus will measure the noise level.

During the test, special attention should be paid to:

1. The test site characteristics regarding parked vehicles, signboards, buildings, or other sound-reflecting surfaces
2. Proper usage of all test equipment including set-up and calibration
3. The ambient sound level

7.2-III. DISCUSSION

The Exterior Noise Test determines the noise level generated by the vehicle under different driving conditions and at stationary low and high idle, with and without air conditioning and accessories operating. The test site is a large, level, bituminous paved area with no reflecting surfaces nearby.

With an exterior ambient noise level of 37.8 dB(A), the average test result obtained while accelerating from a constant speed was 73.0 dB(A) on the right side and 73.0 dB(A) on the left side.

When accelerating from a standstill with an exterior ambient noise level of 37.9 dB(A), the average of the results obtained were 73.3 dB(A) on the right side and 73.0 dB(A) on the left side.

With the vehicle stationary and the engine, accessories, and air conditioning on, the measurements averaged 58.2 dB(A) at low idle, 57.7 dB(A) at high idle, and 73.7 dB(A) at wide open throttle. With the accessories and air conditioning off, the readings averaged 1.9 dB(A) lower at low idle, 2.5 dB(A) higher at high idle, and 0.4 dB(A) lower at wide open throttle. The exterior ambient noise level measured during this test was 37.9 dB(A).

EXTERIOR NOISE TEST DATA FORM
Accelerating from Constant Speed

Bus Number:	Date:
Personnel:	
Temperature (°F):	Humidity (%):
Wind Speed (mph):	Wind Direction:
Barometric Pressure (in.Hg):	
Verify that microphone height is 4 feet, wind speed is less than 12 mph and ambient temperature is between 30°F and 90°F: ■ checked by: S.C.	
Initial Sound Level Meter Calibration: ■ checked by: S.C.	
Exterior Ambient Noise Level dB(A):	

Accelerating from Constant Speed Curb (Right) Side		Accelerating from Constant Speed Street (Left) Side	
Run #	Measured Noise Level dB(A)	Run #	Measured Noise Level dB(A)
1	72.4	1	72.8
2	72.4	2	73.1
3	72.7	3	72.6
4	73.0	4	72.9
5	72.9	5	72.7
Average of two highest actual noise levels = 73.0 dB(A)		Average of two highest actual noise levels = 73.0 dB(A)	

Final Sound Level Meter Calibration Check: ■ checked by: S.C.
Comments: None noted.

EXTERIOR NOISE TEST DATA FORM
Accelerating from Standstill

Bus Number: 0516	Date: 11-14-05
Personnel: B.S., T.S. & E.L.	
Temperature (°F): 54	Humidity (%): 43
Wind Speed (mph): 3	Wind Direction: W
Barometric Pressure (in.Hg): 30.33	
Verify that microphone height is 4 feet, wind speed is less than 12 mph and ambient temperature is between 30°F and 90°F: ■ checked by: S.C.	
Initial Sound Level Meter Calibration: ■ checked by: S.C.	
Exterior Ambient Noise Level dB(A): 37.9	

Accelerating from Standstill Curb (Right) Side		Accelerating from Standstill Street (Left) Side	
Run #	Measured Noise Level dB(A)	Run #	Measured Noise Level dB(A)
1	72.9	1	73.0
2	72.9	2	72.8
3	73.5	3	72.8
4	73.0	4	73.0
5	73.0	5	73.0
Average of two highest actual noise levels = 73.3 dB(A)		Average of two highest actual noise levels = 73.0 dB(A)	
Final Sound Level Meter Calibration Check: ■ checked by: S.C.			
Comments: None noted.			

EXTERIOR NOISE TEST DATA FORM
Stationary

Bus Number: 0516	Date: 11-14-05
Personnel: B.S., T.S. & E.L.	
Temperature (°F): 54	Humidity (%): 43
Wind Speed (mph): 3	Wind Direction: W
Barometric Pressure (in.Hg): 30.33	
Verify that microphone height is 4 feet, wind speed is less than 12 mph and ambient temperature is between 30°F and 90°F: ■ checked by: S.C.	
Initial Sound Level Meter Calibration: ■ checked by: S.C.	
Exterior Ambient Noise Level dB(A): 37.9	

Accessories and Air Conditioning ON

Throttle Position	Engine RPM	Curb (Right) Side dB(A)	Street (Left) Side db(A)
		Measured	Measured
Low Idle	675	58.4	57.9
High Idle	1,150	64.0	51.4
Wide Open Throttle	4,000	73.9	73.5

Accessories and Air Conditioning OFF

Throttle Position	Engine RPM	Curb (Right) Side dB(A)	Street (Left) Side db(A)
		Measured	Measured
Low Idle	700	56.4	56.1
High Idle	1,200	60.1	60.3
Wide Open Throttle	4,100	72.7	73.8

Final Sound Level Meter Calibration Check: ■ checked by: S.C.
Comments:

7.2 EXTERIOR NOISE TEST

TEST BUS UNDERGOING
EXTERIOR NOISE TESTING

ITEM #11 (e)

COPIES

OF

PROPOSED

FLOOR

PLANS

SMALL TRANSIT

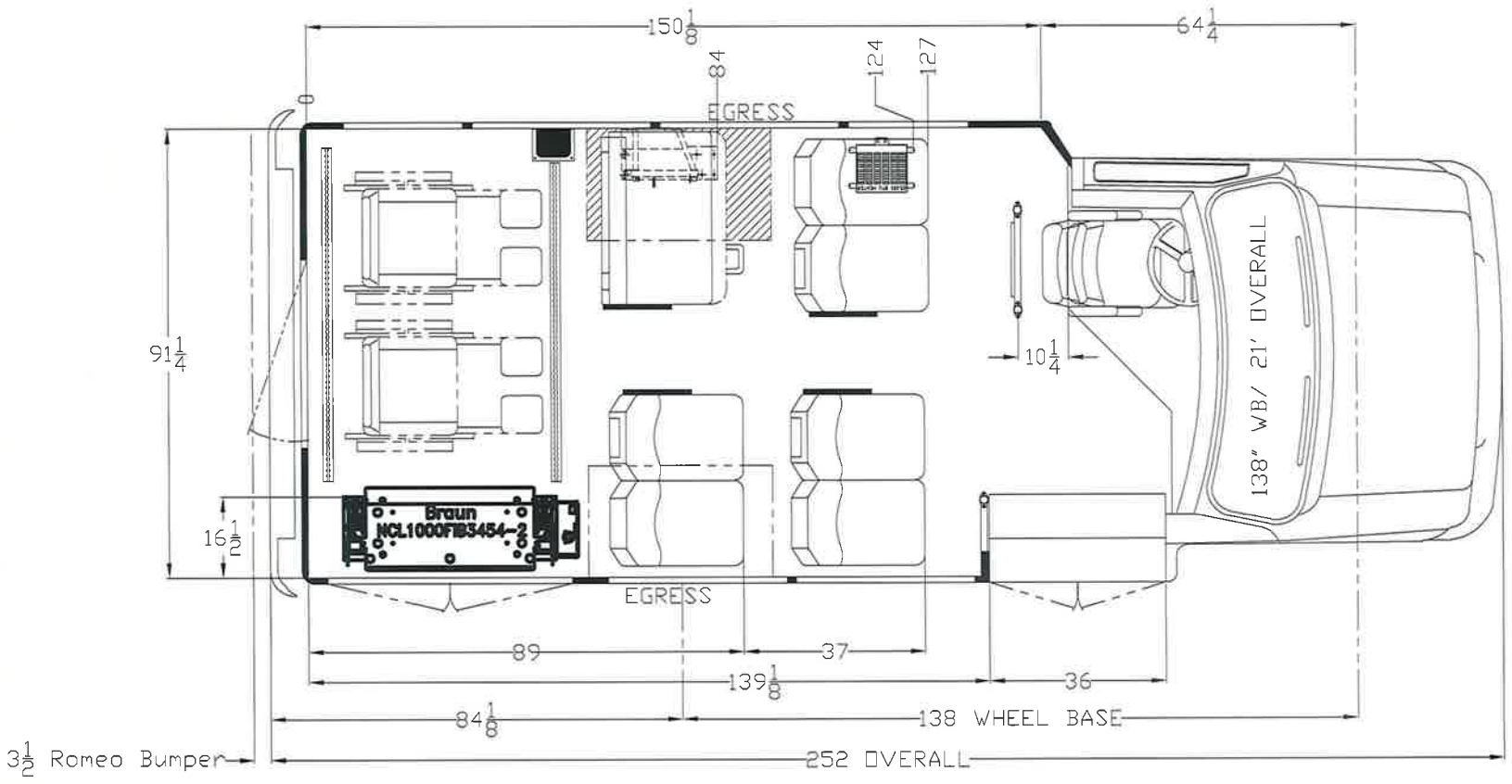
FLOOR PLANS
INTERIOR DIMENSIONS
EXTERIOR DIMENSIONS

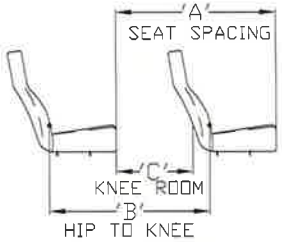
For
ELKHART COACH

REV	DATE	BY	DESCRIPTION
-	-	-	-

REV	DATE	BY	DESCRIPTION
-	-	-	-

REV	DATE	BY	DESCRIPTION
-	-	-	-





SMALL TRANSIT FORD CHASSIS 8 PASSENGER WITH 2 WHEEL CHAIRS

SEAT STYLE	SEAT SPACING 'A'	HIP-TO-KNEE 'B'	KNEE ROOM 'C'
MID HIGH	37"	35"	17"

DEALER SIGNATURE: _____

Q-42-082715-01

DO NOT SCALE

PROJECTION

DESCRIPTION
Floor plan ECCW 138-252 Rear lift (Braun1000) Standard Floor 8P/2WC

W.I. NUMBER

DATE: 8-28-15

SCALE: N.T.S.

REFERENCE: NUMBER

SHEET 1 OF 2

2901 County Road 7 N
ELKHART, IN 46514
(574) 264-5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
FLOORPLANS ±1/2"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

DRAWN BY: NPM

CHECKED BY:

PART NUMBER
900-12-0326

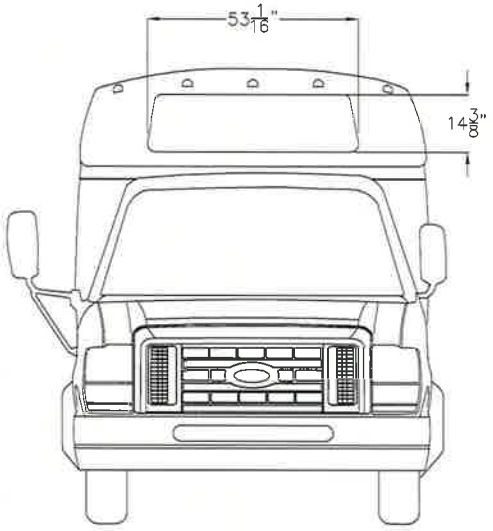
REV A

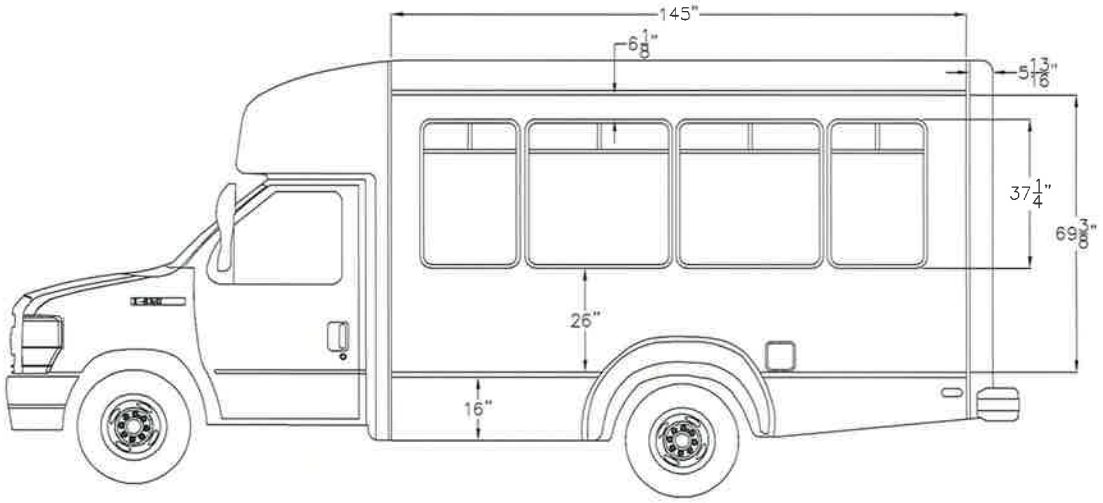
elkhart coach

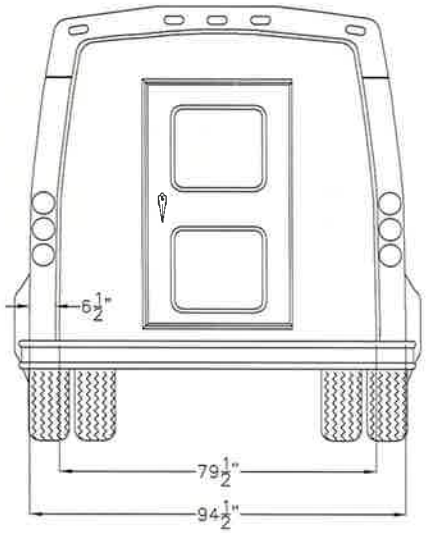
REV	DATE	BY	DESCRIPTION
–	–	–	–

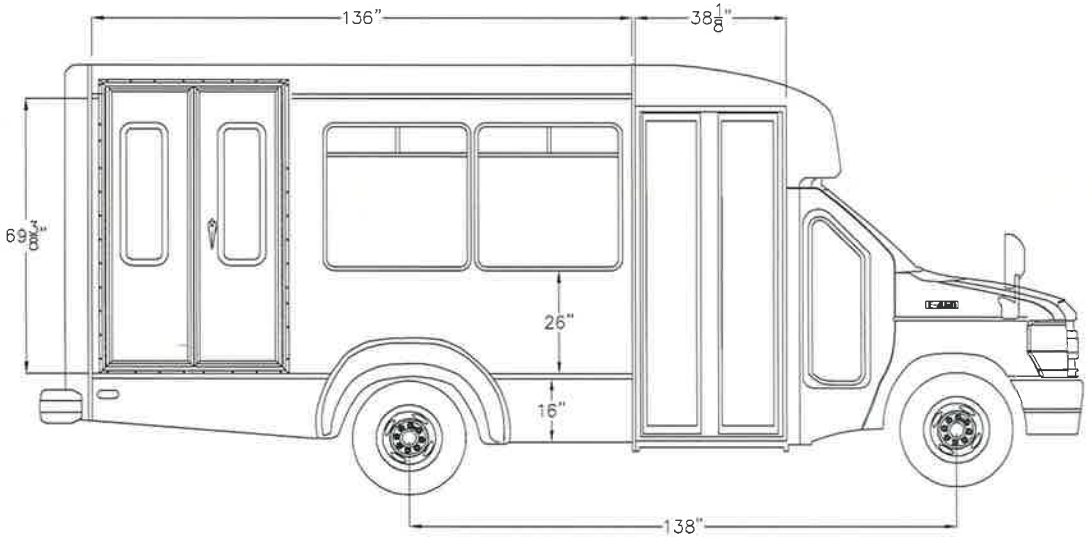
REV	DATE	BY	DESCRIPTION
–	–	–	–

REV	DATE	BY	DESCRIPTION
–	–	–	–









EXTERIOR DIMENSIONS SMALL TRANSIT 8+2 WHEELCHAIRS FORD CHASSIS

DO NOT SCALE

PROJECTION

DESCRIPTION: Elevation, Rear Lift, 138/252

W.I. NUMBER

DATE: 6–29–12

SCALE: N.T.S.

REFERENCE: NUMBER

SHEET 1 OF 1

2901 County Road 7 N
ELKHART, IN 46514
(574) 264–5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
FLOORPLANS ±1/2"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

DRAWN BY: NPM

CHECKED BY:

PART NUMBER **Rear Lift**

REV A

elkhart coach

REV	DATE	BY	DESCRI		REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DI	PTION
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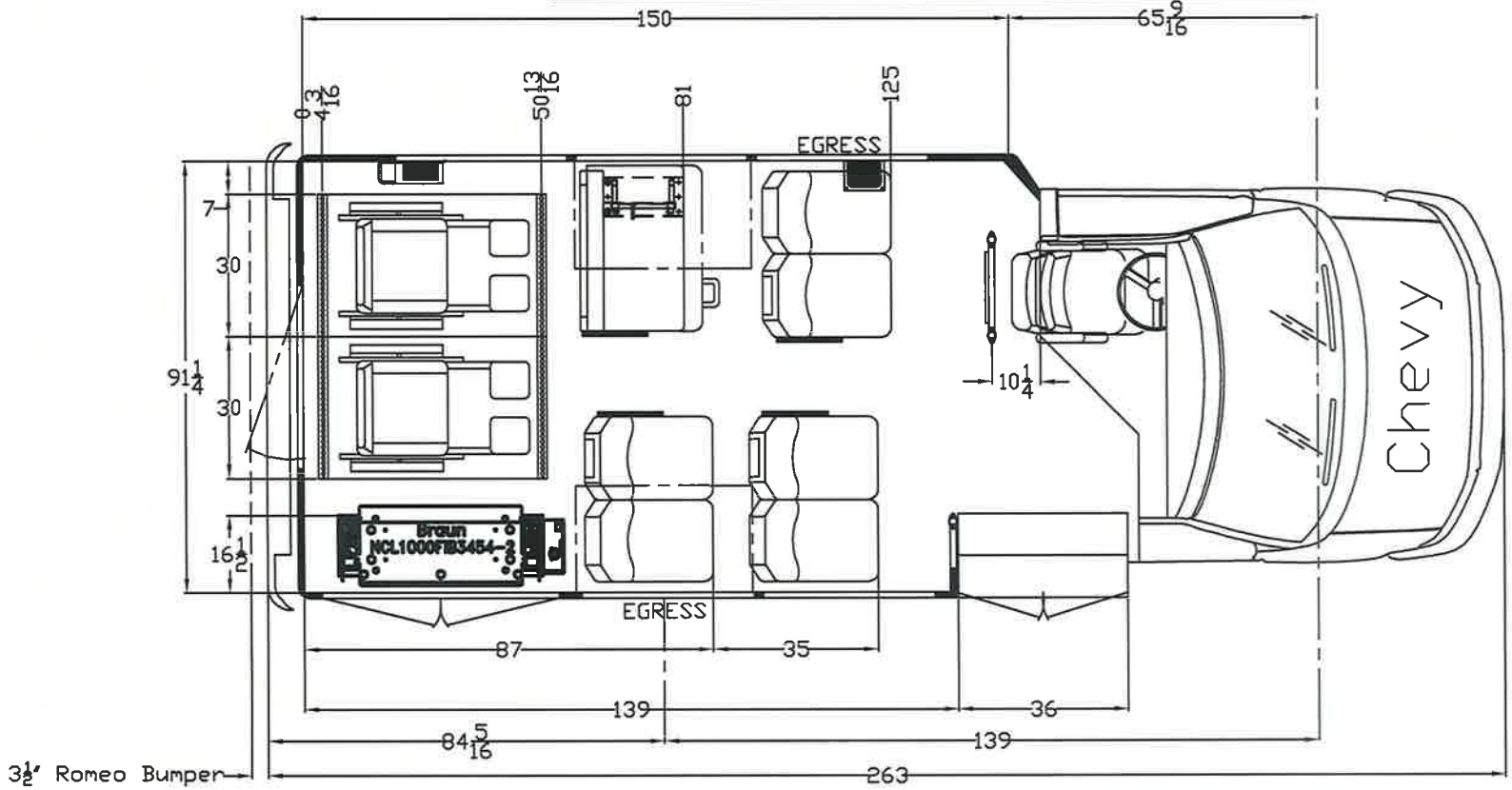

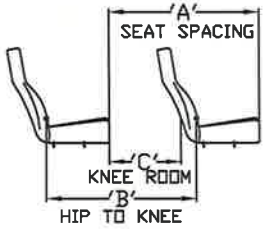

SMALL TRANSIT 8 + 2 WC ON OPTIONAL CHEVROLET CHASSIS

SEAT STYLE	SEAT SPACING 'A'	HIP-TO-KNEE 'B'	KNEE ROOM 'C'
MID HIGH	35"	31"	12 3/4"

DEALER SIGNATURE:_____

Q-42-091615-00

DO NOT SCALE

PROJECTION

DESCRIPTION: Floor plan ECCW Chevy G /139-263 Rear Lift (Braun) Standard Floor 8P/2WC

W.I. NUMBER

DATE: 5-15-13

SCALE: N.T.S.

REFERENCE: NUMBER

SHEET 1 OF 1

52807 COUNTY ROAD 7
ELKHART, IN 46514
(574) 264-5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
FLOORPLANS ±1/2"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

DRAWN BY: NPM

CHECKED BY:

PART NUMBER **900-36-0016**

REV A

elkhart coach

REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DESCRIPTION
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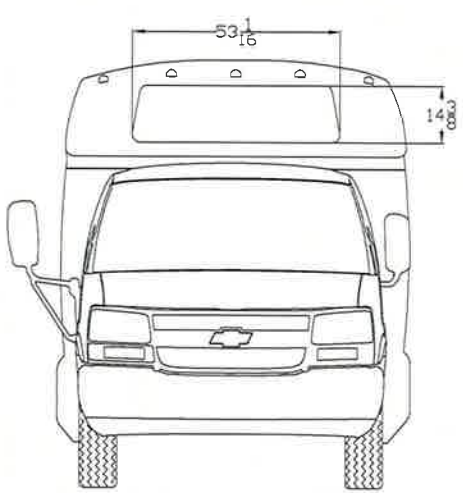
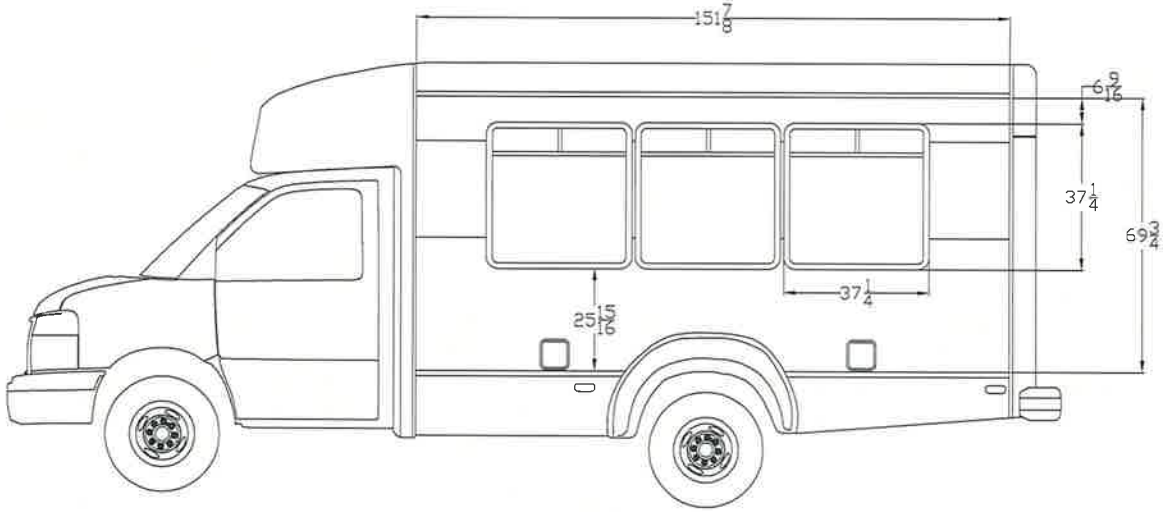
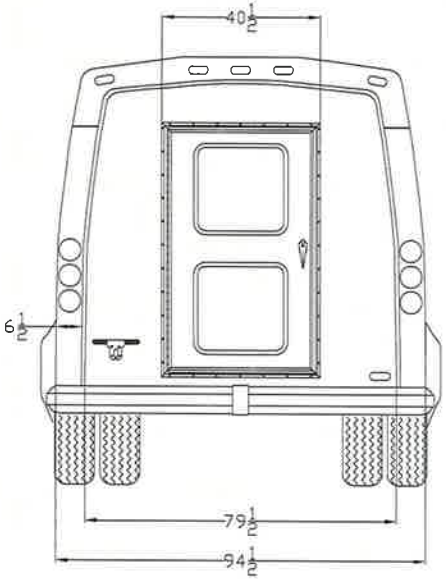
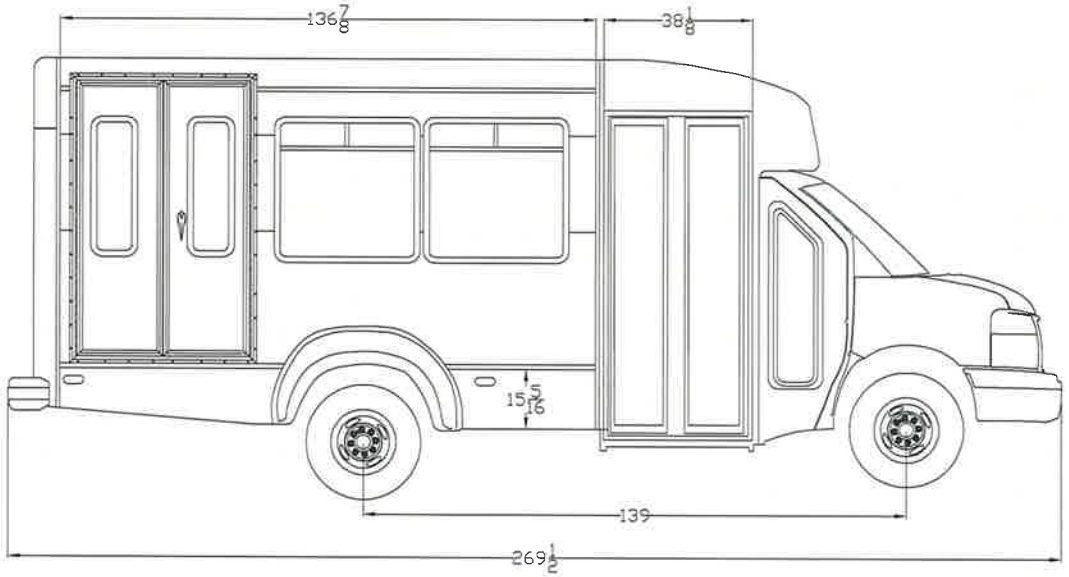








EXTERIOR DIMENSIONS SMALL TRANSIT 8+2 WHEELCHAIRS OPTIONAL CHEVROLET CHASSIS

DO NOT SCALE

PROJECTION

DESCRIPTION: Elevation Chevrolet G-Cut 139-263, Rear Lift

W.I. NUMBER

DATE: 12-20-11

SCALE: N.T.S.

REFERENCE: NUMBER

SHEET 1 OF 1

52807 COUNTY ROAD 7 N
ELKHART, IN 46514
(574) 264-5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
FLOORPLANS ±1/4"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

DRAWN BY: NPM

CHECKED BY:

PART NUMBER: 1300-74-0002

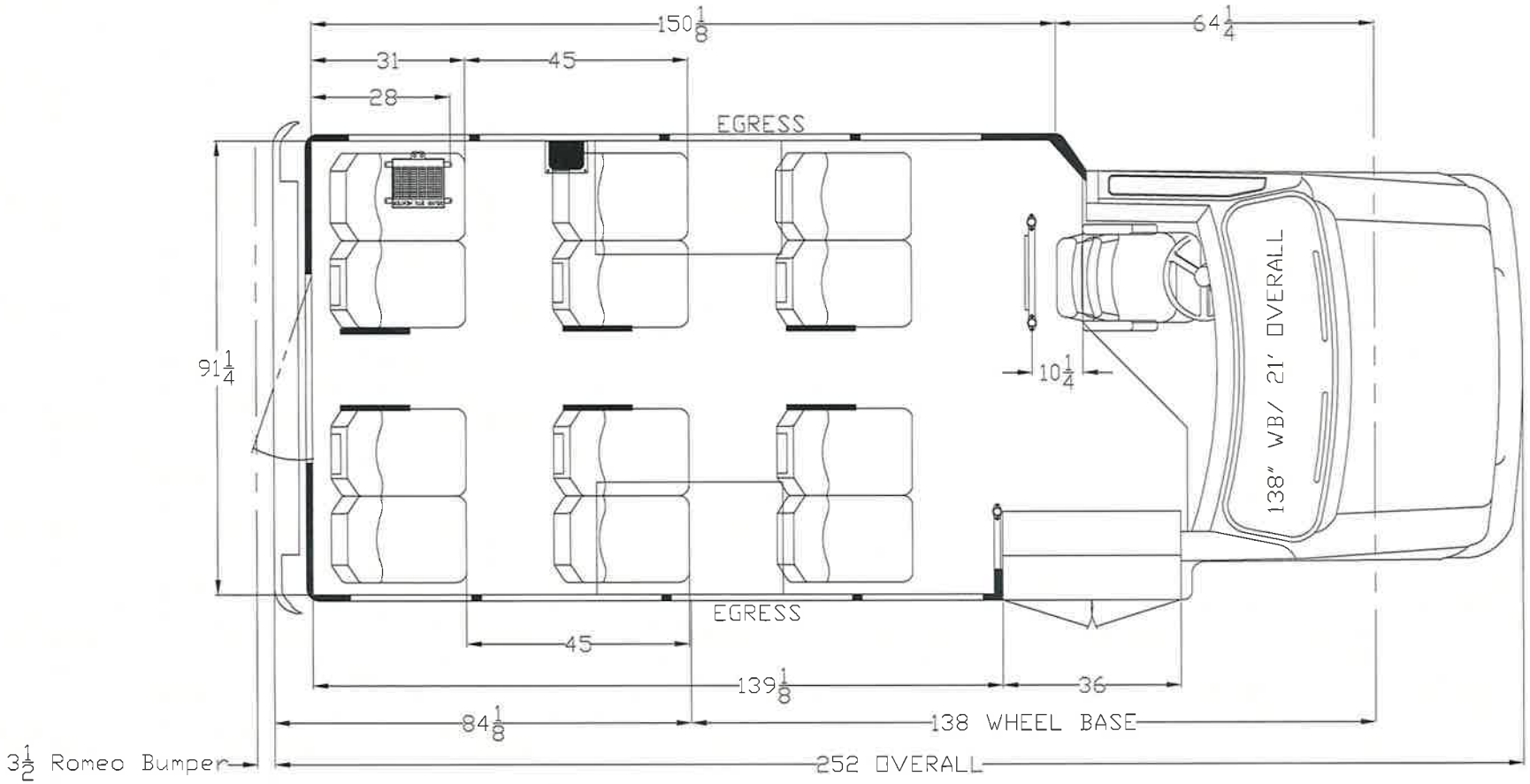
REV: A

elkhart coach

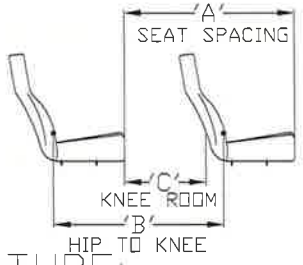
REV	DATE	BY	DESCRIPTION
-	-	-	-

REV	DATE	BY	DESCRIPTION
-	-	-	-

REV	DATE	BY	DESCRIPTION
-	-	-	-



SMALL TRANSIT FORD CHASSIS 12 PASSENGER OPTION



SEAT STYLE	SEAT SPACING 'A'	HIP-TO-KNEE 'B'	KNEE ROOM 'C'
MID HIGH	45"	43"	25"

DEALER SIGNATURE: _____

Q-42-091115-02

DO NOT SCALE

PROJECTION

DESCRIPTION: Floor plan ECCW 138-252 12P/138/252

W.I. NUMBER

DATE: 1-22-07

SCALE: N.T.S.

REFERENCE: NUMBER

SHEET 1 OF 1

52807 County Road 7
ELKHART, IN 46514
(574) 264-5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
FLOORPLANS ±1/4"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

DRAWN BY: NPM

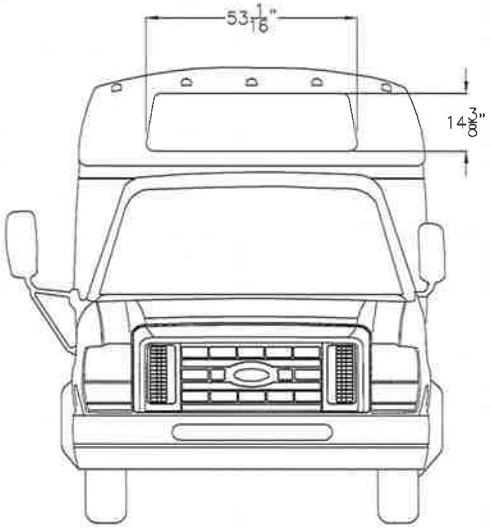
CHECKED BY:

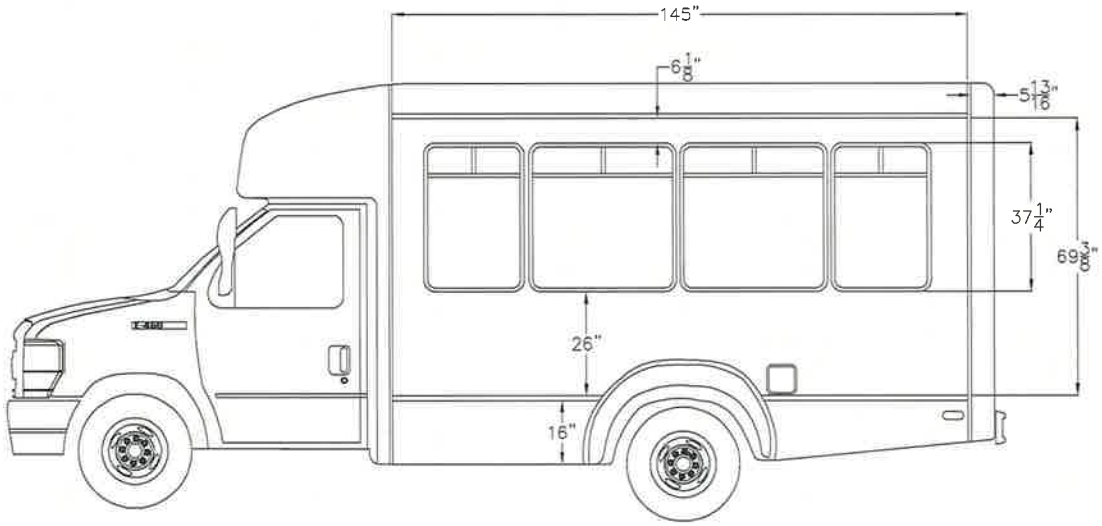
PART NUMBER: 900-12-0035

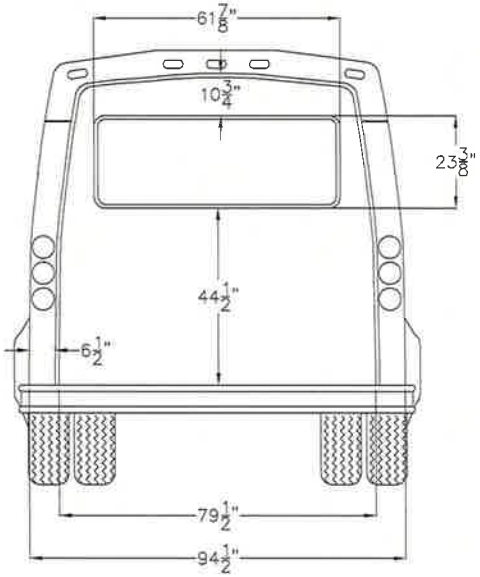
REV: A

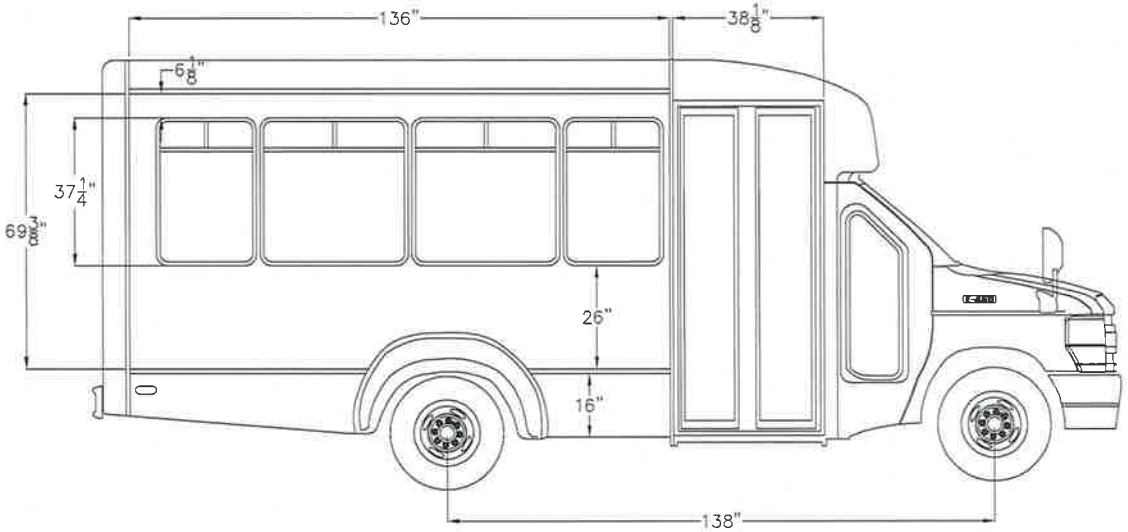
elkhart coach

REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DESCRIPTION
–	–	–	–	–	–	–	–	–	–	–	–









SMALL TRANSIT 12 PASSENGER FORD CHASSIS

DO NOT SCALE

PROJECTION

DESCRIPTION: Elevation, All Pass, Stnd Floor 138/252

W.I. NUMBER

DATE: 6–29–12

SCALE: N.T.S.

REFERENCE: NUMBER

SHEET 1 OF 1

52807 County Road 7
ELKHART, IN 46514
(574) 264–5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
FLOORPLANS ±1/2"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

DRAWN BY: NPM

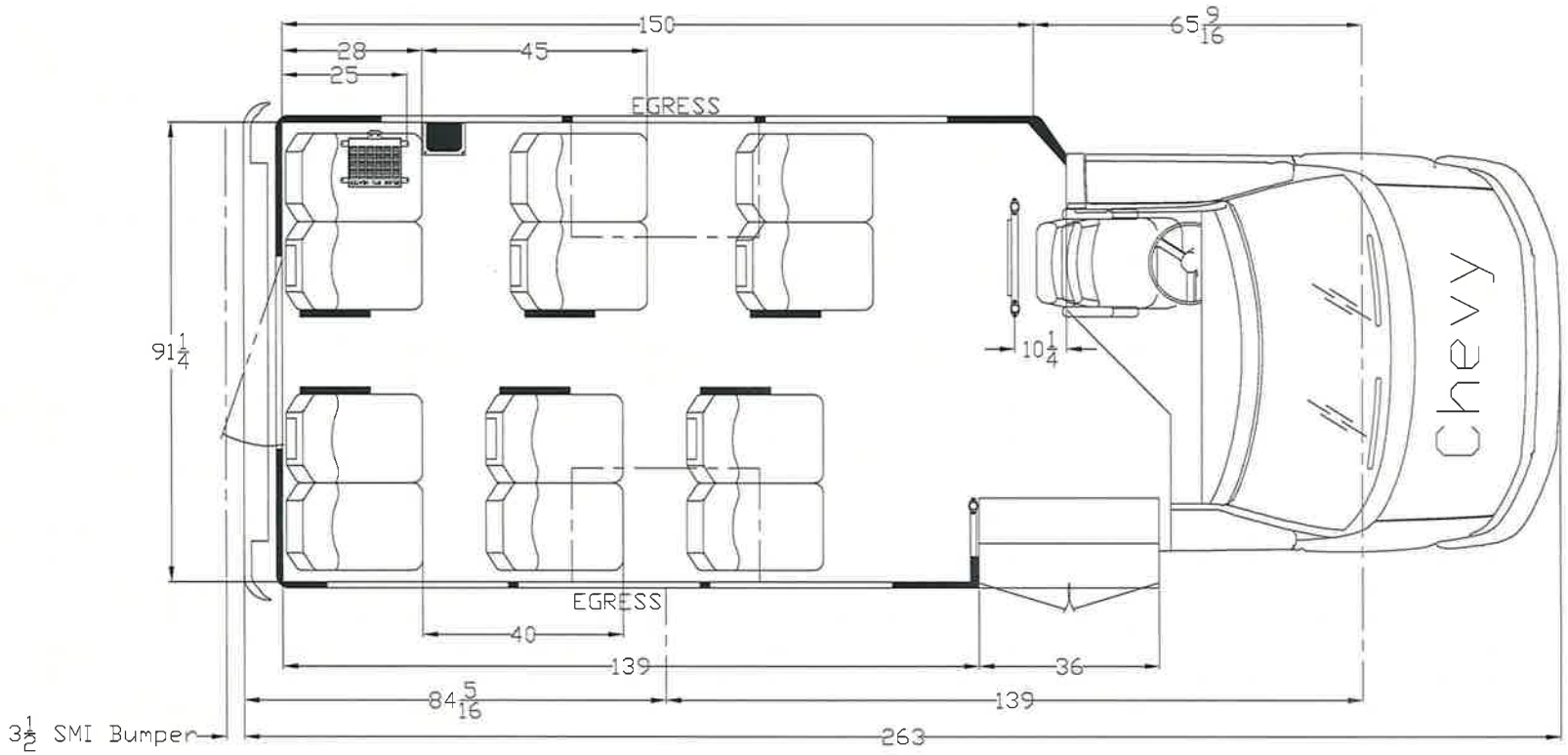
CHECKED BY:

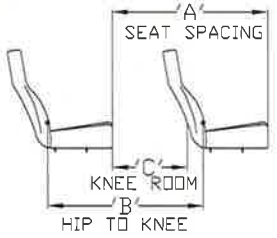
PART NUMBER: **All Pass**

REV: A

elkhart Coach

REV	DATE	BY	DESCRIPTION
-	-	-	-





SMALL TRANSIT 12 PASSENGER ON OPTIONAL CHEVROLET CHASSIS

SEAT STYLE	SEAT SPACING 'A'	HIP-TO-KNEE 'B'	KNEE ROOM 'C'
Mid High	45"	43"	25"
Mid High	40"	38"	20"

DEALER SIGNATURE: _____

Q-42-091715-03

DO NOT SCALE

PROJECTION

DESCRIPTION: Floor plan ECCW Chevy G /139-263 All Passenger Standard Floor 12P

W.I. NUMBER

DATE: 9-17-15

SCALE: N.T.S.

REFERENCE: NUMBER

SHEET 1 OF 1

2901 COUNTY ROAD 7 N
ELKHART, IN 46514
(574) 264-5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
FLOORPLANS ±1/2"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

DRAWN BY: NPM

CHECKED BY:

PART NUMBER **900-36-0040**

REV A

elkhart coach

REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DESCRIPTION
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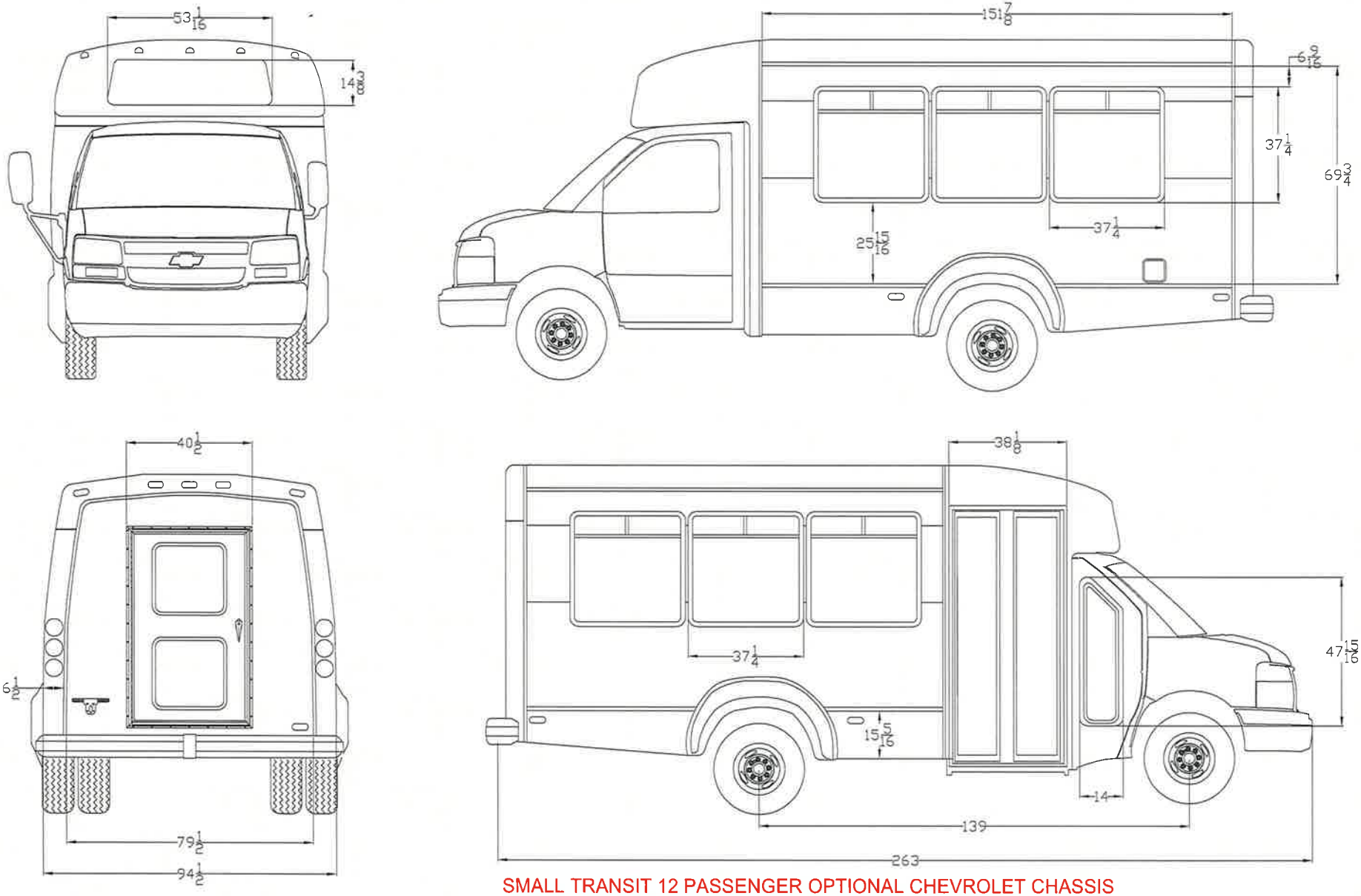


SMALL TRANSIT 12 PASSENGER OPTIONAL CHEVROLET CHASSIS

DO NOT SCALE

PROJECTION

DESCRIPTION: Elevation Chevrolet G-Cut 139-263, All Passenger

W.I. NUMBER

DATE: 4-30-12

SCALE: N.T.S.

REFERENCE: NUMBER

SHEET 1 OF 1

52807 COUNTY ROAD 7
ELKHART, IN 46514
(574) 264-5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
Elevations ±1/2"
ANGLE ±1°

DRAWN BY: NPM

CHECKED BY:

PART NUMBER: **All Pass**

REV: A

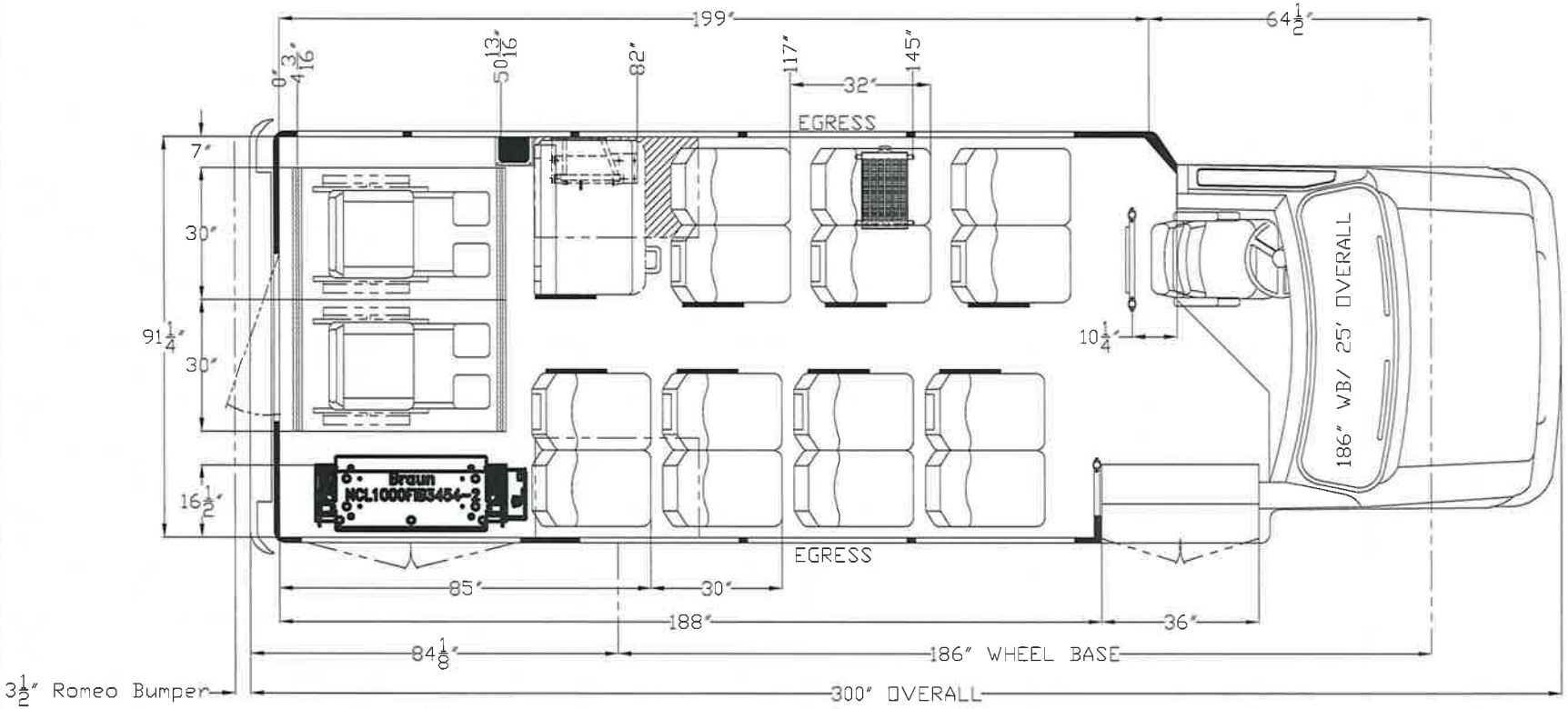
elkhart Coach

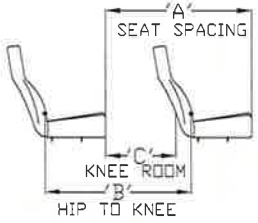
LARGE TRANSIT

FLOOR PLANS
INTERIOR DIMENSIONS
EXTERIOR DIMENSIONS

For
ELKHART COACH

REV	DATE	BY	DESCRI		REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DI	PTION
-	-	-	-		-	-	-	-	-	-	-	-	





LARGE TRANSIT FORD CHASSIS 16 PASSENGER WITH 2 WHEEL CHAIRS

SEAT STYLE	SEAT SPACING 'A'	HIP-TO-KNEE 'B'	KNEE ROOM 'C'
MID-HIGH	32"	30"	12"
MID-HIGH	30"	28"	10"

DEALER SIGNATURE: _____

Q-42-082715-03

DO NOT SCALE

PROJECTION

DESCRIPTION: Floor plan ECCW 186-300 Rear Lift (Braun1000) Standard Floor 16p/2wc

W.I. NUMBER | DATE: 8-28-15 | SCALE: N.T.S. | REFERENCE: NUMBER | SHEET 1 OF 1

2901 County Road 7 N
ELKHART, IN 46514
(574) 266-5208
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
FLOORPLANS ±1/2"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

DRAWN BY: NPM

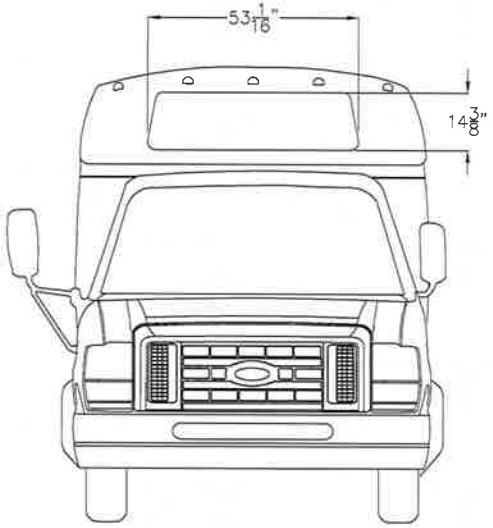
CHECKED BY:

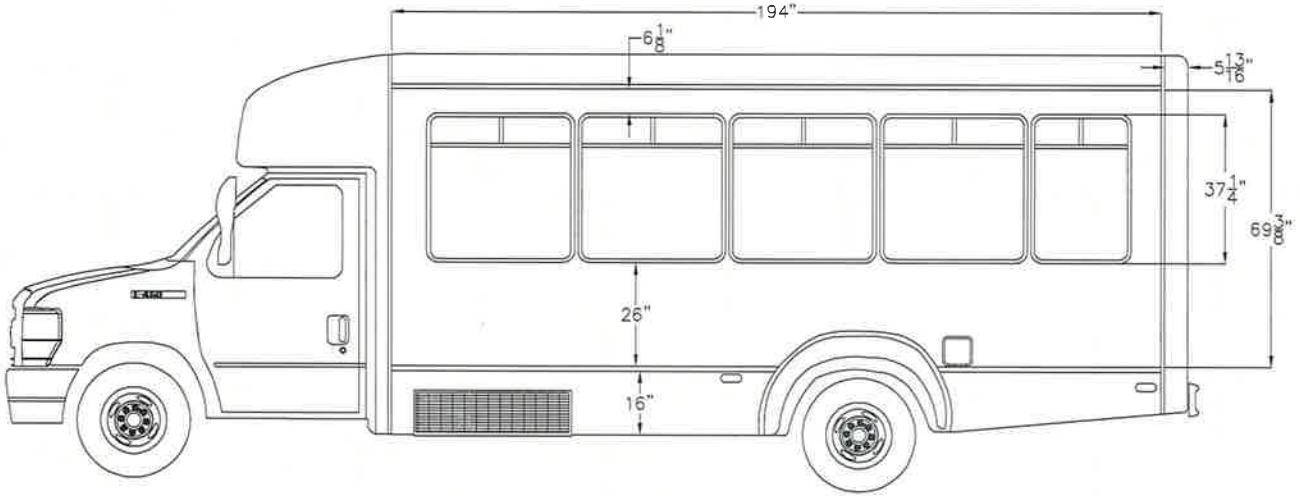
DRAWING NUMBER: 900-05-0909

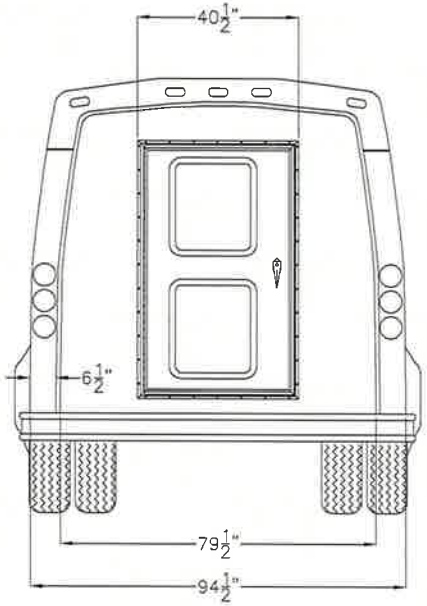
REV: A

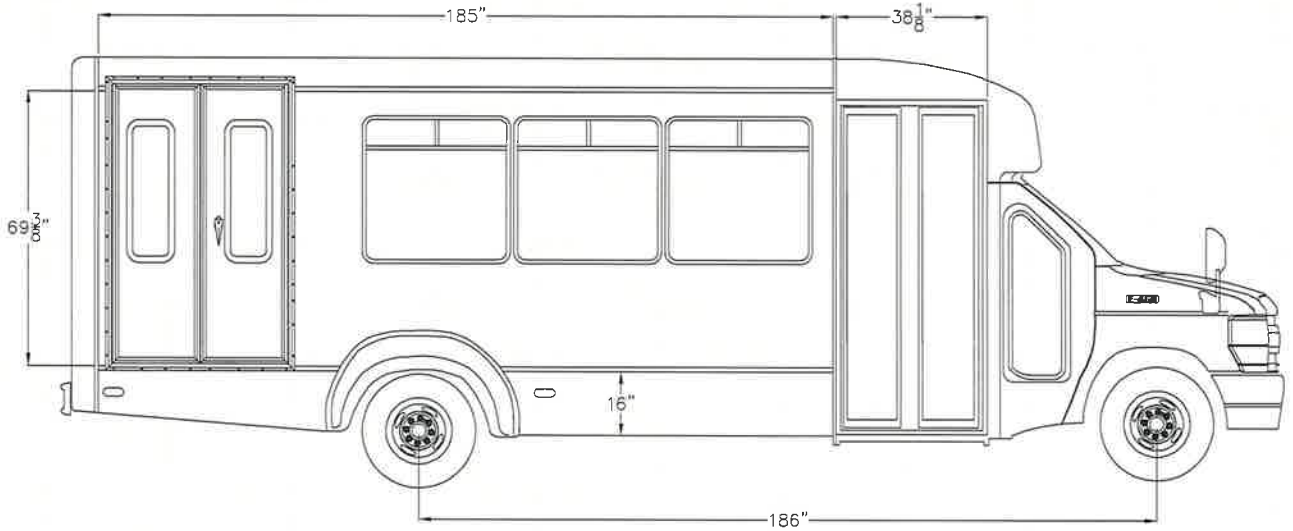
elkhart coach

REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DESCRIPTION
–	–	–	–	–	–	–	–	–	–	–	–









EXTERIOR DIMENSIONS LARGE TRANSIT 16+2 WHEELCHAIRS FORD CHASSIS

DO NOT SCALE

PROJECTION

DESCRIPTION: Elevation, Rear Lift, Stnd Floor 186/300

W.I. NUMBER

DATE: 6–29–12

SCALE: N.T.S.

REFERENCE: NUMBER

SHEET 1 OF 1

52807 County Road 7
ELKHART, IN 46514
(574) 264–5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
FLOORPLANS ±1/2"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

DRAWN BY: NPM

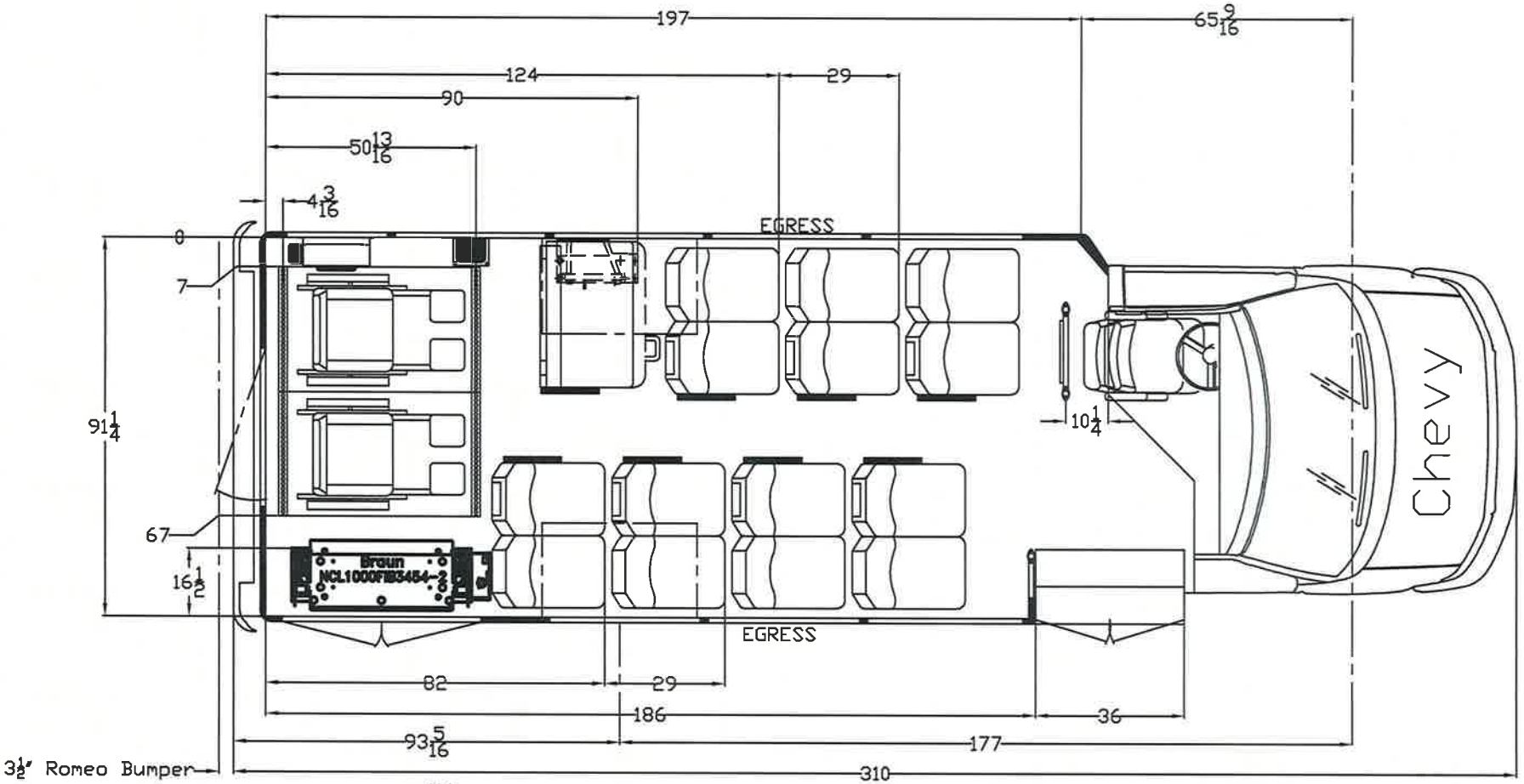
CHECKED BY:

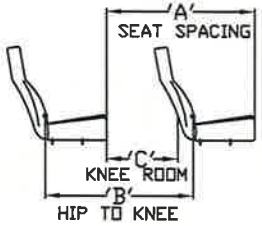
PART NUMBER: **Rear Lift 3**

REV: A

elkhart coach

REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DESCRIPTION
-	-	-	-	-	-	-	-	-	-	-	-





LARGE TRANSIT 16 +2 WC ON OPTIONAL CHEVROLET CHASSIS

SEAT STYLE	SEAT SPACING 'A'	HIP-TO-KNEE 'B'	KNEE ROOM 'C'
Mid HI	29"	27"	7"

DEALER SIGNATURE: _____

Q-42-091615-02

DO NOT SCALE

PROJECTION

DESCRIPTION: Floor plan ECCW Chevy G /177-310 Rear Lift (Braun1000) Standard Floor 16P/2WC

W.I. NUMBER

DATE: 9-16-2015

SCALE: N.T.S.

REFERENCE: NUMBER

SHEET 1 OF 1

52807 COUNTY ROAD 7
ELKHART, IN 46514
(574) 264-5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
FLOORPLANS ±1/4"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

DRAWN BY: IPM

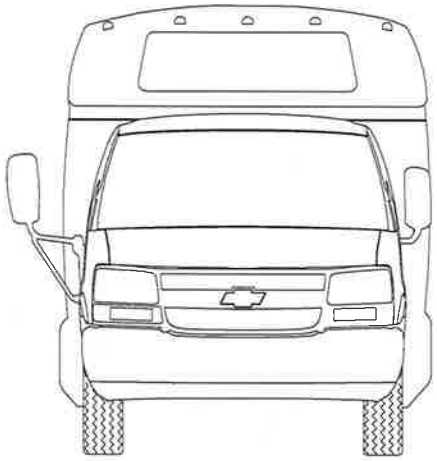
CHECKED BY:

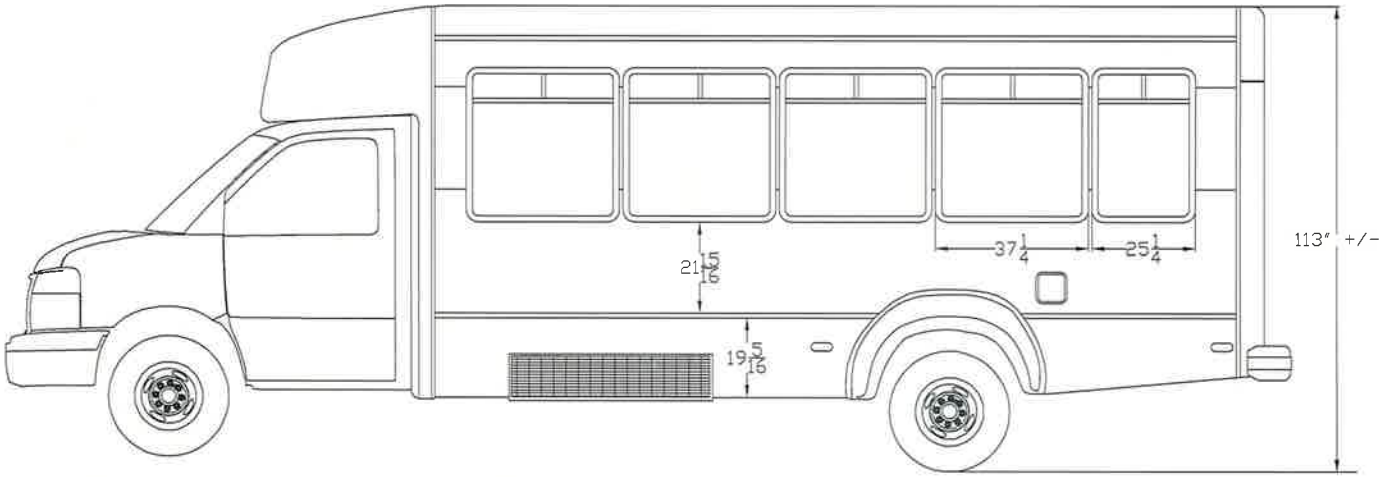
PART NUMBER: 900-34-0120

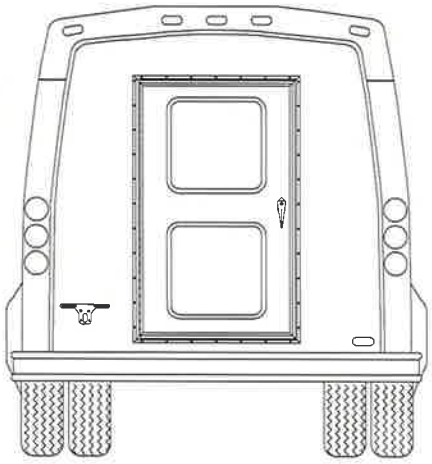
REV: A

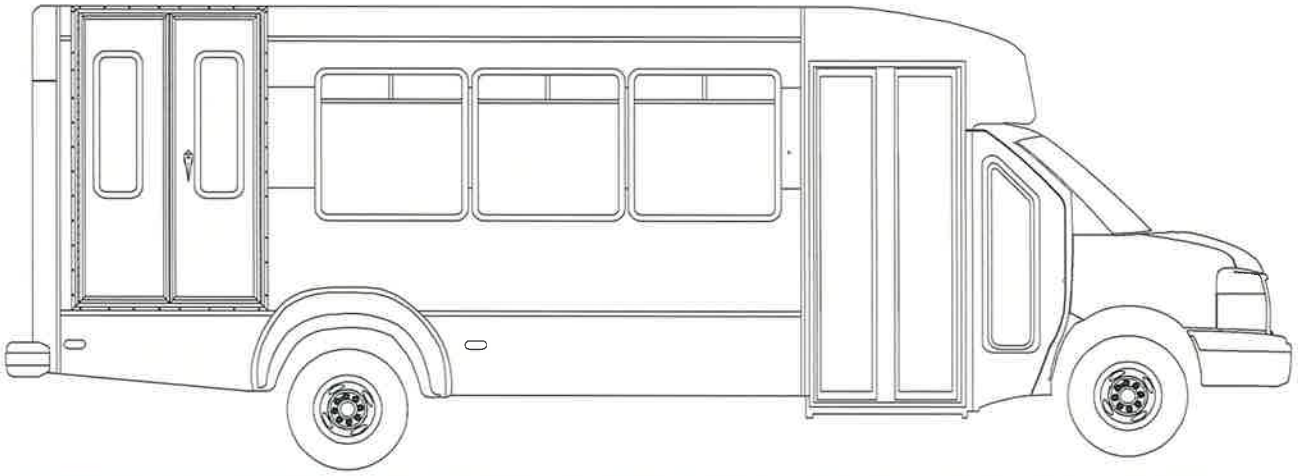
Elkhart Coach

REV	DATE	BY	DESCRI		REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DI	PTION
-	-	-	-		-	-	-	-	-	-	-	-	









EXTERIOR DIMENSIONS LARGE TRANSIT 16+2 WHEELCHAIR OPTIONAL CHEVROLET CHASSIS

DO NOT SCALE

PROJECTION

DESCRIPTION: Elevation Chevrolet G-Cut 177-310, Rear Lift, Standard Floor

W.I. NUMBER

DATE: 12-12-11

SCALE: N.T.S.

REFERENCE: NUMBER

SHEET 1 OF 1

52807 COUNTY ROAD 7
ELKHART, IN 46514
(574) 264-5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
FLOORPLANS ±1/4"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

DRAWN BY: NPM

CHECKED BY:

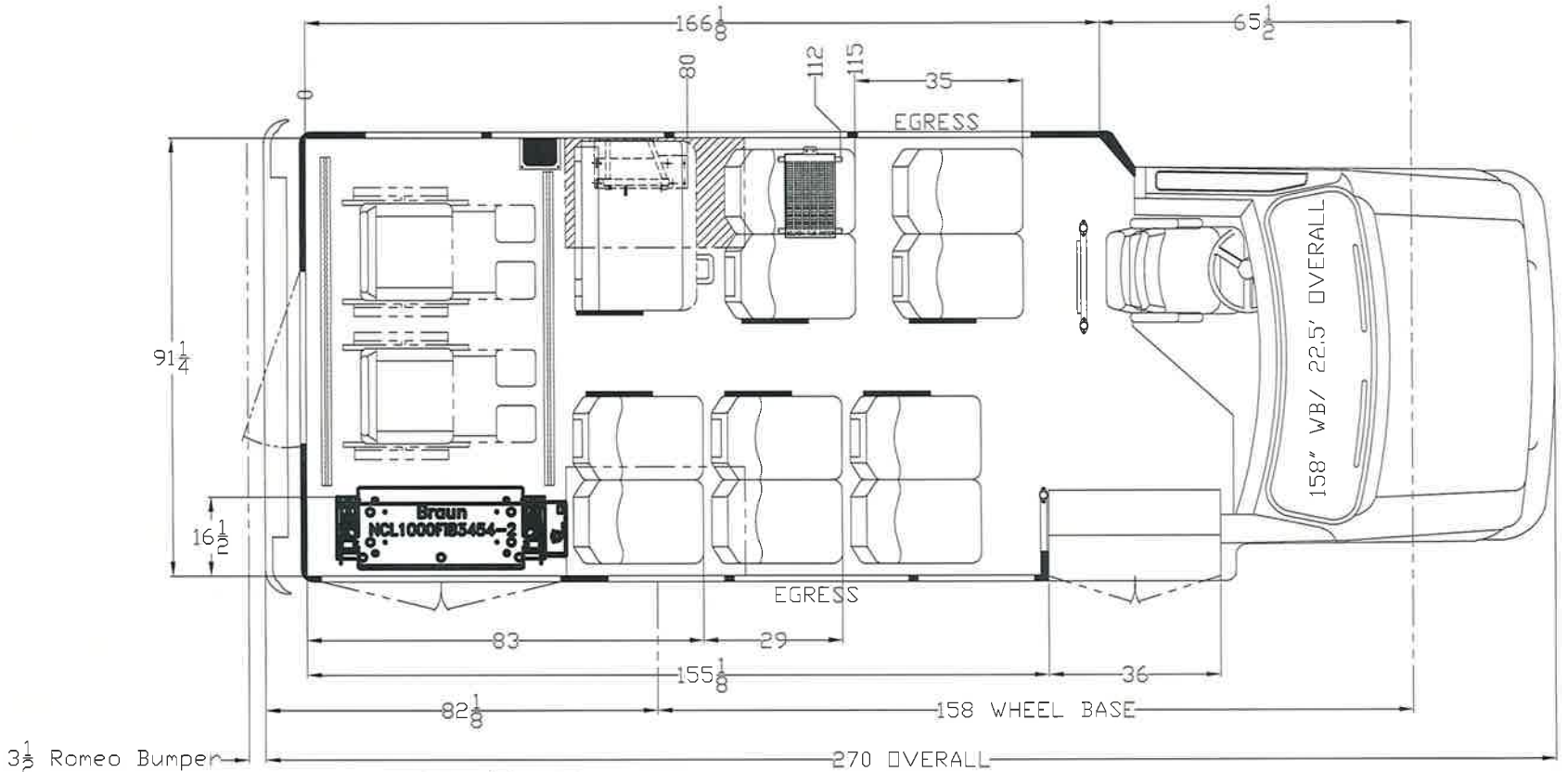
PART NUMBER: 1300-76-0001

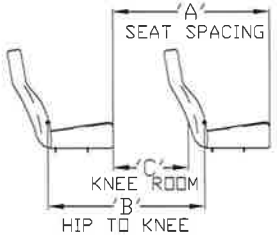
REV: A

elkhart coach

REV	DATE	BY	DESCRI
-	-	-	-

	REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DI	PTION
	-	-	-	-	-	-	-	-	





LARGE TRANSIT FORD CHASSIS OPTIONAL 12 PASSENGER 2 WHEEL CHAIR

SEAT STYLE	SEAT SPACING 'A'	HIP-TO-KNEE 'B'	KNEE ROOM 'C'
MID HIGH	35"	33"	15"
MID HIGH	29"	27"	9"

DEALER SIGNATURE: _____

Q-42-082715-02

DO NOT SCALE

PROJECTION

DESCRIPTION
Floor plan ECCW 158-270 Rear Lift (Braun1000) Standard Floor 12P/2WC

W.I. NUMBER

DATE: 8-28-15

SCALE: N.T.S.

REFERENCE: NUMBER

SHEET 1 OF 2

2901 COUNTY ROAD 7 N
ELKHART, IN 46514
(574) 264-5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
FLOORPLANS ±1/2"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

DRAWN BY: NPM

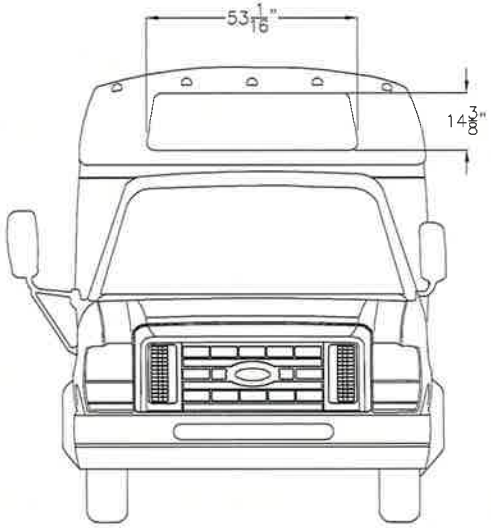
CHECKED BY:

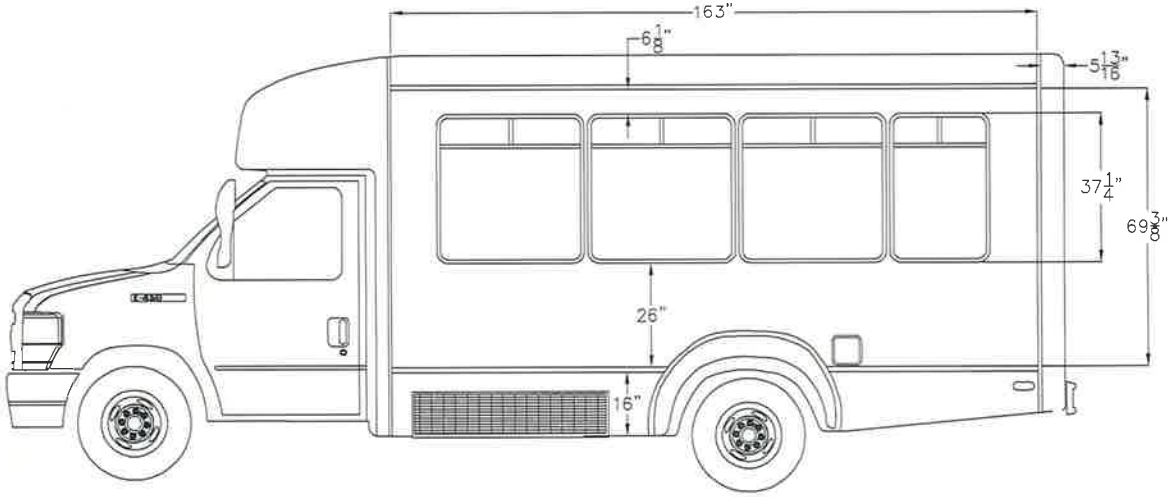
PART NUMBER
900-03-0967

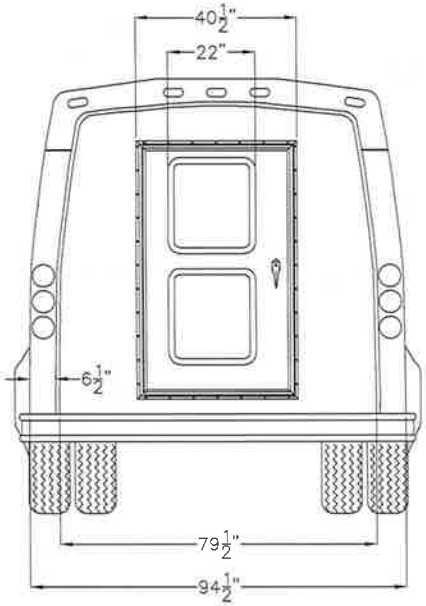
REV A

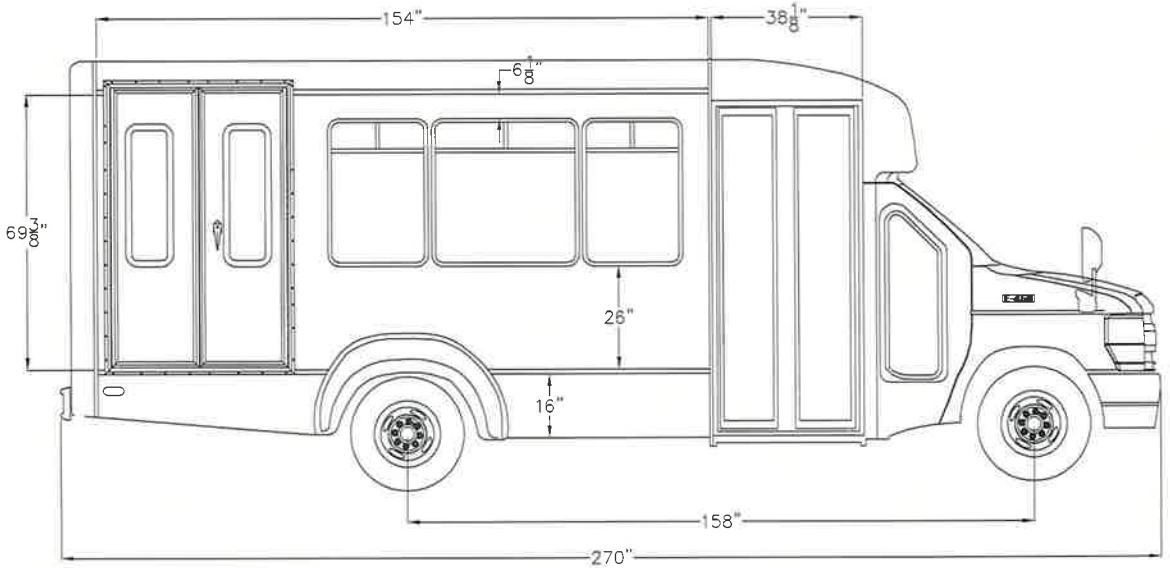
elkhart coach

REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DESCRIPTION
–	–	–	–	–	–	–	–	–	–	–	–









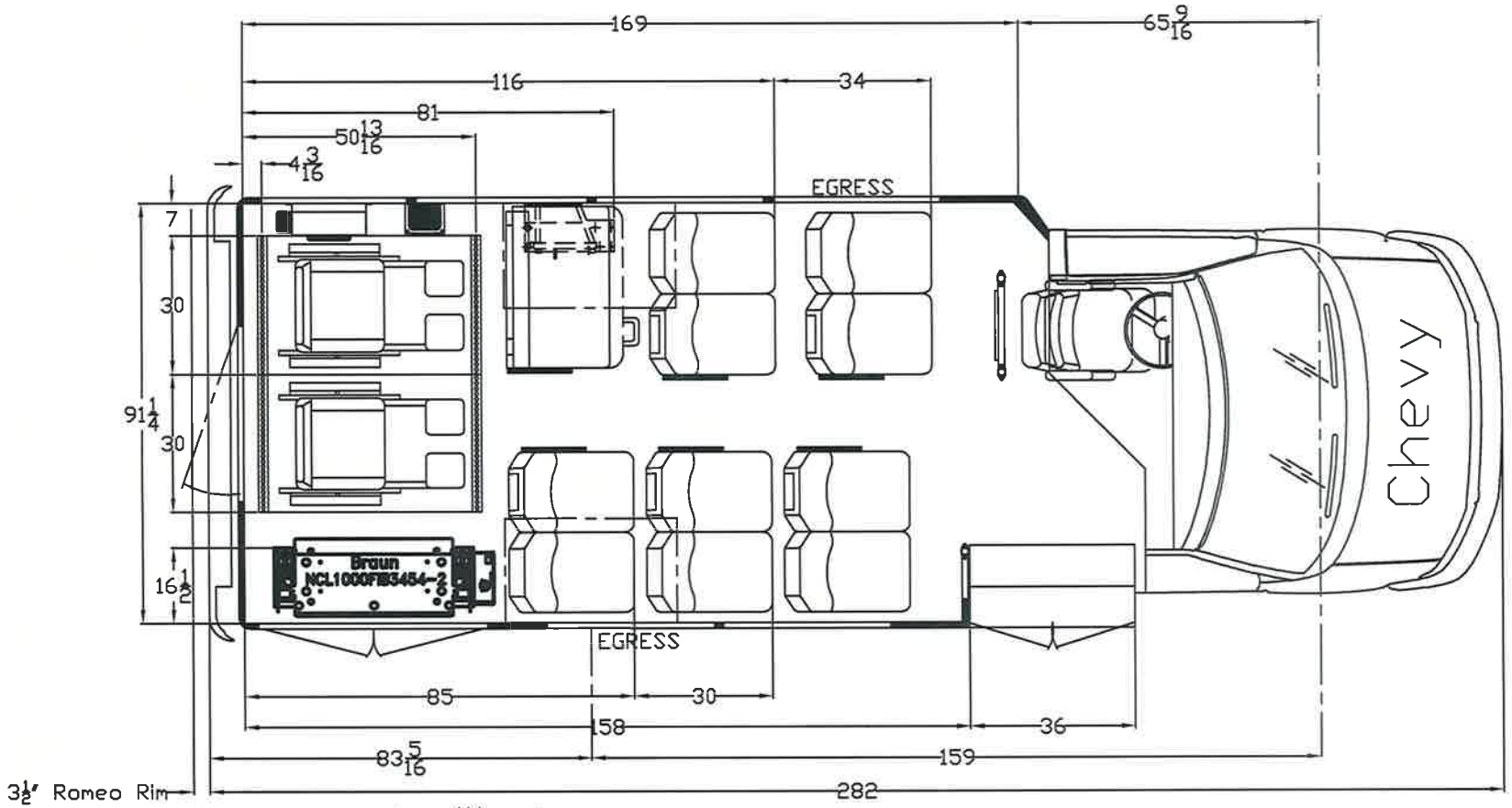
EXTERIOR DIMENSIONS LARGE TRANSIT 12+2 WHEELCHAIRS FORD CHASSIS

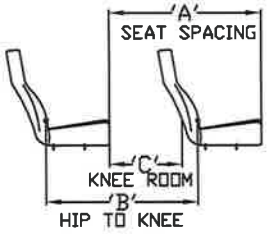
DO NOT SCALE

PROJECTION	DESCRIPTION: Elevation, Rear Lift,158/270				2901 County Road 7 N ELKHART, IN 46514 (574) 264–5179 A DIVISION OF FOREST RIVER
	W.I. NUMBER	DATE: 6–29–12	SCALE: N.T.S.	REFERENCE: NUMBER	SHEET 1 OF 1
SIZE A	THIS DOCUMENT AND THE INFORMATION CONTAINED HEREIN ARE THE EXCLUSIVE PROPERTY OF ELKHART COACH IT SHALL NOT BE COPIED OR DUPLICATED IN ANY MANNER, NOR SHALL IT BE SUBMITTED TO OUTSIDE PARTIES FOR EXAMINATION WITHOUT OUR WRITTEN CONSENT. IT IS LOANED FOR USE WITH REFERENCE TO WORK UNDER CONTRACT WITH, OR PROPOSALS SUBMITTED TO ELKHART COACH	TOLERANCES UNLESS OHTERWISE SPECIFIED ARE: FLOORPLANS ±1/2" ALL STRUCTURAL ±1/8" ANGLE ±1°	DRAWN BY: NPM CHECKED BY:	PART NUMBER **Rear Lift**	REV A

elkhart coach

REV	DATE	BY	DESCRI		REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DI	PTION
-	-	-	-		-	-	-	-	-	-	-	-	





LARGE TRANSIT OPTIONAL 12 + 2 WC ON OPTIONAL CHEVROLET CHASSIS

SEAT STYLE	SEAT SPACING 'A'	HIP-TO-KNEE 'B'	KNEE ROOM 'C'
MID HIGH	30"	28"	10"
MID HIGH	34"	32"	14"

DEALER SIGNATURE:_____

Q-42-091615-01

DO NOT SCALE

PROJECTION

DESCRIPTION: Floor plan ECCW Chevy G /159-282 Rear Lift (Braun) Standard Floor 12P/2WC

W.I. NUMBER

DATE: 9-16-2015

SCALE: N.T.S.

REFERENCE: NUMBER

SHEET 1 OF 1

52807 COUNTY ROAD 7
ELKHART, IN 46514
(574) 264-5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
FLOORPLANS ±1/2"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

DRAWN BY: IPM

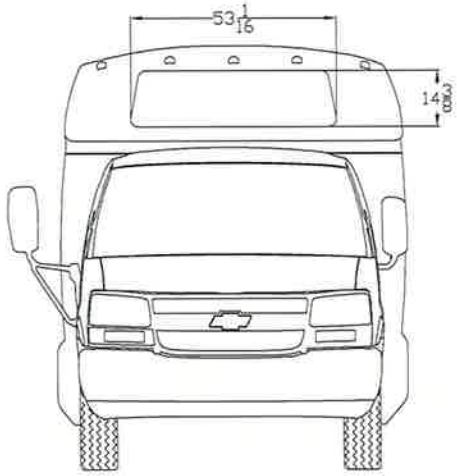
CHECKED BY:

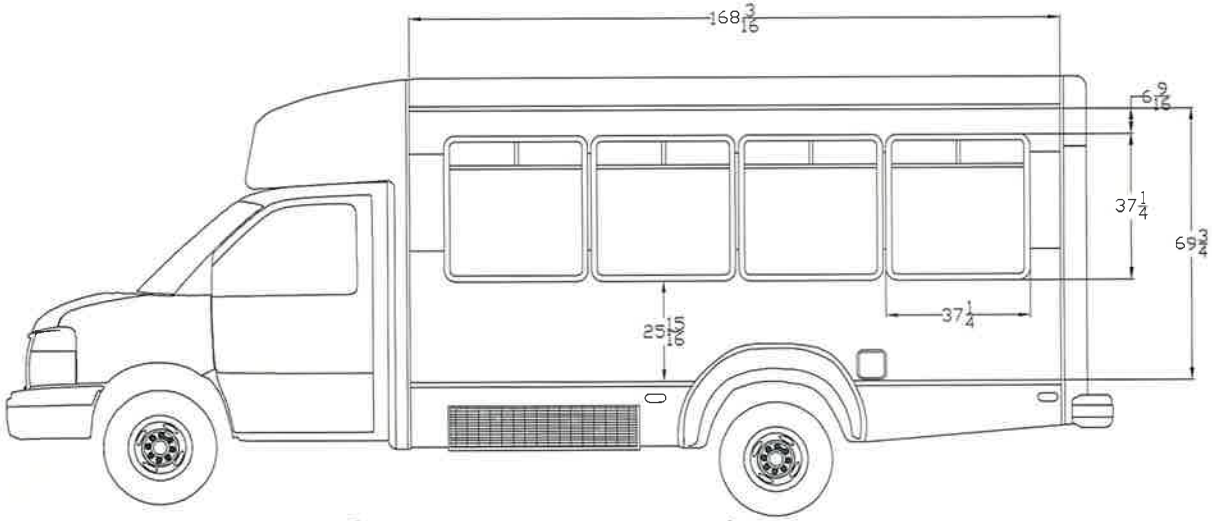
PART NUMBER **900-32-0153**

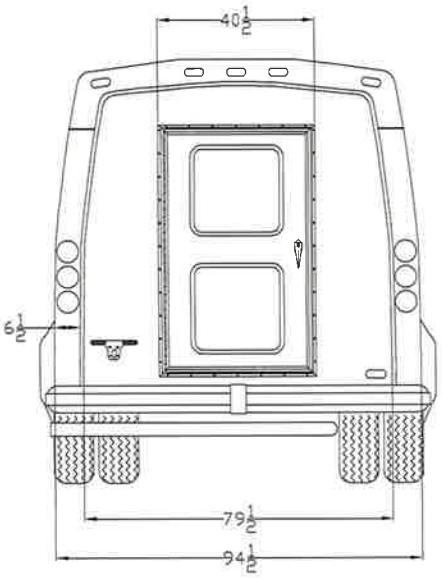
REV **A**

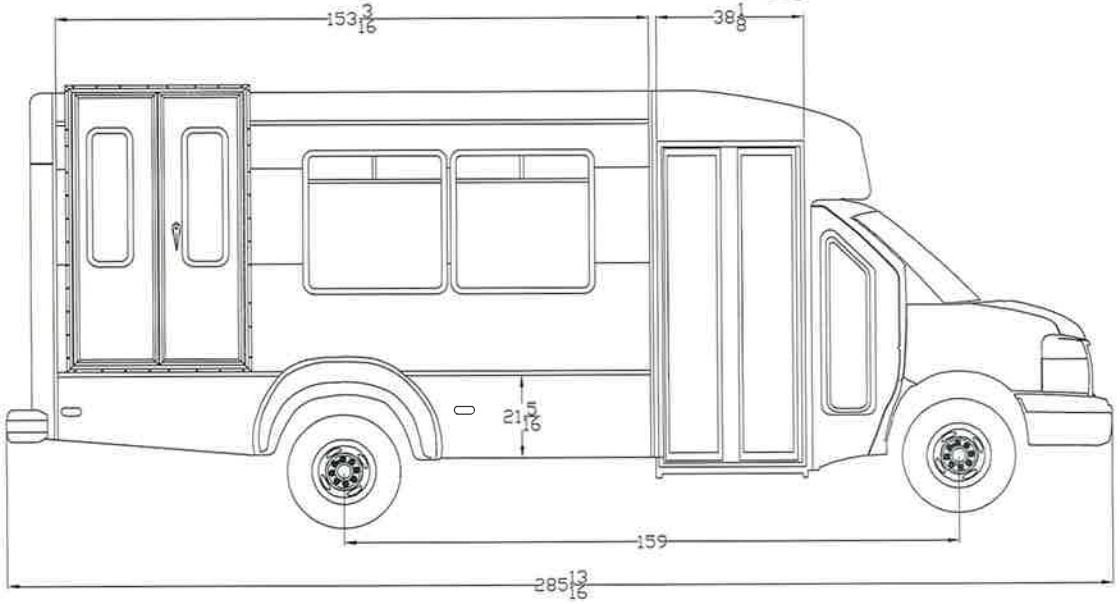
elkhart coach

REV	DATE	BY	DESCRI		REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DE .PTION
-	-	-	-		-	-	-	-	-	-	-	-









EXTERIOR DIMENSIONS LARGE TRANSIT 12 +2 WHEELCHAIRS OPTIONAL CHEVROLET CHASSIS

DO NOT SCALE

PROJECTION

DESCRIPTION: Elevation Chevrolet G-Cut 159-282, Rear Lift

W.I. NUMBER

DATE: 8-23-11

SCALE: N.T.S.

REFERENCE: NUMBER

SHEET 1 OF 1

52807 COUNTY ROAD 7
ELKHART, IN 46514
(574) 264-5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
FLOORPLANS ±1/4"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

DRAWN BY: NPM

CHECKED BY:

PART NUMBER **1300-74-0002**

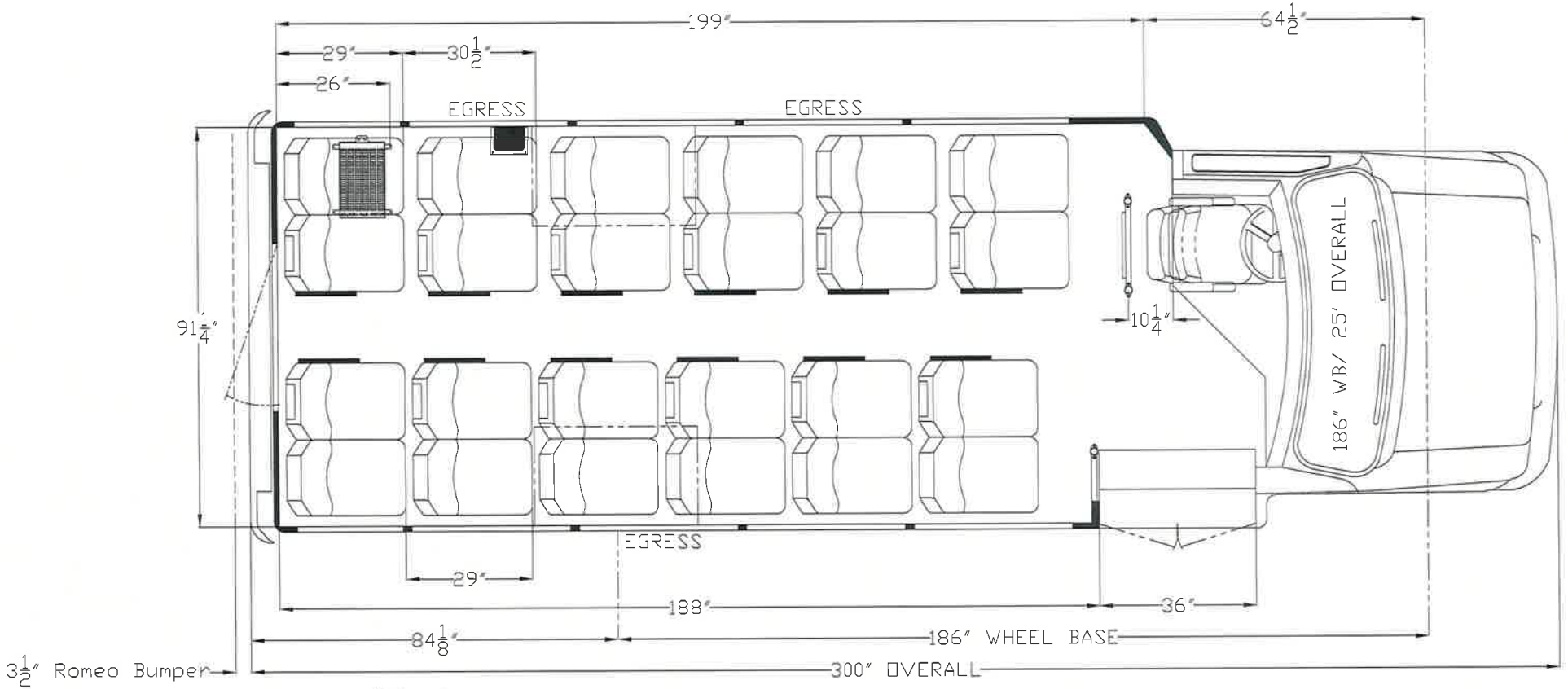
REV **A**

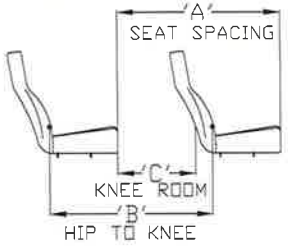
elkhart coach

REV	DATE	BY	DESCRIPTION
-	-	-	-

REV	DATE	BY	DESCRIPTION
-	-	-	-

REV	DATE	BY	DESCRIPTION
-	-	-	-





LARGE TRANSIT FORD CHASSIS 24 PASSENGER OPTION

SEAT STYLE	SEAT SPACING 'A'	HIP-TO-KNEE 'B'	KNEE ROOM 'C'
MID-HIGH	30 1/2"	28 1/2"	10 1/2"
MID-HIGH	29"	27"	9"

DEALER SIGNATURE: _____

Q-42-091115-03

DO NOT SCALE

PROJECTION

DESCRIPTION: Floor plan ECCW 186-300 all passenger standard floor 24p

W.I. NUMBER

DATE: 6-2-06

SCALE: N.T.S.

REFERENCE: NUMBER

SHEET 1 OF 1

52807 County Road 7
ELKHART, IN 46514
(574) 264-5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OTHERWISE SPECIFIED ARE:
FLOORPLANS ±1/2"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

DRAWN BY: NPM

CHECKED BY:

PART NUMBER: 900-05-0038

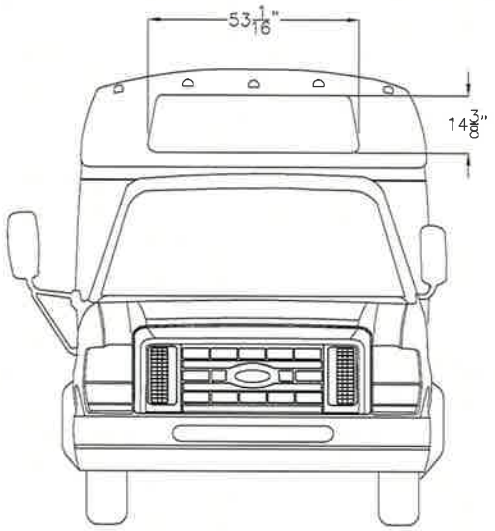
REV: A

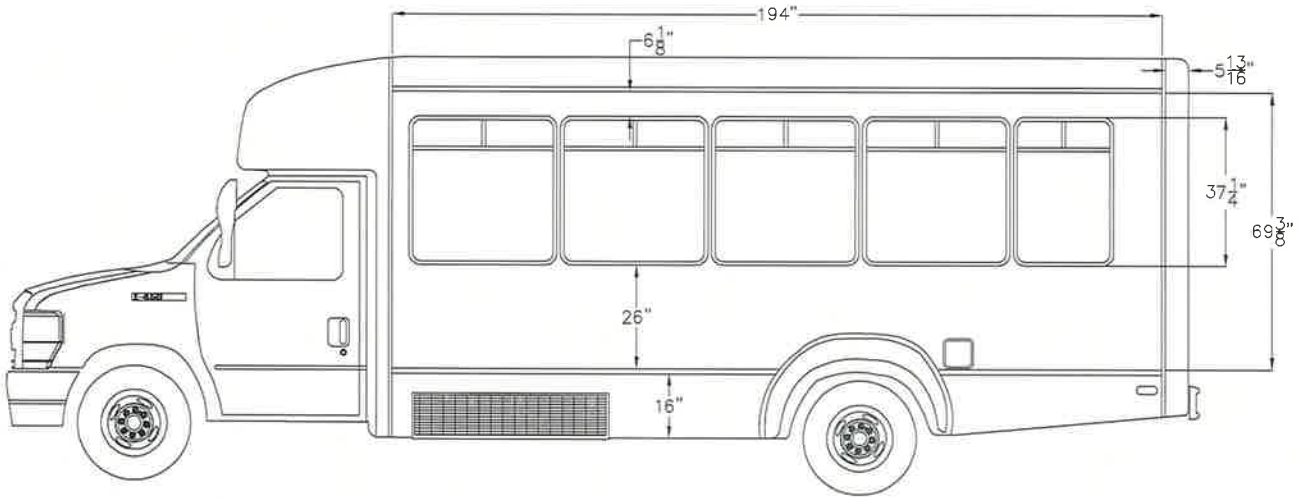
elkhart coach

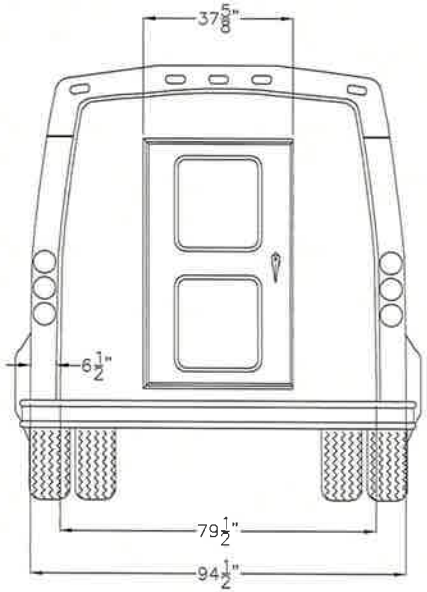
REV	DATE	BY	DESCRIPTION
–	–	–	–

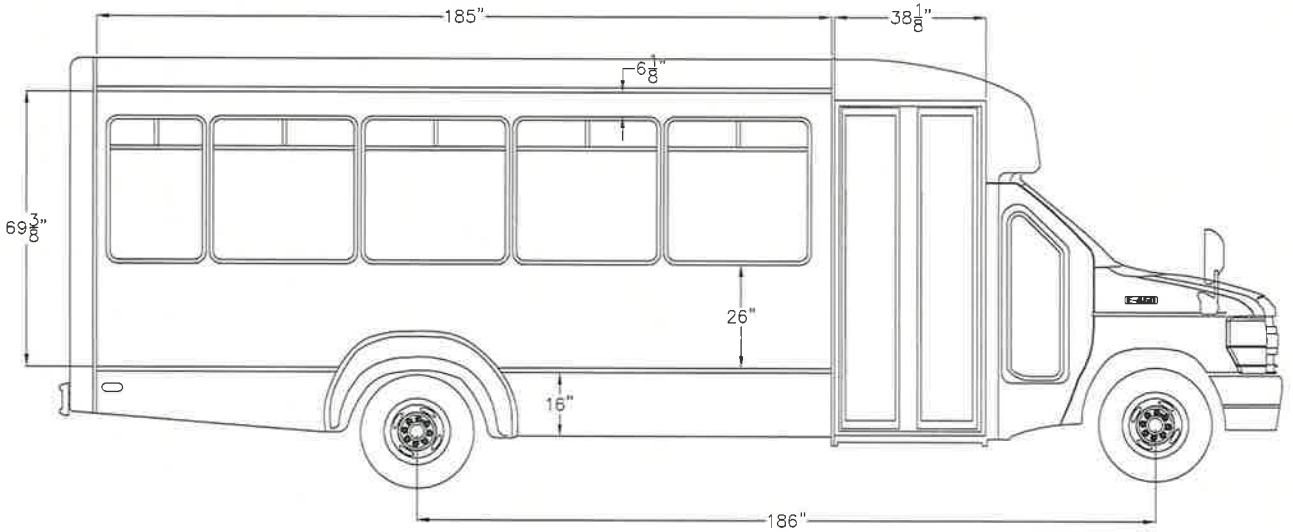
REV	DATE	BY	DESCRIPTION
–	–	–	–

REV	DATE	BY	DESCRIPTION
–	–	–	–









LARGE TRANSIT 24 PASSENGER FORD CHASSIS

DO NOT SCALE

PROJECTION

DESCRIPTION: Elevation, All Passenger, Stnd Floor 186/300

W.I. NUMBER

DATE: 7–9–12

SCALE: N.T.S.

REFERENCE: NUMBER

SHEET 1 OF 1

52807 County Road 7
ELKHART, IN 46514
(574) 264–5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
FLOORPLANS ±1/2"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

DRAWN BY: NPM

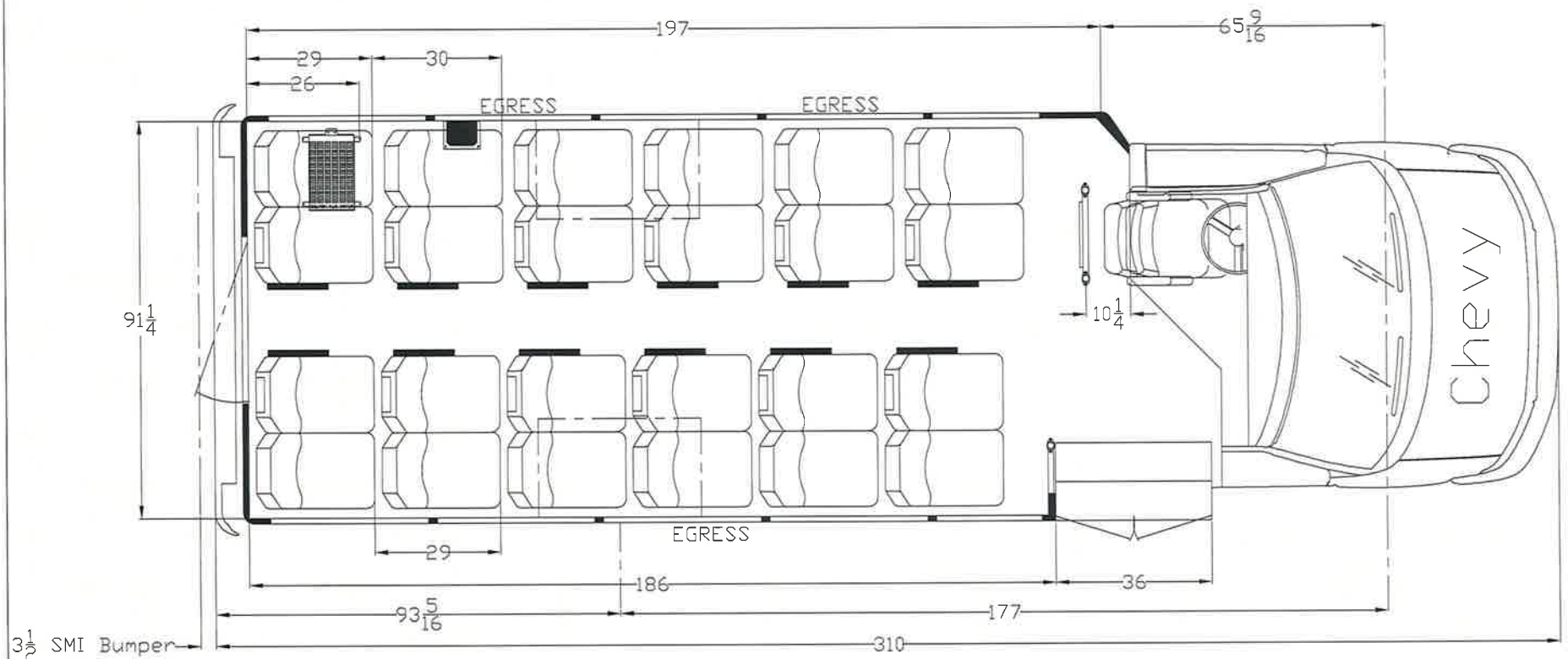
CHECKED BY:

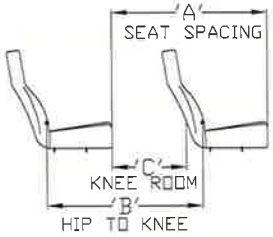
PART NUMBER: **All Pass**

REV: A

elkhart coach

REV	DATE	BY	DESCRI		REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DI	PTION
-	-	-	-		-	-	-	-	-	-	-	-	





LARGE TRANSIT 24 PASSENGER ON OPTIONAL CHEVROLET CHASSIS

SEAT STYLE	SEAT SPACING 'A'	HIP-TO-KNEE 'B'	KNEE ROOM 'C'
MID HIGH	29"	27"	9"
MID HIGH	30"	28"	10"

DEALER SIGNATURE: _____

Q-42-091715-02

DO NOT SCALE

PROJECTION

DESCRIPTION: Floor plan ECCW Chevy G /177-310 All Passenger Standard Floor 24P

W.I. NUMBER | DATE: 8-2-11 | SCALE: N.T.S. | REFERENCE: NUMBER | SHEET 1 OF 1

2901 COUNTY ROAD 7 N
ELKHART, IN 46514
(574) 264-5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
FLOORPLANS ±1/2"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

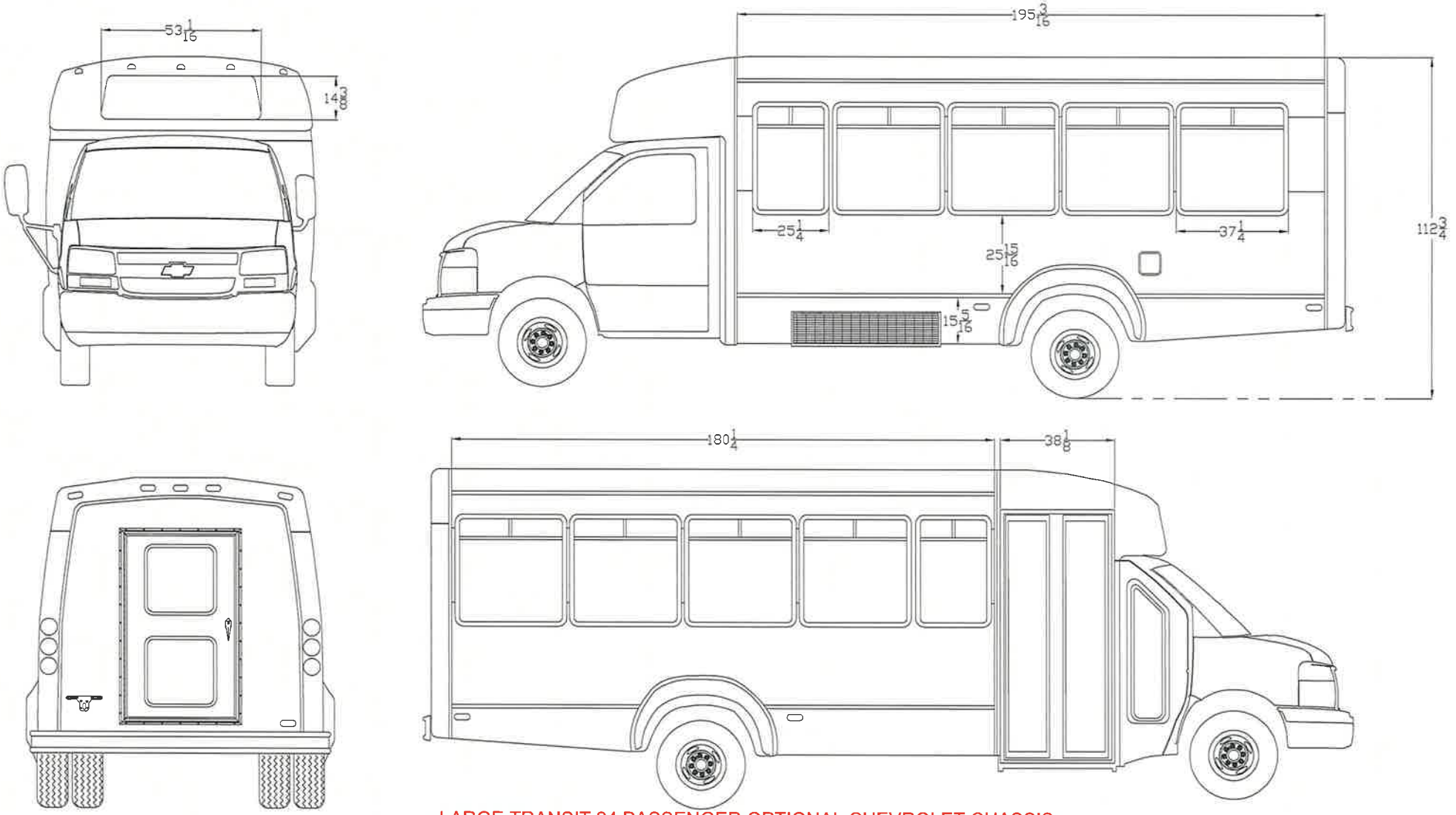
DRAWN BY: NPM
CHECKED BY:

PART NUMBER **900-34-0004**

REV **A**

elkhart Coach

REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DESCRIPTION	REV	DATE	BY	DESCRIPTION
-	-	-	-	-	-	-	-	-	-	-	-



LARGE TRANSIT 24 PASSENGER OPTIONAL CHEVROLET CHASSIS

DO NOT SCALE

PROJECTION

DESCRIPTION: Elevation Chevrolet G-Cut 177-310, All Passenger

W.I. NUMBER

DATE: 9-21-12

SCALE: N.T.S.

REFERENCE: NUMBER

SHEET 1 OF 1

52807 COUNTY ROAD 7
ELKHART, IN 46514
(574) 264-5179
A DIVISION OF FOREST RIVER

SIZE A

TOLERANCES UNLESS OHTERWISE SPECIFIED ARE:
FLOORPLANS ±1/2"
ALL STRUCTURAL ±1/8"
ANGLE ±1°

DRAWN BY: NPM

CHECKED BY:

PART NUMBER **1300-76-0003**

REV **A**

elkhart Coach

ITEM #11 (f)

LIST
OF
STANDARD
EXTERIOR
COLORS

SMALL AND LARGE TRANSIT CHASSIS COLORS FORD CHASSIS

Shown below are standard colors available for the Ford E350 an E450 cutaway chassis. It needs to be noted that the standard chassis for the bus chassis is always white and is the standard bus chassis color. If any other color chassis is selected, then the option pricing for "Solid Color Paint Scheme" as listed in the pricing section must be selected.

OXFORD WHITE
STANDARD BUS COLOR

RACE RED

SHADOW BLACK

CARIBOU

INGOT SILVER

GREEN GEM

BLUE JEANS

SCHOOL BUS YELLOW

MAGNETIC

Exterior Solid Paint	Color Code	Touch-Up Paint Number	Interior	
			Neutral	Medium Pewter
Dark Blue Metallic[1]	25U	WA-722J	A	A
Summit White	GAZ	WA-8624	A	A
Wheatland Yellow	86U	WA-253A	A	A
Red Hot	G7C	WA-130X	A	A
Rainforest Green Metallic[1]	G7J	WA-136X	A	A
Silver Ice Metallic[1]	GAN	WA-636R	--	A
Black	GBA	WA-8555	A	A
Cyber Gray Metallic[1]	GBV	WA-637R	--	A
Brownstone Metallic[1]				

ITEM #11 (g)

LIST
OF
SERVICE
CENTERS

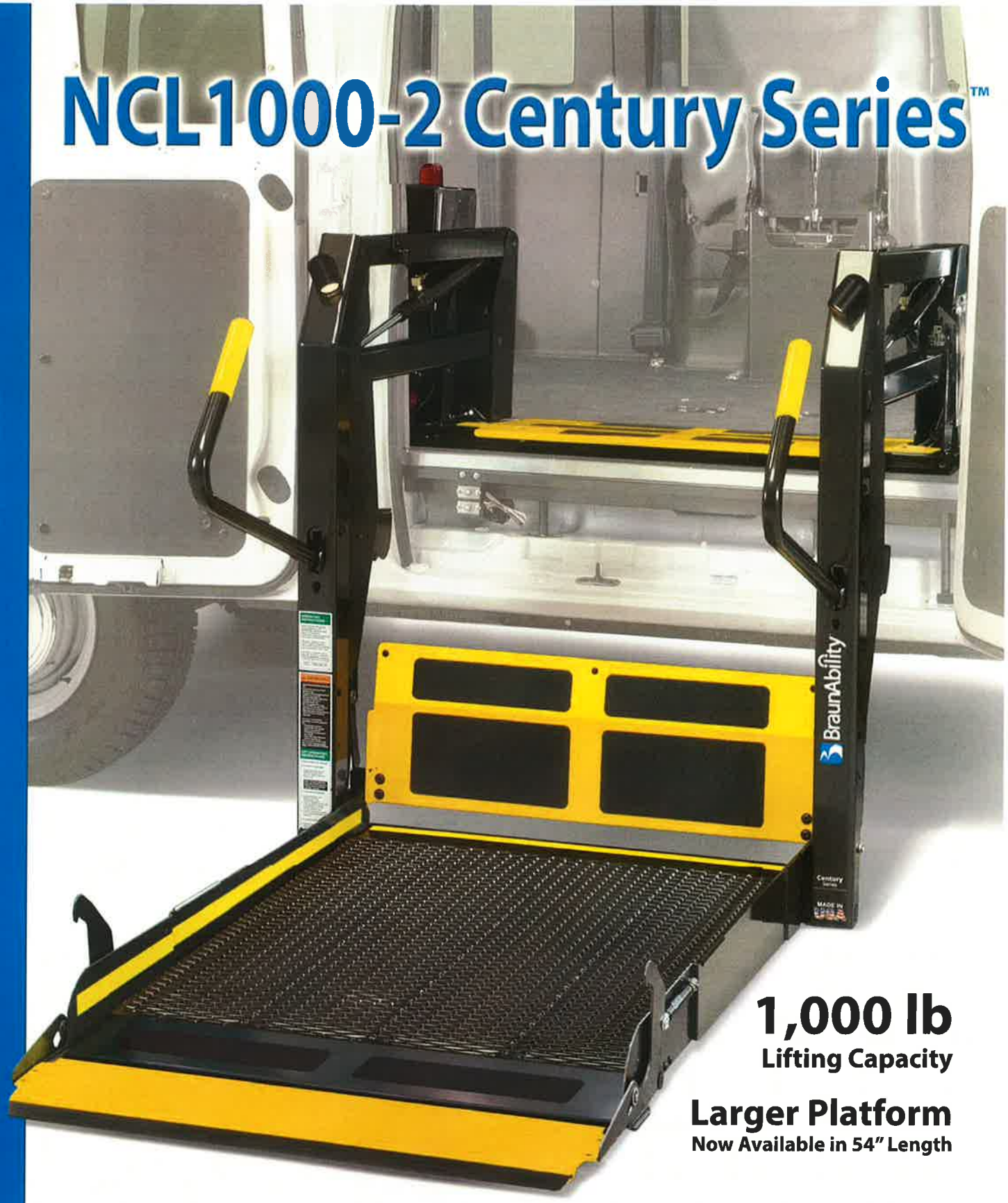
(Found under Tab #5, Exhibit F-2)

ITEM #11 (i)

LIFT
INFORMATION

Commercial Wheelchair Lifts

NCL1000-2 Century Series™



1,000 lb
Lifting Capacity

Larger Platform
Now Available in 54" Length

BraunAbility®

Life is a Moving Experience™

NCL1000-2 Century Series™

NCL1000IB3351-2 (33" wide x 51" long platform)
NCL1000IB3451-2 (34" wide x 51" long platform)
NCL1000IB3451HB-2 (34" wide x 51" long platform - with handrail belt)
NCL1000IB3454-2 (34" wide x 54" long platform)
NCL1000IB3454HB-2 (34" wide x 54" long platform - with handrail belt)

Rear pump models listed - all models also available in front pump configuration

- 1,000 lb lifting capacity
- Fully automatic FMVSS 403 compliant lift, operated by an attendant
- Loading position - either direction
- Interfaces with OEM interlocks
- Long lasting LED lift mounted lights that are active when vehicle interlocks are engaged and lift power switch is on
- Hand-held control box with illuminated functions
- Locking mechanical Inboard Barrier (IB), powder coated yellow for safety and high visibility, prevents operation if occupied
- Pump design prevents platform folding when occupied, quiet operation & low current draw
- Durable redesigned baseplate reduces lift weight and allows for quicker and easier service of hose/wiring
- Easily installed, step-by-step installation instructions, no peripheral hardware required
- Platform movement prevented during unsafe operation
- Gas spring activated outer barrier detects roll stop occupancy as the platform leaves the ground, complete with durable rubber nose guard
- Transition areas marked with durable high-gloss yellow powder coating for safety & visibility
- Side or rear door application
- Dual handrails for security and convenience
- Bridging feature permits the wheelchair user to board the lift from sidewalks or inclines
- Floor to ground travel is 48"
- Integrated back-up pump
- Equipped with an adjustable anti-rattle feature to avoid unpleasant noise in the vehicle during transit
- Durable high-gloss powder coated finish
- Lift-Tite system stows the lift platform securely while the vehicle is in transit
- Pump module with removable cover offers easy access to all components

MADE IN USA

Integrated dual handrails provide added security for wheelchair users and standees

Visual and audible warnings alert both passengers and attendants to unsafe conditions

Gas spring activated outer barrier detects roll stop occupancy as the platform leaves the ground

BraunAbility
Life is a Moving Experience™

631 West 11th Street • Winamac, IN 46996
(574) 946-6153 • 1-800-THE-LIFT
www.braunability.com/commercial

COMMERCIAL WHEELCHAIR LIFT SPECIFICATIONS - IN COMPLIANCE WITH
United States Department of Transportation Rules and Regulations 49CFR, Part 38.
FROM THE AMERICANS WITH DISABILITIES ACT OF 1990 and NHTSA Rule 403 (2004)
"Provided to make your spec writing easier."

The wheelchair lift is compliant with Federal Motor Vehicle Safety Standard 403 for platform lift systems for motor vehicles. The lift shall have been tested to a minimum static load of 3000#. The lift shall have 1000# rated lifting capacity. The base plate shall be a corrugated designed member to provide rigidity to minimize lift deflection when placed under load.

The power supply shall be a 12 volt electro-hydraulic system operating two single-acting cylinders. The hydraulic power pack system shall be of modular design allowing for easy removal and field replacement, if needed. The operation of the unit shall provide a smooth, jerk-free ride in both up and down directions. The power operation of the hydraulic cylinders shall be of a pull-type design for smooth lifting operation and improved synchronous arm movement. The pivot pins in the trunnion (knuckle) of the pivot arms shall be of stationary design. The hydraulic system shall be regulated by two separate relief valves, one of which is designed to prevent accidental stowing when occupied.

The hand control for lift operation shall be of a one-hand operation design made of durable plastic. The hand control will provide user with illuminated functions. The hand control cable shall be coiled with quick-change connections for ease of maintenance or field change.

A manual back-up system shall be provided to ensure operation of the lift in case of electrical failure. The backup system shall provide a reliable means of manually raising and lowering the lift while occupied. The back-up system shall fold and unfold the platform. The back-up pump shall be integrated with the hydraulic power pack system such that no hydraulic lines or fittings are required.

The platform shall be of steel construction and the surface shall be of see-through grating allowing for improved visibility and safer use in inclement weather. The platform shall have a minimum usable wheelchair passageway width of 33 inches and a minimum usable length of 51 inches requiring a 57 inch vertical clear door opening. The sides of the platform shall be a minimum of 2-1/2 inches high.

The platform shall be automatically folded and unfolded and fully automatic in operation. The platform shall allow both inboard and outboard facing of wheelchair and mobility aid users. The platform entrance ramp shall be extruded aluminum for weight savings, have a rubber leading edge and raised ribs for traction. The outer barrier must not raise if occupied with 25 lbs. The outer barrier shall be the sole outboard wheelchair retention device and shall be interlocked and comply with the FMVSS 403 requirements. Dual handrails shall be provided to add security and convenience. These handrails shall be 1-1/4 inch minimum diameter, minimum 30 inches in height, minimum of 8 inches in length, and withstand a 100# force in any direction (including vertical) without permanent deformation. The lift must have a fail safe system to prevent stowing if solenoid welds. The platform shall have "built in" lighting to meet 404 platform lighting requirements with no auxiliary lighting.

All lift components shall be finished with a baked-on powder coating, which will meet a salt spray test of 1000 hours, to provide corrosion resistance and a long service life. BraunAbility Century Series to include but not limited to the following model numbers:

•NCL1000IB3351-2, NCL1000FIB3351-2, NCL1000IB3451-2, NCL1000FIB3451-2, NCL1000IB3454-2, NCL1000FIB3454-2

BraunAbility®

Life is a Moving Experience™

ITEM #11 (j)

SECUREMENT SYSTEM INFORMATION

Q'STRAINT®

Thinking **Beyond** Safety

QRT™ SERIES

The New Standard in Wheelchair Securement and Passenger Safety

QRT-3 SERIES

Meets the Requirements of **WC18**
Compatible with **WC19** Wheelchairs

QRT-360

MEETING TOMORROW'S STANDARDS, TODAY

Introducing the QRT-3 SERIES Wheelchair and Occupant Securement System:
The first 4-point, heavy duty, fully automatic retractable tie-downs designed, engineered and built to perform in wheelchair crash tests under **WC19** as well as withstand the higher loads of the **WC18 standard**.

More impressively, the new **QRT-360** meets these increased standards years ahead of their effective date in 2015.

WC18/WC19 at a Glance

As WC19 wheelchairs become increasingly popular, the countdown has already begun for wheelchair tie-downs to be compatible. Year-end 2015 will see the effective date of the revised RESNA WC18 standard for Wheelchair Tie-downs and Occupant Restraint Systems (WTORS).

The most significant implication of the revised standard is that wheelchair tie-downs must be stronger. WC19 covers the design and testing of wheelchairs for use in passenger transportation, and it brings about much needed passenger protection as well as some challenges for WTORS manufacturers.

These crash tested wheelchairs will feature lap belts that are integrally mounted onto the wheelchair frame, as opposed to relying on traditional WTORS equipment where the passenger belts are mounted separately. During a collision, this new dynamic produces higher loading on the WTORS as much as 60%. Enter the QRT-360, the first retractor to meet these new requirements.

AN ALL NEW DESIGN FROM THE FLOOR UP

Stronger than any previous retractors, the QRT-360 utilizes innovative energy management designs and material technologies to deliver the system's full strength for maximum load capacity.

An energy-absorbing steel frame, new high strength 58 mm webbing and fine-adjust self tensioning from 25 high-strength teeth, the QRT-360 retractors achieve a surrogate wheelchair rating that meets the requirements of WC18. The geometry of the teeth and an innovative new locking bar design provide perpendicular alignment for maximum strength. A re-engineered Positive Locking Interface contributes to the system's ability to secure extremely heavy loads.

With many more safety features than manual straps and significantly lighter and more practical than 6-point systems, space-efficient QRT-360 retractors safely secure both the chair and occupant in an easy-to-use 4-point restraint. This not only meets the new WC18 standard for combined occupant and chair securement, but it eliminates the need, cost and additional securement time associated with having four anchorages dedicated to the rear securement.

Compatible with Most Vehicles and Chairs

The QRT-360 offers a shortened retractor footprint that allows placement flexibility and better accommodates large chairs by increasing the available space in the securement location. Like other Q'Straint systems, it's compatible with the widest variety of wheelchairs and scooters.

A More Secure Connection, Every Time

With Q'Straint J-hook attachments, operators can achieve a secure attachment on virtually any wheelchair. An updated Positive Lock Indicator provides the operator with clear and certain visual confirmation that the retractor is locked and the vehicle is ready to go. Our patented design eliminates the guesswork when passenger safety is involved. When the indication mark is in-line, the attachment is secure.

Automatic Tightening Increases Safety

Q'Straint's industry-leading self-tensioning system automatically tightens the straps to eliminate any slack created by small wheelchair movements. The belts continue to tighten during low-g vehicle movements, which reduce the potential for dangerous excursions in the event of a collision.

Automatic Release Makes it Easy to Use

Securement is simplified by the compact and ergonomically designed knob. Thanks to Q'Straint auto-release, operators and attendants can pull and secure the wheelchair hook in one step without having to press a release button.

SOLUTIONS FOR EVERY TRANSPORTATION APPLICATION

- Personal Mobility
- Para-Transit
- School/Pupil Transportation
- Transit
- Motorcoach
- Taxi

QRT-1 SERIES

THE SECUREMENT SYSTEM THAT CHANGED EVERYTHING

The original 4-point wheelchair securement system, QRT-1 Series retractors defined the way passenger safety devices are designed and tested.

Solutions for Every Need and Budget

Today, QRT-1 Series retractors provide a full range of options for simple, safe and effective securement of wheelchairs in Para-Transit vehicles, mini-van, rail, city bus, coach bus, and school bus applications.

QRT Max

is a **fully automatic**, knobless retractor offering innovative features that maximize ease of use and ensure passenger safety.

QRT Deluxe

is the world-class original **self-locking** and **self-tensioning** retractable system. The Max and Deluxe models feature a new ergonomic streamlined housing.

QRT Standard

is simple and economical semi-automatic retractor system appropriate for many applications.

QRT-1 Series Specifications

Compatible Anchorages:
Slide 'N Click and L-Track floor anchorages, or may be directly mounted to vehicle floors, seat legs or barriers

Warranty:
3 years (QRT Max, QRT Deluxe);
2 years (QRT Standard)

Testing:
Crash tested to 30mph/20g Impact Test Criteria

Meets or exceeds the following standards and regulations:

- SAE J2249
- ISO 10542
- FMVSS 209, 302, 210, 222
- CMVSS 209
- CSA Z605
- ADA

QRT SERIES-1 FEATURES COMPARISON	QRT MAX	QRT DELUXE	QRT STANDARD
Knobless, One-Handed Operation No knobs to interfere with wheels and footrests.	●		
Dual Tensioning Knobs Provides additional tensioning if needed.		●	
Single Tensioning Knob Provides additional tensioning if needed.			●
Automatic, Self-Locking Allows easy, one-handed hook-up.	●	●	
Self-Tensioning Retractors automatically take up 'slack'.	●	●	
Positive Lock Indicator Patented feature clearly indicates when fitting is locked in anchorage.	●	●	●
Interchangeable Eliminates confusion: no right, left, front or rear locations.	●	●	●
Low Profile & Compact Elimination of mounting bracket allows retractors to fit under most footrests.	●	●	●
Accommodates Larger Wheelchairs Reduced overall retractor length leaves more room for wheelchairs.	●	●	
Universal Design Accommodates virtually all wheelchair designs, including scooters.	●	●	●
Durable Constructed from hardened steel and coated in zinc for maximum corrosion resistance.	●	●	●
J-Hook Reduces twisting of belts and ensures proper securement with a quarter turn accommodating virtually all wheelchair designs.	●	●	●
Foot Release Lever Easy release.	●	●	●

Q'STRAINT

Qstraint.com

Q'Straint America
5553 Ravenswood Road, #110
Ft. Lauderdale, FL 33312
Tel: 800-987-9987
Fax: 954-986-0021
Email: qstraint@qstraint.com

Q'Straint Europe
72-76 John Wilson Business Park
Whitstable, Kent, CT5 3QT
United Kingdom
Tel: +44 (0)1227 773035
Fax: +44 (0)1227 770035
Email: info@qstraint.co.uk

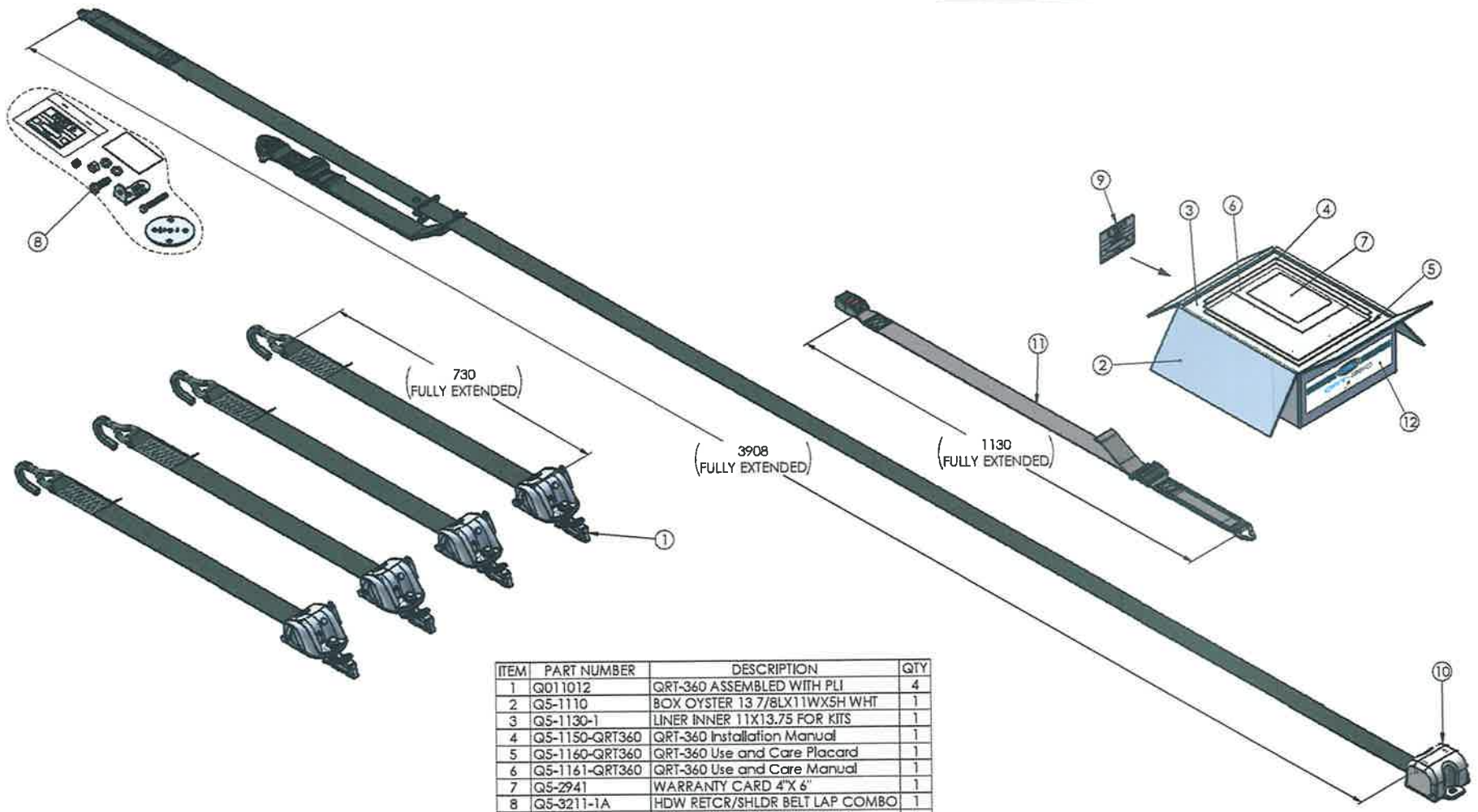
Q'Straint Australia
Tramanco Pty Ltd.
21 Shoebury Street,
Rocklea, Australia, QLD. 4106
Tel: +61 7 3892 2311
Fax: +61 7 3892 1819
Email: info@tramanco.com.au

Q'Straint Canada
18-100 Sheldon Dr.
Cambridge, ON N1R 7S7
Tel: 1-800-987-9987
Email: qstraint@qstraint.com

MKM4821 - QRT3

Q-10007

REV	ECN	DESCRIPTION	BY	VERIFIED	DATE
A	-	INITIAL DRAWING RELEASE.	GS	YT	8/18/2014



ITEM	PART NUMBER	DESCRIPTION	QTY
1	Q011012	QRT-360 ASSEMBLED WITH PLI	4
2	Q5-1110	BOX OYSTER 13 7/8LX11WX5H WHT	1
3	Q5-1130-1	LINER INNER 11X13.75 FOR KITS	1
4	Q5-1150-QRT360	QRT-360 Installation Manual	1
5	Q5-1160-QRT360	QRT-360 Use and Care Placard	1
6	Q5-1161-QRT360	QRT-360 Use and Care Manual	1
7	Q5-2941	WARRANTY CARD 4"X 6"	1
8	Q5-3211-1A	HDW RETCR/SHLDR BELT LAP COMBO	1
9	Q5-3995-B	LABEL 4X3 DIRECT THERMAL BL	1
10	Q8-6323	LAP/SHOULDER BELT COMBO	1
11	Q8-6340	EXTENSION FOR L/S COMBO BELT	1
12	QC99360	QRT-360 BOX STICKER	1

UNLESS OTHERWISE SPECIFIED:
1. ALL PRODUCT CHANGES REQUIRE ENGINEERING APPROVAL.

DIMENSIONS ARE IN mm.
TOLERANCES UNLESS OTHERWISE SPECIFIED:
.X = ±0.50 ANGLES: ±1°
.XX = ±0.25 (CRITICAL)
.XXX = ±0.13 (REFERENCE)

INITIAL APPROVAL

DRWN:	GS	8/18/2014
ENGR:	YT	8/18/2014
MFG:	JE	8/18/2014
QUAL:	JG	8/18/2014

THIRD ANGLE PROJECTION
PRINTED COPY UNCONTROLLED
ASME Y14.5-2009
SCALE: 1:8.1 SIZE: B TYPE: U

Q'STRAINT www.qstraint.com

DRAWING TITLE: KIT QRT-360 COMBO PLI W/ OCC

DRAWING NUMBER: Q-10007

REV: A

WC18/WC19/WC20

WHITE PAPER

Q'STRAINT
OCTOBER 1, 2013

5553 Ravenswood Road . Bldg. 110 . Ft. Lauderdale, Florida 33312
Toll-Free: 1-800-987-9987 • **Tel:** 954-986-6665 • **Fax:** 954-986-0021 • **www.qstraint.com**

Now is the Time to Plan Compliance with New WTORS Safety Standards

Manufacturers of wheelchair tiedown and occupant restraint systems (WTORS) need to be planning now for how they will increase the strength of their products to comply with a new requirement of a RESNA (Rehabilitation Engineering Assistive Technology Society of North American) wheelchair transportation safety standard, known as WC18, that takes effect in December 2015.

As with its predecessor standard, Society of Automotive Engineers (SAE) J2249, compliance with WC18 requires that wheelchair tiedown/securement systems of complete WTORS must be dynamically strength tested on an impact sled using a 30-mph/20-g crash pulse, a 187-pound (85 kg) surrogate wheelchair, and a 170-lb (76-kg) midsize adult male crash-test dummy. However, one of the most significant changes in WC18 is that by December 2015 (three years following the initial publication of WC18), wheelchair tiedown/securement systems must be able to withstand the increased forces generated in an additional test in which the 170-lb crash-test dummy is restrained by a lap belt that is anchored to the surrogate wheelchair rather than to the vehicle. The new WC19 wheelchair standard requires the availability of an optional wheelchair-anchored lap belt. The RESNA Committee on Wheelchairs and Transportation (COWHAT) developed the new WC18 standard to address the higher wheelchair forces that are transmitted to the tiedown/securement system when a person riding in a wheelchair is using that optional lap belt.

Industry Steps In Where Government Has Not Yet Acted

In the absence of federal standards for the use of wheelchairs as passenger seats in motor vehicles, key stakeholders involved in transportation for people who depend on wheelchairs for their mobility have assumed responsibility for improving transportation safety for these travelers through the development of voluntary industry standards. These stakeholders include WTORS manufacturers, wheelchair and wheelchair seating manufacturers, auto safety professionals, rehabilitation engineers, clinicians, transit providers, and consumers. While these industry standards are voluntary, their continuing revision, updating, and strengthening — as in the newest versions of WC18 and WC19 — demonstrate industry's ongoing and increasing commitment to the safety of travelers seated in wheelchairs.

Keeping the Wheelchair Secure

WC18 is the familiar name of *Wheelchair Tiedown and Occupant Restraint Systems for Use in Motor Vehicles*, which is Section 18 of Volume 4 of RESNA wheelchair standards (WC-4): *Wheelchairs and Transportation*. Section 19 (or WC19) is the companion standard for *Wheelchairs Used as Seats in Motor Vehicles*. These voluntary industry standards establish what are considered to be minimum design and

performance levels to provide a reasonable level of safe transportation and crash protection for people who use their wheelchairs as the vehicle seat when traveling in motor vehicles.

As noted above, WC18 is a revised and updated version of Society of Automotive Engineers (SAE) Recommended Practice J2249, which was first published in 1996 and last updated in 1999. WC19 was the first industry standard in the U.S to address the design and performance of wheelchairs used as seats in motor vehicles and was first published in 2000 as Section 19 of Volume 1 of RESNA wheelchair standards.

Both SAE J2249 and WC18 require that WTORS provide a method, independent of the occupant restraint system, for effectively securing wheelchairs in a 30-mph frontal crash. A three-point, lap-shoulder belt restraint system must also be provided to reduce occupant movement and prevent ejection from the vehicle, thereby reducing the chance of injury in a frontal crash from occupant contact with the vehicle interior, with other vehicle occupants, or with objects outside of the vehicle.

In *RESNA's Position on Wheelchairs Used as Seats in Motor Vehicles,** RESNA says that wheelchairs used as passenger seats in motor vehicles should provide effective occupant support under the same frontal-impact test conditions as passenger car seats and child safety seats covered by federal motor vehicle safety standards. The wheelchairs should also facilitate proper placement of vehicle-anchored lap/shoulder-belt restraints. In addition, WC19-compliant wheelchairs are easier to correctly and effectively secured with a four-point, strap-type tiedown, which is today's universal method of wheelchair securement. RESNA also calls WC18-compliant WTORS "a critical part of a wheelchair transportation safety system as they anchor the wheelchair to the floor and keep passengers seated in their wheelchairs."

WTORS can use different methods to secure the wheelchair and still be WC18-compliant. Typical securement systems include four-point, strap-type tiedowns and auto-engage docking devices. Future solutions yet to be designed are also allowed as long as they secure the wheelchair independent of the occupant to prevent the wheelchair from adding forces to the occupant during a crash event and comply with other design and performance requirements of WC18. Whatever the securement system, for WTORS equipment to be WC18 compliant, beginning in December 2015, it must be successfully tested with the crash-test dummy restrained by a lap belt anchored to the 187-lb surrogate wheelchair.

However, compliance with WC18 does require that WTORS include a belt-type occupant restraint system with both lower (lap or pelvic) and upper (shoulder) belt restraints. The most common of these is the three-point, lap-shoulder belt system similar to that installed as original equipment in motor vehicles.

Improved Safety When the Wheelchair Becomes the Passenger Seat

While WC18 addresses wheelchair securement and occupant restraint systems, the newly revised WC19 standard covers the design and performance testing of wheelchairs for use as seats in motor vehicles. Since the wheelchair becomes the vehicle seat for people with disabilities who cannot transfer from their wheelchairs to ride in a minivan, van, or bus, WC19 provides for the application of basic occupant-protection principles to wheelchair design. Key elements of WC19 compliance include:

- **Four easily accessible, permanently attached, and labeled securement points** with specific closed-loop geometry that allow one-hand attachment of tiedown-strap hooks. These must be able to withstand the forces of a 30-mph, 20-g frontal impact.
- **Successful crash testing with a commercially available wheelchair-anchored lap belt placed around the pelvis of the appropriate-size crash-test dummy.** A pin-bushing anchorage must be available on each half of the lap belt for attaching the lower end of a shoulder belt near the passenger's hip to comprise a three-point belt restraint system.
- **Testing to determine two ratings of the wheelchair's accommodation of vehicle-anchored lap/shoulder belt restraints:** one rating for the ease of proper seatbelt positioning and the other for the *degree* to which proper belt placement is achieved.

Because it is not practical to crash-test every possible combination of wheelchair seating systems and base frames, a new RESNA standard, Section 20 in Volume 4 of RESNA wheelchair standards, commonly referred to as WC20, allows for independent testing of wheelchair seating systems using a surrogate wheelchair frame or SWCF. As with WC18 and WC19, WC20 also specifies manufacturer requirements for product labeling and user instructions and warnings.

The Key Role of Third-Party Payers

Institutions such as private insurance companies that finance wheelchair users' mobility solutions can play a significant and important role in contributing to the success of these standards by agreeing to pay the small additional cost of standards-compliant wheelchairs, seating systems, and tiedowns.

Taking a step in that direction, the U.S. Department of Veterans Affairs recently required compliance with WC19 design, performance, and instruction requirements in its most recent solicitation for a select category of powered wheelchairs (VA-797-11-RP-0097; March 18, 2011). In responses to questions from prospective vendors who appeared to be unclear on this point, the VA confirmed and reiterated its requirement for WC19 compliance.

In Amendment 7 to the solicitation (June 16, 2011), the VA wrote:

> "All submissions must be tested to WC-19 standards as indicated in the solicitation..."

In Amendment 9 to the solicitation (July 8, 2011), the VA wrote:

> "... the power wheelchair MUST BE TESTED to all identified RESNA standards in the standard configuration as prior clarified, including the wheelchair anchored pelvic belt."

While this requirement of standards compliance currently applies only to a specific category of powered wheelchairs, Dr. Larry Schneider, Research Professor and Associate Director of the University of Michigan Transportation Research Institute (UMTRI), and Chair of the RESNA Committee on Wheelchairs and Transportation from 2000 to 2013, says that RESNA remains hopeful that the VA will issue a similar requirement for manual wheelchairs and tiedown systems.

"These kinds of things are slow in coming, but they can have a significant impact on improving transportation safety for occupants who must remain seated in their wheelchairs when traveling in motor vehicles," he says.

With the publication of the newest WTORS and wheelchair transportation standards in December of 2012, and the increased strength requirement for wheelchair tiedown and securement systems beginning year-end 2015, now is the time for transportation providers to be discussing compliance roadmaps with WTORS manufacturers and developing strategies for providing improved safety for passengers seated in wheelchairs who are using crashworthy wheelchair-anchored lap belts.

New Wheelchair and WTORS Standards at a Glance

- The intension of RESNA WC18 is to officially replace SAE J2249 as the recommended best practice in wheelchair securement.
- In 2000, RESNA published a WC19 standard governing the design and testing of wheelchairs to be used as a seat in a moving motor vehicle.
- WC19 wheelchairs feature visible tie-down securement points and an integrated crash-worthy lap belt. The WC19 lap belt is designed to facilitate proper use and fit of the occupant restraints for wheelchair passengers, making securement easier and transportation safer.
- Recently, the Veterans Association of America announced that they will only fund WC19 wheelchairs, further continuing the popularity of these wheelchairs in all forms of transportation.
- As with SAE J2249 previously, adopting the RESNA WC18 in state specifications and bus standards reduces the liability of transportation providers and ensures that they receive securement equipment that meets the latest industry safety standard.
- The latest volume of WC18 was adopted in December 2012, and gave WTORS manufacturers a three year window to comply (effectively December, 2015).
- At that point, tie-downs must be able to pass an additional test with an integrated WC19 lap belt. The testing utilizes the same 85kg surrogate wheelchair with a crash-worthy wheelchair-anchored lap belt.
- A WC19 crash-worthy lap belt features pin connectors on both ends, allowing a vehicle mounted shoulder belt to be connected. Most Q'Straint combination lap/shoulder belt occupant securements have been WC18 ready since 2005.
- 60% stronger: With non-WC19 wheelchairs, the occupant restraints are connected to the rear tie-downs. However, a WC19 wheelchair *with* an integrated occupant belt increases the load to the rear tie-downs by an additional 60%, because much of the occupant's weight is now directly connected to the wheelchair. This, in turn, requires tie-downs that can accommodate these significantly increased loads.

5553 Ravenswood Road . Bldg. 110 . Ft. Lauderdale, Florida 33312
Toll-Free: 1-800-987-9987 • **Tel:** 954-986-6665 • **Fax:** 954-986-0021 • **www.qstraint.com**

ITEM #11 (k)

OCCUPANT
RESTRAINT
SYSTEM
INFORMATION

4-POINT SECUREMENT SYSTEMS

Q'Straint introduced the world's first fully integrated 4-point wheelchair passenger securement system. the industry standard for more than 25 years. Each component is designed, engineered and tested to work as one cohesive system. In the event of a collision or sudden stop, the system isolates the forward forces of the occupant from those of their chair by directing the chair's forces to the vehicle floor.

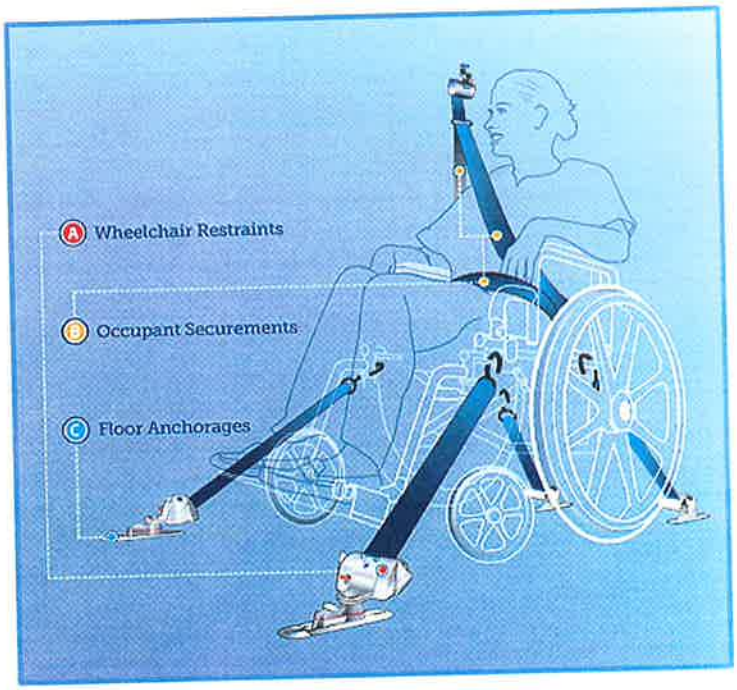
A complete 4-Point System includes:

4 Wheelchair Restraints:
Retractable or manual belt systems for securing wheelchair to the floor anchorages. (QRT Deluxe with PLI fitting shown)

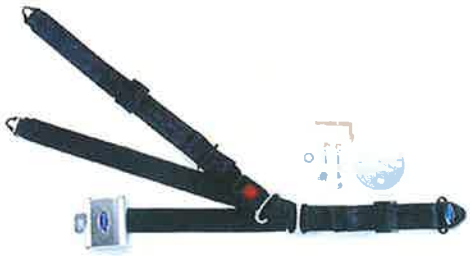
Occupant Securements:
A manual or combination lap and shoulder belt for securing the occupant. (Combination belt shown)

Floor Anchorages:
Track, Pocket or Slide 'N Click system for anchoring the wheelchair restraints. (QRT Deluxe with L-Track fitting and anchorage shown)

Also Included:
Complete operator instructions and warranty registration card.



COMPLETE SYSTEM OF BELTS WHEELCHAIR AND OCCUPANT RESTRAINT



OCCUPANT RESTRAINT BELT SYSTEM

ITEM #11 (I)

FORWARD

FACING

FOLD-A-WAY

SEAT

INFORMATION

FEATHER WEIGHT

FOLDAWAY BV & AM STYLES

Freedman Seating gives you the largest selection of Foldaways in the industry. Whether you need space for luggage or wheel chairs, we have the right seat. Easy to install and easier to operate, our Foldaways will provide you with miles and miles of happy riders and drivers. Maybe we should say, "smiles and smiles". Freedman Seating, "Not just seats – seating solutions."

Notch-Back, standard Bench-Back and High-Back are shown.

Not Just Seats

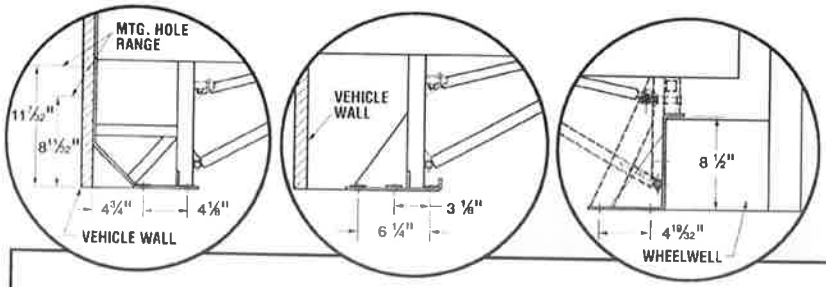
Seating Solutions™

THE FEATHER WEIGHT SERIES BY

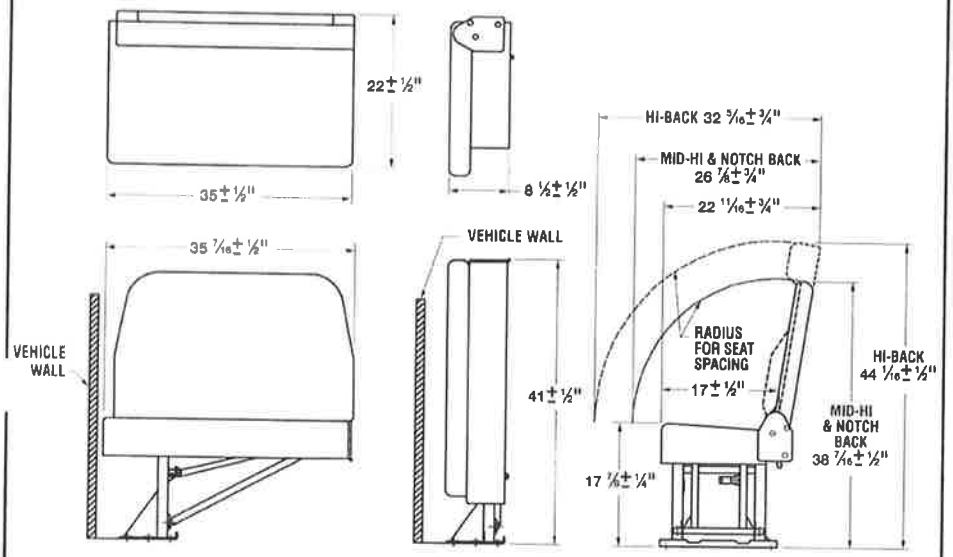
FREEDMAN
SEATING COMPANY
an ISO 9001:2000 certified company

FEATHER WEIGHT

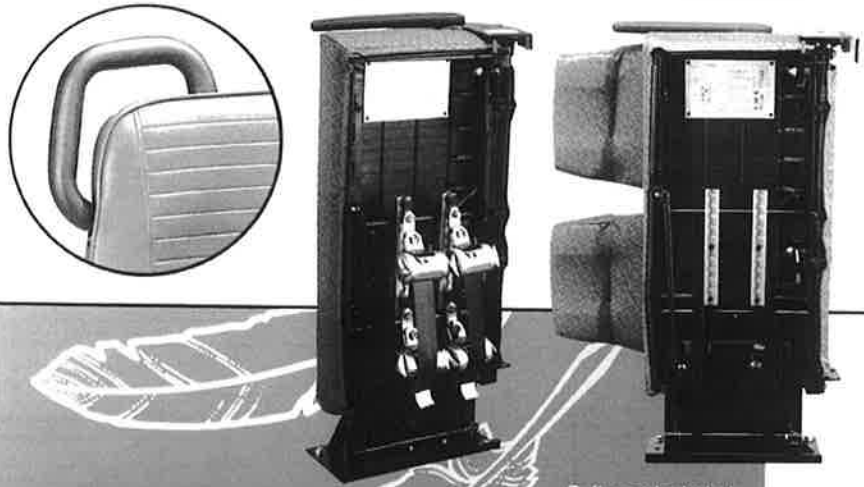
Foldaway BV & AM STYLES



AM2 Floor/Wall Mount | BV Floor Mount | BVWW3 Floor Mount



Corner Grabs | TDSS with belts | TDSS without belts



Belts not included.

Standard Features:

- BV Foldaways mount to the vehicle with four bolts to the floor (no wall mount)
- AM Foldaways mount to the vehicle with four bolts to the floor and two to the wall mount
- Seat belt ready (FMVSS 210 compliant with no leg or tether)
- Ultra-thin backrest for added hip-to-knee room and lumbar support
- High quality molded polyurethane seat and back cushions
- Folds up to less than 10" thick when in the stowed position
- Cantilever design provides reduced installation time; no floor cutting for aisle leg and easy vehicle clean up
- Wire mesh grid seat springs for even support
- 2 locking mechanisms to hold seat in stowed position

Options:

- Single or double seats
- Bench back, notch back or high back
- Wheel well seats
- Wide variety of vinyl's or cloths
- Molded U.S. arms or upholstered arms
- Black or yellow top grabs (not on high backs)
- Black or yellow corner grabs (black side only on high back)
- Vertical stitching
- FTA foam
- ABS backs (Notchback only)
- Adjustable headrests (Single and Notchback only)
- Shrouds to cover the Foldaway when stowed
- USR seat belts (Under Seat Retractors)
- CRS-225 hooks and tethers
- TDSS (Tie Down Storage System)

Not Just Seats

Seating Solutions™

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an ISO 9001:2000 certified company

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e-mail: sales@freedmanseat.com

ITEM #11 (m)

AIR-CONDITIONING INFORMATION

Small Transit Vehicle
Air Conditioning / Heating System

The air conditioning/heating system proposed is comprised of two separate systems as follows.

OEM Dash System: This system is supplied by the OEM chassis manufacturer. It includes a dash area heating function, air conditioning function, defrosting function and fresh air ventilation. The system is controlled by a function switch which allows for selecting the proper function desired and a multi speed blower switch and temperature regulating dial. All controls are located in the driver's area.

Body Heating and Air Conditioning: The body manufacturer, installs the rear passenger compartment heating/cooling system. The rear systems are comprised of the following.

Heating: A 65,000 BTU forced air hot water heater is installed in the rear of the passenger compartment. Heater will be located in back half of vehicle when possible. Heaters are controlled by a fan switch in the driver's area.

Air Conditioning: Rear air conditioning system is manufactured by ACC Climate Control, Inc. The systems consist of a rear ceiling mounted evaporator (model 23022) that is built into rear bulkhead and skirt mounted two fan condenser (model 25062). System uses dual compressors with one being supplied by the OEM chassis manufacturer and an additional compressor installed by the body manufacturer. Front and rear systems are totally independent of each other. The system is controlled by a multi speed fan switch and temperature regulating dial mounted in the driver's dash area. Information on the condenser and evaporator are attached.

AIR CONDITIONING SPECIFICATION

ACC Model R226216 (tied into the OEM supplied air conditioning)

This air conditioning system shall be an ACC Climate Control Model **R226216**.

Compressor: (1) TM-16 10.0 CID compressor in addition to the OE Chassis supplied compressor driven off the vehicle engine.

Evaporator: One (1) ACC Model 23022 free blow evaporator rated up to 45,000 BTU/hr. The evaporator shall have one (1) dual shaft blower assembly. The motor is minimum three (3) speed continuous duty permanent magnet and utilizes a resistor to limit amperage requirements. Drain pan shall not be part evaporator cover, but shall be part of the evaporator module with drain valleys to insure proper drains of the condensation. The return air filter is located at the coil and is easily accessible for maintenance without removal of the evaporator cover. The evaporator coil is copper tube design with aluminum fins. Evaporator assembly shall be a galvanized design. The evaporator shall utilize and orifice tube in lieu of a thermal expansion valve for a more trouble free operation. The evaporator cover have no sharp edges and must meet FMVSS 302 specification standards. High Pressure and Low Pressure (switch) protection are part of the evaporator assembly to maximize compressor and entire system protection. Evaporator air outlet louvers shall be adjustable to provide maximum directional airflow throughout the vehicle.

Driver's area in-dash evaporator: The OE Chassis supplied drivers in-dash evaporator shall be utilized and is independent of the rear passenger area air conditioning system.

Condenser: One (1) ACC Model 25062 skirt mounted condenser rated @ 67,000 BTU/hr. The condenser shall have two (2) 11" high performance fan/motor assemblies with extended brush life motors. The coil shall be a parallel flow design for lighter weight and maximum heat rejection efficiency. The condenser assembly shall be designed to distribute air away from the vehicle floor. The condenser is installed in such a manner to assure the entire coil face area is exposed to fresh air from the outside of the vehicle skirt (the skirt of the vehicle will not in any way interfere with direct airflow through the coil). The system design shall use an accumulator with filter dessicant in lieu of a filter drier. The accumulator shall be mounted at the lowest point of the system (on the chassis frame rail) for maximum system protection. In addition, the accumulator shall include an oil pickup tube to insure proper compressor lubrication upon start up of the a/c system. The electrical connections shall be corrosion resistant

This air conditioning system utilizes environmentally friendly R-134A. Refrigerant hoses are ATCO, Air-O-Crimp 3800 Barrier hose with one-piece stainless steel clamps, all designed to meet SAE-J2064.

A three (3) speed fan switch and a rotary thermostat control is included and located in an area easily accessible to the driver. All wiring is color coded. The entire electrical system shall utilize ACC's simplified relay board with ground leg switching. The relay board shall consist of LED's to aid in the diagnosis of electrical continuity. Each circuit shall be protected by individual fuses for greater protection of the relay board components. The system shall be protected with manual reset circuit breakers.

The system shall be supported by ACC's 3 year/75,000 mile, with a minimum of two (2) years unlimited miles. See ACC's warranty statement for details .

ACC Climate Control, Inc.

R226216

The ACC Model R226216 consists of a 23022 evaporator and a 25062 skirt condenser with (1) TM-16 Compressor, and is rated up to 45,000 BTU/hr (plus the OE Dash a/c capacity). The system is equipped with ACC's orifice tube/accumulator design for prolonged service life.

ACC's simplified relay board provides system operation with ground leg switching. LEDs for each circuit provide for easy diagnostics of electrical continuity.

Parallel flow condensers provide for lighter weight and higher efficiencies over copper tube condensers.

Tied with the OE package, the total system capacity rating is approximately 60,000 BTU/hr.

23022 Evaporator
- Up to 45,000 BTU/hr
- (1) dual blower assemblies @ 800 cfm
- 19 amps @ 12 vdc
- 52 lbs

25062 Condenser
- 67,000 BTU/hr
- (2) 11 inch fans
- 18 amps @ 12 vdc
- 26 lbs

ACC Hose System
- ATCO 3800 Barrier hose
- ATCO A/C Series Hybrid or Elastomer Fittings
- Use with PAG oil

ACC Climate Control—building **Rock Solid** relationships with **Rock Solid** performance and commitment!

ACC Climate Control, Inc.

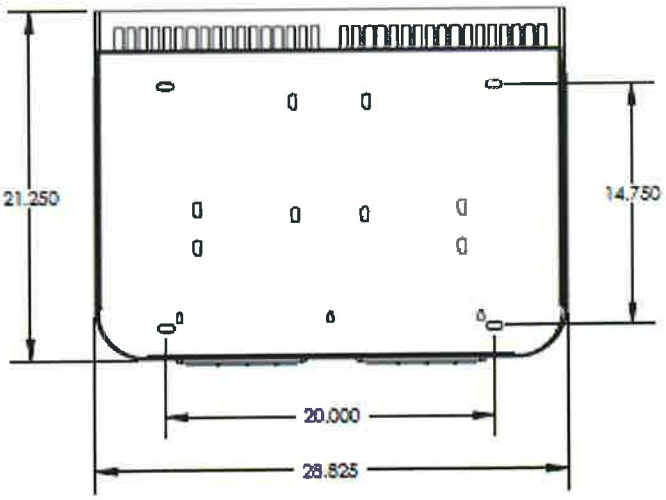
23022 Series Evaporator

SPECIFICATIONS:

- Up to 45,000 BTU/HR/Cool
- 800 CFM
- Amp Draw (High Speed)
  - 19 amps
- 3 Speed Fans
- 12 or 24 Volt Motors
- Dimensions:
  - 28 3/4"W x 9" H x 19 3/8" D
- Weight: 52lbs
- Optional W/Heat 40,000 BTU/HR Heat Capacity

FEATURES:

- Dynamically balanced twin shaft blower assembly
- Orifice tube/accumulator in lieu of TXV/drier
- Highly efficient rifled copper tube and aluminum fin coil for maximum capacity output and durability
- Standard manual controls or fully automatic
- Standard relay board with electrical diagnostic LED's
- Relay board can be mounted at the evaporator or the vehicle's electrical control panel



www.accclimatecontorl.com
Phone: 800-462-6322
574-264-2190

KEY COMPONENTS:

- Coil: 11471511C
- Blower Assembly: 26060048A
- Orifice Tube: 08800502A
- Optional Heat Coil: 11471618B (22022 Series Evaporator)
- Cover Color Options:

*In the interest of continual product improvement, specifications may change without notice or, * obligation to change existing product

5/2012

ACC Climate Control, Inc.

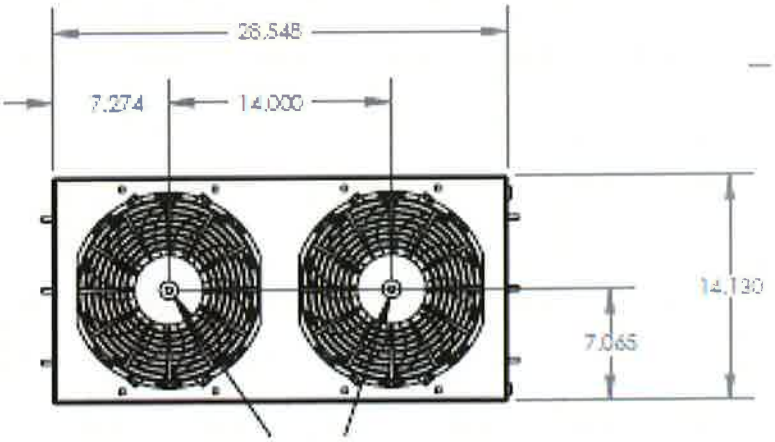
25062 Series Condenser

SPECIFICATIONS:

- Up to 67,000 BTU/HR
- Amp Draw (High Speed):
  - 18 Amps
- 12 or 24 Volts
- Dimensions:
  - 28 1/2"W x 7"H x 14 3/4"D
- Weight: 26lbs

FEATURES:

- Two 11" diameter high performance fans
- High performance motors with extended brush life
- Highly efficient all aluminum micro channel coil
- Unit is fabricated from galvanealed steel and cover in a corrosion resistant epoxy coating for durability
- Design allows for easy installation without having to cut intakes in the skirt of the bus, on certain applications providing a more aesthetic OEM look to the bus
- An inlet filter on the condenser protects the coil from contaminants



*In the interest of continual product improvement, specifications may change without notice or, * obligation to change existing product

www.accclimatecontrol.com
Phone: 800-462-6322
574-264-2190

KEY COMPONENTS:

- Coil: 11471746A
- Fan: 18000003B (2)
- Filter: 08813973A

ACC Climate Control, Inc.

SPECIFICATIONS:

- Permissible Speed:
  - 700-6000 RPM
- Clutch Coil:
  - 12VDC-24VDC
- Rotation:
  - Clockwise
  - Counterclockwise
- Displacement:
  - 162.9 CC
- Refrigerant:
  - R-134A
- Mounting:
  - Pad Mount
  - Ear Mount
- Rated Capacity:
  - 55,000 BTU/HR

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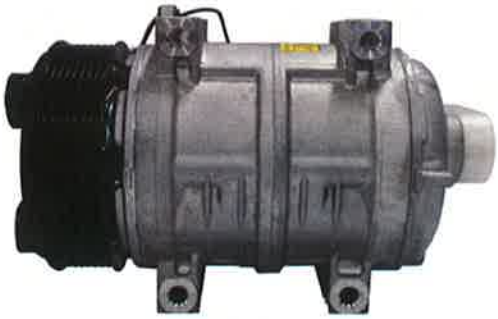
Phone: 800-462-6322
574-264-2190

TM-16 COMPRESSOR



*In the interest of continual product improvement, specifications may change without notice or, * obligation to change existing product

Large Transit Vehicle
Air Conditioning / Heating System

The air conditioning/heating system proposed is comprised of two separate systems as follows.

OEM Dash System: This system is supplied by the OEM chassis manufacturer. It includes a dash area heating function, air conditioning function, defrosting function and fresh air ventilation. The system is controlled by a function switch which allows for selecting the proper function desired and a multi speed blower switch and temperature regulating dial. All controls are located in the driver's area.

Body Heating and Air Conditioning: The body manufacturer, installs the rear passenger compartment heating/cooling system. The rear systems are comprised of the following.

Heating: A 65,000 BTU forced air hot water heater is installed in the rear of the passenger compartment. Heater will be located in back half of vehicle when possible. Heaters are controlled by a fan switch in the driver's area.

Air Conditioning: Rear air conditioning system is manufactured by ACC Climate Control, Inc. The systems consist of a rear ceiling mounted evaporator (model 23023) that is built into rear bulkhead and skirt mounted two fan condenser (model 25065). System uses dual compressors with one being supplied by the OEM chassis manufacturer and an additional compressor installed by the body manufacturer. Front and rear systems are totally independent of each other. The system is controlled by a multi speed fan switch and temperature regulating dial mounted in the driver's dash area. Information on the condenser and evaporator are attached.

AIR CONDITIONING SPECIFICATION

ACC Model R236516

This air conditioning system shall be an ACC Climate Control Model **R236516**.

Compressor: (1) TM-16 Compressor in addition to the OE Chassis supplied compressor driven off the vehicle engine.

Evaporator: One (1) ACC Model 23023 free blow evaporator rated up to 65,000 BTU/hr. The evaporator shall have two (2) dual shaft blower assemblies. The motor is minimum three (3) speed continuous duty permanent magnet and utilizes a resistor to limit amperage requirements. Drain pan shall not be part evaporator cover, but shall be part of the evaporator module with drain valleys to insure proper drains of the condensation. The return air filter is located at the coil and is easily accessible for maintenance without removal of the evaporator cover. The evaporator coil is copper tube design with aluminum fins. Evaporator assembly shall be a galvanized design. The evaporator shall utilize an orifice tube in lieu of a thermal expansion valve for a more trouble free operation. The evaporator cover have no sharp edges and must meet FMVSS 302 specification standards. High Pressure and Low Pressure (switch) protection are part of the evaporator assembly to maximize compressor and entire system protection. Evaporator air outlet louvers shall be adjustable to provide maximum directional airflow throughout the vehicle.

Driver's area in-dash evaporator: The OE Chassis supplied drivers in-dash evaporator shall be utilized and independent of the rear passenger area air conditioning system.

Condenser: One (1) ACC Model 25065 skirt mounted condenser rated @ 83,000 BTU/hr. The condensers shall have two (2) 14" high performance fan/motor assemblies with extended brush life motors. Each condenser assembly shall be designed to distribute air away from the vehicle floor. The condenser is installed in such a manner to assure the entire coil face area is exposed to fresh air from the outside of the vehicle skirt (the skirt of the vehicle will not in any way interfere with direct airflow through the coil). The system design shall use an accumulator with filter dessicant in lieu of a filter drier. The accumulator shall be mounted at the lowest point of the system (on the chassis frame rail) for maximum system protection. In addition, the accumulator shall include an oil pickup tube to insure proper compressor lubrication upon start up of the a/c system. The electrical connections shall be corrosion resistant

This air conditioning system utilizes environmentally friendly R-134A.

The thermostat controls shall be located in an area easily accessible to the driver. All wiring is color coded. The entire electrical system shall utilize ACC's simplified relay board with ground leg switching. The relay board shall consist of LED's to aid in the diagnosis of electrical continuity. Each circuit shall be protected by individual fuses for greater protection of the relay board components. The system shall be protected with manual reset circuit breakers.

The system shall be supported by ACC's 3 year/75,000 mile, with a minimum of two (2) years unlimited miles. See ACC's warranty statement for details .

ACC Climate Control, Inc.

R236516

The R236516 consists of (1) 23023 Rear Mount Evaporator, (1) 25065 skirt mount condenser with (1) TM-16 compressor, and is rated up to 55,000 BTU/hr (plus the OE Dash a/c capacity). The system is equipped with AC-C's orifice tube/accumulator design for prolonged service life.

ACC's simplified relay board provides system operation with ground leg switching. LEDs for each circuit provide for easy diagnostics of electrical continuity.

Parallel flow condensers provide for lighter weight and higher efficiencies over copper tube condensers.

Combined with the OE package, the total system capacity rating up to 70,000 BTU/hr.

23023 Evaporator
- Up to 65,000 BTU/hr
- (2) dual blower assemblies @ 1600 cfm
- 30 amps @ 12 vdc
- 60 lbs

25065 Condenser
- 83,000 BTU/hr
- (2) 14 inch fans
- 22 amps @ 12 vdc
- 54 lbs

TM-16 Compressor
- 10 cubic inch displacement
- 3 amps @ 12 vdc

ACC Climate Control—building **Rock Solid** relationships with **Rock Solid** performance and commitment!

ACC Climate Control, Inc.

23023 Series Evaporator

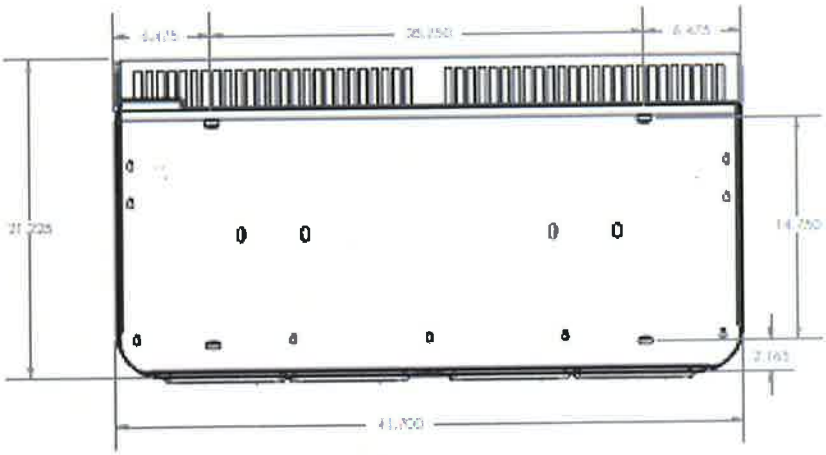
SPECIFICATIONS:

- Up to 63,000 BTU/HR/Cool
- 1600 CFM
- Amp Draw (High Speed):
  - 30 amps
- 3 Speed Fans
- 12 or 24 Volt Motors
- Dimensions:
  - 42"W x 10"Hx 21 3/4" D
- Weight: 60lbs
- Optional W/Heat 60,000 BTU/HR Heat Capacity

www.accclimatecontrol.com
Phone: 800-462-6322
574-264-2180

FEATURES:

- Two dynamically balanced twin shaft blower assembly
- Orifice tube/accumulator in lieu of TXV/drier
- Highly efficient rifled copper tube and aluminum fin coil for maximum capacity output and durability
- Standard manual controls or fully automatic
- Standard relay board with electrical diagnostic LED's
- Relay board can be mounted at the evaporator or the vehicle's electrical control panel



KEY COMPONENTS:

- Coil: 11471508D
- Blower Assembly: 26060036B
- Orifice Tube: 08800504A
- Optional Heat Coil: 11471619B (22023 Series Evaporator)
- Cover Color Options:

*In the interest of continual product improvement, specifications may change without notice or, * obligation to change existing product

ACC Climate Control, Inc.

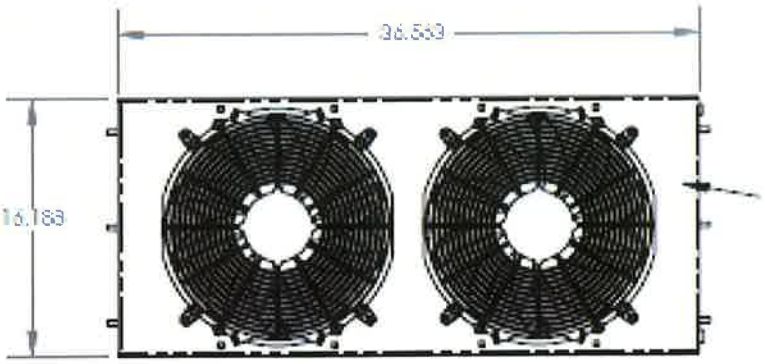
25065 Series Condenser

SPECIFICATIONS:

- Up to 83,000 BTU/HR
- Amp Draw (High Speed):
  - 22 Amps
- 12 or 24 Volts
- Dimensions:
  - 40 1/2"W x 5 5/8"H x 14"D
- Weight: 51lbs

FEATURES:

- Two 14" diameter fans to cover a larger percentage of the surface area on the condenser coil
- High performance motors with extended brush life
- High performance parallel flow condenser
- Unit is fabricated from galvanealed steel and cover in a corrosion resistant epoxy coating for durability
- Design allows for easy installation without having to cut intakes in the skirt of the bus, on certain applications providing a more aesthetic OEM look to the bus
- An inlet filter on the condenser protects the coil from contaminants



www.accclimatecontrol.com
Phone: 800-462-6322
574-264-2190

KEY COMPONENTS:

- Coil: 11471749A
- Fan: 18000005C (2)
- Filter: 08813973A

*In the interest of continual product improvement, specifications may change without notice or, * obligation to change existing product

ACC Climate Control, Inc.

SPECIFICATIONS:

- Permissible Speed:
  - 700-6000 RPM
- Clutch Coil:
  - 12VDC-24VDC
- Rotation:
  - Clockwise
  - Counterclockwise
- Displacement:
  - 162.9 CC
- Refrigerant:
  - R-134A
- Mounting:
  - Pad Mount
  - Ear Mount
- Rated Capacity:
  - 55,000 BTU/HR

www.accclimatecontorl.com
Phone: 800-462-6322
574-264-2190

TM-16 COMPRESSOR

*In the interest of continual product improvement, specifications may change without notice or, * obligation to change existing product

ACC Climate Control, Inc.

SPECIFICATIONS:

- ATCO 3800 Barrier hose
- ATCO A/C Series Hybrid or Elastomer Fittings
- Use with PAG oil
- * Crimps Tools Needed

www.accclimatecontrol.com
Phone: 800-462-6322
574-264-2190

ATCO CRIMP TOOLS AVAILABLE:

- Air Crimp Gun:
  - FCP3801
- Manual Crimp Pliers:
  - Ratchet Pincers

ATCO AIR-O CRIMP A/C HOSE SYSTEM

FEATURES:

- Provides a reliable leak free crimp
- One piece clamp assembly w/ stainless steel clamps
- Clamp locator insures proper fitting alignment
- Qualified to SAE J2064 specification
- Low refrigeration permeation rate
- Low moisture ingression rate

*In the interest of continual product improvement, specifications may change without notice or, * obligation to change existing product

ITEM #11 (n)

BUY AMERICA
CERTIFICATION
AND
DOCUMENTATION

Elkhart Coach

BUY AMERICA COST DOCUMENTATION

MIDWEST - INDOA - SMALL 8 & 2 Q42-082715-01

PRE - AWARD. PREPARED 09/16/15

COMPONENT	MANUFACTURER	STATE	% OF TOTAL COST
CHASSIS	FORD MOTOR CO	OH	55.74%
DRIVER AND PASSENGER SEATS	FREEDMAN SEATING LLC	IL	3.28%
WHEEL CHAIR TIE DOWN SYSTEMS	Q'STRAINT/SURELOK	FL	2.26%
AIR CONDITIONING	ACC	IN	4.72%
			======
	Total% of vehicle manufactured in the United States (minimum):		**66.00%**

Final assembly point will be Elkhart, Indiana. At this location the raw, cut away chassis is converted into a passenger and/or paratransit bus, complete and ready for use.

Activities include:
Check-in, Inspection and preparation of chassis
Fabrication of vehicle steel body framing
Lamination of vehicle exterior walls and roof
Mounting of front and rear caps
Mounting of vehicle body onto chassis framing
Installation and interconnection of heat and air conditioning equipment
Installation of floor decking and floor covering
Installation of electrical system and lighting
Installation of passenger seats and grab rails
Installation of door and windows
Installation of all customer selected options such as destination signs, lifts, etc.
Water testing of completed vehicle
Road testing of completed vehicle
Final inspection of vehicle and preparation for shipment

Elkhart Coach

BUY AMERICA COST DOCUMENTATION

MIDWEST - INDOA - LARGE 12 & 2 Q42-082715-02

PRE - AWARD. PREPARED 09/16/15

COMPONENT	MANUFACTURER	STATE	% OF TOTAL COST
CHASSIS	FORD MOTOR CO	OH	56.41%
DRIVER AND PASSENGER SEATS	FREEDMAN SEATING LLC	IL	4.03%
WHEEL CHAIR TIE DOWN SYSTEMS	Q'STRAINT/SURELOK	FL	2.10%
AIR CONDITIONING	ACC	IN	4.84%
			======
	Total% of vehicle manufactured in the United States (minimum):		**67.37%**

Final assembly point will be Elkhart, Indiana. At this location the raw, cut away chassis is converted into a passenger and/or paratransit bus, complete and ready for use.

Activities include:
Check-in, Inspection and preparation of chassis
Fabrication of vehicle steel body framing
Lamination of vehicle exterior walls and roof
Mounting of front and rear caps
Mounting of vehicle body onto chassis framing
Installation and interconnection of heat and air conditioning equipment
Installation of floor decking and floor covering
Installation of electrical system and lighting
Installation of passenger seats and grab rails
Installation of door and windows
Installation of all customer selected options such as destination signs, lifts, etc.
Water testing of completed vehicle
Road testing of completed vehicle
Final inspection of vehicle and preparation for shipment

Elkhart Coach

BUY AMERICA COST DOCUMENTATION

MIDWEST - INDOA - LARGE 16 & 2 Q42-082715-03

PRE - AWARD. PREPARED 09/16/15

COMPONENT	MANUFACTURER	STATE	% OF TOTAL COST
CHASSIS	FORD MOTOR CO	OH	54.58%
DRIVER AND PASSENGER SEATS	FREEDMAN SEATING LLC	IL	4.77%
WHEEL CHAIR TIE DOWN SYSTEMS	Q'STRAINT/SURELOK	FL	2.03%
AIR CONDITIONING	ACC	IN	4.68%
			======
	Total% of vehicle manufactured in the United States (minimum):		**66.06%**

Final assembly point will be Elkhart, Indiana. At this location the raw, cut away chassis is converted into a passenger and/or paratransit bus, complete and ready for use.

Activities include:
Check-in, Inspection and preparation of chassis
Fabrication of vehicle steel body framing
Lamination of vehicle exterior walls and roof
Mounting of front and rear caps
Mounting of vehicle body onto chassis framing
Installation and interconnection of heat and air conditioning equipment
Installation of floor decking and floor covering
Installation of electrical system and lighting
Installation of passenger seats and grab rails
Installation of door and windows
Installation of all customer selected options such as destination signs, lifts, etc.
Water testing of completed vehicle
Road testing of completed vehicle
Final inspection of vehicle and preparation for shipment