SUPPORT DOCUMENTATION
For
Braun Entervan (low floor)

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
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 10, Exterior Paint: List of available exterior colors. These will be found under #11 (f) below
7. Attachment I, page 11, Front Passenger Seat: Description of quick release front seat
8. Attachment I, page 15, Securement Systems: Detailed description of Securement systems. This will be found under #11 (j) below.
9. Attachment I, page 16 Vehicle Testing: Certification of compliance with requirements of testing. This will be included under #11 (d) 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)
    - (h) Ramp information
    - (j): Securement system information
    - (k): Occupant restraint information
    - (l): Forward facing fold-a-way seat information
    - (n): Buy America certification, documentation

ITEM #1

SPECIFICATIONS
and
ACCESSORIES
OPTION
SHEETS

Commercial Side-Entry

Commercial Vehicles

The BraunAbility Commercial Side-Entry conversion is the culmination of over forty years experience in building personal mobility products. Style, performance, convenience and safety have been aesthetically blended to achieve a new level of refinement in a wheelchair-accessible minivan.

The most striking feature is its handsomely finished automotive look. Both the passenger side and the driver side sliding doors have been lowered to match the low floor level with no sill or other obstructions to step over. This standard feature also allows for a better wheelchair turning radius, making it easier to maneuver while inside the vehicle. The conversion comes standard with a removable front driver and passenger seat, and a wheelchair securement position in the front passenger area.

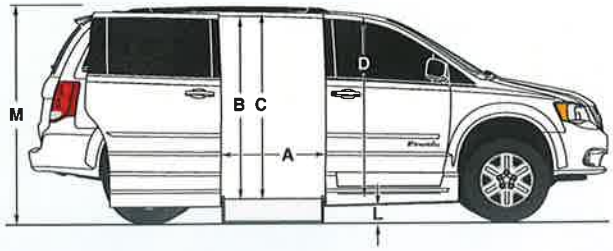
Safety has always been a top priority at BraunAbility. The Commercial Side-Entry conversion has been crash tested and certified to meet or exceed all applicable requirements of the Federal Motor Vehicle Safety Standards (FMVSS) and is backed by our three-year limited warranty.

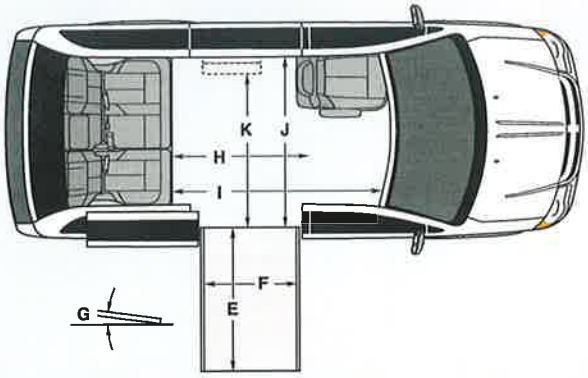
BraunAbility®

Life is a Moving Experience™

Commercial Side-Entry

- Dodge Grand Caravan Chassis
- ADA, FMVSS and CMVSS Compliant
- Meets/exceeds Altoona test requirements
- CARB approved
- 6-passenger vehicle (with optional 2-passenger Fold-A-Way Seat)
- Lowered floor from firewall to rear axle
- 61" floor-to-ceiling at center of van*
- Manual swing ramp providing 30" usable width
- Multiple wheelchair securement locations
- One belt system for wheelchair securement
- Manual driver and passenger side sliding door providing 56-1/4" vertical opening (ADA compliant), passenger door provides 31-1/2" in width
- Step-and-Roll front seats
- Roll and Tumble third row seating
- Front passenger floor tracks for wheelchair securement, with 60" floor-to-ceiling height
- Stylized lower body panels with integrated steps
- Vinyl flooring with 3/8" marine grade plywood underlayment
- ADA-compliant interlock
- ADA-compliant ramp and door entrance lighting
- Priority seat decal
- Wheelchair securement location decals
- 3-passenger bench seat at rear with folding footrest
- Auxiliary wiring harnesses include fused circuits
- Emergency rear hatch release
- Easy maintenance interior trim package
- 20 gallon OEM fuel tank





All dimensions are for reference only.

Door Opening Usable Width (Slide Door)	A	31-1/2"
Door Opening Usable Height (Slide Door)	B	56-1/4"
Interior Height at Center of Van*	C	61"
Interior Height at Driver and Passenger Position*	D	60"
Ramp Length	E	52"
Ramp Width (Usable Clear Opening)	F	30"
Ramp Angle (Unloaded)	G	12.5°
Interior Floor Length (Behind Front Seats)	H	57"
Overall Interior Floor Length (Flat Area)	I	87-1/2"
Interior Width at B-Pillars	J	62"
Width - Ramp to Optional 2-Pass. Seat (Folded)	K	49-3/4"
[1] Ground Clearance (Unloaded) - [2] Loaded @ 1200 lbs	L	[1] 6-1/4" - [2] 5"
Overall Vehicle Height (Unloaded)	M	74"

Due to manufacturing tolerances both with the OEM vehicle and the conversion components, all dimensions may vary slightly from those shown.
* Deduct 3" off of Interior Height for Applications with Overhead DVD/Rear Heat & AC/Rail System

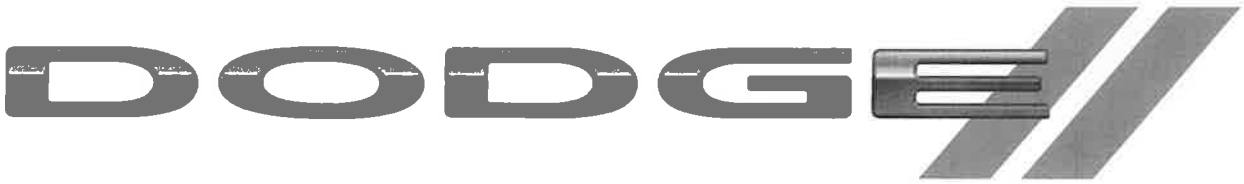
AUTHORIZED DEALER

BraunAbility
Life is a Moving Experience™

631 West 11th Street • Winamac, IN 46996
(574) 946-6153 • 1-800-THE-LIFT
www.braunability.com/commercial

ITEM #2

WARRANTY INFORMATION



2016

All Vehicles

WARRANTY INFORMATION-GAS

WARRANTY COVERAGE AT A GLANCE

DESCRIPTION	1 Yr/ 12, 000	2 Yr/ 24,000	3 Yr/ 36,000	3 Yr/ 50,000	3 Yr/ Unlimited	5 Yr/ 50,000	5 Yr/ 60,000	5 Yr/ 100,000	5 Yr/ Unlmtd	7 Yr/ 70,000	8 Yr/ 80,000
Basic Limited Warranty Coverage	■	■	■								
Special Extended Warranty Coverage											
Anti-Corrosion Perforation Limited Warranty:											
All Panels	■	■	■	■	■						
Outer Panels	■	■	■	■	■	■	■	■	■		
Powertrain Limited Warranty	■	■	■	■	■	■	■				
Federal Emissions Warranty	■	■									
Federal Emissions Warranty											
Specified Comp.	■	■	■	■	■	■	■	■	■	■	■

Limited Warranty

Braun® Public Use

Lowered Floor Minivan Conversion

34941 Rev A

IMPORTANT

This booklet contains Braun Corporation limited warranties.
It should be kept in your vehicle and presented to your Dealer
if any warranty service is needed.

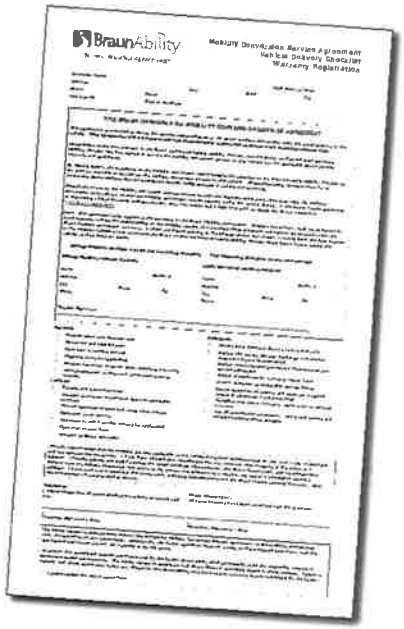
WARRANTY AND REGISTRATION INSTRUCTIONS

Examine your lowered floor minivan conversion for any damage. Should any damage have occurred during delivery, notify the carrier at once with any claims.

Review the service agreement, delivery checklist and warranty registration form with your sales representative. The form must be signed by the consumer and retailer. A hard copy is available upon request.

The warranty registration form must be processed electronically by the sales representative to activate the warranty. This Warranty Booklet contains detailed terms and provisions applicable to this vehicle.

Record the last eight digits of the vehicle identification number (VIN) in the space provided for future reference. This information must be provided when filing a warranty claim or ordering parts.



Vehicle Identification Number (VIN) _____

WARRANTY COVERAGE AND WARRANTY COVERAGE TIME PERIODS

The Braun Corporation ("Braun") warranty covers Braun's modifications and alterations for associated parts for three (3) years or the first thirty six thousand (36,000) miles, whichever occurs first. In addition, the corrosion protection portion of this warranty applies to covered parts (see below) for 5 years or 100,000 miles, whichever occurs first. The 3 year/36,000 mile limited warranty covers substantial defects in materials and workmanship attributable to Braun of the conversion van frame, floor structural components, ramp, door and associated structural components, electrical components, including but not limited to switches, wires, connectors and the controller and interior appearance items such as floor covering and the lower door extension assemblies. The corrosion warranty covers substantial defects in materials and workmanship attributable to Braun of the metal fabrication on or of the frame, floor and lower door extensions. These warranty periods begin 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 to the first consumer purchaser, and the next subsequent owner, only. This limited warranty may be transferred once during the warranty period. However, the subsequent owner must submit a warranty transfer form to Braun to make the warranty transfer effective. All rights and limitations within this warranty are applicable to the original and subsequent owner of the product. The subsequent owner's warranty coverage period is the remaining balance of the warranty coverage period that the prior owner was entitled to under this limited warranty. Warranty transfer forms can be obtained from any independent, authorized dealer, which must be submitted to Braun within thirty (30) days from the subsequent owner's purchase, and proof of the purchase date must be supplied with the form.

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 warranty coverage periods, it will be repaired or replaced, at Braun's option, without charge to the owner, in accordance with the terms, conditions and limitations of this limited warranty.

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 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; and
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; Customer Experience Group 1-800-488-0359.

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; any product used for rental or other commercial purposes (Note: It shall be concluded that the product has been used for commercial and/ or business purposes if the product owner or user files a tax form claiming any business or commercial tax benefit related to the product, or if the product is purchased in a business name); 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 to a dealer. These items are usually detected and corrected at the factory or by the selling dealer prior to delivery to the retail customer. 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: any rental or other commercial use or purchase of the product (as defined in this warranty), misuse, neglect, collision, accidents, failure to provide routine maintenance (See Owner's Manual), unauthorized alteration, off road use, 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 any 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.

"Providing Access to the World®"

January 2011

34941 Rev A

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

Maintenance and Service Requirements

BraunAbility® lowered floor wheelchair accessible vehicles must be maintained and serviced by authorized representatives who have attended the AbilityCare training program (MSE certified).

Read and become familiar with the operating procedures outlined in the applicable operator's manual and the maintenance and troubleshooting information contained in this manual before beginning operation, maintenance or service procedures.

Contact BraunAbility Aftersales at 1-800-946-7513 if any of this information is not understood.

MAINTENANCE and SERVICE

Preventive Maintenance

Maintenance is necessary to ensure safe and trouble free conversion operation. Encourage the consumer to perform preventive maintenance procedures. General preventive maintenance consisting of inspections along with cleaning procedures should be a part of the consumers routine.

Keeping the passenger slide door lower track pan free of debris, ice and snow is one of the most effective preventive maintenance practices to exercise. Regular preventive maintenance procedures will increase service life as well as enhancing safety.

The consumer should inspect and clean frequently and routinely (minimum four weeks or 100 cycle intervals).

Note: A Preventive Maintenance section is provided in the operator's manual.

Maintenance and Lubrication Schedule

Normal vehicle maintenance must be performed as outlined in the OEM-supplied owner's manual. This maintenance is not the responsibility of BraunAbility.

The maintenance and lubrication procedures outlined in this schedule must be performed at the recommended scheduled intervals by a BraunAbility authorized service representative.

Clean specified components and the surrounding area before applying lubricants. When replacing lubricated components, be sure to lubricate during installation procedures.

A "dri-film" style of light oil should be applied where Light Oil is called out (goes on wet and then dries). Lubricants of this type are available that do not attract dust and other debris.

Use of improper lubricants can attract dirt or other contaminants which could result in wear or damage to components. Avoid lubricants that can leave stains.

Some lubricants referenced in the schedule are available from BraunAbility (part numbers provided where specified).

Inspection, lubrication and maintenance procedures should be repeated at 3 month intervals following the scheduled 6 month maintenance. These intervals are a general guideline and will vary according to frequency of use and conditions. Exposure to severe conditions (weather, environment, contamination, heavy usage, etc.) may require inspection and maintenance procedures to be performed more often than specified.

Discontinue use immediately if maintenance and lubrication procedures are not properly performed, or if there is any sign of wear, damage, improper operation or any abnormal condition. Contact your sales representative or call 1-800-946-7513. A BraunAbility Aftersales representative will direct you to an authorized service technician who will inspect your vehicle.

⚠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.

Maintenance and Lubrication Schedule

3 Months	**Manual Ramp**	
	Outboard ramp extension hinge and fasteners	Clean and lubricate with Light Oil. Resecure or replace fasteners as needed
	Inspect ramp inboard pivot points (bolts, screws and bushings/bearings) for positive securement, wear or damage	Clean and lubricate with Light Oil. Tighten, replace or correct as needed
	Inspect ramp fold pickup bearing for positive securement, alignment, wear or other damage	Replace or correct as needed. If bearing retaining screw is not secure or is removed for service, apply Blue #242 Thread Locker Loctite to retaining screw and tighten.
	Inspect ramp fold arm for positive securement, alignment, wear or other damage	Tighten, replace or correct as needed
	Inspect ramp fold arm bearing slot for excessive wear or damage	Replace if needed
	Inspect ramp floor mounting hardware for securement (loose or missing)	Resecure, replace or correct as needed
	General Items	
	Lower slide door track	Inspect for debris/obstructions and clean (vacuum or blow out debris using compressor)
	Wheelchair tiedown straps, occupant restraint belts and tie down track	Inspect strap and belt assemblies frequently. Any defects such as strap/belt cuts, fraying or malfunctioning call for replacement of the entire strap/belt assembly. "L" track must be clean and not worn, bent or otherwise damaged (prohibiting proper strap/belt attachment). If there is any sign of damage, wear, abnormal condition or improper operation of straps, belts, strap/belt hardware (hooks, keepers, latch plate, receptacle), or track, discontinue use and replace components immediately. Follow all inspection and maintenance instructions supplied by the belt manufacturer. Severe conditions (weather, environment, heavy usage, etc.) may require more frequent inspections. Exposure to severe conditions will dramatically reduce the life of the system.
	Inspect removable seat bases for proper engagement of latching mechanisms	Replace or correct as needed

Maintenance and Lubrication Schedule

6 Months	**Manual Ramp** — **Perform all procedures listed in previous section also**	
	Remove interior cover and inspect:	
	Top pivot (wall mounting) bracket mounting bolts for securement (loose or missing)	Resecure, replace damaged parts or otherwise correct as needed. See applicable Manual Ramp exploded views on pages 19A-20B, 23A-24B or 27A-28B.
	Main (spring) housing mounting bolts for securement (loose or missing)	
	Ramp fold arm securement (collar and mounting screws)	
	Torsion spring securement hairpin cotter, external snap ring(s) or key (loose or missing)	
	Inspect Power Source: Vehicle battery, 50 ampere fuse, vehicle engine compartment fuse block and center console fuse block.	Resecure, repair or replace
	Swing Out Ramp	
	Inspect:	
	Latch for proper operation (apply Light Oil)	Realign, resecure, tighten, lubricate, replace damaged parts or otherwise correct as needed.
	Latch mounting hardware for positive securement (loose or missing mounting hardware)	
	Latch pin for positive securement, wear, misalignment, or other damage	
	Missing or damaged ramp top pivot bracket securement cotter pin (hairpin cotter or "R" clip)	
	Top and/or bottom ramp pivot points (axles and/or bearing surfaces) for deformation, wear or other damage	
	Bottom ramp pivot pin (axle) plastic flanged bearing damaged or missing.	
	Latch release rod for positive securement, alignment, wear, or other damage	

Consecutive 3 Month Intervals	Repeat all previously listed inspection, lubrication and maintenance procedures at 3 month intervals.

MAINTENANCE SCHEDULE

Your vehicle is equipped with an automatic oil change indicator system. The oil change indicator system will remind you that it is time to take your vehicle in for scheduled maintenance.

Based on engine operation conditions, the oil change indicator message will illuminate. This means that service is required for your vehicle. Operating conditions such as frequent short-trips, trailer tow, extremely hot or cold ambient temperatures, and E85 fuel usage will influence when the "Oil Change Required" message is displayed. Severe Operating Conditions can cause the change oil message to illuminate as early as 3,500 miles (5,600 km) since last reset. Have your vehicle serviced as soon as possible, within the next 500 miles (805 km).

Your authorized dealer will reset the oil change indicator message after completing the scheduled oil change. If a scheduled oil change is performed by someone other than your authorized dealer, the message can be reset by referring to the steps described under "Electronic Vehicle Information Center (EVIC)" in "Understanding Your Instrument Panel" for further information.

NOTE: Under no circumstances should oil change intervals exceed 10,000 miles (16,000 km), twelve months or 350 hours of engine run time, whichever comes first. The 350 hours of engine run or idle time is generally only a concern for fleet customers.

Severe Duty All Models

Change Engine Oil at 4,000 miles (6,500 km) if the vehicle is operated in a dusty and off road environment or is operated predominately at idle or only very low engine RPM's. This type of vehicle use is considered Severe Duty.

Once A Month Or Before A Long Trip:

- Check engine oil level.
- Check windshield washer fluid level.
- Check tire pressure and look for unusual wear or damage. Rotate tires at the first sign of irregular wear, even if it occurs before the oil indicator system turns on.
- Check the fluid levels of the coolant reservoir, brake master cylinder, and power steering and fill as needed.
- Check function of all interior and exterior lights.

Required Maintenance Intervals.

Refer to the maintenance schedules on the following page for the required maintenance intervals.

At Every Oil Change Interval As Indicated By Oil Change Indicator System:
• Change oil and filter.
• Rotate the tires. **Rotate at the first sign of irregular wear, even if it occurs before the oil indicator system turns on.**
• Inspect battery and clean and tighten terminals as required.
• Inspect brake pads, shoes, rotors, drums, hoses and park brake.
• Inspect engine cooling system protection and hoses.
• Inspect exhaust system.
• Inspect engine air cleaner if using in dusty or off-road conditions.

Maintenance Chart

Refer to the Maintenance Schedules on the following pages for the required maintenance intervals.

Mileage or time passed (whichever comes first)	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000	110,000	120,000	130,000	140,000	150,000
Or Years:	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Or Kilometers:	32,000	48,000	64,000	80,000	96,000	112,000	128,000	144,000	160,000	176,000	192,000	208,000	224,000	240,000
Additional Inspections														
Inspect the CV joints.		X			X			X			X			X
Inspect front suspension, tie rod ends, boot seals, and replace if necessary.	X		X		X		X		X		X		X	
Inspect the brake linings, replace as necessary.	X		X		X		X		X		X		X	

Mileage or time passed (whichever comes first)	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000	110,000	120,000	130,000	140,000	150,000
Or Years:	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Or Kilometers:	**32,000**	**48,000**	**64,000**	**80,000**	**96,000**	**112,000**	**128,000**	**144,000**	**160,000**	**176,000**	**192,000**	**208,000**	**224,000**	**240,000**
Additional Maintenance														
Replace engine air filter.		X			X			X			X			X
Replace cabin/air conditioning filter.	X		X		X		X		X		X		X	
Replace spark plugs (3.6L engine). **									X					
Flush and replace the engine coolant at 10 years or 150,000 miles (240,000 km) whichever comes first.									X					X

8

Mileage or time passed (whichever comes first)	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000	110,000	120,000	130,000	140,000	150,000
Or Years:	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Or Kilometers:	32,000	48,000	64,000	80,000	96,000	112,000	128,000	144,000	160,000	176,000	192,000	208,000	224,000	240,000
Change automatic transmission fluid and filter if using your vehicle for any of the following: police, taxi, fleet, or frequent trailer towing.					X						X			
Change automatic transmission fluid and filter.											X			
Inspect and replace PCV valve if necessary.									X					

** The spark plug change interval is mileage based only, yearly intervals do not apply.

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 (f)

LIST
OF
AVAILABLE
EXTERIOR
STANDARD
COLORS

(Found under item 11 (f) of this section)

ITEM #7

DESCRIPTION
OF
QUICK
RELEASE
FRONT
SEATS

Front Seats: In an effort to produce vehicles that can be configured to meet a variety of customer needs, the driver and passenger seat bases have been designed so they may be removed.

Note: The driver seat would typically not be removed in public use transit applications except during maintenance and cleaning procedures.

Driver and passenger side front seats are equipped with "step & roll" quick-release seat base attachments that engage recessed floor strikers (supports). Remove and install "step & roll" seats as detailed on pages 36-39.

Note: Driver and passenger side front seats are not interchangeable.

Power Seats: Front seats are equipped with electrical wiring harnesses to accommodate optional equipment such as heated seats, air bags, etc. (see Heated Seats and Adjustable Pedals).

Note: Front passenger seat may not provide power features (per conversion package).

Before removing seats, be certain seat wiring harnesses are disconnected.

When power seats are removed, the seat electrical harness plug must be connected to the receptacle provided in the seat base (details provided on pages 33-35).

⚠WARNING

Park vehicle and turn engine off before removing or installing seats. Failure to do so may result in serious bodily injury and/or property damage.

⚠CAUTION

Disconnect seat wiring harness before removing seat. Failure to do so may result in property damage.

When positioning seats, it is your responsibility to reconnect all seat electrical harnesses. Failure to properly connect power seat electrical harnesses may result in power seat functions being disabled and/or the air bag light illuminating.

⚠WARNING

Connect front seat wiring harness plug to socket provided at top of seat base before removing front seat. Failure to do so may result in serious bodily injury and/or property damage.

Heated Seats: The OEM heated seat option for front seats is interfaced in the driver seat electrical wiring harness. The passenger seat heated seat feature is disabled if the driver seat is removed ("B" pillar harness disconnected).

Adjustable Pedals: Like the heated seat option, the OEM adjustable pedals feature is interfaced in the driver seat electrical wiring harness. When the driver seat is removed, the adjustable brake and accelerator pedal feature is disabled.

Contact your sales representative or call the Customer Experience Group at 1-800-488-0359 if any of this information is not understood.

Floor Mats: The floor mats supplied with this vehicle were specifically designed for use on the OEM (non-modified) vehicle floor in conjunction with OEM seats. The floor mats are not compatible for use with conversion front seat bases (with riser).

Do not use a floor mat at the front driver seat position when the conversion seat is installed. Improperly fitted and/or secured floor mats can potentially interfere with the operation of the accelerator or brake pedals, resulting in an accident.

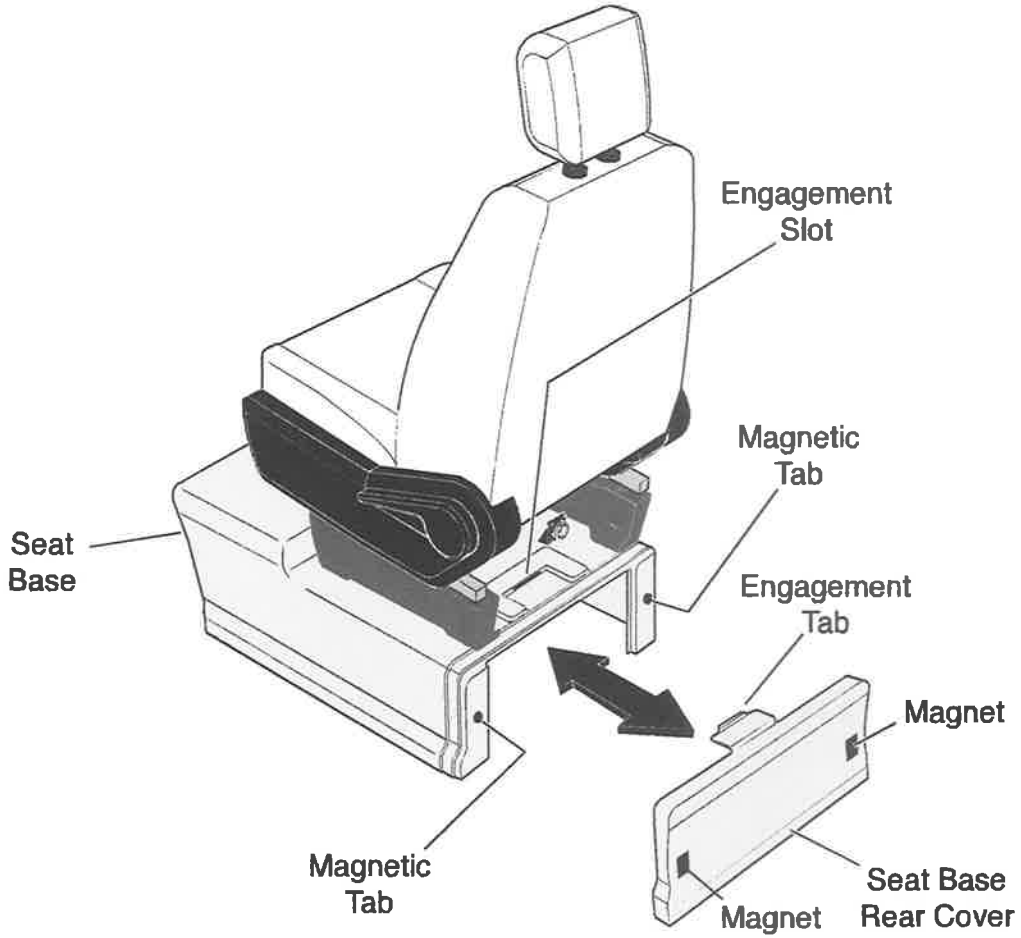
Contact your sales representative or call the Customer Experience Group at 1-800-488-0359 if any of this information is not understood.

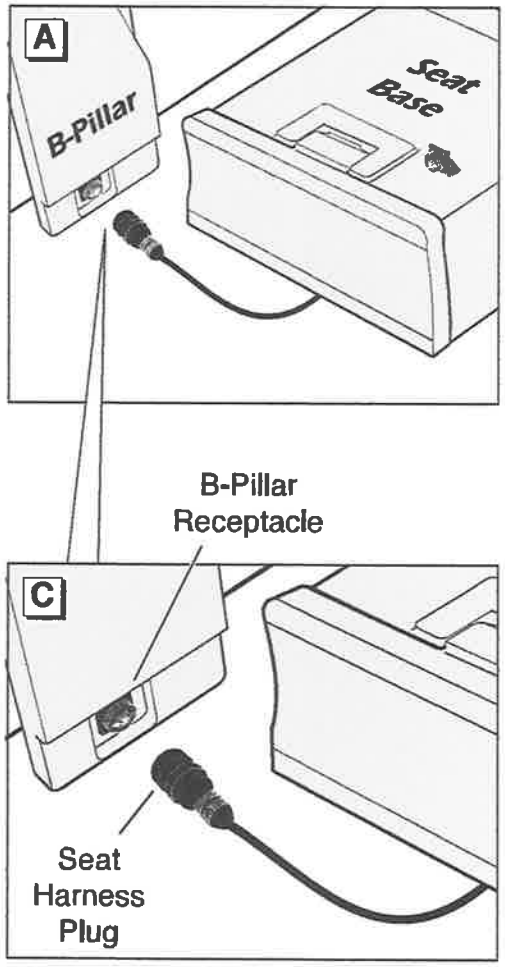
Seat Base Rear Covers

Front seats are equipped with easy to remove seat base rear covers. The covers must be removed when removing and installing seats. Securement magnets are located at each end of the cover (left and right), and an engagement tab is located at top. Simply pull back at the ends and lift out of engagement slot to remove covers. Engage tab with slot and push into position when reinstalling seats.

Caution: Do not contact and damage the seat base electrical harness when removing and installing seat base rear covers.

Note: Driver side seat shown.



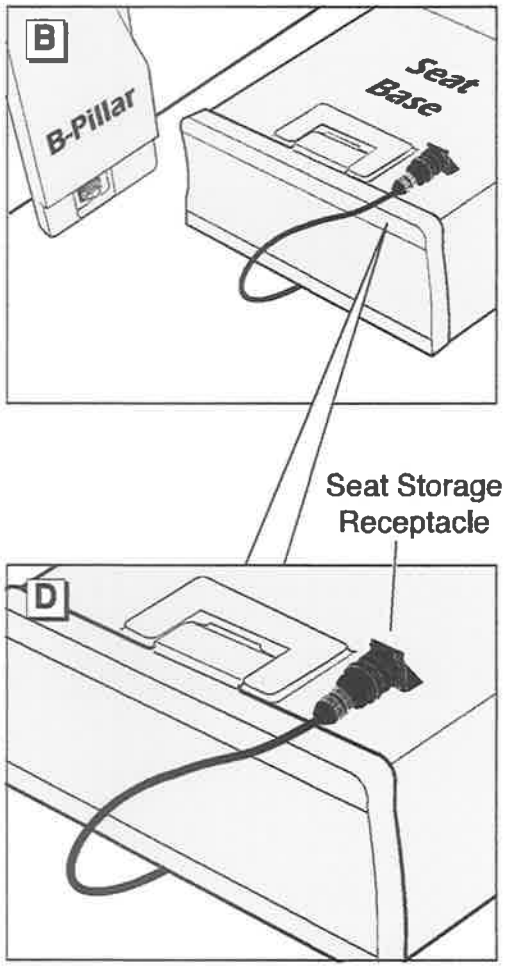


Front Seat Wiring Harnesses and Receptacles

An electrical harness receptacle is located to the rear of each seat base in the wall (at "B" pillar). See Figures A and C. The seat wiring harness plug connects to the receptacle socket (screw-on connector details on pages 34 and 35).

Before removing seats, be certain seat wiring harnesses are disconnected.

When seats are removed, the seat electrical harness plug must be connected to the receptacle provided in the seat base. See Figures B and D.



⚠CAUTION

Disconnect seat wiring harness before removing seat. Failure to do so may result in property damage.

⚠WARNING

Connect front seat wiring harness plug to socket provided at top of seat base before removing front seat. Failure to do so may result in serious bodily injury and/or property damage.

When installing power seats, be certain seat wiring harnesses are reconnected. Failure to do so may result in power seat functions being disabled and/or the air bag light illuminating.

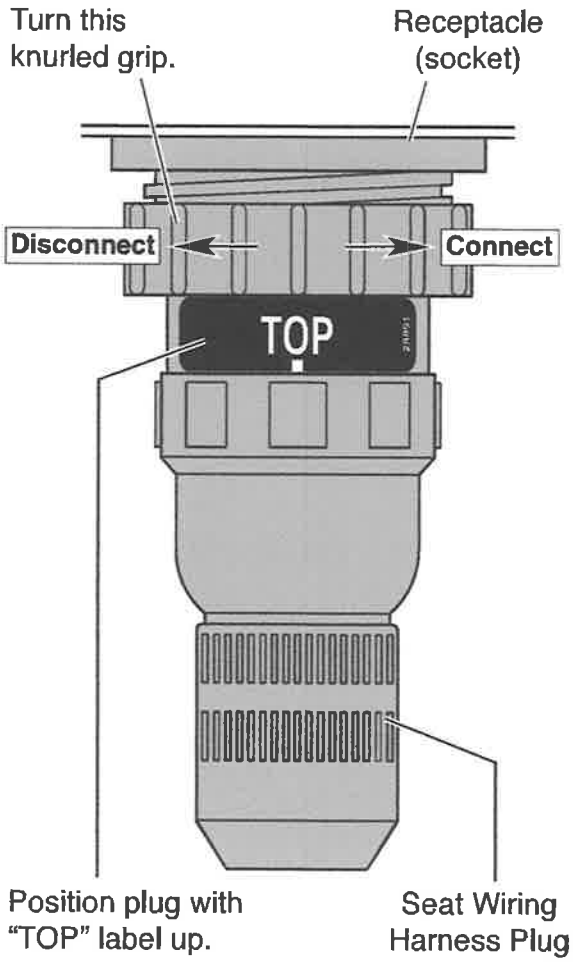
Heated Seats and **Adjustable Pedals:** These OEM options are interfaced in the driver seat electrical wiring harness. Both options are disabled if the driver seat is removed ("B" pillar harness disconnected).

Screw-on Connectors

Front seat wiring harnesses are equipped with a screw-on connector (plug). Operate connectors as detailed here and on page 35.

A label is posted on the seat wiring harness plug which identifies the top of the connector ("TOP" decal 28891). Position the plug with the "TOP" label facing up when connecting the plug to either receptacle socket. Use this feature as an alignment guide.

Note: Alignment grooves (slots) are provided in receptacle sockets. Receptacle sockets have a single wider alignment groove that is positioned at 12 o'clock (shown on page 31). Seat wiring harness plugs are equipped with mating alignment guides (keys).

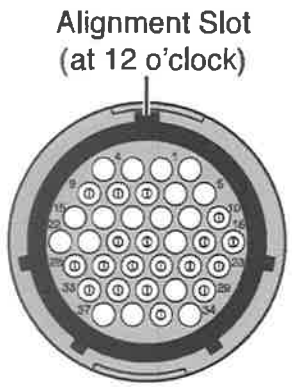


Screw-on Connectors

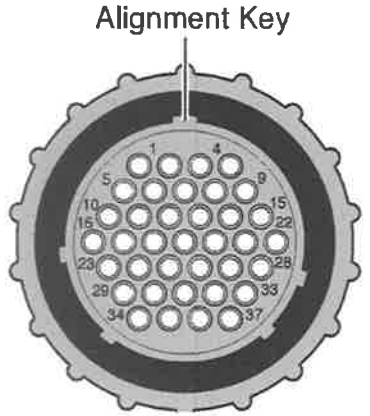
To Connect: Align the seat harness connector by positioning the plug with the "TOP" label facing up. Align the seat harness connector alignment keys (guides) with the receptacle socket alignment slots (will only connect one way).

Carefully insert the seat harness plug in the receptacle socket. Turn seat harness connector large diameter knurled grip clockwise fully (turn gripper nearest to socket).

To Disconnect: Turn seat harness connector large diameter knurled grip counterclockwise and disengage connectors.



Receptacle Socket

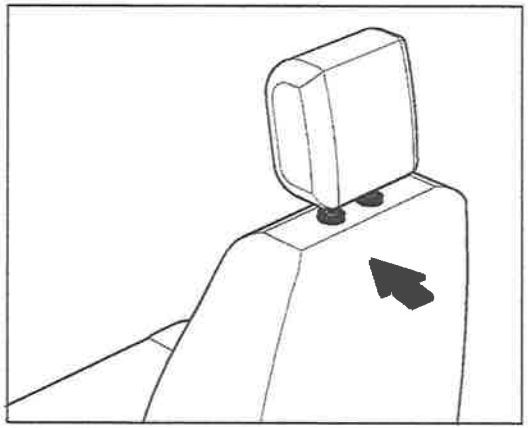


Seat Harness Plug

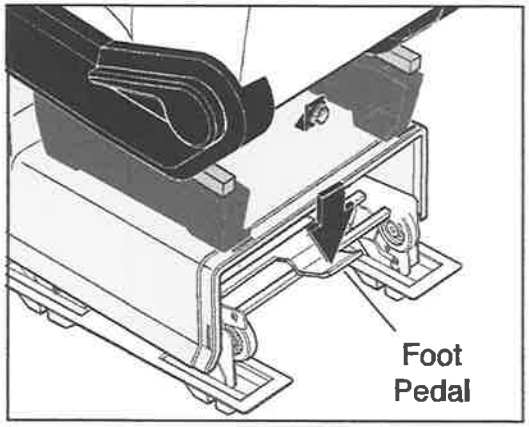
Front Seat Bases

"Step & roll" quick-release seat base attachments engage recessed floor strikers (supports). A foot-activated release pedal is located at the rear of the seat base. Stepping on the pedal disengages the attachments and deploys the seat base rear wheels.

Note: For ease of disengagement, move the seat to the full forward and upright position before removing seat(s). Push the seat back forward and upward while stepping on foot pedal (ensures full deployment of rear wheels).

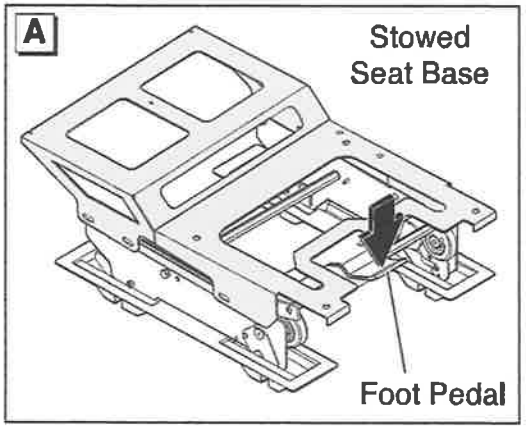


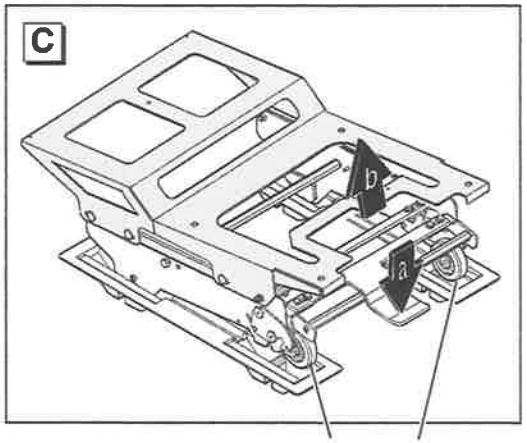
Push seat back forward and upward while stepping on foot pedal.

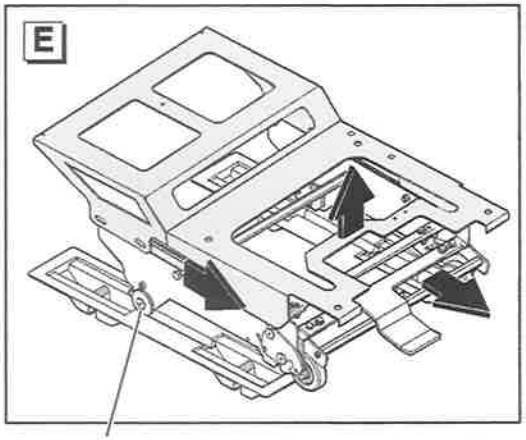


Front Seat Removal Instructions

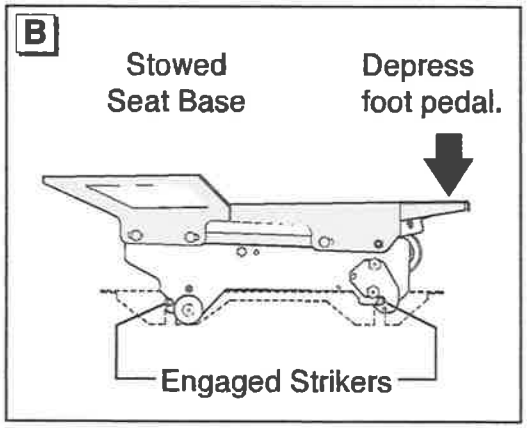
1. Move seat to full forward and upright position.
2. Caution! Disconnect seat wiring harness before removing a front seat base. Connect harness to seat base socket. See page 33-35 for wiring harness details.
3. Depress foot pedal (push down). Note: Push seat back forward and upward while stepping on foot pedal (shown at left). See Figures A-D.
4. Pull up and back on the rear of seat (deploy front wheels). See Figures E and F.
5. Roll seat base out of vehicle as shown.

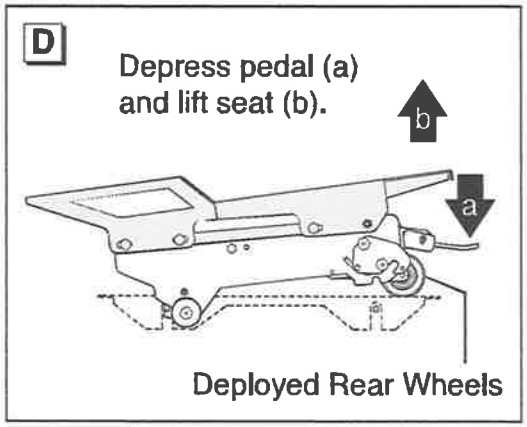


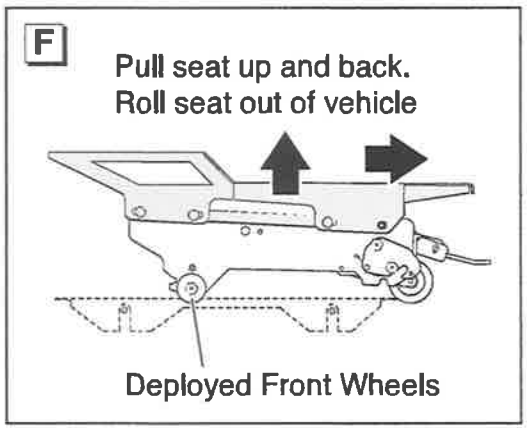




Illustrations depict seat base only.





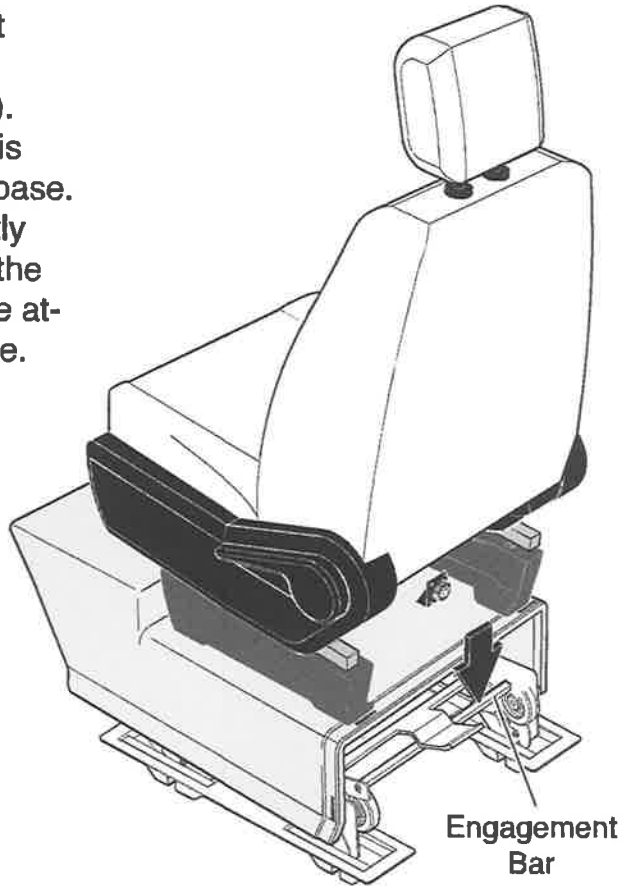


Front Seat Bases

"Step & roll" quick-release seat base attachments engage recessed floor strikers (supports). A foot-activated release pedal is located at the rear of the seat base. A cross bar is positioned directly under the pedal. Stepping on the bar engages the rear seat base attachments to lock the seat base.

⚠WARNING

Seat attachments must be fully latched in floor supports before occupying seats or operating vehicle. Failure to do so will result in serious bodily injury.



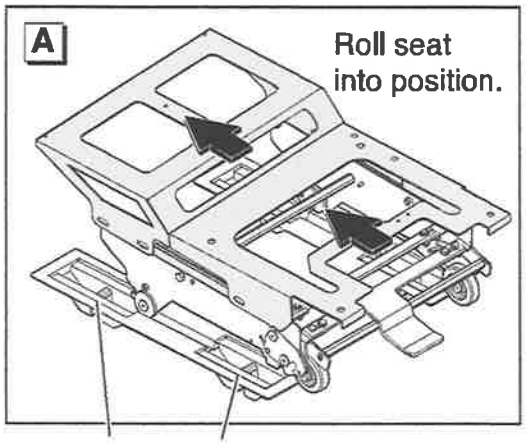
Front Seat Installation Instructions

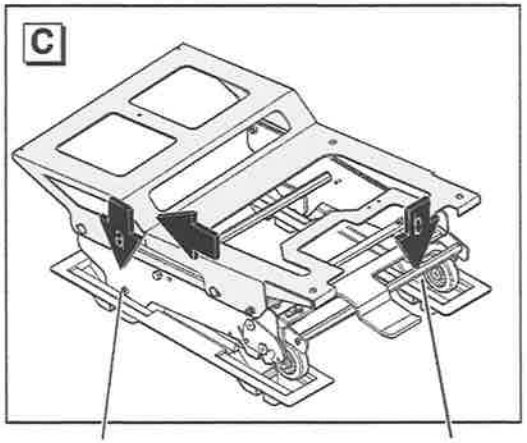
1. Roll seat base into position, just behind the floor mounted strikers. See Figures A and B. Move seat base forward to engage front strikers. See Figures C and D.

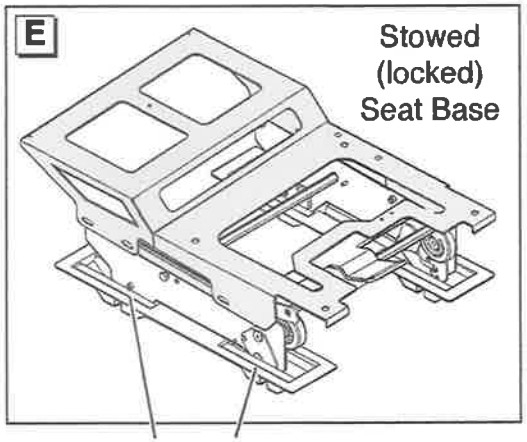
   Note: Position outside of seat base alongside wall panel for easy alignment.

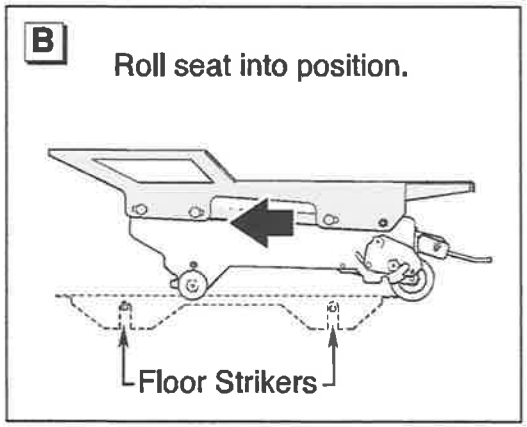
2. Depress rear cross bar (push down) to stow rear wheels and engage rear seat attachments with floor strikers. See Figures C-F. Lift seat to ensure floor strikers are locked in seat attachments.

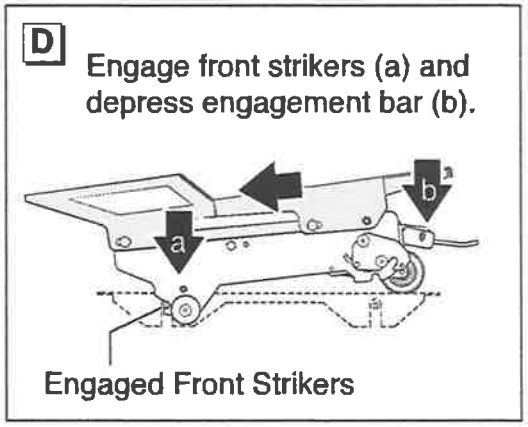
3. Connect (plug) seat electrical harness to B-pillar receptacle. See page 33.

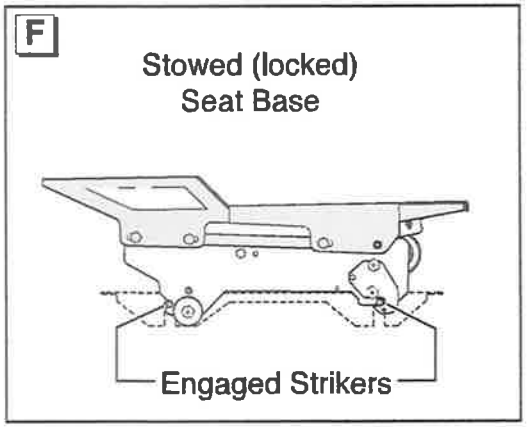

A
Roll seat into position.
Floor Strikers


C
a
b
Engaged Front Strikers
Engagement Bar


E
Stowed (locked) Seat Base
Engaged Strikers


B
Roll seat into position.
Floor Strikers


D
Engage front strikers (a) and depress engagement bar (b).
a
b
Engaged Front Strikers


F
Stowed (locked) Seat Base
Engaged Strikers

ITEM #8 & 11 (j)

DESCRIPTION
OF
SECUREMENT
SYSTEMS

Located in tab 10 under item 11 (j)

ITEM #9 & 11 (d)

CERTIFICATION
OF
COMPLIANCE
WITH
TESTING

Located in tab 10 under item 11 (d)

ITEM #10

DBE/FTA
GOALS
LETTER

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

Headquarters

Braun Corporation
631 W. 11th Street
Winamac, IN 46996

Attn: Ken Morgel

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

September 15, 2014

Re: TVM DBE Goal Concurrence – Fiscal Year 2015

Dear Mr. Morgel:

This letter is to inform you that the Federal Transit Administration's (FTA) Office of Civil Rights has received Braun'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 FTAfunded 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

International Corporate Headquarters:
The Braun Corporation
631 W. 11th Street
P.O.Box 310
Winamac, IN 46996 USA
1-800-THE LIFT
(574) 946-6153
FAX: (574) 946-4670
www.braunlift.com

THE BRAUN CORPORATION.
"Providing Access to the World"

TRANSIT VEHICLE MANUFACTURERS CERTIFICATION OF COMPLIANCE WITH SUBPART D, 49 CFR PART 26

This procurement is subject to the provisions of Section 26.49 of 49 CFR Part 26. Accordingly, as a condition of permission to bid, the following certification must be completed and submitted with the bid. A bid which does not include the certification will not be considered.

TRANSIT VEHICLE MANUFACTURER CERTIFICATION

The Braun Corporation, a TVM, hereby certifies that it has complied with the requirements of Section 26.49 of 49 CFR Part 26 by submitting a current annual DBE goal to FTA. The goals apply to Federal Fiscal Year 2015 (October 1, 2014 to September 30, 2015) and has been approved or not disapproved by FTA.

Signed: Andy Conner Andy Conner

Title: Commercial Vehicle Manager

Date: 9/11/15

ITEM #11 (a)

LIST

OF

DIVIATIONS

OR

ACCEPTIONS

None Taken

ITEM #11 (b)

DESCRIPTION
OF
VEHICLE
AND
EQUIPMENT

Commercial Side-Entry

Dodge

Commercial Vehicles

BraunAbility applies our extensive personal mobility product experience to the Commercial market with the Commercial Side-Entry conversion. If you want a wheelchair accessible vehicle that's functional, practical, safe, and reliable, while retaining its style, comfort, and convenience, this is the right vehicle for your fleet.

Safety has always been a top priority at BraunAbility. The Dodge Commercial Side-Entry conversion has been crash tested and certified to meet or exceed all applicable requirements of the Federal Motor Vehicle Safety Standards (FMVSS).

Manual Door
The Commercial Side-Entry conversion features an ADA compliant manual driver and passenger sliding door with 56-1/4" vertical opening.

Manual Ramp
The 30" wide aluminum foldout ramp makes it easy to load and unload wheelchair users. The ramp swing-out feature allows for easy ambulatory access to the vehicle.

FTA BUY AMERICA COMPLIANT
BraunAbility
FINAL ASSEMBLY WINAMAC, INDIANA USA

BraunAbility®

Life is a Moving Experience™

Commercial Side-Entry

Dodge

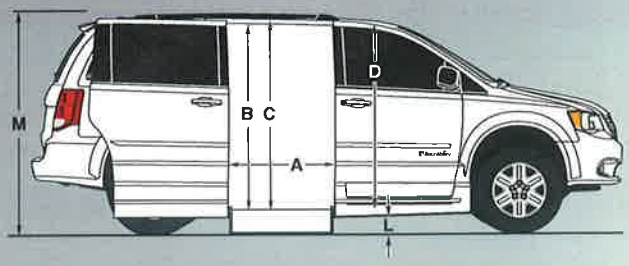
FTA BUY AMERICA COMPLIANT
BraunAbility
FINAL ASSEMBLY WINAMAC, INDIANA USA

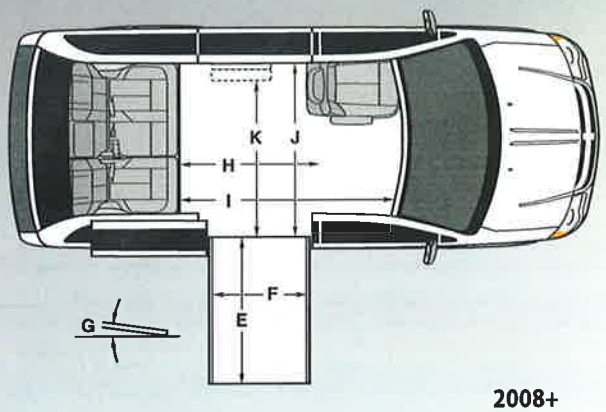
Standard Features

- FTA Buy America Compliant
- ADA, FMVSS and CMVSS Compliant
- Meets/exceeds Altoona test requirements
- CARB approved
- 6-passenger vehicle (with optional aftermarket 2nd row 2-passenger folding bench seat)
- Lowered floor from firewall to rear axle
- 61" floor-to-ceiling at center of van*
- Manual swing ramp providing 30" usable width
- Multiple wheelchair securement locations
- One belt system for wheelchair securement
- Manual driver and passenger side sliding door providing 56-1/4" vertical opening (ADA compliant), passenger door provides 31-1/2" in width
- Step-and-Roll front seats
- passenger bench seat at rear with folding footrest
- Front passenger floor tracks for wheelchair securement, with 60" floor-to-ceiling height
- Stylized lower body panels with integrated steps
- Vinyl flooring with 3/8" marine grade plywood underlayment
- ADA-compliant interlock
- ADA-compliant ramp and door entrance lighting
- Priority seat decal
- Wheelchair securement location decals
- Auxiliary wiring harnesses include fused circuits
- Emergency rear hatch release
- Easy maintenance interior trim package
- 20 gallon OEM fuel tank

Options

- Aftermarket 2nd row 2-passenger folding bench seat
- DOT kit
- Additional set of tie-down straps





		2008+
A	Door Opening Usable Width (Slide Door)	31-1/2
B	Door Opening Usable Height (Slide Door)	56-1/4
C	Interior Height at Center of Van*	61
D	Interior Height at Driver and Passenger Position*	60
E	Ramp Length	52
F	Ramp Width (Usable Clear Opening)	30
G	Ramp Angle (Unloaded)	12.5°
H	Interior Floor Length (Behind Front Seats)	57
I	Overall Interior Floor Length (Flat Area)	87-1/2
J	Interior Width at B-Pillars	62
K	Width - Ramp to Optional 2-Pass. Seat (Folded)	49-3/4
L	[1] Ground Clearance (Unloaded) - [2] Loaded @ 1200 lbs	[1] 6-1/4 [2] 5
M	Overall Vehicle Height (Unloaded)	74

Due to manufacturing tolerances both with the OEM vehicle and the conversion components, all dimensions may vary slightly from those shown.
* Deduct 3" off of Interior Height for Applications with Overhead DVD/Rear Heat & AC/Rail System

BraunAbility
Life is a Moving Experience™

631 West 11th Street • Winamac, IN 46996
(574) 946-6153 • 1-800-THE-LIFT
www.braunability.com/commercial

Dodge Chassis

Information and Specifications

Prepared By:
Administrator
Your Dealership Name Here

Dodge Grand Caravan

RTKH53 FWD Passenger Van AVP/SE

Photo may not represent exact vehicle or selected equipment.

Prepared By:
Administrator
Your Dealership Name Here

• VEHICLE REPORT

2015 Dodge Grand Caravan RTKH53 FWD Passenger Van AVP/SE

SELECTED MODEL

Code	Description	MSRP
RTKH53	*2015 Dodge Grand Caravan FWD Passenger Van AVP/SE*	*$21,395.00*

SELECTED VEHICLE COLORS

Code	Description
-	*Interior: BLACK/LIGHT GRAYSTONE*
-	*Exterior 1: BRIGHT WHITE CLEARCOAT*
-	*Exterior 2: No color has been selected.*

SELECTED OPTIONS

Code	Description	Class
	PACKAGES	
29E	*Quick Order Package 29E SE* *3 Zone Manual Control Front & Rear A/C; 6 Speakers; Body Color Bodyside Molding; Body Color Door Handles; Body Color Sill Applique; Floor Console w/Cupholder; Rear Air Conditioning w/Heater; Sunscreen Glass; (CYC) 2nd Row Buckets w/Fold-In-Floor*	*OPT*
	EMISSIONS	
NAS	*50 State Emissions*	*OPT*
	POWERTRAIN	
ERB	*Engine: 3.6L V6 24V VVT FlexFuel*	*STD*
DG2	*Transmission: 6-Speed Automatic 62TE*	*STD*
STDAX	*3.16 Axle Ratio*	*STD*
Z1A	*GVWR: 6,050 lbs*	*STD*
	WHEELS & TIRES	
TU3	*Tires: P225/65R17 BSW Touring*	*STD*
WFU	*Wheels: 17" x 6.5" Steel*	*STD*

• VEHICLE REPORT

2015 Dodge Grand Caravan RTKH63 FWD Passenger Van AVP/SE

SELECTED OPTIONS

Code	Description	Class
	WHEELS & TIRES (Continued)	
	17" Wheel Covers	
	SEATS & SEAT TRIM	
H7	*Cloth Low-Back Bucket Seats*	*STD*
CEP	*Light Graystone Seats*	*OPT*
CYC	*2nd Row Buckets w/Fold-In-Floor* *2 Row Stow 'N Go w/Tailgate Seats; Easy Clean Floor Mats*	*INC*
	OTHER OPTIONS	
SDC	*Touring Suspension*	*STD*
APA	*Monotone Paint Application*	*STD*
RES	*Radio: Uconnect 130 AM/FM/CD/MP3*	*STD*
	FLEET OPTIONS	
SER	*Load Leveling & Height Control*	*OPT*
AMS	*Mobility Prep Group* *Delete 2nd Row Seats; Delete Heated Second Row Seats*	*OPT*
	INTERIOR COLORS FOR : PRIMARY W/SE	
X1	*Black/Light Graystone*	*OPT*
	EXTERIOR COLORS FOR : PRIMARY W/SE	
PW7	*Bright White Clearcoat*	*OPT*

OPTIONS TOTAL

• VEHICLE REPORT

2015 Dodge Grand Caravan RTKH53 FWD Passenger Van AVP/SE

STANDARD EQUIPMENT

Powertrain

- *283hp 3.6L DOHC 24 valve V-6 engine with variable valve control, SMPI*
- *Recommended fuel : regular unleaded*
- *Emissions Type: ULEV II*
- *6 speed multi-speed automatic transmission with overdrive, AUTOSTICK sequential sport shift, driver mode select*
- *Front-wheel drive*
- *Fuel Economy City: 17mpg*
- *Fuel Economy Highway: 25mpg*
- *Fuel Tank Capacity: 20.0gal.*

Suspension/Handling

- *Front independent strut suspension with anti-roll bar, gas-pressurized shocks*
- *Rear semi-independent torsion beam suspension with gas-pressurized shocks*
- *Rear auto-leveling suspension*
- *Touring suspension*
- *Hydraulic power-assist rack-pinion steering*
- *Front and rear 17" x 6.5" steel wheels with full wheel covers*
- *P225/65SR17.0 BSW touring AS front and rear tires*

Body Exterior

- *4 doors*
- *Sliding left rear passenger door*
- *Sliding right rear passenger door*

• VEHICLE REPORT

2015 Dodge Grand Caravan RTKH53 FWD Passenger Van AVP/SE

STANDARD EQUIPMENT

Body Exterior (Continued)

- *Driver and passenger power remote heated door mirrors*
- *Black door mirrors*
- *Rear lip spoiler*
- *Body-colored bumpers*
- *Body-colored bodyside moldings*
- *Clearcoat paint*
- *Trailer sway control*

Convenience

- *Dual zone front manual air conditioning with air filter*
- *Rear HVAC with separate controls*
- *Auxiliary rear heater*
- *Cruise control with steering wheel controls*
- *Power front windows*
- *Driver 1-touch down*
- *Remote power door locks with 2 stage unlock and illuminated entry*
- *Manual tilt steering wheel*
- *Manual telescopic steering wheel*
- *Day-night rearview mirror*
- *Front and rear cupholders*
- *Dual visor vanity mirrors*

• VEHICLE REPORT

2015 Dodge Grand Caravan RTKH53 FWD Passenger Van AVP/SE

STANDARD EQUIPMENT

Convenience (Continued)

- *Removable floor console*
- *Covered floor storage*
- *Driver and passenger door bins*

Seats and Trim

- *Seating capacity of 7*
- *Front bucket seats*
- *4-way driver seat adjustment*
- *4-way passenger seat adjustment*
- *Driver and passenger armrests*
- *Front/rear facing fixed 60-40 3rd row split-bench seat with recline*
- *Cloth seat upholstery*
- *Simulated wood instrument panel insert*
- *Carpet front and rear floor mats*

Entertainment Features

- *AM/FM stereo radio*
- *Single CD player*
- *MP3 decoder*
- *Steering wheel mounted radio controls*
- *6 speakers*
- *Fixed antenna*

• VEHICLE REPORT

2015 Dodge Grand Caravan RTKH53 FWD Passenger Van AVP/SE

STANDARD EQUIPMENT

Lighting, Visibility and Instrumentation

- *Halogen aero-composite headlights*
- *Delay-off headlights*
- *Variable intermittent front windshield wipers*
- *Fixed interval rear windshield wiper*
- *Rear window defroster*
- *Manual vented rearmost window activation*
- *Deep tinted windows*
- *Front reading lights*
- *Tachometer*
- *Outside temperature display*
- *Low tire pressure warning*
- *Trip computer*
- *Trip odometer*

Safety and Security

- *4-wheel ABS brakes*
- *Brake assist*
- *4-wheel disc brakes*
- *Electronic stability*
- *ABS and driveline traction control*
- *Dual front impact airbag supplemental restraint system*

• VEHICLE REPORT

2015 Dodge Grand Caravan RTKH53 FWD Passenger Van AVP/SE

STANDARD EQUIPMENT

Safety and Security (Continued)

- *Dual seat mounted side impact airbag supplemental restraint system*
- *Curtain 1st, 2nd and 3rd row overhead airbag supplemental restraint system*
- *Knee airbag supplemental restraint system*
- *Airbag supplemental restraint system occupancy sensor*
- *Remote activated perimeter/approach lighting*
- *Power remote door locks with 2 stage unlock and panic alarm*
- *Sentry Key immobilizer*
- *Manually adjustable front head restraints with tilt, anti-whiplash*

Specs and Dimensions

- *Engine displacement: 3.6L*
- *Engine horsepower: 283hp @ 6,400RPM*
- *Engine torque: 260 lb.-ft. @ 4,400RPM*
- *Bore x stroke : 3.78" x 3.27"*
- *Compression ratio: 10.20:1*
- *Gear ratios (1st): 4.13*
- *Gear ratios (2nd): 2.84*
- *Gear ratios (3rd): 2.28*
- *Gear ratios (4th): 1.45*
- *Gear ratios (5th): 1.00*
- *Gear ratios (6th): 0.69*

• VEHICLE REPORT

2015 Dodge Grand Caravan RTKH63 FWD Passenger Van AVP/SE

STANDARD EQUIPMENT

Specs and Dimensions (Continued)

- *Gear ratios (reverse): 3.21*
- *Curb weight: 4,321lbs.*
- *GVWR: 6,050lbs.*
- *Front GAWR: 2,950lbs.*
- *Rear GAWR: 3,100lbs.*
- *Towing capacity: 3,600lbs.*
- *Exterior length: 202.8"*
- *Exterior body width: 78.7"*
- *Exterior height: 67.9"*
- *Wheelbase: 121.2"*
- *Front track: 65.6"*
- *Rear track: 64.6"*
- *Turning radius: 19.6'*
- *Min ground clearance: 5.6"*
- *Front legroom: 40.7"*
- *3rd row legroom: 32.7"*
- *Front headroom: 39.8"*
- *3rd row headroom: 37.9"*
- *Front hiproom: 58.4"*

• VEHICLE REPORT

STANDARD EQUIPMENT

Specs and Dimensions (Continued)

- *3rd row hiproom: 48.7"*
- *Front shoulder room: 63.7"*
- *3rd row shoulder room: 62.0"*
- *Passenger volume: 163.5cu.ft.*
- *Approach angle: 13.4 deg*
- *Departure angle: 17.5 deg*
- *Interior cargo volume: 33.0cu.ft.*
- *Interior cargo volume seats folded: 143.8cu.ft.*
- *Interior maximum cargo volume: 143.8cu.ft.*

ITEM #11 (c)

CERTIFICATION
OF
FMVSS
COMPLIANCE

International Corporate Headquarters:
The Braun Corporation
631 W. 11th Street
P.O.Box 310
Winamac, IN 46996 USA
1-800-THE LIFT
(574) 946-6153
FAX: (574) 946-4670
www.braunlift.com

THE BRAUN CORPORATION.
"Providing Access to the World"

FEDERAL MOTOR VEHICLE SAFETY STANDARDS
(Pre-Award)

The Braun Corporation certifies that the vehicle/vehicles being proposed will meet or exceed all applicable Federal Motor Vehicle Safety Standards (FMVSS).

Signed: Andy Conner Andy Conner

Title: Commercial Vehicle Manager

Date: 9/11/15

ITEM #11 (d)

ALTOONA
TESTING
REPORT

STURAA TEST

4 YEAR

100,000 MILE BUS

from

THE BRAUN CORPORATION

MODEL ENTERVAN

APRIL 2009

PTI-BT-R0901

PENNSTATE

The Thomas D. Larson
Pennsylvania Transportation Institute

201 Transportation Research 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

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Braun Corporation submitted a model Entervan; gasoline-powered 5 seat (including the driver) 16-foot converted Dodge Grand Caravan SE, for a 4 yr/100,000 mile STURAA test. The odometer reading at the time of delivery was 25.0 miles. Testing started on January 22, 2009 and was completed on April 3, 2009. 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 February 18, 2009 and was completed on March 6, 2009.

The interior of the bus is configured with seating for five passengers including the driver plus one wheelchair position. This converted Dodge Grand Caravan SE does not allow for free floor space; therefore the design does not allow for standing passengers. At 150 lbs per person, plus 600 lbs (wheelchair position) this load results in a measured gross vehicle weight of 5,920 lbs. The first segment of the Structural Durability Test was performed with the bus loaded to a GVW of 5,920 lbs. Due to no standing passengers, the middle seated load weight segment was performed at the same 5,920 lbs and the final segment was performed at a curb weight of 4,580 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 is provided in the Maintainability section of this report. **The test vehicle encountered no failures during the Structural Durability Test; therefore, no data is available in that section.**

Accessibility, in general, was adequate. 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.

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 failures during the Structural Durability Test; therefore, no data is available in this section.**

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 15.36 seconds.

The Shakedown Test produced a maximum final loaded deflection of .080 inches with a permanent set ranging between -0.005 to 0.005 inches under a distributed static load of 2,475 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 submitted test vehicle 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 2.9 inches.

A Fuel Economy Test was run on simulated central business district, arterial, and commuter courses. The results were 13.43 mpg, 14.36 mpg, and 23.54 mpg respectively; with an overall average of 15.64 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 vehicle consists of a converted Dodge Grand Caravan SE, model Entervan. The vehicle has OEM front driver's and passenger doors rear of the front wheels and left and right side sliding doors forward of the rear axle. The right side sliding door is equipped with a Braun Model OEM handicap ramp. Power is provided by a gasoline-fueled, Chrysler LLC model 3.3 L V6 engine coupled to a Chrysler OEM, 4XTE (4 speed automatic) transaxle.

The measured curb weight is 2,490 lbs for the front axle and 2,090 lbs for the rear axle. These combined weights provide a total measured curb weight of 4,580 lbs. There are 5 seats including the driver plus 1 wheelchair position. Gross load is 150 lb x 5 = 750 lbs. + 600 lbs (wheelchair position) = 1,350 lbs. At full capacity, the measured gross vehicle weight is 5,920 lbs.

VEHICLE DATA FORM

Bus Number: 0901	Arrival Date: 1/21/09
Bus Manufacturer: The Braun Corporation	Vehicle Identification Number (VIN): 1D8HN44E89B52D693
Model Number: Entervan	Date: 1/21/09
Personnel: T.S. & E.D.	Chassis: Chrysler / Grand Caravan SE

WEIGHT:

Individual Wheel Reactions:

Weights (lb)	Front Axle		Middle Axle		Rear Axle	
	Right	Left	Right	Left	Right	Left
CW	1,240	1,250	N/A	N/A	1,080	1,010
SLW	1,400	1,440	N/A	N/A	1,610	1,470
GVW	1,400	1,440	N/A	N/A	1,610	1,470

Total Weight Details:

Weight (lb)	CW	SLW	GVW	GAWR
Front Axle	2,490	2,840	2,840	2,950
Middle Axle	N/A	N/A	N/A	N/A
Rear Axle	2,090	3,080	3,080	3,100
Total	4,580	5,920	5,920	GVWR: 6,050

Dimensions:

Length (ft/in)	16 / 10.25
Width (in)	79.0
Height (in)	75.25
Front Overhang (in)	37.0
Rear Overhang (in)	43.0
Wheel Base (in)	122.25
Wheel Track (in)	Front: 65.5
	Rear: 65.0

Bus Number: 0901	Date: 1/21/09

CLEARANCES:

Lowest Point Outside Front Axle	Location: Engine mount Clearance(in): 8.9
Lowest Point Outside Rear Axle	Location: Spare tire Clearance(in): 8.6
Lowest Point between Axles	Location: Body Clearance(in): 6.2
Ground Clearance at the center (in)	6.2
Front Approach Angle (deg)	13.5
Rear Approach Angle (deg)	15.7
Ramp Clearance Angle (deg)	5.8
Aisle Width (in)	N/A
Inside Standing Height at Center Aisle (in)	61.3

BODY DETAILS:

Body Structural Type	Monocoque		
Frame Material	Steel		
Body Material	Steel		
Floor Material	Steel		
Roof Material	Steel		
Windows Type	■ Fixed	■ Movable	
Window Mfg./Model No.	PPG / 43R-000263		
Number of Doors	_2_ Front	_1_ Rear	
Mfr. / Model No.	Chrysler Corp. / OEM		
Dimension of Each Door (in)	Front - 43.9 x 35.0	Rear – 41.6 x 47.8	Side – 56.6 x 32.9
Passenger Seat Type	□ Cantilever	■ Pedestal	□ Other (explain)
Mfr. / Model No.	Chrysler / OEM		
Driver Seat Type	□ Air	□ Spring	■ Other (cushion)
Mfr. / Model No.	Chrysler Corp. / OEM		
Number of Seats (including Driver)	5 + 1 wheelchair position.		

Bus Number: 0901	Date: 2/21/09

BODY DETAILS (Contd..)

Free Floor Space (ft^2)	N/A			
Height of Each Step at Normal Position (in)	Front	1. 21.0	2. N/A	3. N/A	4. N/A
	Middle	1. 12.0	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.	Chrysler LLC / 3.3 L V6		
Location	■ Front	□ Rear	□ Other (explain)
Fuel Type	■ Gasoline	□ CNG	□ Methanol
	□ Diesel	□ LNG	□ Other (explain)
Fuel Tank Capacity (indicate units)	20.0 gals		
Fuel Induction Type	■ Injected	□ Carburetion	
Fuel Injector Mfr. / Model No.	Chrysler LLC / 3.3 L V6		
Carburetor Mfr. / Model No.	N/A		
Fuel Pump Mfr. / Model No.	Chrysler LLC / 3.3 L V6		
Alternator (Generator) Mfr. / Model No.	Denso / 304 AC		
Maximum Rated Output (Volts / Amps)	12 / 140 - 160		
Air Compressor Mfr. / Model No.	N/A		
Maximum Capacity (ft^3 / min)	N/A		
Starter Type	■ Electrical	□ Pneumatic	□ Other (explain)
Starter Mfr. / Model No.	Denso / 428000-3071		

Bus Number: 0901	Date: 1/21/09

TRANSMISSION

Transmission Type	□ Manual	■ Automatic	
Mfr. / Model No.	Chrysler Corp. / OEM 4XTE (4 speed automatic)		
Control Type	■ Mechanical	□ Electrical	□ Other
Torque Converter Mfr. / Model No.	N/A		
Integral Retarder Mfr. / Model No.	N/A		

SUSPENSION

Number of Axles	2		
Front Axle Type	■ Independent	□ Beam Axle	
Mfr. / Model No.	Chrysler / Transaxle		
Axle Ratio (if driven)	OEM		
Suspension Type	□ Air	□ Spring	□ Other (explain)
No. of Shock Absorbers	2		
Mfr. / Model No.	Chrysler / OEM		
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.	Chrysler / OEM		
Axle Ratio (if driven)	N/A		
Suspension Type	□ Air	■ Spring	□ Other (explain)
No. of Shock Absorbers	2		
Mfr. / Model No.	Chrysler / OEM		

Bus Number: 0901	Date: 1/21/09

WHEELS & TIRES

Front	Wheel Mfr./ Model No.	Chrysler / OEM
	Tire Mfr./ Model No.	Yokohama Avids33 / 225/65R 16
Rear	Wheel Mfr./ Model No.	Chrysler / OEM
	Tire Mfr./ Model No.	Yokohama Avids33 / 225/65R 16

BRAKES

Front Axle Brakes Type	□ Cam	■ Disc	□ Other (explain)
Mfr. / Model No.	Chrysler / OEM		
Middle Axle Brakes Type	□ Cam	□ Disc	□ Other (explain)
Mfr. / Model No.	N/A		
Rear Axle Brakes Type	□ Cam	■ Disc	□ Other (explain)
Mfr. / Model No.	Chrysler / OEM		
Retarder Type	N/A		
Mfr. / Model No.	N/A		

HVAC

Heating System Type	□ Air	■ Water	□ Other
Capacity (Btu/hr)	Chrysler / OEM		
Mfr. / Model No.	Chrysler Corp. / OEM		
Air Conditioner	■ Yes	□ No	
Location	Dash		
Capacity (Btu/hr)	Chrysler / OEM		
A/C Compressor Mfr. / Model No.	Design Press / 10SR17C		

STEERING

Steering Gear Box Type	Rack & pinion
Mfr. / Model No.	Chrysler / OEM
Steering Wheel Diameter	15.5
Number of turns (lock to lock)	3.13

Bus Number: 0901	Date: 1/21/09

OTHERS

Wheel Chair Ramps	Location: Right side	Type: Fold out ramp
Wheel Chair Lifts	Location: N/A	Type: N/A
Mfr. / Model No.	The Braun Corp. / OEM	
Emergency Exit	Location: Doors	Number: 4

CAPACITIES

Fuel Tank Capacity (units)	20.0 gals
Engine Crankcase Capacity (quarts)	5.0
Transaxle Capacity (quarts)	4.0
Differential Capacity (gallons)	NA
Cooling System Capacity (quarts)	13.4
Power Steering Fluid Capacity (gallons)	OEM

VEHICLE DATA FORM

Bus Number: 0901	Date: 1/21/09

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

Part Number	Description	Qty.
N/A	N/A	N/A

COMPONENT/SUBSYSTEM INSPECTION FORM

Bus Number: 0901	Date: 1/22/09

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

CHECK - IN

BRAUN CORPORATION
MODEL ENTERVAN

BRAUN CORPORATION
MODEL ENTERVAN EQUIPPED WITH A BRAUN
MODEL OEM 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. 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.

ACCESSIBILITY DATA FORM

Bus Number: 0901	Date: 4-2-09

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	✓	
Diagnostic Interface Connector	✓	
TRANSMISSION :		
Fluid Dip-Stick	✓	
Filler Hole	✓	
Drain Plug	✓	
SUSPENSION :	✓	
Bushings	✓	
Shock Absorbers	✓	
Air Springs	**N/A**	
Leveling Valves	**N/A**	
Grease Fittings	✓	

ACCESSIBILITY DATA FORM

Bus Number: 0901	Date: 4-2-09

Component	Checked	Comments
HVAC :		
A/C Compressor	✓	
Filters	✓	
Fans	✓	
ELECTRICAL SYSTEM :		
Fuses	✓	
Batteries	✓	
Voltage regulator	✓	
Voltage Converters	**N/A**	
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.

SCHEDULED MAINTENANCE
Braun #0901

DATE	TEST MILES	SERVICE	ACTIVITY	DOWN TIME	HOURS
02-25-09	1,430	P.M. / Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
03-03-09	2,756	P.M. / Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
03-05-09	3,298	P.M. / Inspection	Linkage, tie rods, universals/u-joints all lubed; all fluids checked.	4.00	4.00
03-24-09	3,828	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

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, no additional components were removed for repair or replacement.

At the end of the test, the remaining items on the list were removed and replaced. The transaxle assembly took 8.0 man-hours (two men 4.0 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
Transaxle	8.0 man hours
Wiper Motor	0.5 man hours
Starter	0.5 man hours
Alternator	0.5 man hours
Batteries	0.5 man hours

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS

TRANSAXLE REMOVAL AND REPLACEMENT (8.0 MAN HOURS)

WIPER MOTOR REMOVAL AND REPLACEMENT (0.5 MAN HOURS)

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS CONT.

STARTER REMOVAL AND REPLACEMENT (0.5 MAN HOURS)

ALTERNATOR REMOVAL AND REPLACEMENT (0.5 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 failures encountered during the Structural Durability Test; therefore, no reliability forms or unscheduled maintenance lists are attached.**

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: 0901	Date: 3-25-09
Personnel: M.R., T.S. & S.C.	

Temperature (°F): 45	Humidity (%): 21
Wind Direction: S	Wind Speed (mph): 10
Barometric Pressure (in.Hg): 30.26	

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 15.36 seconds.

PERFORMANCE DATA FORM

Bus Number: 0901	Date: 3-25-09
Personnel: M.R., T.S. & S.C.	
Temperature (°F): 45	Humidity (%): 21
Wind Direction: S	Wind Speed (mph): 10
Barometric Pressure (in.Hg): 30.26	
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	2.07	2.57	2.28
20 mph	4.44	4.57	4.53
30 mph	7.45	6.54	7.07
40 mph	10.55	9.23	10.95
Top Test Speed(mph) 50	14.46	13.76	15.14

Clockwise Recorded Interval Times

Speed	Run 1	Run 2	Run 3
10 mph	2.13	2.00	1.88
20 mph	3.78	3.84	4.15
30 mph	7.26	7.98	6.54
40 mph	11.58	13.01	10.23
Top Test Speed(mph) 50	16.05	17.79	14.98

PERFORMANCE SUMMARY SHEET

BUS MANUFACTURER :Braun
BUS MODEL :Entervan

BUS NUMBER :0901
TEST DATE :03/25/09

TEST CONDITIONS :

TEMPERATURE (DEG F) : 45.0
WIND DIRECTION : S
WIND SPEED (MPH) : 10.0
HUMIDITY (%) : 21
BAROMETRIC PRESSURE (IN. HG) : 30.3

VEHICLE SPEED	AVERAGE TIME (SEC)		
(MPH)	CCW DIRECTION	CW DIRECTION	TOTAL
10.0	2.31	2.00	2.16
20.0	4.51	3.92	4.22
30.0	7.02	7.26	7.14
40.0	10.24	11.61	10.93
50.0	14.45	16.27	15.36

TEST SUMMARY :

VEHICLE SPEED (MPH)	TIME (SEC)	ACCELERATION (FT/SEC^2)	MAX. GRADE (%)
1.0	.19	7.8	25.0
5.0	.96	7.4	23.5
10.0	1.99	6.8	21.6
15.0	3.12	6.2	19.7
20.0	4.35	5.7	17.9
25.0	5.71	5.1	16.2
30.0	7.22	4.6	14.5
35.0	8.90	4.1	12.9
40.0	10.79	3.6	11.4
45.0	12.94	3.2	10.0
50.0	15.41	2.8	8.6

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.

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 5 people including the driver + 1 wheelchair position. The resulting test load is (5 x 375 lb) = 1,875 lb. + 600 (wheelchair position) = 2,475. 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 0.080 inches at reference point 2. The maximum permanent deflection after the final loading sequence ranged from -0.005 inches at reference point 6 to 0.005 inches at reference point 3.

STRUCTURAL SHAKEDOWN DATA FORM

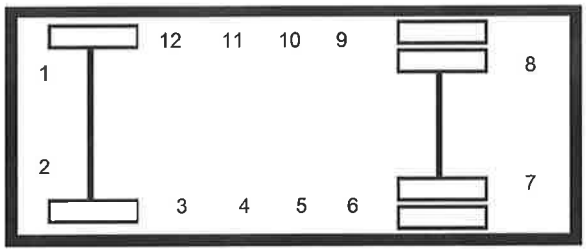
Bus Number: 0901	Date: 1-23-09
Personnel: J.P., E.L. & K.D.	Temperature (°F): 65
Loading Sequence: ■ 1 □ 2 □ 3 (check one) Test Load (lbs): 2,475	

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	.074	.074	.003	.003
2	0	.076	.076	.000	.000
3	0	.022	.022	.000	.000
4	0	.056	.056	.004	.004
5	0	.010	.010	.004	.004
6	0	.022	.022	.005	.005
7	0	.056	.056	.017	.017
8	0	.048	.048	.009	.009
9	0	.022	.022	.006	.006
10	0	.020	.020	.003	.003
11	0	.039	.039	.005	.005
12	0	.018	.018	.004	.004

STRUCTURAL SHAKEDOWN DATA FORM

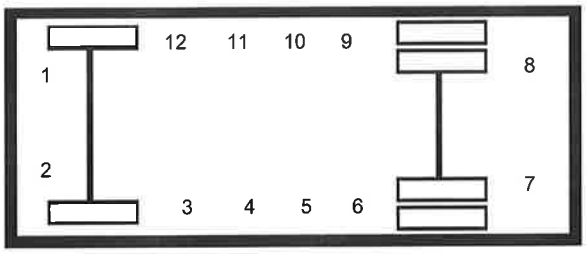
Bus Number: 0901	Date: 1-23-09
Personnel: J.P., E.L. & K.D.	Temperature (°F): 68
Loading Sequence: □ 1 ■ 2 □ 3 (check one) Test Load (lbs): 2,475	

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	.078	.075	.001	-.002
2	.000	.080	.080	.004	.004
3	.000	.027	.027	.005	.005
4	.004	.041	.037	.005	.001
5	.004	.016	.012	.006	.002
6	.005	.015	.010	.000	-.005
7	.017	.059	.042	.020	.003
8	.009	.047	.038	.009	.000
9	.006	.024	.018	.009	.003
10	.003	.024	.021	.003	.000
11	.005	.039	.034	.008	.003
12	.004	.023	.019	.005	.001

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: 0901	Date: 2-18-09
Personnel: T.S., E.L., E.D. & S.C.	Temperature(°F): 65

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: 0901	Date: 2-18-09
Personnel: T.S., E.L., E.D. & S.C.	Temperature(°F): 65

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: 0901	Date: 2-18-09
Personnel: T.S., E.L., E.D. & S.C.	Temperature(°F): 65

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: 0901	Date: 2-18-09
Personnel: T.S., E.L., E.D. & S.C.	Temperature(°F): 65

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: 0901	Date: 2-18-09
Personnel: T.S., E.L., E.D. & S.C.	Temperature(°F): 65

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: 0901	Date: 2-18-09
Personnel: T.S., E.L., E.D. & S.C.	Temperature(°F): 65

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: 0901	Date: 2-18-09
Personnel: T.S., E.L., E.D. & S.C.	Temperature(°F): 65

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: 0901	Date: 2-18-09
Personnel: T.S., E.L., E.D. & S.C.	Temperature(°F): 65

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: 0901	Date: 2-18-09
Personnel: T.S., E.L., E.D. & S.C.	Temperature(°F): 65

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: 0901	Date: 2-18-09
Personnel: T.S., E.L., E.D. & S.C.	Temperature(°F): 65

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 REAR WHEEL SIX INCHES LOWER

LEFT FRONT WHEEL SIX INCHES HIGHER

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 vehicle 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: 0901	Date: 3-31-09
Personnel: T.S. & J.P.	

Temperature (°F): 37	Humidity (%): 67
Wind Direction: NE	Wind Speed (mph): 6
Barometric Pressure (in.Hg): 30.18	

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: A front lift tow was performed incorporating a hydraulic under lift wrecker.
Description and location of any structural damage: None noted.
General Comments: No problem with the tow or towing interface where encountered the test.

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 2.9 inches to 5.6 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	4.2"
Rear axle – one tire flat	5.4"
Rear axle – two tires flat	NA

JACKING TEST DATA FORM

Bus Number: 0901	Date: 1-22-09
Personnel: E.D. & E.L.	Temperature (°F): 62

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	6.3 " I 4.2 " D	6.9 " I 4.3 " D	
Left front	6.5 " I 4.5 " D	7.0 " I 4.6 " D	
Right rear—outside	7.4 " I 5.4 " D	5.5 " I 2.9 " D	
Right rear—both	NA	NA	
Left rear—outside	7.4 " I 5.6 " D	5.5 " I 3.2 " D	
Left rear—both	NA	NA	
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: 0901	Date: 1-22-09
Personnel: E.D. & E.L.	Temperature (°F): 62

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 3,800 miles; approximately 2,500 miles on the PSBRTF Durability Test Track and approximately 1,300 miscellaneous other miles. The test will be conducted with the bus operated under three different loading conditions. The first segment will consist of approximately 1,500 miles with the bus operated at GVW. The second segment will consist of approximately 800 miles with the bus operated at SLW. The remainder of the test, approximately 1,500 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 February 18, 2009 and was conducted until March 6, 2009. The first 1,500 miles were performed at a GVW of 5,920 lbs. and completed on February 24, 2009. The next 800 mile SLW segment was performed at the same 5,920 lbs and completed on February 27, 2009, and the final 1,500 mile segment was performed at a CW of 4,580 lbs and completed on March 6, 2009. Note; GVW and SLW were performed at the same weight due to the test vehicle having no free floor space.

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. **The test vehicle encountered no failures during the Structural Durability Test.**

BRAUN - TEST BUS #0901

MILEAGE DRIVEN/RECORDED FROM DRIVER'S LOGS

DATE	TOTAL DURABILITY TRACK	TOTAL OTHER MILES	TOTAL
02/16/09 TO 02/22/09	550.00	73.00	623.00
02/23/09 TO 03/01/09	950.00	793.00	1743.00
03/02/09 TO 03/08/09	1000.00	462.00	1462.00
TOTAL	2500.00	1328.00	3828.00

Table 4. Driving Schedule for Bus Operation on the Durability Test Track.

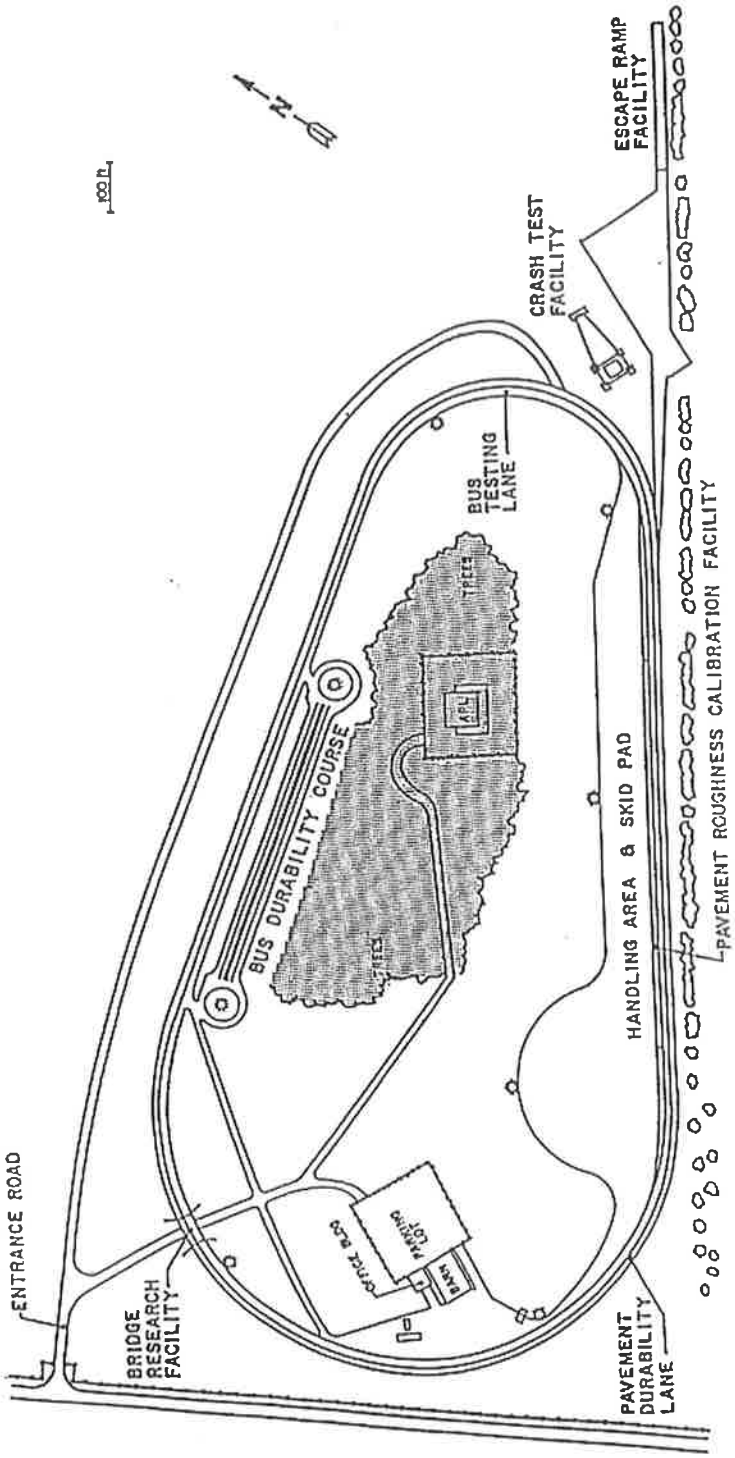
STANDARD OPERATING SCHEDULE

Monday through Friday

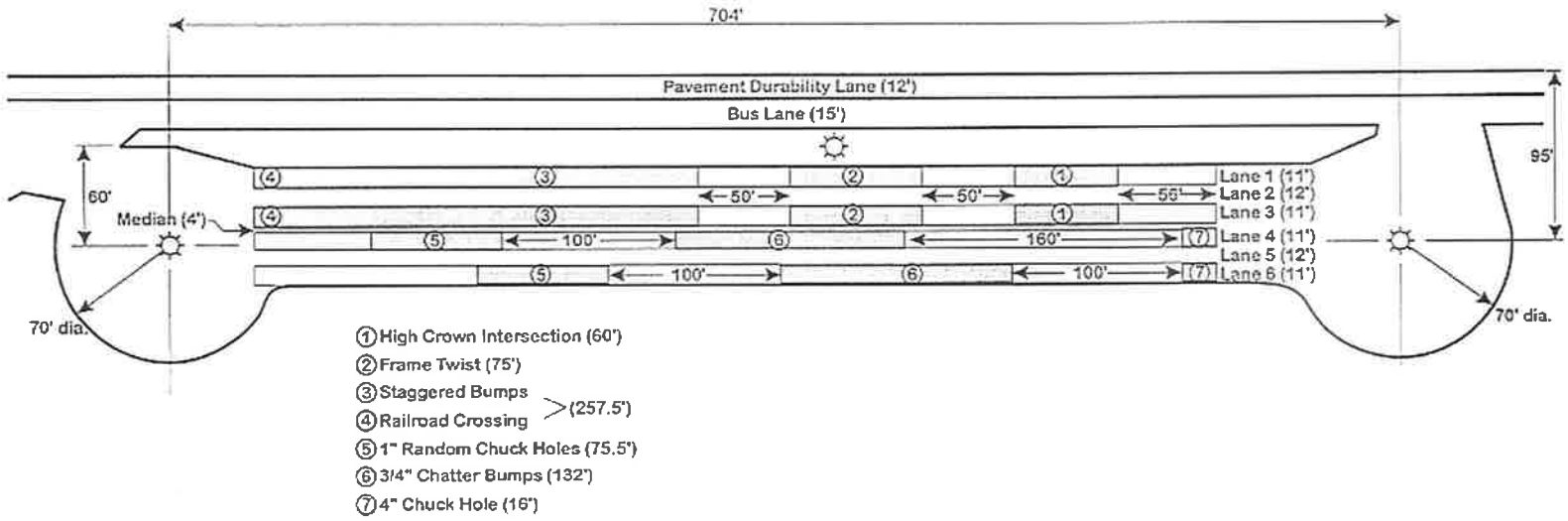
	HOUR	ACTION
Shift 1	midnight	D
	1:40 am	C
	1:50 am	B
	2:00 am	D
	3:35 am	C
	3:45 am	B
	4:05 am	D
	5:40 am	C
	5:50 am	B
	6:00 am	D
	7:40 am	C
	7:50 am	F
Shift 2	8:00 am	D
	9:40 am	C
	9:50 am	B
	10:00 am	D
	11:35 am	C
	11:45 am	B
	12:05 pm	D
	1:40 pm	C
	1:50 pm	B
	2:00 pm	D
	3:40 pm	C
	3:50 pm	F
Shift 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"



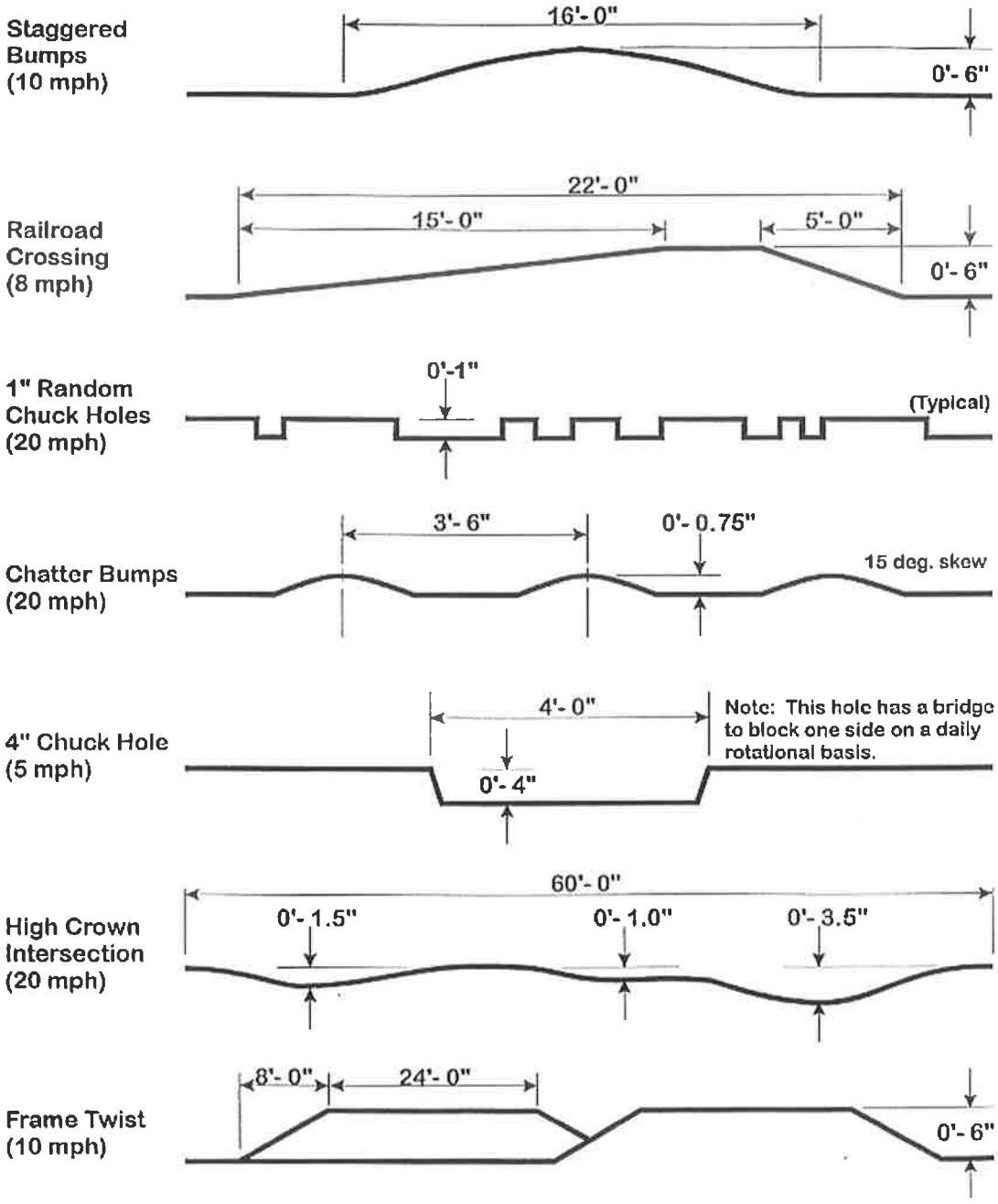
BUS TESTING AND RESEARCH TEST TRACK
UNIVERSITY PARK, PA



Plan View

Vehicle Durability Test Track

The Pennsylvania Transportation Institute
Penn State



Durability Element Profiles

The Pennsylvania Transportation Institute
Penn State

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 ± 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 60EF (8.3373 lbs/gal) and volumetric heating value of standard fuel; and test fuel specific gravity (unitless) and volumetric heating value (BTU/gal). These combine to give a fuel economy in miles per gallon (mpg) which is corrected to a standard gallon of fuel referenced to water at 60EF. 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

$$\mathbf{FEo_{mi/lb}} = \text{Observed fuel economy} = \frac{\text{miles}}{\text{lb of fuel}}$$

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

$$\mathbf{FEo_{mpg}} = \mathbf{FEc_{mi/lb}} \times Gs \times Gw$$

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.

$$\mathbf{FEc} = \mathbf{FEo_{mpg}} \times \frac{Q}{H}$$

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

$$\mathbf{FEo_{mi/scf}} = \text{Observed fuel economy} = \frac{\text{miles}}{\text{scf of fuel}}$$

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.

$$\mathbf{FEo_{mi/lb}} = FEo / Gm$$

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 gasoline fuel with a heating value of 20,025.0 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 – 13.43 mpg, ART – 14.36 mpg, and COM – 23.54 mpg. Average fuel consumption at idle was .37 gph.

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Bus Number: 0901	Date: 3-18-09	SLW (lbs): 5,920
Personnel: T.S. & S.C.		

FUEL SYSTEM	OK	Date	Initials
Install fuel measurement system	✓	3/18/09	S.C.
Replace fuel filter	✓	3/18/09	S.C.
Check for fuel leaks	✓	3/18/09	S.C.
Specify fuel type (refer to fuel analysis)	Gasoline		
Remarks: None noted.			
BRAKES/TIRES	OK	Date	Initials
Inspect hoses	✓	3/18/09	S.C.
Inspect brakes	✓	3/18/09	S.C.
Relube wheel bearings	✓	3/18/09	S.C.
Check tire inflation pressures (mfg. specs.)	✓	3/18/09	S.C.
Remarks: None noted.			
COOLING SYSTEM	OK	Date	Initials
Check hoses and connections	✓	3/18/09	S.C.
Check system for coolant leaks	✓	3/18/09	S.C.
Remarks: None noted.			

FUEL ECONOMY PRE-TEST MAINTENANCE FORM (page 2)

Bus Number: 0901	Date: 3-18-09
Personnel: T.S. & S.C.	

ELECTRICAL SYSTEMS	OK	Date	Initials
Check battery	✓	3/18/09	S.C.
Inspect wiring	✓	3/18/09	S.C.
Inspect terminals	✓	3/18/09	S.C.
Check lighting	✓	3/18/09	S.C.
Remarks: None noted.			

DRIVE SYSTEM	OK	Date	Initials
Drain transmission fluid	✓	3/18/09	T.S.
Replace filter/gasket	✓	3/18/09	T.S.
Check hoses and connections	✓	3/18/09	T.S.
Replace transmission fluid	✓	3/18/09	T.S.
Check for fluid leaks	✓	3/18/09	T.S.
Remarks: None noted.			

LUBRICATION	OK	Date	Initials
Drain crankcase oil	✓	3/18/09	T.S.
Replace filters	✓	3/18/09	T.S.
Replace crankcase oil	✓	3/18/09	T.S.
Check for oil leaks	✓	3/18/09	T.S.
Check oil level	✓	3/18/09	T.S.
Lube all chassis grease fittings	✓	3/18/09	T.S.
Lube universal joints	✓	3/18/09	T.S.
Replace differential lube including axles	✓	3/18/09	T.S.
Remarks: None noted.			

FUEL ECONOMY PRE-TEST MAINTENANCE FORM (page 3)

Bus Number: 0901	Date: 3-18-09
Personnel: T.S. & S.C.	

EXHAUST/EMISSION SYSTEM	OK	Date	Initials
Check for exhaust leaks	✓	3/18/09	S.C.
Remarks: None noted.			

ENGINE	OK	Date	Initials
Replace air filter	✓	3/18/09	S.C.
Inspect air compressor and air system	**N/A**	3/18/09	S.C.
Inspect vacuum system, if applicable	✓	3/18/09	S.C.
Check and adjust all drive belts	✓	3/18/09	S.C.
Check cold start assist, if applicable	✓	3/18/09	S.C.
Remarks: None noted.			

STEERING SYSTEM	OK	Date	Initials
Check power steering hoses and connectors	✓	3/18/09	S.C.
Service fluid level	✓	3/18/09	S.C.
Check power steering operation	✓	3/18/09	S.C.
Remarks: None noted.			

	OK	Date	Initials
Ballast bus to seated load weight	✓	3/18/09	S.C.

TEST DRIVE	OK	Date	Initials
Check brake operation	✓	3/18/09	S.C.
Check transmission operation	✓	3/18/09	S.C.
Remarks: None noted.			

FUEL ECONOMY PRE-TEST INSPECTION FORM

Bus Number: 0901	Date: 3-25-09
Personnel: S.C.	

PRE WARM-UP	If OK, Initial
Fuel Economy Pre-Test Maintenance Form is complete	S.C.
Cold tire pressure (psi): Front 40 Middle N/A Rear 40	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 41 Middle N/A Rear 42	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: 0901	Manufacturer: Braun	Date: 3-24-09
Run Number: 1	Personnel: M.R., T.S. & S.C.	
Test Direction: ▫CW or ▪CCW	Temperature (°F): 35	Humidity (%): 27
SLW (lbs): 5,920	Wind Speed (mph) & Direction: 5 / SW	Barometric Pressure (in.Hg): 30.24

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	8:21	8:21	4.4	0	.1461	.1461
ART #1	0	3:48	3:48	5.1	0	.1296	.1296
CBD #2	0	8:12	8:12	5.9	0	.1482	.1482
ART #2	0	3:42	3:42	6.8	0	.1372	.1372
CBD #3	0	7:40	7:40	7.2	0	.1457	.1457
COMMUTER	0	5:53	5:53	8.6	0	.1615	.1651
							Total Fuel = .8719 lbs

20 minute idle : Total Fuel Used = .1228 lbs

Heating Value = 20,025.0 BTU/LB

Comments: None noted.

FUEL ECONOMY DATA FORM (Liquid Fuels)

Bus Number: 0901	Manufacturer: Braun	Date: 3-24-09
Run Number: 2	Personnel: M.R., T.S. & S.C.	
Test Direction: ■CW or ▫CCW	Temperature (°F): 36	Humidity (%): 27
SLW (lbs): 5,920	Wind Speed (mph) & Direction: 6 / SW	Barometric Pressure (in.Hg): 30.26

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	7:55	7:55	8.6	0	.1424	.1424
ART #1	0	3:50	3:50	6.8	0	.1307	.1307
CBD #2	0	7:49	7:49	7.5	0	.1477	.1477
ART #2	0	3:47	3:47	6.7	0	.1353	.1353
CBD #3	0	7:58	7:58	6.3	0	.1441	.1441
COMMUTER	0	5:52	5:52	6.8	0	.1650	.1650
							Total Fuel = .8652 lbs

20 minute idle : Total Fuel Used = N/A lbs
Heating Value = 20,025.0 BTU/LB
Comments: None noted.

FUEL ECONOMY DATA FORM (Liquid Fuels)

Bus Number: 0901	Manufacturer: Braun	Date: 3-25-09
Run Number: 3	Personnel: M.R., T.S. & S.C.	
Test Direction: ▫CW or ■CCW	Temperature (°F): 41	Humidity (%): 21
SLW (lbs): 5,920	Wind Speed (mph) & Direction: 8 / S	Barometric Pressure (in.Hg): 30.26

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	7:56	7:56	12.4	0	.1500	.1500
ART #1	0	3:45	3:45	9.4	0	.1433	.1433
CBD #2	0	7:41	7:41	7.0	0	.1449	.1449
ART #2	0	3:39	3:39	6.1	0	.1402	.1402
CBD #3	0	7:41	7:41	5.6	0	.1481	.1481
COMMUTER	0	5:50	5:50	5.8	0	.1670	.1670
							Total Fuel = .8935 lbs

20 minute idle : Total Fuel Used = N/A lbs
Heating Value = 20,025.0 BTU/LB
Comments: None noted.

FUEL ECONOMY DATA FORM (Liquid Fuels)

Bus Number: 0901	Manufacturer: Braun	Date: 3-25-09
Run Number: 4	Personnel: M.R., T.S. & S.C.	
Test Direction: ■CW or □CCW	Temperature (°F): 43	Humidity (%): 21
SLW (lbs): 5,920	Wind Speed (mph) & Direction: 8 / S	Barometric Pressure (in.Hg): 30.26

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	7:52	7:52	5.8	0	.1451	.1451
ART #1	0	3:39	3:39	5.7	0	.1382	.1382
CBD #2	0	7:49	7:49	5.9	0	.1440	.1440
ART #2	0	3:43	3:43	6.2	0	.1378	.1378
CBD #3	0	7:49	7:49	6.2	0	.1437	.1437
COMMUTER	0	5:50	5:50	6.4	0	.1686	.1686
						Total Fuel = .8774 lbs	

20 minute idle : Total Fuel Used = .1212 lbs

Heating Value = 20,025.0 BTU/LB

Comments: None noted.

0901.fu.docl
FUEL ECONOMY SUMMARY SHEET

BUS MANUFACTURER :Braun BUS NUMBER :0901
BUS MODEL :Entervan TEST DATE :03/25/09

FUEL TYPE : GASOLINE
SP. GRAVITY : .7400
HEATING VALUE : 20025.00 BTU/Lb
FUEL TEMPERATURE : 60.00 deg F
Standard Conditions : 60 deg F and 14.7 psi
Density of Water : 8.3373 lb/gallon at 60 deg F

CYCLE	TOTAL FUEL USED(GAL)	TOTAL MILES	FUEL ECONOMY MPG(Measured)	FUEL ECONOMY MPG (Corrected)
Run # :1, CCW				
CBD	.440	5.73	13.023	13.36
ART	.267	3.82	14.318	14.68
COM	.165	3.82	23.137	23.73
TOTAL	.872	13.37	15.334	15.73
Run # :2, CW				
CBD	.434	5.73	13.197	13.53
ART	.266	3.82	14.361	14.73
COM	.165	3.82	23.152	23.74
TOTAL	.865	13.37	15.453	15.85
Run # :3, CCW				
CBD	.443	5.73	12.935	13.26
ART	.284	3.82	13.474	13.82
COM	.167	3.82	22.874	23.46
TOTAL	.894	13.37	14.964	15.35
Run # :4, CW				
CBD	.433	5.73	13.239	13.58
ART	.276	3.82	13.841	14.19
COM	.169	3.82	22.657	23.24
TOTAL	.877	13.37	15.238	15.63

IDLE CONSUMPTION (MEASURED)

First 20 Minutes Data : .12GAL Last 20 Minutes Data : .12GAL
Average Idle Consumption : .37GAL/Hr

RUN CONSISTENCY: % Difference from overall average of total fuel used

Run 1 : .6 Run 2 : 1.3 Run 3 : -1.9 Run 4 : .0

SUMMARY (CORRECTED VALUES)

Average Idle Consumption : .36 G/Hr
Average CBD Phase Consumption : 13.43 MPG
Average Arterial Phase Consumption : 14.36 MPG
Average Commuter Phase Consumption : 23.54 MPG
Overall Average Fuel Consumption : 15.64 MPG
Overall Average Fuel Consumption :126.56 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 49.1 dB(A); ranging from 47.2 dB(A) in line with the rear speaker to 52.3 dB(A) in line with the front speaker. The interior ambient noise level for this test was 49.9 dB(A).

The second test measures interior noise during acceleration from 0 to 35 mph. This noise level ranged from 69.7 dB(A) at the middle passenger seats to 76.4 dB(A) at the rear passenger seats. The overall average was 72.1 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: 0901	Date: 2/9/09
Personnel: E.D. & E.L.	
Temperature (°F): 43	Humidity (%): 40
Wind Speed (mph): Calm	Wind Direction: Clam
Barometric Pressure (in.Hg): 30.32	
Initial Sound Level Meter Calibration: ▪ checked by: S.C.	
Interior Ambient Noise Level dB(A): 49.9	Exterior Ambient Noise Level dB(A): < 34.0
Microphone Height During Testing (in): 48.0	

Measurement Location	Measured Sound Level dB(A)
Driver's Seat	48.2
Front Passenger Seats	48.9
In Line with Front Speaker	52.3
In Line with Middle Speaker	50.0
In Line with Rear Speaker	47.2
Rear Passenger Seats	48.2

Final Sound Level Meter Calibration: ▪ checked by: E.D.

Comments: All readings taken in the center aisle.

INTERIOR NOISE TEST DATA FORM
Test Condition 2: 0 to 35 mph Acceleration Test

Bus Number: 0901	Date: 3/25/09
Personnel: M.R., T.S. & S.C.	
Temperature (°F): 45	Humidity (%): 21
Wind Speed (mph): 10	Wind Direction: S
Barometric Pressure (in.Hg): 30.26	
Initial Sound Level Meter Calibration: ▪ checked by: S.C.	
Interior Ambient Noise Level dB(A): < 34.0	Exterior Ambient Noise Level dB(A): 45.5
Microphone Height During Testing (in): 48.0	

Measurement Location	Measured Sound Level dB(A)
Driver's Seat	70.3
Front Passenger Seats	71.8
Middle Passenger Seats	69.7
Rear Passenger Seats	76.4

Final Sound Level Meter Calibration: ▪ checked by: S.C.

Comments: All readings taken in the center aisle.

INTERIOR NOISE TEST DATA FORM
Test Condition 3: Audible Vibration Test

Bus Number: 0901	Date: 3/25/09
Personnel: M.R., T.S. & S.C.	
Temperature (°F): 45	Humidity (%): 21
Wind Speed (mph): 10	Wind Direction: S
Barometric Pressure (in.Hg): 30.26	

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 46.1 dB(A), the average test result obtained while accelerating from a constant speed was 68.1 dB(A) on the right side and 66.4 dB(A) on the left side.

When accelerating from a standstill with an exterior ambient noise level of 45.1 dB(A), the average of the results obtained were 63.9 dB(A) on the right side and 63.6 dB(A) on the left side.

With the vehicle stationary and the engine, accessories, and air conditioning on, the measurements averaged 44.7 dB(A) at low idle and 64.0 dB(A) at wide open throttle. With the accessories and air conditioning off, the readings averaged 2.0 dB(A) lower at low idle and 0.9 dB(A) lower at wide open throttle. The exterior ambient noise level measured during this test was 46.2 dB(A). The test bus was not equipped with a high idle mode, therefore, data for that condition is not available.

EXTERIOR NOISE TEST DATA FORM
Accelerating from Constant Speed

Bus Number: 0901	Date: 3/25/09
Personnel: M.R., T.S. & S.C.	
Temperature (°F): 47	Humidity (%): 21
Wind Speed (mph): 10	Wind Direction: 3
Barometric Pressure (in.Hg): 30.26	
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): 46.1	

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	66.5	1	66.4
2	65.4	2	66.1
3	66.7	3	65.9
4	69.7	4	66.0
5	65.5	5	66.3
Average of two highest actual noise levels = 68.1 dB(A)		Average of two highest actual noise levels = 66.4 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: 0901	Date: 3/25/09
Personnel: M.R., T.S. & S.C.	
Temperature (°F): 47	Humidity (%): 21
Wind Speed (mph): 10	Wind Direction: S
Barometric Pressure (in.Hg): 30.26	
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): 45.1	

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	62.3	1	61.0
2	62.5	2	62.0
3	62.7	3	63.9
4	6.37	4	63.3
5	64.0	5	63.0
Average of two highest actual noise levels = 6.39 dB(A)		Average of two highest actual noise levels = 63.6 dB(A)	

Final Sound Level Meter Calibration Check: ▪ checked by: S.C.
Comments: None noted.

EXTERIOR NOISE TEST DATA FORM
Stationary

Bus Number: 0901	Date: 3/25/.9
Personnel: M.R., T.S. & S.C.	
Temperature (°F): 47	Humidity (%): 21
Wind Speed (mph): 10	Wind Direction: S
Barometric Pressure (in.Hg): 30.26	
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): 46.2	

Accessories and Air Conditioning ON

Throttle Position	Engine RPM	Curb (Right) Side dB(A)	Street (Left) Side db(A)
		Measured	Measured
Low Idle	743	43.5	45.8
High Idle	N/A	N/A	N/A
Wide Open Throttle	1,991	64.6	63.4

Accessories and Air Conditioning OFF

Throttle Position	Engine RPM	Curb (Right) Side dB(A)	Street (Left) Side db(A)
		Measured	Measured
Low Idle	791	42.5	42.8
High Idle	N/A	N/A	N/A
Wide Open Throttle	2,001	64.5	61.6

Final Sound Level Meter Calibration Check: ▪ checked by: S.C.
Comments: Not equipped with high idle mode.

7.2 EXTERIOR NOISE TESTS

TEST VEHICLE UNDERGOING EXTERIOR NOISE TEST

ITEM #11 (e)

COPIES

OF

PROPOSED

FLOOR

PLANS

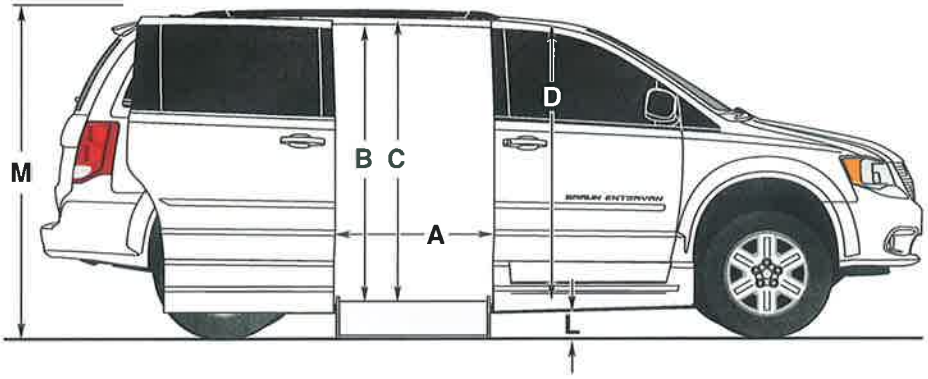
LOW FLOOR VAN

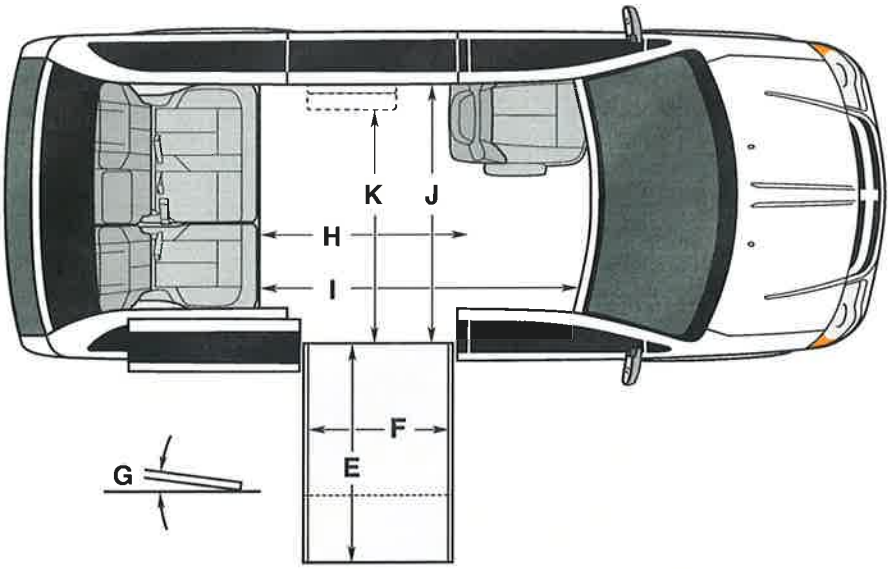
FLOOR PLANS
INTERIOR DIMENSIONS
EXTERIOR DIMENSIONS

for
BRAUN ENTERVAN

DIMENSIONS

Dimensions - Dodge Conversion - Public Use



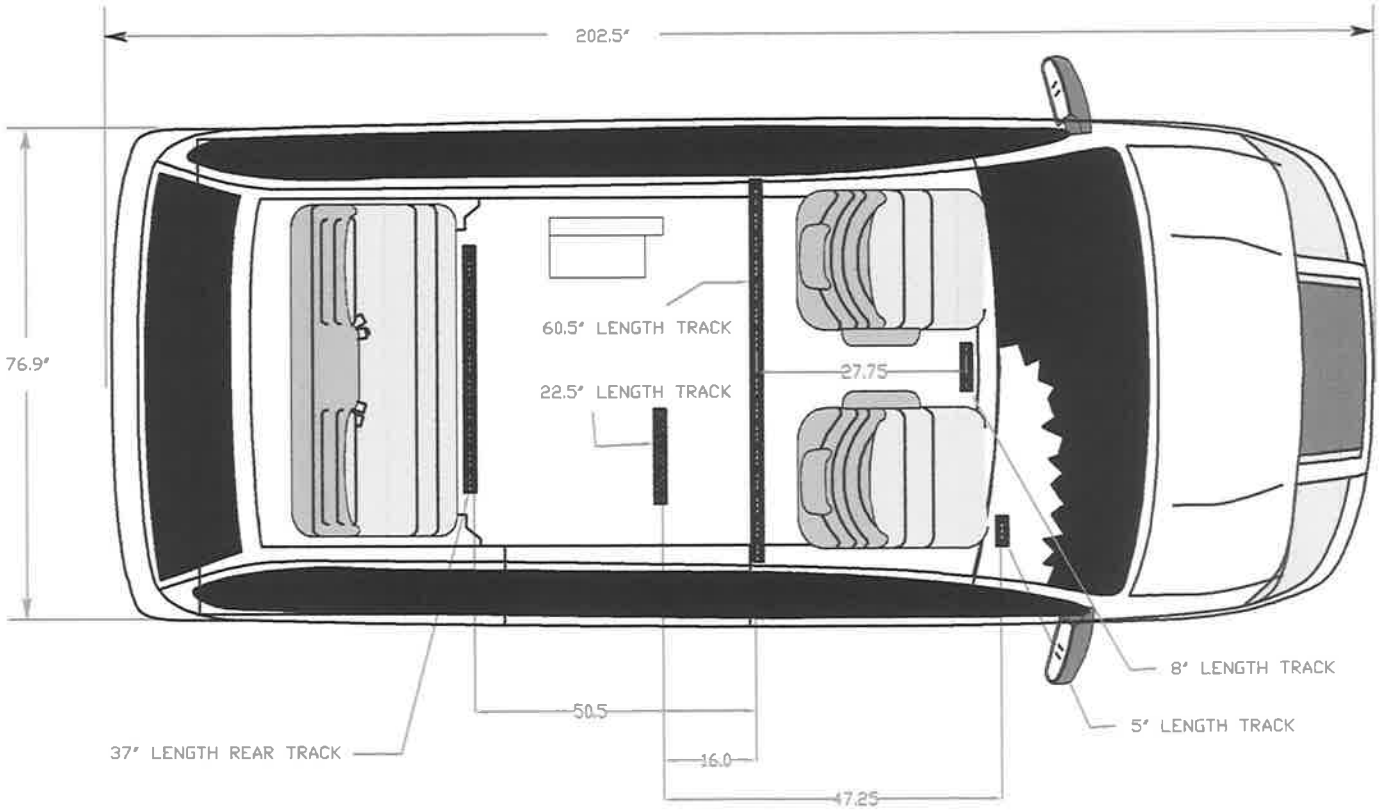


All dimensions are for reference only.

		Foldout Ramp
Door Opening Usable Width (Slide Door)	**A**	31-1/2"
Door Opening Usable Height (Slide Door)	**B**	56-1/4"
Interior Height at Center of Van	**C**	61"
Interior Height at Driver and Passenger Position	**D**	60"
Ramp Length	**E**	52"
Ramp Width (Usable Clear Opening)	**F**	30"
Ramp Angle (Unloaded)	**G**	12.5°
Interior Floor Length (Behind Front Seats)	**H**	57"
Overall Interior Floor Length (Flat Area)	**I**	87-1/2"
Interior Width at B Pillars	**J**	62"
Width - Ramp to Optional 2-Passenger Seat (Folded)	**K**	49-3/4"
[1]Ground Clearance (Unloaded) - [2]Loaded @ 1200 lbs	**L**	[1] 6-1/4" - [2] 5"
Overall Vehicle Height (Unloaded)	**M**	74"

Due to manufacturing tolerances both with the OEM vehicle and the conversion components, all dimensions may vary slightly from those shown.

MOBILITY AID TRACK MOUNTING DIMENSIONS
SHOWING LOCATION OF TRACKING



NOTES / DEFINED VARIABLES

NOTE: THESE ARE APPROXIMATE DIMENSIONS ONLY.

REQ. BY	LET.	REVISION	ECN NO.	REV. BY	DATE

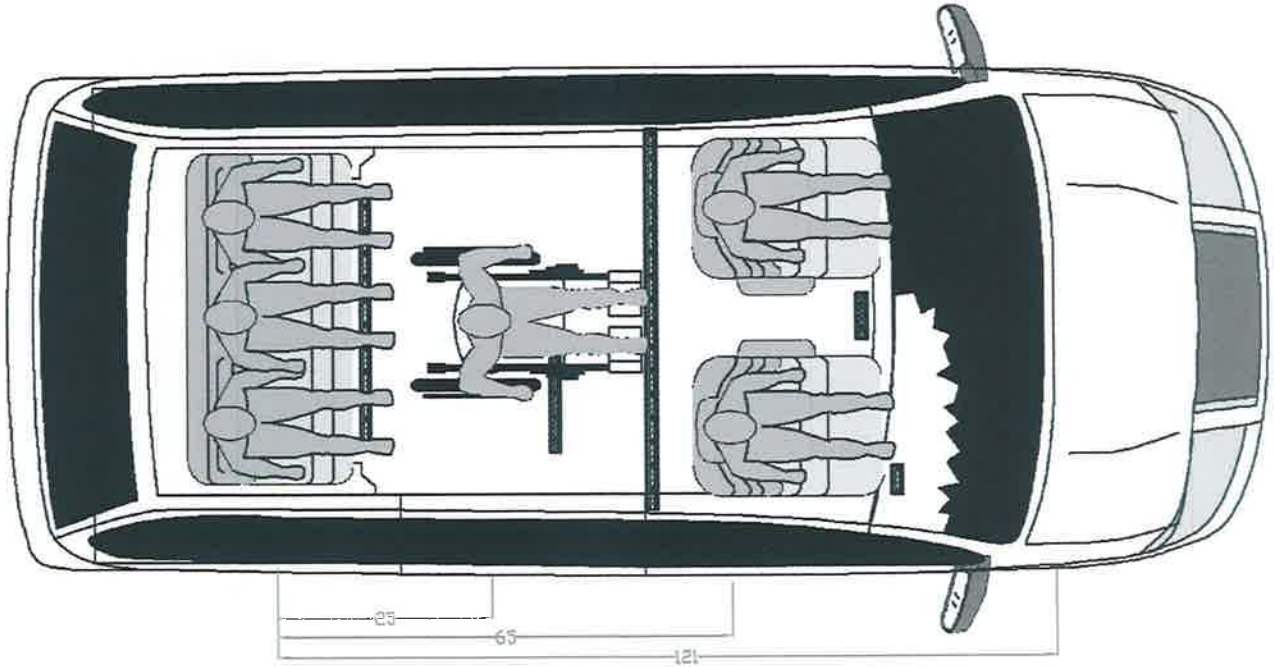
DESIGN/APPR.	CML
DRAWN	AEK
DETAIL CHK.	
SCALE	1"=32"
DATE	01/15/09

TOLERANCES:
UNLESS OTHERWISE SPECIFIED
DECIMAL DIMENSIONS: .XXX = ±.010
.XX = ±.030
.X = ±.060
FRACTIONAL DIMENSIONS = ±1/32
ANGULAR DIMENSIONS = ±1°
NOTE: DEBURR ALL SHARP CORNERS

The Braun Corporation
Winamac, Indiana 46996

BRAUN CHRYSLER RT ADA ENTERVAN CV

P/N MOBILITY AID TRACK MOUNTING



FLOOR PLAN WITH ONE WHEELCHAIR

(BASE MODEL WITH NO CENTER FOLD A WAY SEAT)

REQ. BY	LET.	REVISION	ECN NO.	REV. BY	DATE

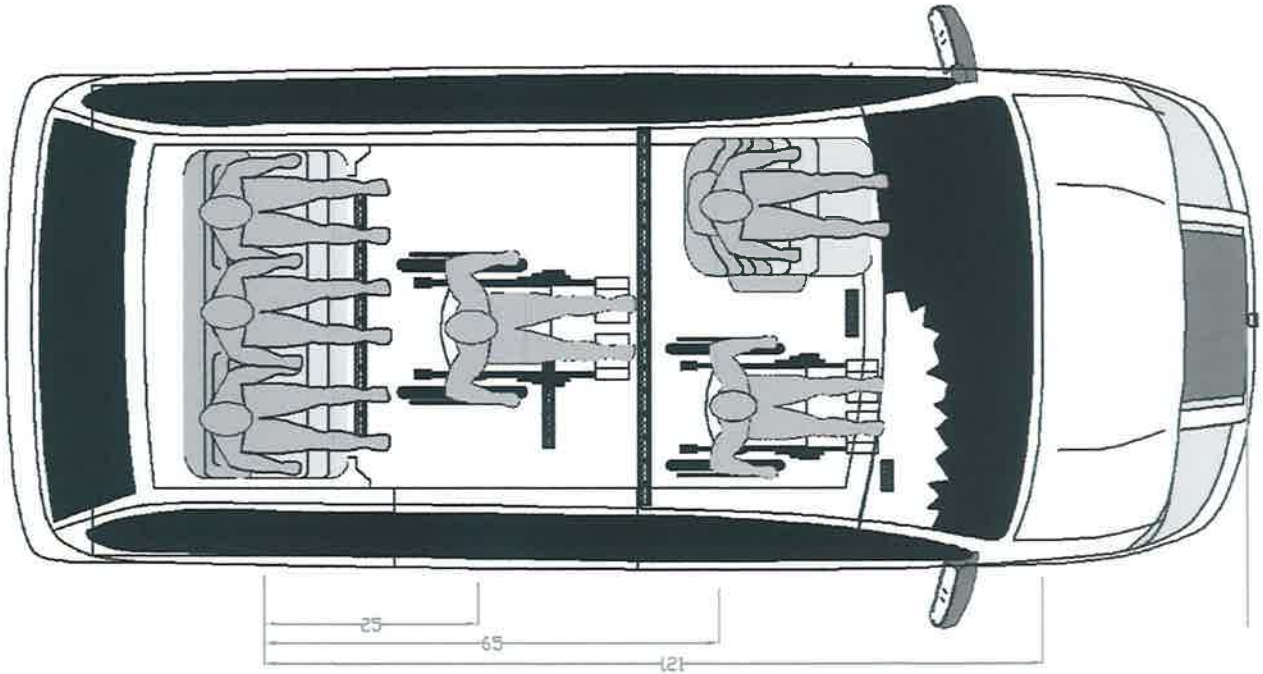
DESIGN/APPR.	CML
DRAWN	AEK
DETAIL CHK.	
SCALE	1"=32"
DATE	01/15/09

TOLERANCES:
(UNLESS OTHERWISE SPECIFIED)
DECIMAL DIMENSIONS: .XXX = ±.010
.XX = ±.030
.X = ±.060
FRACTIONAL DIMENSIONS = ±1/32
ANGULAR DIMENSIONS = ±1°
NOTE: DEBUR ALL SHARP CORNERS

The Braun Corporation
Winamac, Indiana 46996

BRAUN CHRYSLER RT ADA ENTERVAN CV

P/N



FLOOR PLAN WITH TWO WHEELCHAIRS

(BASE MODEL NO CENTER FOLD A WAY SEAT)

REQ. BY	LET.	REVISION	ECN NO.	REV. BY	DATE

DESIGN/APPR.	CML
DRAWN	AEK
DETAIL CHK.	
SCALE	1"=32"
DATE	01/15/09

TOLERANCES:
(UNLESS OTHERWISE SPECIFIED)
DECIMAL DIMENSIONS: .XXX = ±.010
.XX = ±.030
.X = ±.060
FRACTIONAL DIMENSIONS = ±1/32
ANGULAR DIMENSIONS = ±1°
NOTE: DEBUR ALL SHARP CORNERS

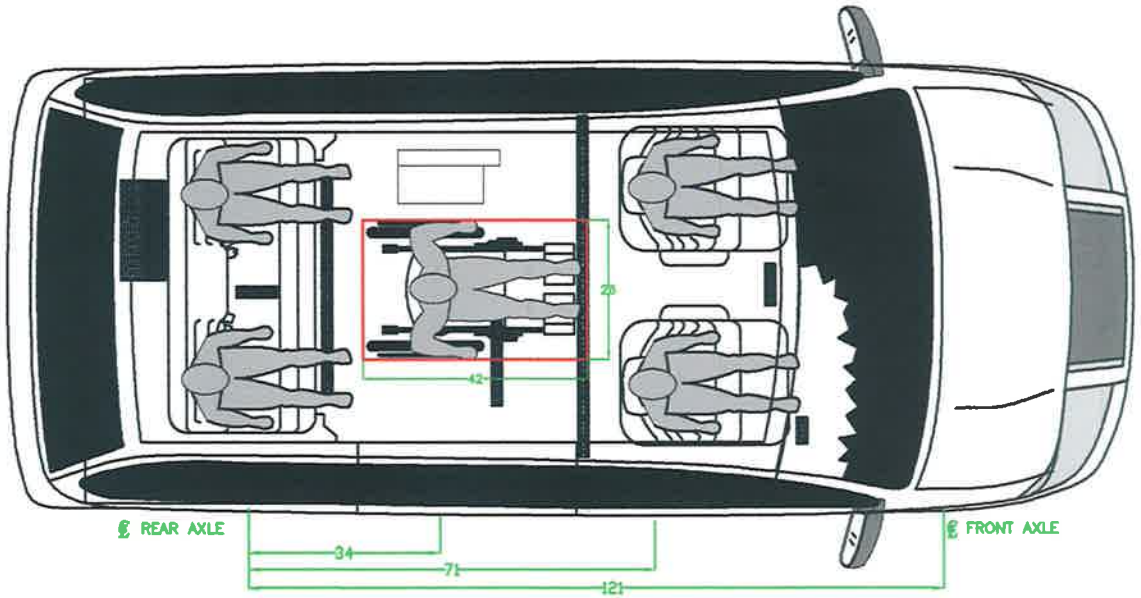
The Braun Corporation
Winamac, Indiana 46996

BRAUN CHRYSLER RT ADA ENTERVAN CV

P/N

SEATING OPTION D

SEATING OPTION: (3) AMBULATORY PASSENGERS, (1) MOBILITY AID PASSENGER, AND THE DRIVER



FLOOR PLAN WITH OPTIONAL CENTER FOLD A WAY SEAT AND 1 WHEELCHAIR

REQ. BY	LET.	REVISION	ECN NO.	REV. BY	DATE

DESIGN/APPR. CML
DRAWN AEK
DETAIL CHK.
SCALE 1"=32"
DATE 01/15/09

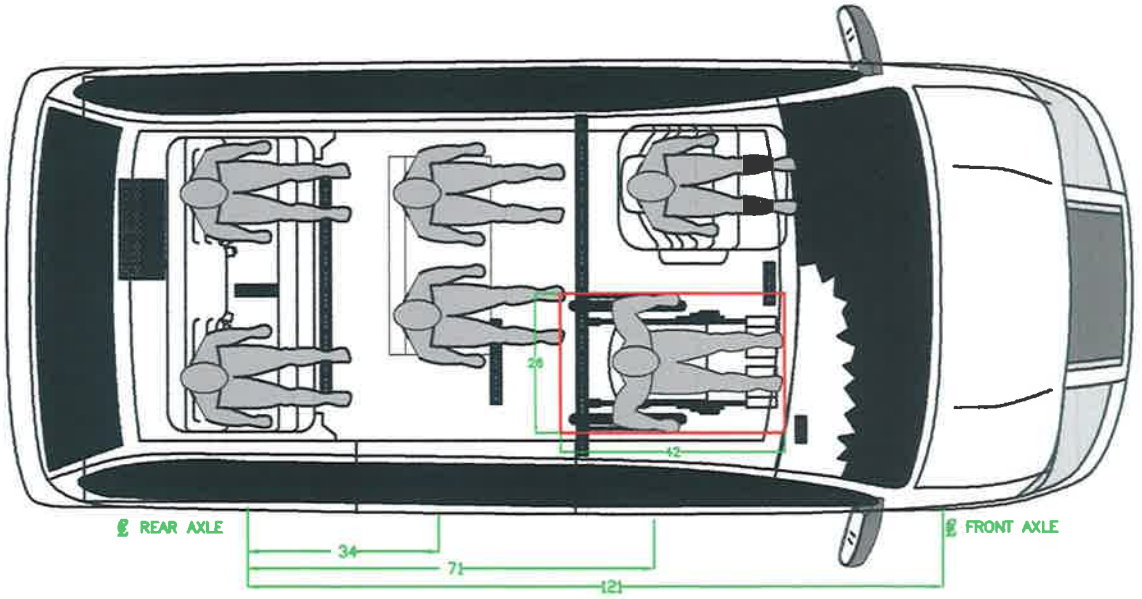
TOLERANCES:
UNLESS OTHERWISE SPECIFIED
DECIMAL DIMENSIONS XXX = ±.010
XX = ±.020
X = ±.060
FRACTIONAL DIMENSIONS = ±1/32
ANGULAR DIMENSIONS = ±1°
NOTE: DEBURR ALL SHARP CORNERS

The Braun Corporation
Winamac, Indiana 46996

BRAUN CHRYSLER RT ADA ENTERVAN CV

P/N 35268 SEATING OPTION

SEATING OPTION: (4) AMBULATORY PASSENGERS, (1) MOBILITY AID PASSENGER, AND THE DRIVER



FLOOR PLAN WITH OPTIONAL CENTER FOLD A WAY SEAT AND 1 WHEELCHAIR

REQ. BY	LET.	REVISION	ECN NO.	REV. BY	DATE

DESIGN/APPR. CML
DRAWN AEK
DETAIL CHK.
SCALE 1"=32"
DATE 01/15/09

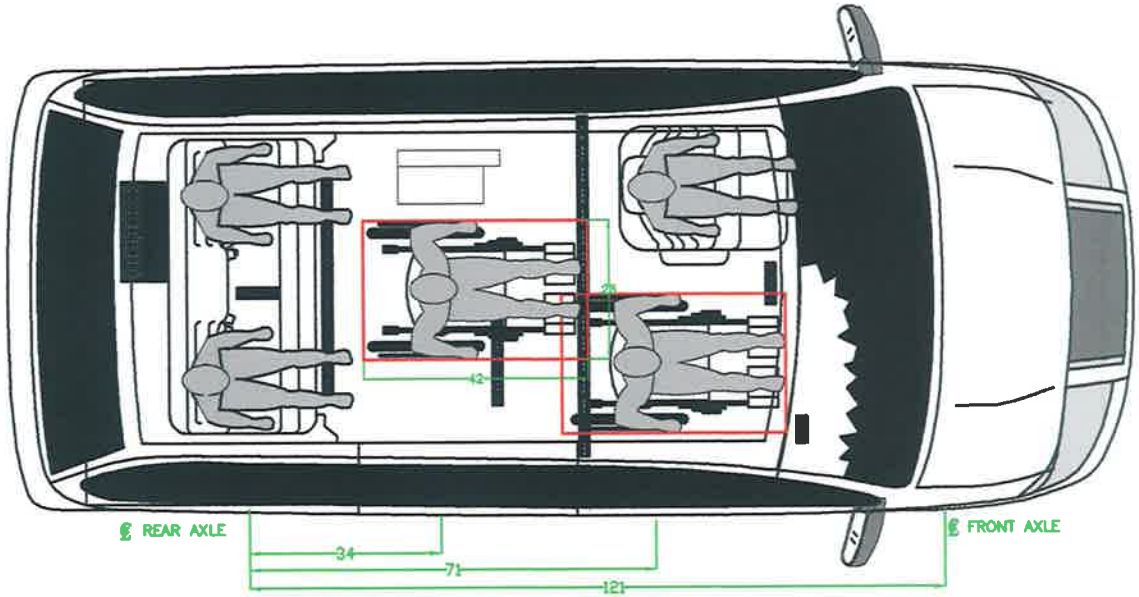
TOLERANCES:
UNLESS OTHERWISE SPECIFIED
DECIMAL DIMENSIONS .XXX = ±.010
.XX = ±.030
.X = ±.060
FRACTIONAL DIMENSIONS = ±1/32
ANGULAR DIMENSIONS = ±1°
NOTE: DEBURR ALL SHARP CORNERS

The Braun Corporation
Winamac, Indiana 46996

BRAUN CHRYSLER RT ADA ENTERVAN CV

P/N 35268 SEATING OPTION

SEATING OPTION: (3) AMBULATORY PASSENGERS, (1) MOBILITY AID PASSENGER, AND THE DRIVER



FLOOR PLAN WITH OPTIONAL CENTER FOLD A WAY SEAT AND TWO WHEELCHAIRS

REQ. BY	LET.	REVISION	ECN NO.	REV. BY	DATE

DESIGN/APPR.	CML
DRAWN	AEK
DETAIL CHK.	
SCALE	1"=32"
DATE	01/15/09

TOLERANCES:
UNLESS OTHERWISE SPECIFIED
DECIMAL DIMENSIONS .XXX = ±.010
.XX = ±.030
.X = ±.060
FRACTIONAL DIMENSIONS = ±1/32
ANGULAR DIMENSIONS = ±1°
MFG. DEBURR ALL SHARP CORNERS

The Braun Corporation
Winamac, Indiana 46996

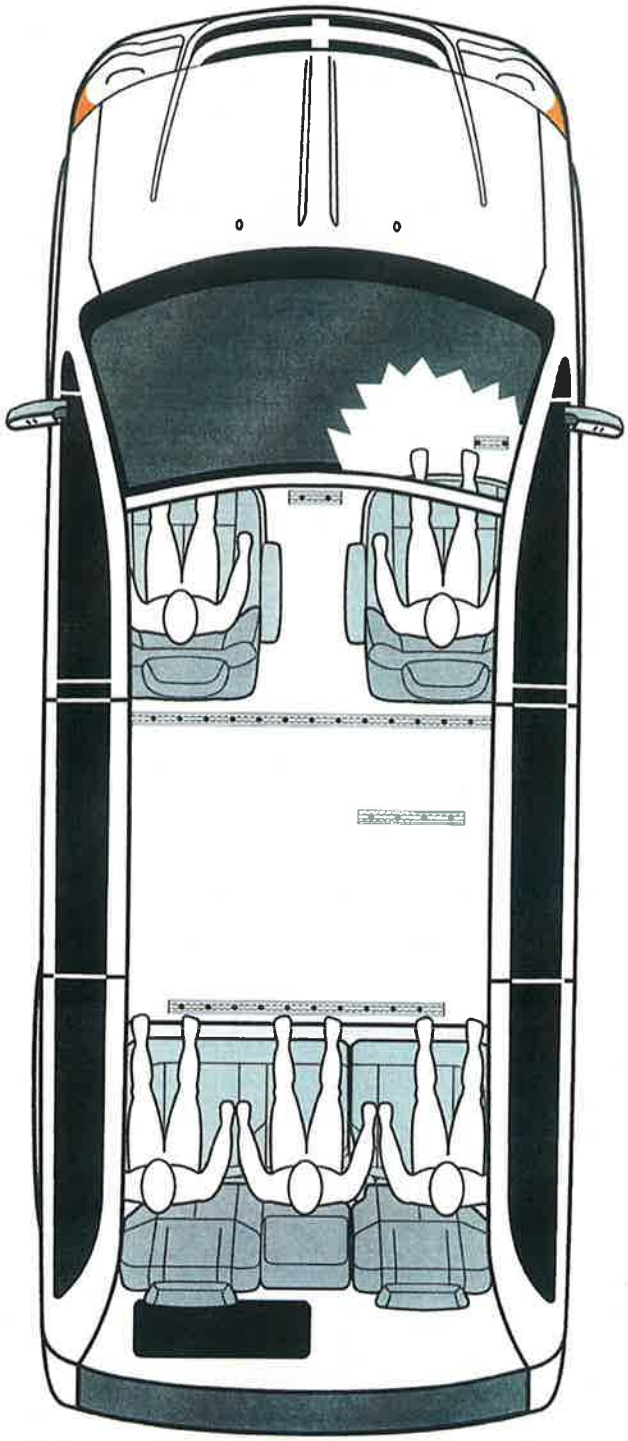
BRAUN CHRYSLER RT ADA ENTERVAN CV

P/N 35268 SEATING OPTION

BraunAbility

" IN-DOT "

FLOOR PLAN NO WHEELCHAIRS AND NO CENTER SEAT



2015 Dodge/Chrysler WAV - (5) Passenger, (No) Wheelchair Position

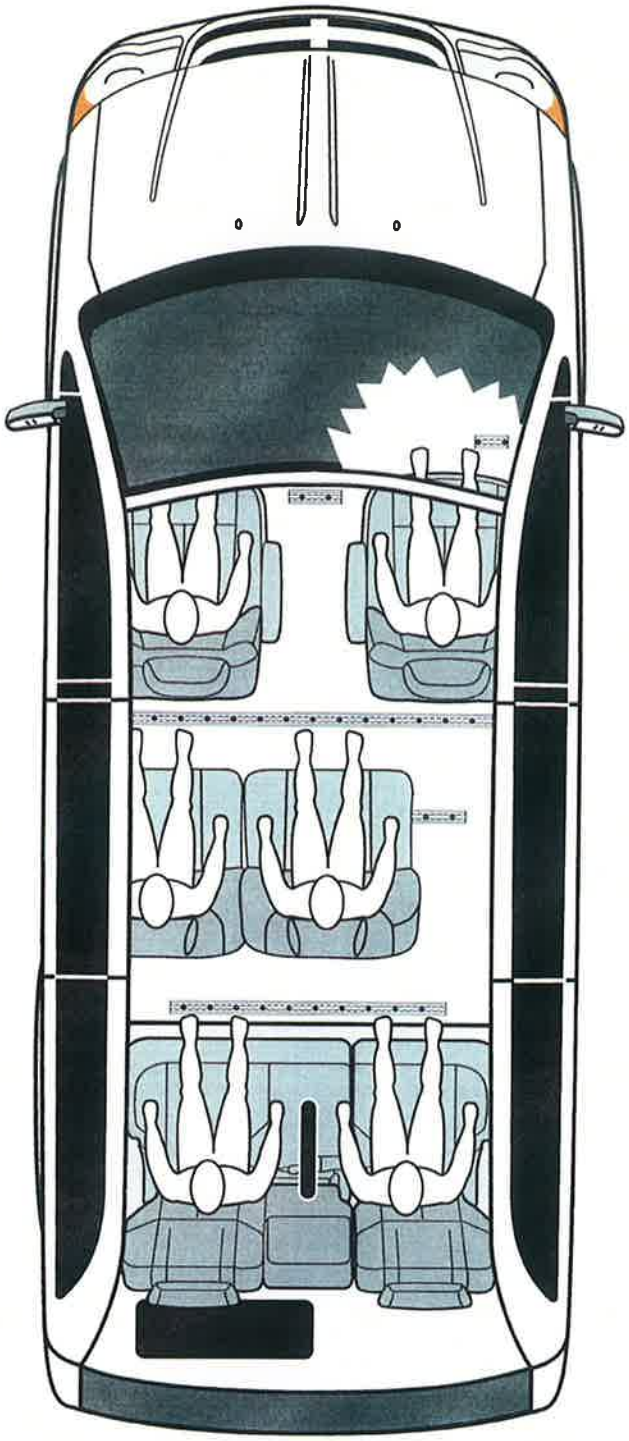
September 2015

FP ADA IN-DOT AC 001.ai

BraunAbility

" IN-DOT "

FLOOR PLAN NO WHEELCHAIRS WITH CENTER SEAT



2015 Dodge/Chrysler WAV - (6) Passenger, (No) Wheelchair Position

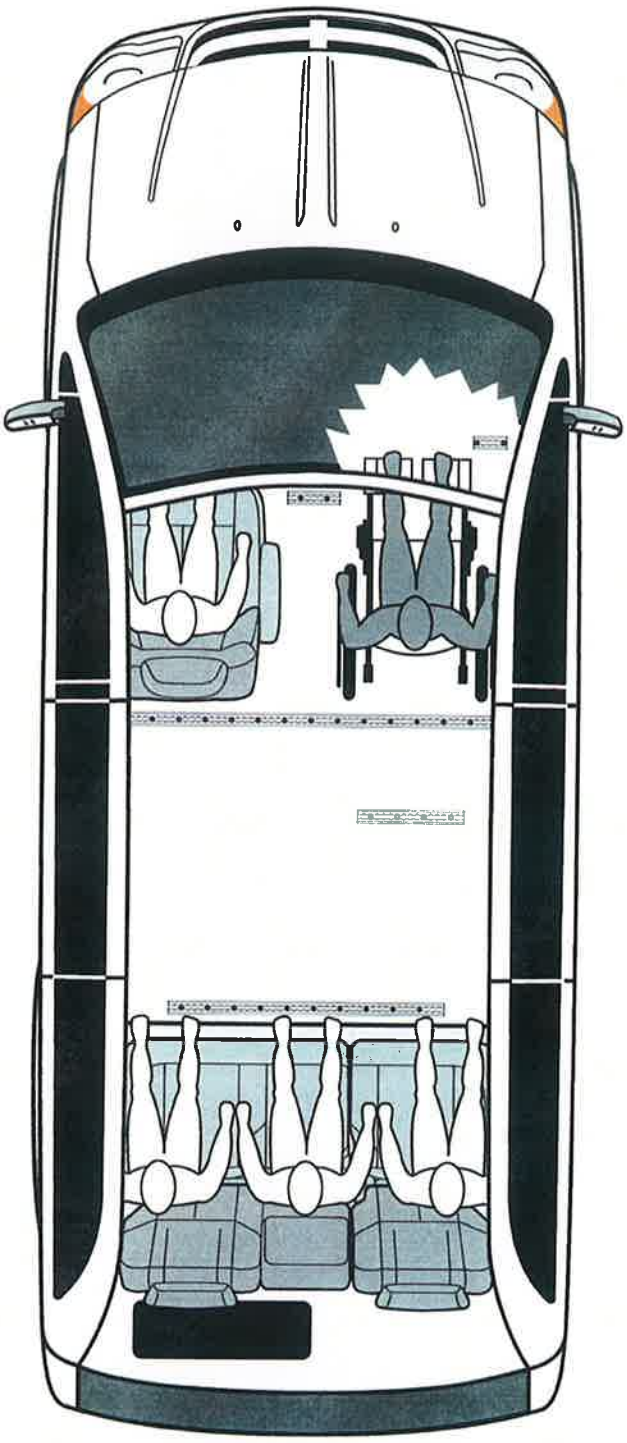
September 2015

FP ADA IN-DOT AC 003.ai

BraunAbility

"IN-DOT"

FLOOR PLAN WITH FRONT WHEELCHAIR AND NO CENTR SEAT



2015 Dodge/Chrysler WAV - (4) Passenger, Front Passenger Wheelchair Position

September 2015

FP ADA IN-DOT AC 002.ai

ITEM #11 (f)

LIST
OF
STANDARD
EXTERIOR
COLORS

DODGE GRAND CARAVAN EXTERIOR COLOR OPTIONS

GRANIT CRYSTAL METTIC CLEARCOAT

REDLINE 2 CLEARCOAT

BILLIT SILVER METALLIC CLEARCOAT

BRILLANT BLACK CRYSTALPEARLCOAT

DEEP CHERRY RED CRYSTAL PEARLCOAT

TRUE BLUE PEARLCOAT

BRIGHT WHITE CLEARCOAT

CASHMERE/SANDSTONE PEARLCOAT

ITEM #11 (g)

LIST
OF
SERVICE
CENTERS

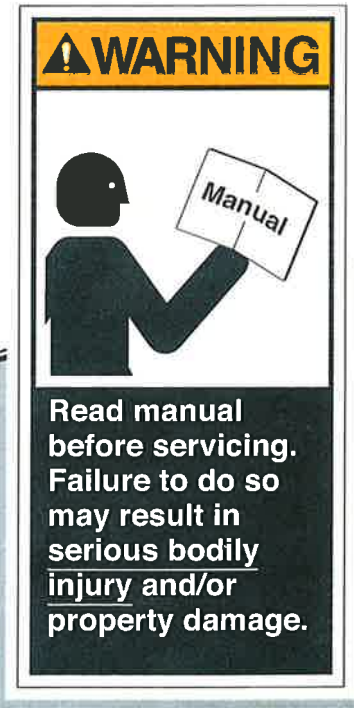
(Found under Tab #5, Exhibit F-2)

ITEM #11 (h)

RAMP
INFORMATION

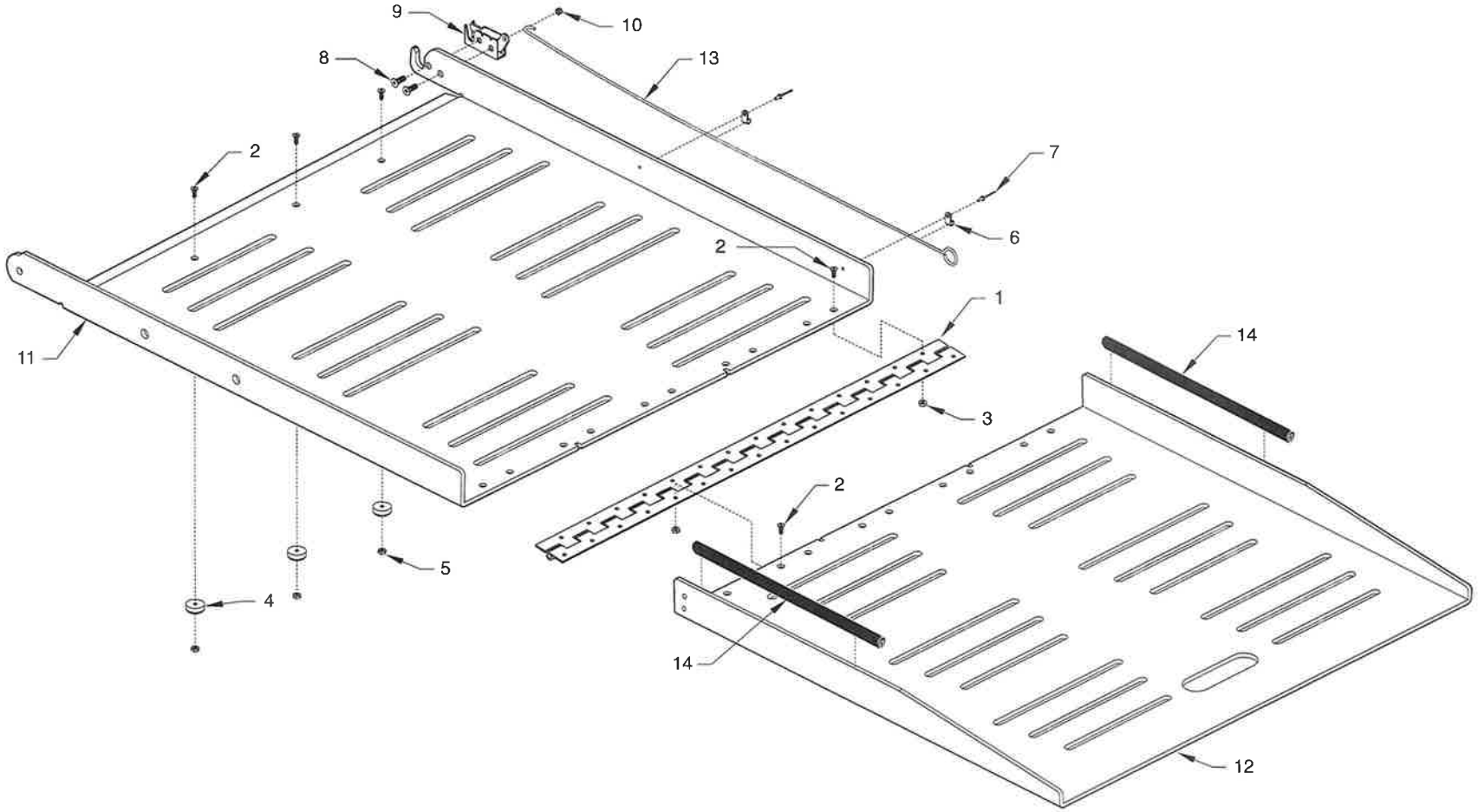
Dodge
Foldout Wheelchair
Accessible Vehicle
Public Use

BraunAbility®



38094 Rev A
July 2014

Exploded View - 50/50 Manual Swing Out Ramp - Platform Assembly

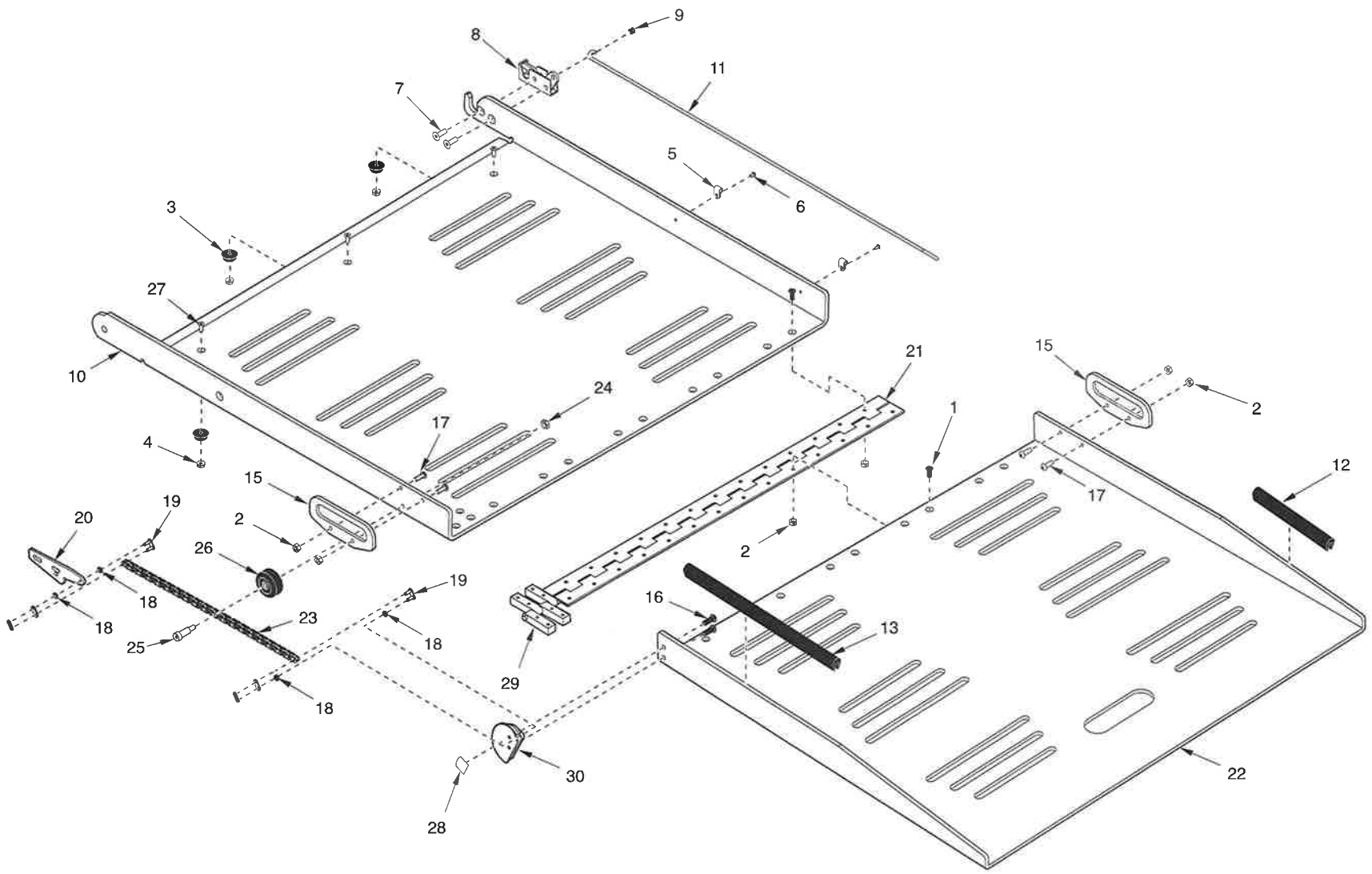


Parts List - 50/50 Manual Swing Out Ramp - Platform Assembly

Item	Qty.	Description	Part Number
1	1	HINGE WMT-S.S. 2" X 1/4" .090 X 29"	37459W029
2	23	SCREW-#10-32X5/8 FHSC-AUTO BLK/PATCHED	32954P
3	20	NUT-10-32 HEX CENTER LOCK/AUTO-BK	34290BK
4	3	BUMPER-RUBBER RECES.31/32 OD	10950
5	3	NUT-#10-32 W/LOCKWASHER/AUTO-BK	18349
6	2	CLAMP-3/16 ID NYLON LOOP BLACK	28326
7	2	RIV-POP-SD43BS-1/8"-.13/.19/AUTO-BK	12954
8	2	SCREW-1/4-20 X3/4 FHSC HD/AUTO-BK	18708
9	1	LATCH-RAMP 29" SWING OUT	51652
10	1	GROMMET-5/32 HOLE-7/16 X 1/4 GROV-RUBBER	29426
11	1	RAMP-BASE/30" POWER/RT	E51849??
12	1	RAMP-EXTENSION/30" AUTO/2010 CHRYSLER	E51883??
13	1	LATCH PULL WIRE/AUTO-SWING RAMP/50-50	E42131-12
14	2	EDGE LINER-1/4"/EDGE TRIM/BLK X 12"	E42139R012

?? represents color

Exploded View - 50/50 Manual Swing Out Ramp - Gas Spring Assist - Ramp Platform / Extension Assembly



REPLACEMENT PARTS

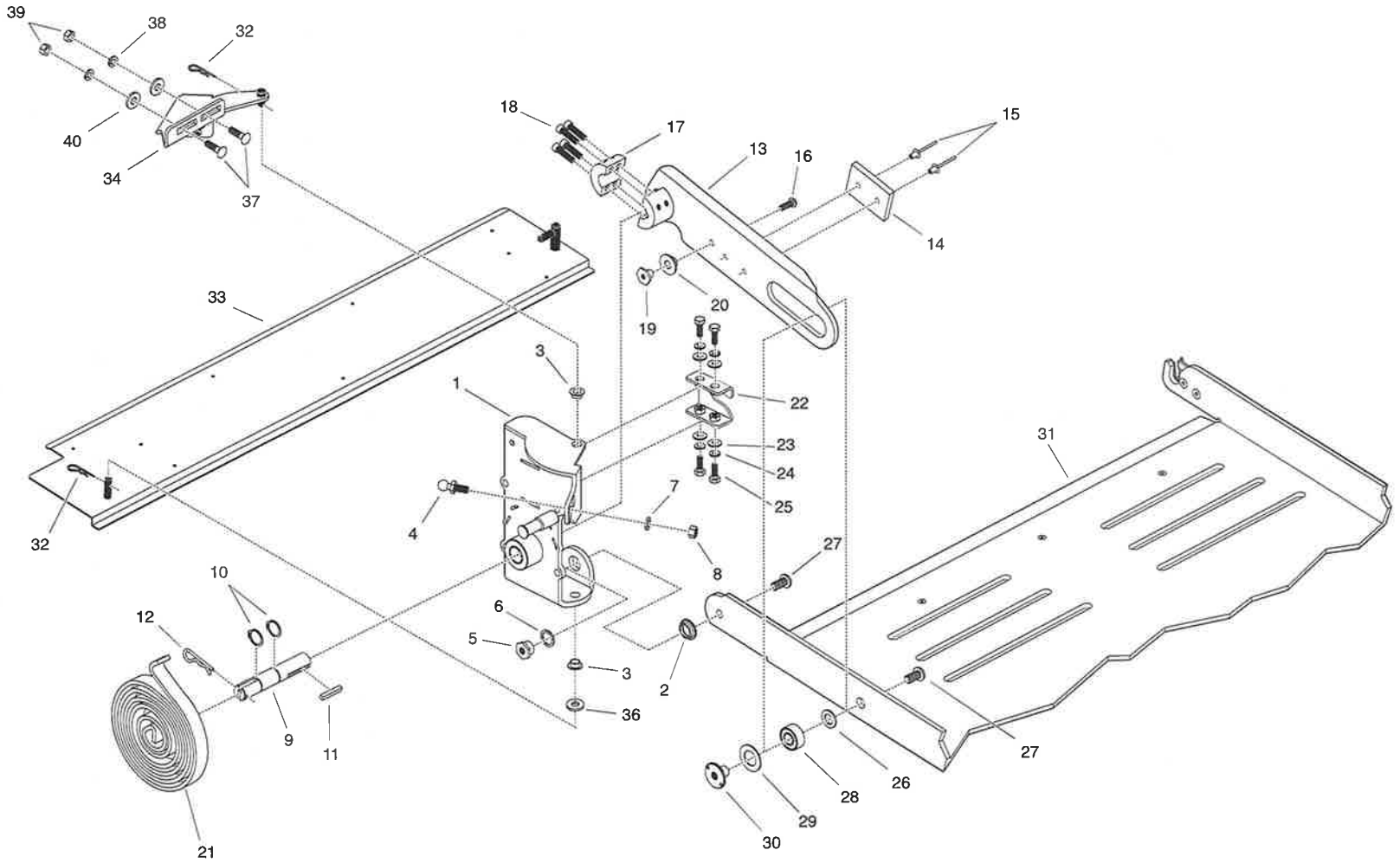
Parts List - 50/50 Manual Swing Out Ramp - Gas Spring Assist - Ramp Platform / Extension Assembly

Item	Qty.	Description	Part Number
1	26	SCREW-#10-32X5/8 FHSC-AUTO BLK/PATCHED	32954P
2	22	NUT-10-32 HEX CENTER LOCK/AUTO-BK	34290BK
3	3	BUMPER-RUBBER RECES.31/32 OD	10950
4	3	NUT-#10-32 W/LOCKWASHER/AUTO-BK	18349
5	2	CLAMP-3/16 ID NYLON LOOP BLACK	28326
6	2	RIV-POP-SD43BS-1/8"-.13/.19/AUTO-BK	12954
7	2	SCREW-1/4-20 X3/4 FHSC HD/AUTO-BK	18708
8	1	LATCH-RAMP 29" SWING OUT	51652
9	1	GROMMET-5/32 HOLE-7/16 X 1/4 GROV-RUBBER	29426
10	1	RAMP-BASE/30" POWER/RT	E51849DS
11	1	LATCH PULL WIRE/AUTO-SWING RAMP/50-50	E42131-12Y
12	1	EDGE LINER-1/4"/EDGE TRIM/BLK X 6"	E42139R006
13	1	EDGE LINER-1/4"/EDGE TRIM/BLK X 12"	E42139R012
14 *	0.00001	SUPERGLUE-RITE-LOK / SF100-20	51295
15	2	RAMP HANDLE-BOLT ON/CALACT	E51584Y
16	2	BOLT-1/4-20X3/4"BHCS NYLK/BKZN	25371
17	4	SCREW-#10-32 X 5/8" BH CAP	25126
18	4	#6 NYLON WASHER	82070-000
19	2	LINK-CHAIN #35	12454
20	1	BRACKET-CABLE TENSIONER/OUTER/BLACK	52568-2908BK
21	1	HINGE ASSY-29.5"_	37459W029.5
22	1	RAMP-EXTENSION/30" AUTO/2010 CHRYSLER	E51883DS
23	1	CHAIN-NICKEL PLATED #35 ROLLER X 9"	84314R009
24	1	NUT-1/4"-20 JAM	83037-000
25	1	BOLT-SHLDR 5/16"OD X 3/4-1/4-20 SKT	18073
26	1	WHEEL-RUBBER CUSHION TREAD 1 5/8-3/4	61-4018-0
27	3	SCREW-#10-32X1/2 FHDHXS-AUTO BLK-W/PATCH	17192P
28	1	DECAL-WARN CHAIN HAZ RAMP EVII	26134
29	4	HINGE-RAMP 50/50 HD	E51989
30	1	RAMP CAM 50/50	36888

* Item not shown

Unfold for:
Exploded View
50/50 Manual Swing Out
Ramp Platform Assembly

Exploded View - 50/50 Manual Swing Out Ramp - Ramp Threshold, Arm & Spring Assembly



Part List - 50/50 Manual Swing Out Ramp - Ramp Threshold, Arm & Spring Assembly

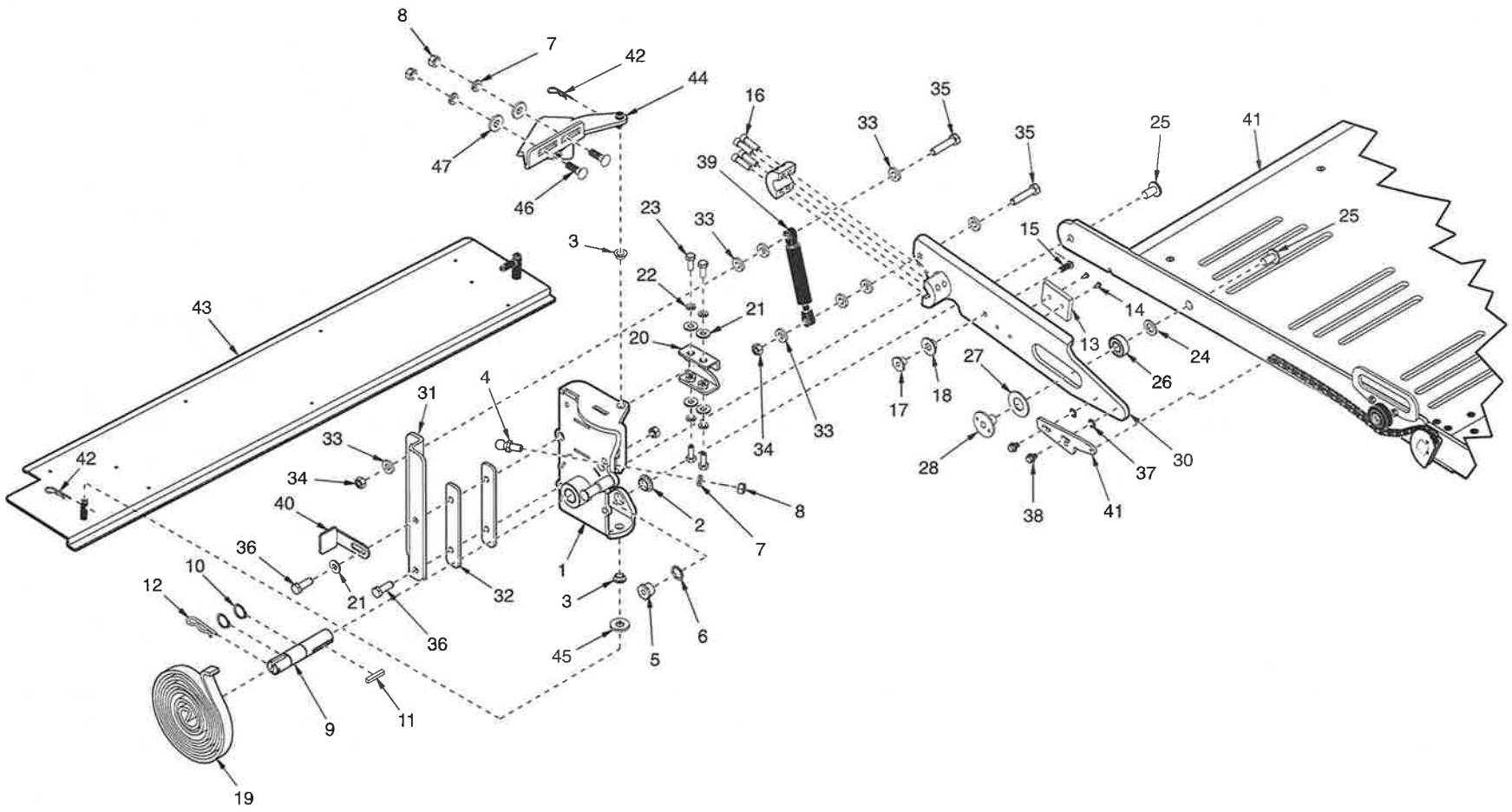
Item	Qty.	Description	Part Number
1	1	WMT-MAIN RAMP HOUSING/MANUAL-04	E41515WBK-04
2	1	BEARING-FLANGE-5/8" X 1/4"-10FDU04	28435
3	2	BEARING-PLASTIC-FLANGE-3/8IDX1/4"	24028
4	1	BALL STUD-13MM,5/16-18 MALE (GAS SPRING)	12611
5	1	PIVOT PIN/BUSHING/EV RAMP/2905	52571-2905
6	1	WASHER-.63 X .8 X .06 NYLON 10	83584
7	1	WASHER-5/16" LOCK/AUTO-BK	10068
8	1	NUT-5/16-18 HEX/AUTO-BK	10058
9	1	SHAFT-30" MANUAL RAMP/GM VENTURE	E41507
10	2	RING-3/4 EXT SNAP	18657
11	1	KEY-3/16 X 3/16 X 1 1/4"	11002
12	1	COTTER-HAIRPIN-1.938 L-.5 SHFT	18832
13	1	ARM-RAMP DRIVE/30" MANUAL/WMT.	E41505WBK-03
14	1	RAMP ARM SPACER-MANUAL/SWING	E50964
15	2	RIV-POP-SD64BS-3/16"-.13/.25/AUTO-BK	11513
16	1	BOLT-1/4-20X3/4"BHCS NYLK/BKZN	25371
17	1	COLLAR-SPLIT-3/4" SHAFT/RMP MTR/INNER	52565-2905??
18	4	SCREW-1/4-20 X 1" SOC HD CAP	24221
19	1	LATCH BOLT-SUPPORT-29" RAMP	51541-2905
20	1	PIN-RAMP SUPPORT-96SC 29" RAMP	51815-2905
21	1	SPRING-POWER/CLOCK/MAN RAMP	28258
22	1	BKT-RAMP LATCH CATCH/ADJUSTABLE/WMT	E41510WBK
23	4	WASHER-1/4" FLAT/AUTO-BK	10062
24	4	WASHER-1/4" LOCK/AUTO-BK	10067
25	4	BOLT-1/4-20 X 3/4 GR5-HEX/AUTO-BK	10970
26	1	WASHER-.519ID X .876OD X .074	12621
27	2	BOLT-3/8-16 X 3/4" FLBHSCS-GD8	25171
28	1	BEARING-1/2ID X 1 1/8 OD-BALL	21371
29	1	WASHER-UHMW 1.500 OD X .76 ID X 0.062	29680
30	1	RETAINER-BEARING	21451-03
31	1	RAMP ASSY-BASE & EXT-MANUAL SWING/50-50	E51849??A3012
32	2	CLIP-HAIRPIN 5/16 DIA SHAFT	84382
33	1	WMT-RAMP THRESHOLD-MANUAL/MANUAL	E51255W??
34	1	ASSY-BKT-C-PILLAR MOUNT/MAN RAMP/0802 RT	E51257A-08
35 *	11	SCREW-#10-16X1 1/4" SDPH MOD TRUSS/BLKZK	35395-1.25
36	1	WASHER-PVC 3/8 X 1 X 1/16" GR	19039
37	2	BOLT-CARR 5/16-18 X 1"	15572
38	2	WASHER-5/16" LOCK/AUTO-BK	10068
39	2	NUT-5/16-18 HEX/AUTO-BK	10058
40	2	WASHER-5/16 FLAT	10063

?? represents color

* item not shown

Unfold for:
Exploded View - 50/50
Manual Swing Out Ramp
Gas Spring Assist - Ramp
Platform / Extension Assembly

Exploded View - 50/50 Manual Swing Out Ramp - Gas Spring Assist - Ramp Threshold / Arm / Spring Assembly



Parts List - 50/50 Manual Swing Out Ramp - Gas Spring Assist - Ramp Threshold / Arm / Spring Assembly

Item	Qty.	Description	Part Number
1	1	WMT-MAIN RAMP HOUSING/MANUAL/CAL	E51976WBK-CAL
2	1	BEARING-FLANGE-5/8" X 1/4"-10FDU04	28435
3	2	BEARING-PLASTIC-FLANGE-3/8IDX1/4"_	24028
4	1	BALL STUD-13MM,5/16-18 MALE (GAS SPRING)	12611
5	1	PIVOT PIN/BUSHING/EV RAMP/2905	52571-2905
6	1	1000WASHER-.63 X .8 X .06 NYLON{10	83584
7	3	WASHER-5/16" LOCK/AUTO-BK	10068
8	3	NUT-5/16-18 HEX/AUTO-BK	10058
9	1	SHAFT-30" MANUAL RAMP/GM VENTURE	E41507
10	2	RING-3/4 EXT SNAP	18657
11	1	KEY-3/16 X 3/16 X 1 1/4"	11002
12	1	COTTER-HAIRPIN-1.938 L-.5 SHFT	18832
13	1	RAMP ARM SPACER-MANUAL/SWING	E50964
14	2	RIV-POP-SD64BS-3/16"-.13/.25/AUTO-BK	11513
15	1	BOLT-1/4-20X3/4"BHCS NYLK/BKZN	25371
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18	1	PIN-RAMP SUPPORT-96SC 29" RAMP	51815-2905
19	1	SPRING-POWER/CLOCK/MAN RAMP	28258
20	1	BKT-RAMP LATCH CATCH/ADJUSTABLE/WMT.	E41510WBK
21	5	WASHER-1/4" FLAT/AUTO-BK	10062
22	4	WASHER-1/4" LOCK/AUTO-BK	10067
23	4	BOLT-1/4-20 X 3/4 GR5-HEX/AUTO-BK	10970
24	1	WASHER-.519ID X .876OD X .074	12621
25	2	BOLT-3/8-16 X 3/4" FLBHSCS-GD8	25171
26	1	BEARING-1/2ID X 1 1/8 OD-BALL	21371
27	1	WASHER-UHMW 1.500 OD X .76 ID X 0.062	29680
28	1	RETAINER-BEARING	21451-03
29 *	0.001	RITE-LOK-BLUE/#42 GEN PURPOSE	18822
30	1	WMT-ARM-DRIVES RAMP-MANUAL-50/50 CAL	E51731W-CAL-BK
31	1	BKT-GAS SPRING/RAMP DEPLOY/CAL	E51582BK
32	2	SPACER-GAS SPRING/RAMP DEPLOY/CAL	E51583BK
33	8	BEARING-BRONZE THRUST-3/8ID,3/4OD,1/8THK	36530
34	3	NUT-5/16-18 HEX LOCK/AUTO-BK	11387BK
35	2	BOLT-5/16-18 X 1 5/8" HHCS GR5 ZP	36531
36	2	BOLT-5/16-18 X 1" HEX HD. CAP	10013
37	2	WASHER-1/4 EXT STAR TOOTH LOCK ZP	83588
38	2	BOLT-FLANGE 1/4-20 X 3/8 BLACK	38571
39	1	GAS SPRING-5.51EXT/3.54COM-667N/149.9LBF	38452
40	1	MOTOR COVER TIE DOWN	E51902
41	1	RAMP ASSY-BASE & EXT-MANUAL SWING/50-50	E51849__A3012-YLCAL
42	2	CLIP-HAIRPIN 5/16 DIA SHAFT	84382
43	1	WMT-RAMP THRESHOLD-MANUAL/MANUAL	E51255W__
44	1	ASSY-BKT-C-PILLAR MOUNT/MAN RAMP/0802 RT	E51257A-08
45	1	WASHER-PVC 3/8 X 1 X 1/16" GR	19039
46	2	BOLT-CARR 5/16-18 X 1"	15572
47	2	WASHER-5/16 FLAT	10063

* Item not shown __ Part Color Code

ITEM #11 (j)

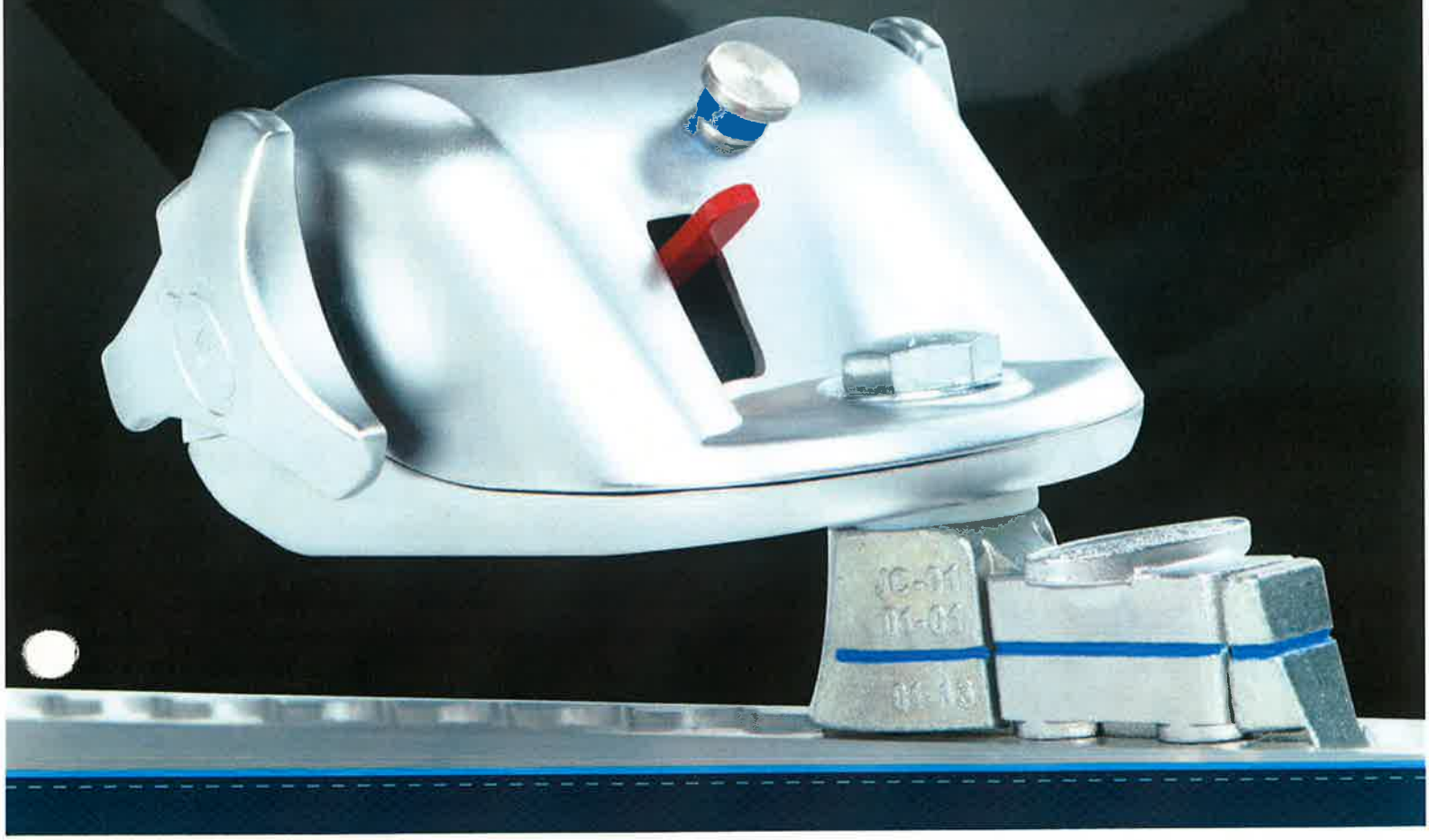
SECUREMENT
SYSTEM
INFORMATION

Q'STRAINT®

Thinking **Beyond** Safety

QRT™ SERIES

The New Standard in Wheelchair Securement and Passenger Safety



QRT-3 SERIES

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.

QRT-360

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, high-strength teeth, the QRT-360 retractors achieve a surrogate wheelchair rating that meets the requirements of WC18. A re-engineered Positive Locking Interface contributes to the system's ability to secure extremely heavy loads.

The QRT-360 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.

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.

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.

Compatible with Most Vehicles and Chairs

Like other Q'Straint systems, the QRT-360 is compatible with the widest variety of wheelchairs and scooters.

Meets the requirements of WC18 standards ahead of their effective date in 2015. Also compatible with WC19 Wheelchairs.

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).

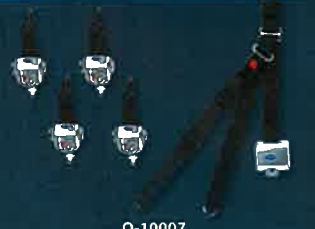
The most significant implication of the revised standard is that wheelchair tie-downs must be stronger. WC19 covers the design and testing of wheelchairs for use in passenger transportation, and it brings about much needed passenger protection as well as some challenges for WTORS manufacturers.

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.

QRT-360 4-POINT SECUREMENT SYSTEM KITS

KIT NO.	RETRACTORS	SECUREMENTS	ANCHORAGES
Q-10007	Q011012 (4) mounted on PLI	Q8-6326-A1	L-TRACK (sold separately)
Q-10008	Q011022 (4) mounted on SNC	Q8-6326-A1	Q8-7580-A (4) Slide 'N Click included
Q-10009	Q011022 (4) mounted on SNC	(sold separately)	Q8-7580-A (4) Slide 'N Click included
Q-10010	Q011012 (4) mounted on PLI	(sold separately)	L-TRACK (sold separately)

EXAMPLE 360 SYSTEM



Q-10007
- (4) QRT-360 Retractors with PLI Fitting for L Track
- (1) Retractable Combination Belt with Height Adjuster

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

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Fax: +61 7 3892 1819
Email: info@tramanco.com.au

Q'Straint Canada
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Email: qstraint@qstraint.com

MKM4821-QRT3 rev. 7/14

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.

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.

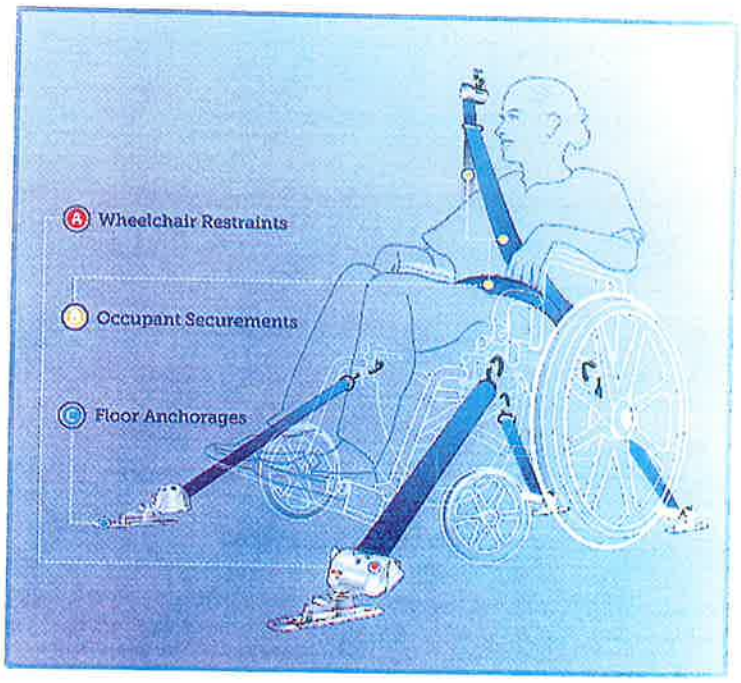
A complete 4-Point System includes:

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

The Freedman 3PT

3 POINT SEATS

FREEDMAN 3PT
3 POINT SEATS

Not Just Seats...
Seating Solutions!

FREEDMAN
SEATING COMPANY

Standard features & benefits:

- Integrated 3 point seat belt (shoulder and lap)
- Conveniently located belts are designed to not fall on the floor
- Mid back seats come standard with grab rail for head & neck support
- High back seats have a headrest that does not block passenger viewing
- Knee Saver back for superior hip to knee room
- Contoured seat and back cushion for comfort and support
- Flexolator grid suspension for long lasting seat comfort
- All 3PT seats are designed, built and tested to meet FMVSS 210
- Bolts to most wall and floor track configurations
- Jig welded heavy-duty tubular frames

Not Just Seats... Seating Solutions!

Stowed Position
Flip Seat

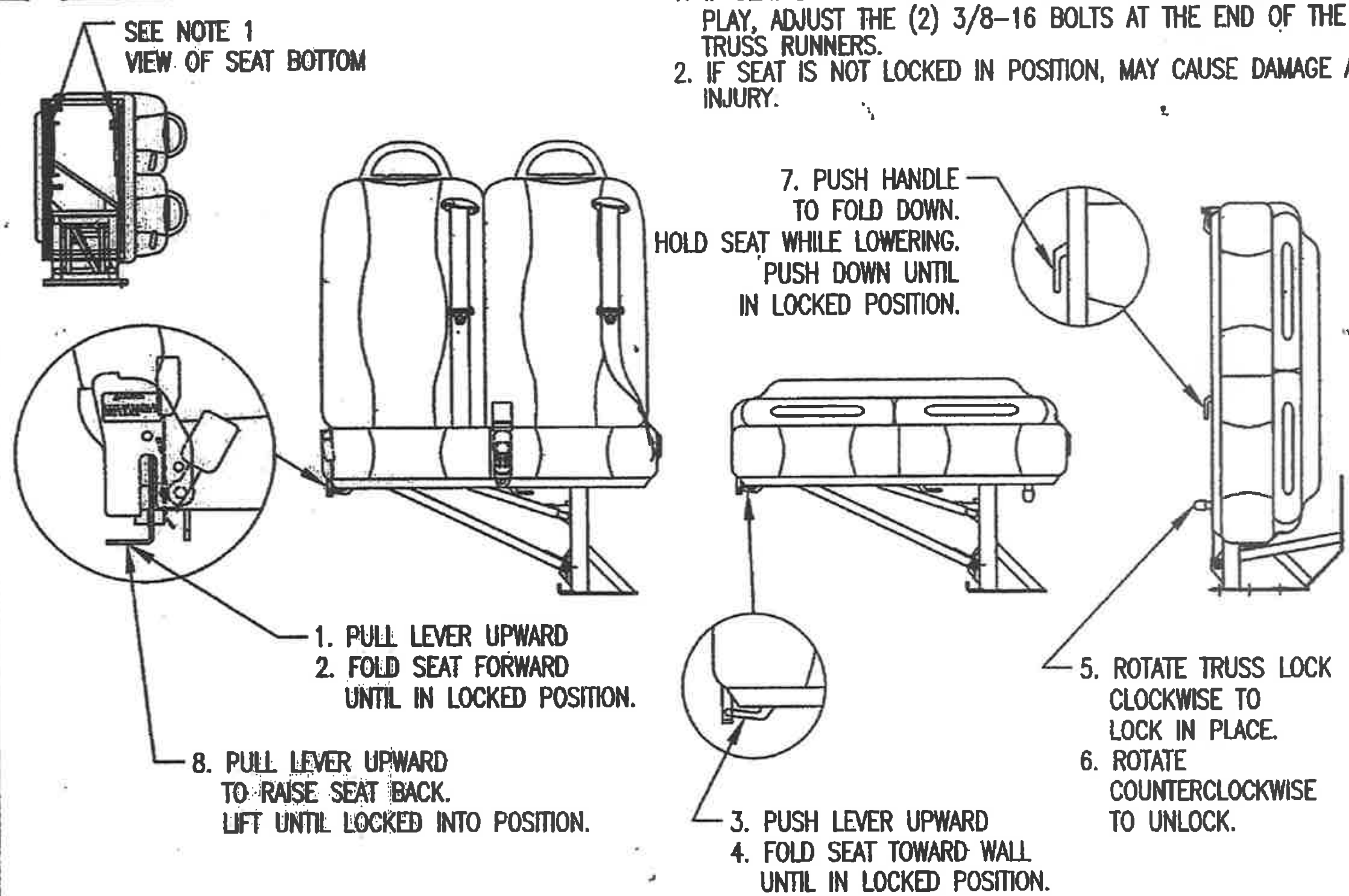
Options:

- Rigid or reclining back rests
- Flip seats (singles or doubles)
- Foldaway seats (singles or doubles)
- CRS-225 hooks and tether
- Flip up U.S. Arms
- FTA foam
- Mesh map pockets
- Foot rests
- Your choice of vinyl or cloth
- Integrated wheelchair restraints, call/stop buttons and ADA options

Stowed Position
Foldaway Seat

Freedman Seating Company
4545 W. Augusta Blvd.
Chicago, IL 60651
(773) 524-2440
(800) 443-4540
sales@freedmanseat.com
www.freedmanseating.com

NOTES:
1. IF SEAT DOES NOT LOCK IN PLACE OR THERE IS SIGNIFICANT PLAY, ADJUST THE (2) 3/8-16 BOLTS AT THE END OF THE TRUSS RUNNERS.
2. IF SEAT IS NOT LOCKED IN POSITION, MAY CAUSE DAMAGE AND INJURY.



1 PRELIMINARY RW 1/05

Freedman Seating Co.

Part Name: INSTRUCTIONS, 3PT FOLDAWAY

Drawn by: RW Date: 01/17/05 DO NOT SCALE DRAWING Drawing No. 56658 Rev. 1

Midpoint Fold-A-Way Seat

A two-passenger fold-a-way seat is available as an midpoint seating option. The two-passenger seat is mounted on a cantilever seat base. The seat can be stowed clear of the lowered floor for unrestricted wheelchair access when not in use.

Deploy (Lower) Seat

To Deploy (Lower) Seat:

1. Rotate truss lock (A) counterclockwise to unlock seat.
2. Push seat deploy latch (B), pull top of seat and lower to full horizontal position (ensure locked).

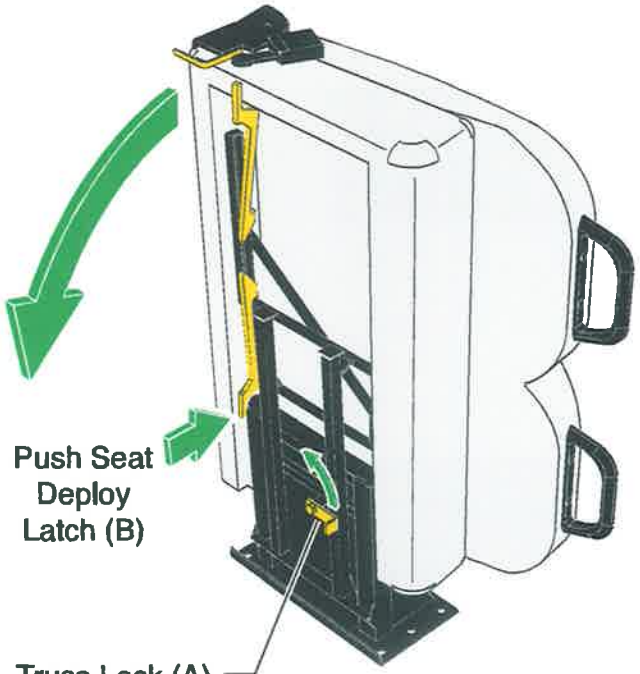


Figure 8

Seatback

To Deploy (Raise) Seatback:

Lift recline lever (C) and raise seatback rearward to vertical position. Ensure latch engagement.

To Stow (Lower) Seatback:

Lift recline lever (C) and lower seatback forward to horizontal position. Ensure latch engagement.

Lift Recline Lever (C)

Figure 9

Stow (Raise) Seat

To Stow (Raise) Seat:

1. Lift seat stow latch (D) and lift seat to full vertical position (ensure locked).
2. Rotate truss lock (A) clockwise to lock seat. See Figure 8.

Lift Seat Stow Latch (D)

Figure 10

Third Row Seats

Third row 60/40 split bench seats have been modified during conversion procedures. Seat backs can be folded down to the flat position and tipped forward to provide full access to rear floor storage compartments. The Stow 'n Go (stow in floor) feature is not available.

⚠WARNING

Install seats as specified before occupying seats or operating vehicle. Failure to do so may result in serious bodily injury and/or property damage.

Folding (tipping) Third Row Seats

Seat backs can be folded down to the flat position and tipped forward. Seats must be returned to the full deployed (locked) position before driving.

To Fold (tip forward) Third Row Seats

1. From the rear of the vehicle, fold down the back of the bench seat (pull release strap #1).
2. Pull the release strap at the rear of the seat (between seat base and floor), and lift and fold (tip) the seat forward.

To Unfold (rotate rearward) Third Row Seats

Carefully (slowly) rotate and lower seat rearward to deployed position. Ensure the rear spring-loaded attachments engage floor strikers. Raise the seat back (pull release strap #1) and attempt to move seat back and forth.

Third Row Seat Removal:

Note: Removal procedures for (40) section and (60) section are the same.

1. From the rear of the vehicle, fold down the back of the bench seat (pull release strap #1).
2. Pull the release strap at the rear of the seat (between seat base and floor), and lift and fold (tip) the seat forward.

   Note: Push top of linkage rod forward to stabilize seat (over center position)

ITEM #11 (n)

BUY AMERICA
CERTIFICATION
AND
DOCUMENTATION

International Corporate Headquarters:
The Braun Corporation
631 W. 11th Street
P.O.Box 310
Winamac, IN 46996 USA
1-800-THE LIFT
(574) 946-6153
FAX: (574) 946-4670

www.braunlift.com

"Providing Access to the World"

Buy America Certification Statement

Certification of Compliance with Section 165 (b) (3)

The Surface Transportation Assistance Act of 1982, as amended,

and the regulations of 49 C.F.R. 661.11

The Braun Corporation hereby certifies that is complies with the requirements of section 165 (b) (3), of the Surface Transportation Assistance Act of 1982, as amended, and the regulations of 49 CFR 661.11 for the cost of labor and administrative and overhead costs (burden) attributable to components manufactured by The Braun Corporation, for use in the final assembly activity. (This labor/burden cost is not part of the final assembly activity.)

Product Name: Component Labor/Burden

Country of Origin: U.S.

% Domestic Content: 100%

This activity takes place at: The Braun Corporation, 627 West 11th Street, Winamac, IN 46996

Authorized Signature: Randy Carson

Title: Commercial Entertain Mgr

Date: 7/10/14

Pre Award Buy America Certification State of Indiana

Manufacturer: The Braun Corporation
RFP # 16-011
Description: Lowered Floor Accessible Minivans
Recipient:
Vin:

Final assembly activities completed at : The Braun Corporation
631 West 11th Street
Winamac, IN 46996

Component	Manufacturer	Country of Origin	Assembled in US Yes/ No	% of Total Cost	FINAL ASSEMBLY POINT Yes/No
Chassis	Chrysler	U.S.	NO	48.41%	Windsor, Ontario, Canada
Component Labor/Burden	The Braun Corporation	U.S.	YES	3.35%	Winamac, IN
Interior Panels	Medallion Plastics	U.S.	YES	2.22%	Mishawaka, IN
Ramp	Duramold Casting	U.S.	YES	1.63%	South Bend, IN
Misc. Fabricated Parts	Mor/Ryde	U.S.	YES	1.31%	Elkhart, IN
Exterior Panels	Star Design	U.S.	YES	0.86%	Elkhart, IN
Steel	Joseph T Ryerson & Sons	U.S.	YES	0.74%	Lisle, IL
Misc. Stamped Parts	Quality Tool and Stamping	U.S.	YES	0.69%	Muskegon Heights, MI
Tie-down Belts &Track	Q'Straint	U.S.	YES	0.55%	Ft. Lauderdale, FL
Plywood	Huttig Building Products	U.S.	YES	0.33%	Elkhart, IN
Misc. Stamped Parts	Logan Stamping	U.S.	YES	0.32%	Logansport, IN
Misc. Plastic Parts	Hammer Plastics	U.S.	YES	0.31%	Mishawaka, IN
Misc. Components	Fastenal	U.S.	YES	0.30%	Chicago, IL
Steel	Cargill Metals	U.S.	YES	0.20%	East Chicago, IN
additional bid items:					
Tie-down Belts - Upgrade	Q'Straint	U.S.	YES	2.65%	Ft. Lauderdale, FL
Fold-away Seat	Freedman	U.S.	YES		Chicago, IL
		Total Percentage of Vehicle Manufactured in U.S.		**63.87%**	

Cost of final assembly as related to cost of vehicle (percentage): 8.79

Signature: Andy Conner

Title: Commercial Vehicle Mgr.

Date: 9/16/2015

Description of final assembly activities:
vehicle inspection
evacuate A/C refrigerant
strip under carriage
install new steering shaft
lowered floor installation
prime and seal body
apply exterior paint
install flooring
raise body
extend fluid lines
install exhaust
install interior panels and trim
install ramp and seating
test and inspect vehicle
ship vehicle

MANUFACTURER VEHICLE COMPONENET COUNTRY OF ORIGIN

Family Line: 2015 Dodge Grand Caravan

COMPONENT	MANUFACTURER	COUNTRY OF ORIGIN	PERCENTAGE OF MATERIAL COST
Engine/Transmission	Chrysler Group LLC	USA	23%
Body in White	Chrysler Group LLC	USA	7%
Body in White	Purchased	USA	7%
Head/Tail Lamps	Purchased	USA	1%
Headliners	Purchased	USA	1%
Trim Panels / Liners	Purchased	USA	2%
Floor Covering	Purchased	USA	0%
Felts & Silencers	Purchased	USA	0%
Glass	Purchased	USA	0%
Instrument Panel	Purchased	USA	2%
Half Shaft	Purchased	USA	1%
Suspension	Purchased	USA	2%
Steer Gear	Purchased	USA	1%
Master Cylinder	Purchased	USA	2%
Wheels	Purchased	USA	1%
Exhaust System	Purchased	USA	3%
Fuel System	Purchased	USA	1%
Engine cooling Module	Purchased	USA	1%
Air Conditioning	Purchased	USA	2%
Misc. Value of Other	Purchased	USA	1%
Total US Content	Corp/Purchased	USA	60%