Nor-Cal VANS


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# Vehicle Selection

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# Table of Contents


**Accessible Full-Size Vans** **page 2**
Lots of room, lots of space; are they right for you?

**Wheelchair Lifts** **page 3**
The vehicle wheelchair lift explained

**Lifts for Mobility Devices** **page 4**
When a vehicle conversion isn't necessary

**Adaptive Seating** **page 4**
A brief overview of seating options for the semi-ambulatory

**Driving Aids** **page 4**
Details the unique characteristics of available driving aids

**Vehicle Selection Questions and Answers** **page 7**
Information to help you make the most qualified buying decision

**Can I Purchase an Adaptive Vehicle On Line?** **page 8**
Trying to get the best price online can result in more expenses down the road

**What You Should Tell Your Mobility Dealer** **page 8**
Helping your dealer find the right vehicle for you

**Paying for Your Conversion** **page 9**
Understanding the various finance options

**Wheelchair Measurements** **page 9**
A handy diagram to help you make sure you have all the right information

**Mobility Programs/Cash Assistance** **page 10**
Taking advantage of mobility rebates and assistance programs

**VA Automobile Assistance for Veterans** **page 11**
Information on VA qualification guidelines for Veterans

**Social Security PASS Program** **page 12**
Social Security can help you get the things you need to work

**Mobility Resources** **page 12**
Contact information for manufacturers and mobility resources

**What an Evaluation Should Provide** **page 12**
Making the most of a driver's evaluation

**Why You Should Choose a NMEDA Mobility Dealer** **page 13**
Stringent guidelines ensure the highest quality work

**2007-2008 Ford E-Van Comparison** **table I**
The new model years bring new uses and specifications

# What Vehicle Selection 101 Is All About

Mobility is one of the most important privileges any human being can have in today's society. And today, finally, we have the necessary technology to convert vehicles for the physically challenged so that they might exercise that privilege.

However, the mobility industry is concerned that consumers are unaware of the products available that will help them regain their freedom. The industry understands that a person who has not been exposed to such equipment prior to their injury or disability will have a difficult time conceiving of the myriad of options available to them.

The main purpose of the Vehicle Selection 101 guide is to educate. If you are not part of a system that regularly deals with disabilities (like the Veterans' Administration, Vocational Rehabilitation or Worker's Compensation), the potential for wasting time and money is enormous. This guide will give you all of the information you need (and then some) so that you can become an informed consumer.

When purchasing an accessible vehicle, it is easy to get lost in all of the options and forget (or avoid) the critical elements that will make the difference between a good decision and a great one, or a good decision and a bad one.

Purchasing an accessible vehicle is all about managing trade-offs. There are very few people who can easily afford everything they want, and those who can still want to make sure they are getting the most for their money. This makes knowing what you are getting and what you are giving up very important. Following are the various options available, all with a brief summary on utility, performance and price.

Before you decide on a specific vehicle or piece of equipment, please read our Vehicle Selection 101 guide. If you have any further questions, please contact one of our accessibility specialists by calling 800-225-7361 or e-mailing info@nor-calmobility.com. We are more than happy to help!

Space and dimensions are extremely important when making a vehicle accessible. There are several key dimensions to consider: Is the entrance tall enough for the person to enter when seated in his wheelchair? What kind of headroom will the person have once inside the vehicle? How many and what kind of seats can be used while the wheelchair is secured in the vehicle? If the wheelchair user is driving, what is their field of vision while seated?

Accessibility modifications have been made to full-size vans for years. To allow for maximum entry height and headroom, these vans most often have lowered floors and raised roofs. Doors are raised in conjunction with the roof to enable a wheelchair user to enter the vehicle without having to bend over or tilt back. This additional height provides 56" to 64" of clear entry. Floors are lowered for the same reasons. The difference here is that you can often pick up the additional height without having to raise the roof or doors. Lowered floors work great in situations where you would like to garage the vehicle and a raised roof would make the vehicle too high. In comparison to Chrysler's most popular minivan conversion, lowered floors in the Ford E-series vans add up to four more inches of doorway clearance and interior headroom. Also, a lowered floor can be used in conjunction with a raised roof and doors for a very tall individual.

Weight-carrying capacity is also another distinct benefit to full-size vans. While a Dodge Grand Caravan can carry up to 1,230 pounds, a full-size Ford can hold up to 3,448 pounds. Consider equipment . . . passengers . . . the weight of your wheelchair . . . it all adds up.

The Ford full-sized E-Van is the most extensively converted full-size van in the industry. Lifts can either be installed in the rear or the side of the vehicle, and are either stowed inside the van or underneath the van. Nor-Cal Vans, Inc. can provide a lowered floor in the mid-passenger, front passenger and driver areas. Lowered floors are available in 4", 6" and 9" drops.

For larger or taller clients and those seeking more weight-carrying capacity, greater interior room for both people and cargo and better ground clearance from their accessible vehicle, a full-size van is the only way to go. The cost of adapting a full-size van ranges from $6,000 to $15,000 for a simple lift and tie-downs to upwards of $30,000 with a raised roof and doors or a lowered floor and other significant modifications. There is a ton of room in these vans, and the weight-carrying capacity is significantly higher than in a minivan, so you can pretty much bring along whatever and whomever you want. But size is also its downfall -- not everyone wants to drive a large van and with gas prices increasing daily it seems, the cost of owning this vehicle is more expensive over time. Garaging may be an issue, depending on your home.

## Full Sized Van Conversions

Ford vans, the most extensively used full-sized vans in the industry, are ideal for a raised roof, raised doors and extensive **lowered floor** modifications. Because lowered floor conversions on Ford full-size vans are a Nor-Cal Vans, Inc. specialty, we will include a thumbs up or thumbs down rating system on whether this particular model is appropriate for mobility conversions.

**2007 - 2009 Ford E-150 RV Converters and Clubwagons**
In 2007 the Ford Motor Company reintroduced the E-150 RV Converter and Clubwagon. Major chassis differences included an increased overall weight-carrying capacity of 8,600 lbs. GVW and improvements to the vehicle's suspension and ride quality. These positive changes are now standard on the E-150 chassis, and combined with the successful FMVSS compliance testing in September of 2007 and October of 2008, the popular E-150 is a great **candidate for mobility conversions**.

**1997-2006 Ford E-150 RV Converters and Clubwagons**
A bulletin from Ford Motor Company dated 5/9/03 advises against using Ford E-150 vans for mobility modifications that require floor lowering or structural chassis modifications due to weight-carrying limitations, and no replacement fuel tanks are available.

**2007 - 2009 Ford E-250 RV Converters**
The 2007 Ford E-250 RV Converter now comes with a 9,000-lbs. GVW rating, up 400 pounds from previous years and is suitable for all lowered floor conversions.

**2009 Ford E-350 Clubwagon**
The Ford E-350 5.4-liter gasoline engine regular-length Clubwagon is available for full lowered floors.

# Accessible Full-Size Vans

- **Chevrolet and GMC Full Sized Vans 2004-2005**
  The GMC van is built incorporating body-on-frame construction. It is also suitable for a raised roof and raised doors. The 2004 GMC full-sized vans have an option for a driver-side cargo door and an option for all-wheel drive. Wheelchair lifts are available for the **passenger-side cargo doors**, but not for **driver-side cargo doors**.

- **Chevrolet and GMC Full Sized Vans 2006-2008**
  These vans are unavailable for a drop-floor conversion as a replacement fuel system is not available. However, these vans are suitable for a raised roof and raised doors.

- **Full Sized Dodge and Older Chevrolet Vans 1992-2003**
  These vans are suitable for raised roof, raised door modifications. Dodge discontinued the manufacture of a full-size van in 2004 and therefore the full-size Dodge van is no longer available.

- **Dodge Sprinter 2004-2009**
  The Dodge Sprinter has superior door entry and interior heights when compared to other full-sized vans. The Dodge Sprinter is also available with an OEM option in which both side cargo and rear cargo doors are raised. Because of this option, there is no need to additionally modify the vehicle with a raised roof or raised doors. The 2007-2008 models have a much wider side-entry door than its earlier counterparts, which makes them ideal candidates for a side-entry wheelchair lift. However, the Sprinter is not a good candidate for a lowered floor, thus making the vehicle much more suitable for an attendant situation. It does, however, cost quite a bit more than the Ford or Chevy full-size vans.

# Wheelchair Lifts for Full-Size Vans

There are different types of commonly available wheelchair lifts that come in several variations to suit different vehicles. All are capable of lifting 600 pounds or more. To choose the appropriate lift, you need to know the wheelchair's dimensions (overall length and width), the distance from the top of the wheelchair occupant's head (or headrest, whichever is higher) to the floor, and the total weight of the wheelchair and its occupant. The most common is the platform lift. The wheelchair is driven onto a platform, and it is then raised to the van's floor level. The wheelchair is then driven off the platform into the van, and the platform moves into a vertical position to stow inside the van door. About seven feet of clearance is needed next to the van to get a wheelchair in and out. This can be reduced to about five feet if the lift has a "side entry" platform that allows the wheelchair to move on or off the side as well as the end. While other lifts are mounted inside the van, those that mount underneath save space inside and keep the entry and exit through the side door clear. These lifts cost about twice as much as other lifts and may be difficult to deploy at a curb. Other considerations are exposure of the lift to hazardous road and weather conditions and the reduction of the vehicle's ground clearance. For more information on full-size wheelchair lifts, visit the Braun website at www.braunability.com and Ricon at www.riconcorp.com

# Lifts for Mobility Devices

Some disabilities allow for a certain amount of mobility, while others require assistance from an ambulatory caregiver. In these situations, getting the person in and out of the vehicle is less of an issue than transporting the wheelchair, power chair or scooter (collectively called mobility devices). A group of lifts has emerged that will lift a mobility device and allow a person to easily store in the trunk of a large sedan, minivan, full-size van or pick-up truck. These lifts are able to move wheelchairs and scooters up to 400 pounds in weight. These devices provide transportation mobility for people who do not want, or cannot afford a converted vehicle.

When purchasing a scooter, there needs to be some thought. For some conditions, such as ALS or progressive MS, a scooter lift is a short-term solution and the purchase of an accessible vehicle may be a better answer. However, if a scooter lift is the most reasonable form of scooter transport, there are a few options available.

An outside carrier looks like a lift on the back of the vehicle. A platform large enough to hold the scooter is deployed, the scooter is driven onto it, secured and the lift raises up from the ground. This requires installing a trailer hitch, and some vehicles have inadequate suspension to support the lift and scooter.

Another option is a trunk lift. This type of lift has an arm to which the scooter is secured and then the scooter is lifted and over the trunk (or truck bed). The person operating the overhead scooter lift has to be in reasonably good shape as the scooter must be controlled during its swing; a person with a bad back or arthritis may find this too difficult. Obviously the scooter must fit in the trunk or truck bed, and accurate measurements of both the loading space and the scooter must be taken.

# Lifts for Mobility Devices

And yet another option to consider is the roof-mounted wheelchair carrier. During operation, part of the cover and frame moves outward, away from the vehicle. A chain and hook descend to the wheelchair. The user slides the hook under the upholstery and, using a hand-held control unit, reverses the motors, which fold the wheelchair and raises it up. Finally, the cover, frame and wheelchair slide back to the main cover and seal shut. The wheel chair carrier looks like a large, aerodynamically shaped luggage carrier and is capable of being painted to match the vehicle. It is fairly bulky. Only standard folding wheelchairs can be used in these devices. Wheelchairs that are unusually tall, long or heavy -- as well as electric wheelchairs and scooters -- will not fit. However, for someone using a standard folding wheelchair, these carrier/loaders have the advantage of freeing up interior space, allowing the use of a vehicle that would not otherwise accommodate loading a wheelchair. To successfully use a roof-mounted wheelchair carrier/loader, the wheelchair user must be able to transfer into the vehicle and attach the wheelchair to the lifting mechanism. The wheelchair must fit the height, weight and length requirements of the carrier. When all pieces fit, roof-mounted carriers/loaders can be an economical solution to loading your wheelchair.

# Adaptive Seating

Special passenger seats have been designed to people with mobility issues enter and exit a vehicle without climbing. They rotate and move outside the vehicle and tilt or extend to bring the seat closer to the ground. Installation of these seats is relatively simple, but proper use may require the assistance of a strong individual. Transfer seats allow a passenger or driver to get to the front seats from inside the van's middle area. These seats swivel and move up, down, forward and back. For more information, please visit www.braunability.com or www.bruno.com.

# Driving Aids

Driving controls, called driving aids in the modified vehicle industry, must be appropriate for individual needs and abilities. It is highly recommended you be evaluated by a Certified Driver Rehabilitation Specialist (CDRS).

## Hand Controls

Hand controls allow drivers to operate gas and brake controls by hand instead of foot. Original pedals are not affected, so the vehicle can be driven normally by other drivers. The vehicle should also have power brakes and power steering.

The most popular mechanically operated hand controls use a single horizontal rod that pushes towards the pedals for brake and down towards the lap for acceleration. They are commonly called push-right angle pull hand controls. Automoblility, CCI, Handicaps Inc., MPS, Mobility Products & Design (MPD) and Wells-Engberg make this type of hand control. Drivemaster and Kroepke make a hand control that operates by pushing down for brake and pulling up in the opposite direction for acceleration. Wells-Engberg also makes a twist-grip hand control that works like a motorcycle throttle. DADC makes a twist-grip control that gets a power assist from the car's engine. Howell Ventures' hand control rocks back to accelerate and forward to brake the car. And MPD makes a push-pull hand control with a large mechanical advantage that is specifically designed for quadriplegic drivers. It fits only vans.

To choose between these hand controls, you must evaluate the unique operating characteristics of each control and decide if they are right for you. For example, the push-right angle pull hand control uses mostly upper arm muscles and requires space between the knee and the steering wheel to operate. On the other hand, the twist-grip control uses mostly wrist muscles for acceleration. Whatever hand control you choose should not cause you to tire quickly.

Getting the proper fit between the car, driver and hand control is the key to proper function and comfort. The driver must fit comfortably inside the car while allowing sufficient space for the hand control to work. But don't overlook something more basic. First, the driver needs to decide if the transfer into the car and stowing the wheelchair is too much work. If it is and it keeps you from going places, then you need to try a different vehicle. There is no magic formula for finding a new car; just the fun and frustration of searching for the right vehicle.

Hand control installation is critical to both fit and safety. Installers make sure the hand control is adjusted properly and out of the way of the knees and feet. They also make sure all parts are tightened properly, no wires are pinched and, where possible, the airbag system is operational. Also, hand controls can be adjusted so they are not too close to the steering wheel or door. On some models, the amount of travel and strength needed to push the accelerator can be adjusted. The force needed to brake, however, is almost always controlled by the resistance built into the car's brake system.

# Driving Aids

Most manufacturers require training courses for installers to make sure that the installation is safe. The hand control manufacturers can direct you to a certified installer in your area. Also they can explain their warranties, insurance and safety procedures. First-time purchasers of hand controls should obtain driving instructions from a trained driver rehabilitation specialist. You can find one near you by contacting ADED, the Association for Driver Rehabilitation Specialists, at 800-290-7067 or by visiting www.aded.net.

## Foot Controls

The left foot accelerator is recommended by driver evaluators for drivers to accelerate using their left foot. It is equipped with a guard to prevent the driver from inadvertently resting their right foot on the accelerator pedal. The left foot accelerator incorporates a quick-release mechanism and is easily removable without tools for ambulatory drivers. A doctor's prescription is necessary prior to the installation of this foot control, and subsequent training is required. Pedal extensions help drivers who cannot reach these foot controls without sitting too close to the driver's air bag. Gas and brake extensions ranging from about an inch to 12 inches are possible.

Pedal guards are required by driver evaluators to be used with foot controls. The guard protects drivers from inadvertently resting their feet on or under the gas or brake pedal. A quick-release mount allows ambulatory drivers to easily remove the device without tools and have full use of the pedals.

## Voice Controls

A typical driving system for a quad would include a hand control for the primary controls, gas and brake, and a steering device for the steering wheel. Secondary controls, like gearshift, wipers and headlights, can be found on strategically located switch pads.

But taking hands and arms that are not functioning at 100 percent off the steering wheel or hand controls can create problems. The driver has to find the switches and return to the steering wheel or hand control, which takes time and diverts the driver's attention. Obviously, the more severe the disability, the tougher this maneuver is to complete. For some drivers, voice recognition is a safer way to drive. It is available as part of the AEVIT and Digi-Drive systems manufactured by Electronic Mobility Controls in Baton Rouge, La.

EMC's Voice Interactive Control, nicknamed VIC, has been recently updated. It features 16 functions and also communicates to the driver the status of the AEVIT power-assisted driving system. During training the driver sets up the system, which can be programmed for the user's voice in up to 10 languages. A wireless headset is optional.

To use VIC, the driver hits a switch to activate the system. After VIC responds with a tone, commands can be given to the system, which in turn operates headlights, wipers, climate control or any other pre-programmed function.
The Crescent Industries Voice Scan system is the exact opposite of the VIC system, but does the same job. Instead of the driver talking, Voice Scan talks to the driver.

Like the VIC system, the Voice Scan only requires one switch to operate up to 16 functions. Pressing a button activates the system. When the needed function is announced, the operator presses the button again and the system turns that function on or off. If the system announces "Left turn signal," pushing the button turns on the left turn signal. The horn, windshield wipers, turn signals, dimmer, cruise control, power windows, climate control and radio can all be controlled by Voice Scan.

Both systems do have limitations, so they are not for everyone. The systems do not work as fast as tapping a switch, if that's physically possible for the driver. They require patience to set up, learn and operate. They also cost up to $5,000. Voice recognition systems for drivers with disabilities seem to be in their infancy. But they should improve rapidly since the technology is being brought to the general public. And, like computers, prices will decrease.

## Wheelchair Tie Downs

A wheelchair's brakes are never enough for a wheelchair user to be safely secured while driving or being transported in a vehicle. For either the driver or passenger position, there are two types of systems to safely transport a wheelchair and its occupant: manual and electric restraints. The most common manual wheelchair tie-down is the four-point system, consisting of four straps that attach to the wheelchair and the van floor. A ratchet mechanism is included to tighten the straps. This system, when properly used, will safely secure almost any wheelchair. Because it is not practical for the wheelchair occupant to operate this tie-down independently, it is used only for wheelchair users in an attendant situation. When using this system, it is very important to ensure the tie-downs are not connected to any movable part of a wheelchair. Q'straint makes the QRT MAX, which is the first securement system that can self-lock and self-tension itself automatically. It is designed with a low profile to allow most wheelchairs to move into place without obstruction and can be operated with one hand.

## Electric Wheelchair Restraints

The electric restraint system contains an anchored device mounted on the floor of the vehicle and its connecting part mounted to the bottom of the wheelchair. The wheelchair occupant guides the two pieces together, and when they are properly locked, an audible click is heard. Some electric models also contain an alarm system that will have a buzzer or light to indicate the system is not properly locked in place. No matter the system used to secure a wheelchair and its occupant for travel in vehicle, the wheelchair occupant must always wear a vehicle seat belt and/or shoulder harness to properly secure the wheelchair occupant to the wheelchair, which is in turn securely mounted to the vehicle floor. EZ Lock and Q'straint are the industry leaders in electric wheelchair securement systems, and more information can be obtained by visiting www.ezlock.net and www.qstraint.com.

## Proper Use of Wheelchair Tie-Downs and Occupant Restraint Systems

Motor vehicle transportation, whether in public or private vehicles, is so vital to employment, access to quality healthcare and community interactions that transportation safety for people who are not able to transfer out of their wheelchairs is often a secondary consideration. This doesn't need to be the case. Although motor-vehicle crashes are a leading cause of death in the U.S., readily available technologies will significantly enhance transportation safety for wheelchair-seated travelers. The safest choice for wheelchair users is to transfer to the vehicle seat whenever possible and practical, so the seatbelt system provided by the vehicle manufacturer can be properly used. The unoccupied wheelchair should then be secured or stored in a cargo area.

For wheelchair users who cannot feasibly transfer, safe transportation requires using after-market equipment to (1) secure the occupied wheelchair facing forward in the vehicle, and (2) provide an effective crashworthy seatbelt for the person in the wheelchair. Commercial products that accomplish both goals are called Wheelchair Tiedowns and Occupant Restraints Systems often referred to as WTORS, Those that comply with SAEJ2249 Wheelchair Tiedown and Occupant Restraint Systems for Use in Motor Vehicles, which involves passing a relatively severe frontal crash test, should always be used.

The most common type of WTORS uses a four-point strap system to secure the wheelchair. These tie-downs are very effective and can secure a wide range of wheelchair types, but they require that another person attach and tighten the straps. For these systems to work properly, all four straps must be used as instructed by the manufacturer. Using four-point strap tie-downs is much easier if the wheelchair occupant has a crash-tested wheelchair that complies with ANSI/RESNAWC19, Wheelchair for Use as Seats in Motor Vehicles. This voluntary standard requires wheelchair frames to include four easily accessible brackets for attaching the tie-down straps. If the wheelchair does not comply with WC19, four structural points on the wheelchair base or seat frame must be identified and used to secure the wheelchair.

Wheelchairs can also be secured to the vehicle using docking-type devices that allow wheelchair users to secure their own wheelchairs. These devices are commonly used by people who drive from their wheelchairs and require the addition of adaptive hardware to the wheelchair for engaging with the docking device mounted to the vehicle floor.

No matter how the wheelchair is secured to the vehicle, a properly used and positioned crashworthy seatbelt, consisting of pelvic and upper-torso belts, is absolutely essential. Seatbelts are by far the most effective occupant restraint system for protecting occupants in crashes and reduce the risk of total injuries by more that 50%. They prevent occupants' ejection from and minimize injurious contact within the vehicle.

To be most effective, the lap belt must be placed low on the pelvis near the top of the thighs, and the shoulder belt should cross the middle of one shoulder and the breastbone and connect to the lap belt near the occupant's hip.

While wheelchair securement and occupant restraints are important, a growing body of evidence suggests a large proportion of serious injuries to wheelchair-seated travelers is due to a lack of proper seat belt use and/or improper positioning of the seatbelt. In many cases, wheelchair features such as armrests and wheels can interfere with proper seatbelt routing and placement, and care must be taken to ensure that seatbelts are properly used and positioned. This may require placing the lap belt between the back of the armrest and the seatback post, or threading the lap belt's end through openings below the armrest before attaching the belt to the vehicle's anchor points. It is also important to place the seatbelt buckle in direct contact with the occupant and not where it may contact rigid wheelchair components during a crash. Never route seat belts outside the large wheels or over armrests.

Most driver evaluation programs utilize vehicles with hand controls and steering devices to instruct their clients. Most programs operate a fully modified van for people who drive from their wheelchairs. This van may have a raised top as well as a lowered floor. It may also have a powered cargo door and a remote control entry device.

After entering the vehicle, the evaluator can determine if you will drive from your wheelchair or from a power seat. The power seat base moves electrically into position next to you so that your transfer may be comfortable and safe. Generally, if you can transfer, you should drive from the van seat, which is bolted to the floor. If you cannot transfer, an electric wheelchair tie down can be added along with special stabilizing belts to secure you and your wheelchair behind the steering wheel.

# Vehicle Selection Questions & Answers

Prior to making an accessible vehicle purchase, the following should be considered:

**1. Your wheelchair or scooter --**
The size, dimensions and features of your wheelchair or scooter can greatly influence the vehicle and equipment that will work best for you and can therefore have a huge impact on the cost of your adaptive equipment and vehicle modifications. It is always preferable to contact a dealer and discuss your needs and desires for your vehicle prior to purchasing your wheelchair or scooter. If you already have your wheelchair or scooter, inform your dealer if you plan on buying a different one soon. This will allow your dealer to recommend adaptive equipment that will accomodate your current and future wheelchair or scooter.

**2. Will I be using the vehicle independently or with full-time assistance?**
The answer to this question will greatly change what vehicles and equipment will be appropriate for you. If you have full-time assistance, you can probably save money by buying manually operated products as opposed to automatic products. If you will be using the vehicle by yourself, your mobility dealer can help show you all of the products available to ensure your independence.

**3. Will I be driving the vehicle with adaptive equipment or riding as a passenger?**
Driving a vehicle with adaptive controls can vary from relatively simple and inexpensive modifications such as spinner knobs and hand controls to more complicated and sophisticated controls that could cost as much the vehicle. The process of driving a vehicle with adaptive controls is a serious matter and needs to be undertaken in a very thorough manner with which only industry professionals can help you.

**4. How do I learn to drive from my wheelchair?**
Many major rehabilitation centers offer complete driver evaluation programs, which are certified by their state's department of motor vehicles. This includes a pre-driver evaluation, behind the wheel lessons and assistance in licensing. Pre-driver evaluations include testing eyesight, motor control, judgment and reaction time.

Driving programs stress that a consultation with your physician is necessary to make sure that you are physically and psychologically prepared for the driving experience. If you are evaluated too soon after your injury, there is the danger of recommending too much equipment and, consequently, spending money on adaptive equipment you will not need in the future. After a traumatic experience, such as a spinal cord injury, there is a great deal to relearn. Don't put too much pressure on yourself too soon, even if you feel that you might be prepared.

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**5. Where and how am I going to use my accessible vehicle?**
Consider issues such as road conditions in your usage area, weather, number of passengers and cargo weight and size requirements.

**6. Where do I find adapted vehicles?**
Most driver education programs have a list of adapted vehicle suppliers in your area. These companies will either modify a vehicle you already own or they will provide you with a complete modified vehicle. Too often, people go to the local auto dealership and buy whichever car or van the auto salesperson recommends without considering whether or not it can be modified for their needs. The auto salesperson may think he has the best vehicle on the market, but he usually does not understand as well as an adaptive equipment distributor a disabled person's special needs.

Due to the cost of conversion, the time spent doing your homework will ultimately pay off in savings. Extras, such as middle captain's chairs and front overhead consoles in vans, may go to waste if you purchase them from an auto dealer and then learn that they must be removed to adapt the vehicle.

The vehicle you purchase must have suspension that is heavy enough to accommodate the weight of conversion, your wheelchair and all of your occupants. A heavy-duty electrical system, heavy-duty service options and factory-installed power accessories are all important features to purchase on your van. Visit your local mobility dealer **before** making a vehicle purchase. In addition to knowing which vehicles are most easily modified, they often purchase many vehicles from dealers and know where to shop for the best buys. Some mobility dealers have demonstration or pre-owned vans that may suit your needs with little modification.

**7. Do I want a full-size or a minivan?**
Both full-size and minivans come in many shapes and sizes. If you will be driving from your wheelchair, additional questions will arise. You need to decide if you want a lowered floor, or a raised top and doors for entry. Because these options may involve removal of the gas tank and increasing the overall height of the vehicle, it is best to consult your mobility dealer before making any decisions.

In recent years, **lowered floor minivan conversions** have become available to disabled motorists. The 10-inch lowered floor allows a wheelchair user access to both the driver and front passenger areas. This vehicle may employ a system that lowers it within inches of the ground and then unfolds a ramp for entry and exit. Lowered floor minivans, like Braun Entervans, let you sit in the front passenger position and see out of the van's windows. These minivans will fit into standard height garages, but they still require approximately eight feet of access space – the same as a full size van with a platform lift. A discussion of the pros and cons of each vehicle with your mobility dealer can be valuable.

# Can I Purchase an Adaptive Vehicle On Line?

Yes, of course. However, it is not recommended by a variety of industry leaders, such as the National Mobility Equipment Dealers' Association (NMEDA), the Association for Driver Rehabilitation Specialists (ADED), the Adaptive Driving Alliance (ADA) and others. There are so many considerations in purchasing an accessible vehicle-- product fit, service, education and safety -- that it would be nearly impossible to select the right vehicle for you without face-to-face interaction with a mobility professional and the interaction you would have with the vehicle you are considering purchasing. The few dollars you might save by buying an accessible vehicle on-line sight-unseen are hardly worth the trouble you may have when there is no one available to service it or assist you with any problems that may arise. To learn more about purchasing vehicles on-line, please visit http://www.nmeda.org/online_purch/ to view their publication "Purchasing Adaptive Vehicles On Line."

# What You Should Tell Your Mobility Dealer

You should know how tall you sit in your chair, measuring from head to ground. You should also know the overall length and width of your chair. If possible, use the chair you intend to travel in when you visit the dealer, and be sure to let the dealer know if you plan on purchasing a different wheelchair in the foreseeable future.

These dimensions will help your dealer determine the modifications you need. For example, the door height of a standard unconverted full size van is 48 inches; the minivan average is 44 inches. There is no easy way for a person in a wheelchair to use either type of vehicle without it being converted. Knowing these door heights and your height will tell the dealer to what level the vehicle needs to be converted. Please use the Wheelchair Dimensions diagram in this guide to accurately find your measurements.

Don't be afraid to ask a lot of questions. Remember, it is easier to change at this stage than after the vehicle is built. When you visit the mobility dealer, there should be some vehicles available for you to get into. This is an ever-changing industry, and new products are being introduced every day. Your local mobility dealer will be knowledgeable about today's products. You should certainly ask for references and to examine the work that the dealer has done in the past. Ask if they have any customers with a vehicle that is similar to the one you are planning to purchase.

Ask about service and warranty programs. How long does the warranty last? Does the warranty include parts and labor? Have they, their sales representatives and their technicians attended manufacturer's sales and service schools within the last three years?

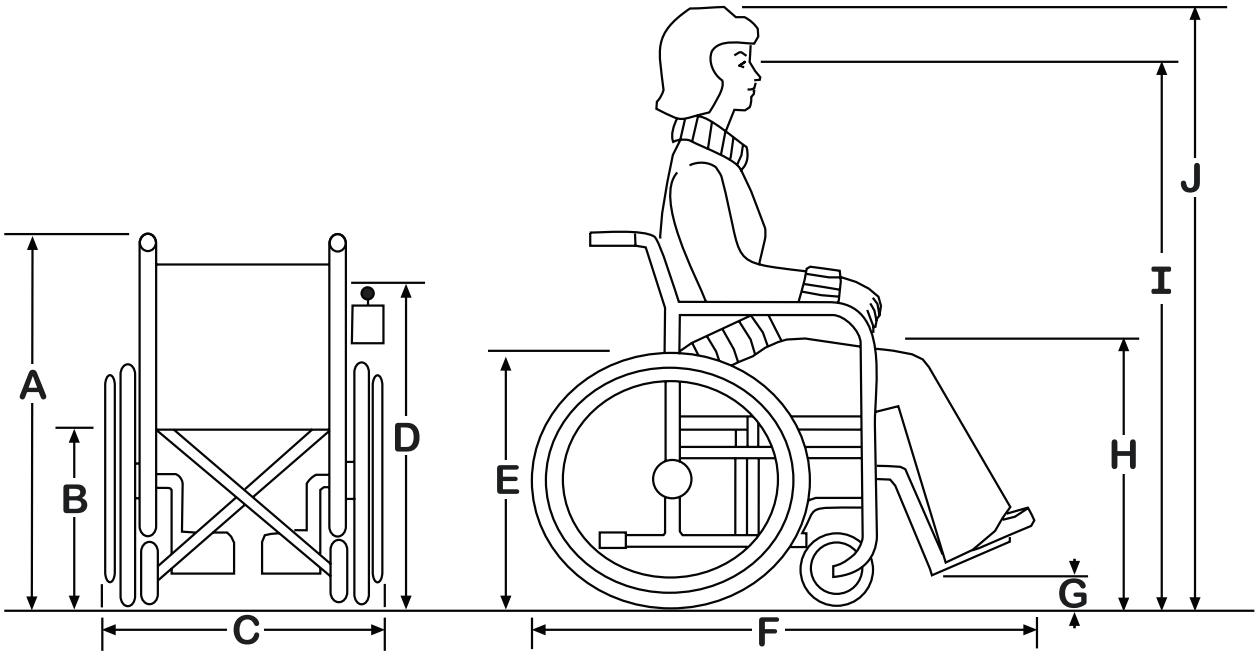
# Paying for Your Conversion

A new vehicle, including modifications for your needs, can be an investment of $25,000 to $95,000. In some cases, you may be eligible for assistance. If you are a Veteran, contact the VA. Your state's Department of Vocational Rehabilitation or Division of Development Services may also provide financial assistance. If you have private insurance, either health or workman's compensation, check your eligibility with your insurance carrier. Many automobile dealers can finance the mobility package along with your vehicle and provide you with a monthly payment plan at competitive interest rates. Your mobility dealer may know of other local sources of funding.

A doctor's prescription is accepted in most states to exempt the purchase of your adaptive equipment from sales tax. Consult a qualified tax accountant regarding any income tax credits. Major vehicle manufacturers have rebate programs that help pay for modifications.

After you have evaluated all of your options, you are ready for the purchase. A van must be custom-fitted to you, just like your wheelchair. With professional guidance, a good evaluation of your personal needs and research of the adaptive equipment that is available, your van purchase will be a learning experience that will lead you to an even more independent and productive life-style.

# Wheelchair Measurements




Wheelchair Type: _____Power _____Manual Wheelchair Mfg._____ Model_____

Ability to transfer independently? _____Yes_____No Cushion Thickness_____

_____ A. Overall wheelchair height

_____ B. Height of seat (floor to top of fabric where it attaches to the wheelchair)

_____ C. Maximum width of drive wheels, including hand rims on manual (measure near ground)

_____ D. Height of wheelchair control on power wheelchair

_____ E. Diameter of drive wheels

_____ F. Length from rear-most part of wheelchair (from floor to 5" up) to toes

_____ G. Minimum footrest height

_____ H. Top of thigh to ground

_____ I. Eyes to ground

_____ J. Overall height from top of head to ground

# Mobility Programs/Cash Assistance

As you know, there are several automobile manufacturers that offer mobility assistance programs. The questions are usually, 1) Who has a program? 2) What are the procedures? 3) Who can you contact when you have questions? Most manufacturers give the NMEDA phone number out. We have researched these questions and have come up with some answers.

**Toyota** and **Lexus** require the vehicle to be a new purchased or leased. Leased vehicles require written lessor approval of adaptive equipment installation. Fleet incentive recipients are not eligible to participate in this program. The reimbursement application must be submitted within 90 days of complete installation of adaptive equipment. Qualifying adaptive or conversion is designed as any aftermarket alteration or equipment installation in an eligible vehicle that provides to the disabled user convenient access and/or the ability to drive the vehicle. Options and accessories are not eligible for reimbursement. For a limited number of adaptations, such as hand controls and wheelchair or scooter hoists or ramps, no medical notes or prescription is required. Running boards, alerting devices, pedal extenders and similar adaptations must have medical documentation. To obtain reimbursement, the reimbursement application must be completed in its entirety and signed by the customer and the selling dealership. For Toyota, all (800) 331-4331 or visit www.toyota.com/mobility; for Lexus, call (800) 255-3987.

**Saturn** will reimburse you for the cost of eligible aftermarket driver or passenger equipment, including installation, for the actual amount up to $1,000. If you require alert devices, Saturn will reimburse you up to $200, including installation. If you require both, Saturn will only reimburse a total of $1,000 ($200 for the alerting device and $800 for the remaining ability aids). This is available on new, certified label used or leased Saturns. Leased vehicles are eligible with written permission from the leaser. Vehicles returned under the money back guarantee or demonstrator vehicles are ineligible for reimbursement. They will also reimburse the cost of reinstalling adaptive aids from your previous vehicle into a new Saturn. In most cases, you have 12 months in which to install your equipment. However, if you are installing alerting devices you only have 60 days. Once installation is complete, you have 30 days in which to file your claim. The Saturn dealer will provide the Saturn Mobility Program application. Call (800) 533-6000 for more information.

**Chrysler** and **Dodge** vehicles may be reimbursed up to a maximum of $1,000. Conversions on other eligible **Chrysler**, **Jeep** or **Dodge** models qualify for a maximum reimbursement of $750. Running boards qualify for a maximum of $400, and alerting devices a maximum of $200. These reimbursements will not be reduced or affected by any additional outside funding. A leased vehicle does not qualify until you are 12 months into the lease. You need to have a prescription or note from a licensed doctor on a physician's letterhead for reimbursement. Some adaptations, like hand controls and wheelchair or scooter hoists, do not require a doctor's approval. You have six months from the date of purchase to have the equipment installed. Once installed, you have 60 days in which to submit your claim form. Call (800) 255-9877, or visit www.automobility.daimlerchysler.com.

**Ford Mobility Motoring Program** offers cash assistance up to $1,200 for the installation of adaptive equipment and up to $200 on alerting devices on new Ford Motor Company vehicle purchases or leases. Call (800) 952-2248, or visit www.mobilitymotoringprogram.com.

**General Motors** offers up to $1,000 towards the cost of the eligible mobility adaptive equipment installed or reinstalled on purchased or leased cars, vans or light-duty trucks. This may be applied to aftermarket equipment needed for the driver or passenger such as hand controls, wheelchair or scooter lifting devices, steering knobs and additional grips. Leased vehicles require approval for conversion. The guidelines are simple. The new vehicles manufactured by Chevrolet, Pontiac, Oldsmobile, Buick, Cadillac and the GMC division are eligible. They must be adapted within six months of purchase or lease and the reimbursement application submitted within 90 days. You may get the application from your GM dealer. Call (800) 323-9935, or visit www.gmmobility.com.

**Volkswagen** will reimburse you up to $500 on purchased or leased vehicles. All you need is a signed purchase (bill of sale) or lease agreement for a new eligible Volkswagen model, and original paid invoice for a wheelchair lift and/or hand control installation on the model purchased and a claim form. Claim forms must be received within 90 days of purchase to be eligible for payment. The claim form may be obtained from your dealer. Call (800) 374-8389 as there is no website available for VW Mobility.

**Volvo** offers up to $1,000 toward the cost of adding adaptive equipment and $200 on an alert hearing device, per vehicle, and is only available for purchases of all model year 2005 or 2006 new vehicles, retired courtesy cars, and retired demonstrators. Eligible vehicles must be upfitted with approved adaptive equipment or alert hearing devices, and claims must be submitted within 180 days of vehicle purchase. Call (800) 803-5222, or visit www.volvocars.us/VolvoOwnership/VolvoMobility.

**Honda** will provide a reimbursement of up to $1,000 to each eligible, original retail customer for expenses incurred to purchase and install qualifying adaptive equipment on any eligible purchased or leased Honda vehicle. Call (800) 999-1009, or visit http://automobiles.honda.com/info/mobility_program.asp.

# VA Automobile Assistance for Veterans

**Service-Connected Veterans** and servicemembers qualify for Automobile Assistance if they have service-connected loss or permanent loss of use of one or both hands or feet, or permanent impairment of vision of both eyes to a certain degree. Veterans and servicemembers entitled to compensation for ankylosis (immobility) of one or both knees, or one or both hips, also qualify for adaptive equipment for an automobile. There is a one-time payment by the VA of not more than $11,000 toward the purchase of an automobile or other conveyance. The VA pays for adaptive equipment, and for repair, replacement or reinstallation required because of disability, and for the safe operation of a vehicle purchased with VA assistance. The VA may not reimburse a veteran for automobile adaptive equipment more than two times within a four-year period. The establishment of the four-year period begins on the date the adaptive equipment is authorized. The VA may not reimburse a veteran for adaptive equipment for more than two vehicles at any one time. An exception may be made to the limitation of two reimbursements in the four-year period in cases where one of the two authorized adapted vehicles is not available for the veteran's use due to uncontrollable circumstances such as theft, fire, accident, court or legal action, repairs so costly as to be prohibitive or changes in a veteran's physical condition necessitating a different type of vehicle. All approved vehicle modification vendors are informed that pre-auhorization is required before any work is initiated. For further information, or to view VHA Handbook 1173.4, please visit http://www1.va.gov/vhapublications/ViewPublication.asp?pub_ID=340.

**Non-Service-Connected Veterans:** The circumstances under which VA will provide wheelchair lifts and other automobile adaptive equipment to non-service-connected veterans has been open to interpretation over the years. Unlike the automobile adaptive equipment provided to certain service-connected veterans based on the rating of their specific service-connected disabilities, only limited adaptive equipment considered medical can be given to non-service-connected veterans. The VHA Handbook 1173.14 states, "Certain items, i.e., van lifts, raised doors, raised roofs, air-conditioning, and wheelchair tie-downs for passenger use may be furnished as part of medical services VA is providing under 38 U.S.C. 1701 as a follow-up to VA hospitalization, provided the equipment is medically necessary for the care and treatment of the veteran. Vehicle modifications, such as raised doors or van lifts, may be furnished to eligible veterans who are wheelchair-bound, when necessary to allow such person to enter and exit." This may include air conditioning when necessary for the health and safety of the person, and interior space modifications needed because of the veteran's size or physical condition. Only non-operational equipment is provided. Items such as hand controls, low-effort steering and automatic transmissions that are necessary for operating the vehicle **are not provided**. Items such as electric door openers will not be provided as veterans transported as passengers will be accompanied by an able-bodied driver. Equipment will be provided for only one vehicle at a time and VA will pay for pre-authorized repairs to the VA-purchased equipment.The key phrase in the handbook is "as a follow-up to VA hospitalization, provided the equipment is medically necessary for the care and treatment of the veteran." Veterans must be receiving post-hospitalization or medical treatment, at a VA or out-sourced facility, and must be wheelchair users to be eligible. This adaptive equipment is normally granted to qualified veterans in power chairs and scooters. Veterans in manual wheelchairs are considered on a case-by-case basis, based on their disabilities and capability of transporting their chair without the adaptive equipment. In effect, automobile adaptive equipment is an extension of the wheelchair, and it is provided for the purpose of getting wheelchair-using veterans to their medical treatment. VA policy requires that automotive adaptive equipment is medically necessary, and a doctor's prescription must be present. A VA representative will review the prescription and forward it to the prosthetics department. There, the Major Medical and Special Equipment Committee (MMSEC) will review it to determine if the prescription is supported by medical findings and if the requested items are necessary for treatment or rehabilitation. This board includes a physician knowledgeable about prosthetics, and other specialists as required. They may consider prescriptions written by VA or private physicians. If they deny the equipment, they will notify the veteran as to why, and include advisement in writing regarding appellate and reconsideration rights. To apply, or for more information, or to find a VA regional office near you, please call 1-800-827-1000.

# Social Security Plan for Achieving Self-Support (PASS)

A plan for achieving self-support, or PASS for short, is a plan for your future. Many people with disabilities want to work, and you're probably one of them. But maybe you need to go back to school before you can get a job. Or, maybe you'd like to start your own business, but you don't have the money. Whatever your work goal may be, a PASS can help you reach it. A PASS lets you set aside money and/or other things you own to help you reach your goal. For example, you could set aside money to start a business or to go to school or to get training for a job.

Your goal must be a job that will produce sufficient earnings to reduce your dependency on Supplemental Security Income (SSI) payments. A PASS is meant to help you acquire those items, services or skills you need so that you can compete for an entry level job in a professional, business or trade environment. You can contact your local Social Security office to find out whether a PASS is appropriate for you. Call 1-800-772-1213 to find a Social Security Office near you, or visit www.ssa.gov/online/ssa-545.html.

# Mobility Resources

**Contact Information for Manufacturers**

| | |
|---|---|
| Toyota Mobility Assistance Center (800) 331-4331 | www.toyota.com/mobility |
| Lexus Customer Satisfaction Center (800) 255-3987 | www.lexus.com/models/ls/parts/mobility.html |
| Saturn Mobility Program (800) 533-6000 | *no website available for Saturn Mobility* |
| Chrysler Automobility Program Headquarters (800) 255-9877 | www.automobility.daimlerchysler.com |
| Ford Mobility Motoring Program (800) 952-2248 | www.fordmobilitymotoring.com |
| GM Mobility Program (800) 323-9935 | www.gmmobility.com |
| Volkswagen Information (800) 374-8389 | *no website available for VW Mobility* |
| Volvo Information (800) 803-5222 | www.volvocars.us/mobility |
| Honda Mobility Information (800) 999-1009 | http://automobiles.honda.com/info/mobility_program.asp |

**Resource Contacts Websites**

| | |
|---|---|
| Association for Driver Rehabilitation Specialists (ADED): | www.driver-ed.org |
| National Mobility Equipment Dealer's Association (NMEDA): | www.nmeda.org |
| Amyotrophis Lateral Sclerosis ALS Association | www.alsa.org |
| National Multiple Sclerosis Society | www.nationalmssociety.org |
| Christopher & Dana Reeve Paralysis Resource Center: | www.christopherreeve.org |
| American Automobile Association (AAA): | www.aaa.com |
| California Department of Rehabilitation: | www.dor.ca.gov |
| Veteran Affairs Administration: | www.va.gov |
| Social Scurity PASS Program | www.ssa.gov/online/ssa-545.html |
| The Boulevard: | www.blvd.com |
| National Highway Traffic Safety Administration: | www.nhtsa.gov |
| California Air Resources Board | www.arb.ca.gov |
| Nor-Cal Mobility, Inc.: | www.norcalmobility.com |
| Nor-Cal Vans: | www.nor-calvans.com |

# What an Evaluation Should Provide

If you have a new injury or illness that requires you to be evaluated, in most cases your doctor or hospital will make the necessary arrangements. However, if you do not have this option, there are some very important factors to consider before making your decision: Do they have a place of business? Do they have a vehicle equipped to perform a proper evaluation? Do they have proper credentials and licenses?

**The Association of Driver Rehabilitation Specialists (ADED**), a nonprofit association, is the primary professional organization in this specialized area. This is an excellent starting point to find a friver trainer/evaluator. Please visit their website at www.driver-ed.org.

- The evaluation should be performed with the actual equipment that will be recommended, for both driver and passenger positions.
- An actual on-road driving assessment (in the case of a driver evaluation) should be performed.
- A complete report outlining the client's performance and training is required.
- A complete list of the adaptive equipment required to provide the client independence.
- Suggestions for the appropriate van or car.
- An evaluation of the client's current wheelchair in relation to the adaptive equipment needs.
- The evaluation should take into account not only how the adaptive equipment will answer the physical needs of the client, but how the adaptive equipment will perform within the client's physical living space.

# Why You Should Choose a NMEDA/QAP Mobility Dealer

**The National Mobility Equipment Dealers Association (NMEDA)** was formed by mobility dealers to promote and support members who are engaged in providing vehicle modifications for people with disabilities. **NMEDA**, in supporting their membership, established guidelines to direct the mobility industry toward consistency, quality and compliance. In keeping with **NMEDA**'s bylaws and mission to ensure that vehicle adaptive equipment installed is always of high quality and that ethical business practices are followed, an industry **Quality Assurance Program (QAP)** was created.

The **NMEDA** guidelines are intended to guide and assist mobility equipment dealers in the completion of vehicle modifications for people with disabilities. The guidelines are established to ensure that adaptive vehicle equipment is installed and vehicle modifications are completed according to the highest level of industry standards and business practices. A mobility equipment dealer and installer use the guidelines in conjunction with the equipment manufacturer installation instructions, Society of Automotive Engineers (SAE) recommended practices, the National Highway Traffic Safety Administration (NHTSA) safety standards and practices and/or other applicable documents.

The **QAP** designation enhances vehicle modification and adaptive equipment installation in a manner consistent with the highest standards available in the industry. It binds dealers to guidelines rooted in national safety standards, an in-house crash-testing program and proven shop practices that assure the highest level of performance and safety. Dealers who participate in the **QAP** are held to extremely high standards. They are required to maintain four types of insurance. They must have certified welders on hand if they perform any structural modifications to vehicles. These dealers are required to have their technicians certified in the equipment they will sell, install and service. They must keep records of all adaptive work. Finally, they are required to undergo an inspection/audit process at least annually by an independent engineering firm to ensure compliance with **NMEDA** guidelines and the requirements listed above. All **QAP** dealers have proven their ability for quality by virtue of successfully navigating the **QAP** process. You can visit their website for more information at www.nmeda.org.

Nor-Cal Vans

# 2007-2009 Ford Full-Size E-Van
## Estimated Specifications

1/7/2009

| Econoline Conversion Specifications | E-150 without modification | E-150 6" Full drop floor | E-150 9" Full drop floor | E-250 without modification | E-250 6" Full drop floor | E-250 9" Full drop floor |
|---|---|---|---|---|---|---|
| Overall Van Height w/out Raised Roof | 81.5" | 83.5" | 84.5" | 83.5" | 84.5" | 85.5" |
| Overall Van Height w/ Raised Roof* | does not apply | 98" | 99" | does not apply | 98" | 99" |
| Overall Vehicle Length | 214" | 214" | 214" | 214" | 214" | 214" |
| Wheel Base | 138" | 138" | 138" | 138" | 138" | 138" |
| Door Opening Height (Side & Rear Barn) | 48.5" | 54" | 56.5" | 48.5" | 54" | 56.5" |
| Door Opening Width (Barn Doors) | 43.5" | 43.5" | 43.5" | 43.5" | 43.5" | 43.5" |
| Door Opening Width (Slider Door) | 39.5" | 39.5" | 39.5" | 39.5" | 39.5" | 39.5" |
| RV Converter Interior Height In Mid Section** | 54.5" | 58.5" | 62" | 54.5" | 58.5" | 62" |
| Interior Height at Driver Station | 53.5" | 58" | 61" | 53.5" | 58" | 61" |
| Eye Ellipse (Floor to Center of Rear View Mirror) | 43.5" | 47.5" | 51.5" | 43.5" | 47.5" | 51.5" |
| Floor to Top of Windshield | 50" | 54" | 57" | 49.5" | 53.5" | 57.5" |
| Maximum Interior Width at B Pillar | 68" | 68" | 68" | 68" | 68" | 68" |
| Interior Length at Floor (Full Drop Only) | does not apply | 92" | 91" | does not apply | 92" | 91" |
| Floor Drop | does not apply | 6" | 9" | does not apply | 6" | 9" |
| Estimated Miles per Gallon | 13-17 mpg | 13-17 mpg | 13-17 mpg | 13-18 mpg | 13-18 mpg | 13-18 mpg |
| Gross Vehicle Weight Rating | 8,600 lbs. | 8,600 lbs. | 8,600 lbs. | 9,000 lbs. | 9,000 lbs. | 9,000 lbs. |
| Est. Available Payload Capacity (w/o wheelchair lift or passengers) | 3,260 lbs. | 3,048 lbs. | 2,990 lbs. | 3,660 lbs. | 3,448 lbs. | 3,390 lbs. |

*Height measurements are variables of suspension condition, gas levels & cargo loads.*

**Because there are so many raised roof manufacturers with a variety of models, this is the roughest of estimates.*

***On Ford Club Wagons, the interior height in the mid-section only is reduced 2" by the OEM headliner.*

*Estimated Miles per Gallon are provided by fueleconomy.gov and are all based on 5.4L gas engines.*

*All estimated specifications are subject ot change without notice.*

1/7/09 aw