

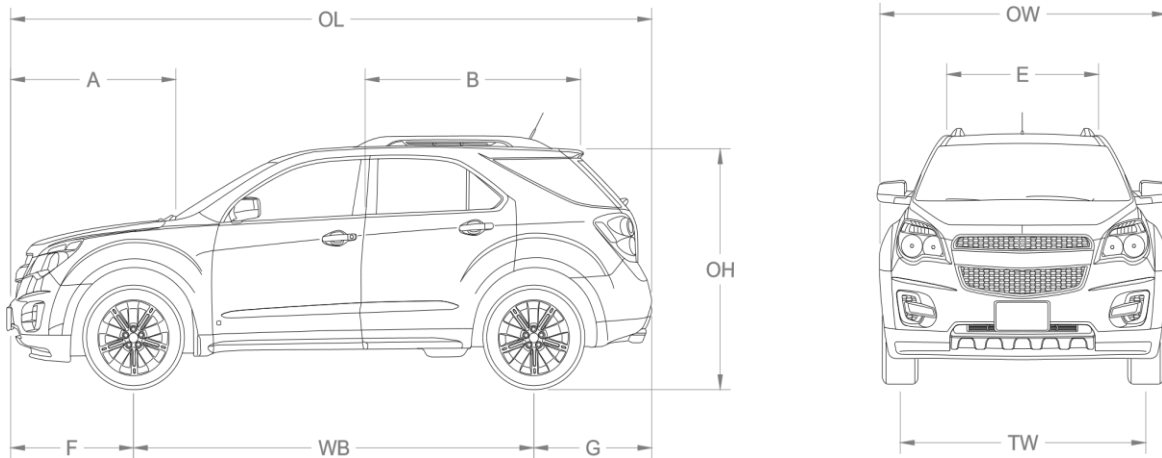


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Guide to the Canadian Vehicle Specifications Database



Transport Canada

**Collision Investigation and Research Division of the
Road Safety and Motor Vehicle Regulation Directorate**

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1. Introduction

The Collision Investigation and Research Division of the Road Safety and Motor Vehicle Regulation Directorate of Transport Canada maintains a database of original vehicle dimensions, entitled the Canadian Vehicle Specifications (CVS) Database. This database is also commonly referred to as the “Specs” database or “Winspecs”, and has been made available by Transport Canada to a wide range of users, including vehicle safety researchers, collision investigators, and those engaged in the field of collision reconstruction. The purpose of this guide is to provide a combination of descriptive text, illustrations, and photographs, to define the measurements that comprise the vehicle dimensions catalogued within the CVS Database.

2. Background

The CVS Database was initially created by the Collision Investigation and Research Division of the Road Safety and Motor Vehicle Regulation Directorate of Transport Canada to provide a catalogue of original vehicle dimensions, for use in vehicle safety research and collision investigation. The purpose of this database was to provide users with a comprehensive listing of vehicle dimensions commonly used in the field of collision investigation and reconstruction, for the North American fleet of passenger cars, light trucks, vans and SUV’s.

The database includes model years dating back to 1971 and is comprised of both commonly available dimensions such as overall length, wheelbase and track widths, and also several dimensions which are not typically readily available from the manufacturers, nor from automotive publications. For example, the front end length, as measured from the centre of the front bumper to the centre of the base of the windshield is one of these additional dimensions catalogued within the CVS database. A number of these dimensions were established with reference to the Collision Deformation Classification (CDC), as described in SAE recommended practice J224, which allows investigators to quantify the extent of vehicle deformation caused by a crash.

This guide is intended to be used by Transport Canada investigators, those with their contracted investigation teams, and police officers across North America. The database is also used by collision investigators with the National Highway Traffic Safety Administration (NHTSA) and the National Transportation Safety Board (NTSB) in the United States. A number of other organizations make use of the resulting data, including members of the Canadian Association of Technical Traffic Investigators (CATAIR), and members of the Reconstruction Practices Committee of the Society of Automotive Engineers (SAE).



3. Dimensions Overview

The CVS Database includes one complete data set for each model year, with each data set comprised of 18 fields, as summarized in Table 1 below, the first two fields of which identify the vehicle make and model. The third field, denoted “MYR”, signifies the year in which the data was compiled for that specific model. For models in which there are no significant dimensional changes from one model year to the next, the dimensions are carried over from the data set compiled the previous model year, and the MYR field remains unchanged. A new data set is created for vehicles which are new to the market in a given year, for those which are completely redesigned, and for those in which the overall length, width or wheelbase has changed, when compared to the specifications for the previous model year.

The dimensions summarized in Table 1 below include the vehicle overall dimensions: overall length, overall width, overall height, and wheelbase, as commonly published in automotive literature made available by the vehicle manufacturers, or on their websites. The curb weights and weight distribution for each vehicle are determined based on published data from the manufacturers, from other third party data suppliers, and from automotive publications or websites that are considered to be reliable. The remaining dimensions designated by the letters A through G, along with the front and rear track widths (TWF / TWR) are defined in greater detail in the following sections. Figures 1, 2, 3 and 4 provide an illustration of all of the dimensions, as applied to passenger cars, vans and SUV’s, hatchbacks and station wagons, and full size pickup trucks, respectively.

Field	Data Element	Field	Data Element
1	Make	10	B
2	Model	11	C
3	MYR	12	D
4	OL	13	E
5	OW	14	F
6	OH	15	G
7	WB	16	TWF
8	CW	17	TWR
9	A	18	WD

Table 1 - CVS Database Data Fields



Figure 1 - Sedans

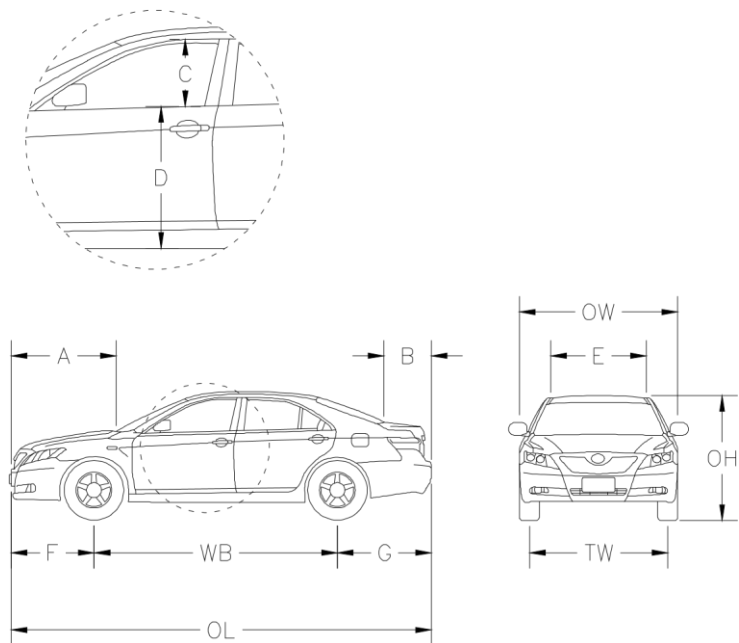
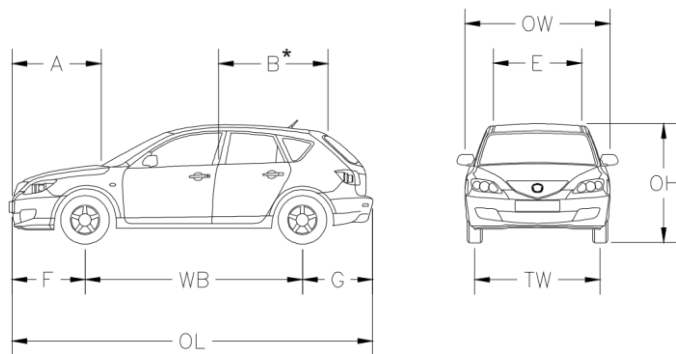


Figure 2 - Hatchbacks and Station Wagons



*Note: If the distance from the rearmost point of the vehicle to the top of the backlight is greater than the distance from the top of the backlight to the front door latch pillar, then the passenger car definition of the B-dimension should be used for that vehicle.

Figure 3 - Vans and SUV's

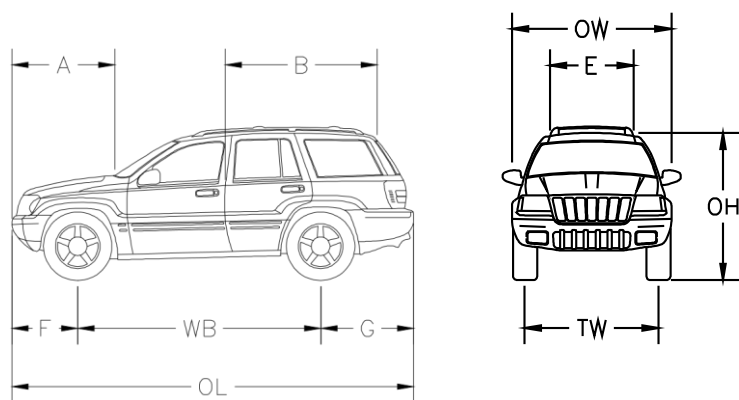


Figure 4 - Pickup Trucks

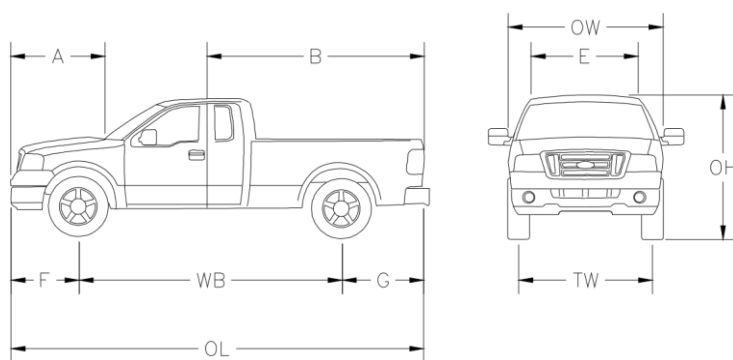


Table 2 – Vehicle Body Styles



4. Dimensions Defined

This section defines all of the dimensions in more detail, providing illustrative photographs of the points on the vehicle from which these measurements are derived. A number of examples are included in cases for which the dimension differs from one vehicle type to another, or where conventions have been adopted for specific vehicle configurations.

4.1 Overall Length (OL)

The vehicle overall length is the distance measured from the foremost point on the front surface of the vehicle to the rearmost point on the rear surface, with the exception of equipment that may have been considered optional. For example, the rear bumper is not included in the measurements of the overall length of full size pickup trucks. This convention was adopted in the early days of the CVS database, at a time when these vehicles often could be purchased with a standard style of bumper or an optional step bumper. The rear bumpers on compact pickup trucks and vans are included in the overall length, as the rear bumpers are generally only available in one standard design for these vehicles. Optional equipment such as brush bars, trailer hitches, and bumperettes, which may affect the overall length, are not included in this measurement. In addition, front license plate mounts that extend beyond the front centre point of the bumper are not included in this measurement, as front license plates are not utilized in some jurisdictions. For vehicles in which the spare tire is mounted on the rear surface, the amount by which the spare tire extends beyond the rear surface, as defined by the rear bumper, is not included in the overall length. Figures 5, 6, and 7 provide an illustration of the measurement of overall length in some of these special cases.

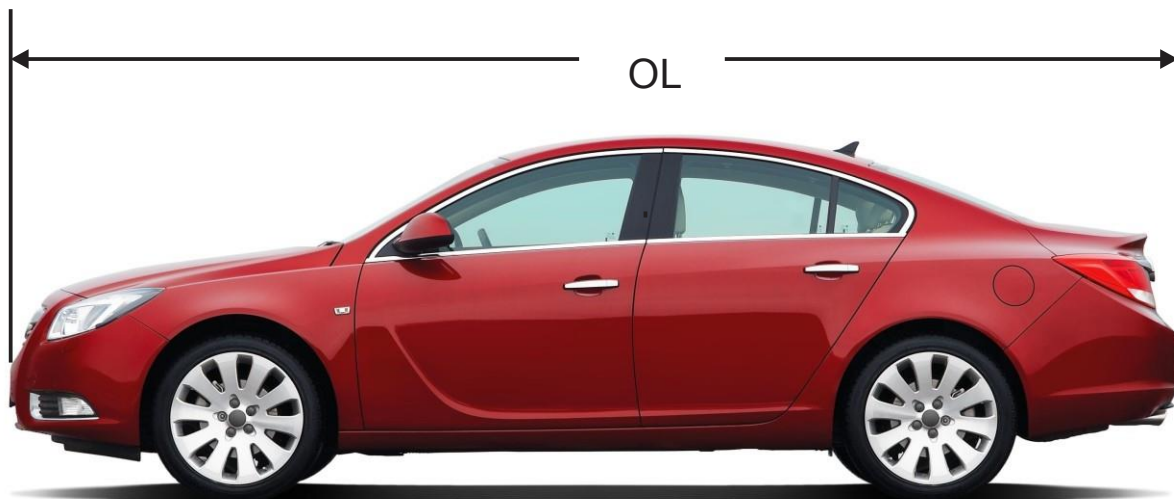


Figure 5 - Overall Length Measurement



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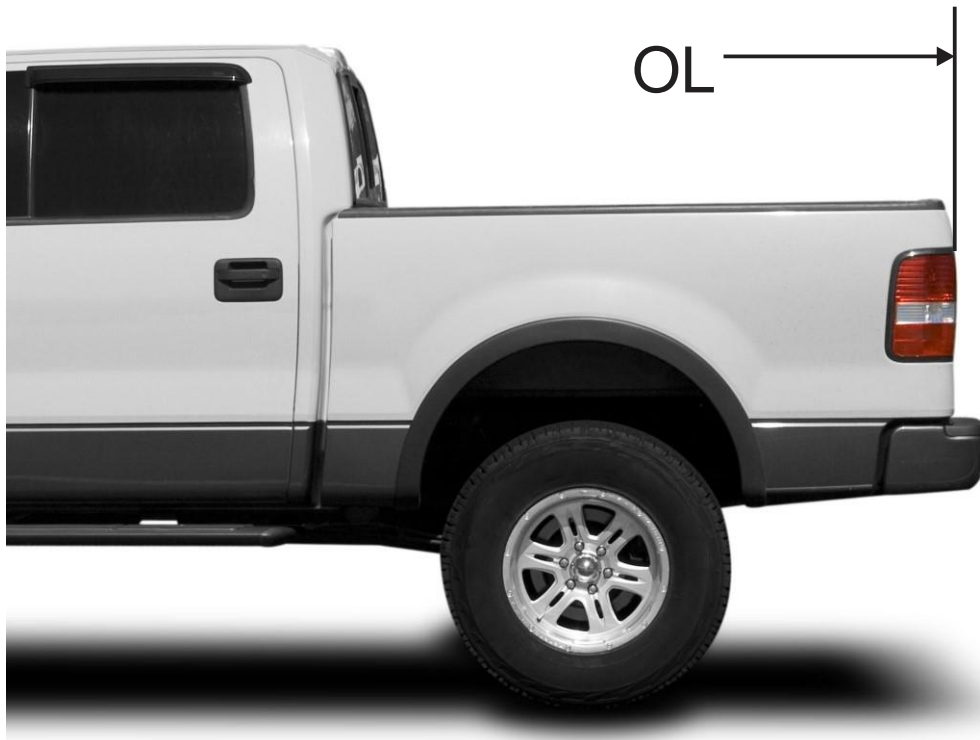


Figure 6 - Overall Length of Full Size Pickups Excludes Rear Bumper



Figure 7 - Overall Length Excludes Rear Mounted Spare Tire

4.2 Overall Width (OW)

The vehicle overall width is measured at the widest point of the vehicle, excluding the exterior rearview mirrors. This dimension includes wheel flares, door handles and body side mouldings, and would be measured to those points, when they comprise the outermost point on the side of the vehicle. For example, the overall width for a full size pickup truck with dual rear wheels would be measured to the outer surface of the rear fenders. Figures 8 and 9 provide an illustration of the overall width measurement.



Figure 8 - Overall Width Excludes Exterior Rearview Mirrors



Figure 9 - Overall Width Includes Add-on Fender or Wheel Flares



4.3 Overall Height (OH)

The vehicle overall height is measured to the highest point on the vehicle, excluding any optional equipment such as roof racks. In addition, the overall height would not include the radio antenna, when it projects above the highest point on the vehicle body. Figures 10 and 11 provide an illustration of the overall height measurement.



Figure 10 - Overall Height Measurement



Figure 11 - Overall Height Excludes Antennas and Optional Equipment



4.4 Wheelbase (WB)

The wheelbase is the distance measured between the front and rear wheel centres. The measurement of the wheelbase is depicted in Figure 12.



Figure 12 - Wheelbase Measurement

4.5 Curb Weight (CW)

The vehicle curb weight is defined as the weight of the vehicle in operational status, with all standard equipment, the weight of fuel at nominal tank capacity, and the weight of optional equipment¹. The curb weight does not include the driver, passengers, or cargo. The curb weight data within the CVS Database has been determined directly from the manufacturers wherever possible, and in some cases, from reliable automotive data suppliers, such as the Sanford Evans Gold Book. The convention that was adopted for the CVS Database was to add a separate data record for vehicles in which the curb weight differed by 50 kilograms (110 lbs) or more. This convention typically allows for a differentiation between models that are available with more than one engine choice, for example, four cylinder versus six cylinder models.

However, in some cases such as the full size pickup trucks, the wide range of available options for engine, drivetrain, and trim level, would lead to a very large number of records for a given manufacturer. In this case, the curb weights are typically differentiated by model configuration, such as wheelbase, box length and cab type, with the curb weight listed for the standard equipment model. In the event that very precise curb weight data is required for a specific model and trim level, the vehicle manufacturer may be able to provide more precise curb weight data based on the vehicle identification number for a specific model, or by providing the model and the exact configuration of the vehicle in question.

1. **Glossary of Automotive Terms**, Society of Automotive Engineers, Warrendale PA, 1988, p. 125.



4.6 Front End Length (A)

The A-dimension is defined as the longitudinal distance between the centre of the front bumper and the centre of the base of the windshield. Optional front end equipment such as brush bars and bumperettes, which may affect this dimension, are not included in this measurement. In addition, front license plate mounts that extend beyond the front centre point of the bumper are not included in this measurement, as front license plates are not utilized in some jurisdictions.

With older vehicle designs, in which the cowl intersected with the base of the windshield glass, the A-dimension was measured directly to the base of the windshield glass. With current automotive designs, the base of the windshield glass most often projects below the top of the cowl and the trailing edge of the hood, resulting in a gap between the hood and the windshield, into which the windshield wipers retract. The base of the windshield includes a blacked-out shadow line, which extends from the bottom edge of the windshield glass up to the bottom of the windshield opening. The top of this shadow line typically also coincides with the extension of the hood line, as projected rearward beyond the gap between the hood and the windshield. For the purpose of the A-dimension, the base of the windshield is considered to be the point at which the hood line intersects with the windshield glass, and this point typically corresponds with the top of the shadow line at the base of the windshield, which also represents the top of the cowl, and the bottom edge of the windshield opening. In some cases, the gap between the trailing edge of the hood and the windshield is covered, or partially covered, with an exterior plastic cowl, providing more discrete delineation of the base of the windshield. Figures 13, 14, and 15 provide an illustration of the A-dimension measurement.

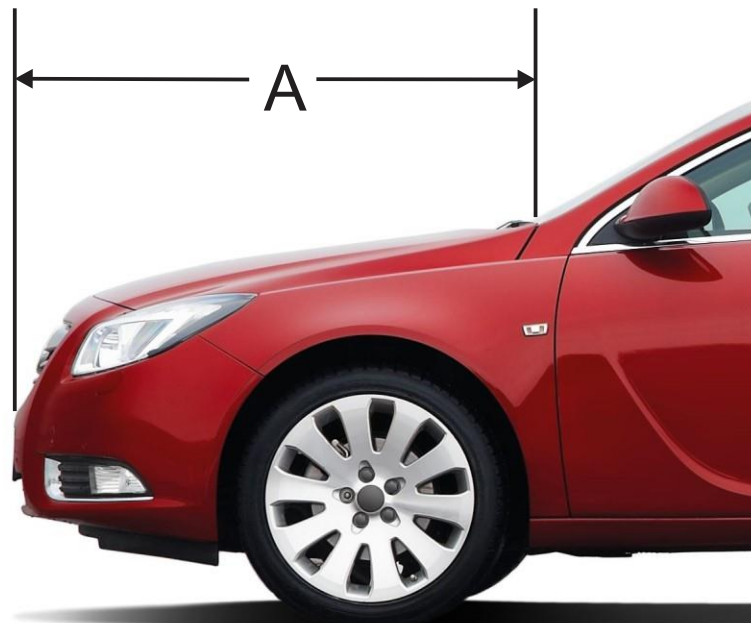


Figure 13 - Front End Length

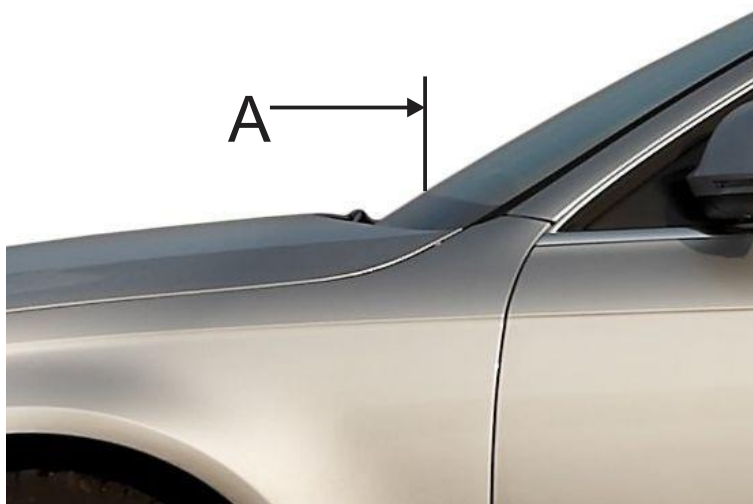


Figure 14 - Modern Vehicle Front End Measurement

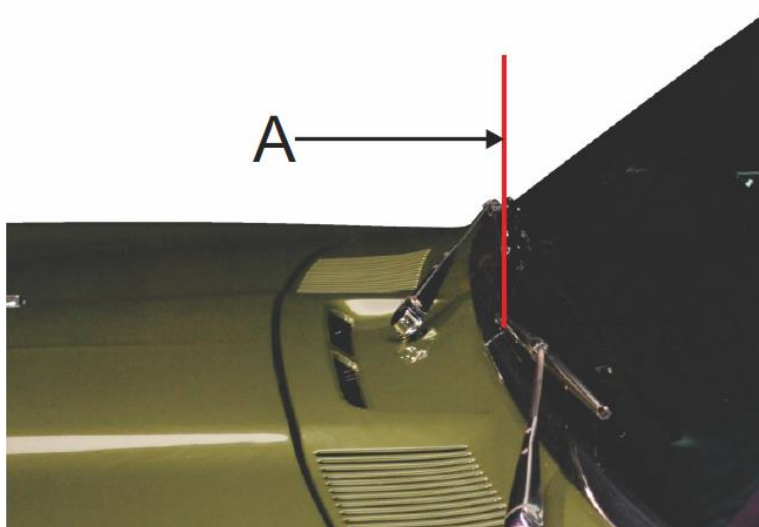


Figure 15 - Older Vehicle Front End Measurement



4.7 Rear End Length (B)

The B-dimension is defined slightly differently, depending on the type of vehicle being measured. For standard passenger cars, such as sedans and coupes, the B-dimension is defined as the longitudinal distance between the centre of the rear bumper and the centre of the base of the backlight (rear window glass). Optional rear end equipment such as bumperettes and trailer hitches, which may affect this dimension, are not included in this measurement.

For hatchbacks, station wagons, vans, and sport utility vehicles (SUV's), the B-dimension is defined as the longitudinal distance between top of the backlight top moulding and front door latch pillar.

The CDC document further indicates that if the distance from the rearmost point of the vehicle to the top of the backlight is greater than the distance from the top of the backlight to the front door latch pillar, then the passenger car definition of the B-dimension should be used for that vehicle. In other words, if the top of the backlight is closer to the front door latch pillar than it is to the centre of the rear bumper, in the longitudinal direction, then the B dimension should be measured from the base of the backlight to the rearmost point of the vehicle, as per the passenger car definition. Some modern "crossover" type vehicles that defy typical classification as a hatchback, station wagon, or SUV (typically with a radically sloping backlight) may fall into this measurement convention. Two door coupes with a rear hatch also often fall into this convention, and are typically measured per the passenger car definition.

A third criteria exists for pickup trucks, in which the B-dimension is defined as the longitudinal distance between the rearmost projection and the front door latch pillar. Again, the rear bumper, and other optional equipment, is not included in the length of the B-dimension for full size pickup trucks.

Most older vehicle designs included a trim moulding that covered the outer perimeter of the backlight. With older passenger car designs of this nature, the B-dimension was measured directly to the base of the backlight, from the centre of the rear bumper. With current passenger car designs, the backlight is often frameless, with no mouldings or coverings applied around the outer perimeter. Additionally, the backlight is often a styled part of the vehicle design, with blacked-out areas extending well beyond the actual glass opening in the body structure. As with the A-dimension, the measurement convention adopted for modern passenger cars is to measure to the top edge of the blacked-out shadow line, which extends up from the base of the backlight. Vehicles equipped with a convertible top are measured from the centre of the rear bumper, to the edge of the opening into which the convertible top retracts.

For pickup trucks, hatchbacks, station wagons, vans, and SUV's, the B-dimension is measured from the front door latch pillar, rearward to the appropriate rear surface as defined above for that model. The convention adopted for the location on the front door latch pillar from which to measure is the rear edge of the front door, at the lower edge of the side window glass. Figures 16, 17, 18, and 19 provide an illustration of the B-dimension measurement.

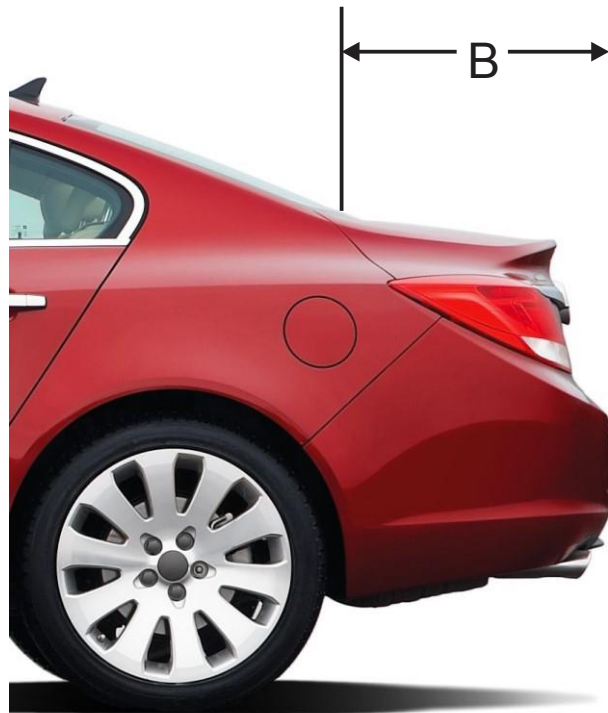


Figure 16 - Rear End Length Measurement (Passenger Cars)

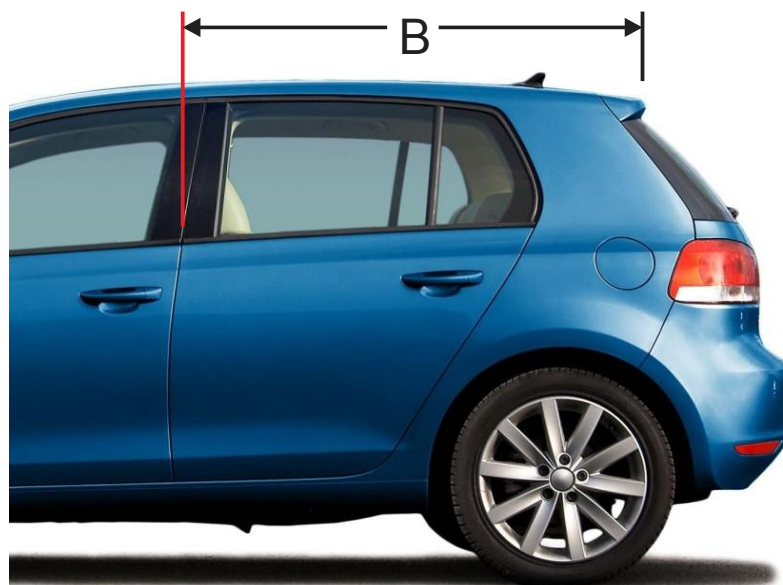


Figure 17 - Rear End Length Measurement (Hatchbacks, Station Wagons, Vans and SUV's)



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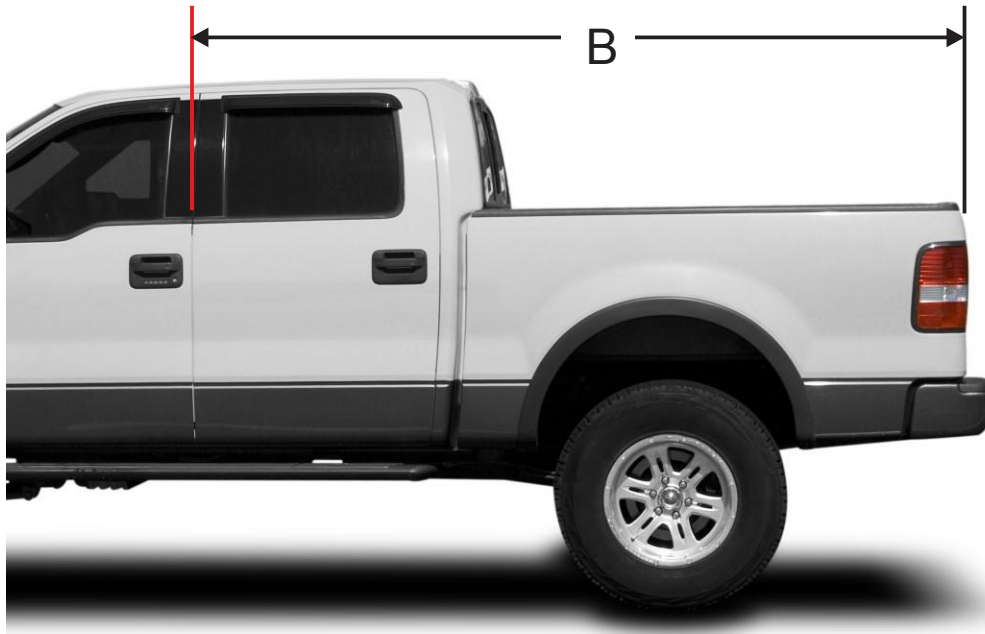


Figure 18 - Rear End Length Measurement (Full Size Pickups)

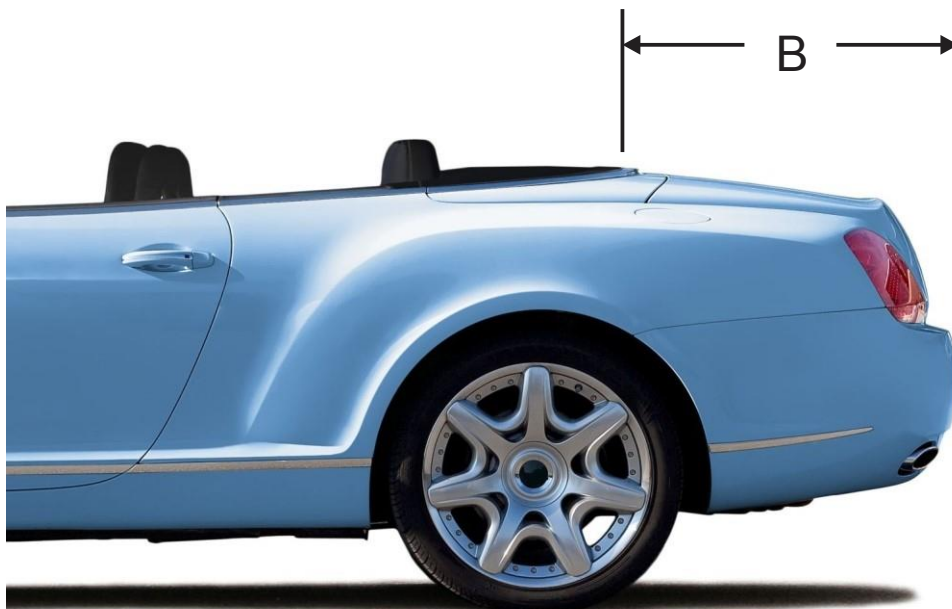


Figure 19 - Rear End Measurement (Convertibles)



4.8 Side Glass Height (C)

The C-dimension is defined as the maximum vertical height of the side glass. The measurement is taken from the lower edge of the side window glass, to the top edge of the window opening, at the point on the vehicle in which the height of the glass opening is the largest. Figure 20 provides an illustration of the C-dimension measurement.



Figure 20 - Side Glass Measurement

4.9 Body Side Height (D)

The D-dimension is defined as the vertical distance between the base of the side glass and the lower edge of the rocker panel. The D-dimension is measured from the base of the rocker panel, up to the lower edge of the side window opening, at the same position on the vehicle as the base of the C-dimension. The D-dimension measurement does not include any optional equipment such as running boards or side steps. Figure 21 provides an illustration of the D-dimension measurement.



Figure 21 - Body Side Height Measurement

4.10 Roof Width (E)

The E-dimension is defined as the distance between the side rails or maximum width of the top. Most older vehicle designs included a rain gutter along the outer edge of the roof. For vehicles with a clearly defined rain gutter, the roof width was measured to the outer edge of the gutter.

Modern vehicle designs include numerous roof designs which result in various methods for measurement of the roof width. Most newer vehicle designs include a weld seam between the roof panel and the side body panels. This weld seam is typically covered by a moulding layed within the seam between the panels. For vehicles with a moulding running along the length of the outer edge of the roof panel, the E-dimension is measured to the outer edge of those mouldings.

Many other newer vehicle designs including side door frames that wrap up into the roof. The E-dimension on vehicles with a roof and door system of this design is measured between the top edges of the seam between the doors and the roof panel. Other vehicles which have no defined mouldings, seams, or gutters on the top surface of the roof panel are measured to the outer edge of the roof, at the top edge of the side door glass.

The E-dimension for convertibles, which have no defined mouldings or features on the top surface of the roof, is measured as the width of the top of the windshield header, where the forward edge of the convertible top latches. Finally, for vehicles with a standard roof-rack, and no other definable features as noted above (such as mouldings or roof gutters), the E-dimension is measured between the outer rails of the roof rack assembly. Figures 22, 23, 24, 25, 26, and 27 provide an illustration of the various E-dimension measurements in each configuration.

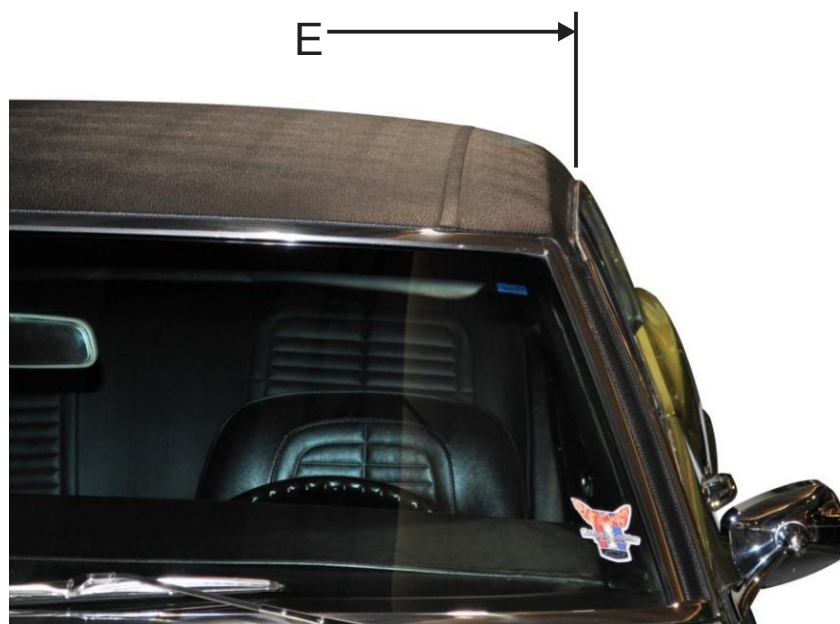


Figure 22 - Roof Width Measurement (with gutter)

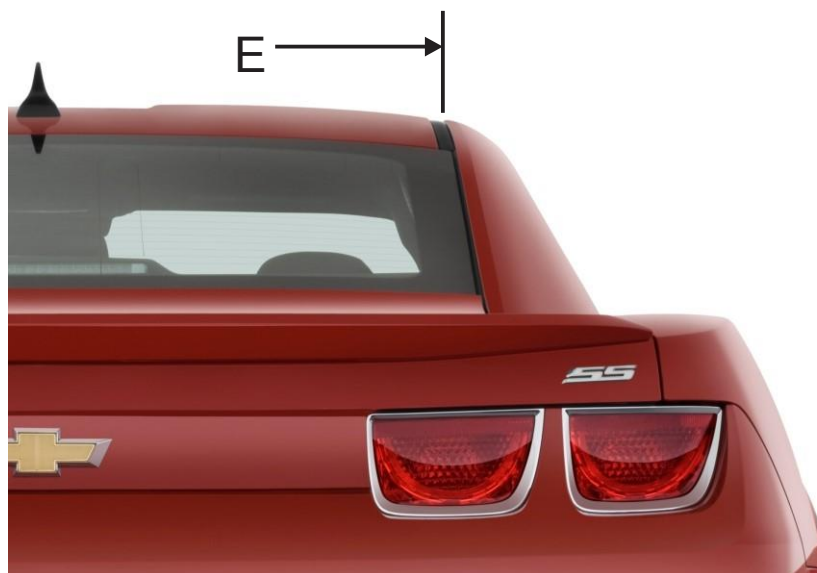


Figure 23 - Roof Width Measurement (with roof moulding)

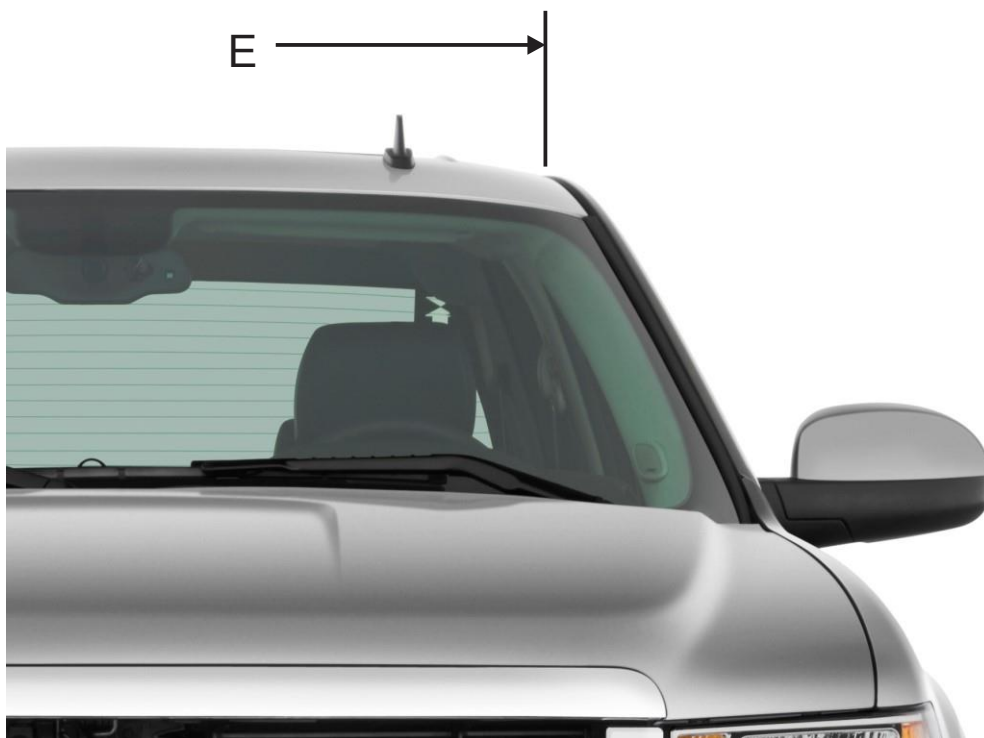


Figure 24 - Roof Width Measurement (wrap around door frames)

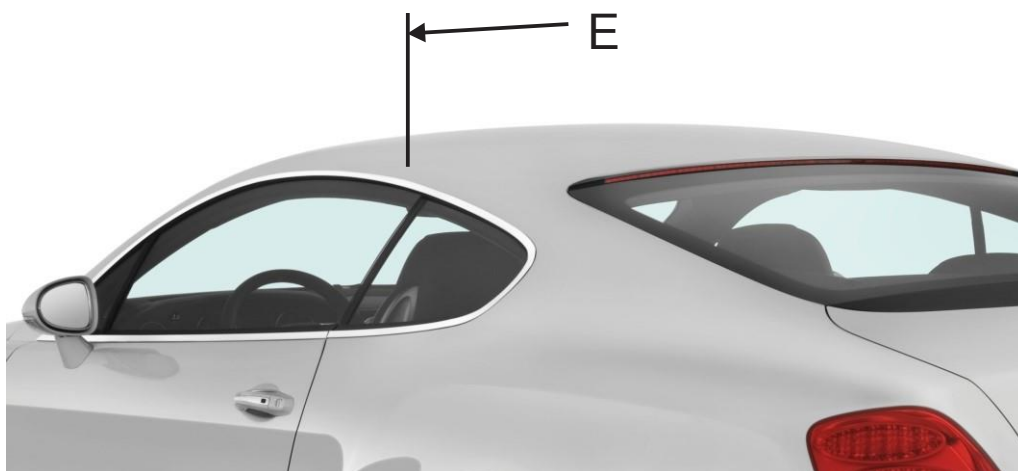


Figure 25 - Roof Width Measurement (with no definable features)



Figure 26 - Roof Width Measurement (Convertibles)



Figure 27 - Roof Width Measurement (with standard roof rack)

4.11 Front Overhang (F)

The F-dimension is defined as the longitudinal distance between the centre of the front bumper and the centre of the front wheel. Similar to the Overall Length, optional front end equipment such as brush bars and bumperettes, which may affect this dimension, are not included in this measurement. In addition, front license plate mounts that extend beyond the front centre point of the bumper are not included in this measurement, as front license plates are not utilized in some jurisdictions. Figure 28 provides an illustration of the F-dimension measurement.

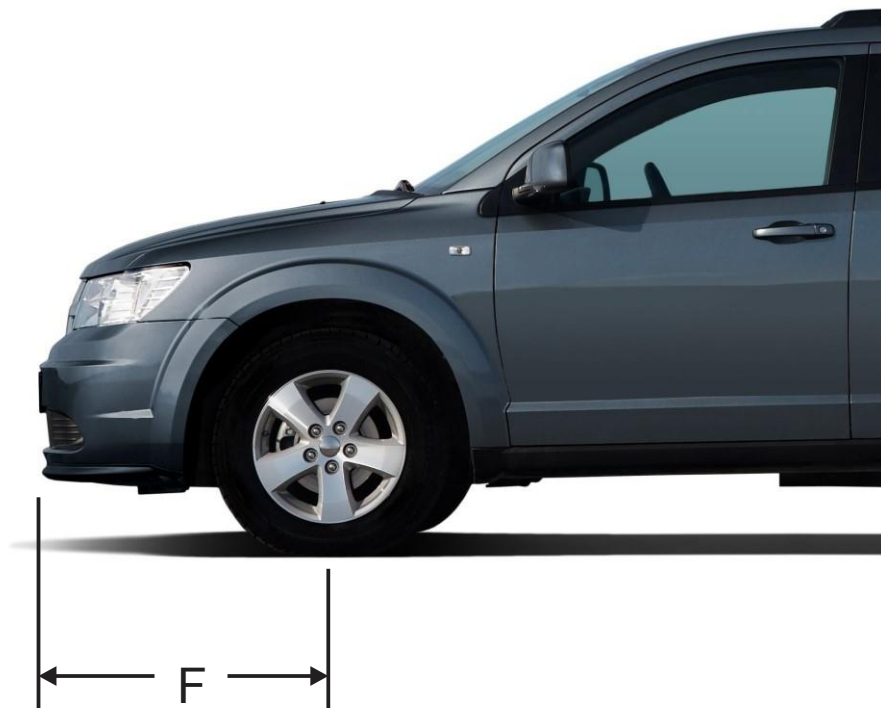


Figure 28 - Front Overhang Measurement

4.12 Rear Overhang (G)

The G-dimension is defined as the longitudinal distance between the centre of the rearmost projection and the centre of the rear wheel. The G-dimension for pickup trucks does not include the rear bumper, while all other vehicle designs are measured to the centre of the rear bumper. Optional rear end equipment such as bumperettes, spare tire carriers, and trailer hitches, which may affect this dimension, are not included in this measurement. Figures 29 and 30 provide an illustration of the G-dimension measurement.

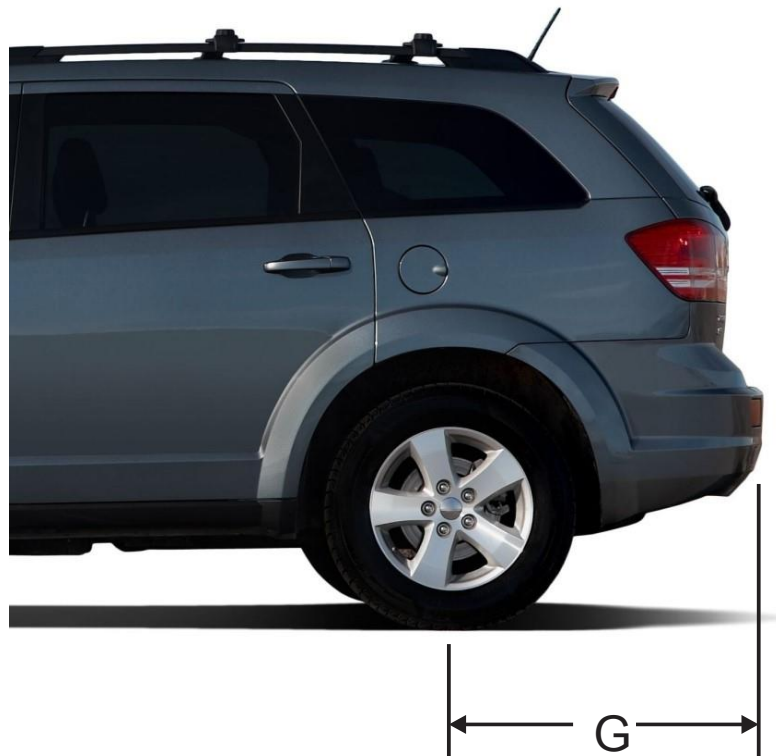


Figure 29 - Rear Overhang Measurement

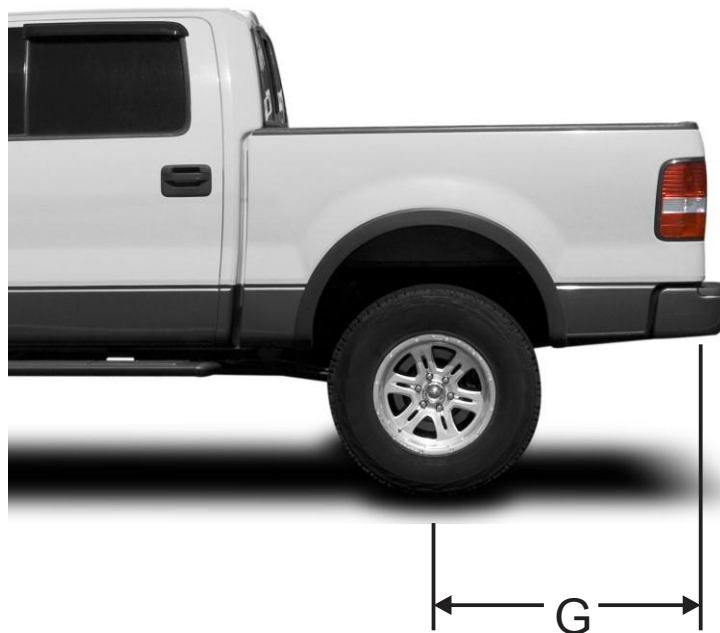


Figure 30 - Rear Overhang Measurement (Full Size Pickup Trucks)

4.13 Track Width (TW)

The track width is the lateral distance measured between the wheel centres on each axle. Both the front and rear track widths are measured for each vehicle, and are designated TWF and TWR, respectively. Unless defined by the manufacturer, the rear track width for vehicles equipped with dual rear wheels is indicated as N/A within the CVS database. The measurement of the track width is depicted in Figure 31.



Figure 31 - Track Width Measurement

4.14 Weight Distribution (WD)

The vehicle weight distribution is defined as the percentage of weight of the vehicle on the front and rear axles, with all standard equipment, the weight of fuel at nominal tank capacity, and the weight of optional equipment. The weight distribution data within the CVS Database has been determined directly from the manufacturers wherever possible, and in some cases, from reliable automotive publications. This data appears as the percentage of weight on the front axle followed by the percentage of weight on the rear axle, separated by a back slash (i.e. front/rear).