

State of Texas



Vehicle Damage Guide For Traffic Crash Investigators



Prepared and Distributed by
Texas Department of Transportation
Traffic Operations Division
Crash Records Section
For Texas Law Enforcement Agencies
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Section 1

Introduction

Purpose of Guide

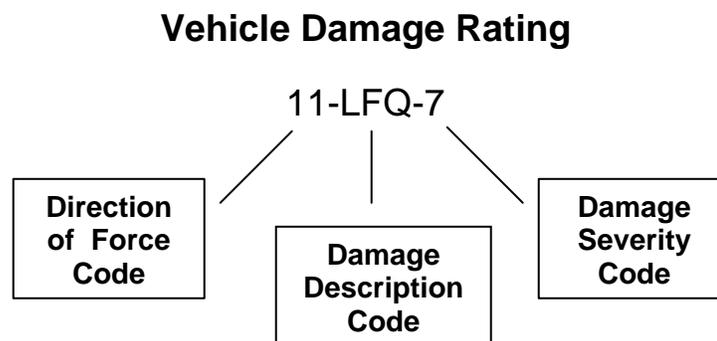
The Texas Department of Transportation (TxDOT) has developed this *Vehicle Damage Guide for Traffic Crash Investigators* to assist Texas law enforcement agencies in correctly assessing damage sustained by motor vehicles in traffic crashes and accurately entering the Vehicle Damage Rating on the Texas Peace Officer's Crash Report (TxDOT Form CR-3).

This guide is based on information contained in the *Manual on Classification of Motor Vehicle and Traffic Accidents - American National Safety Institute (ANSI) D 16.1 - 1996*, the *Minimum Model Uniform Crash Criteria (MMUCC) Guideline, 2nd Edition - 2003*, and the *Fatality Analysis Reporting System (FARS) Coding Manual - 2008*.

This guide consists of diagrams, descriptions and photographs of damaged automobiles representing a variety of common impacts that investigators are likely to encounter. Diagrams and symbols are provided to assist with an accurate determination of vehicle damage.

Determining the Vehicle Damage Rating

The Vehicle Damage Rating for motor vehicles involved in crashes is shown by sequentially entering three (3) separate codes on the Texas Peace Officer's Crash Report (TxDOT Form CR-3). A diagram showing the components of the Vehicle Damage Rating and an explanation of each code is shown below.



- ◆ The **Direction of Force Code** consists of a one or two-digit numeric code corresponding to the numbers on a clock (1-12) that describes the angle at which the vehicle received damage.
- ◆ The **Damage Description Code** consists of a two or three-letter alpha character code that describes the area of the vehicle that received the damage.
- ◆ The **Damage Severity Code** consists of a single-digit numeric character code ranging from 0 to 7 that describes the severity of the damage.

Section 2

Using the Vehicle Damage Scale

Overview

The Vehicle Damage Scale in Section 5 of this guide consists of 11 pages of photographs depicting automobiles damaged in crashes. There is a separate page for each of the common impacts that investigators are likely to encounter. The Vehicle Damage Scale is used to determine the Damage Description Code and the Damage Severity Code that the investigator will enter as part of the Vehicle Damage Rating on the CR-3. *The Direction of Force Code, which precedes the Damage Description Code and the Damage Severity Code in the Vehicle Damage Rating, is discussed in Section 3 of this guide.*

Damage Description Code

The two or three-letter Damage Description Code (FC, LBQ, etc.), displayed in the upper right, upper left, and lower left corner of each page of the Vehicle Damage Scale, indicates the part of the vehicle that received the damage and the type of impact that caused the damage. For example, the Damage Description Code “FC” indicates that the vehicle received front-end damage from a concentrated impact, corresponding to the type of impact resulting from a collision with a tree, utility pole, or other narrow object.

In addition, a diagram of a car and an arrow, or series of arrows, on the left side of the page, shows the direction of the principal impact force. The diagrams and damage descriptions for all of the pages of the Vehicle Damage Scale appear in the Vehicle Damage Index in Section 4 of this manual to assist investigators in finding the appropriate page to match the damage to the vehicle.

Damage Severity Code

The Damage Severity Code is entered as a single-digit numeric character between 0 and 7.

If a vehicle sustained no discernable damage, a “0” rating should be reported. The “0” rating is generally applicable to collisions of motor vehicles with pedestrians or bicycles or to non-collision crashes. In addition, if two motor vehicles collide head-on and one motor vehicle sustains no damage, the complete vehicle damage code for the undamaged vehicle may be indicated as “12-FD-0”.

Each page of the Vehicle Damage Scale in Section 5 of this guide consists of three to six photographs of automobiles damaged in traffic crashes. The numbers 1 through 7 to the left of the arrows adjacent to the photographs are used to indicate severity of damage.

To rate damage severity on a vehicle, the investigator must select the appropriate page of photographs and attempt to match the damage on the vehicle with one of the photographs appearing on the page.

(continued)

Damage Severity Code (continued)

Damage in the top photograph, or set of paragraphs on each page is minor and is generally limited to dents and gouges in body sheet metal and trim. The Damage Severity Code corresponding to these photographs is a “2”.

The second photograph or set of photographs shows vehicles that are moderately damaged, with considerable crumpling of body sheet metal, but little or no distortion of the basic structure or frame. The Damage Severity Code for these photographs is a “4”.

Vehicles appearing in the bottom photograph or sets of photographs are severely, but not totally damaged. Sheet metal is severely distorted, torn or crumpled; the basic structure of the car is visibly distorted, and there is usually some penetration of the passenger compartment. The Damage Severity Code corresponding to this set of photographs is a “6”.

While the damage severity scale specifies “2”, “4”, “6” ratings, the investigator may not be able to match the damaged vehicle with any of the photographs corresponding to those ratings. In that case, the investigator may use “1”, “3”, “5”, or “7” ratings for damage that is greater or less than the damage shown in the photographs. *Therefore, the photographs depicting three degrees of damage will guide the investigator in selecting any one of the seven degrees of severity to describe how badly a vehicle was damaged.*

Establishing Damage Description and Severity Rating

In order to establish a damage description and damage severity rating, the crash investigator must first select the proper page from the Vehicle Damage Index in Section 4 of this guide to match the damage to the vehicle. The type of collision will determine the selection.

For example, if the investigator is reporting on an angle collision that occurred at an intersection, and the front end of a vehicle struck another vehicle on the left side, the investigator can refer to the Vehicle Damage Index to find the diagram that most accurately describes the impact on the first vehicle. In this case, it may be the diagram that shows distributed impact on the front end. In the column headed “Damage Description Code”, the damage description “FD” tells the investigator what page of pictures should be used in determining the damage severity rating. The page number is listed in the next column. For convenience, the pages are arranged in the same order as their designators appear in the index.

The next step is to compare the damage on the vehicle with a photograph on the selected page of the Vehicle Damage Scale in Section 5. If, for example, the front-end damage on the first vehicle appears to match that on the bottom photograph on the page labeled “FD” (front-end damage, distributed impact), the damage description and severity rating would be “FD-6”. However, if the damage is more severe than the damage in the photo adjacent to “FD-6”, the damage description and severity rating of “FD-7” should be used; and if less severe, but greater than “FD-4”, the rating should be “FD-5”.

(continued)

Establishing Damage Description and Severity Rating (continued)

The procedure for rating the damage on the car that was struck on its left side is similar, except that the investigator must determine what part of the left side was struck before selecting the proper page of photographs depicting the damage. The impact diagrams in the Vehicle Damage Index facilitate this determination.

If the vehicle was struck broadside in the area of the passenger compartment, the investigator would use the page headed “LP/RP” to determine the damage severity rating. However, if the impact occurred in the area ahead of the passenger compartment, the page headed “LFQ/RFQ” (left front quarter/right front quarter) would be proper to use; and if the impact occurred behind the passenger compartment, the “LBQ/RBQ” (left back quarter/right back quarter) would be used.

Should the investigator decide that the second car in the example collision was struck broadside in the area of the passenger compartment, the entry on the crash report form would be “LP-(with the appropriate damage severity rating)”. If the second car was struck on the right side instead of the left side, the investigator would use the page titled “LP/RP”. The investigator would then enter “RP-(with the appropriate damage severity rating)” on the crash report form.

Dual descriptions such as LP/RP, LBQ/RBQ, FL/FR, and BL/BR mean that the pages so labeled may be used for describing damage to either the left or right sides of the vehicle. The investigator should exercise care in writing the damage description so that there will be no question as to what side or corner was damaged (*See Section 3, Direction of Force, for compatible direction of force and damage description codes*).

Note: In cases where vehicles are damaged in more than one area, the investigator should enter the description of the two (2) most severely damaged areas, beginning with the area showing the most severe damage (Example: “FD-6, BD-3”).

Exceptions:

The following damage descriptions shall be utilized when vehicles acquire damage from occurrences other than the types of impacts described in the damage description table:

- ◆ **VB-1** - vehicle burned, NOT due to collision (engine catches fire, cigarette burns upholstery, etc.).
- ◆ **VB-7** - vehicle catches fire due to the collision (vehicle collides with object or another vehicle and fire starts).
- ◆ **TP-0** - top damage only.
- ◆ **VX-0** - undercarriage damage only.
- ◆ **MC-1** - motorcycle, moped, scooter, etc.
- ◆ **N/A** - farm tractor, train, pedalcyclist, wheelchair, motorized conveyance, streetcar, animal carrying person, etc.

Section 3

Direction of Force Code

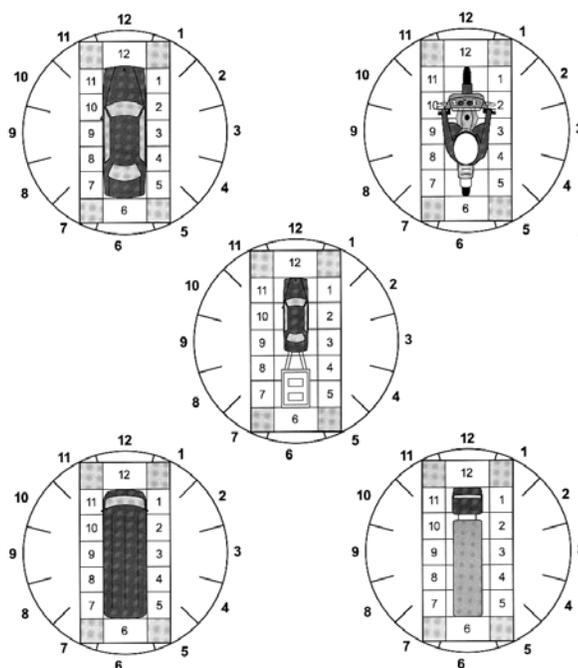
Overview

The Direction of Force Code describes the angle at which the vehicle received damage, and is the first field captured when describing vehicular damage in the Vehicle Damage Rating (see diagram in Section 1). This is the field that represents the *impact point*. A rough description of direction of force is provided by the damage description letter code in the Vehicle Damage Scale. However, for investigators who prefer a more precise scheme for indicating direction of force, the investigator may assign a one or two-digit numeric code corresponding to the numbers on a clock that represents the direction at which the vehicle received damage.

Determining Direction of Force

In order to determine the direction of force, the investigator must imagine a superimposed circle around the vehicle, with numbers as on a clock. Each number (1-12) represents a direction or angle in which the vehicle may have received damage. See the following diagrams for determining the number value indicating direction of force for different types of vehicles.

Clockpoint Diagrams for Different Types of Motor Vehicles



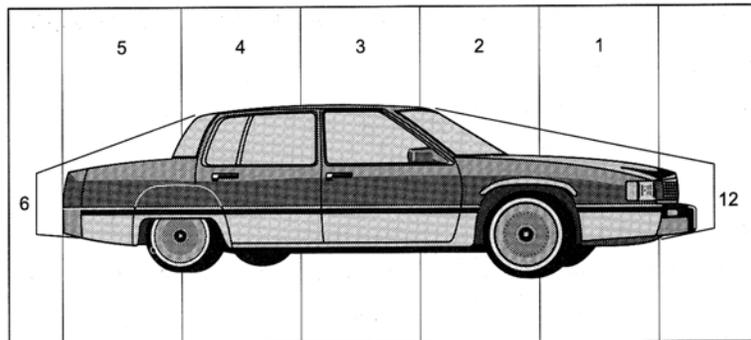
The clockpoint diagrams above show direction of force for different types of motor vehicles. For example, the direction of force for a vehicle involved in a head-on collision where force is received by the front of the vehicle would be a 12. Direction of force for a vehicle receiving damage directly from behind would be a 6. A perpendicular hit to the driver's side of the vehicle would be shown as a 9 and a perpendicular hit to the passenger's side would be shown as a 3.

Impact Points

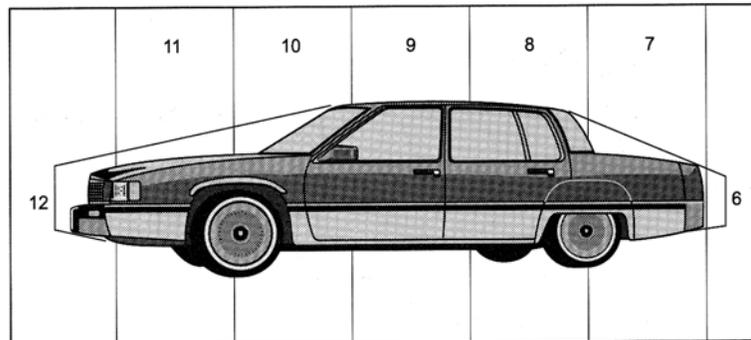
To be compatible, the direction of force and damage description codes entered on the CR-3 crash report form must correspond to the appropriate side of the vehicle (left, right, front or rear). In other words, a direction of force code of “3” and a damage description code of “LP” (3-LP) are *incompatible*, because “LP” is the code for “Left Panel” and the direction of force code “3” is associated with damage to the *right* side of the vehicle as indicated on the chart below.

Compatible Impact Points for Direction of Force

Right Side



Left Side



Impact Points correspond to the numbers on the clockpoint diagrams shown on the previous page of this guide to indicate the direction of force from which damage was received. The numbers 3 and 9 indicate a perpendicular impact to the sides of the vehicle, the number 6, a perpendicular impact to the rear of the vehicle, and the number 12, a perpendicular impact to the front of the vehicle.

Any of the above numbers that are used should precede the letter code to prevent any confusion with the Damage Severity Code, which follows the letter code (*See Section 2 of this guide*). Inclusion of direction of force codes is shown in the following examples:

12-FC-3, 9-LP-2, 6-BD-4

(continued)

Impact Points (continued)

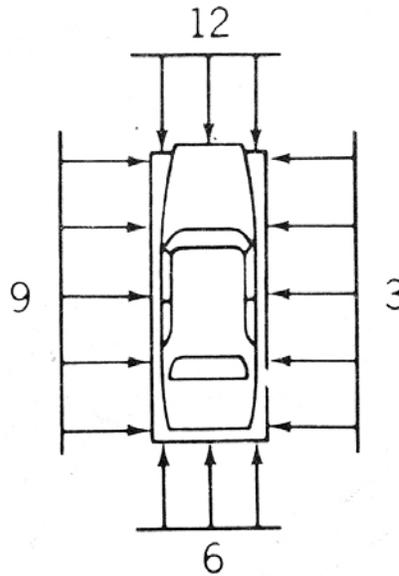


Diagram 1

In Diagram 1, the direction of force codes indicated by numbers 3, 6, 9, and 12 are approximately perpendicular to the vehicle. Compatible direction of force codes and damage description codes are shown in the table below.

Direction of Force Codes Indicated in Diagram 1

12-FC	3-RBQ	6-BC	9-LBQ
12-FD	3-RFQ	6-BD	9-LFQ
12-FL	3-RP	6-BL	9-LP
12-FR	3-R&T	6-BR	9-L&T

Any other letter code combined with any of the above numbered codes should be considered as incompatible.

(continued)

Impact Points (continued)

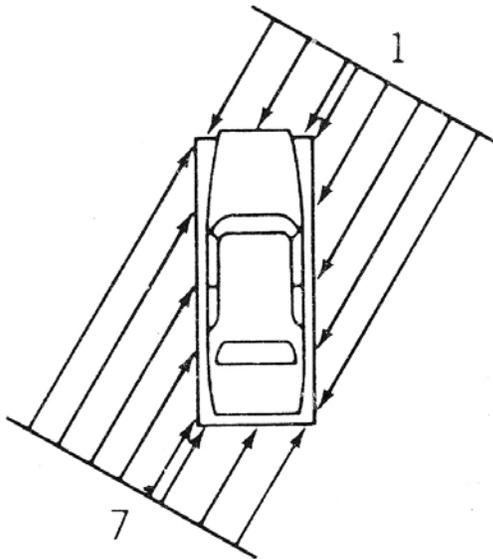


Diagram 2

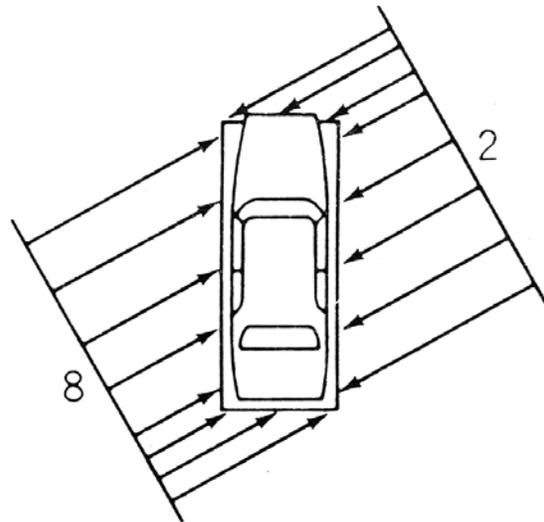


Diagram 3

In Diagram 2, the direction of force codes indicated by numbers 1 and 7 are isolated. In Diagram 3, the direction of force codes indicated by numbers 2 and 8 are isolated. Below are combinations of compatible codes.

Direction of Force Codes Indicated in Diagrams 2 & 3

1-FC	2-FC	7-BC	8-BC
1-FL	2-FL	7-BL	8-BL
1-FR	2-FR	7-BR	8-BR
1-RBQ	2-RBQ	7-LBQ	8-LBQ
1-RFQ	2-RFQ	7-LFQ	8-LFQ
1-RD	2-RP	7-LD	8-LP
1-RP		7-LP	

(continued)

Impact Points (continued)

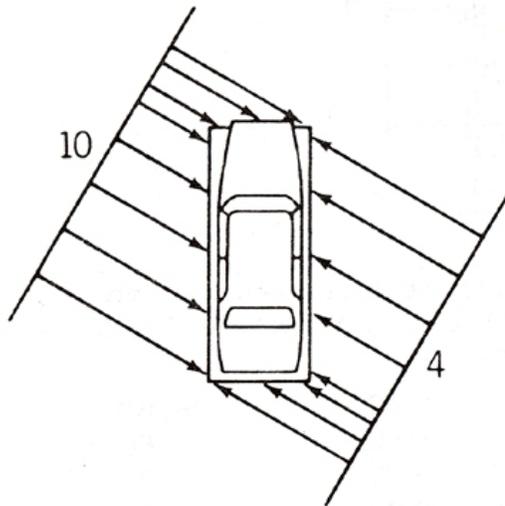


Diagram 4

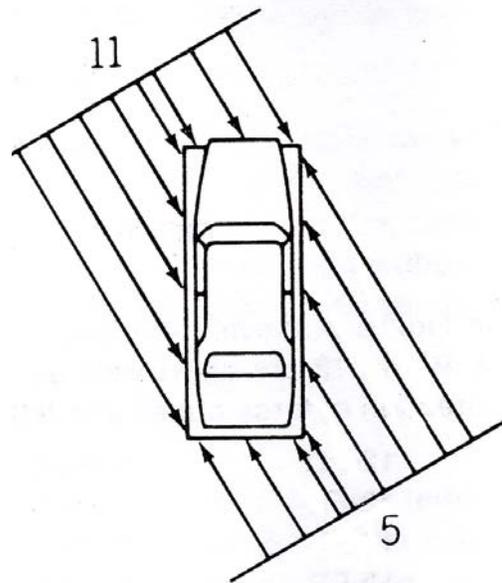


Diagram 5

In Diagram 4, the direction of force codes indicated by numbers 4 and 10 are isolated. In Diagram 5, the direction of force codes indicated by numbers 5 and 11 are isolated. Below are combinations of compatible codes.

Direction of Force Codes Indicated in Diagrams 2 & 3

4-RBQ	5-RBQ	10-RBQ	11-RBQ
4-RFQ	5-RFQ	10-LFQ	11-LFQ
4-RP	5-RD	10-LP	11-LD
4-BL	5-RP	10-FC	11-LP
4-BR	5-BL	10-FL	11-FC
4-BC	5-BR	10-FR	11-FL
5-BC		11-FR	

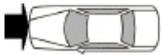
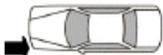
Section 4 Vehicle Damage Index

Overview

The Vehicle Damage Index is used by the investigating officer to determine which page of the Vehicle Damage Scale in Section 5 of this guide best represents the damage to the vehicle. In order to establish a damage severity rating, the crash investigator must first select the proper page from the Index to match the vehicle damage. The type of collision will determine the selection.

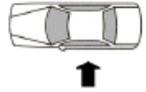
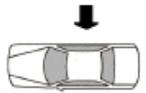
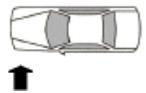
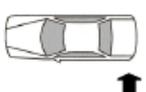
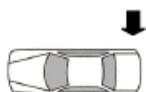
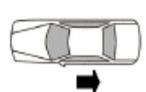
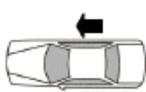
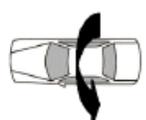
Diagrams of cars and arrows on the left side of the chart show the directions of the principal impact force. The “Type of Impact” in the second column provides a detailed description of the type of damage associated with the impact. Corresponding damage description codes and page numbers are listed in the columns on the right side of the chart to refer the investigator to the page of photographs that can be used to determine the damage severity rating.

Vehicle Damage Index

Vehicle Damage Index		Damage Description	See Page #
	Type of Impact (Front to Rear End Damage) Front end damage due to concentrated impact resulting from collision of subject vehicle with tree, utility pole, or other narrow object.	FC	15
	Front end damage due to distributed impact resulting from full contact of front end of subject vehicle with other vehicle or broad object.	FD	16
	Front left corner damage due to partial contact of front end of subject vehicle with other vehicle or object	FL	17
	Front right corner damage due to partial contact of front end of subject vehicle with other vehicle or object.	FR	17
	Rear end damage due to concentrated impact resulting from collision of subject vehicle with tree, utility pole, or other narrow object.	BC	18
	Rear end damage due to distributed impact resulting from full contact of rear end of subject vehicle with another vehicle or object. Applicable to rear-end collisions.	BD	19
	Rear left corner damage due to partial contact or rear end of subject vehicle with another vehicle or object. Applicable to rear-end collisions	BL	20
	Rear right corner damage due to partial contact of rear end of subject vehicle with another vehicle or object. Applicable to rear-end collisions	BR	20

(continued)

Vehicle Damage Index (continued)

	Type of Impact (Side and/or Top Damage)	Damage Description	See Page #
	Left side damage in vicinity of passenger compartment due to angular impact by another vehicle or object. Applicable to angle collisions and crashes in which a vehicle strikes an object after skidding or spinning.	LP	21
	Right side damage in vicinity of passenger compartment due to angular impact by another vehicle or object.	RP	21
	Left front quarter damage (ahead of passenger compartment) due to angular impact by another vehicle or object. Applicable to angle collisions and crashes in which a vehicle strikes an object after skidding or spinning.	LFQ	22
	Right front quarter damage (ahead of passenger compartment) due to angular impact by another vehicle or object.	RFQ	22
	Left rear quarter damage (behind passenger compartment) due to angular impact by another vehicle or object. Applicable to angle collisions and crashes in which a vehicle strikes an object after skidding or spinning.	LBQ	23
	Right rear quarter damage (behind passenger compartment) due to angular impact by another vehicle or object.	RBQ	23
	Left side damage resulting from sideswipe by meeting or overtaking other vehicle or object.	LD	24
	Right side damage resulting from sideswipe by meeting or overtaking other vehicle or object.	RD	24
	Left side and top damage due to rollover.	L&T	25
	Right side and top damage due to rollover	R&T	25

Section 5

Vehicle Damage Scale

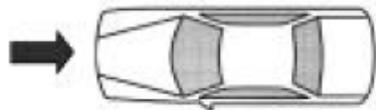
Overview

The Vehicle Damage Scale on the following pages is used by crash investigators to determine the severity of damage to motor vehicles involved in traffic crashes. The Vehicle Damage Index in Section 4 may be used to determine which page of the scale the investigator should refer to for damage resulting from specific types of crashes (see Section 2 of this guide for information on how to use the Vehicle Damage Scale).

DAMAGE DESCRIPTION

FC

**Front End Damage
Concentrated Impact**



This scale is applicable to damage to the front of the subject vehicle resulting from a collision with a tree, utility pole, or other narrow object.

FC

**Damage Description and
Severity Codes**

FC - 1 



FC - 2 



FC - 3 

FC - 4 



FC - 5 

FC - 6 

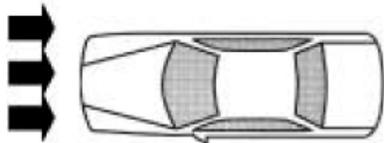
FC - 7 

FC

DAMAGE DESCRIPTION

FD

**Front End Damage
Distributed Impact**

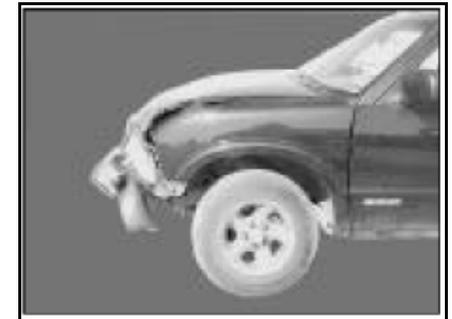


This scale is applicable to damage to the front of the subject vehicle due to distributed impact resulting from full contact with another vehicle or broad object.

FD

**Damage Description and
Severity Codes**

FD – 1



FD – 2



FD – 3



FD – 4



FD – 5



FD – 6



FD – 7

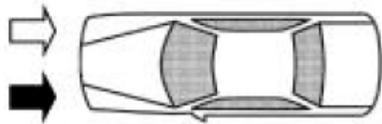


FD

DAMAGE DESCRIPTION

FL/FR

**Front End Damage
Partial Contact**



This scale is applicable to damage resulting from partial contact of the front end (left front corner or right front corner) of the subject vehicle with another vehicle or object.

FL/FR

**Damage Description and
Severity Codes**

FL-1 or FR-1 →



FL-2 or FR-2 →



FL-3 or FR-3 →



FL-4 or FR-4 →



FL-5 or FR-5 →



FL-6 or FR-6 →



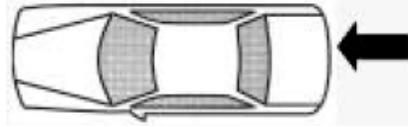
FL-7 or FR-7 →

FL/FR

DAMAGE DESCRIPTION

BC

**Back End Damage
Concentrated Impact**



This scale is applicable to damage to the back end of the subject vehicle resulting from a collision with a tree, utility pole, or other narrow object.

BC

Damage Description and Severity Codes

BC - 1



BC - 2



BC - 3

BC - 4

BC - 5

BC - 6



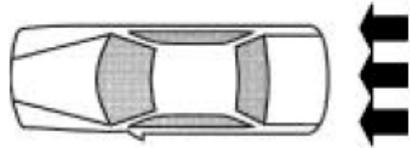
BC - 7

BC

DAMAGE DESCRIPTION

BD

Rear End Damage
Distributed Impact



This scale is applicable to damage to the rear of the subject vehicle resulting from full contact of the rear end of the subject vehicle with another vehicle or object.

BD

Damage Description and Severity Codes

BD - 1 →



BD - 2 →



BD - 3 →

BD - 4 →

BD - 5 →

BD - 6 →

BD - 7 →

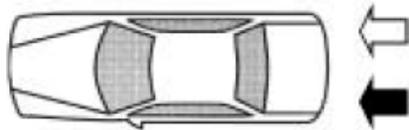


BD

DAMAGE DESCRIPTION

BL/BR

**Front End Damage
Partial Contact**



This scale is applicable to damage resulting from partial contact of the rear end (left rear corner or right rear corner) of the subject vehicle with another vehicle or object.

BL/BR

Damage Description and Severity Codes

BL-1 or BR-1



BL- 2 or BR- 2



BL- 3 or BR- 3



BL- 4 or BR- 4



BL- 5 or BR- 5



BL- 6 or BR- 6



BL- 7 or BR-7

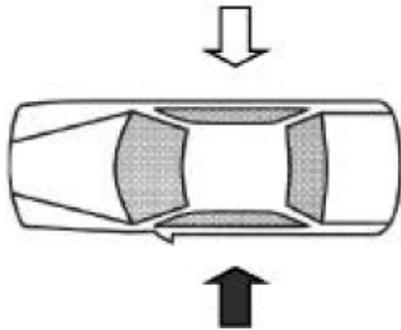


BL/BR

DAMAGE DESCRIPTION

LP/RP

**Side Damage
Angular Impact**



This scale is applicable to damage to the side in the vicinity of the passenger compartment of the subject vehicle resulting from an angular impact by another vehicle or object.

LP/RP

**Damage Description and
Severity Codes**

LP- 1 or RP - 1



LP- 2 or RP - 2



LP- 3 or RP- 3



LP- 4 or RP- 4



LP- 5 or RP- 5



LP- 6 or RP- 6



LP- 7 or RP- 7



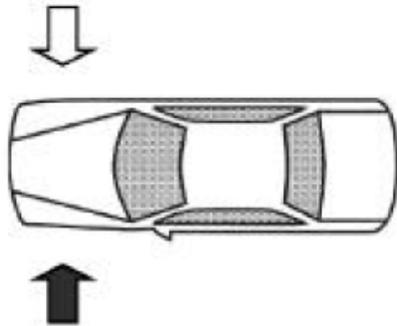
LP/RP



DAMAGE DESCRIPTION

LFQ/RFQ

**Front Quarter Damage
Angular Impact**



This scale is applicable to damage to the left or right front quarter of the subject vehicle (ahead of the passenger compartment) resulting from an angular impact by another vehicle or object.

LFQ/RFQ

**Damage Description and
Severity Codes**

LFQ – 1 or RFQ – 1



LFQ – 2 or RFQ – 2



LFQ – 3 or RFQ – 3



LFQ – 4 or RFQ – 4



LFQ – 5 or RFQ – 5



LFQ – 6 or RFQ – 6



LFQ – 7 or RFQ – 7



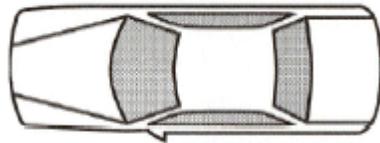
LFQ/RFQ



DAMAGE DESCRIPTION

LBQ/RBQ

Rear Quarter Damage
Angular Impact



This scale is applicable to damage to the left or right rear quarter of the subject vehicle (behind the passenger compartment) resulting from an angular impact by another vehicle or object.

LBQ/RBQ

Damage Description and Severity Codes

LBQ – 1 or RBQ – 1



LBQ – 2 or RBQ – 2



LBQ – 3 or RBQ – 3



LBQ – 4 or RBQ – 4



LBQ – 5 or RBQ – 5



LBQ – 6 or RBQ – 6



LBQ – 7 or RBQ – 7



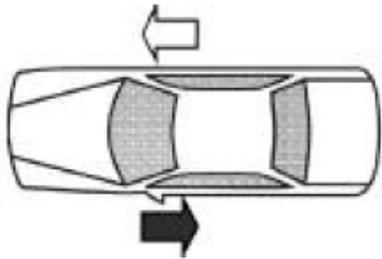
LBQ/RBQ



DAMAGE DESCRIPTION

LD/RD

**Distributed Side Damage
Parallel Impact**



This scale is applicable to damage to the left or right side of the subject vehicle resulting from a sideswipe with another vehicle or object.

LD/RD

Damage Description and Severity Codes

LD - 1 or RD - 1



LD - 2 or RD - 2



LD - 3 or RD - 3



LD - 4 or RD - 4



LD - 5 or RD - 5



LD - 6 or RD - 6



LD - 7 or RD - 7



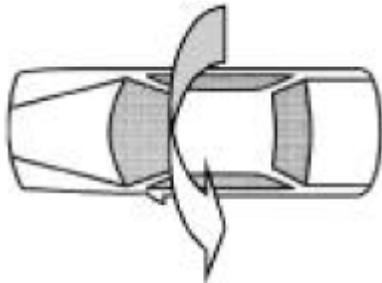
LD/RD



DAMAGE DESCRIPTION

L&T/R&T

Side and Top Damage
Roll-over Effects



This scale is applicable to damage to the left or right side and top of the subject vehicle resulting from a rollover.

L&T/R&T

Damage Description and Severity Codes

L&T - 1 or R&T - 1



L&T - 2 or R&T - 2



L&T - 3 or R&T - 3



L&T - 4 or R&T - 4



L&T - 5 or R&T - 5



L&T - 6 or R&T - 6



L&T - 7 or R&T - 7



L&T/R&T



SOURCES:

Manual on Classification of Motor Vehicle and Traffic Accidents, American National Standard Institute (ANSI) D 16.1 - 1996, Minimum Model Uniform Crash Criteria (MMUCC) Guideline, 2nd Edition - 2003, FARS Coding Manual - 2008.