

REPORT NUMBER 110-GTL-08-003

SAFETY COMPLIANCE TESTING FOR FMVSS NO. 110 TIRE SELECTION AND RIMS

KIA MOTORS CORPORATION
2008 KIA SPORTAGE, MPV
NHTSA NO. C80506

GENERAL TESTING LABORATORIES, INC.
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SEPTEMBER 15, 2008

FINAL REPORT

PREPARED FOR

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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16. Abstract Compliance tests were conducted on the subject 2008 Kia Sportage, MPV in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-110T-02 for the determination of FMVSS 110 compliance. Test failures identified were as follows: None		
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SECTION 1

INTRODUCTION

1.0 PURPOSE OF COMPLIANCE TEST

A 2008 Kia Sportage MPV was subjected to FMVSS No. 110 testing to determine if the vehicle was in compliance with the requirements of the standard. All tests were conducted in accordance with NHTSA, Office of Vehicle Safety Compliance (OVSC) Laboratory Procedure, TP-110T-02 dated 31 August 2007 and General Testing Laboratories, Inc (GTL) Test Procedure, TP-110T dated 11 June 2007.

1.1 TEST VEHICLE

The test vehicle was a 2008 Kia Sportage MPV. Nomenclature applicable to the test vehicle are:

- A. Vehicle Identification Number: KNDJF724587490403
- B. NHTSA No.: C80506
- C. Manufacturer: KIA MOTORS CORPORATION
- D. Manufacture Date: 10/07

1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 110 testing during the time period July 22-23, 2008.

SECTION 2

TEST PROCEDURE AND SUMMARY OF RESULTS

2.0 GENERAL

The 2008 Kia Sportage MPV, NHTSA No. C80506, was subjected to FMVSS No. 110 testing during the time period July 22 through July 23, 2008.

2.1 TEST PROCEDURE

Prior to test, the test vehicle was inspected for completeness, systems operability and appropriate fuel and liquid levels, i.e., oil and coolant. The vehicle was then photographically documented as required by the DOT/NHTSA and GTL test procedures. Subsequent events included weighing the vehicle to establish delivered curb weight and the distribution of weight on the front and rear axles and each wheel position. The vehicle normal load as well as the maximum load on each wheel were measured. Data from each tire furnished with the vehicle were recorded. The vehicle tire placard was surveyed and photographed. Required dimensional data and other identifying data for the left front and right rear rims were obtained. The contour of the aforementioned rims was documented photographically.

In preparation for the deflated tire retention test, test instrumentation was installed in the vehicle. With the driver aboard, the vehicle was ballasted to equal the "vehicle maximum load on the tire" on the front and rear axle, as previously established. The tire pressure of all tires was adjusted to placard specifications for cold tire inflation at maximum loaded vehicle weight. The deflated tire retention test was then conducted on the left front tire followed by the right rear tire. The tests were conducted with the vehicle traveling in a straight line at 96.6 kph (60 mph). The respective tire was blown by an explosive charge on the tire's sidewall. Test data collected during the test included vehicle speed, deceleration, stopping distance, distance of uncontrolled deviation from a straight line and tire pressure. After the vehicle was stopped, any tire bead separation from the rim flange was documented photographically.

2.2 SUMMARY OF RESULTS

The test vehicle appears to be in compliance with the requirements of FMVSS No. 110.

SECTION 3

TEST DATA

DATA SHEET 1 (1 of 2)
SUMMARY

VEHICLE MAKE/MODEL/BODY STYLE: 2008 Kia Sportage
 VEHICLE NHTSA NO.: C80506 ; VIN: KNDJF724587490403
 VEHICLE TYPE: MPV DATE OF MANUFACTURE: 10/07
 LABORATORY: General Testing Laboratories, Inc.
 TEST DATE: July 22-23, 2008

LIGHT TRUCK TYPE VEHICLE REQUIREMENTS

PASS/FAIL

General (Data Sheet 2)

The vehicle is equipped with tires that meet the requirements of S139. (S110, S4.1)

Pass

Tire Load Limits (Data Sheet 2)

The sum of the maximum load ratings of the tires fitted to an axle is not less than the gross axle weight rating (GAWR) of the axle system as specified on the certification label. When passenger car tires are installed, each tires load rating is reduced by dividing it by 1.10 before determining the sum of the maximum load ratings of the tires fitted to an axle. (S110, S4.2.2.1, S4.2.2.2)

Pass

When passenger car tires are installed, the vehicle normal load on the tire is not greater than the value of 94 percent of the derated load rating at the vehicle manufacturer's recommended cold inflation pressure for that tire. When LT tires are installed, the vehicle normal load on the tire is not greater than the value of 94 percent of the load rating at the vehicle manufacturer's recommended cold inflation pressure for that tire. (S110, S4.2.2.3(a), (b))

Pass

Rims (Data Sheet 3 and 6)

Each rim is constructed to the dimensions of a rim referred to in FMVSS 139 that is listed by the manufacturer of the tires as suitable for use with those tires. (S110, S4.4.1 (a))

Pass

Vehicle rims retain deflated tires during a controlled braking application (S110, S4.4.1(b))

Pass

Each rim is properly marked (S110, S4.4.2)

Pass

DATA SHEET 1 (2 of 2)
SUMMARY

LIGHT TRUCK TYPE VEHICLE REQUIREMENTS

PASS/FAIL

Certification, Placard, and Tire Inflation Pressure Labels (Data Sheet 4)

The placard and tire inflation pressure label (if provided) are affixed and located correctly, and display the information and format required (S110, S4.3)

Pass

The Part 567 certification label shows the size designation of the tires and rims appropriate for the vehicle including the tire size(s) listed on the vehicle placard and, if provided, tire inflation pressure label. (S110, S4.3.3)

Pass

No inflation pressure other than the maximum permissible inflation pressure is shown on the placard and, if any, tire inflation pressure label unless as required. (S110, S4.3.4)

Pass

Vehicle Weight Distribution (Data Sheet 5)

The Gross Vehicle Weight Rating(GVWR) is not less than the sum of the unloaded vehicle weight, rated cargo load, and 68 kg times the vehicle's designated seating capacity. However, for school buses, the minimum occupant weight allowance is 54 kg. (49 CFR 567, Certification)

Pass

Owner's Manual (Data Sheet 6)

Owner's manual or other document has discussion of Vehicle Placard, Loading and Tires. (575.6 (a) (4))

Pass

Owner's manual includes exact statement relating to "Steps for Determining Correct Load Limits." (575.6 (a)(5))

Pass

RECORDED BY: G. FARRAND
APPROVED BY: D. MESSICK

DATE: 07/23/08

DATA SHEET 2
TEST VEHICLE INFORMATION

LABORATORY: General Testing Laboratories, Inc. DATE: 07/22/08

VEHICLE MODEL YEAR/MAKE/MODEL/BODY STYLE: 2008 Kia Sportage

MANUFACTURE DATE: 10/07 NHTSA NO.: C80506 BODY COLOR: Silver

VIN: KNDJF724587490403 VEHICLE TYPE: MPV

GVWR 2050 kg (4519 lbs) GAWR(Fr) 1170 kg (2579 lbs) GAWR(Rr) 1100 kg (2425 lbs)

SEATING POSITIONS: FRONT 2 MID REAR 3

ODOMETER READING AT START OF TEST: 188 Miles

ENGINE DATA: 4 Cylinders 2.0 Liters 120.5 Cubic Inches

TRANSMISSION DATA: Automatic X Manual 5 No. of Speeds

FINAL DRIVE DATA: Rear Drive X Front Drive 4 Wheel Drive

CHECK APPROPRIATE BOXES FOR VEHICLE EQUIPMENT/MAKE SURE ALL OPTIONS ON WINDOW

<input checked="" type="checkbox"/>	Air Conditioning	<input checked="" type="checkbox"/>	Traction Control	<input checked="" type="checkbox"/>	Clock
<input checked="" type="checkbox"/>	Tinted Glass	<input type="checkbox"/>	All Wheel Drive	<input checked="" type="checkbox"/>	Roof Rack
<input checked="" type="checkbox"/>	Power Steering	<input checked="" type="checkbox"/>	Cruise Control	<input checked="" type="checkbox"/>	Console
<input checked="" type="checkbox"/>	Power Windows	<input checked="" type="checkbox"/>	Rear Window Defroster	<input checked="" type="checkbox"/>	Driver Air Bag
<input checked="" type="checkbox"/>	Power Door Locks	<input type="checkbox"/>	Sun Roof or T-Top	<input checked="" type="checkbox"/>	Passenger Air Bag
<input type="checkbox"/>	Power Seat(s)	<input checked="" type="checkbox"/>	Tachometer	<input checked="" type="checkbox"/>	Front Disc Brakes
<input checked="" type="checkbox"/>	Power Brakes	<input checked="" type="checkbox"/>	Tilt Steering Wheel	<input checked="" type="checkbox"/>	Rear Disc Brakes
<input checked="" type="checkbox"/>	Antilock Brake System	<input checked="" type="checkbox"/>	AM/FM/CD	<input type="checkbox"/>	Other –

REMARKS:

RECORDED BY: G. FARRAND
APPROVED BY: D. MESSICK

DATE: 07/22/08

DATA SHEET 3
TEST VEHICLE TIRE IDENTIFICATION AND LOAD LIMITS

VEHICLE MAKE/MODEL/BODY STYLE: 2008 Kia Sportage
 VEHICLE NHTSA NO.: C80506 ; VIN: KNDJF724587490403
 LABORATORY: General Testing Laboratories, Inc.
 TEST DATE: July 22-23, 2008

All tires on the vehicle (excluding the spare) are the same size: Yes No

Spare tire is the same size as all other tires: Yes No

Tire Sidewall	Right Front	Left Rear (If different)	Spare Tire (If different)
Manufacturer and Model	<u>Kumho Ecsta HP4</u>	<u>_____</u>	<u>Maxxis</u>
Tire Size Designation	<u>P215/65R16</u>	<u>_____</u>	<u>T155/90D16</u>
Load Index/Speed Symbol	<u>96 T</u>	<u>_____</u>	<u>110/M</u>
Maximum Inflation Pressure	<u>300 KPA, 44 PSI</u>	<u>_____</u>	<u>420 KPA, 60 PSI</u>
Maximum Load Rating	<u>710 KG, 1565 LBS</u>	<u>_____</u>	<u>1060 KG, 2337 LBS</u>
Treat/Traction/Temperature	<u>360 "A" "B"</u>	<u>_____</u>	<u>N/A</u>
Tires have "DOT" markings	<u>YES</u>	<u>_____</u>	<u>YES</u>

Serial Number: Right Front 27L3YP71 Left Front 27L3YP71
 Right Rear 27L3YP71 Left Rear 27L3YP71
 Spare 7FJFABC3607

Mounted Tire vs. Axle Rating Comparison (at sidewall maximum inflation pressure)	Front Axle	Rear Axle
A. GAWR (KG) from certification label	1170 KG	1100 KG
B. Tire Maximum Load Rating from above (KG)	710 KG	710 KG
C. Reduced Tire Load Rating, if applicable (KG)*	645.45 KG	645.45 KG
D. (Number of tires on axle) x (tire load rating, de-rated if appropriate)	1290.90 KG	1290.90 KG
Is "D" equal to or greater than "A"? (Yes/No)	YES	YES

* If a passenger car tire is installed on a multipurpose passenger vehicle (MPV), truck or bus, the tire's load rating is reduced by dividing by 1.10.

DATA INDICATES COMPLIANCE PASS/FAIL Pass

REMARKS:

RECORDED BY: G. FARRAND
 APPROVED BY: D. MESSICK

DATE: 07/23/08

DATA SHEET 4
VEHICLE RIM IDENTIFICATION

VEHICLE MAKE/MODEL/BODY STYLE: 2008 Kia Sportage
 VEHICLE NHTSA NO.: C80506 ; VIN: KNDJF724587490403
 LABORATORY: General Testing Laboratories, Inc.
 TEST DATE: July 22, 2008

RIM MARKINGS	RIGHT FRONT	LEFT REAR (if different)
A. Source of published dimensions (letter designation)	"E"	
B. Rim Size	E 6.5 J x 16	
C. Does rim contain DOT symbol (Yes/No)	YES	
D. Manufacturer's name, symbol or trademark (copy format)	KIA	
E. Date of manufacture or symbol (copy format)	1006/07	
Do items A-C appear on weather side of rim? (Yes/No)	YES	
Letter height (not less than 3 mm)	YES	
Lettering (impressed or embossed)	EMBOSSSED	
Are all rim markings legible? (Yes/No)	YES	
Do all markings comply with requirements? (Yes/No)	YES	

RIM MEASUREMENTS	RIGHT FRONT	LEFT REAR (if different)
Rim Width (mm)	165.1	
Rim Diameter (mm)	406.4	
Rim measurements same as rim markings? (Yes/No)	YES	

Rims are suitable for tire on vehicle* (X) Yes () No

*Reference source used for tire/rim match verification: 2008 Tire and Rim Association Yearbook

DATA INDICATES COMPLIANCE

PASS/FAIL Pass

REMARKS:

RECORDED BY: G. FARRAND
 APPROVED BY: D. MESSICK

DATE: 07/22/08

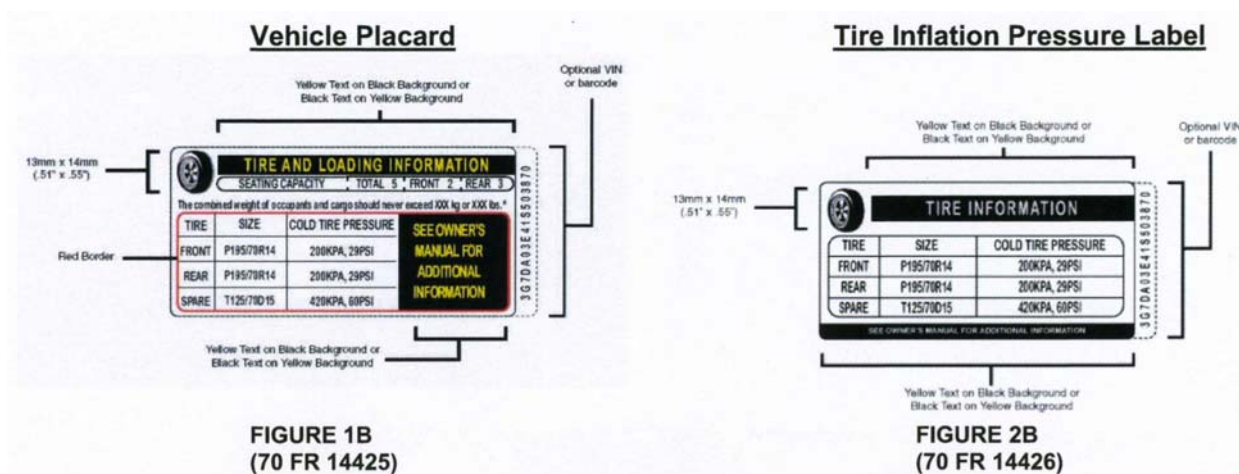
DATA SHEET 5 (1 of 3)
VEHICLE PLACARD AND TIRE INFLATION PRESSURE LABEL

VEHICLE MAKE/MODEL/BODY STYLE: 2008 Kia Sportage
 VEHICLE NHTSA NO.: C80506 ; VIN: KNDJF724587490403
 LABORATORY: General Testing Laboratories, Inc.
 TEST DATE: July 22, 2008

Identification of Vehicle Labeling

	(Yes/No)	Location	Pass/Fail
1. Certification Label*	<u>Yes</u>	<u>Driver "B" Pillar</u>	<u>Pass</u>
2. Vehicle Placard*	<u>Yes</u>	<u>Driver "B" Pillar</u>	<u>Pass</u>
3. Tire Inflation Pressure Label*	<u>No</u>	<u>N/A</u>	<u>N/A</u>

*Labels are to be located as specified in section 12.4 of DOT test procedure



Labeling Notes:

1. Tire size and pressure can be omitted from Vehicle Placard if same data is displayed on a Tire Inflation Pressure Label.
2. The Alphanumeric Identifier or Barcode, is optional. It can be located vertically, along the right edge or the left edge of the placard or label, or horizontally, along the bottom edge of the placard or label.
3. Tire size can include the tire load range identification symbol ("XL" or "reinforced", "B", "C", "D", "E", or "F"), the load index number, and speed rating symbol, located immediately to the right of the tire size designation.
4. The tire "SIZE" heading can be replaced with "ORIGINAL TIRE SIZE" or "ORIGINAL SIZE"
5. The "SPARE" tire heading can be replaced with "SPARE TIRE."
6. For full size spare tires, the recommended cold tire inflation pressure can be replaced with "SEE ABOVE."
7. If no spare tire is provided, the word "NONE" is to replace the manufacturer's cold tire inflation pressure.

DATA SHEET 5 (2 of 3)
VEHICLE PLACARD AND TIRE INFLATION PRESSURE LABEL

Vehicle Placard has the exact color and format as specified in the above Figure 1B and text is in English. Yes No

If no, explain: _____

Tire Inflation Pressure Label, if provided, has the exact color and format as specified in the above Figure 2B and text is in English. Yes No Not Applicable

If no, explain: _____

Vehicle Placard and, if provided, **Tire Inflation Pressure Label** are permanently affixed.

Yes No

Vehicle Placard information:

Combined weight of occupants and cargo 390 kg (860 lbs)

Seating capacity: Total 5 Front 2 Rear 3

Is the number of belted seating positions the same as the labeled seating capacity?

Yes No

If no, explain _____

Is the tire size and pressure provided? Yes No

If no, is the tire size and pressure provided on a Tire Inflation Pressure Label?

Yes No

Vehicle Placard or Tire Inflation Pressure Label tire information:

Tire size Front P215/65R16 Rear P215/65R16

Tire Inflation Pressure Front 210 kPa (30 psi) Rear 210 kPa (30 psi)

Are the sizes of the installed tires the same as the sizes of the labeled tires?

Yes No

If no, explain _____

Is the labeled cold tire inflation pressure equal to or less than the sidewall labeled maximum cold tire inflation pressure?

Front axle: Yes No Rear axle: Yes No

Vehicle Certification Label information:

	Tire Size	Rim Size	Rim Suitable for Tire? (Yes/No)*
Front Axle	<u>P215/65R16</u>	<u>6.5J x 16</u>	<u>Yes</u>
Rear Axle	<u>P215/65R16</u>	<u>6.5J x 16</u>	<u>Yes</u>

DATA SHEET 5 (3 of 3)
VEHICLE PLACARD AND TIRE INFLATION PRESSURE LABEL

Referenced source used for tire/rim match verification: 2008 Tire and Rim Association Yearbook

Is (Are) tire size(s) listed on the vehicle placard and/or tire inflation pressure label also listed on the certification label with suitable rim size? (X) Yes () No

Labeled Tire Capacity at Specified Pressure GVWR: <u>2050 KG</u>	<u>Front Axle</u>	<u>Rear Axle</u>
A. GAWR (KG) from certification label	1170	1100
B. Tire Load Rating (KG) of labeled tire size at labeled inflation pressure*	667	667
C. Reduced Tire Load Rating, if applicable** (KG)	606	606
D. (Number of tires) x (tire load rating, de-rated if appropriate) (KG)	1212	1212
Is "D" equal to or greater than "A"? (Yes/No)	YES	YES

*Reference source used for tire/rim match verification: 2008 Tire and Rim Association Yearbook

** If a passenger car tire is installed on a multipurpose passenger vehicle(MPV), truck or bus, the tire's load rating is reduced by dividing 1.10.

DATA INDICATES COMPLIANCE

PASS/FAIL Pass

REMARKS:

RECORDED BY: G. FARRAND
APPROVED BY: D. MESSICK

DATE: 07/22/08

DATA SHEET 6 (1 of 4)
CURB WEIGHT, NORMAL LOAD WEIGHT & MAXIMUM VEHICLE WEIGHT

VEHICLE MAKE/MODEL/BODY STYLE: 2008 Kia Sportage
 VEHICLE NHTSA NO.: C80506 ; VIN: KNDJF724587490403
 LABORATORY: General Testing Laboratories, Inc.
 TEST DATE: July 22, 2008

Full Fluid Levels: Fuel Full Coolant Full Other Fluids Full (Brake Fluid, Windshield Washer Fluid)

Tire Pressures: LF 210 KPA LR 210 KPA
 RF 210 KPA RR 210 KPA

A. MEASURED CURB WEIGHT WITH INSTALLED OPTIONS AND ACCESSORIES

LF 443.0 KG LR 307.0 KG
 RF 448.0 KG RR 316.0 KG

Front Axle 891.0 KG Rear Axle 623.0 KG

Total Vehicle 1514.0 KG

B. MEASURED VEHICLE NORMAL LOAD WEIGHT

1. Seating Capacity from Vehicle Placard 5
2. Normal Load Number of Occupants (from table in Section 10) 3
 Occupant Distribution: Front Seat 2 Second Seat 1
 Third Seat 0 Fourth Seat 0

3. Total Normal Occupant Load 204 KG
 (# of occupants x 68 KG per occupant)

4. Measured Normal Load on Axles
 LF 492.5 KG LR 360.5 KG
 RF 495.0 KG RR 370.0 KG

Front Axle 987.5 KG Rear Axle 730.5 KG

Total 1718.0 KG

5. Calculated Vehicle Normal Load on the Tire
 Front Tires (Measured front axle normal load/2) 493.8 KG
 Rear Tires (Measured rear axle normal load/2) 365.3 KG

DATA SHEET 6 (2 of 4)
CURB WEIGHT, NORMAL LOAD WEIGHT & MAXIMUM VEHICLE WEIGHT

Vehicle Normal Load on the Tire should not be greater than the Value of 94% of the load rating at the vehicle manufacturer's recommended cold inflation pressure.

MEASURED NORMAL LOAD ON TIRE VS. VALUE OF 94% OF LOAD RATING FOR THAT TIRE AT SPECIFIED PRESSURE	Front Axle	Rear Axle
A. Calculated Vehicle Normal Load on the Tire from (5)	493.8	365.3
B. Tire Load Rating (KG) of installed tire size at recommended cold inflation pressure*	667.0	667.0
C. Reduced Tire Load Rating, if applicable (KG)**	606.0	606.0
D. 94% of tire load rating, de-rated if appropriate (KG)	570.0	570.0
Is "D" equal to or greater than "A"? (Yes/No)	YES	YES

*Reference source used for tire/rim match verification: 2008 Tire and Rim Association Yearbook

** If a passenger car tire is installed on a multipurpose passenger vehicle(MPV), truck or bus, the tire's load rating is reduced by dividing 1.10.

DATA SHEET 6 (3 of 4)
CURB WEIGHT, NORMAL LOAD WEIGHT & MAXIMUM VEHICLE WEIGHT

C. MEASURED VEHICLE WEIGHT WITH FULL OCCUPANT LOAD

1. Seating Capacity from Placard:
Total 5 Front 2 Rear 3
2. Full Occupant Load 340 KG
(# of occupants x 68 KG per occupant)
3. Measured Vehicle Weight with Full Occupant Load

LF <u>506.5</u> KG	LR <u>415.0</u> KG
RF <u>510.5</u> KG	RR <u>422.0</u> KG
Front Axle <u>1017.0</u> KG Rear Axle <u>837.0</u> KG	
Total Vehicle <u>1854.0</u> KG	

D. MEASURED VEHICLE WEIGHT WITH MAXIMUM LOAD (PLACARD)

1. Vehicle Capacity Weight (from placard) 390 KG
2. Full Occupant Load (from C.2 above) 340 KG
(# of occupants x 68 KG per occupant)
3. Luggage/Cargo Load (subtract 2 from 1) 50 KG
4. Measured Vehicle Maximum Load on Axles

LF <u>504.5</u> KG	LR <u>442.5</u> KG
RF <u>508.5</u> KG	RR <u>448.5</u> KG
Front Axle <u>1013.0</u> KG Rear Axle <u>891.0</u> KG	
Total Vehicle <u>1904.0</u> KG	

DATA SHEET 6 (4 of 4)
CURB WEIGHT, NORMAL LOAD WEIGHT & MAXIMUM VEHICLE WEIGHT

WEIGHT DISTRIBUTION

Item	Tire or Vehicle Rating* (KG)	Unloaded Vehicle Wt. (KG)		Vehicle Wt. With Full Occupant Load (KG)		Vehicle Maximum Wt. With Occupants and Cargo (KG)	
		Measured	Overload	Measured	Overload	Measured	Overload
Left Front Tire	606.0	443.0	No	506.5	No	504.5	No
Right Front Tire	606.0	448.0	No	510.5	No	508.5	No
Front Axle (GAWR)	1170.0	891.0	No	1017.0	No	1013.0	No
Left Rear Tire	606.0	307.0	No	415.0	No	442.5	No
Right Rear Tire	606.0	316.0	No	422.0	No	448.5	No
Rear Axle (GAWR)	1100.0	623.0	No	837.0	No	891.0	No
Total Vehicle (GVWR)	2050.0	1514.0	No	1854.0	No	1904.0	No

* Vehicle and axle weight ratings (GVWR & GAWR) are located on the vehicle certification label. Vehicle tire load ratings are based upon the inflation pressure specified on the Vehicle Placard or Tire Inflation Pressure Label for each respective axle, as determined from the appropriate Tire and Rim reference manual. If a passenger car tire is installed on a multipurpose passenger vehicle (MPV), truck or bus, the tire's load rating is reduced by dividing by 1.10.

DATA INDICATES COMPLIANCE

PASS/FAIL Pass

REMARKS:

RECORDED BY: G. FARRAND
APPROVED BY: D. MESSICK

DATE: 07/22/08

DATA SHEET 7 (1 of 2)
DEFLATED TIRE RETENTION

VEHICLE MAKE/MODEL/BODY STYLE: 2008 Kia Sportage
 VEHICLE NHTSA NO.: C80506 ; VIN: KNDJF724587490403
 LABORATORY: General Testing Laboratories, Inc.
 TEST DATE: July 23, 2008

Tire Pressures: LF 210 KPA LR 210 KPA
 RF 210 KPA RR 210 KPA

Test Weight: LF 504 KG LR 441 KG
 RF 517.5 KG RR 441.5 KG

Front Axle 1021.5 KG Rear Axle 882.5 KG

Total Vehicle 1904 KG

Retention Test Left Front:

Odometer (START): 188 miles Fuel Level: Full

Ambient Temperature: 35.5 °C Wind Speed: 2.0 m/s

Vehicle Speed at time of blow-out: 95.6 kmph (97 kmph +0 kmph, -2 kmph)

Maximum Deceleration Rate: 2.5 m/sec² Deflation Opening Size 2.5 cm (dia.)

Stopping Distance (Distance traveled after initial release of air): 186.7 m

Distance of Uncontrolled Deviation from a straight line: 0 cm

Description of Bead Separation, Outboard:

None

Description of Bead Separation, Inboard:

None

Vehicle stopped with a controlled brake application (driver opinion): (X) Yes () No

Deflated tire retained on rim for duration of test: (X) Yes () No

DATA SHEET 7 (2 of 2)
DEFLATED TIRE RETENTION

Retention Test Right Rear:

Odometer (START): 190 miles Fuel Level: Full

Ambient Temperature: 32 °C Wind Speed: 3 m/s

Vehicle Speed at time of blow-out: 96.5 kmph (97 kmph +0 kmph, -2 kmph)

Maximum Deceleration Rate: 2.5 m/sec² Deflation Opening Size 1.3 cm (dia.)

Stopping Distance (Distance traveled after initial release of air): 210 m

Distance of Uncontrolled Deviation from a straight line: 0 cm

Description of Bead Separation, Outboard:

None

Description of Bead Separation, Inboard:

None

Vehicle stopped with a controlled brake application (driver opinion): (X) Yes () No

Deflated tire retained on rim for duration of test: (X) Yes () No

DATA INDICATES COMPLIANCE:

Left Front
Right Rear

PASS/FAIL

Pass

Pass

REMARKS:

RECORDED BY: G. FARRAND

DATE: 07/23/08

APPROVED BY: D. MESSICK

DATA SHEET 8
OWNER'S MANUAL REQUIREMENTS

VEHICLE MAKE/MODEL/BODY STYLE: 2008 Kia Sportage
 VEHICLE NHTSA NO.: C80506 ; VIN: KNDJF724587490403
 LABORATORY: General Testing Laboratories, Inc.
 TEST DATE: July 23, 2008

Owner's Manual Discusses:

Part 575.6(a) Paragraph	Required Discussion Topic	Discussed in Manual? (Yes/No)
(4) (i)	Tire labeling, including a description and explanation of each marking on the tire provided with the vehicle, and information about the location of the Tire Identification Number (TIN)	YES
(4) (ii)	A. Description and explanation of recommended cold tire inflation pressure.	YES
	B. Description and explanation of FMVSS 110 Vehicle Placard and Tire Inflation Pressure Label and their location(s)	YES
	C. Description and explanation of adverse safety consequences of under-inflation including tire failure	YES
	D. Description and explanation for measuring and adjusting air pressure to achieve proper inflation	YES
(4) (iii)	Glossary of tire terminology, including "cold tire pressure", "maximum inflation pressure", and all non-technical terms defined in S3 of FMVSS 110 and 139	YES
(4) (iv)	Tire care, including maintenance and safety practices	YES
(4) (v)	A. Description and explanation of locating and understanding load limit information, total load capacity, seating capacity, towing capacity and cargo capacity.	YES
	B. Description and explanation for calculating total and cargo load capacities with varying seating configurations including quantitative examples showing/illustrating how the vehicle's cargo and luggage capacity decreases as the combined number and size of occupants increases.	YES
	C. Description and explanation for determining compatibility of tire and vehicle load capabilities	YES
	D. Description and explanation of adverse safety consequences of overloading on handling and stopping and on tires	YES

DATA SHEET 8 Continued
OWNER'S MANUAL REQUIREMENTS

The following verbatim statement, in the English language, is provided in the Owner's Manual.
Reference Part 575.6 (a)(5) (X)Yes () No

Steps for Determining Correct Load Limit:

1. Locate the statement "The combined weight of occupants and cargo should never exceed XXX kg or XXX lbs." on your vehicle's placard.
2. Determine the combined weight of the driver and passenger that will be riding in your vehicle
3. Subtract the combined weight of the driver and passenger from XXX kg or XXX lbs.
4. The resulting figure equals the available amount of cargo and luggage load capacity. For example, if the XXX amount equals 1400 lbs and there will be five 150 lb passenger in your vehicle, the amount of available cargo and luggage load capacity is 650 lbs. $(1400 - 750 (5 \times 150) = 650 \text{ lbs.})$
5. Determine the combined weight of the luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage load capacity calculated in Step 4.
6. If you vehicle will be towing a trailer, load from your trailer will be transferred to your vehicle. Consult the manual to determine how this reduces the available cargo and luggage load capacity of your vehicle.

DATA INDICATES COMPLIANCE

PASS/FAIL Pass

REMARKS:

RECORDED BY: G. FARRAND
APPROVED BY: D. MESSICK

DATE: 07/23/08

SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST

TABLE 1 - INSTRUMENTATION & EQUIPMENT LIST

EQUIPMENT	DESCRIPTION	MODEL/ SERIAL NO.	CAL. DATE	NEXT CAL. DATE
PAD SCALES	#1 199744LF	199744LF	01/08	01/09
	#2 199744RF	199744RF	01/08	01/09
	#3 199744LR	199744LR	01/08	01/09
	#4 199744RR	19974RR	01/08	01/09
PRESSURE TRANSDUCER	BLH	D-HF #65409	BEFORE USE	BEFORE USE
ANEMOMETER	OMEGA	19353-56	06/08	06/09
SLIP RING ASSEMBLY	GTL	N/A	BEFORE USE	BEFORE USE
DECCELEROMETER	GTL	N/A	BEFORE USE	BEFORE USE
VBOX	RACELOGIC	VB2 #004337	06/08	06/09
LASER LEVEL	ACCULINE	40-6620	BEFORE USE	BEFORE USE

SECTION 5
PHOTOGRAPHS



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.1
¾ FRONTAL VIEW FROM LEFT SIDE OF VEHICLE



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.2
¾ REAR VIEW FROM RIGHT SIDE OF VEHICLE

KIA MANUFACTURED IN KOREA BY
KIA MOTORS CORPORATION

10/07
 GAWR GVWR 4519 LB PAINT S6 TRIM WK
 TIRES RIMS COLD TIRE INFL


FRONT	2579 LB	P215/65R16	6.5Jx16	30 psi SINGLE
REAR	2425 LB	P215/65R16	6.5Jx16	30 psi SINGLE

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S.A. FEDERAL
 MOTOR VEHICLE SAFETY AND THEFT PREVENTION STANDARDS
 IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

V.I.N KNDJF724587490403
 MPV

2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.3
VEHICLE CERTIFICATION LABEL



TIRE AND LOADING INFORMATION PNEUS ET CHARGE-INFORMATION

SEATING CAPACITY	TOTAL 5	FRONT 2	REAR 3
NOMBRE DE SIÈGES	TOTAL 5	AVANT 2	ARRIÈRE 3

The combined weight of occupants and cargo should never exceed 390kg or 860lbs.
Le poids combiné des occupants et du chargement ne doit jamais excéder 390kg ou 860lb.

TIRE / PNEU	SIZE / DIMENSION	COLD TIRE PRESSURE / PRESSION À FROID
FRONT / AVANT	P215/65R16	210kPa, 30psi
REAR / ARRIÈRE	P215/65R16	210kPa, 30psi
SPARE / SECOURS	T155/90D16	420kPa, 60psi

SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION

CONSULTER LE GUIDE DU PROPRIÉTAIRE POUR OBTENIR DES RENSEIGNEMENTS ADDITIONNELS

2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.4
VEHICLE TIRE INFORMATION LABEL



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.5
TIRE SHOWING BRAND AND MODEL



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.6
TIRE SHOWING SIZE, LOAD INDEX AND SPEED
SYMBOL



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.7
TIRE SHOWING LOAD RATING AND PRESSURE



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.8
TIRE SHOWING SERIAL NUMBER



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.9
RIM SHOWING DATE AND DATE CODE



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.10
RIM MARKINGS SHOWING DOT AND SIZE



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.11
RIM MARKINGS



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.12
RIM MARKINGS



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.13
RIM MARKINGS



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.14
RIM MEASUREMENT



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.15
VEHICLE BALLAST FOR FRONT PASSENGER



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.16
VEHICLE BALLAST FOR REAR SEAT, NORMAL LOAD



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.17
VEHICLE BALLAST FOR REAR PASSENGER, MAXIMUM
LOAD



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.18
VEHICLE BALLAST FOR CARGO



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.19
VEHICLE ON SCALES



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.20
INSTRUMENTATION SET-UP



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.21
LEFT FRONT TIRE BLOW-OUT



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.22
LEFT FRONT TIRE HOLE



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.23
LEFT FRONT TIRE OUTSIDE, POST TEST



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.24
LEFT FRONT TIRE INSIDE, POST TEST



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.25
RIGHT REAR TIRE BLOW-OUT



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.26
RIGHT REAR TIRE HOLE



2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

FIGURE 5.27
RIGHT REAR TIRE OUTSIDE, POST TEST

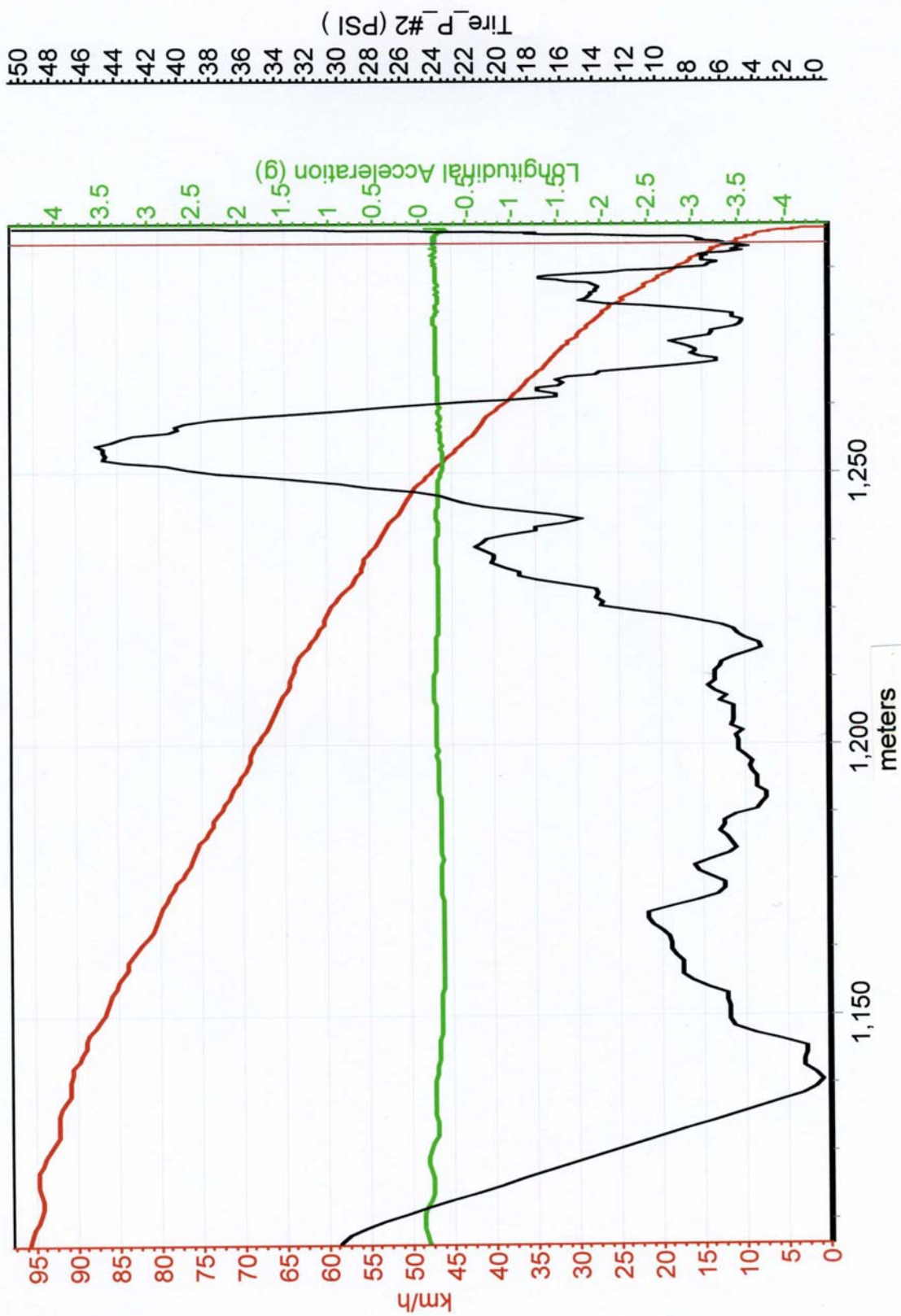


2008 KIA SPORTAGE
NHTSA NO. C80506
FMVSS NO. 110

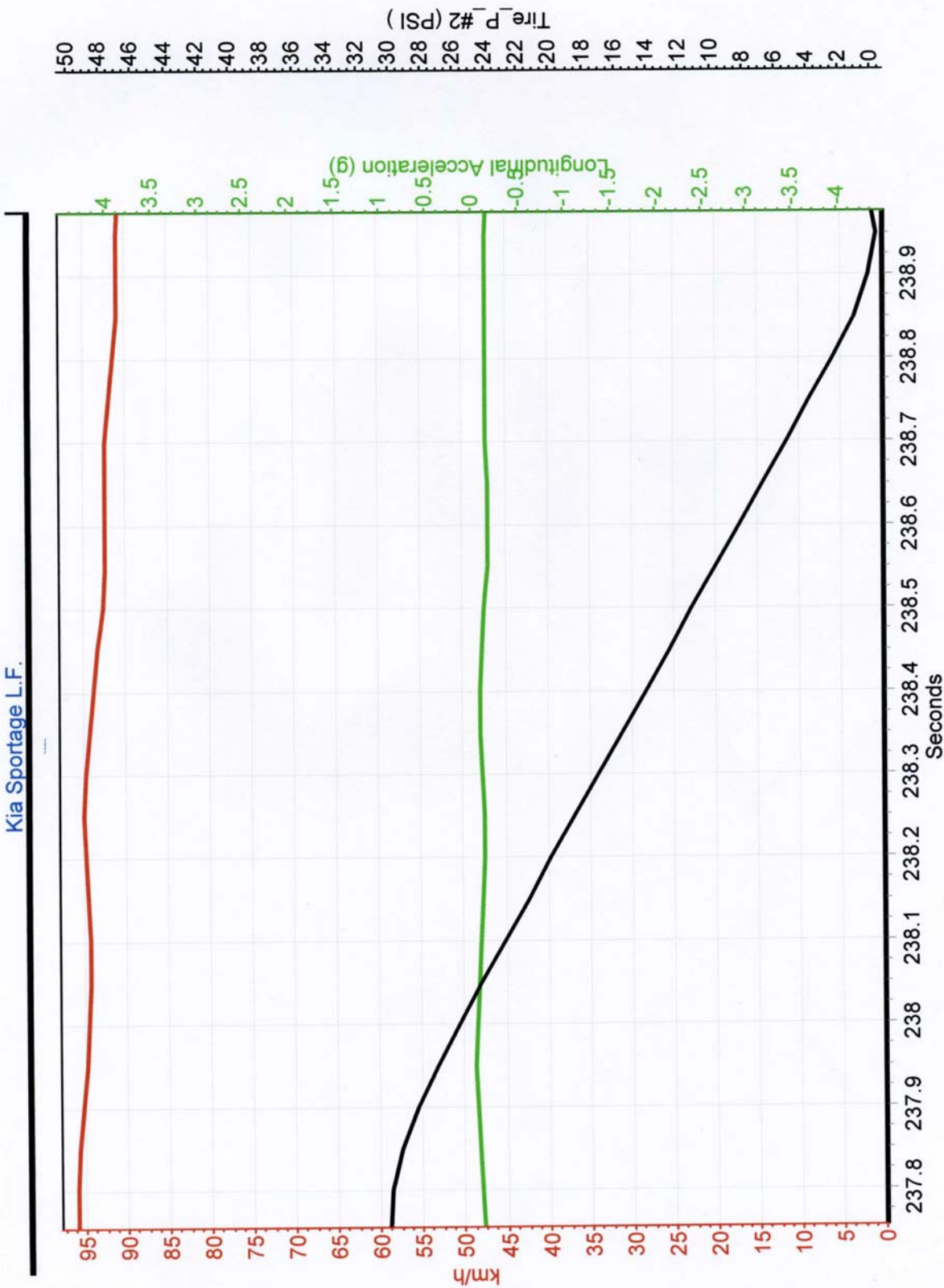
FIGURE 5.28
RIGHT REAR TIRE INSIDE, POST TEST

SECTION 6
TEST PLOTS

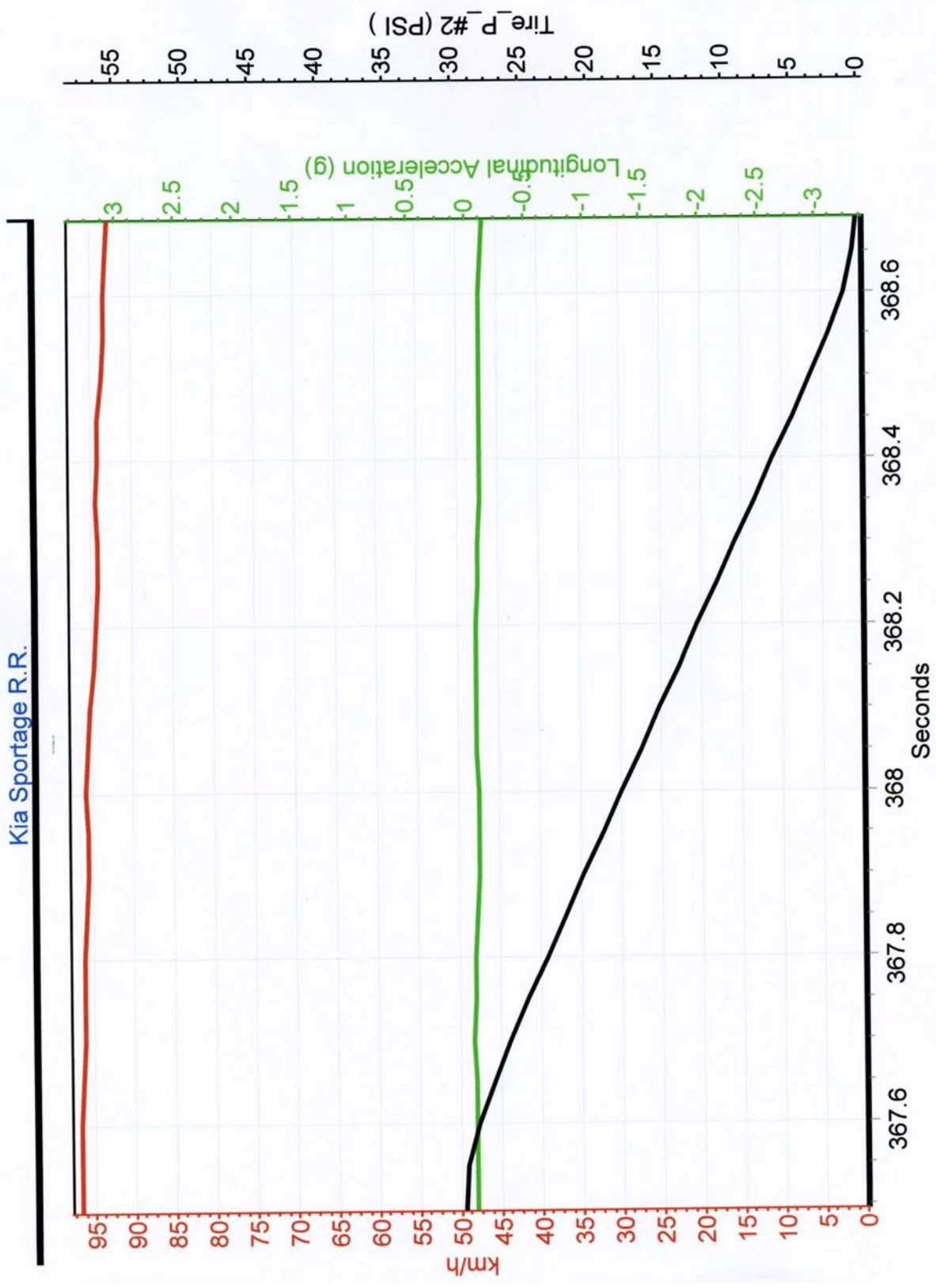
Kia Sportage L.F.



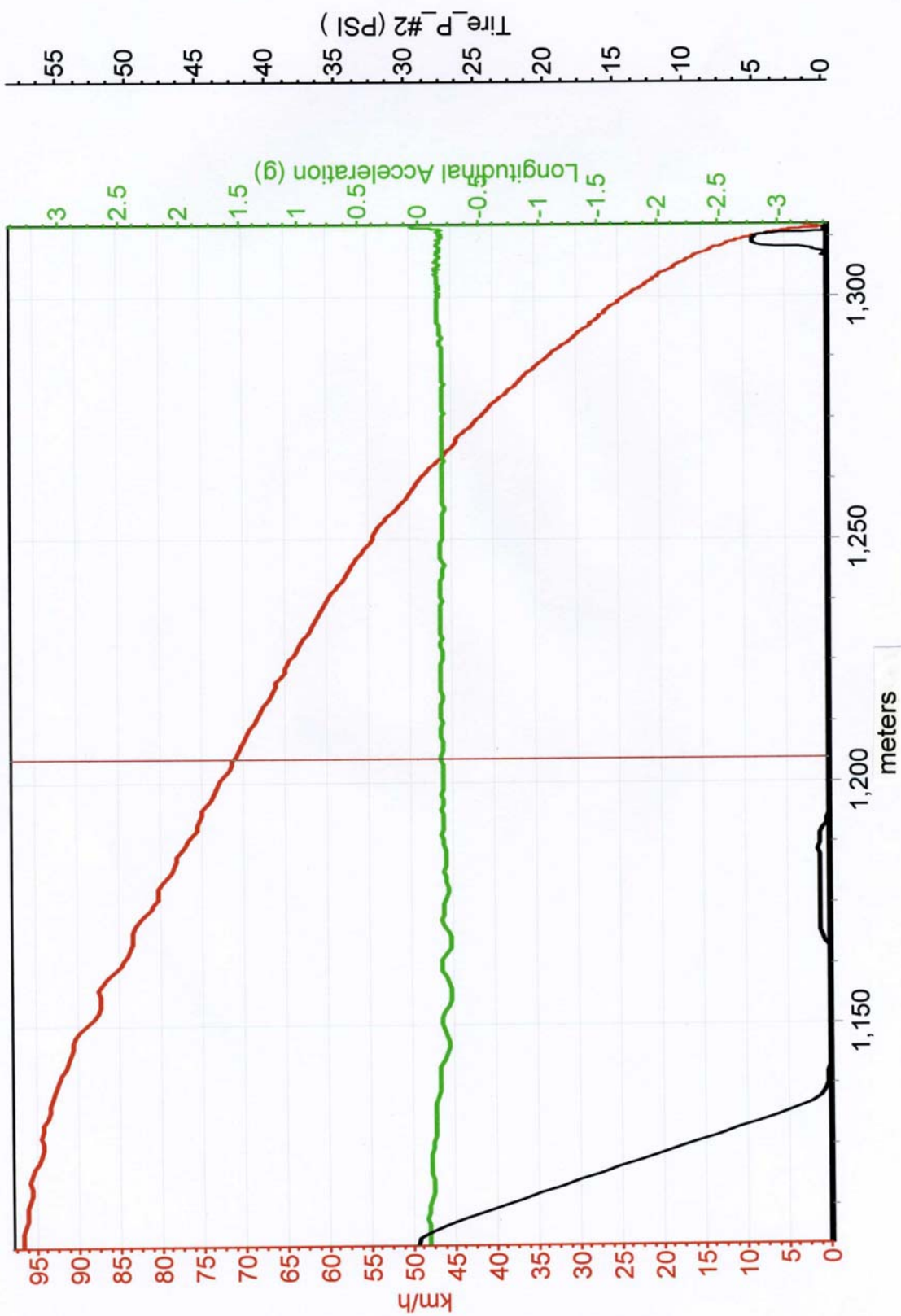
Kia Sportage L.F.



Kia Sportage R.R.



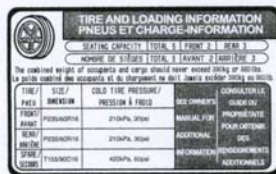
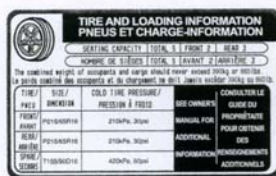
Kia Sportage R.R.



SECTION 7
OWNER'S MANUAL INFORMATION

VEHICLE LOAD LIMIT

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6KMA5001/6KMA5002

Tire and loading information label

The label located on the driver's door sill gives the original tire size, cold tire pressures recommended for your vehicle, the number of people that can be in your vehicle and vehicle capacity weight.

Vehicle capacity weight:

860 lbs (390 kg)

Vehicle capacity weight is the maximum combined weight of occupants and cargo. If your vehicle is equipped with a trailer, the combined weight includes the tongue load.

Seating capacity:

Total : 5 persons
(Front seat : 2 persons,
Rear seat : 3 persons)

Seating capacity is the maximum number of occupants including a driver, your vehicle may carry. However the seating capacity may be reduced based upon the weight of all of the occupants, and the weight of the cargo being carried or towed.

Do not overload the vehicle as there is a limit to the total weight, or load limit including occupants and cargo, the vehicle can carry.

Towing capacity:

Without trailer brakes:
1000 lbs (454 kg)

With trailer brakes:
1500 lbs (680 kg) - 2.0L Engine
2000 lbs (907 kg) - 2.7L Engine

Towing capacity is the maximum trailer weight including its cargo weight, your vehicle can tow.

Cargo capacity:

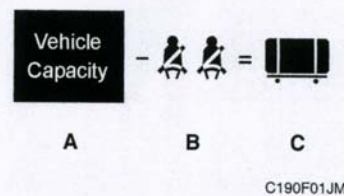
The cargo capacity of your vehicle will increase or decrease depending on the weight and the number of occupants and the tongue load, if your vehicle is equipped with a trailer.

Steps for determining correct load limit

1. Locate the statement "The combined weight of occupants and cargo should never exceed XXX kg or XXX lbs." on your vehicle's placard.
2. Determine the combined weight of the driver and passengers that will be riding in your vehicle.
3. Subtract the combined weight of the driver and passengers from XXX kg or XXX lbs.
4. The resulting figure equals the available amount of cargo and luggage load capacity. For example, if the "XXX" amount equals 1400 lbs. (635 kg), and there will be five 150 lbs. (68 kg) passengers in your vehicle, the amount of available cargo and luggage load capacity is 650 lbs. (295 kg).
(1400-750 (5 x 150) = 650 lbs. or 635-340 (5 x 68) = 295 kg)

5. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage load capacity calculated in Step 4.
6. If your vehicle will be towing a trailer, load from your trailer will be transferred to your vehicle. Consult this manual to determine how this reduces the available cargo and luggage load capacity of your vehicle.

Example 1

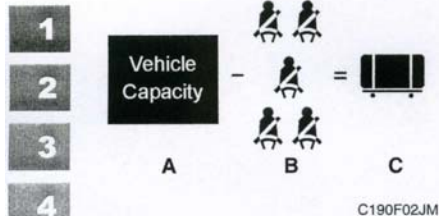


Item	Description	Total
A	Vehicle Capacity Weight	1400 lbs (635 kg)
B	Subtract Occupant Weight 150 lbs (68 kg) x 2	300 lbs (136 kg)
C	Available Cargo and Luggage weight	1100 lbs (499 kg)

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Driving tips

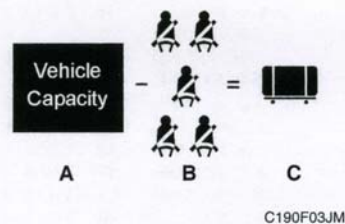
Example 2



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Item	Description	Total
A	Vehicle Capacity Weight	1400 lbs (635 kg)
B	Subtract Occupant Weight 150 lbs (68 kg) × 5	750 lbs (340 kg)
C	Available Cargo and Luggage weight	650 lbs (295 kg)

Example 3



Item	Description	Total
A	Vehicle Capacity Weight	1400 lbs (635 kg)
B	Subtract Occupant Weight 172 lbs (78 kg) × 5	860 lbs (390 kg)
C	Available Cargo and Luggage weight	540 lbs (245 kg)

Refer to your vehicle's tire and loading information label for specific information about your vehicle's capacity weight and seating positions. The combined weight of the driver, passengers and cargo should never exceed your vehicle's capacity weight.

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Driving tips



2KMN5043

Compliance label

The compliance label is located on the driver's door sill.

This label shows the maximum allowable weight of the fully loaded vehicle. This is called the GVWR (Gross Vehicle Weight Rating). The GVWR includes the weight of the vehicle, all occupants, fuel and cargo.

This label also tells you the maximum weight that can be supported by the front and rear axles, called Gross Axle Weight Rating (GAWR).

To find out the actual loads on your front and rear axles, you need to go to a weigh station and weigh your vehicle. Your dealer can help you with this. Be sure to spread out your load equally on both sides of the centerline.

⚠ **WARNING - Over loading**

- Never exceed the GVWR for your vehicle, the GAWR for either the front or rear axle and vehicle capacity weight. Exceeding these ratings can cause an accident or vehicle damage. You can calculate the weight of your load by weighing the items (or people) before putting them in the vehicle. Be careful not to overload your vehicle.
- Do not load your vehicle any heavier than the GVWR, either the maximum front or rear GAWR and vehicle capacity weight. If you do, parts, including tires on your vehicle can break, and it can change the way your vehicle handles and braking ability. This could cause you to lose control and crash. Also, overloading can shorten the life of your vehicle.

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Driving tips

The label will help you decide how much cargo and installed equipment your vehicle can carry.

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If you carry items inside your vehicle - like suitcases, tools, packages, or anything else - they are moving as fast as the vehicle. If you have to stop or turn quickly, or if there is a crash, the items will keep going and can cause an injury if they strike the driver or a passenger.

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* NOTICE

- **Overloading your vehicle may cause damage. Repairs would not be covered by your warranty. Do not overload your vehicle.**
- **Using heavier suspension components to get added durability might not change your weight ratings. Ask your dealer to help you load your vehicle the right way.**

5:36

Driving tips

WEIGHT OF THE VEHICLE

This section will guide you in the proper loading of your vehicle and/or trailer, to keep your loaded vehicle weight within its design rating capability, with or without a trailer. Properly loading your vehicle will provide maximum return of the vehicle design performance. Before loading your vehicle, familiarize yourself with the following terms for determining your vehicle's weight ratings, with or without a trailer, from the vehicle's Specifications and the compliance label:

Base curb weight

This is the weight of the vehicle including a full tank of fuel and all standard equipment. It does not include passengers, cargo, or optional equipment.

Vehicle curb weight

This is the weight of your new vehicle when you picked it up from your dealer plus any aftermarket equipment.

Cargo weight

This figure includes all weight added to the Base Curb Weight, including cargo and optional equipment. When towing, trailer tongue load or king pin weight also is part of the Cargo Weight.

GAW (Gross axle weight)

This is the total weight placed on each axle (front and rear) - including vehicle curb weight and all payload.

GAWR (Gross axle weight rating)

This is the maximum allowable weight that can be carried by a single axle (front or rear). These numbers are shown on the compliance label. The total load on each axle must never exceed its GAWR.

GVW (Gross vehicle weight)

This is the Base Curb Weight plus actual Cargo Weight plus passengers.

GVWR (Gross vehicle weight rating)

This is the maximum allowable weight of the fully loaded vehicle (including all options, equipment, passengers and cargo). The GVWR is shown on the compliance label located on the driver's door pillar.

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TIRES AND WHEELS

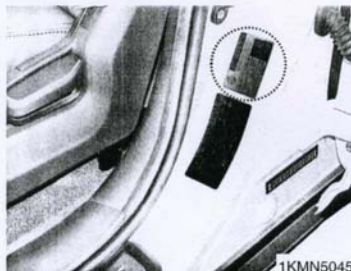
Tires care

For proper maintenance, safety, and maximum fuel economy, you must always maintain recommended tire inflation pressures and stay within the load limits and weight distribution recommended for your vehicle.

Recommended cold tire inflation pressures

All tire pressures (including the spare) should be checked every day when the tires are cold. "Cold Tires" means the vehicle has not been driven for at least three hours or driven less than one mile (1.6 km).

Recommended pressures must be maintained for the best ride, top vehicle handling, and minimum tire wear. (Refer to "Tires" in section 8, Specifications.)



1KMN5045

All specifications (sizes and pressures) can be found on a label attached to the front driver's door sill.

TIRE AND LOADING INFORMATION PNEUS ET CHARGE-INFORMATION			
SEATING CAPACITY TOTAL X FRONT X REAR X		NOMBRE DE SIÈGES TOTAL X AVANT X ARRIÈRE X	
The combined weight of occupants and cargo should never exceed 1000 kg or 2200 lb. Le poids combiné des occupants et du chargement ne doit jamais excéder 1000 kg ou 2200 lb.			
TIRE / PNEU	SIZE / DIMENSION	COLD TIRE PRESSURE / PRESSION À FROID	SEE OWNERS' MANUAL FOR ADDITIONAL INFORMATION / CONSULTEZ LE GUIDE DU PROPRIÉTAIRE POUR OBTENIR DES RENSEIGNEMENTS ADDITIONNELS
FRONT / AVANT	XXXXXXXX	XXX kPa, XX psi	ADDITIONAL INFORMATION / RENSEIGNEMENTS ADDITIONNELS
REAR / ARRIÈRE	XXXXXXXX	XXX kPa, XX psi	
SPARE / RÉSERVE	XXXXXXXX	XXX kPa, XX psi	

6KMN5003

⚠ WARNING - Tire underinflation

Severe underinflation (10 psi (70 kPa) or more) can lead to severe heat build-up, causing blowouts, tread separation and other tire failures that can result in the loss of vehicle control leading to severe injury or death. This risk is much higher on hot days and when driving for protracted periods at high speeds.

* NOTICE

- Underinflation also results in excessive wear, poor handling and reduced fuel economy. Wheel deformation also is possible. Keep your tire pressures at the proper levels. If a tire frequently needs refilling, have it checked by an Authorized Kia Dealer.
- Overinflation produces a harsh ride, excessive wear at the center of the tire tread, and a greater possibility of damage from road hazards.



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*** NOTICE**

- Warm tires normally exceed recommended cold tire pressures by 4 to 6 psi (28 to 41 kPa). Do not release air from warm tires to adjust the pressure or the tires will be underinflated.
- Be sure to reinstall the tire inflation valve caps. Without the valve cap, dirt or moisture could get into the valve core and cause air leakage. If the cap have been lost, install new one as soon as possible.

⚠ WARNING - Tire Inflation
 Overinflation or underinflation can reduce tire life, adversely affect vehicle handling, and lead to sudden tire failure. This could result in loss of vehicle control and potential injury.

⚡ CAUTION - Tire pressure
 Always observe the following:

- **Check tire pressure when the tires are cold.** (After vehicle has been parked for at least three hours or hasn't been driven more than one mile (1.6 km) since startup.)
- **Check the pressure of your spare tire each time you check the pressure of other tires.**
- **Never overload your vehicle.** Be careful not to overload a vehicle luggage rack if your vehicle is equipped with one.
- **Worn, old tires can cause accidents.** If your tread is badly worn, or if your tires have been damaged, replace them.

Checking tire inflation pressure

Check your tires once a month or more.

Also, check the tire pressure of the spare tire.

How to check

Use a good quality gage to check tire pressure. You can not tell if your tires are properly inflated simply by looking at them. Radial tires may look properly inflated even when they're underinflated.

Check the tire's inflation pressure when the tires are cold. - "Cold" means your vehicle has been sitting for at least three hours or driven no more than 1 mile (1.6 km).

7 40

Remove the valve cap from the tire valve stem. Press the tire gage firmly onto the valve to get a pressure measurement. If the cold tire inflation pressure matches the recommended pressure on the tire and loading information label, no further adjustment is necessary. If the pressure is low, add air until you reach the recommended amount.

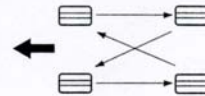
If you overfill the tire, release air by pushing on the metal stem in the center of the tire valve. Recheck the tire pressure with the tire gage. Be sure to put the valve caps back on the valve stems. They help prevent leaks by keeping out dirt and moisture.

Tire rotation

To equalize tread wear, it is recommended that the tires be rotated every 7,500 miles (12,000 km) or sooner if irregular wear develops. During rotation, check the tires for correct balance.

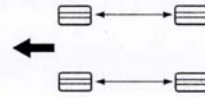
When rotating tires, check for uneven wear and damage. Abnormal wear is usually caused by incorrect tire pressure, improper wheel alignment, out-of-balance wheels, severe braking or severe cornering. Look for bumps or bulges in the tread or side of tire. Replace the tire if you find either of these conditions. Replace the tire also if you can see fabric or cord. After rotation, be sure to bring the front and rear tire pressures to specification and check lug nut tightness. Refer to Section 8, Specifications.

Without a spare tire



CBGQ0707

Directional tires (if equipped)



CBGQ0707A

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Disc brake pads should be inspected for wear whenever tires are rotated.

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Rotate radial tires that have an asymmetric tread pattern only from front to rear and not from right to left.

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⚠ WARNING

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- Do not use the temporary spare tire for tire rotation

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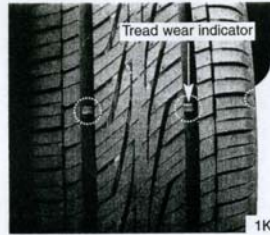
- Do not mix bias ply and radial ply tires under any circumstance. This may cause unusual handling characteristics that could result in death, severe injury, or property damage.

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Tire replacement

If the tire is worn evenly, a tread wear indicator will appear as a solid band across the tread. This shows there is less than 1/16 inch (1.6 mm) of tread left on the tire. Replace the tire when this happens.

Do not wait for the band to appear across the entire tread before replacing the tire.

Compact spare tire replacement (if equipped)

A compact spare tire has a shorter tread life than a regular size tire. Replace it when you can see the tread wear indicator bars on the tire. The replacement compact spare tire should be the same size and design tire as the one provided with your new Kia and should be mounted on the same compact spare tire wheel. The compact spare tire is not designed to be mounted on a regular size wheel, and the compact spare tire wheel is not designed for mounting a regular size tire.

7:42

Wheel alignment and tire balance

The wheels on your vehicle were aligned and balanced carefully at the factory to give you the longest tire life and best overall performance.

In most cases, you will not need to have your wheels aligned again. However, if you notice unusual tire wear or your vehicle pulling one way or the other, the alignment may need to be reset.

If you notice your vehicle vibrating when driving on a smooth road, your wheels may need to be rebalanced.

* NOTICE

Improper wheel weights can damage your vehicle's aluminum wheels. Use only approved wheel weights.

⚠ WARNING - Replacing tires

- Driving on worn-out tires is very hazardous and will reduce braking effectiveness, steering accuracy, and traction.
- Your vehicle is equipped with tires designed to provide for safe ride and handling capability. Do not use a size and type of tire and wheel that is different from the one that is originally installed on your vehicle. It can affect the safety and performance of your vehicle, which could lead to handling failure or rollover and serious injury. When replacing the tires, be sure to equip all four tires with the tire and wheel of the same size, type, tread, brand and load-carrying capacity.

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If you nevertheless decide to equip your vehicle with any tire/wheel combination not recommended by Kia for off road driving, you should not use these tires for highway driving.

- The use of any other tire size or type may seriously affect ride, handling, ground clearance, stopping distance, body to tire clearance, snow tire clearance, and speedometer reliability.
- It is best to replace all four tires at the same time. If that is not possible, or necessary, then replace the two front or two rear tires as a pair. Replacing just one tire can seriously affect your vehicle's handling.

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Wheel replacement

When replacing the metal wheels for any reason, make sure the new wheels are equivalent to the original factory units in diameter, rim width and offset.

⚠ WARNING

A wheel that is not the correct size may adversely affect wheel and bearing life, braking and stopping abilities, handling characteristics, ground clearance, body-to-tire clearance, snow chain clearance, speedometer calibration, headlight aim and bumper height.

Tire maintenance

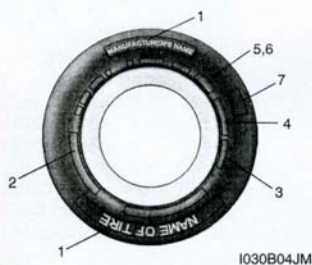
In addition to proper inflation, correct wheel alignment helps to decrease tire wear. If you find a tire is worn unevenly, have your dealer check the wheel alignment.

When you have new tires installed, make sure they are balanced. This will increase vehicle ride comfort and tire life. Additionally, a tire should always be rebalanced if it is removed from the wheel.

Tire traction

Tire traction can be reduced if you drive on worn tires, tires that are improperly inflated or on slippery road surfaces. Tires should be replaced when tread wear indicators appear. To reduce the possibility of losing control, slow down whenever there is rain, snow or ice on the road.

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Tire sidewall labeling

Federal law requires tire manufacturers to place standardized information on the sidewall of all tires. This information identifies and describes the fundamental characteristics of the tire and also provides the tire identification number (TIN) for safety standard certification. The TIN can be used to identify the tire in case of a recall.

1. Manufacturer or brand name

Manufacturer or Brand name is shown.

2. Tire size designation

A tire's sidewall is marked with a tire size designation. You will need this information when selecting replacement tires for your car. The following explains what the letters and numbers in the tire size designation mean.

Example tire size designation:

(These numbers are provided as an example only; your tire size designator could vary depending on your vehicle.)

P215/65R16 96T

P - Applicable vehicle type (tires marked with the prefix "P" are intended for use on passenger cars or light trucks; however, not all tires have this marking).

215 - Tire width in millimeters.

65 - Aspect ratio. The tire's section height as a percentage of its width.

R - Tire construction code (Radial).

16 - Rim diameter in inches.

96 - Load Index, a numerical code associated with the maximum load the tire can carry.

T - Speed Rating Symbol. See the speed rating chart in this section for additional information.

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Wheel size designation

Wheels are also marked with important information that you need if you ever have to replace one. The following explains what the letters and numbers in the wheel size designation mean.

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Example wheel size designation:

6.5 JX16

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6.5 - Rim width in inches.

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J - Rim contour designation.

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16 - Rim diameter in inches.

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Tire speed ratings

The chart below lists many of the different speed ratings currently being used for passenger cars. The speed rating is part of the tire size designation on the sidewall of the tire. This symbol corresponds to that tire's designed maximum safe operating speed.

Speed Rating Symbol	Maximum Speed
S	112 mph (180 km/h)
T	118 mph (190 km/h)
H	130 mph (210 km/h)
V	149 mph (240 km/h)
Z	Above 149 mph (240 km/h)

3. Checking tire life (TIN : Tire Identification Number)

Any tires that are over 6 years, based on the manufacturing date, tire strength and performance, decline with age naturally (even unused spare tires). Therefore, the tires (including the spare tire) should be replaced by new ones. You can find the manufacturing date on the tire sidewall (possibly on the inside of the wheel), displaying the DOT Code. The DOT Code is a series of numbers on a tire consisting of numbers and English letters. The manufacturing date is designated by the last four digits (characters) of the DOT code.

DOT : XXXX XXXX OOOO

The front part of the DOT means a plant code number, tire size and tread pattern and the last four numbers indicate week and year manufactured.

For example:

DOT XXXX XXXX 1605 represents that the tire was produced in the 16th week of 2005.

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⚠ WARNING - Tire age

Tires degrade over time, even when they are not being used. Regardless of the remaining tread, it is recommended that tires generally be replaced after six (6) years of normal service. Heat caused by hot climates or frequent high loading conditions can accelerate the aging process. Failure to follow this warning can result in sudden tire failure, which could lead to a loss of control and an accident involving serious injury or death.

4. Tire ply composition and material

The number of layers or plies of rubber-coated fabric in the tire. Tire manufacturers also must indicate the materials in the tire, which include steel, nylon, polyester, and others. The letter "R" means radial ply construction; the letter "D" means diagonal or bias ply construction; and the letter "B" means belted-bias ply construction.

5. Maximum permissible inflation pressure

This number is the greatest amount of air pressure that should be put in the tire. Do not exceed the maximum permissible inflation pressure. Refer to the Tire and Loading Information label for recommended inflation pressure.

6. Maximum load rating

This number indicates the maximum load in kilograms and pounds that can be carried by the tire. When replacing the tires on the vehicle, always use a tire that has the same load rating as the factory installed tire.

7. Uniform tire quality grading

The following information relates to the tire grading system developed by the National Highway Traffic Safety Administration (NHTSA) for grading tires by tread wear, traction and temperature performance.

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Tread wear

The tread wear grade is a comparative rating based on the wear rate of the tire when tested under controlled conditions on a specified government test course. For example, a tire graded 150 would wear one-and-a-half times as well on the government course as a tire graded 100.

The relative performance of tires depends upon the actual conditions of their use. However, performance may differ from the norm because of variations in driving habits, service practices and differences in road characteristics and climate.

These grades are molded on the side-walls of passenger vehicle tires. The tires available as standard or optional equipment on Kia vehicles may vary with respect to grade.

Traction - AA, A, B & C

The traction grades, from highest to lowest, are AA, A, B and C. The grades represent the tires ability to stop on wet pavement as measured under controlled conditions on specified government test surfaces of asphalt and concrete. A tire marked C may have poor traction performance.

Temperature -A, B & C

The temperature grades are A (the highest), B and C. The grades represent the tire's resistance to the generation of heat and its ability to dissipate heat when tested under controlled conditions on a specified indoor laboratory test wheel.

Sustained high temperature can cause the material of the tires to degenerate and reduce tires life, and excessive temperature can lead to sudden tires failure. Grade C corresponds to a level of performance which all passenger vehicle tires must meet under the Federal Motor Vehicle Safety Standard No. 109. Grades A and B represent higher levels of performance on the laboratory test wheel than the minimum required by the law.

⚠ WARNING - Tire temperature

The temperature grade for this tire is established for a tire that is properly inflated and not overloaded. Excessive speed, underinflation, or excessive loading, either separately or in combination, can cause heat build-up and possible sudden tires failure. This can cause loss of vehicle control and serious injury or death.

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Tire terminology and definitions

Air Pressure: The amount of air inside the tire pressing outward on the tire. Air pressure is expressed in pounds per square inch (psi) or kilopascal (kPa).

Accessory Weight: This means the combined weight of optional accessories. Some examples of optional accessories are, automatic transmission, power seats, and air conditioning.

Aspect Ratio: The relationship of a tire's height to its width.

Belt: A rubber coated layer of cords that is located between the plies and the tread. Cords may be made from steel or other reinforcing materials.

Bead: The tire bead contains steel wires wrapped by steel cords that hold the tire onto the rim.

Bias Ply Tire: A pneumatic tire in which the plies are laid at alternate angles less than 90 degrees to the centerline of the tread.

Cold Tire Pressure: The amount of air pressure in a tire, measured in pounds per square inch (psi) or kilopascals (kPa) before a tire has built up heat from driving.

Curb Weight: This means the weight of a motor vehicle with standard and optional equipment including the maximum capacity of fuel, oil and coolant, but without passengers and cargo.

DOT Markings: A code molded into the sidewall of a tire signifying that the tire is in compliance with the U.S. Department of Transportation motor vehicle safety standards. The DOT code includes the Tire Identification Number (TIN), an alphanumeric designator which can also identify the tire manufacturer, production plant, brand and date of production.

GVWR: Gross Vehicle Weight Rating

GAWR FRT: Gross Axle Weight Rating for the front Axle.

GAWR RR: Gross Axle Weight Rating for the rear axle.

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Intended Outboard Sidewall: The side of an asymmetrical tire, that must always face outward when mounted on a vehicle.

Kilopascal (kPa): The metric unit for air pressure.

Load Index: An assigned number ranging from 1 to 279 that corresponds to the load carrying capacity of a tire.

Maximum Inflation Pressure: The maximum air pressure to which a cold tire may be inflated. The maximum air pressure is molded onto the sidewall.

Maximum Load Rating: The load rating for a tire at the maximum permissible inflation pressure for that tire.

Maximum Loaded Vehicle Weight: The sum of curb weight; accessory weight; vehicle capacity weight; and production options weight.

Normal Occupant Weight: The number of occupants a vehicle is designed to seat multiplied by 150 pounds (68 kg).

Occupant Distribution: Designated seating positions.

Outward Facing Sidewall: The side of a asymmetrical tire that has a particular side that faces outward when mounted on a vehicle. The side of the tire that contains a whitewall, bears white lettering or bears manufacturer, brand and or model name molding that is higher or deeper than the same moldings on the other sidewall of the tire.

Passenger (P-Metric) Tire: A tire used on passenger cars and some light duty trucks and multipurpose vehicles.

Recommended Inflation Pressure: Vehicle manufacturer's recommended tire inflation pressure and shown on the tire placard.

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Radial Ply tire: A pneumatic tire in which the ply cords that extend to the beads are laid at 90 degrees to the centerline of the tread.

Rim: A metal support for a tire and upon which the tire beads are seated.

Sidewall: The portion of a tire between the tread and the bead.

Speed Rating: An alphanumeric code assigned to a tire indicating the maximum speed at which a tire can operate.

Traction: The friction between the tire and the road surface. The amount of grip provided.

Tread: The portion of a tire that comes into contact with the road.

Treadwear Indicators: Narrow bands, sometimes called "wear bars", that show across the tread of a tire when only 2/32 inch of tread remains.

UTQGS: Uniform Tire Quality Grading Standards, a tire information system that provides consumers with ratings for a tire's traction, temperature and treadwear. Ratings are determined by tire manufacturers using government testing procedures. The ratings are molded into the sidewall of the tire.

Vehicle Capacity Weight: The number of designated seating positions multiplied by 150 lbs. (68 kg) plus the rated cargo and luggage load.

Vehicle Maximum Load on the Tire: Load on an individual tire due to curb and accessory weight plus maximum occupant and cargo weight.

Vehicle Normal Load on the Tire: That load on an individual tire that is determined by distributing to each axle its share of the curb weight, accessory weight, and normal occupant weight and driving by 2.

Vehicle Placard: A label permanently attached to a vehicle showing the original equipment tire size and recommended inflation pressure.

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All season tires

Kia specifies all season tires on some models to provide good performance for use all year round, including snowy and icy road conditions. All SEASON tires are identified by ALL SEASON and/or M+S (Mud and Snow) on the tire sidewall. Snow tires have better snow traction than all season tires and may be more appropriate in some areas.

Summer tires

Kia specifies summer tires on some models to provide superior performance on dry roads. Summer tire performance is substantially reduced in snow and ice. Summer tires do not have the tire traction rating M+S (Mud and Snow) on the tire side wall. If you plan to operate your vehicle in snowy or icy conditions, Kia recommends the use of snow tires or all season tires on all four wheels.

Snow tires

If you equip your car with snow tires, they should be the same size and have the same load capacity as the original tires. Snow tires should be installed on all four wheels; otherwise, poor handling may result.

Snow tires should carry 4 psi (28 kPa) more air pressure than the pressure recommended for the standard tires on the tire label on the driver's side of the center pillar, or up to the maximum pressure shown on the tire sidewall whichever is less.

Do not drive faster than 75 mph (120 km/h) when your car is equipped with snow tires.

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Tire chains

Tire chains, if necessary, should be installed on the drive wheels as follows.

2WD : Front wheels

4WD : All four wheels

If a full set of chains is not available for a 4WD vehicle, chains may be installed on the front wheels only.

Be sure that the chains are installed in accordance with the manufacturer's instructions.

To minimize tire and chain wear, do not continue to use tire chains when they are no longer needed.

⚠ WARNING - Snow or ice

- When driving on roads covered with snow or ice, drive at less than 20 mph (30 km/h).
- Use the SAE "S" class or wire chains.
- If you have noise caused by chains contacting the body, retighten the chain to avoid contact with the vehicle body.
- To prevent body damage, retighten the chains after driving 0.3~0.6 miles.
- Don't use a tire chains to the vehicle which aluminium wheels are installed to keep the wheels. if it is on unavoidable circumstances, use a wire chains.
- Use wire chains less than 15mm to prevent damage to the chain's connection.

*** NOTICE**

- If you hear noise caused by chains contacting the body, retighten the chain to avoid contact with the vehicle body.
- To prevent body damage, retighten the chains after driving 0.3 ~ 0.6 miles (0.5 ~ 1.0 km).

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