REPORT NUMBER 114-GTL-09-009

SAFETY COMPLIANCE TESTING FOR FMVSS NO. 114 THEFT PROTECTION

TOYOTA MOTOR CORPORATION
2009 LEXUS ES 350, PASSENGER CAR
NHTSA NO. C95104

GENERAL TESTING LABORATORIES, INC.
1623 LEEDSTOWN ROAD
COLONIAL BEACH, VIRGINIA 22443

July 21, 2009

FINAL REPORT

PREPARED FOR

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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15. Supplementary Notes

16. Abstract

Compliance tests were conducted on the subject 2009 Lexus ES 350 4-door passenger car in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-114-03-DRAFT-GTL-REVC for the determination of FMVSS 114 compliance.

Test failures identified were as follows:
None

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SECTION 1

PURPOSE OF COMPLIANCE TEST

1.0 PURPOSE OF TEST

A model year 2009 Lexus ES 350 passenger car was subjected to Federal Motor Vehicle Safety Standard (FMVSS) No. 114 testing to determine if the vehicle was in compliance with the requirements of the standard. FMVSS 114 specifies requirements to decrease the likelihood that a vehicle is stolen, or accidentally set in motion.

1.1 The test vehicle was a 2009 Lexus ES 350 Passenger Car. The vehicle was identified as follows:

A. Vehicle Identification Number: JTHBJ46GX92295416

B. NHTSA No.: C95104

C. Manufacturer: TOYOTA MOTOR CORPORATION

D. Manufacture Date: 10/08

E. Color: Smoky Granite Mica

1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 114 testing on June 11, 2009.

SECTION 2

TEST PROCEDURE AND SUMMARY OF RESULTS

2.0 TEST PROCEDURE

All tests were conducted in accordance with NHTSA, Office of Vehicle Safety Compliance (OVSC) Laboratory Procedure TP-114-03-DRAFT-GTL-REVC and General Testing Laboratories, Inc. (GTL) Test Procedure, TP-114-03-Draft, “Theft Protection and Rollaway Prevention”.

2.1 SUMMARY OF RESULTS

Test data indicate the FMVSS 114 requirements appear to have been satisfied. All test data resulting from the tests were recorded on test data sheets in Section 3.

SECTION 3

TEST DATA

3.0 TEST RESULTS

The following data sheets document the results of FMVSS 114 testing on the 2009 Lexus ES 350.

FMVSS 114, THEFT PROTECTION
DATA SHEET 1 – VEHICLE IDENTIFICATION

TEST DATE: 06/11/09 LAB.: General Testing Laboratories
CONTRACT: DTNH22-06-C-00032 VEH. NHTSA NO.: C95104
VIN: JTHBJ46GX92295416 BUILD DATE: 10/08

MY/MAKE/MODEL/BODY STYLE: 2009 Lexus ES 350

TRANSMISSION TYPE:
Automatic X; Manual ___; Other ___ (describe: _____)

DRIVE TRAIN TYPE:
Front Wheel X; Rear Wheel _____; 4-Wheel _____

FUEL TANK LEVEL: 100 (% OF max.) MILEAGE: 1197

VEHICLE STARTING SYSTEM:

Location of the starting system:
On Dash Just to Right Side of Steering Column

Selectable settings:
Off/Lock, Accessory, On/Run, Start/Stop

Explain how the system is activated:
When (1) Electronic Key is located within vehicle, and (2) The engine start/stop button is pushed.

KEY

Description of the key:
Electronic Key FOB

STARTING SYSTEM ACTIVATION

Describe how the key is inserted into the starting system:
When (1) Electronic Key is located within vehicle, and (2) The engine start/stop button is pushed.

Describe how the key is used to activate the starting system:
The act of pushing the start/stop button enables an ID verification process that allows the code to be inserted into the starting system.

Describe how the key is removed from the starting system:
The Electronic Key is removed from the starting system when (1) the transmission is in the “park” position, (2)the engine is shut off, and (3) a door is opened (in that sequence)

FMVSS 114, THEFT PROTECTION
DATA SHEET 1 continued

GEAR SELECTION CONTROL

Describe the gear selection control:
Center Console mounted Gear Shift Lever

Describe how the gear selection control is activated:
Depress brake pedal and move gear selector to desired position

Describe all of the selectable settings:
Park, Reverse, Neutral, Drive

IMMOBILIZER

Is the vehicle equipped with an immobilizer YES X NO

Describe the immobilizer device and how it prevents vehicle theft (if equipped):
Engine will not start until correct code is loaded into the system

OPTIONAL RELEASE DEVICES

Describe if the vehicle is equipped with optional release devices:
Yes

OPTIONAL RELEASE DEVICES:

Key Removal Gear Selection Control X None Other

VEHICLE FLUIDS

Check all vehicle fluids and adjust to the proper levels for operation: Full

VEHICLE TIRE PLACARD INFORMATION

Vehicle Mfg. Recommended Tire Inflation Pressure
(kPa): Front 210 Rear 210

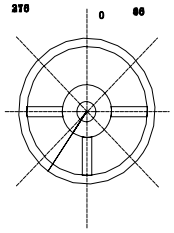
TIRE INFLATION PRESSURES:

Measured (kPa): LF 210 LR 210 RF 210 RR 210

WEIGHT

Vehicle Curb Weight(kg): 1647 Weight of Driver (kg): 91 (target = 91kg)

FMVSS 114, THEFT PROTECTION
DATA SHEET 2

REQUIREMENT S5.1.1	PASS	FAIL
Engine cannot be started without using the key _X_ Yes ____ No	X	
With key removed, steering wheel locks: Yes: _X_ No: ____ Identify locking position(s) on wheel using arrow(s) Clockwise: _____5___ (degrees) Counterclockwise:_____5___ (degrees) 		
Key removal prevents forward self-mobility: Yes:___X___ No:_____ If yes describe: Engine will not run and shifter is locked in park position.		
When key is removed from the starting system, starting of the engine or motor and either steering or self mobility is prevented. YES	X	

REMARKS:

FMVSS 114, THEFT PROTECTION
DATA SHEET 2 continued

REQUIREMENT S5.1.3	PASS	FAIL
An audible warning is activated whenever the key is in any starting system position with the exception of “on” and “start” and the door closest to the driver’s designated seating position is opened. Yes__X__ No _____ Identify ALL key/starting system position setting: Off/Lock, Accessory, On/Run, Start/Stop	X	

REQUIREMENT S5.1.4	PASS	FAIL
With the vehicle engine or motor shut down and the transmission gear selection control in any position other than “park”; The steering wheel can rotate without locking? Yes__X__ No_____	X	
The vehicle is free to roll forward? Yes__X__ No_____	X	

REMARKS:

RECORDED BY: G. Farrand DATE: 06/11/09
APPROVED BY: D. Messick

FMVSS 114, ROLLAWAY PREVENTION
DATA SHEET 3
(for vehicles equipped with transmission with a “park” position)

VEH. NHTSA NO.: C95104 TEST DATE: 06/11/09

REQUIREMENT S5.2.1	PASS	FAIL
The starting system prevents key removal in ALL gear selection control positions except “park”. Yes X No	X	
Can the gear selection control be placed between each gear selection position and will it remain there without assistance? Yes X No		
If yes, can the key be removed from the starting system? Yes No X	X	
If the key can be removed from the vehicle starting system when the gear selection control is not locked in “park”, a mechanism shall exist which, upon key removal, the vehicle transmission or gear selection control shall become locked in “park” as the direct result of removing the key. If such a mechanism exists, describe the mechanism and its function:		

REQUIREMENT S5.2.2	PASS	FAIL
The gear selection control is locked in the “park” position when the key is removed from the starting system. Yes X No	X	

REMARKS:

DATA SHEET 3 continued

REQUIREMENT S5.2.3	PASS	FAIL
ELECTRICAL FAILURE (Battery Discharge) In the event of an electrical failure, key removal from the starting system when the transmission or gear selection control is not locked in “park” is permitted”. Yes_____ No__X	X	
The vehicle is equipped with an override device that permits key removal from the starting system when the transmission or gear selection control is not locked in “park”. Yes_____ No__X	X	
If yes, select the type of override device equipped: Opaque Cover_____ No Cover_____ Describe the override device design and mode of activation (if equipped):	N/A	
FILL IN THE SECTION BELOW THAT APPLIES: OVERRIDE WITH AN OPAQUE COVER: The opaque surface cover prevents sight of and use of override device. Yes_____ No_____ The opaque surface cover can only be removed by using a screwdriver or other tool. Yes_____ No_____ As a direct result of removing the key from starting system, the following is prevented: Steering_____ or Self-Mobility_____ OVERRIDE WITH NO COVER The override device requires the use of a tool to activate. Yes_____ No_____ Simultaneous activation of the override device and removal of key from starting system is required. Yes_____ No_____ As a direct result of removing the key from the starting system, the following is prevented: Steering_____ or Self-Mobility_____	N/A N/A	

REMARKS:

DATA SHEET 3 continued

REQUIREMENT S5.2.4	PASS	FAIL
GEAR SELECTION CONTROL OVERRIDE DEVICE The vehicle is equipped with an override device that allows the user to move the gear selection control from "park" after the key has been removed from the starting system. Yes__X__ No_____ If yes, select the type of override device that is equipped: Override operated with a: Key_____ Opaque Cover __X__ No Cover_____ Describe the override device design and mode of activation (if equipped): Remove cover with screwdriver and insert screwdriver and push down while moving gear selector. **FILL IN THE SECTION BELOW THAT APPLIES:** OVERRIDE OPERATED WITH KEY: The key is required to operate the override device that allows the user to move the gear selection control from "park" after the key has been removed from the starting system. Yes_____ No__X OVERRIDE WITH AN OPAQUE COVER The opaque surface cover prevents sight of and use of override device. Yes__X__ No_____ The opaque surface cover can only be removed by using a screwdriver or other tool. Yes__X__ No_____ As a direct result of removing the key from the starting system, the following is prevented: Steering__X__ or Self-Mobility __X__ OVERRIDE WITH NO COVER The override device requires the use of a tool to operate. Yes_____ No_____ Simultaneous activation of the override device and removal of key from starting system is required. Yes_____ No_____ As a direct result of removing the key from the starting system, the following is prevented: Steering_____ or Self-Mobility_____	X X X N/A	

REMARKS:

DATA SHEET 3 continued

REQUIREMENTS S5.2.5	PASS	FAIL
VEHICLE FACING UPHILL ON 10% GRADE With the gear selection control in “park” measure movement of the vehicle down the slope upon releasing the service brake. Test grade: 15 % (9% to 15%) Measured movement: 40 mm (150mm maximum) **NOTE:** Repeat procedure if vehicle fails on grade in excess of 10%. Test grade: _____ % (9% to 10%) Measured movement: _____ mm (150 mm maximum) VEHICLE FACING DOWNHILL ON 10% GRADE With the gear selection control in “park” measure movement of the vehicle down the slope upon releasing the service brake. Test grade: 15 % (9% to 15%) Measured movement: 18 mm (150mm maximum) **NOTE:** Repeat procedure if vehicle fails on grade in excess of 10%. Test grade: _____ % (9% to 10%) Measured movement: _____ mm (150 mm maximum)	X X	see note

REMARKS:

DATA SHEET 3 continued

REQUIREMENTS S5.3	PASS	FAIL
VEHICLE FACING UPHILL ON 10% GRADE		
With the key in the "off" position, the transmission will shift out of "park" without the service brake being applied. Yes_____ No__X	__X__	
With the key in the "acc" position, the transmission will shift out of "park" without the service brake being applied. Yes_____ No__X	__X__	
With the key in the "on" position (engine off), the transmission will shift out of "park" without the service brake being applied. Yes____ No__X	__X__	
With the key in the "start" position, the transmission will shift out of "park" without the service brake being applied. Yes_____ No__X	__X__	
With the key in the "other" position (please specify), the transmission will shift out of "park" without the service brake being applied. Yes_____ No__X	__X__	
Does the key stay between starting system positions without being held by operator? Yes_____ No__X If so, please describe.	__X__	
Brake force readings (force required to allow the transmission to shift out of "park"):		
The vehicle is equipped with adjustable pedals: Yes_____ No__X		
Fore Position: Aft Position (if applicable)		
Reading 1 22.2 N Reading 1_____ Reading 2 20.5 N Reading 2_____ Reading 3 21.4 N Reading 3_____ Reading 4 20.5 N Reading 4_____ Reading 5 20.5 N Reading 5_____ Avg. 21.0 N Avg. _____	__X__	

REMARKS:

RECORDED BY: G. Farrand DATE: 06/11/09
APPROVED BY: D. Messick

SECTION 4
TEST EQUIPMENT LIST

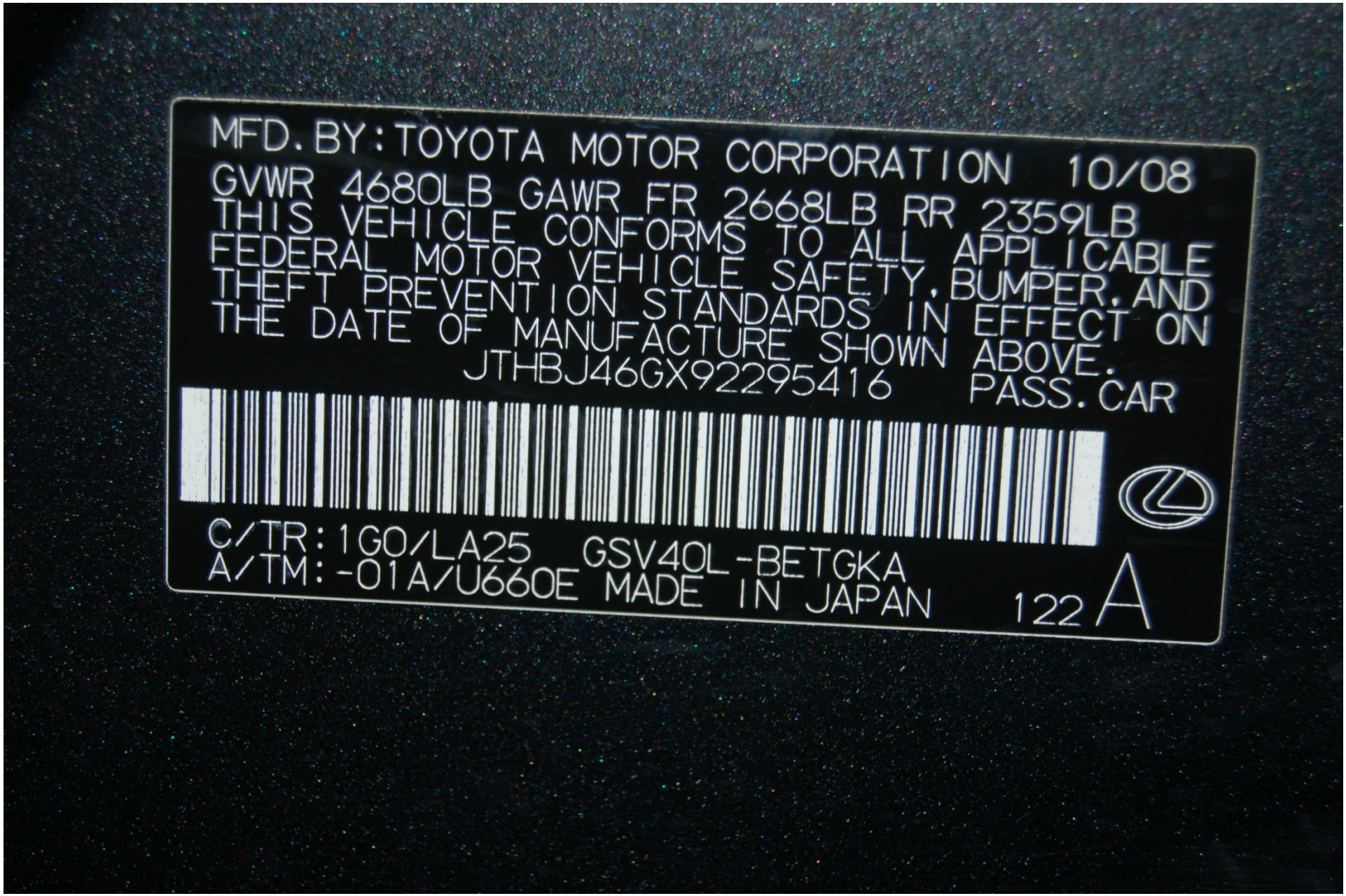
ITEM	MFR	MODEL	S/N	CAL. PERIOD	DATE OF NEXT CALIB.	REMARKS
SLR DIGITAL CAMERA	NIKON	D50	N/A	N/A	N/A	
TIRE PRESSURE GAUGE	WESKLER	45-0/100	107	12 MO.	03/10	
INCLINOMETER	MITUTOYO	PRO 360	950-315	N/A	BEFORE USE	
STEEL TAPE	STANLEY	FAT MAX	33-890	12 MO.	03/10	
WHEEL SCALES	INTERCOMP	SERIES 94	199744	12 MO.	04/10	
WHEEL SCALES	INTERCOMP	SERIES 94	199744	12 MO.	04/10	
WHEEL SCALES	INTERCOMP	SERIES 94	199744	12 MO.	04/10	
WHEEL SCALES	INTERCOMP	SERIES 94	199744	12 MO.	04/10	
SPRING SCALE	CHATILLON	DPP-10	4729	12 MO.	04/10	

SECTION 5

PHOTOGRAPHS

2009 LEXUS ES 350
NHTSA NO. C95104
FMVSS NO. 114

FIGURE 5.1
¾ FRONTAL VIEW FROM LEFT SIDE OF VEHICLE



2009 LEXUS ES 350
NHTSA NO. C95104
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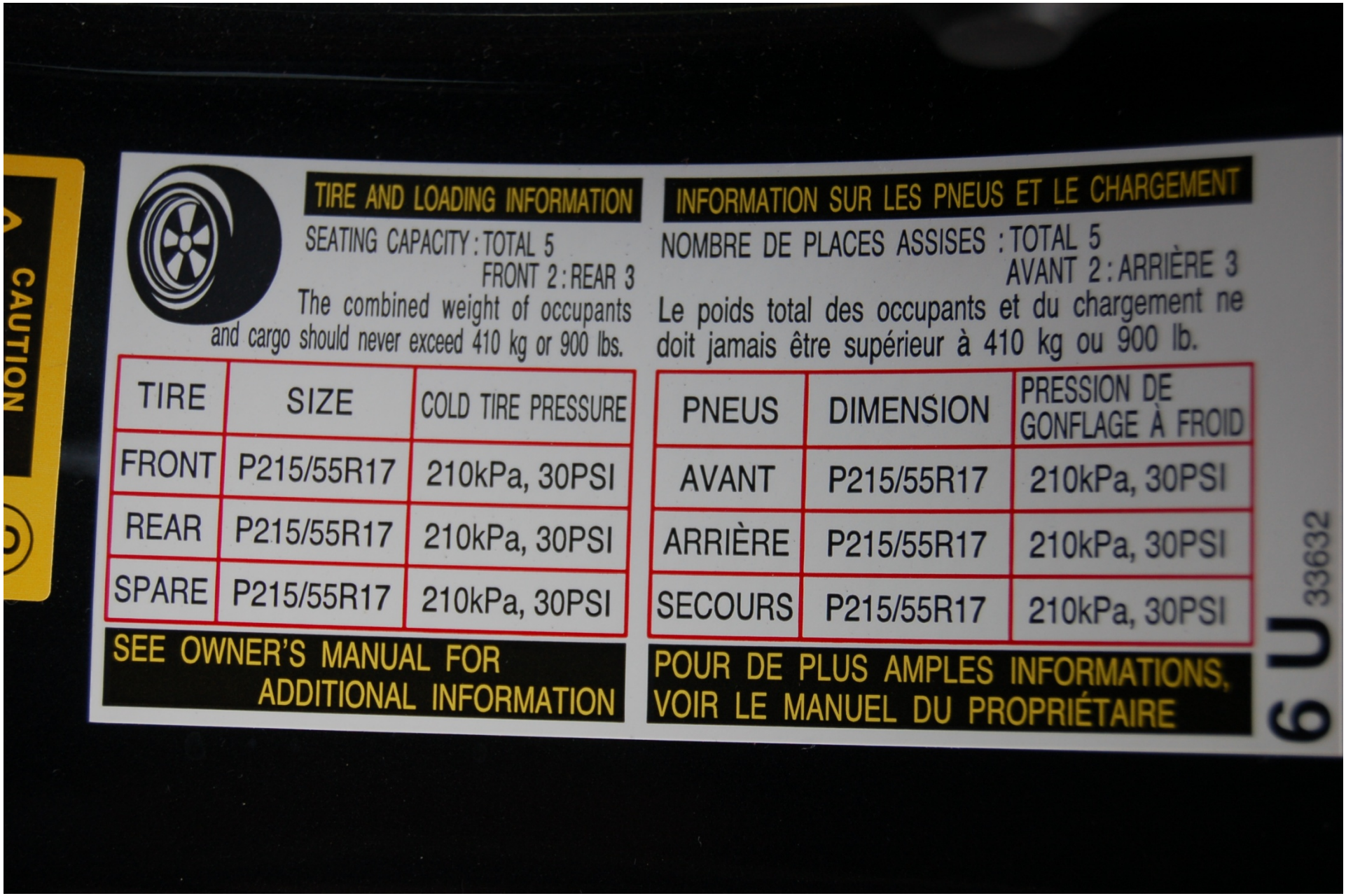
FIGURE 5.2
VEHICLE CERTIFICATION LABEL



2009 LEXUS ES 350
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FMVSS NO. 114

FIGURE 5.3
VEHICLE TIRE INFORMATION LABEL

2009 LEXUS ES 350
NHTSA NO. C95104
FMVSS NO. 114

FIGURE 5.4
CLOSE-UP VIEW OF IGNITION KEY

2009 LEXUS ES 350
NHTSA NO. C95104
FMVSS NO. 114

FIGURE 5.5
STARTING SYSTEM CONTROL

2009 LEXUS ES 350
NHTSA NO. C95104
FMVSS NO. 114

FIGURE 5.6
TRANSMISSION GEAR SELECTION CONTROL

2009 LEXUS ES 350
NHTSA NO. C95104
FMVSS NO. 114

FIGURE 5.7
ELECTRONIC DISPLAY WITH KEY REMOVED

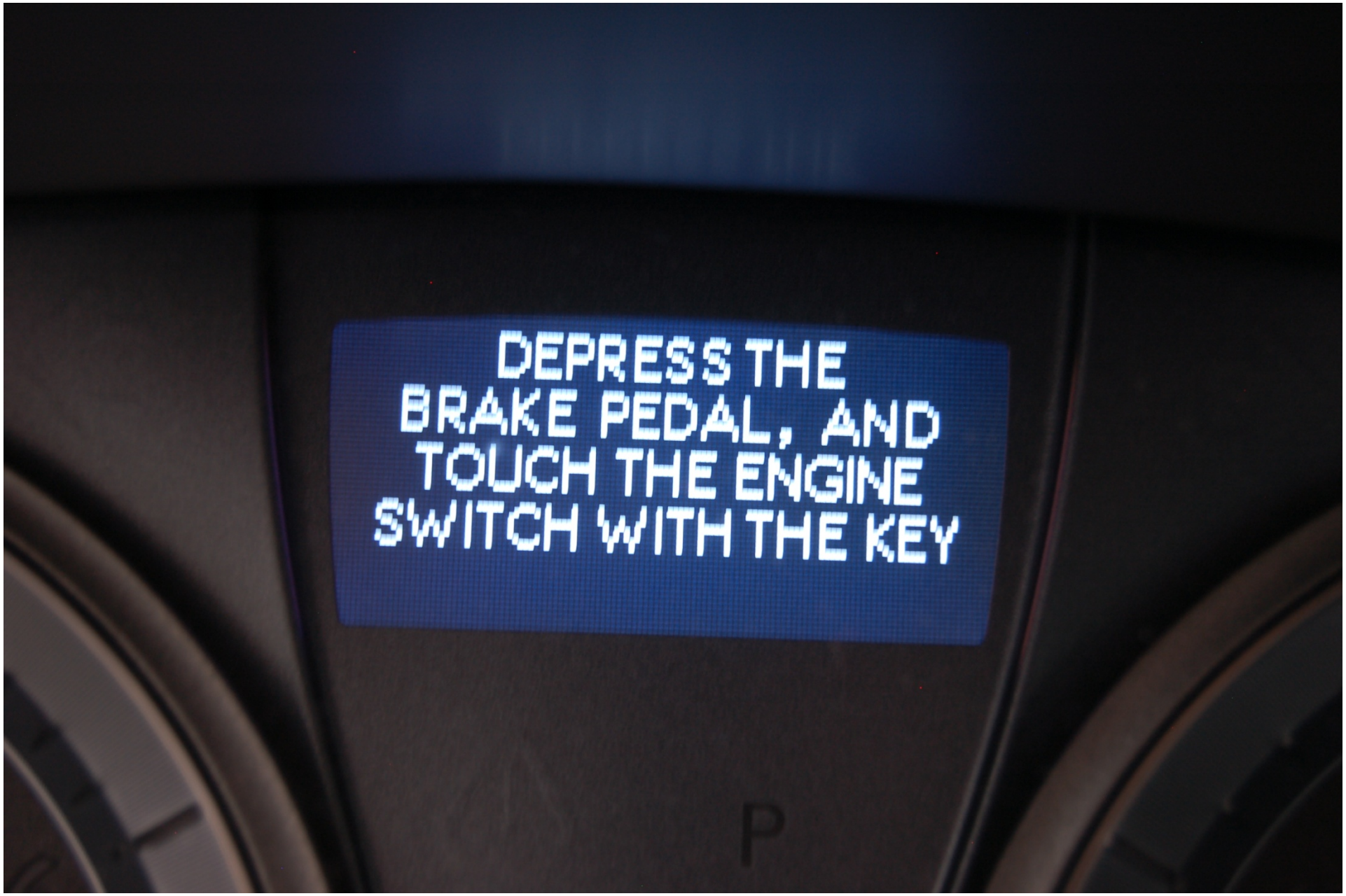

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FIGURE 5.8
ELECTRONIC DISPLAY WITH “HOW TO START”

2009 LEXUS ES 350
NHTSA NO. C95104
FMVSS NO. 114

FIGURE 5.9
ELECTRONIC DISPLAY WITH “SHIFT TO PARK”

2009 LEXUS ES 350
NHTSA NO. C95104
FMVSS NO. 114

FIGURE 5.10
PARK OVERRIDE ACCESS COVER