

REPORT NUMBER 114-GTL-10-007

# SAFETY COMPLIANCE TESTING FOR FMVSS NO. 114 THEFT PROTECTION

TOYOTA MOTOR CORPORATION  
2010 SCION tC PASSENGER CAR  
NHTSA NO. CA5106

GENERAL TESTING LABORATORIES, INC.  
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April 30, 2010

**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 2010 Scion tC 2-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 2010 Scion tC 2-door 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 2010 Scion tC 2-door Passenger Car. The vehicle was identified as follows:

A. Vehicle Identification Number: JTKDE3B79A0308521

B. NHTSA No.: CA5106

C. Manufacturer: TOYOTA MOTOR CORPORATION

D. Manufacture Date: 09/09

E. Color: White

1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 114 testing on March 25, 2010.

## 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 2010 Scion tC.





FMVSS 114, THEFT PROTECTION  
DATA SHEET 1 continued

GEAR SELECTION CONTROL

Describe the gear selection control:

Traditional gear selector located on center console

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, 3-D, 2, L

IMMOBILIZER

Is the vehicle equipped with an immobilizer    YES \_\_\_\_\_    NO  X

Describe the immobilizer device and how it prevents vehicle theft (if equipped):

N/A

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  220     Rear  220

TIRE INFLATION PRESSURES:

Measured (kPa): LF  220     LR  200     RF  220     RR  200

WEIGHT

Vehicle Curb Weight(kg):  1357     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 <u>  X  </u> Yes <u>      </u> No	X	
<p>With key removed, steering wheel locks: Yes: <u>  X  </u> No: <u>      </u></p> <p>Identify locking position(s) on wheel using arrow(s)</p> <p>Clockwise: <u>      10      </u> (degrees) Counterclockwise: <u>      270      </u> (degrees)</p> <div style="text-align: right; margin-right: 50px;"> </div>		
<p>Key removal prevents forward self-mobility: Yes: <u>  X  </u> No: <u>      </u></p> <p>If yes describe: Vehicle will not start without key.</p>		
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
<p>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.</p> <p style="text-align: right;">Yes <u>  X  </u> No _____</p> <p>Identify ALL key/starting system position setting: <u>Lock/Off, Accessory, On/Run, Start</u></p>	X	

REQUIREMENT S5.1.4	PASS	FAIL
<p>With the vehicle engine or motor shut down and the transmission gear selection control in any position other than "park";</p> <p>The steering wheel can rotate without locking? Yes <u>  X  </u> No _____</p>	X	
<p>The vehicle is free to roll forward? Yes <u>  X  </u> No _____</p>	X	

REMARKS:

RECORDED BY:   G. Farrand    
APPROVED BY:   D. Messick  

DATE:   03/25/10

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

VEH. NHTSA NO.: CA5106

TEST DATE: 03/25/10

REQUIREMENT S5.2.1	PASS	FAIL
<p>The starting system prevents key removal in ALL gear selection control positions except "park". Yes <u>X</u> No _____</p>	X	
<p>Can the gear selection control be placed between each gear selection position and will it remain there without assistance? Yes _____ No <u>X</u></p>	X	
<p>If yes, can the key be removed from the starting system? Yes _____ No _____</p>	N/A	
<p>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: N/A</p>		

REQUIREMENT S5.2.2	PASS	FAIL
<p>The gear selection control is locked in the "park" position when the key is removed from the starting system. Yes <u>X</u> No _____</p>	X	

REMARKS:

DATA SHEET 3 continued

REQUIREMENT S5.2.3	PASS	FAIL
<p><u>ELECTRICAL FAILURE (Battery Discharge)</u></p> <p>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 <u>X</u></p>		
<p>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”.</p> <p>Yes _____ No <u>X</u></p>		
<p>If yes, select the type of override device equipped:                      Opaque Cover _____ No Cover _____</p> <p>Describe the override device design and mode of activation (if equipped):</p>	N/A	
<p><b>FILL IN THE SECTION BELOW THAT APPLIES:</b></p> <p><u>OVERRIDE WITH AN OPAQUE COVER:</u></p> <p>The opaque surface cover prevents sight of and use of override device.                      Yes _____ No _____</p> <p>The opaque surface cover can only be removed by using a screwdriver or other tool.                      Yes _____ No _____</p> <p>As a direct result of removing the key from starting system, the following is prevented:      Steering _____ or Self-Mobility _____</p> <p><u>OVERRIDE WITH NO COVER</u></p> <p>The override device requires the use of a tool to activate.                      Yes _____ No _____</p> <p>Simultaneous activation of the override device and removal of key from starting system is required.                      Yes _____ No _____</p> <p>As a direct result of removing the key from the starting system, the following is prevented:      Steering _____ or Self-Mobility _____</p>	N/A	

REMARKS:

DATA SHEET 3 continued

REQUIREMENT S5.2.4	PASS	FAIL
<p><u>GEAR SELECTION CONTROL OVERRIDE DEVICE</u></p> <p>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 <u>X</u> No _____</p> <p>If yes, select the type of override device that is equipped: Override operated with a: Key _____ Opaque Cover <u>X</u> No Cover _____</p> <p>Describe the override device design and mode of activation (if equipped):</p> <p><b>FILL IN THE SECTION BELOW THAT APPLIES:</b></p> <p><u>OVERRIDE OPERATED WITH KEY:</u></p> <p>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 _____</p> <p><u>OVERRIDE WITH AN OPAQUE COVER</u></p> <p>The opaque surface cover prevents sight of and use of override device. Yes <u>X</u> No _____</p> <p>The opaque surface cover can only be removed by using a screwdriver or other tool. Yes <u>X</u> No _____</p> <p>As a direct result of removing the key from the starting system, the following is prevented: Steering <u>X</u> or Self-Mobility <u>X</u></p> <p><u>OVERRIDE WITH NO COVER</u></p> <p>The override device requires the use of a tool to operate. Yes _____ No _____</p> <p>Simultaneous activation of the override device and removal of key from starting system is required. Yes _____ No _____</p> <p>As a direct result of removing the key from the starting system, the following is prevented: Steering _____ or Self-Mobility _____</p>	<p>X</p> <p>N/A</p> <p>X</p> <p>N/A</p>	

REMARKS:

DATA SHEET 3 continued

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

REMARKS:

DATA SHEET 3 continued

REQUIREMENTS S5.3	PASS	FAIL
<u>VEHICLE FACING UPHILL ON 10% GRADE</u>		
With the key in the "off" position, the transmission will shift out of "park" without the service brake being applied. Yes_____ No__ <u>X</u>	<u>x</u>	
With the key in the "acc" position, the transmission will shift out of "park" without the service brake being applied. Yes_____ No__ <u>X</u>	<u>x</u>	
With the key in the "on" position (engine off), the transmission will shift out of "park" without the service brake being applied. Yes____ No__ <u>X</u>	<u>x</u>	
With the key in the "start" position, the transmission will shift out of "park" without the service brake being applied. Yes_____ No__ <u>X</u>	<u>x</u>	
With the key in the "other" position (please specify), the transmission will shift out of "park" without the service brake being applied. Yes_____ No _____	<u>N/A</u>	
Does the key stay between starting system positions without being held by operator? Yes_____ No__ <u>X</u> If so, please describe.	<u>x</u>	
Brake force readings (force required to allow the transmission to shift out of "park"):		
The vehicle is equipped with adjustable pedals: Yes_____ No <u>X</u>		
Fore Position:	Aft Position (if applicable)	
Reading 1 <u>4.5</u> N	Reading 1_____	
Reading 2 <u>4.2</u> N	Reading 2_____	
Reading 3 <u>3.8</u> N	Reading 3_____	
Reading 4 <u>4.0</u> N	Reading 4_____	
Reading 5 <u>4.0</u> N	Reading 5_____	
Avg. <u>4.1</u> N	Avg. _____	
	<u>N/A</u>	

REMARKS: Manual Transmission

RECORDED BY: G. Farrand  
 APPROVED BY: D. Messick

DATE: 03/25/10



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.	04/03/10	
INCLINOMETER	MITUTOYO	PRO 360	950-315	N/A	BEFORE USE	
STEEL TAPE	STANLEY	FAT MAX	33-890	12 MO.	03/29/10	
WHEEL SCALES	INTERCOMP	SERIES 94	199744	12 MO.	03/02/11	
WHEEL SCALES	INTERCOMP	SERIES 94	199744	12 MO.	03/02/11	
WHEEL SCALES	INTERCOMP	SERIES 94	199744	12 MO.	03/02/11	
WHEEL SCALES	INTERCOMP	SERIES 94	199744	12 MO.	03/02/11	
SPRING SCALE	CHATILLON	DPP-10	4729	12 MO.	BEFORE USE	

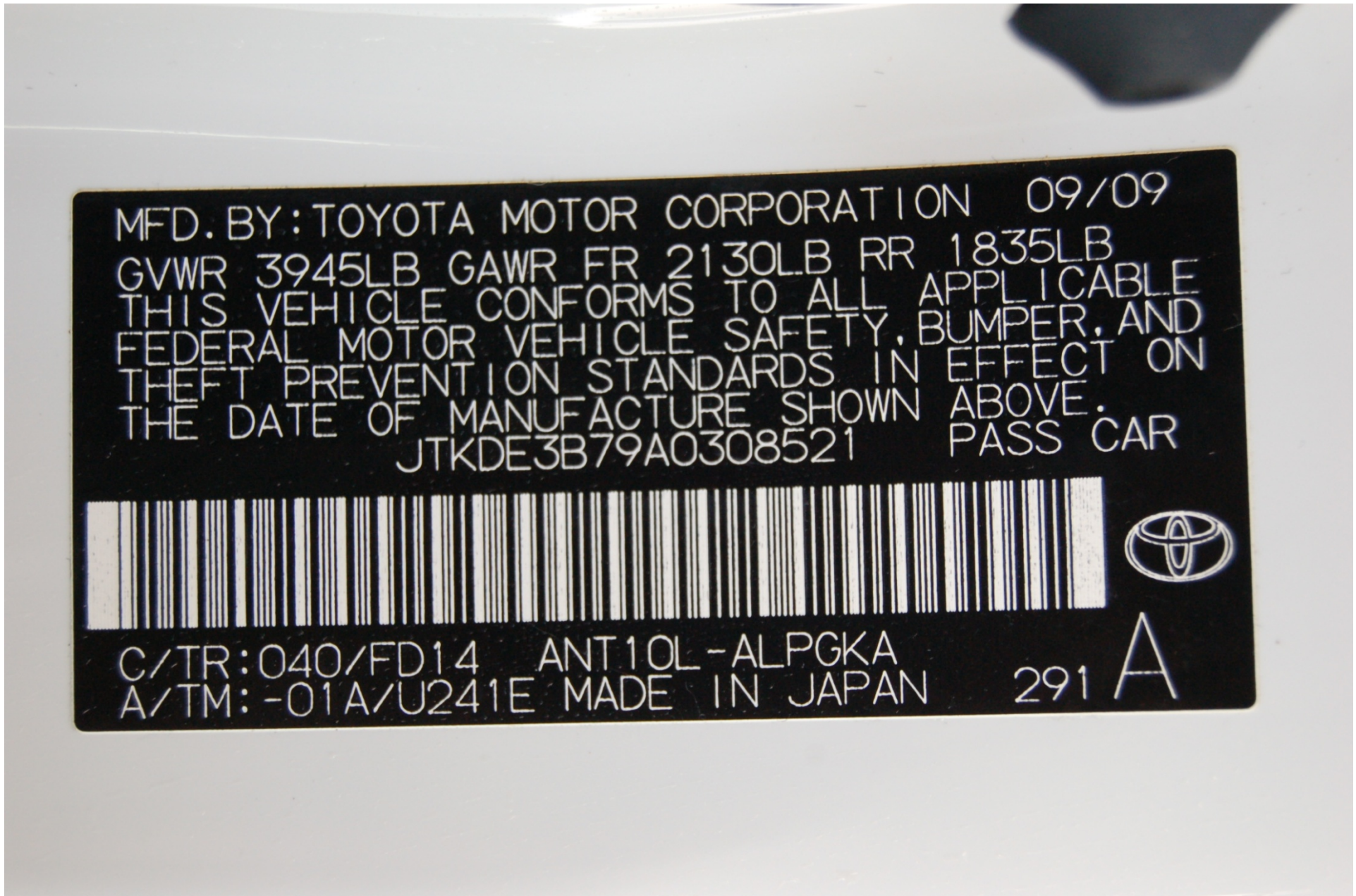
SECTION 5  
PHOTOGRAPHS



2010 SCION tC  
NHTSA NO. CA5106  
FMVSS NO. 114

FIGURE 5.1  
¾ FRONTAL VIEW FROM LEFT SIDE OF VEHICLE

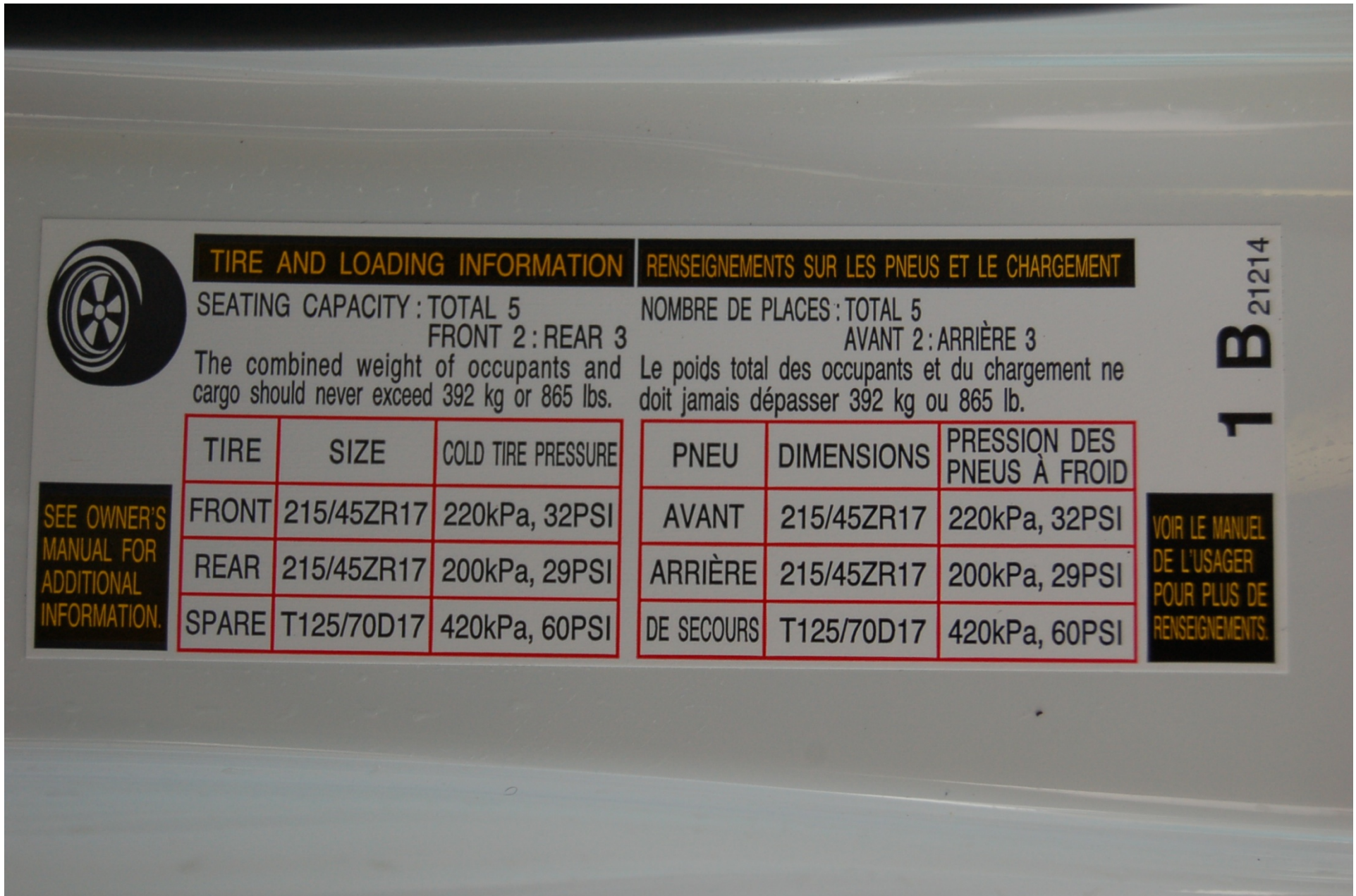




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FIGURE 5.2  
 VEHICLE CERTIFICATION LABEL





**TIRE AND LOADING INFORMATION      RENSEIGNEMENTS SUR LES PNEUS ET LE CHARGEMENT**

SEATING CAPACITY : TOTAL 5  
 FRONT 2 : REAR 3  
 The combined weight of occupants and cargo should never exceed 392 kg or 865 lbs.

NOMBRE DE PLACES : TOTAL 5  
 AVANT 2 : ARRIÈRE 3  
 Le poids total des occupants et du chargement ne doit jamais dépasser 392 kg ou 865 lb.

TIRE	SIZE	COLD TIRE PRESSURE
FRONT	215/45ZR17	220kPa, 32PSI
REAR	215/45ZR17	200kPa, 29PSI
SPARE	T125/70D17	420kPa, 60PSI

PNEU	DIMENSIONS	PRESSION DES PNEUS À FROID
AVANT	215/45ZR17	220kPa, 32PSI
ARRIÈRE	215/45ZR17	200kPa, 29PSI
DE SECOURS	T125/70D17	420kPa, 60PSI

SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION.

VOIR LE MANUEL DE L'USAGER POUR PLUS DE RENSEIGNEMENTS.

1 B 21214

FIGURE 5.3  
 VEHICLE TIRE INFORMATION LABEL



2010 SCION tC  
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FIGURE 5.4  
CLOSE-UP VIEW OF IGNITION KEY





2010 SCION tC  
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FMVSS NO. 114

FIGURE 5.5  
STARTING SYSTEM CONTROL



2010 SCION tC  
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FMVSS NO. 114

FIGURE 5.6  
TRANSMISSION GEAR SELECTION CONTROL





2010 SCION tC  
NHTSA NO. CA5106  
FMVSS NO. 114

FIGURE 5.7  
COVER OVER GEAR SELECTOR RELEASE





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NHTSA NO. CA5106  
FMVSS NO. 114

FIGURE 5.8  
KEY INSERTED INTO GEAR SELECTOR RELEASE