REPORT NUMBER: 114-CAL-08-06

SAFETY COMPLIANCE TESTING FOR FMVSS No. 114 THEFT PROTECTION AND ROLLOWAY PREVENTION

FORD MOTOR COMPANY
2008 FORD RANGER REGULAR CAB PICKUP

NHTSA NUMBER: C80205

CALSPAN TEST NUMBER: 8858-F114-06

CALSPAN CORPORATION
P.O. BOX 400
BUFFALO, NEW YORK 14225

May 5, 2008

FINAL REPORT

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
ENFORCEMENT
Office of Vehicle Safety Compliance
Room W43-481, NVS-220
1200 New Jersey Avenue, SE
Washington, DC 20590

Prepared By: 

Vincent M. Paolini, Project Engineer

Approved By: 

David J. Travale, Program Manager
Transportation Sciences Center

Approval Date: August 20, 2008

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: _____

Acceptance Date: _____

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. 114-CAL-08-06	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of FMVSS 114 Compliance Testing of a 2008 Ford Ranger Regular Cab Pickup NHTSA No.: C80205		5. Report Date May 5, 2008 6. Performing Organization Code CAL	
7. Author(s) Vincent M. Paolini, Project Engineer David J. Travale, Program Manager		8. Performing Organization Report No. 8858-F114-06	
9. Performing Organization Name and Address Calspan Corporation Transportation Sciences Center Transportation Sciences Center P.O. Box 400 Buffalo, New York 14225		10. Work Unit No. 11. Contract or Grant No. DTNH22-06-C-00031	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Enforcement Office of Vehicle Safety Compliance (NVS-220) 400 Seventh Street, SW, Rm. 6115 Washington, D.C. 20590		13. Type of Report and Period Covered Final Report, May - June 2008 14. Sponsoring Agency Code NVS-221	
15. Supplementary Notes			
16. Abstract Compliance tests were conducted on the subject 2008 Ford Ranger Regular Cab Pickup in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-114-03 for the determination of FMVSS 114 compliance. Test failures were identified as follows: None			
17. Key Words Compliance Testing Safety Engineering FMVSS 114	18. Distribution Statement Copies of this report are available from: National Highway Transportation Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Avenue SE (Room E12-100) Washington DC 20590 Email: tis@nhtsa.dot.gov FAX: 202-493-2833		
19. Security Classification of Report UNCLASSIFIED	20. Security Classification of Page UNCLASSIFIED	21. No. of Pages 35	22. Price

TABLE OF CONTENTS

SECTION 1

PURPOSE OF COMPLIANCE TEST

This test is part of the Federal Motor Vehicle Safety Standard (FMVSS) 114 Compliance Test Program conducted for the National Highway Traffic Safety Administration (NHTSA) by General Dynamics Advanced Information Engineering Services under Contract No. DTNH22-06-C-00031. The purpose of this test was to determine if the subject vehicle, a 2008 Ford Ranger Regular Cab Pickup, was in compliance with FMVSS No. 114, Theft Protection and Rollaway Prevention. The purpose of this standard is to reduce the incidence of crashes resulting from unauthorized operation of vehicles by specifying requirements for theft protection. Additionally, FMVSS No. 114 specifies requirements to reduce the incidents of crashes from rollaway of parked vehicles with automatic transmissions as a result of children moving the shift mechanism out of the "park" position. This standard applies to passenger cars, trucks and multipurpose passenger vehicles having a Gross Vehicle Weight Rating (GVWR) of 4536 kilograms or less. This compliance test was conducted using the requirements found in the OVSC Laboratory Test Procedure No. TP-114-03, dated May 2, 2008.

SECTION 2

TEST PROCEDURE AND DISCUSSION OF RESULTS

A 2008 Ford Ranger Regular Cab Pickup with an automatic transmission was subjected to FMVSS No. 114 testing in accordance with the NHTSA Office of Vehicle Safety Compliance (OVSC) Laboratory Test Procedure TP-114-03, dated May 2, 2008. This test was performed by General Dynamics Advanced Information Engineering Services on May 5, 2008.

The test equipment used for this test included a standard metric tape ruler, a digital inclinometer with digital clinometer function, weight scales and a digital manometer. Testing was performed in the following sequence:

STARTING SYSTEM REQUIREMENT (S5.1.1):

Normal activation of the vehicle engine was prevented with the key removed from the starting system. Both steering and forward self-mobility were also prevented.

AUDIBLE ALARM REQUIREMENT (S5.1.3):

With the key left in the vehicle starting system and the driver's door opened, an audible alarm was activated. This "warning to the driver" was verified in all ignition switch positions except "on" and "start".

"PARK" POSITION REQUIREMENT (S5.1.4)

With the vehicle key in the ignition and the engine shut off, the steering wheel was able to rotate in both directions without locking and the vehicle was free to roll forward in all transmission positions except "park".

ROLLAWAY PREVENTION REQUIREMENT (S5.2.1)

With the vehicle key in the ignition and the engine shut off, the starting system prevented key removal in all transmission positions other than "park." This vehicle was not equipped with an advanced key and the transmission could not be placed in locations between locking gear selector positions. The vehicle was not equipped with a mechanism that will lock the transmission in "park" as a result of removing the key in a transmission position other than "park."

GEAR SELECTION REQUIREMENT (S5.2.2):

With the vehicle ignition key removed, the gear control could not be moved from the "park" position. With the vehicle ignition key in the "ON" position and the vehicle engine running, the transmission could be moved to the "drive" position by depressing the brake pedal.

KEY REMOVAL OVERRRIDE REQUIREMENT (S5.2.3):

This vehicle was not equipped with a key removal override option.

GEAR SELECTION CONTROL OVERRRIDE REQUIREMENT (S5.2.4):

The vehicle was not equipped with a gear selection control override device.

TEN PERCENT GRADE "PARK" REQUIREMENT (S5.2.5)

The vehicle was driven forward and stopped with the service brakes on a 11.0% grade. The parking brake was fully applied and the transmission lever was placed in "park". When the service and parking brakes were released the vehicle moved 27 mm (150 mm maximum is allowed on a 10% grade). Since the available test grade was more stringent than the specified condition, the subject vehicle appeared to perform within the safety performance requirements.

The vehicle was driven in reverse and stopped with the service brakes on a 10.5% grade. The parking brake was fully applied and the transmission lever was placed in "park". When the service and parking brakes were released the vehicle moved 55 mm (150 mm maximum is allowed on a 10% grade). Since the available test grade was more stringent than the specified condition, the subject vehicle appeared to perform within the safety performance requirements.

BRAKE TRANSMISSION SHIFT INTERLOCK REQUIREMENT (S5.3)

With the vehicle key in the starting system the vehicle transmission was unable to be shifted from the "park" position without depressing the brake pedal for each of the starting system key positions.

SECTION 3

TEST DATA

FMVSS 114, THEFT PROTECTION

DATA SHEET 1 – ALL VEHICLES

TEST DATE:	May 5, 2008	LAB:	Calspan
CONTRACT:	DTNH22-06-C-00031	VEHICLE NHTSA NUMBER:	C80205
VIN:	1FTYR10D98PA33826	BUILD DATE:	09/07
MY/MAKE/MODEL/BODY STYLE:	2008 Ford Ranger Regular Cab Pickup		

TRANSMISSION TYPE:

Automatic X ; Manual - ; Other (describe: Not Applicable)

DRIVE TRAIN TYPE:

Front Wheel - ; Rear Wheel X ; Four Wheel -

OPTIONAL RELEASE DEVICES:

Key - ; Transmission - ; None X

VEHICLE STARTING SYSTEM:

Location of the starting system: The ignition switch is located on the right side of the steering column in front of the transmission gear select lever.

Selectable settings: “ACCESSSORY”, “LOCK”, “OFF”, “ON”, and “START”

Activation of starting system: Place the key in the ignition switch, depress the foot brake and rotate the key clockwise to start the vehicle engine.

KEY:

Description of key: The vehicle has a mechanical key with a code specific to the vehicle’s computer embedded into the key.

STARTING SYSTEM ACTIVATION:

Insertion of key into starting system: The key inserts into the ignition switch like a traditional lock and key mechanism

Activation of starting system with key: Insert the key into the ignition switch, depress the brake pedal and rotate the vehicle key clockwise to start the vehicle engine.

Removal of key from starting system: Depress the vehicle brake, place the vehicle transmission in “PARK” and rotate the key counter clockwise to the “LOCK” position and remove.

GEAR SELECTION CONTROL:

Gear selection control: The gear selector is located on the right side of the steering column. The gear indicator is located directly in front of the driver on the instrument panel.

Activation of gear selection control: With the vehicle key in the ignition switch and the engine running, the driver must depress the brake pedal to move the transmission out of “PARK.”

Selectable settings: “PARK”, “REVERSE”, “NEUTRAL”, “DRIVE”, “2” and “1”

IMMOBILIZER:

Is the vehicle equipped with an immobilizer: Yes X No -

Description of Immobilizer and how it prevents vehicle theft: A passive system that utilizes a coded key specific to the vehicle. The vehicle engine will not start unless the programmed key code is recognized by the vehicle computer.

OPTIONAL RELEASE DEVICES:

Key Removal - Gear selection Control - None X Other -

If other, Explain: Not Applicable

TIRE PRESSURE:

Vehicle Manufacturer Recommended (kPa): Front 205 ; Rear 205

Measured (kPa): LF 205 ; LR 205 ; RF 205 ; RR 205

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

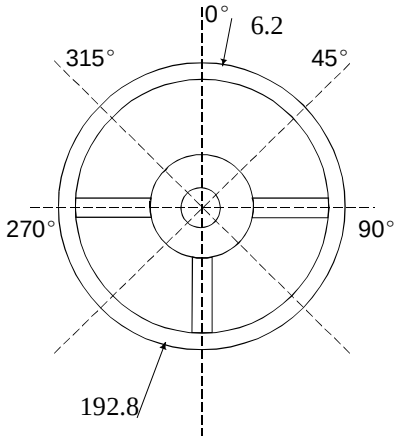
	LEFT SIDE (kg)	RIGHT SIDE (kg)	TOTAL (kg)	PERCENT
FRONT =	427.0	403.0	830.0	58.8%
REAR=	293.0	288.0	581.0	41.2%

TOTAL DELIVERED WEIGHT (UDW) : 1411.0 kg

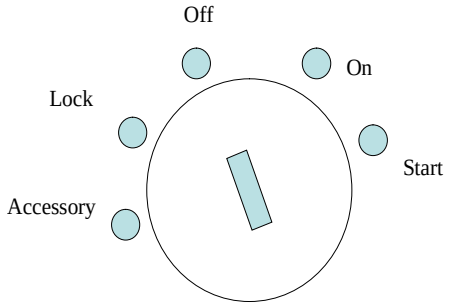
FMVSS 114, THEFT PROTECTION

DATA SHEET 2 – THEFT PROTECTION

TEST DATE:	May 5, 2008	LAB:	Calspan
CONTRACT:	DTNH22-06-C-00031	VEHICLE NHTSA NUMBER:	C80205
VIN:	1FTYR10D98PA33826	BUILD DATE:	09/07
MY/MAKE/MODEL/BODY STYLE:	2008 Ford Ranger Regular Cab Pickup		

REQUIREMENT S5.1.1	**PASS**	**FAIL**
Engine cannot be started without using the key. Yes X No _____	**X**	--
With key removed, steering locks: Yes X No -  Identify the steering wheel locking position(s) on the circle using arrows Clockwise: 6.2 (degrees) Counterclockwise: 192.8 (degrees)		
Key removal prevents forward self-mobility: Yes X No - If yes, describe: The steering column locks, the transmission locks in "PARK" and the vehicle has an engine immobilizer that requires the vehicle key to start the engine.	**X**	--
When the key is removed from the starting system, starting of the engine or motor and either steering or self mobility is prevented	**X**	--

DATA SHEET 2 – THEFT PROTECTION

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 -	X	--
Identify ALL key/starting system position settings:  		

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: None

RECORDED BY: Vincent M. Paolini DATE: May 5, 2008

APPROVED BY: David Travale

DATA SHEET 3 – ROLLAWAY PREVENTION
(For vehicles equipped with automatic transmission with a 'PARK' position)

TEST DATE:	May 5, 2008	LAB:	Calspan
CONTRACT:	DTNH22-06-C-00031	VEHICLE NHTSA NUMBER:	C80205
VIN:	1FTYR10D98PA33826	BUILD DATE:	09/07
MY/MAKE/MODEL/BODY STYLE:	2008 Ford Ranger Regular Cab Pickup		

REQUIREMENT S5.2.1	**PASS**	**FAIL**
The starting system prevents key removal in **ALL** gear selection control positions except "park". Yes X No - Can the gear selection control be placed between each gear selection position and will it remain there without assistance? Yes - No X If yes, can the key be removed from the starting system? Yes - No - 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's 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: NOT APPLIACBLE	**X**	--

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**	--

DATA SHEET 3 – ROLLAWAY PREVENTION
(For vehicles equipped with automatic transmission with a 'PARK' position)

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 X No - 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 If yes, select the type of override device that is equipped: Override operated with a: Opaque Cover -- No cover -- **FILL IN THE SECTION BELOW THAT APPLIES:**	X	---
OVERRIDE WITH AN OPAQUE COVER: The opaque surface cover prevents sight of and use of the override device Yes - No - The opaque surface cover can be removed only by using a screwdriver or other tool. Yes - No - As a direct result of removing the key from the starting system, the following is prevented: Steering - self mobility -	N/A	N/A
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 the key from the starting system is required. Yes - No - As a direct result of removing the key from the starting system, the following is prevented: Steering - self mobility -	N/A	N/A

DATA SHEET 3 – ROLLAWAY PREVENTION
(For vehicles equipped with automatic transmission with a 'PARK' position)

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 _____ No X If yes, select the type of override device that is equipped: Override operated with a: Key -- Opaque Cover - No cover -- Describe the device design and mode of activation (if equipped): **FILL IN THE SECTION BELOW THAT APPLIES:**		
OVERRIDE OPERATED WITH A KEY: A 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 --	N/A	N/A
OVERRIDE WITH AN OPAQUE COVER: The opaque surface cover prevents sight of and use of the override device Yes - No - The opaque surface cover can be removed only by using a screwdriver or other tool. Yes - No - As a direct result of removing the key from the starting system, the following is prevented: Steering - self mobility -	N/A	N/A
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 the key from the starting system is required. Yes - No - As a direct result of removing the key from the starting system, the following is prevented: Steering - self mobility -	N/A	N/A

DATA SHEET 3 – ROLLAWAY PREVENTION
(For vehicles equipped with automatic transmission with a 'PARK' position)

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: 11.0 % (9% to 15%) Measured movement: 27 mm (150mm maximum) **NOTE:** Repeat procedure if vehicle fails on grade in excess of 10%. Test grade: N/A % (9% to 10%) Measured movement: N/A mm (150 mm maximum)	X	--
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: 10.5 % (9% to 15%) Measured movement: 55 mm (150mm maximum) **NOTE:** Repeat procedure if vehicle fails on grade in excess of 10%. Test grade: N/A % (9% to 10%) Measured movement: N/A mm (150 mm maximum)		

Remarks: None

RECORDED BY: Vincent M. Paolini DATE: May 5, 2008

APPROVED BY: David Travale

FMVSS 114, ROLLAWAY PREVENTION
DATA SHEET 3 – ROLLAWAY PREVENTION
(For vehicles equipped with automatic transmission with a 'PARK' position)

REQUIREMENTS S5.3	PASS	FAIL
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 "on" position (*engine running*), 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? If so, please describe Between "ACC" and "OFF"	N/A	N/A
Brake force readings (force required to allow the transmission to shift out of "park"): Reading 1 4.0 lbf Reading 2 4.0 lbf Reading 3 4.0 lbf Reading 4 4.0 lbf Reading 5 4.0 lbf Average 4.0 lbf	N/A	N/A

Remarks: None

RECORDED BY: Vincent M. Paolini DATE: May 5, 2008

APPROVED BY: David Travale

SECTION 4

TEST EQUIPMENT LIST AND CALIBRATION DATES

Equipment	Manufacturer	Name	Range	Accuracy	Calibration Date	Calibration Due
Clinometer	MD	Smart Level	0-100%	0.1%	04/2008	04/2009
Steel Tape	Stanley	Stanley 3137	3 meters	0.5mm	N/A	N/A
Weight Scales	Long Acre	Computer Scales 2000	0-12,000lbs.	0.2%	03/2008	03/2009
Manometer	Meriam Instrument Co.	350 Smart Manometer	0-200 psi.	0.05%	02/2008	02/2009
Plumb Bob	Stanley	Plumb bob	N/A	N/A	N/A	N/A

SECTION 5

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Figure 1: Vehicle Left Front Three-Quarter View

2008 Ford Ranger Regular Cab Pickup
NHTSA No.: C80205

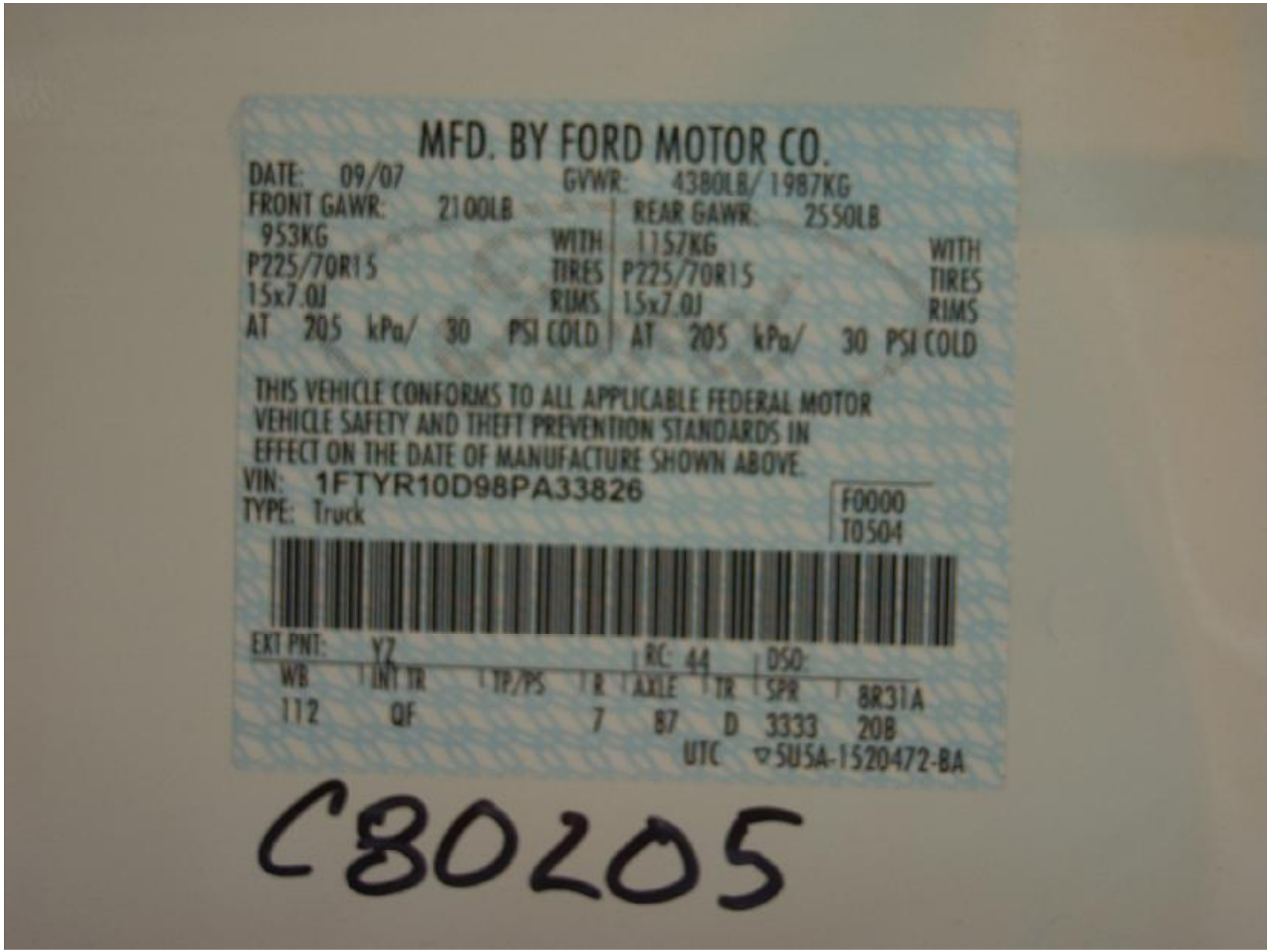


Figure 2: Vehicle Certification Placard

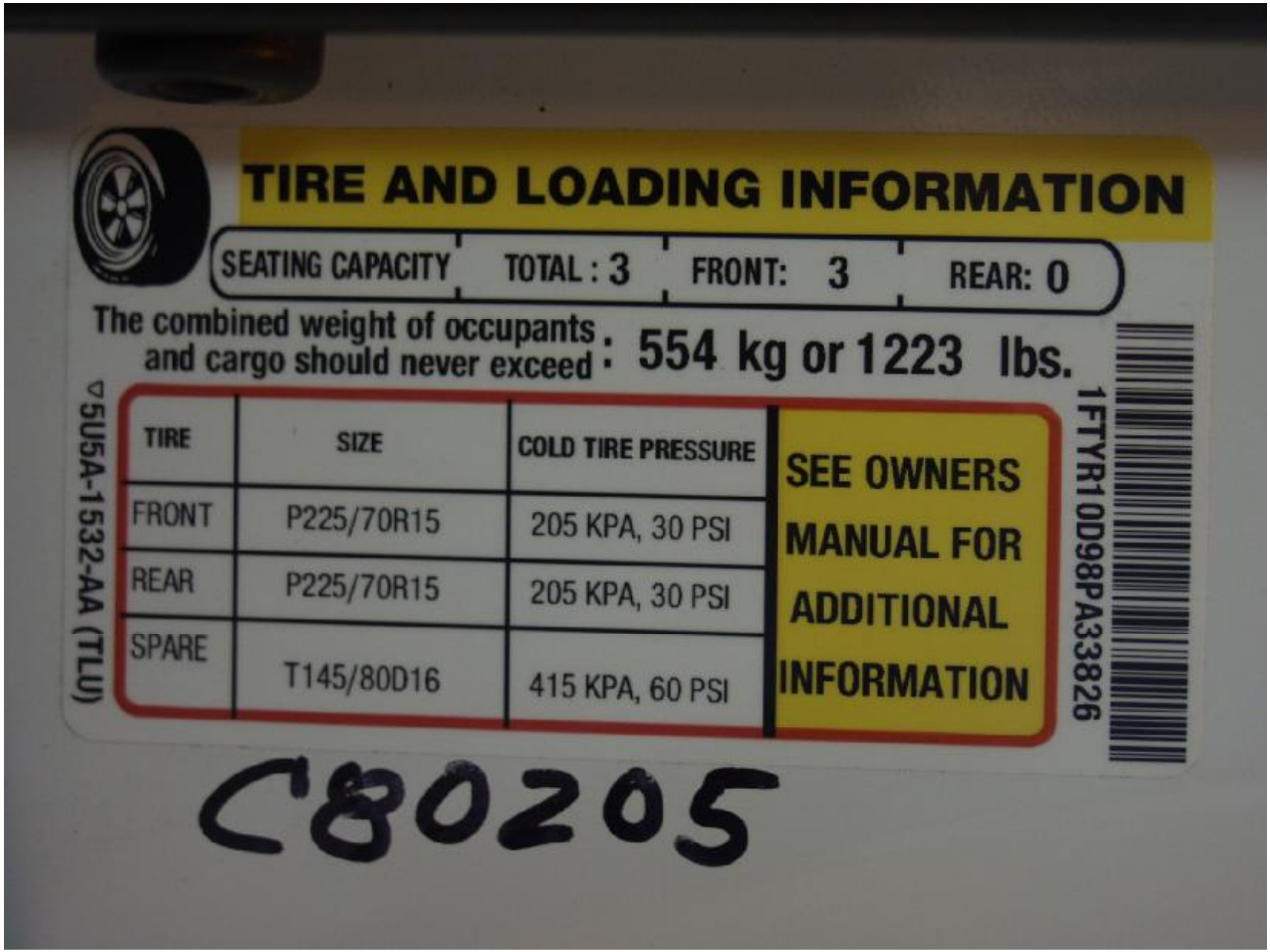


Figure 3: Vehicle Tire Placard

Figure 4: Close-Up of Ignition Switch

Figure 5: Close-Up of Transmission Shift Lever Mechanism

NOT APPLICABLE

Figure 6: Close-Up of Special Device Which Allows For Key Removal

2008 Ford Ranger Regular Cab Pickup
NHTSA No.: C80205

NOT APPLICABLE

Figure 7: Close-Up of Special Device Which Allows Moving of Shift Lever

2008 Ford Ranger Regular Cab Pickup
NHTSA No.: C80205

SECTION 6

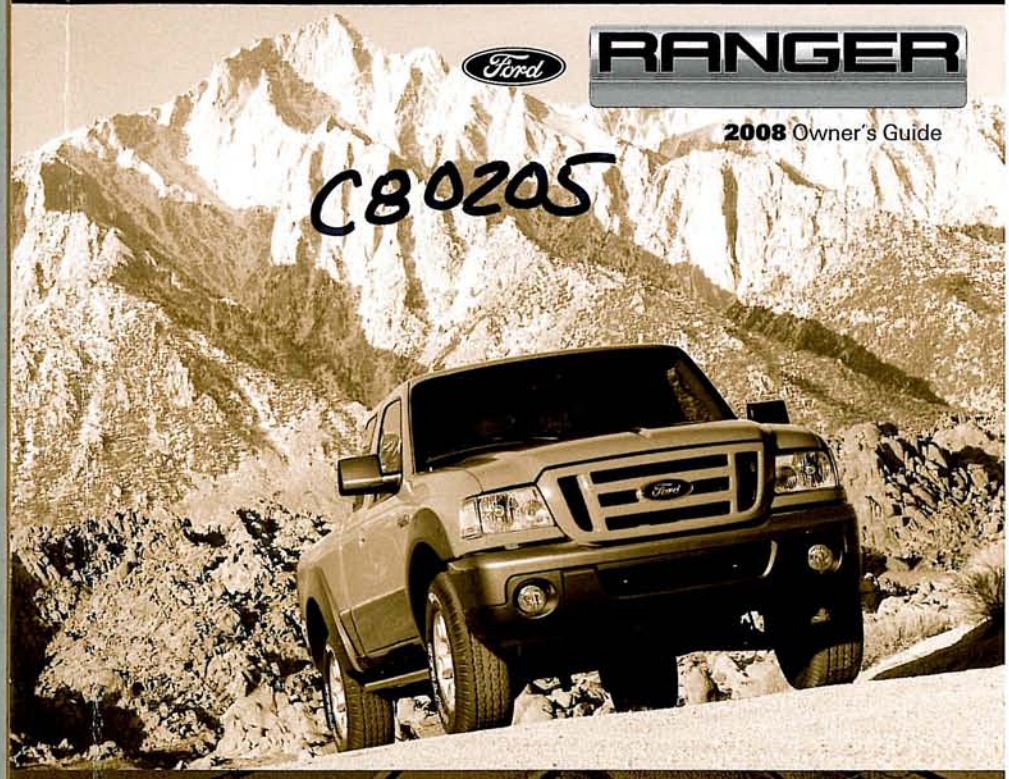
VEHICLE OWNER'S MANUAL

2008 Ford Ranger Regular Cab Pickup
NHTSA No.: C80205

RANGER

2008 Owner's Guide

C80205



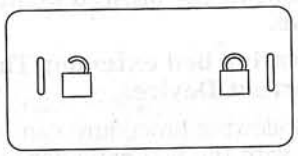
KEYS

The key operates all locks on your vehicle. You should always carry a second key with you in a safe place in case you require it in an emergency.

If your vehicle is equipped with the SecuriLock™ Passive Anti-theft system, your keys are coded to your vehicle; using a non-coded key will not permit your vehicle to start. If you lose your dealer supplied keys, replacement keys are available through your authorized dealer.

POWER DOOR LOCKS (IF EQUIPPED)

Press the control to unlock or lock all the doors.



REMOTE ENTRY SYSTEM (IF EQUIPPED)

This device complies with part 15 of the FCC rules and with RS-210 of Industry Canada. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The typical operating range for your remote entry transmitter is approximately 33 feet (10 meters). A decrease in operating range could be caused by:

- weather conditions,
- nearby radio towers,
- structures around the vehicle, or
- other vehicles parked next to your vehicle.

Illuminated entry

The interior lamps illuminate when the remote entry system is used to unlock the door(s) or sound the personal alarm.

The illuminated entry system will turn off the interior lights if:

- the ignition switch is turned to the ON position, or
- the remote transmitter lock control is pressed, or
- after 25 seconds of illumination.

The inside lights will not turn off if:

- they have been turned on with the dimmer control, or
- any door is open.

The battery saver will shut off the interior lamps after several minutes if they are left on accidentally.

SECURILOCK™ PASSIVE ANTI-THEFT SYSTEM (IF EQUIPPED)

SecuriLock™ passive anti-theft system is an engine immobilization system. This system is designed to help prevent the engine from being started unless a **coded key programmed to your vehicle** is used. The use of the wrong type of coded key may lead to a "no-start" condition.

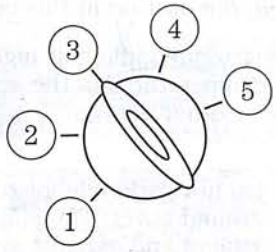
Your vehicle comes with two coded keys; additional coded keys may be purchased from your authorized dealer. The authorized dealer can program your spare keys to your vehicle or you can program the keys yourself. Refer to *Programming spare keys* for instructions on how to program the coded key.

Note: The SecuriLock™ passive anti-theft system is not compatible with non-Ford aftermarket remote start systems. Use of these systems may result in vehicle starting problems and a loss of security protection.

Note: Large metallic objects, electronic devices that are used to purchase gasoline or similar items, or a second coded key on the same key chain may cause vehicle starting issues. You need to prevent these objects from touching the coded key while starting the engine. These objects will not cause damage to the coded key, but may cause a momentary issue if they are too close to the key when starting the engine. If a problem occurs, turn the ignition off, remove all objects on the key chain away from the coded key and restart the engine.

STARTING

Positions of the ignition



1. ACCESSORY, allows the electrical accessories such as the radio to operate while the engine is not running.

2. LOCK, locks the steering wheel, automatic transmission gearshift lever and allows key removal. For vehicles equipped with a manual transmission, you must depress the ignition release lever to release the key.

3. OFF, shuts off the engine and all accessories without locking the steering wheel.

4. ON, all electrical circuits operational. Warning lights illuminated. Key position when driving.

5. START, cranks the engine. Release the key as soon as the engine starts.

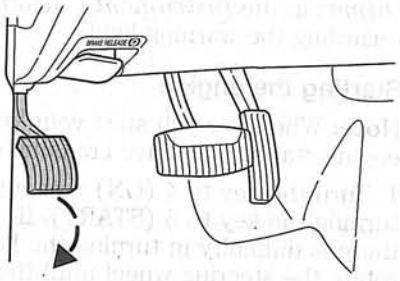
Preparing to start your vehicle

Engine starting is controlled by the powertrain control system.

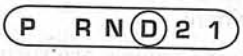
Note: This system meets all Canadian Interference-Causing Equipment standard requirements regulating the impulse electrical field strengt radio noise.

If starting a vehicle with an automatic transmission:

- Make sure the parking brake is set.

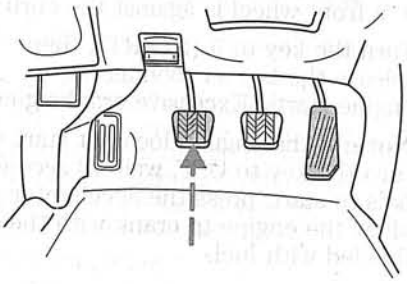


- Make sure the gearshift is in P (Park).

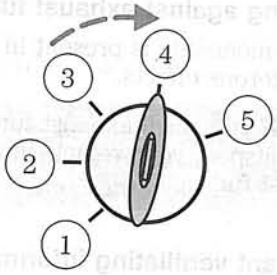


If starting a vehicle with a manual transmission:

1. Make sure the parking brake is set.
2. Push the clutch pedal to the floor.



3. Turn the key to 4 (ON) without turning the key to 5 (START).



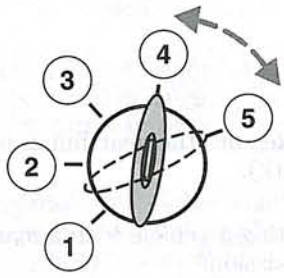
If there is difficulty in turning the key, firmly rotate the steering wheel left and right until the key turns freely. This condition may occur when:

- front wheels are turned
- front wheel is against the curb
- steering wheel is turned when getting in or out of the vehicle

Some warning lights will briefly illuminate. See *Warning lights and chimes* in the *Instrument Cluster* chapter for more information regarding the warning lights.

Starting the engine

Note: Whenever you start your vehicle, release the key as soon as the engine starts. Excessive cranking could damage the starter.



1. Turn the key to 4 (ON) without turning the key to 5 (START). If there is difficulty in turning the key, rotate the steering wheel until the key turns freely. This condition may occur when:
   - the front wheels are turned
   - a front wheel is against the curb

   Turn the key to 5 (START), then release the key as soon as the engine starts. Excessive cranking could damage the starter.

Note: If the engine does not start within five seconds on the first try, turn the key to OFF, wait 10 seconds and try again. If the engine still fails to start, press the accelerator to the floor and try again; this will allow the engine to crank with the fuel shut off in case the engine is flooded with fuel.

Guarding against exhaust fumes

Carbon monoxide is present in exhaust fumes. Take precautions to avoid its dangerous effects.

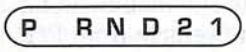
If you smell exhaust fumes inside your vehicle, have your dealer inspect your vehicle immediately. Do not drive if you smell exhaust fumes.

Important ventilating information

If the engine is idling while the vehicle is stopped for a long period of time, open the windows at least one inch (2.5 cm) or adjust the heating or air conditioning to bring in fresh air.

If the parking brake is fully released, but the brake warning lamp remains illuminated, the brakes may not be working properly. See your authorized dealer.

Driving with a 5–speed automatic transmission (if equipped)



This vehicle is equipped with an adaptive Transmission Shift Strategy. Adaptive Shift Strategy offers the optimal transmission operation and shift quality. When the vehicle's battery has been disconnected for any type of service or repair, the transmission will need to relearn the normal shift strategy parameters, much like having to reset your radio stations when your vehicle battery has been disconnected. The Adaptive Transmission Strategy allows the transmission to relearn these operating parameters. This learning process could take several transmission upshifts and downshifts; during this learning process, slightly firmer shifts may occur. After this learning process, normal shift feel and shift scheduling will resume.

P (Park)

This position locks the transmission and prevents the rear wheels from turning.

To put your vehicle in gear:

- Start the engine
- Depress the brake pedal
- Move the gearshift lever into the desired gear

To put your vehicle in P (Park):

- Come to a complete stop
- Move the gearshift lever and securely latch it in P (Park)

Always set the parking brake fully and make sure the gearshift is latched in P (Park). Turn the ignition to the LOCK position and remove the key whenever you leave your vehicle.

R (Reverse)

With the gearshift lever in R (Reverse), the vehicle will move backward. Always come to a complete stop before shifting into and out of R (Reverse).

N (Neutral)

With the gearshift lever in N (Neutral), the vehicle can be started and is free to roll. Hold the brake pedal down while in this position.

D (Drive) with Overdrive

The normal driving position for the best fuel economy. Transmission operates in gears one through five.

D (Drive) without Overdrive

D (Drive) with Overdrive can be deactivated by pressing the transmission control switch on the end of the gearshift lever.

- This position allows for all forward gears except overdrive.
- O/D OFF lamp is illuminated.

O/D
OFF

- Provides engine braking.
- Use when driving conditions cause excessive shifting from O/D to other gears. Examples: city traffic, hilly terrain, heavy loads, trailer towing and when engine braking is required.
- To return to O/D (overdrive mode), press the transmission control switch. The O/D OFF lamp will not be illuminated.
- O/D (Overdrive) is automatically returned each time the key is turned off.

2 (Second)

Use 2 (Second) to start-up on slippery roads or to provide additional engine braking on downgrades.

1 (First)

- Provides maximum engine braking.
- Allows upshifts by moving gearshift lever.
- Will not downshift into 1 (First) at high speeds; allows for 1 (First) when vehicle reaches slower speeds.

Forced downshifts

- Allowed in D (Drive) with Overdrive or D (Drive) without Overdrive.
- Depress the accelerator to the floor.
- Allows transmission to select an appropriate gear.