126-TRC-11-001

SAFETY COMPLIANCE TESTING FOR FMVSS 126
Electronic Stability Control Systems

Ford Motor Company
2011 Ford Transit Connect
NHTSA No. CB0206

TRANSPORTATION RESEARCH CENTER INC.
10820 State Route 347
East Liberty, Ohio 43319

April 20, 2011

FINAL REPORT

Prepared Under Contract No.: DTNH22-08-D-00097

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
1200 New Jersey Avenue, SE
West Building, 4th Floor (NVS-221)
Washington, DC 20590

Prepared for the Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-08-D-00097.

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16. Abstract A test was conducted on a 2011 Ford Transit Connect, NHTSA No. CB0206, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-126-02 for the determination of FMVSS 126 compliance. Test failures identified were as follows: None			
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TABLE OF CONTENTS

1.0 PURPOSE OF COMPLIANCE TEST

The purpose of this test is to determine if the test vehicle, a MY 2011 Ford Transit Connect meets the minimum equipment and performance requirements stated in Federal Motor Vehicle Safety Standard (FMVSS) 126, "Electronic Stability Control Systems."

This standard establishes performance and equipment requirements for Electronic Stability Control (ESC) Systems installed in passenger cars, multipurpose passenger vehicles, trucks, and buses with a gross vehicle weight rating of 4,536 kilograms or less.

2.0 TEST PROCEDURE AND DISCUSSION OF RESULTS

Testing of the MY 2011 Ford Transit Connect was conducted at Transportation Research Center Inc. (TRC Inc.) in accordance with NHTSA TP-126-02, dated November 19, 2008.

The vehicle was inspected to ensure it was equipped with an ESC System that:

- Augments vehicle directional stability by applying and adjusting brake torques individually at each wheel to induce a correcting yaw moment to a vehicle;
- Is computer controlled with the computer using a closed-loop algorithm to limit vehicle oversteer and to limit vehicle understeer;
- Has a means to determine the vehicle's yaw rate and to estimate its side slip or side slip derivative with respect to time;
- Has a means to monitor driver steering inputs;
- Has an algorithm to determine the need, and a means to modify engine torque, as necessary, to assist the driver in maintaining control of the vehicle, and
- Is operational over the full speed range of the vehicle (except at vehicle speeds less than 20km/h (12.4mph), when being driven in reverse, or during system initialization).

The vehicle was subjected to a 0.7Hz Sine with Dwell (SWD) Steering Maneuver to ensure that it would meet the stability and responsiveness requirements of the standard as follows:

- At 1.0 second after completion of a required sine with dwell steering input, the yaw rate of the vehicle must not exceed 35 percent of the first peak value of yaw rate recorded after the steering wheel angle changes sign (between first and second peaks during the same test run).
- At 1.75 seconds after completion of a required sine with dwell steering input, the yaw rate of the vehicle must not exceed 20 percent of the first peak value of yaw rate recorded after the steering wheel angle changes sign (between first and second peaks during the same test run).

- The lateral displacement of the vehicle center of gravity with respect to its initial straight path must be at least 1.83 m (6 feet) (for vehicles with a GVWR of 3,500kg (7,716 lb) or less) when computed 1.07 seconds after the Beginning of Steer (BOS) at the specified steering wheel angles.

System malfunction simulations were executed to verify vehicle could identify and indicate a malfunction.

The vehicle's ESC System appears to meet the performance and equipment requirements as required by FMVSS 126. The test results are summarized on the following summary sheet.

2.0 TEST PROCEDURE AND DISCUSSION OF RESULTS …continued

DATA SUMMARY (Sheet 1 of 2)

VEHICLE MAKE/MODEL/BODY STYLE: Ford / Transit Connect / Truck

VEHICLE NHTSA NO.: CB0206 VIN: NM0LS7DN6BT050535

VEHICLE TYPE: Truck DATE OF MANUFACTURE: 11/10

LABORATORY: Transportation Research Center Inc.

REQUIREMENTS	PASS/FAIL
ESC Equipment and Operational Characteristics (Data Sheet 2)	
The vehicle is to be equipped with an ESC System that meets the equipment and operational characteristics requirements. (S126, S5.1, S5.6)	PASS
ESC Malfunction Telltale (Data Sheet 3)	
The vehicle is equipped with a telltale that indicates one or more ESC System malfunctions. (S126, S5.3)	PASS
"ESC Off" and other System Controls and Telltale (Data Sheet 3 & 4)	
The vehicle is equipped with an ESC off telltale indicating the vehicle has been put into a mode that renders the ESC System unable to satisfy the performance requirements of the standard, if such a mode exists. (S5.5.1)	See Remarks
If provided, off control and other system controls as well as the ESC off telltale meets the operational requirements (S126, S5.4, S5.4.1, S5.4.2, S5.5.4, and S5.5.9)	See Remarks

2.0 TEST PROCEDURE AND DISCUSSION OF RESULTS …continued

DATA SUMMARY (Sheet 2 of 2)

REQUIREMENTS	PASS/FAIL
If provided, off control and other system controls as well as the ESC off telltale meets the operational requirements (S126, S5.4, S5.4.1, S5.4.2, S5.5.4, and S5.5.9)	See Remarks

Vehicle Lateral Stability (Data Sheet 8)

Yaw Rate Ratio at 1 second after COS is less than 35% of peak value. (S126, S5.2.1)	PASS
Yaw Rate Ratio at 1.75 seconds after COS is less than 20% of peak value. (S126, S5.2.2)	PASS

Vehicle Responsiveness (Data Sheet 8)

Lateral displacement at 1.07 seconds after BOS is at least 1.83 m (6 feet) for vehicles with a GVWR of 3,500 kg (7,716 lbs.) or less, and 1.52 m (5 feet) for vehicles with a GVWR greater than 3,500 kg (7,716 lbs.). (S126 S5.2.3)	PASS

ESC Malfunction Warning (Data Sheet 9)

Warning is provided to driver after malfunction occurrence. (S126. S5.3)	PASS
Malfunction telltale stayed illuminated as long as malfunction existed and must extinguish after malfunction was corrected. (S126, S5.3.7)	PASS

REMARKS

The 2011 Ford Transit Connect does not have an ESC Off Control, therefore it does not have an ESC Off telltale.

3.0 TEST DATA

DATA SHEET 1 (Sheet 1 of 2)
TEST VEHICLE INSPECTION AND TEST PREPARATION

VEHICLE MAKE/MODEL/BODY STYLE: Ford / Transit Connect / Truck

NHTSA No.: CB0206 TEST DATE: 3-07-11

VIN: NM0LS7DN6BT050535 MANUFACTURE DATE: 11/10

GVWR: 2,270 KG FRONT GAWR: 1,130 KG REAR GAWR 1,243 KG

SEATING POSITIONS: FRONT 2 MID 0 REAR 0

ODOMETER READING AT START OF TEST: 20 (32) Miles (Kilometers)

DESIGNATED TIRE SIZE(S) FROM VEHICLE LABELING:

Front Axle P205 / 65R 15 95T Rear Axle P205 / 65R 15 95T

INSTALLED TIRE SIZE(S) ON VEHICLE:

From Tire Sidewall	Front Axle	Rear Axle
Manufacturer and Model	Continental ContiProContact	Continental ContiProContact
Tire Size Designation	P205 / 65R 15 95T	P205 / 65R 15 95T

Are installed tire sizes same as labeled tire sizes? X Yes _____ No
If no, contact COTR for further guidance.

DRIVE CONFIGURATIONS (MARK ALL THAT APPLY):

X Two Wheel Drive (2WD): (X) Front Wheel Drive ( ) Rear Wheel Drive
_____ All Wheel Drive (AWD)
_____ Four Wheel Drive Automatic – differential not locked full time (4WD Automatic)
_____ Four Wheel Drive High Gear Unlocked Center Differential
_____ Four Wheel Drive High Gear Locked Center Differential
_____ Four Wheel Drive Low Gear Unlocked Center Differential
_____ Four Wheel Drive Low Gear Locked Center Differential
_____ Other (define _____)

3.0 TEST DATA….continued

DATA SHEET 1 (Sheet 2 of 2)
TEST VEHICLE INSPECTION AND TEST PREPARATION

DRIVE CONFIGURATIONS AND MODES: (ex. default, performance, off)
(For each of the vehicle's drive configurations identify available operating modes)

Drive Configuration 2WD
Mode(s) default

Drive Configuration _____
Mode(s) _____

Drive Configuration _____
Mode(s) _____

VEHICLE STABILITY SYSTEMS (Check applicable technologies):

X ESC	X Traction Control	X Roll Stability Control
_____ Active Suspension	X Electronic Throttle Control	____ Active Steering
X ABS		

List other systems; _____

REMARKS:

RECORDED BY: Alan Ida DATE: 3-07-11
APPROVED BY: Ken Webster DATE: 3-28-11

3.0 TEST DATA….continued

DATA SHEET 2 (Sheet 1 of 2)
ESC SYSTEM HARDWARE AND OPERATIONAL CHARACTERISTICS

VEHICLE MAKE/MODEL/BODY STYLE: Ford / Transit Connect / Truck

NHTSA No.: CB0206 TEST DATE: 3-09-11

ESC SYSTEM IDENTIFICATION:

Manufacturer / Model Continental Teves – MK60EC ESC System Diagonal Brake Split

ESC SYSTEM HARDWARE (Check applicable hardware):

X Electronic Control Unit	X Hydraulic Control Unit
X Wheel Speed Sensors	X Steering Angle Sensor
X Yaw Rate Sensor	X Lateral Acceleration Sensor

List other components; _____

ESC SYSTEM OPERATIONAL CHARACTERISTICS:

System is capable of generating brake torques at each wheel — X Yes (PASS) / ____ No (FAIL)

List and describe component(s): Hydraulic Control Unit

System is capable of determining yaw rate — X Yes (PASS) / ____ No (FAIL)

List and describe component(s): Yaw Rate Sensor in RSC03 sensor cluster

System is capable of monitoring driver steering input — X Yes (PASS) / ____ No (FAIL)

List and describe component(s): Steering input calculated, based on an absolute steering wheel angle signal

System is capable of estimating side slip or side slip derivation — X Yes (PASS) / ____ No (FAIL)

List and describe component(s): The ESC continuously evaluates measured data from the steering angle, wheel speed, yaw rate, and lateral acceleration sensors and calculates the vehicle deviation by comparing the driver's input with the actual behavior of the vehicle. If the actual vehicle behavior deviates from the expected vehicle behavior, the ESC triggers suitable measures to maintain the vehicle stability.

3.0 TEST DATA….continued

DATA SHEET 2 (Sheet 2 of 2)
ESC SYSTEM HARDWARE AND OPERATIONAL CHARACTERISTICS

ESC SYSTEM OPERATIONAL CHARACTERISTICS (continued):

System is capable of modifying engine torque during ESC activation. ___X___ Yes (PASS)
_____ No (FAIL)

Method used to modify engine torque: For the 2011 Ford Transit Connect, the torque output is managed by reducing air flow, altering spark timing, and/or selectively turning off fuel injectors. This is also the standard order for reducing torque output during a torque reduction request. Every torque reduction is independent and the powertrain action is based on the amount of torque reduction being requested. If the requested torque reduction can be achieved by using air reduction only, then that would be the only means used.

System is capable of activation at speeds of 20 km/h (12.4 mph) and higher. ___X___ Yes (PASS)
_____ No (FAIL)

Speed system becomes active. 14.4 km/h (8.9 mph)

System is capable of activation during the following driving phases (acceleration, deceleration, coasting, and during activation of ABS or traction control). ___X___ Yes (PASS)
_____ No (FAIL)

Driving phases that the system is capable of activation. ESC is active under all driving situations, except backwards, driving at low velocity (less than 14.4 km/h) or if ESC is disabled by optional ESC-off switch or ESC off-road switch.

Vehicle manufacturer submitted documentation explaining how the ESC system mitigates understeer? ___X___ Yes (PASS)
_____ No (FAIL)

DATA INDICATES COMPLIANCE PASS/FAIL PASS

RECORDED BY: Alan Ida DATE: 3-22-11
APPROVED BY: Ken Webster DATE: 3-28-11

3.0 TEST DATA….continued

DATA SHEET 3 (Sheet 1 of 2)
ESC MALFUNCTION AND OFF TELLTALES

VEHICLE MAKE/MODEL/BODY STYLE: Ford / Transit Connect / Truck

VEHICLE NHTSA NO. CB0206 TEST DATE: 3-23-11

ESC Malfunction Telltale

Vehicle is equipped with malfunction telltale? X Yes (Pass) ____ No (Fail)

Telltale Location Instrument cluster, below the speedometer

Telltale Color Yellow

Telltale symbol or abbreviation used.

Or **ESC**

X Vehicle uses this symbol
____ Vehicles uses this abbreviation
____ Neither symbol or abbreviation is used

If different than identified above, make note of any message, symbol or abbreviation used.

Is telltale part of a common space? ____ Yes X No

Is telltale also used to indicate activation of the ESC system? X Yes ____ No

If yes, explain telltale operation during ESC activation: The ESC telltale flashes

DATA SHEET 3 (Sheet 2 of 2)
ESC MALFUNCTION AND OFF TELLTALES

"ESC OFF" Telltale (if provided)

Vehicle is equipped with "ESC Off" telltale? _____Yes ___X__No

Is "ESC OFF" telltale combined with "ESC Malfunction" telltale utilizing a two part telltale?

_____Yes ____X_No

Telltale Location _____N/A_____

Telltale Color _____N/A_____

Telltale symbol or abbreviation used.

Or **ESC OFF**

_____Vehicle uses this symbol
_____Vehicle uses this abbreviation
_____Neither symbol or abbreviation is used

If different than identified above, make note of any message, symbol or abbreviation used.

_____N/A_____

Is telltale part of a common space? _____ Yes _____ No

DATA INDICATES COMPLIANCE PASS/FAIL ____PASS___
(Vehicle is compliant if equipped with a malfunction telltale)

REMARKS:
The 2011 Ford Transit Connect does not have an ESC Off Control, therefore it does not have an ESC Off telltale.

RECORDED BY: __Alan Ida_____ DATE:___3-23-11_____
APPROVED BY: __Ken Webster_____ DATE:___3-28-11_____

3.0 TEST DATA….continued

DATA SHEET 4 (Sheet 1 of 3)
ESC AND ANCILLARY SYSTEM CONTROLS

"ESC OFF" Controls Identification and Operational Check:

Is the vehicle equipped with a control or controls whose purpose is to deactivate the ESC system or place the ESC system in a mode or modes that may no longer satisfy the performance requirements of the standard?

_____ Yes ___X__ No

Type of control or controls provided? (mark all that apply)

_____ Dedicated "ESC Off" control
_____ Multi-functional control with an "ESC Off" mode
_____ Other (describe)

Identify each control location, labeling and selectable modes.

First Control:
Location N/A
Labeling _____
Modes _____
_____
_____

Identify standard or default drive configuration N/A

Verify standard or default drive configuration selected. _____ Yes _____ No

Does the "ESC Off" telltale illuminate upon activation of the dedicated ESC off control or selection of the "ESC Off" mode on the multi-function control?

_____ Yes _____ No (fail)

Does the "ESC Off" telltale extinguish when the ignition is cycled from "On" ("Run") to "Lock" or "Off" and then back again to the "On" ("Run") position?

_____ Yes _____ No (fail)

If no, describe how the off control functions:

_____
_____

3.0 TEST DATA….continued

DATA SHEET 4 (Sheet 2 of 3)
ESC AND ANCILLARY SYSTEM CONTROLS

If a multi-function control is provided, cycle through each mode setting on the control and record which modes illuminate the "ESC Off" telltale. Also, for those modes that illuminate the ESC Off" telltale identify if the telltale extinguishes upon cycling the ignition system.

Control Modes	"ESC Off" telltale illuminates upon activation of control? (Yes/No)	"ESC Off" telltale extinguishes upon cycling ignition? (Yes/No)
N/A		

For each mode that illuminates the "ESC Off" telltale, did the telltale extinguish when the ignition was cycled from "On" ("Run") to "Lock" or "Off" and then back again to the "On" ("Run") position?

_____ Yes _____ No (fail)

Other System Controls that have an ancillary effect on ESC Operation:

Is the vehicle equipped with any ancillary controls that upon activation may deactivate the ESC System or place the ESC System in a mode or modes that may no longer satisfy the performance requirements of the standard?

_____ Yes ___X__ No

List and describe each control (i.e. alternate drive configuration selection controls):

Ancillary Control: System N/A
Control Description _____
Labeling _____

Ancillary Control: System N/A
Control Description _____
Labeling _____

3.0 TEST DATA….continued

DATA SHEET 4 (Sheet 3 of 3)
ESC AND ANCILLARY SYSTEM CONTROLS

Activate each control listed above and record whether the control illuminates the "ESC Off" telltale. Also, record warnings or messages provided regarding the ESC System.

Ancillary Control	Control Activates "ESC Off" Telltale? (Yes/No)	Warnings or Messages Provided
N/A		

For those controls that illuminate the "ESC Off" telltale above identify if the "ESC Off" telltale extinguishes upon cycling the ignition system.

Ancillary Control	"ESC Off" telltale extinguishes upon cycling ignition? (Yes/No)
N/A	N/A

For each control that illuminates the "ESC Off" telltale, did the telltale extinguish when the ignition is cycled from "On" ("Run") to "Lock" or "Off" and then back again to the "On" ("Run") position? If the control activated places the vehicle into a low-range four-wheel drive configuration designed for low-speed, off–road driving, the ESC System may remain turned off after the ignition has been cycled off and then back on and therefore the "ESC Off" telltale may not extinguish.

_____ Yes _____ No (fail)

DATA INDICATES COMPLIANCE: PASS/FAIL PASS

REMARKS:

RECORDED BY: Alan Ida DATE: 3-23-11
APPROVED BY: Ken Webster DATE: 3-28-11

3.0 TEST DATA….continued

DATA SHEET 5 (Sheet 1 of 3)
VEHICLE AND TEST TRACK DATA

VEHICLE MAKE/MODEL/BODY STYLE: Ford / Transit Connect / Truck

NHTSA No.: CB0206 TEST DATE: 3-17-11

Test Track Requirements: Test Surface Slope (0-1 %) 1 %

Peak Friction Coefficient (at least 0.9) 0.94

Full Fluid Levels: Fuel X Coolant X Other Fluids Washer (specify)

Tire Pressures: **Required:** Front Axle 276 kPa Rear Axle 338 kPa

Actual: LF: 276 kPa RF: 276 kPa LR: 338 kPa RR: 338 kPa

Vehicle Dimensions: Track Width 149.9 cm Wheelbase 291.5 cm

Roof Height 198.3 cm

Vehicle weight ratings: GAWR Front 1,130 KG GAWR Rear 1,243 KG

Unloaded Vehicle Weight (UVW)

Front Axle 866.4 KG Left Front 437.8 KG Right Front 428.6 KG

Rear Axle 670.4 KG Left Rear 337.6 KG Right Rear 332.8 KG

Total UVW 1,536.8 KG

Baseline Weight and Outrigger Selection (only for MPVs, Trucks, Buses)

Calculated Baseline Weight (UVW+ 73 kg) 1,609.8 KG

Outrigger size required ("Standard" or "Heavy") Standard

Standard - Baseline weight under 2,722 kg (6,000 lbs.)
Heavy - Baseline weight equal to or greater than 2,722 kg (6,000 lbs.)

3.0 TEST DATA….continued

DATA SHEET 5 (Sheet 2 of 3)
VEHICLE AND TEST TRACK DATA

UVW with Outriggers (only for MPVs, Trucks, Buses)

Front Axle 935.6 KG Left Front 469.0 KG Right Front 466.6 KG

Rear Axle 714.0 KG Left Rear 363.2 KG Right Rear 350.8 KG

Total UVW w/ Outriggers 1,649.6 KG

Loaded Vehicle Weight w/ Driver and Instrumentation (No Ballast)

Front Axle 1,014.2 KG Left Front 515.8 KG Right Front 498.4 KG

Rear Axle 770.8 KG Left Rear 396.6 KG Right Rear 374.2 KG

Total Loaded Vehicle Weight 1,785.0 KG

Ballast Required = [**UVW w/ Outriggers** + 168 KG] - **Total Loaded Weight w/ Driver and Instrumentation**

= [1,649.6 KG + 168 KG] - 1,785.0 KG

= 32.6 KG

Total Loaded Vehicle Weight

Front Axle 1,029.8 KG Left Front 518.2 KG Right Front 511.6 KG

Rear Axle 787.8 KG Left Rear 401.6 KG Right Rear 386.2 KG

Total Loaded Vehicle Weight 1,817.6 KG

3.0 TEST DATA….continued

DATA SHEET 5 (Sheet 3 of 3)
VEHICLE AND TEST TRACK DATA

Center of Gravity and Inertial Sensing System Location at Loaded Vehicle Condition

x-distance (longitudinal) Point of reference is the front axle centerline. (Positive from front axle toward rear of vehicle.)

y-distance (lateral) Point of reference is the vehicle centerline. (Positive from the center toward the right.)

z-distance (vertical) Point of reference is the ground plane. (Positive from the ground up.)

Locations:

	Center of Gravity	Inertial Sensing System
x-distance	126.3 cm	161.7 cm
y-distance	-0.9 cm	-1.6 cm
z-distance	75.3 cm	100.4 cm

Distance Between Ultrasonic Sensors: 171.5 cm

TEST TRACK DATA MEETS REQUIREMENTS: YES/NO YES
If no, explain: _____

REMARKS:

RECORDED BY: Alan Ida DATE: 3-17-11
APPROVED BY: Ken Webster DATE: 3-28-11

3.0 TEST DATA….continued

DATA SHEET 6 (Sheet 1 of 3)
BRAKE AND TIRE CONDITIONING

VEHICLE MAKE/MODEL/BODY STYLE: Ford / Transit Connect / Truck

VEHICLE NHTSA No.: CB0206

Measured Cold Tire Pressures: LF 276 kPa RF 276 kPa

LR 338 kPa RR 338 kPa

Wind Speed 5.0 m/sec
(10m/sec (22mph) max for passenger cars; 5m/s (11mph) max. for MPVs and Trucks)

Ambient Temperature (7°C (45°F) - 40°C (104°F)) 9.4 °C

Brake Conditioning Time; 10:45 AM Date; 3-17-11

56 km/h (35 mph) Brake Stops

Number of stops executed (10 required) 10 stops

Observed deceleration rate range (.5g target) 0.50 – 0.55 g

72 km/h (45 mph) Brake Stops

Number of stops executed (3 required) 3 stops

Number of stops ABS activated (3 required) 3 stops

Observed deceleration rate range 0.90 – 0.97 g

72 km/h (45 mph) Brake Cool Down Period

Duration of cool down period (5 minutes min.) 5:13 minutes

3.0 TEST DATA….continued

DATA SHEET 6 (Sheet 2 of 3)
BRAKE AND TIRE CONDITIONING

Tire Conditioning Series No. 1 Time: 9:34 AM Date: 3-18-11

Measured Tire Pressures: LF 283 kPa RF 283 kPa

LR 345 kPa RR 341 kPa

Wind Speed 3.6 m/sec
(10m/sec (22mph) max for passenger cars; 5m/s (11mph) max. for MPVs and Trucks)

Ambient Temperature (7°C (45°F) - 40°C (104°F)) 13.9 °C

30 meter (100 ft) Diameter Circle Maneuver				
Test Runs	Steering Direction	Target Lateral Acceleration (g)	Observed Lateral Acceleration (g)	Observed Vehicle Speed (km/h)
1-3	Clockwise	0.5-0.6	0.55	32.2
4-6	Counterclockwise	0.5-0.6	0.55	32.2

1 Hz 5 Cycle Sinusoidal Steering Maneuver to Determine Steering Wheel Angle For 0.5-0.6g Lateral Acceleration				
Test Runs	Vehicle Speed Km/h(mph)	Steering Wheel Angle (degrees)	Target Peak Lateral Acceleration (g)	Observed Peak Lateral Acceleration (g)
1	56±2 (35±1)	30	0.5-0.6	0.24
2	56±2 (35±1)	70	0.5-0.6	0.53
3	56±2 (35±1)		0.5-0.6	
4	56±2 (35±1)		0.5-0.6	

Steering wheel angle that corresponds to a peak 0.5–0.6g lateral acceleration; 70 degrees

1 Hz 10 Cycle Sinusoidal Steering Maneuver				
Test Runs	Vehicle Speed Km/h (mph)	Steering Wheel Angle (degrees)	Target Peak Lateral Acceleration (g)	Observed Peak Lateral Acceleration (g)
1 - 3	56±2 (35±1)	70 (cycles 1-10)	0.5-0.6	0.51
4	56±2 (35±1)	70 (cycles 1-9)	0.5-0.6	0.51
		140 (cycle 10)*	N/A	0.85

* The steering wheel angle used for cycle 10 should be twice the angle used for cycles 1-9.

3.0 TEST DATA….continued

DATA SHEET 6 (Sheet 3 of 3)
BRAKE AND TIRE CONDITIONING

Tire Conditioning Series No. 2 Time: 12:02 PM Date: 3-18-11

Measured Tire Pressures: LF 290 kPa RF 290 kPa

LR 348 kPa RR 352 kPa

Wind Speed 2.7 m/sec
(10m/sec (22mph) max for passenger cars; 5m/s (11mph) max. for MPVs and Trucks)

Ambient Temperature (7°C (45°F) - 40°C (104°F)) 16.1 °C

30 meter (100 ft) Diameter Circle Maneuver				
Test Runs	Steering Direction	Target Lateral Acceleration (g)	Observed Lateral Acceleration (g)	Observed Vehicle Speed (km/h)
1-3	clockwise	0.5-0.6	0.55	32.2
4-6	counterclockwise	0.5-0.6	0.55	32.2

1 Hz 5 Cycle Sinusoidal Steering Maneuver to Determine Steering Wheel Angle For 0.5-0.6g Lateral Acceleration				
Test Runs	Vehicle Speed Km/h (mph)	Steering Wheel Angle (degrees)	Target Peak Lateral Acceleration (g)	Observed Peak Lateral Acceleration (g)
1	56±2 (35±1)	N/A	0.5-0.6	N/A
2	56±2 (35±1)		0.5-0.6	
3	56±2 (35±1)		0.5-0.6	
4	56±2 (35±1)		0.5-0.6	

Steering wheel angle that corresponds to a peak 0.5–0.6g lateral acceleration; 70 degrees

1 Hz 10 Cycle Sinusoidal Steering Maneuver				
Test Runs	Vehicle Speed (mph)	Steering Wheel Angle (degrees)	Target Peak Lateral Acceleration (g)	Observed Peak Lateral Acceleration (g)
1 - 3	56±2 (35±1)	70 (cycles 1-10)	0.5-0.6	0.50
4	56±2 (35±1)	70 (cycles 1-9)	0.5-0.6	0.50
		140 (cycle 10)*	N/A	0.87

* The steering wheel angle used for cycle 10 should be twice the angle used for cycles 1-9.

REMARKS:

RECORDED BY: Alan Ida DATE: 3-18-11
APPROVED BY: Ken Webster DATE: 3-28-11

3.0 TEST DATA….continued

DATA SHEET 7 (1 of 2)
SLOWLY INCREASING STEER (SIS) MANEUVER

VEHICLE MAKE/MODEL/BODY STYLE: Ford / Transit Connect / Truck

VEHICLE NHTSA No.: CB0206 TEST DATE: 3-18-11

Wind Speed 3.1 m/sec
(10m/sec (22mph) max for passenger cars; 5m/s (11mph) max. for MPVs and Trucks)

Ambient Temperature (7°C (45°F) - 40°C (104°F)) 13.9 °C

Static Data File Number: 0008

Selected Drive Configuration: 2WD

Selected Mode: default

Preliminary Left Steer Maneuver:

Lateral Acceleration measured at 30 degrees steering wheel angle ($a_{y,30\ degrees}$)

$a_{y,30\ degrees}$ = 0.36 g

Assuming a linear relationship the following ratio should be used to calculate the steering wheel angle at .55g.

$$\frac{30\,\text{degrees}}{a_{\text{y,30 degrees}}} = \frac{\delta_{SIS}}{0.55\,\text{g}}$$

δ_{SIS} = 46 degrees @ 0.55g

δ_{SIS} = 40* degrees (rounded)

Steering Wheel Angle at Corrected 0.3 g Lateral Acceleration:

Maneuver #	Initial Steer Direction	Time Clock (5 min max between runs)	Steering Wheel Angle to nearest 0.1 degree (degrees)	All Conditions Met?
0012	Left	9:52 am	-29.3	Yes
0014	Left	9:58 am	-28.8	Yes
0015	Left	10:01 am	-29.5	Yes
0021	Right	10:23 am	29.3	Yes**
0022	Right	10:26 am	29.7	Yes
0023	Right	10:29 am	29.7	Yes

3.0 TEST DATA….continued

DATA SHEET 7 (2 of 2)
SLOWLY INCREASING STEER (SIS) MANEUVER

Average Overall Steering Wheel Angle:

$$\delta_{0.3\ g,\ overall} = (|\ \delta_{0.3\ g,\ left\ (1)}\ | + |\ \delta_{0.3\ g,\ left\ (2)}\ | + |\ \delta_{0.3\ g,\ left\ (3)}\ | + \delta_{0.3\ g,\ right\ (1)} + \delta_{0.3\ g,\ right\ (2)} + \delta_{0.3\ g,\ right\ (3)}) / 6$$

$\delta_{0.3\ g,\ overall}$ = 29.4 degrees
[to nearest 0.1 degree]

REMARKS:

*The Slowly Increasing Steer maneuvers were initially rounded up to 50 degrees, which exceeded 0.6g lateral acceleration. Therefore, the SIS maneuvers were rounded down to 40 degrees in order to maintain a lateral acceleration between 0.5g to 0.6g.

* *The time clock between maneuvers 0015 and 0021 indicates more than 5 minutes since maneuvers 0016 through 0020 were omitted due to lateral acceleration and vehicle speed not meeting the requirements.

RECORDED BY: Alan Ida DATE: 3-18-11
APPROVED BY: Ken Webster DATE: 3-28-11

3.0 TEST DATA….continued

DATA SHEET 8 (1 of 3)
VEHICLE LATERAL STABILITY AND RESPONSIVENESS

VEHICLE MAKE/MODEL/BODY STYLE: Ford / Transit Connect / Truck

VEHICLE NHTSA No.: CB0206 TEST DATE: 3-18-11

Tire conditioning completed	X Yes	No
ESC system is enabled	X Yes	No
On track calibration checks have been completed	X Yes	No
On track static data file for each sensor obtained	X Yes	No

Selected Drive Configuration: 2WD
Selected Mode: default

Overall steering wheel angle ($\delta_{0.3\ g,\ overall}$) 29.4 degrees

Static Data File Number 0028

Lateral Stability Test Series No. 1 – Counterclockwise Initial Steer Direction

Maneuver #	Clock Time (1.5 – 5 min between each test run)	Commanded Steering Wheel Angle[1] (degrees)		Yaw Rates (degrees/sec)			YRR at 1.0 sec after COS [≤ 35%]		YRR at 1.75 sec after COS [≤ 20%]	
		Scalar	Angle	$\dot{\psi}_{Peak}$	$\dot{\psi}_{1.0sec}$	$\dot{\psi}_{1.75sec}$	%	Pass/ Fail	%	Pass/ Fail
0030	12:33 pm	1.5* $\delta_{0.3\ g}$	44	12.33	-0.01	-0.01	-0.05	Pass	-0.06	Pass
0031	12:38 pm	2.0* $\delta_{0.3\ g}$	59	16.82	-0.06	-0.03	-0.34	Pass	-0.15	Pass
0032	12:42 pm	2.5* $\delta_{0.3\ g}$	74	20.74	-0.18	-0.20	-0.89	Pass	-0.97	Pass
0038	1:14 pm	3.0* $\delta_{0.3\ g}$	88	24.23	0.01	0.03	0.05	Pass	0.13	Pass
0039	1:17 pm	3.5* $\delta_{0.3\ g}$	103	28.22	0.01	0.01	0.04	Pass	0.03	Pass
0040	1:52 pm	4.0* $\delta_{0.3\ g}$	118	31.68	0.15	-0.02	0.49	Pass	-0.07	Pass
0041	1:55 pm	4.5* $\delta_{0.3\ g}$	132	34.86	0.40	0.05	1.16	Pass	0.15	Pass
0042	1:59 pm	5.0* $\delta_{0.3\ g}$	147	37.39	0.24	-0.14	0.65	Pass	-0.37	Pass
0043	2:03 pm	5.5* $\delta_{0.3\ g}$	162	40.64	0.52	0.31	1.29	Pass	0.76	Pass
0044	2:07 pm	6.0* $\delta_{0.3\ g}$	176	43.31	0.12	0.06	0.27	Pass	0.15	Pass
0045	2:11 pm	6.5* $\delta_{0.3\ g}$	191	47.59	0.32	0.17	0.66	Pass	0.35	Pass
0046	2:15 pm	7.0* $\delta_{0.3\ g}$	206	49.09	-0.07	-0.18	-0.13	Pass	-0.36	Pass
0047	2:19 pm	7.5* $\delta_{0.3\ g}$	221	50.74	0.44	0.06	0.88	Pass	0.12	Pass
0048	2:23 pm	8.0* $\delta_{0.3\ g}$	235	50.46	0.26	-0.04	0.52	Pass	-0.09	Pass
0049	2:35 pm	8.5* $\delta_{0.3\ g}$	250	50.26	-0.07	0.17	-0.15	Pass	0.35	Pass
0050	2:39pm	9.0* $\delta_{0.3\ g}$	265	49.32	0.18	0.16	0.36	Pass	0.32	Pass
0051	2:42 pm	9.2* $\delta_{0.3\ g}$	270	50.06	0.16	0.09	0.32	Pass	0.19	Pass

1. Maneuver execution should continue until a steering wheel angle magnitude factor of 6.5*$\delta_{0.3\ g,\ overall}$ or 270 degrees is utilized, whichever is greater provided the calculated magnitude of 6.5*$\delta_{0.3\ g,\ overall}$ is less than or equal to 300 degrees. If 6.5*$\delta_{0.3\ g,\ overall}$ is less than 270 degrees maneuver execution should continue by increasing the steering wheel angle magnitude by multiples of 0.5*$\delta_{0.3\ g,\ overall}$ without exceeding the 270 degree steering wheel angle.

3.0 TEST DATA….continued

DATA SHEET 8 (2 of 3)
VEHICLE LATERAL STABILITY AND RESPONSIVENESS

Lateral Stability Test Series No. 2 – Clockwise Initial Steer Direction

Maneuver #	Clock Time (1.5 – 5 min between each test run)	Commanded Steering Wheel Angle[1] (degrees)		Yaw Rates (degrees/sec)			YRR at 1.0 sec after COS [≤ 35%]		YRR at 1.75 sec after COS [≤ 20%]	
		Scalar	Angle	$\dot{\psi}_{Peak}$	$\dot{\psi}_{1.0\text{sec}}$	$\dot{\psi}_{1.75\text{sec}}$	%	Pass/ Fail	%	Pass/ Fail
0052	2:46 pm	1.5* $\delta_{0.3\,g}$	44	-13.34	0.09	-0.02	-0.68	Pass	0.16	Pass
0053	2:50 pm	2.0* $\delta_{0.3\,g}$	59	-18.25	0.20	0.13	-1.10	Pass	-0.71	Pass
0054	2:53 pm	2.5* $\delta_{0.3\,g}$	74	-22.19	0.03	-0.01	-0.12	Pass	0.03	Pass
0055	2:57 pm	3.0* $\delta_{0.3\,g}$	88	-25.70	-0.17	-0.08	0.65	Pass	0.31	Pass
0056	3:00 pm	3.5* $\delta_{0.3\,g}$	103	-30.54	-0.44	-0.27	1.43	Pass	0.87	Pass
0057	3:03 pm	4.0* $\delta_{0.3\,g}$	118	-32.52	-0.27	-0.10	0.82	Pass	0.31	Pass
0058	3:07 pm	4.5* $\delta_{0.3\,g}$	132	-36.44	-0.36	-0.13	0.98	Pass	0.35	Pass
0059	3:10 pm	5.0* $\delta_{0.3\,g}$	147	-37.82	-0.29	-0.17	0.78	Pass	0.45	Pass
0060	3:13 pm	5.5* $\delta_{0.3\,g}$	162	-41.09	-0.65	-0.37	1.58	Pass	0.89	Pass
0061	3:16 pm	6.0* $\delta_{0.3\,g}$	176	-44.18	-0.30	-0.03	0.67	Pass	0.06	Pass
0062	3:20 pm	6.5* $\delta_{0.3\,g}$	191	-46.97	-0.36	-0.19	0.78	Pass	0.40	Pass
0063	3:23 pm	7.0* $\delta_{0.3\,g}$	206	-49.44	-0.18	-0.05	0.37	Pass	0.10	Pass
0064	3:26 pm	7.5* $\delta_{0.3\,g}$	221	-50.68	-0.43	-0.28	0.84	Pass	0.55	Pass
0065	3:30 pm	8.0* $\delta_{0.3\,g}$	235	-52.85	-0.41	-0.27	0.78	Pass	0.51	Pass
0066	3:36 pm	8.5* $\delta_{0.3\,g}$	250	-52.48	-0.55	-0.39	1.05	Pass	0.74	Pass
0068	3:40 pm	9.0* $\delta_{0.3\,g}$	265	-51.49	-0.23	-0.22	0.44	Pass	0.42	Pass
0069	3:44 pm	9.2* $\delta_{0.3\,g}$	270	-51.90	-0.03	-0.33	0.05	Pass	0.64	Pass

1. Maneuver execution should continue until a steering wheel angle magnitude factor of 6.5*$\delta_{0.3\,g,\,overall}$ or 270 degrees is utilized, whichever is greater provided the calculated 6.5*$\delta_{0.3\,g,\,overall}$ is less than or equal to 300 degrees. If 6.5*$\delta_{0.3\,g,\,overall}$ is less than 270 degrees maneuver execution should continue by increasing the steering wheel angle magnitude by multiples of 0.5*$\delta_{0.3\,g,\,overall}$ without exceeding the 270 degree steering wheel angle.

During execution of the sine with dwell maneuvers were any of the following events observed?

Rim-to-pavement contact	_____ Yes	_X_ No
Tire debeading	_____ Yes	_X_ No
Loss of pavement contact of vehicle tires	_____ Yes	_X_ No
Did the test driver experience any vehicle loss of control or spinout?	_____ Yes	_X_ No

If "Yes" explain the event and consult with the COTR. _____

_____

_____

3.0 TEST DATA….continued

DATA SHEET 8 (3 of 3)
VEHICLE LATERAL STABILITY AND RESPONSIVENESS

Responsiveness – Lateral Displacement

Maneuver #	Initial Steer Direction	Commanded Steering Wheel Angle ($5.0*\delta_{0.3\ g,\ overall}$ or greater)		Calculated Lateral Displacement[1]	
		Scalar	Angle (degrees)	Distance (m)	Pass/Fail
0042	Counter Clockwise	5.0* $\delta_{0.3\ g}$	147	2.99	Pass
0043	Counter Clockwise	5.5* $\delta_{0.3\ g}$	162	3.06	Pass
0044	Counter Clockwise	6.0* $\delta_{0.3\ g}$	176	3.17	Pass
0045	Counter Clockwise	6.5* $\delta_{0.3\ g}$	191	3.22	Pass
0046	Counter Clockwise	7.0* $\delta_{0.3\ g}$	206	3.21	Pass
0047	Counter Clockwise	7.5* $\delta_{0.3\ g}$	221	3.26	Pass
0048	Counter Clockwise	8.0* $\delta_{0.3\ g}$	235	3.24	Pass
0049	Counter Clockwise	8.5* $\delta_{0.3\ g}$	250	3.33	Pass
0050	Counter Clockwise	9.0* $\delta_{0.3\ g}$	265	3.30	Pass
0051	Counter Clockwise	9.2* $\delta_{0.3\ g}$	270	3.29	Pass
0059	Clockwise	5.0* $\delta_{0.3\ g}$	147	2.86	Pass
0060	Clockwise	5.5* $\delta_{0.3\ g}$	162	2.96	Pass
0061	Clockwise	6.0* $\delta_{0.3\ g}$	176	2.98	Pass
0062	Clockwise	6.5* $\delta_{0.3\ g}$	191	3.09	Pass
0063	Clockwise	7.0* $\delta_{0.3\ g}$	206	3.15	Pass
0064	Clockwise	7.5* $\delta_{0.3\ g}$	221	3.17	Pass
0065	Clockwise	8.0* $\delta_{0.3\ g}$	235	3.24	Pass
0066	Clockwise	8.5* $\delta_{0.3\ g}$	250	3.19	Pass
0068	Clockwise	9.0* $\delta_{0.3\ g}$	265	3.34	Pass
0069	Clockwise	9.2* $\delta_{0.3\ g}$	270	3.26	Pass

1. Lateral displacement should be $\geq$ 1.83 m (6 ft) for vehicles with a GVWR of 3,500 kg (7,716 lb) or less; and $\geq$ 1.52 m (5ft) for vehicles with a GVWR greater than 3,500 kg (7,716 lb).

DATA INDICATES COMPLIANCE: PASS/FAIL PASS

REMARKS:

RECORDED BY: Alan Ida DATE: 3-18-11
APPROVED BY: Ken Webster DATE: 3-28-11

3.0 TEST DATA….continued

DATA SHEET 9 (Sheet 1 of 2)
MALFUNCTION WARNING TEST

VEHICLE MAKE/MODEL/BODY STYLE: Ford / Transit Connect / Truck

VEHICLE NHTSA No.: CB0206 TEST DATE: 3-23-11

METHOD OF MALFUNCTION SIMULATION:
Describe method of malfunction simulation: Disconnect the Left Front wheel speed sensor connector.

MALFUNCTION TELLTALE ILLUMINATION:
Telltale illuminates and remains illuminated after ignition locking system is activated and if necessary the vehicle is driven at least 2 minutes.

X Yes ____ No

Time for telltale to illuminate after ignition system is activated.
0 Seconds (must be within 2 minutes) X Pass ____ Fail

ESC SYSTEM RESTORATION:
Telltale extinguishes after ignition locking system is activated and if necessary the vehicle is driven at least 2 minutes.

X Yes ____ No

Time for telltale to extinguish after ignition system is activated and vehicle speed of 48± 8 km/h (30± 5mph) is reached.
0 Second (must be within 2 minutes) X Pass ____ Fail

DATA INDICATES COMPLIANCE: PASS/FAIL PASS

REMARKS:
The vehicle did not require driving to illuminate or extinguish the malfunction telltales. When the wheel speed sensor was disconnected, both the ESC and ABS malfunction telltales illuminated. After the wheel speed sensor connector was restored, both the ESC and ABS malfunction telltales extinguished.

RECORDED BY: Alan Ida DATE: 3-23-11
APPROVED BY: Ken Webster DATE: 3-28-11

3.0 TEST DATA….continued

DATA SHEET 9 (Sheet 2 of 2)
MALFUNCTION WARNING TEST

VEHICLE MAKE/MODEL/BODY STYLE: Ford / Transit Connect / Truck

VEHICLE NHTSA No.: CB0206 TEST DATE: 3-23-11

METHOD OF MALFUNCTION SIMULATION:
Describe method of malfunction simulation: Disconnect the steering wheel angle sensor connector.

MALFUNCTION TELLTALE ILLUMINATION:
Telltale illuminates and remains illuminated after ignition locking system is activated and if necessary the vehicle is driven at least 2 minutes.

X Yes ____ No

Time for telltale to illuminate after ignition system is activated.
0 Seconds (must be within 2 minutes) X Pass ____ Fail

ESC SYSTEM RESTORATION:
Telltale extinguishes after ignition locking system is activated and if necessary the vehicle is driven at least 2 minutes.

X Yes ____ No

Time for telltale to extinguish after ignition system is activated.
0 Second (must be within 2 minutes) X Pass ____ Fail

DATA INDICATES COMPLIANCE: PASS/FAIL PASS

REMARKS:
The vehicle did not require driving to illuminate or extinguish the ESC malfunction telltale. After the steering wheel angle sensor connector was restored, the ESC malfunction telltale extinguished.

RECORDED BY: Alan Ida DATE: 3-23-11
APPROVED BY: Ken Webster DATE: 3-28-11

4.0 TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

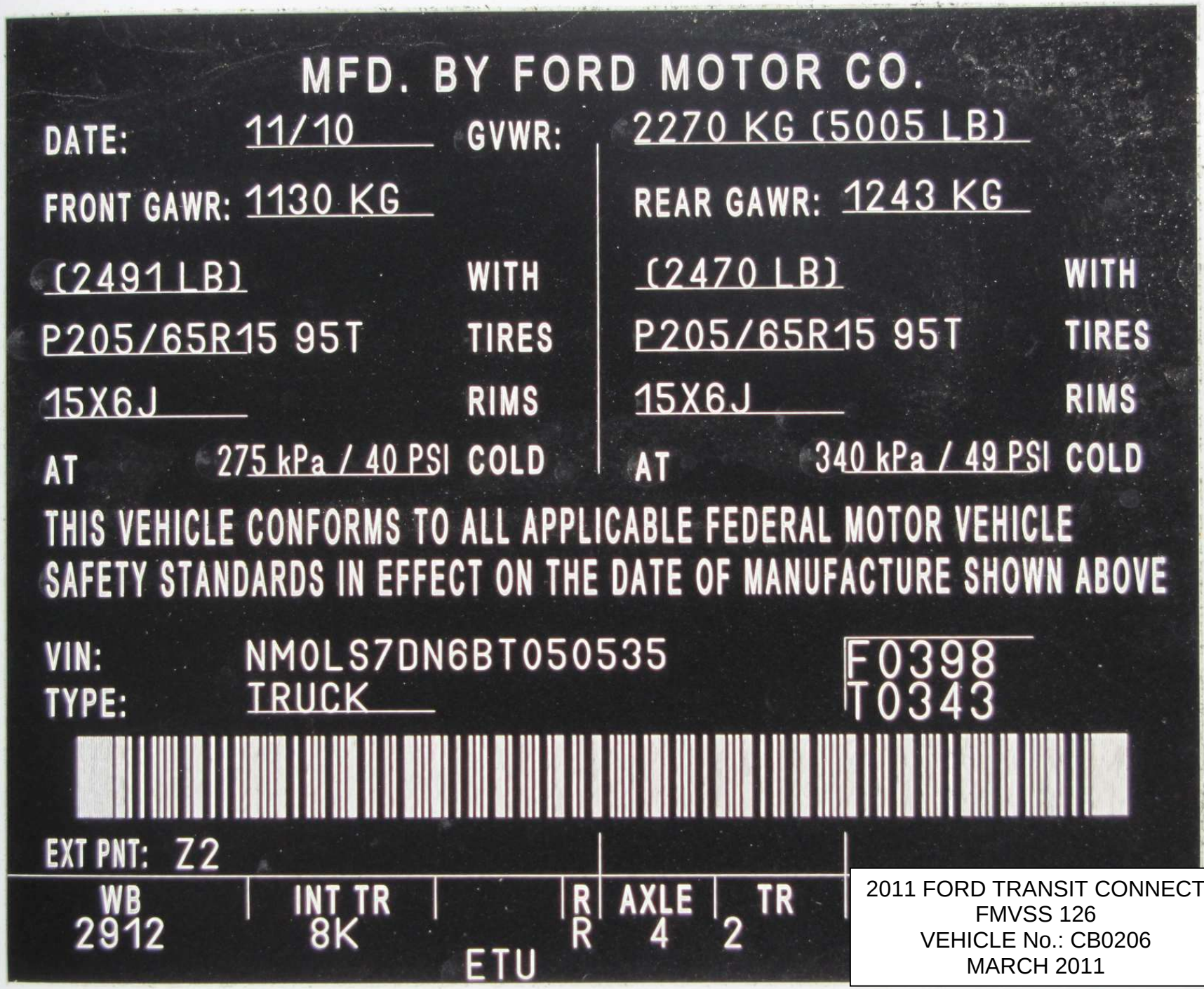
Type	Output	Range	Resolution	Accuracy	Specifics	Serial Number	Calibration
Tire Pressure Gauge	Vehicle Tire Pressure	0-60psi	0.5 psi	±0.5% of applied pressure	Moroso Model: 89562 0-60psi	N/A	By: TRC Date: 1-12-11 Due: 4-12-11
Platform Scales	Vehicle Total, Wheel, and Axle Load	0-2500 lb per each of four pads	0.5 lb	±1.0% of applied load	Mettler Toledo Model: JXGA1000	5225831-5JC	By: Mettler Toledo Date: 2-14-11 Due: 5-14-11
Automated Steering Machine with Steering Angle Encoder	Handwheel Angle	±800 deg	0.25 deg	±0.25 deg	Heitz Automotive Testing Model: Sprint 3	60303	By: ATI-Heitz Date: 2-18-11 Due: 2-18-12
Multi-Axis Inertial Sensing System	Longitudinal, Lateral, and Vertical Acceleration Roll, Yaw, and Pitch Rate	Accelerometers: ±2 g Angular Rate Sensors: ±100 deg/s	Accelerometers: ≤10 ug Angular Rate Sensors: ≤0.004 deg/s	Accelerometers: ≤0.05% of full range Angular Rate Sensors: 0.05% of full range	BEI Technologies Model: MotionPAK MP-1	0768	By: BEI Tech. Date: 1-10-11 Due: 1-10-12
Radar Speed Sensor and Dashboard Display	Vehicle Speed	0-125 mph	0.009 mph	±0.25% of full scale	A-DAT Corp. Radar Model: DRS-6 Display Model: RD-2	1400603	By: B+S Multidata Date: 2-14-11 Due: 2-14-12
Ultrasonic Distance Measuring System	Left and Right Side Vehicle Height	5-24 inches	0.01 inches	±0.25% of maximum distance	Massa Products Corporation Model: M-5000/220	104619 & 104613	By: Consumers Energy Laboratory Services Date: 1-20-11 Due: 1-20-12
Data Acquisition System [Amplify, Anti-Alias, and Digitize]	Record Time; Velocity; Distance; Lateral, Longitudinal, and Vertical Accelerations; Roll, Yaw, and Pitch Rates; Steering Wheel Angle.	Sufficient to meet or exceed individual sensors	200 Hz	Sufficient to meet or exceed individual sensors	Dewetron Sidehand DAS Model: DA-121-16 Digitizer Model: Dewe-Orion-1616-100 Amplifier/AntiAliasing: MDAQ-FILT-10-S	12060 1105	By: Dewetron Date: 12-02-10 Due: 12-02-11
Load Cell	Vehicle Brake Pedal Force	0-300 lb	1 lb	±0.05% of full scale	DATRON Model: DTM-LPA	4970-1103	By: TRC Date: per test Due: per test
Coordinate Measurement Machine	Inertial Sensing System Location	0-10 feet	0.001 inch	±0.003% of full scale	FARO International Model: Faro Arm N10	U12-05-08-07108	By: FARO Date: 7-30-10 Due: 7-30-11
Outriggers	No output. Safety Item.	N/A	N/A	N/A	NHTSA Titanium Outriggers Model: Docket 2007-27662-11	N/A	N/A

5.0 PHOTOGRAPHS

5.1 ¾ FRONT VIEW FROM LEFT SIDE OF VEHICLE
5.2 ¾ REAR VIEW FROM RIGHT SIDE OF VEHICLE
5.3 VEHICLE CERTIFICATION LABEL
5.4 TIRE AND LOADING INFORMATION LABEL
5.5 WINDOW STICKER (MONRONEY LABEL)
5.6 ESC MALFUNCTION TELLTALE
5.7 ¾ FRONT VIEW - TEST VEHICLE INSTRUMENTED
5.8 ¾ REAR VIEW – TEST VEHICLE INSTRUMENTED
5.9 STEERING WHEEL CONTROLLER AND DATA ACQUISITION SYSTEM
5.10 STEERING CONTROLLER BATTERY BOX
5.11 INERTIA MEASUREMENT UNIT
5.12 VEHICLE SPEED SENSOR
5.13 BODY ROLL SENSOR (DRIVER SIDE)
5.14 BODY ROLL SENSOR (PASSENGER SIDE)
5.15 BRAKE PEDAL FORCE TRANSDUCER

5.1 ¾ FRONT VIEW FROM LEFT SIDE OF VEHICLE

5.2 ¾ REAR VIEW FROM RIGHT SIDE OF VEHICLE



2011 FORD TRANSIT CONNECT
FMVSS 126
VEHICLE No.: CB0206
MARCH 2011

5.3 VEHICLE CERTIFICATION LABEL

2011 FORD TRANSIT CONNECT
FMVSS 126
VEHICLE No.: CB0206
MARCH 2011

5.4 TIRE AND LOADING INFORMATION LABEL

Ford
www.fordvehicles.com

VEHICLE DESCRIPTION
TRANSIT CONNECT

2011 XLT CARGO VAN
114" WHEELBASE
2.0L I4 DURATEC GAS ENGINE
4 SPD AUTO TRANSAXLE W/ O/D

EXTERIOR
FROZEN WHITE METALLIC
INTERIOR
DARK GRAY CLOTH

BT 050535

STANDARD EQUIPMENT **INCLUDED AT NO EXTRA CHARGE**

EXTERIOR
- BUMPERS, BODY COLOR
- DEFROSTER PACKAGE
- DOORS - DUAL SLIDING SIDE, 180-DEGREE HINGED, REAR
- INTEGRATED SPOTTER MIRRORS
- PRIVACY GLASS - REAR DOORS
- MOLDINGS - BODY SIDE, GREY WHEEL LIP, GREY
- WHEELS, 15" STEEL W/COVER

INTERIOR
- AIR COND, MANUAL FRONT
- AM/FM STEREO/CD, W/2 SPKRS
- BUCKET SEATS-MANUAL 6-WAY DRIVER, 4-WAY FRONT PASS
- DOME LAMPS - FRT, MID & RR
- FLOOR COVERING - CARPETED FRONT, VINYL REAR
- HEADLINER - FULL CLOTH
- OVERHEAD STOWAGE SHELF
- POWER GROUP

FUNCTIONAL
- ALTERNATOR - 150-AMP/HOUR
- MAINT FREE BATTERY W/SAVER
- FUEL TANK - 15.4 GALLON
- GRILLE - GREY 3-BAR W/LOCK
- POWERPOINT-2 FRNT/1 RR
- TILT/TELESCOPE WHEEL
- SPEED CONTROL
- TIRES - P205/65R-15 BSW
- FULL-SIZE SPARE TIRE

SAFETY/SECURITY
- AIR BAGS - FRONT AND SIDE
- COLLAPSIBLE STEER COLUMN
- 4-WHEEL ABS W/ TPMS

WARRANTY
- 3YR/36,000 BUMPER / BUMPER
- 5YR/60,000 POWERTRAIN
- 5YR/60,000 ROADSIDE ASSIST

PRICE INFORMATION

	Manufacturer's Suggested Retail Price
STANDARD VEHICLE PRICE	$22,600.00
INCLUDED ON THIS VEHICLE	
ORDER CODE 210A	
OPTIONAL EQUIPMENT	
RR CARGO DOOR CHECK ARMS 255	240.00
ROLL STABILITY CONTROL-RSC	545.00
REVERSE SENSING SYSTEM	280.00
FRONT LICENSE PLATE BRACKET	NO CHARGE
TOTAL OPTIONS	1,065.00
TOTAL VEHICLE & OPTIONS	23,665.00
DESTINATION & DELIVERY	805.00

EPA Fuel Economy Estimates

CITY MPG
21
Expected range for most drivers 17 to 25 MPG

Estimated Annual Fuel Cost
$1,957
based on 15,000 miles at $3.00 per gallon

Combined Fuel Economy
This Vehicle
23
10 — 32
All SUVs

HIGHWAY MPG
26
Expected range for most drivers 21 to 31 MPG

Your actual mileage will vary depending on how you drive and maintain your vehicle.

See the FREE Fuel Economy Guide at dealers or www.fueleconomy.gov

SOLD TO 44A 127 Bob Gillingham Ford Inc 8383 Brookpark Rd Parma OH 44129	ONE RF98	DEALER NO. 44A 127	METHOD OF TRANSP. RAIL ITEM #: 44-0080 O/T 2
SHIP TO (IF OTHER THAN SOLD TO)	TWO	NM0LS7DN6BT050535	
SHIP THROUGH	FINAL ASSEMBLY POINT OTOSAN	This label is affixed pursuant to the Federal Automobile Information Disclosure Act. Gasoline, License, and Title Fees, State and Local taxes are not included. Dealer installed options or accessories are not included unless listed above. AM163 N RB22X 120 002424 12 16 10	

EXTENDED SERVICE PLAN
Ford Extended Service Plan is the only service contract backed by Ford and honored at all Ford and Lincoln Mercury Dealers. Ask your dealer for prices and additional details or see our website at www.ford-esp.com.

Ford Motor Company Insurance Services
This vehicle qualifies for auto insurance discounts, call 1-866-367-3131 or visit www.fordautoinsurance.com for availability in your state.

TOTAL MSRP $24,470.00

GOVERNMENT SAFETY RATINGS

Frontal Crash	Driver	Not Rated
	Passenger	Not Rated

Star ratings based on the risk of injury in a frontal impact. Frontal ratings should ONLY be compared to other vehicles of similar size and weight.

Side Crash	Front seat	Not Rated
	Rear seat	Not Rated

Star ratings based on the risk of injury in a side impact.

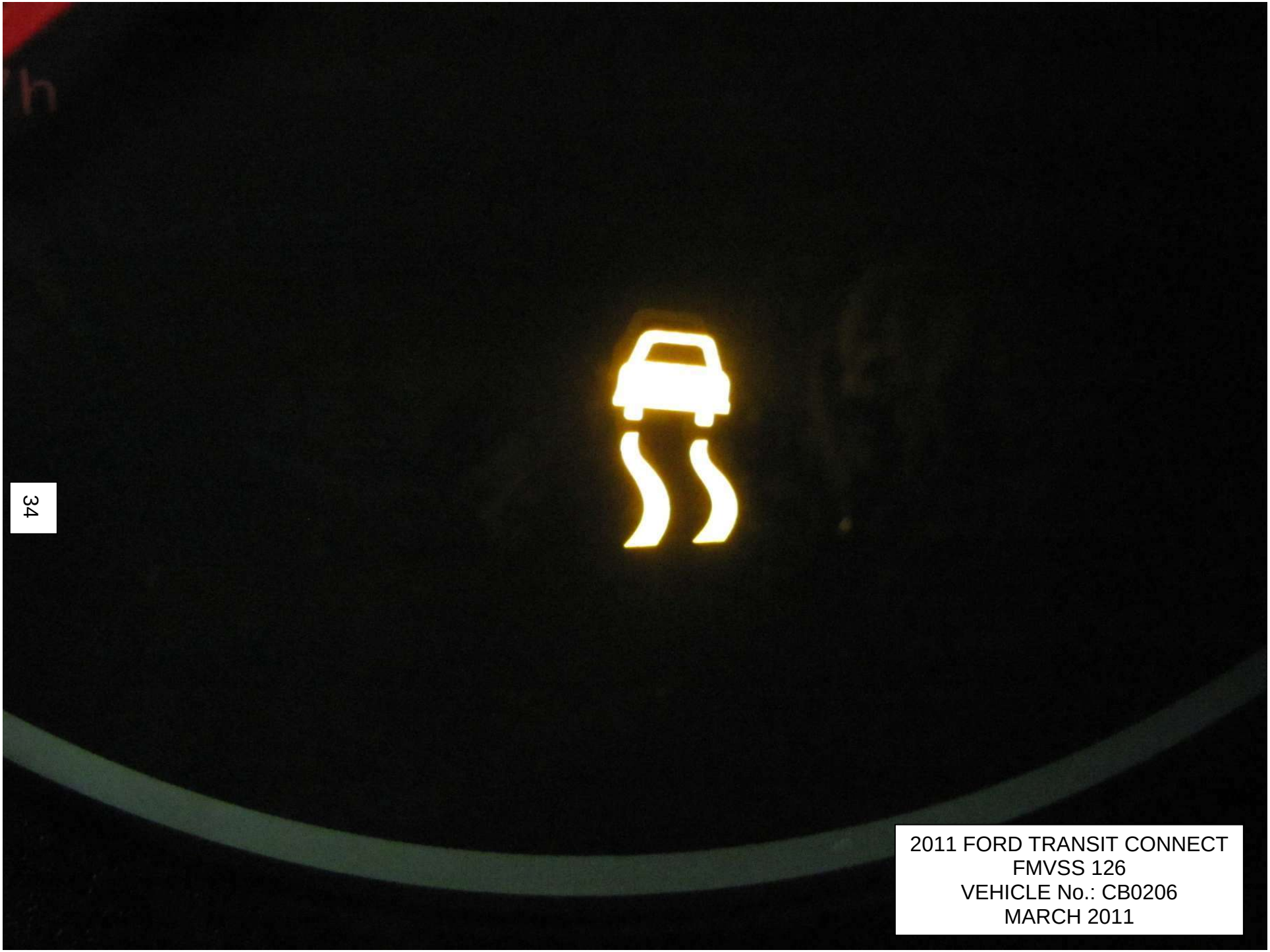
Rollover: Not Rated
Star ratings based on the risk of rollover in a single vehicle crash.

Star ratings range from 1 to 5 stars (★★★★★), with 5 being the highest.
Source: National Highway Traffic Safety Administration (NHTSA).

www.safercar.gov or call 1-888-327-4236

2011 FORD TRANSIT CONNECT
FMVSS 126
VEHICLE No.: CB0206
MARCH 2011

5.5 WINDOW STICKER - MONRONEY LABEL



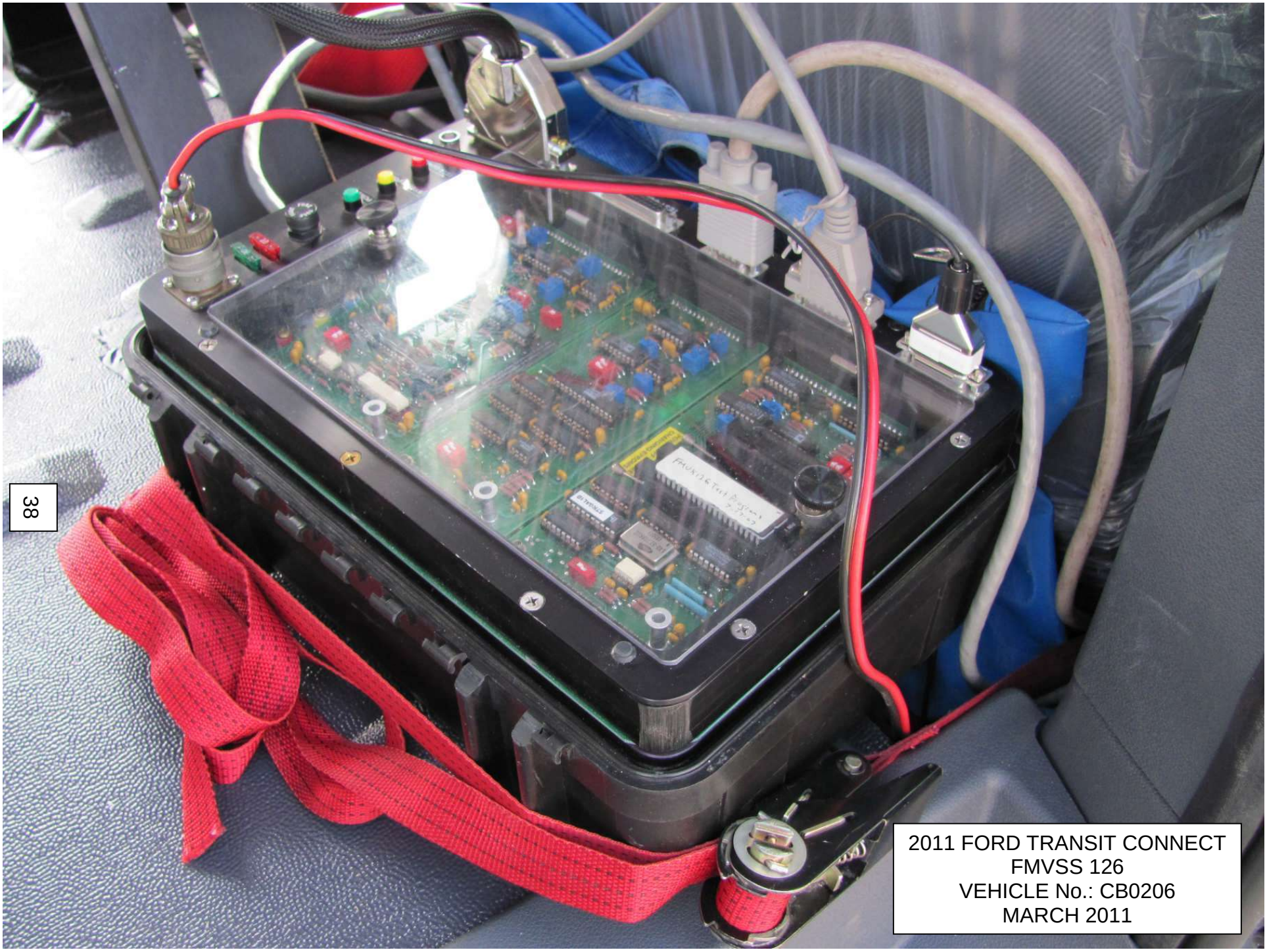
5.6 ESC MALFUNCTION TELLTALE

5.7 ¾ FRONT VIEW - TEST VEHICLE INSTRUMENTED

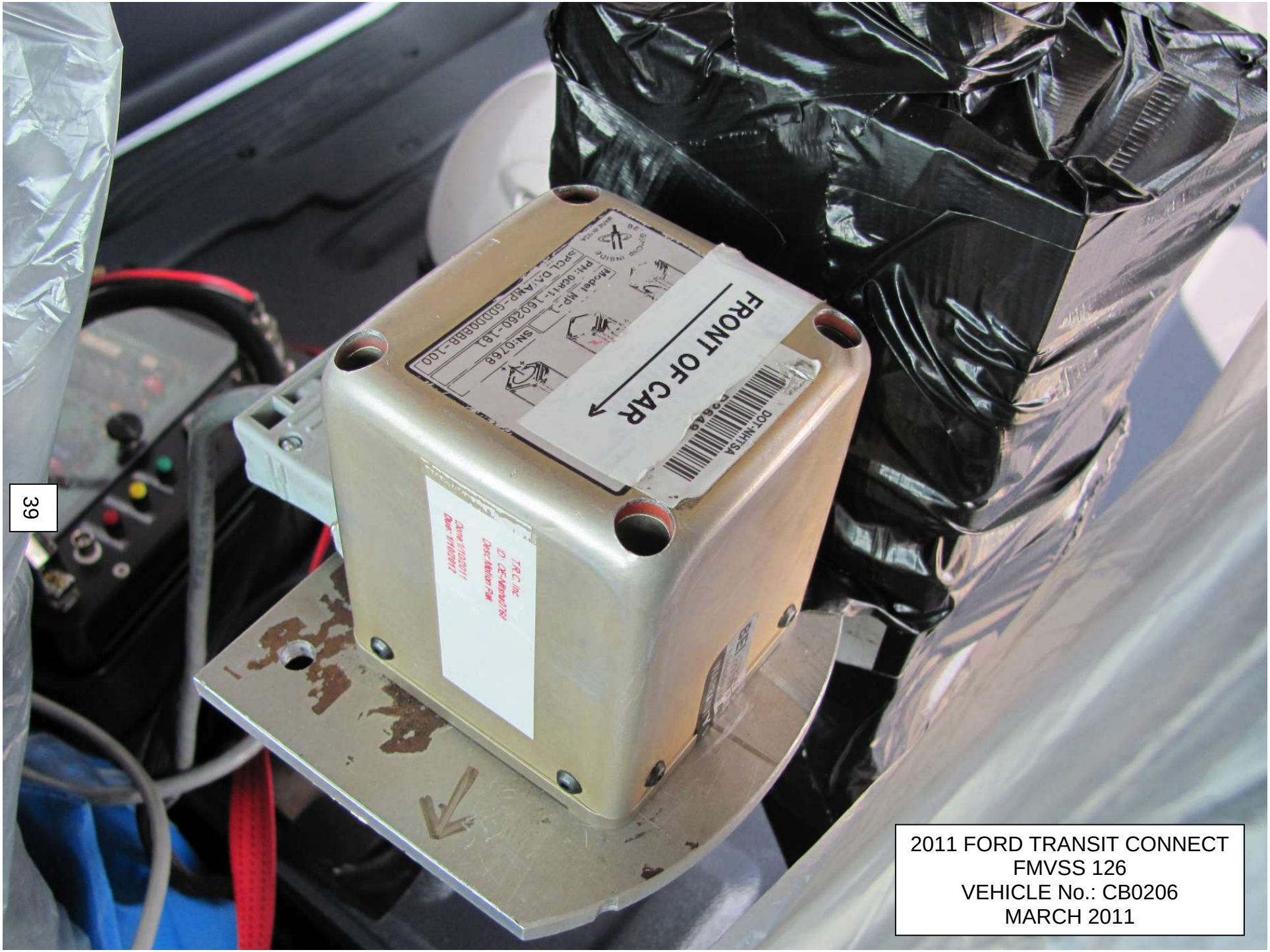
5.8 ¾ REAR VIEW - TEST VEHICLE INSTRUMENTED

2011 FORD TRANSIT CONNECT
FMVSS 126
VEHICLE No.: CB0206
MARCH 2011

5.9 STEERING WHEEL CONTROLLER AND DATA ACQUISITION SYSTEM



5.10 STEERING CONTROLLER BATTERY BOX



2011 FORD TRANSIT CONNECT
FMVSS 126
VEHICLE No.: CB0206
MARCH 2011

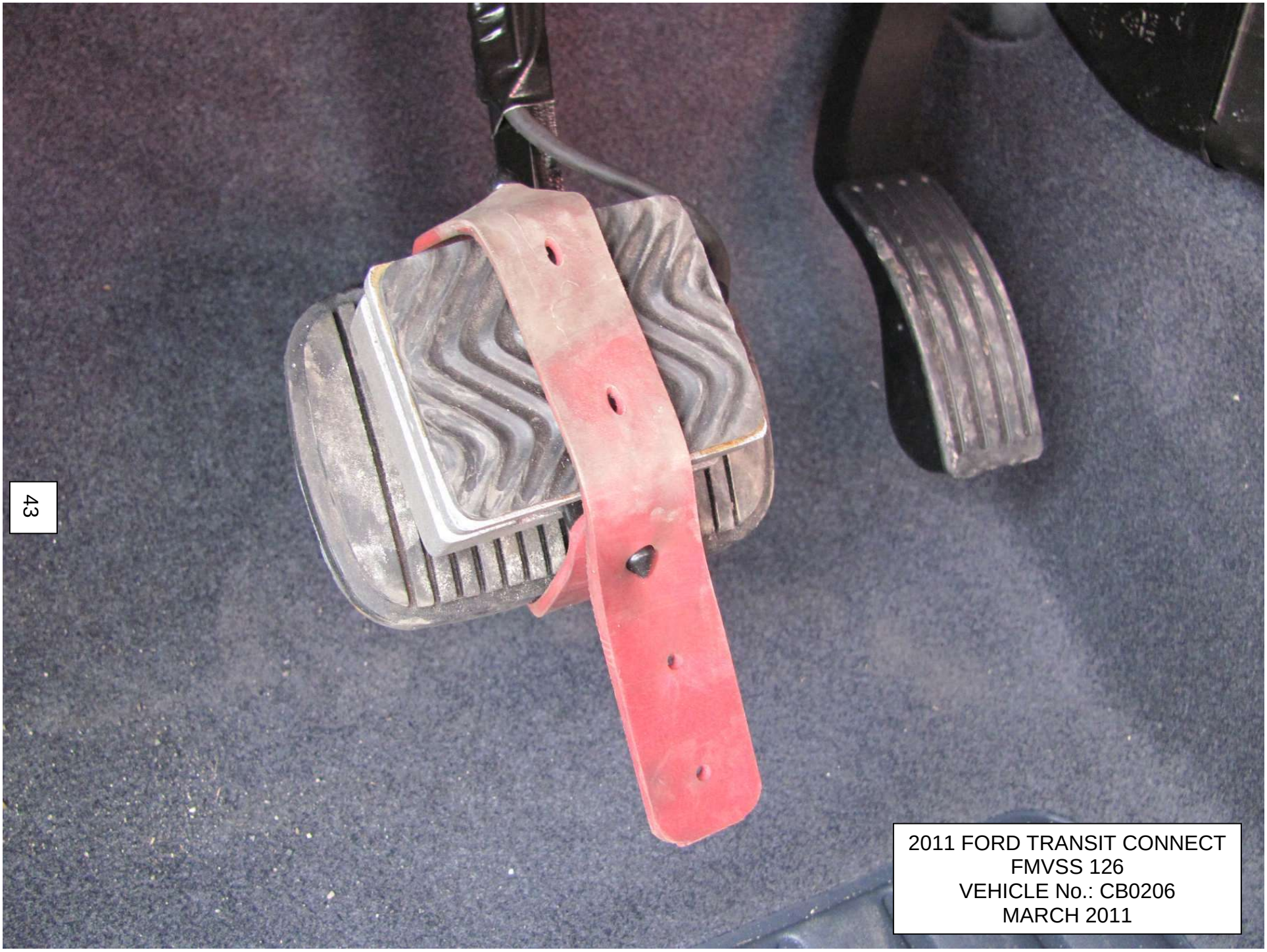
5.11 INERTIA MEASUREMENT UNIT

2011 FORD TRANSIT CONNECT
FMVSS 126
VEHICLE No.: CB0206
MARCH 2011

5.12 VEHICLE SPEED SENSOR

5.13 BODY ROLL SENSOR (DRIVER SIDE)

5.14 BODY ROLL SENSOR (PASSENGER SIDE)

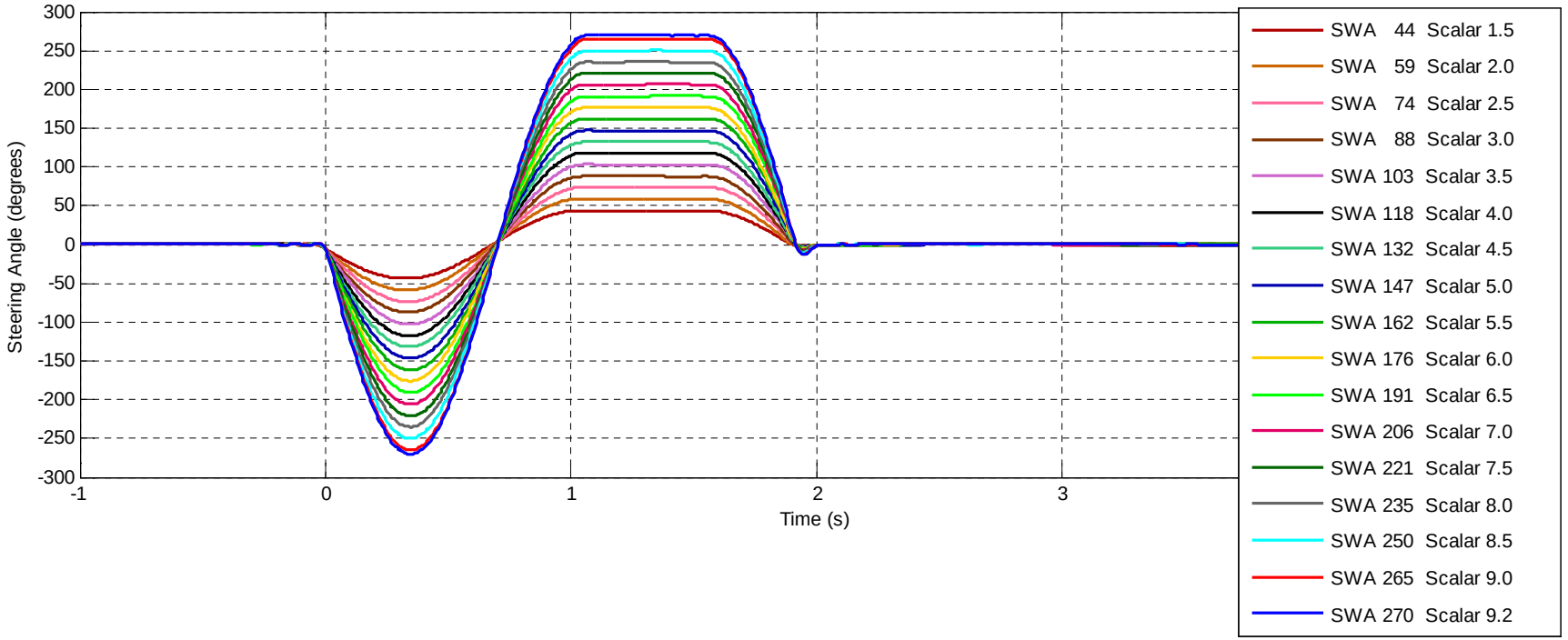


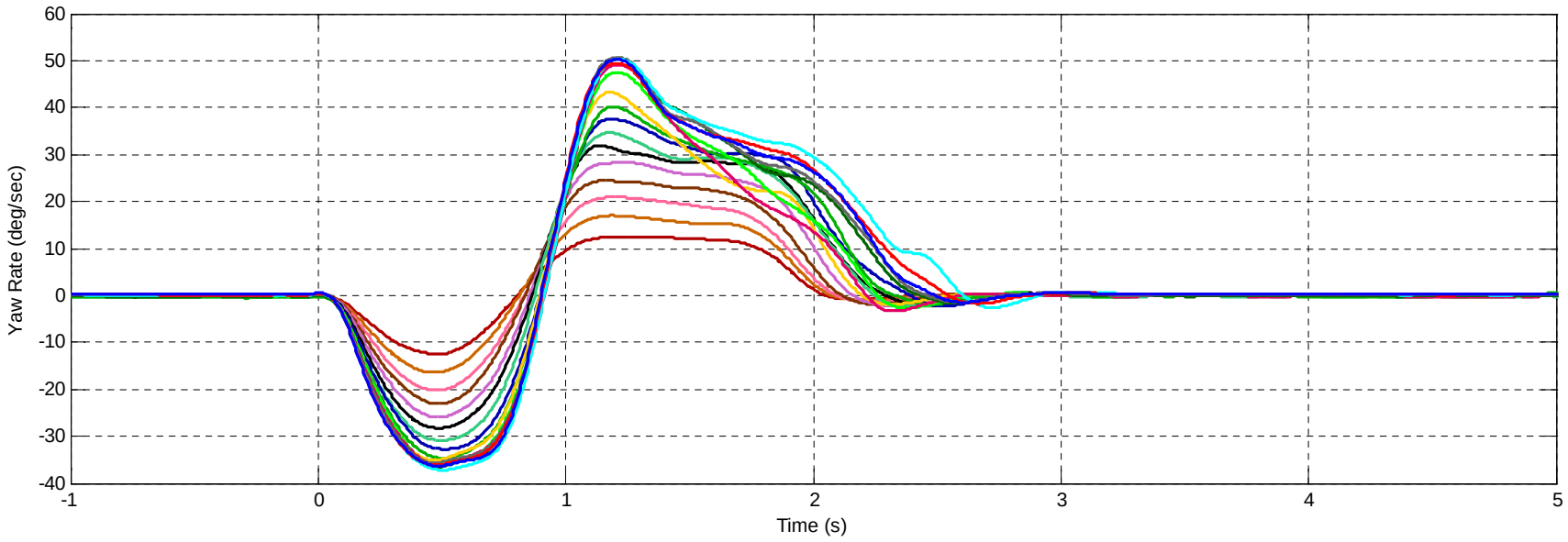
5.15 BRAKE PEDAL FORCE TRANSDUCER

6.0 DATA PLOTS

6.0 2011 FORD TRANSIT CONNECT DATA PLOTS

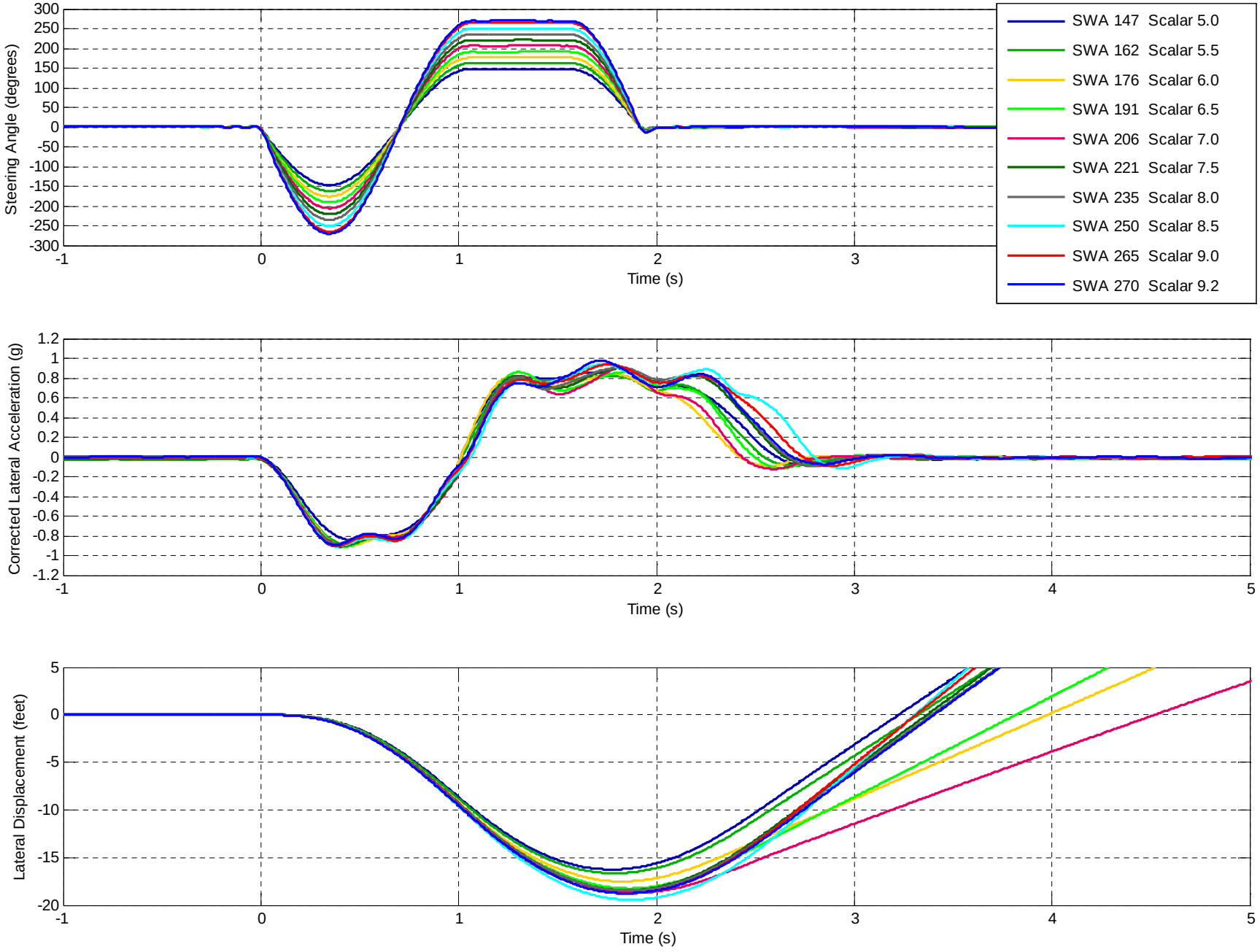
Figure 1. Steering Angle and Yaw Rate Time History, Counter-Clockwise Initial Steer Tests





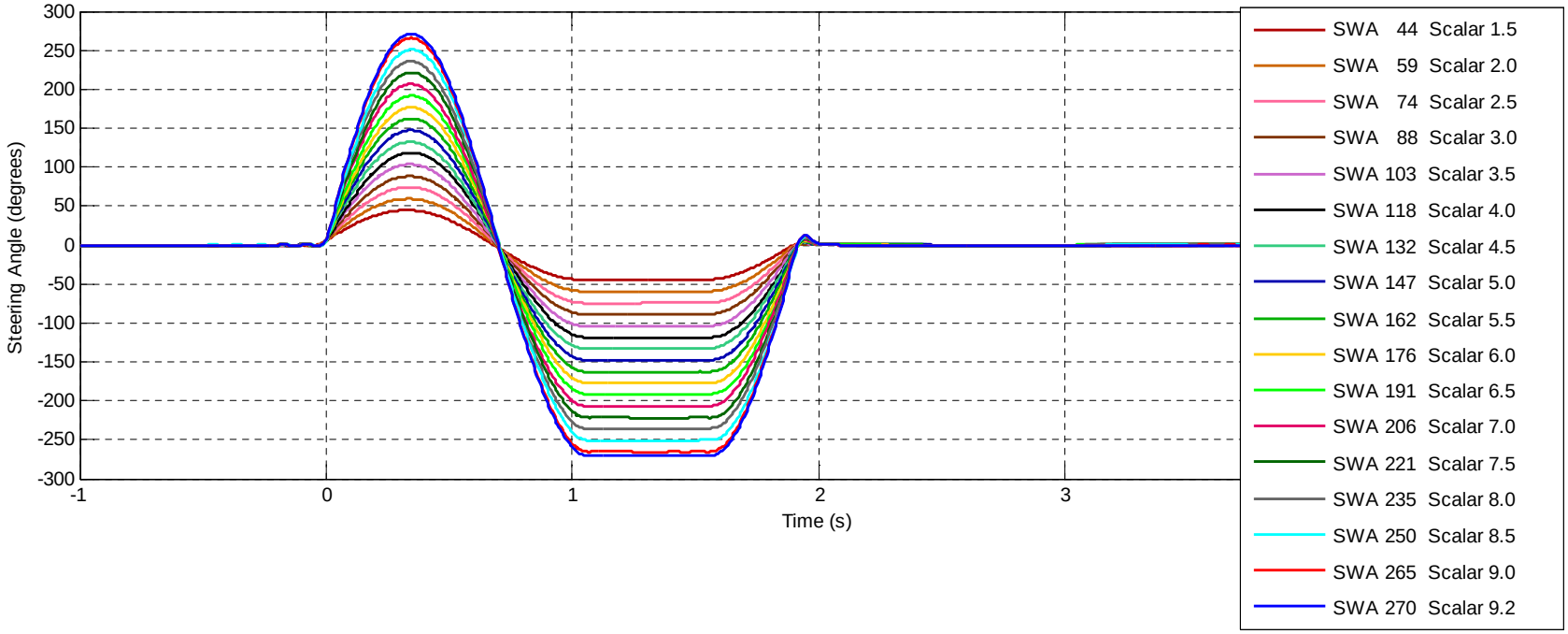
6.0 2011 FORD TRANSIT CONNECT DATA PLOTS…continued

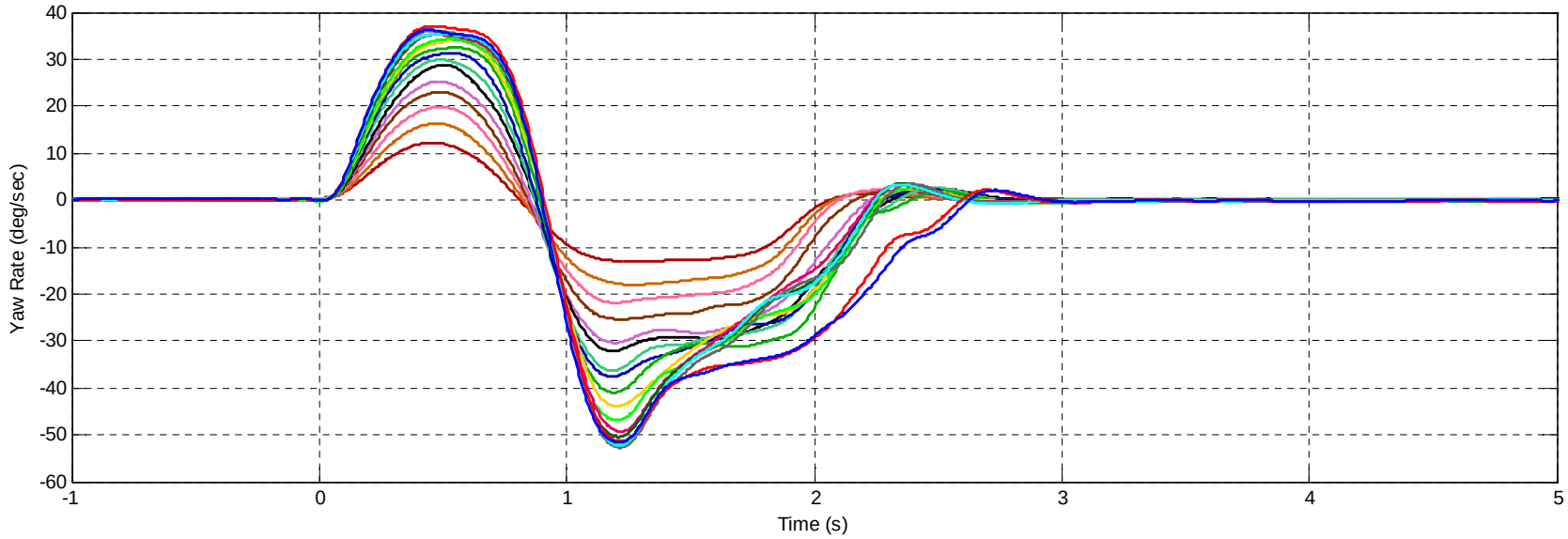
Figure 2. Steering Angle, Lateral Acceleration, and Lateral Displacement Time History, Counter-Clockwise Initial Steer Tests



6.0 2011 FORD TRANSIT CONNECT DATA PLOTS…continued

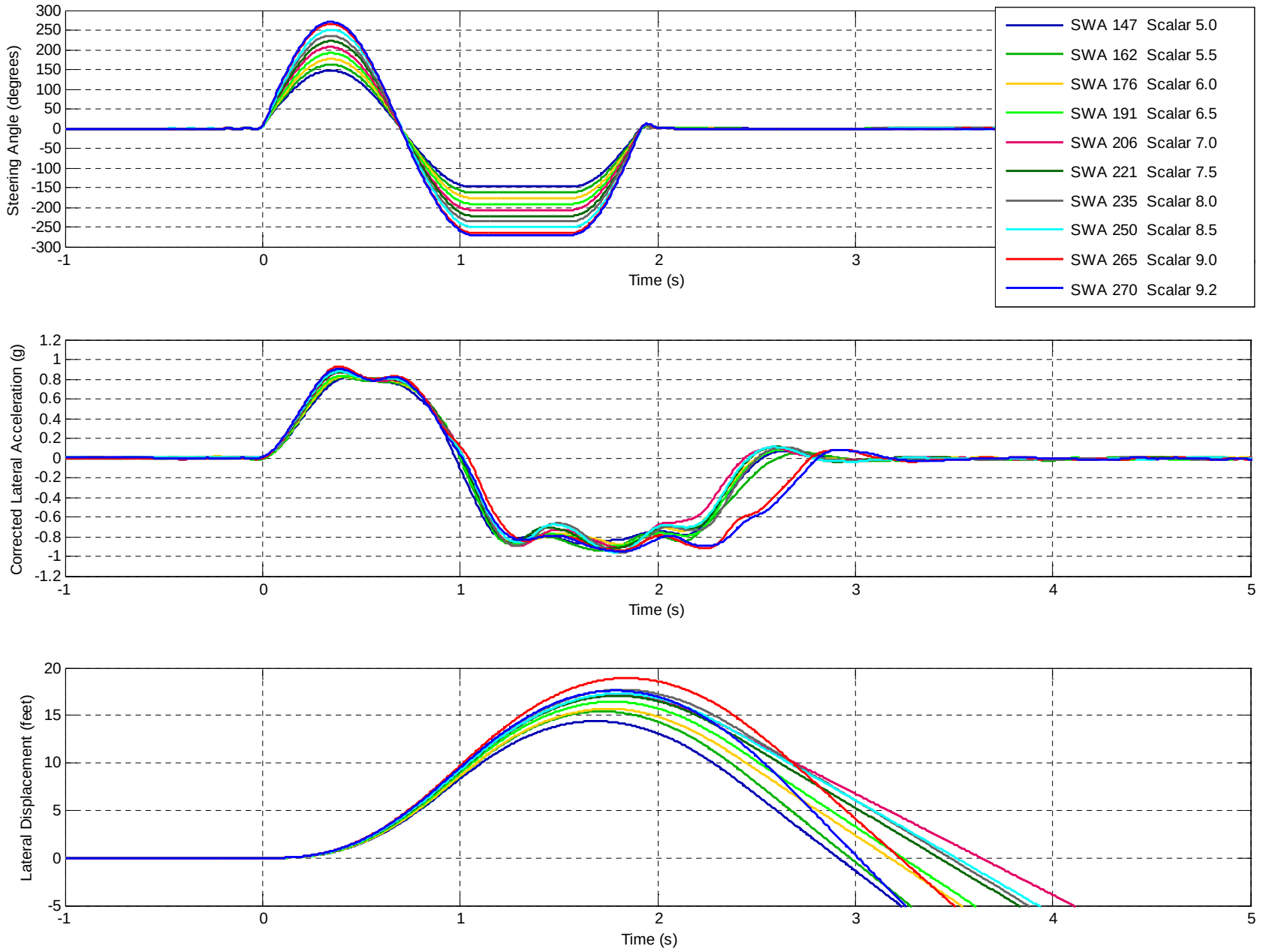
Figure 3. Steering Angle and Yaw Rate Time History, Clockwise Initial Steer Tests





6.0 2011 FORD TRANSIT CONNECT DATA PLOTS…continued

Figure 4. Steering Angle, Lateral Acceleration, and Lateral Displacement Time History, Clockwise Initial Steer Tests



7.0 OTHER DOCUMENTATION

7.1 OWNER'S MANUAL PAGES
7.2 VEHICLE ARRIVAL CONDITION REPORT
7.3 VEHICLE COMPLETION CONDITION REPORT
7.4 SINE WITH DWELL TEST RESULTS
7.5 SLOWLY INCREASING STEER TEST RESULTS
7.6 INERTIAL SENSING SYSTEM LOCATION COORDINATES

7.1 OWNER'S MANUAL PAGES

ADVANCETRAC® WITH ROLL STABILITY CONTROL™ (RSC®) STABILITY ENHANCEMENT SYSTEM

WARNING: Vehicle modifications involving braking system, aftermarket roof racks, suspension, steering system, tire construction and/or wheel/tire size may change the handling characteristics of the vehicle and may adversely affect the performance of the AdvanceTrac® with RSC® system. In addition, installing any stereo loudspeakers may interfere with and adversely affect the AdvanceTrac® with RSC® system. Install any aftermarket stereo loudspeaker as far as possible from the front center console, the tunnel, and the front seats in order to minimize the risk of interfering with the AdvanceTrac® with RSC® sensors. Reducing the effectiveness of the AdvanceTrac® with RSC® system could lead to an increased risk of loss of vehicle control, vehicle rollover, personal injury and death.

WARNING: Remember that even advanced technology cannot defy the laws of physics. It's always possible to lose control of a vehicle due to inappropriate driver input for the conditions. Aggressive driving on any road condition can cause you to lose control of your vehicle increasing the risk of personal injury or property damage. Activation of the AdvanceTrac® with RSC® system is an indication that at least some of the tires have exceeded their ability to grip the road; this could reduce the operator's ability to control the vehicle, potentially resulting in a loss of vehicle control, vehicle rollover, personal injury and death. If your AdvanceTrac® with RSC® system activates, SLOW DOWN.

WARNING: If a failure has been detected within the AdvanceTrac® with RSC® system, the "sliding car" icon will illuminate steadily. If the "sliding car" icon illuminates steadily, have the system service by an authorized dealer immediately. Operating your vehicle with the "sliding car" icon illuminated could lead to an increased risk of loss of vehicle control, vehicle rollover, personal injury and death.

The AdvanceTrac® with RSC® system provides the following stability enhancement features for certain driving situations:

- Traction Control (TCS), which functions to help avoid drive-wheel spin and loss of traction.

2011 FORD TRANSIT CONNECT
FMVSS 126
VEHICLE No.: CB0206
MARCH 2011

- Electronic Stability Control (ESC), which functions to help avoid skids or lateral slides
- Roll Stability Control™ (RSC®), which functions to help avoid a vehicle roll-over.

The AdvanceTrac® with RSC® system automatically enables each time the engine is started. All features of the AdvanceTrac® with RSC® system (TCS, ESC, and RSC®) are active and monitor the vehicle from start-up. However, the system will only intervene if the driving situation requires it.

The "sliding car" icon in the instrument cluster will illuminate temporarily during start-up as part of a normal system self-check, or during driving if a driving situation causes the AdvanceTrac® with RSC® system to operate. If the "sliding car" icon remains steadily illuminated, have the system serviced by an authorized dealer immediately.

When AdvanceTrac® with RSC® performs a normal system self-check, some drivers may notice a slight movement of the brake, and/or a rumble, grunting, or grinding noise after startup and when driving off.

When an event occurs that activates AdvanceTrac® with RSC® you may experience the following:

- A slight deceleration of the vehicle
- The "sliding car" indicator light will flash.
- A vibration in the pedal when your foot is on the brake pedal
- If the driving condition is severe and your foot is not on the brake, the brake pedal may move as the systems applies higher brake forces. You may also hear a whoosh of air from under the instrument panel during this severe condition.
- The brake pedal may feel stiffer than usual.

Traction Control (TCS)

Traction Control is a driver aid feature that helps your vehicle maintain traction of the wheels, typically when driving on slippery and/or hilly road surfaces, by detecting and controlling wheel spin.

Excessive wheel spin is controlled in two ways, which may work separately or in tandem: Engine Traction Control and Brake Traction Control. Engine Traction Control works to limit drive-wheel spin by momentarily reducing engine power. Brake Traction Control works to limit wheel spin by momentarily applying the brakes to the wheel that is

2011 FORD TRANSIT CONNECT
FMVSS 126
VEHICLE No.: CB0206
MARCH 2011

slipping. Traction Control prevents the driven wheels from loss of traction due to excessive throttle or low road friction level.

During Traction Control events the "sliding car" icon in the instrument cluster will flash.

If the Traction Control system is activated excessively in a short period of time, the braking portion of the system may become temporarily disabled to allow the brakes to cool down. In this situation, Traction Control will use only engine power reduction or transfer to help control the wheels from over-spinning. When the brakes have cooled down, the system will regain all features. Anti-lock braking, RSC®, and ESC are not affected by this condition and will continue to function during the cool-down period.

Electronic Stability Control (ESC)

Electronic Stability Control (ESC) may enhance your vehicle's directional stability during adverse maneuvers, for example when cornering severely or avoiding objects in the roadway. ESC operates by applying brakes to one or more of the wheels individually and, if necessary, reducing engine power if the system detects that the vehicle is about to skid or slide laterally.

During Electronic Stability Control events the "sliding car" icon in the instrument cluster will flash.

Certain adverse driving maneuvers may activate the Electronic Stability Control system, which include but are not limited to:

- Taking a turn too fast
- Maneuvering quickly to avoid an accident, pedestrian or obstacle
- Driving over a patch of ice or other slippery surfaces
- Changing lanes on a snow-rutted road
- Entering a snow-free road from a snow-covered side street, or vice versa
- Entering a paved road from a gravel road, or vice versa
- Cornering while towing a heavily loaded trailer (refer to *Trailer towing* in the *Tires, Wheels and Loading* chapter).

Roll Stability Control™ (RSC®)

Roll Stability Control™ (RSC®) may help to maintain roll stability of the vehicle during adverse maneuvers. RSC® operates by detecting the vehicle's roll motion and the rate at which it changes and by applying the brakes to one or more wheels individually.

During an event that activates the Roll Stability Control™ (RSC®) the "sliding car" icon  in the instrument cluster will flash.

Certain adverse driving maneuvers may activate the Roll Stability Control system, which include:

- Emergency lane-change
- Taking a turn too fast
- Quick maneuvering to avoid an accident, pedestrian or obstacle

STEERING

To help prevent damage to the power steering system:

- Never hold the steering wheel at its furthest turning points (until it stops) for more than a few seconds when the engine is running.
- Do not operate the vehicle with a low power steering pump fluid level (below the MIN mark on the reservoir).
- Some noise is normal during operation. If the noise is excessive, check for low power steering pump fluid level before seeking service by your authorized dealer.
- Heavy or uneven steering efforts may be caused by low power steering pump fluid level. Check for low power steering pump fluid level before seeking service by your authorized dealer.
- Do not fill the power steering pump reservoir above the MAX mark on the reservoir, as this may result in leaks from the reservoir.

If the power steering system breaks down (or if the engine is turned off), you can steer the vehicle manually, but it takes more effort. If the steering wanders or pulls, check for:

- an improperly inflated tire
- uneven tire wear
- loose or worn suspension components
- loose or worn steering components
- improper steering alignment

A high crown in the road or high crosswinds may also make the steering seem to wander/pull.

If the steering wheel vibrates check for:

- improper wheel balance

PREPARING TO DRIVE

WARNING: Utility vehicles have a significantly higher rollover rate than other types of vehicles.

WARNING: In a rollover crash, an unbelted person is significantly more likely to die than a person wearing a seat belt.

Utility vehicles and trucks have larger tires and increased ground clearance, giving the vehicle a higher center of gravity than a passenger car.

WARNING: Vehicles with a higher center of gravity such as utility vehicles and trucks handle differently than vehicles with a lower center of gravity. Utility vehicles and trucks are **not** designed for cornering at speeds as high as passenger cars any more than low-slung sports cars are designed to perform satisfactorily under off-road conditions. Avoid sharp turns, excessive speed or abrupt maneuvers in these vehicles. Failure to drive cautiously could result in an increased risk of loss of vehicle control, vehicle rollover, personal injury and death.

WARNING: Loaded vehicles, with a higher center of gravity, may handle differently than unloaded vehicles. Do not overload your vehicle and use extra precautions, such as driving at slower speeds, avoiding abrupt steering changes and allowing for increased stopping distance, when driving a heavily loaded vehicle. Over-loading or loading the vehicle improperly can deteriorate handling capability and contribute to loss of vehicle control and vehicle rollover.

Vehicle stability and handling

The risk of a rollover crash increases as the number of people and load in the vehicle increase. This increased risk occurs because the passenger weight and load raises the vehicle's center of gravity and causes it to shift rearward. As a result, the van has less resistance to rollover and handles differently from other commonly driven passenger vehicles, making it more difficult to control in an emergency situation. Placing any load on the roof also raises the center of gravity and increases the potential for rollover.

The van should be operated by an experienced driver. An organization that owns a van should select one or two experienced drivers to drive

7.2 VEHICLE ARRIVAL CONDITION REPORT

CONTRACT NO. DTNH22-08-D-00097 DATE: 3/03/11

FROM: Automotive Allies

TO: TRC

PURPOSE: (X) Initial Receipt ( ) Received via Transfer ( ) Present vehicle condition

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2011 / Ford / Transit Connect / Truck

MANUFACTURE DATE: 11/10 NHTSA NO.: CB0206

BODY COLOR: White VIN: NM0LS7DN6BT050535

ODOMETER READING: 20 miles GVWR: 2,270 KG

PURCHASE PRICE: $ rented / leased DEALER'S NAME: Buckeye Ford, 110 US 42 South, London, OH 43140

X ALL OPTIONS LISTED ON "WINDOW STICKER" ARE PRESENT ON THE TEST VEHICLE

X TIRES AND WHEEL RIMS ARE NEW AND THE SAME AS LISTED

X THERE ARE NO DENTS OR OTHER INTERIOR OR EXTERIOR FLAWS

X THE VEHICLE HAS BEEN PROPERLY PREPARED AND IS IN RUNNING CONDITION

X THE GLOVE BOX CONTAINS AN OWNER'S MANUAL, WARRANTY DOCUMENT, CONSUMER INFORMATION, AND EXTRA SET OF KEYS

X PROPER FUEL FILLER CAP IS SUPPLIED ON THE TEST VEHICLE

X PLACE VEHICLE IN STORAGE AREA

X INSPECT THE VEHICLE'S INTERIOR AND EXTERIOR, INCLUDING ALL WINDOWS, SEATS, DOORS, ETC., TO CONFIRM THAT EACH SYSTEM IS COMPLETE AND FUNCTIONAL PER THE MANUFACTURER'S SPECIFICATIONS. ANY DAMAGE, MISADJUSTMENT, OR OTHER UNUSUAL CONDITION THAT COULD INFLUENCE THE TEST PROGRAM OR TEST RESULTS SHALL BE RECORDED. REPORT ANY ABNORMAL CONDITION TO THE NHTSA COTR BEFORE BEGINNING ANY TEST

RECORDED BY: Alan Ida DATE: 3-03-11
APPROVED BY: Ken Webster DATE: 3-28-11

7.3 VEHICLE COMPLETION CONDITION REPORT

CONTRACT NO. DTNH22-08-D-00097 DATE: 3/23/11

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2011 / Ford / Transit Connect / Truck

MANUFACTURE DATE: 11/10 NHTSA NO.: CB0206

BODY COLOR: White VIN: NM0LS7DN6BT050535

ODOMETER READING: 106 miles GVWR: 2,270 KG

LIST OF FMVSS TESTS PERFORMED BY THIS LAB: 126, 135

X THERE ARE NO DENTS OR OTHER INTERIOR OR EXTERIOR FLAWS

X THE VEHICLE HAS BEEN PROPERLY MAINTAINED AND IS IN RUNNING CONDITION

X THE GLOVE BOX CONTAINS AN OWNER'S MANUAL, WARRANTY DOCUMENT, CONSUMER INFORMATION, AND EXTRA SET OF KEYS

X PROPER FUEL FILLER CAP IS SUPPLIED ON THE TEST VEHICLE

REMARKS:

Equipment that is no longer on the test vehicle as noted on Vehicle Arrival Condition Report:

None.

Explanation for equipment removal:

N/A

Test Vehicle Condition:

Like new.

RECORDED BY: Alan Ida DATE: 3-23-11
APPROVED BY: Ken Webster DATE: 3-28-11

7.4 SINE WITH DWELL TEST RESULTS
2011 Ford Transit Connect
NHTSA No.: CB0206

Date Created 18-Mar-11

LEFT-TO-RIGHT (INITIAL COUNTER-CLOCKWISE STEER)

File	SWA @ 5deg Ct	MES	Time@5deg	COS	Time@COS	MOS	Time@MOS	YRR1(%)	YR1 (deg/sec)	YRR1 Ct	YRR175(%)	YR175 (deg/sec)
0030	618	50.420	3.084	999	4.988	755	3.767	-0.047	-0.006	1199	-0.055	-0.007
0031	618	50.432	3.081	1000	4.991	756	3.771	-0.341	-0.057	1200	-0.149	-0.025
0032	616	50.233	3.073	999	4.988	755	3.768	-0.887	-0.184	1199	-0.975	-0.202
0038	616	50.166	3.071	999	4.988	755	3.768	0.054	0.013	1199	0.131	0.032
0039	615	50.300	3.069	999	4.988	755	3.768	0.043	0.012	1199	0.030	0.008
0040	615	50.409	3.066	999	4.987	755	3.767	0.487	0.154	1199	-0.073	-0.023
0041	615	50.343	3.065	999	4.986	755	3.767	1.161	0.405	1199	0.149	0.052
0042	614	50.337	3.063	998	4.984	755	3.766	0.646	0.242	1198	-0.375	-0.140
0043	614	50.421	3.063	998	4.984	755	3.767	1.291	0.525	1198	0.764	0.310
0044	615	50.395	3.065	999	4.986	755	3.769	0.273	0.118	1199	0.148	0.064
0045	614	50.391	3.065	999	4.986	755	3.769	0.664	0.316	1199	0.350	0.166
0046	614	50.582	3.062	998	4.983	755	3.767	-0.134	-0.066	1198	-0.363	-0.178
0047	614	50.283	3.063	998	4.984	755	3.767	0.876	0.445	1198	0.124	0.063
0048	614	50.438	3.062	998	4.982	755	3.766	0.519	0.262	1198	-0.085	-0.043
0049	614	50.371	3.062	998	4.982	755	3.766	-0.147	-0.074	1198	0.345	0.174
0050	614	50.512	3.064	998	4.983	755	3.768	0.365	0.180	1198	0.316	0.156
0051	614	50.483	3.063	998	4.982	755	3.767	0.325	0.163	1198	0.189	0.095

RIGHT-TO-LEFT (INITIAL CLOCKWISE STEER)

0052	618	50.125	3.083	999	4.987	755	3.767	-0.675	0.090	1199	0.160	-0.021
0053	617	50.676	3.079	999	4.989	755	3.769	-1.100	0.201	1199	-0.714	0.130
0054	616	50.260	3.074	999	4.988	755	3.768	-0.119	0.026	1199	0.029	-0.006
0055	616	50.465	3.073	999	4.990	755	3.770	0.651	-0.167	1199	0.306	-0.079
0056	615	50.358	3.067	999	4.986	755	3.766	1.430	-0.437	1199	0.874	-0.267
0057	614	50.157	3.065	998	4.985	755	3.766	0.815	-0.265	1198	0.313	-0.102
0058	615	50.527	3.066	999	4.987	755	3.768	0.975	-0.355	1199	0.350	-0.127
0059	614	50.289	3.062	998	4.983	754	3.765	0.778	-0.294	1198	0.450	-0.170
0060	614	50.443	3.063	998	4.984	755	3.766	1.583	-0.651	1198	0.894	-0.367
0061	614	50.297	3.064	999	4.985	755	3.768	0.673	-0.297	1199	0.064	-0.028
0062	614	50.287	3.064	999	4.985	755	3.768	0.777	-0.365	1199	0.400	-0.188
0063	615	50.354	3.065	999	4.987	755	3.769	0.365	-0.181	1199	0.105	-0.052
0064	614	50.368	3.063	998	4.985	755	3.767	0.843	-0.427	1198	0.553	-0.280
0065	615	50.310	3.067	999	4.988	756	3.771	0.780	-0.412	1199	0.508	-0.268
0066	614	50.199	3.065	998	4.985	755	3.769	1.045	-0.549	1198	0.735	-0.386
0068	615	50.474	3.066	999	4.986	756	3.770	0.442	-0.227	1199	0.418	-0.215
0069	615	50.450	3.067	999	4.986	756	3.771	0.048	-0.025	1199	0.641	-0.333

7.4 SINE WITH DWELL TEST RESULTS
2011 Ford Transit Connect
NHTSA No.: CB0206

Date Created 18-Mar-11

LEFT-TO-RIGHT (INITIAL COUNTER-CLOCKWISE STEER)

File	YRR175 Ct	2nd Yaw Peak(deg/sec)	2nd Yaw Peak Ct	Lat Disp (ft)	Lat. Acc. 1.07s (g)	1st SWA Peak(deg)	1st SWA Peak Ct	2nd SWA Mean(deg)
0030	1349	12.332	869	-3.894	0.320	44.045	684	43.785
0031	1350	16.826	856	-5.206	0.385	58.977	684	58.855
0032	1349	20.743	855	-6.366	0.433	73.886	684	73.806
0038	1349	24.231	848	-7.133	0.481	87.851	684	87.818
0039	1349	28.221	863	-7.908	0.481	102.949	684	103.070
0040	1349	31.684	843	-8.747	0.466	117.982	684	118.057
0041	1349	34.862	850	-9.254	0.433	131.910	684	131.925
0042	1348	37.394	851	-9.819	0.330	147.021	683	146.967
0043	1348	40.643	852	-10.024	0.317	161.915	683	161.898
0044	1349	43.315	851	-10.388	0.360	175.909	684	176.039
0045	1349	47.591	855	-10.558	0.279	190.843	684	190.982
0046	1348	49.091	856	-10.538	0.228	206.158	683	206.296
0047	1348	50.742	857	-10.705	0.277	221.156	684	221.135
0048	1348	50.460	855	-10.623	0.242	235.123	683	235.190
0049	1348	50.261	857	-10.913	0.153	250.181	683	250.032
0050	1348	49.320	855	-10.829	0.193	265.187	684	265.110
0051	1348	50.062	855	-10.798	0.200	270.124	683	269.962

RIGHT-TO-LEFT (INITIAL CLOCKWISE STEER)

0052	1349	-13.343	882	3.670	-0.312	44.460	684	44.377
0053	1349	-18.253	871	4.928	-0.377	59.418	684	59.419
0054	1349	-22.193	855	5.833	-0.437	74.284	684	74.429
0055	1349	-25.699	860	6.828	-0.472	88.212	684	88.445
0056	1349	-30.544	854	7.473	-0.482	103.420	684	103.608
0057	1348	-32.517	850	8.288	-0.454	118.452	683	118.653
0058	1349	-36.438	852	8.928	-0.449	132.355	684	132.547
0059	1348	-37.823	850	9.372	-0.433	147.410	683	147.643
0060	1348	-41.087	852	9.711	-0.391	162.320	683	162.604
0061	1349	-44.183	854	9.787	-0.370	176.443	684	176.576
0062	1349	-46.967	854	10.152	-0.390	191.385	684	191.538
0063	1349	-49.438	859	10.340	-0.351	206.725	684	206.882
0064	1348	-50.678	856	10.411	-0.393	221.647	684	221.844
0065	1349	-52.850	858	10.622	-0.375	235.674	684	235.852
0066	1348	-52.479	856	10.479	-0.371	250.664	684	250.795
0068	1349	-51.489	859	10.948	-0.219	265.678	684	265.692
0069	1349	-51.903	857	10.691	-0.311	270.628	684	270.713

7.5 SLOWLY INCREASING STEER TEST RESULTS
2011 Ford Transit Connect
NHTSA No.: CB0206

Date Created 18-Mar-11

File	Vehicle	EventPt	DOS	MES [mph]	Mean SPD [mph]	AYcount_3	THETAENCF_3 [degree]	AYCG_CD2_3 [g]	r_squared	ZeroBegin	ZeroEnd
0012	2011 Ford Transit Connect	664	1	50.058	50.151	1139	-29.296	-0.303	0.998	464	664
0014	2011 Ford Transit Connect	697	1	50.242	50.485	1130	-28.764	-0.290	0.996	497	697
0015	2011 Ford Transit Connect	705	1	50.474	50.295	1143	-29.548	-0.304	0.998	505	705
0021	2011 Ford Transit Connect	702	0	50.533	50.200	1132	29.298	0.298	0.999	502	702
0022	2011 Ford Transit Connect	701	0	50.303	50.187	1137	29.669	0.303	0.996	501	701
0023	2011 Ford Transit Connect	702	0	50.646	50.326	1138	29.739	0.304	0.997	502	702
	Averages						29.4	0.300			

Scalars	Steering Angles (deg)
1.5	44
2	59
2.5	74
3	88
3.5	103
4	118
4.5	132
5	147
5.5	162
6	176
6.5	191
7	206
7.5	221
8	235
8.5	250
9	265
9.2	270

7.6 INERTIA SENSOR MEASUREMENTS
2011 Ford Transit Connect
NHTSA No.: CB0206

Device : U12-05-08-07108
device version : 2.24
device certification date : 07/30/10
today is : 3/17/2011
units : Millimeters

Label	ActualX	ActualY	ActualZ
C_DEVICEPOS001			
M_PLANE001	1561.553	-601.913	-302.675
M_LINE001	414.551	108.791	-107.437
M_FRONT_AXLE_CENTER	0.000	0.000	0.000
C_COORDSYS001	0.000	0.000	0.000
M_TIRE_TREAD_CENTER	292.417	64.918	-145.467
M_INERTIA_PACK	1617.075	798.193	747.977
M_ROOF	3123.236	689.831	1682.422
M_GROUND	3123.709	-170.019	-300.281
Track Width		1498.600	
Roof Height (relative to ground)			1982.703
Motion Pak - x-distance (mm)	1617.075		
Motion Pak - y-distance (mm)		-16.025	
Motion Pak - z-distance (mm)			1003.808
Motion Pak - x-distance (inches)	63.664		
Motion Pak - y-distance (inches)		-0.631	
Motion Pak - z-distance (inches)			39.520

x-distance (longitudinal)	Point of reference is the front axle centerline. (Positive from front axle toward rear of vehicle.)
y-distance (lateral)	Point of reference is the vehicle centerline. (Positive from the center toward the right.)
z-distance (vertical)	Point of reference is the ground plane. (Positive from the ground up.)