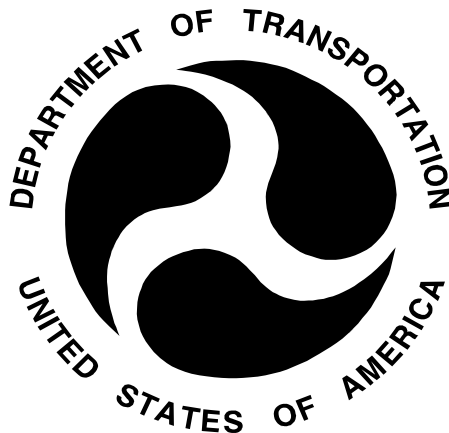


126-TRC-11-003

**SAFETY COMPLIANCE TESTING FOR FMVSS 126
Electronic Stability Control Systems**

Honda Manufacturing of Indiana, LLC
2011 Honda Civic
NHTSA No. CB5304

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



May 17, 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

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Ken Webster

Approval Date: 5/3/2011

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Accepted By: 

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16. Abstract A test was conducted on a 2011 Honda Civic, NHTSA No. CB5304, 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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1.0 PURPOSE OF COMPLIANCE TEST

The purpose of this test is to determine if the test vehicle, a MY 2011 Honda Civic 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 Honda Civic 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: Honda / Civic / Passenger Car

VEHICLE NHTSA NO.: CB5304 VIN: 19XFA1F94BE023956

VEHICLE TYPE: Passenger Car 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 PASS and operational characteristics requirements. (S126, S5.1, S5.6)

ESC Malfunction Telltale (Data Sheet 3)

The vehicle is equipped with a telltale that indicates one or more PASS ESC System malfunctions. (S126, S5.3)

“ESC Off” and other System Controls and Telltale (Data Sheet 3 & 4)

The vehicle is equipped with an ESC off telltale indicating the vehicle PASS 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)

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

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) PASS

Vehicle Lateral Stability (Data Sheet 8)

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

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

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. PASS
(S126. S5.3)

Malfunction telltale stayed illuminated as long as malfunction existed and must extinguish after malfunction was corrected. PASS
(S126, S5.3.7)

REMARKS

3.0 TEST DATA

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

VEHICLE MAKE/MODEL/BODY STYLE: Honda / Civic / Passenger Car

NHTSA No.: CB5304 TEST DATE: 4-22-11

VIN: 19XFA1F94BE023956 MANUFACTURE DATE: 11/10

GVWR: 1,695 KG FRONT GAWR: 895 KG REAR GAWR 800 KG

SEATING POSITIONS: FRONT 2 REAR 3

ODOMETER READING AT START OF TEST: 70 (113) Miles (Kilometers)

DESIGNATED TIRE SIZE(S) FROM VEHICLE LABELING:

Front Axle P205 / 55R16 89H Rear Axle P205 / 55R16 89H

INSTALLED TIRE SIZE(S) ON VEHICLE:

<u>From Tire Sidewall</u>	<u>Front Axle</u>	<u>Rear Axle</u>
Manufacturer and Model	<u> Bridgestone Turanza EL400 </u>	<u> Bridgestone Turanza EL400 </u>
Tire Size Designation	<u> P205 / 55R16 89H </u>	<u> P205 / 55R16 89H </u>

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):

ESC Traction Control Roll Stability Control
 Active Suspension Electronic Throttle Control Active Steering
 ABS

List other systems; _____

REMARKS:

RECORDED BY: Alan Ida
APPROVED BY: Ken Webster

DATE: 4-22-11
DATE: 5-03-11

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. Yes (PASS)
 No (FAIL)

Method used to modify engine torque: The VSA Modulator (ESC Computer) calculates vehicle speed and wheel slippage based on various sensor signals and requires FI-ECU to adjust engine torque. For example, if the understeer occurs by the wheel acceleration slippage, TCS reduces the engine torque to decrease the difference between the traveling direction and the target traveling direction. The FI-ECU estimates ignition timing and/or cuts fuel delivery after the request of the VSA Modulator.

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

Speed system becomes active. 15 km/h (9.3 mph)

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

Driving phases that the system is capable of activation. The ESC system is active under acceleration, deceleration, coasting, and during activation of ABS and traction control. The ESC system is not active when being driven in reverse

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

DATA INDICATES COMPLIANCE

PASS/FAIL PASS

RECORDED BY: Alan Ida
APPROVED BY: Ken Webster

DATE: 5-02-11
DATE: 5-03-11

3.0 TEST DATA....continued

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

VEHICLE MAKE/MODEL/BODY STYLE: Honda / Civic / Passenger Car

VEHICLE NHTSA NO. CB5304 TEST DATE: 5-02-11

ESC Malfunction Telltale

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

Telltale Location Instrument cluster, left of the tachometer

Telltale Color Yellow

Telltale symbol or abbreviation used.



Or **ESC**

- 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.

There are 2 symbols that illuminate for ESC Malfunction. The letters "VSA" illuminate

and a triangle symbol with an exclamation in the center also illuminate. 

Is telltale part of a common space? Yes No

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

If yes, explain telltale operation during ESC activation: During ESC Activation, the triangle symbol with an exclamation in the center flashes.

3.0 DATA SHEETS....continued

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

“ESC OFF” Telltale (if provided)

Vehicle is equipped with “ESC Off” telltale? X Yes No

Is “ESC OFF” telltale combined with “ESC Malfunction” telltale utilizing a two part telltale? Yes X No

Telltale Location Instrument cluster, left of the tachometer

Telltale Color Yellow

Telltale symbol or abbreviation used.




Or

ESC OFF

- Vehicle uses this symbol
- Vehicle uses this abbreviation
- X Neither symbol or abbreviation is used

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

A triangle symbol with an exclamation in the center 

Is telltale part of a common space? Yes X No

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

REMARKS:

Note: The 2011 Honda Civic uses the same telltale when the ESC system has malfunctioned and when the system has been manually turned off. However, when the ESC system has a malfunction, the “VSA” telltale also illuminates.

The telltale symbols and controls labeling do not have to meet the requirements of FMVSS No. 126 until on or after September 1, 2011.

RECORDED BY: Alan Ida

DATE: 5-02-11

APPROVED BY: Ken Webster

DATE: 5-03-11

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 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 Instrument panel, left of steering column, under the driver’s side vent
Labeling VSA Off
Modes Traction Control Off / On
ESC Off / On

Identify standard or default drive configuration 2WD - default

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	N/A	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 _____
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	N/A	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: The torque control component of FI-ECU is not a control that the operator can manually activate. When the FI-ECU detects an electrical failure with the torque control, it automatically deactivates the ESC system.

If the low tire pressure indicator or Tire Pressure Monitoring System (TPMS) malfunction indicator illuminates, the ESC system automatically turns on even if the ESC system is turned off by pressing the VSA Off control switch.

RECORDED BY: Alan Ida
APPROVED BY: Ken Webster

DATE: 5-03-11
DATE: 5-03-11

3.0 TEST DATA....continued

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

VEHICLE MAKE/MODEL/BODY STYLE: Honda / Civic / Passenger Car

NHTSA No.: CB5304 TEST DATE: 4-21-11

Test Track Requirements: Test Surface Slope (0-1 %) 1 %
Peak Friction Coefficient (at least 0.9) 0.96

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

Tire Pressures: Required: Front Axle 220 kPa Rear Axle 220 kPa
Actual: LF: 220 kPa RF: 220 kPa LR: 220 kPa RR: 220 kPa

Vehicle Dimensions: Track Width 150.0 cm Wheelbase 270.8 cm
Roof Height 141.7 cm

Vehicle weight ratings: GAWR Front 895 KG GAWR Rear 800 KG

Unloaded Vehicle Weight (UVW)

Front Axle 770.2 KG Left Front 386.6 KG Right Front 383.6 KG
Rear Axle 512.4 KG Left Rear 261.6 KG Right Rear 250.8 KG
Total UVW 1,282.6 KG

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

Calculated Baseline Weight (UVW+ 73 kg) 1,355.6 KG

Outrigger size required ("Standard" or "Heavy") N/A
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**

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

Front Axle 842.8 KG Left Front 430.0 KG Right Front 412.8 KG

Rear Axle 574.2 KG Left Rear 298.8 KG Right Rear 275.4 KG

Total Loaded Vehicle Weight 1,417.0 KG

$$\begin{aligned} \text{Ballast Required} &= [\text{Total Unloaded Vehicle Weight} + 168 \text{ KG}] - \text{Total Loaded} \\ &\hspace{10em} \text{Weight w/ Driver and Instrumentation} \\ &= [\underline{1,282.6} \text{ KG} + 168 \text{ KG}] - \underline{1,417.0} \text{ KG} \\ &= \underline{33.6} \text{ KG} \end{aligned}$$

Total Loaded Vehicle Weight

Front Axle 854.8 KG Left Front 431.8 KG Right Front 423.0 KG

Rear Axle 595.8 KG Left Rear 304.8 KG Right Rear 291.0 KG

Total Loaded Vehicle Weight 1,450.6 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	<u>111.2</u> cm	<u>160.4</u> cm
y-distance	<u>-1.2</u> cm	<u>-0.4</u> cm
z-distance	<u>53.8</u> cm	<u>70.3</u> cm

Distance Between Ultrasonic Sensors: 178.4 cm

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

REMARKS:

RECORDED BY: Alan Ida
APPROVED BY: Ken Webster

DATE: 4-27-11
DATE: 5-03-11

3.0 TEST DATA....continued

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

VEHICLE MAKE/MODEL/BODY STYLE: Honda / Civic / Passenger Car

VEHICLE NHTSA No.: CB5304

Measured Cold Tire Pressures: LF 221 kPa RF 221 kPa

LR 221 kPa RR 221 kPa

Wind Speed 7.2 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)) 8.3 °C

Brake Conditioning Time; 9:30 AM Date; 4-28-11

56 km/h (35 mph) Brake Stops

Number of stops executed (10 required) 10 stops

Observed deceleration rate range (.5g target) 0.50 – 0.60 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 1.00 – 1.10 g

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

Duration of cool down period (5 minutes min.) 5:17 minutes

3.0 TEST DATA....continued

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

Tire Conditioning Series No. 1 Time: 10:03 AM Date: 4-28-11

Measured Tire Pressures: LF 228 kPa RF 228 kPa

LR 224 kPa RR 224 kPa

Wind Speed 7.6 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)) 8.9 °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	30.6
4-6	Counterclockwise	0.5-0.6	0.55	30.6

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	<u>56+2 (35+1)</u>	30	0.5-0.6	0.33
2	<u>56+2 (35+1)</u>	50	0.5-0.6	0.55
3	<u>56+2 (35+1)</u>		0.5-0.6	
4	<u>56+2 (35+1)</u>		0.5-0.6	

Steering wheel angle that corresponds to a peak 0.5–0.6g lateral acceleration; 50 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	<u>56+2 (35+1)</u>	50 (cycles 1-10)	0.5-0.6	0.55
4	<u>56+2 (35+1)</u>	50 (cycles 1-9)	0.5-0.6	0.55
		100 (cycle 10)*	N/A	0.77

* 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: 12:17 PM Date: 4-28-11

Measured Tire Pressures: LF 231 kPa RF 231 kPa

LR 228 kPa RR 229 kPa

Wind Speed 9.8 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)) 12.2 °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	30.6
4-6	counterclockwise	0.5-0.6	0.55	30.6

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	<u>56+2 (35+1)</u>	N/A	0.5-0.6	N/A
2	<u>56+2 (35+1)</u>		0.5-0.6	
3	<u>56+2 (35+1)</u>		0.5-0.6	
4	<u>56+2 (35+1)</u>		0.5-0.6	

Steering wheel angle that corresponds to a peak 0.5–0.6g lateral acceleration; 50 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	<u>56+2 (35+1)</u>	50 (cycles 1-10)	0.5-0.6	0.55
4	<u>56+2 (35+1)</u>	50 (cycles 1-9)	0.5-0.6	0.55
		100 (cycle 10)*	N/A	0.77

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

REMARKS:

RECORDED BY: Alan Ida

DATE: 4-28-11

APPROVED BY: Ken Webster

DATE: 5-03-11

3.0 TEST DATA....continued

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

VEHICLE MAKE/MODEL/BODY STYLE: Honda / Civic / Passenger Car

VEHICLE NHTSA No.: CB5304 TEST DATE: 4-28-11

Wind Speed 8.9 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

Static Data File Number: 0010

Selected Drive Configuration: 2WD

Selected Mode: default

Preliminary Left Steer Maneuver:

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

$$a_{y,30 \text{ degrees}} = \underline{0.44} \text{ g}$$

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

$$\frac{30 \text{ degrees}}{a_{y,30 \text{ degrees}}} = \frac{\delta_{SIS}}{0.55 \text{ g}} \quad \delta_{SIS} = \underline{37.5} \text{ degrees @ } 0.55\text{g}$$

$$\delta_{SIS} = \underline{40} \text{ degrees (rounded)}$$

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	10:25 am	-24.1	Yes
0013	Left	10:28 am	-24.3	Yes
0015	Left	10:34 am	-24.5	Yes
0016	Right	10:38 am	24.2	Yes
0017	Right	10:41 am	24.4	Yes
0019	Right	10:48 am	23.5	Yes

3.0 TEST DATA....continued

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

Average Overall Steering Wheel Angle:

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

$$\delta_{0.3 \text{ g, overall}} = \underline{\quad 24.2 \quad} \text{ degrees} \\ \text{[to nearest 0.1 degree]}$$

REMARKS:

Files 14 and 18 were omitted due to vehicle speed outside of the tolerance range. Therefore, the time clock indicates more than 5 minute between maneuvers.

RECORDED BY: Alan Ida
APPROVED BY: Ken Webster

DATE: 4-28-11
DATE: 5-03-11

3.0 TEST DATA....continued

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

VEHICLE MAKE/MODEL/BODY STYLE: Honda / Civic / Passenger Car

VEHICLE NHTSA No.: CB5304 TEST DATE: 4-28-11

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

Selected Drive Configuration: 2WD
Selected Mode: default

Overall steering wheel angle ($\delta_{0.3g, overall}$) 24.2 degrees

Static Data File Number 0025

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
0026	12:45 pm	1.5* $\delta_{0.3g}$	36	12.23	0.18	0.06	1.49	Pass	0.51	Pass
0027	12:49 pm	2.0* $\delta_{0.3g}$	48	14.40	-0.29	-0.36	-2.02	Pass	-2.48	Pass
0028	12:54 pm	2.5* $\delta_{0.3g}$	61	18.09	-0.25	-0.41	-1.38	Pass	-2.26	Pass
0029	12:58 pm	3.0* $\delta_{0.3g}$	73	21.77	0.05	0.19	0.25	Pass	0.87	Pass
0030	1:03 pm	3.5* $\delta_{0.3g}$	85	24.64	-0.22	-0.26	-0.90	Pass	-1.04	Pass
0031	1:07 pm	4.0* $\delta_{0.3g}$	97	28.49	-0.38	-0.37	-1.35	Pass	-1.32	Pass
0032	1:11 pm	4.5* $\delta_{0.3g}$	109	32.45	-0.21	-0.22	-0.65	Pass	-0.67	Pass
0033	1:15 pm	5.0* $\delta_{0.3g}$	121	35.86	-0.34	-0.14	-0.94	Pass	-0.39	Pass
0034	1:20 pm	5.5* $\delta_{0.3g}$	133	39.37	0.04	0.15	0.11	Pass	0.38	Pass
0035	1:24 pm	6.0* $\delta_{0.3g}$	145	41.87	0.22	0.15	0.53	Pass	0.35	Pass
0036	1:28 pm	6.5* $\delta_{0.3g}$	157	42.19	-0.39	-0.52	-0.94	Pass	-1.23	Pass
0037	1:32 pm	7.0* $\delta_{0.3g}$	169	44.34	0.54	0.00	1.23	Pass	0.00	Pass
0038	1:36 pm	7.5* $\delta_{0.3g}$	182	46.12	0.20	-0.28	0.43	Pass	-0.60	Pass
0039	1:40 pm	8.0* $\delta_{0.3g}$	194	46.24	0.83	-0.27	1.79	Pass	-0.59	Pass
0040	1:44 pm	8.5* $\delta_{0.3g}$	206	46.35	0.94	-0.39	2.02	Pass	-0.85	Pass
0041	1:48 pm	9.0* $\delta_{0.3g}$	218	49.12	-0.91	-0.29	-1.85	Pass	-0.60	Pass
0042	1:53 pm	9.5* $\delta_{0.3g}$	230	49.57	-1.09	-0.25	-2.20	Pass	-0.51	Pass
0043	1:57 pm	10.0* $\delta_{0.3g}$	242	52.90	-3.71	-0.38	-7.02	Pass	-0.72	Pass
0045	2:05 pm	10.5* $\delta_{0.3g}$	254	53.39	-5.10	-0.57	-9.55	Pass	-1.07	Pass
0046	2:09 pm	11.0* $\delta_{0.3g}$	266	55.75	-0.27	-0.28	-0.48	Pass	-0.50	Pass
0047	2:12 pm	11.2* $\delta_{0.3g}$	270	55.21	-1.01	-0.68	-1.82	Pass	-1.22	Pass

1. Maneuver execution should continue until a steering wheel angle magnitude factor of $6.5 * \delta_{0.3g, overall}$ or 270 degrees is utilized, whichever is greater provided the calculated magnitude of $6.5 * \delta_{0.3g, overall}$ is less than or equal to 300 degrees. If $6.5 * \delta_{0.3g, overall}$ is less than 270 degrees maneuver execution should continue by increasing the steering wheel angle magnitude by multiples of $0.5 * \delta_{0.3g, overall}$ 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 [$\leq 35\%$]		YRR at 1.75 sec after COS [$\leq 20\%$]	
		Scalar	Angle	$\dot{\psi}_{Peak}$	$\dot{\psi}_{1.0sec}$	$\dot{\psi}_{1.75sec}$	%	Pass/Fail	%	Pass/Fail
0048	2:20 pm	1.5* $\delta_{0.3g}$	36	-10.83	0.08	0.36	-0.76	Pass	-3.31	Pass
0049	2:24 pm	2.0* $\delta_{0.3g}$	48	-14.43	0.00	0.39	-0.03	Pass	-2.67	Pass
0050	2:27 pm	2.5* $\delta_{0.3g}$	61	-17.59	-0.29	-0.35	1.64	Pass	2.00	Pass
0051	2:30 pm	3.0* $\delta_{0.3g}$	73	-21.13	0.03	0.05	-0.12	Pass	-0.25	Pass
0052	2:33 pm	3.5* $\delta_{0.3g}$	85	-24.65	0.16	0.16	-0.64	Pass	-0.64	Pass
0053	2:36 pm	4.0* $\delta_{0.3g}$	97	-29.90	-0.28	-0.09	0.92	Pass	0.30	Pass
0054	2:40 pm	4.5* $\delta_{0.3g}$	109	-33.95	0.15	-0.01	-0.44	Pass	0.04	Pass
0055	2:43 pm	5.0* $\delta_{0.3g}$	121	-37.48	-0.06	0.00	0.17	Pass	0.01	Pass
0056	2:46 pm	5.5* $\delta_{0.3g}$	133	-42.44	-0.15	-0.24	0.36	Pass	0.57	Pass
0057	2:49 pm	6.0* $\delta_{0.3g}$	145	-45.16	0.00	-0.20	0.01	Pass	0.44	Pass
0058	2:56 pm	6.5* $\delta_{0.3g}$	157	-51.38	-0.18	0.33	0.35	Pass	-0.64	Pass
0059	2:59 pm	7.0* $\delta_{0.3g}$	169	-55.42	-1.67	-0.20	3.01	Pass	0.37	Pass
0060	3:02 pm	7.5* $\delta_{0.3g}$	182	-54.68	-1.38	-0.41	2.53	Pass	0.74	Pass
0061	3:05 pm	8.0* $\delta_{0.3g}$	194	-58.55	-1.26	-0.20	2.15	Pass	0.33	Pass
0062	3:08 pm	8.5* $\delta_{0.3g}$	206	-62.44	3.57	-0.37	-5.72	Pass	0.59	Pass
0063	3:11 pm	9.0* $\delta_{0.3g}$	218	-59.87	1.59	0.04	-2.66	Pass	-0.07	Pass
0064	3:15 pm	9.5* $\delta_{0.3g}$	230	-62.10	2.45	0.06	-3.95	Pass	-0.09	Pass
0065	3:18 pm	10.0* $\delta_{0.3g}$	242	-67.32	6.45	-0.26	-9.58	Pass	0.39	Pass
0066	3:21 pm	10.5* $\delta_{0.3g}$	254	-65.22	6.90	-0.08	-10.59	Pass	0.12	Pass
0067	3:24 pm	11.0* $\delta_{0.3g}$	266	-65.18	6.93	-0.27	-10.63	Pass	0.42	Pass
0068	3:27 pm	11.2* $\delta_{0.3g}$	270	-65.97	4.43	-0.48	-6.71	Pass	0.73	Pass

1. Maneuver execution should continue until a steering wheel angle magnitude factor of $6.5 * \delta_{0.3g, overall}$ or 270 degrees is utilized, whichever is greater provided the calculated $6.5 * \delta_{0.3g, overall}$ is less than or equal to 300 degrees. If $6.5 * \delta_{0.3g, overall}$ is less than 270 degrees maneuver execution should continue by increasing the steering wheel angle magnitude by multiples of $0.5 * \delta_{0.3g, overall}$ 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 debanding _____ 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 ($5.0^* \delta_{0.3g, overall}$ or greater)		Calculated Lateral Displacement ¹	
		Scalar	Angle (degrees)	Distance (m)	Pass/Fail
0033	Counter Clockwise	$5.0^* \delta_{0.3g}$	121	3.11	Pass
0034	Counter Clockwise	$5.5^* \delta_{0.3g}$	133	3.16	Pass
0035	Counter Clockwise	$6.0^* \delta_{0.3g}$	145	3.24	Pass
0036	Counter Clockwise	$6.5^* \delta_{0.3g}$	157	3.16	Pass
0037	Counter Clockwise	$7.0^* \delta_{0.3g}$	169	3.31	Pass
0038	Counter Clockwise	$7.5^* \delta_{0.3g}$	182	3.27	Pass
0039	Counter Clockwise	$8.0^* \delta_{0.3g}$	194	3.28	Pass
0040	Counter Clockwise	$8.5^* \delta_{0.3g}$	206	3.29	Pass
0041	Counter Clockwise	$9.0^* \delta_{0.3g}$	218	3.33	Pass
0042	Counter Clockwise	$9.5^* \delta_{0.3g}$	230	3.41	Pass
0043	Counter Clockwise	$10.0^* \delta_{0.3g}$	242	3.25	Pass
0045	Counter Clockwise	$10.5^* \delta_{0.3g}$	254	3.28	Pass
0046	Counter Clockwise	$11.0^* \delta_{0.3g}$	266	3.30	Pass
0047	Counter Clockwise	$11.2^* \delta_{0.3g}$	270	3.32	Pass
0055	Clockwise	$5.0^* \delta_{0.3g}$	121	3.18	Pass
0056	Clockwise	$5.5^* \delta_{0.3g}$	133	3.36	Pass
0057	Clockwise	$6.0^* \delta_{0.3g}$	145	3.37	Pass
0058	Clockwise	$6.5^* \delta_{0.3g}$	157	3.62	Pass
0059	Clockwise	$7.0^* \delta_{0.3g}$	169	3.63	Pass
0060	Clockwise	$7.5^* \delta_{0.3g}$	182	3.60	Pass
0061	Clockwise	$8.0^* \delta_{0.3g}$	194	3.65	Pass
0062	Clockwise	$8.5^* \delta_{0.3g}$	206	3.71	Pass
0063	Clockwise	$9.0^* \delta_{0.3g}$	218	3.74	Pass
0064	Clockwise	$9.5^* \delta_{0.3g}$	230	3.74	Pass
0065	Clockwise	$10.0^* \delta_{0.3g}$	242	3.82	Pass
0066	Clockwise	$10.5^* \delta_{0.3g}$	254	3.83	Pass
0067	Clockwise	$11.0^* \delta_{0.3g}$	266	3.74	Pass
0068	Clockwise	$11.2^* \delta_{0.3g}$	270	3.74	Pass

1. Lateral displacement should be ≥ 1.83 m (6 ft) for vehicles with a GVWR of 3,500 kg (7,716 lb) or less; and ≥ 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
APPROVED BY: Ken Webster

DATE: 4-28-11
DATE: 5-03-11

3.0 TEST DATA....continued

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

VEHICLE MAKE/MODEL/BODY STYLE: Honda / Civic / Passenger Car

VEHICLE NHTSA No.: CB5304 TEST DATE: 5-02-11

METHOD OF MALFUNCTION SIMULATION:

Describe method of malfunction simulation: Disconnect the Right 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 ± 5 mph) is reached.

2 Seconds (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, the VSA, Triangle with Exclamation symbol, and ABS malfunction telltales illuminated. After the wheel speed sensor connector was restored, the VSA, Triangle with Exclamation symbol, and ABS malfunction telltales had extinguished.

RECORDED BY: Alan Ida

DATE: 5-02-11

APPROVED BY: Ken Webster

DATE: 5-03-11

3.0 TEST DATA....continued

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

VEHICLE MAKE/MODEL/BODY STYLE: Honda / Civic / Passenger Car

VEHICLE NHTSA No.: CB5304 TEST DATE: 5-02-11

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.

Yes No

Time for telltale to illuminate after ignition system is activated.

0 Seconds (must be within 2 minutes) Pass Fail

ESC SYSTEM RESTORATION:

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

Yes No

Time for telltale to extinguish after ignition system is activated.

2 Seconds (must be within 2 minutes) Pass Fail

DATA INDICATES COMPLIANCE:

PASS/FAIL PASS

REMARKS:

The vehicle did not require driving to illuminate or extinguish the malfunction telltales. When the Steering Wheel Angle sensor connector was removed, the VSA and Triangle with Exclamation symbol malfunction telltales illuminated. After the Steering Wheel Angle sensor connector was restored, the VSA and Triangle with Exclamation symbol malfunction telltales had extinguished.

RECORDED BY: Alan Ida

DATE: 5-02-11

APPROVED BY: Ken Webster

DATE: 5-03-11

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	<u>N/A</u>	By: <u>TRC</u> Date: <u>3-29-11</u> Due: <u>6-27-11</u>
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	<u>5225831-5JC</u>	By: <u>Mettler Toledo</u> Date: <u>2-14-11</u> Due: <u>5-14-11</u>
Automated Steering Machine with Steering Angle Encoder	Handwheel Angle	±800 deg	0.25 deg	±0.25 deg	Heitz Automotive Testing Model: Sprint 3	<u>60303</u>	By: <u>ATI-Heitz</u> Date: <u>2-18-11</u> Due: <u>2-18-12</u>
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	<u>0768</u>	By: <u>BEI Tech.</u> Date: <u>1-10-11</u> Due: <u>1-10-12</u>
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	<u>1400603</u>	By: <u>B+S Multidata</u> Date: <u>2-14-11</u> Due: <u>2-14-12</u>
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	<u>104619 & 104613</u>	By: <u>Consumers Energy Laboratory Services</u> Date: <u>1-20-11</u> Due: <u>1-20-12</u>
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	<u>120601105</u>	By: <u>Dewetron</u> Date: <u>12-02-10</u> Due: <u>12-02-11</u>
Load Cell	Vehicle Brake Pedal Force	0-300 lb	1 lb	±0.05% of full scale	DATRON Model: DTM-LPA	<u>4970-1103</u>	By: <u>TRC</u> Date: <u>per test</u> Due: <u>per test</u>
Coordinate Measurement Machine	Inertial Sensing System Location	0-10 feet	0.001 inch	±0.003% of full scale	FARO International Model: Faro Arm N10	<u>U12-05-08-07108</u>	By: <u>FARO</u> Date: <u>7-30-10</u> Due: <u>7-30-11</u>
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 ESC OFF TELLTALE
- 5.8 ESC OFF CONTROL
- 5.9 ¾ FRONT VIEW - TEST VEHICLE INSTRUMENTED
- 5.10 ¾ REAR VIEW – TEST VEHICLE INSTRUMENTED
- 5.11 STEERING WHEEL CONTROLLER AND DATA ACQUISITION SYSTEM
- 5.12 STEERING CONTROLLER BATTERY BOX
- 5.13 INERTIA MEASUREMENT UNIT
- 5.14 VEHICLE SPEED SENSOR
- 5.15 BODY ROLL SENSOR (DRIVER SIDE)
- 5.16 BODY ROLL SENSOR (PASSENGER SIDE)
- 5.17 BRAKE PEDAL FORCE TRANSDUCER



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2011 HONDA CIVIC
FMVSS 126
VEHICLE No.: CB5304
APRIL 2011

5.1 ¾ FRONT VIEW FROM LEFT SIDE OF VEHICLE



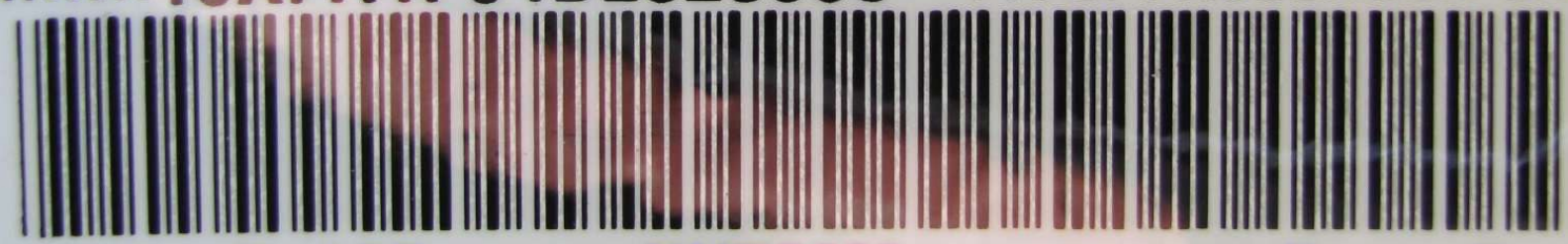
30

2011 HONDA CIVIC
FMVSS 126
VEHICLE No.: CB5304
APRIL 2011

5.2 ¾ REAR VIEW FROM RIGHT SIDE OF VEHICLE

31

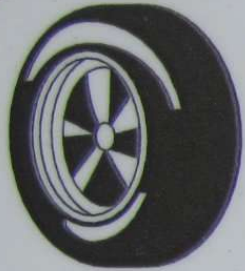
MFD. BY HONDA MFG. OF INDIANA, LLC 11/'10
 GVWR 3737LBS GAWR F 1973LBS R 1764LBS
 GVWR 1695KG GAWR F 895KG R 800KG
 THIS VEHICLE CONFORMS TO ALL APPLICABLE
 FEDERAL MOTOR VEHICLE SAFETY, BUMPER,
 AND THEFT PREVENTION STANDARDS IN EFFECT
 ON THE DATE OF MANUFACTURE SHOWN ABOVE.
 V.I.N.: 19XFA1F94BE023956 TYPE: PASSENGER CAR



SVK B AE5 - NH700M - B - E

2011 HONDA CIVIC
 FMVSS 126
 VEHICLE No.: CB5304
 APRIL 2011

5.3 VEHICLE CERTIFICATION LABEL



TIRE AND LOADING INFORMATION

SEATING CAPACITY :: TOTAL 5 :: FRONT 2 :: REAR 3

The combined weight of occupants and cargo should never exceed 385kg or 850lbs.

SNE E5

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TIRE	SIZE	COLD TIRE PRESSURE	SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION
FRONT	P205/55R16 89H	220KPA, 32PSI	
REAR		220KPA, 32PSI	
SPARE	T135/80R16 101M	420KPA, 60PSI	

2011 HONDA CIVIC
FMVSS 126
VEHICLE No.: CB5304
APRIL 2011

5.4 TIRE AND LOADING INFORMATION LABEL



2011 CIVIC 4DR EX-L
 VEHICLE NUMBER: 19XFA1F94BE023956
 ENGINE NUMBER: R18A1-7027412 EXT: ALABASTER SILVER M
 CONTROL NUMBER: 172728 INT: GRAY

STANDARD EQUIPMENT AT NO EXTRA COST

*** TECHNICAL FEATURES ***

- 140hp 1.8-Liter SOHC 16-Valve i-VTEC 4-Cylinder Engine
- 5-Speed Automatic Transmission with Grade Logic Control
- 4-Wheel Disc Brakes
- Front MacPherson Strut Suspension
- Rear Multi-Link Suspension
- Variable-Assist Rack-and-Pinion Power Steering
- Immobilizer Theft-Deterrent System

*** SAFETY FEATURES ***

- Driver's and Front Passenger's Dual-Stage Airbags (SRS)
- Driver's and Front Passenger's Side Airbags
- Side Curtain Airbags
- Anti-Lock Braking System (ABS)
- Electronic Brake Distribution (EBD)
- 3-Point Seat Belts
- Front Seat Belts with Automatic Tensioning System
- Tire Pressure Monitoring System
- Active Front Head Restraints
- Side-Impact Door Beams
- Front and Rear Crumple Zones
- ACE Body Structure
- Daytime Running Lights (DRL)
- LATCH System for Child Seats

*** INTERIOR FEATURES ***

- Leather-Trimmed Seats
- Leather-Wrapped Steering Wheel
- 160-Watt AM/FM/CD Audio System with 6 Speakers Incl. MP3/WMA Playback
- Steering Wheel-Mounted Controls
- USB Audio Interface
- MP3/Auxiliary Input Jack
- Air Conditioning with Air Filtration System
- Driver's Seat Height Adjustment
- Heated Front Seats
- 60/40 Split Fold-Down Rear Seatback
- Front Center Console with Armrest
- Fold-Down Rear Seat Center Armrest
- Power Windows and Door Locks
- Driver's Auto Up/Down Window
- Tilt & Telescopic Steering Column
- Front Map Lights & Cargo Area Light
- 12-Volt Power Outlets
- Cruise Control
- Exterior Temperature Gauge
- Floor Mats
- Maintenance Minder System

*** EXTERIOR FEATURES ***

- One-Touch Power Moonroof with Tilt Feature
- 16" x 6.5" Alloy Wheels
- P205/55 R16 All-Season Tires
- Variable Intermittent Windshield Wipers
- Rear Window Defroster
- Heated Power Door Mirrors
- Remote Entry System with Trunk Opener
- Security System

Manufacturer's Suggested Retail Price **\$21,955.00**

Full Tank of Fuel **No Charge**

Destination and Handling **750.00**

TOTAL VEHICLE PRICE
(Includes Pre-Delivery Service)

\$22,705.00

License and title fees, state and local taxes and dealer options and accessories are not included in the manufacturer's suggested retail price.

EPA Fuel Economy Estimates

CITY MPG

25

Expected range for most drivers 20 to 30 MPG

HIGHWAY MPG

36

Expected range for most drivers 29 to 43 MPG

Estimated Annual Fuel Cost \$1,552
based on 15,000 miles at \$3.00 per gallon

Combined Fuel Economy

This Vehicle

29

10 33
All SUB COMPACTs

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



PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS GARLINE
 U.S./Canadian Parts Content: **70 %**
 Major Sources of Foreign Parts Content:
JAPAN 15 %

NOTE: Parts content does not include final assembly, distribution or other non-parts costs.

GOVERNMENT SAFETY RATINGS

Frontal Crash	Driver 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 Rear seat	Not Rated
-------------------	----------------------	------------------

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

Rollover	★★★★
-----------------	-------------

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 1-888-327-4236

This vehicle is equipped with a front bumper of a type that has been tested at an impact speed of 5 miles per hour, and a rear bumper of a type that has been tested at an impact speed of 5 miles per hour, resulting in no damage to the vehicle's body and safety systems and minimal damage to the bumper and attachment hardware. "Minimal damage to the bumper" means minor cosmetic damage that can be repaired with the use of common repair materials and without replacing any parts. The stronger the bumper, the less likely the vehicle will require repair after a low-speed collision. This vehicle exceeds the current federal bumper standard of 2.5 miles per hour.

FOR THIS VEHICLE
 Final Assembly Point:
GREENSBURG, INDIANA USA

Country of Origin: Engine:
U.S.A.
 Transmission:
JAPAN

BRIGHTON HONDA
 333 OLD US 33
 BIRGHTON, MI 48114

PORT OF ENTRY: INDIANA
 DELIVERY POINT: CHICAGO
 SHIP#: _____
 ROW/SPACE: 509-013
 TRANS.METHOD: TRUCK

VIN: 19XFA1F94BE023956

ORIG. DLT: 200204
 REF NO: 40302
 HN CODE: HN-1952
 EMISSION: 50 STATE

DEALER: 208284



Environmental Performance

Protect the environment. choose vehicles with higher scores:

Global Warming Score



Smog Score



Vehicle emissions are a primary contributor to global warming and smog. Scores are determined by the California Air Resources Board based on this vehicle's measured emissions. Please visit www.DriveClean.ca.gov for more information. California Environmental Protection Agency AIR RESOURCES BOARD

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5.5 WINDOW STICKER - MONRONEY LABEL

2011 HONDA CIVIC
 FMVSS 126
 VEHICLE No.: CB5304
 APRIL 2011

VSA



2011 HONDA CIVIC
FMVSS 126
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APRIL 2011

5.6 ESC MALFUNCTION TELLTALES



2011 HONDA CIVIC
FMVSS 126
VEHICLE No.: CB5304
APRIL 2011

5.7 ESC OFF TELLTALE

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VSA
OFF

2011 HONDA CIVIC
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VEHICLE No.: CB5304
APRIL 2011

5.8 ESC OFF CONTROL



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2011 HONDA CIVIC
FMVSS 126
VEHICLE No.: CB5304
APRIL 2011

5.9 3/4 FRONT VIEW - TEST VEHICLE INSTRUMENTED



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2011 HONDA CIVIC
FMVSS 126
VEHICLE No.: CB5304
APRIL 2011

5.10 ¾ REAR VIEW - TEST VEHICLE INSTRUMENTED



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2011 HONDA CIVIC
FMVSS 126
VEHICLE No.: CB5304
APRIL 2011

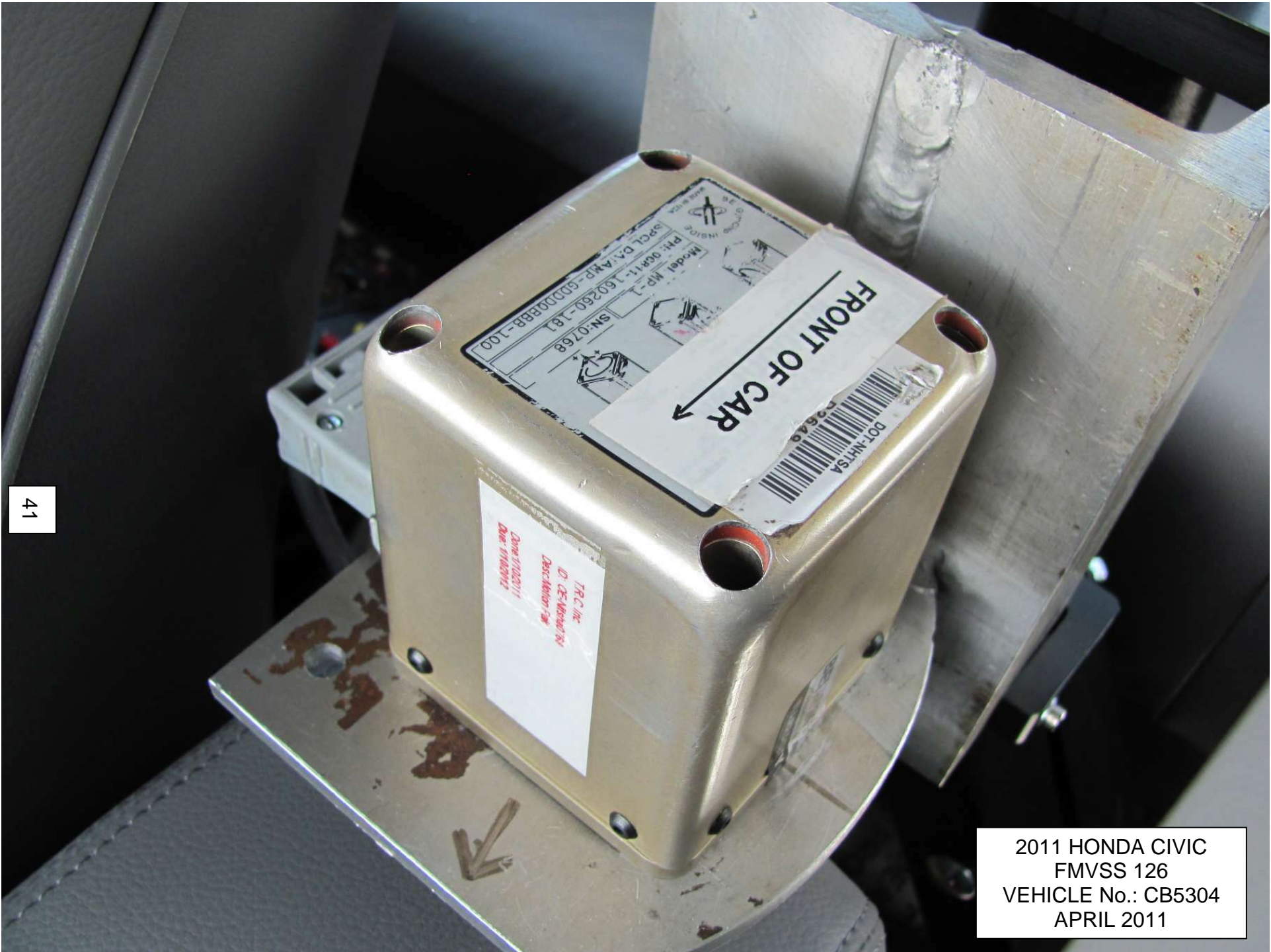
5.11 STEERING WHEEL CONTROLLER AND DATA ACQUISITION SYSTEM



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2011 HONDA CIVIC
FMVSS 126
VEHICLE No.: CB5304
APRIL 2011

5.12 STEERING CONTROLLER BATTERY BOX



2011 HONDA CIVIC
FMVSS 126
VEHICLE No.: CB5304
APRIL 2011

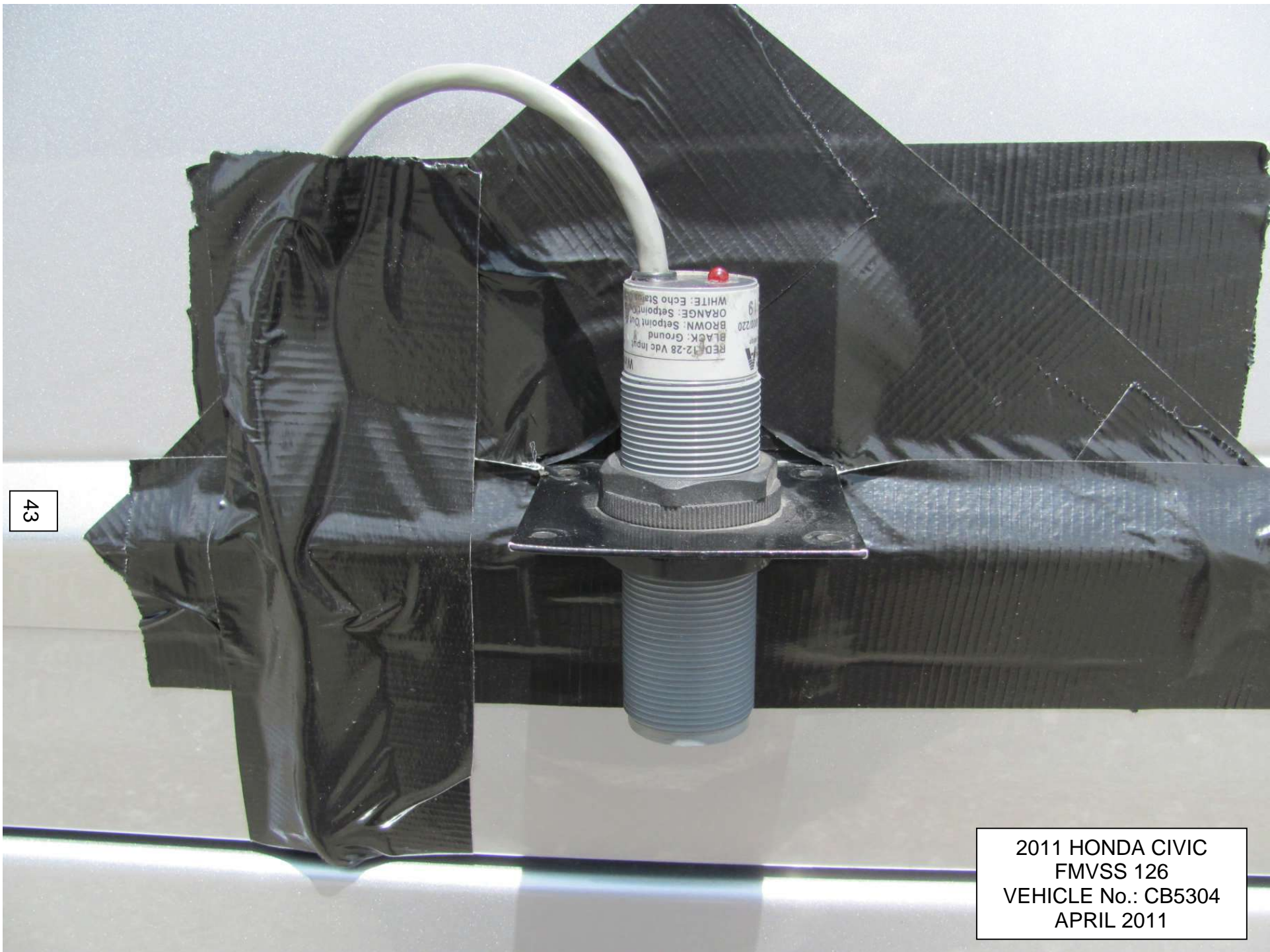
5.13 INERTIA MEASUREMENT UNIT



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2011 HONDA CIVIC
FMVSS 126
VEHICLE No.: CB5304
APRIL 2011

5.14 VEHICLE SPEED SENSOR



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2011 HONDA CIVIC
FMVSS 126
VEHICLE No.: CB5304
APRIL 2011

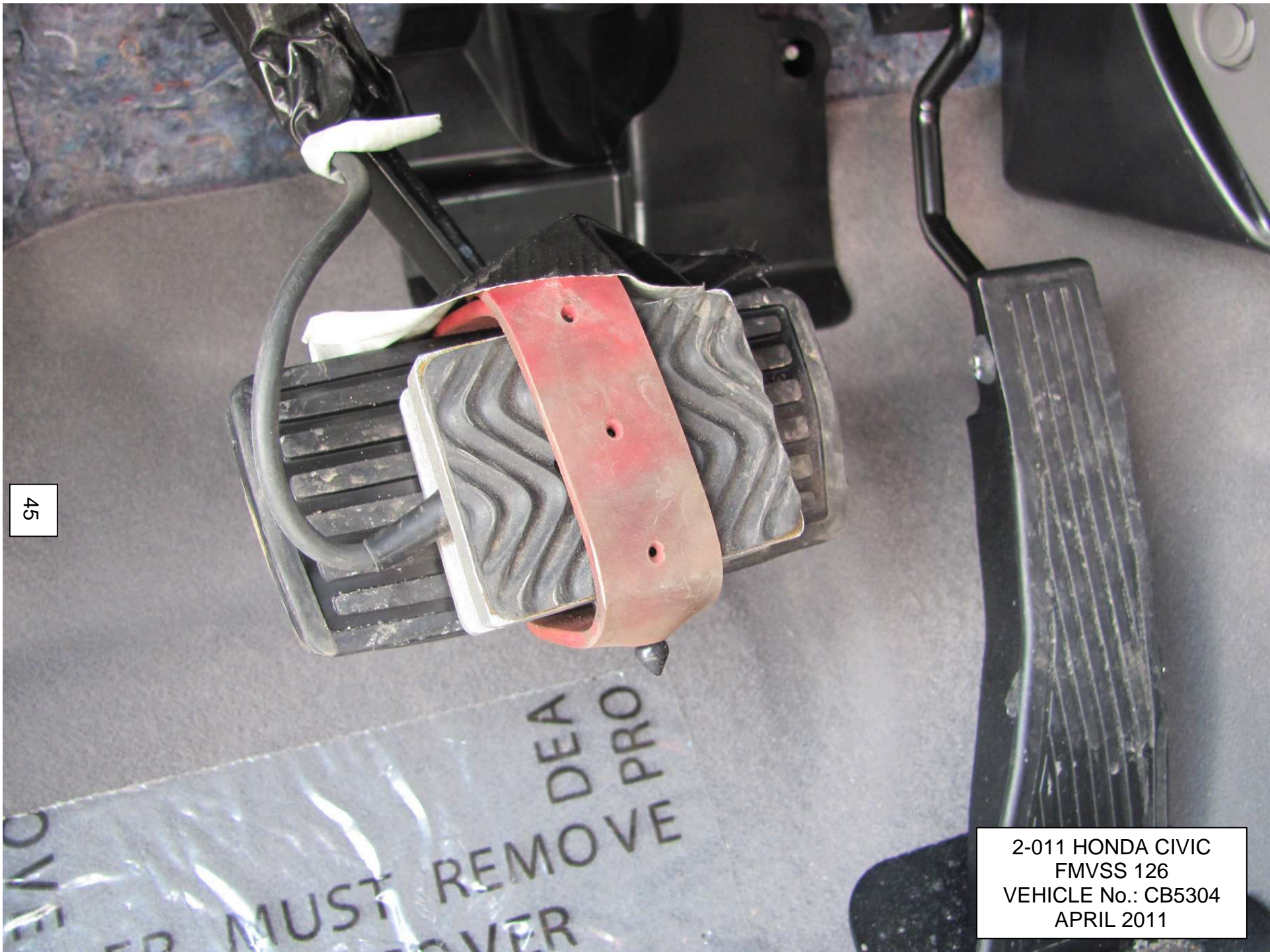
5.15 BODY ROLL SENSOR (DRIVER SIDE)



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2011 HONDA CIVIC
FMVSS 126
VEHICLE No.: CB5304
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5.16 BODY ROLL SENSOR (PASSENGER SIDE)



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2-011 HONDA CIVIC
FMVSS 126
VEHICLE No.: CB5304
APRIL 2011

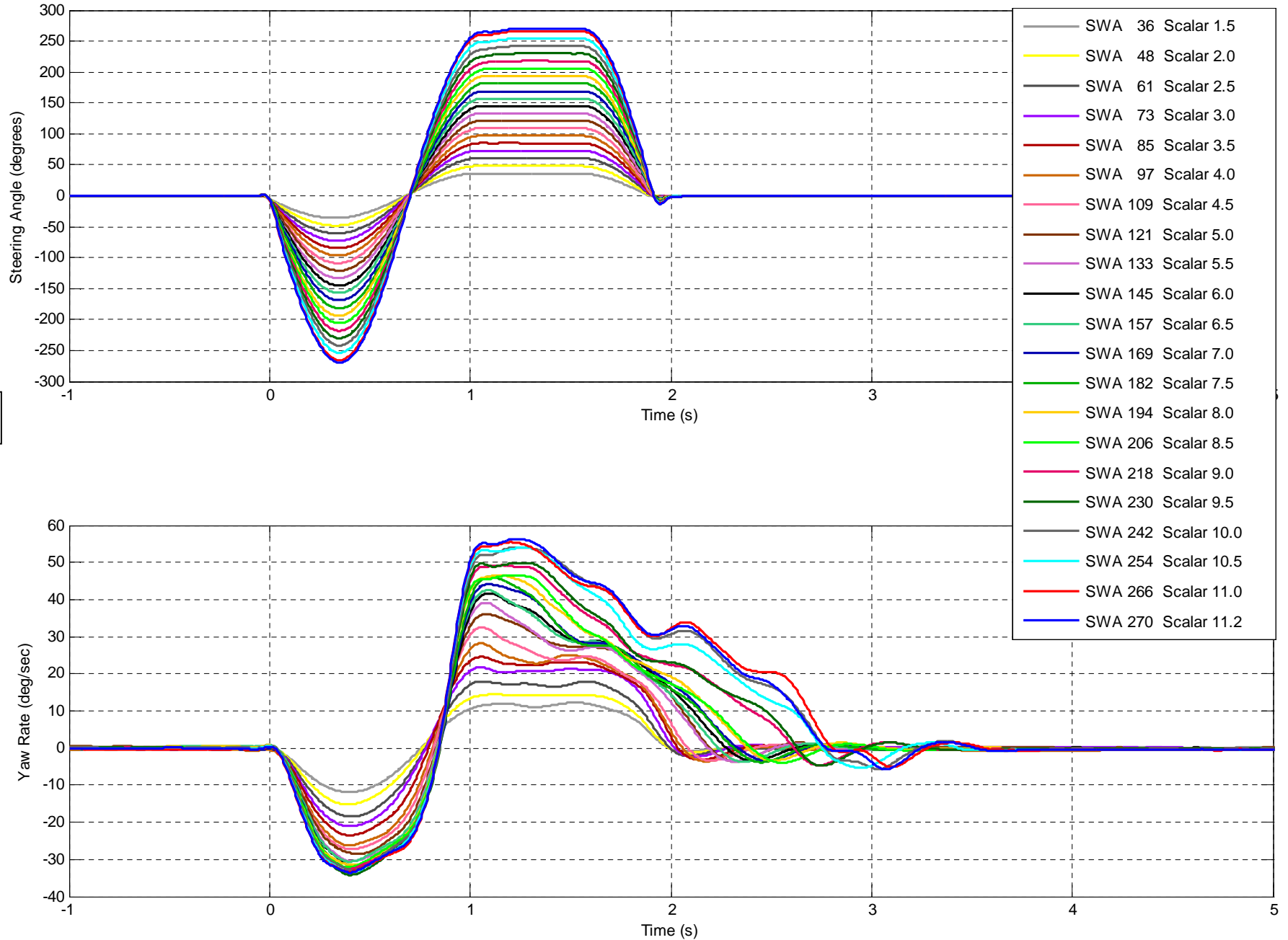
5.17 BRAKE PEDAL FORCE TRANSDUCER

6.0 DATA PLOTS

- Figure 1. Steering Angle and Yaw Rate Time History, Counter-Clockwise Initial Steer Tests
- Figure 2. Steering Angle, Lateral Acceleration, and Lateral Displacement Time History, Counter-Clockwise Initial Steer Tests
- Figure 3. Steering Angle and Yaw Rate Time History, Clockwise Initial Steer Tests
- Figure 4. Steering Angle, Lateral Acceleration, and Lateral Displacement Time History, Clockwise Initial Steer Tests

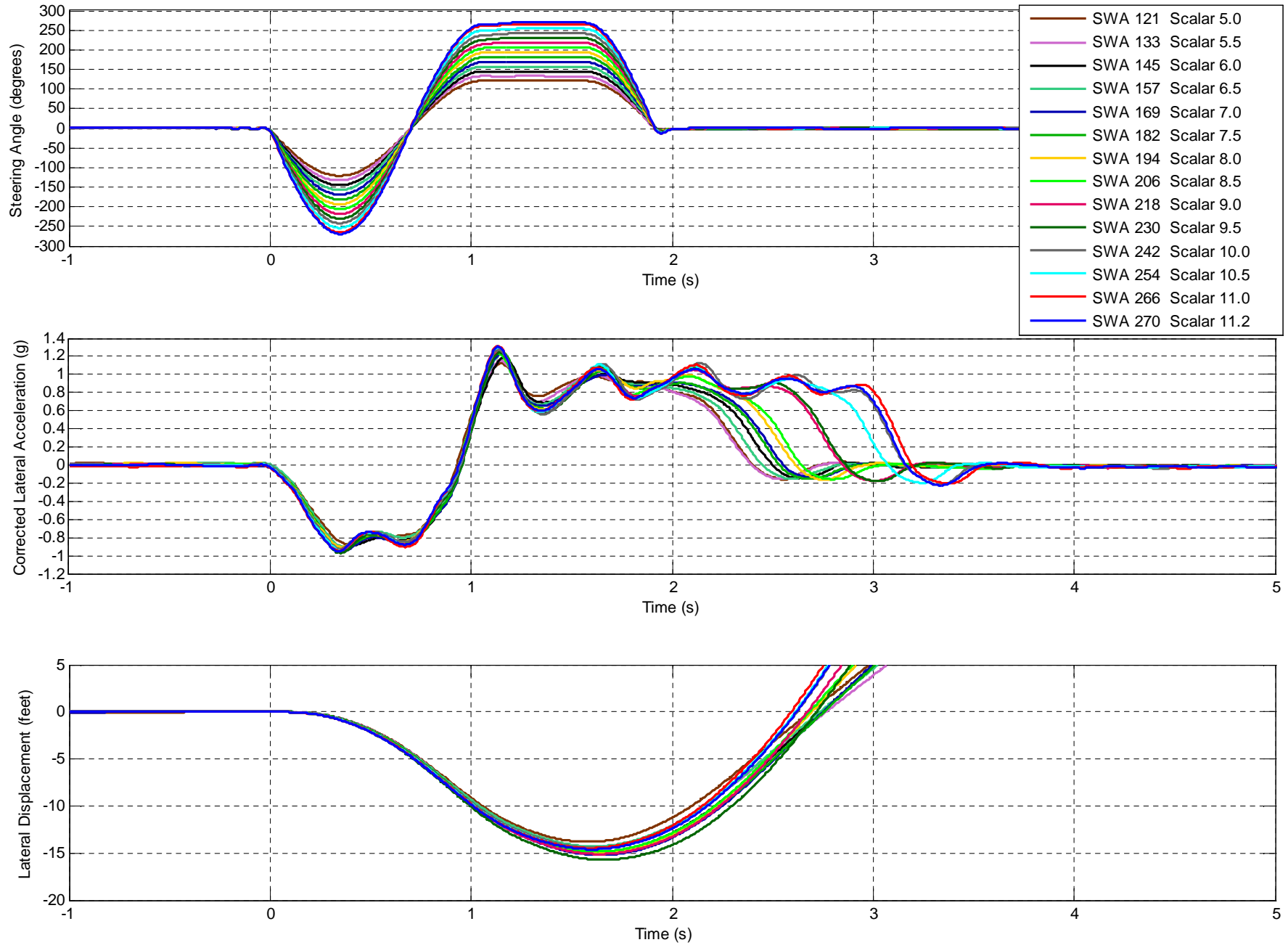
6.0 2011 HONDA CIVIC DATA PLOTS

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



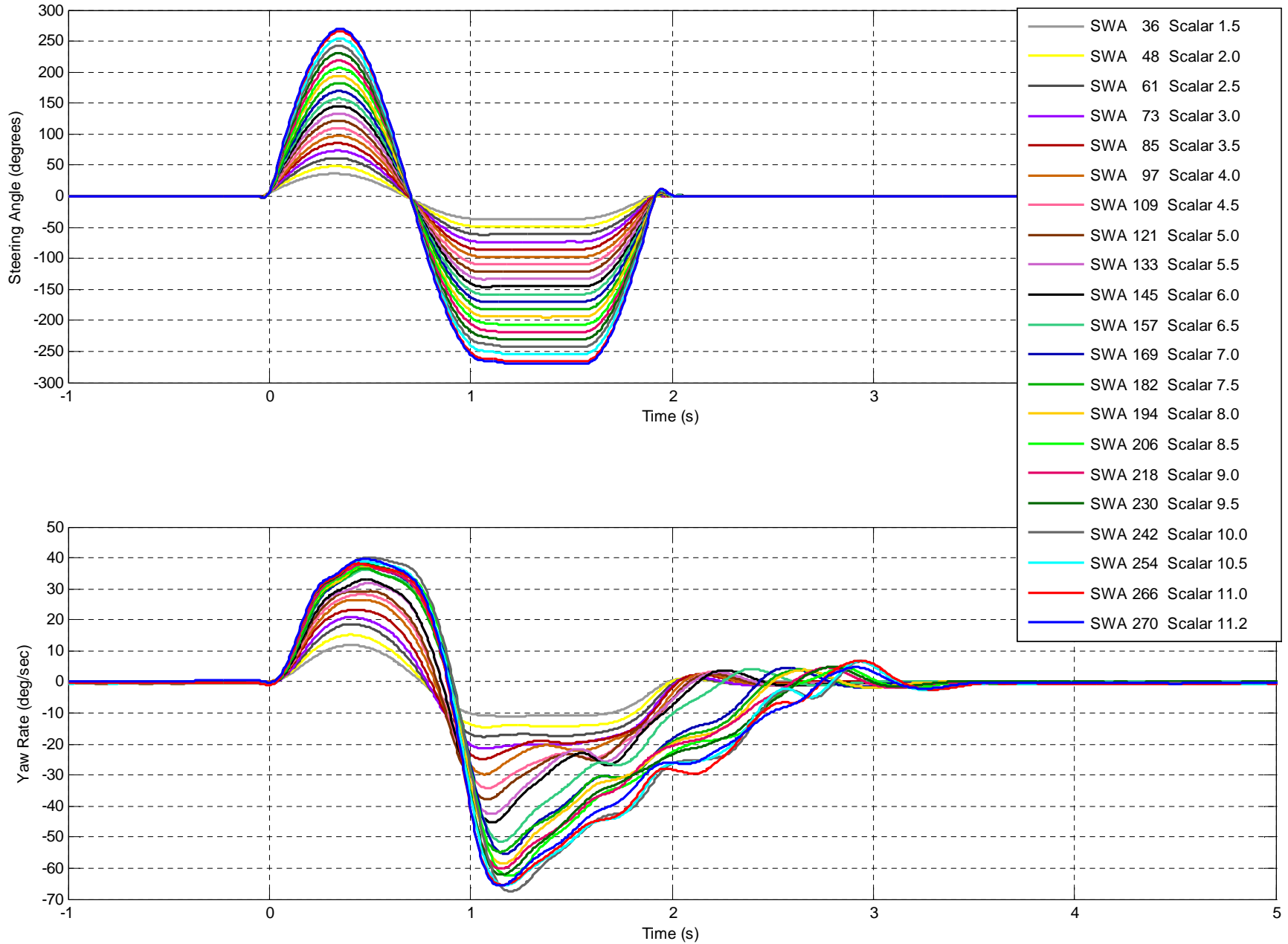
6.0 2011 HONDA CIVIC DATA PLOTS...continued

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



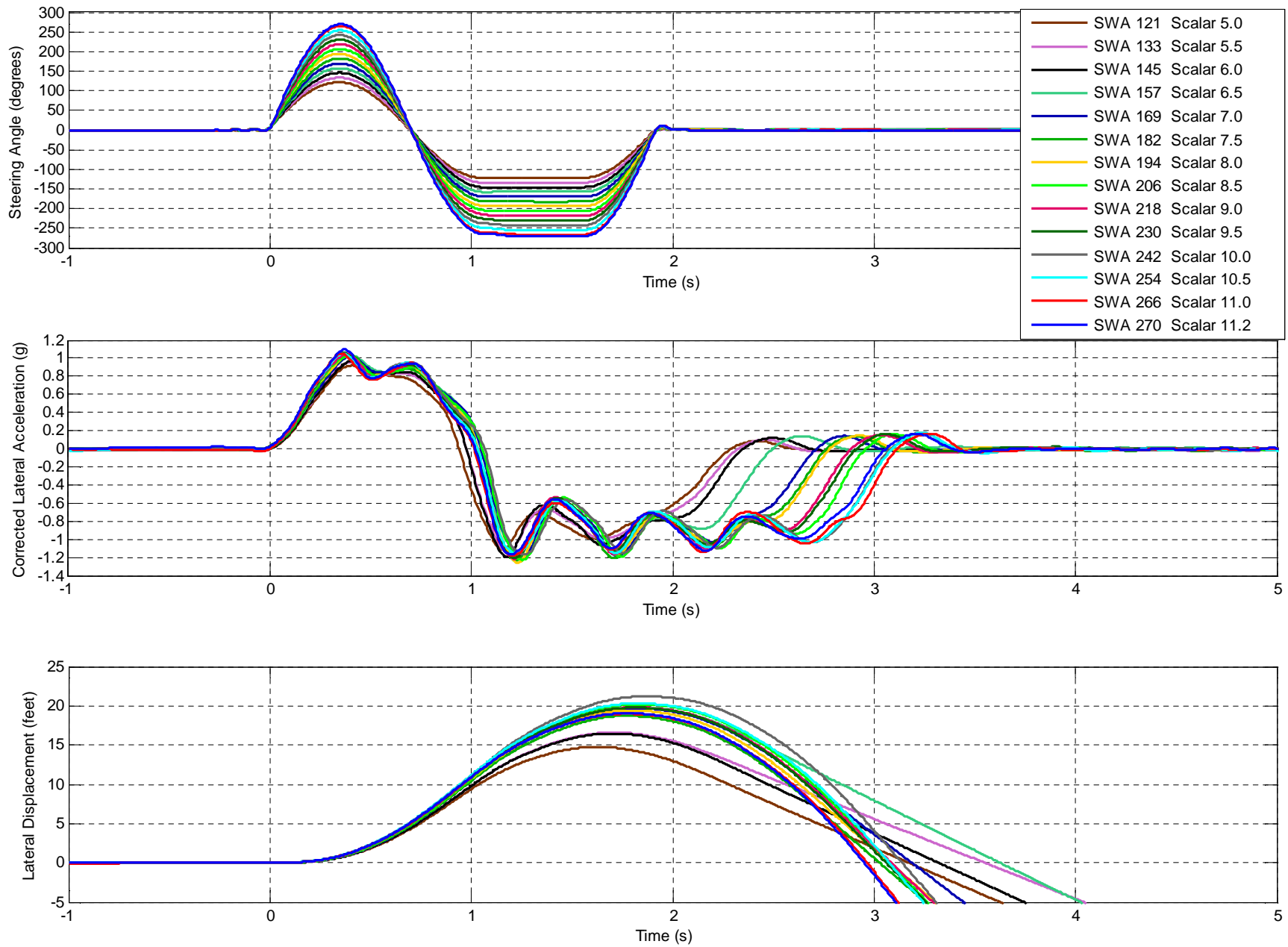
6.0 2011 HONDA CIVIC DATA PLOTS...continued

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



6.0 2011 HONDA CIVIC DATA PLOTS...continued

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

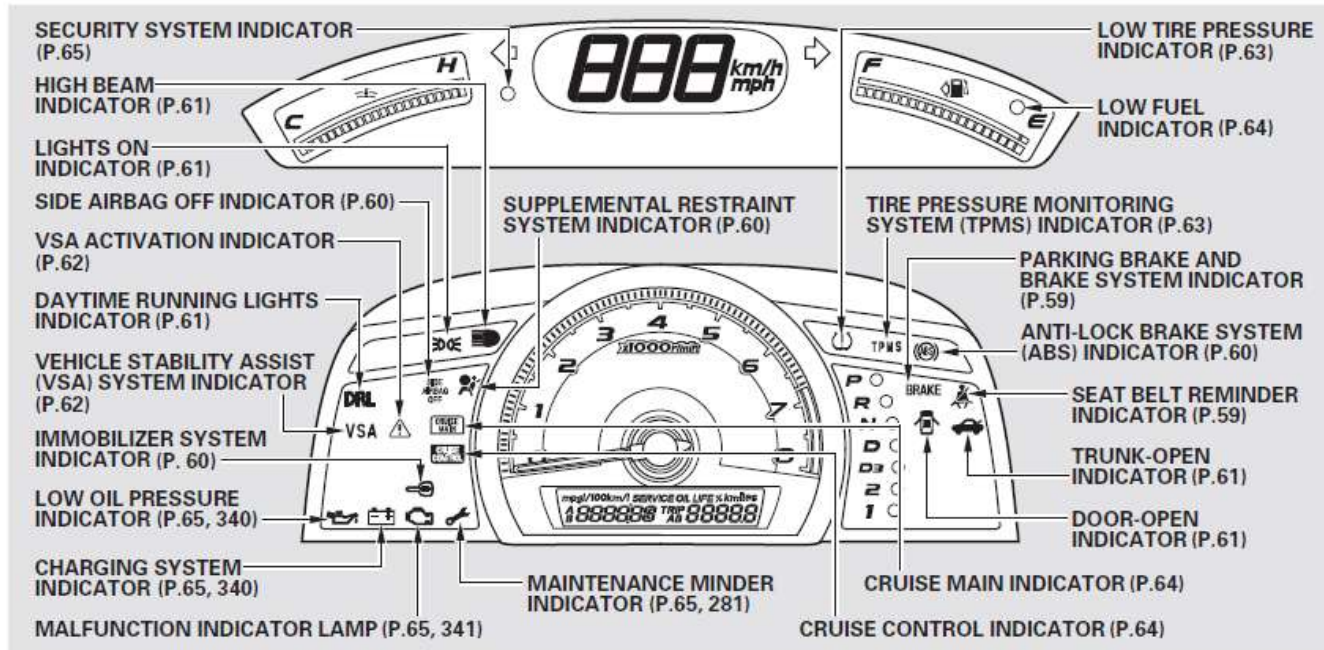


7.0 OTHER DOCUMENTATION

- 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

DX, DX-G (Canada), LX (U.S.), LX-S (U.S.), SE (Canada), EX (U.S.), EX-L



Instruments and Controls

The U.S. instrument panel is shown. Differences for Canadian models are noted in the text.

Canadian DX-G model with M/T has the electric power steering (EPS) indicator (see page 62) next to the immobilizer system indicator.

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Instrument Panel Indicators

Vehicle Stability Assist (VSA) System Indicator

If equipped

This indicator normally comes on for a few seconds when you turn the ignition switch to the ON (II) position.

If it comes on and stays on at any other time, there is a problem with the VSA system. Take your vehicle to a dealer to have it checked. Without VSA, your vehicle still has normal driving ability, but will not have VSA traction and stability enhancement. See page 268 for more information on the VSA system.

2011 HONDA CIVIC
FMVSS 126
VEHICLE No.: CB5304
APRIL 2011

VSA Activation Indicator

If equipped

This indicator has three functions:

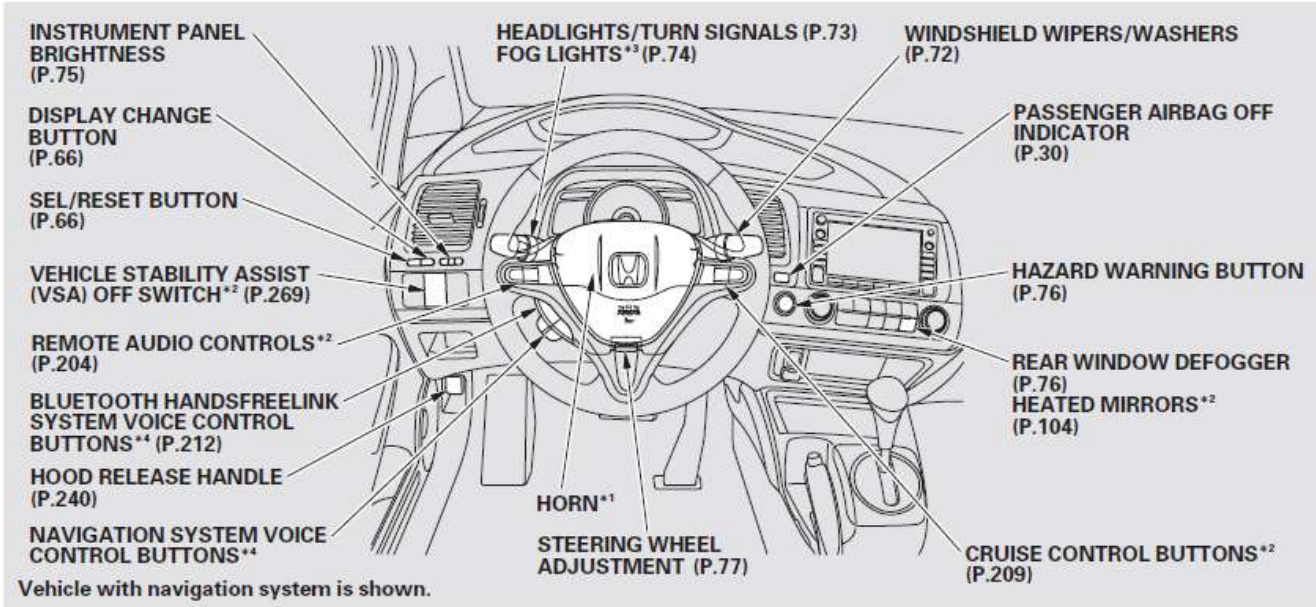
1. It comes on as a reminder that you have turned off the vehicle stability assist (VSA) system.
2. It flashes when VSA is active (see page 268).
3. It comes on along with the VSA system indicator if there is a problem with the VSA system.

This indicator normally comes on for a few seconds when you turn the ignition switch to the ON (II) position. See page 268 for more information on the VSA system.

Electric Power Steering (EPS) Indicator

Si and Canadian DX-G with manual transmission models

This indicator normally comes on when you turn the ignition switch to the ON (II) position and goes off after the engine starts. If it comes on at any other time, there is a problem in the electric power steering system. If this happens, stop the vehicle in a safe place, and turn off the engine. Reset the system by restarting the engine. The indicator will not turn off immediately. If it does not go off after driving a short distance, or comes back on again while driving, take the vehicle to your dealer to have it checked. With the indicator on, the EPS may be off, making the vehicle harder to steer.



- * 1 : To use the horn, press the center pad of the steering wheel.
- * 2 : If equipped
- * 3 : Si model
- * 4 : Only on vehicles equipped with navigation system. Refer to the navigation system manual.

Vehicle Stability Assist (VSA®), aka Electronic Stability Control (ESC), System

If equipped

The vehicle stability assist (VSA) system helps to stabilize the vehicle during cornering if the vehicle turns more or less than desired. It also assists you in maintaining traction while accelerating on loose or slippery road surfaces. It does this by regulating the engine's output and by selectively applying the brakes.

When VSA activates, you may notice that the engine does not respond to the accelerator in the same way it does at other times. There may also be some noise from the VSA hydraulic system. You will also see the VSA activation indicator blink.

The VSA system cannot enhance the vehicle's driving stability in all situations and does not control your vehicle's entire braking system. It is still your responsibility to drive and corner at reasonable speeds and to leave a sufficient margin of safety.



VSA Activation Indicator

When VSA activates, you will see the VSA Activation indicator blinks.



VSA Vehicle Stability Assist (VSA) System Indicator

If this indicator comes on while driving, pull to the side of the road when it is safe, and turn off the engine. Reset the system by restarting the engine. If the VSA system indicator stays on or comes back on while driving, have the VSA system inspected by your dealer.

NOTE: The main function of the VSA system is generally known as Electronic Stability Control (ESC). The system also includes a traction control function.

If the indicator does not come on when the ignition switch is turned to the ON (II) position, there may be a problem with the VSA system. Have your dealer inspect your vehicle as soon as possible.

On U.S. models

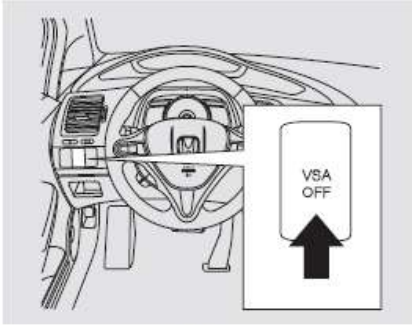
If the low tire pressure indicator or TPMS indicator comes on, the VSA system automatically turns on even if the VSA system is turned off by pressing the VSA OFF switch (see page 269). If this happens, you cannot turn the VSA system off by pressing the VSA OFF switch again.

Without VSA, your vehicle will have normal braking and cornering ability, but it will not have VSA traction and stability enhancement.

2011 HONDA CIVIC
FMVSS 126
VEHICLE No.: CB5304
APRIL 2011

Vehicle Stability Assist (VSA®), aka Electronic Stability Control (ESC), System

VSA OFF Switch



This switch is under the driver's side vent. To turn the VSA system on and off, press and hold it until you hear a beep.

When VSA is off, the VSA activation indicator comes on as a reminder. Press and hold the switch again. It turns the system back on.

VSA is turned on every time you start the engine, even if you turned it off the last time you drove the vehicle.

In certain unusual conditions when your vehicle gets stuck in shallow mud or fresh snow, it may be easier to free it with the VSA temporarily switched off. When the VSA system is off, the traction control system is also off. You should only attempt to free your vehicle with the VSA off if you are not able to free it when the VSA is on.

Immediately after freeing your vehicle, be sure to switch the VSA on again. We do not recommend driving your vehicle with the VSA and traction control systems switched off.

VSA and Tire Sizes

Driving with varying tire or wheel sizes may cause the VSA to malfunction. When replacing tires, make sure they are of the same size and type as your original tires (see page 320).

If you install winter tires, make sure they are the same size as those that were originally supplied with your vehicle. Exercise the same caution during winter driving as you would if your vehicle was not equipped with VSA.

Driving

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2011 HONDA CIVIC
FMVSS 126
VEHICLE No.: CB5304
APRIL 2011

7.1 OWNER'S MANUAL PAGES

7.2 VEHICLE ARRIVAL CONDITION REPORT

CONTRACT NO. DTNH22-08-D-00097 DATE: 4/15/11

FROM: Automotive Allies

TO: TRC

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

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2011 / Honda / Civic / Passenger Car

MANUFACTURE DATE: 11/10 NHTSA NO.: CB5304

BODY COLOR: Silver VIN: 19XFA1F94BE023956

ODOMETER READING: 70 miles GVWR: 1,695 KG

PURCHASE PRICE: \$ rented / leased DEALER'S NAME: Automotive Allies, 209 W. Alameda Avenue, Suite 101, Burbank, CA 91502

- ALL OPTIONS LISTED ON "WINDOW STICKER" ARE PRESENT ON THE TEST VEHICLE
- TIRES AND WHEEL RIMS ARE NEW AND THE SAME AS LISTED
- THERE ARE NO DENTS OR OTHER INTERIOR OR EXTERIOR FLAWS
- THE VEHICLE HAS BEEN PROPERLY PREPARED AND IS IN RUNNING CONDITION
- THE GLOVE BOX CONTAINS AN OWNER'S MANUAL, WARRANTY DOCUMENT, CONSUMER INFORMATION, AND EXTRA SET OF KEYS
- PROPER FUEL FILLER CAP IS SUPPLIED ON THE TEST VEHICLE
- PLACE VEHICLE IN STORAGE AREA
- 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: 4-15-11

APPROVED BY: Ken Webster

DATE: 5-03-11

7.3 VEHICLE COMPLETION CONDITION REPORT

CONTRACT NO. DTNH22-08-D-00097 DATE: 5/02/11

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2011 / Honda / Civic / Passenger Car

MANUFACTURE DATE: 11/10 NHTSA NO.: CB5304

BODY COLOR: Silver VIN: 19XFA1F94BE023956

ODOMETER READING: 143 miles GVWR: 1,695 KG

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

- THERE ARE NO DENTS OR OTHER INTERIOR OR EXTERIOR FLAWS
- THE VEHICLE HAS BEEN PROPERLY MAINTAINED AND IS IN RUNNING CONDITION
- THE GLOVE BOX CONTAINS AN OWNER'S MANUAL, WARRANTY DOCUMENT, CONSUMER INFORMATION, AND EXTRA SET OF KEYS
- 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: 5-02-11

APPROVED BY: Ken Webster

DATE: 5-03-11

7.4 SINE WITH DWELL TEST RESULTS

2011 Honda Civic

NHTSA No.: CB5304

Date Created 28-Apr-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)
0026	619	50.081	3.090	1000	4.991	755	3.768	1.485	0.182	1200	0.512	0.063
0027	618	50.549	3.083	999	4.990	755	3.768	-2.018	-0.291	1199	-2.479	-0.357
0028	617	50.343	3.078	999	4.989	755	3.769	-1.376	-0.249	1199	-2.260	-0.409
0029	617	50.306	3.075	999	4.989	755	3.769	0.248	0.054	1199	0.867	0.189
0030	616	50.089	3.072	999	4.989	755	3.769	-0.900	-0.222	1199	-1.041	-0.256
0031	615	50.492	3.067	999	4.985	754	3.765	-1.348	-0.384	1199	-1.316	-0.375
0032	615	50.520	3.065	998	4.985	755	3.765	-0.653	-0.212	1198	-0.674	-0.219
0033	614	50.217	3.065	998	4.985	755	3.766	-0.935	-0.335	1198	-0.391	-0.140
0034	615	50.378	3.065	999	4.986	755	3.767	0.107	0.042	1199	0.385	0.151
0035	614	50.445	3.064	998	4.985	755	3.766	0.534	0.223	1198	0.347	0.145
0036	614	50.270	3.063	998	4.984	755	3.766	-0.936	-0.395	1198	-1.227	-0.517
0037	614	50.304	3.065	999	4.985	755	3.768	1.227	0.544	1199	-0.003	-0.001
0038	614	50.218	3.064	998	4.985	755	3.768	0.428	0.198	1198	-0.597	-0.275
0039	615	50.367	3.065	999	4.985	755	3.769	1.792	0.829	1199	-0.594	-0.275
0040	614	50.345	3.063	998	4.984	755	3.767	2.024	0.938	1198	-0.848	-0.393
0041	614	50.149	3.062	998	4.983	755	3.766	-1.848	-0.908	1198	-0.598	-0.294
0042	614	50.343	3.063	998	4.983	755	3.766	-2.197	-1.089	1198	-0.511	-0.254
0043	614	50.443	3.063	998	4.982	755	3.766	-7.016	-3.712	1198	-0.719	-0.380
0045	615	50.251	3.066	999	4.985	755	3.770	-9.548	-5.097	1199	-1.073	-0.573
0046	615	50.452	3.066	998	4.984	755	3.769	-0.477	-0.266	1198	-0.498	-0.277
0047	614	50.243	3.062	998	4.981	755	3.765	-1.823	-1.007	1198	-1.223	-0.675

RIGHT-TO-LEFT (INITIAL CLOCKWISE STEER)

0048	619	50.491	3.089	999	4.988	755	3.768	-0.756	0.082	1199	-3.313	0.359
0049	618	50.238	3.081	999	4.987	755	3.767	-0.025	0.004	1199	-2.674	0.386
0050	617	50.221	3.078	999	4.989	755	3.769	1.644	-0.289	1199	2.003	-0.352
0051	616	50.187	3.072	999	4.987	755	3.767	-0.118	0.025	1199	-0.252	0.053
0052	616	50.143	3.071	999	4.988	755	3.768	-0.636	0.157	1199	-0.637	0.157
0053	615	50.285	3.069	999	4.988	755	3.768	0.924	-0.276	1199	0.295	-0.088
0054	615	50.141	3.068	999	4.988	755	3.768	-0.436	0.148	1199	0.042	-0.014
0055	615	50.195	3.066	999	4.986	755	3.767	0.172	-0.065	1199	0.007	-0.002
0056	614	50.304	3.063	998	4.984	755	3.765	0.361	-0.153	1198	0.566	-0.240
0057	614	50.156	3.065	999	4.986	755	3.767	0.010	-0.004	1199	0.436	-0.197
0058	614	50.315	3.064	999	4.986	755	3.767	0.351	-0.180	1199	-0.644	0.331
0059	614	50.281	3.064	999	4.986	755	3.767	3.015	-1.671	1199	0.368	-0.204
0060	614	50.415	3.065	999	4.987	755	3.768	2.532	-1.385	1199	0.745	-0.407
0061	615	50.309	3.065	999	4.987	755	3.769	2.149	-1.258	1199	0.333	-0.195
0062	614	50.354	3.065	999	4.986	755	3.768	-5.722	3.573	1199	0.589	-0.368
0063	614	50.209	3.062	998	4.984	755	3.766	-2.661	1.593	1198	-0.073	0.043
0064	615	50.344	3.066	999	4.986	755	3.769	-3.952	2.454	1199	-0.089	0.055
0065	615	50.336	3.066	999	4.987	755	3.769	-9.582	6.450	1199	0.387	-0.261
0066	614	50.434	3.063	998	4.983	755	3.766	-10.586	6.904	1198	0.119	-0.077
0067	614	50.308	3.063	998	4.983	755	3.767	-10.633	6.930	1198	0.421	-0.274
0068	614	50.328	3.063	998	4.982	755	3.767	-6.713	4.429	1198	0.734	-0.484

7.4 SINE WITH DWELL TEST RESULTS

2011 Honda Civic

NHTSA No.: CB5304

Date Created 28-Apr-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)
0026	1350	12.233	852	-4.171	0.450	36.103	684	36.009
0027	1349	14.401	843	-5.525	0.540	48.126	684	47.999
0028	1349	18.091	829	-6.568	0.641	61.059	684	60.846
0029	1349	21.772	827	-7.431	0.714	72.968	684	72.930
0030	1349	24.636	827	-8.304	0.762	84.932	684	84.902
0031	1349	28.490	825	-9.212	0.777	96.768	683	96.932
0032	1348	32.450	826	-9.726	0.818	109.054	683	109.097
0033	1348	35.859	830	-10.193	0.821	120.992	683	121.069
0034	1349	39.365	830	-10.366	0.829	132.983	683	132.924
0035	1348	41.866	833	-10.616	0.832	144.995	683	144.856
0036	1348	42.187	832	-10.371	0.862	157.029	683	156.853
0037	1349	44.343	832	-10.850	0.897	169.020	684	168.778
0038	1348	46.118	834	-10.728	0.904	181.957	684	181.756
0039	1349	46.237	845	-10.758	0.916	193.883	684	193.689
0040	1348	46.350	851	-10.790	0.934	206.181	684	205.963
0041	1348	49.119	846	-10.916	0.928	218.183	684	217.847
0042	1348	49.573	825	-11.198	0.881	230.035	684	229.780
0043	1348	52.901	844	-10.648	0.943	241.917	684	241.766
0045	1349	53.387	829	-10.763	0.957	253.836	685	253.775
0046	1348	55.753	856	-10.819	0.969	265.678	685	265.660
0047	1348	55.206	828	-10.886	0.950	269.477	684	269.595

RIGHT-TO-LEFT (INITIAL CLOCKWISE STEER)

0048	1349	-10.826	863	4.317	-0.398	36.484	684	36.461
0049	1349	-14.426	834	5.420	-0.530	48.575	684	48.451
0050	1349	-17.586	830	6.525	-0.618	61.581	684	61.340
0051	1349	-21.126	830	7.510	-0.675	73.529	683	73.331
0052	1349	-24.650	828	8.407	-0.678	85.519	684	85.309
0053	1349	-29.903	829	9.301	-0.722	97.433	684	97.325
0054	1349	-33.953	832	9.994	-0.748	109.673	684	109.583
0055	1349	-37.482	831	10.421	-0.772	121.582	684	121.597
0056	1348	-42.439	834	11.015	-0.724	133.528	683	133.546
0057	1349	-45.156	835	11.041	-0.773	145.575	684	145.515
0058	1349	-51.378	844	11.892	-0.501	157.442	684	157.535
0059	1349	-55.415	848	11.900	-0.412	169.440	684	169.495
0060	1349	-54.681	843	11.814	-0.630	182.323	684	182.413
0061	1349	-58.545	847	11.989	-0.484	194.389	684	194.298
0062	1349	-62.441	852	12.160	-0.352	206.561	684	206.588
0063	1348	-59.867	844	12.262	-0.549	218.533	684	218.521
0064	1349	-62.102	846	12.266	-0.496	230.444	684	230.493
0065	1349	-67.316	854	12.529	-0.226	242.280	684	242.405
0066	1348	-65.218	848	12.551	-0.444	254.175	684	254.386
0067	1348	-65.176	846	12.263	-0.588	265.802	685	266.319
0068	1348	-65.969	843	12.263	-0.551	269.719	685	270.276

7.5 SLOWLY INCREASING STEER TEST RESULTS

2011 Honda Civic
 NHTSA No.: CB5304

Date Created 28-Apr-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 Honda Civic	702	1	50.176	50.035	1059	-24.094	-0.310	0.997	502	702
0013	2011 Honda Civic	697	1	50.502	50.354	1063	-24.335	-0.308	0.996	497	697
0015	2011 Honda Civic	704	1	50.449	50.199	1067	-24.525	-0.297	0.998	504	704
0016	2011 Honda Civic	704	0	49.982	50.181	1058	24.214	0.303	0.997	504	704
0017	2011 Honda Civic	702	0	50.160	49.540	1060	24.444	0.296	0.998	502	702
0019	2011 Honda Civic	703	0	49.751	49.928	1047	23.524	0.305	0.996	503	703
Averages							24.2	0.303			

Scalars	Steering Angles (deg)
1.5	36
2	48
2.5	61
3	73
3.5	85
4	97
4.5	109
5	121
5.5	133
6	145
6.5	157
7	169
7.5	182
8	194
8.5	206
9	218
9.5	230
10	242
10.5	254
11	266
11.2	270

7.6 INERTIA SENSOR MEASUREMENTS

2011 Honda Civic

NHTSA No.: CB5304

Device : U12-05-08-07108
 device version : 2.24
 device certification date : 07/30/10
 today is : 4/27/2011
 units : Millimeters

Label	ActualX	ActualY	ActualZ
C_DEVICEPOS001			
M_PLANE001	1325.533	-475.625	-307.391
M_LINE001	562.139	84.638	-135.230
M_FRT_AXLE_CENTER_-_ORIGIN	0.000	0.000	0.000
C_COORDSYS001	0.000	0.000	0.000
M_TIRE_TREAD_CENTER	277.057	78.963	-152.145
M_INERTIA_PACK	1603.770	824.908	443.599
M_ROOF	1782.647	831.048	1113.082
M_GROUND	1783.064	-150.133	-303.576

Track Width 1500.188

Roof Height (relative to ground) 1416.658

Motion Pak - x-distance (mm) 1603.770
Motion Pak - y-distance (mm) -4.149
Motion Pak - z-distance (mm) 702.724

Motion Pak - x-distance (inches) 63.140
Motion Pak - y-distance (inches) -0.163
Motion Pak - z-distance (inches) 27.666

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.)