126-TRC-21-005

SAFETY COMPLIANCE TESTING FOR FMVSS 126
Electronic Stability Control Systems

Honda Development & Manufacturing of America, LLC
2022 Honda Civic
NHTSA No. C20215303

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

December 3, 2021

FINAL REPORT

Prepared Under Contract No.: DTNH22-16-D-00027

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
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16. Abstract A test was conducted on a 2022 Honda Civic, NHTSA No. C20215303, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-126-03 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 2022 Honda Civic, appears to meet 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 2022 Honda Civic was conducted at Transportation Research Center (TRC) in accordance with NHTSA TP-126-03, dated September 9, 2011.

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 1.00 second after completion of steer (COS) 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 steer (COS) 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, and 1.52 m (5 feet) for vehicles with GVWR greater than 3,500kg (7,716 lb) 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.

System related malfunction and Off telltales, and related controls were inspected for required identification and labeling.

Any deviation(s) from the conditions (i.e. environmental, loading, etc.) stated in NHTSA test procedure (TP-126-03) are noted in the remarks section of the applicable data sheets. Testing with any deviation(s) from the specified conditions was performed at the request of the customer, having decided that the deviation(s) were not likely to have a significant positive or negative impact on vehicle performance.

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 / Hatchback

VEHICLE NHTSA NO.: C20215303 VIN: 19XFL1H85NE002987

VEHICLE TYPE: Passenger Car DATE OF MANUFACTURE: 10-21

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 – Location, Labeling and Bulb Check (Data Sheet 3)	
Telltale meets the requirements for mounting, symbol or text, color and check of lamp function (S126, S5.3.1, S5.3.2, S5.3.4, S5.3.5, S5.3.6 and S5.3.8)	PASS
"ESC Off" and other System Controls and Telltale (Data Sheet 3 & 4)	
If provided, telltale meets the requirements for mounting, symbol, or text, color and check of lamp function (S126, S5.5.1, S5.5.2, S5.5.3, S5.5.6, S5.5.7, S5.5.8)	PASS
If provided, off control meets the label requirements (S126, S5.4.3)	PASS
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, S5.4.4, S5.5.4, and S5.5.9)	PASS

2.0 TEST PROCEDURE AND DISCUSSION OF RESULTS …continued

DATA SUMMARY (Sheet 2 of 2)

REQUIREMENTS	PASS/FAIL
Vehicle Lateral Stability (Data Sheet 8)	
Yaw Rate Ratio at 1.00 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, S5.3.3 and S5.3.7)	PASS

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 / Hatchback

NHTSA No.: C20215303 TEST DATE: 11-30-21

VIN: 19XFL1H85NE002987 MANUFACTURE DATE: 10-21

GVWR: 1,840 KG FRONT GAWR: 980 KG REAR GAWR 870 KG

SEATING POSITIONS: FRONT 2 MID _____ REAR 3

ODOMETER READING AT START OF TEST: 35 (56) Miles (Kilometers)

DESIGNATED TIRE SIZE(S) FROM VEHICLE LABELING:

Front Axle 235/40R18 Rear Axle 235/40R18

INSTALLED TIRE SIZE(S) ON VEHICLE:

From Tire Sidewall	Front Axle	Rear Axle
Manufacturer and Model	Continental ContiProContact	
Tire Size Designation	235/40R18	235/40R18

TIN Left Front DOT 1VY 0FBEKL 3921 Right Front DOT 1VY 0FBEKL 3921

Left Rear DOT 1VY 0FBEKL 3921 Right Rear DOT 1VY 0FBEKL 3921

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 Locked Center Differential (4WD HGLD)
_____ Four Wheel Drive Low Gear (4WD Low)
_____ 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-road)
(For each of the vehicle's drive configurations identify available operating modes)

Drive Configuration FWD
Mode(s) default

Drive Configuration _____
Mode(s) _____

Drive Configuration _____
Mode(s) _____

VEHICLE STABILITY SYSTEMS (Check applicable technologies):

X ESC X Traction Control ____ Roll Stability Control

____ Active Suspension X Electronic Throttle Control ____ Active Steering

X ABS

List other systems; _____

_____

REMARKS:

RECORDED BY: David Karls DATE: 12-01-21
APPROVED BY: Jordan Piening DATE: 12-01-21

3.0 TEST DATA….continued

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

VEHICLE MAKE/MODEL/BODY STYLE: Honda / Civic / Hatchback

NHTSA No.: C20215303 TEST DATE: 11-30-21

ESC SYSTEM IDENTIFICATION:

Manufacturer / Model Continental MK100IPB

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)

Brief explanation with reference to components used:
The VSA modulator (ESC computer) estimates understeer and oversteer based on various sensor signals and brake fluid pressure is adjusted at each of the four individual wheels. For example, when understeer occurs, the necessary braking control pressure is calculated and applied to the rear wheel inside the turn to bring the lateral acceleration from the traveling direction close to the target traveling direction.

System is capable of determining yaw rate X Yes (PASS)
_____ No (FAIL)

Brief explanation with reference to components used:
The actual yaw rate signal is supplied by the Yaw Rate – Lateral Acceleration sensor.

System is capable of monitoring driver steering input X Yes (PASS)
_____ No (FAIL)

Brief explanation with reference to components used:
The driver steering inputs are determined by the Steering Wheel Angle sensor.

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 estimating side slip or side slip derivative ___X___ Yes (PASS)
_____ No (FAIL)

Brief explanation with reference to data collected and method used:
The VSA modulator (ESC computer) collects actual vehicle data as follows:
Vehicle speed from WHEEL SPEED SENSORS.
Steering angle from STEERING WHEEL ANGLE SENSOR.
Lateral acceleration from YAW RATE – LATERAL ACCELERATION SENSOR.
Yaw rate from YAW RATE -LATERAL ACCELERATION SENSOR
A proprietary algorithm is used to calculate the vehicle side slip derivative (with respect to time) from the signals listed above.

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

Brief explanation of method used to modify engine torque:
The VSA modulator (ESC computer) calculates vehicle speed and wheel slip, based on various sensor signals and requires the FI-ECU to adjust engine torque. For example, if understeer occurs by wheel acceleration slippage, the Traction Control System (TCS) reduces the engine torque to decrease the difference between the traveling direction and the target traveling direction. The FI-ECU estimates to change ignition timing and/or cut 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. ___X___ Yes (PASS)
_____ No (FAIL)

Speed system becomes active. ESC becomes fully active at 20.0 km/h (12.4 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)

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

DATA INDICATES COMPLIANCE PASS/FAIL _____PASS_____

RECORDED BY: David Karls DATE: 12-01-21
APPROVED BY: Jordan Piening DATE: 12-01-21

3.0 TEST DATA….continued

DATA SHEET 3 (Sheet 1 of 4)
ESC MALFUNCTION AND OFF TELLTALES
Location, Labeling and Bulb Check

VEHICLE MAKE/MODEL/BODY STYLE: Honda / Civic / Hatchback

VEHICLE NHTSA NO. C20215303 TEST DATE: 11-30-21

ESC Malfunction Telltale

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

Telltale Location Lower left corner of the instrument cluster

Telltale is mounted inside the occupant compartment in front of and in clear view of the driver?

X Yes (Pass) ____ No (Fail) If no, explain ____

Malfunction Telltale symbol or abbreviation required by FMVSS No. 101.



Or **ESC**

X Vehicle uses this symbol
____ Vehicle uses this abbreviation
____ Other (Fail)

Note any words or additional symbols used.

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

Is ESC malfunction telltale also used to indicate activation of the ESC system?

X Yes ____ No

If yes, explain telltale operation during ESC activation:

During ESC activation, the ESC telltale flashes.

DATA SHEET 3 (Sheet 2 of 4)
ESC MALFUNCTION AND OFF TELLTALES
Location, Labeling and Bulb Check

"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?

__X__ Yes _____ No

Telltale Location Left side of instrument cluster, inside the tachometer

Telltale is mounted inside the occupant compartment in front of and in clear view of the driver?

__X__ Yes (Pass) _____ No (Fail) If no, explain _____

"ESC OFF" Telltale symbol or abbreviation required by FMVSS No. 101.



Or **ESC OFF**

__X__ Vehicle uses this symbol
_____ Vehicle uses this abbreviation
_____ Other (Fail)

Note any words or additional symbols used.

_____

_____

_____

Is ESC Off telltale part of a common space? _____ Yes __X__ No

DATA SHEET 3 (Sheet 3 of 4)
ESC MALFUNCTION AND OFF TELLTALES
Location, Labeling and Bulb Check

Malfunction Telltale Lamp Function, OR Two-Part Malfunction/Off Telltale Lamp Function:
Identify position of starting system when telltale illuminates.

☐ OFF/LOCK ☐ Between OFF/LOCK and ON/RUN
☒ ON/RUN ☐ Between ON/RUN and Start

Is telltale yellow in color? __X__ Yes _____ No (fail)

Time telltale remains illuminated __2__ seconds

Note: If telltale is part of common space, it is not required to illuminate during this check of lamp function.

Starter Interlock:
Does vehicle have any starter, transmission or other interlocks that affect operation of the telltale lamp check functions? _____ Yes __X__ No

If yes, describe the interlock feature:

_____

_____

"ESC OFF" Telltale Lamp Function (If separate from Malfunction Telltale):
Identify position of starting system when "ESC OFF" telltale illuminates.

☐ OFF/LOCK ☐ Between OFF/LOCK and ON/RUN
☐ ON/RUN ☐ Between ON/RUN and Start

Is telltale yellow in color? _____ Yes _____ No (fail)

Time telltale remains illuminated _____ seconds

Note: If telltale is part of common space, it is not required to illuminate during the check of lamp function.

DATA SHEET 3 (Sheet 4 of 4)
ESC MALFUNCTION AND OFF TELLTALES
Location, Labeling and Bulb Check

Starter Interlock:
Does vehicle have any starter, transmission or other interlocks that affect operation of the "ESC OFF" telltale lamp check functions? _____ Yes _____ No

If yes, describe the interlock feature:

_____

_____

DATA INDICATES COMPLIANCE PASS/FAIL PASS

REMARKS:

RECORDED BY: David Karls DATE: 12-01-21
APPROVED BY: Jordan Piening DATE: 12-01-21

3.0 TEST DATA….continued

DATA SHEET 4 (Sheet 1 of 4)
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?

__X__ Yes _____ No

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

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

REMARKS:

Identify each control location, labeling and selectable modes.

First Control: (If applicable)
Location ___Dashboard, left of the steering wheel_____
Labeling ___Skidding car symbol, with "OFF" below_____
Modes ___ESC On / Off_____

"ESC OFF" Control identification symbol or abbreviation required by FMVSS No. 101.



Or **ESC OFF**

__X__ Vehicle uses this symbol
_____ Vehicle uses this abbreviation

Note any words or additional symbols used.

3.0 TEST DATA….continued

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

Second Control: (If applicable)
Location N/A
Labeling _____
Modes _____

"ESC OFF" Control identification symbol or abbreviation required by FMVSS No. 101.



Or **ESC OFF**

_____ Vehicle uses this symbol
_____ Vehicle uses this abbreviation

Note any words or additional symbols used.

_____

_____

Identify standard or default drive configuration Default - FWD

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

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

_____ NA X Yes _____ No (fail)

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

_____ NA X Yes _____ No (fail)

If no, describe how the off control functions:

_____

_____

3.0 TEST DATA….continued

DATA SHEET 4 (Sheet 3 of 4)
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)
ESC Off	Yes	Yes

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?

_____ NA ___X__ 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_____
Control Description_____
Labeling_____

Ancillary Control: System_____
Control Description_____
Labeling_____

3.0 TEST DATA….continued

DATA SHEET 4 (Sheet 4 of 4)
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

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)

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.

__X__ NA _____ Yes _____ No (fail)

DATA INDICATES COMPLIANCE: PASS/FAIL PASS

REMARKS:

RECORDED BY: David Karls DATE: 12-01-21
APPROVED BY: Jordan Piening DATE: 12-01-21

3.0 TEST DATA….continued

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

VEHICLE MAKE/MODEL/BODY STYLE: Honda / Civic / Hatchback

NHTSA No.: C20215303 TEST DATE: 11-30-21

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

Peak Friction Coefficient (at least 0.9) 0.93

Test Track Data Meets Requirements: Yes/No Yes
If no, explain: _____

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

Tire Pressures: Required: Front Axle 230 kPa Rear Axle 220 kPa

Actual: LF 230 kPa RF 230 kPa
LR 220 kPa RR 220 kPa

Vehicle Dimensions: Track Width 153.6 cm Wheelbase 272.8 cm

Vehicle weight ratings: GAWR Front 980 KG GAWR Rear 870 KG

Unloaded Vehicle Weight (UVW)

Front Axle 845.0 KG Left Front 415.0 KG Right Front 430.0 KG

Rear Axle 549.2 KG Left Rear 291.4 KG Right Rear 257.8 KG

Total UVW 1394.2 KG

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

Calculated Baseline Weight (UVW+ 73 kg) 1467.2 KG

Outrigger size required ("Light," "Standard" or "Heavy") N/A
Light – Baseline weight under 1,588 kg (3,500 lbs.)
Standard - Baseline weight equal to or greater than 1,588 kg (3,500 lbs.) and 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_____KG Left Front_____KG Right Front _____KG

Rear Axle_____KG Left Rear_____KG Right Rear _____KG

Total UVW w/ Outriggers__N/A__KG

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

Front Axle__914.6__KG Left Front__455.8__KG Right Front __458.8_KG

Rear Axle__613.4__KG Left Rear__330.0__KG Right Rear __283.4_KG

Vehicle Weight__1528.0__KG

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

= [_1394.2__KG + 168 KG] - __1528.0__KG

= __34.2__KG

Total Loaded Vehicle Weight w/Driver, Instrumentation and Ballast

Front Axle__927.4__KG Left Front__459.8__KG Right Front __467.6_KG

Rear Axle__634.8__KG Left Rear__339.0__KG Right Rear __295.8_KG

Total Loaded Vehicle Weight__1562.2__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	110.8 cm	165.4 cm
y-distance	-1.7 cm	-4.7 cm
z-distance	53.2 cm	74.7 cm

Roof Height: 140.0 cm

Distance Between Body Roll Sensors: 194.0 cm

The NHTSA test procedure (TP-126-03) states that the vehicle's vertical CG coordinate is estimated to be 38% of the vehicle's roof height. The lateral and longitudinal CG coordinates are determined using the individual corner weights of the vehicle in its test condition.

REMARKS:

RECORDED BY: David Karls DATE: 12-01-21
APPROVED BY: Jordan Piening DATE: 12-01-21

3.0 TEST DATA….continued

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

VEHICLE MAKE/MODEL/BODY STYLE: Honda / Civic / Hatchback

VEHICLE NHTSA No.: C20215303

Measured Cold Tire Pressures: LF 230 kPa RF 230 kPa

LR 220 kPa RR 220 kPa

Wind Speed 5.4 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

Brake Conditioning Time; 2:35 PM Date; 11-30-21

56 km/h (35 mph) Brake Stops

Number of stops executed (10 required) 10 stops

Observed deceleration rate range (.5g target) 0.48 – 0.52 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 1.0 – 1.1 g

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

Duration of cool down period (5 minutes min.) 5.5 minutes

3.0 TEST DATA….continued

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

Tire Conditioning Series No. 1 Time: 3:00 PM Date: 11-30-21

Measured Tire Pressures: LF 256 kPa RF 256 kPa

LR 244 kPa RR 244 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)) 9.2 °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	0.58	44.8
4-6	Counterclockwise	0.5-0.6	0.58	44.8

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	0.28
2	56±2 (35±1)	60	0.5-0.6	0.55
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; 60 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)	60 (cycles 1-10)	0.5-0.6	0.55
4	56±2 (35±1)	60 (cycles 1-9)	0.5-0.6	0.55
		120 (cycle 10)*	N/A	0.86

* 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: 3:35 PM Date: 11-30-21

Measured Tire Pressures: LF 254 kPa RF 254 kPa

LR 242 kPa RR 242 kPa

Wind Speed 3.9 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)) 9.6 °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	0.58	44.8
4-6	counterclockwise	0.5-0.6	0.58	44.8

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; 60 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)	60 (cycles 1-10)	0.5-0.6	0.55
4	56±2 (35±1)	60 (cycles 1-9)	0.5-0.6	0.55
		120 (cycle 10)*	N/A	0.86

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

REMARKS:

RECORDED BY: David Karls DATE: 12-01-21
APPROVED BY: Jordan Piening DATE: 12-01-21

3.0 TEST DATA….continued

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

VEHICLE MAKE/MODEL/BODY STYLE: Honda / Civic / Hatchback

VEHICLE NHTSA No.: C20215303 TEST DATE: 11-30-21

Measured Tire Pressures: LF 253 kPa RF 253 kPa
LR 243 kPa RR 243 kPa

Wind Speed 3.3 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)) 9.6 °C

Selected Drive Configuration: FWD (default)

Selected Mode: ESC On (default)

Preliminary Left Steer Maneuver:
Lateral Acceleration measured at 30 degrees steering wheel angle ($a_{y,30\ degrees}$)

$a_{y,30\ degrees}$ = 0.38 g

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

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

δ_{SIS} = 43.4 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?
0010	Left	3:14 pm	-24.5	Yes
0011	Left	3:16 pm	-24.8	Yes
0012	Left	3:17 pm	-25.3	Yes
0013	Right	3:18 pm	25.1	Yes
0014	Right	3:19 pm	24.9	Yes
0015	Right	3:20 pm	25.6	Yes

3.0 TEST DATA….continued

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

Average Overall Steering Wheel Angle:

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

$\delta_{0.3\ g,\ overall}$ = 25.0 degrees
[to nearest 0.1 degree]

REMARKS:

RECORDED BY: David Karls DATE: 12-01-21
APPROVED BY: Jordan Piening DATE: 12-01-21

3.0 TEST DATA….continued

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

VEHICLE MAKE/MODEL/BODY STYLE: Honda / Civic / Hatchback

VEHICLE NHTSA No.: C20215303 TEST DATE: 11-30-21

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: FWD
Selected Mode: ESC On (default)

Overall steering wheel angle ($\delta_{0.3\ g,\ overall}$) 25.0 degrees

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	Ψ_{Peak}	$\Psi_{1.0sec}$	$\Psi_{1.75sec}$	%	Pass/ Fail	%	Pass/ Fail
0017	3:40 pm	1.5* δ0.3 g	38	11.931	0.141	0.173	1.181	Pass	1.448	Pass
0018	3:42 pm	2.0* δ0.3 g	50	15.668	-0.138	-0.084	-0.882	Pass	-0.533	Pass
0019	3:44 pm	2.5* δ0.3 g	63	19.249	-0.143	-0.141	-0.744	Pass	-0.732	Pass
0020	3:46 pm	3.0* δ0.3 g	75	20.418	-0.253	-0.054	-1.239	Pass	-0.266	Pass
0021	3:48 pm	3.5* δ0.3 g	88	24.805	-0.235	-0.248	-0.949	Pass	-0.999	Pass
0022	3:50 pm	4.0* δ0.3 g	100	30.858	-0.177	-0.121	-0.574	Pass	-0.391	Pass
0023	3:52 pm	4.5* δ0.3 g	113	34.326	-0.555	-0.320	-1.617	Pass	-0.931	Pass
0024	3:54 pm	5.0* δ0.3 g	125	26.718	-0.246	-0.105	-0.919	Pass	-0.394	Pass
0025	3:56 pm	5.5* δ0.3 g	138	28.968	-0.143	-0.100	-0.493	Pass	-0.345	Pass
0026	3:58 pm	6.0* δ0.3 g	150	28.806	-0.150	-0.130	-0.520	Pass	-0.453	Pass
0027	4:00 pm	6.5* δ0.3 g	163	28.287	-0.384	-0.384	-1.358	Pass	-1.357	Pass
0028	4:02 pm	7.0* δ0.3 g	175	27.786	-0.255	-0.390	-0.916	Pass	-1.405	Pass
0029	4:04 pm	7.5* δ0.3 g	188	27.289	-0.353	-0.349	-1.292	Pass	-1.280	Pass
0030	4:06 pm	8.0* δ0.3 g	200	27.024	-0.094	-0.242	-0.349	Pass	-0.895	Pass
0031	4:08 pm	8.5* δ0.3 g	213	26.654	-0.335	-0.294	-1.255	Pass	-1.105	Pass
0032	4:10 pm	9.0* δ0.3 g	225	27.999	-0.069	-0.176	-0.245	Pass	-0.627	Pass
0033	4:12 pm	9.5* δ0.3 g	238	27.105	-0.212	-0.075	-0.781	Pass	-0.276	Pass
0034	4:14 pm	10.0* δ0.3 g	250	27.564	-0.230	-0.286	-0.835	Pass	-1.036	Pass
0035	4:16 pm	10.5* δ0.3 g	263	27.144	-0.059	0.069	-0.217	Pass	0.255	Pass
0036	4:18 pm	10.8* δ0.3 g	270	28.461	-0.046	0.026	-0.160	Pass	0.090	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	Ψ_{Peak}	$\Psi_{1.0sec}$	$\Psi_{1.75sec}$	%	Pass/ Fail	%	Pass/ Fail
0037	4:20 pm	1.5* δ0.3 g	38	-11.837	-0.089	-0.025	0.756	Pass	0.211	Pass
0038	4:22 pm	2.0* δ0.3 g	50	-15.619	-0.054	-0.060	0.345	Pass	0.385	Pass
0039	4:24 pm	2.5* δ0.3 g	63	-18.969	-0.065	0.138	0.344	Pass	-0.729	Pass
0040	4:26 pm	3.0* δ0.3 g	75	-22.312	-0.207	-0.013	0.928	Pass	0.058	Pass
0041	4:28 pm	3.5* δ0.3 g	88	-24.833	0.052	0.173	-0.208	Pass	-0.696	Pass
0042	4:30 pm	4.0* δ0.3 g	100	-30.627	-0.073	0.234	0.240	Pass	-0.765	Pass
0043	4:32 pm	4.5* δ0.3 g	113	-36.514	0.006	0.206	-0.016	Pass	-0.565	Pass
0044	4:34 pm	5.0* δ0.3 g	125	-29.981	-0.088	0.138	0.293	Pass	-0.462	Pass
0045	4:36 pm	5.5* δ0.3 g	138	-31.272	-0.103	0.165	0.331	Pass	-0.528	Pass
0046	4:38 pm	6.0* δ0.3 g	150	-32.556	0.081	0.224	-0.249	Pass	-0.687	Pass
0047	4:40 pm	6.5* δ0.3 g	163	-32.616	-0.068	0.033	0.209	Pass	-0.102	Pass
0048	4:42 pm	7.0* δ0.3 g	175	-34.928	0.041	0.045	-0.117	Pass	-0.128	Pass
0049	4:44 pm	7.5* δ0.3 g	188	-35.087	0.048	0.112	-0.137	Pass	-0.320	Pass
0050	4:46 pm	8.0* δ0.3 g	200	-35.856	-0.040	0.024	0.111	Pass	-0.068	Pass
0051	4:48 pm	8.5* δ0.3 g	213	-36.924	-0.106	0.135	0.288	Pass	-0.366	Pass
0052	4:50 pm	9.0* δ0.3 g	225	-34.762	-0.071	0.199	0.205	Pass	-0.574	Pass
0053	4:52 pm	9.5* δ0.3 g	238	-32.880	-0.211	0.199	0.642	Pass	-0.605	Pass
0054	4:54 pm	10.0* δ0.3 g	250	-34.593	-0.142	0.056	0.412	Pass	-0.162	Pass
0055	4:56 pm	10.5* δ0.3 g	263	-31.959	-0.128	0.139	0.401	Pass	-0.435	Pass
0056	4:58 pm	10.8* δ0.3 g	270	-32.751	-0.239	0.100	0.728	Pass	-0.304	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
0024	Counter Clockwise	5.0* δ0.3 g	125	-3.40	Pass
0025	Counter Clockwise	5.5* δ0.3 g	138	-3.45	Pass
0026	Counter Clockwise	6.0* δ0.3 g	150	-3.47	Pass
0027	Counter Clockwise	6.5* δ0.3 g	163	-3.43	Pass
0028	Counter Clockwise	7.0* δ0.3 g	175	-3.37	Pass
0029	Counter Clockwise	7.5* δ0.3 g	188	-3.38	Pass
0030	Counter Clockwise	8.0* δ0.3 g	200	-3.32	Pass
0031	Counter Clockwise	8.5* δ0.3 g	213	-3.34	Pass
0032	Counter Clockwise	9.0* δ0.3 g	225	-3.33	Pass
0033	Counter Clockwise	9.5* δ0.3 g	238	-3.29	Pass
0034	Counter Clockwise	10.0* δ0.3 g	250	-3.27	Pass
0035	Counter Clockwise	10.5* δ0.3 g	263	-3.26	Pass
0036	Counter Clockwise	10.8* δ0.3 g	270	-3.18	Pass
0044	Clockwise	5.0* δ0.3 g	125	3.56	Pass
0045	Clockwise	5.5* δ0.3 g	138	3.64	Pass
0046	Clockwise	6.0* δ0.3 g	150	3.66	Pass
0047	Clockwise	6.5* δ0.3 g	163	3.70	Pass
0048	Clockwise	7.0* δ0.3 g	175	3.77	Pass
0049	Clockwise	7.5* δ0.3 g	188	3.76	Pass
0050	Clockwise	8.0* δ0.3 g	200	3.82	Pass
0051	Clockwise	8.5* δ0.3 g	213	3.73	Pass
0052	Clockwise	9.0* δ0.3 g	225	3.77	Pass
0053	Clockwise	9.5* δ0.3 g	238	3.69	Pass
0054	Clockwise	10.0* δ0.3 g	250	3.64	Pass
0055	Clockwise	10.5* δ0.3 g	263	3.67	Pass
0056	Clockwise	10.8* δ0.3 g	270	3.67	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: David Karls DATE: 12-01-21
APPROVED BY: Jordan Piening DATE: 12-01-21

3.0 TEST DATA….continued

DATA SHEET 9 (Sheet 1 of 6)
MALFUNCTION WARNING TEST
(Test Number __1__)

VEHICLE MAKE/MODEL/BODY STYLE: ____Honda / Civic / Hatchback_

VEHICLE NHTSA No.:___C20215303__ TEST DATE:_____11-30-21_____

METHOD OF MALFUNCTION SIMULATION:
Describe method of malfunction simulation:_____

_____Disconnect the left front wheel speed sensor._____

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 as specified in section 13.12. B.

___X__ Yes _____No (Fail)

Telltale illuminated when engine was started, no driving required.

___X__ Yes (Pass) _____No

Driving was required to illuminate telltale. _____ Yes ___X__No

When driving was required, telltale illuminated before vehicle speed of 48± 8 km/h (30± 5mph) was reached.

___X__NA _____ Yes (Pass) _____No

If driving required, approximate driving time below vehicle speed of 48± 8 km/h (30± 5mph) to activate telltale.

_____ Seconds

When driving was required, telltale illuminated after a vehicle speed above 48± 8 km/h (30± 5mph) was reached.

___X__NA _____ Yes _____No

If driving required, time for telltale to illuminate after starting system is activated and vehicle speed of 48± 8 km/h (30± 5mph) is reached.

_____ Seconds (must be within 2 minutes) _____ Pass _____ Fail

3.0 TEST DATA….continued

DATA SHEET 9 (Sheet 2 of 6)
MALFUNCTION WARNING TEST
(Test Number __1__)

Identify all other telltales and/or warning messages activated upon simulating subject ESC system malfunction. ESC, ABS, TPMS, EPS and Brake System telltales illuminated Error messages regarding the following systems also displayed: Electric Parking Brake, Tire Pressure Monitoring System, Brake system, Brake Hold system, Anti-lock Brake System, Electric Power Steering system, Vehicle Stability Assist, Hill Start Assist, Adaptive Cruise Control, Lane Keeping Assist, Collision Mitigation Braking system, Road Departure Mitigation system, Low speed braking control, Parking Sensors

Did the malfunction telltale re-illuminate after the starting system was shut off for five minutes and then turned back on with the engine running?

__X__ Yes (Pass) _____No (Fail)

ESC SYSTEM RESTORATION:
Describe method used to restore system to normal operation:

Reconnect left front wheel speed sensor.

After system restoration is completed, telltale extinguishes after vehicle starting system is activated and if necessary the vehicle is driven at least 2 minutes as specified in section 13.12. D.

__X__ Yes _____No (Fail)

Telltale extinguished when engine was started, no driving required.

__X__ Yes (Pass) _____No

Driving was required to extinguish telltale. _____ Yes __X__No

When driving was required, telltale extinguished before vehicle speed of 48± 8 km/h (30± 5mph) was reached.

__X__NA _____ Yes (Pass) _____No

If driving required, approximate driving time below vehicle speed of 48± 8 km/h (30± 5mph) to extinguish telltale.

_____ Seconds

3.0 TEST DATA….continued

DATA SHEET 9 (Sheet 3 of 6)
MALFUNCTION WARNING TEST
(Test Number __1__)

When driving was required, telltale extinguished after a vehicle speed above 48± 8 km/h (30± 5mph) was reached.

___X___NA _____ Yes _____No

If driving required, time for telltale to extinguish after starting system is activated and vehicle speed of 48± 8 km/h (30± 5mph) is reached.

_____ Seconds (must be within 2 minutes) _____ Pass _____ Fail

DATA INDICATES COMPLIANCE: PASS/FAIL ___PASS____

REMARKS:

RECORDED BY: __David Karls_____ DATE:_____12-01-21___
APPROVED BY: __Jordan Piening_____ DATE:_____12-01-21___

3.0 TEST DATA….continued

DATA SHEET 9 (Sheet 4 of 6)
MALFUNCTION WARNING TEST
(Test Number __2__)

VEHICLE MAKE/MODEL/BODY STYLE: ____Honda / Civic / Hatchback_

VEHICLE NHTSA No.:___C20215303__ TEST DATE:_____11-30-21_____

METHOD OF MALFUNCTION SIMULATION:
Describe method of malfunction simulation:_____

_____Remove 10A VSA/ABS fuse (B28) from the under dash fuse box._____

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 as specified in section 13.12. B.

__X__ Yes _____No (Fail)

Telltale illuminated when engine was started, no driving required.

__X__ Yes (Pass) _____No

Driving was required to illuminate telltale. _____ Yes __X__No

When driving was required, telltale illuminated before vehicle speed of 48± 8 km/h (30± 5mph) was reached.

__X__NA _____ Yes (Pass) _____No

If driving required, approximate driving time below vehicle speed of 48± 8 km/h (30± 5mph) to activate telltale.

_____ Seconds

When driving was required, telltale illuminated after a vehicle speed above 48± 8 km/h (30± 5mph) was reached.

__X__NA _____ Yes _____No

If driving required, time for telltale to illuminate after starting system is activated and vehicle speed of 48± 8 km/h (30± 5mph) is reached.

_____ Seconds (must be within 2 minutes) _____ Pass _____ Fail

3.0 TEST DATA….continued

DATA SHEET 9 (Sheet 5 of 6)
MALFUNCTION WARNING TEST
(Test Number __2__)

Identify all other telltales and/or warning messages activated upon simulating subject ESC system malfunction. ESC, ABS, TPMS, EPS, BRAKE, SRS, Auto start-stop and Brake System telltales illuminated. Error messages regarding the following systems also displayed: Electric Parking Brake, Tire Pressure Monitoring System, Brake system, Brake Hold system, Anti-lock Brake System, Electric Power Steering system, Vehicle Stability Assist, Hill Start Assist, Adaptive Cruise Control, Lane Keeping Assist, Collision Mitigation Braking system, Road Departure Mitigation system, Low speed braking control, Parking Sensors, Auto Idle Stop system, Supplemental Restraint System, Transmission System

Did the malfunction telltale re-illuminate after the starting system was shut off for five minutes and then turned back on with the engine running?

__X__ Yes (Pass) _____No (Fail)

ESC SYSTEM RESTORATION:
Describe method used to restore system to normal operation:

Replace fuse B28.

After system restoration is completed, telltale extinguishes after vehicle starting system is activated and if necessary the vehicle is driven at least 2 minutes as specified in section 13.12. D.

__X__ Yes _____No (Fail)

Telltale extinguished when engine was started, no driving required.

__X__ Yes (Pass) _____No

Driving was required to extinguish telltale. _____ Yes __X__No

When driving was required, telltale extinguished before vehicle speed of 48± 8 km/h (30± 5mph) was reached.

__X__NA _____ Yes (Pass) _____No

If driving required, approximate driving time below vehicle speed of 48± 8 km/h (30± 5mph) to extinguish telltale.

_____ Seconds

3.0 TEST DATA….continued

DATA SHEET 9 (Sheet 6 of 6)
MALFUNCTION WARNING TEST
(Test Number __2__)

When driving was required, telltale extinguished after a vehicle speed above 48± 8 km/h (30± 5mph) was reached.

___X___NA _____ Yes _____No

If driving required, time for telltale to extinguish after starting system is activated and vehicle speed of 48± 8 km/h (30± 5mph) is reached.

_____ Seconds (must be within 2 minutes) _____ Pass _____ Fail

DATA INDICATES COMPLIANCE: PASS/FAIL ___PASS____

REMARKS:

RECORDED BY: __David Karls_____ DATE:_____12-01-21___
APPROVED BY: __Jordan Piening_____ DATE:_____12-01-21___

4.0 TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

Type	Output	Range	Resolution	Accuracy	Specifics	Serial Number	Calibration
Tire Pressure Gauge	Vehicle Tire Pressure	0-150 psi	0.01 psi	±0.5% of applied pressure	Intercomp 360045-150-BC	AG-0422SS08645	By: TRC Inc. Date: 7-28-21 Due: 1-28-22
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: Kanawha Scales Date: 6-18-21 Due: 12-18-21
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: 2-10-21 Due: 2-10-22
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	0767	By: BEI Tech. Date: 1-19-21 Due: 1-19-22
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: TRC Inc. Date: 4-15-21 Due: 4-15-22
Laser Height / Body Roll Measuring System	Left and Right Side Vehicle Height	145 to 895 mm	0.075 mm	±0.15%	Acuity Model: AR500-750	HS-27380 & HS-27378	By: TRC Inc. Date: 1-20-21 Due: 1-20-22
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	Link Vmax 4000	41284-004	By: TRC Inc. Date: 1-18-21 Due: 1-18-22
Load Cell	Vehicle Brake Pedal Force	0-300 lb	1 lb	±0.05% of full scale	DATRON Model: DTM-LPA	4970-1103	By: TRC Inc. 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 Advantage	E12-05-13-10989	By: FARO Date: 1-13-21 Due: 1-13-22
Outriggers	No output. Safety Item.	N/A	N/A	N/A	NHTSA Titanium Outriggers Model: Docket 2007-27662-11	Asset ID: N/A	N/A
Weather Station	Temperature and Wind Speed	-40-150°F 0-200mph	0.1°F 1mph	±1°F ±2mph	Davis Instruments Vantage Pro2	200102N01	By: Davis Inst. Date: 1-11-21 Due: 1-11-22

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 OFF AND ESC MALFUNCTION TELLTALES
5.7 ESC OFF CONTROL LOCATION
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

2022 Honda Civic
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5.1 ¾ FRONT VIEW FROM LEFT SIDE OF VEHICLE



5.2 ¾ REAR VIEW FROM RIGHT SIDE OF VEHICLE

2022 Honda Civic
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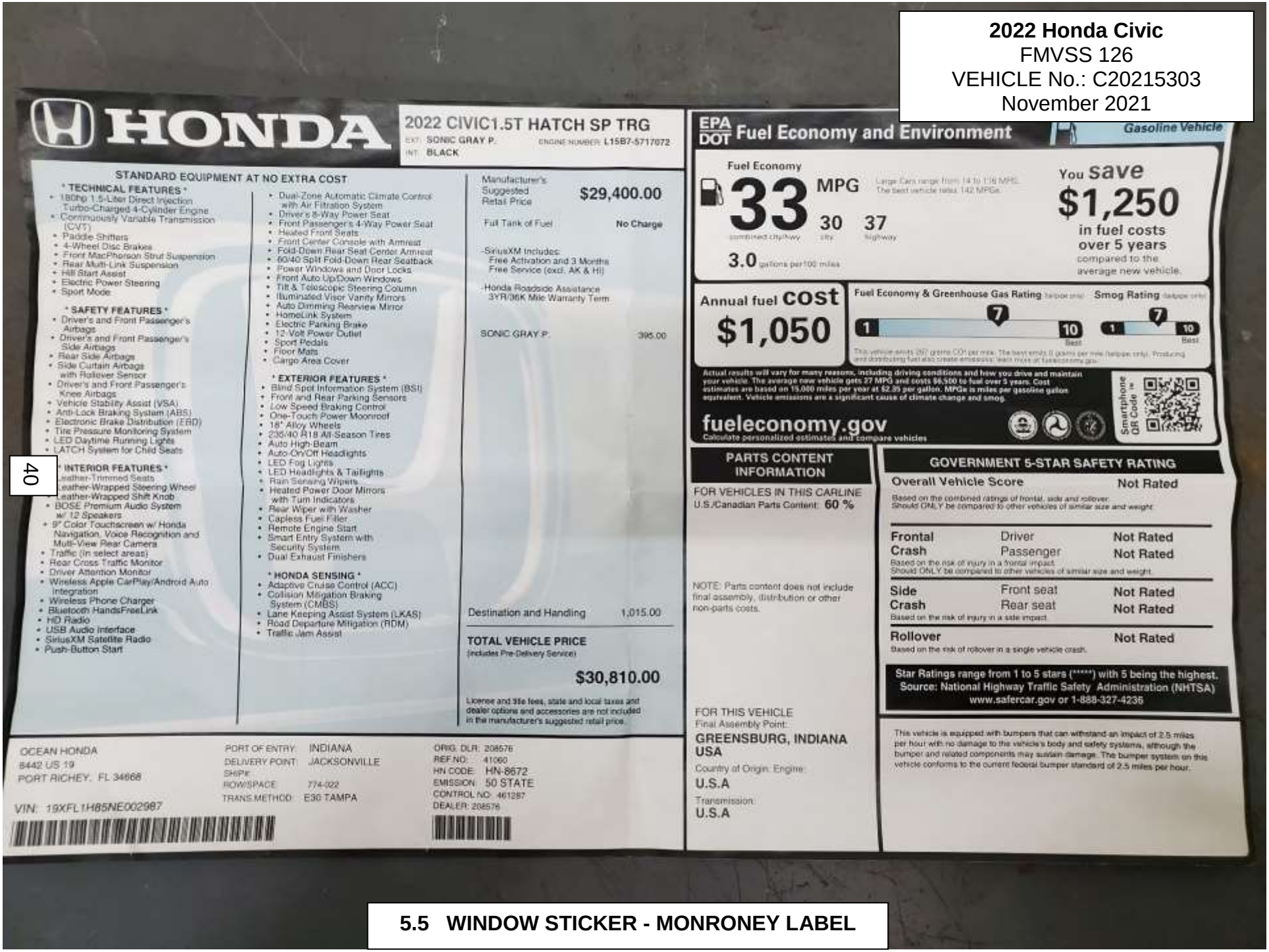
5.3 VEHICLE CERTIFICATION LABEL

2022 Honda Civic
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5.4 TIRE AND LOADING INFORMATION LABEL

2022 Honda Civic
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HONDA

2022 CIVIC1.5T HATCH SP TRG
EXT: SONIC GRAY P. ENGINE NUMBER: L15B7-5717072
INT: BLACK

STANDARD EQUIPMENT AT NO EXTRA COST

* TECHNICAL FEATURES *
- 180hp 1.5-Liter Direct Injection Turbo-Charged 4-Cylinder Engine
- Continuously Variable Transmission (CVT)
- Paddle Shifters
- 4-Wheel Disc Brakes
- Front MacPherson Strut Suspension
- Rear Multi-Link Suspension
- Hill Start Assist
- Electric Power Steering
- Sport Mode

* SAFETY FEATURES *
- Driver's and Front Passenger's Airbags
- Driver's and Front Passenger's Side Airbags
- Rear Side Airbags
- Side Curtain Airbags with Rollover Sensor
- Driver's and Front Passenger's Knee Airbags
- Vehicle Stability Assist (VSA)
- Anti-Lock Braking System (ABS)
- Electronic Brake Distribution (EBD)
- Tire Pressure Monitoring System
- LED Daytime Running Lights
- LATCH System for Child Seats

* INTERIOR FEATURES *
- Leather-Trimmed Seats
- Leather-Wrapped Steering Wheel
- Leather-Wrapped Shift Knob
- BOSE Premium Audio System w/ 12 Speakers
- 9" Color Touchscreen w/ Honda Navigation, Voice Recognition and Multi-View Rear Camera
- Traffic (in select areas)
- Rear Cross Traffic Monitor
- Driver Attention Monitor
- Wireless Apple CarPlay/Android Auto Integration
- Wireless Phone Charger
- Bluetooth HandsFreeLink
- HD Radio
- USB Audio Interface
- SiriusXM Satellite Radio
- Push-Button Start

- Dual-Zone Automatic Climate Control with Air Filtration System
- Driver's 8-Way Power Seat
- Front Passenger's 4-Way Power Seat
- Heated Front Seats
- Front Center Console with Armrest
- Fold-Down Rear Seat Center Armrest
- 60/40 Split Fold-Down Rear Seatback
- Power Windows and Door Locks
- Front Auto Up/Down Windows
- Tilt & Telescopic Steering Column
- Illuminated Visor Vanity Mirrors
- Auto Dimming Rearview Mirror
- HomeLink System
- Electric Parking Brake
- 12-Volt Power Outlet
- Sport Pedals
- Floor Mats
- Cargo Area Cover

* EXTERIOR FEATURES *
- Blind Spot Information System (BSI)
- Front and Rear Parking Sensors
- Low Speed Braking Control
- One-Touch Power Moonroof
- 18" Alloy Wheels
- 235/40 R18 All-Season Tires
- Auto High-Beam
- Auto-On/Off Headlights
- LED Fog Lights
- LED Headlights & Taillights
- Rain Sensing Wipers
- Heated Power Door Mirrors with Turn Indicators
- Rear Wiper with Washer
- Capless Fuel Filler
- Remote Engine Start
- Smart Entry System with Security System
- Dual Exhaust Finishers

* HONDA SENSING *
- Adaptive Cruise Control (ACC)
- Collision Mitigation Braking System (CMBS)
- Lane Keeping Assist System (LKAS)
- Road Departure Mitigation (RDM)
- Traffic Jam Assist

Manufacturer's Suggested Retail Price	$29,400.00
Full Tank of Fuel	No Charge
-SiriusXM Includes: Free Activation and 3 Months Free Service (excl. AK & HI)	
-Honda Roadside Assistance 3YR/36K Mile Warranty Term	
SONIC GRAY P.	395.00
Destination and Handling	1,015.00

TOTAL VEHICLE PRICE
(includes Pre-Delivery Service)
$30,810.00

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

OCEAN HONDA
8442 US 19
PORT RICHEY, FL 34668

VIN: 19XFL1H85NE002987

PORT OF ENTRY: INDIANA
DELIVERY POINT: JACKSONVILLE
SHIP#:
ROW/SPACE: 774-022
TRANS.METHOD: E30 TAMPA

ORIG. DLR: 208576
REF.NO: 41060
HN CODE: HN-8672
EMISSION: 50 STATE
CONTROL NO: 461287
DEALER: 208576

EPA DOT Fuel Economy and Environment — Gasoline Vehicle

Fuel Economy
33 MPG combined city/hwy
30 city
37 highway
3.0 gallons per 100 miles
Large Cars range from 14 to 116 MPG. The best vehicle rated 142 MPGe.

You save $1,250 in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost $1,050

Fuel Economy & Greenhouse Gas Rating (tailpipe only): 7 (1–10, Best)
Smog Rating (tailpipe only): 7 (1–10, Best)
This vehicle emits 297 grams CO2 per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at fueleconomy.gov

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 27 MPG and costs $6,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at $2.89 per gallon. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fueleconomy.gov
Calculate personalized estimates and compare vehicles

Smartphone QR Code ™

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE
U.S./Canadian Parts Content: 60 %

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

FOR THIS VEHICLE
Final Assembly Point:
GREENSBURG, INDIANA USA
Country of Origin: Engine:
U.S.A
Transmission:
U.S.A

GOVERNMENT 5-STAR SAFETY RATING

Overall Vehicle Score: Not Rated
Based on the combined ratings of frontal, side and rollover.
Should ONLY be compared to other vehicles of similar size and weight

Frontal Crash	Driver	Not Rated
	Passenger	Not Rated
Side Crash	Front seat	Not Rated
	Rear seat	Not Rated
Rollover		Not Rated

Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.
Based on the risk of injury in a side impact.
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 bumpers that can withstand an impact of 2.5 miles per hour with no damage to the vehicle's body and safety systems, although the bumper and related components may sustain damage. The bumper system on this vehicle conforms to the current federal bumper standard of 2.5 miles per hour.

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5.5 WINDOW STICKER - MONRONEY LABEL

2022 Honda Civic
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5.6 ESC OFF AND ESC MALFUNCTION TELLTALES

2022 Honda Civic
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5.7 ESC OFF CONTROL LOCATION

2022 Honda Civic
FMVSS 126
VEHICLE No.: C20215303
November 2021



5.8 ESC OFF CONTROL



2022 Honda Civic
FMVSS 126
VEHICLE No.: C20215303
November 2021

5.9 ¾ FRONT VIEW - TEST VEHICLE INSTRUMENTED

2022 Honda Civic
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November 2021



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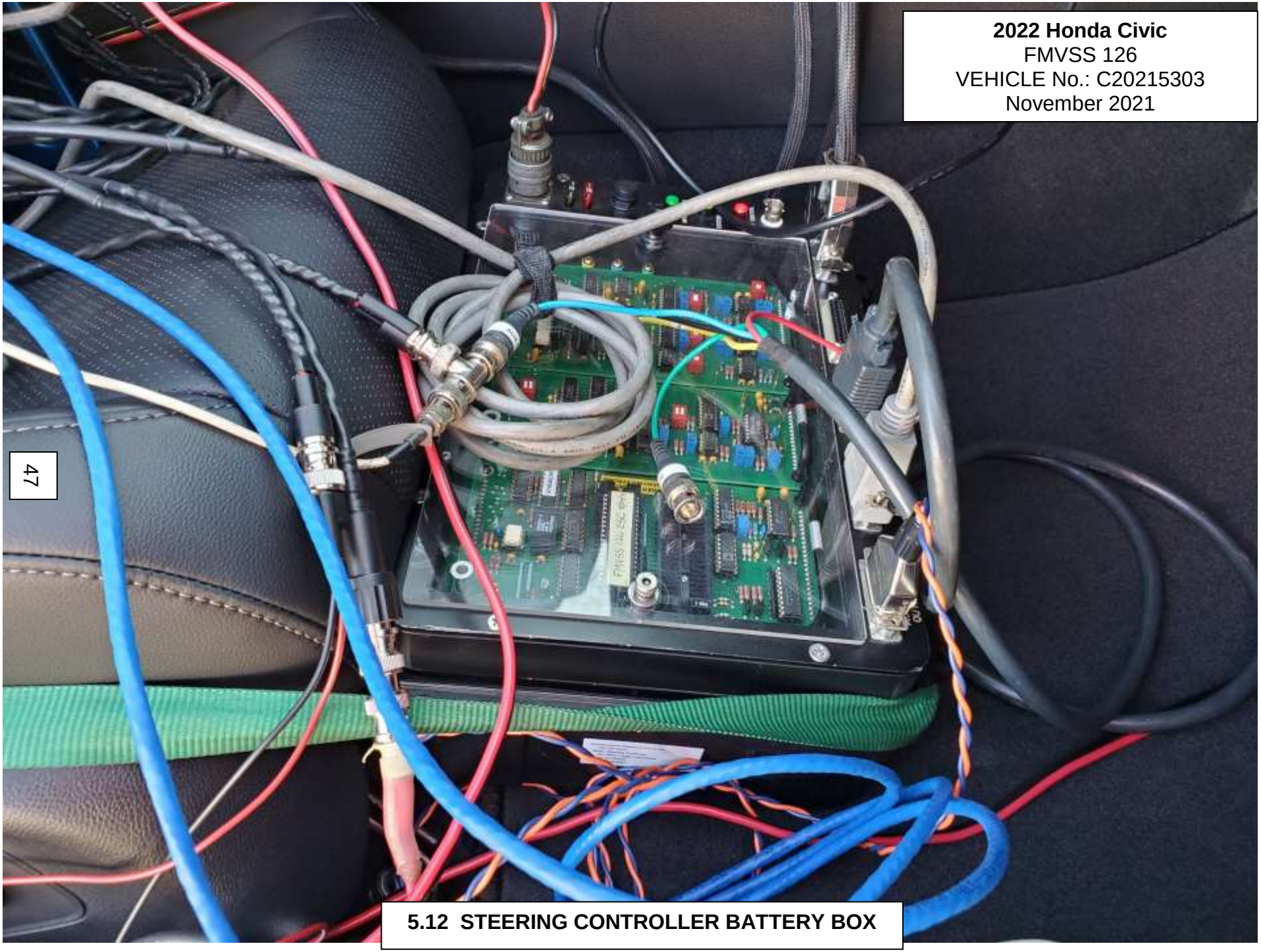
5.10 ¾ REAR VIEW - TEST VEHICLE INSTRUMENTED

2022 Honda Civic
FMVSS 126
VEHICLE No.: C20215303
November 2021



5.11 STEERING WHEEL CONTROLLER AND DATA ACQUISITION SYSTEM

2022 Honda Civic
FMVSS 126
VEHICLE No.: C20215303
November 2021

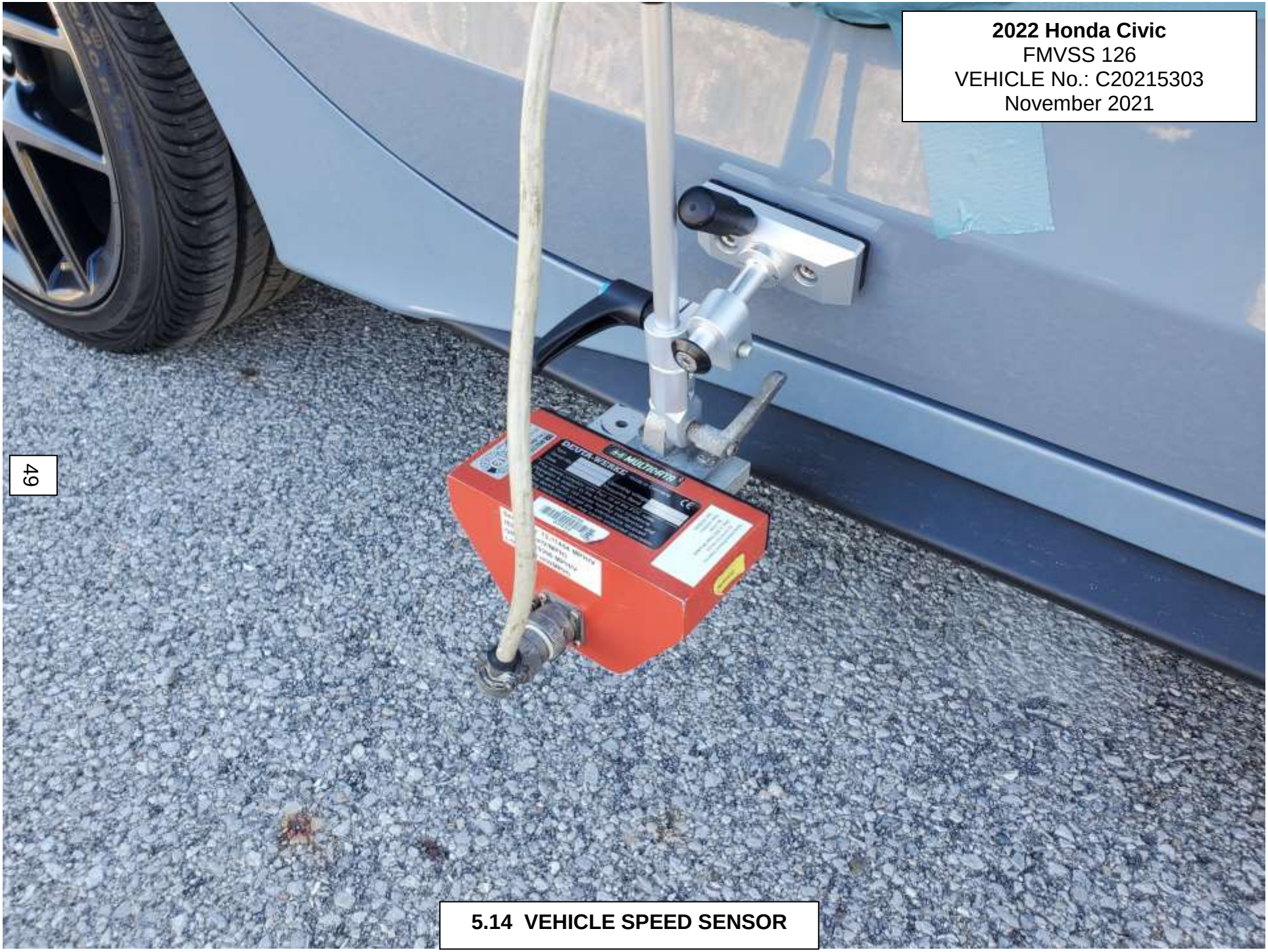


5.12 STEERING CONTROLLER BATTERY BOX

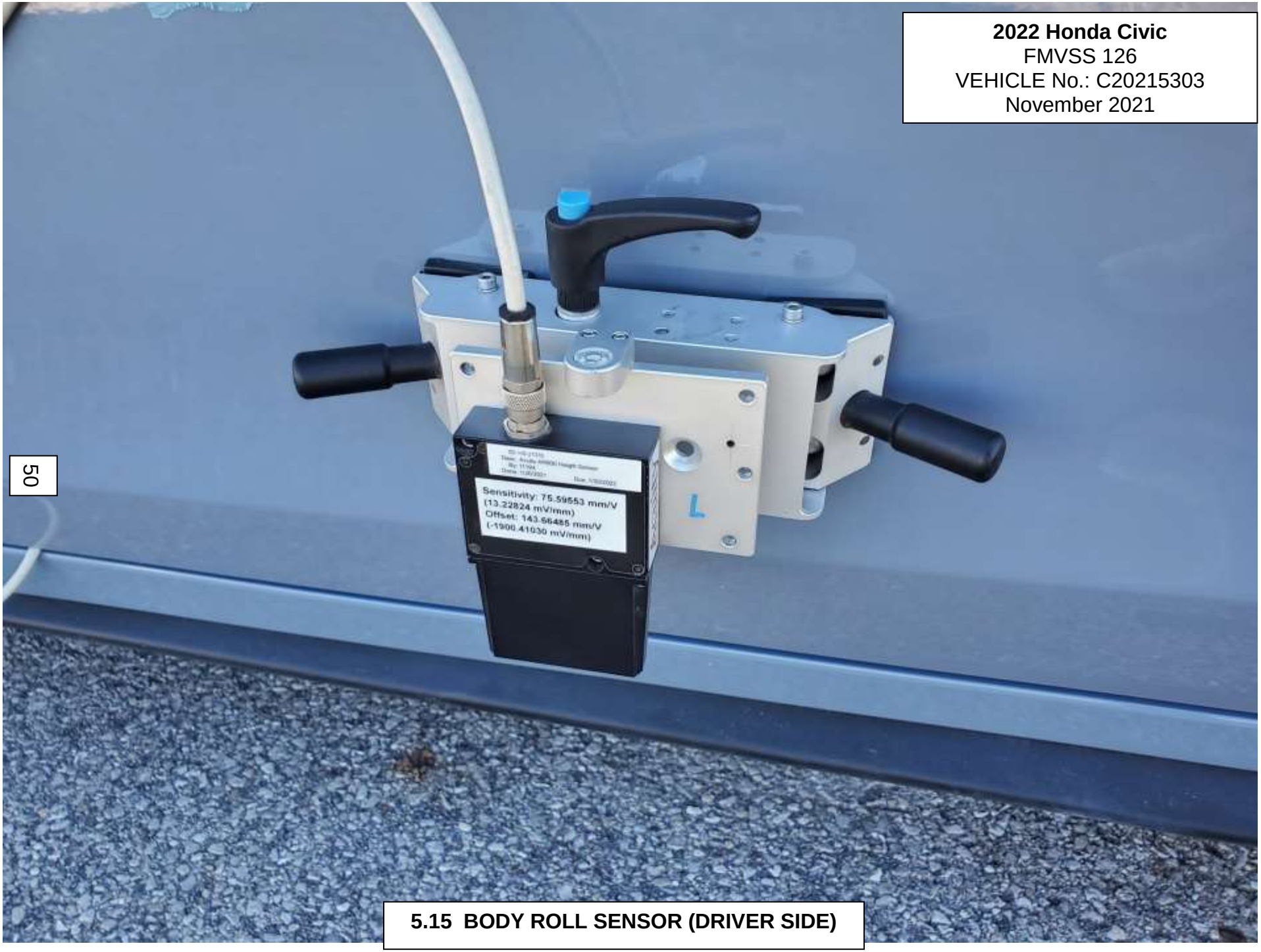


2022 Honda Civic
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5.13 INERTIA MEASUREMENT UNIT

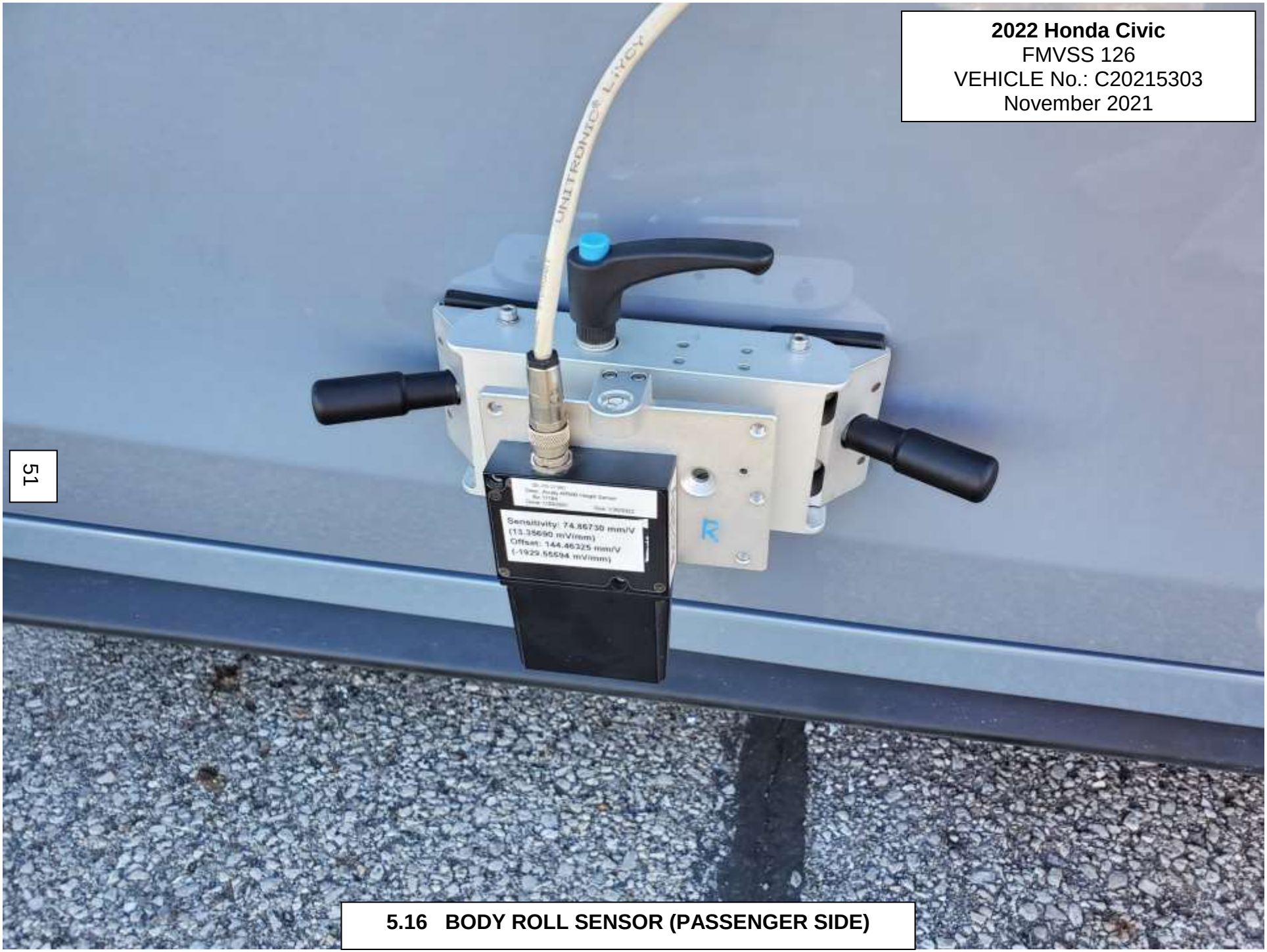

2022 Honda Civic
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VEHICLE No.: C20215303
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5.14 VEHICLE SPEED SENSOR

2022 Honda Civic
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November 2021

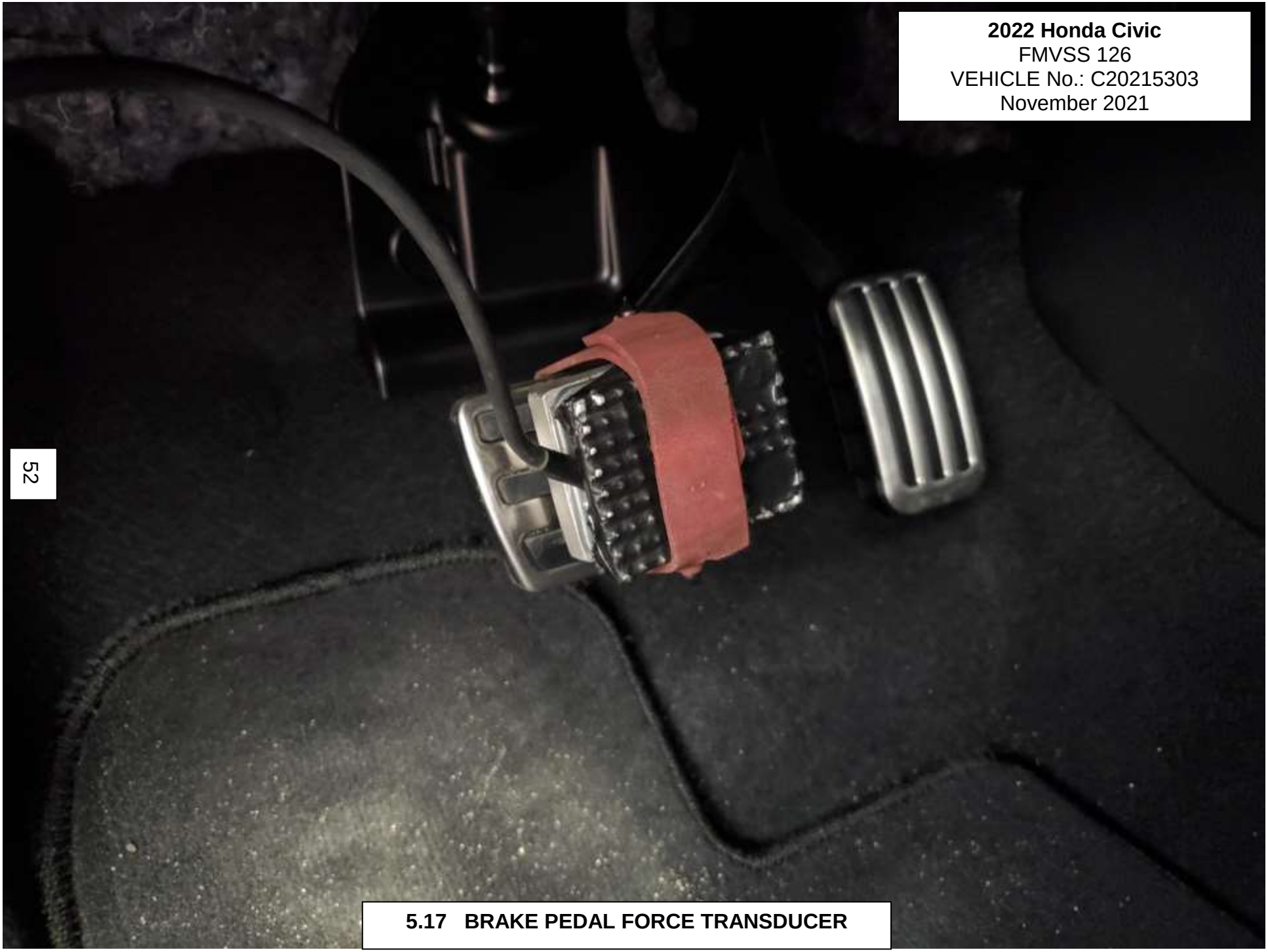


5.15 BODY ROLL SENSOR (DRIVER SIDE)

2022 Honda Civic
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5.16 BODY ROLL SENSOR (PASSENGER SIDE)



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November 2021

5.17 BRAKE PEDAL FORCE TRANSDUCER

6.0 DATA PLOTS

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

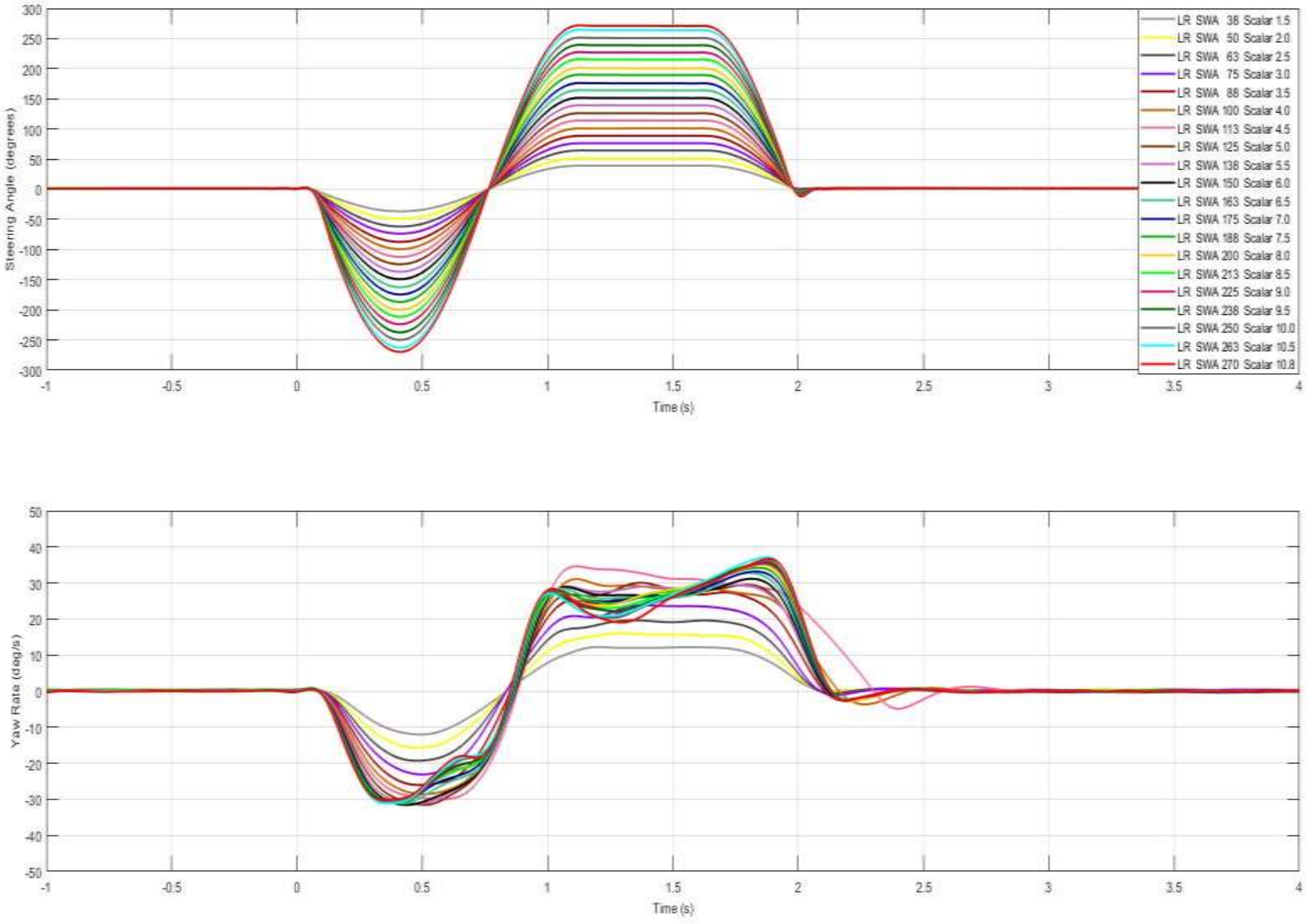
Figure 2. Steering Angle, Lateral Acceleration, and Lateral Displacement Time History, Counter-Clockwise Initial Steer Tests

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

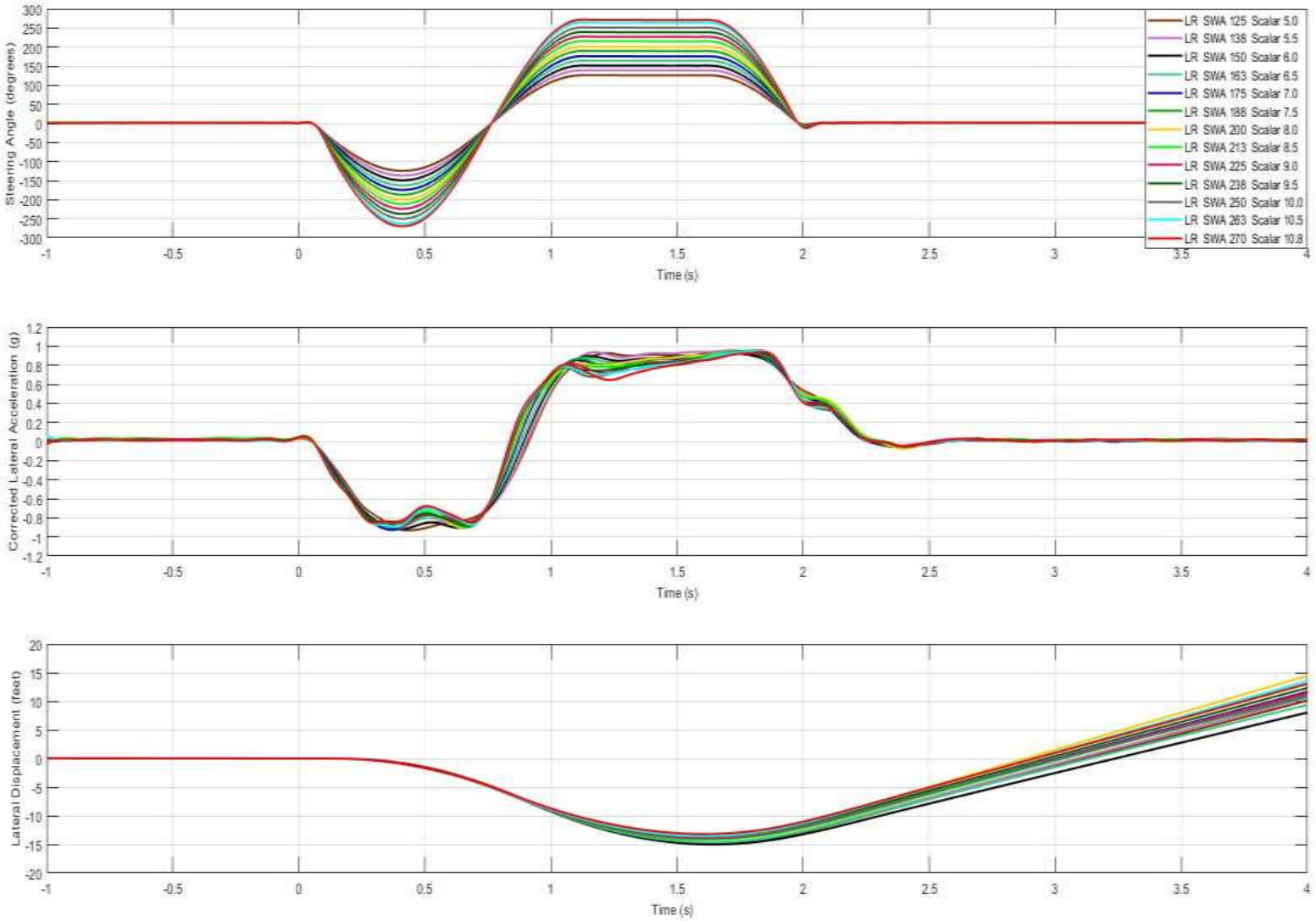
6.0 2022 Honda Civic DATA PLOTS

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



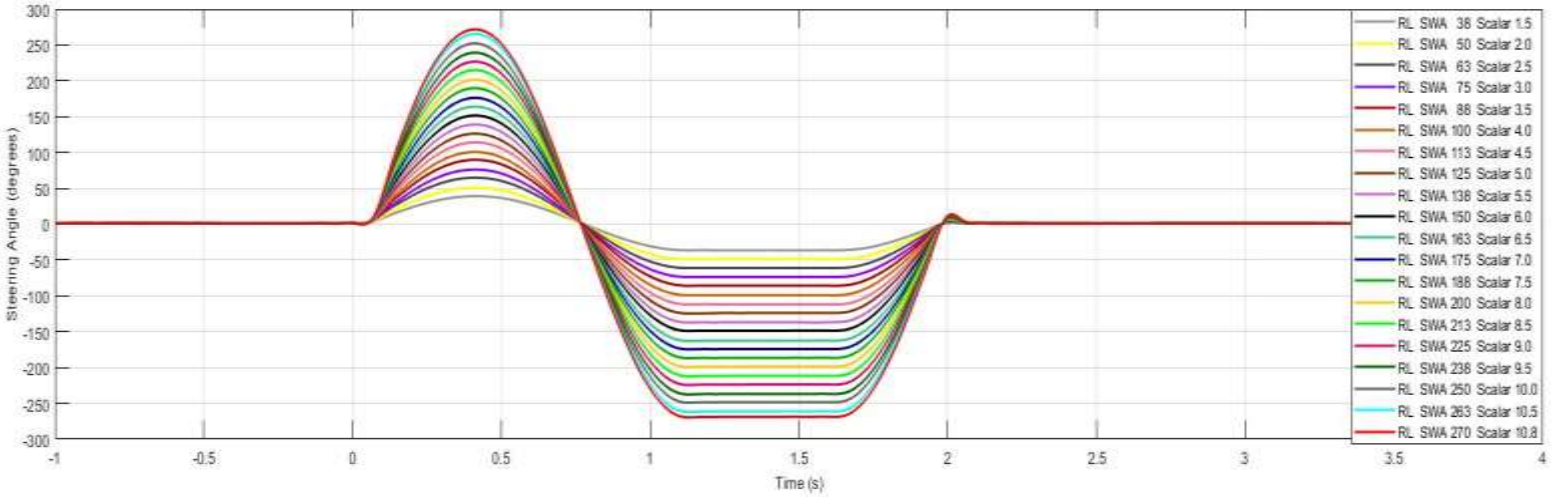
6.0 2022 Honda Civic DATA PLOTS …continued

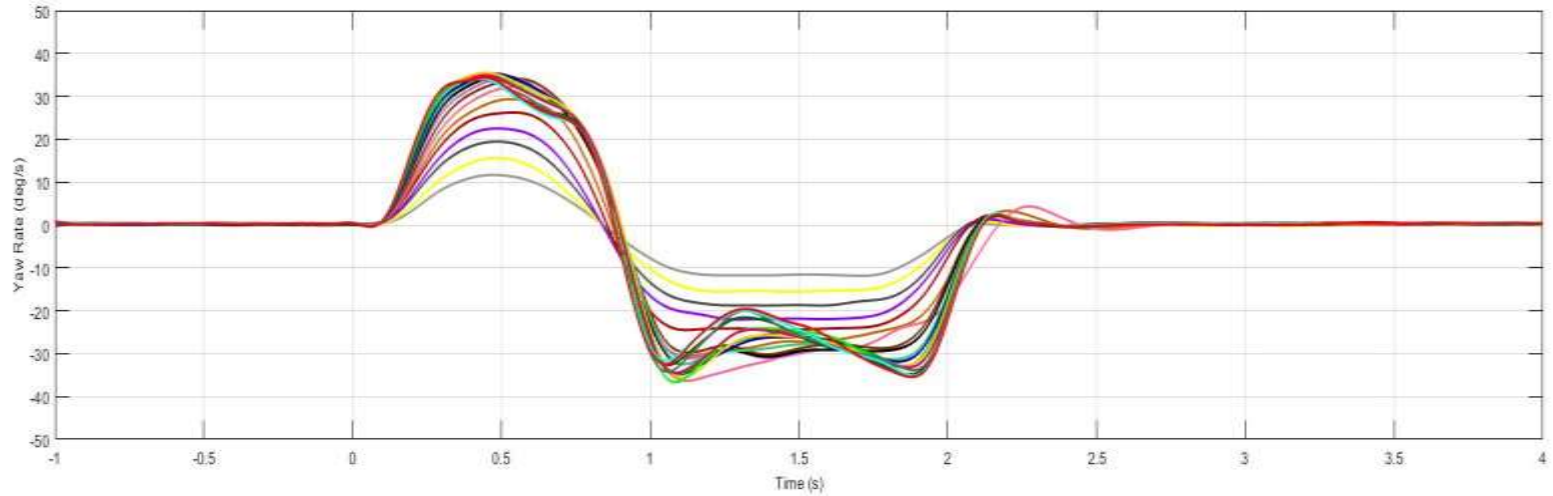
Figure 2. Steering Angle and Yaw Rate Time History, Counter-Clockwise Initial Steer Tests



6.0 2022 Honda Civic DATA PLOTS …continued

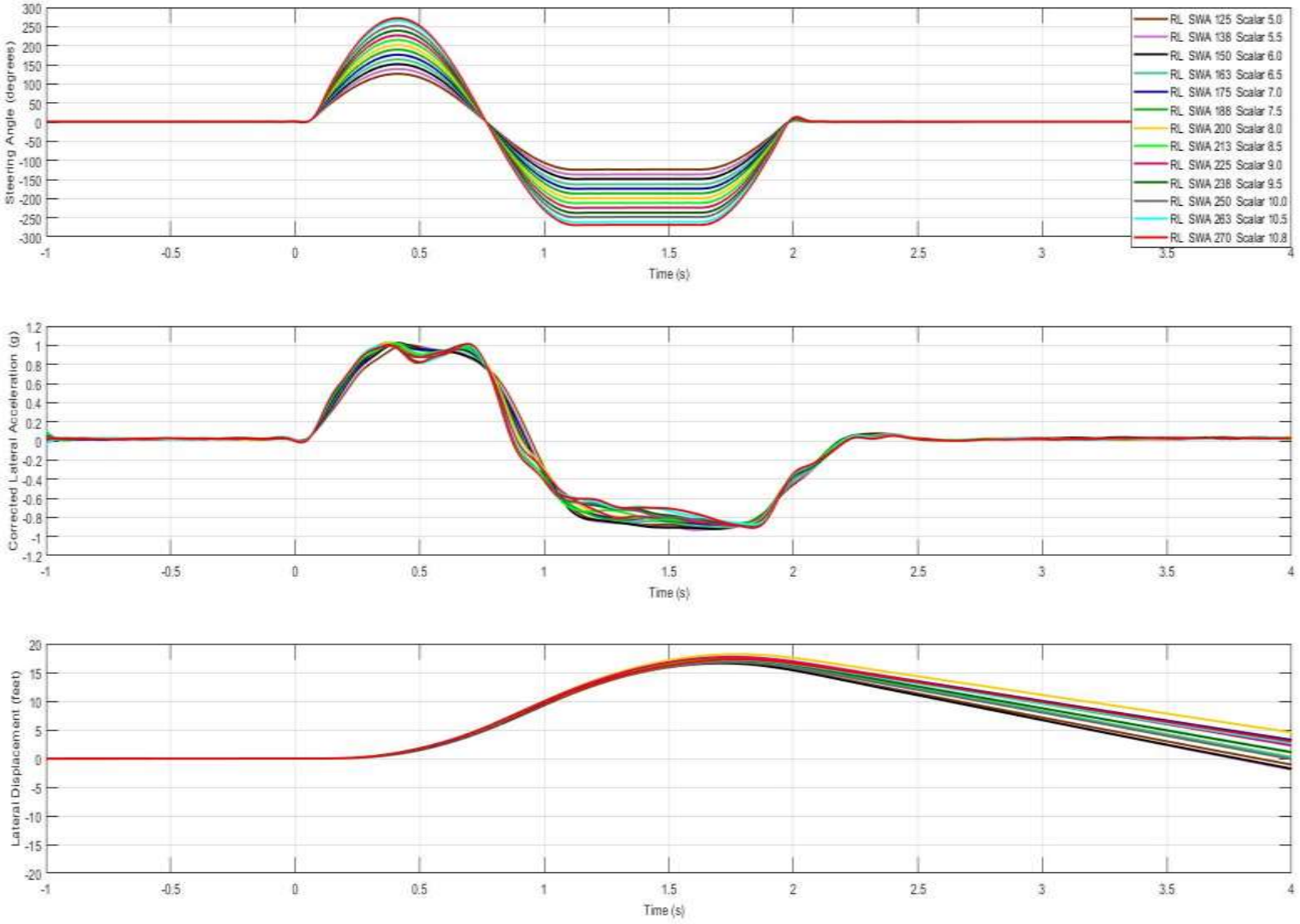
Figure 3. Steering Angle and Yaw Rate Time History, Clockwise Initial Steer Tests





6.0 2022 Honda Civic DATA PLOTS …continued

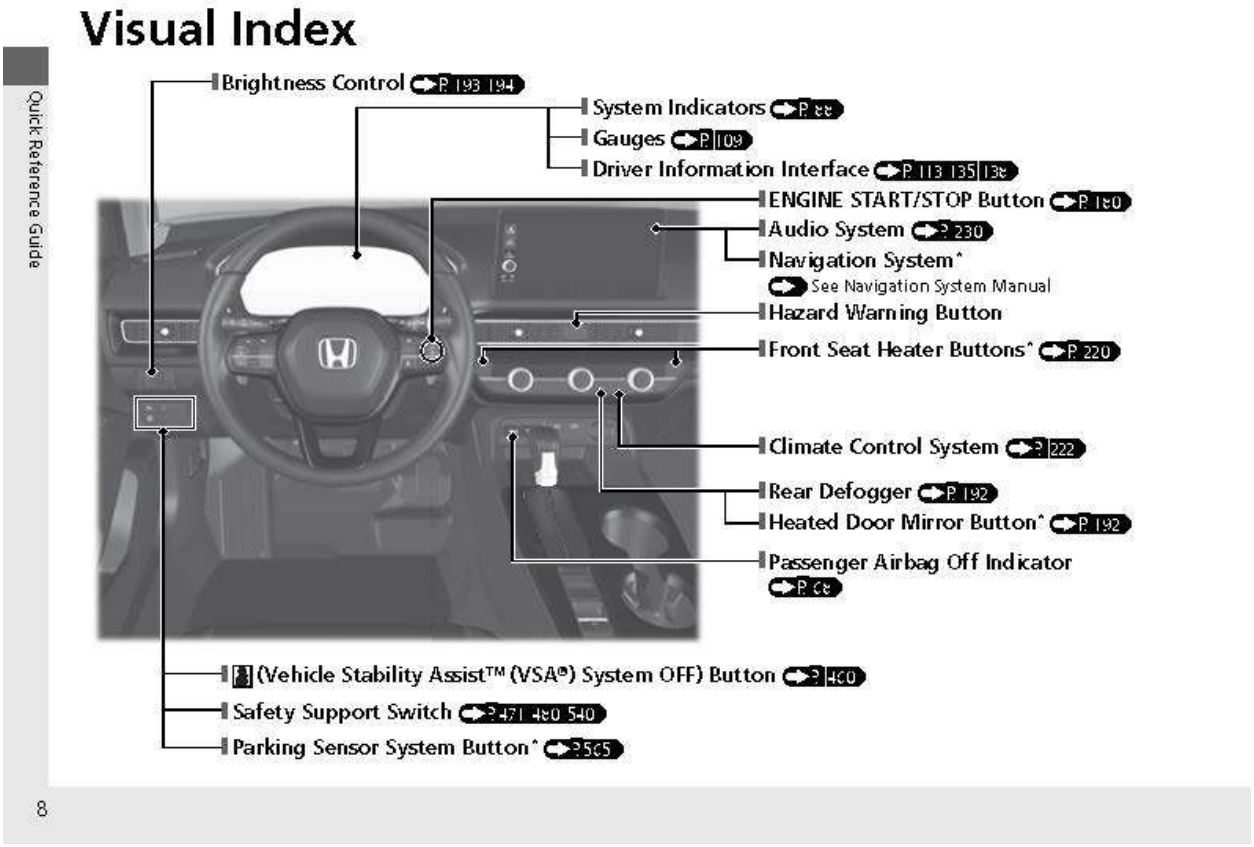
Figure 4. Steering Angle, Lateral Acceleration, and Lateral Displacement Time History, Clockwise Initial Steer Tests



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 INERTIA SENSOR MEASUREMENTS

7.1 OWNER'S MANUAL PAGES



VSA® On and Off P. 460

- The Vehicle Stability Assist™ (VSA®) system helps stabilize the vehicle during cornering, and helps maintain traction while accelerating on loose or slippery road surfaces.
- VSA® comes on automatically every time you start the engine.
- To partially disable or fully restore VSA® function, press and hold the button until you hear a beep.

CMBS™ On and Off P. 480

- When a possible frontal collision is likely unavoidable, the CMBS™ can help you to reduce the vehicle speed and the severity of the collision.
- The CMBS™ is turned on every time you start the engine.
- To turn the CMBS™ on or off, use the safety support switch.

U.S. models

Tire Pressure Monitoring System (TPMS) P. 462

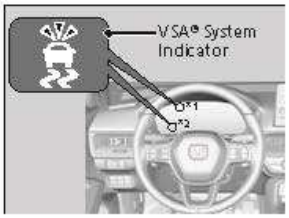
- Detects a change in tire conditions and overall dimensions due to decrease in tire pressures.
- The TPMS is turned on automatically every time you start the engine.
- A calibration procedure must be performed when certain conditions arise.

Indicator	Name	On/Blinking	Explanation
	Electric Power Steering (EPS) System Indicator	• Comes on if there is a problem with the EPS system.	• **Stays on constantly** - Have your vehicle checked by a dealer. • **Do not drive displays on the driver information interface** - Immediately stop in a safe place and contact a dealer. **If the Electric Power Steering (EPS) System Indicator Comes On** P. 662
	Vehicle Stability Assist™ (VSA®) System Indicator	• Blinks when VSA® is active.	—
		• Comes on if there is a problem with the VSA® system, brake assist system or hill start assist system.	• **Stays on constantly** - Have your vehicle checked by a dealer. **Vehicle Stability Assist™ (VSA®), aka Electronic Stability Control (ESC), System** P. 459
		• Comes on if the VSA® system is deactivated temporarily after the battery has been disconnected, then re-connected.	• Drive a short distance at more than 12 mph (20 km/h). The indicator should go off. If it does not, have your vehicle checked by a dealer.
	Vehicle Stability Assist™ (VSA®) **OFF** Indicator	• Comes on when you partially disable VSA®.	**VSA® On and Off** P. 460
		• Comes on if the VSA® system is deactivated temporarily after the battery has been disconnected, then re-connected.	• Drive a short distance at more than 12 mph (20 km/h). The indicator should go off. If it does not, have your vehicle checked by a dealer.

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

VSA® helps stabilize the vehicle during cornering if the vehicle turns more or less than what was intended. It also assists in maintaining traction on slippery surfaces. It does so by regulating engine output and selectively applying the brakes.

VSA® Operation



When VSA® activates, you may notice that the engine does not respond to the accelerator. You may also notice some noise from the hydraulic brake system. You will also see the indicator blink.

*1 : Models with A-type meter
*2 : Models with B-type meter

* Not available on all models

Continued

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

The VSA® may not function properly if tire type and size are mixed. Make sure to use the same size and type of tire, and the air pressures as specified.

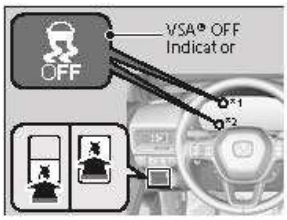
When the VSA® system indicator comes on and stays on while driving, there may be a problem with the system. While this may not interfere with normal driving, have your vehicle checked by a dealer immediately.

The Vehicle Stability Assist™ (VSA®) system, Vehicle Stability Assist™ (VSA®) OFF, Adaptive Cruise Control (ACC) with Low Speed Follow, low tire pressure/TPMS* and safety support indicators may come on in amber along with a message in the gauge when you set the power mode to ON after reconnecting the battery. Drive a short distance at more than 12 mph (20 km/h). Each indicator should go off. If any do not, have your vehicle checked by a dealer.

VSA® cannot enhance stability in all driving situations and does not control the entire braking system. You still need to drive and corner at speeds appropriate for the conditions and always leave a sufficient margin of safety.

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

VSA® On and Off



This button is on the driver side control panel. To partially disable VSA® functionality/features, press and hold it until you hear a beep.

Your vehicle will have normal braking and cornering ability, but traction control function will be less effective.

To restore VSA® functionality/features, press the (VSA® **OFF**) button until you hear a beep.

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

*1 : Models with A-type meter
*2 : Models with B-type meter

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

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 button is pressed, the traction control function becomes less effective. This allows for the wheels to spin more freely at low speed. 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 VSA® on again. We do not recommend driving your vehicle with the VSA® system switched off.

You may hear a motor sound coming from the engine compartment while system checks are being performed immediately after starting the engine or while driving. This is normal.

7.2 VEHICLE ARRIVAL CONDITION REPORT

CONTRACT NO. DTNH22-16-D-00027 DATE: 11-19-21

FROM: Automotive Allies

TO: TRC Inc.

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

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2022 / Honda / Civic / Hatchback

MANUFACTURE DATE: 10-21 NHTSA NO.: C20215303

BODY COLOR: Grey VIN: 19XFL1H85NE002987

ODOMETER READING: 35 miles GVWR: 1,840 KG

PURCHASE PRICE: $ rented / leased DEALER'S NAME: Ocean Honda, 8442 US 19, Port Richey, FL 34668

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: David Karls DATE: 12-01-21

APPROVED BY: Jordan Piening DATE: 12-01-21

7.3 VEHICLE COMPLETION CONDITION REPORT

CONTRACT NO. DTNH22-16-D-00027 DATE: 12-1-21

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2022 / Honda / Civic / Hatchback

MANUFACTURE DATE: 10-21 NHTSA NO.: C20215303

BODY COLOR: Grey VIN: 19XFL1H85NE002987

ODOMETER READING: 80 miles GVWR: 1,840 KG

LIST OF FMVSS TESTS PERFORMED BY THIS LAB: 126

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: David Karls DATE: 12-01-21
APPROVED BY: Jordan Piening DATE: 12-01-21

7.4 SINE WITH DWELL TEST RESULTS

2022 Honda Civic

NHTSA No.: C20215303

Date Created 30-Nov-21

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)
0017	219	50.038	0.086	600	1.992	356	0.771	1.181	0.141	800	1.448	0.173
0018	217	50.207	0.079	600	1.991	356	0.770	-0.882	-0.138	800	-0.533	-0.084
0019	216	50.442	0.074	599	1.989	355	0.769	-0.744	-0.143	799	-0.732	-0.141
0020	216	50.272	0.071	599	1.987	355	0.767	-1.239	-0.253	799	-0.266	-0.054
0021	215	50.115	0.068	598	1.985	355	0.767	-0.949	-0.235	798	-0.999	-0.248
0022	215	50.285	0.067	598	1.984	355	0.766	-0.574	-0.177	798	-0.391	-0.121
0023	215	50.302	0.065	598	1.984	355	0.766	-1.617	-0.555	798	-0.931	-0.320
0024	214	50.173	0.064	598	1.984	355	0.766	-0.919	-0.246	798	-0.394	-0.105
0025	214	50.221	0.064	598	1.985	355	0.766	-0.493	-0.143	798	-0.345	-0.100
0026	214	50.134	0.063	598	1.984	355	0.765	-0.520	-0.150	798	-0.453	-0.130
0027	214	50.268	0.063	598	1.983	355	0.766	-1.358	-0.384	798	-1.357	-0.384
0028	214	50.131	0.063	598	1.984	355	0.766	-0.916	-0.255	798	-1.405	-0.390
0029	214	50.176	0.062	598	1.982	355	0.765	-1.292	-0.353	798	-1.280	-0.349
0030	214	50.141	0.062	598	1.982	355	0.766	-0.349	-0.094	798	-0.895	-0.242
0031	214	50.378	0.063	598	1.982	355	0.766	-1.255	-0.335	798	-1.105	-0.294
0032	214	50.327	0.062	598	1.981	355	0.765	-0.245	-0.069	798	-0.627	-0.176
0033	214	50.303	0.064	598	1.982	355	0.766	-0.781	-0.212	798	-0.276	-0.075
0034	214	50.481	0.064	598	1.982	355	0.766	-0.835	-0.230	798	-1.036	-0.286
0035	214	50.138	0.064	598	1.981	355	0.766	-0.217	-0.059	798	0.255	0.069
0036	214	50.147	0.063	598	1.980	355	0.765	-0.160	-0.046	798	0.090	0.026

RIGHT-TO-LEFT (INITIAL 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)
0037	219	50.136	0.090	601	2.000	355	0.769	0.756	-0.089	801	0.211	-0.025
0038	218	50.229	0.081	600	1.992	355	0.768	0.345	-0.054	800	0.385	-0.060
0039	217	50.052	0.075	599	1.989	355	0.768	0.344	-0.065	799	-0.729	0.138
0040	216	50.188	0.072	599	1.989	355	0.767	0.928	-0.207	799	0.058	-0.013
0041	216	50.288	0.070	599	1.988	355	0.767	-0.208	0.052	799	-0.696	0.173
0042	215	50.316	0.067	599	1.985	355	0.765	0.240	-0.073	799	-0.765	0.234
0043	215	50.184	0.067	599	1.985	355	0.765	-0.016	0.006	799	-0.565	0.206
0044	214	50.612	0.065	599	1.985	354	0.765	0.293	-0.088	799	-0.462	0.138
0045	214	50.197	0.064	599	1.986	355	0.765	0.331	-0.103	799	-0.528	0.165
0046	214	50.160	0.064	599	1.985	355	0.765	-0.249	0.081	799	-0.687	0.224
0047	214	50.057	0.064	598	1.985	355	0.766	0.209	-0.068	798	-0.102	0.033
0048	214	50.234	0.064	598	1.985	355	0.766	-0.117	0.041	798	-0.128	0.045
0049	214	50.329	0.063	598	1.984	354	0.765	-0.137	0.048	798	-0.320	0.112
0050	214	50.438	0.063	598	1.983	355	0.765	0.111	-0.040	798	-0.068	0.024
0051	214	50.215	0.064	598	1.984	355	0.766	0.288	-0.106	798	-0.366	0.135
0052	214	50.388	0.064	598	1.983	355	0.766	0.205	-0.071	798	-0.574	0.199
0053	214	50.047	0.064	598	1.983	355	0.766	0.642	-0.211	798	-0.605	0.199
0054	214	50.054	0.063	598	1.981	355	0.765	0.412	-0.142	798	-0.162	0.056
0055	214	50.094	0.064	598	1.982	355	0.766	0.401	-0.128	798	-0.435	0.139
0056	214	50.100	0.065	598	1.982	355	0.766	0.728	-0.239	798	-0.304	0.100

7.4 SINE WITH DWELL TEST RESULTS

2022 Honda Civic

NHTSA No.: C20215303

Date Created 30-Nov-21

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)
0017	950	11.931	442	-4.350	0.437	38.080	284	37.670
0018	950	15.668	460	-5.824	0.567	50.196	284	50.014
0019	949	19.249	470	-7.140	0.700	63.241	284	62.943
0020	949	20.418	422	-8.374	0.795	75.032	283	74.904
0021	948	24.805	421	-9.525	0.893	88.094	283	87.858
0022	948	30.858	424	-10.403	0.986	100.075	283	100.077
0023	948	34.326	424	-11.073	0.977	113.163	283	113.112
0024	948	26.718	420	-11.149	0.841	125.198	283	125.153
0025	948	28.968	416	-11.320	0.894	137.989	283	137.950
0026	948	28.806	416	-11.401	0.874	150.302	283	150.213
0027	948	28.287	412	-11.264	0.860	163.479	283	163.152
0028	948	27.786	410	-11.072	0.830	175.293	283	175.022
0029	948	27.289	410	-11.073	0.833	188.388	283	188.015
0030	948	27.024	408	-10.886	0.799	200.571	283	200.033
0031	948	26.654	407	-10.966	0.767	213.489	283	213.061
0032	948	27.999	406	-10.913	0.758	225.427	283	225.188
0033	948	27.105	406	-10.782	0.735	238.313	283	237.867
0034	948	27.564	403	-10.738	0.675	250.639	283	250.058
0035	948	27.144	403	-10.693	0.708	263.660	283	263.151
0036	948	28.461	405	-10.436	0.724	270.705	283	270.030

RIGHT-TO-LEFT (INITIAL 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)
0037	951	-11.837	453	4.182	-0.449	37.585	284	37.867
0038	950	-15.619	449	5.447	-0.569	49.791	283	49.965
0039	949	-18.969	473	7.019	-0.694	63.052	283	62.977
0040	949	-22.312	461	7.922	-0.783	74.793	283	74.942
0041	949	-24.833	425	9.282	-0.861	87.591	284	87.946
0042	949	-30.627	426	10.376	-0.920	99.627	283	100.039
0043	949	-36.514	425	11.241	-0.966	112.750	284	113.293
0044	949	-29.981	427	11.691	-0.769	124.847	283	125.222
0045	949	-31.272	425	11.938	-0.794	137.733	283	138.002
0046	949	-32.556	423	12.001	-0.802	149.897	283	150.213
0047	948	-32.616	424	12.154	-0.737	163.177	283	163.284
0048	948	-34.928	421	12.359	-0.742	175.179	283	175.163
0049	948	-35.087	419	12.342	-0.732	188.088	283	188.080
0050	948	-35.856	422	12.529	-0.681	200.041	283	199.997
0051	948	-36.924	418	12.238	-0.747	213.266	283	213.167
0052	948	-34.762	418	12.364	-0.660	225.300	283	225.146
0053	948	-32.880	413	12.093	-0.667	238.166	283	237.892
0054	948	-34.593	413	11.948	-0.673	250.316	283	250.086
0055	948	-31.959	412	12.036	-0.629	263.587	283	263.111
0056	948	-32.751	411	12.035	-0.628	270.301	283	270.045

7.5 SLOWLY INCREASING STEER TEST RESULTS

2022 Honda Civic

NHTSA No.: C20215303

Date Created 30-Nov-21

File	Vehicle	EventPt	DOS	MES [mph]	Mean SPD [mph]	AYcount_3	THETAENCF_3 [degree]	AYCG_CD2_3 [g]	r_squared	ZeroBegin	ZeroEnd
0010	2022 Honda Civic	297	1	49.989	49.688	659	-24.457	-0.293	0.997	97	297
0011	2022 Honda Civic	178	1	50.166	49.794	670	-24.785	-0.301	0.995	1	178
0012	2022 Honda Civic	296	1	49.691	49.567	673	-25.307	-0.295	0.987	96	296
0013	2022 Honda Civic	307	0	50.400	49.911	677	25.053	0.302	0.999	107	307
0014	2022 Honda Civic	305	0	50.572	49.660	673	24.927	0.304	0.998	105	305
0015	2022 Honda Civic	308	0	49.685	49.091	686	25.614	0.310	0.997	108	308
	Averages						25	0.301			

Scalars	Steering Angles (deg)
1.5	38
2.0	50
2.5	63
3.0	75
3.5	88
4.0	100
4.5	113
5.0	125
5.5	138
6.0	150
6.5	163
7.0	175
7.5	188
8.0	200
8.5	213
9.0	225
9.5	238
10.0	250
10.5	263
10.8	270

7.6 INERTIA SENSOR MEASUREMENTS

2022 Honda Civic

NHTSA No.: C20215303

Serial Number : E12-05-13-10989					x-distance (longitudinal)	Point of reference is the front axle centerline.			
Calibration Date : 1/13/21						(Positive from front axle toward rear of vehicle.)			
Units : millimeters									
					y-distance (lateral)	Point of reference is the vehicle centerline.			
Date Created : 11/30/21						(Positive from the center toward the right.)			
					z-distance (vertical)	Point of reference is the ground plane.			
						(Positive from the ground up.)			
Label	ActualX	ActualY	ActualZ		**Track Width (mm)**			1535.938	
					Roof Height (relative to ground)			1399.533	
M_FRT_AXLE_CENTER	0.0000	0.0000	0.0000		**Motion Pak - x-distance (mm)**	1654.436			
C_COORDSYS001	0.0000	0.0000	0.0000		**Motion Pak - y-distance (mm)**		-46.880		
M_TIRE_TREAD_CENTER	246.3216	89.17219	-208.2917		**Motion Pak - z-distance (mm)**			746.776	
M_INERTIA_PACK	1654.436	810.2613	527.7907						
M_ROOF	1735.441	878.5664	1091.648						
M_GROUND	1721.728	-193.9164	-307.8851		**Motion Pak - x-distance (inches)**	65.135			
M_REAR_AXLE_CENTER	2727.794	-8.158918	4.806826		**Motion Pak - y-distance (inches)**		-1.846		
					Motion Pak - z-distance (inches)			29.401	