126-TRC-07-001

SAFETY COMPLIANCE TESTING FOR FMVSS 126 (Indicant)
Electronic Stability Control Systems

Volkswagen AG
2007 Volkswagen Passat 2.0T
NHTSA No. C75802

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

September 21, 2007

FINAL REPORT

Prepared Under Contract No.: DTNH22-07-P-00332

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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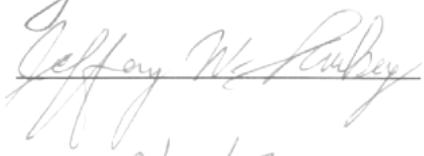
Prepared By: 

Approved By: 

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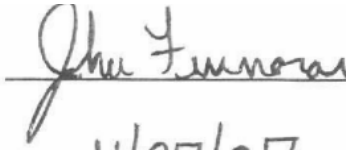
Accepted By: 

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16. Abstract A test was conducted on a 2007 Volkswagen Passat 2.0T, NHTSA No. C75802, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-126-00 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, an MY 2007 Volkswagen Passat 2.0T meets the minimum equipment and performance requirements stated in Federal Motor Vehicle Safety Standard (FMVSS) 126, "Electronic Stability Control Systems."

This test is considered an "Indicant" Test because manufacturers are not required to certify vehicles to FMVSS 126 until on or after September 1, 2008.

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 2007 Volkswagen Passat 2.0T was conducted at Transportation Research Center Inc. (TRC Inc.) in accordance with NHTSA TP-126-00, dated April 6, 2007.

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

- Augments vehicle directional stability by applying and adjusting the vehicle brake torque individually 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 15km/h (9.3mph) or when being driven in reverse).

The vehicle was subjected to a 0.7Hz sine with dwell 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: Volkswagen / Passat 2.0T / 4-Door Sedan

VEHICLE NHTSA NO.: C75802 VIN: WVWAK73CX7P083838

VEHICLE TYPE: Passenger Car DATE OF MANUFACTURE: 11/06

LABORATORY: Transportation Research Center, Inc.

REQUIREMENTS	PASS/FAIL
ESC Equipment and Operational Characteristics (Data Sheet 2)	
The vehicle is 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* and S5.3.5, S5.3.6)	PASS
"ESC Off" and other System Controls and Telltale* (Data Sheet 3)	
If provided, ESC OFF telltale meets the requirements for mounting, symbol or abbreviation, color and check of lamp function. (S126, S5.5.1, S5.5.2*, S5.5.3*, S5.5.6*, S5.5.7, and S5.5.8)	SEE REMARKS
If provided, dedicated off control meets the label requirements (S126, S5.4.2*)	SEE REMARKS
If provided, off control and other system controls meets the operational requirements (S126, S5.4, S5.4.1, S5.4.3*, S5.5.4, and S5.5.9)	PASS
Vehicle Lateral Stability (Data Sheet 7)	
Yaw Rate Ratio at 1 second after COS is less than 35% of peak value. (S126, S5.2.1)	PASS
Yaw Rate Ratio at 1.75 seconds after COS is less than 20% of peak value. (S126, S5.2.2)	PASS

2.0 TEST PROCEDURE AND DISCUSSION OF RESULTS …continued

DATA SUMMARY SHEET (2 of 2)

REQUIREMENTS	PASS/FAIL
Vehicle Responsiveness (Data Sheet 7)	
Lateral displacement at 1.07 seconds after BOS is at least 1.83 m (6 feet) for vehicles with a GVWR of 3,500kg (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 8)	
Warning is provided to driver after malfunction occurrence. (S126. S5.3.3*)	PASS
Malfunction telltale stayed illuminated as long as malfunction existed and must extinguished after malfunction was corrected. (S126, S5.3.3*, S5.3.7)	PASS

*Requirements effective on and after September 1, 2011.

REMARKS:

ESC System malfunction and off telltales and controls do not have to meet the requirements of FMVSS No. 126 until on or after September 1, 2011.

3.0 TEST DATA

DATA SHEET 1
TEST VEHICLE INSPECTION AND TEST PREPARATION

VEHICLE MAKE/MODEL/BODY STYLE: Volkswagen / Passat 2.0T / 4-Door Sedan

NHTSA No.: C75802 TEST DATE: 6-6-07

VIN: WVWAK73CX7P083838 MANUFACTURE DATE: 11/06

GVWR: 2040 KG FRONT GAWR: 1100 KG REAR GAWR 990 KG

SEATING POSITIONS: FRONT 2 MID N/A REAR 3

ODOMETER READING AT START OF TEST: 26 (42) Miles (Kilometers)

DESIGNATED TIRE SIZE(S) FROM VEHICLE LABELING:

Front Axle 215/55R16-97H XL Rear Axle 215/55R16-97H XL

INSTALLED TIRE SIZE(S) ON VEHICLE:

From Tire Sidewall	Front Axle	Rear Axle
Manufacturer and Model	Michelin MXM4 Pilot HX	Michelin MXM4 Pilot HX
Tire Size Designation	215/55R16-97H	215/55R16-97H

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

DRIVETRAIN CONFIGURATION:

X Front Wheel Drive (FWD) ____ Rear Wheel Drive (RWD)
____ Four Wheel Drive (4WD) ____ All Wheel Drive (AWD)

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; EDL (Electronic Differential Lock), ASR (Anti-Slip Regulation)

REMARKS:

Volkswagen calls its ESC System "Electronic Stabilization Program (ESP)".

RECORDED BY: Jason Church DATE: 6-6-07
APPROVED BY: Jeff Sankey DATE: 9-20-07

3.0 TEST DATA….continued

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

VEHICLE MAKE/MODEL/BODY STYLE: Volkswagen / Passat 2.0T / 4-Door Sedan

NHTSA No.: C75802 TEST DATE: 6-6-07

ESC SYSTEM IDENTIFICATION:
Manufacturer/Model TRW Automotive, Model EBC 440

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; ESP Off Switch

ESC SYSTEM OPERATIONAL CHARACTERISTICS:

System is capable of generating brake torques at each wheel X Yes (PASS)
_____ No (FAIL)
List and describe component(s): ESP Hydraulic System

System is capable of determining yaw rate X Yes (PASS)
_____ No (FAIL)
List and describe component(s): Yaw Rate Sensor in the EPB ECU

System is capable of monitoring driver steering input X Yes (PASS)
_____ No (FAIL)
List and describe component(s): Steering Wheel Sensor

System is capable of estimating side slip or side slip derivation X Yes (PASS)
_____ No (FAIL)
List and describe component(s): Steering Wheel Sensor, Yaw Rate Sensor, Lateral Acceleration 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 modifying engine torque during ESC activation. __X__ Yes (PASS)
_____ No (FAIL)
Method used to modify engine torque:___ESC actuates Engine Control System_____

System is capable of activation at speeds of 15 km/h (9.3 mph) and higher. __X__ Yes (PASS)
_____ No (FAIL)

Speed system becomes active. ___2 km/h_____

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

Driving phases system is capable of activation. ___All phases listed above_____

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

DATA INDICATES COMPLIANCE PASS/FAIL _____PASS_

REMARKS:

RECORDED BY: __Jason Church_____ DATE:_____6-6-07_____
APPROVED BY: __Jeff Sankey_____ DATE:_____9-20-07_____

3.0 TEST DATA….continued

DATA SHEET 3 (Sheet 1 of 5)
ESC MALFUNCTION AND OFF TELLTALES AND CONTROLS – Location, Labeling and Bulb Check

VEHICLE MAKE/MODEL/BODY STYLE: Volkswagen / Passat 2.0T / 4-Door Sedan

NHTSA No.: C75802 TEST DATE: 6-6-07

ESC Malfunction Telltale
Malfunction Telltale Location Instrument Panel Cluster – Inside Speedometer Gauge

Telltale is mounted inside the occupant compartment in front of and in clear view of the driver?
__X__ Yes _____ No (fail) If no, explain: _____

Telltale is part of a common space? _____ Yes __X__ No

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

Or **ESC**

_____X__ Vehicle uses this symbol
_____ Vehicles uses this abbreviation

Note any words or additional symbols used.

_____

_____

"ESC OFF" Telltale (if provided)
"ESC OFF" Telltale Location "ESC Off" telltale is combined with ESC malfunction telltale located in the instrument panel cluster inside the speedometer gauge.

"ESC OFF" telltale is mounted inside the occupant compartment in front of and in clear view of the driver?
__X__ Yes _____ No (fail) If no, explain: _____

Telltale is part of a common space? _____ Yes __X__ No

3.0 TEST DATA….continued

DATA SHEET 3 (Sheet 2 of 5)
ESC MALFUNCTION AND OFF TELLTALES AND CONTROLS

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

Or **ESC OFF**

_____ Vehicle uses this symbol
_____ Vehicle uses this abbreviation
__X__ Neither symbol nor abbreviation used

Note any words or additional symbols used.
"ESC OFF" telltale is combined with ESC malfunction telltale. ESC malfunction telltale stays illuminated when ESC system is off.

Malfunction Telltale Lamp Function:
Identify position of ignition locking system when malfunction 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 Mal-function telltale lamp check functions? _____ Yes __X__ No

If yes, describe the interlock feature:

3.0 TEST DATA….continued

DATA SHEET 3 (Sheet 3 of 5)
ESC MALFUNCTION AND OFF TELLTALES AND CONTROLS

"ESC OFF" Telltale Lamp Function:
Identify position of ignition locking 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.

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:

_____

_____

ESC OFF Control Operational Check:
Is the vehicle equipped with a control whose sole purpose is to deactivate the ESC System? __X__ Yes _____ No

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

Or **ESC OFF**

___ Vehicle uses this symbol
____ Vehicle uses this abbreviation
__X__ Neither symbol nor abbreviation used

Note any words or additional symbols used.
Control switch is labeled "ESP OFF" not "ESC OFF"

_____

3.0 TEST DATA….continued

DATA SHEET 3 (Sheet 4 of 5)
ESC MALFUNCTION AND OFF TELLTALES AND CONTROLS

Does the “ESC Off” telltale illuminate upon activation of the ESC off control?

__X__ Yes _____ No (fail)

If no, describe off control function:

("ESC OFF" telltale is combined with malfunction telltale.)

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?

__X__ Yes _____ No (fail)

If no, describe the off control function:

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

List other controls (i.e. low speed off-road axle/transfer case):

N/A

Does the “ESC OFF” telltale illuminate upon activation of each control system listed above?

_____ Yes _____ No

If no, describe off control function:

For electrical controls, does the “ESC OFF” telltale extinguish and remain extinguished when the ignition is cycled from “On” (“Run”) to “Lock” or “Off” and then back again to the “On” (“Run”) position?

_____ Yes _____ No

If no, describe the off control function:

3.0 TEST DATA….continued

DATA SHEET 3 (Sheet 5 of 5)
ESC MALFUNCTION AND OFF TELLTALES AND CONTROLS

For mechanical controls, does the “ESC OFF” telltale extinguish after de-activation of mechanical control?

_____ Yes _____ No

If no, describe the off control function:

_____

DATA INDICATES COMPLIANCE: PASS/FAIL SEE REMARKS

REMARKS:

ESC System malfunction and off telltales and controls do not have to meet the requirements of FMVSS No.126 until on or after September 1, 2011.

RECORDED BY: Jason Church DATE: 6-6-07

APPROVED BY: Jeff Sankey DATE: 9-20-07

3.0 TEST DATA….continued

DATA SHEET 4 (Sheet 1 of 3)
VEHICLE AND TEST TRACK DATA

VEHICLE MAKE/MODEL/BODY STYLE: Volkswagen / Passat 2.0T / 4-Door Sedan

NHTSA No.: C75802 TEST DATE: 6-6-07

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

Peak Friction Coefficient (at least 0.9) 0.94

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

Tire Pressures: **Required:** Front Axle 227.5 KPA Rear Axle 227.5 KPA
Actual: LF 227.5 KPA RF 227.5 KPA LR 227.5 KPA RR 227.5 KPA

Vehicle Dimensions: Track Width 152.2 cm Wheelbase 271.5 cm

Roof Height 145.8 cm

Vehicle weight ratings: GAWR Front 1100 KG GAWR Rear 990 KG

Unloaded Vehicle Weight (UVW)

Front Axle 913.0 KG Right Front 459.0 KG Left Front 454.0 KG

Rear Axle 626.0 KG Right Rear 316.0 KG Left Rear 310.0 KG

Total UVW 1,539.0 KG

3.0 TEST DATA….continued

DATA SHEET 4 (Sheet 2 of 3)
VEHICLE AND TEST TRACK DATA

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

Front Axle 994.5 KG Right Front 490.0 KG Left Front 504.5 KG

Rear Axle 689.0 KG Right Rear 334.5 KG Left Rear 354.5 KG

Total Loaded weight w/ Driver 1,683.5 KG

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

= [1,539.0 KG + 168 KG] - 1,683.5 KG

= 23.5 KG

Total Loaded Vehicle Weight

Front Axle 1,005.0 KG Right Front 499.0 KG Left Front 506.0 KG

Rear Axle 708.0 KG Right Rear 347.0 KG Left Rear 361.0 KG

Total Loaded Vehicle Weight 1,713.0 KG

3.0 TEST DATA….continued

DATA SHEET 4 (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	112.2 cm	114.1 cm
y-distance	-1.0 cm	0.03 cm
z-distance	55.4 cm	43.4 cm

Distance Between Ultrasonic Sensors: 186.7 cm

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

REMARKS:

RECORDED BY: Jason Church DATE: 6-8-07
APPROVED BY: Jeff Sankey DATE: 9-20-07

3.0 TEST DATA….continued

DATA SHEET 5 (Sheet 1 of 3)
BRAKE AND TIRE CONDITIONING

VEHICLE MAKE/MODEL/BODY STYLE: Volkswagen / Passat 2.0T / 4-Door Sedan

VEHICLE NHTSA No.: C75802

Measured Cold Tire Pressures: LF 227.5 KPA LR 227.5 KPA

RF 227.5 KPA RR 227.5 KPA

Wind Speed 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)) 21 °C

Brake Conditioning Time; 9:30AM Date; 7-18-07

56 km/h (35 mph) Brake Stops

Number of stops executed (10 required) 10 stops

Observed deceleration rate range (.5g target) 0.45 - 0.55 g

72 km/h (45 mph) Brake Stops

Number of stops executed (3 required) 3 stops

Number of stops ABS activated (3 required) 3 stops

Observed deceleration rate range 0.85 - 0.95 g

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

Duration of cool down period (5 minutes min.) 6 minutes

3.0 TEST DATA….continued

DATA SHEET 5 (Sheet 2 of 3)
BRAKE AND TIRE CONDITIONING

Tire Conditioning Series No. 1 Time: 7:25am Date: 7-20-07

Measured Tire Pressures: LF 227.5 KPA LR 227.5 KPA

RF 227.5 KPA RR 227.5 KPA

Wind Speed 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)) 14 °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	42
4-6	Counterclockwise	0.5-0.6	0.55	42

1 Hz 3 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	.22
2	56±2 (35±1)	70	0.5-0.6	.42
3	56±2 (35±1)	80	0.5-0.6	.52
4	56±2 (35±1)		0.5-0.6	

Steering wheel angle that corresponds to a peak 0.5–0.6g lateral acceleration; 80 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)	80 (cycles 1-10)	0.5-0.6	.55
4	56±2 (35±1)	80 (cycles 1-9)	0.5-0.6	.55
		160 (cycle 10)*	NA	NA

* 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 5 (Sheet 3 of 3)
BRAKE AND TIRE CONDITIONING

Tire Conditioning Series No. 2 Time: 9:15 AM Date: 7-20-07

Measured Tire Pressures: LF 234 KPA LR 234 KPA
RF 234 KPA RR 234 KPA

Wind Speed 4.5 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)) 15.5 °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	.55	42
4-6	counterclockwise	0.5-0.6	.55	42

1 Hz 3 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	.22
2	56±2 (35±1)	80	0.5-0.6	.52
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; 80 degrees

1 Hz 10 Cycle Sinusoidal Steering Maneuver				
Test Runs	Vehicle Speed (mph)	Steering Wheel Angle (degrees)	Target Peak Lateral Acceleration (g)	Observed Peak Lateral Acceleration (g)
1 - 3	56±2 (35±1)	80 (cycles 1-10)	0.5-0.6	.55
4	56±2 (35±1)	80 (cycles 1-9)	0.5-0.6	.55
		160 (cycle 10)*	NA	NA

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

REMARKS:

RECORDED BY: Jason Church DATE: 7-20-07
APPROVED BY: Jeff Sankey DATE: 9-20-07

3.0 TEST DATA….continued

DATA SHEET 6 (1 of 2)
SLOWLY INCREASING STEER (SIS) MANEUVER

VEHICLE MAKE/MODEL/BODY STYLE: Volkswagen / Passat 2.0T / 4-Door Sedan

VEHICLE NHTSA No.: C75802 TEST DATE: 7-20-07

Wind Speed 4.5 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)) 15.5 °C

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

$a_{y,30\ degrees}$ = 0.35 g

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

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

δ_{SIS} = 47 degrees

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?
1	Left	7:37am	- 28.7	Yes
2	Left	7:41am	- 27.6	Yes
3	Left	7:43am	- 28.7	Yes
4	Right	7:47am	29.0	Yes
5	Right	7:49am	28.7	Yes
6	Right	7:51am	28.7	Yes

3.0 TEST DATA….continued

DATA SHEET 6 (2 of 2)
SLOWLY INCREASING STEER (SIS) MANEUVER

Average Overall Steering Wheel Angle:

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

$\delta_{0.3\,g,\,overall}$ = 28.6 degrees
[to nearest 0.1 degree]

REMARKS:

RECORDED BY: Jason Church DATE: 7-20-07
APPROVED BY: Jeff Sankey DATE: 9-20-07

3.0 TEST DATA….continued

DATA SHEET 7 (1 of 3)
VEHICLE LATERAL STABILITY AND RESPONSIVENESS

VEHICLE MAKE/MODEL/BODY STYLE: Volkswagen / Passat 2.0T / 4-Door Sedan

VEHICLE NHTSA No.: C75802 TEST DATE: 7-20-07

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

Overall steering wheel angle ($\delta_{0.3\ g,\ overall}$) 28.6 degrees

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

Maneuver #	Clock Time (5 min max between runs)	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
1	9:24am	1.5* $\delta_{0.3\ g}$	43	12.17	-0.02	0.07	-0.17	Pass	0.57	Pass
2	9:27am	2.0* $\delta_{0.3\ g}$	57	16.02	-0.04	-0.05	-0.25	Pass	-0.29	Pass
3	9:29am	2.5* $\delta_{0.3\ g}$	72	20.15	0.08	0.09	0.41	Pass	0.44	Pass
4	9:31am	3.0* $\delta_{0.3\ g}$	86	24.98	0.13	0.20	0.51	Pass	0.79	Pass
5	9:34am	3.5* $\delta_{0.3\ g}$	100	29.75	0.09	0.25	0.30	Pass	0.85	Pass
6	9:36am	4.0* $\delta_{0.3\ g}$	114	35.87	0.89	0.03	2.47	Pass	0.10	Pass
7	9:39am	4.5* $\delta_{0.3\ g}$	129	42.12	0.66	0.25	1.56	Pass	0.59	Pass
8	9:41am	5.0* $\delta_{0.3\ g}$	143	47.99	0.88	0.12	1.84	Pass	0.25	Pass
9	9:44am	5.5* $\delta_{0.3\ g}$	157	52.78	0.46	0.28	0.87	Pass	0.53	Pass
10	9:46am	6.0* $\delta_{0.3\ g}$	172	57.79	1.24	0.34	2.15	Pass	0.59	Pass
11	9:49am	6.5* $\delta_{0.3\ g}$	186	60.84	0.99	0.10	1.64	Pass	0.16	Pass
12	9:51am	7.0* $\delta_{0.3\ g}$	200	64.51	2.50	0.27	3.87	Pass	0.42	Pass
13	9:54am	7.5* $\delta_{0.3\ g}$	214	67.51	7.78	1.85	11.53	Pass	2.74	Pass
14	9:56am	8.0* $\delta_{0.3\ g}$	229	69.55	6.55	0.49	9.42	Pass	0.71	Pass
15	9:59am	8.5* $\delta_{0.3\ g}$	243	70.83	8.65	1.21	12.21	Pass	1.71	Pass
16	10:02am	9.0* $\delta_{0.3\ g}$	257	(see REMARKS)						
17	10:04am	9.4* $\delta_{0.3\ g}$	270	71.22	4.66	0.28	6.54	Pass	0.40	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 7 (2 of 3)
VEHICLE LATERAL STABILITY AND RESPONSIVENESS

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

Maneuver #	Clock Time (5 min max between runs)	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
1	10:07am	1.5* $\delta_{0.3\,g}$	43	-12.55	0.16	0.09	-1.30	Pass	-0.68	Pass
2	10:09am	2.0* $\delta_{0.3\,g}$	57	-16.70	-0.01	-0.04	0.08	Pass	0.26	Pass
3	10:11am	2.5* $\delta_{0.3\,g}$	72	-21.22	-0.02	-0.01	0.11	Pass	0.06	Pass
4	10:14am	3.0* $\delta_{0.3\,g}$	86	-25.88	0.03	-0.08	-0.13	Pass	0.30	Pass
5	10:16am	3.5* $\delta_{0.3\,g}$	100	-30.05	-0.38	0.20	1.26	Pass	-0.67	Pass
6	10:18am	4.0* $\delta_{0.3\,g}$	114	-35.33	--0.60	-0.07	1.69	Pass	0.19	Pass
7	10:20am	4.5* $\delta_{0.3\,g}$	129	-40.49	2.38	-0.04	-5.88	Pass	-0.10	Pass
8	10:22am	5.0* $\delta_{0.3\,g}$	143	-46.15	-0.87	0.00	1.88	Pass	-0.01	Pass
9	10:25am	5.5* $\delta_{0.3\,g}$	157	-49.65	-0.87	0.02	1.76	Pass	-0.03	Pass
10	10:27am	6.0* $\delta_{0.3\,g}$	172	-54.36	-0.35	0.34	0.64	Pass	-0.63	Pass
11	10:29am	6.5* $\delta_{0.3\,g}$	186	-57.56	3.81	0.17	-6.61	Pass	-0.30	Pass
12	10:32am	7.0* $\delta_{0.3\,g}$	200	-61.40	-9.56	-0.53	15.57	Pass	0.86	Pass
13	10:34am	7.5* $\delta_{0.3\,g}$	214	-64.55	-6.70	0.17	10.38	Pass	-0.26	Pass
14	10:36am	8.0* $\delta_{0.3\,g}$	229	-66.26	-0.60	0.48	0.90	Pass	-0.73	Pass
15	10:38am	8.5* $\delta_{0.3\,g}$	243	-67.86	-6.11	0.09	9.01	Pass	-0.13	Pass
16	10:41am	9.0* $\delta_{0.3\,g}$	257	-69.10	-9.97	-1.28	14.42	Pass	1.86	Pass
17	10:43am	9.4* $\delta_{0.3\,g}$	270	-71.42	-12.49	-1.09	17.49	Pass	1.53	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 7 (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)		Lateral Acceleration at 1.07 seconds after BOS[1]	Calculated Lateral Displacement[2]	
		Scalar	Angle (degrees)	Corrected (m/sec^2)	Distance (m)	Pass/Fail
8	Counter Clockwise	$5.0*\delta_{0.3\,g}$	143	1.88	3.15	Pass
9	Counter Clockwise	$5.5*\delta_{0.3\,g}$	157	0.37	3.11	Pass
10	Counter Clockwise	$6.0*\delta_{0.3\,g}$	172	0.33	3.22	Pass
11	Counter Clockwise	$6.5*\delta_{0.3\,g}$	186	1.27	3.26	Pass
12	Counter Clockwise	$7.0*\delta_{0.3\,g}$	200	0.02	3.23	Pass
13	Counter Clockwise	$7.5*\delta_{0.3\,g}$	214	0.60	3.28	Pass
14	Counter Clockwise	$8.0*\delta_{0.3\,g}$	229	1.18	3.22	Pass
15	Counter Clockwise	$8.5*\delta_{0.3\,g}$	243	1.57	3.12	Pass
16	Counter Clockwise	$9.0*\delta_{0.3\,g}$	257	(see REMARKS)		
17	Counter Clockwise	$9.4*\delta_{0.3\,g}$	270	2.05	3.22	Pass
8	Clockwise	$5.0*\delta_{0.3\,g}$	143	3.59	3.03	Pass
9	Clockwise	$5.5*\delta_{0.3\,g}$	157	3.19	3.08	Pass
10	Clockwise	$6.0*\delta_{0.3\,g}$	172	2.22	3.17	Pass
11	Clockwise	$6.5*\delta_{0.3\,g}$	186	2.28	3.19	Pass
12	Clockwise	$7.0*\delta_{0.3\,g}$	200	2.13	3.20	Pass
13	Clockwise	$7.5*\delta_{0.3\,g}$	214	2.17	3.17	Pass
14	Clockwise	$8.0*\delta_{0.3\,g}$	229	2.87	3.16	Pass
15	Clockwise	$8.5*\delta_{0.3\,g}$	243	2.48	3.19	Pass
16	Clockwise	$9.0*\delta_{0.3\,g}$	257	3.11	3.13	Pass
17	Clockwise	$9.4*\delta_{0.3\,g}$	270	2.27	3.16	Pass

1. Measured Lateral Accelerations are corrected for sensor location CG offset and vehicle body roll.
2. Lateral displacement should be $\geq$ 1.83 m (6 ft) for vehicles with a GVWR of 3,500 kg (7,716 lb) or less; and $\geq$ 1.52 m (5ft) for vehicles with a GVWR greater than 3,500 kg (7,716 lb).

DATA INDICATES COMPLIANCE: PASS/FAIL PASS

REMARKS:
Maneuver #16 under Lateral Stability Test Series No.1 was not included in the results due to driver error. Handwheel command module was not set to the proper steering angle for 9.0 Scalar (257 degrees).

RECORDED BY: Jason Church DATE: 7-20-07
APPROVED BY: Jeff Sankey DATE: 9-20-07

3.0 TEST DATA….continued

DATA SHEET 8
MALFUNCTION WARNING TEST

VEHICLE MAKE/MODEL/BODY STYLE: Volkswagen / Passat 2.0T / 4-Door Sedan

VEHICLE NHTSA No.: C75802 TEST DATE: 8-7-07

CHECK MALFUNCTION TELLTALE BULB CHECK FUNCTION:
Before simulating an ESC system malfunction activate the vehicle ignition locking system and verify telltale illuminates for the bulb check and then extinguishes.
X Yes ____ No

METHOD OF MALFUNCTION SIMULATION:
Describe method of malfunction simulation: 1) Disconnect LF ABS Sensor

2) Remove (F16) SWA and CAN fuse

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 and vehicle speed of 48± 8 km/h (30± 5mph) is reached.

SEE REMARKS Seconds (must be within 2 minutes) X Pass ____ Fail

Cycle ignition locking system and start the vehicle's engine. Verify that the malfunction telltale illuminates and stays illuminated. X Yes ____ No

After the ESC system is restored to normal operation verify that the telltale does not remain illuminated. X Yes ____ No

DATA INDICATES COMPLIANCE: PASS/FAIL PASS

REMARKS:
Malfunction telltale illuminated immediately upon cycling ignition locking system without driving vehicle.

RECORDED BY: Jason Church DATE: 8-7-07
APPROVED BY: Jeff Sankey DATE: 9-20-07

4.0 TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

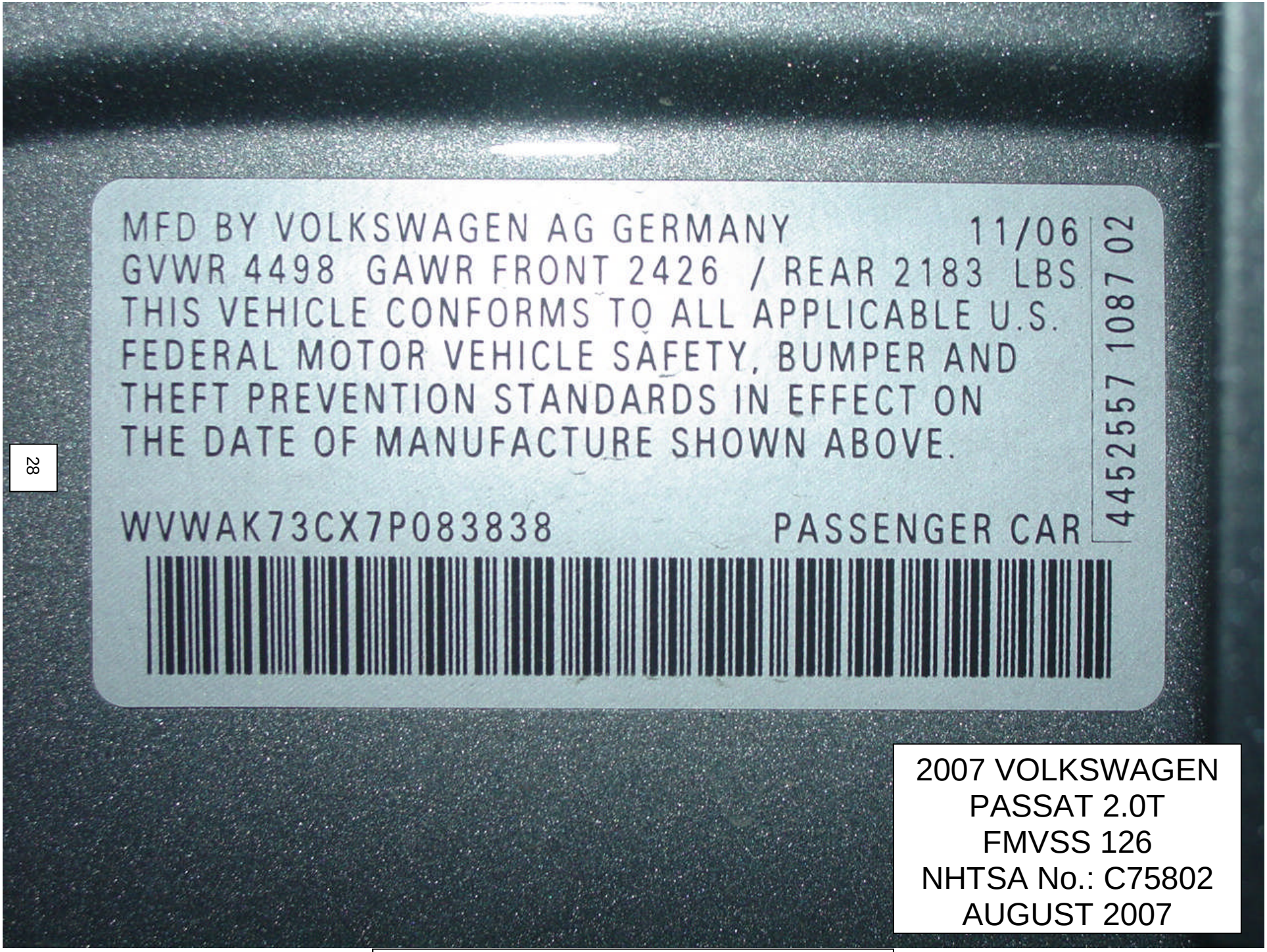
Type	Output	Range	Resolution	Accuracy	Specifics	Serial Number	Calibration
Tire Pressure Gage	Vehicle Tire Pressure	0-100psi	1 psi	±2.0% of applied pressure	Marsh Model: Series J 0-100psi	AG-102	By: TRC Date: 11-6-06 Due: 11-6-07
Platform Scales	Vehicle Total, Wheel, and Axle Load	0-2500 lb per each of four pads	0.5 lb	±1.0% of applied load	Mettler Toledo Model: JXGA1000	5225831-5JC	By: Mettler Date: 5-14-07 Due: 8-14-07
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: TRC Date: 6-18-07 Due: 6-18-08
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: 6-21-07 Due: 6-21-08
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: A-DAT Date: 9-9-06 Due: 9-9-07
Ultrasonic Distance Measuring System	Left and Right Side Vehicle Height	5-24 inches	0.01 inches	±0.25% of maximum distance	Massa Products Corporation Model: M-5000/220	104619 & 104613	By: TRC Date: per test Due: per test
Data Acquisition System [Amplify, Anti-Alias, and Digitize]	Record Time; Velocity; Distance; Lateral, Longitudinal, and Vertical Accelerations; Roll, Yaw, and Pitch Rates; Steering Wheel Angle.	Sufficient to meet or exceed individual sensors	200 Hz	Sufficient to meet or exceed individual sensors	Dewetron Sidehand DAS Model: DA-121-16 Digitizer Model: Dewe-Orion-1616-100 Amplifier/AntiAliasing: MDAQ-FILT-10-S	12060 1105	By: Dewetron Date: 3-20-07 Due: 3-20-08
Load Cell	Vehicle Brake Pedal Force	0-300 lb	1 lb	±0.05% of full scale	DATRON Model: DTM-LPA	4970-1103	By: TRC Date: per test Due: per test
Coordinate Measurement Machine	Inertial Sensing System Location	0-10 feet	0.001 inch	±0.003% of full scale	FARO International Model: Faro Arm N10	N10-02-03-01310	By: FARO Date: 12-04-06 Due: 12-04-07
Outriggers	No output. Safety Item.	N/A	N/A	N/A	NHTSA Titanium Outriggers Model: Docket TBD	N/A	N/A

5.0 PHOTOGRAPHS

- ¾ FRONTAL VIEW FROM LEFT SIDE OF VEHICLE
- VEHICLE CERTIFICATION LABEL
- VEHICLE PLACARD
- WINDOW STICKER (MONRONEY LABEL)
- ESC MALFUNCTION AND ESC OFF TELLTALE
- ESC OFF CONTROL
- TEST VEHICLE, TEST CONDITION
- TEST INSTRUMENTATION
- TEST INSTRUMENTATION AND BALLAST
- TEST INSTRUMENTATION
- TEST INSTRUMENTATION
- TEST INSTRUMENTATION

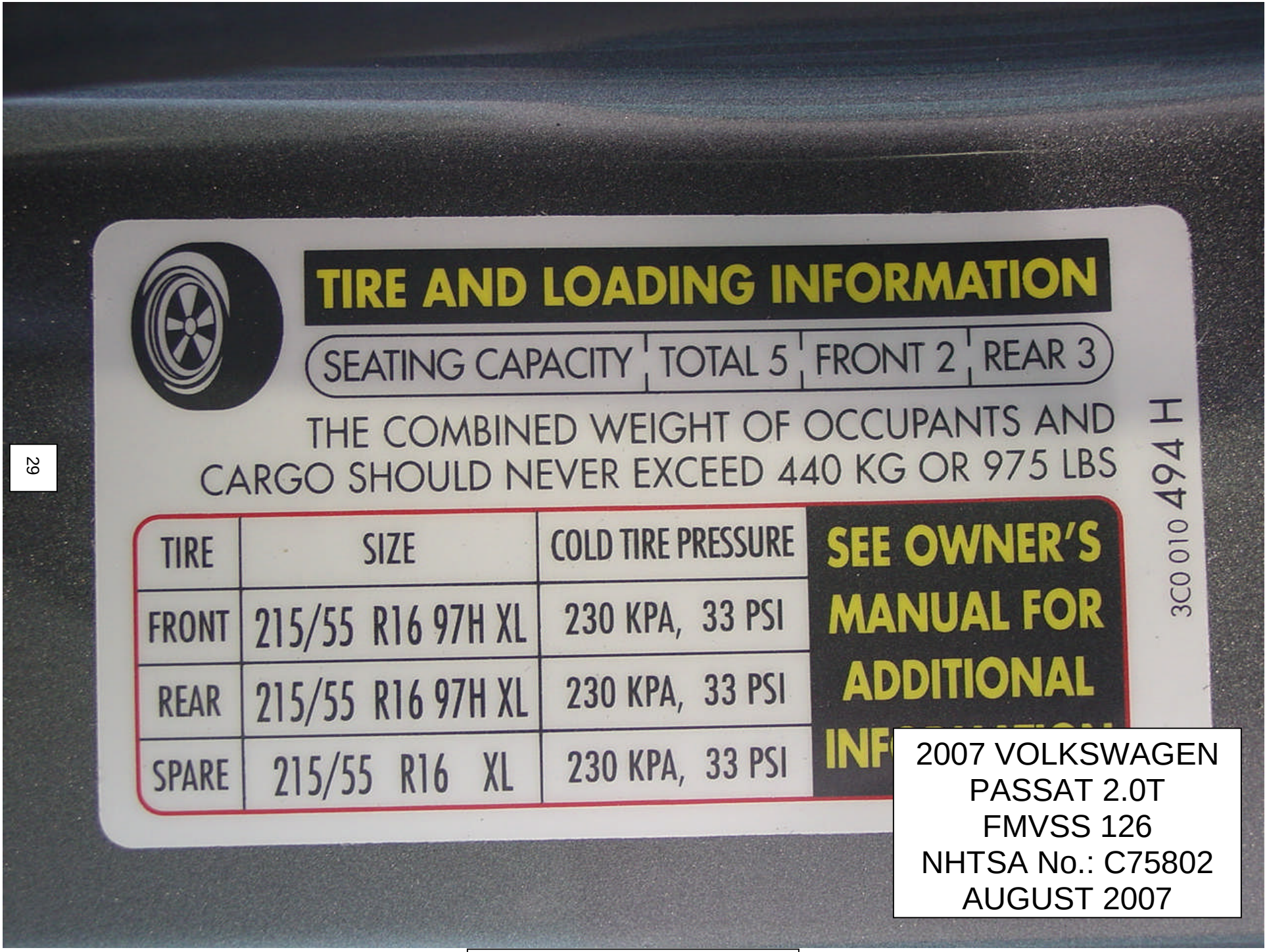
2007 VOLKSWAGEN
PASSAT 2.0T
FMVSS 126
NHTSA No.: C75802
AUGUST 2007

¾ FRONTAL VIEW FROM LEFT SIDE OF VEHICLE



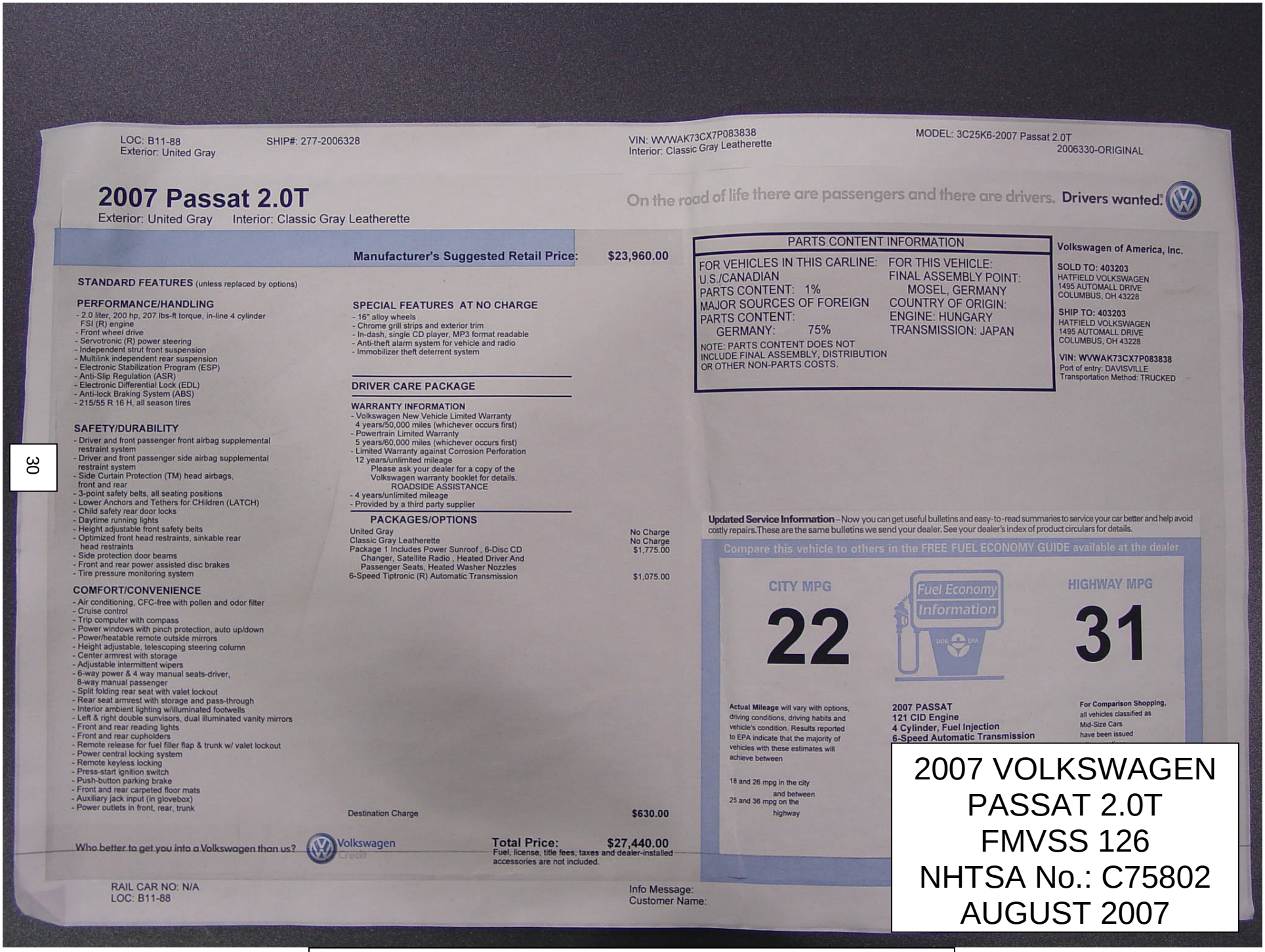
2007 VOLKSWAGEN
PASSAT 2.0T
FMVSS 126
NHTSA No.: C75802
AUGUST 2007

VEHICLE CERTIFICATION LABEL



2007 VOLKSWAGEN
PASSAT 2.0T
FMVSS 126
NHTSA No.: C75802
AUGUST 2007

VEHICLE PLACARD



LOC: B11-88
Exterior: United Gray

SHIP#: 277-2006328

VIN: WVWAK73CX7P083838
Interior: Classic Gray Leatherette

MODEL: 3C25K6-2007 Passat 2.0T
2006330-ORIGINAL

2007 Passat 2.0T

Exterior: United Gray Interior: Classic Gray Leatherette

On the road of life there are passengers and there are drivers. **Drivers wanted.**

Manufacturer's Suggested Retail Price: $23,960.00

STANDARD FEATURES (unless replaced by options)

PERFORMANCE/HANDLING
- 2.0 liter, 200 hp, 207 lbs-ft torque, in-line 4 cylinder FSI (R) engine
- Front wheel drive
- Servotronic (R) power steering
- Independent strut front suspension
- Multilink independent rear suspension
- Electronic Stabilization Program (ESP)
- Anti-Slip Regulation (ASR)
- Electronic Differential Lock (EDL)
- Anti-lock Braking System (ABS)
- 215/55 R 16 H, all season tires

SAFETY/DURABILITY
- Driver and front passenger front airbag supplemental restraint system
- Driver and front passenger side airbag supplemental restraint system
- Side Curtain Protection (TM) head airbags, front and rear
- 3-point safety belts, all seating positions
- Lower Anchors and Tethers for CHildren (LATCH)
- Child safety rear door locks
- Daytime running lights
- Height adjustable front safety belts
- Optimized front head restraints, sinkable rear head restraints
- Side protection door beams
- Front and rear power assisted disc brakes
- Tire pressure monitoring system

COMFORT/CONVENIENCE
- Air conditioning, CFC-free with pollen and odor filter
- Cruise control
- Trip computer with compass
- Power windows with pinch protection, auto up/down
- Power/heatable remote outside mirrors
- Height adjustable, telescoping steering column
- Center armrest with storage
- Adjustable intermittent wipers
- 6-way power & 4 way manual seats-driver, 8-way manual passenger
- Split folding rear seat with valet lockout
- Rear seat armrest with storage and pass-through
- Interior ambient lighting w/illuminated footwells
- Left & right double sunvisors, dual illuminated vanity mirrors
- Front and rear reading lights
- Front and rear cupholders
- Remote release for fuel filler flap & trunk w/ valet lockout
- Power central locking system
- Remote keyless locking
- Press-start ignition switch
- Push-button parking brake
- Front and rear carpeted floor mats
- Auxiliary jack input (in glovebox)
- Power outlets in front, rear, trunk

SPECIAL FEATURES AT NO CHARGE
- 16" alloy wheels
- Chrome grill strips and exterior trim
- In-dash, single CD player, MP3 format readable
- Anti-theft alarm system for vehicle and radio
- Immobilizer theft deterrent system

DRIVER CARE PACKAGE

WARRANTY INFORMATION
- Volkswagen New Vehicle Limited Warranty 4 years/50,000 miles (whichever occurs first)
- Powertrain Limited Warranty 5 years/60,000 miles (whichever occurs first)
- Limited Warranty against Corrosion Perforation 12 years/unlimited mileage
  Please ask your dealer for a copy of the Volkswagen warranty booklet for details.
  ROADSIDE ASSISTANCE
- 4 years/unlimited mileage
- Provided by a third party supplier

PACKAGES/OPTIONS

United Gray	No Charge
Classic Gray Leatherette	No Charge
Package 1 Includes Power Sunroof , 6-Disc CD Changer, Satellite Radio , Heated Driver And Passenger Seats, Heated Washer Nozzles	$1,775.00
6-Speed Tiptronic (R) Automatic Transmission	$1,075.00
Destination Charge	$630.00

Total Price: $27,440.00
Fuel, license, title fees, taxes and dealer-installed accessories are not included.

Who better to get you into a Volkswagen than us? Volkswagen Credit

RAIL CAR NO: N/A
LOC: B11-88

Info Message:
Customer Name:

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE:	FOR THIS VEHICLE:
U.S./CANADIAN PARTS CONTENT: 1%	FINAL ASSEMBLY POINT: MOSEL, GERMANY
MAJOR SOURCES OF FOREIGN PARTS CONTENT: GERMANY: 75%	COUNTRY OF ORIGIN: ENGINE: HUNGARY TRANSMISSION: JAPAN

NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION OR OTHER NON-PARTS COSTS.

Volkswagen of America, Inc.

SOLD TO: 403203
HATFIELD VOLKSWAGEN
1495 AUTOMALL DRIVE
COLUMBUS, OH 43228

SHIP TO: 403203
HATFIELD VOLKSWAGEN
1495 AUTOMALL DRIVE
COLUMBUS, OH 43228

VIN: WVWAK73CX7P083838
Port of entry: DAVISVILLE
Transportation Method: TRUCKED

Updated Service Information – Now you can get useful bulletins and easy-to-read summaries to service your car better and help avoid costly repairs. These are the same bulletins we send your dealer. See your dealer's index of product circulars for details.

Compare this vehicle to others in the FREE FUEL ECONOMY GUIDE available at the dealer

CITY MPG **22**

Fuel Economy Information

HIGHWAY MPG **31**

Actual Mileage will vary with options, driving conditions, driving habits and vehicle's condition. Results reported to EPA indicate that the majority of vehicles with these estimates will achieve between

18 and 26 mpg in the city
and between
23 and 36 mpg on the highway

2007 PASSAT
121 CID Engine
4 Cylinder, Fuel Injection
6-Speed Automatic Transmission

For Comparison Shopping, all vehicles classified as Mid-Size Cars have been issued

30

2007 VOLKSWAGEN
PASSAT 2.0T
FMVSS 126
NHTSA No.: C75802
AUGUST 2007

WINDOW STICKER (MONRONEY LABEL)

2007 VOLKSWAGEN
PASSAT 2.0T
FMVSS 126
NHTSA No.: C75802
AUGUST 2007

ESC MALFUNCTION AND ESC OFF TELLTALE

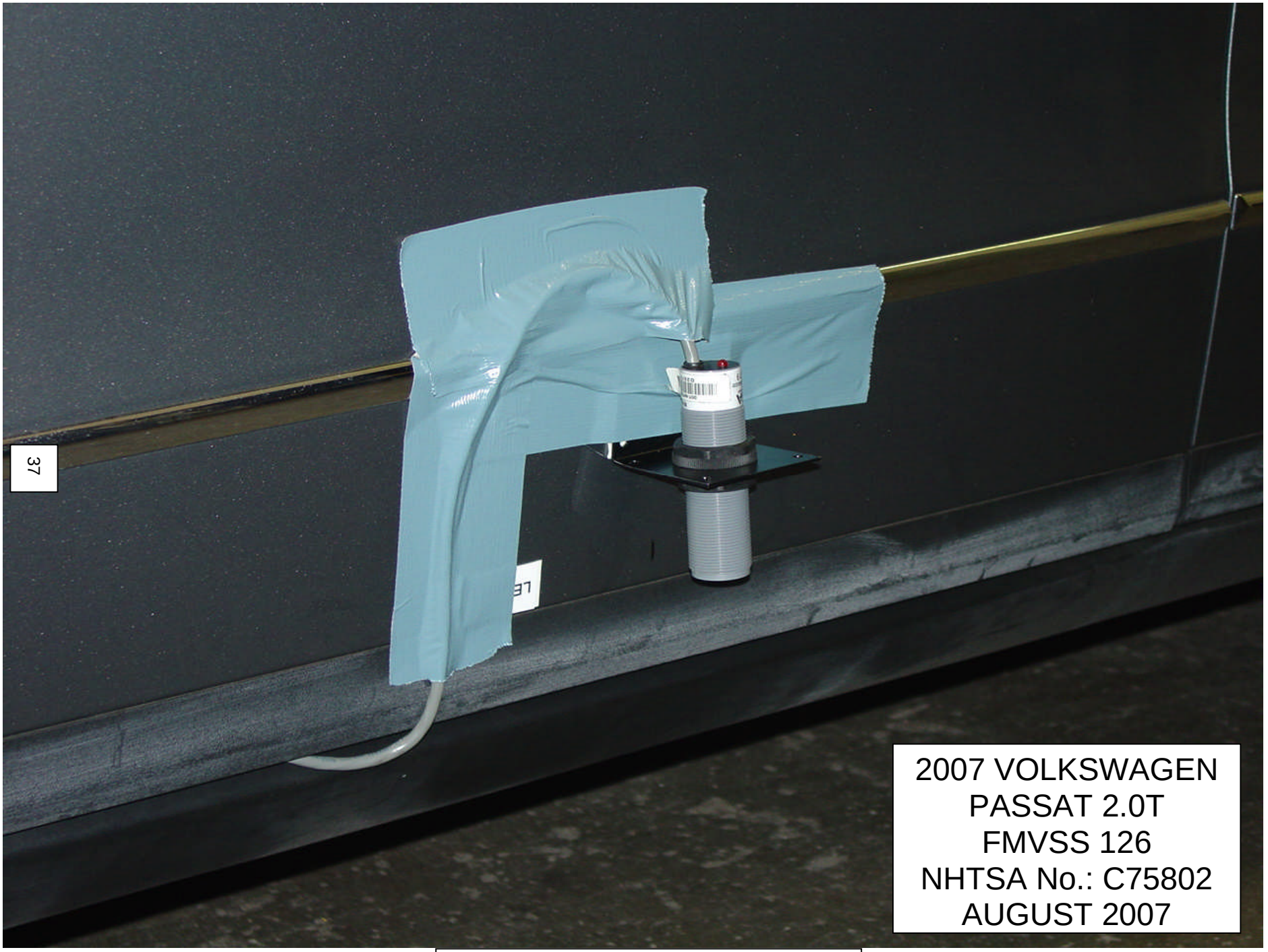
ESC OFF CONTROL

TEST VEHICLE, TEST CONDITION

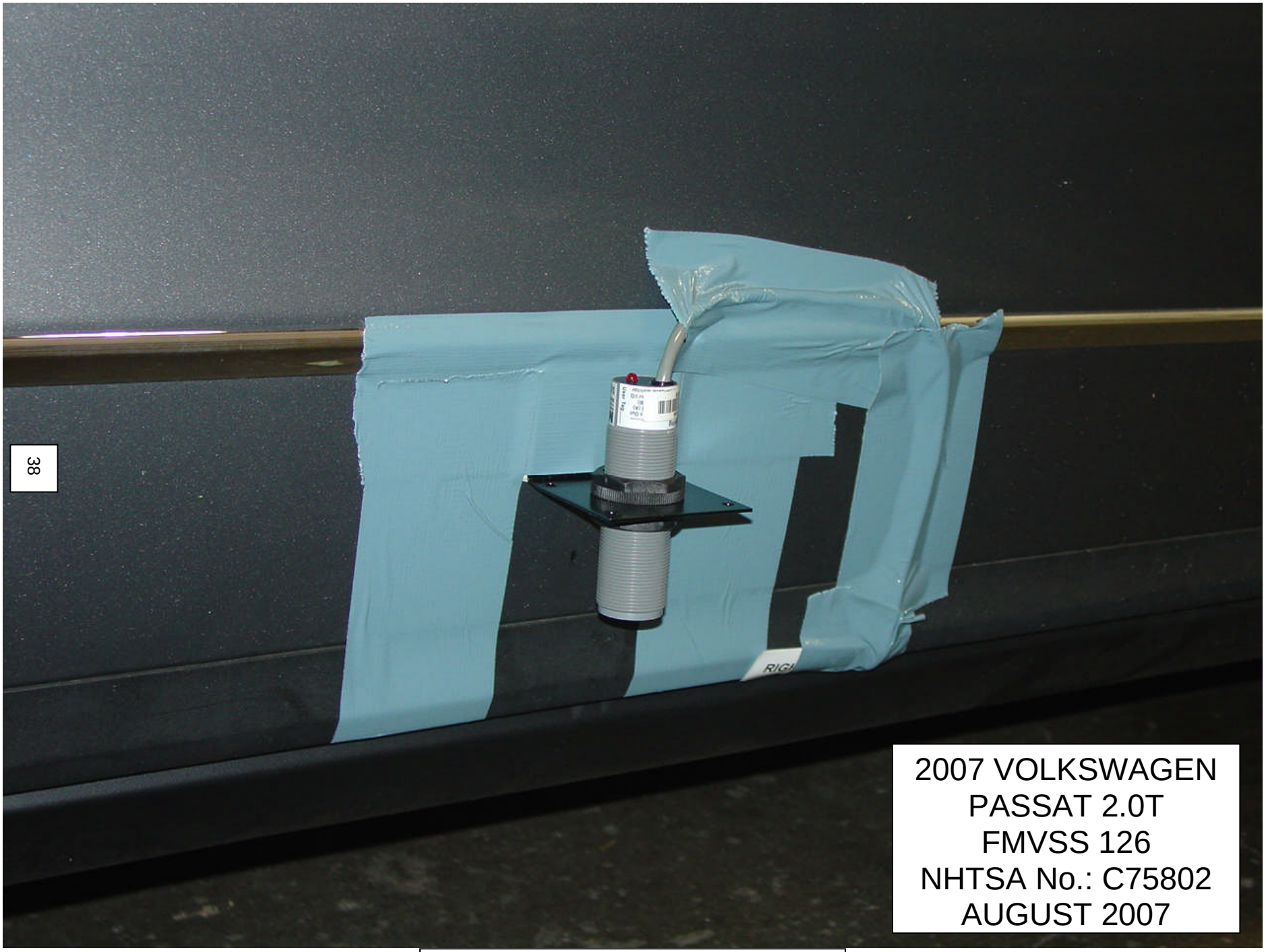
TEST INSTRUMENTATION

TEST INSTRUMENTATION AND BALLAST

TEST INSTRUMENTATION



TEST INSTRUMENTATION



TEST INSTRUMENTATION

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 DATA PLOTS

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

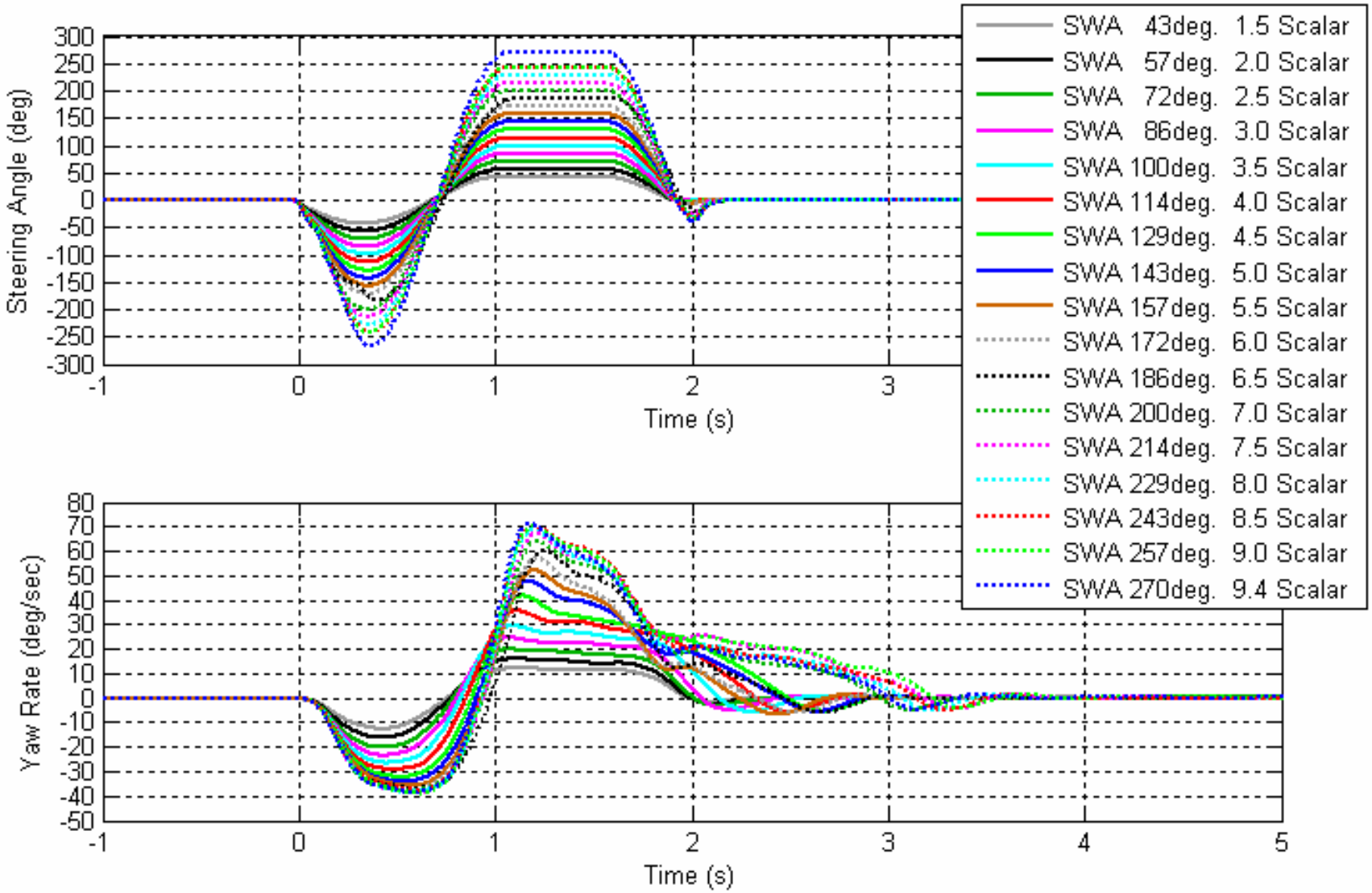


Figure 2. Steering Angle, Lateral Acceleration, and Lateral Displacement Time History, Counter-Clockwise Initial Steer Tests

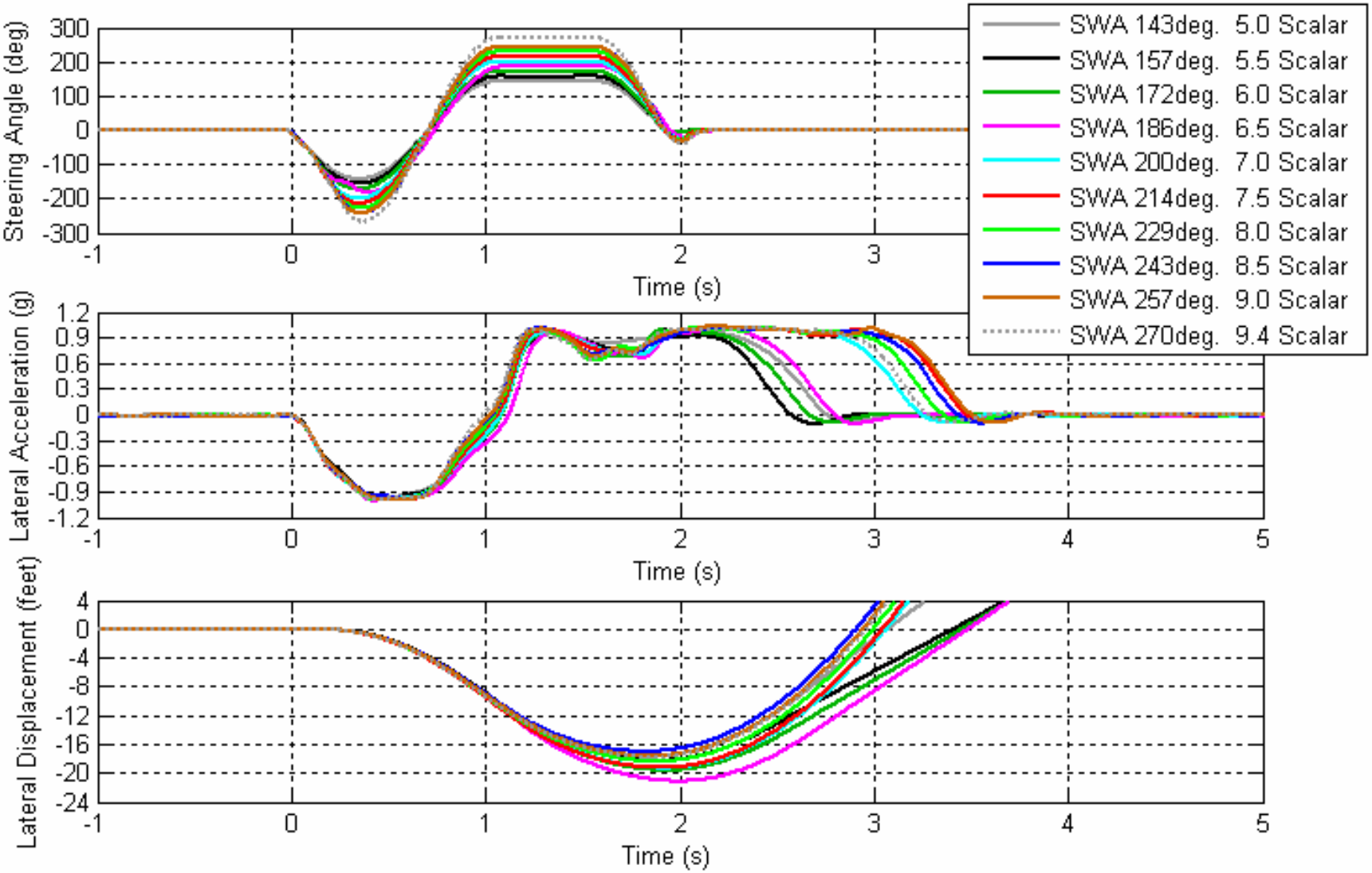


Figure 3. Steering Angle and Yaw Rate Time History, Clockwise Initial Steer Tests

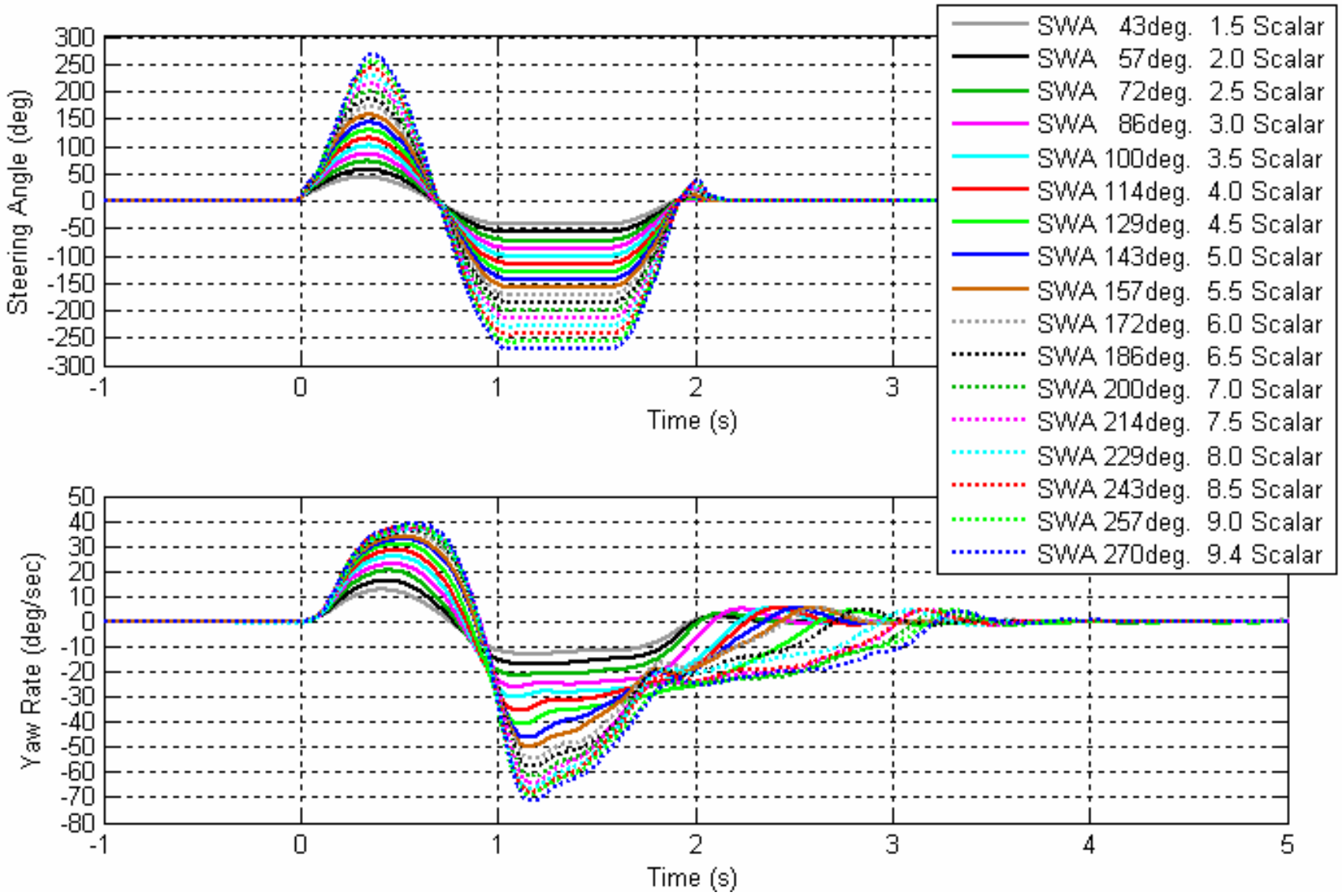
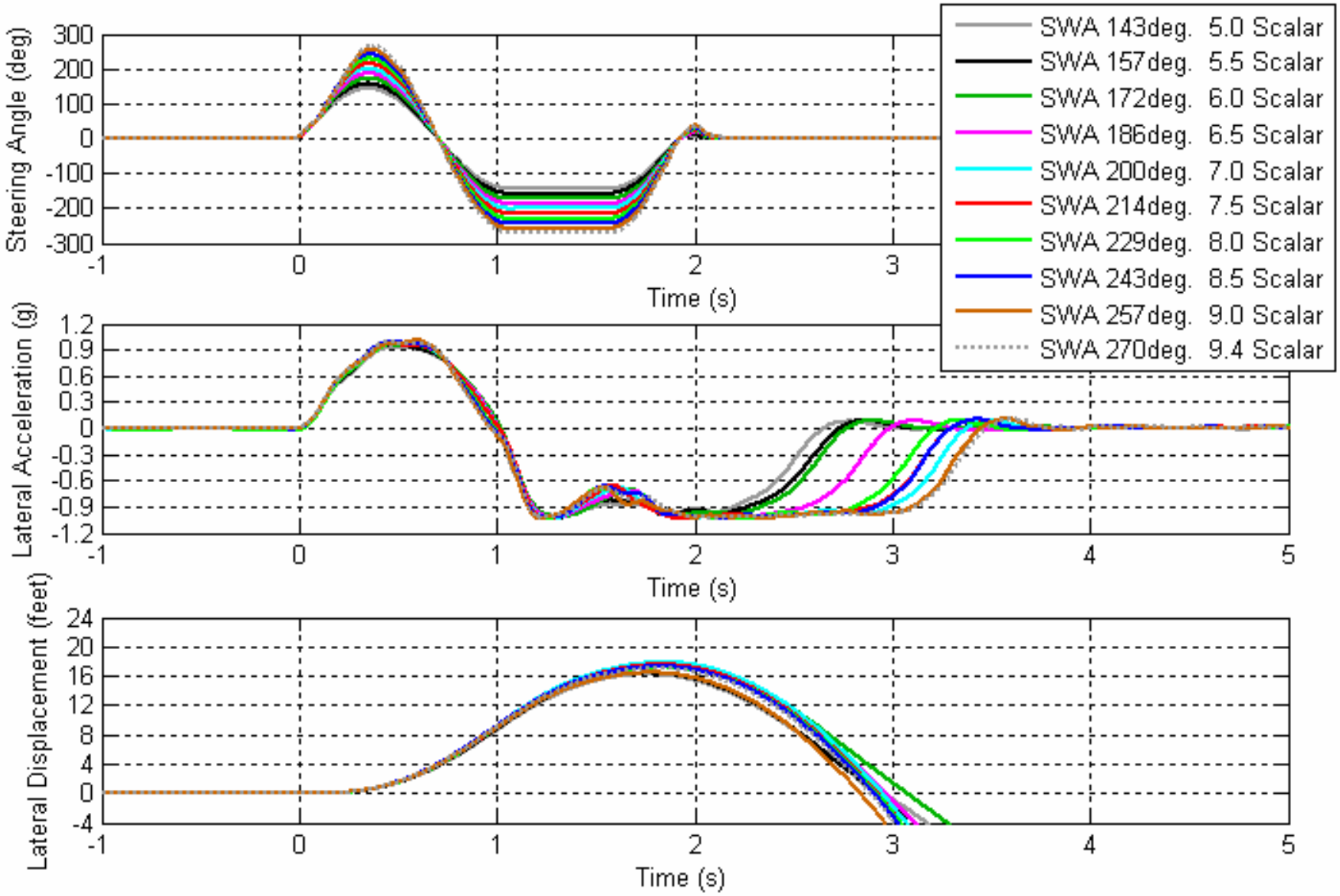


Figure 4. Steering Angle, Lateral Acceleration, and Lateral Displacement Time History, Clockwise Initial Steer Tests



7.0 OTHER DOCUMENTATION

- OWNER'S MANUAL PAGES
- VEHICLE ARRIVAL CONDITION REPORT
- VEHICLE COMPLETION CONDITION REPORT
- SINE WITH DWELL TEST RESULTS
- SLOWLY INCREASING STEER TEST RESULTS
- INERTIAL SENSING SYSTEM LOCATION COORDINATES

...el starts spinning.

climb a hill in slippery conditions, which it may otherwise be difficult or impossible. EDL uses the ABS sensors to monitor wheel speed.

EDL works only when the engine is running.

EDL helps balance out differences in wheel speed caused by a slippery road surface on *one side* of the vehicle. It does this by slightly braking the wheel that has lost traction, so that more driving force is distributed to the other driven wheel via the differential.

EDL is active at speeds up to about 50 mph (80 km/h).

In extreme cases, EDL automatically switches off to keep the brake on the braked wheel from overheating. The vehicle can still be driven, just like a vehicle without EDL. For this reason, there is no warning that EDL has been switched off.

EDL will automatically be switched on again when conditions have returned to normal.

WARNING

Always adjust your speed and driving style to road, traffic and weather conditions. Never let the extra safety that EDL can provide tempt you into taking extra risks.

- **When accelerating on a slippery surface, for example on ice and snow, press the accelerator carefully. Even with EDL, the wheels may start to spin leading to a loss of vehicle control.**

WARNING

- **Always remember that vehi... alterations or modifications can affect th... ion of the ABS, BAS, EDL and ESP syste... mples of these alterations or modific... lude a different wheel/tire combina... brake or chassis modifications ⇒ pa... pairs and technical modifications.**
- **Changing the vehicle susp... or using an unapproved tire / wheel c... ion can change the way the ABS, BAS, ... d ESP systems work and reduce the... effectiveness. ◀**

Applies to vehicles: with Electronic Stabilization Program (ESP)

Electronic Stabilization Program (ESP)

ESP can help make driving safer in certain situations.

Fig. 1 ESP button in the center console

The Electronic Stabilization Program (ESP) includes the Electronic Differential Lock (EDL) and Anti-Slip Regulation (ASR). The ESP works together with ABS. Both warning lights will come on if the ESP or ABS system malfunctions.

ESP is switched on automatically when the engine is started.

You should generally leave the ESP switched on at all times. In certain circumstances where you need less traction, you can switch off the ESP by pressing the ESP button ⇒ fig. 1.

For example:

- When driving with snow chains ▶

- When driving in deep snow or on loose surfaces
- When rocking the vehicle when you are stuck

Press the button to switch ESP back on as soon as possible, when you no longer need to be able to spin the tires.

When the ESP is switched off, ASR and EDL are also switched off. These systems are not available for as long as the ESP stays off.

How ESP works

ESP helps to reduce the risk of skidding by braking the wheels individually in certain situations. It works only when the engine is running.

The ESP system uses steering wheel angle and road speed to calculate what the driver wants, and constantly compares this information with the vehicle's actual path of travel. If the two do not match (if the vehicle starts to skid, for example) the ESP responds by applying the brake at the appropriate wheel.

The forces acting on the braked wheel help to bring the vehicle back on course. If the vehicle is tending to break away at the rear, the brake is mainly applied on the outside front wheel; if the vehicle is tending to run wide in a curve, the brake is mainly applied to the inside rear wheel.

How Anti-Slip Regulation (ASR) works

ASR reduces engine power to help keep the driven wheels of front-wheel-drive vehicles from losing traction when accelerating. It helps the vehicle to start moving, accelerate and climb a hill in slippery conditions when it may otherwise be difficult or impossible. ASR works over the entire speed range, along with the ABS. If the ABS fails, ASR will not work.

When do the indicator light and the ESP button come on or flash?

- The indicator light comes on for about 2 seconds as a bulb check when the ignition is switched on.
- The indicator light flashes while you are driving to tell you when ESP is active.
- Both indicator lights come on if there is an ESP malfunction.
- Both indicator lights come on when ESP has been switched off. At the same time, OFF comes on in the ESP button.
- Both indicator lights also come on when there is an ABS malfunction, because ESP works along with ABS.

If the indicator light comes on just after the engine is started, ESP may have been switched off by system controls. If so, you can reactivate ESP by switching the ignition off and on again. When the indicator light goes out, the system is working.

If the battery has been disconnected, the indicator light comes on after the ignition is switched on. It must go out after driving a short distance.

WARNING

Always adjust your speed and driving style to road, traffic and weather conditions. Never let the extra safety that ESP and ASR can provide tempt you into taking extra risks.

- **Always drive safely.**
- **ESP and ASR cannot overcome the laws of physics. Slippery and wet roads are dangerous even with ESP!**
- **ESP and ASR cannot reduce the risk of accident, for example if you drive too fast for conditions or if you do not keep your distance from the vehicle in front of you.**
- **Although ESP and ASR are very effective, always remember that your vehicle's handling capability is limited by tire traction.**

WARNING

- **Always remember that vehicle alterations or modifications can affect the function of the ABS, BAS, EDL and ESP systems. Examples of these alterations or modifications include a different wheel/tire combination and brake or chassis modifications ⇒ page 25, "Repairs and technical modifications".**
- **Changing the vehicle suspension or using an unapproved tire / wheel combination can change the way the ABS, BAS, EDL and ESP systems work and reduce their effectiveness.**
- **The effectiveness of ESP is also determined by the tires fitted ⇒ page 49, "Tires and wheels".** ▶

⚠ WARNING (continued)

systems work and reduce their effectiveness. ◀

Anti-lock Brake System (ABS)

The Anti-lock Brake System keeps the wheels from locking when the brakes are applied.

The Anti-lock Brake System is an important part of the vehicle's active safety system. ABS works only when the engine is running.

How the ABS works

If, under braking, one wheel begins to lock up, ABS automatically reduces brake pressure to prevent that wheel from locking. When ABS is doing its job, you will notice **a slight vibration through the brake pedal** and hear a noise. This is a warning that one or more of the wheels is about to lock, that the ABS control function has intervened, and that your speed must be adjusted to road, traffic and weather conditions. In this situation, it is important to keep pressing hard on the brake pedal so the ABS can work to help regulate your braking. Do not *pump* the brake pedal – ABS cannot do its job if you try to do it, too.

ABS helps you to keep the vehicle under control because it keeps the wheels from locking up when the brakes are applied. This means the vehicle can still be steered and is less likely to skid.

ABS cannot necessarily guarantee shorter braking distances in *all* conditions. The braking distance can even be longer if you brake on gravel or on fresh snow covering a slippery surface.

If ABS is not working properly, a warning light will come on ⇒ page 5, "Warning light: Anti-lock brake system ABS or ".

⚠ WARNING

Always adjust your speed and driving style to road, traffic and weather conditions. Never let the extra safety that ABS can provide tempt you into taking extra risks.

- **Always drive safely.**
- **ABS cannot change the laws of physics. Slippery and wet roads are dangerous even with ABS!**
- **ABS cannot reduce the risk of accidents, for example if you drive too fast for the conditions or if you do not keep your distance from the vehicle in front of you.**

⚠ WARNING

- **Always remember that vehicle alterations or modifications can affect the operation of the ABS, BAS, EDL and ESP systems. Examples of these alterations or modifications include a different wheel/tire combination, brake or chassis modifications ⇒ page 2 [illegible] repairs and technical modifications".**
- **Changing the vehicle suspension or using an unapproved tire / wheel combination can change the way the ABS, BAS, EDL and ESP systems work and reduce their effectiveness.**
- **The effectiveness of ABS is also determined by the tires on your vehicle ⇒ page 49, "Tires and wheels". ◀**

Warning light: Anti-lock brake system ABS or

The ABS warning light is part of the ABS and the integrated Electronic Differential Lock (EDL).

The warning light ABS or should come on for a few seconds when the ignition is switched on. The light goes out again after the system has run through an automatic test sequence.

There is a fault in the ABS:

- If the warning light ABS does not come on when the ignition is switched on.
- If the warning light does not go out again after a few seconds.
- If the warning light comes on when the vehicle is moving.

The vehicle can still be braked in the normal way (except that the ABS is not active). Contact an authorized Volkswagen dealer or a qualified workshop as soon as possible.

If an ABS fault occurs, the ESP warning light will also come on. There may be a message in the instrument cluster display telling you what to do.

Fault in the main brake system

If the ABS warning light ABS or comes on along with the brake system warning lights BRAKE or , not only is there an ABS malfunction, there may also be a brake system malfunction ⇒ ⚠.

There may be a message displayed in the instrument cluster about what to do ⇒ ⚠.

⚠ WARNING

Stop! Before working in the engine compartment, always read and heed all WARNINGS ⇒ page 30, "Working in the engine compartment". The engine compartment of any motor vehicle is a potentially dangerous area and can cause serious personal injury.

⚠ WARNING

Driving with bad brakes can cause a collision and serious personal injury.

- **If the BRAKE or brake warning light does not go out, or if it lights up when driving, the brake fluid level in the reservoir is too low or there is a fault in the brake system. Immediately stop driving and contact an authorized Volkswagen dealer or a qualified workshop ⇒ page 44, "Brake fluid".**
- **If the BRAKE or brake warning light comes on at the same time as the ABS warning light ABS or , the ABS may not be working properly and the rear wheels could lock up first under hard braking. Rear wheel brake lock-up can cause loss of vehicle control. If you believe that it is safe to do so, go immediately at low speed to the nearest authorized Volkswagen dealer or a qualified workshop and have the brake system inspected. Drive slowly and avoid sudden, hard brake application.**
- **If the ABS warning light ABS does not go out, or if it comes on while driving, the ABS is not working properly. The vehicle can then be stopped only with the standard brakes (without ABS). You will not have the protection ABS provides. Contact your authorized Volkswagen dealer or a qualified workshop as soon as possible. ◀**

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Note

To ensure that ESP and ASR work correctly, all four wheels must be fitted with the same tires.

Any differences in tire size can cause the system to reduce engine power – even when this is not the best thing to do under the circumstances.

Steering

Indicator lights

The indicator light comes on for a few seconds when the ignition is switched on. If the indicator light (or) does not go out, or comes on while driving, there is a problem in the power steering ⇒ page 9 or in the electronic steering column lock ⇒ page 9. There may be a message in the instrument cluster telling you what to do.

Indicator light flashes

If the indicator light flashes after the ignition is switched on or while you are driving and you hear three warning chimes at the same time, there is a serious problem in the electronic steering column lock. There may be a message in the instrument cluster telling you what to do. **Stop the vehicle and do not continue to drive!** ⇒ ⚠

Have the problem corrected by a qualified workshop. The vehicle **must** be towed with the front wheels off the ground, except for 4MOTION models, which must be professionally transported with all four wheels off the ground on a flatbed truck or trailer ⇒ page 96, "General notes".

Indicator light flashes

If the indicator light flashes after the ignition is switched on and you hear a single warning chime at the same time, there is a problem in the electronic steering column lock. There may be a message in the instrument cluster telling you what to do.

In this case:

- The steering column cannot be locked or unlocked. Remove the ignition key, then switch the ignition on again. Follow any messages that appear in the instrument cluster.
- The steering column may be jammed. Turn the steering wheel back and forth.

If you are not able to correct the problem, have the steering inspected by your authorized Volkswagen dealer or a qualified workshop.

Do not continue to drive if the steering column remains locked after you have switched the ignition. Have the problem corrected by your authorized Volkswagen dealer or a qualified workshop. The vehicle **must** be towed with the front wheels off the ground, except for 4MOTION models, which must be professionally transported with all four wheels off the ground on a flatbed truck or trailer ⇒ "General notes".

Indicator light or comes on

Power assist may be reduced (light) or be lost completely (light and three warning chimes). The steering system must be inspected immediately by an authorized Volkswagen dealer or a qualified workshop. If the yellow warning light stays off after restarting and driving a short distance, there is no immediate need for steering system service.

If the power assist is reduced or lost completely, you will have to use more force than normal to steer the vehicle ⇒ ⚠.

When the engine is not running (e.g. when the car is being towed), there is no power assist.

⚠ WARNING

If you do not pay attention to the warning lights that have come on, including the text warnings in the display, this could lead to personal injury or damage to your vehicle.

- **Never ignore warning lights or text warnings in the instrument cluster display.**
- **Never remove the ignition key from the ignition switch while the vehicle is moving. The electronic steering column lock could sud-**

⚠ WARNING (continued)

denly engage and you will not be able to steer the vehicle.

- **Turning the steering wheel is very difficult when the power steering system is not working and it is harder to control the vehicle.**
- **Never let the vehicle coast with the engine switched off.**

Electronic steering column lock

The steering column is locked when you remove the key from the ignition switch ⇒ ⚠.

Indicator lights and ⇒ page 8, "Indicator lights ".

⚠ WARNING

- **Never remove the ignition key from the ignition switch while the vehicle is moving. The electronic steering column lock could sud-**

⚠ WARNING (continued)

denly engage and you will not be able to steer the vehicle.

- **If you do not pay attention to the warning lights that have come on, including text warnings in the display, this could lead to personal injury or damage to your vehicle.**

Note

The electronic steering column lock does not lock if the vehicle is moving for more than 10 seconds with the ignition key removed.

Power steering

Power assistance is adjusted electronically, depending on vehicle speed, turning force on the steering wheel, and steering wheel angle.

The power steering system is mechanical, using an electric motor to provide steering assistance. One advantage is that it does not use hydraulic components such as hoses, oil containers, filters or hydraulic fluid. The electro-mechanical system is also more efficient. It uses energy only when the vehicle is actually being turned, unlike a hydraulic system that must maintain system pressure at all times.

Using less energy helps to save fuel.

If the electro-mechanical power steering system fails, the steering will still work. If the engine stops, the power steering does not work and the steering wheel will be a lot harder to turn.

Indicator lights and ⇒ page 8, "Indica lights ".

⚠ WARNING

Turning the steering wheel is very difficult when the power steering system is not working and it is harder to control the vehicle.

- **Never let the vehicle coast with the engine switched off.**
- **Never ignore warning lights or text warnings in the instrument cluster display.**

Note

- Do not keep the steering wheel turned all the way to the left or right for more than 15 seconds

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(32) Cruise control lever ⇒ Booklet 3.2 "Driving your Vehicle", chapter "Cruise control"
(33) Driver airbag ⇒ Booklet 2.1 "Safety First", chapter "Airbag system"
(34) Horn (works only when the ignition is on)
(35) Lever for adjustable steering column 32
(36) Ignition lock ⇒ Booklet 3.2 "Driving your Vehicle", chapter "Starting and stopping the engine"
(37) Warning light to indicate front passenger airbag switched off[1] ⇒ Booklet 2.1 "Safety First", chapter "Monitoring the Advanced Airbag System"
(38) Thumb-wheel for left seat heating 90
(39) ON/OFF button for Electronic Stabilization Program[1] (ESP) and Anti-slip Regulation (ASR) ⇒ Booklet 3.3 "Tips and Advice", chapter "Brakes"
(40) ON/OFF button for Auto Hold[1] ⇒ Booklet 3.2 "Driving your Vehicle", chapter "Parking brake"
(41) Storage tray with cup holder 101
(42) ON/OFF button for park assist[1] ⇒ Booklet 3.2 "Driving your Vehicle", chapter "Park Distance Control (PDC)"
(43) Button for switching tire monitoring pressure system[2] ⇒ Booklet 3.3 "Tips and Advice", chapter "Tires and wheels"

Tips

- Some features mentioned are standard equipment on some models or options on others.
- For technical reasons, the a… the switches, indicators and wa… differ. If there are differences, y… guided by the symbol on the swi… not the location. ◀

Warning lights

Overview of warning lights

The warning lights indicate a number of different functions and possible faults.

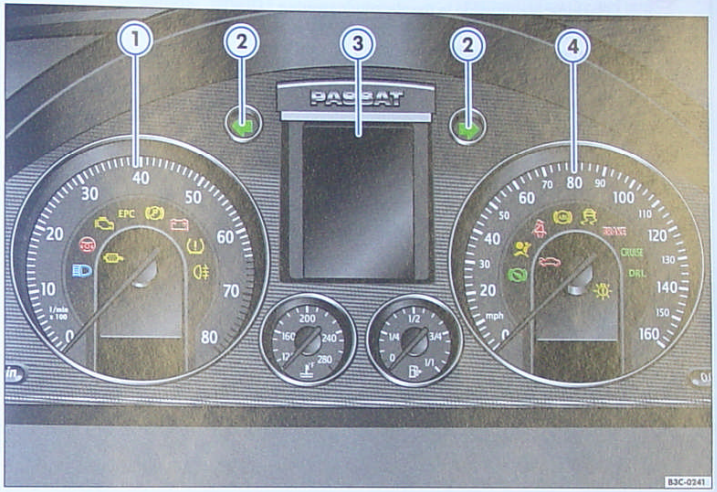

Fig. 2 Instrument cluster with warning lights. Some of the warning lights shown here may be on some models only, or may apply to optional equipment. Ask your authorized Volkswagen dealer or a qualified workshop if you have questions.

Warning, malfunction and other information is indicated by warning lights, other symbols, and text messages in the display ⇒ page 15.

① Warning lights and other indicators in the tachometer		
Symbol	**Meaning**	**More information**
	High beams switched on	⇒ page 65, "Switching the lights on and off ☼"
	Light on: Power steering assist reduced – contact your authorized Volkswagen dealer or a qualified workshop	⇒ Booklet 3.3 "Tips and Advice", chapter "Steering"
	Flashing: Malfunction in the electronic steering column lock	

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① Warning lights and other indicators in the tachometer		
Symbol	Meaning	More information
	Light on: Power steering assist failure – STOP contact your authorized Volkswagen dealer or a qualified workshop	⇒ Booklet 3.3 "Tips and Advice", chapter "Steering"
	Flashing: Malfunction in the electronic steering column lock – STOP contact your authorized Volkswagen dealer or qualified workshop	
	Malfunction Indicator Lamp – contact your authorized Volkswagen dealer or a qualified workshop	⇒ Booklet 3.3 "Tips and Advice", chapter "Engine management and exhaust system"
EPC	Electronic Power Control (gasoline engine only) – contact your authorized Volkswagen dealer or a qualified workshop	
	Malfunction in parking brake system – contact your authorized Volkswagen dealer or qualified workshop	⇒ Booklet 3.3 "Tips and Advice", chapter "Brakes"
	Generator malfunction – contact your authorized Volkswagen dealer or a qualified workshop	⇒ Booklet 3.3 "Tips and Advice", chapter "Vehicle battery"
	Inflation pressure in at least one tire is too low, or there is a system error.	⇒ Booklet 3.3 "Tips and Advice", chapter "Tires and wheels"
	Rear fog light switched on	⇒ page 65, "Switching the lights on and off ☼"
	Fuel filler cap not properly closed	⇒ Booklet 3.3 "Tips and Advice", chapter "Filling the fuel tank"

② Turn signal indicators		
Symbol	Meaning	More information
	Turn signal, left	⇒ page 69
	Turn signal, right	

③ Warning lights and other indicators in the instrument cluster display		
Symbol	Meaning	More information
	STOP Engine coolant temperature too high – stop engine	⇒ page 11 or ⇒ Booklet 3.3 "Tips and Advice", chapter "Coolant"
	Engine coolant level too low	
	Brake system malfunction – contact your authorized Volkswagen dealer or a qualified workshop	⇒ Booklet 3.3 "Tips and Advice", chapter "Brakes"

③ Warning lights and other indicators in the instrument cluster display		
Symbol	Meaning	More information
	Windshield washer fluid level too low	⇒ Booklet 3.3 "Tips and Advice", chapter "Checking and filling"
	Fuel level too low (reserve) – refuel as soon as possible	⇒ Booklet 3.3 "Tips and Advice", chapter "Filling the fuel tank"
	STOP Engine oil pressure too low – stop the engine and check the engine oil level	⇒ Booklet 3.3 "Tips and Advice", chapter "Engine oil"
	Doors open[a] – make sure both doors are completely closed (to the second catch)	⇒ page 51, "Closing the doors"
	Rear lid open	⇒ page 54, "Unlocking and opening the rear lid"
	Engine oil level too low – check the oil level as soon as possible and add oil as necessary	⇒ Booklet 3.3 "Tips and Advice", chapter "Engine oil"

[a] Where applicable

④ Warning lights and other indicators in the speedometer		
Symbol	Meaning	More information
	Depress brake pedal for starting	⇒ Booklet 3.2 "Driving your Vehicle", chapter "Parking brake, Starting and stopping the engine or Adaptive Cruise Control (ACC)"
	Depress brake pedal!	⇒ Booklet 3.2 "Driving your Vehicle", chapter "Adaptive Cruise Control (ACC)"
	Airbag system malfunction– contact your authorized Volkswagen dealer or a qualified workshop	⇒ Booklet 2.1 "Safety First", chapter "Airbag System"
	Airbag disabled	⇒ Booklet 2.1 "Safety First", chapter "Airbag System"
	Safety belt pretensioner system malfunction – contact your authorized Volkswagen dealer or a qualified workshop	⇒ Booklet 2.1 "Safety First", chapter "Airbag System"
	Fasten safety belts!	⇒ Booklet 2.1 "Safety First", chapter "Safety belts"
ABS or	Malfunction in Anti-lock Brake System (ABS) – contact your authorized Volkswagen dealer or a qualified workshop	⇒ Booklet 3.3 "Tips and Advice", chapter "Brakes"
	Flashing: Electronic Stabilization Program (ESP) or Anti-Slip Regulation (ASR) in operation **Light on:** ESP or ASR malfunctioning or switched off	⇒ Booklet 3.3 "Tips and Advice", chapter "Brakes"

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VEHICLE ARRIVAL CONDITION REPORT

CONTRACT NO. DTNH22- 07-P-00332 DATE: 6-6-07

FROM: Event Vehicles (Leasing Company)

TO:
TRC

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

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2007 Volkswagen Passat 2.0T 4-door Sedan

MANUFACTURE DATE: 11/06 NHTSA NO.: C75802

BODY COLOR: steel VIN: WVWAK73CX7P083838

ODOMETER READING: 26 miles GVWR: 4498 lbs.

PURCHASE PRICE: $ (leased) DEALER'S NAME: (leased)

_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: Jason Church DATE: 6-6-07
APPROVED BY: Jeff Sankey DATE: 9-20-07

VEHICLE COMPLETION CONDITION REPORT

CONTRACT NO. DTNH22- 07-P-00332 DATE: 8-14-07

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2007 Volkswagen Passat 2.0T 4-door Sedan

MANUFACTURE DATE: 11/06 NHTSA NO.: C75802

BODY COLOR: steel VIN: WVWAK73CX7P083838

ODOMETER READING: 130 miles GVWR: 4498 lbs.

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: Jason Church DATE: 8-14-07
APPROVED BY: Jeff Sankey DATE: 9-20-07

SINE WITH DWELL TEST RESULTS

2007 Volkswagen Passat 2.0T

NHTSA No.: C75802

Date Created 20-Jul-07

File	SWA @ 5deg Ct	MES	Time@5deg	COS	Time@COS	MOS	Time@MOS	YRR1(%)	YR1 (deg/sec)	YRR1 Ct	YRR175(%)	YR175 (deg/sec)
9	1306	50.42573	6.52051061	1686	8.42475161	1442	7.20388673	-0.17011	-0.020711098	1886	0.5673449	0.069073859
10	1655	50.43374	8.26639782	2037	10.1764549	1793	8.95627622	-0.25127	-0.040252239	2237	-0.2875628	-0.046066735
11	1799	50.31963	8.98585856	2182	10.900545	1937	9.67991283	0.40571	0.081770329	2382	0.4435805	0.089402988
12	1539	50.398	7.68693668	1922	9.60350313	1678	8.38417958	0.514654	0.128548498	2122	0.78677	0.196516538
13	1453	50.31297	7.25983387	1837	9.17794944	1593	7.9591191	0.29898	0.088952314	2037	0.8453253	0.251500466
14	1714	50.66073	8.56368987	2098	10.4833728	1854	9.26424947	2.471239	0.886457019	2298	0.0972146	0.034871819
15	1290	50.49248	6.4449125	1675	8.36550736	1431	7.14663664	1.559824	0.657004396	1875	0.5852061	0.246491308
16	1219	50.49145	6.08810878	1603	8.00928911	1360	6.79083833	1.840707	0.883264856	1803	0.2504351	0.120171513
17	1910	50.37872	9.54454504	2295	11.4658782	2051	10.2480941	0.870069	0.459213702	2495	0.5296889	0.279564461
18	1581	50.66725	7.89557214	1965	9.81825521	1722	8.6005362	2.150129	1.242599902	2165	0.5851132	0.338147976
19	1727	50.5239	8.62698566	2118	10.5811474	1874	9.36263233	1.635127	0.994795642	2318	0.1602274	0.097480827
20	1401	50.6352	6.99603629	1786	8.92032409	1542	7.70049127	3.871485	2.497319096	1986	0.419665	0.27070685
21	1469	50.70113	7.33595619	1853	9.25958433	1610	8.0410563	11.52883	7.782537269	2053	2.7383083	1.848495516
22	1646	50.63244	8.22455629	2031	10.1479816	1787	8.92975902	9.420504	6.551738971	2231	0.7090528	0.493129572
23	1799	50.85439	8.98967682	2184	10.9129077	1940	9.69460131	12.20687	8.646169702	2384	1.7066353	1.208816245
24	1937	50.34888	9.67833239	2322	11.6015829	2078	10.3837948	17.42765	12.23630437	2522	2.5008002	1.755861952
25	1643	50.53908	8.20537187	2027	10.1285456	1784	8.91100648	6.538991	4.657126417	2227	0.3998896	0.284804867
26	1646	50.91537	8.22013971	2027	10.1253505	1782	8.90252882	-1.30406	0.163716641	2227	-0.6774868	0.085054248
27	1635	50.45136	8.16913185	2017	10.0798316	1773	8.85780228	0.078253	-0.013068799	2217	0.258608	-0.043189346
28	1299	50.9455	6.48799999	1682	8.40223352	1438	7.18123854	0.111583	-0.023677728	1882	0.0648946	-0.013770497
29	1728	50.68038	8.63007526	2111	10.5459642	1867	9.32615256	-0.13098	0.033894714	2311	0.2969804	-0.076849985
30	1833	50.49471	9.1580761	2217	11.076048	1973	9.85660787	1.25548	-0.377223568	2417	-0.6678534	0.200664386
31	1646	50.51461	8.22035214	2029	10.1395142	1786	8.92055919	1.688202	-0.596519568	2229	0.1919944	-0.067840475
32	1656	50.72758	8.27160137	2040	10.1930367	1796	8.97295257	-5.87894	2.380623739	2240	0.0955439	-0.038689639
33	1896	50.48595	9.47352505	2281	11.3956818	2037	10.1757191	1.877071	-0.866303857	2481	-0.0087562	0.004041151
34	1775	50.4203	8.86781301	2160	10.7912653	1916	9.57119536	1.75858	-0.873171655	2360	-0.0319785	0.015877992
35	1912	50.53575	9.55469263	2297	11.480021	2053	10.2587609	0.637351	-0.346486069	2497	-0.6315472	0.343330706
36	1542	50.34973	7.7040659	1927	9.62976938	1683	8.4077719	-6.61346	3.806957922	2127	-0.3038609	0.174913807
37	1906	50.72853	9.52185132	2291	11.445678	2047	10.2255896	15.57056	-9.56036022	2491	0.859653	-0.527828907
38	1767	50.66173	8.82911445	2152	10.7512789	1908	9.5330431	10.38332	-6.701939831	2352	-0.2597567	0.1676605
39	1680	50.95578	8.3934971	2065	10.3157181	1821	9.09767974	0.900529	-0.59672406	2265	-0.7261653	0.48118438
40	1707	50.67819	8.52621129	2091	10.4481934	1848	9.23048064	9.010616	-6.114816475	2291	-0.1299605	0.088194277
41	1542	50.52078	7.70231504	1926	9.62469266	1683	8.40693089	14.42074	-9.965139173	2126	1.8562978	-1.282754056
42	1818	50.35271	9.08092016	2202	11.0043282	1959	9.78539748	17.49373	-12.49383377	2402	1.5313659	-1.09368526

SINE WITH DWELL TEST RESULTS

2007 Volkswagen Passat 2.0T

NHTSA No.: C75802

Date Created 20-Jul-07

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)
9	2036	12.17493258	1529	-4.130037	0.397653617	42.8129895	1371	42.74824296
10	2387	16.01971552	1874	-5.3582234	0.501305032	56.71767307	1721	56.61551109
11	2532	20.15484918	2012	-6.5541576	0.577769096	71.62272346	1866	71.51037197
12	2272	24.97763423	1753	-7.5036582	0.616077561	85.55919142	1607	85.526496
13	2187	29.75191585	1670	-8.4066755	0.621049354	99.74848722	1522	99.76717958
14	2448	35.87095331	1936	-9.1584417	0.560662153	113.7959573	1783	113.7131895
15	2025	42.12042399	1517	-9.6809552	0.417271355	128.5949181	1360	128.7931553
16	1953	47.98508499	1453	-10.323562	0.19122315	142.5744174	1288	142.6982392
17	2645	52.7789941	2149	-10.213993	0.037962854	156.6840587	1979	156.7541479
18	2315	57.79188789	1822	-10.556528	-0.033570679	171.6761373	1650	171.6894549
19	2468	60.83903436	1976	-10.709017	-0.129231793	182.7131556	1807	185.5528302
20	2136	64.50545863	1643	-10.590734	0.001581827	199.5965394	1471	200.0687471
21	2203	67.50501778	1710	-10.770907	0.060746912	213.3063303	1539	214.0598099
22	2381	69.54764784	1885	-10.549491	0.120738123	228.1616525	1717	229.1281874
23	2534	70.83037848	2038	-10.230832	0.159799987	242.2131971	1871	243.0013348
24	2672	70.21200334	2175	-10.406366	0.160161028	242.2572941	2008	242.986369
25	2377	71.22087608	1878	-10.56468	0.209086103	267.3414547	1716	269.8921888
26	2377	-12.55437741	1871	4.3904461	-0.38009952	43.32781071	1710	43.35020968
27	2367	-16.70070043	1861	5.4479263	-0.474696827	57.20650056	1701	57.34293826
28	2032	-21.21977602	1518	6.5934015	-0.555701221	72.14794671	1366	72.29674473
29	2461	-25.87712778	1946	7.4901501	-0.568189936	86.07667818	1796	86.30515492
30	2567	-30.04617184	2051	8.3633545	-0.597032302	100.2792997	1902	100.5086912
31	2379	-35.33461761	1867	8.9292974	-0.571012595	114.2579667	1715	114.5274783
32	2390	-40.49409795	1880	9.6921768	-0.508471652	129.0878659	1725	129.5327643
33	2631	-46.15190501	2126	9.950888	-0.366455156	142.959057	1966	143.5324173
34	2510	-49.65208259	2006	10.103585	-0.324946083	157.0530968	1844	157.51415
35	2647	-54.36342765	2147	10.402876	-0.226657134	171.8939249	1982	172.4589596
36	2277	-57.56378503	1777	10.471566	-0.232953008	186.1407407	1612	186.3867465
37	2641	-61.4002281	2140	10.490816	-0.217169416	200.1387893	1976	200.5987385
38	2502	-64.54521875	2002	10.389669	-0.22149787	213.9528551	1837	214.5406695
39	2415	-66.2637569	1912	10.366215	-0.292174695	228.8074381	1751	229.5190763
40	2441	-67.86236054	1940	10.468419	-0.252689126	242.5498479	1778	243.3912962
41	2276	-69.10281635	1774	10.256674	-0.317568877	255.4493537	1615	257.421009
42	2552	-71.41893551	2052	10.370329	-0.231573265	267.041949	1891	270.2610844

SLOWLY INCREASING STEER TEST RESULTS

2007 Volkswagen Passat 2.0T

NHTSA No.: C75802

Date Created 20-Jul-07

File	Vehicle	EventPt	DOS	MES [mph]	Mean SPD [mph]	AYcount	THETAENC [degree]	AYCG [g]	r_squared	ZeroBegin	ZeroEnd
2	2007 VW Passat	3465	1	49.738687	49.51489753	3898	-28.68453605	-0.297634856	0.997015	3265	3465
3	2007 VW Passat	1817	1	49.077837	48.99988948	2228	-27.63925638	-0.304277658	0.998854	1617	1817
4	2007 VW Passat	2312	1	49.028004	49.24467357	2749	-28.74549336	-0.297609084	0.998882	2112	2312
5	2007 VW Passat	3002	0	49.303385	49.36282259	3433	28.98213345	0.297572184	0.999001	2802	3002
6	2007 VW Passat	2636	0	49.359037	49.5648472	3059	28.7180969	0.301262261	0.998909	2436	2636
7	2007 VW Passat	2943	0	49.520703	49.61465075	3367	28.73430765	0.301484653	0.99895	2743	2943
	Averages						28.6	0.299973449			

Scalars	Steering Angles (deg)
1.5	43
2	57
2.5	72
3	86
3.5	100
4	114
4.5	129
5	143
5.5	157
6	172
6.5	186
7	200
7.5	214
8	229
8.5	243
9	257
9.4	270

INERTIAL SENSING SYSTEM LOCATION COORDINATES

2007 Volkswagen Passat 2.0T

NHTSA No.: C75802

Device : N10-02-03-01310
device version : 1.55
device certification date : 12/04/06
today is : 06/08/07
units : Millimeters

Label	ActualX	ActualY	ActualZ
C_DEVICEPOS001			
M_PLANE001	1140.6329	-722.3676	-298.9613
M_LINE001	708.8814	115.872	69.1117
M_FRT_AXLE_ORIGIN	0	0	0
C_COORDSYS001	0	0	0
M_TOP_OF_SENSOR	1141.3012	863.8912	224.2778
M_TOP_OF_ROOF	1878.385	888.7634	1159.5477
M_FLOOR	1878.836	-220.2512	-298.1332
Outside of Front Wheels Delta	[redacted]	1727.2	[redacted]
Roof Height (relative to ground)			**1457.6809**
Motion Pak - x-distance	**1141.3012**		
Motion Pak - y-distance		**0.2912**	
Motion Pak - z-distance			**433.511**