**REPORT NUMBER TR-P29009-03-NC**

# SAFETY COMPLIANCE TESTING FOR FMVSS 124
# ACCELERATOR CONTROL SYSTEMS

**NISSAN MOTOR CORPORATION**

**2009 NISSAN ROGUE**

**5-DOOR MPV**

**NHTSA NUMBER: C95205**

**PREPARED BY:**

**KARCO ENGINEERING, LLC.**

**9270 HOLLY ROAD**

**ADELANTO, CALIFORNIA 92301**

**JULY 16, 2009**

**FINAL REPORT**

**PREPARED FOR:**

**U.S. DEPARTMENT OF TRANSPORTATION**

**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

**ENFORCEMENT**

**OFFICE OF VEHICLE SAFETY COMPLIANCE**

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**WASHINGTON, D.C. 20590**

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**15. Supplementary Notes**

**16. Abstract**

Compliance tests were conducted on the subject 2009 Nissan Rogue 5-Door MPV on July 16, 2009 in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-124-06 for the determination of FMVSS 124 compliance.

Test failures identified were as follows: None

The return times for some normal operation and fault conditions were greater than one second. In these cases, throttle angle position decreased rapidly followed by a controlled ramp down to the original idle position. Manufacturers sometimes use this ramp down strategy to improve emission control, which may be the cause here. No engine “racing” was observed at any point during the test.

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# SECTION 1

# PURPOSE OF COMPLIANCE TEST

## 1.1 PURPOSE OF COMPLIANCE TEST

Tests were conducted on a 2009 Nissan Rogue 5-Door MPV manufactured by Nissan Motor Corporation, to determine if the tested vehicle meets the minimum performance requirements of Federal Motor Vehicle Safety Standard (FMVSS) 124, “Accelerator Control Systems”. FMVSS 124 establishes requirements for the return of a vehicle’s throttle to the idle position when the actuating force is removed from the accelerator control or in the event of a severance or disconnection in the accelerator control system.

All tests were conducted in compliance with current National Highway Traffic Safety Administration (NHTSA), Office of Vehicle Safety Compliance (OVSC) Laboratory Procedures, specifically, TP-124-06, dated April 2000. Detailed procedures for receiving, inspecting, testing and reporting of test results are described in the test procedures and are not repeated in this report.

## SECTION 2

## TEST PROCEDURE

### 2.1 COMPLIANCE TEST PROCEDURE

A 2009 Nissan Rogue 5-Door MPV was subjected to FMVSS 124 compliance testing. The tests were conducted at KARCO Engineering, LLC. in Adelanto, California on July 16, 2009. The following tests were performed:

- Inspection
- Time to Return to Idle Position (Complete Normal Operation)
- Time to Return to Idle Position (APS Disconnect)
- Time to Return to Idle Position (Individual APS Wires Open and Short-to-Ground)
- Time to Return to Idle Position (TPS Spring 1 Removed)
- Time to Return to Idle Position (TPS Spring 2 Removed)
- Time to Return to Idle Position (TPS Disconnect)
- Time to Return to Idle Position (Individual TPS Wires Open and Short-to-Ground)

The vehicle is equipped with an electronic throttle control system with an accelerator pedal position sensor (APS), a throttle position sensor (TPS), an electronic control module (ECM), and a throttle plate actuator motor.

Throttle return time requirements of FMVSS 124 are as follows:

| Test Vehicle GVWR | Maximum Throttle Return Time |
|---|---|
| ≤4536 kg | 1 second |
| >4536 kg | 2 seconds |

### 2.2 TEST SETUP

Each series of tests were conducted in the following manner: Throttle plate position was measured using the test vehicle's throttle position sensor (TPS) and a TDAS data acquisition system. The time base of the TDAS was used to determine throttle return time where possible. Engine coolant temperature was monitored by placing a thermocouple in the engine coolant, coupled to a digital temperature readout. Engine RPM was monitored using the vehicle's tachometer. Accelerator demand was measured at the accelerator pedal sensor (APS) using a digital voltmeter. Voltage readings were recorded for zero demand, as well as 100% demand (WOT), and then points were calculated for 25%, 50% and 75% demand. Time zero for each test was the instant that accelerator pedal demand was removed, which in the case of an induced electrical fault (APS or TPS individual wire open or grounding, APS or TPS disconnect) was simultaneous to the induced fault condition.

## SECTION 3

## SUMMARY OF COMPLIANCE TEST

### 3.1 TEST DATA SUMMARY

Testing was performed on the subject 2009 Nissan Rogue 5-Door MPV on July 16, 2009 to determine compliance with FMVSS 124 “Accelerator Control Systems”. The subject vehicle was equipped with a “Drive-By-Wire” accelerator control system. Tests were conducted in the normal operating condition as well as in the following induced system failure modes: throttle return energy removal (TPS Springs 1 and 2), electrical system disconnects (APS and TPS electrical connectors), electrical system open circuits (TPS and APS wires), and electrical system circuits shorted to ground (TPS and APS wires). Accelerator pedal return spring removal was not conducted.

The return times for some normal operation and fault conditions were greater than one second. In these cases, throttle angle position decreased rapidly followed by a controlled ramp down to the original idle position. Manufacturers sometimes use this ramp down strategy to improve emission control, which may be the cause here. No engine “racing” was observed at any point during the test. Complete data on the testing performed is available in Data Sheet No. 3 of this report.

## SECTION 4

## COMPLIANCE TEST DATA

Test Vehicle: 2009 Nissan Rogue 5-Door MPV NHTSA No.: C95205

Test Program: FMVSS 124 Accelerator Control Systems Test Date: 7/16/09

### CONVERSION FACTORS USED IN THIS REPORT*

| Quantity | Typical Application | Std Units | Metric Unit | Multiply By |
|---|---|---|---|---|
| Mass | Vehicle Weight | lb | kg | 0.4536 |
| Linear Velocity | Impact Velocity | mile/h | km/h | 1.609344 |
| Length or Distance | Measurements | in | mm | 25.4 |
| Volume | Fuel Systems | gal | liter | 3.785 |
| Volume | Small Fluids | oz | mL | 29.573 |
| Pressure | Tire Pressures | $lbf/in^2$ | kPa | 7.0 |
| Volume | Liquid | gal | liter | 3.785 |
| Temperature | General Use | $^oF$ | $^oC$ | =(tf -32)/1.8 |
| Force | Dynamic Forces | lbf | N | 4.448 |
| Moment | Torque | lbf/ft | Nm | 1.355 |

## DATA SHEET NO. 1

## GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2009 Nissan Rogue 5-Door MPV NHTSA No.: C95205

Test Program: FMVSS 124 Accelerator Control Systems Test Date: 7/16/09

### TEST VEHICLE INFORMATION AND OPTIONS

| | | | |
|---|---|---|---|
| NHTSA No. | C95205 | Anti-Lock Brakes | Yes |
| Make | Nissan | All Wheel Drive | No |
| Model | Rogue | Power Steering | Yes |
| Body Style | 5-Door MPV | Driver Front Airbag | Yes |
| Vin No. | JN8AS58T59W320598 | Driver Side Torso Airbag | Yes |
| Color | Grey | Driver Side Head Airbag | No |
| Delivery Date | 5/28/2009 | Driver Curtain/Airbag | Yes |
| Odometer (Miles) | 229.0 | Rear Pass. Airbag | No |
| Dealer | Unknown | Rear Pass. Side Airbag | No |
| Transmission | CVT | Rear Pass. Head Airbag | No |
| Final Drive | Front | Rear Pass. Curtain/Airbag | Yes |
| Type/No. Cyl. | 4 Cylinder | Pre-Tensioners | Yes |
| Engine Disp. (L) | 2.5 | Load Limiters | Yes |
| Engine Placement | Transverse | Bucket Seats | Yes |
| Roof Rack | No | Air Cond. | Yes |
| Sunroof/T-Top | No | AM/FM CD | Yes |
| Tinted Glass | No | Tilt Steering | Yes |
| Traction Control | Yes | Automatic Door Locks | Yes |
| Power Brakes | Yes | Power Windows | Yes |
| Front Disc | Yes | Power Seats | No |
| Rear Disc | Yes | Other | N/A |

| | |
|---|---|
| Does Owners Manual provide instructions to turn off automatic door locks. | No |

### DATA FROM CERTIFICATION LABEL

| | | | |
|---|---|---|---|
| Manufactured By | Nissan Motor Corporation | GVWR (kg) | 1920 |
| | | GAWR Front (kg) | 1017 |
| Date of Manufacture | Jul-08 | GAWR Rear (kg) | 911 |

### VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

| Measured Parameter | Front | Rear | Third | Total |
|---|---|---|---|---|
| Type of Seats | Bucket | Bench | | |
| Number of Occupants | 2 | 3 | | 5 |
| Capacity Weight (VCW) (kg) | | | | 412.0 |

**DATA SHEET NO. 2**

**VEHICLE THROTTLE CONTROL DATA**

Test Vehicle: 2009 Nissan Rogue 5-Door MPV NHTSA No.: C95205

Test Program: FMVSS 124 Accelerator Control Systems Test Date: 7/16/09

**THROTTLE CONTROL SYSTEM INFORMATION**

| | |
|---|---|
| Throttle Control System Description | Drive by Wire |
| Describe sources of energy to return throttle to idle position | 2 Springs on TPS |
| Accelerator Throttle Position Sensor | Yes |
| Electronic Control Module | Yes |
| Throttle Plate Actuator Motor | Yes |
| Throttle Plate Position Sensor | Yes |

**WIRE DESCRIPTION**

| APS Wire Number | Color | TPS Wire Number | Color |
|---|---|---|---|
| 1 | Green | 1 | Black |
| 2 | Purple | 2 | White |
| 3 | Red | 3 | Green |
| 4 | Blue | 4 | Red |
| 5 | Yellow | 5 | Blue |
| 6 | White | 6 | Grey |

**DATA SHEET NO. 3**
**SUMMARY OF TEST REQUIREMENTS AND RESULTS**

Test Vehicle: 2009 Nissan Rogue 5-Door MPV NHTSA No.: C95205

Test Program: FMVSS 124 Accelerator Control Systems Test Date: 07/16/09

| Test Description / Connector | Engine Temp. (F) | Idle RPM / Throttle Position % | Return Time (msec) | Pass/Fail |
|---|---|---|---|---|
| (Normal Operation) | 200 | 800 / 2% | 2180.0 | See note 1 & 3 |
| (Normal Operation) | 200 | 800 / 2% | 2310.0 | See note 1 & 3 |
| (Normal Operation) | 200 | 800 / 2% | 2300.0 | See note 1 & 3 |
| (Normal Operation) | 200 | 800 / 2% | 2350.0 | See note 1 & 3 |
| (APS Wire 1 Open) | 200 | 800 / 2% | 2230.0 | See note 1 & 3 |
| (APS Wire 2 Open) | 200 | 800 / 2% | 2310.0 | See note 1 & 3 |
| (APS Wire 3 Open) | 200 | 800 / 2% | 2140.0 | See note 1 & 3 |
| (APS Wire 4 Open) | 200 | 800 / 2% | 2210.0 | See note 1 & 3 |
| (APS Wire 5 Open) | 200 | 800 / 2% | 2270.0 | See note 1 & 3 |
| (APS Wire 6 Open) | 200 | 800 / 2% | 2090.0 | See note 1 & 3 |
| (APS Wire 1 Short) | 200 | 800 / 2% | 2120.0 | See note 1 & 3 |
| (APS Wire 2 Short) | 200 | 800 / 2% | 2380.0 | See note 1 & 3 |
| (APS Wire 3 Short) | 200 | 800 / 2% | 60.0 | Pass/ See note 1 |
| (APS Wire 4 Short) | 200 | 800 / 2% | 2370.0 | See note 1 & 3 |
| (APS Wire 5 Short) | 200 | 800 / 2% | 2250.0 | See note 1 & 3 |
| (APS Wire 6 Short) | 200 | 800 / 2% | 2180.0 | See note 1 & 3 |
| (APS Disconnect) | 200 | 800 / 2% | #N/A | See note 1 & 2 |

(1) Throttle plate would only open to approximately 20% irrespective of the accelerator pedal position

(2) Throttle never returned to baseline position. Appears to be a Limp-Home Mode.

(3) The return times for some normal operation and fault conditions resulted in return time greater than 1 second. In these cases, throttle angle position decreased rapidly followed by a controlled ramp down to the original idle position. Manufacturers sometimes use this ramp- down strategy for improved emission control which may be the case here. No engine “racing” was observed at any point in the testing.

**DATA SHEET NO. 3…(Continued)**
**SUMMARY OF TEST REQUIREMENTS AND RESULTS**

Test Vehicle: 2009 Nissan Rogue 5-Door MPV NHTSA No.: C95205

Test Program: FMVSS 124 Accelerator Control Systems Test Date: 07/16/09

| Test Description / Connector | Engine Temp. (F) | Idle RPM / Throttle Position % | Return Time (msec) | Pass/Fail |
|---|---|---|---|---|
| (TPS Spring 1 Removed) | 200 | 800 / 2% | 2400.0 | See note 1 & 4 |
| (TPS Spring 1 Removed) | 200 | 800 / 2% | 2220.0 | See note 1 & 4 |
| (TPS Spring 1 Removed) | 200 | 800 / 2% | 2360.0 | See note 1 & 4 |
| (TPS Spring 1 Removed) | 200 | 800 / 2% | 2500.0 | See note 1 & 4 |
| (TPS Spring 2 Removed) | 200 | 800 / 2% | 2830.0 | See note 1 & 4 |
| (TPS Spring 2 Removed) | 200 | 800 / 2% | 2450.0 | See note 1 & 4 |
| (TPS Spring 2 Removed) | 200 | 800 / 2% | 2440.0 | See note 1 & 4 |
| (TPS Spring 2 Removed) | 200 | 800 / 2% | 730.0 | Pass/ See note 1 |
| (TPS Wire 1 Open) | 200 | 800 / 2% | 50.0 | Pass/ See note 1 |
| (TPS Wire 2 Open) | 200 | 800 / 2% | #N/A | See note 1 & 2 |
| (TPS Wire 3 Open) | 200 | 800 / 2% | 160.0 | Pass/ See note 1 |
| (TPS Wire 4 Open) | 200 | 800 / 2% | #N/A | See note 1 & 3 |
| (TPS Wire 5 Open) | 200 | 800 / 2% | 100.0 | Pass/ See note 1 |
| (TPS Wire 6 Open) | 200 | 800 / 2% | 100.0 | Pass/ See note 1 |
| (TPS Wire 1 Short) | 200 | 800 / 2% | 60.0 | Pass/ See note 1 |
| (TPS Wire 2 Short) | 200 | 800 / 2% | 80.0 | Pass/ See note 1 |
| (TPS Wire 3 Short) | 200 | 800 / 2% | 110.0 | Pass/ See note 1 |
| (TPS Wire 4 Short) | 200 | 800 / 2% | 2490.0 | See note 1 & 4 |

(1) Throttle plate would only open to approximately 20% irrespective of the accelerator pedal position.

(2) Throttle never returned to baseline position. Appears to be a Limp-Home Mode.

(3) Induced wire fault caused loss of throttle sensor reading.

(4) The return times for some normal operation and fault conditions resulted in return time greater than 1 second. In these cases, throttle angle position decreased rapidly followed by a controlled ramp down to the original idle position. Manufacturers sometimes use this ramp- down strategy for improved emission control which may be the case here. No engine “racing” was observed at any point in the testing.

**DATA SHEET NO. 3…(Continued)**
**SUMMARY OF TEST REQUIREMENTS AND RESULTS**

| | | | |
|---|---|---|---|
| Test Vehicle: | 2009 Nissan Rogue 5-Door MPV | NHTSA No.: | C95205 |
| Test Program: | FMVSS 124 Accelerator Control Systems | Test Date: | 07/16/09 |

| Test Description / Connector | Engine Temp. (F) | Idle RPM / Throttle Position % | Return Time (msec) | Pass/Fail |
|---|---|---|---|---|
| Throttle Position (TPS Wire 5 Short) | 200 | 800 / 2% | 90.0 | Pass/ See note 1 |
| Throttle Position (TPS Wire 6 Short) | 200 | 800 / 2% | 1890.0 | See note 1 & 3 |
| (TPS/ Throttle Plate Motor Disconnect) | 200 | 800 / 2% | #N/A | See note 2 |

(1) Throttle plate would only open to approximately 20% irrespective of the accelerator pedal position

(2) Throttle never returned to baseline position. Appears to be a Limp-Home Mode.

(3) The return times for some normal operation and fault conditions resulted in return time greater than 1 second. In these cases, throttle angle position decreased rapidly followed by a controlled ramp down to the original idle position. Manufacturers sometimes use this ramp- down strategy for improved emission control which may be the case here. No engine “racing” was observed at any point in the testing.

**APPENDIX A**

**PHOTOGRAPHS**


2009 NISSAN ROGUE
NHTSA NO. C95205
FMVSS NO. 124

Figure A-1: Front View of Vehicle

Figure A-2: Left Side View of Vehicle

2009 NISSAN ROGUE
NHTSA NO. C95205
FMVSS NO. 124

Figure A-3: Right Side View of Vehicle

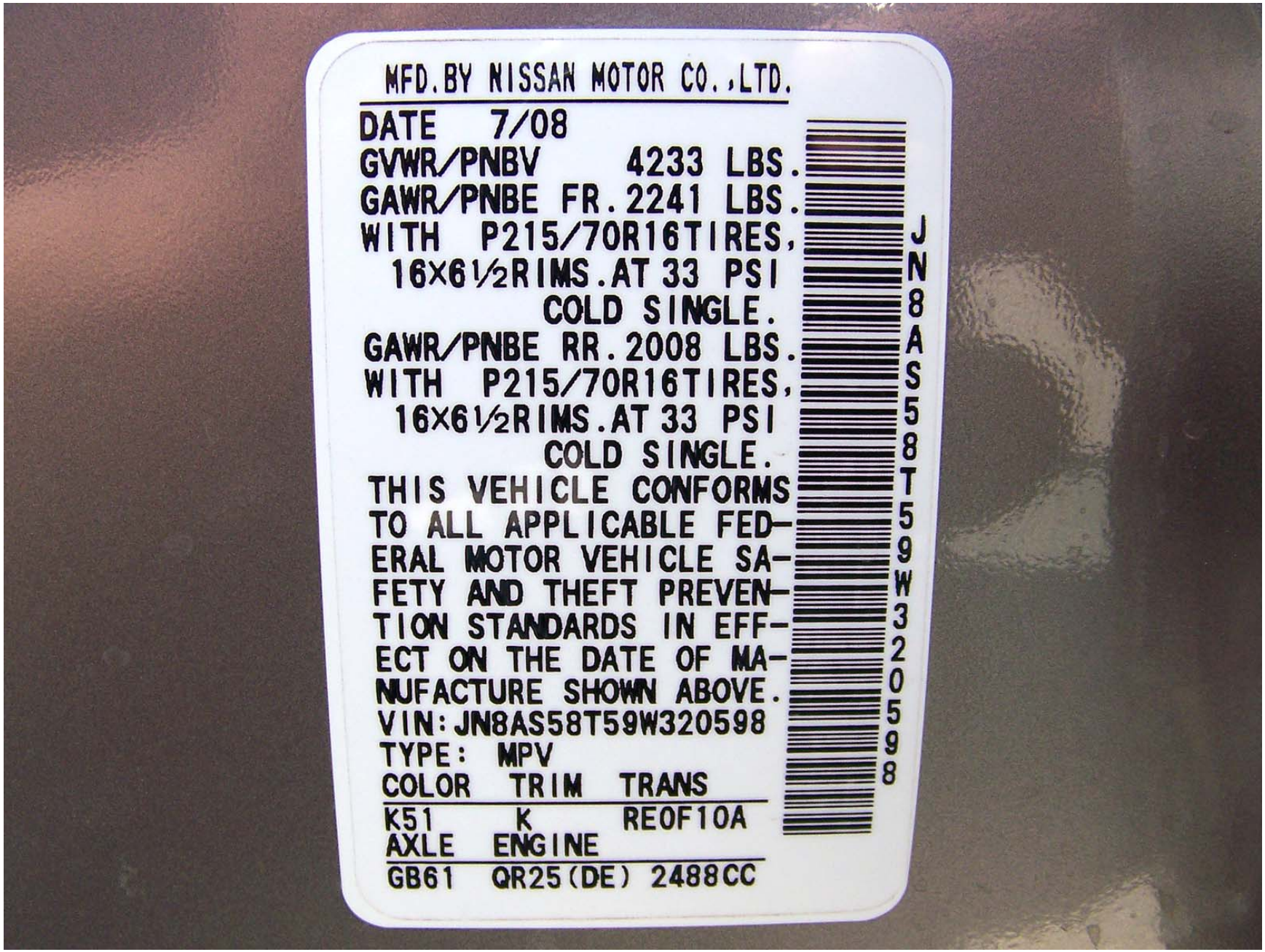



Figure A-4: Vehicle's Certification Label



2009 NISSAN ROGUE
NHTSA NO. C95205
FMVSS NO. 124

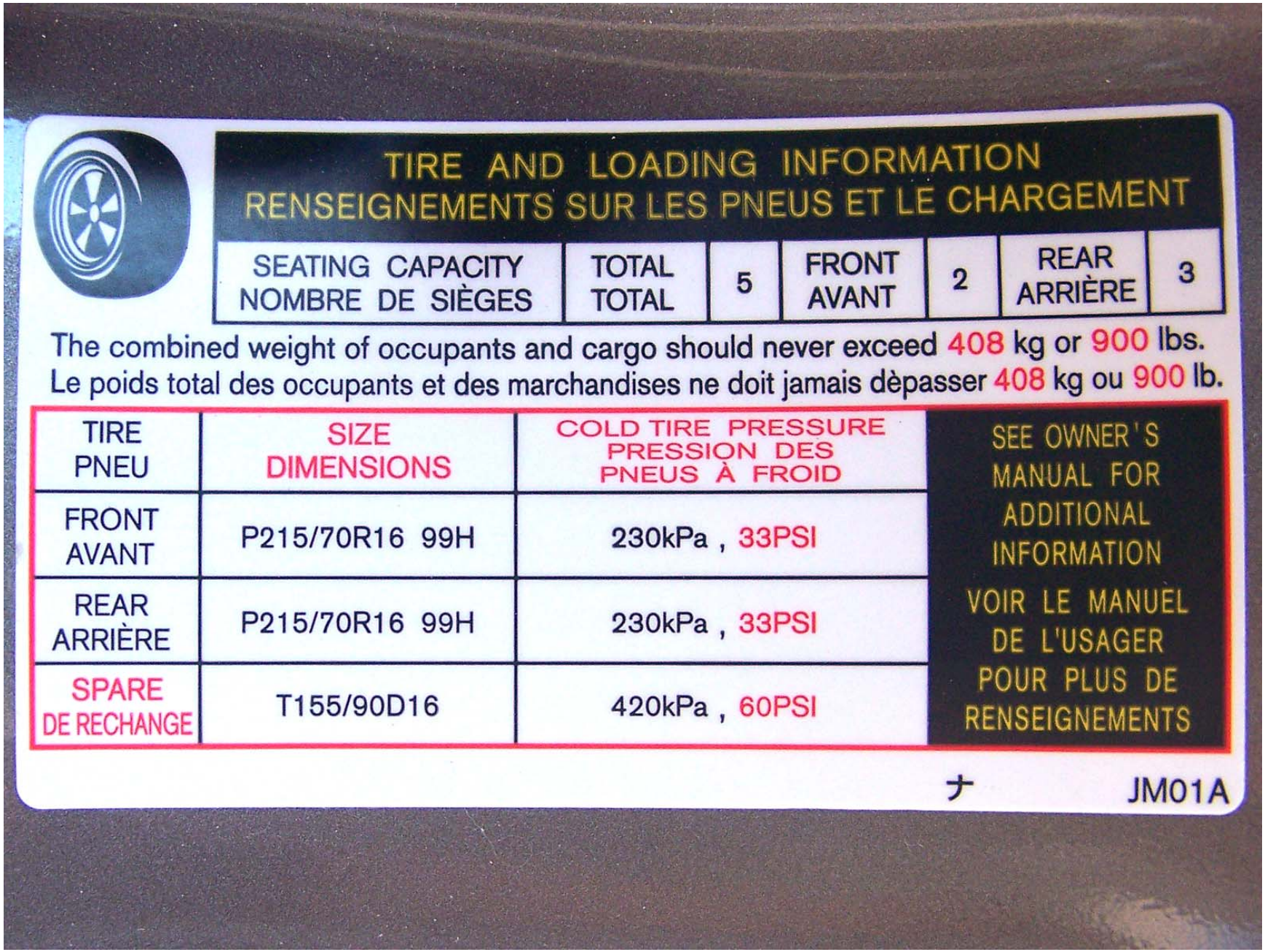



Figure A-5: Vehicle's Tire Placard



2009 NISSAN ROGUE
NHTSA NO. C95205
FMVSS NO. 124


2009 NISSAN ROGUE
NHTSA NO. C95205
FMVSS NO. 124

Figure A-6: Throttle Body Assembly

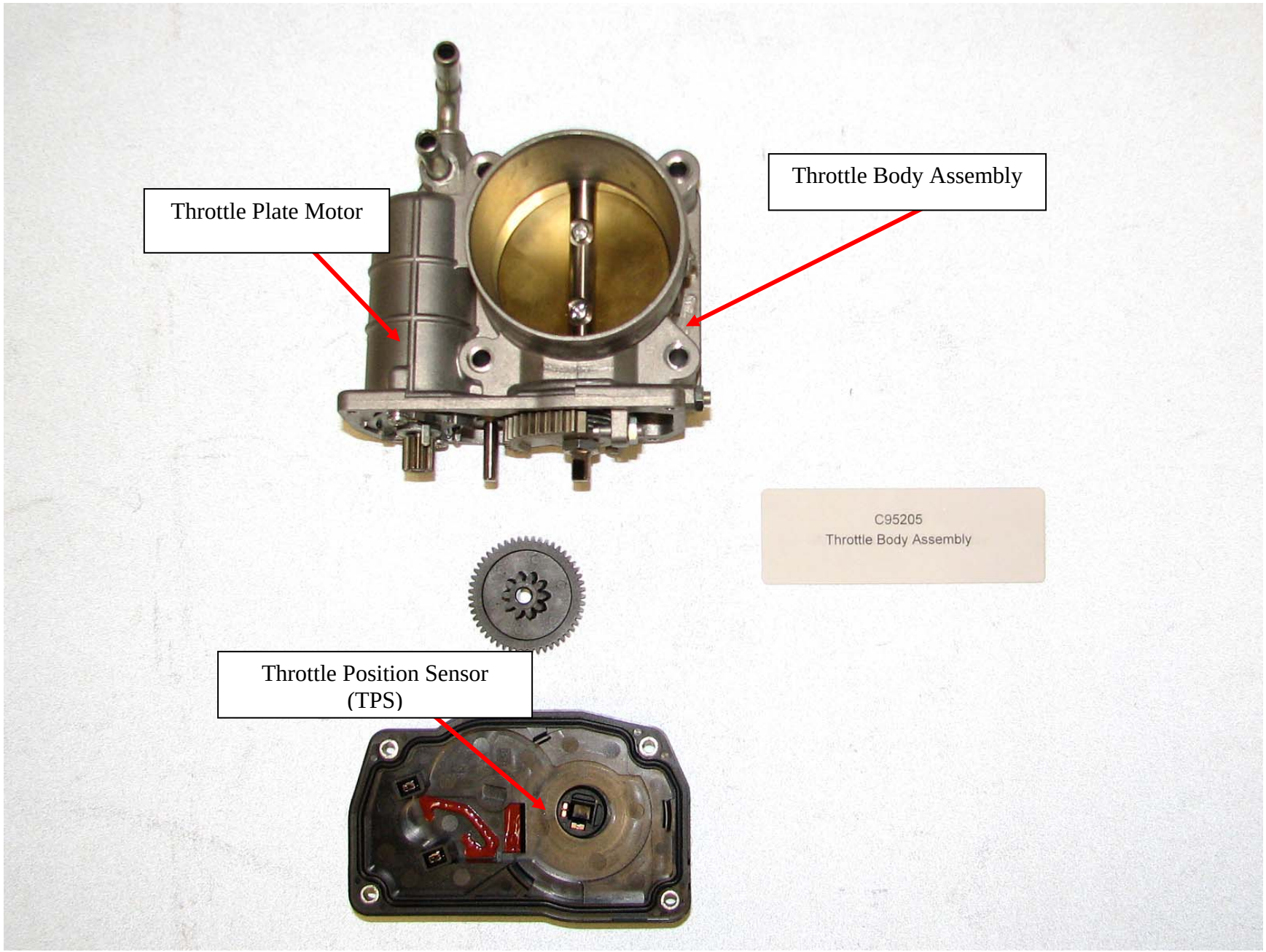



Figure A-7: Throttle Body Assembly, Motor, and Position Sensor



2009 NISSAN ROGUE
NHTSA NO. C95205
FMVSS NO. 124

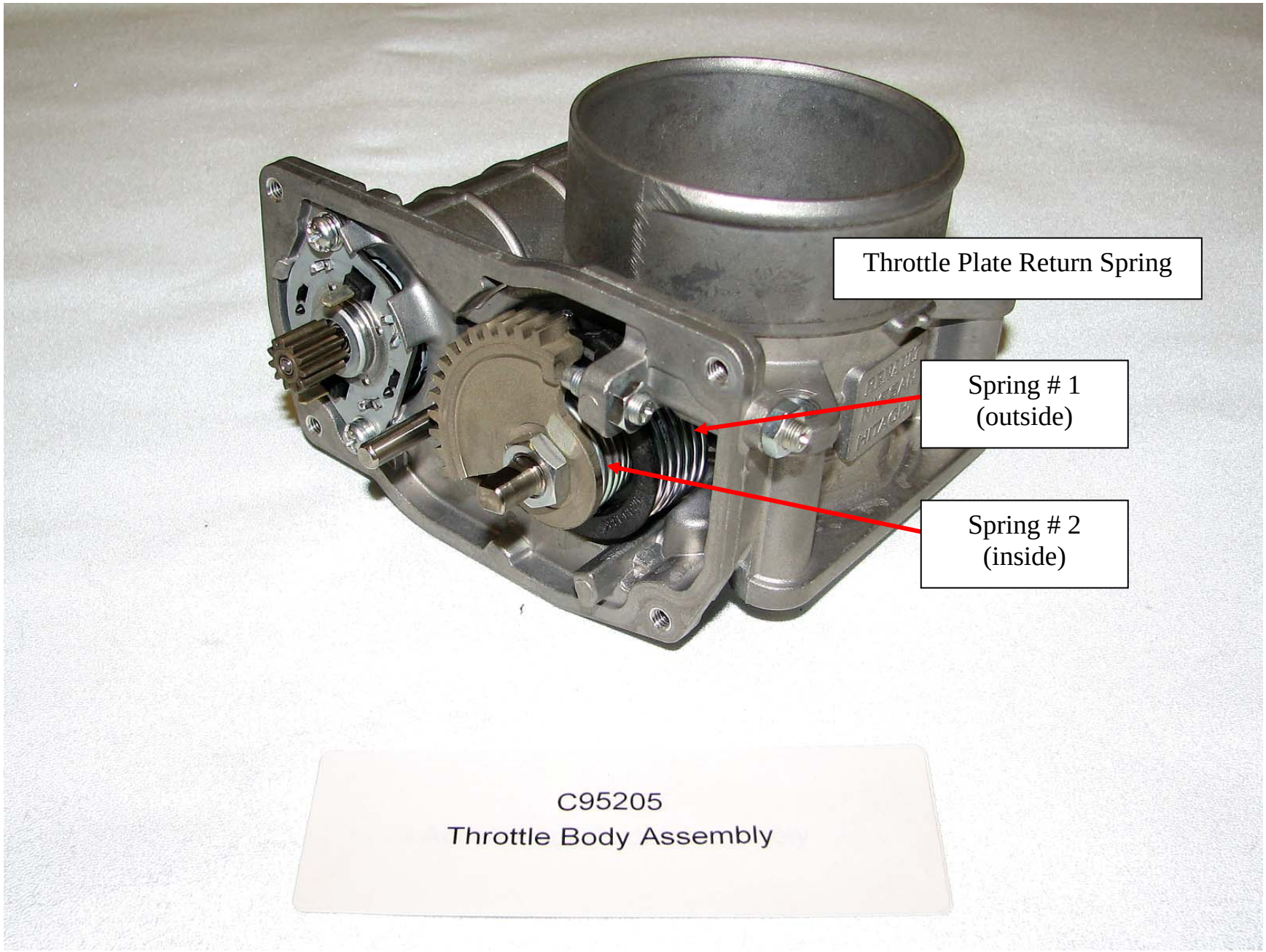



Figure A-8: Throttle Plate Return Spring



2009 NISSAN ROGUE
NHTSA NO. C95205
FMVSS NO. 124

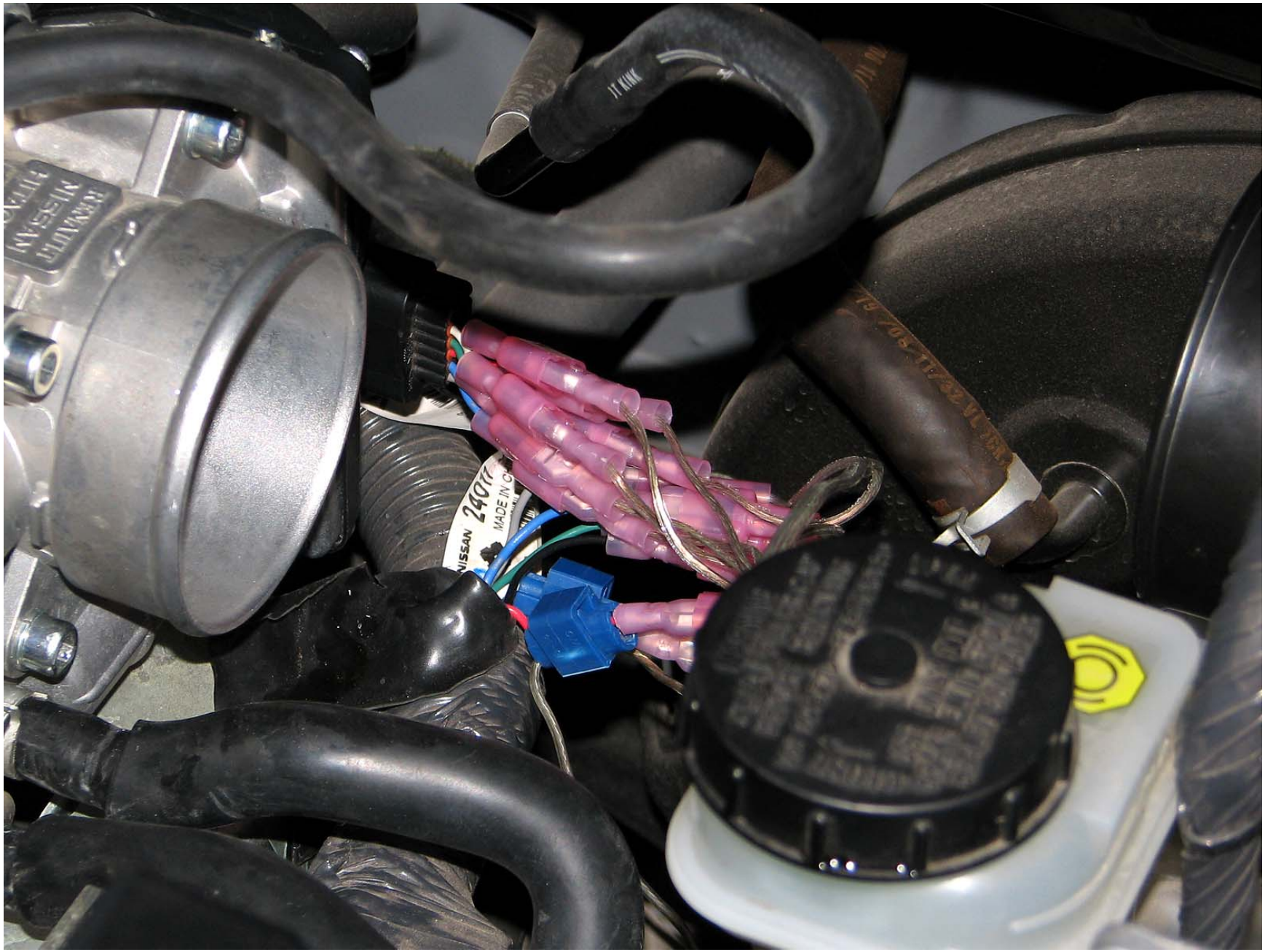
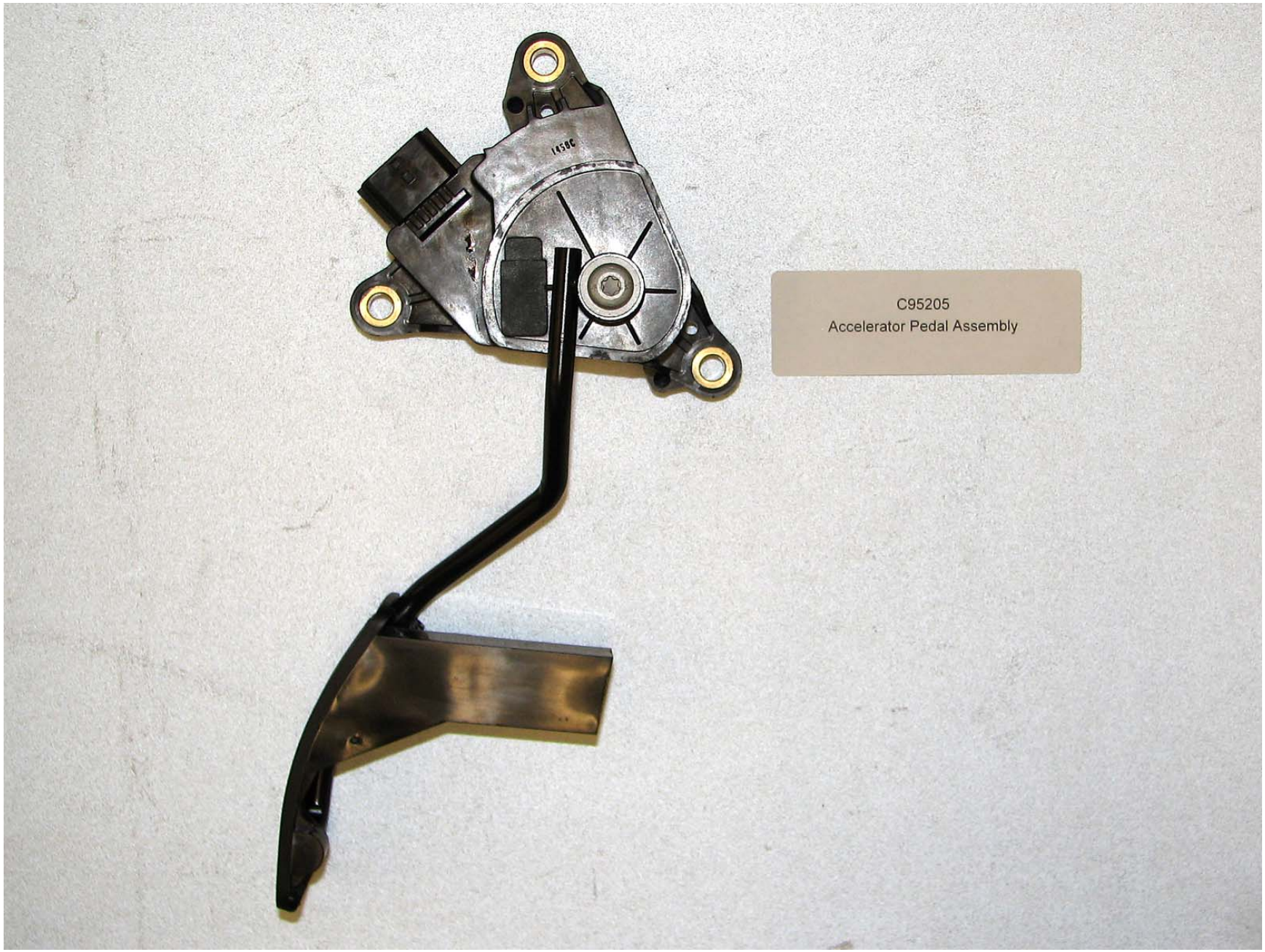


Figure A-9: Throttle Body Test Setup




2009 NISSAN ROGUE
NHTSA NO. C95205
FMVSS NO. 124

Figure A-10: Accelerator Pedal Assembly

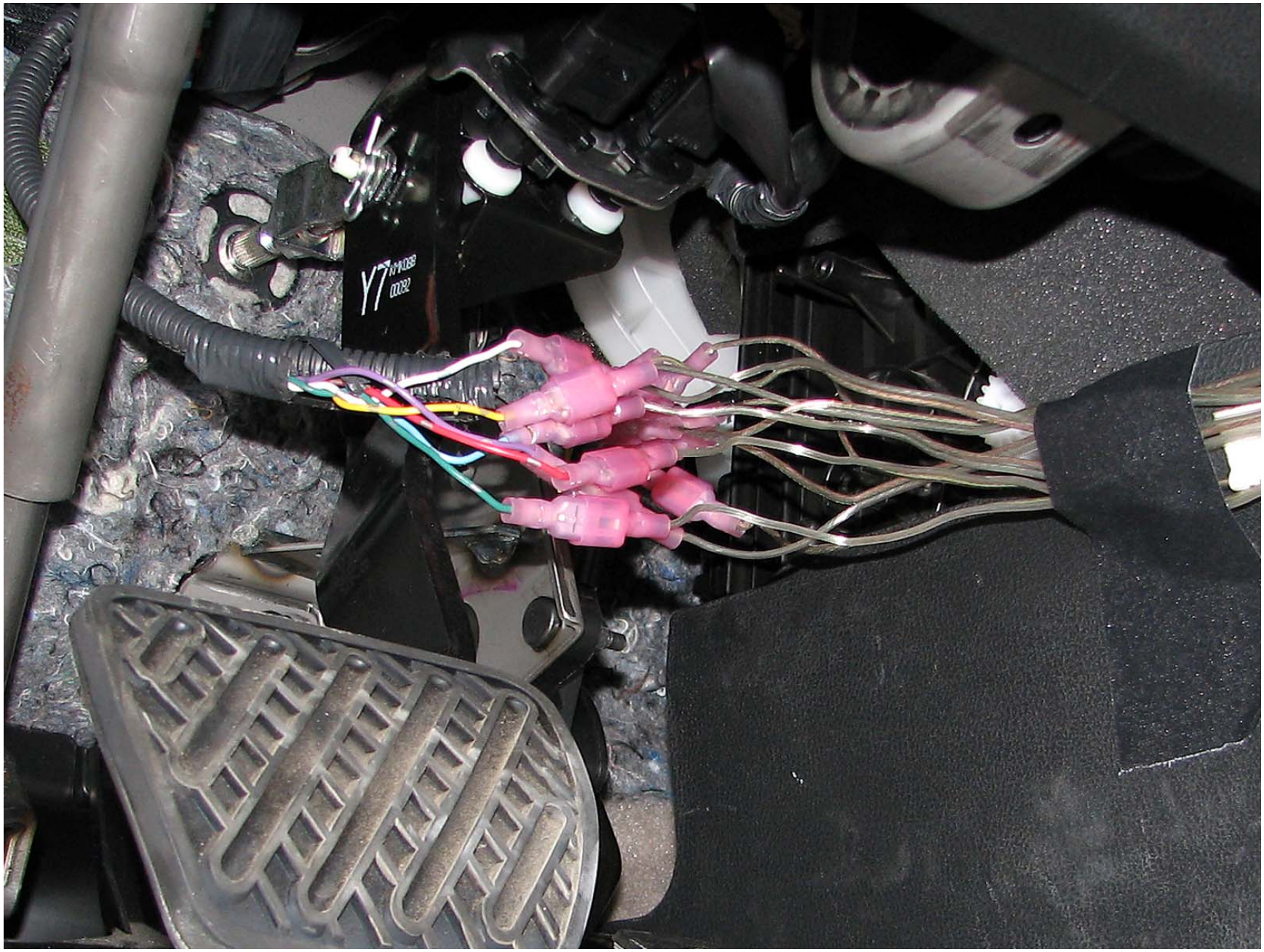
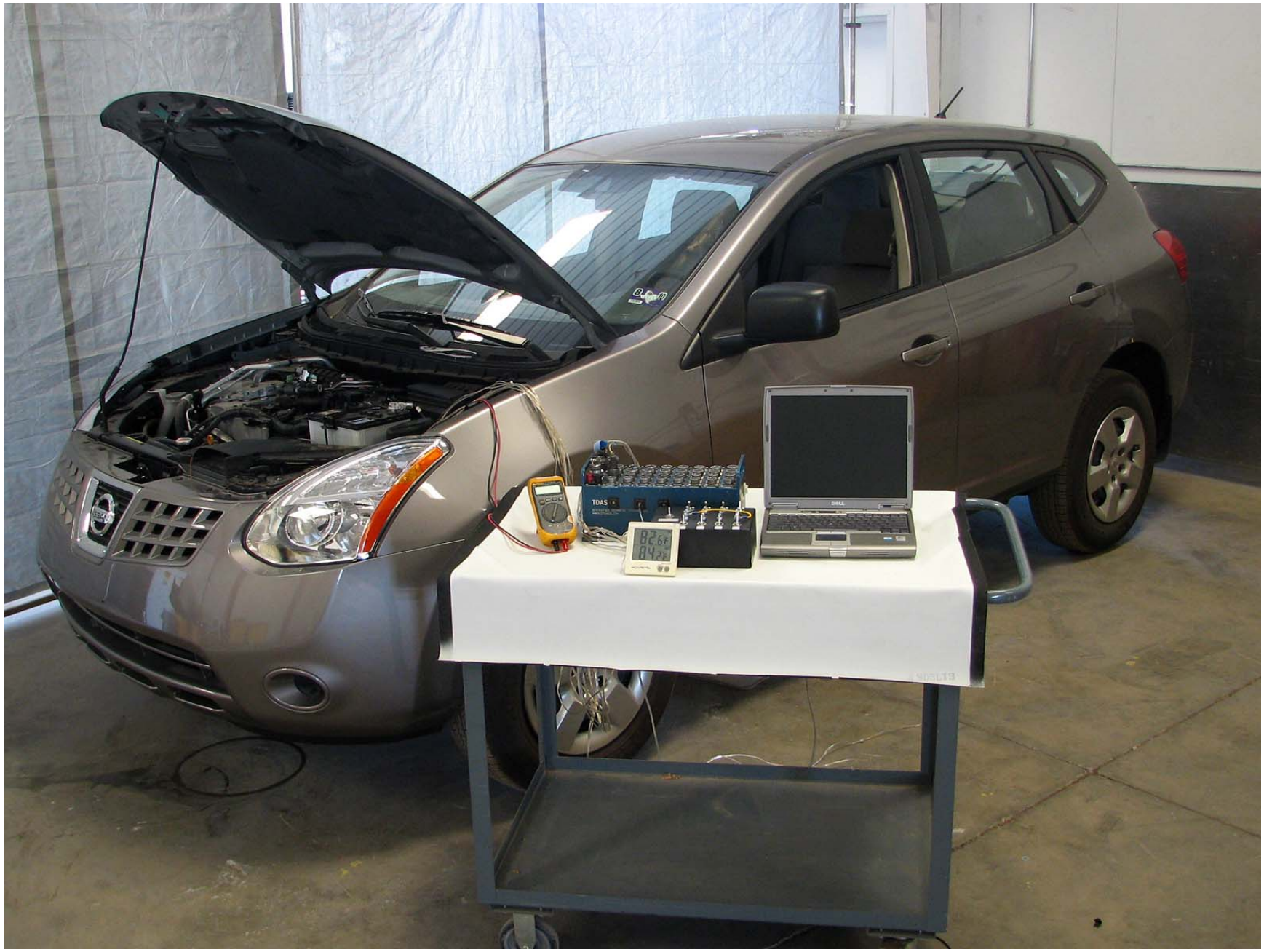


Figure A-11: Accelerator Pedal Test Setup




2009 NISSAN ROGUE
NHTSA NO. C95205
FMVSS NO. 124

Figure A-12: Vehicle Test Setup

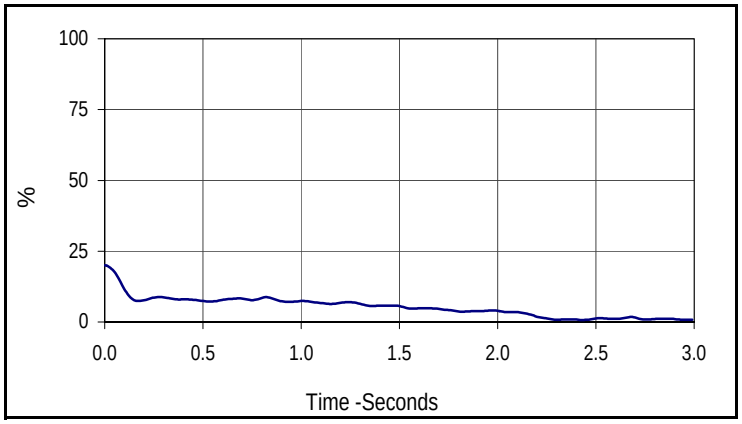

2009 NISSAN ROGUE
NHTSA NO. C95205
FMVSS NO. 124

Figure A-13: Instrumentation

**APPENDIX B**

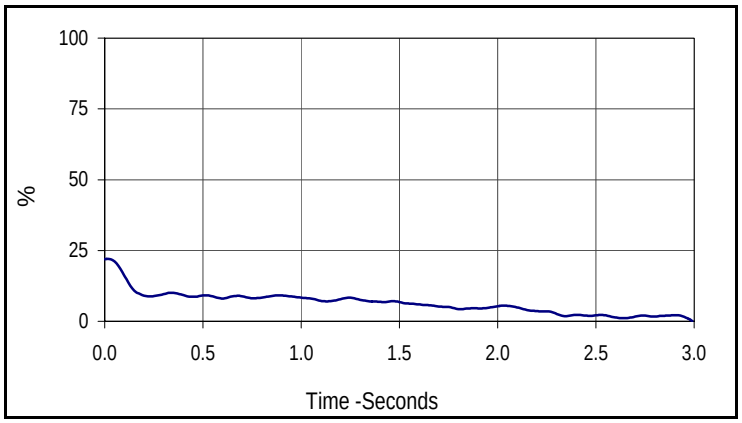
**DATA PLOTS**

| | | | |
|---|---|---|---|
| Test Vehicle: | 2009 Nissan Rogue 5-Door MPV | Test Date: | 7/16/09 |
| Test Program: | FMVSS 124 Accelerator Control Systems | NHTSA No.: | C95205 |



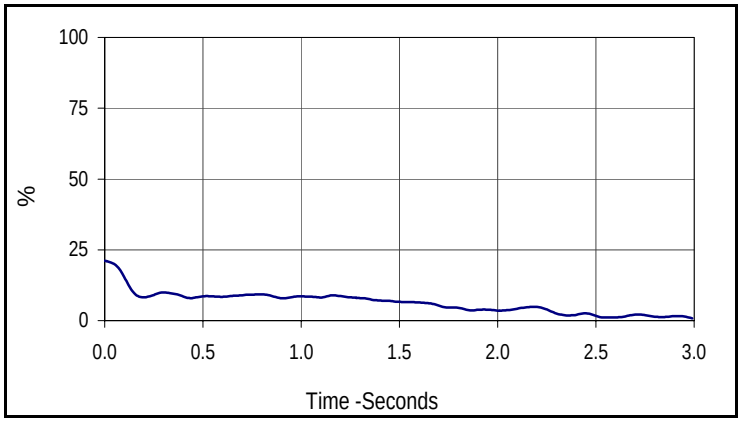

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (Normal Operation) | | | |
| CURNO | Type | Filter Freq | Units |
| 001 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 20.0 | 0.0 | 2180.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



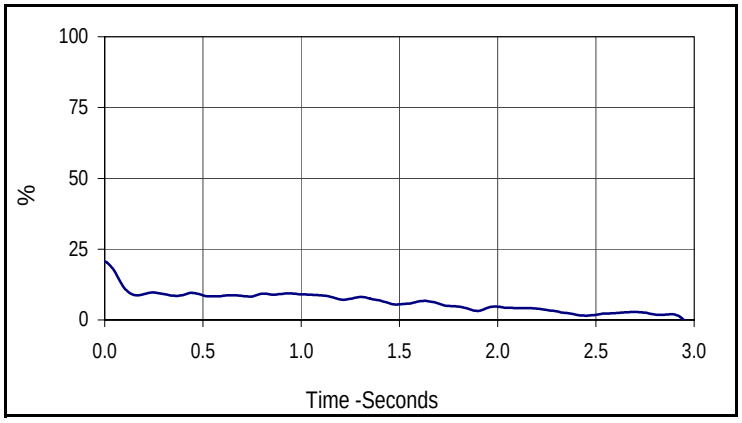

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (Normal Operation) | | | |
| CURNO | Type | Filter Freq | Units |
| 002 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 22.1 | 0.0 | 2310.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



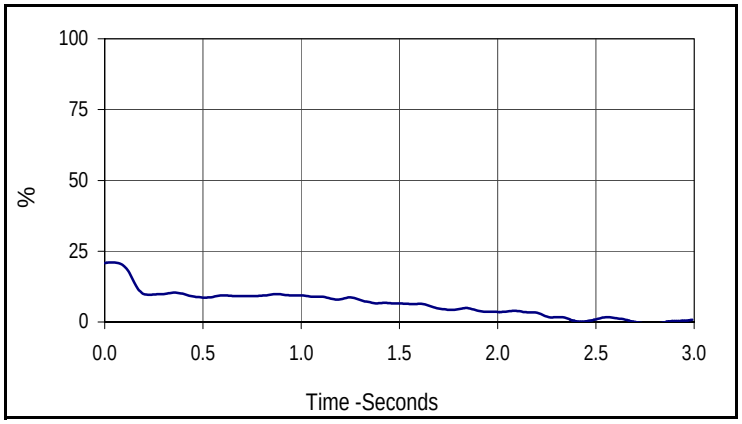

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (Normal Operation) | | | |
| CURNO | Type | Filter Freq | Units |
| 003 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 21.1 | 0.0 | 2300.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



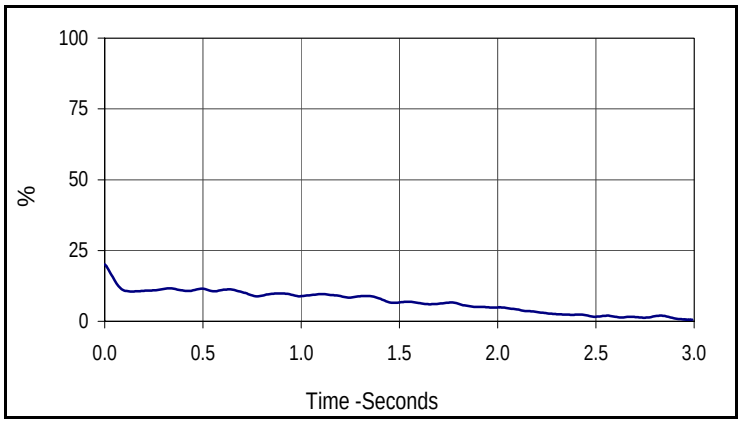

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (Normal Operation) | | | |
| CURNO | Type | Filter Freq | Units |
| 004 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 20.7 | 0.0 | 2350.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



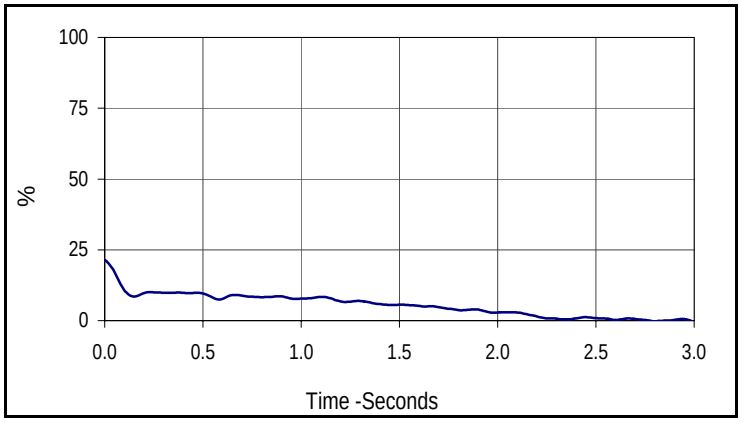

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (APS Wire 1 Open) | | | |
| CURNO | Type | Filter Freq | Units |
| 005 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 21.0 | 0.0 | 2230.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



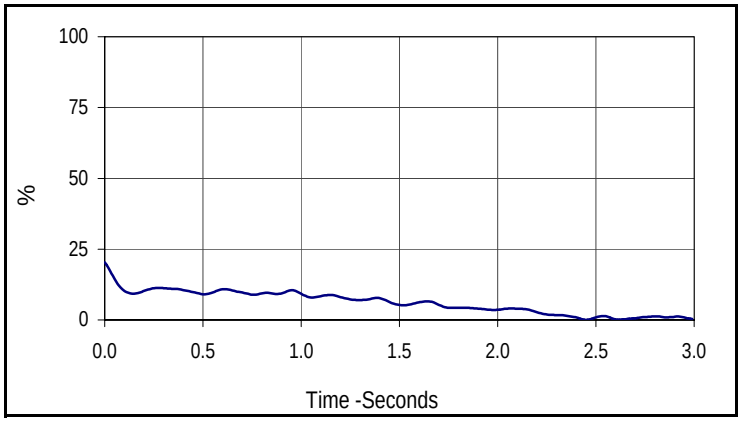

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (APS Wire 2 Open) | | | |
| CURNO | Type | Filter Freq | Units |
| 006 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 20.2 | 0.0 | 2310.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



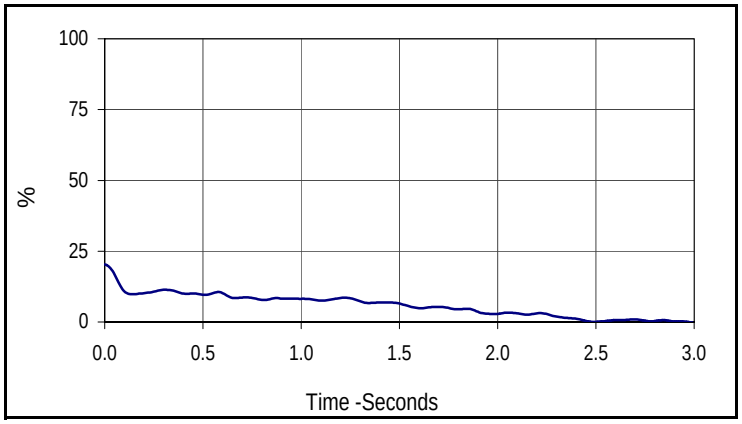

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (APS Wire 3 Open) | | | |
| CURNO | Type | Filter Freq | Units |
| 007 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 21.4 | 0.0 | 2140.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%




| Curve Description | | | |
|---|---|---|---|
| Throttle Position (APS Wire 4 Open) | | | |
| CURNO | Type | Filter Freq | Units |
| 008 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 20.4 | 0.0 | 2210.0 | |

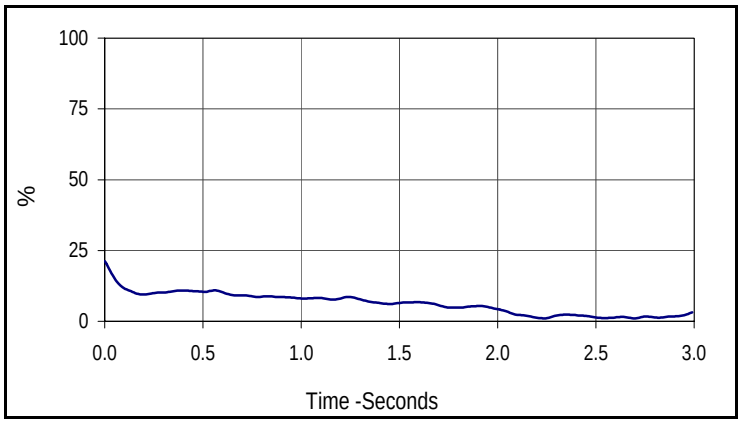
Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%




| Curve Description | | | |
|---|---|---|---|
| Throttle Position (APS Wire 5 Open) | | | |
| CURNO | Type | Filter Freq | Units |
| 009 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 20.4 | 0.0 | 2270.0 | |

Throttle % reading at baseline (idle) is 2%

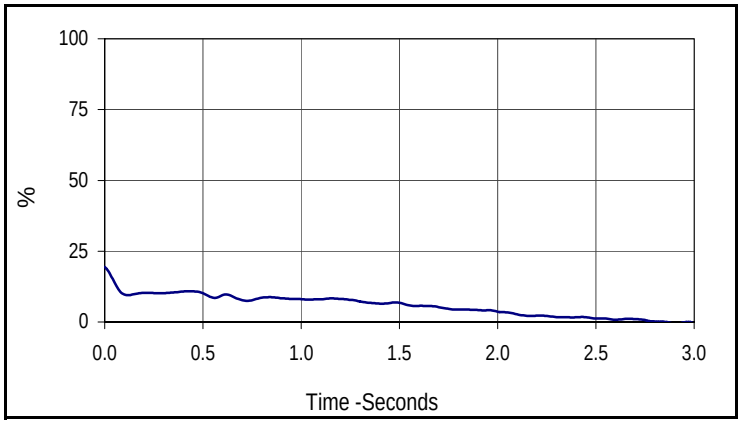
All return times were calculated at a return to 2%




| Curve Description | | | |
|---|---|---|---|
| Throttle Position (APS Wire 6 Open) | | | |
| CURNO | Type | Filter Freq | Units |
| 010 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 21.3 | 0.0 | 2090.0 | |

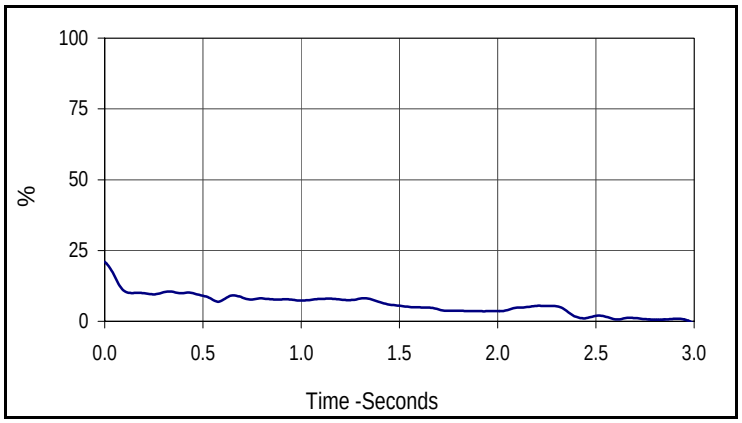
Throttle % reading at baseline (idle) is 2%

All return times were calculated at a return to 2%



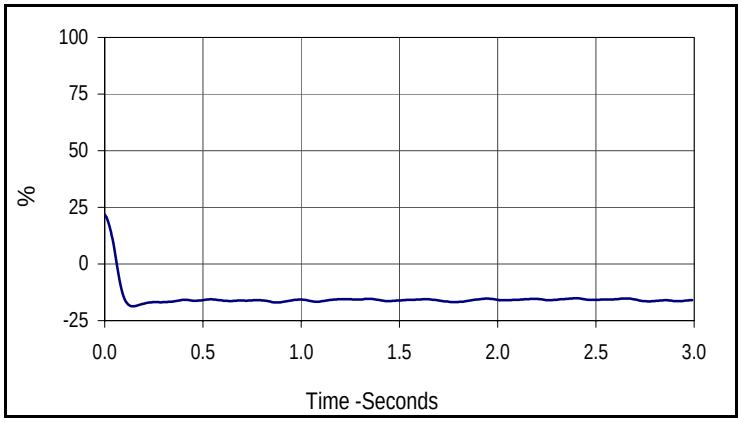

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (APS Wire 1 Short) | | | |
| CURNO | Type | Filter Freq | Units |
| 011 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 19.4 | 0.0 | 2120.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



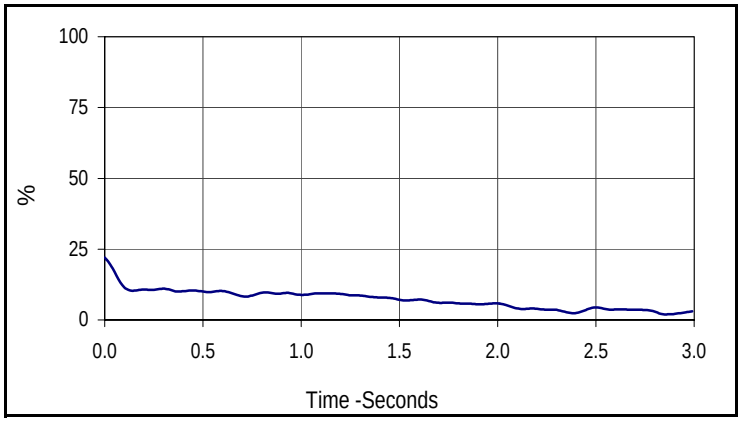

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (APS Wire 2 Short) | | | |
| CURNO | Type | Filter Freq | Units |
| 012 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 21.0 | 0.0 | 2380.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



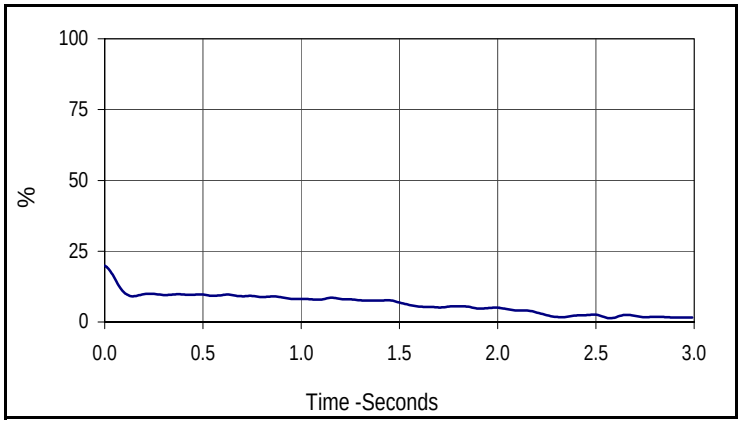

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (APS Wire 3 Short) | | | |
| CURNO | Type | Filter Freq | Units |
| 013 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 21.9 | 0.0 | 60.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



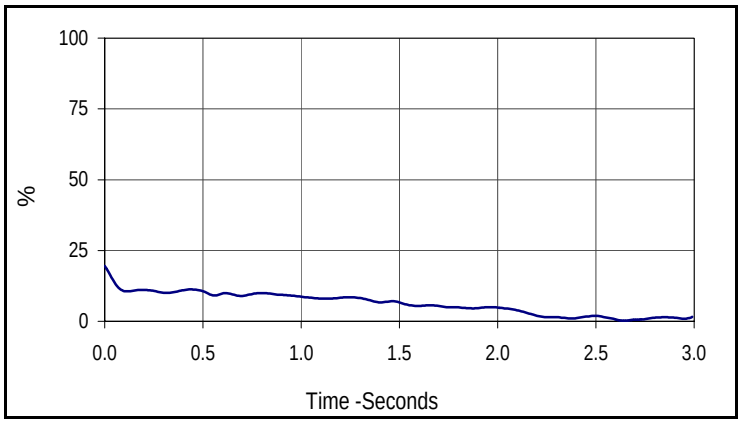

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (APS Wire 4 Short) | | | |
| CURNO | Type | Filter Freq | Units |
| 014 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 22.0 | 0.0 | 2370.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



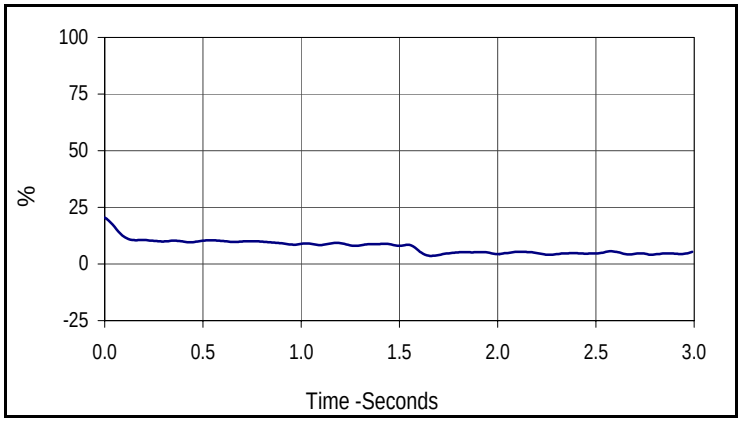

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (APS Wire 5 Short) | | | |
| CURNO | Type | Filter Freq | Units |
| 015 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 19.9 | 0.0 | 2250.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



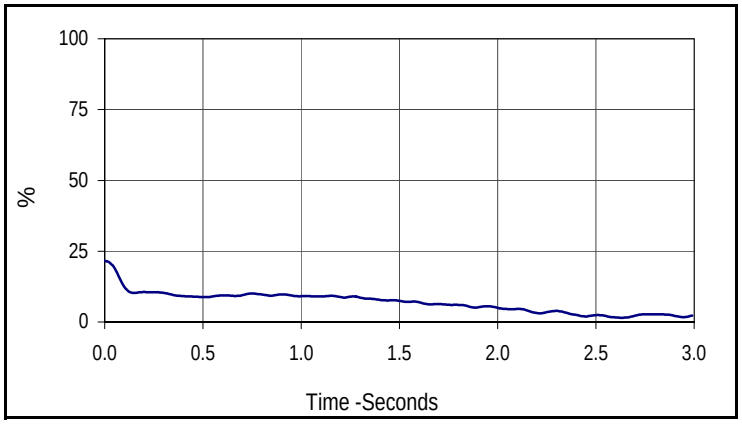

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (APS Wire 6 Short) | | | |
| CURNO | Type | Filter Freq | Units |
| 016 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 19.5 | 0.0 | 2180.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



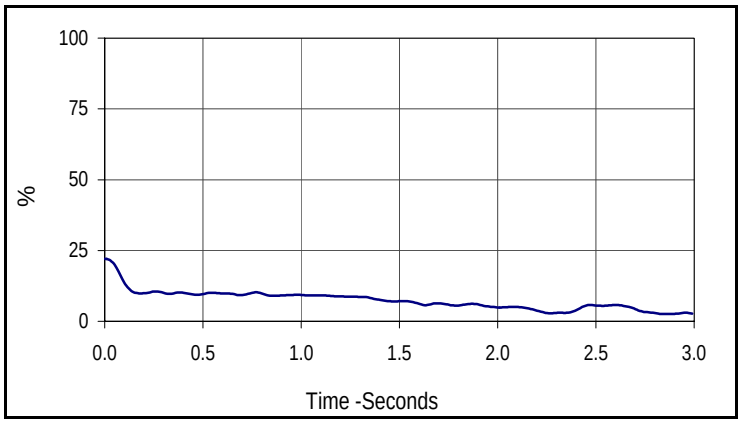

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (APS Disconnect) | | | |
| CURNO | Type | Filter Freq | Units |
| 017 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 20.4 | 0.0 | * | |

Throttle % reading at baseline (idle) is 2%
* Throttle never returned to baseline position.



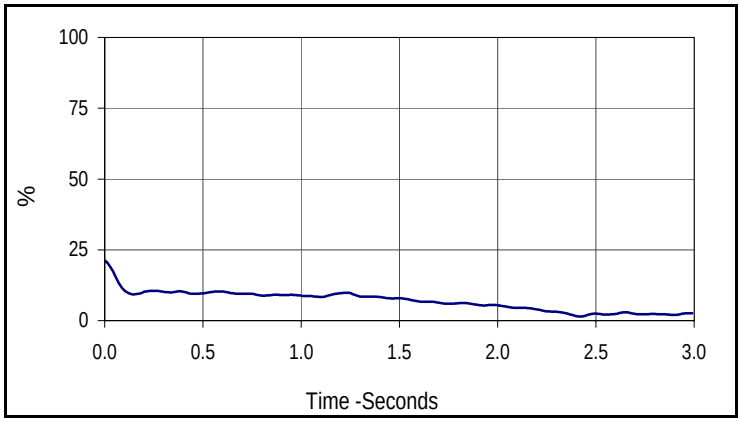

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Spring 1 Removed) | | | |
| CURNO | Type | Filter Freq | Units |
| 018 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 21.5 | 0.0 | 2400.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



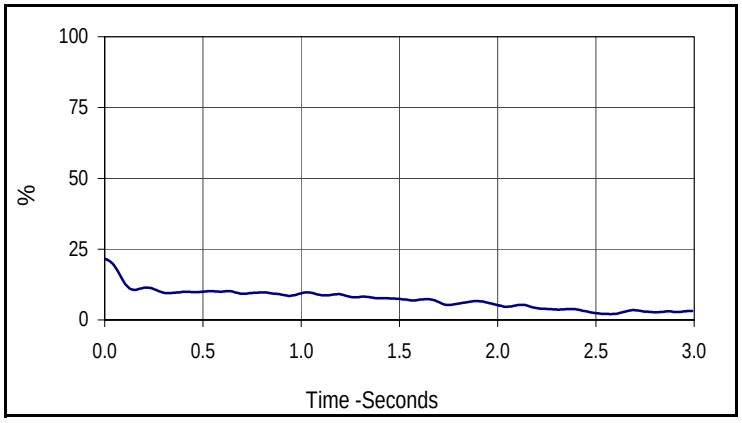

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Spring 1 Removed) | | | |
| CURNO | Type | Filter Freq | Units |
| 019 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 22.1 | 0.0 | 2220.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



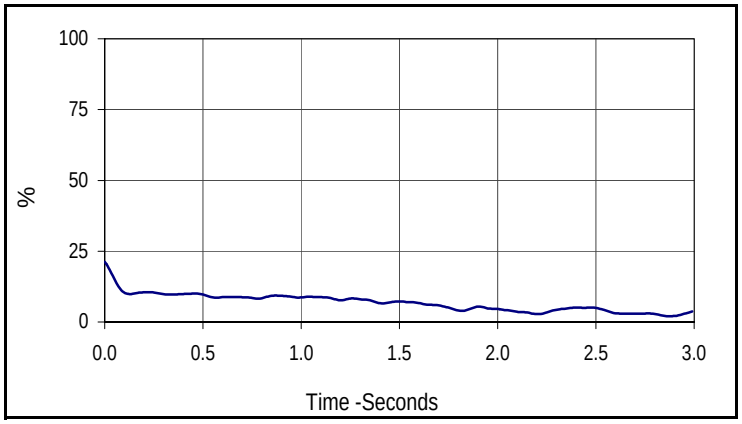

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Spring 1 Removed) | | | |
| CURNO | Type | Filter Freq | Units |
| 020 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 21.3 | 0.0 | 2360.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



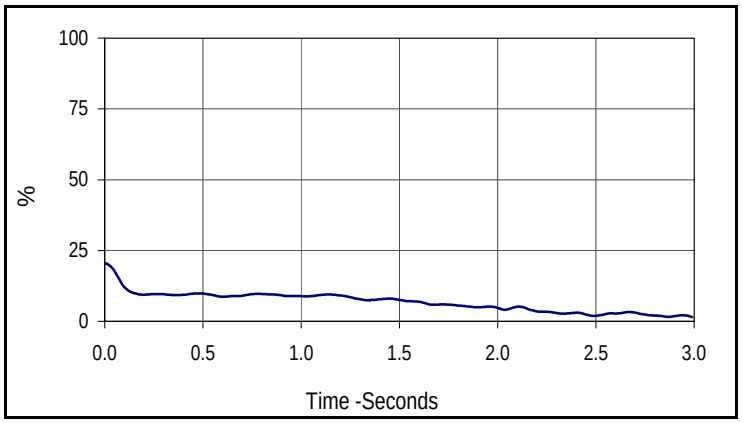

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Spring 1 Removed) | | | |
| CURNO | Type | Filter Freq | Units |
| 021 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 21.6 | 0.0 | 2500.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



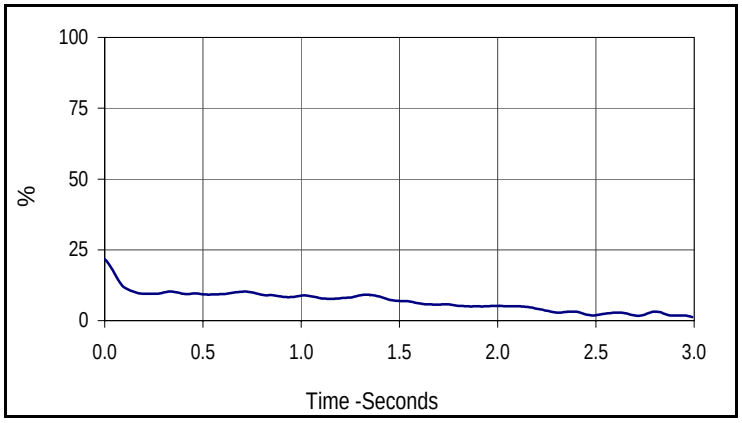

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Spring 2 Removed) | | | |
| CURNO | Type | Filter Freq | Units |
| 022 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 21.3 | 0.0 | 2830.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



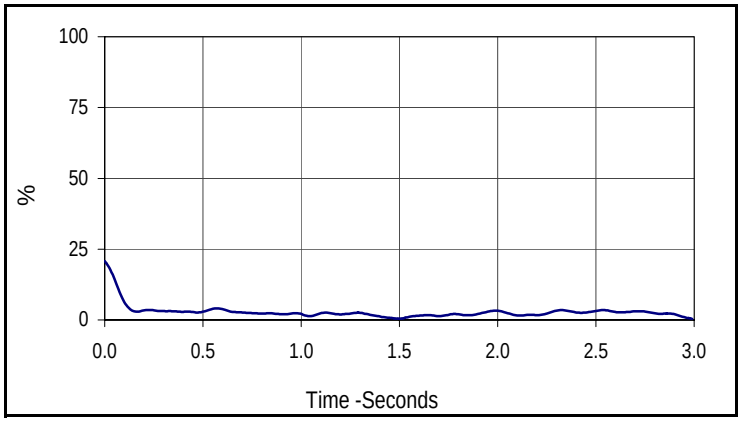

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Spring 2 Removed) | | | |
| CURNO | Type | Filter Freq | Units |
| 023 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 20.5 | 0.0 | 2450.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



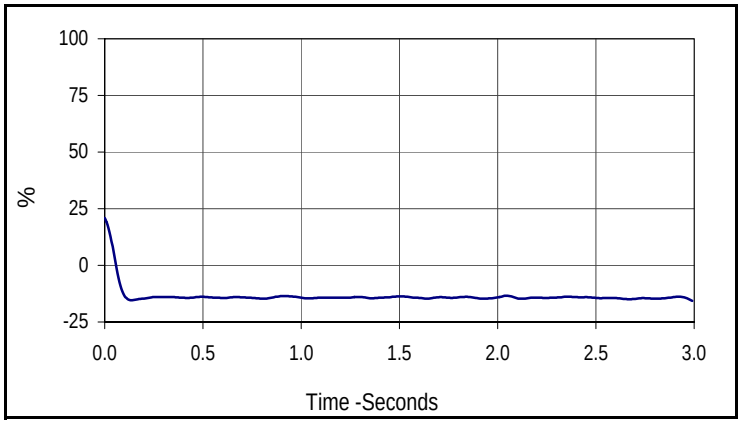

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Spring 2 Removed) | | | |
| CURNO | Type | Filter Freq | Units |
| 024 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 21.7 | 0.0 | 2440.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



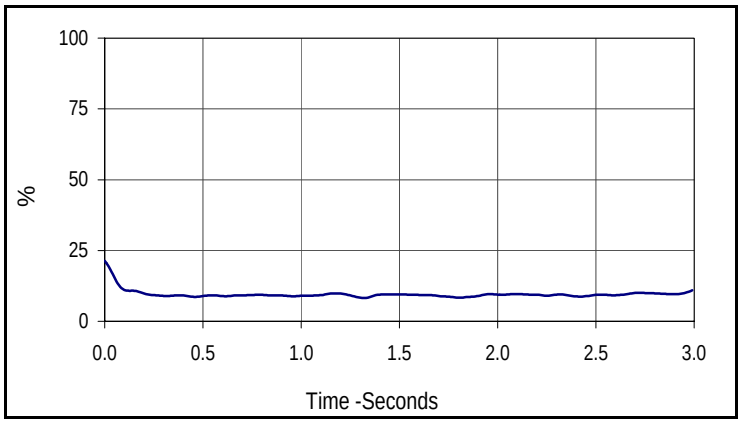

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Spring 2 Removed) | | | |
| CURNO | Type | Filter Freq | Units |
| 025 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 20.7 | 0.0 | 730.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



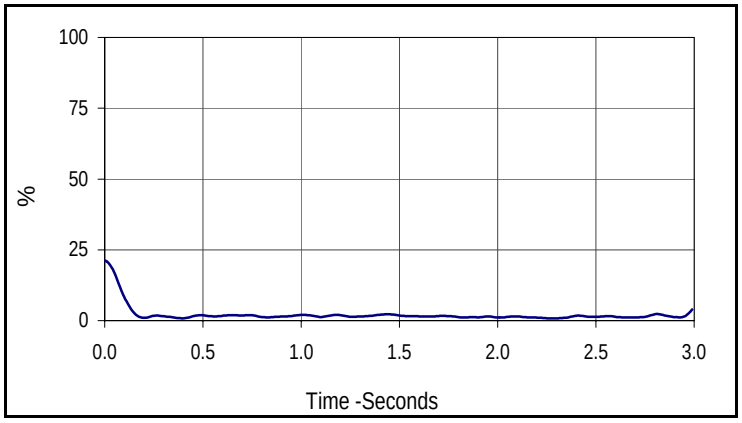

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Wire 1 Open) | | | |
| CURNO | Type | Filter Freq | Units |
| 026 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 20.9 | 0.0 | 50.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



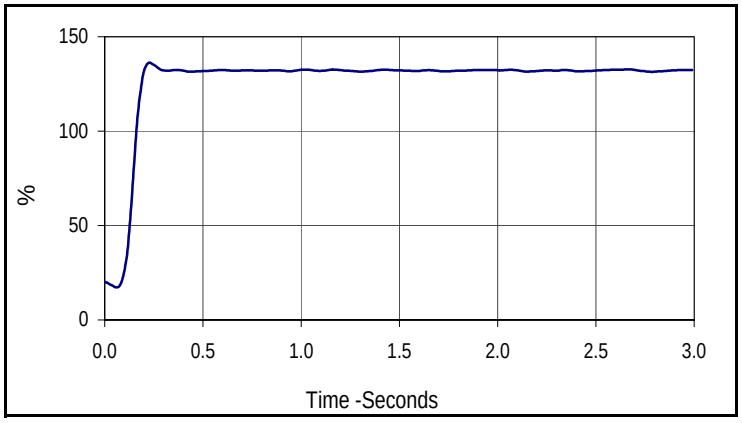

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Wire 2 Open) | | | |
| CURNO | Type | Filter Freq | Units |
| 027 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 21.3 | 0.0 | * | |

Throttle % reading at baseline (idle) is 2%
* Throttle never returned to baseline position.



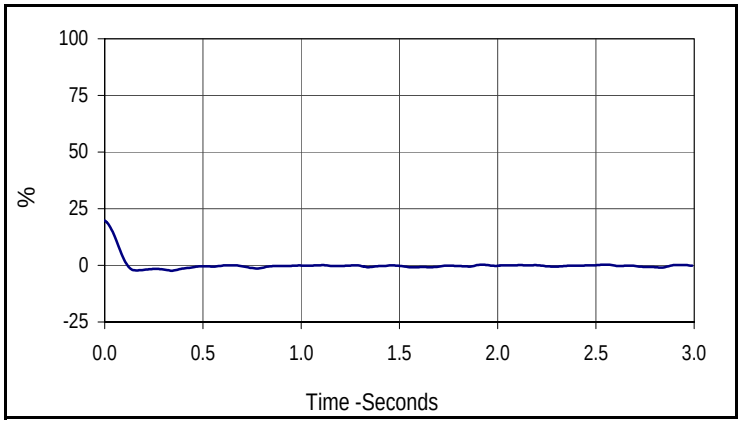

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Wire 3 Open) | | | |
| CURNO | Type | Filter Freq | Units |
| 028 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 21.3 | 0.0 | 160.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%




| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Wire 4 Open) | | | |
| CURNO | Type | Filter Freq | Units |
| 029 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 136.2 | 0.2 | * | |

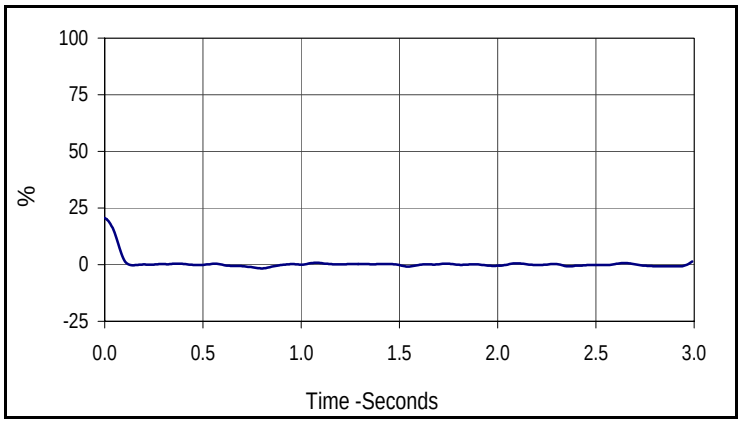
Throttle % reading at baseline (idle) is 2%
*Induced wire fault caused loss of sensor reading




| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Wire 5 Open) | | | |
| CURNO | Type | Filter Freq | Units |
| 030 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 19.8 | 0.0 | 100.0 | |

Throttle % reading at baseline (idle) is 2%

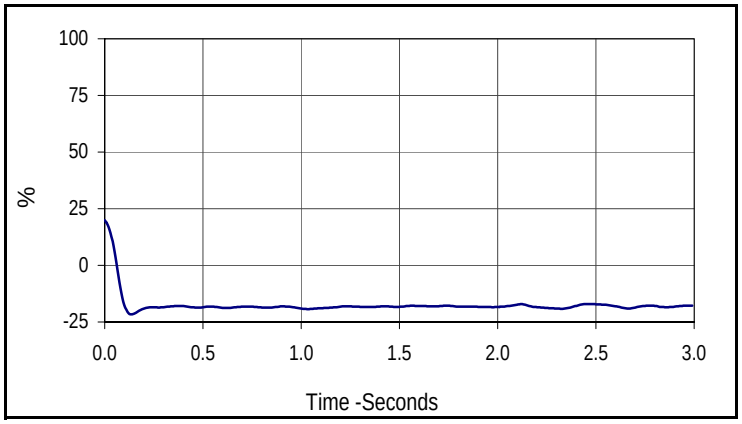
All return times were calculated at a return to 2%




| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Wire 6 Open) | | | |
| CURNO | Type | Filter Freq | Units |
| 031 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 20.6 | 0.0 | 100.0 | |

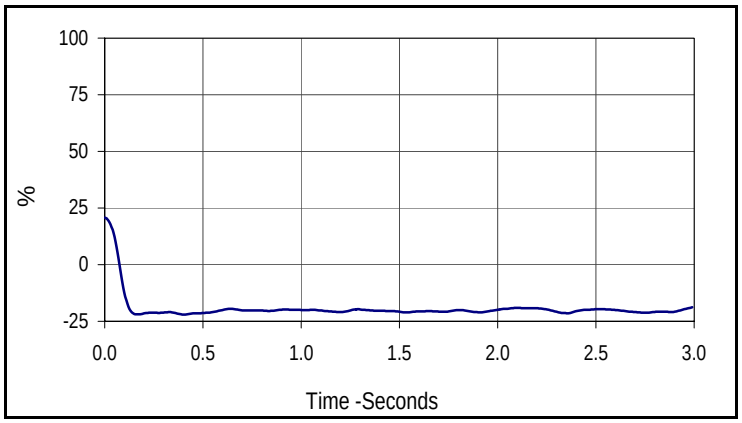
Throttle % reading at baseline (idle) is 2%

All return times were calculated at a return to 2%



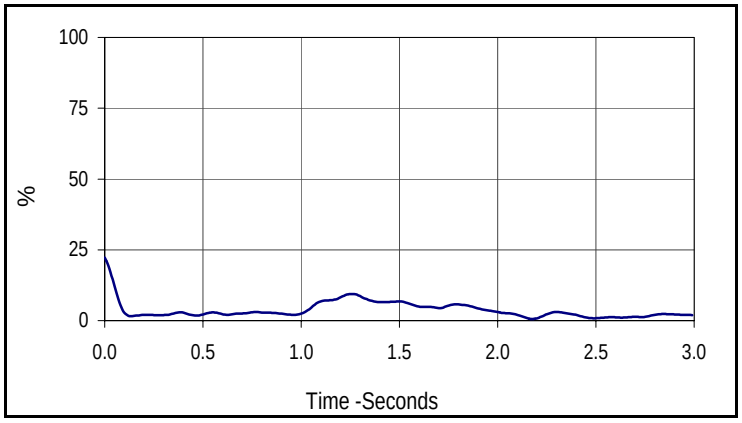

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Wire 1 Short) | | | |
| CURNO | Type | Filter Freq | Units |
| 032 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 19.9 | 0.0 | 60.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



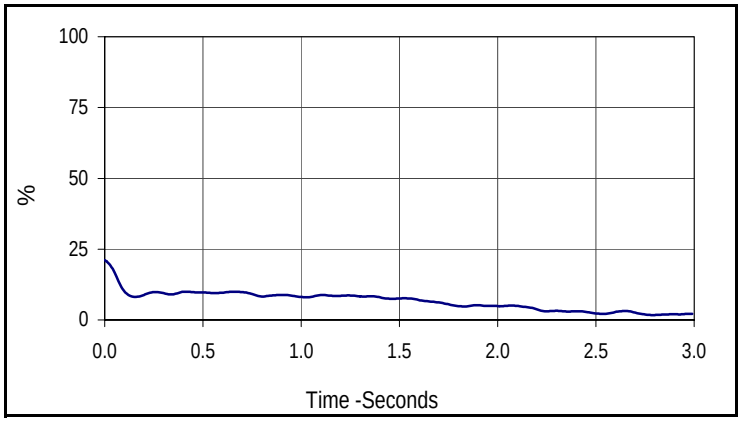

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Wire 2 Short) | | | |
| CURNO | Type | Filter Freq | Units |
| 033 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 20.8 | 0.0 | 80.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



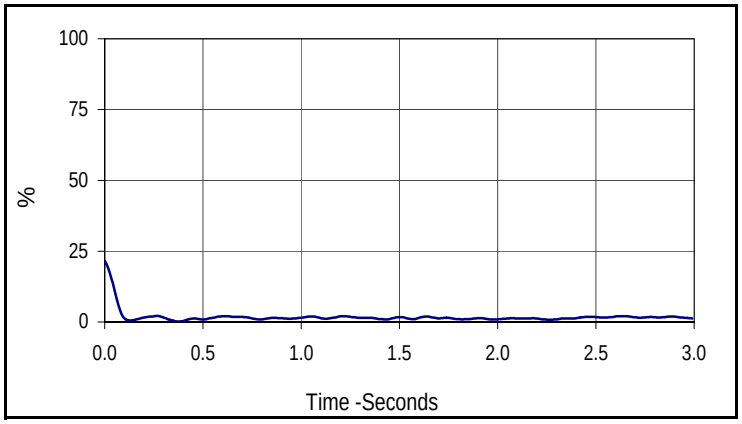

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Wire 3 Short) | | | |
| CURNO | Type | Filter Freq | Units |
| 034 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 22.3 | 0.0 | 110.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



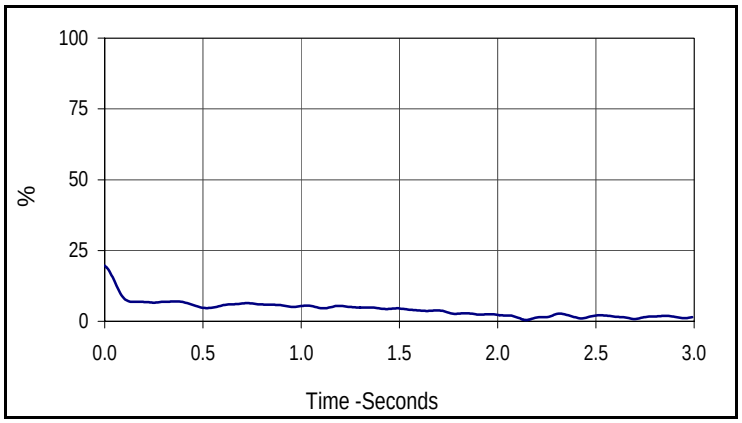

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Wire 4 Short) | | | |
| CURNO | Type | Filter Freq | Units |
| 035 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 21.1 | 0.0 | 2490.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%



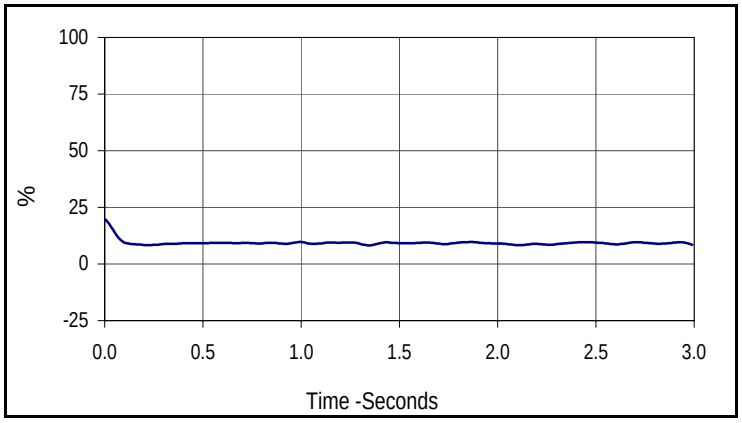

| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Wire 5 Short) | | | |
| CURNO | Type | Filter Freq | Units |
| 036 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 21.6 | 0.0 | 90.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%




| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS Wire 6 Short) | | | |
| CURNO | Type | Filter Freq | Units |
| 037 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 19.6 | 0.0 | 1890.0 | |

Throttle % reading at baseline (idle) is 2%
All return times were calculated at a return to 2%




| Curve Description | | | |
|---|---|---|---|
| Throttle Position (TPS/ Throttle Plate Motor Disconnect) | | | |
| CURNO | Type | Filter Freq | Units |
| 038 | FIL | 5 | % |
| Max | Time | Return Time (msec) | |
| 19.8 | 0.0 | * | |

Throttle % reading at baseline (idle) is 2%
* Throttle never returned to baseline position.

**APPENDIX-C**

**TEST EQUIPMENT AND CALIBRATION INFORMATION**

**FMVSS 124 Accelerator Control Systems**

**Test Equipment List and Calibration Information**

**7/16/09**

**2009 Nissan Rogue 5-Door MPV**

| Description | Manufacturer | Model No. | Serial No. | Limit | Accuracy | Cal. Date | Due Cal. |
|---|---|---|---|---|---|---|---|
| TDAS | DTS | TDAS | DM0101 | N/A | SAE J211 | 11/14/08 | 11/14/09 |
| Computer | Toshiba | PAS4014 | X8065355A | N/A | N/A | N/A | N/A |

**APPENDIX-D**

**MANUFACTURER SUBMITTED INFORMATION**

# VEHICLE INFORMATION / TEST SPECIFICATIONS

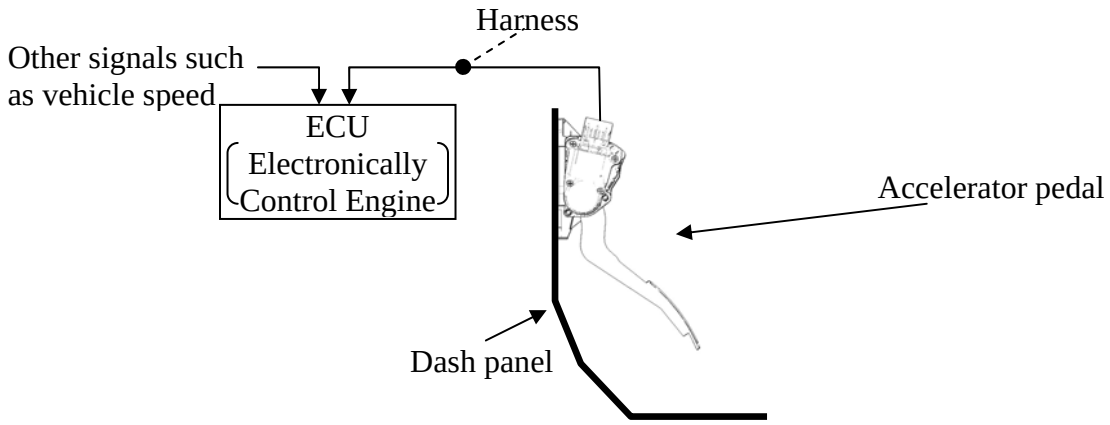
FMVSS No. 124

## 2009MY Nissan Rogue*

*Please note this system is similar in operation to the accelerator control system in the 2007MY Nissan Versa, which was tested for compliance in Fall 2007 (Report 124-GTL-07-003)

Requested Information:

**1.** A sketch of the driver operated accelerator control system (ACS) starting from the accelerator pedal up to and including the fuel metering device (carburetor, fuel injectors, fuel distributor, or fuel injection pump).




**2.** For Normal ACS operation, the method utilized to determine the engine idle state (air throttle plate position, fuel delivery rate, other).

**The engine idle state can be determined by monitoring the Throttle Position Sensor (TPS) output voltage. This information provides throttle plate position data in the form of TPS output voltage (TPS output voltage at idle is available for both TPS sensors, see Nissan service manual for Rogue). The engine idle state can also be monitored through the On-Board Diagnostic System (OBD) using the Nissan Consult-3 equipment. This information will be given in the form of engine speed (RPM). The value for engine RPM at idle is available in the Nissan Rogue service manual.**

**3.** For Fail-Safe operation of the ACS (disconnection or severance), the method utilized to determine return of engine power to the idle state (air throttle plate position, fuel delivery rate, air intake, engine rpm, other)

**For Fail-Safe operation of the ACS (disconnection or severance), the method utilized to determine return of engine power to the idle state is by monitoring the TPS voltage output, which provides the air throttle plate position as a function of TPS output voltage.**

**4.** Is the vehicle ACS equipped with any of the following:

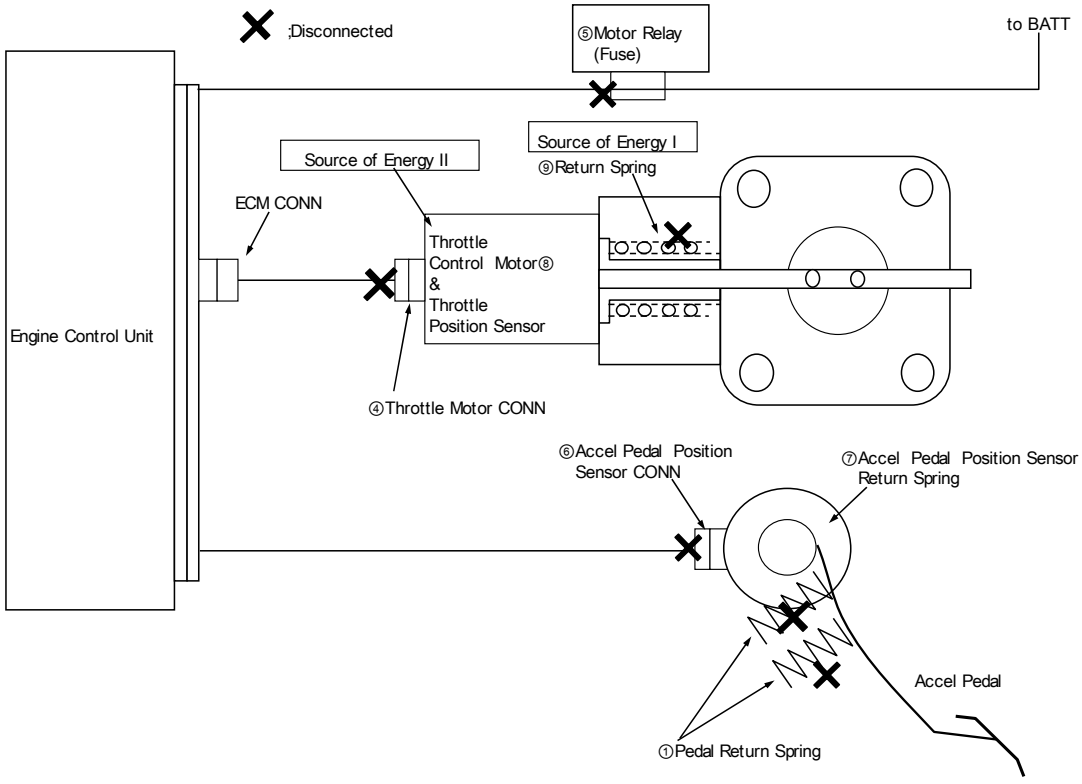
A. Accelerator Pedal Position Sensor (APS) : **Yes**
B. Throttle Plate Position Sensor (TPS) : **Yes**
C. Electronic Control Module (ECM) : **Yes**
D. Air throttle plate actuator motor: **Yes**

**5.** If air throttle plate equipped, is there a procedure which can be utilized by the test laboratory to measure the position of the throttle plate by tapping into the TPS or ECM? If so, please describe.

**Yes, there is a means to measure throttle plate position by tapping onto the TPS. Procedure: Splice into the TPS signal at the Throttle Control Motor Connector (located on the throttle body- engine compartment; see service manual for correct wiring termination). Monitor the TPS signal voltage output at the sensor output.**

**6.** Point(s) chosen to demonstrate compliance with FMVSS No. 124 for single point disconnect and severance.

**See sketch below**



**7.** Where applicable, were connections in the ACS beyond the ECM such as the fuel injectors tested for disconnection and severance. If yes, provide details.

**No.**

**8.** Where applicable, were idle return times tested for electrical severance accompanied by shorting to ground? If yes, please provide details.

**No.**

**9.** All sources of return energy (springs) for the accelerator pedal and if applicable, the air throttle plate.

**Sources of Throttle Return Energy:**
**1. Throttle Control Motor**
**2. Throttle Motor Return Springs:**
**a. Inner Spring**
**b. Outer Spring**
**3. Accelerator Pedal Return Springs:**
**a. Inner Spring**
**b. Outer Spring**

**10.** If fuel delivery rate is used to demonstrate return to idle state, provide:

A. The method used to measure this signal i.e. connection to standard SAE J1587 data bus.
B. Equipment required to measure signal.

**Fuel delivery rate is not used to demonstrate return to idle state.**

**11.** Fuel rate signal output range at the idle state.
**N/A**

**12.** Is the ACS equipped with a limp home mode? If yes, provide operation description.

**Yes. Upon disconnection or severance of any part of the ACS system the air throttle plate is returned to within +10° of idle position. At the same time, the fuel delivery rate is deceased to slightly above the idle rate. "Service Engine Soon" light is turned on. Acceleration is poor.**

**13.** Method by which the test laboratory can record engine RPM by connection to ECM, OBD connector, etc.

**Install Nissan diagnostic equipment (Nissan Consult-3) into the OBD connector of a Nissan vehicle. Engine RPM can be monitored and recorded by Consult-3.**