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HS#
637144

REPORT NUMBER 124L-GTL-04-004

SAFETY COMPLIANCE TESTING FOR FMVSS 124L ACCELERATOR CONTROL SYSTEMS

HONDA OF AMERICA MFG., INC.
2004 HONDA ELEMENT
NHTSA NO. C45300

GENERAL TESTING LABORATORIES, INC.
1623 LEEDSTOWN ROAD
COLONIAL BEACH, VIRGINIA 22443

MAY 14, 2004

FINAL REPORT

PREPARED FOR

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW
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Approval Date: 5/14/04

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: [signature]

Acceptance Date: 5/17/04

Technical Report Documentation Page

1. Report No. 124L-GTL-04-004	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Final Report of FMVSS 124 Compliance Testing of 2004 HONDA ELEMENT, MPV NHTSA No. C45300		5. Report Date May 14, 2004 6. Performing Organ. Code GTL
7. Author(s) Grant Farrand, Project Engineer Debbie Messick, Project Manager		8. Performing Organ. Rep# GTL-DOT-04-124-004
9. Performing Organization Name and Address General Testing Laboratories, Inc. 1623 Leedstown Road Colonial Beach, Va 22443		10. Work Unit No. (TRAIS) 11. Contract or Grant No. DTNH22-01-C-11025
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Admin. Enforcement Office of Vehicle Safety Compliance (NVS-220) 400 7th Street, S.W., Room 6115 Washington, DC 20590		13. Type of Report and Period Covered Final Test Report May 6, 2004 14. Sponsoring Agency Code NSA-30
15. Supplementary Notes		
16. Abstract Compliance tests were conducted on the subject 2004 Honda Element MPV 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		
17. Key Words Compliance Testing Safety Engineering FMVSS 124	18. Distribution Statement Copies of this report are available from NHTSA NHTSA Technical Reference Div., Rm. 5108 (NAD-52) 400 7th St., S.W. Washington, DC 20590 Telephone No. (202) 366-4946	
19. Security Classif. (of this report) UNCLASSIFIED	21. No. of Pages 56	22. Price
20. Security Classif. (of this page) UNCLASSIFIED		

Form DOT F 1700.7 (8-72)

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SECTION 1
PURPOSE OF COMPLIANCE TEST

FMVSS 124 specifies requirements for the return of a vehicle's throttle to the idle position when the driver removes the actuating force from the accelerator control, or in the event of a severance or disconnection in the accelerator control system. The purpose of FMVSS 124 is to reduce deaths and injuries resulting from engine overspeed caused by malfunctions in the accelerator control system. This standard applies to passenger cars, multipurpose passenger vehicles (MPV's), trucks and buses.

SECTION 2
TEST PROCEDURES AND DISCUSSION OF RESULTS

Compliance testing was conducted on a 2004 Honda Element, MPV, NHTSA No. C45300 in accordance with the National Highway Traffic Safety Administration (NHTSA) Laboratory Procedure TP-124-06.

Output from the vehicle throttle position sensor on the air throttle plate shaft was used to measure throttle position and data was recorded at 1000 HZ with GTL' s data acquisition system. Testing was conducted to simulate the normal removal of the driver's foot from the accelerator pedal. Testing was performed with the vehicle in park and the engine running. Return to idle times were determined for four throttle plate positions with the accelerator control system complete and with each of the three throttle return springs (2) on the throttle plate shaft and (1) on the accelerator pedal independently disconnected. The severed linkage test was also performed by disconnecting the throttle cable from the throttle body. As the air throttle plate was mechanically linked to the accelerator pedal, no electrical disconnections were required.

This testing was to be performed at low ambient temperature of -40° C (-0 +5° C) in accordance with the NHTSA Test Procedure TP-124-06 however, due to the inability of prior test vehicles to start at this extreme temperature the test was performed at -13° C (-25° F).

SECTION 3
COMPLIANCE TEST DATA

Test data for this test can be found on the following pages. Photographs are found in Section 5 and Test Plots are found in Section 6.

DATA SHEET 1
VEHICLE DESCRIPTION

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2004 HONDA ELEMENT MPV
VEHICLE NHTSA NO.: C45300
VEHICLE VIN: 5J6YH28254L000085
DATE OF TEST: MAY 6, 2004
TEST LAB: GENERAL TESTING LABORATORIES
VEHICLE ENGINE TYPE: 4 CYL GVWR: 2020 KG
VEHICLE ENGINE SIZE: 2.4 L D.O.H.C 16 VALVE
VEHICLE ACCEL. CONTROL SYSTEM (ACS) (Air or Fuel Throttled): AIR
MAX. BHP ENGINE SPEED: 160 HP.
MFR. IDLE RPM: COMPUTER CONTROLLED (750)
FUEL METERING DEVICE (Carburetor, fuel injection, etc): FUEL INJECTION

REMARKS:

RECORDED BY: [signature] DATE: 05/06/04

APPROVED BY: [signature]

DATA SHEET 2
NORMAL OPERATION TEST
(fully operational system)

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2004 HONDA ELEMENT, MPV
VEHICLE NHTSA NO.: C45300
DATE OF TEST: MAY 6, 2004

Check one:

Mid Temp. Test:___ Low Temp. Test: X High Temp. Test:_____

SYSTEM CONDITION: COMPLETE (no modifications) Normal Operation

ACCELERATOR POSITION % WIDE OPEN THROTTLE (WOT)	THROTTLE POSITION SENSOR READING	RPM	TEMPERATURE (°F)		THROTTLE POSITION SENSOR READING @ IDLE (BASELINE)	RETURN TIME TO IDLE (Msec)	PASS/ FAIL
			ENGINE COOLANT	AMBIENT			
25%	25	5100	-25	-25	13%	29	P
50%	50	5100	-24	-25	13%	31	P
75%	75	5100	-24	-25	13%	33	P
100%	100	5100	-24	-25	13%	39	P

RETURN TIME REQUIREMENTS:

1 second (1000 ms) for vehicles less than 4536 kg.
2 seconds (2000 ms) for vehicles more than 4536 kg.
3 seconds (3000 ms) for vehicles exposed to -18° C or less

PASS X FAIL _____

REMARKS: Baseline Idle 12% to 13% at this temperature.

RECORDED BY: _____ DATE: 05/06/04

APPROVED BY: _____

DATA SHEET 3 (1 of 3)
FAIL-SAFE OPERATION DISCONNECTION

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2004 HONDA ELEMENT, MPV
VEHICLE NHTSA NO.: C45300
DATE OF TEST: MAY 6, 2004

Check one:

Mid Temp. Test:___ Low Temp. Test: X High Temp. Test:_____

SYSTEM CONDITION: #1 SPRING DISCONNECTED (OUTER SPRING)

ACCELERATOR POSITION % WIDE OPEN THROTTLE (WOT)	THROTTLE POSITION SENSOR READING	RPM	TEMPERATURE (°F)		THROTTLE POSITION SENSOR READING @ IDLE (BASELINE)	RETURN TIME TO IDLE (Msec)	PASS/ FAIL
			ENGINE COOLANT	AMBIENT			
25%	25	3800	32	-25	13%	28	P
50%	50	5100	32	-25	13%	32	P
75%	75	5200	32	-25	13%	36	P
100%	100	5200	32	-25	13%	39	P

RETURN TIME REQUIREMENTS:

1 second (1000 ms) for vehicles less than 4536 kg.
2 seconds (2000 ms) for vehicles more than 4536 kg.
3 seconds (3000 ms) for vehicles exposed to -18° C or less

PASS X FAIL _____

REMARKS:

RECORDED BY: _____ DATE: 05/06/04

APPROVED BY: _____

DATA SHEET 3 (2 of 3)
FAIL-SAFE OPERATION DISCONNECTION

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2004 HONDA ELEMENT, MPV
VEHICLE NHTSA NO.: C45300
DATE OF TEST: MAY 6, 2004

Check one:

Mid Temp. Test:___ Low Temp. Test: X High Temp. Test:_____

SYSTEM CONDITION: #2 SPRING DISCONNECTED (INNER SPRING)

ACCELERATOR POSITION % WIDE OPEN THROTTLE (WOT)	THROTTLE POSITION SENSOR READING	RPM	TEMPERATURE (°F)		THROTTLE POSITION SENSOR READING @ IDLE (BASELINE)	RETURN TIME TO IDLE (Msec)	PASS/ FAIL
			ENGINE COOLANT	AMBIENT			
25%	25	4000	32	-25	13%	25	P
50%	50	5100	32	-25	13%	73	P
75%	75		32	-25	13%	32	P
100%	100		32	-25	13%	50	P

RETURN TIME REQUIREMENTS:

1 second (1000 ms) for vehicles less than 4536 kg.
2 seconds (2000 ms) for vehicles more than 4536 kg.
3 seconds (3000 ms) for vehicles exposed to -18° C or less

PASS X FAIL _____

REMARKS:

RECORDED BY: _____ DATE: 05/06/04

APPROVED BY: _____

DATA SHEET 3 (3 of 3)
FAIL-SAFE OPERATION DISCONNECTION

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2004 HONDA ELEMENT, MPV
VEHICLE NHTSA NO.: C45300
DATE OF TEST: MAY 6, 2004

Check one:

Mid Temp. Test:___ Low Temp. Test: X High Temp. Test:_____

SYSTEM CONDITION: #3 SPRING DISCONNECTED (ACCELERATOR)

ACCELERATOR POSITION % WIDE OPEN THROTTLE (WOT)	THROTTLE POSITION SENSOR READING	RPM	TEMPERATURE (°F)		THROTTLE POSITION SENSOR READING @ IDLE (BASELINE)	RETURN TIME TO IDLE (Msec)	PASS/ FAIL
			ENGINE COOLANT	AMBIENT			
25%	25	5100	0	-25	13%	35	P
50%	50	5100	1	-25	13%	39	P
75%	75	5100	1	-25	13%	48	P
100%	100	5100	3	-25	13%	42	P

RETURN TIME REQUIREMENTS:

1 second (1000 ms) for vehicles less than 4536 kg.
2 seconds (2000 ms) for vehicles more than 4536 kg.
3 seconds (3000 ms) for vehicles exposed to -18° C or less

PASS X FAIL _____

REMARKS:

RECORDED BY: _____ DATE: 05/06/04

APPROVED BY: _____

DATA SHEET 4
FAIL-SAFE OPERATION SEVERED

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2004 HONDA ELEMENT, MPV
VEHICLE NHTSA NO.: C45300
DATE OF TEST: MAY 6, 2004

Check one:

Mid Temp. Test:___ Low Temp. Test: X High Temp. Test:_____

SYSTEM CONDITION: SEVERANCE

ACCELERATOR POSITION % WIDE OPEN THROTTLE (WOT)	THROTTLE POSITION SENSOR READING	RPM	TEMPERATURE (°F)		THROTTLE POSITION SENSOR READING @ IDLE (BASELINE)	RETURN TIME TO IDLE (Msec)	PASS/ FAIL
			ENGINE COOLANT	AMBIENT			
25%	25	4100	21	-25	13%	22	P
50%	50	5100	22	-25	13%	6	P
75%	75	5100	26	-25	13%	8	P
100%	100	5100	29	-25	13%	6	P

RETURN TIME REQUIREMENTS:

1 second (1000 ms) for vehicles less than 4536 kg.
2 seconds (2000 ms) for vehicles more than 4536 kg.
3 seconds (3000 ms) for vehicles exposed to -18° C or less

PASS X FAIL _____

REMARKS:

RECORDED BY: _____ DATE: 05/06/04

APPROVED BY: _____

SECTION 4
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

EQUIPMENT	DESCRIPTION	MODEL/ SERIAL NO.	CAL. DATE	NEXT CAL. DATE
CONTINUOUS RECORDER	OMEGA	55662	03/04	03/05
ENGINE RECORDING	FLUKE	7471026	03/04	03/05
ENGINE RECORDING	MONARCH	1444664	01/04	07/05
SOFTWARE	GTL	N/A	BEFORE USE	BEFORE USE
CHAMBER	GTL	N/A	N/A	N/A
EXHAUST DUCT	GTL	N/A	N/A	N/A

SECTION 5
PHOTOGRAPHS

2004 HONDA ELEMENT
NHTSA NO. C45300
FMVSS NO. 124L

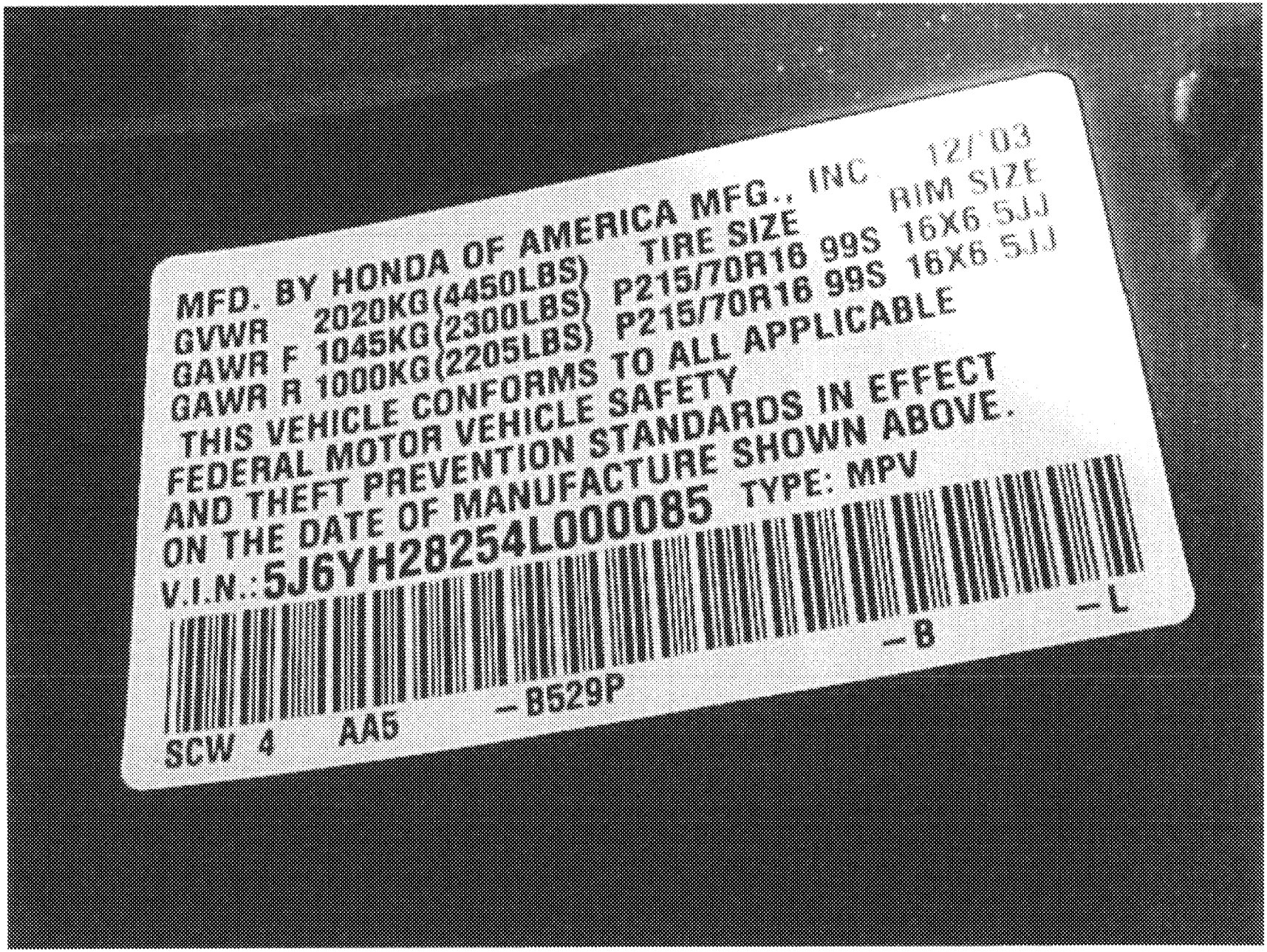
FIGURE 5.1
FRONT VIEW OF VEHICLE

2004 HONDA ELEMENT
NHTSA NO. C45300
FMVSS NO. 124L

FIGURE 5.2
LEFT SIDE VIEW OF VEHICLE

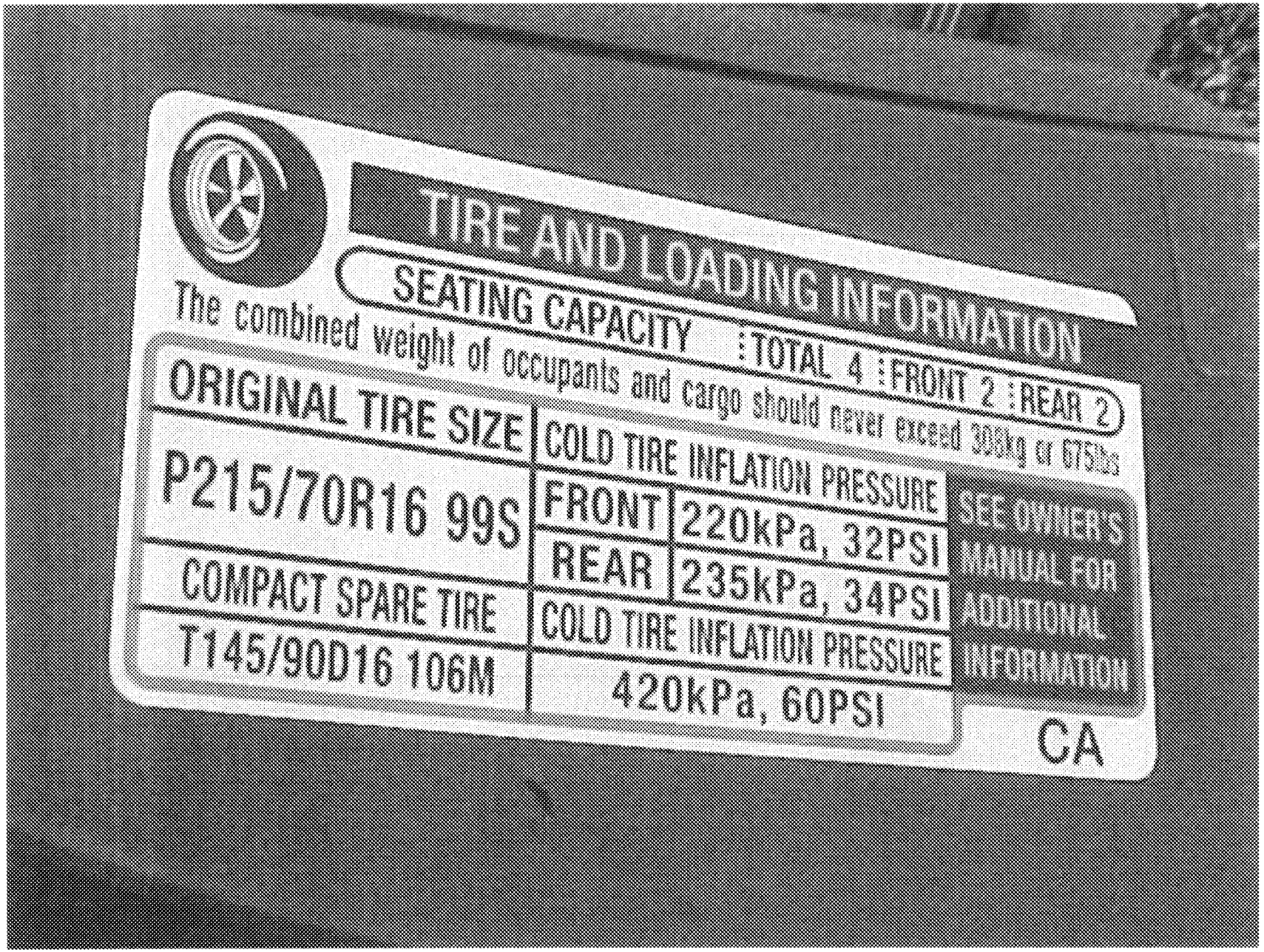
2004 HONDA ELEMENT
NHTSA NO. C45300
FMVSS NO. 124L

FIGURE 5.3
RIGHT SIDE VIEW OF VEHICLE



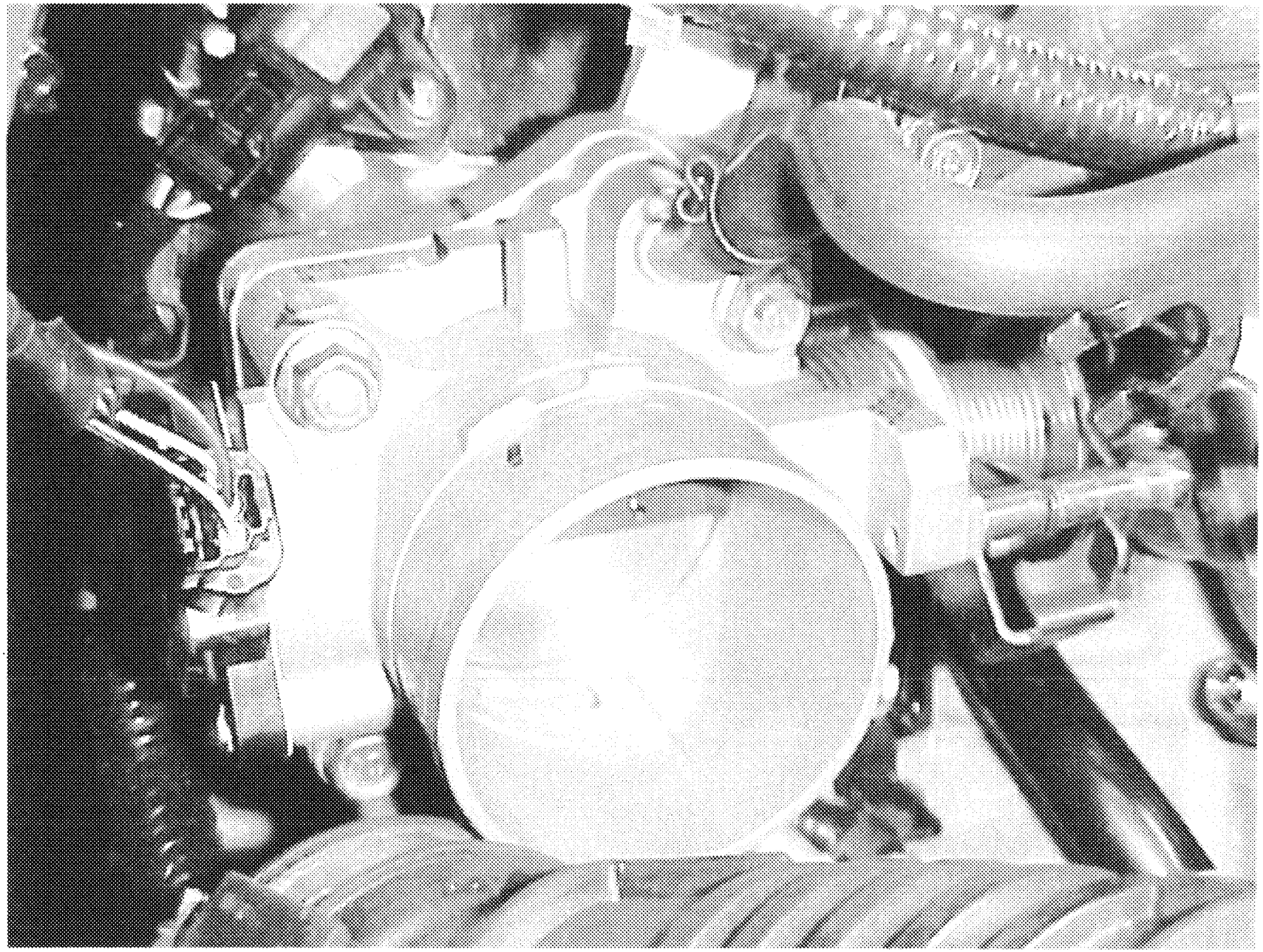
2004 HONDA ELEMENT
NHTSA NO. C45300
FMVSS NO. 124L

FIGURE 5.4
CLOSE-UP VIEW OF VEHICLE'S CERTIFICATION LABEL



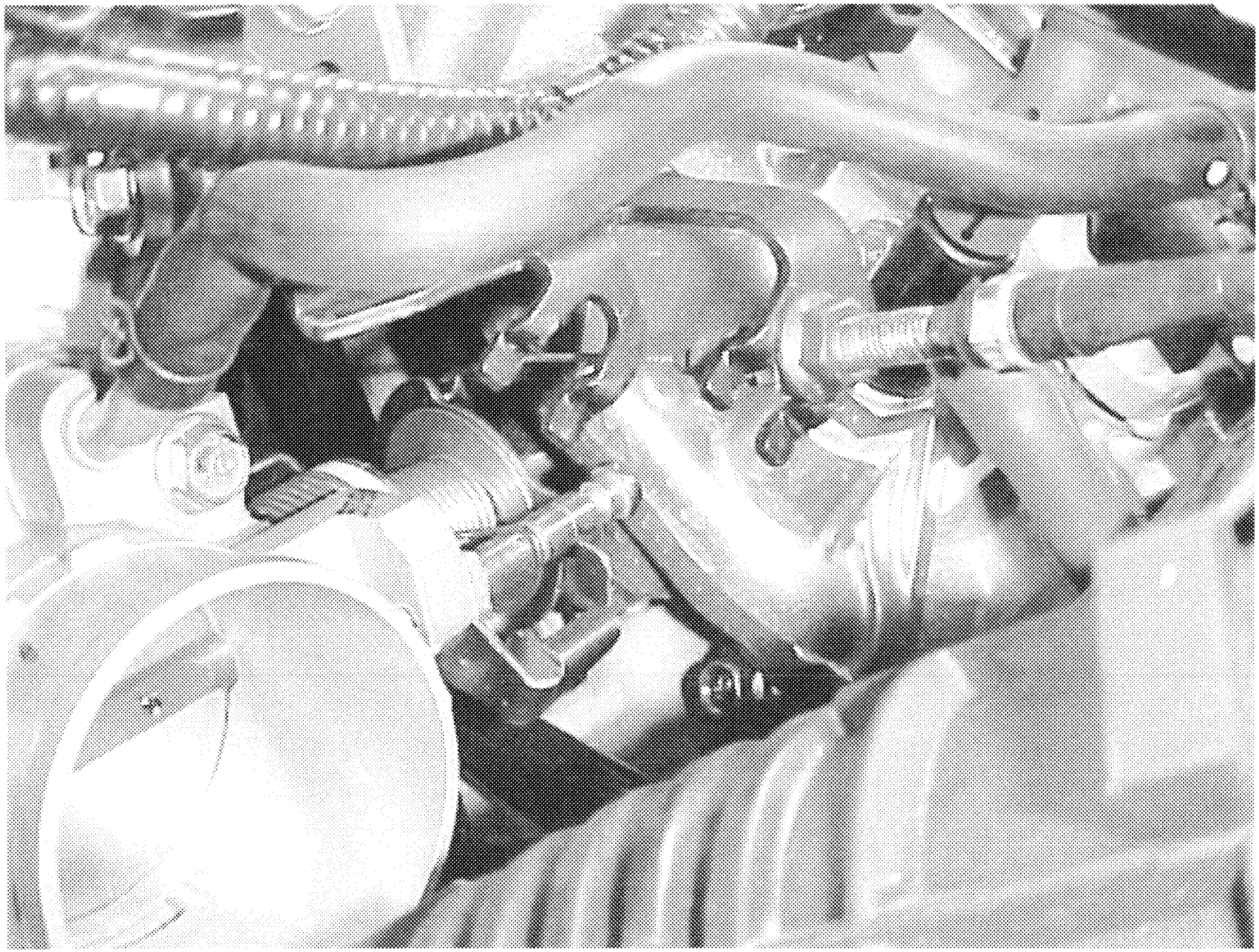
2004 HONDA ELEMENT
NHTSA NO. C45300
FMVSS NO. 124L

FIGURE 5.5
CLOSE-UP VIEW OF VEHICLE'S TIRE INFORMATION LABEL



2004 HONDA ELEMENT
NHTSA NO. C45300
FMVSS NO. 124L

FIGURE 5.6
THROTTLE BODY ON ENGINE

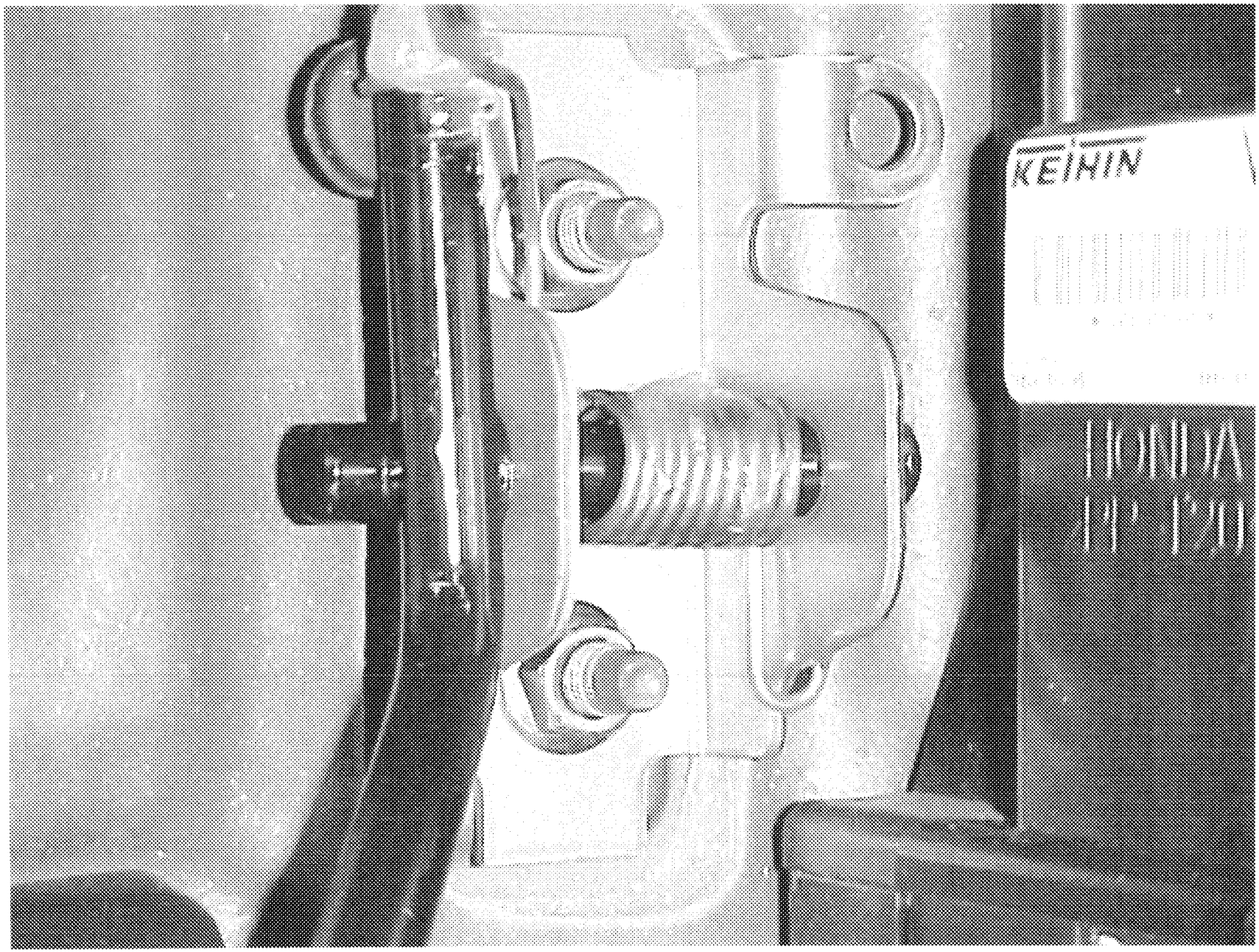


2004 HONDA ELEMENT
NHTSA NO. C45300
FMVSS NO. 124L

FIGURE 5.7
ACCELERATOR CABLE LINKAGE TO THROTTLE BODY

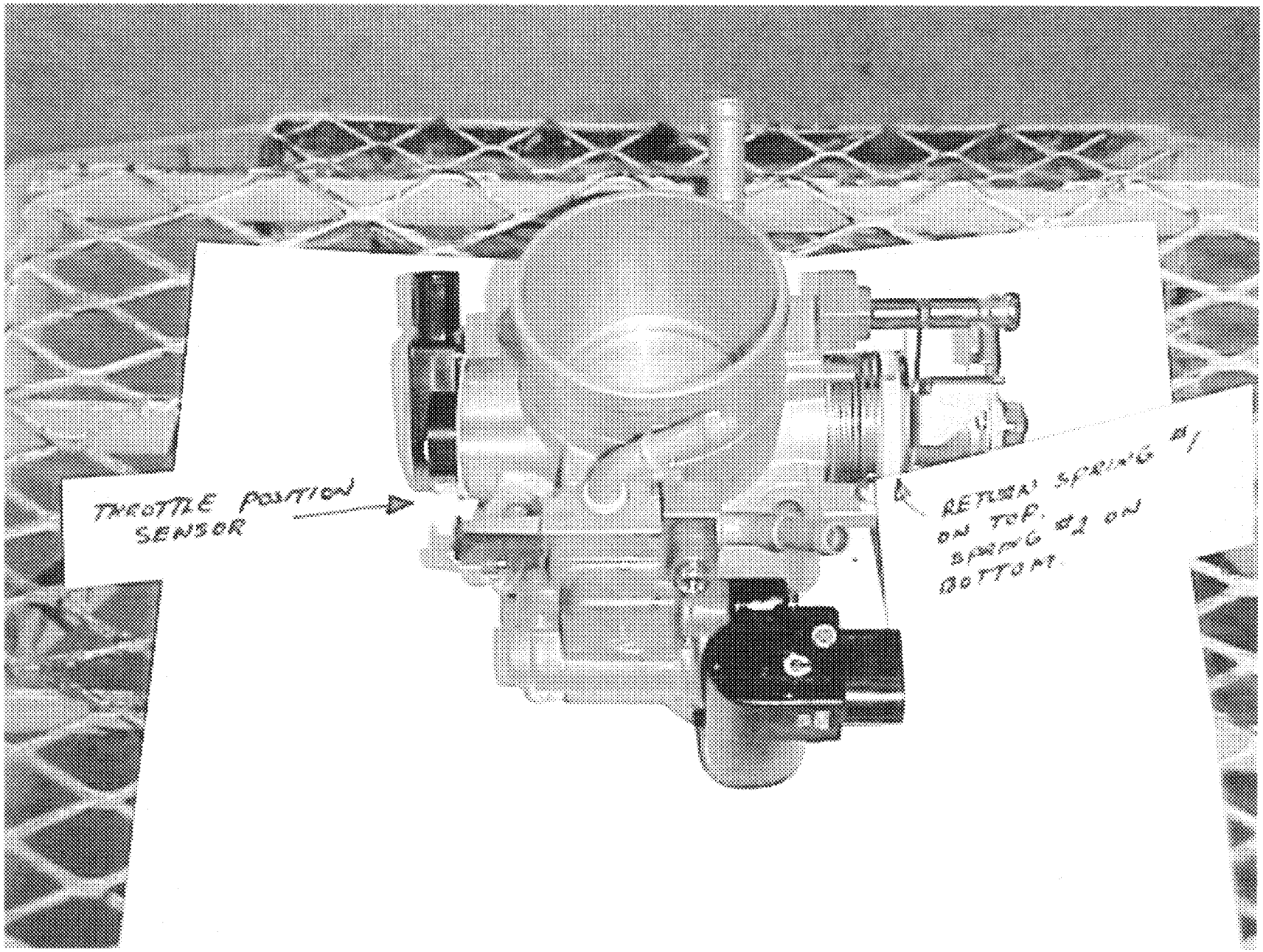
2004 HONDA ELEMENT
NHTSA NO. C45300
FMVSS NO. 124L

FIGURE 5.8
ACCELERATOR PEDAL



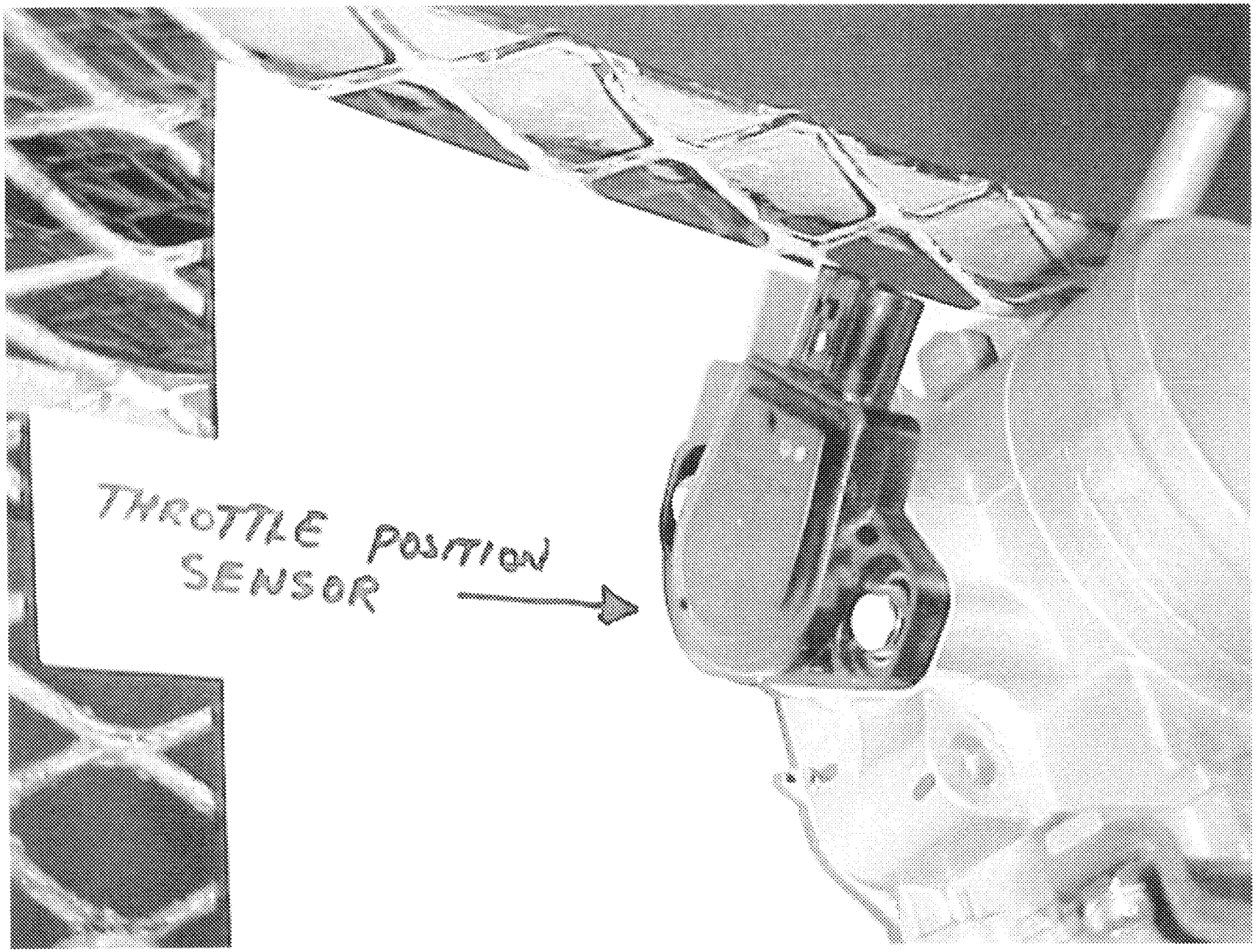
2004 HONDA ELEMENT
NHTSA NO. C45300
FMVSS NO. 124L

FIGURE 5.9
ACCELERATOR PEDAL RETURN SPRING
(SPRING #3)



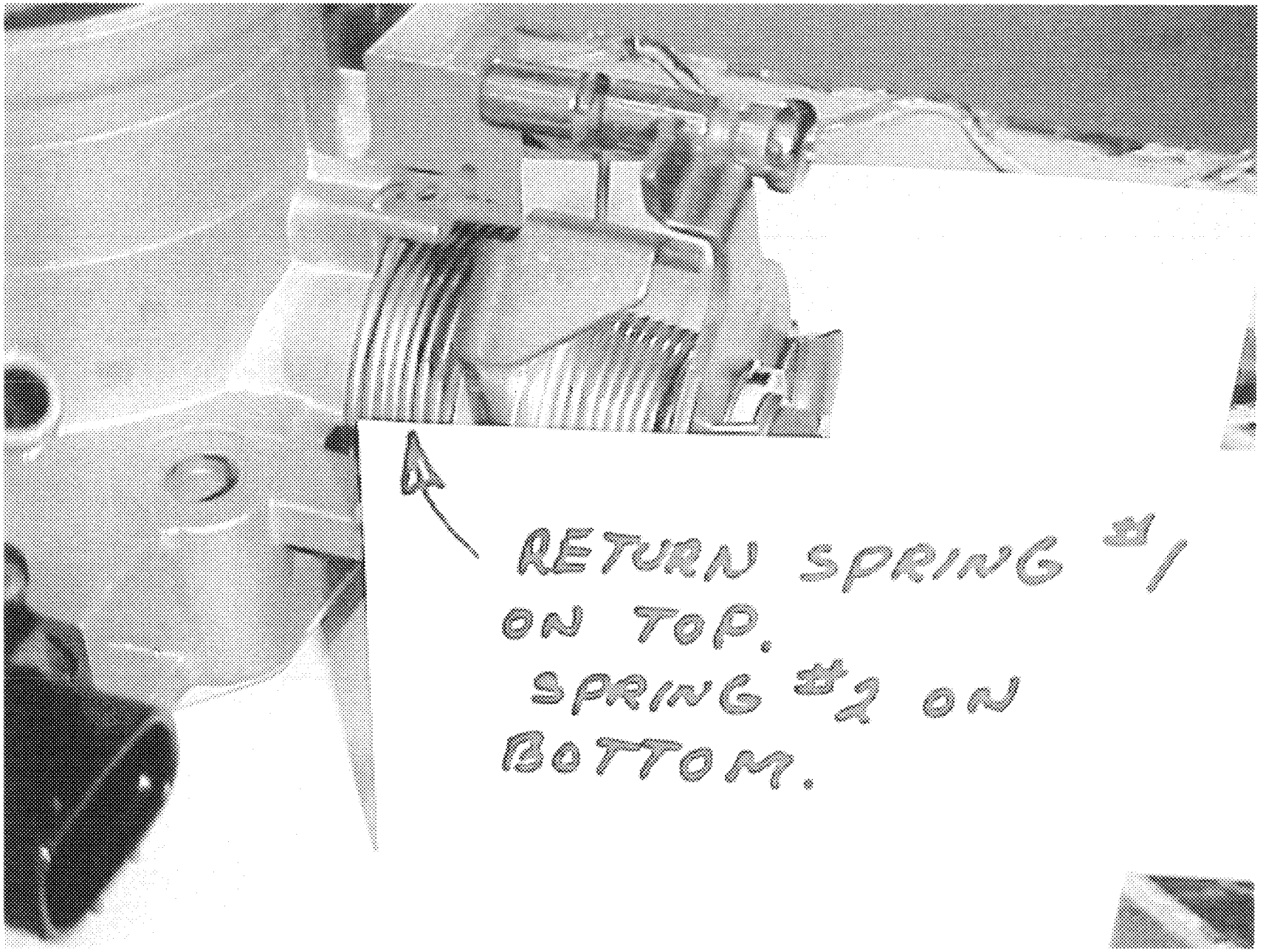
2004 HONDA ELEMENT
NHTSA NO. C45300
FMVSS NO. 124L

FIGURE 5.10
THROTTLE BODY REMOVED FROM ENGINE



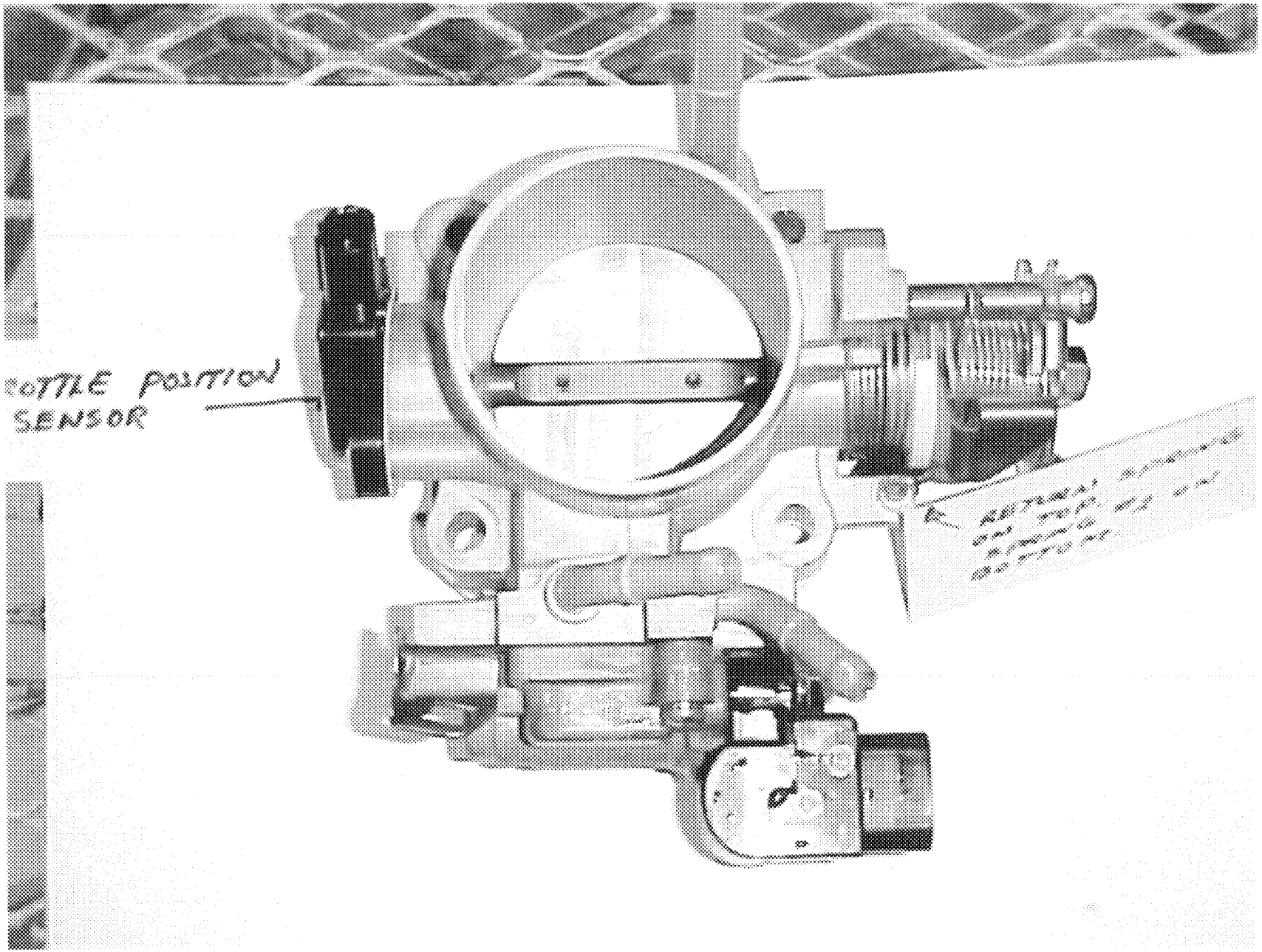
2004 HONDA ELEMENT
NHTSA NO. C45300
FMVSS NO. 124L

FIGURE 5.11
THROTTLE POSITION SENSOR



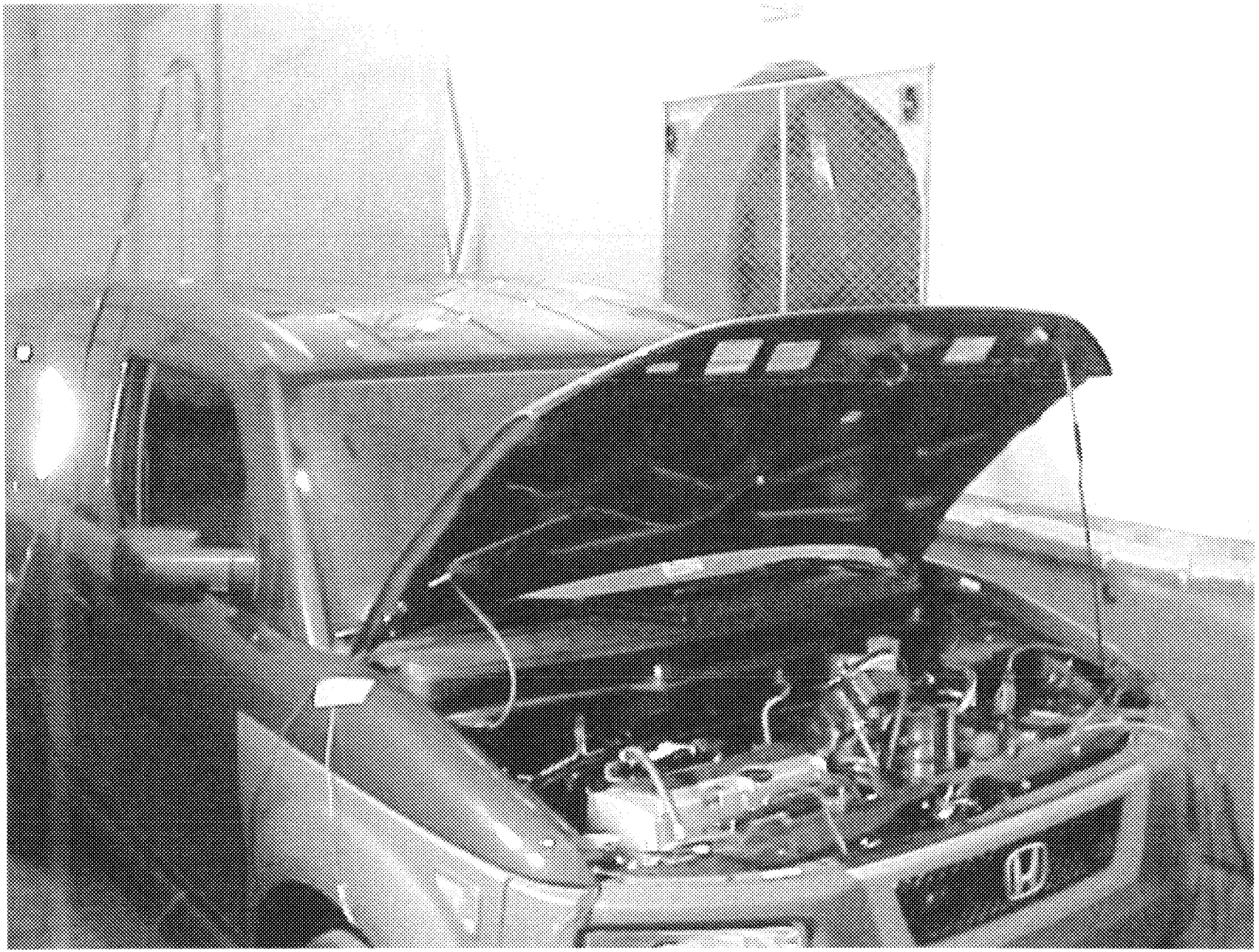
2004 HONDA ELEMENT
NHTSA NO. C45300
FMVSS NO. 124L

FIGURE 5.12
THROTTLE CONTROL SPRINGS #1 AND #2



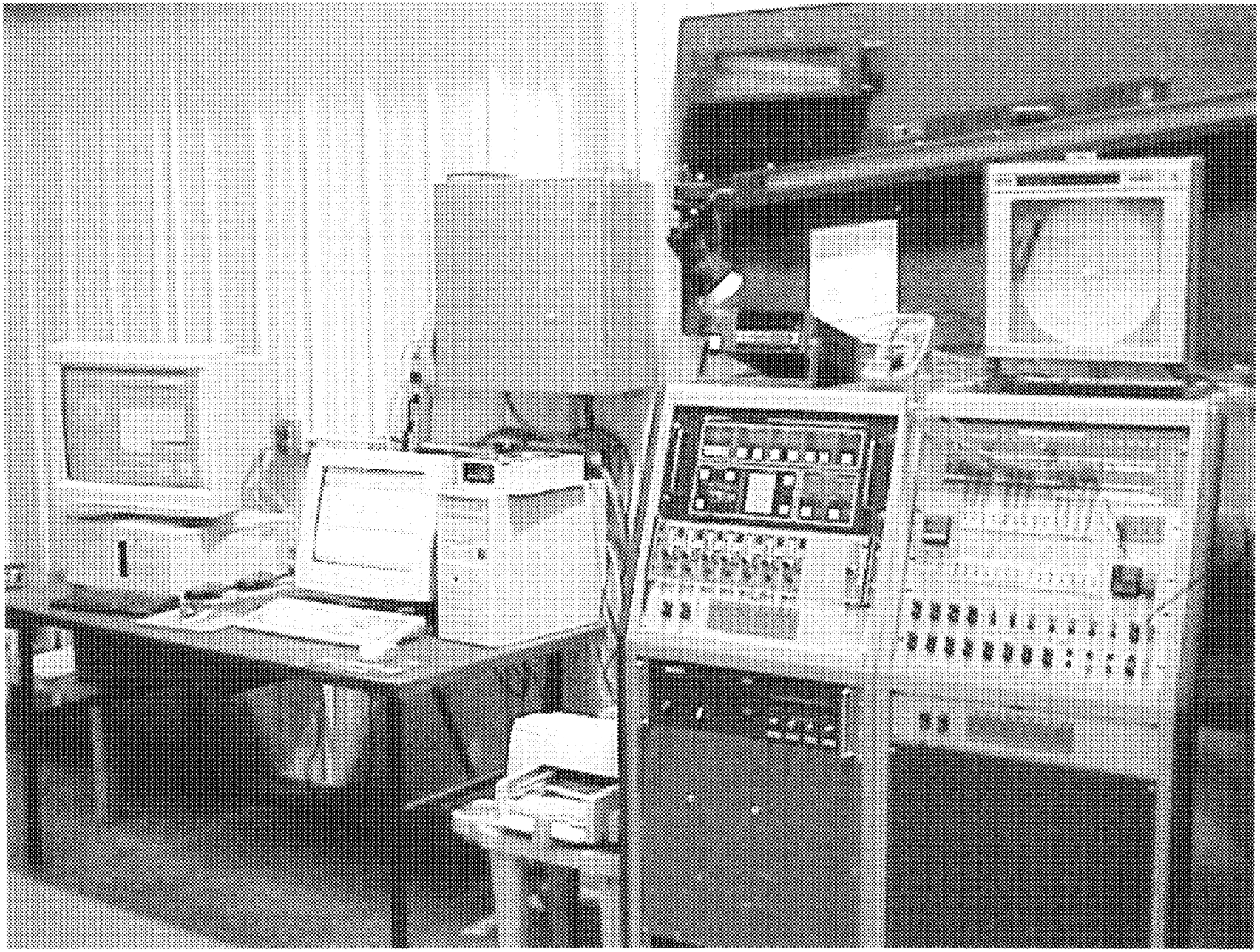
2004 HONDA ELEMENT
NHTSA NO. C45300
FMVSS NO. 124L

FIGURE 5.13
TOP VIEW OF THROTTLE BODY



2004 HONDA ELEMENT
NHTSA NO. C45300
FMVSS NO. 124L

FIGURE 5.14
VEHICLE IN TEST CHAMBER



2004 HONDA ELEMENT
NHTSA NO. C45300
FMVSS NO. 124L

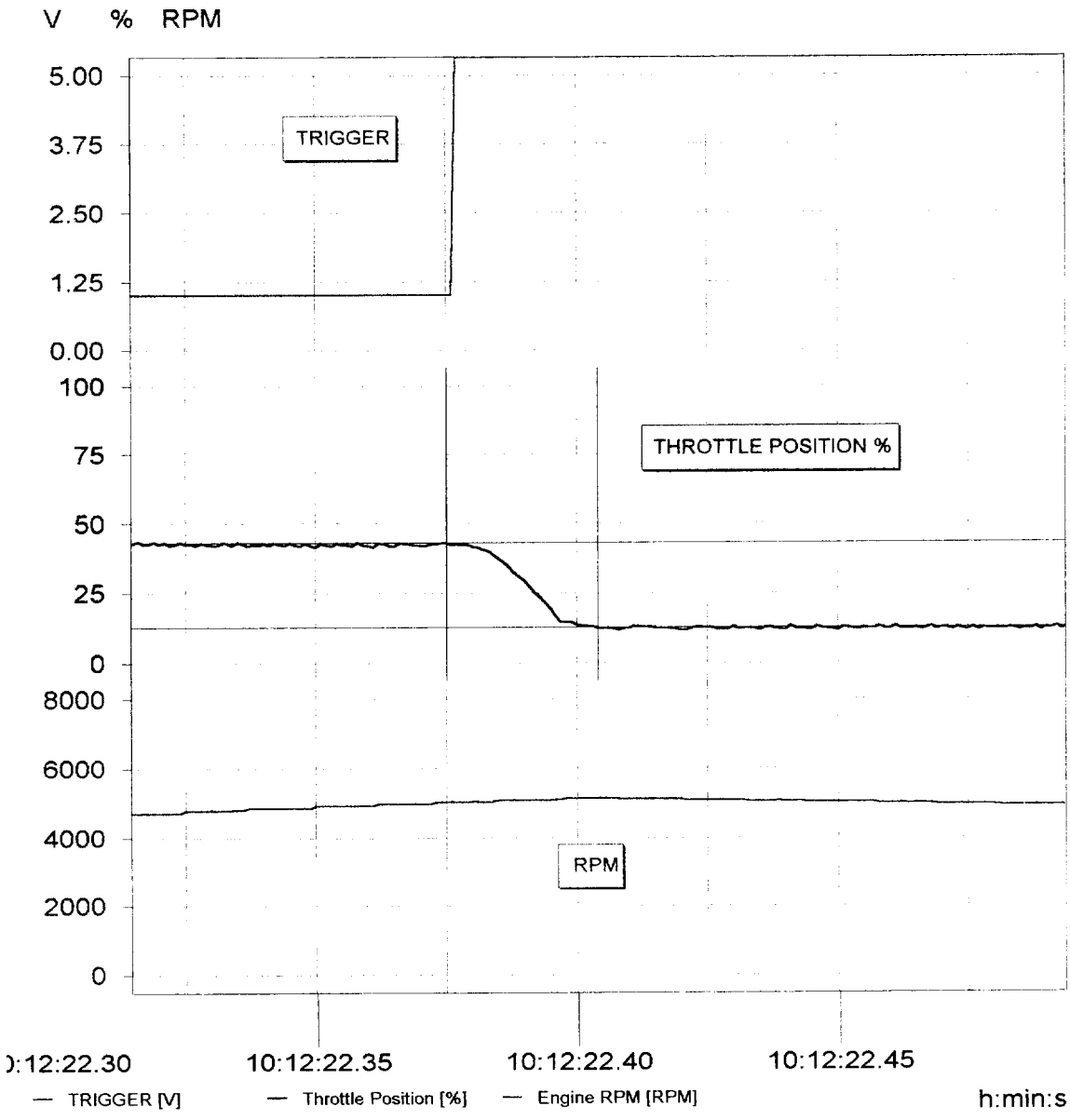
FIGURE 5.15
124 TEST INSTRUMENTATION SET-UP

SECTION 6
PLOTS

FMVSS 124 THROTTLE RETURN TEST

124 COLD/ NORMAL/25% WOT 10:17:44 AM 5/6/04

NHTSA C45300 HONDA ELEMENT



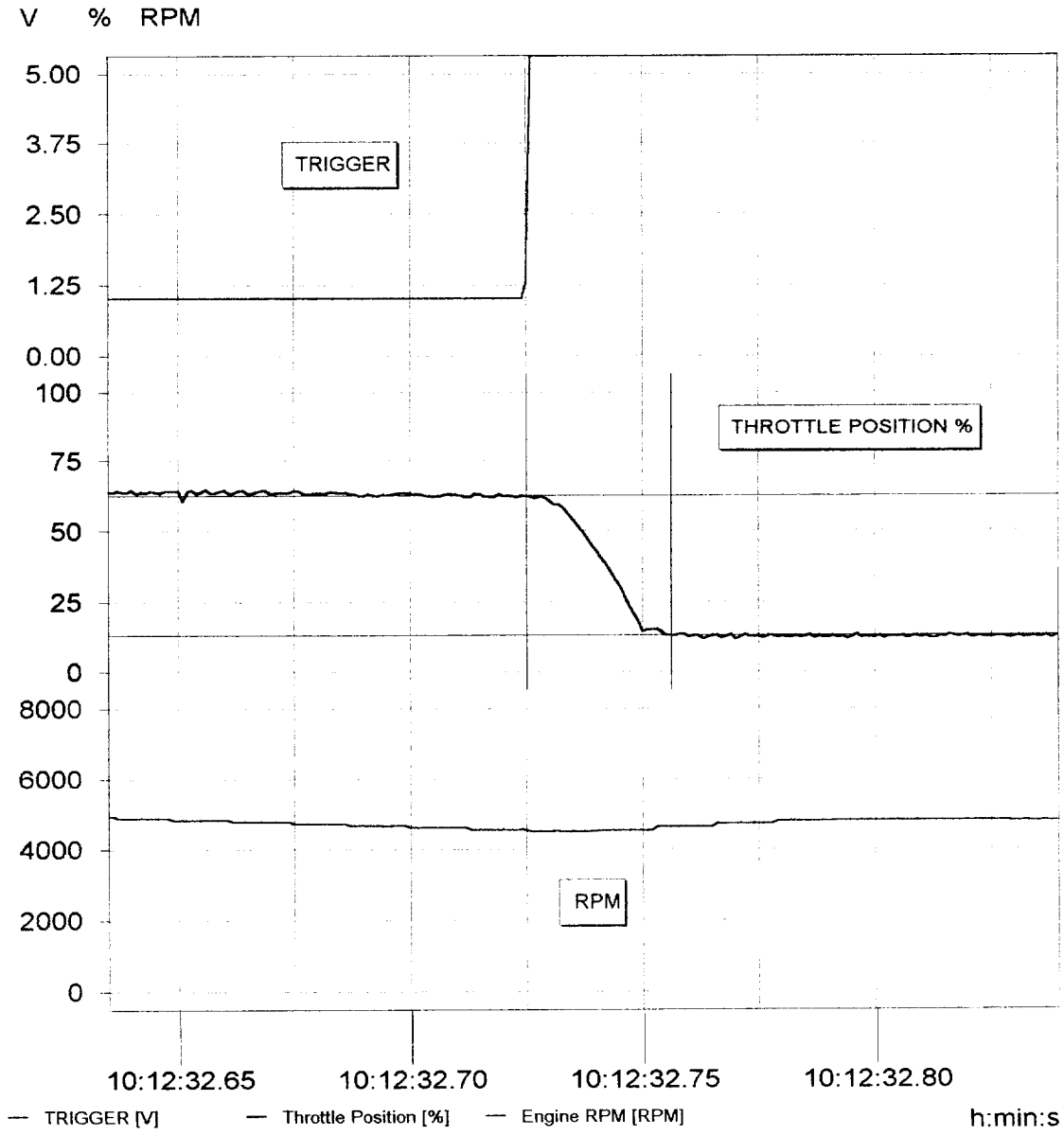
Channel:Throttle Position

Y1:	42.998 %	Y2:	12.776 %
t1:	-35471.154 ms	t2:	-35442.154 ms
dt:	0.029 s	f:	34.483 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/ NORMAL/50% WOT 10:19:09 AM 5/6/04

NHTSA C45300 HONDA ELEMENT



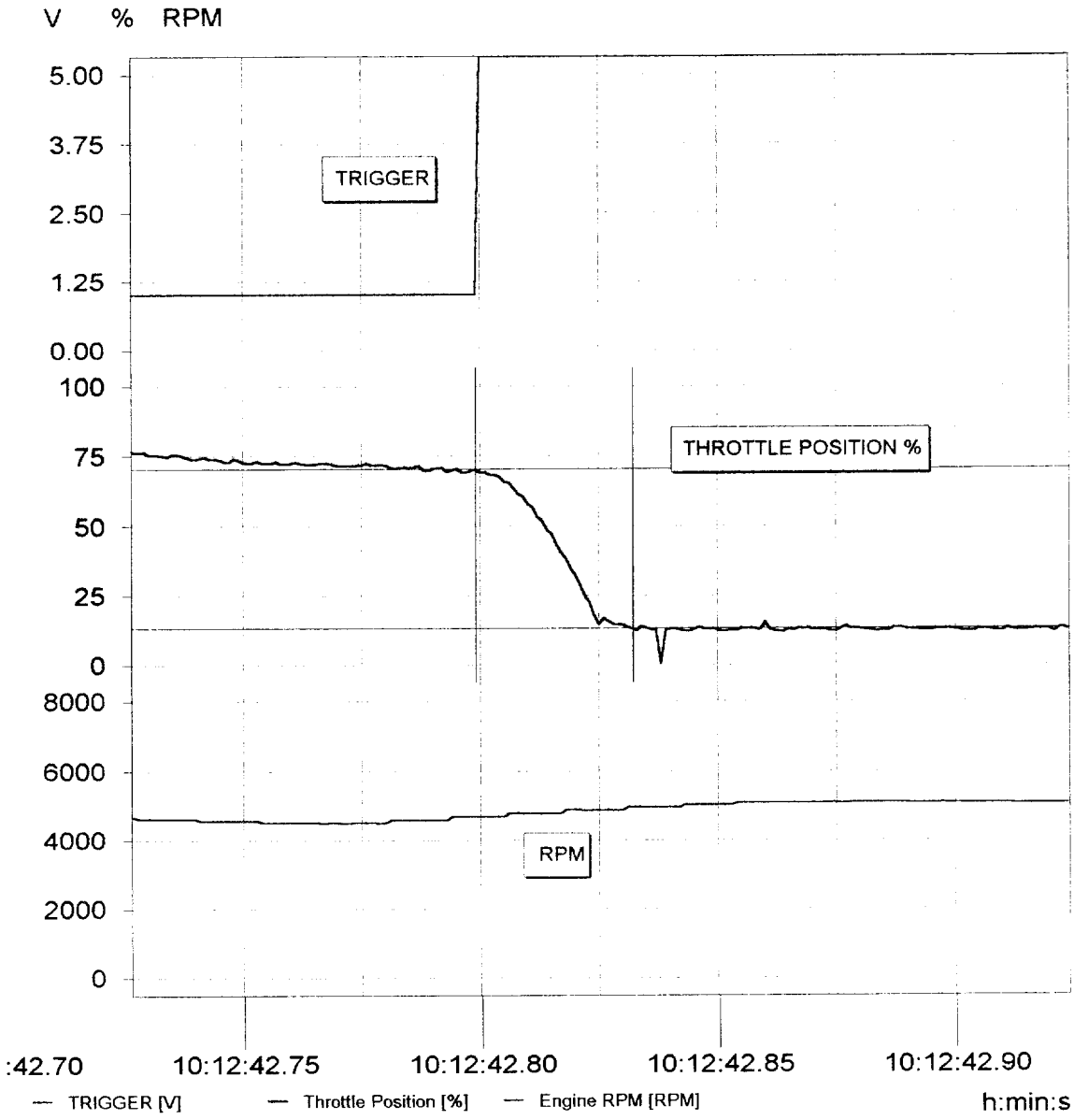
Channel:Throttle Position

Y1:	62.396 %	Y2:	12.973 %
t1:	-25121.154 ms	t2:	-25090.154 ms
dt:	0.031 s	f:	32.258 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/ NORMAL/75% WOT 10:20:38 AM 5/6/04

NHTSA C45300 HONDA ELEMENT



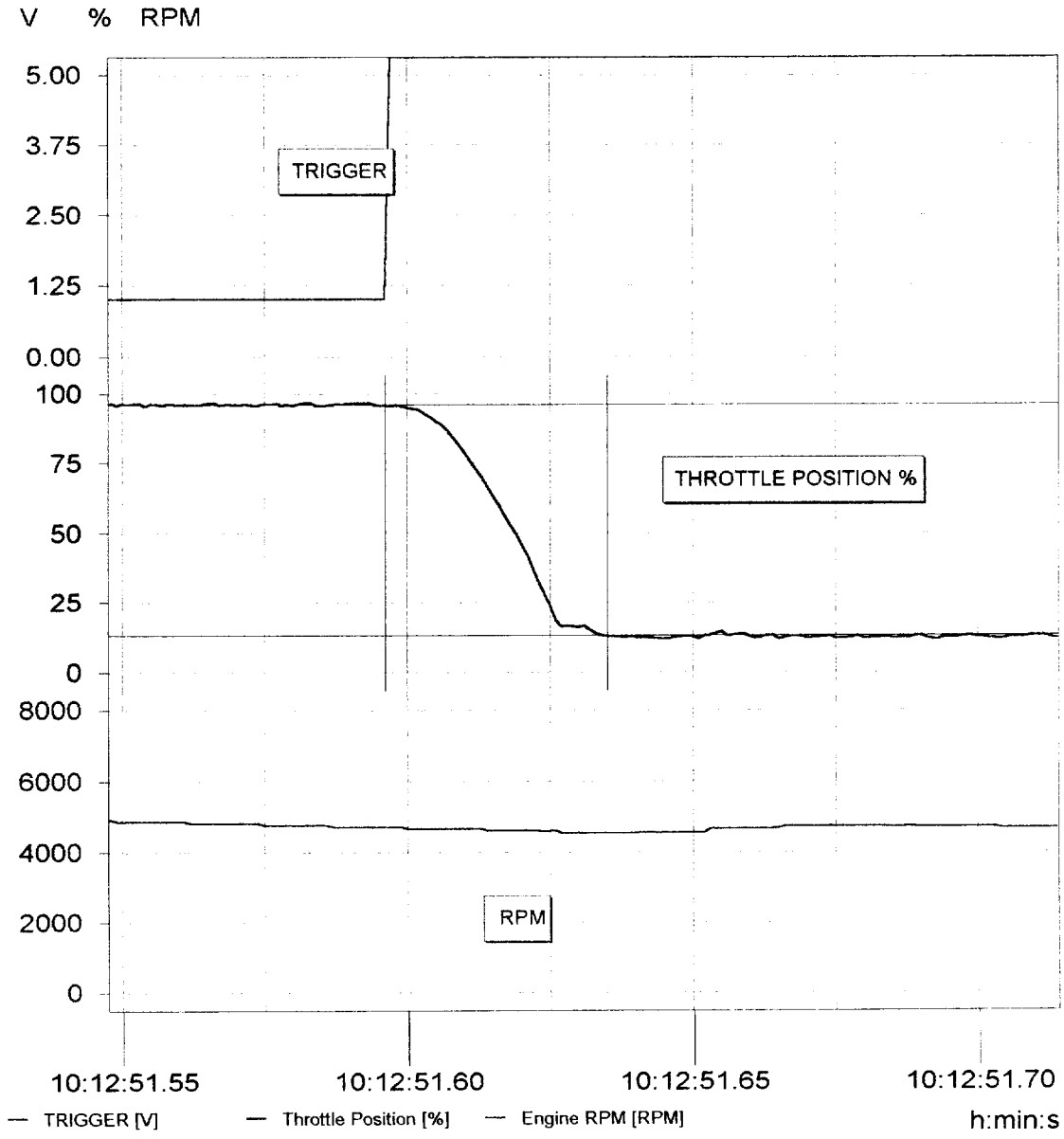
Channel: Throttle Position

Y1:	70.324 %	Y2:	12.967 %
t1:	-15047.154 ms	t2:	-15014.154 ms
dt:	0.033 s	f:	30.303 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/ NORMAL/100% WOT 10:22:08 AM 5/6/04

NHTSA C45300 HONDA ELEMENT



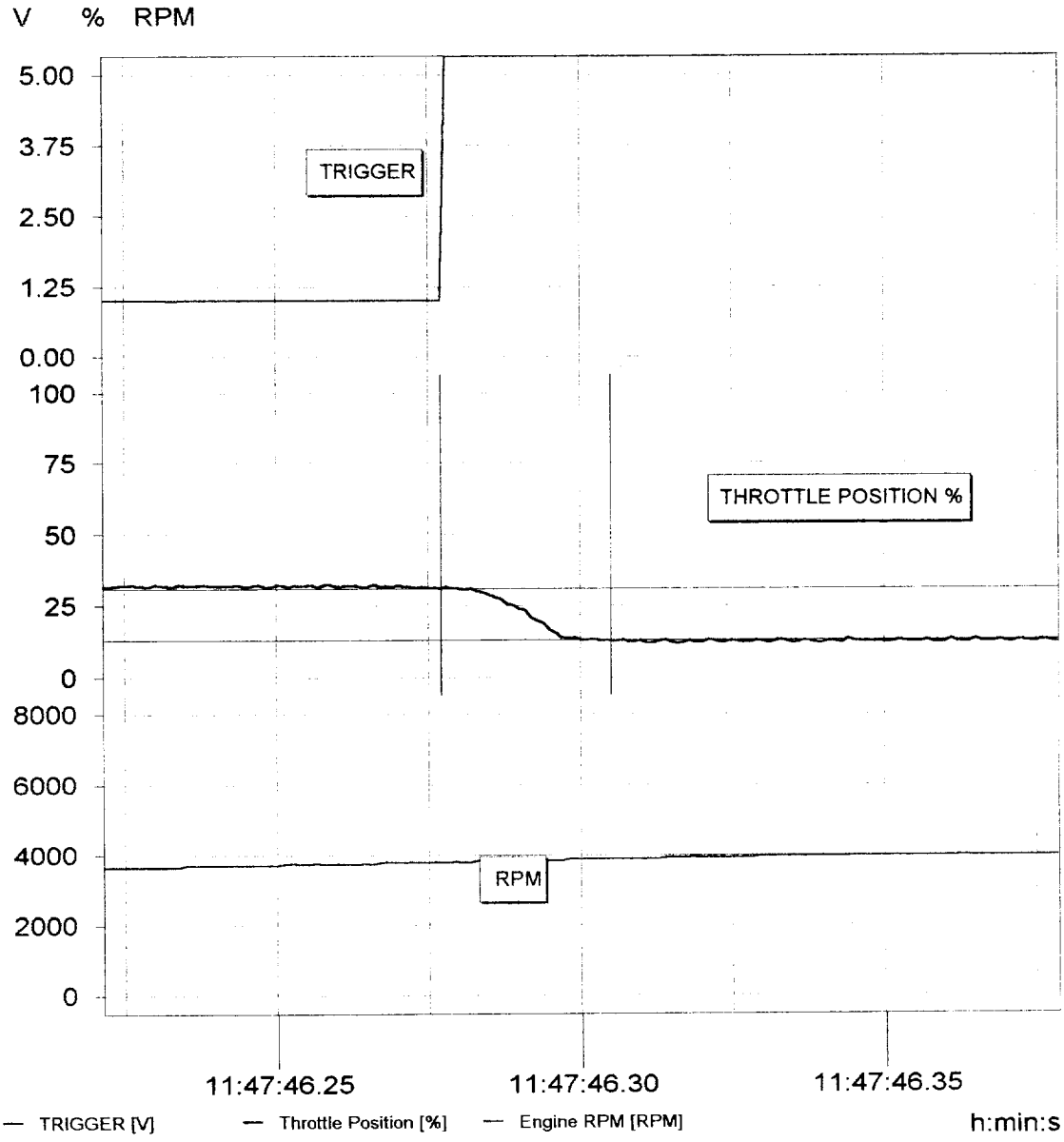
Channel:Throttle Position

Y1:	95.879 %	Y2:	12.973 %
t1:	-6250.154 ms	t2:	-6211.154 ms
dt:	0.039 s	f:	25.641 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/SPRING 1/25% WOT 11:55:50 AM 5/6/04

NHTSA C45300 HONDA ELEMENT



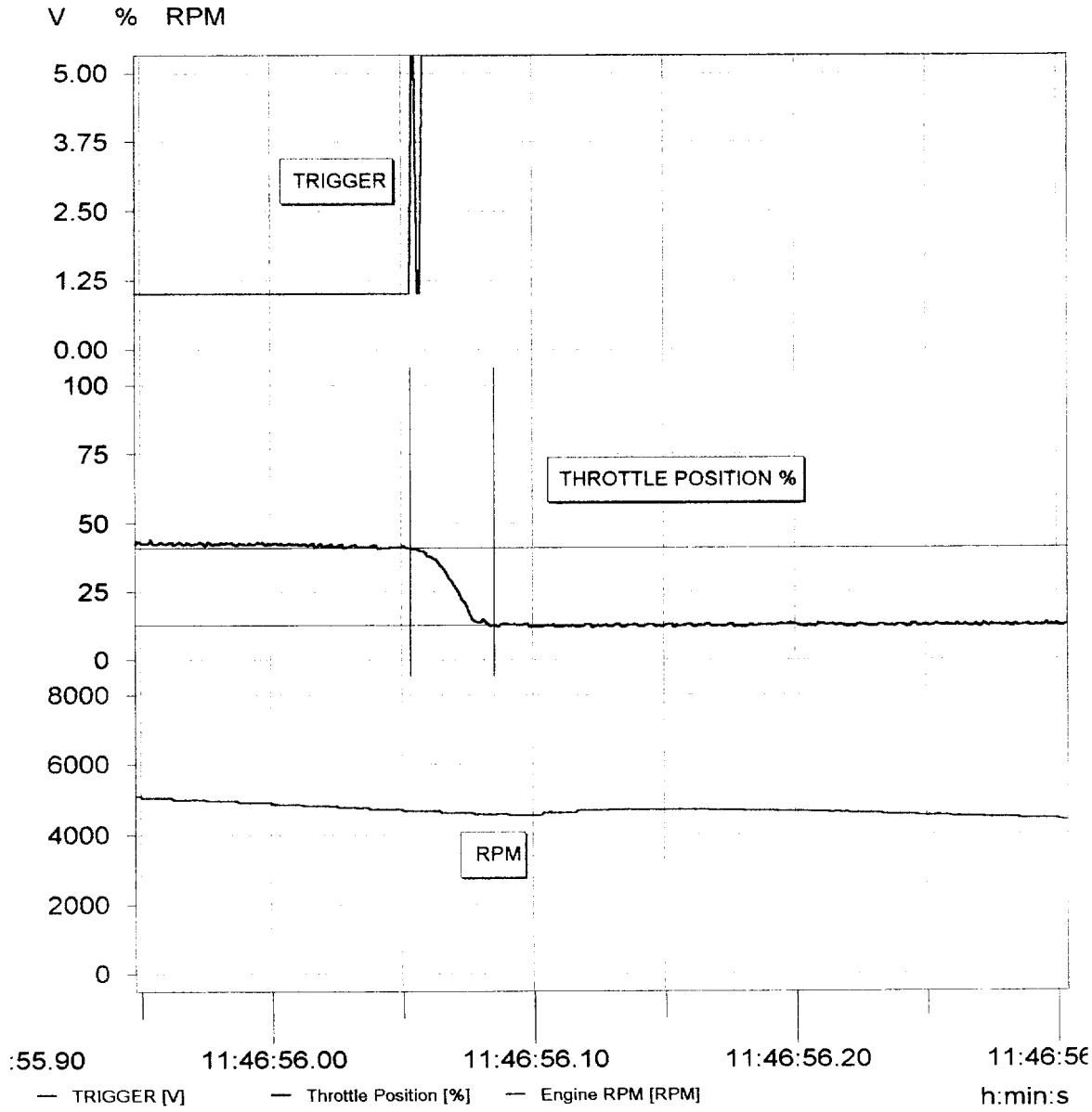
Channel: Throttle Position

Y1:	30.934 %	Y2:	12.897 %
t1:	-5497.320 ms	t2:	-5469.320 ms
dt:	0.028 s	f:	35.714 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/SPRING 1/50% WOT 11:50:42 AM 5/6/04

NHTSA C45300 HONDA ELEMENT



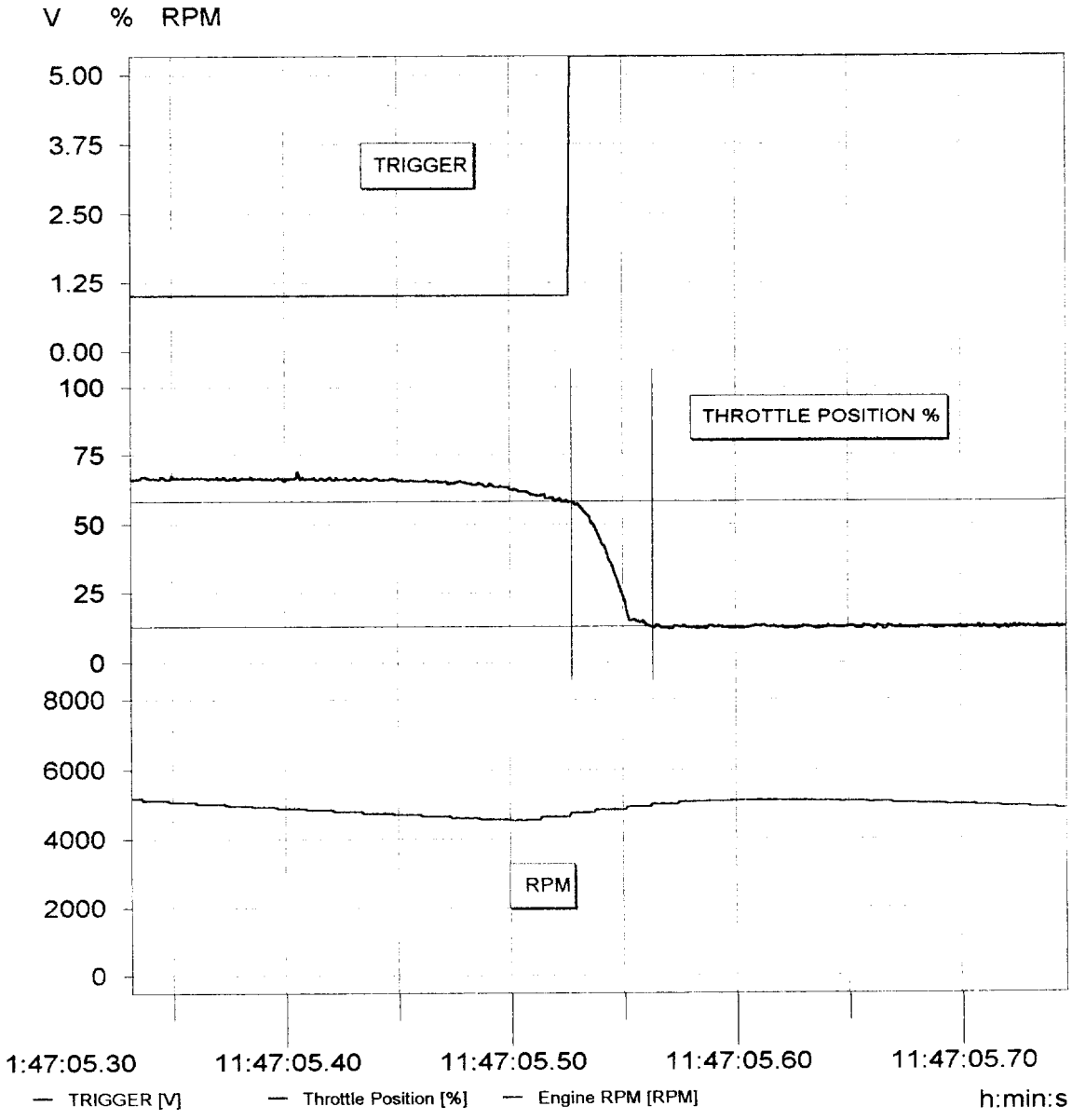
Channel:Throttle Position

Y1:	40.782 %	Y2:	12.792 %
t1:	-55721.320 ms	t2:	-55689.320 ms
dt:	0.032 s	f:	31.250 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/SPRING 1/75% WOT 11:52:18 AM 5/6/04

NHTSA C45300 HONDA ELEMENT



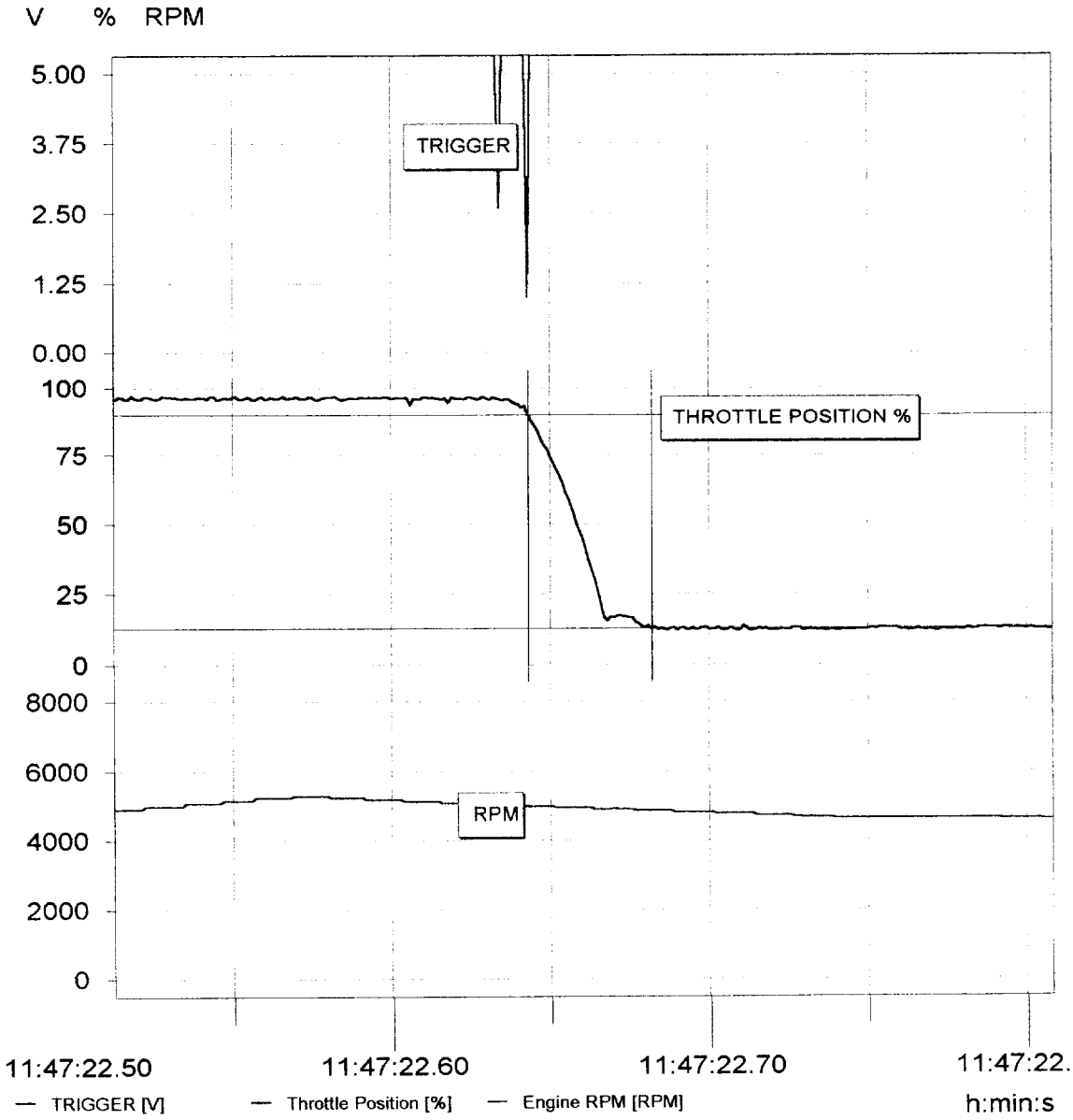
Channel:Throttle Position

Y1:	58.047 %	Y2:	12.925 %
t1:	-46247.320 ms	t2:	-46211.320 ms
dt:	0.036 s	f:	27.778 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/SPRING 1/100% WOT 11:54:19 AM 5/6/04

NHTSA C45300 HONDA ELEMENT



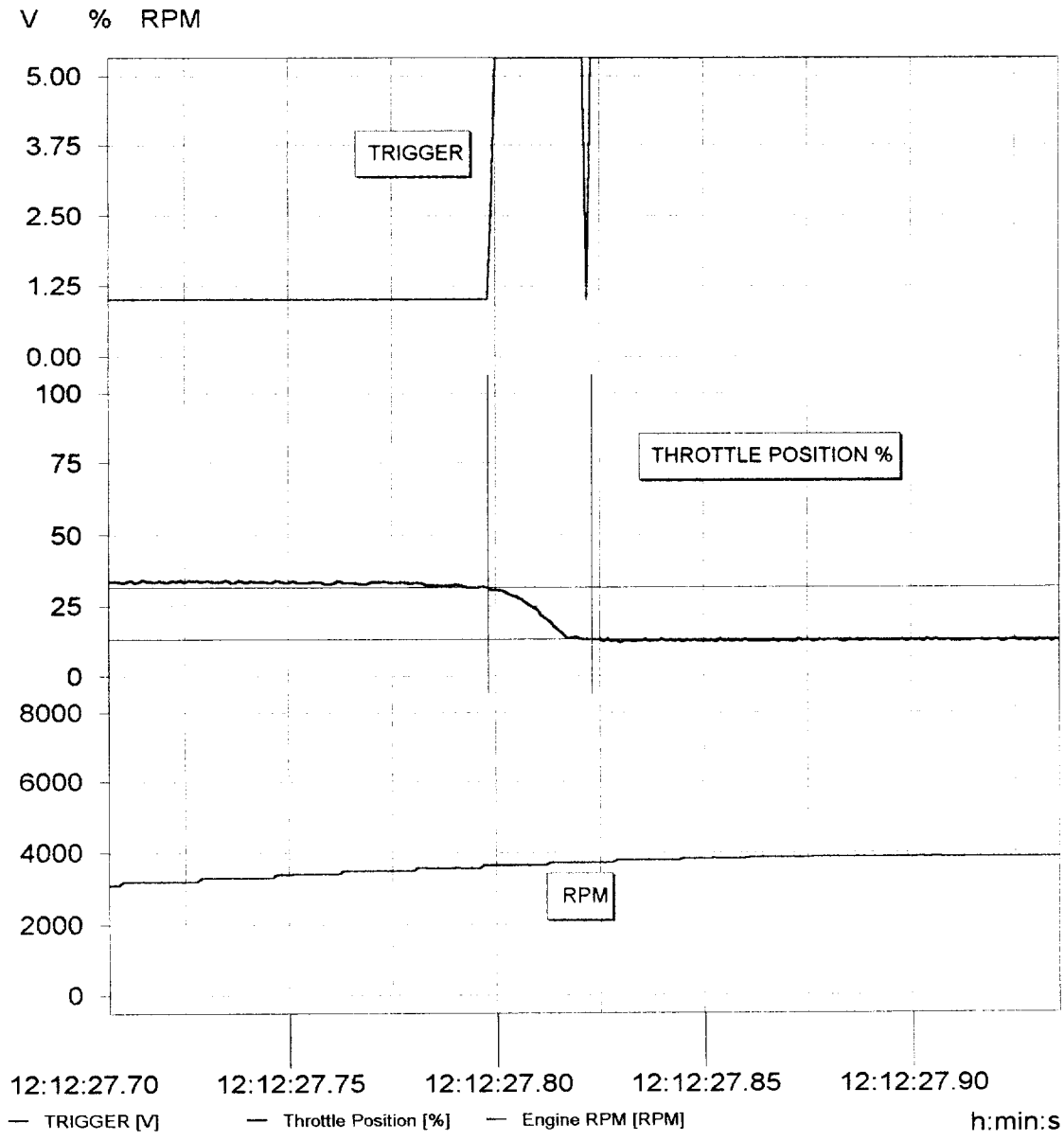
Channel:Throttle Position

Y1:	89.645 %	Y2:	12.716 %
t1:	-29131.320 ms	t2:	-29092.320 ms
dt:	0.039 s	f:	25.641 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/SPRING 2 /25% WOT 12:14:47 PM 5/6/04

NHTSA C45300 HONDA ELEMENT



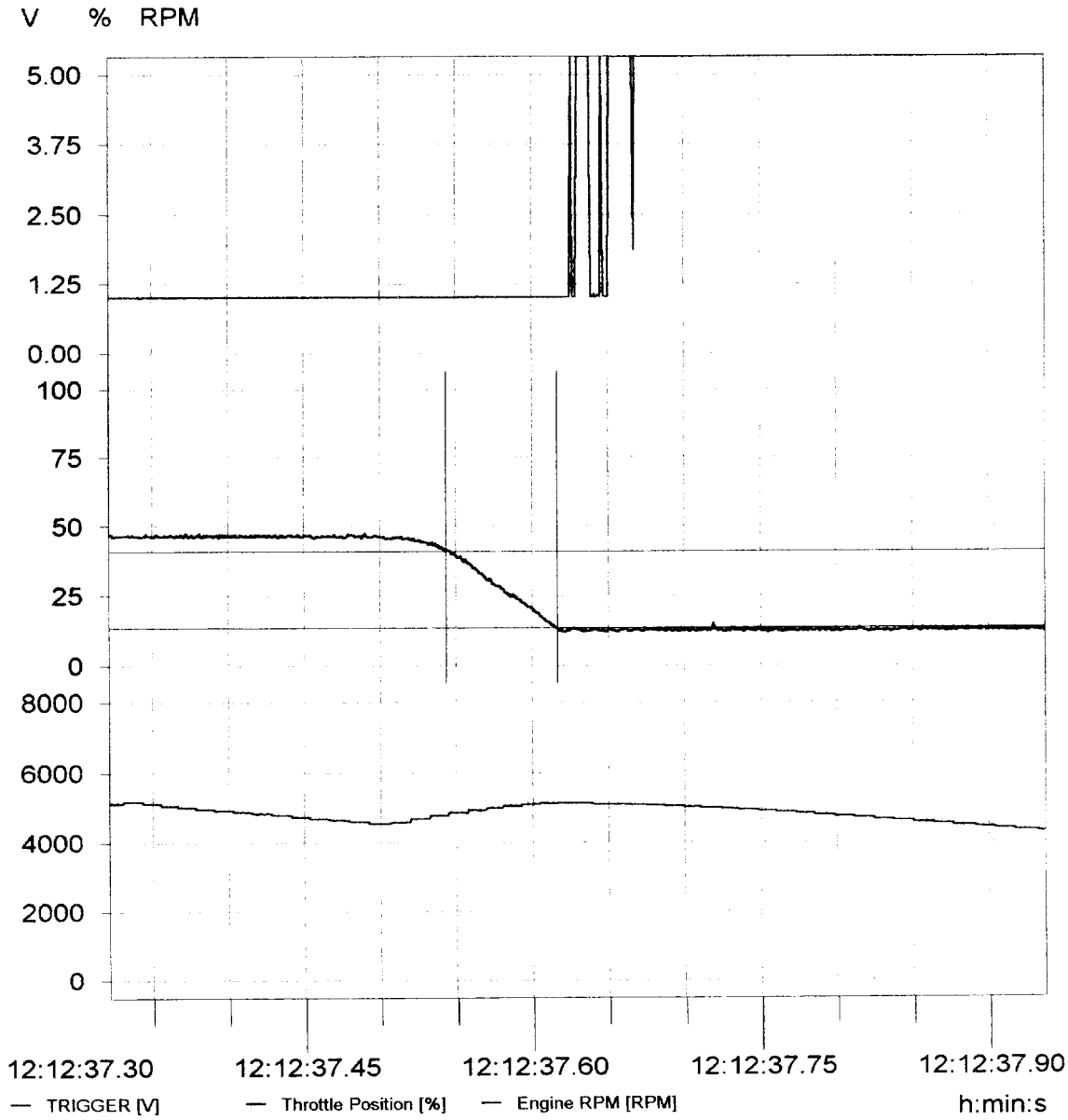
Channel:Throttle Position

Y1:	31.468 %	Y2:	12.878 %
t1:	-35894.308 ms	t2:	-35869.308 ms
dt:	0.025 s	f:	40.000 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/SPRING 2 /50% WOT 12:16:09 PM 5/6/04

NHTSA C45300 HONDA ELEMENT



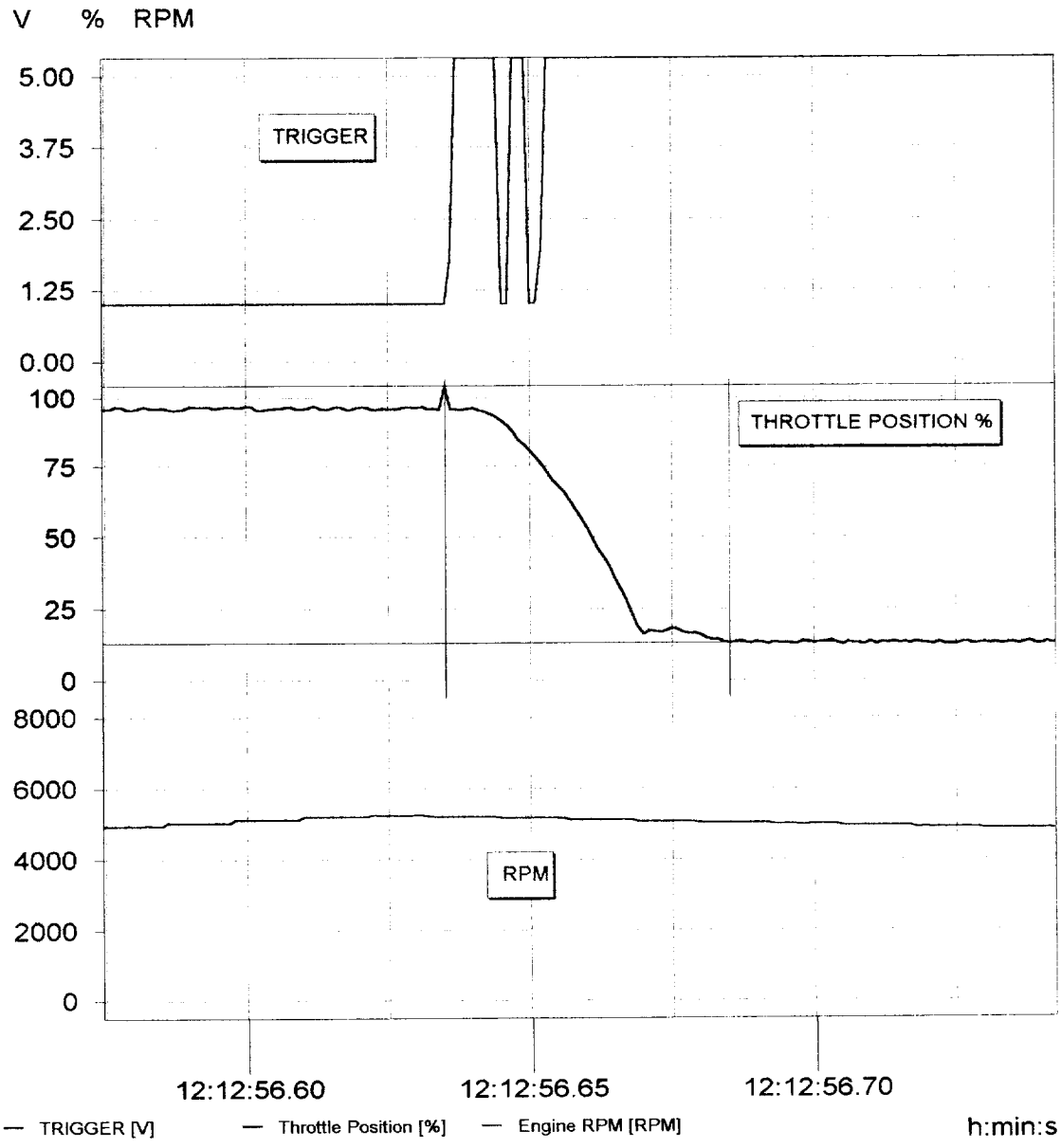
Channel:Throttle Position

Y1:	40.919 %	Y2:	13.380 %
t1:	-26149.308 ms	t2:	-26076.308 ms
dt:	0.073 s	f:	13.699 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/SPRING 2 /100% WOT 12:20:01 PM 5/6/04

NHTSA C45300 HONDA ELEMENT



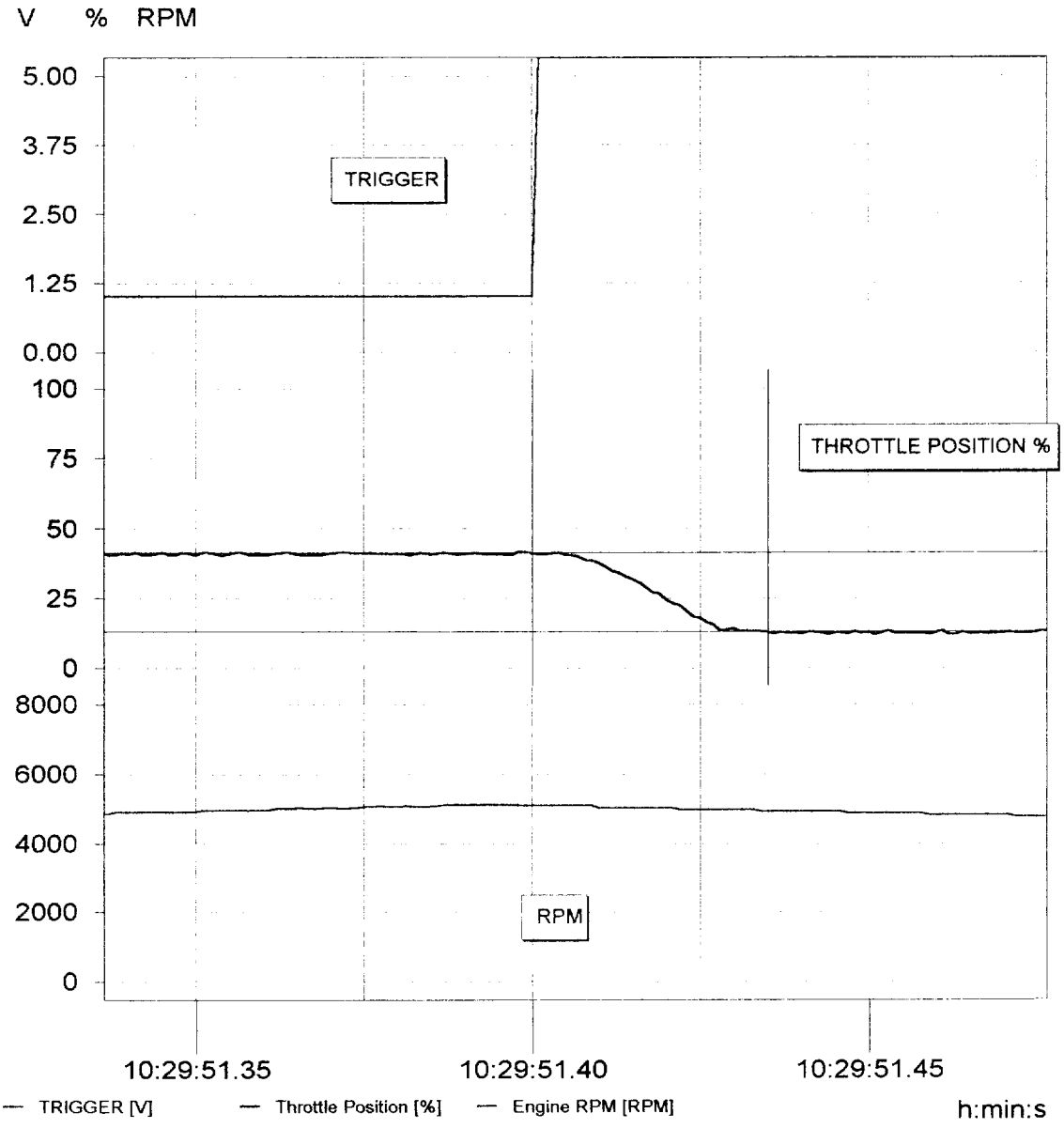
Channel:Throttle Position

Y1:	104.167 %	Y2:	12.846 %
t1:	-7057.308 ms	t2:	-7007.308 ms
dt:	0.050 s	f:	20.000 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/SPRING 3 /25% WOT 10:33:26 AM 5/6/04

NHTSA C45300 HONDA ELEMENT



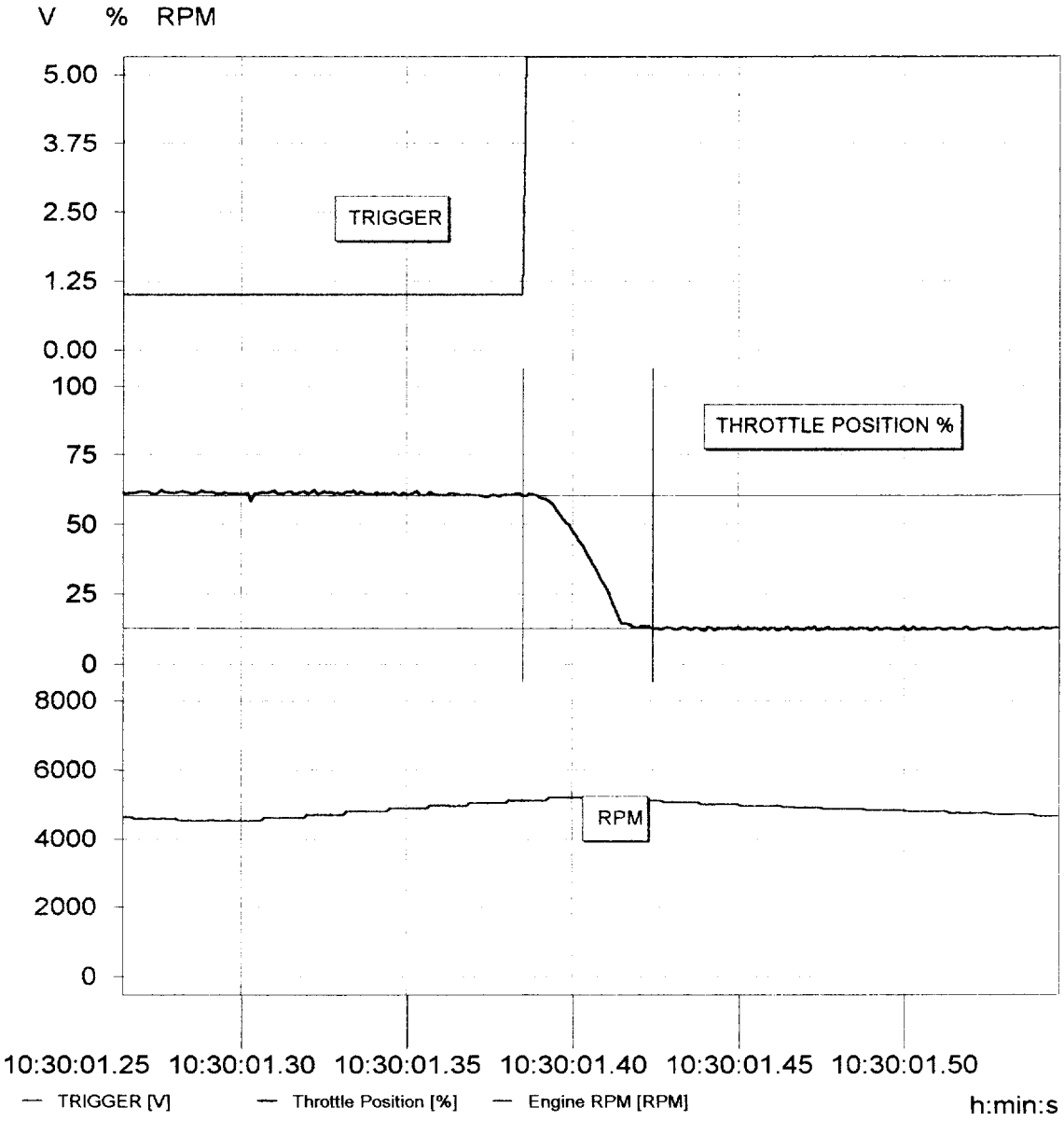
Channel:Throttle Position

Y1:	41.008 %	Y2:	12.938 %
t1:	-54660.977 ms	t2:	-54625.977 ms
dt:	0.035 s	f:	28.571 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/SPRING 3 /50% WOT 10:35:00 AM 5/6/04

NHTSA C45300 HONDA ELEMENT



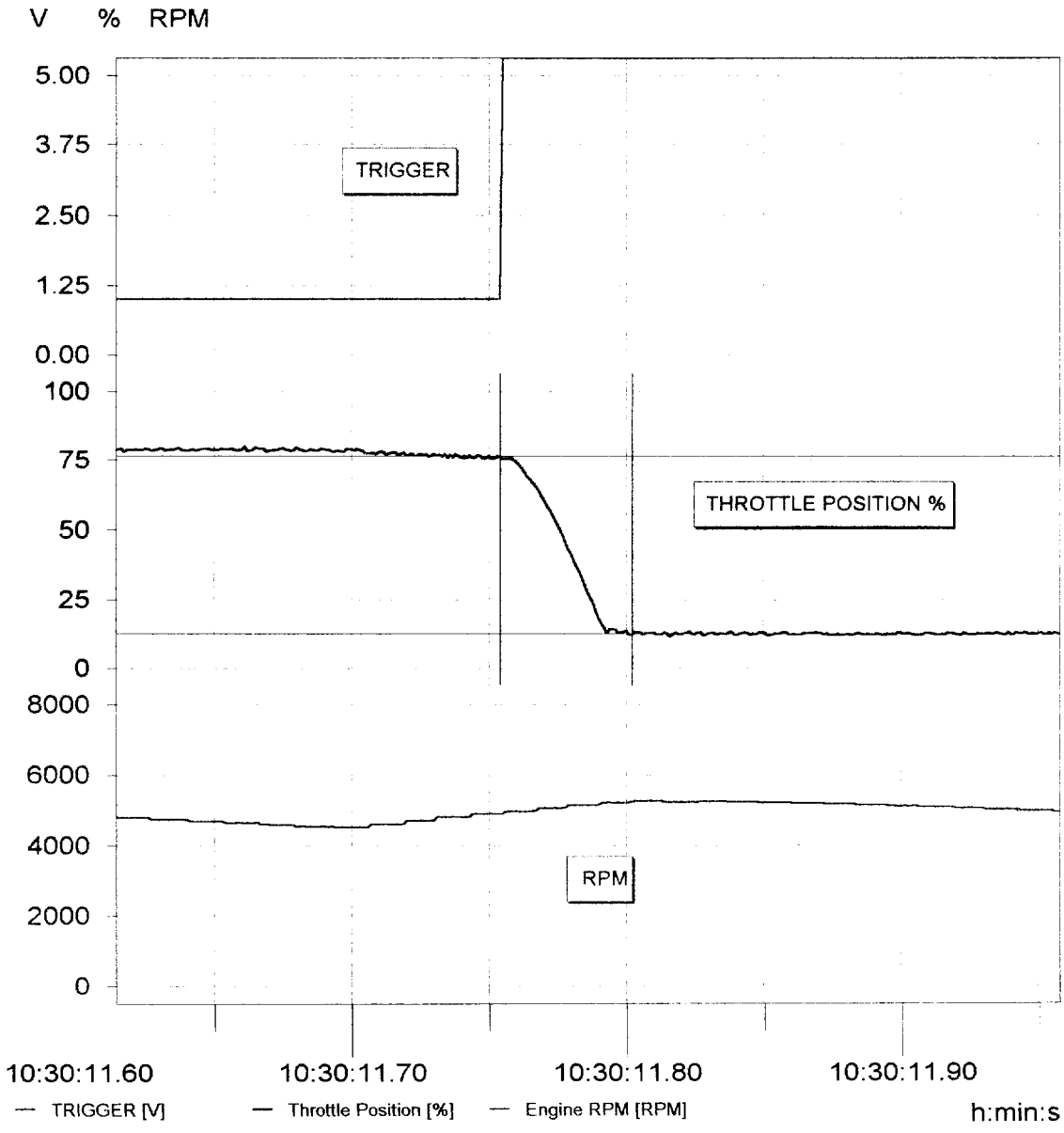
Channel:Throttle Position

Y1:	60.307 %	Y2:	12.801 %
t1:	-44675.977 ms	t2:	-44636.977 ms
dt:	0.039 s	f:	25.641 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/SPRING 3 /75% WOT 10:36:46 AM 5/6/04

NHTSA C45300 HONDA ELEMENT



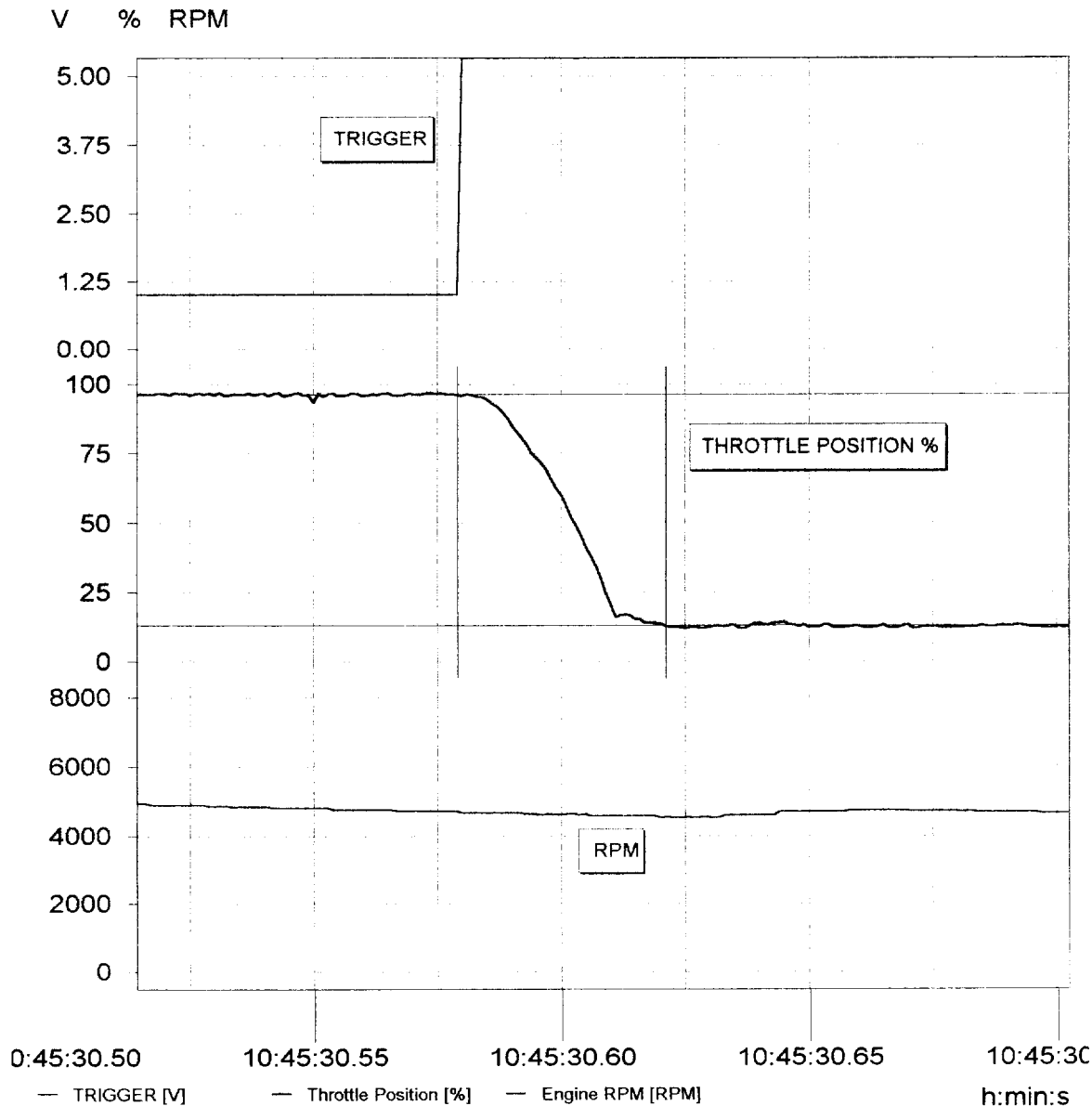
Channel:Throttle Position

Y1:	76.275 %	Y2:	12.582 %
t1:	-34306.977 ms	t2:	-34258.977 ms
dt:	0.048 s	f:	20.833 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/SPRING 3 /100% WOT 10:47:00 AM 5/6/04

NHTSA C45300 HONDA ELEMENT



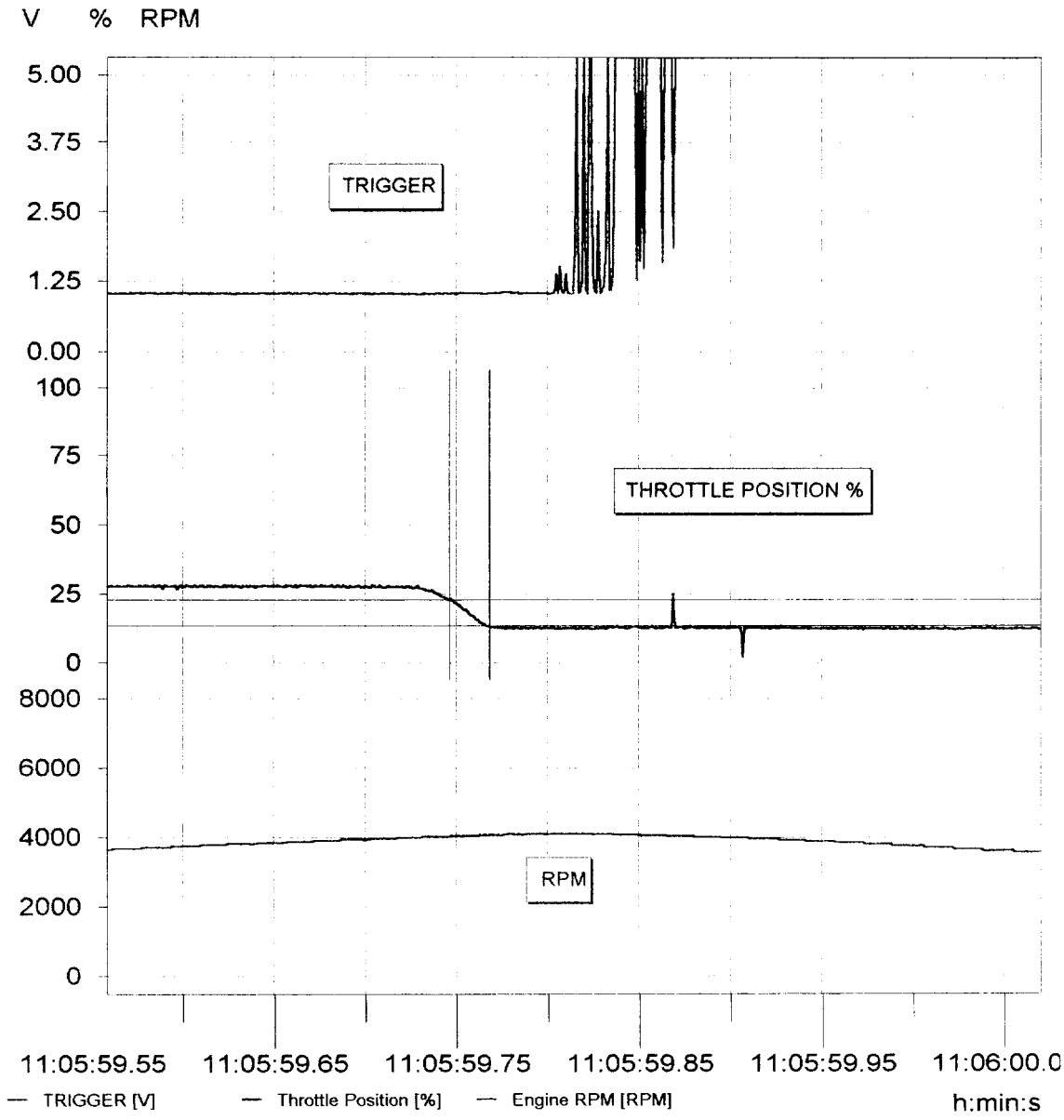
Channel:Throttle Position

Y1:	96.108 %	Y2:	12.884 %
t1:	-5420.756 ms	t2:	-5378.756 ms
dt:	0.042 s	f:	23.810 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/SEVERED/25% WOT 11:15:32 AM 5/6/04

NHTSA C45300 HONDA ELEMENT



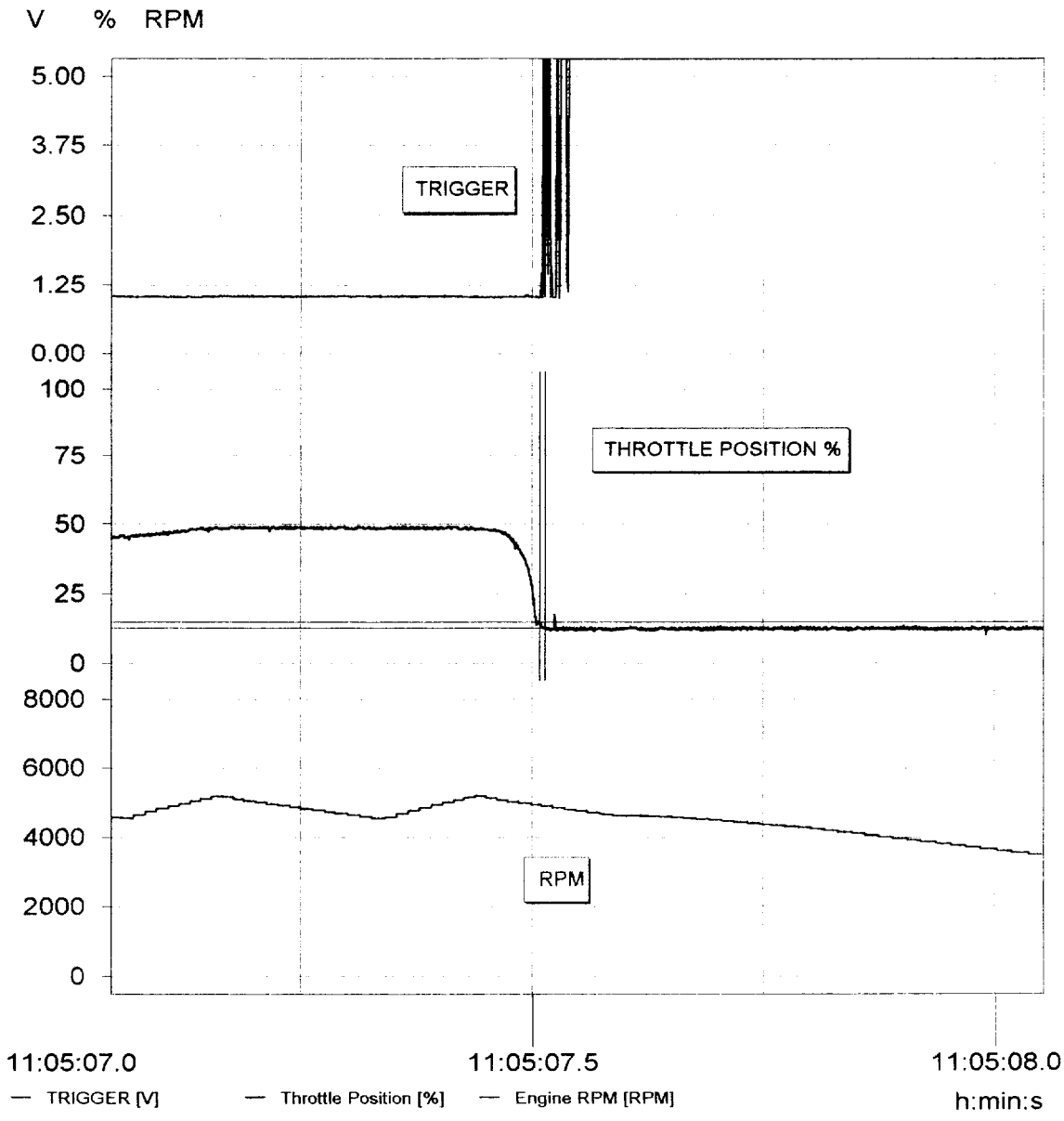
Channel:Throttle Position

Y1:	22.799 %	Y2:	13.177 %
t1:	-2330.923 ms	t2:	-2308.923 ms
dt:	0.022 s	f:	45.455 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/SEVERED/50% WOT 11:09:22 AM 5/6/04

NHTSA C45300 HONDA ELEMENT



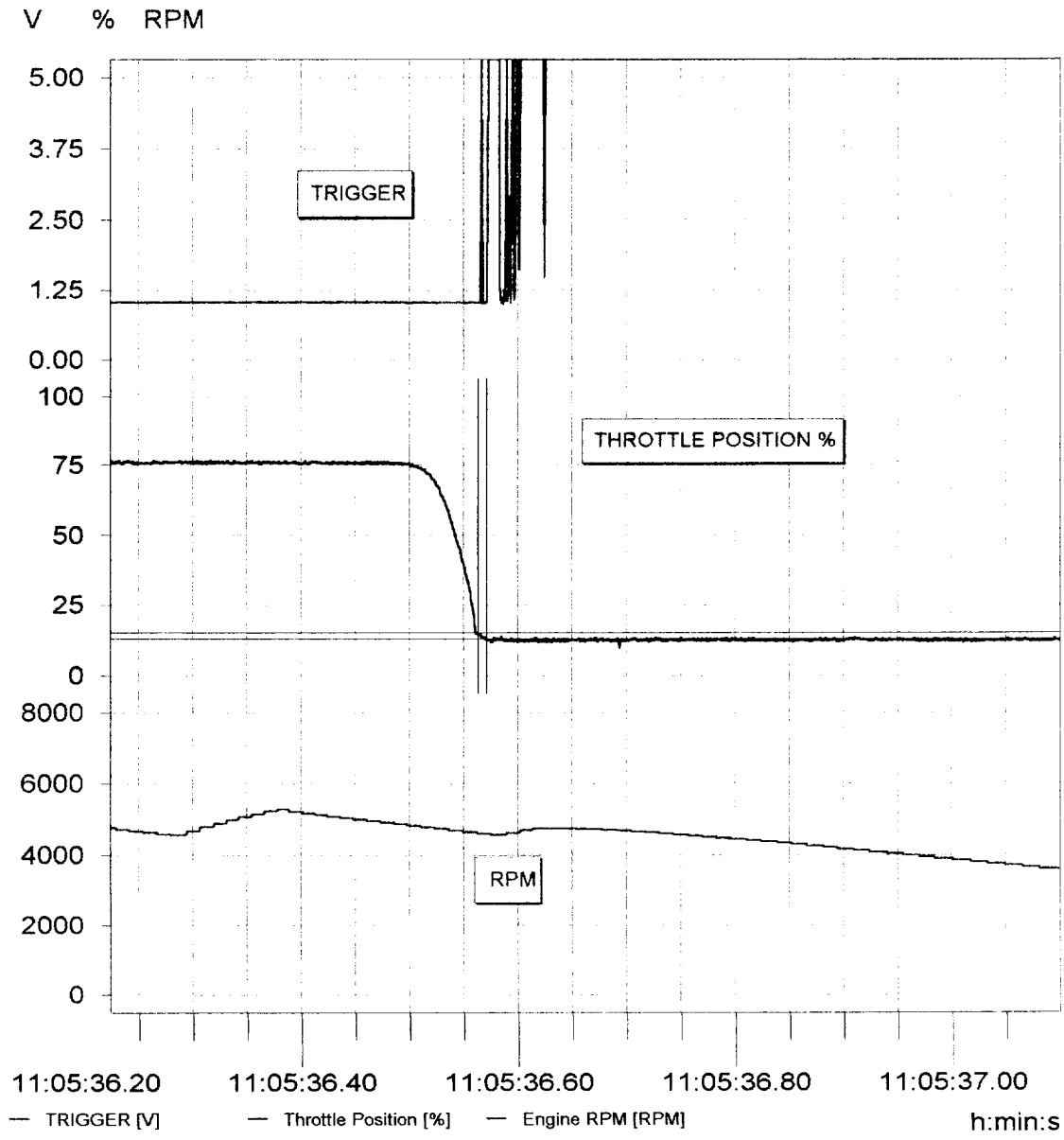
Channel:Throttle Position

Y1:	14.909 %	Y2:	12.827 %
t1:	-54568.923 ms	t2:	-54562.923 ms
dt:	0.006 s	f:	166.667 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/SEVERED/75% WOT 11:11:07 AM 5/6/04

NHTSA C45300 HONDA ELEMENT



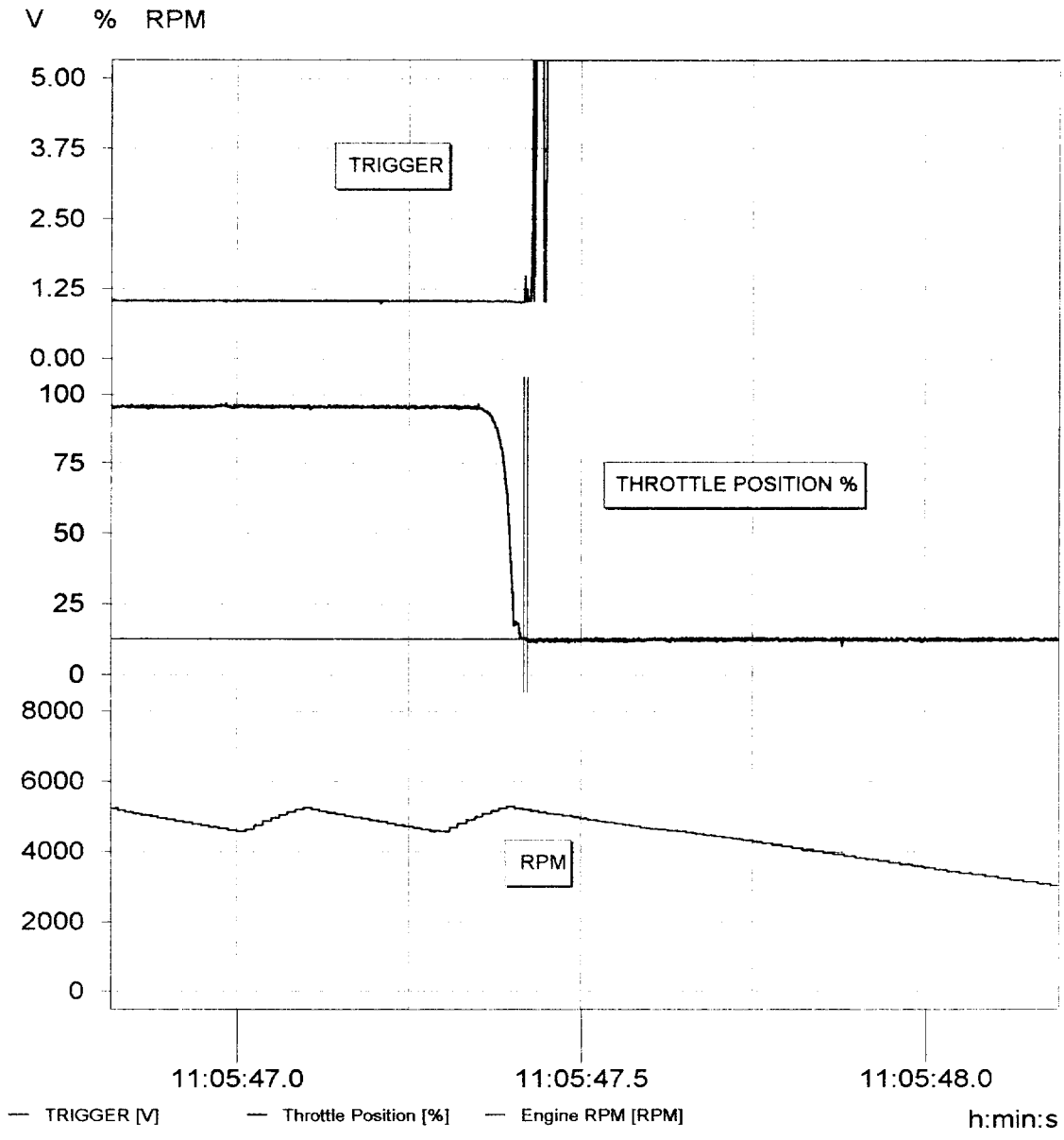
Channel:Throttle Position

Y1:	15.039 %	Y2:	12.970 %
t1:	-25513.923 ms	t2:	-25505.923 ms
dt:	0.008 s	f:	125.000 Hz

FMVSS 124 THROTTLE RETURN TEST

124 COLD/SEVERED/100% WOT 11:13:22 AM 5/6/04

NHTSA C45300 HONDA ELEMENT



Channel:Throttle Position

Y1:	12.808 %	Y2:	12.557 %
t1:	-14660.923 ms	t2:	-14654.923 ms
dt:	0.006 s	f:	166.667 Hz

SECTION 7
MANUFACTURER'S DRAWINGS

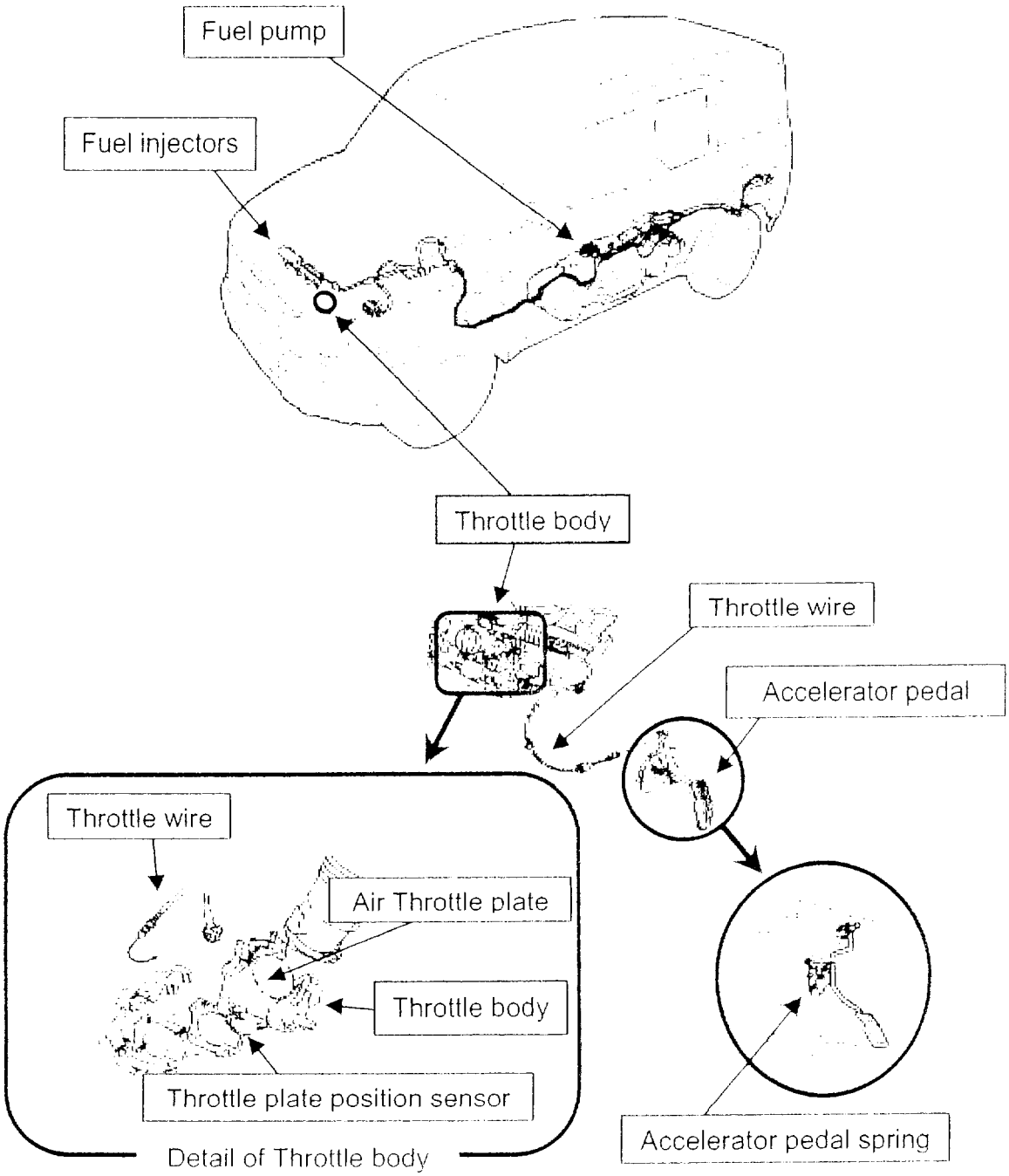
VEHICLE INFORMATION/TEST SPECIFICATIONS
FMVSS 124 - Accelerator Control Systems

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).

Answer: Refer to Fig.1.

Fig.1 Accelerator Control System of 04M ELEMENT



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

Answer: Air Throttle Plate Position is used.

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)

Answer: Air Throttle Plate Position is used.

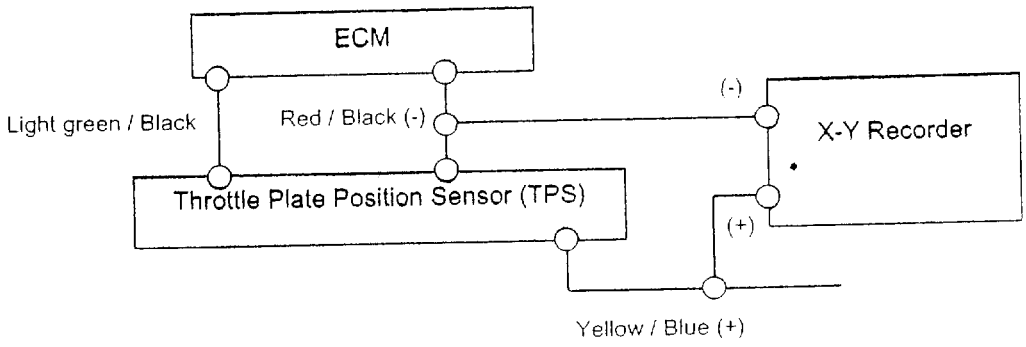
4.) Is the vehicle ACS equipped with any of the following:
   A. Accelerator Pedal Position Sensor (APS)
   B. Throttle Plate Position Sensor (TPS)
   C. Electronic Control Module (ECM)
   D. Air throttle plate actuator motor

Answer: B. and C.

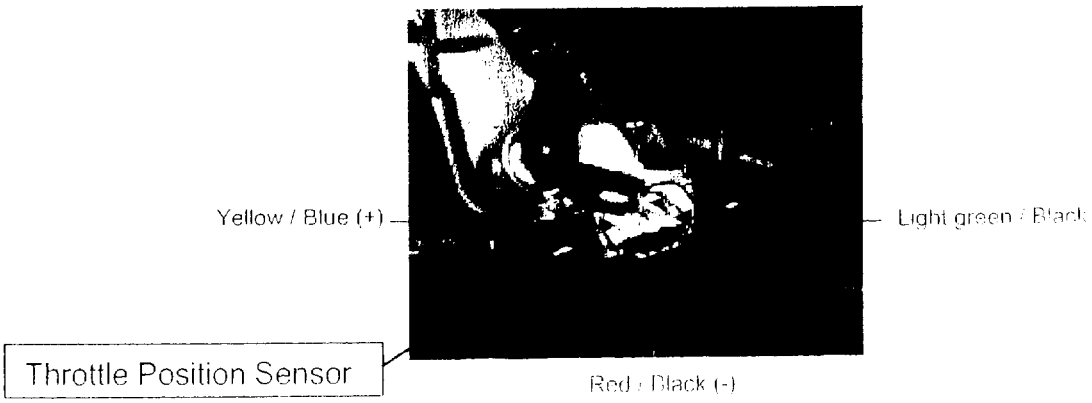
5.) If air throttle plate equipped, is there a procedure which can be utilized by the test laboratory to measure the position of the throttle plate by tapping into the TPS or ECM? If so, please describe.

Answer: Connect Recorder to TPS wire as shown in Fig.2. The WOT of the throttle is measured by first measuring the voltage at the idle position, which is set to 0%, and by setting voltage of the fully open throttle to 100%. Also, the throttle return time is measured by the voltage difference time of the throttle position sensor.

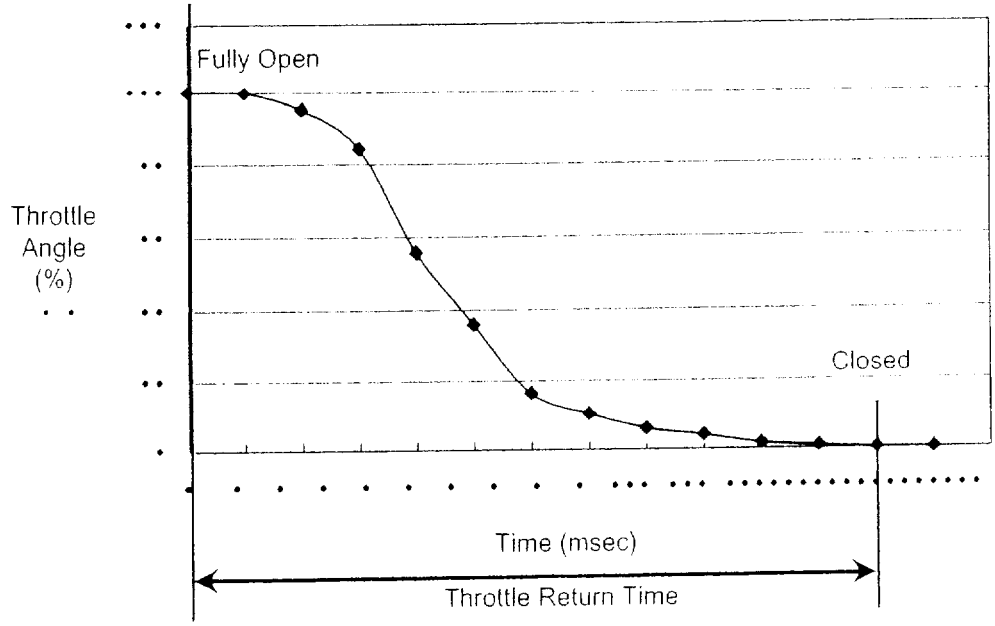
Connecting Method for Recorder (Fig.2)



Throttle Plate Position Sensor (Photo)

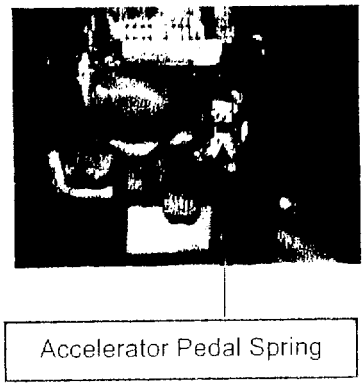


Example of the Throttle Return Time



6.) Point(s) chosen to demonstrate compliance with FMVSS 124 for single point disconnect and severance.

Answer: The Accelerator Pedal Spring is removed.



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.

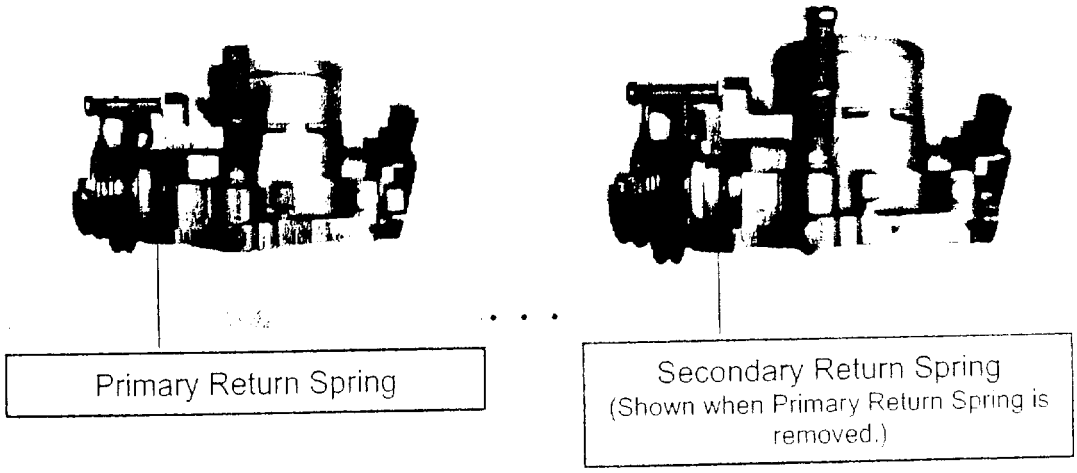
Answer: No

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

Answer: No

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

Answer: Primary Return Spring and Secondary Return Spring of Air Throttle Valve



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.
C. Fuel rate signal output range at the idle state.

Answer: N.A.

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

Answer: N.A.