REPORT NUMBER 124-GTL-07-004

SAFETY COMPLIANCE TESTING FOR FMVSS 124 ACCELERATOR CONTROL SYSTEMS

HONDA MOTOR CO.,
2007 HONDA FIT,
4-DOOR PASSENGER CAR
NHTSA NO. C75300

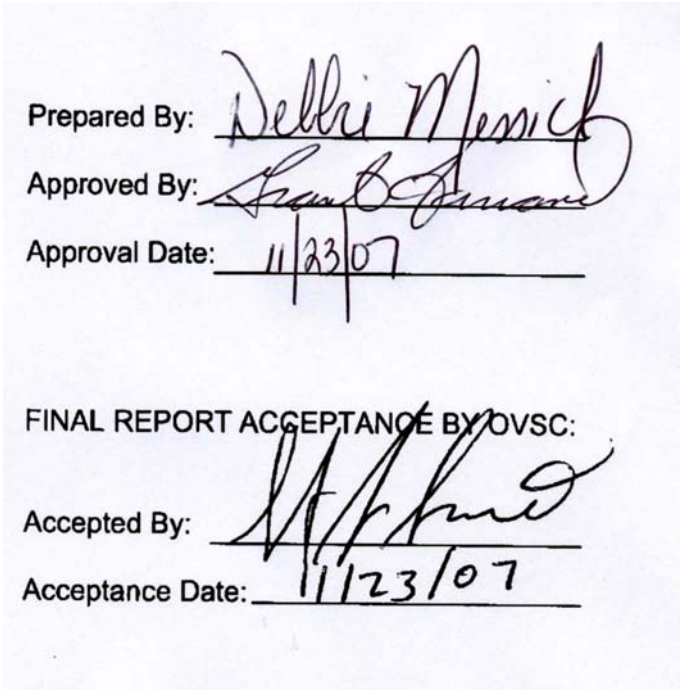
GENERAL TESTING LABORATORIES, INC.
1623 LEEDSTOWN ROAD
COLONIAL BEACH, VIRGINIA 22443

NOVEMBER 27, 2007

FINAL REPORT

PREPARED FOR

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
1200 NEW JERSEY AVE, SE
WASHINGTON, D.C. 20590



Technical Report Documentation Page

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12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Enforcement Office of Vehicle Safety Compliance (NVS-220) 1200 New Jersey Ave., S.E. Washington, DC 20590		13. Type of Report and Period Covered Final Test Report September 11-13, 2007 14. Sponsoring Agency Code NVS-220
15. Supplementary Notes		
16. Abstract Compliance tests were conducted on the subject 2007 Honda Fit 4-door Passenger Car 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		
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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 the number of 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 2007 Honda Fit 4-door Pssenger Car, NHTSA No. C75201 in accordance with the National Highway Traffic Safety Administration (NHTSA) Laboratory Procedure TP-124-06.

The vehicle is equipped with an electronic throttle control system with an Accelerator Pedal Position Senson (APS), a Throttle Plate Position Sensor (TPS), an Electronic control Module (ECM) and an Air Throttle Plate Actuator Motor.

Output from the vehicle throttle position sensor on the air throttle plate shaft was used to measure throttle position and data was recorded at 100 HZ with GTL' s data acquisition system. Testing was conducted to simulate the normal removal of the driver's foot from the accelerator pedal. This was performed by depressing the accelerator with a gloved hand which incorporated an electrical contact strip in the depressing forefinger. The accelerator was depressed to the required amount and then the forefinger was quickly removed from the pedal, releasing the accelerator and activating the contact strip for time zero. Failures were induced simultaneously with release of 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 (25%, 50%, 75% and 100%) with the accelerator control system complete and with each of the two APS return springs in the accelerator pedal assembly independently disconnected. With each of the wires to the APS and throttle plate position sensor disconnected and shorted to ground, return to idle times were determined at the worst case

SECTION 2 (Continued)

condition – wide open throttle (100%). In addition, tests were conducted with the APS and TPS connectors disconnected.

Some system faults resulted in no data output as the TPS used for throttle position data was itself disconnected for that part of the test. For these cases, return to idle state was determined by laboratory personnel observation. A number of induced failures resulted in the throttle plate return to or below the idle state then shifting to a Limp-Home mode position which allows the vehicle to be removed from the roadway.

This testing was performed at mid ambient temperature of 10º C to 46º C, in accordance with the NHTSA Test Procedure TP-124-06.

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: 2007 HONDA FIT PASSENGER CAR
VEHICLE NHTSA NO.: C75300
VEHICLE VIN: JHMGD37647S056969
DATE OF TEST: SEPTEMBER 11-13, 2007
TEST LAB: GENERAL TESTING LABORATORIES
VEHICLE ENGINE TYPE: GAS GVWR: 1563 KG
VEHICLE ENGINE SIZE: 1.5 L 4 CYL.
VEHICLE ACCEL. CONTROL SYSTEM (ACS) (Air or Fuel Throttled): AIR
MAX. BHP ENGINE SPEED: N/A
MFR. IDLE RPM: 750 RPM
FUEL METERING DEVICE (Carburetor, fuel injection, etc): FUEL INJECTION

REMARKS: Engine throttle body was not disassembled for failed spring tests due to unit being a sealed, non-serviceable assembly.

RECORDED BY: G. FARRAND DATE: 09/11/07

APPROVED BY: D. MESSICK

DATA SHEET 2
NORMAL OPERATION TEST
(fully operational system)

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2007 HONDA FIT PASSENGER CAR
VEHICLE NHTSA NO.: C75300
DATE OF TEST: SEPTEMBER 11, 2007

Check one:

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

SYSTEM CONDITION: COMPLETE (no modifications) Normal Operation

GTL #	ACCELERATOR POSITION % WIDE OPEN THROTTLE (WOT)	THROTTLE POSITION SENSOR READING	RPM	TEMPERATURE (ºC)		THROTTLE POSITION SENSOR READING @ IDLE (BASELINE)	RETURN TIME TO IDLE (Msec)	PASS/ FAIL
				ENGINE COOLANT	AMBIENT			
5829	25%	21%	750	82	31	2%	70	P
5830	50%	57%	750	82	31	2%	150	P
5831	75%	86%	750	82	31	2%	120	P
5832	100%	100%	750	82	31	2%	150	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 -18º C or less

PASS X FAIL

REMARKS: None

RECORDED BY: G. FARRAND DATE: 09/11/07

APPROVED BY: D. MESSICK

DATA SHEET 3 (1 of 2)
FAIL-SAFE OPERATION DISCONNECTION

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2007 HONDA FIT PASSENGER CAR
VEHICLE NHTSA NO.: C75300
DATE OF TEST: SEPTEMBER 11, 2007

Check one:

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

	SYSTEM CONDITION: #1 SPRING DISCONNECTED APS INSIDE SPRING REMOVED							
GTL #	ACCELERATOR POSITION % WIDE OPEN THROTTLE (WOT)	THROTTLE POSITION SENSOR READING	RPM	TEMPERATURE (ºC)		THROTTLE POSITION SENSOR READING @ IDLE (BASELINE)	RETURN TIME TO IDLE (Msec)	PASS/ FAIL
				ENGINE COOLANT	AMBIENT			
5857	25%	26%	750	83	32	2%	80	P
5858	50%	59%	750	83	32	2%	60	P
5859	75%	81%	750	83	32	2%	180	P
5860	100%	98%	750	83	32	2%	240	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 -18º C or less

PASS X FAIL

REMARKS: None

RECORDED BY: G. FARRAND DATE: 09/13/07

APPROVED BY: D. MESSICK

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

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2007 HONDA FIT PASSENGER CAR
VEHICLE NHTSA NO.: C75300
DATE OF TEST: SEPTEMBER 13, 2007

Check one:

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

SYSTEM CONDITION: #2 SPRING DISCONNECTED
APS OUTSIDE SPRING REMOVED

GTL #	ACCELERATOR POSITION % WIDE OPEN THROTTLE (WOT)	THROTTLE POSITION SENSOR READING	RPM	TEMPERATURE (ºC)		THROTTLE POSITION SENSOR READING @ IDLE (BASELINE)	RETURN TIME TO IDLE (Msec)	PASS/ FAIL
				ENGINE COOLANT	AMBIENT			
5861	25%	34%	750	83	32	2%	60	P
5862	50%	53%	750	83	32	2%	80	P
5863	75%	83%	750	83	32	2%	130	P
5864	100%	99%	750	83	32	2%	290	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 -18º C or less

PASS X FAIL

REMARKS: None

RECORDED BY: G. FARRAND DATE: 09/13/07

APPROVED BY: D. MESSICK

DATA SHEET 4
FMVSS 124

VEHICLE MY/MAKE/MODEL/BODY STYLE: 2007 HONDA FIT PASSENGER CAR
VEHICLE NHTSA NO.: C75300
DATE OF TEST: SEPTEMBER 11, 2007

GTL #	CONNECTOR	WIRE/PIN DESCRIPTION	FAULT CONDITION	ENGINE TEMP. ºC	% THROTTLE/ RETURN TIME (MS)	PASS/FAIL/NOTES
5833	APS	#1/ORANGE	OPEN	83	100/220	P
5834	APS	#2/PINK	OPEN	83	100/220	P
5835	APS	#3/BLUE	OPEN	83	100/210	P
5836	APS	#4/BROWN	OPEN	83	100/130	P
5837	APS	#5/BLACK	OPEN	83	100/200	P
5838	APS	#6/PURPLE	OPEN	83	100/30	P
5839	APS	#1/ORANGE	SHORT	83	100/480	P Engine Stopped
5840	APS	#2/PINK	SHORT	83	100/120	P
5841	APS	#3/BLUE	SHORT	83	100/110	P
5842	APS	#4/BROWN	SHORT	83	100/450	P Engine Stopped
5843	APS	#5/BLACK	SHORT	83	100/120	P
5844	APS	#6/PURPLE	SHORT	83	100/120	P
5845	TPS	#7/YEL/RED	OPEN	83	100/60	P Limp Home Mode
5846	TPS	#8/YELLOW	OPEN	83	100/70	P Limp Home Mode
5847	TPS	#9/BLUE	OPEN	83	100/890	P Limp Home Mode
5848	TPS	#10/RED	OPEN	83	100/120	P
5849	TPS	#11/GREEN	OPEN	83	100/20	P Limp Home Mode
5850	TPS	#12 RED/BLACK	OPEN	83	100/0	*Engine went to idle but no data
5851	TPS	#7/YEL/RED	SHORT	83	100/580	P Limp Home Mode
5852	TPS	#8/YELLOW	SHORT	83	100/260	P Limp Home Mode
5853	TPS	#9/BLUE	SHORT	83	100/190	P
5854	TPS	#10/RED	SHORT	83	100/200	P
5855	TPS	#11/GREEN	SHORT	83	100/0	*Limp Home Mode
5856	TPS	#12/RED/BLACK	SHORT	83	100/0	P Engine Stopped
5865	APS	CONNECTOR	DISCONNECT	83	100/480	P Engine Stopped
5866	TPS	CONNECTOR	DISCONNECT	83	100/20	P Limp Home Mode

REMARKS: Limp Home Mode is 1500 RPM and very limited throttle control.

* By Laboratory Observation

RECORDED BY: G. FARRAND DATE: 09/11/07

APPROVED BY: D. MESSICK

SECTION 4
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

EQUIPMENT	DESCRIPTION	MODEL/ SERIAL NO.	CAL. DATE	NEXT CAL. DATE
CONTINUOUS RECORDER	OMEGA	CT485	06/07	06/08
ENGINE RECORDING	GTL COMPUTER	CPU1	BEFORE USE	BEFORE USE
ENGINE RECORDING	MONARCH	1444664	08/07	08/08
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

2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.1
FRONT VIEW OF VEHICLE

2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

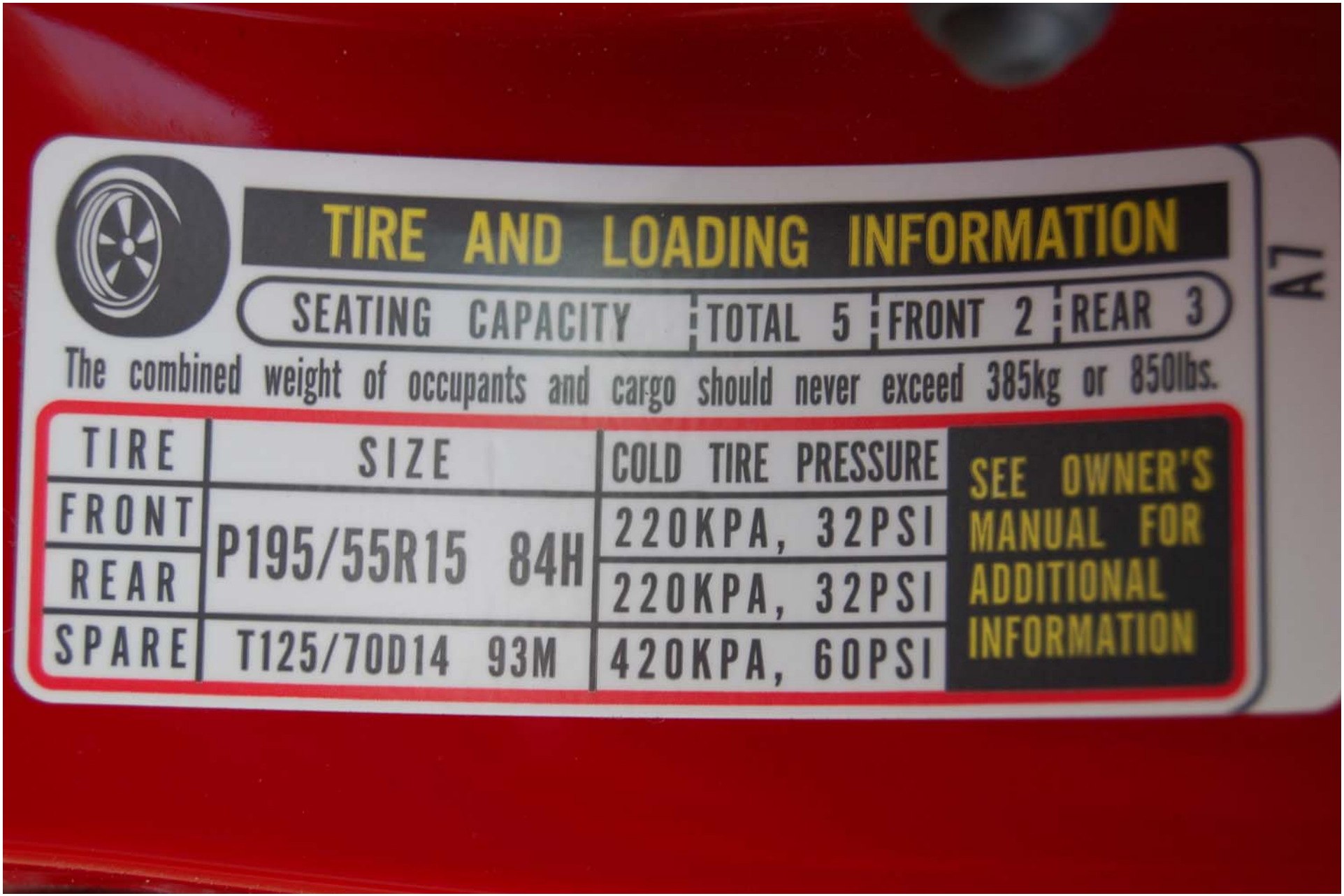
FIGURE 5.2
LEFT SIDE VIEW OF VEHICLE

2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.3
RIGHT SIDE VIEW OF VEHICLE

2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.4
CLOSE-UP VIEW OF VEHICLE CERTIFICATION LABEL

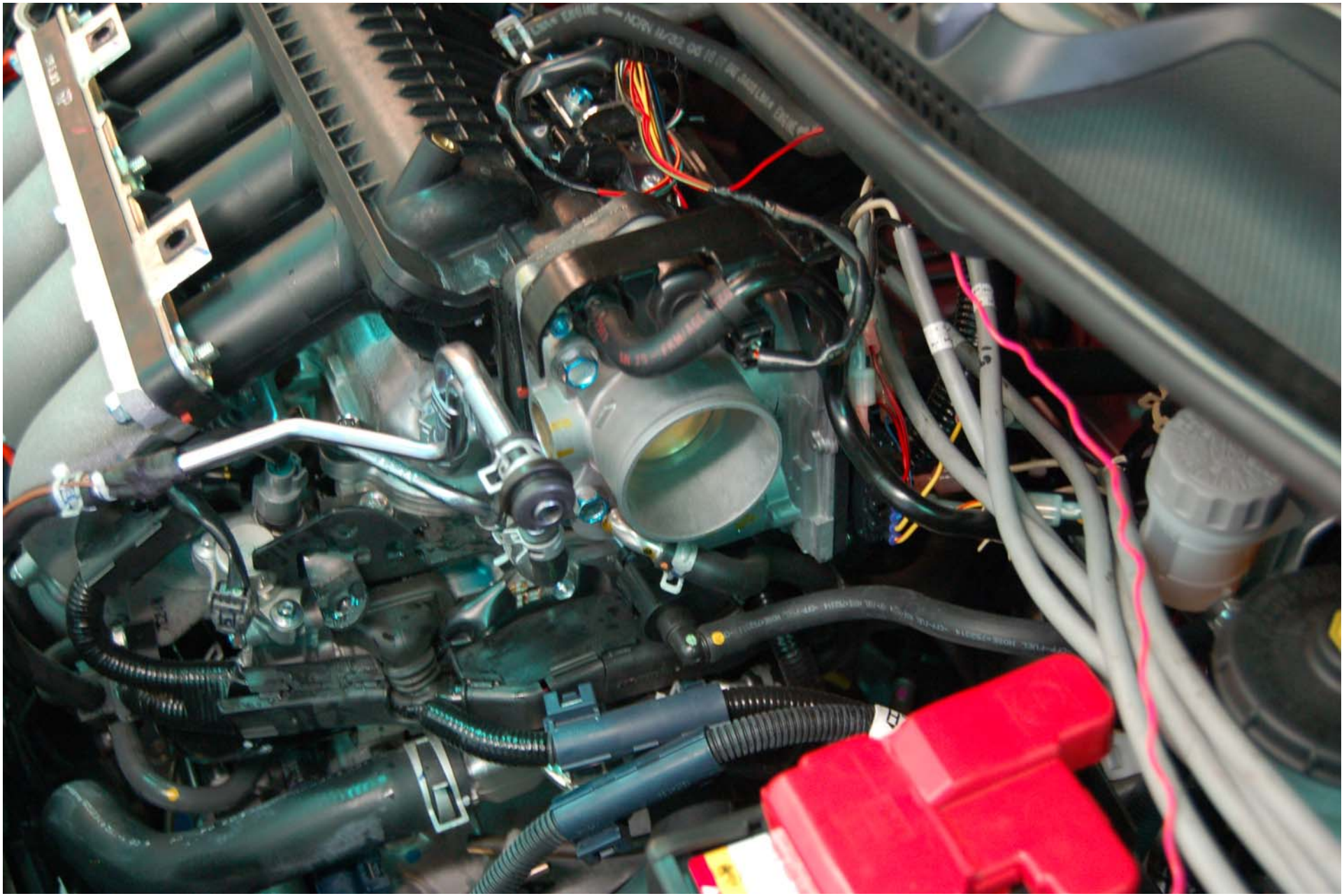


2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.5
CLOSE-UP VIEW OF VEHICLE PLACARD

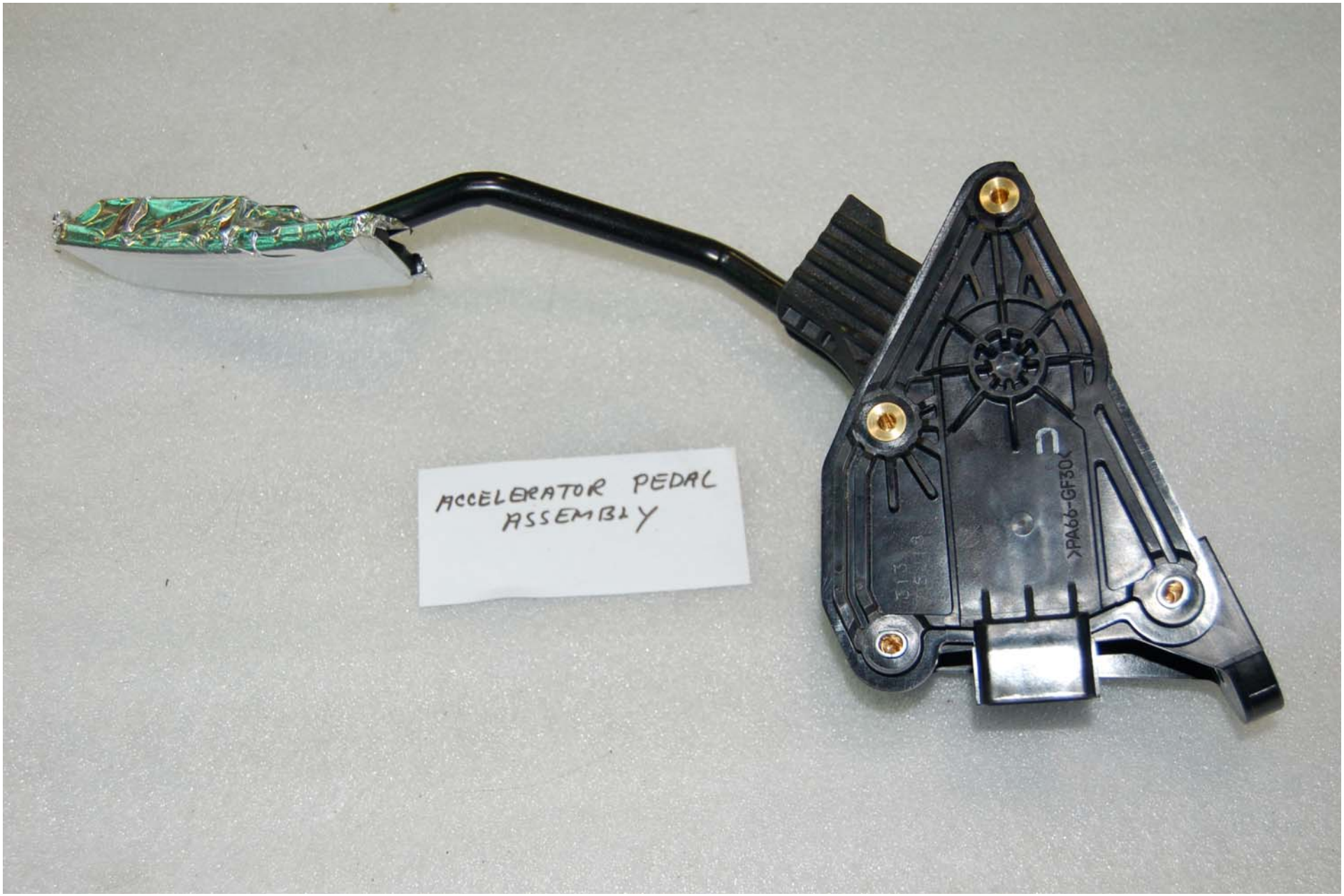
2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.6
ACCELERATOR TEST SET-UP



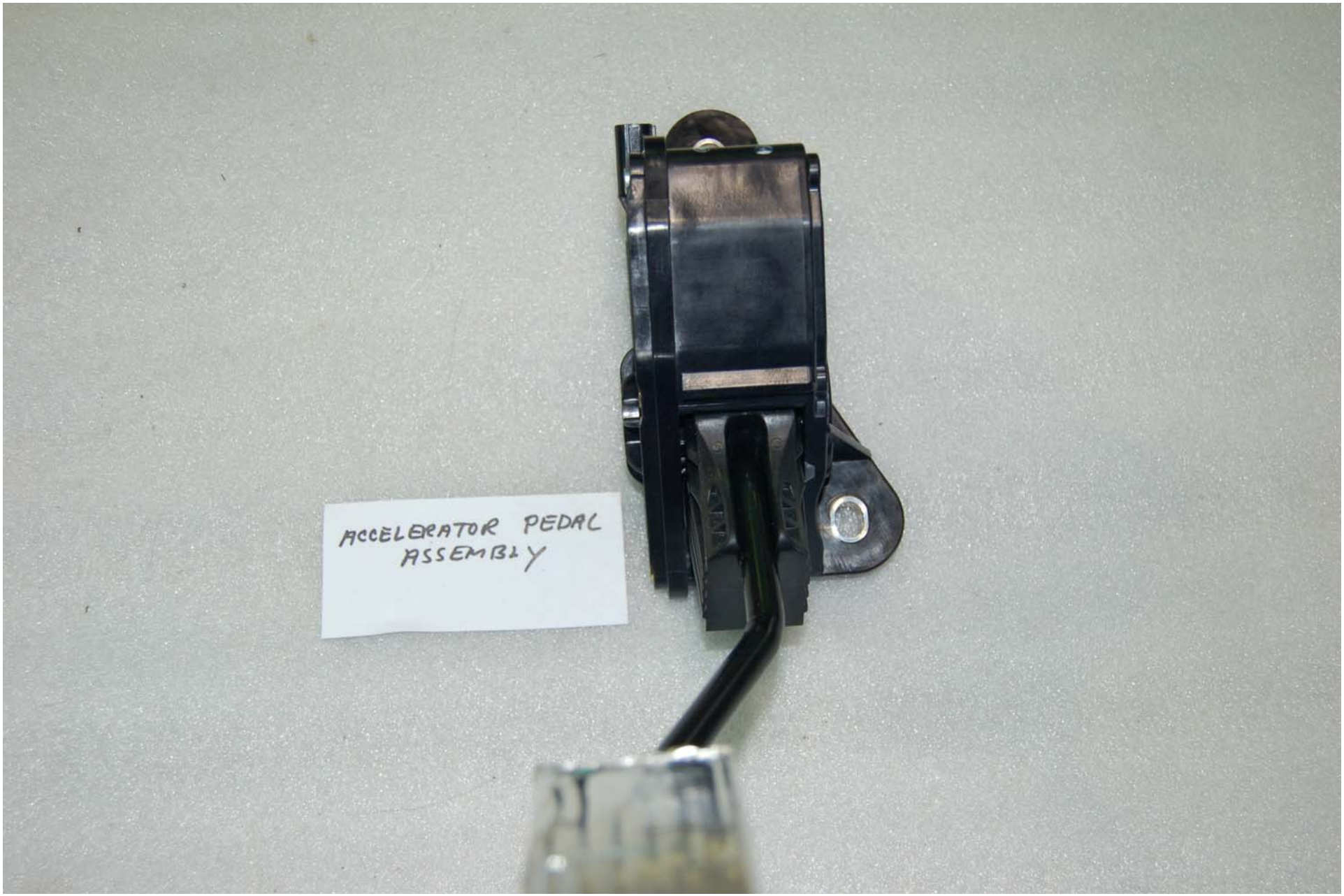
2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.7
THROTTLE BODY TEST SET-UP



2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.8
ACCELERATOR PEDAL ASSEMBLY



2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.9
ACCELERATOR PEDAL ASSEMBLY

2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.10
ACCELERATOR PEDAL ASSEMBLY

2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.11
APS SPRINGS #1 AND #2

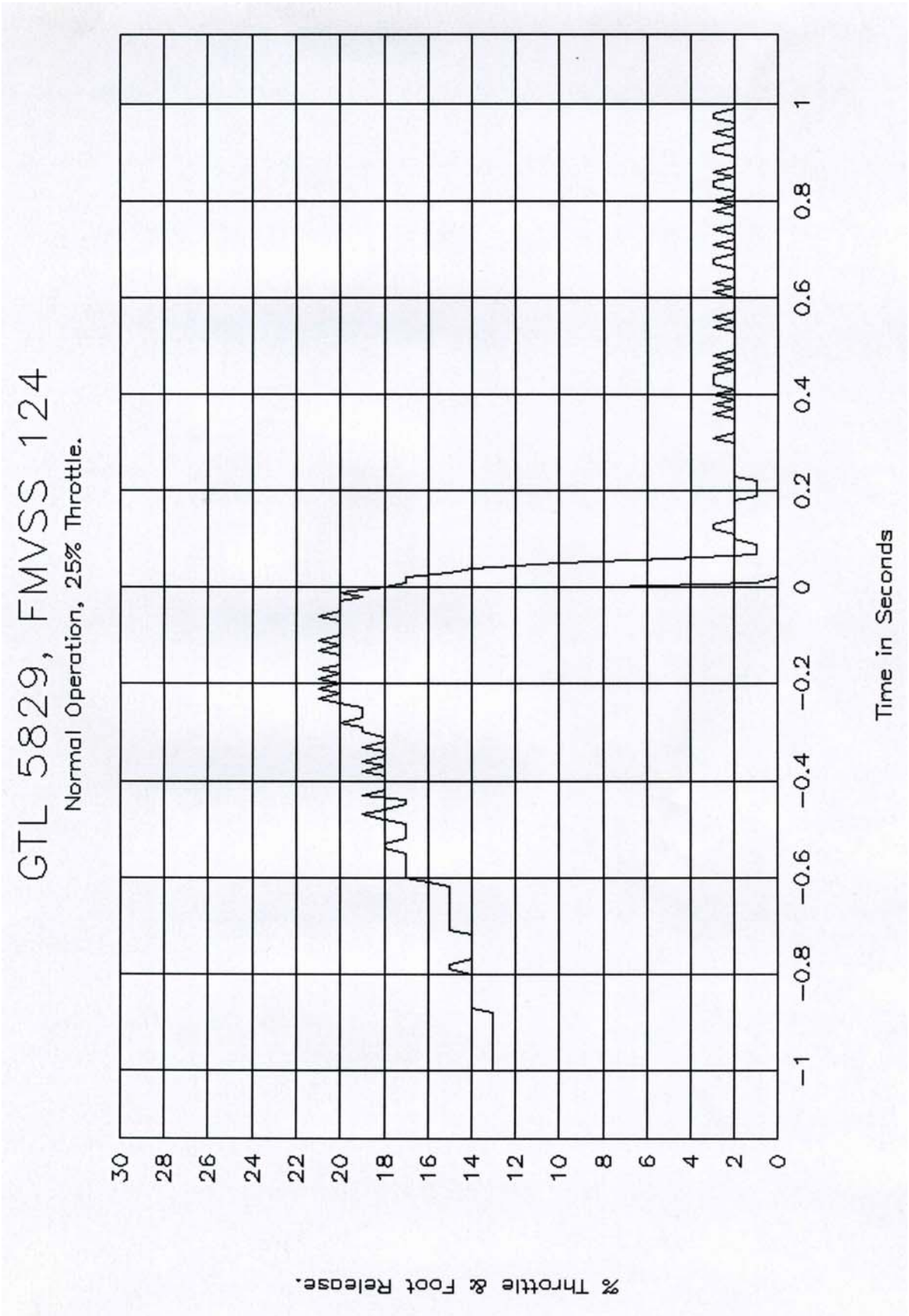
2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.12
APS SPRINGS #1 AND #2 CLOSE-UP

2007 HONDA FIT
NHTSA NO. C75300
FMVSS NO. 124

FIGURE 5.13
OVERALL TEST SET-UP

SECTION 6
PLOTS


GTL 5829, FMVSS 124
Normal Operation, 25% Throttle.
% Throttle & Foot Release.
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
-1
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-0.6
-0.4
-0.2
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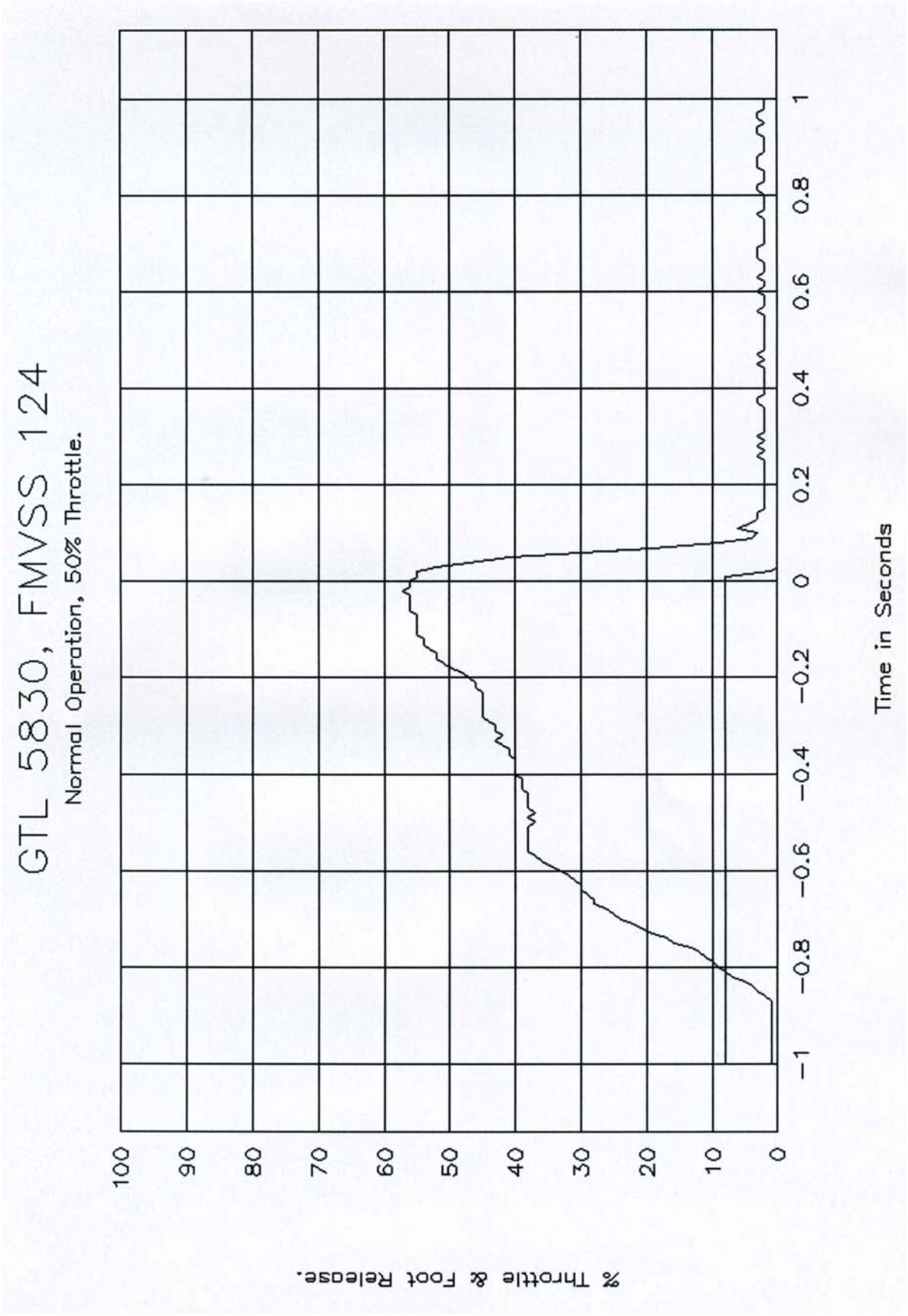
0.2
0.4
0.6
0.8
1
Time in Seconds


GTL 5830, FMVSS 124
Normal Operation, 50% Throttle.
% Throttle & Foot Release.
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90
80
70
60
50
40
30
20
10
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-1
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-0.6
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0.4
0.6
0.8
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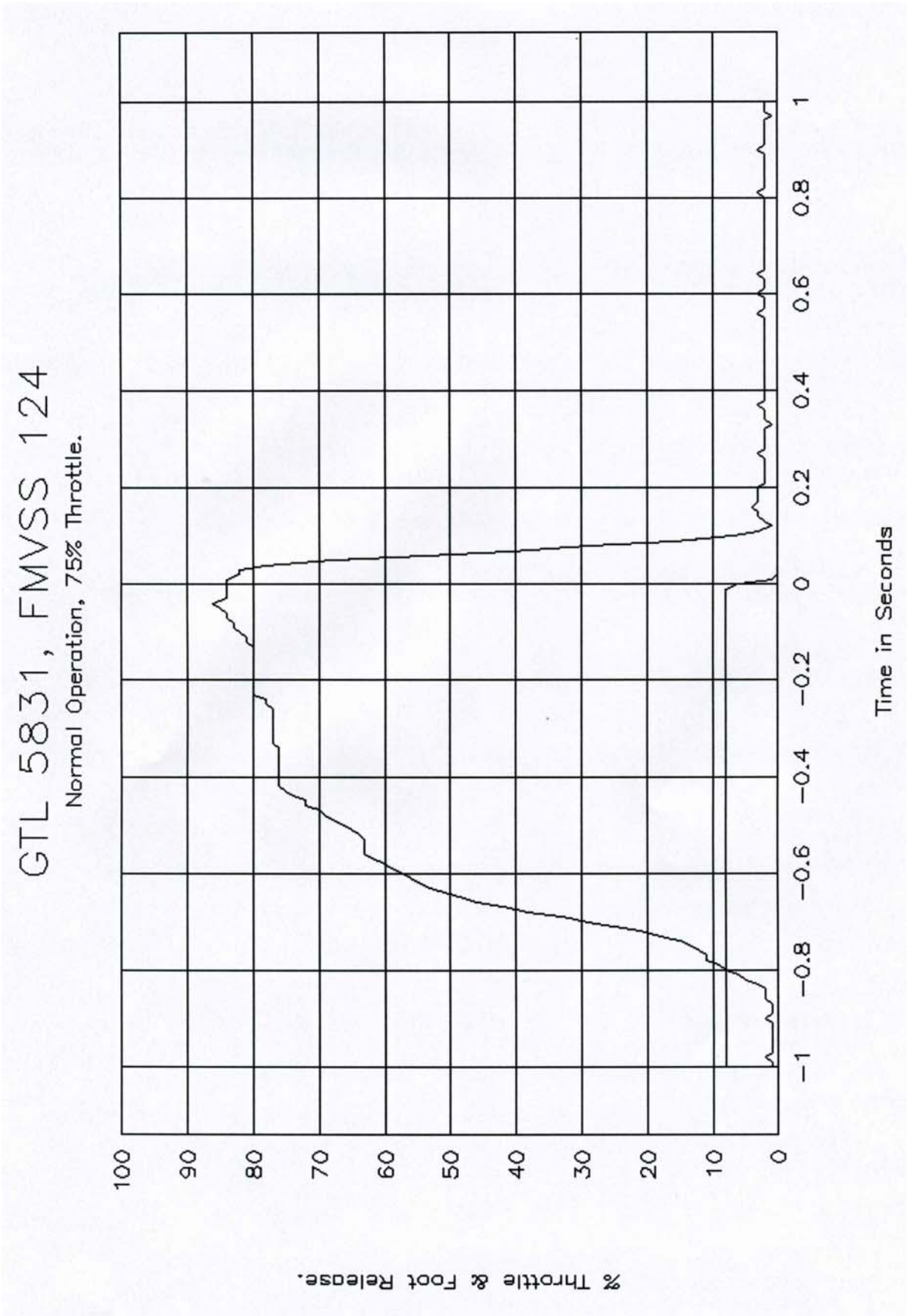
Time in Seconds


GTL 5831, FMVSS 124
Normal Operation, 75% Throttle.
% Throttle & Foot Release.
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90
80
70
60
50
40
30
20
10
0
−1
−0.8
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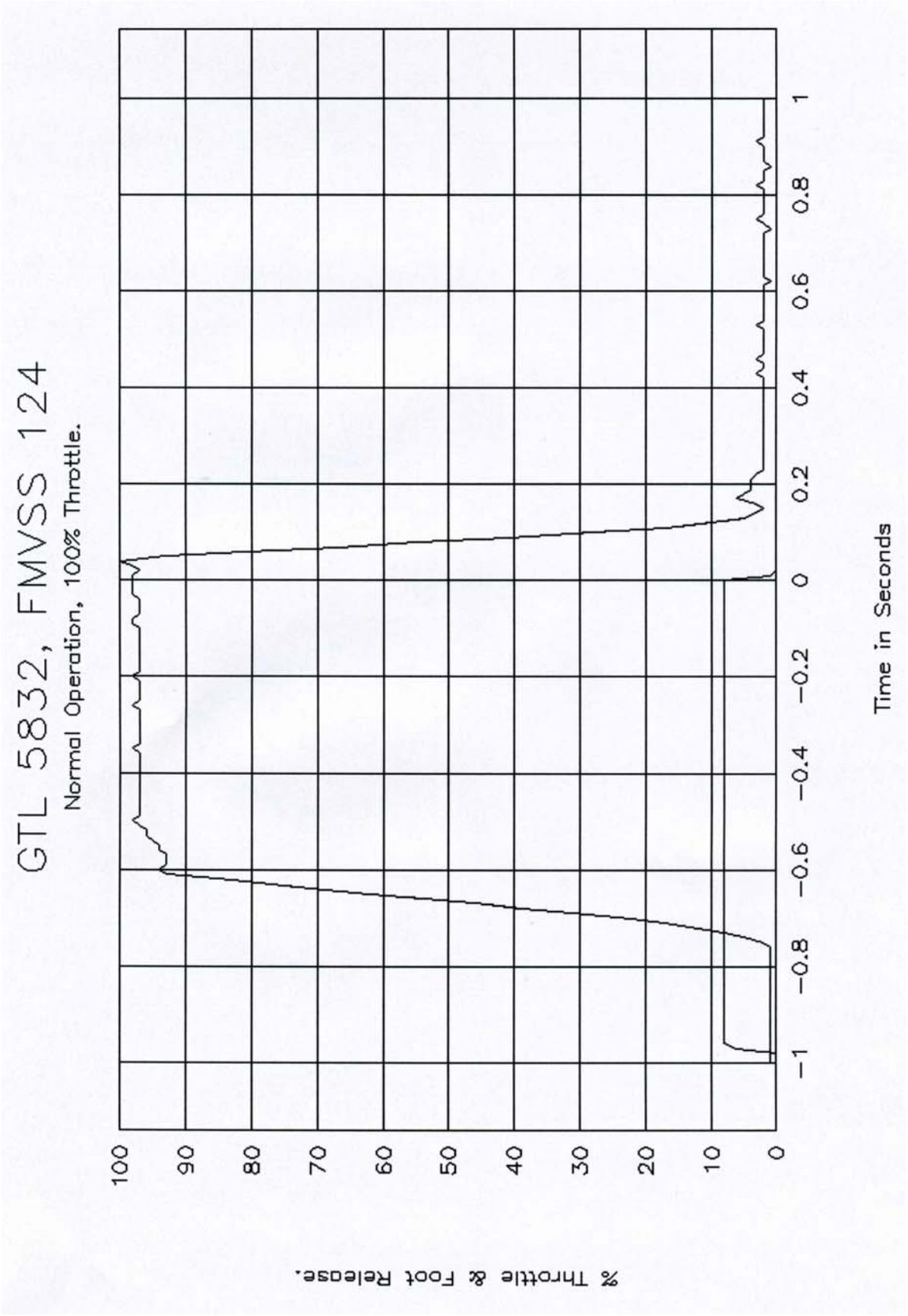
Time in Seconds


GTL 5832, FMVSS 124
Normal Operation, 100% Throttle.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
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-1
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-0.6
-0.4
-0.2
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0.2
0.4
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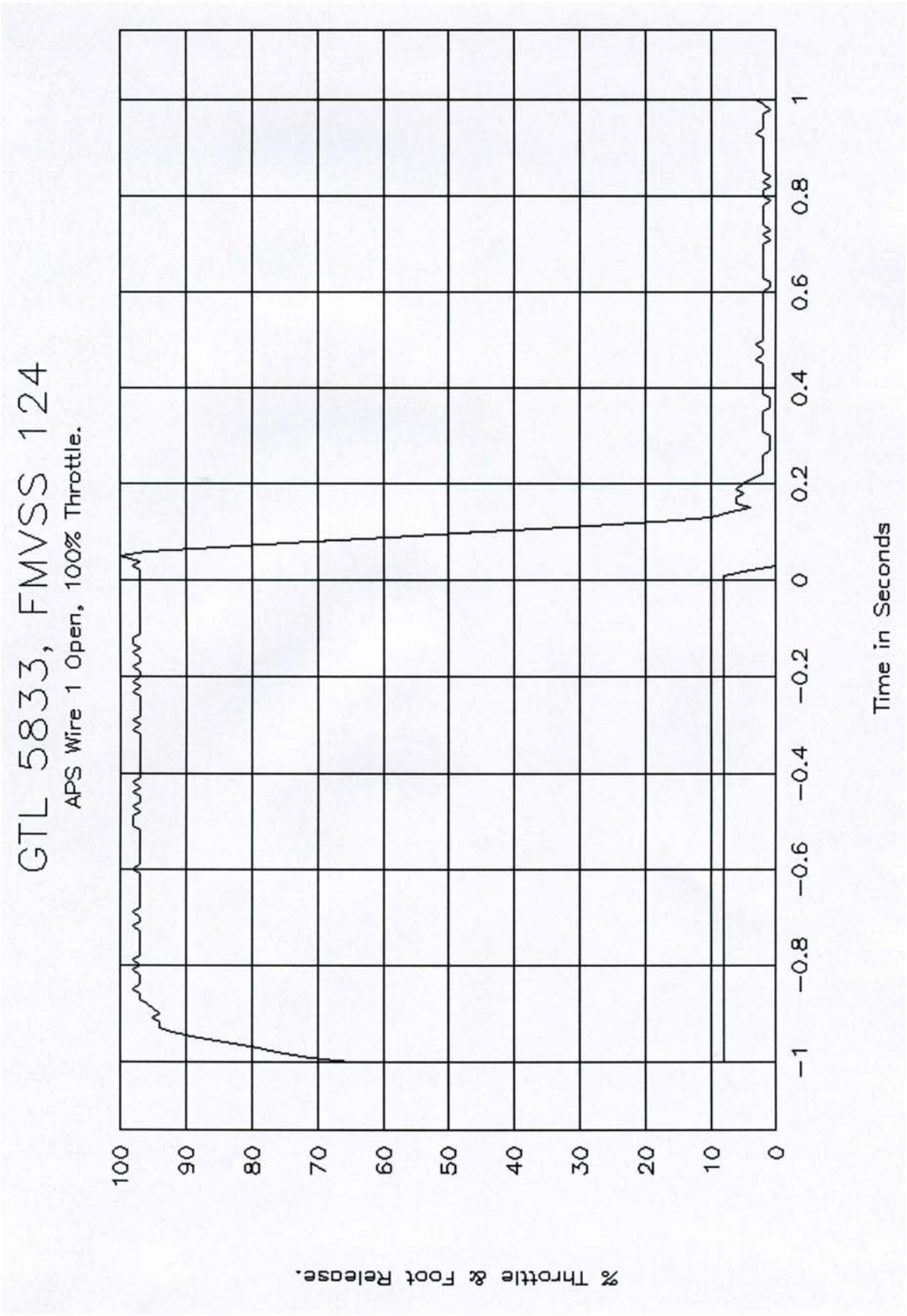
0.8
1
Time in Seconds


GTL 5833, FMVSS 124
APS Wire 1 Open, 100% Throttle.
% Throttle & Foot Release.
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90
80
70
60
50
40
30
20
10
0
-1
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-0.6
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0
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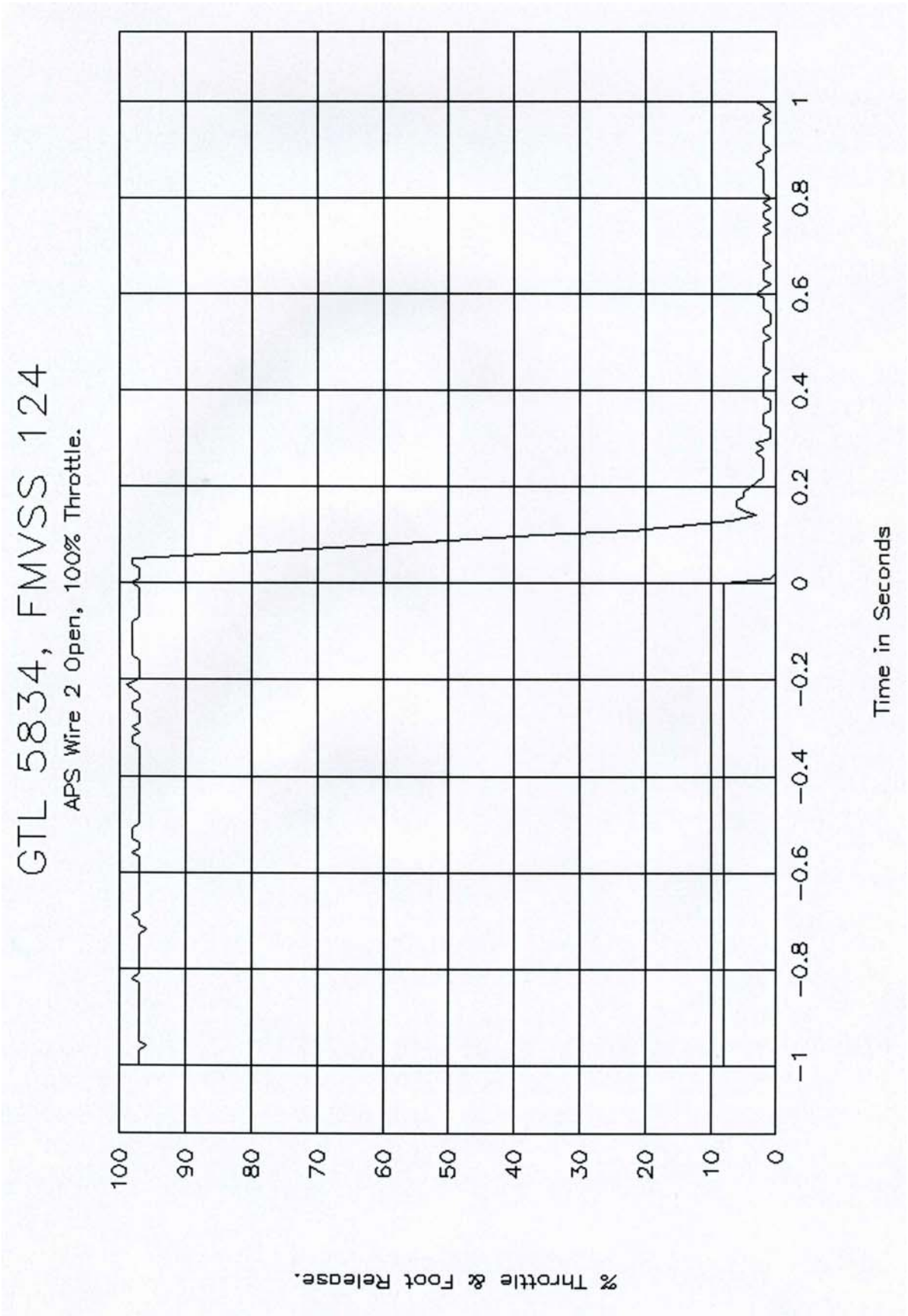
0.8
1
Time in Seconds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% Throttle & Foot Release.
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80
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60
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20
10
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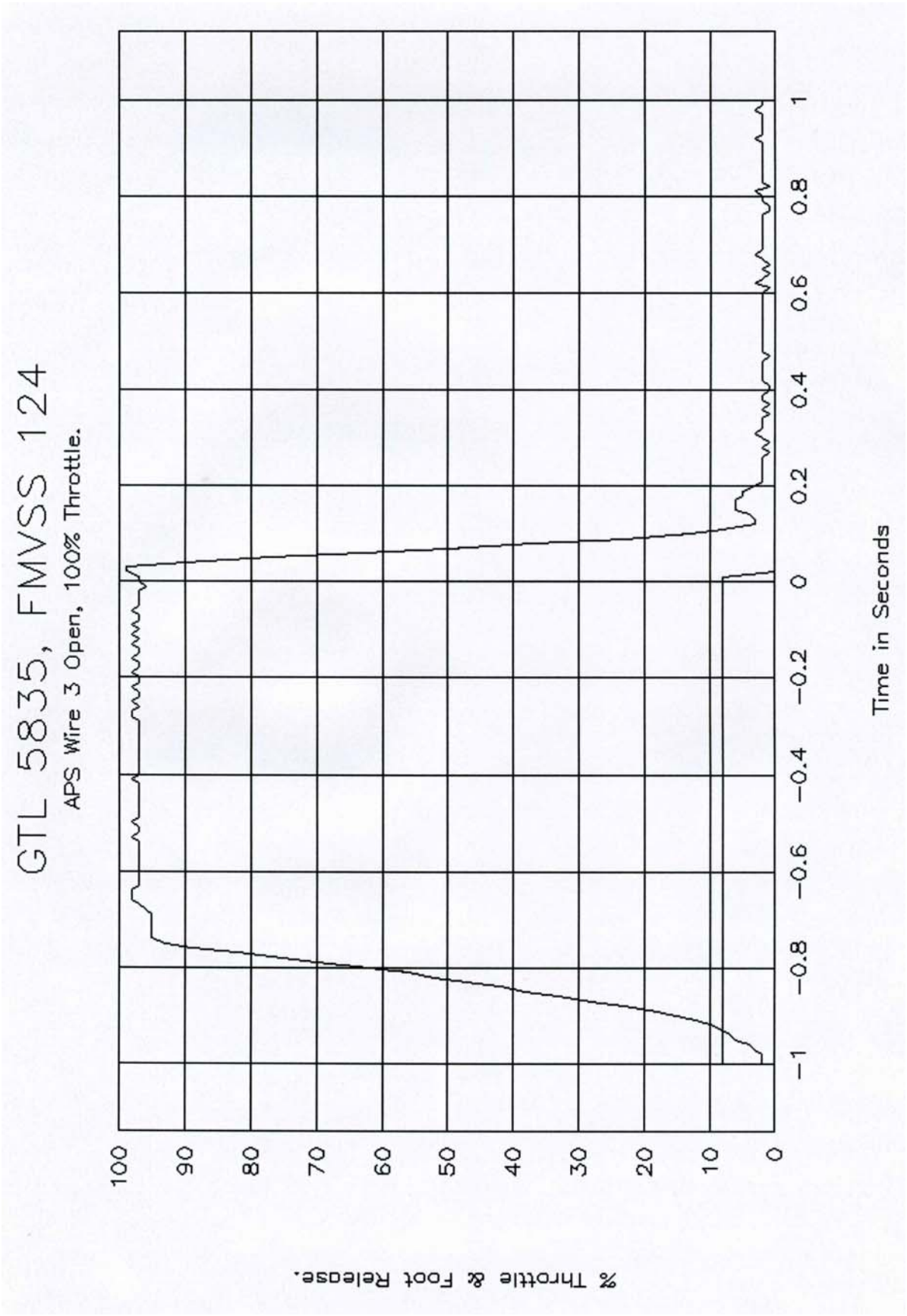
Time in Seconds


GTL 5835, FMVSS 124
APS Wire 3 Open, 100% Throttle.
% Throttle & Foot Release.
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20
10
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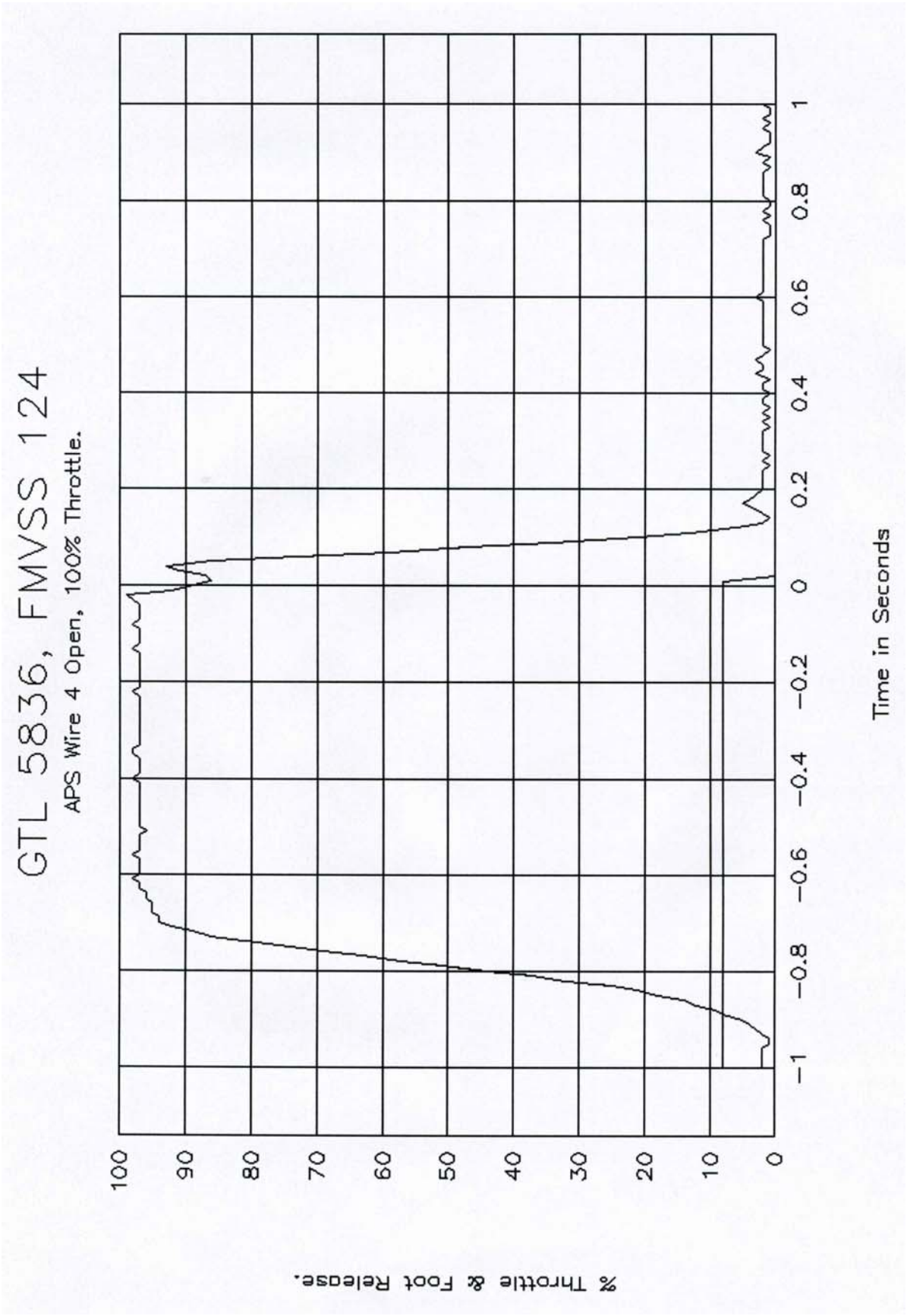
0.6
0.8
1
Time in Seconds


GTL 5836, FMVSS 124
APS Wire 4 Open, 100% Throttle.
% Throttle & Foot Release.
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80
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60
50
40
30
20
10
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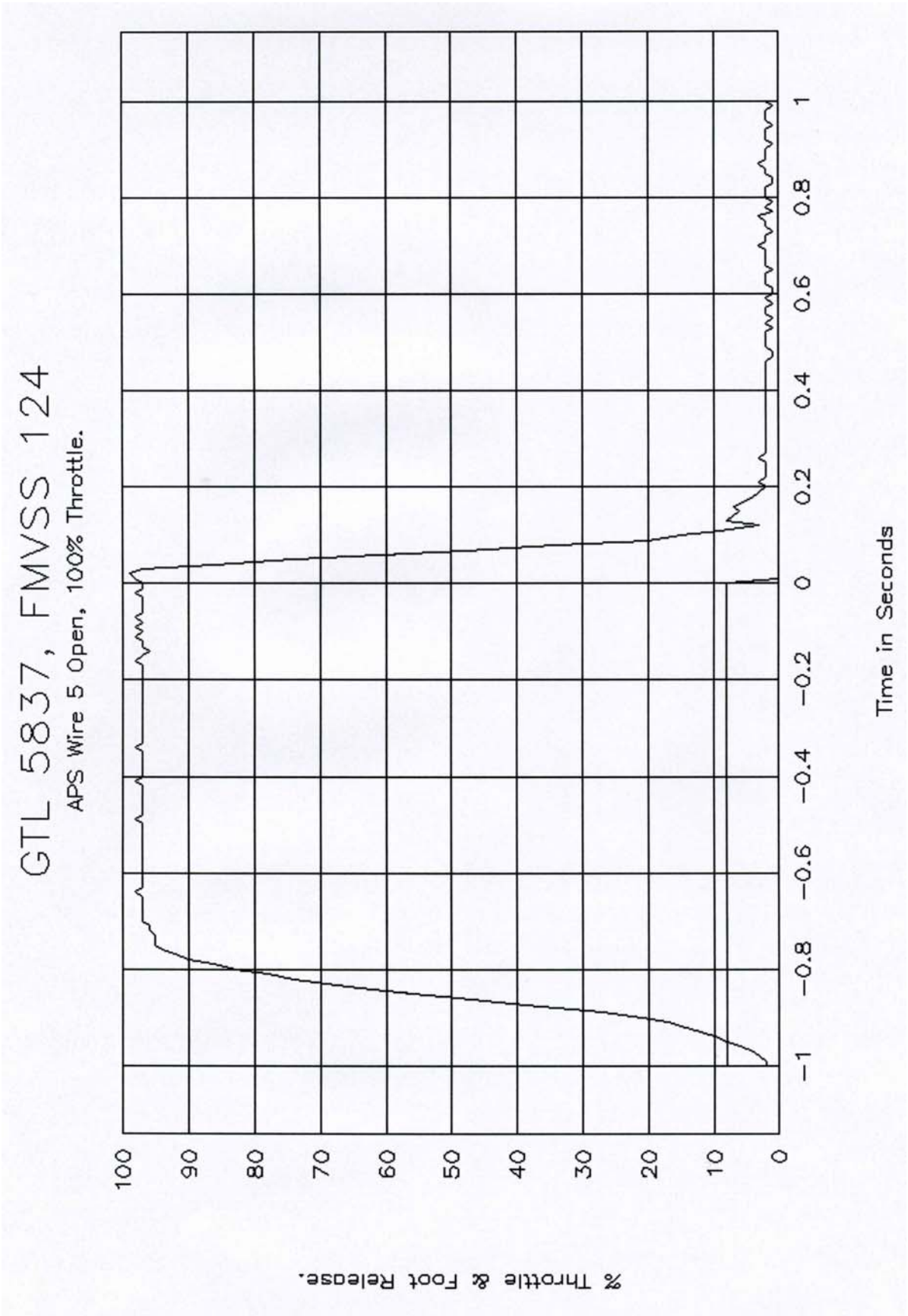
0.8
1
Time in Seconds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APS Wire 5 Open, 100% Throttle.
% Throttle & Foot Release.
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80
70
60
50
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30
20
10
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0.6
0.8
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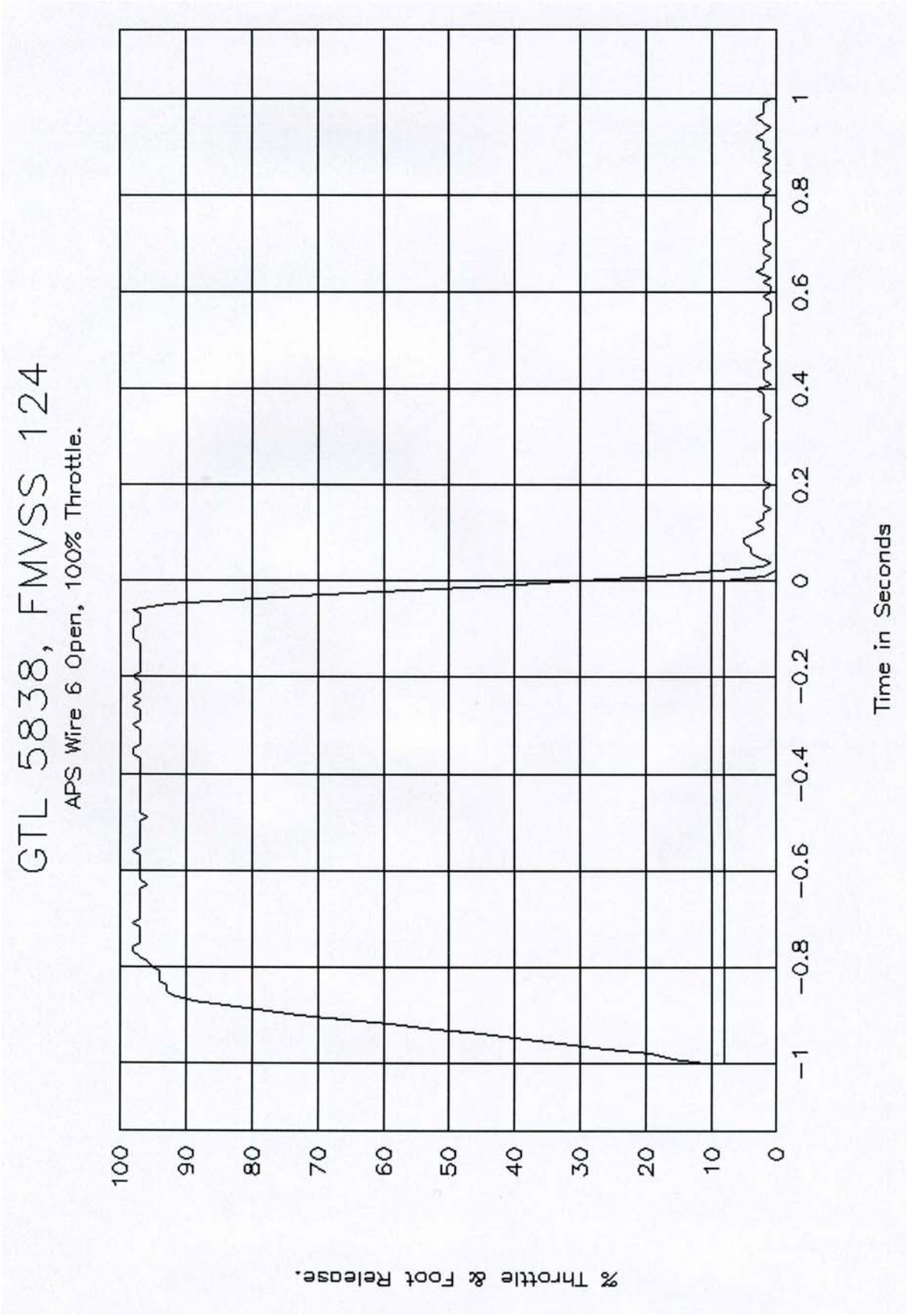
Time in Seconds


GTL 5838, FMVSS 124
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% Throttle & Foot Release.
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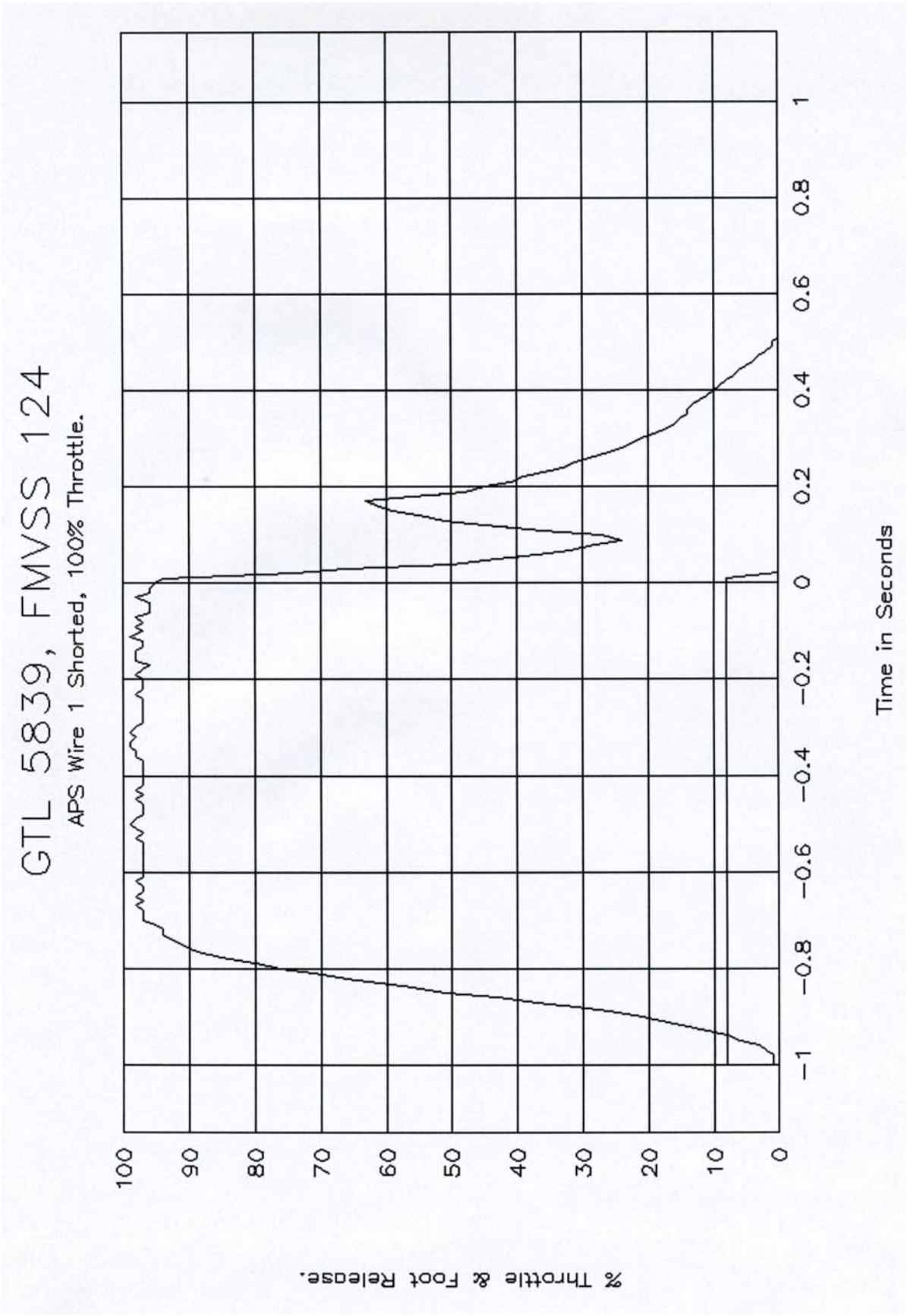
GTL 5839, FMVSS 124
APS Wire 1 Shorted, 100% Throttle.
% Throttle & Foot Release.
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80
70
60
50
40
30
20
10
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0.6
0.8
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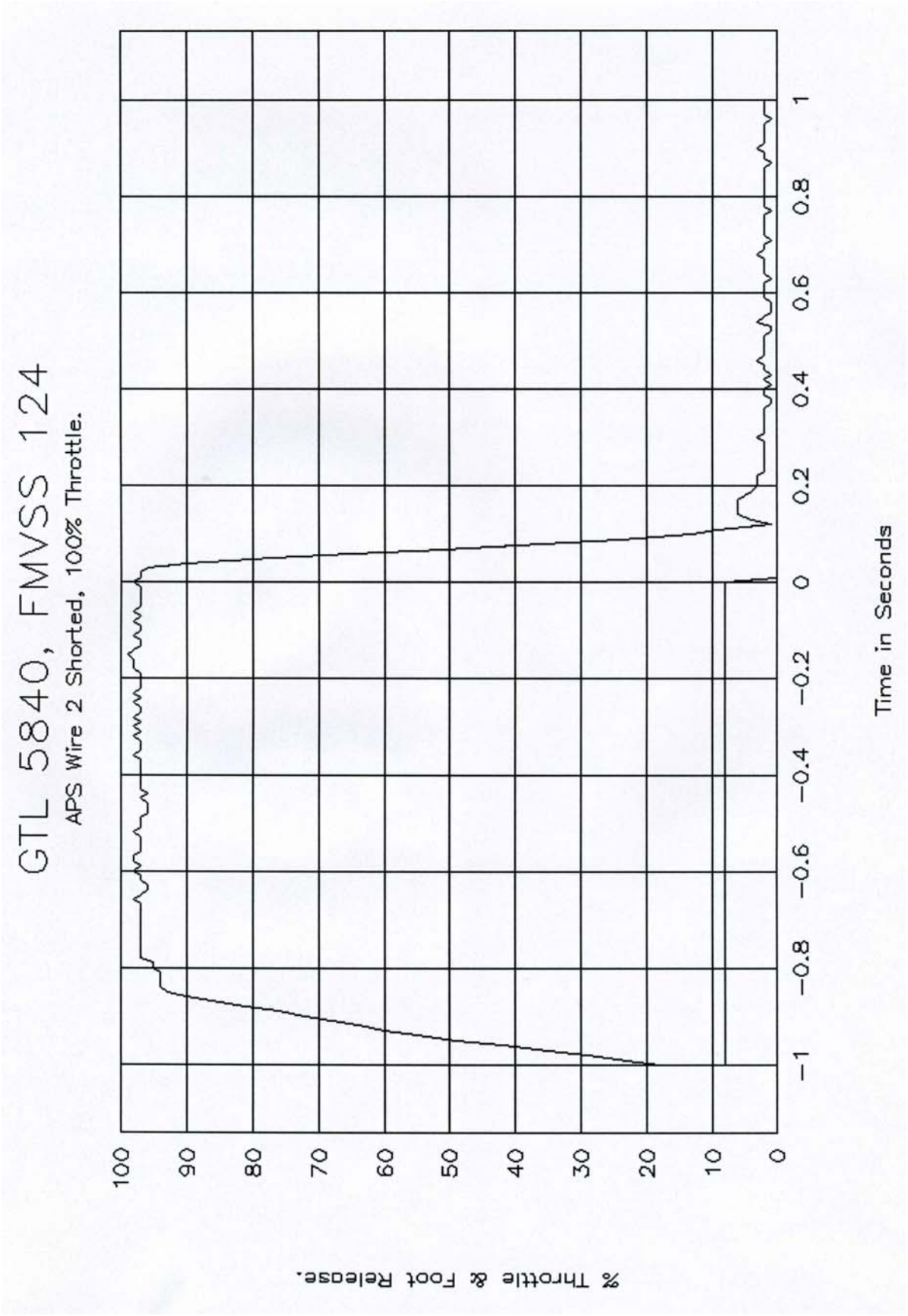
Time in Seconds


GTL 5840, FMVSS 124
APS Wire 2 Shorted, 100% Throttle.
% Throttle & Foot Release.
100
90
80
70
60
50
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30
20
10
0
-1
-0.8
-0.6
-0.4
-0.2
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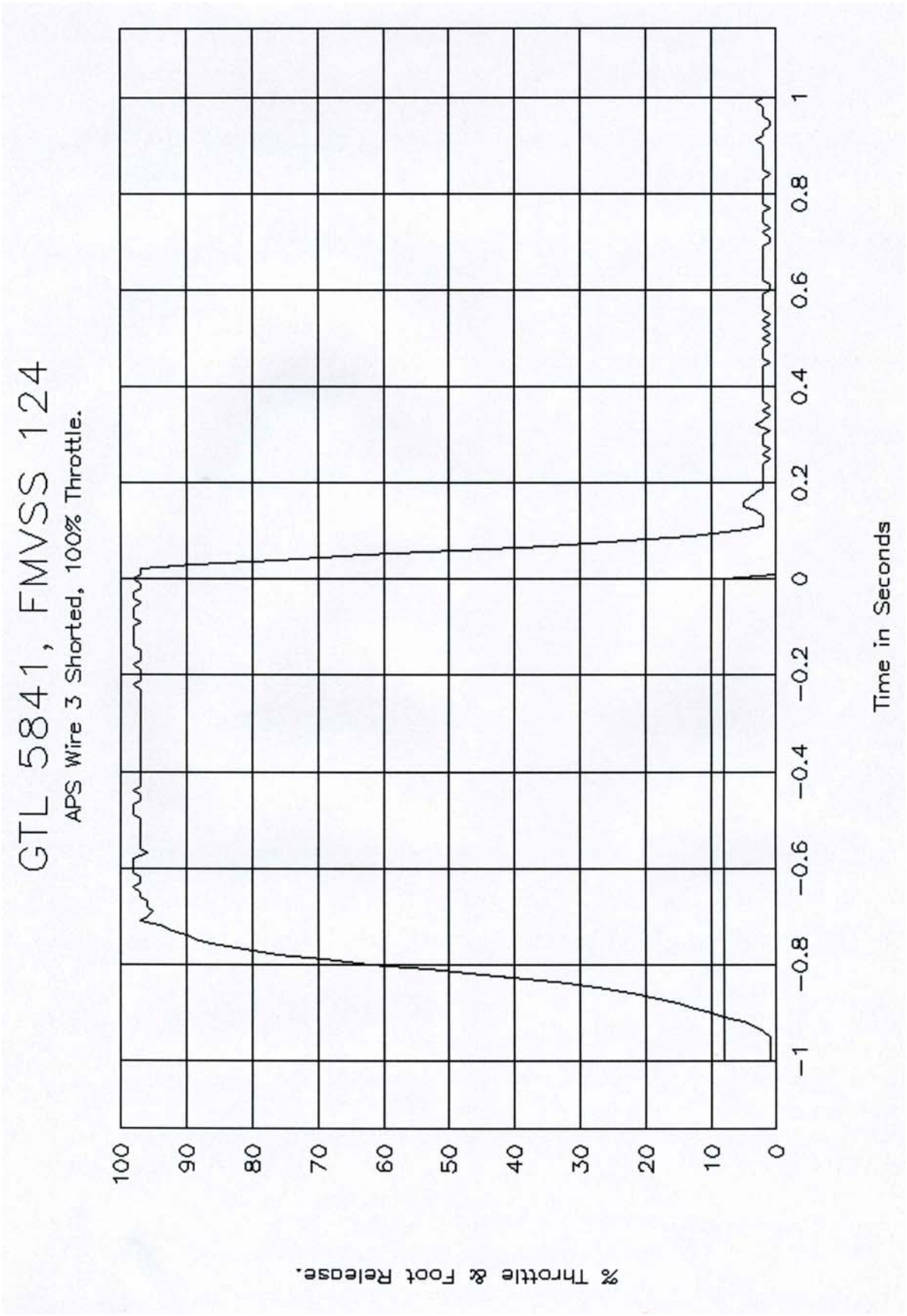
0.2
0.4
0.6
0.8
1
Time in Seconds


GTL 5841, FMVSS 124
APS Wire 3 Shorted, 100% Throttle.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
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-1
-0.8
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-0.4
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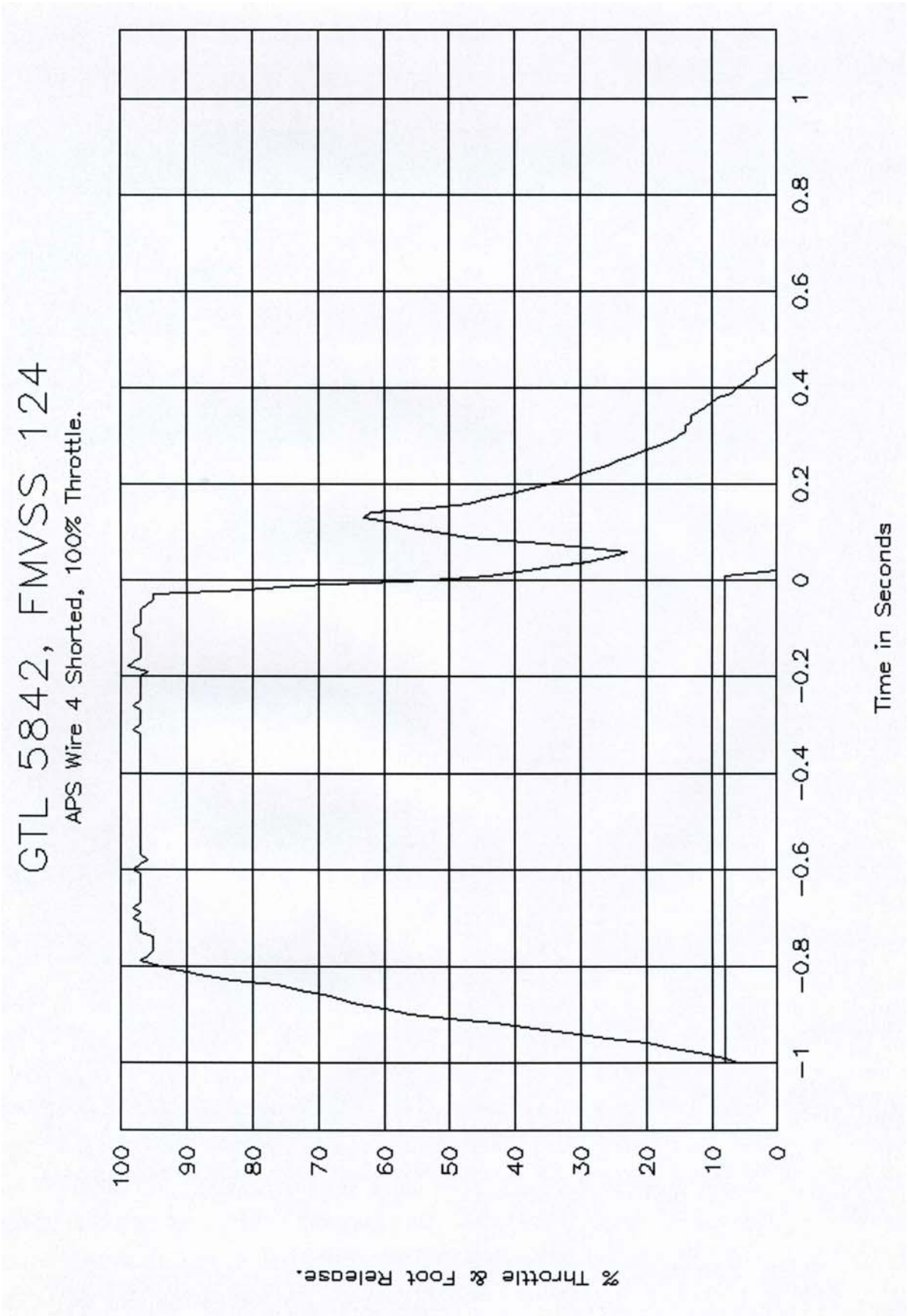
1
Time in Seconds


GTL 5842, FMVSS 124
APS Wire 4 Shorted, 100% Throttle.
% Throttle & Foot Release.
100
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-1
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-0.6
-0.4
-0.2
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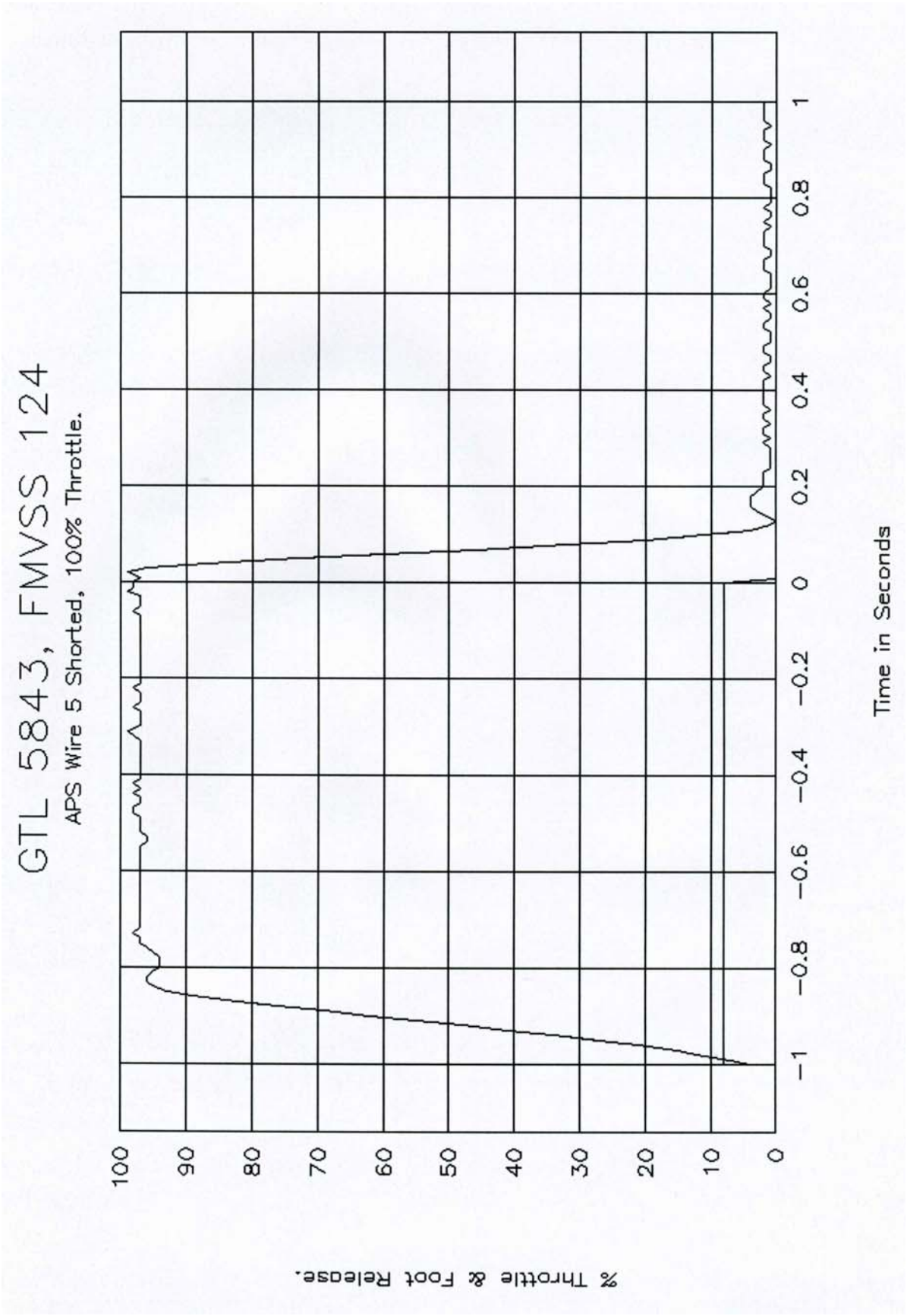
1
Time in Seconds


GTL 5843, FMVSS 124
APS Wire 5 Shorted, 100% Throttle.
% Throttle & Foot Release.
100
90
80
70
60
50
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-0.8
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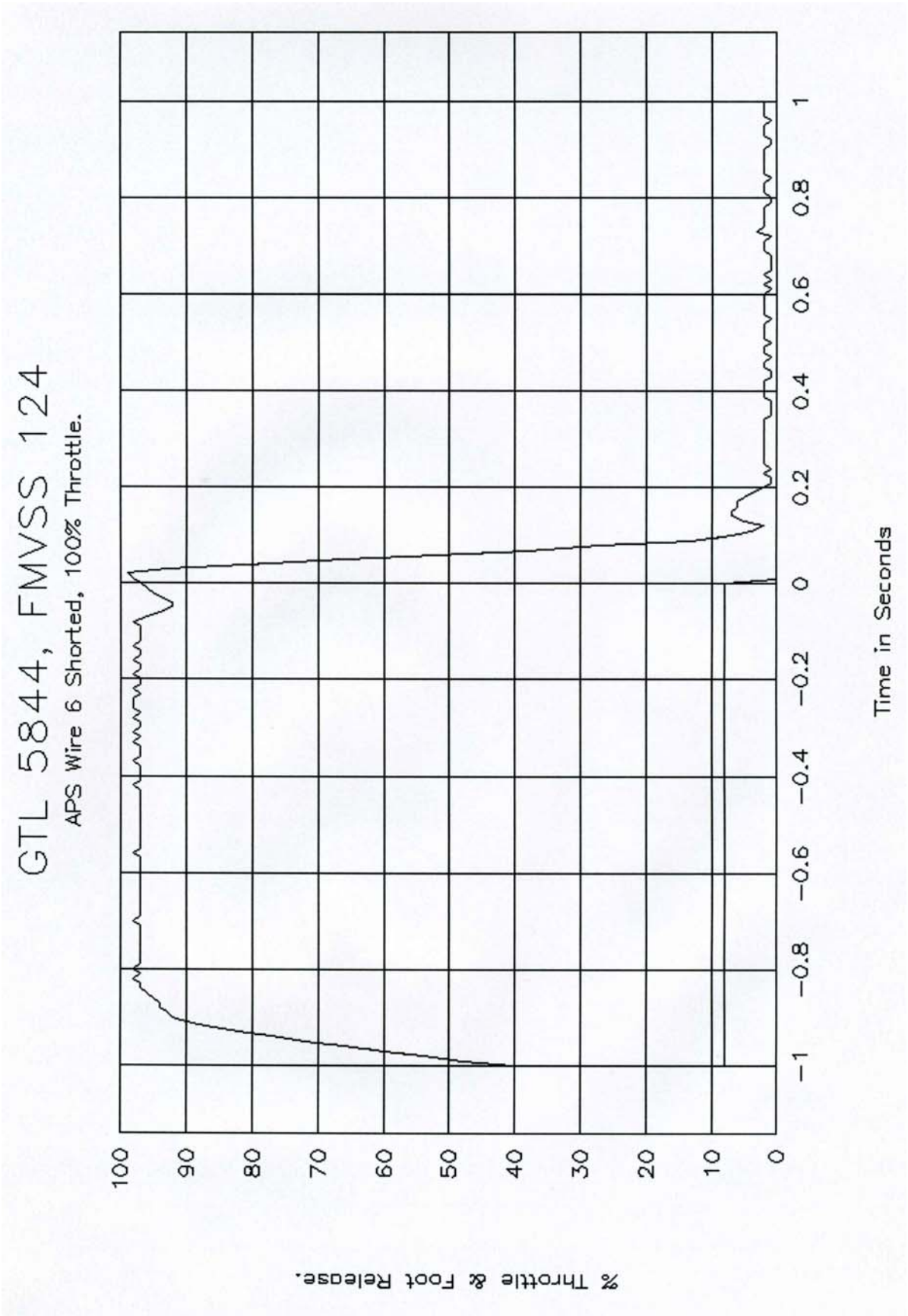
Time in Seconds


GTL 5844, FMVSS 124
APS Wire 6 Shorted, 100% Throttle.
% Throttle & Foot Release.
100
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-0.6
-0.4
-0.2
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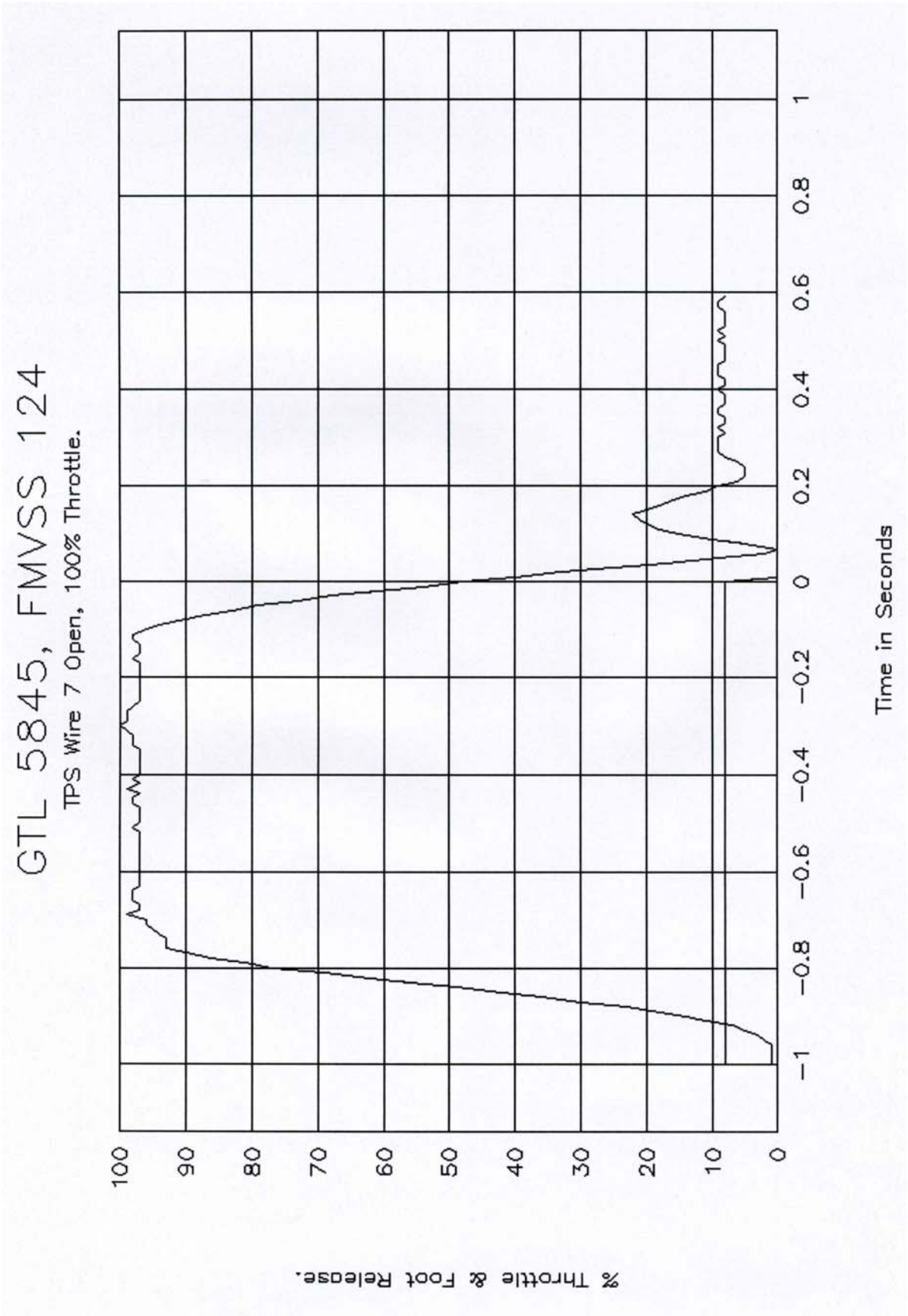
0.2
0.4
0.6
0.8
1
Time in Seconds


GTL 5845, FMVSS 124
TPS Wire 7 Open, 100% Throttle.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
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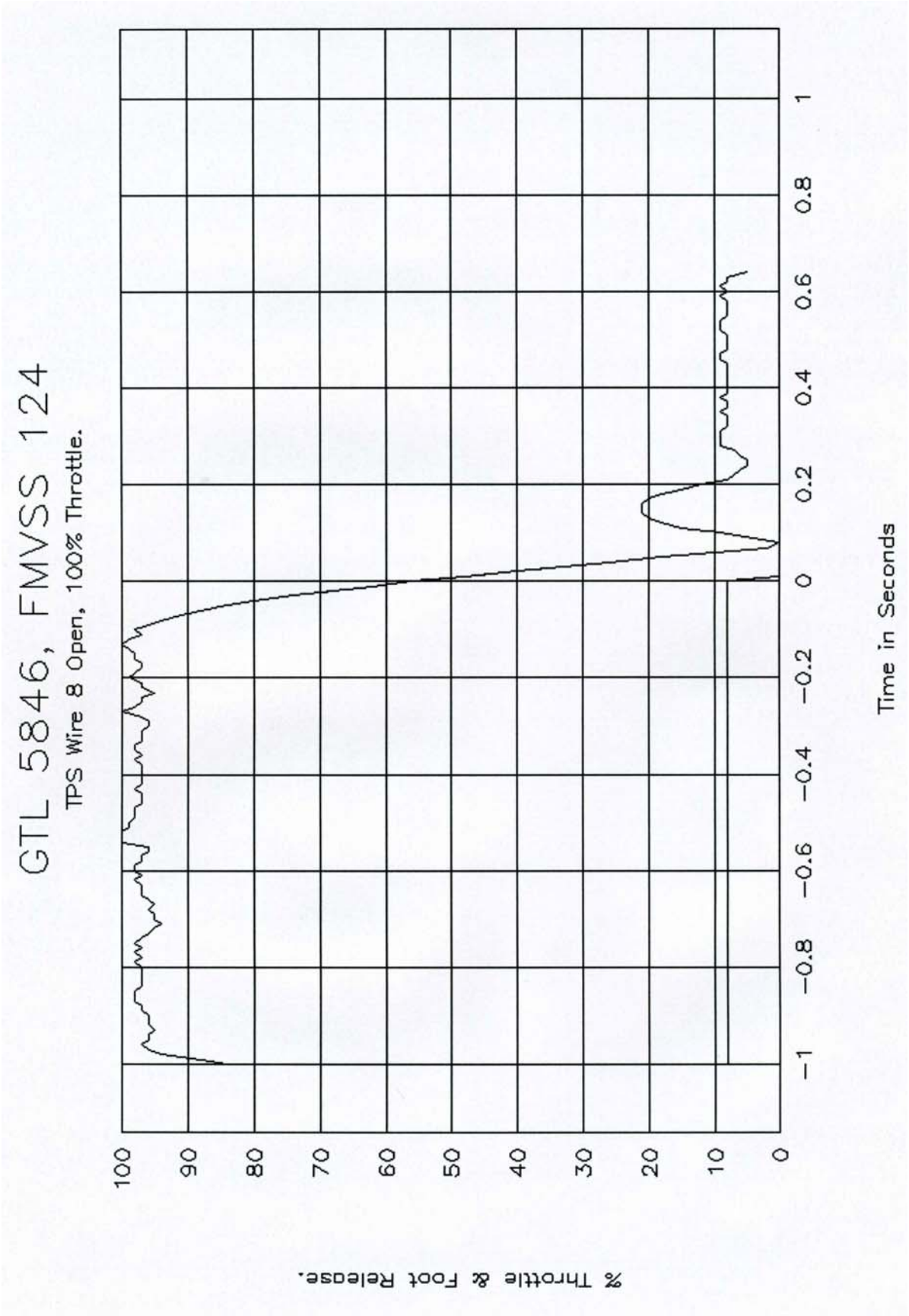
Time in Seconds


GTL 5846, FMVSS 124
TPS Wire B Open, 100% Throttle.
% Throttle & Foot Release.
100
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-0.4
-0.2
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0.2
0.4
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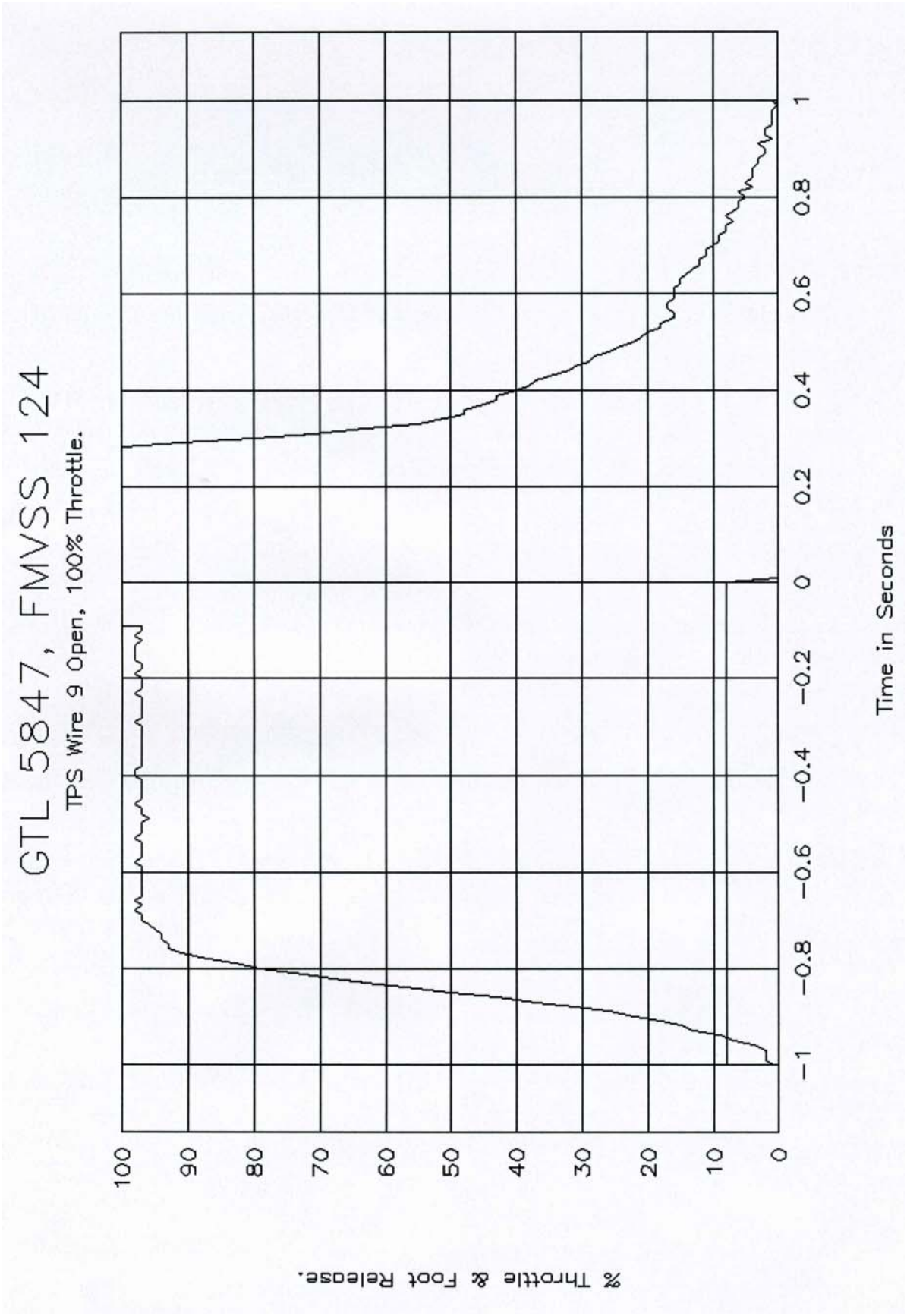
0.8
1
Time in Seconds


GTL 5847, FMVSS 124
TPS Wire 9 Open, 100% Throttle.
% Throttle & Foot Release.
100
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80
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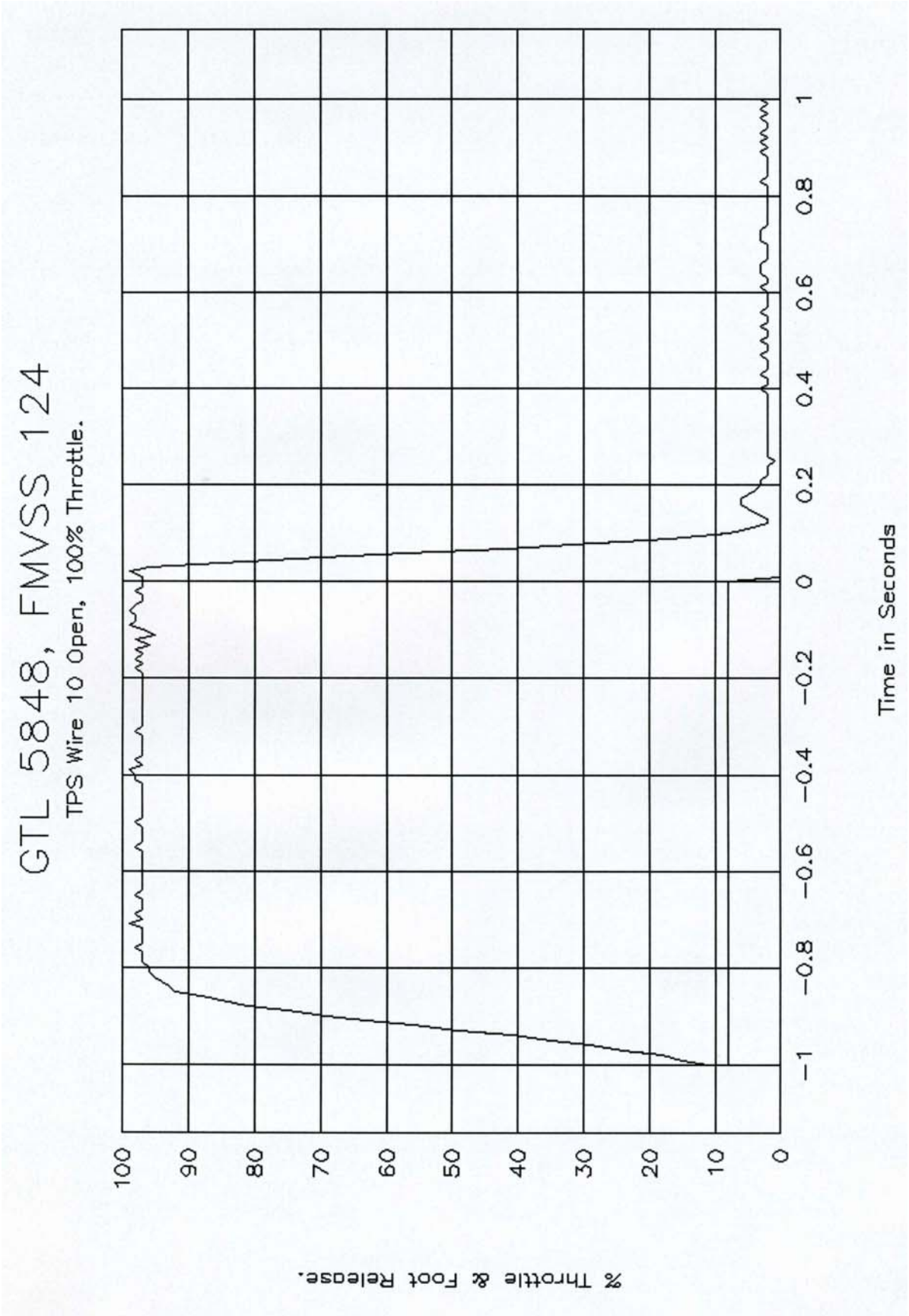
Time in Seconds


GTL 5848, FMVSS 124
TPS Wire 10 Open, 100% Throttle.
% Throttle & Foot Release.
100
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0.8
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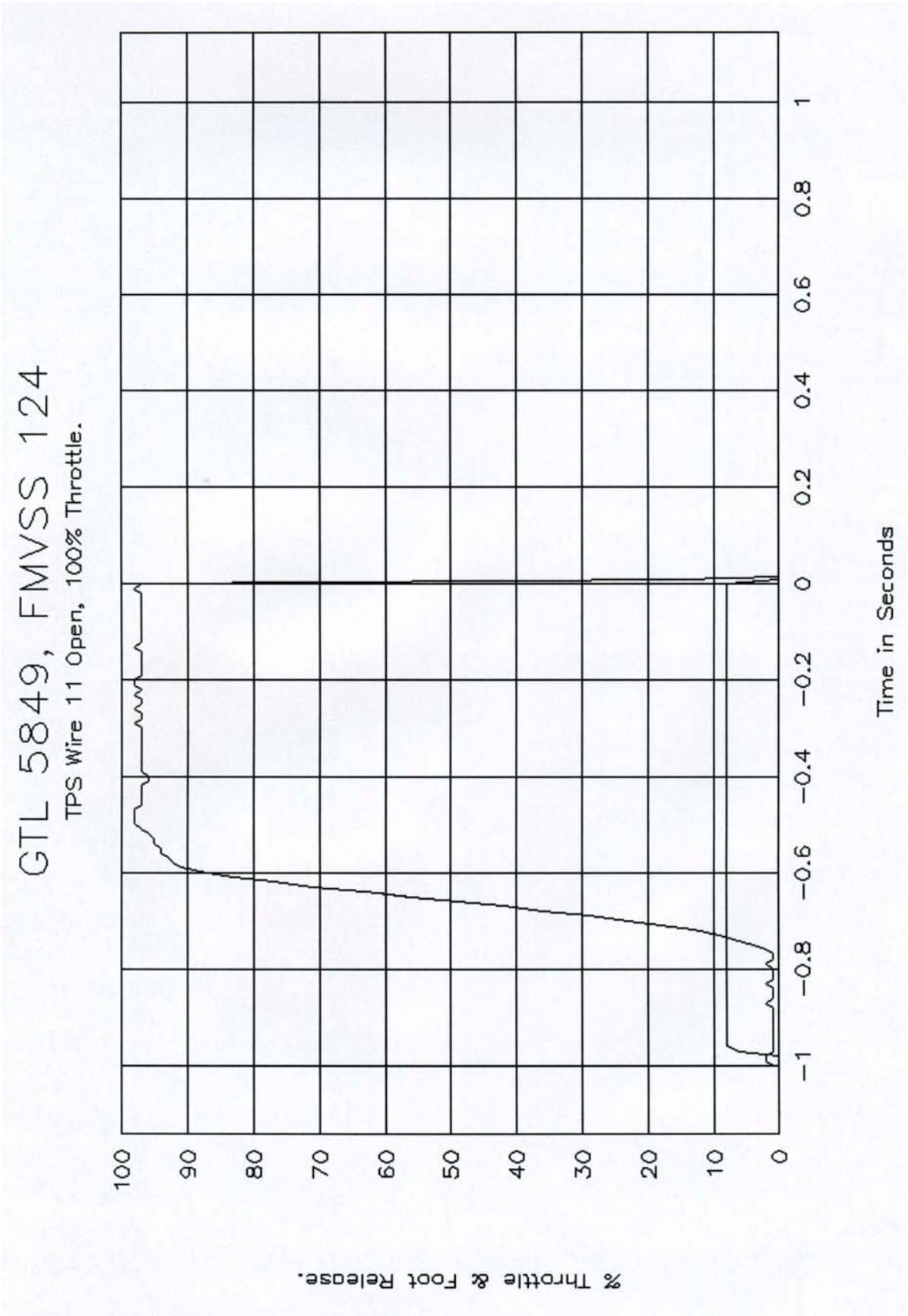
Time in Seconds


GTL 5849, FMVSS 124
TPS Wire 11 Open, 100% Throttle.
% Throttle & Foot Release.
100
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30
20
10
0
−1
−0.8
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−0.2
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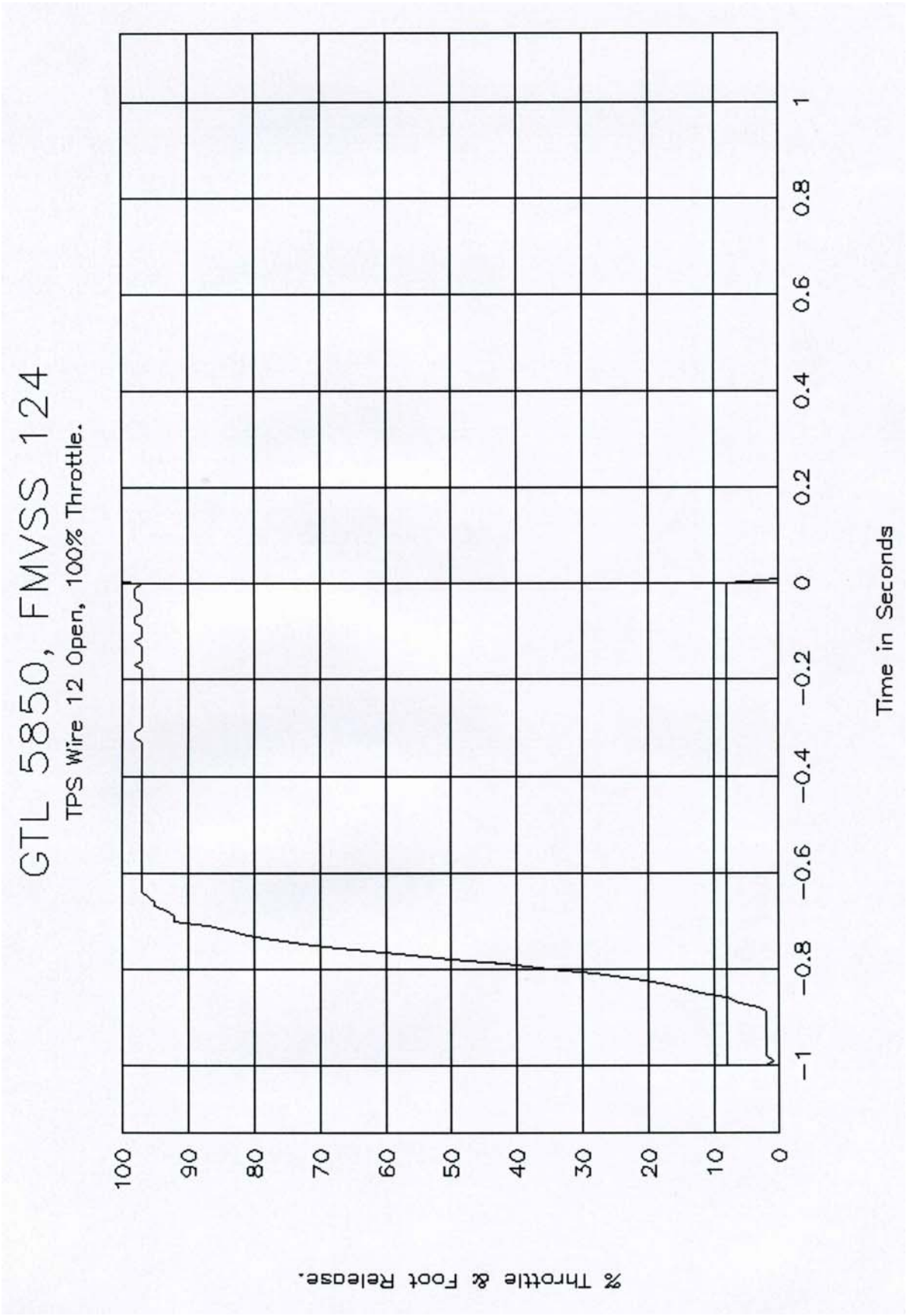
1
Time in Seconds


GTL 5850, FMVSS 124
TPS Wire 12 Open, 100% Throttle.
% Throttle & Foot Release.
100
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20
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−0.6
−0.4
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0.8
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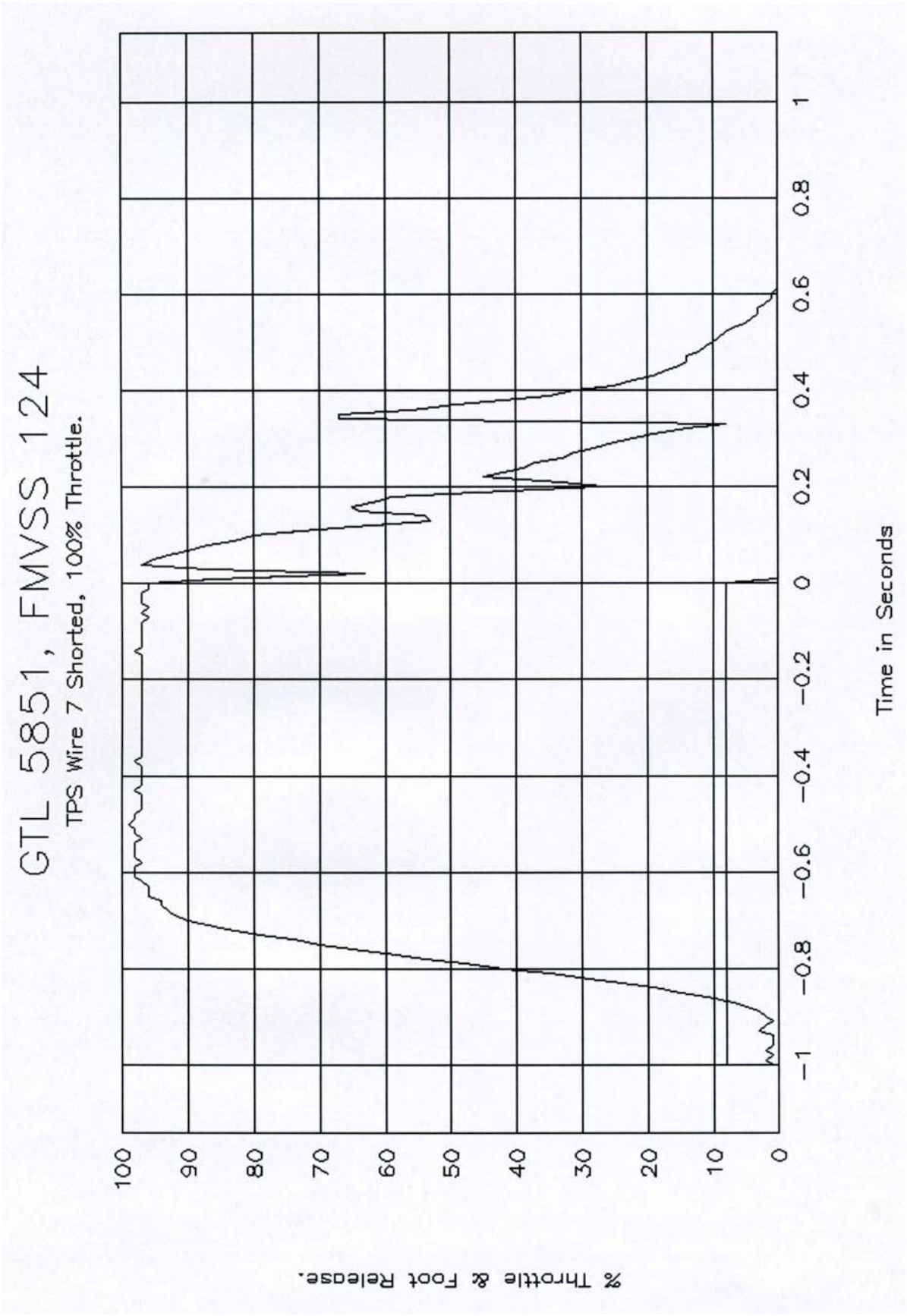
Time in Seconds


GTL 5851, FMVSS 124
TPS Wire 7 Shorted, 100% Throttle.
% Throttle & Foot Release.
100
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80
70
60
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30
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-1
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-0.4
-0.2
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0.2
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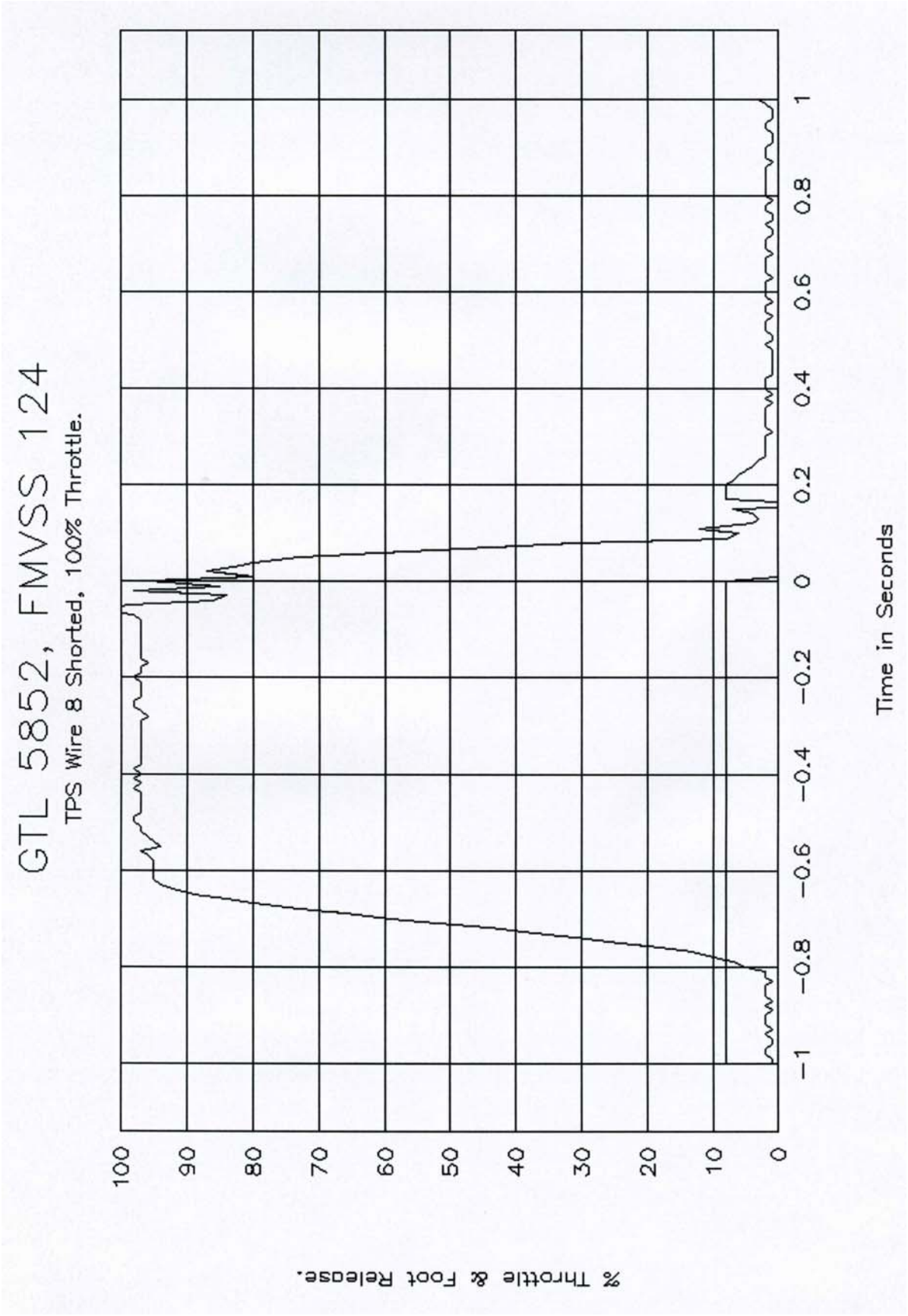
0.6
0.8
1
Time in Seconds


GTL 5852, FMVSS 124
TPS Wire 8 Shorted, 100% Throttle.
% Throttle & Foot Release.
100
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60
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40
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-0.6
-0.4
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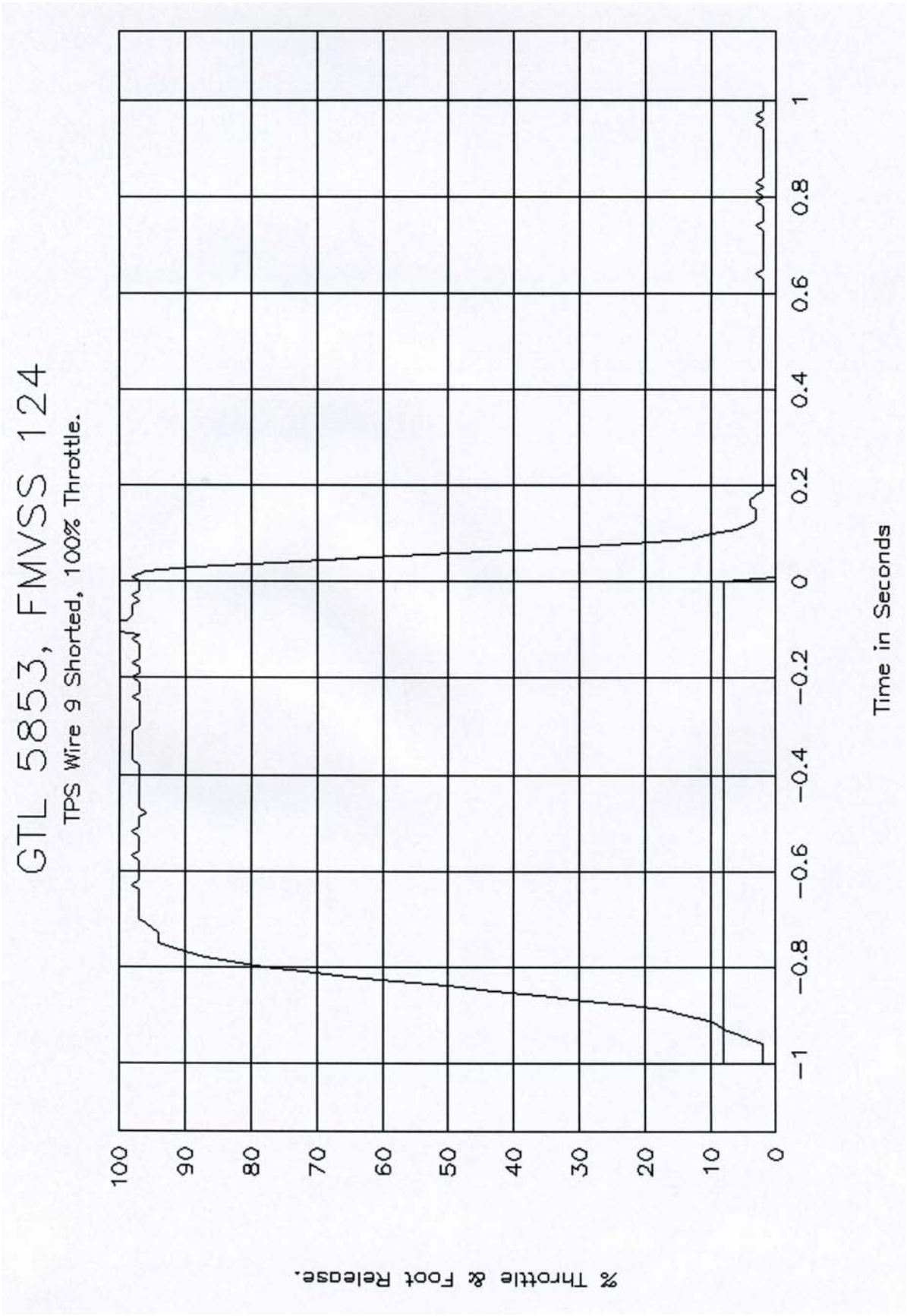
1
Time in Seconds


GTL 5853, FMVSS 124
TPS Wire 9 Shorted, 100% Throttle.
% Throttle & Foot Release.
100
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-0.6
-0.4
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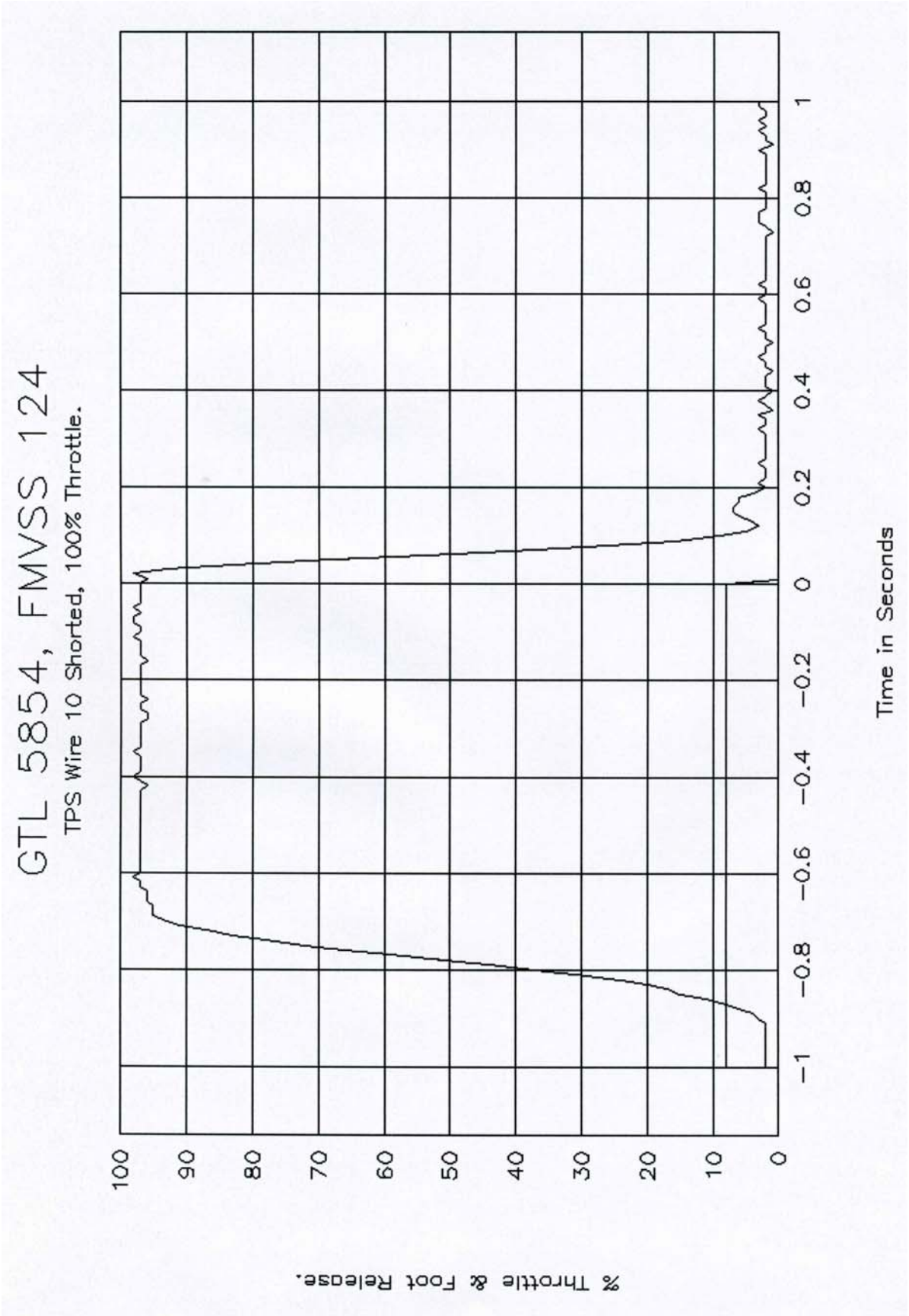
0.6
0.8
1
Time in Seconds


GTL 5854, FMVSS 124
TPS Wire 10 Shorted, 100% Throttle.
% Throttle & Foot Release.
100
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80
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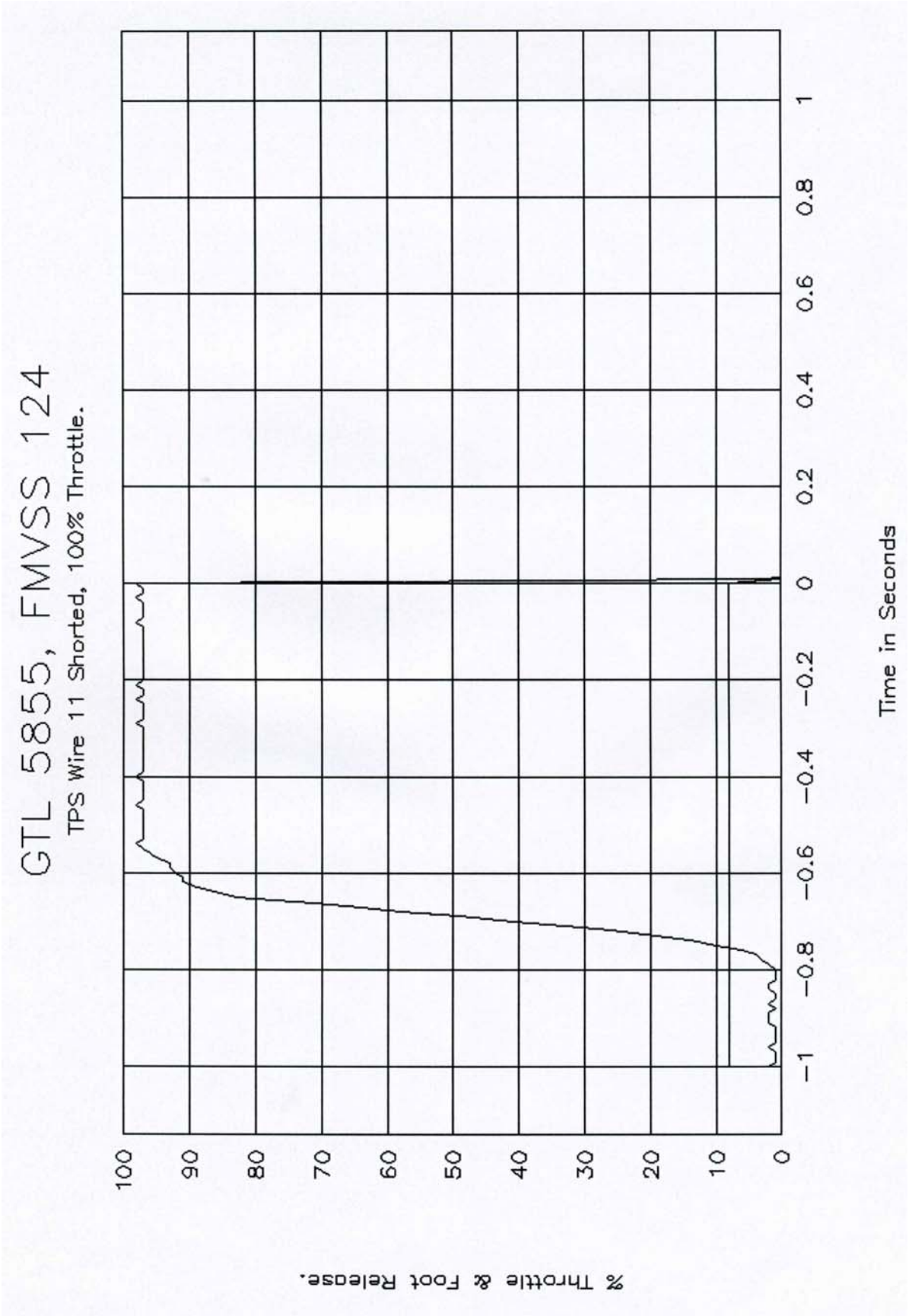
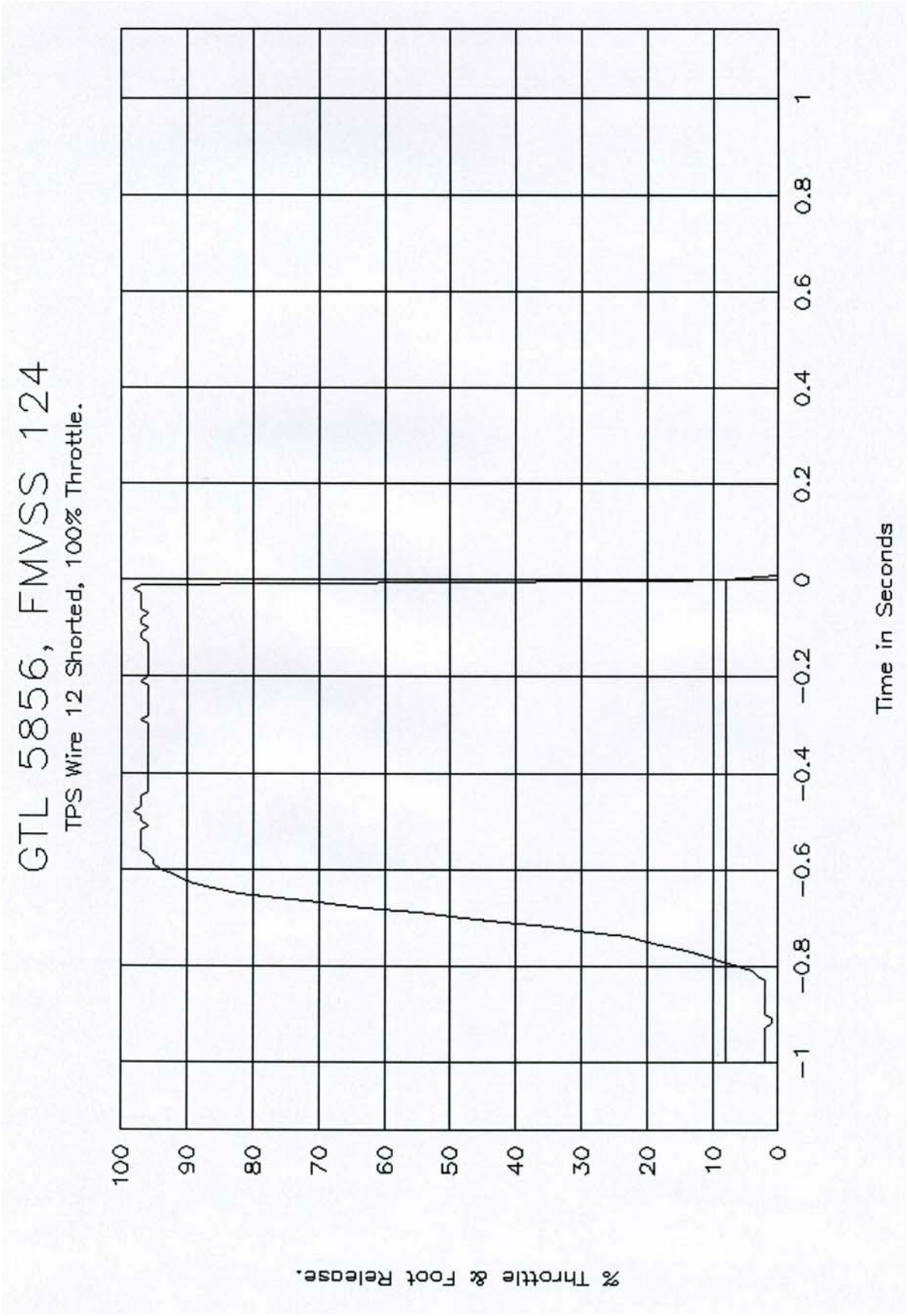
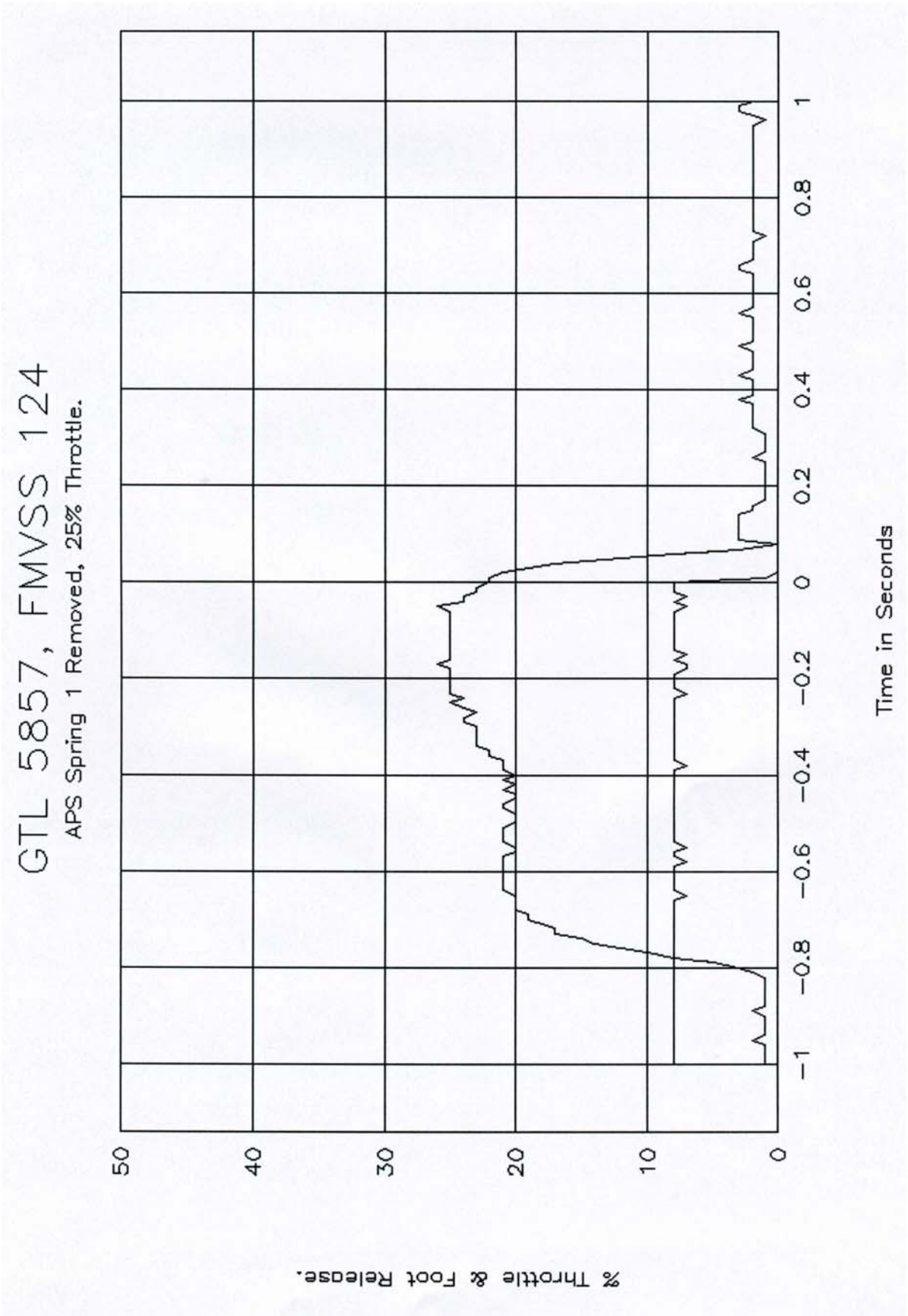
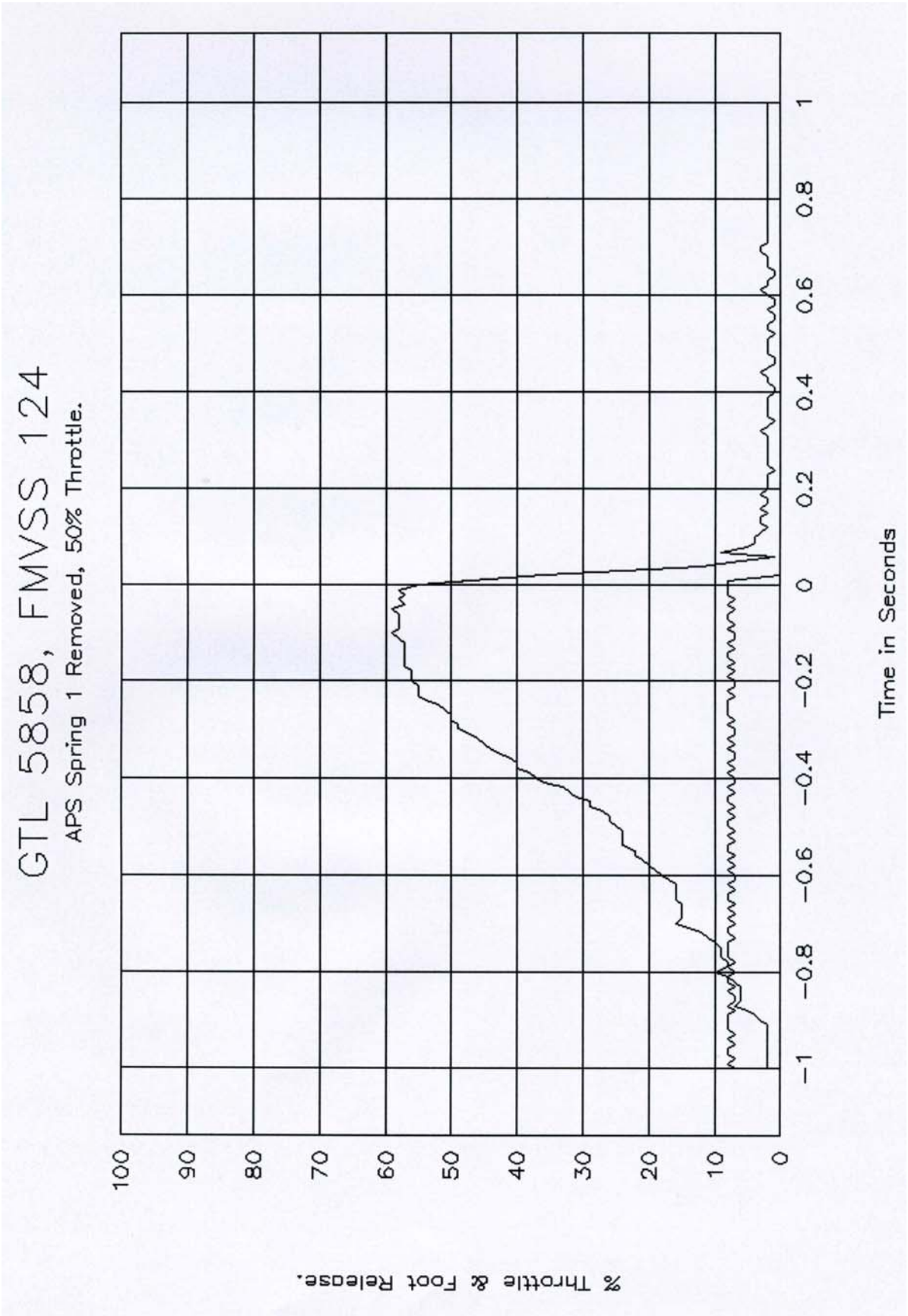
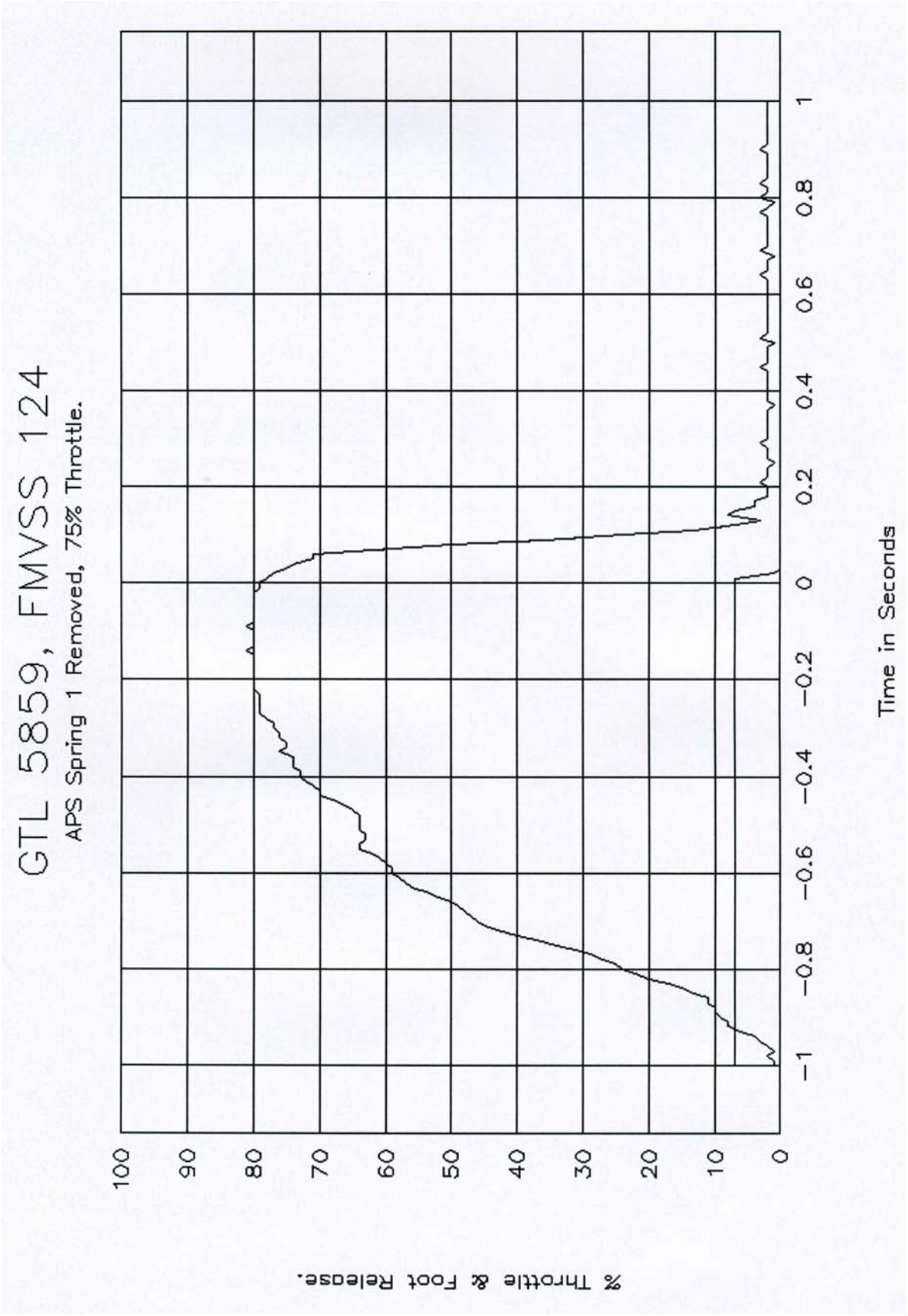
-1
-0.8
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
0.8
1
Time in Seconds


GTL 5855, FMVSS 124
TPS Wire 11 Shorted, 100% Throttle.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
Time in Seconds


GTL 5856, FMVSS 124
TPS Wire 12 Shorted, 100% Throttle.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-1
-0.8
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
0.8
1
Time in Seconds


GTL 5857, FMVSS 124
APS Spring 1 Removed, 25% Throttle.
% Throttle & Foot Release.
50
40
30
20
10
0
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
Time in Seconds


GTL 5858, FMVSS 124
APS Spring 1 Removed, 50% Throttle.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-1
-0.8
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
0.8
1
Time in Seconds


GTL 5859, FMVSS 124
APS Spring 1 Removed, 75% Throttle.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-1
-0.8
-0.6
-0.4
-0.2
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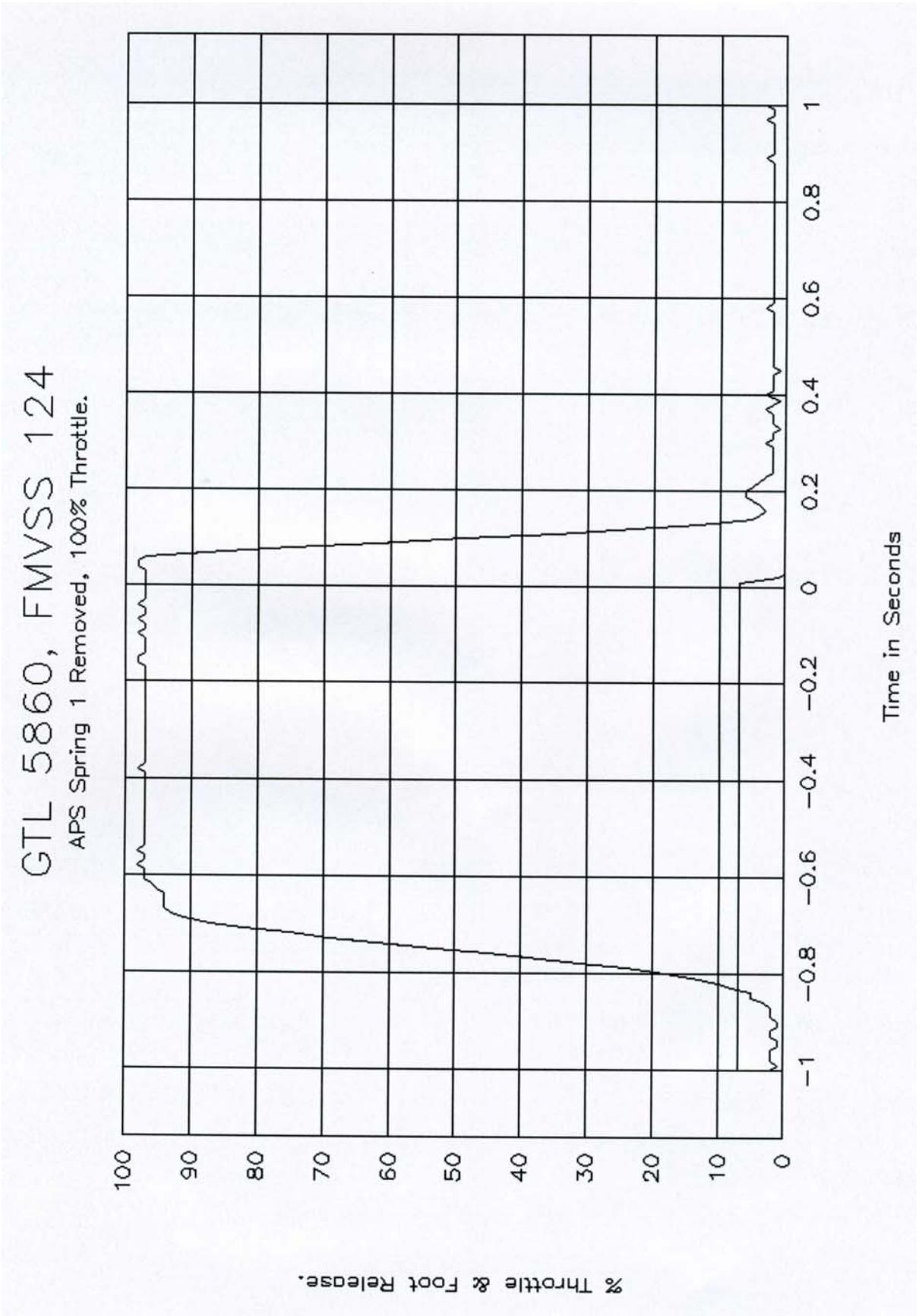
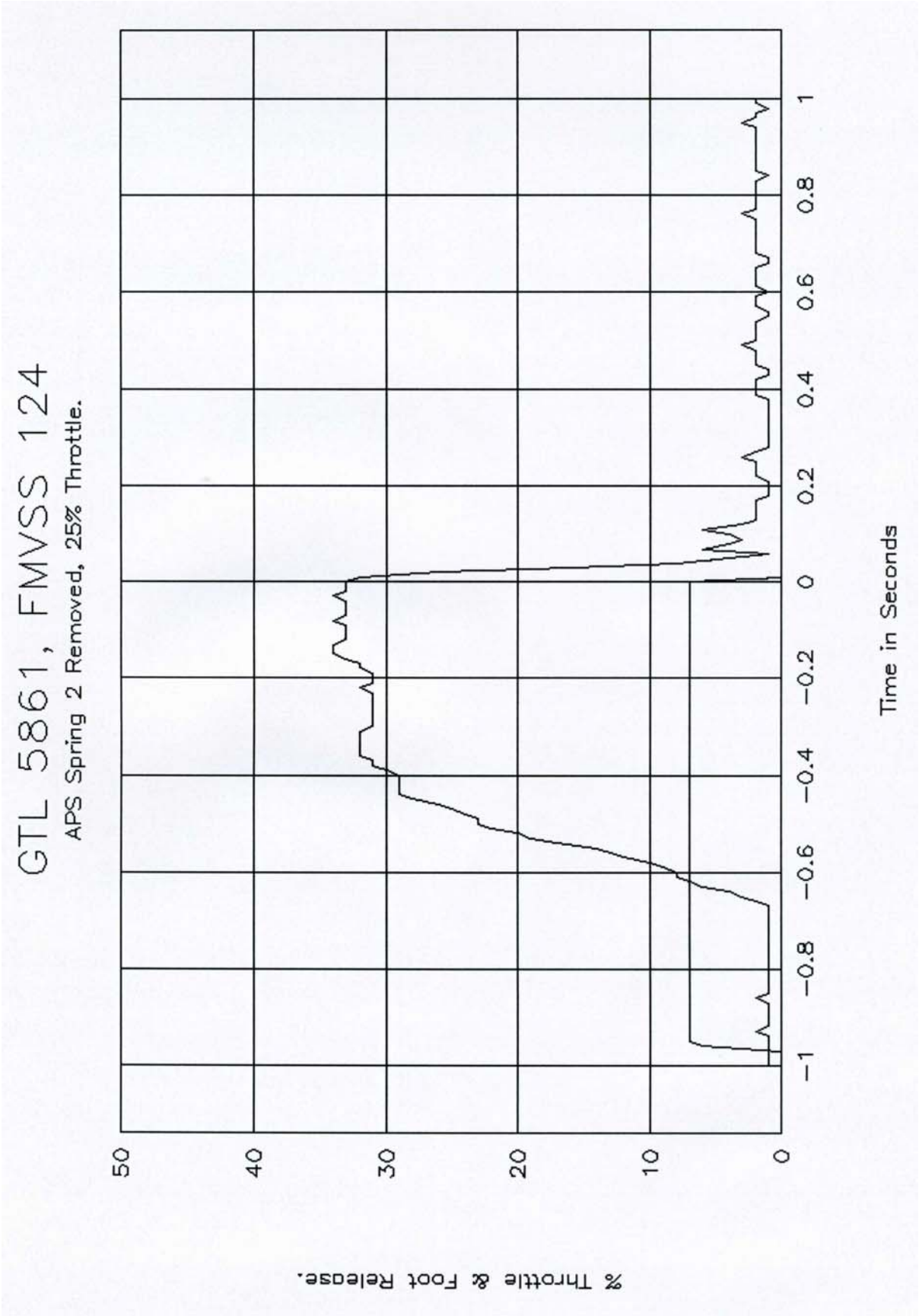
0.2
0.4
0.6
0.8
1
Time in Seconds


GTL 5860, FMVSS 124
APS Spring 1 Removed, 100% Throttle.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
Time in Seconds


GTL 5861, FMVSS 124
APS Spring 2 Removed, 25% Throttle.
% Throttle & Foot Release.
50
40
30
20
10
0
-1
-0.8
-0.6
-0.4
-0.2
0
0.2
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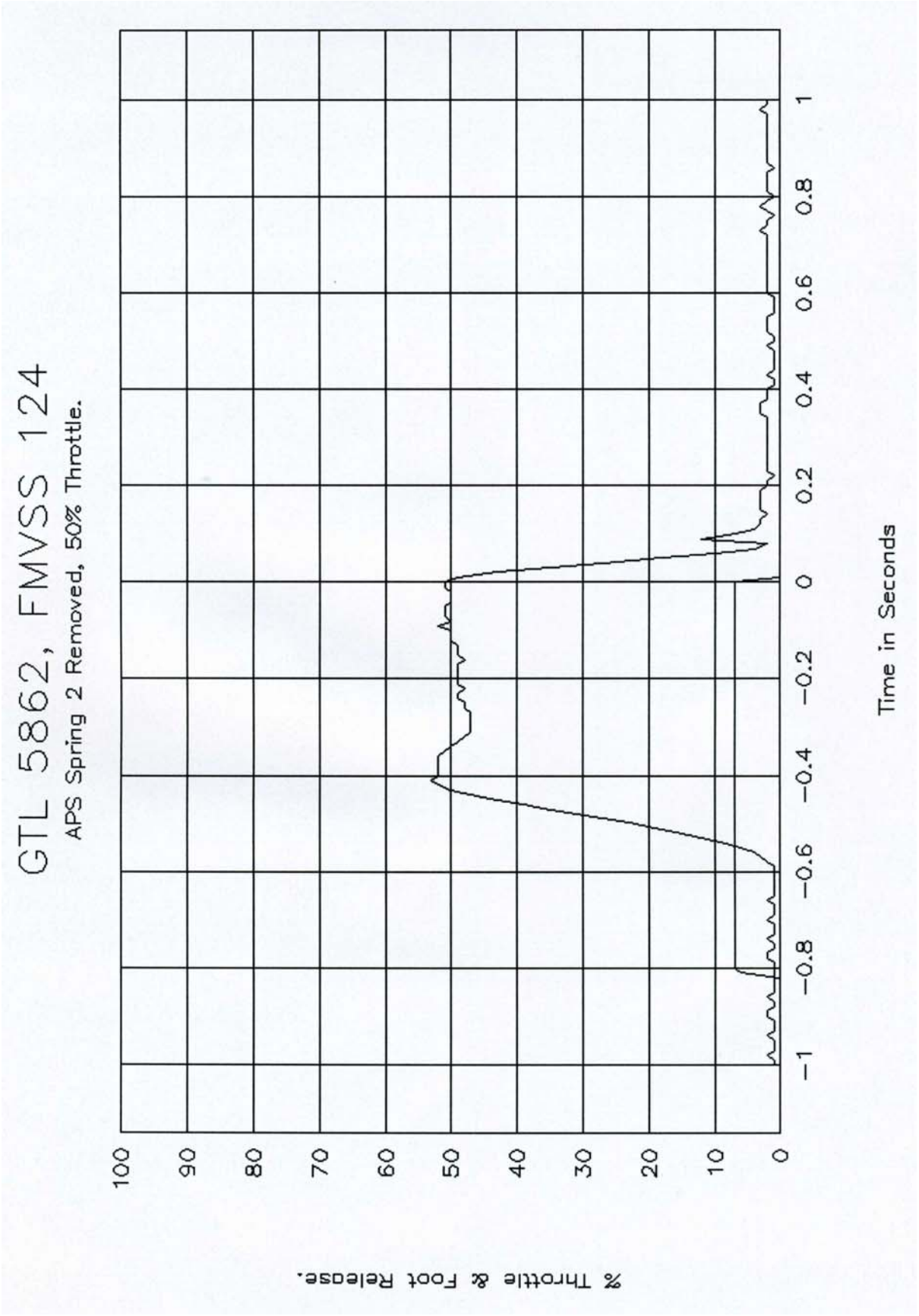
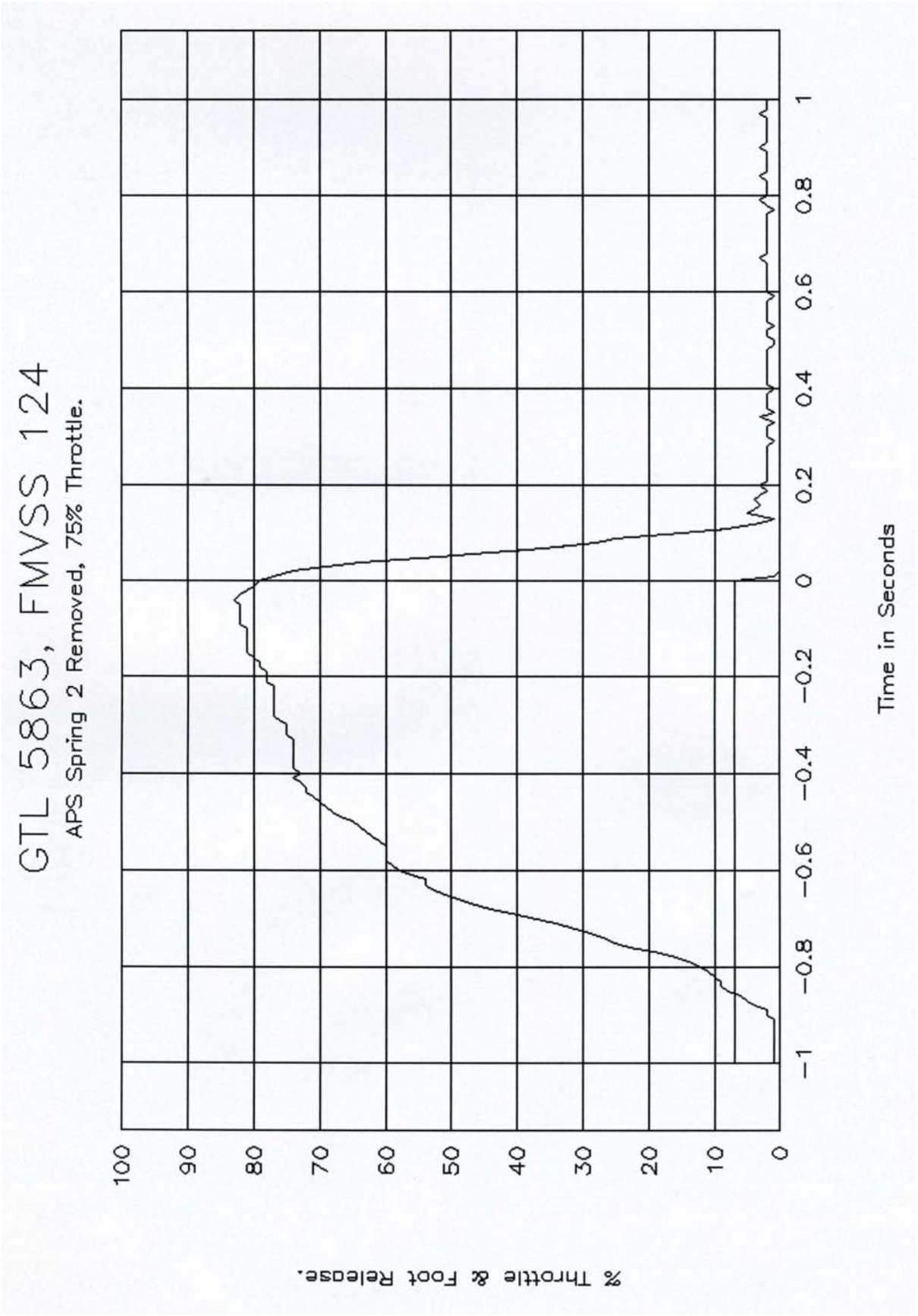
0.8
1
Time in Seconds


GTL 5862, FMVSS 124
APS Spring 2 Removed, 50% Throttle.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
Time in Seconds


GTL 5863, FMVSS 124
APS Spring 2 Removed, 75% Throttle.
% Throttle & Foot Release.
100
90
80
70
60
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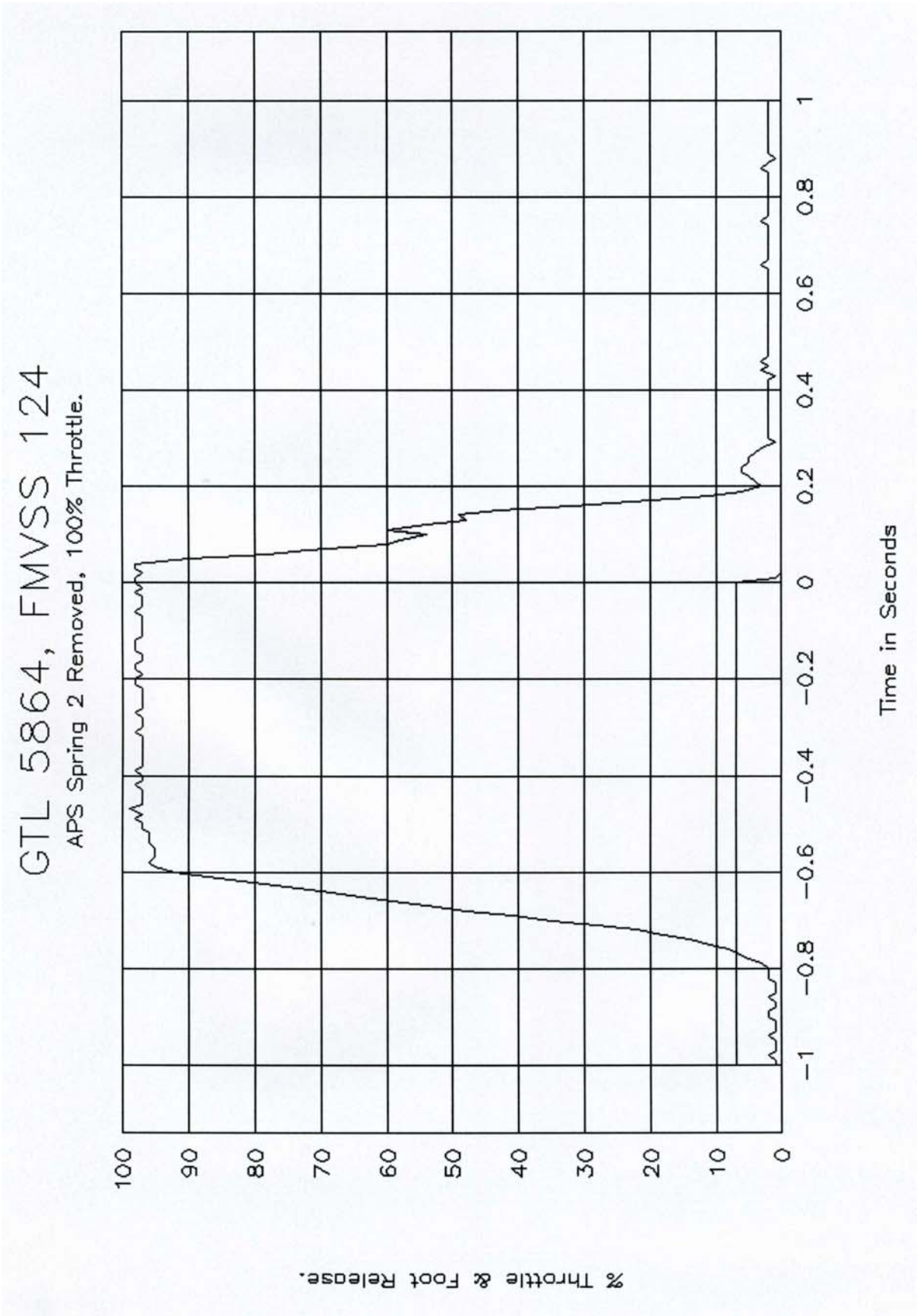
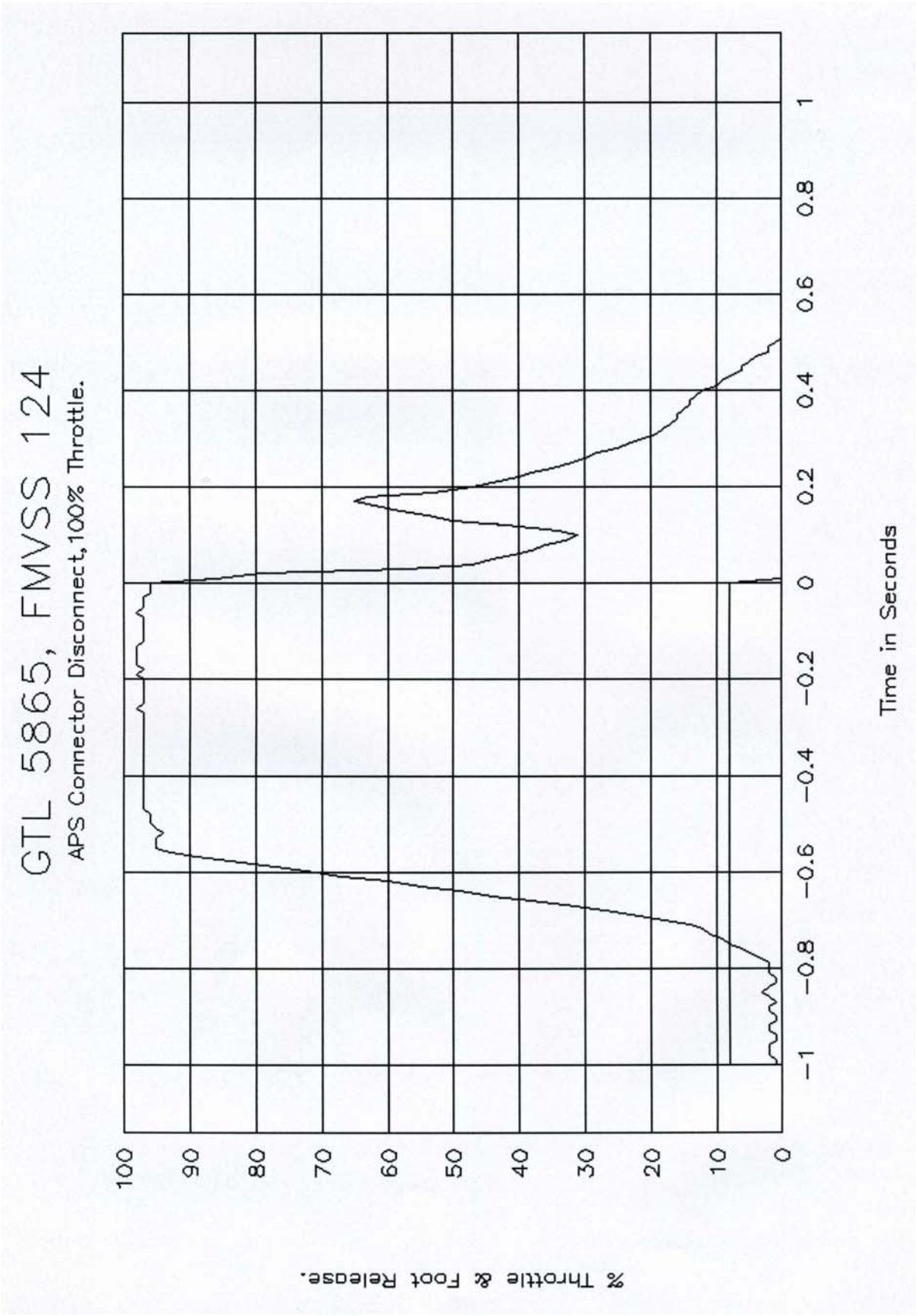
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
Time in Seconds


GTL 5864, FMVSS 124
APS Spring 2 Removed, 100% Throttle.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
−1
−0.8
−0.6
−0.4
−0.2
0
0.2
0.4
0.6
0.8
1
Time in Seconds


GTL 5865, FMVSS 124
APS Connector Disconnect, 100% Throttle.
% Throttle & Foot Release.
100
90
80
70
60
50
40
30
20
10
0
-1
-0.8
-0.6
-0.4
-0.2
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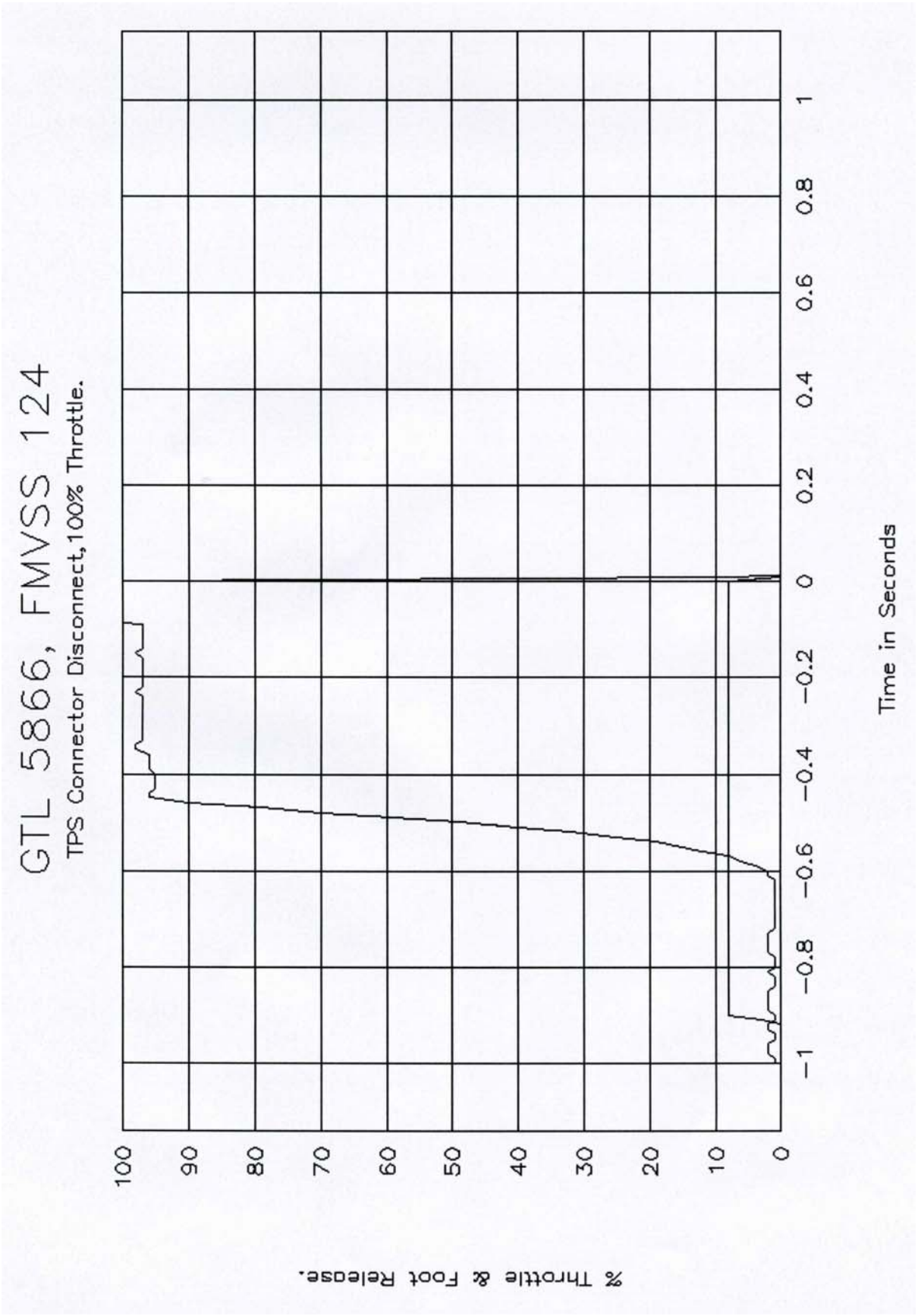
0.2
0.4
0.6
0.8
1
Time in Seconds


GTL 5866, FMVSS 124
TPS Connector Disconnect, 100% Throttle.
% Throttle & Foot Release.
100
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70
60
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−1
−0.8
−0.6
−0.4
−0.2
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0.2
0.4
0.6
0.8
1
Time in Seconds

SECTION 7
MANUFACTURER'S DRAWINGS

FORM – 124
Rev. 10/24/2003

VEHICLE INFORMATION / TEST SPECIFICATIONS

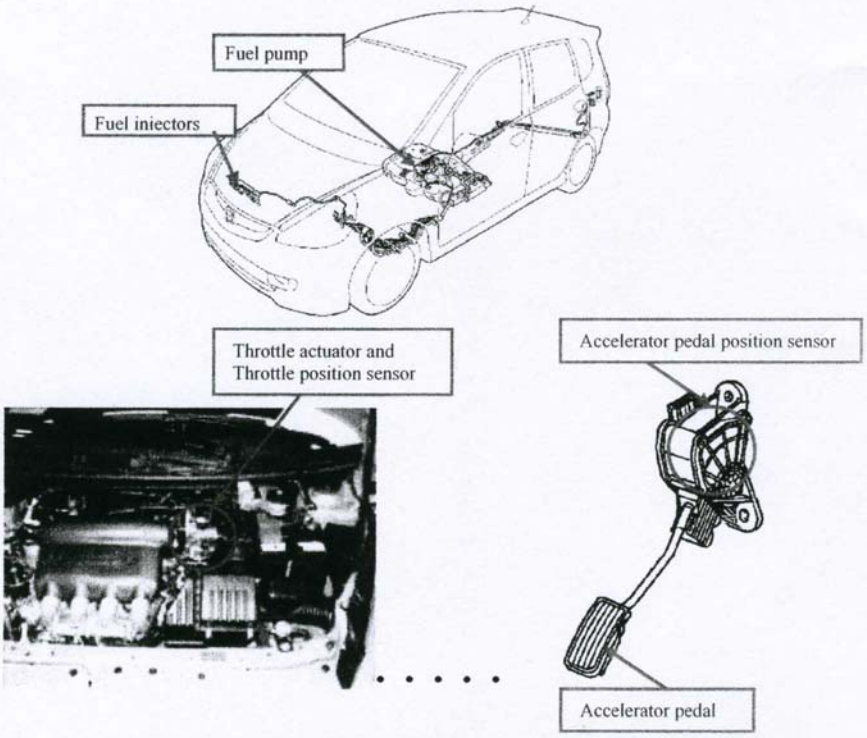
FMVSS No. 124

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).

   Refer to Fig.1.

Fig.1 Accelerator control system of 07MY Fit



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

   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)

Air throttle plate position is used.

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

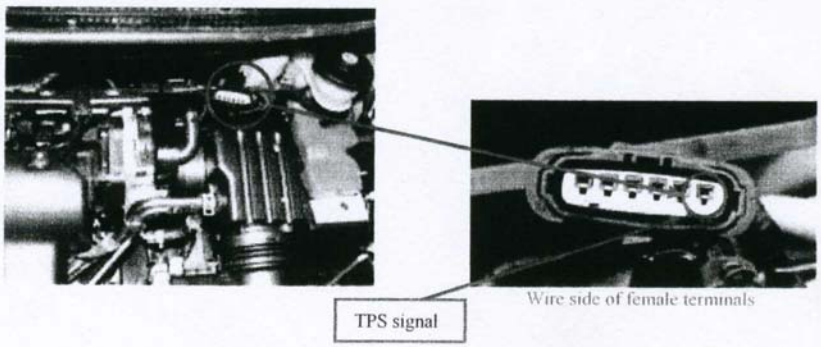
A. Accelerator Pedal Position Sensor (APS)
B. Throttle Plate Position Sensor (TPS)
C. Electronic Control Module (ECM)
D. Air throttle plate actuator motor

A,B,C and D.

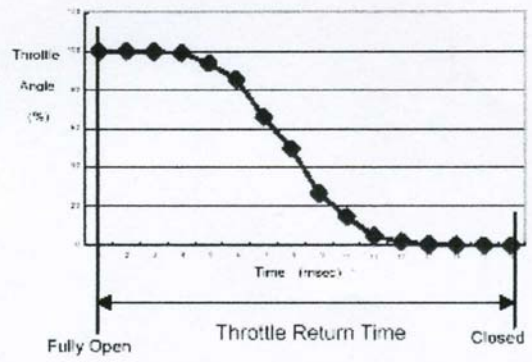
5. If air throttle plate equipped, is there a procedure which can be utilized by the test laboratory to measure the position of the throttle plate by tapping into the TPS or ECM? If so, please describe.

Please see Fig.2 below. The pin at right side of Throttle body 6P connector is a signal source of Throttle plate position sensor(TPS). Therefore, by receiving its signal to X-Y recorder and connecting minus side to a body ,this system can measure a throttle position. And also, it can measure the switching rate when the idle positions voltage is measured and determined as 0% and the full throttle voltage is 100%. By recording the voltage differences of (TPS),it can measure the return speed of accelerator.

Fig.2 Throttle body 6P connector(TPS signal)



Example of the throttle return



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

1.Primary return spring.(Refer Fig.4)
2.Secondary return spring.(Refer Fig.4)
3.Throttle body return spring.(Refer Fig.5)
4.Air throttle plate actuator motor.(Refer Fig.5)

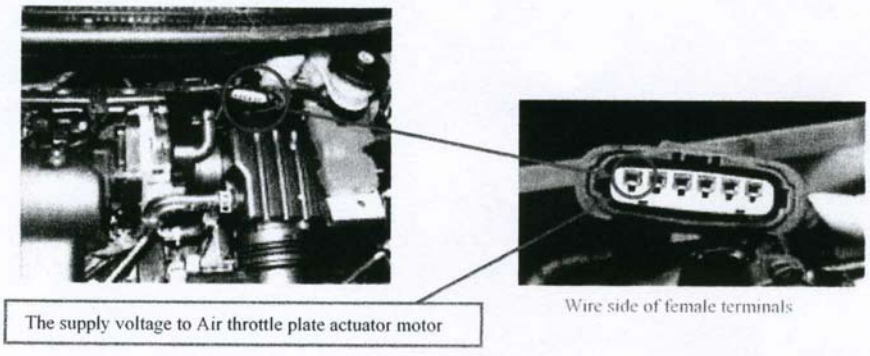
7. Where applicable, were connections in the ACS beyond the ECM such as the fuel injectors tested for disconnection and severance. If yes, provide details.

No

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

Please see Fig.3 below. The pin at the left side of Throttle body 6Pconnector is the supply voltages. Therefore, by blocking this voltage, the electronic disconnection can be repeated.

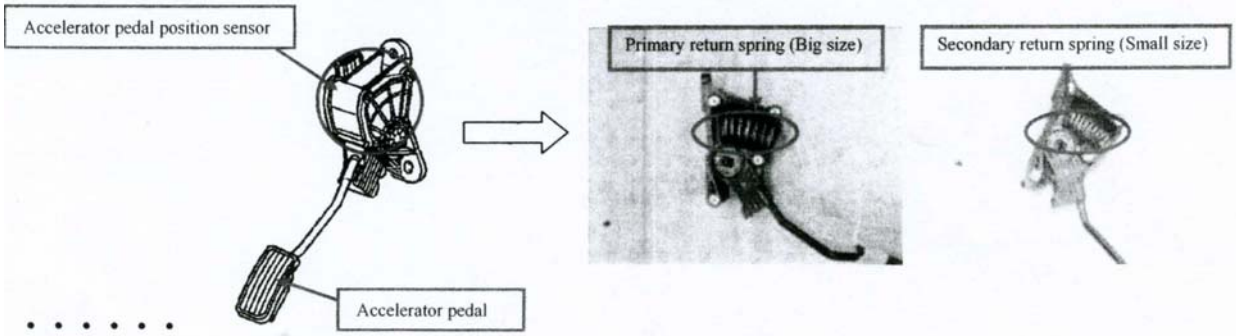
Fig.3 Throttle Body 6P Connector(The supply voltage to plate actuator motor)



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

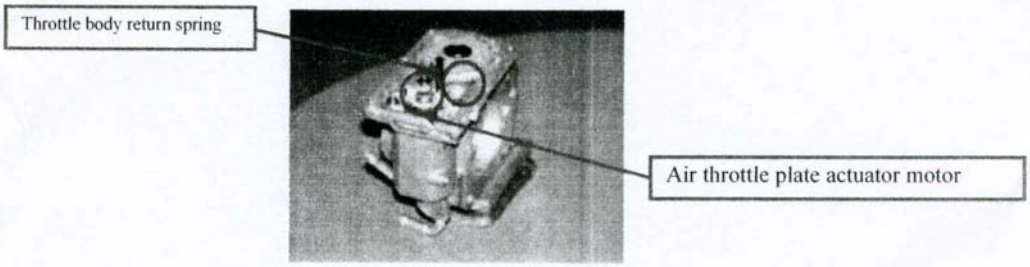
- The primary and secondary springs of Accelerator position sensor.(Fig.4)

Fig.4 Accelerator position sensor



- Throttle body return spring(Fig.5)

Fig.5 Throttle body 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.

N.A

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.

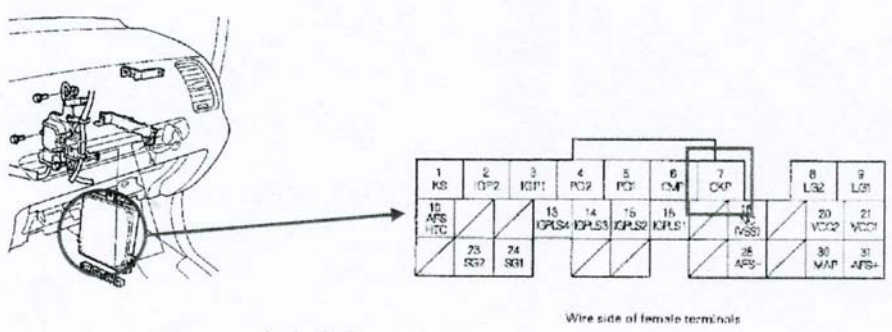
It can be operated by removing the Accelerator position sensor connector or

Throttle body 6Pconnector.

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

Fig.6 shows ECM connector (31pin). The information from the pin No.7 of this connector is the signal from CKP(Crankshaft position sensor). The frequency is expressed by the conversion rate,100[rpm]=1.67[Hz], when a cycle is 13pulse.

Fig.6 ECM connector (31pin)



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