

Injection Mode Active Test Diagnostics

Service Category Engine/Hybrid System

Section Engine Control

Market USA

Toyota Supports
 ASE Certification 

Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION
2019 - 2021	Avalon, Corolla Hatchback, RAV4	VDS(s): A1RFV, A4MBE, AZ1FB Engine(s): A25, M20, 2GR
2018 - 2021	Camry	VDS(s): BZ1HK, FZ1AK Engine(s): A25, 2GR
2020 - 2021	Corolla	VDS(s): M4MCE Engine(s): M20
2017 - 2021	Highlander, Sienna	VDS(s): CZRAH Engine(s): 2GR
2016 - 2021	Tacoma	VDS(s): AZ5CN Engine(s): 2GR

Introduction

This Service Bulletin provides a procedure to properly perform the Techstream “Control the Injection Mode” active test in some 2016 – 2021 model year Toyota vehicles equipped with an FKS engine.

Warranty Information

OP CODE	DESCRIPTION	TIME	OFF	T1	T2
N/A	Not Applicable to Warranty	–	–	–	–

Injection Mode Active Test Diagnostics

Required Tools & Equipment

REQUIRED EQUIPMENT	SUPPLIER	PART NUMBER	QTY
Techstream ADVi*	ADE	TSADVUNIT	1
Techstream 2.0		TS2UNIT	
Techstream Lite		TSLITEPDLR01	
Techstream Lite (Green Cable)		TSLP2DLR01	

*Essential SST.

NOTE

- Only ONE of the Techstream units listed above is required.
- Software version 15.30.027 or later is required.
- Additional Techstream units may be ordered by calling Approved Dealer Equipment (ADE) at 1-800-368-6787.

Test Procedure

1. Using Techstream, navigate to *Active Test – Control the Injection Mode*.
2. Verify the execute conditions are met to perform the active test.

NOTICE

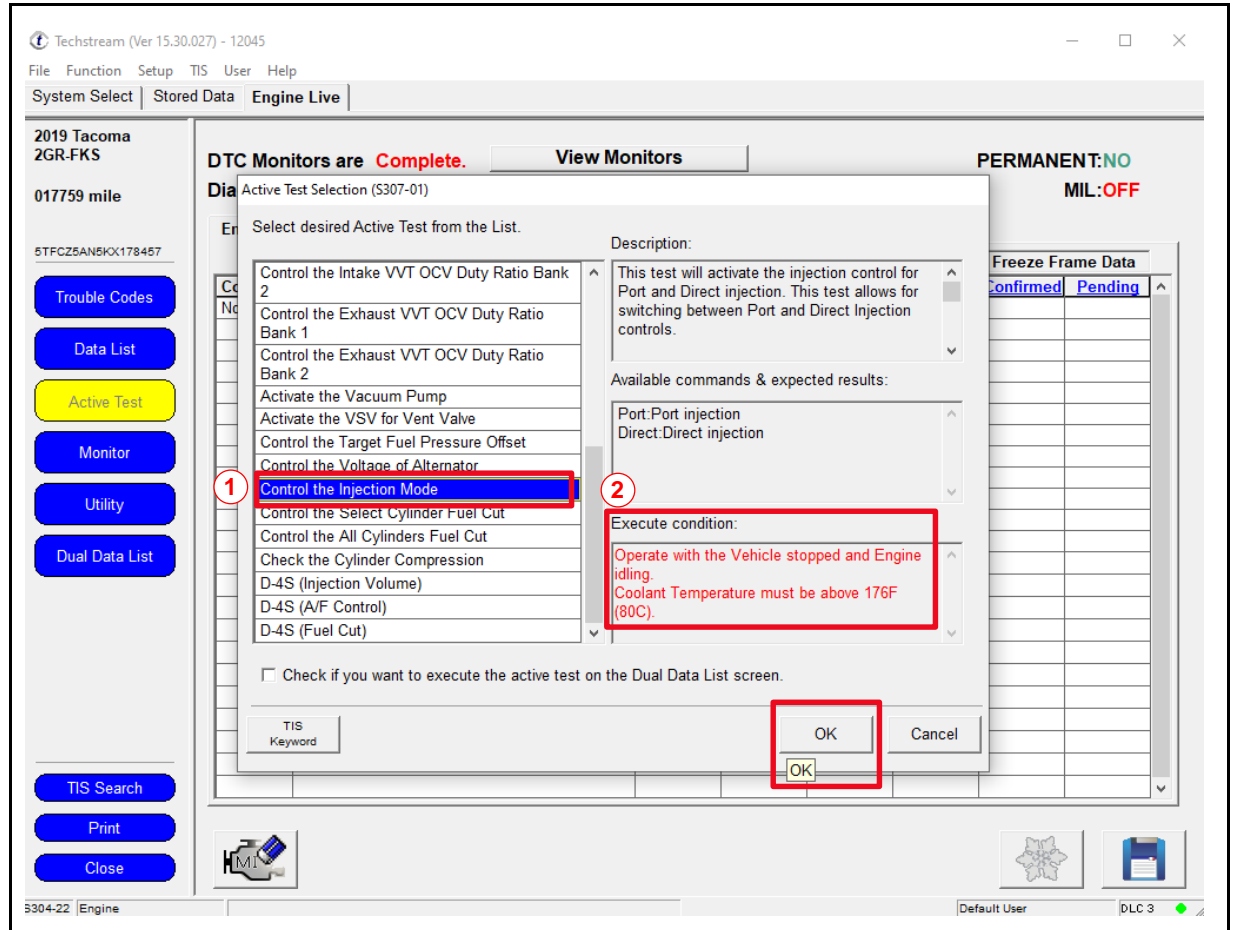
The vehicle **MUST** be stopped with the engine idling, and the coolant temperature **MUST** be above 176°F (80°C).

3. Select OK.

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Test Procedure (continued)

Figure 1.



1 Active Test Selection

2 Execute Conditions

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Test Procedure (continued)

4. Select the criteria desired for monitoring (see the figure below).
 - A. Select Primary as the data set to be displayed.
 - B. Select the parameters.
 - C. Select the graph button.

Figure 2. Example of Selecting Criteria for Monitoring

The screenshot shows a diagnostic software interface with a menu on the left and a main parameter list on the right. A 'Primary' dropdown menu is highlighted with a red circle (1). The parameter list is highlighted with a red circle (2). A graph button is highlighted with a red circle (3). A small dialog box titled 'Control the Injection Mode (3307-100)' is visible in the bottom right corner.

Parameter	Value	Unit	Parameter	Value	Unit
Control the Injection Mode [Target Value]	Not Active		Injection Time Cylinder #1 (D4)	1020	us
Control the Injection Mode [Current Value]			Target Air Fuel Ratio	1.000	
Vehicle Speed	0	MPH	AF (O2) Lambda Sensor B1S1	0.965	
Engine Speed	1779	rpm	AF (O2) Lambda Sensor B2S1	0.970	
Calculate Load	13.3	%	AF (O2) Sensor Voltage B1S1	3.080	V
Vehicle Load	14.1	%	AF (O2) Sensor Voltage B2S1	3.136	V
Mass Air Flow Sensor	8.45	gm/sec	AF (O2) Sensor Current B1S1	-0.083	mA
Atmospheric Pressure	-1	psi(gg)	AF (O2) Sensor Current B2S1	-0.059	mA
Coolant Temperature	176	F	AF (O2) Sensor Heater Duty Ratio B1S1	32.0	%
Intake Air Temperature	75	F	AF (O2) Sensor Heater Duty Ratio B2S1	32.0	%
Ambient Temperature	75	F	O2 Sensor Voltage B1S2	0.790	V
Engine Run Time	557	sec	O2 Sensor Voltage B2S2	0.800	V
Initial Engine Coolant Temperature	91.6	F	O2 Sensor Heater Current Value B1S2	1.010	A
Initial Engine Intake Air Temperature	69.1	F	O2 Sensor Heater Current Value B2S2	1.068	A
Battery Voltage	13.7	V	Short FT B1S1	-0.782	%
Accelerator Position	13.3	%	Short FT B1S2	-0.782	%
Throttle Request Position	0.878	V	Short FT B2S2	-0.782	%
Throttle Sensor Position	1.9	%	Long FT B1S1	-4.888	%
Throttle Position Sensor No 1 Voltage	0.878	V	Long FT B1S2	-4.888	%
Throttle Position Sensor No 2 Voltage	2.480	V	Long FT B2S1	0.000	%
Throttle Position Command	0.878	V	Long FT B2S2	0.000	%
Throttle Air Flow Learn Value (Area 1)	0.80	%	Fuel System Status Bank 1	CL	
Throttle Air Flow Learn Value (Area 2)	0.95	%	Fuel System Status Bank 2	CL	
Throttle Air Flow Learn Value (Area 3)	1.0	%	Ignition Timing Cylinder #1	42.5	deg
Low Revolution Control	CL		Ignition Timing Cylinder #2	20.5	deg
Engine Stall Control F/B Flow	-100	Nm	Knock Correct Learn Value	Unsupp	
Throttle Position	6.25	deg	Shift SW Status (Neutral) Supported	Unsupp	
Target Fuel Pressure (High)	348	psig	Complete Parts Monitor	Avail	
Target Fuel Pressure (High) Supported	Supp		Complete Parts Monitor Result	Compl	
Target Fuel Pressure (Low) / Target Fuel Pressure 2	58	psig	Ignition Monitor	Compl	
Target Fuel Pressure (Low) / Target Fuel Pressure 2 Supported	Supp		Fuel System Monitor	Avail	
Fuel Pressure (High)	3661	psig	Fuel System Monitor Result	Compl	
Fuel Pressure (High) Supported	Supp		Mafsa Monitor	Avail	
Fuel Pressure (Low) / Fuel Pressure 2	57	psig	Mafsa Monitor Result	Compl	
Fuel Pressure (Low) / Fuel Pressure 2 Supported	Supp		EGRAVVT Monitor	Avail	
VSV for Vent Valve	OFF		EGRAVVT Monitor Result	Compl	
Fuel Pump Control Duty Ratio	24.4	%	AF (O2) Sensor Heater Monitor	Avail	
Injector Cylinder #1 (D4)	3030	us	AF (O2) Sensor Heater Monitor Result	Compl	
Injection Volume Cylinder #1	0.099	ml	AF (O2) Sensor Monitor	Avail	
High Fuel Pressure Sensor	25.242	MPa	AF (O2) Sensor Monitor Result	Compl	
High Pressure Fuel Pump Duty Ratio (D4)	0.0	%	Secondary Air Injection System Monitor	Avail	
High Pressure Fuel Pump Discharge Rate	0.000	ml	Secondary Air Injection System Monitor Result	Compl	
Injection Mode	Port		EVAP Monitor	Avail	
Injection Timing Cylinder #1 (D4)	0.0	deg	EVAP Monitor Result	Compl	
	(CA)		Heated Catalyst Monitor	Avail	

1	Data Set to Be Displayed
2	Parameters

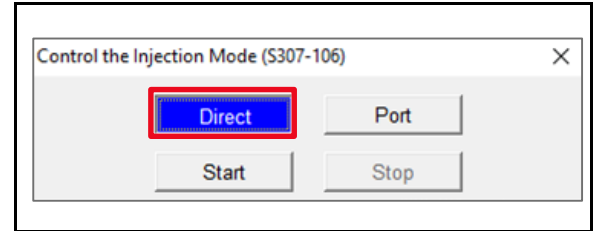
3	Graph Button
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Test Procedure (continued)

5. Select Direct on the Control the Injection Mode window.

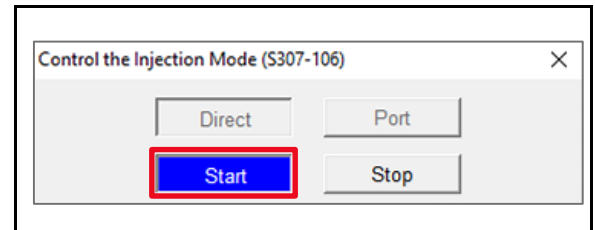
Figure 3.



6. Raise engine to 2,000 RPM.

7. Press Start

Figure 4.

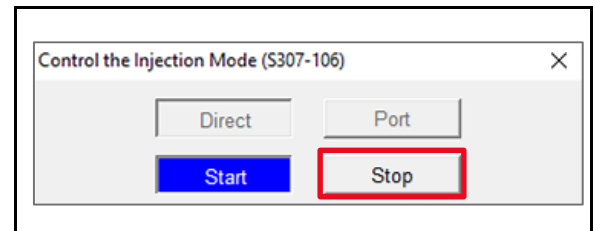


8. Keep the engine RPM at 2,000 for 30 seconds.

9. Idle the engine for one minute.

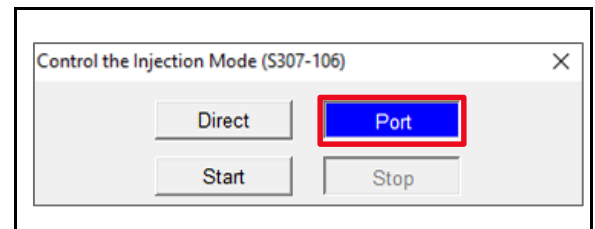
10. Click Stop.

Figure 5.



11. Select Port on the Control the Injection Mode window and repeat steps 6 – 10 once before continuing to step 12.

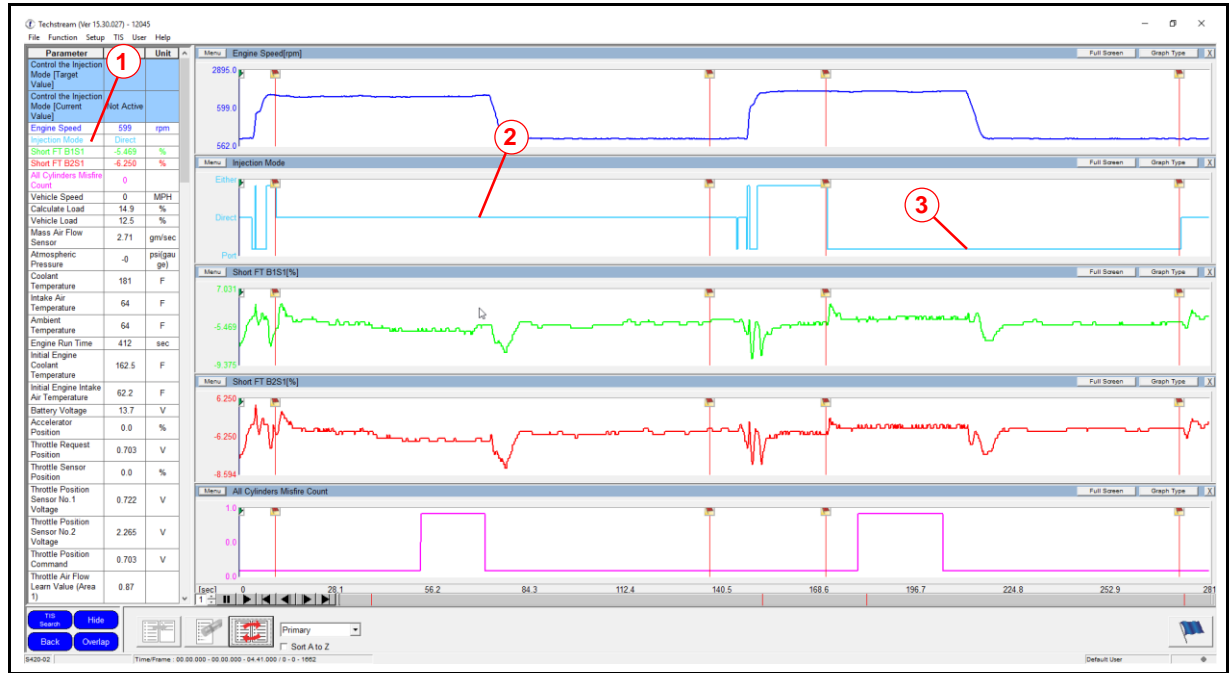
Figure 6.



Injection Mode Active Test Diagnostics

Test Procedure (continued)

Figure 7. Primary Data List Graph Snapshot



1	Injection Mode Parameter
3	Port Injection Mode Confirmation

2	Direct Injection Mode Confirmation
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- Utilizing the primary data list graph snapshot, confirm the switch occurred when commanded with the injection mode parameter.

Did the vehicle respond to the selected modes (direct and port) during the active test?

- YES** — The active test is complete.
- NO** — Retake the active test, return to step 1.

NOTE

If the active test is used multiple times without using this procedure to raise engine RPM, it may be necessary to reset learning values for fuel trim and air to fuel ratio before returning the vehicle to the customer.