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</table>
ABS ECM
The ABS ECM is located with the ABS unit in the engine compartment. Modules communicate with each other through serial data.

To Test Voltage:
See PCM Pin #B15 and PCM Pin #D16.

Air Conditioner Amplifier
The Air Conditioner Amplifier is located under the dash behind the glove compartment. The PCM communicates with the A/C Amplifier to control operation of the air conditioner.

To Test Voltage:
See PCM Pin #D10 and D21.

Air Conditioner Single Pressure Switch
The Air Conditioner Single Pressure Switch is located in the air conditioner pressure lines. Should the air conditioner pressure exceed specifications, this switch closes to ground. This brings the Engine Cooling Fan onto high speed.

Automatic Transmission
The 4 speed Automatic Transmission is PCM controlled. The PCM controls the transmission through:
Automatic Transmission Fluid Temperature Sensor.
Automatic Transmission Solenoids.
Automatic Transmission Turbine Speed Sensor.

Automatic Transmission Fluid Temperature (TFT) Sensor
The TFT Sensor is located within the Automatic Transmission. The PCM monitors this sensor to determine transmission fluid temperature.

To Test Voltage:
See PCM Pin #B9 and PCM Pin #C10.

Automatic Transmission Inhibitor Switch
The Inhibitor Switch is incorporated with the Automatic Transmission Range Switch.

To Test Voltage:
See PCM Pin #D11 and D22.

Automatic Transmission Range Switch
The Automatic Transmission Range Switch incorporates the Inhibitor Switch. The PCM monitors this switch for driver demand. It monitors Park and Neutral positions through the Inhibitor Switch. If it sees no voltage on any of the monitored lines, it assumes Drive is selected.

To Test Voltage:
See PCM Pin #A5 and PCM Pin #D11, D17, D18, D19 and D22.
Automatic Transmission Solenoids
The Automatic Transmission Solenoids are located within the Automatic Transmission. They are:
• Shift Solenoid #1
• Shift Solenoid #2
• Solenoid ST
• Line Pressure Solenoid
• Lock Up Solenoid

To Test Voltage:
See PCM Pin #C1, C2, C3, C6, C7 and C9.

Automatic Transmission Turbine Speed Sensor
The Automatic Transmission Turbine Speed Sensor is located in the Automatic Transmission. The PCM monitors this sensor for transmission speed.

To Test Voltage:
See PCM Pin #C5 and C11.

Brake Lamp Switch
The Brake Lamp Switch is located at the brake pedal cluster. The PCM monitors this switch to determine when the brakes are applied.

To Test Voltage:
See PCM Pin #A6.

1 Camshaft Position Sensor
The Camshaft Position Sensor is located at the left end of the camshaft. It incorporates a single tooth plate on the camshaft and a pickup coil. The PCM monitors this sensor for engine position. It also uses this signal to monitor operation of the Camshaft Timing Oil Control Valve.

To Test Voltage:
See PCM Pin #A16 and A18.

2 Camshaft Timing Oil Control Valve
The Camshaft Timing Oil Control Valve is located at the right end of the camshaft. The PCM actuates this valve to vary the opening of the intake valves.

To Test Voltage:
See PCM Pin #A10 and A23.

To Test:
With the engine idling at operating temperature disconnect the Oil Control Valve connector. Apply battery voltage to the valve. If the engine runs rough or stalls, the valve is operating. If there is no change, the valve is faulty and should be replaced.
Canister Purge Solenoid
The Canister Purge Solenoid is located at the left rear of the cylinder head. The PCM actuates this solenoid to purge the carbon canister of gaseous hydrocarbons. It will do this when it has the least effect on driveability.

To Test Voltage:
See PCM Pin #A9.

Check Engine Lamp
The Check Engine Lamp is located in the instrument panel. Should the PCM detect a fault it will illuminate this lamp. Manual 2 digit Fault Codes can also be read through this lamp.

To Test Voltage:
See PCM Pin #D5.

Crankshaft Position Sensor
The Crankshaft Position Sensor is located at the right end of the crankshaft. It incorporates a signal plate with 34 teeth and a pick up coil. The PCM monitors this sensor for crankshaft angle and engine speed.

To Test Voltage:
See PCM Pin #A16 and A17.

Diagnostic Connector
The 16 pin OBDII type Diagnostic Connector is located under the drivers side dash.

To Test Voltage:
See PCM Pin #B15 and PCM Pin #D16.

Engine Coolant Temperature Sensor
The Engine Coolant Temperature Sensor is located at the right end of the cylinder head. It is to the rear of the Camshaft Position Sensor. The PCM monitors this sensor to determine engine coolant temperature.

To Test Voltage:
See PCM Pin #B4 and B9.
Engine Coolant Temperature Switch (Models with A/C)
The Engine Coolant Temperature Switch is located at the radiator.
When the engine coolant temperature exceeds specifications, this switch closes.
This brings the Engine Cooling Fan on to high speed.

Engine Cooling Fan
The Engine Cooling Fan is located at the radiator.
It is actuated by Engine Cooling Fan Relay #1.

Operation:
In models without air conditioning;
The fan is actuated on a single speed by the PCM.

To Test Voltage:
See PCM Pin #A8.

In models with air conditioning:
The fan is actuated on low speed by the Air Conditioner Amplifier.
It is actuated on high speed by:
PCM.
Air Conditioner Single Pressure Switch or Engine Coolant Temperature Switch.

To Test Voltage:
See PCM Pin #A8, and PCM Pin #D10 and D21.

Engine Cooling Fan Relays
The Engine Cooling Fan Relays are in the main fuse relay box in the engine compartment.
Models without air conditioning use Fan Relay #1 only.
Models with air conditioning use both Fan Relay #1 and Fan Relay #2.
(See Engine Cooling Fan)

To Test Voltage:
See PCM Pin #A8.

Engine Cooling Fan Resistor - Low Speed (A/C)
The Engine Cooling Fan Low Speed Resistor is located behind the left headlamp.
It is used through Engine Cooling Fan Relay #2 to operate the fan on low speed.

Firing Order
1, 3, 4, 2.
5 Fuel Injectors
The Fuel Injectors are located in the intake ports of the cylinder head.

To Test Voltage:
See PCM Pin #A11, A12, A24 and A25.

To Test Resistance @ 20°C:
Disconnect connectors and test individually - should be 13.4 to 14.2 Ohms.

Fuel Pressure
Engine idling 304 to 343 kPa.

Fuel Pressure Regulator
The Fuel Pressure Regulator is incorporated within the Fuel Pump Assembly in the fuel tank. This negates the need for a fuel return line and keeps the fuel in the tank cooler.

Fuel Pump Assembly
The Fuel Pump Assembly is located in the fuel tank. It incorporates the Fuel Pressure Regulator, Fuel Pump and the Fuel Gauge Sender.

Fuel Pump Relay
The Fuel Pump Relay is in the instrument panel junction box in the passenger compartment.

To Test Voltage:
See PCM Pin #D14.

Fuse Locations
The following Fuses are in the Fusible Link Block in the engine compartment.
Fuse Alt - 100 Amp.
Fuse Main - 60 Amp.

The following Fuses are in the main fuse relay box in the engine compartment.
Fuse AM2 - 15 Amp.
Fuse EFI - 15 Amp.
Fuse RDI - 30 Amp
Fuse ST - 30 Amp.

The following Fuses are in the instrument panel junction box in the passenger compartment.
Fuse AM1 - 50 Amp.
Fuse ECU-IG - 7.5 Amp.
Fuse Gauge - 10 Amp.
Fuse OBD - 7.5 Amp.
Fuse Stop - 10 Amp.
Idle Air Control Valve
The rotary solenoid type Idle Air Control Valve is located at the Throttle Body. The PCM actuates this valve to alter the air bypassing the throttle plate.

To Test Voltage:
See PCM Pin #A2.

Idle Speed (Base)
Idle speed is PCM controlled. It can be checked as follows:
Ensure that:
- Engine is @ operating temperature
- All accessories including air conditioner are off.
- Transmission is in neutral or park.

Connect suitable tachometer to terminal 9 of the Diagnostic Connector. Start engine and check idle speed is as follows:
- 100 to 700 RPM (Manual)
- 650 to 750 RPM (Auto)

Ignition Coils
There are 4 Ignition Coils located at the spark plugs. Each coil incorporates its own Igniter.

To Test Voltage:
See PCM Pin #A3, A19, A20, A21 and A22.

Ignition System
The Ignition System used is an Electronic Distributorless Ignition System. It has a single Ignition Coil / Igniter for each spark plug. The PCM determines ignition timing and outputs a signal for each cylinder (IGT). Simultaneously, the Igniter also sends a confirmation signal back to the PCM (IGF). This acts as a failsafe for misfire detection.

Ignition Timing (Base)
Ignition timing is ECM controlled and cannot be adjusted. It can be checked as follows:
Ensure that:
- Engine is @ operating temperature
- All accessories including air conditioner are off.
- Transmission is in neutral or park.

Bridge terminal 13 of the Diagnostic Connector to ground. Connect timing light to cylinder #1. Start engine and check ignition timing is 8° to 12° BTDC.
Intake Air Temperature Sensor
The Intake Air Temperature Sensor is incorporated within the Mass Air Flow Meter. The PCM monitors this sensor to determine the temperature of the incoming air.

To Test Voltage:
See PCM Pin #B3 and B9.

Kickdown Switch (If Fitted)
These vehicles may be fitted with a Kickdown Switch.

To Test Voltage:
See PCM Pin #C12.

7 Knock Sensor
The piezoelectric Knock Sensor is located on the front of the engine block. When the PCM detects a knocking condition it retards the ignition timing to alleviate the knock.

To Test Voltage:
See PCM Pin #B13.

Main (EFI) Relay
The Main (EFI) Relay is located in the main fuse relay box in the engine compartment.

To Test Voltage:
See PCM Pin #D12.

8 Mass Air Flow Meter
The hot wire Mass Air Flow Meter is located in the intake duct. It incorporates the Intake Air Temperature Sensor.

To Test Voltage:
See PCM Pin #B2, B3, B9 and B10.

Overdrive Off Lamp
The Overdrive Off Lamp is located in the instrument panel. It is actuated by the Overdrive Off Switch. The PCM monitors this lamp to determine when the Overdrive Off Switch has been activated.

To Test Voltage:
See PCM Pin #C4.

Overdrive Off Switch
The Overdrive Off Switch is located in the gear selector lever. The driver activates this switch to prevent actuation of the overdrive gear.

To Test Voltage:
See PCM Pin #C4.
Overview
These vehicles are fitted with the 1.3 Litre 2NZ-FE and the 1.5 Litre 1NZ-FE VVTi engines. The system manages both engine and automatic transmission control. Battery voltage as well as air conditioning and engine cooling fans are PCM controlled. Air Mass calculations are by a hot wire Mass Air Flow Meter. Close monitoring of stoichiometric air fuel ratio is through a heated Oxygen Sensor. Exhaust gases are cleaned using a 3 way catalytic converter.

Oxygen Sensor
The heated zirconium dioxide Oxygen Sensor is in the exhaust before the catalytic converter.

To Test Voltage:
See PCM Pin #B6 and B8.

Power Steering Oil Pressure Sensor
The Power Steering Oil Pressure Sensor is located at the power steering pump. The PCM monitors this sensor for power steering load. It will adjust idle speed to the most appropriate dependant upon this signal.

To Test Voltage:
See PCM Pin #B1, B9 and B12.

Power Steering Pressure Test Connector
The Power Steering Pressure Test Connector is located under the passenger side dash.

To Test Voltage:
See PCM Pin #A7.

Security Indicator LED
The Security Indicator LED is located in the instrument panel. It indicates the state of the security system.

To Test Voltage:
See PCM Pin #D6.

SRS ECM
The SRS ECM is located behind the centre console. Modules communicate with each other through serial data.

To Test Voltage:
See PCM Pin #B15 and PCM Pin #D16.

Starter Relay
The Starter Relay is located in the main fuse relay box in the engine compartment.
Throttle Body
The Throttle Body incorporates:
- Idle Air Control Valve
- Throttle Position Sensor.

10 Throttle Position Sensor
The potentiometer type Throttle Position Sensor is located at the Throttle Body.

To Test Voltage:
See PCM Pin #B1, B9 and B11.

Transponder Key Amplifier
The Transponder Key Amplifier is located at the steering column next to the ignition switch. It is part of the immobiliser system.

To Test Voltage:
See PCM Pin #D3, D4 and D15.

Unlock Warning Switch
The Unlock Warning Switch is located at the steering column next to the ignition switch.

To Test Voltage:
See PCM Pin #D7.

Variable Valve Timing (VVT) System
These engines use a Variable Valve Timing (VVT) System.
- The PCM monitors the Camshaft Position Sensor for camshaft actual position.
- It actuates the Camshaft Timing Oil Control Valve to vary the intake valve timing.

Vehicle Speed Sensor
The Vehicle Speed Sensor is located at the transmission.
It sends a signal (4 pulses per revolution) to the speedometer.
The speedometer converts this signal to a more regular waveform and sends it to the PCM.

To Test Voltage:
See PCM Pin #D9.
PCM
The 4 connector PCM is located behind the glove compartment.

PCM Voltage Table

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Circuit and Status</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Ground</td>
<td>0 Volts</td>
</tr>
<tr>
<td>A2</td>
<td>Idle Air Control Valve</td>
<td>Ignition ON</td>
</tr>
<tr>
<td></td>
<td>ECM Connector C Disconnected</td>
<td>0 to 3 Volts</td>
</tr>
<tr>
<td>A3</td>
<td>Ignition Coil Feedback (IGF)</td>
<td>Ignition ON</td>
</tr>
<tr>
<td></td>
<td>Engine Idling</td>
<td>4.5 to 5.5 Volts</td>
</tr>
<tr>
<td>A4</td>
<td>Alternator M Terminal</td>
<td>No Specifications Available</td>
</tr>
<tr>
<td></td>
<td>Voltage Pulse</td>
<td></td>
</tr>
<tr>
<td>A5</td>
<td>Transmission Switch D Position</td>
<td>Ignition ON</td>
</tr>
<tr>
<td></td>
<td>Gear Selector in D Position</td>
<td>Battery Volts</td>
</tr>
<tr>
<td></td>
<td>Gear Selector in any other Position</td>
<td>0 Volts</td>
</tr>
<tr>
<td>A6</td>
<td>Brake Lamp Switch</td>
<td>Brake Pedal at Rest</td>
</tr>
<tr>
<td></td>
<td>Brake Pedal Depressed</td>
<td>Battery Volts</td>
</tr>
<tr>
<td>A7</td>
<td>Power Steering Pressure Test Connector</td>
<td>Engine Running</td>
</tr>
<tr>
<td></td>
<td>Connector Not Bridged</td>
<td>High Volts</td>
</tr>
</tbody>
</table>
Connector Bridged.................................................. <1 Volts

A8  Engine Cooling Fan Relay  
(Models without A/C)  
Ignition ON  
Engine Cooling Fan OFF................................. Battery Volts  
   Engine Cooling Fan ON................................. 0 Volts

A8  Engine Cooling Fan Relay #2  
(Models with A/C)  
Engine Running with A/C ON  
Engine Cooling Fan on Low Speed.................... Battery Volts  
   Engine Cooling Fan on High Speed............... 0 Volts

A9  Canister Purge Solenoid  
Ignition ON.................................................... Battery Volts

A10 Camshaft Timing Oil Control Valve Positive  
No Specifications Available........................... N/A

A11 Fuel Injector #2  
Ignition ON.................................................... Battery Volts  
   Engine Idling............................................ Voltage Pulse

A12 Fuel Injector #1  
Ignition ON.................................................... Battery Volts  
   Engine Idling............................................ Voltage Pulse

A13 Ground  
All Times....................................................... 0 Volts

A14 Ground  
All Times....................................................... 0 Volts

A15 Case Ground  
All Times....................................................... 0 Volts

A16 Camshaft and Crankshaft Position Sensor Negative  
All Times....................................................... 0 Volts

A17 Crankshaft Position Sensor Signal  
Engine Idling.................................................. Voltage Pulse

A18 Camshaft Position Sensor Signal  
Engine Idling.................................................. Voltage Pulse

A19 Ignition Coil #4  
Engine Idling.................................................. Voltage Pulse

A20 Ignition Coil #3  
Engine Idling.................................................. Voltage Pulse

A21 Ignition Coil #2  
Engine Idling.................................................. Voltage Pulse
A22 Ignition Coil #1
Engine Idling............................................... Voltage Pulse

A23 Camshaft Timing Oil Control Valve Negative
No Specifications Available............................... N/A

A24 Fuel Injector #4
Ignition ON.................................................. Battery Volts
Engine Idling............................................... Voltage Pulse

A25 Fuel Injector #3
Ignition ON.................................................. Battery Volts
Engine Idling............................................... Voltage Pulse

A26 Ground
All Times...................................................... 0 Volts

Connector `B'

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Circuit and Status</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>5 Volts Sensor Power Supply</td>
<td>4.5 to 5.5 Volts</td>
</tr>
<tr>
<td>B2</td>
<td>Mass Air Flow Meter Signal</td>
<td>Engine Idling in Neutral, A/C OFF</td>
</tr>
<tr>
<td>B3</td>
<td>Intake Air Temperature Sensor Signal</td>
<td>Engine Idling, Intake Air Temperature @ 20°C</td>
</tr>
<tr>
<td>B4</td>
<td>Engine Coolant Temperature Sensor Signal</td>
<td>Engine Idling, Engine Coolant Temperature @ 80°C</td>
</tr>
<tr>
<td>B5</td>
<td>ATCP Module (If Fitted)</td>
<td>BUS Negative</td>
</tr>
<tr>
<td>B6</td>
<td>Oxygen Sensor Signal</td>
<td>Engine @ Operating Temperature, Engine speed steady @ 2500 RPM</td>
</tr>
<tr>
<td>B7</td>
<td>ATCP Module (If Fitted)</td>
<td>BUS Positive</td>
</tr>
<tr>
<td>B8</td>
<td>Oxygen Sensor Heater Control</td>
<td></td>
</tr>
<tr>
<td>Pin #</td>
<td>Circuit and Status</td>
<td>Voltage</td>
</tr>
<tr>
<td>-------</td>
<td>-------------------</td>
<td>---------</td>
</tr>
<tr>
<td>C1</td>
<td>Line Pressure Solenoid Positive (Auto)</td>
<td>Ignition ON: &lt;1 Volt, In Reverse Gear: Battery Volts</td>
</tr>
<tr>
<td>C2</td>
<td>ST Solenoid (Auto)</td>
<td>Ignition ON: Battery Volts</td>
</tr>
<tr>
<td>C3</td>
<td>Shift Solenoid 1 (Auto)</td>
<td>Ignition ON: Battery Volts, In First or Second Gear: Battery Volts, In Third or Overdrive Gear: &lt;1 Volt</td>
</tr>
<tr>
<td>C4</td>
<td>Overdrive Off Switch (Auto)</td>
<td>Ignition ON: Switch ON: Battery Volts, Switch OFF: &lt;1 Volt</td>
</tr>
<tr>
<td>C5</td>
<td>Transmission Speed Sensor (Auto)</td>
<td></td>
</tr>
</tbody>
</table>
Engine Running.............................................. 0 to 5 Volts Pulse

C6  Lock Up Solenoid (Auto)
Ignition ON................................................... <1 Volt
Under Lockup Conditions......................... Battery Volts

C7  Line Pressure Solenoid Negative (Auto)
Ignition ON...................................................... <1 Volt

C9  Shift Solenoid 2 (Auto)
Ignition ON...................................................... <1 Volt
In First or Second Gear................................. Battery Volts
In Third or Overdrive Gear......................... <1 Volt

C10 Transmission Fluid Temperature Sensor Positive
  Ignition ON
  Temperature @ 110°C.................................... <1 Volt

C11 Transmission Speed Sensor (Auto)
  Engine Running........................................... 0 to 5 Volts Pulse

C12 Kickdown Switch (Auto)
  Ignition ON
  Switch Open............................................... Battery Volts
  Switch Closed........................................... 0 Volts

Connector ‘D’

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Circuit and Status</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>Permanent Battery Supply</td>
<td>Battery Volts</td>
</tr>
<tr>
<td>D2</td>
<td>Ignition Feed</td>
<td>Battery Volts</td>
</tr>
<tr>
<td>D3</td>
<td>Transponder Key Amplifier</td>
<td>N/A</td>
</tr>
<tr>
<td>D4</td>
<td>Transponder Key Amplifier</td>
<td>N/A</td>
</tr>
<tr>
<td>D5</td>
<td>Check Engine Lamp</td>
<td>&lt;3 Volts</td>
</tr>
<tr>
<td></td>
<td>Engine Idling</td>
<td>Battery Volts</td>
</tr>
<tr>
<td>D6</td>
<td>Security Indicator LED</td>
<td></td>
</tr>
</tbody>
</table>
Ignition ON
Lamp Illuminated.............................................. Battery Volts
Lamp Not Illuminated........................................ 0 Volts

D7 Unlock Warning Switch
Ignition ON
Switch Open.................................................. Battery Volts
Switch Closed............................................. 0 Volts

D8 Tachometer Signal
Engine Idling............................................... Voltage Pulse

D9 Vehicle Speed Signal
Ignition ON
Drive Wheels Rotating Slowly............................ Voltage Pulse

D10 Air Conditioner Amplifier (AC Circuit)
Engine Idling
Air Conditioner Switch ON................................ <1.5 Volts
Air Conditioner Switch OFF............................... 7.5 to 14 Volts

D11 Start Signal
Engine Cranking............................................. >6 Volts

D12 ECM Power Supply
Ignition ON.................................................. Battery Volts

D13 Ignition Feed
Ignition ON.................................................. Battery Volts

D14 Fuel Pump Relay Control
Engine Cranking or Idling................................. 0 Volts

D15 Transponder Key Amplifier
No Specifications Available.............................. N/A

D16 Diagnostic Connector Terminal 7
No Specifications Available.............................. N/A

D17 Transmission Switch R Position
Ignition ON
Gear Selector in R Position.............................. Battery Volts
Gear Selector in any other Position.................. 0 Volts

D18 Transmission Switch 2 Position
Ignition ON
Gear Selector in 2 Position.............................. Battery Volts
Gear Selector in any other Position.................. 0 Volts

D19 Transmission Switch L Position
Ignition ON
Gear Selector in L Position.............................. Battery Volts
Gear Selector in any other Position.................. 0 Volts
D21  Air Conditioner Amplifier (ACT Circuit)

Engine Idling
Air Conditioner Switch ON................................ Battery Volts
Air Conditioner Switch OFF............................... <2 Volts

D22  Inhibitor Switch (Auto)

Ignition ON
Selector Lever in P or N Position......................0 to 3 Volts
Selector Lever in any other Position................. Battery Volts
TOYOTA ECHO 1.3L (2NZ-FE Engine) 1999-04 Engine & Transmission Management System
TOYOTA ECHO 1.5L (1NZ-FE Engine) 1999-04 Engine & Transmission Management System

Wiring Diagram

See Key to Wiring Diagram.
**Key to Wiring Diagram**

101. Battery
102. Fuse Main - 60 Amp
103. Fuse EFI - 15 Amp
104. Brake Lamps
105. Fuse Alt - 100 Amp
106. Fuse Stop - 10 Amp
107. Brake Lamp Switch
108. Fuse AM1 - 40 Amp
109. Fuse AM2 - 15 Amp
110. Ignition Switch
111. Fuse ST - 30 Amp
112. Starter Relay
113. Inhibitor Switch (Auto)
114. Starter Motor
115. Ignition Coil Cylinder #1
116. Ignition Coil Cylinder #2
117. Ignition Coil Cylinder #3
118. Ignition Coil Cylinder #4
119. Fuse Gauge - 10 Amp
120. Crankshaft Position Sensor
121. Camshaft Position Sensor
122. Fuel Injector #1
123. Fuel Injector #2
124. Fuel Injector #3
125. Fuel Injector #4
126. Instrument Panel
127. Check Engine Lamp
128. Overdrive Off Lamp
129. Security Indicator LED
130. Tachometer
131. Speedometer
132. Multifunction Display
133. Vehicle Speed Sensor
134. Overdrive Off Switch
135. Transmission Range Switch (Auto)
136. Transmission Indicator Lamps (Auto)
137. Fuse ECU-IG - 7.5 Amp
138. Fuse RDI - 30 Amp
139. Engine Cooling Fan Relay #1
140. Engine Cooling Fan
141. Cooling Fan Low Speed Resistor (A/C)
142. Engine Cooling Fan Relay #2 (A/C)
143. Engine Coolant Temp Switch (A/C)
144. A/C Single Pressure Switch (A/C)
145. Air Conditioner Amplifier
146. Fuse OBD - 7.5 Amp
147. Main Relay
148. Fuel Pump Relay
149. Fuel Pump
150. Transponder Key Amplifier
151. Canister Purge Solenoid
152. Idle Air Control Valve
153. Oxygen Sensor
154. Mass Air Flow Meter
155. Throttle Position Sensor
156. Engine Coolant Temperature Sensor
157. Camshaft Timing Oil Control Valve
158. Power Steering Pressure Sensor
159. Unlock Warning Switch
160. Kickdown Switch (If Fitted)
161. Automatic Transmission
162. Turbine Speed Sensor
163. Shift Solenoid #1
164. Shift Solenoid #2
165. Solenoid ST
166. Lock Up Solenoid
167. Line Pressure Solenoid
168. Transmission Fluid Temp Sensor
169. ATCP Module (If Fitted)
170. Knock Sensor
171. Alternator
172. Power Steering Pressure Test Connector
173. SRS ECM
174. ABS ECM
175. Diagnostic Connector
176. Powertrain Control Module (PCM)
## Reference Database Application

### Tune Up Specifications for:

TOYOTA ECHO  
1999-04 1.5Litre EFI Engine

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engine ID:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Auto / Manual:</strong></td>
<td>Auto / Manual</td>
</tr>
<tr>
<td><strong>Spark Plug Gap (mm):</strong></td>
<td>1.1</td>
</tr>
<tr>
<td><strong>Firing Order:</strong></td>
<td>1-3-4-2</td>
</tr>
<tr>
<td><strong>Timing (deg):</strong></td>
<td>8-12 See Note #1</td>
</tr>
<tr>
<td><strong>Points / Pick-up Gap (mm):</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Dwell Angle (deg):</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Coil Resistance (Pri/Sec):</strong></td>
<td>Not Available</td>
</tr>
<tr>
<td><strong>Idle Speed (rpm):</strong></td>
<td>700</td>
</tr>
<tr>
<td><strong>Valve Clearance (mm):</strong></td>
<td>Cold; In 0.15-0.25, Ex 0.25-0.35</td>
</tr>
<tr>
<td><strong>Compression (kPa):</strong></td>
<td>1080-1470</td>
</tr>
<tr>
<td><strong>Fuel Pressure (kPa):</strong></td>
<td>300</td>
</tr>
<tr>
<td><strong>Cylinder Head Tension:</strong></td>
<td>30Nm + 90deg + 90deg</td>
</tr>
<tr>
<td><strong>Main Bearing Torque (Nm):</strong></td>
<td>22Nm, + 90deg</td>
</tr>
<tr>
<td><strong>Conrod Torque (Nm):</strong></td>
<td>15Nm + 90deg</td>
</tr>
</tbody>
</table>

### Notes:

Note #1: With terminals "4" & "13" Jumpered.

### Your Notes:
Wheel Alignment Specifications for:
TOYOTA ECHO
1999-04 1.5L 1NZ-FE Road height Front=185mm Rear=270

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Front Camber (deg)</td>
<td>-.58</td>
</tr>
<tr>
<td>Front Caster (deg)</td>
<td>.7</td>
</tr>
<tr>
<td>Front Toe-In (mm)</td>
<td>0</td>
</tr>
<tr>
<td>SAI (deg)</td>
<td>10.08</td>
</tr>
<tr>
<td>Included Angle (deg)</td>
<td>N/A</td>
</tr>
<tr>
<td>TOOT Inside (deg)</td>
<td>37</td>
</tr>
<tr>
<td>TOOT Outside (deg)</td>
<td>32.12</td>
</tr>
<tr>
<td>Rear Camber (deg)</td>
<td>-1</td>
</tr>
<tr>
<td>Rear Toe-In (mm)</td>
<td>3</td>
</tr>
<tr>
<td>Thrust Angle (deg)</td>
<td>0</td>
</tr>
</tbody>
</table>

Notes:
1. '0' movement (left/right) for ball joints and tie rods.

Your Notes:
# Reference Database Application

**Wheel Alignment Specifications for:**

<table>
<thead>
<tr>
<th>Make</th>
<th>Model</th>
<th>Year</th>
<th>Engine</th>
<th>Road Height</th>
<th>Notes</th>
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<tbody>
<tr>
<td>TOYOTA</td>
<td>ECHO</td>
<td>1999-04</td>
<td>1.5L 1NZ-FE</td>
<td>Front=185mm Rear=270 with power steering</td>
<td></td>
</tr>
</tbody>
</table>

- **Front Camber (deg):** -.58
- **Front Caster (deg):** 1.66
- **Front Toe-In (mm):** 0
- **SAI (deg):** 10.08
- **Included Angle (deg):** N/A
- **TOOT Inside (deg):** 37
- **TOOT Outside (deg):** 32.12
- **Rear Camber (deg):** -1
- **Rear Toe-In (mm):** 3
- **Thrust Angle (deg):** 0

**Wheel Alignment Specifications for this job:**

<table>
<thead>
<tr>
<th>TECHNICIAN:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>SPECIFICATIONS</th>
<th>BEFORE</th>
<th>AFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Left</td>
<td>Right</td>
</tr>
<tr>
<td>Front Camber (deg):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front Caster (deg):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front Toe-In (mm):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear Camber (deg):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear Toe-In (mm):</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

Notes: #1: '0' movement (left/right) for ball joints and tie rods.

**Your Notes:**
Wheel Alignment Specifications for:
TOYOTA ECHO
1999-04 1.5L 1NZ-FE Road height Front=205mm Rear=290

**Front Camber (deg):** -0.33 + / - 0.75
**Front Caster (deg):** 0.43 + / - 0.75
**Front Toe-In (mm):** 0 + / - 2
**SAI (deg):** 9.53
**Included Angle (deg):** 37
**TOOT Inside (deg):** 36.12
**Rear Caster (deg):** 3 + / - 3
**Rear Toe-In (mm):** 0 + / - 0.15

Notes:

Notes: #1: '0' movement (left/right) for ball joints and tie rods. #2: Rough road package
### Reference Database Application

**Wheel Alignment Specifications for:**

**TOYOTA**  
**ECHO**  
**1999-04**  
**1.5L 1NZ-FE Road height Front=205mm Rear=290 with power steering**

<table>
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<tr>
<th>Parameter</th>
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<tbody>
<tr>
<td>Front Camber (deg)</td>
<td>-.33 + / - .75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front Caster (deg)</td>
<td>.43 + / - .75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front Toe-In (mm)</td>
<td>0 + / - 2</td>
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<tr>
<td>SAI (deg)</td>
<td>9.53</td>
<td></td>
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</tr>
<tr>
<td>Included Angle (deg)</td>
<td>N/A + / - .5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOOT Inside (deg)</td>
<td>37</td>
<td></td>
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</tr>
<tr>
<td>TOOT Outside (deg)</td>
<td>36.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear Camber (deg)</td>
<td>-1 + / - .75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear Toe-In (mm)</td>
<td>3 + / - 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thrust Angle (deg)</td>
<td>0 + / - .15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Wheel Alignment Specifications for this job:**

**TECHNICIAN:**

<table>
<thead>
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</tr>
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<tbody>
<tr>
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<td>Right</td>
</tr>
<tr>
<td>Front Camber (deg):</td>
<td></td>
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<tr>
<td>Front Caster (deg):</td>
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<td></td>
</tr>
<tr>
<td>Front Toe-In (mm):</td>
<td></td>
<td></td>
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<tr>
<td>Rear Camber (deg):</td>
<td></td>
<td></td>
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<tr>
<td>Rear Toe-In (mm):</td>
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<td></td>
</tr>
</tbody>
</table>

**Notes:**

Notes: #1: '0' movement (left/right) for ball joints and tie rods. #2: Rough road package

**Your Notes:**