Electronic Cautions

Resetting Shift Adapts
The ECM (engine control module) has memorized values which must be relearned after transmission repair. Use a scan tool (OE factory tool recommended) to reset the ECM.

Post-Adapt Road Test
After resetting the ECM, a road test is required. Start the engine and warm it to normal operating temperature. Perform a thorough road test with multiple accelerations from a stop until proper shifting is obtained.

TSB TC002-06
Toyota published a Technical Service Bulletin regarding computer hardware problems in 2001-2003 RAV4 vehicles. Resetting the ECM will not eliminate shifting complaints for this unit. A new ECM will be required.

Solenoids
Solenoids should be cleaned to remove debris that results in sticking and malfunction.
**Zip Kit Instructions**

1. **Valve Body Removal from Case**
   
   **NOTE:** See color chart for bolt lengths.

   Remove the 17 bolts indicated (Figure 1).

2. **Valve Body Disassembly: Step 1**

   **NOTE:** See Figure 2 and 3 for bolt locations.

   The solenoids have differing resistance amounts (Figure 2). Ensure each of the solenoids are put back in their correct location.

   a. Remove the five solenoids and bolts shown in Figure 2.
   
   **NOTE:** Reference Figure 3 for steps b through e.
   
   b. Remove the eight upper valve body bolts, #1 and #2.
   
   c. Remove the seven upper valve body cover bolts, #3 and #4.
   
   d. Remove bolt #5, bracket and checkball.
   
   e. Remove checkball, location A.

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**Solenoid Resistance Chart**

<table>
<thead>
<tr>
<th>Solenoid</th>
<th>U140E</th>
<th>U140F</th>
<th>U240E</th>
<th>U241F</th>
</tr>
</thead>
<tbody>
<tr>
<td>SL1</td>
<td>5.1–5.5 ohms</td>
<td>5.0–5.6 ohms</td>
<td>5.0–5.6 ohms</td>
<td>5.0–5.6 ohms</td>
</tr>
<tr>
<td>SL2</td>
<td>5.1–5.5 ohms</td>
<td>5.1–5.5 ohms</td>
<td>5.1–5.5 ohms</td>
<td>5.1–5.5 ohms</td>
</tr>
<tr>
<td>S4</td>
<td>5.1–5.5 ohms</td>
<td>11–15 ohms</td>
<td>11–15 ohms</td>
<td>11–15 ohms</td>
</tr>
<tr>
<td>DSL</td>
<td>11–15 ohms</td>
<td>11–13 ohms</td>
<td>11–13 ohms</td>
<td>11–13 ohms</td>
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<tr>
<td>SLT</td>
<td>5.0–5.6 ohms</td>
<td>5.1–5.5 ohms</td>
<td>5.1–5.5 ohms</td>
<td>5.1–5.5 ohms</td>
</tr>
</tbody>
</table>

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**Bolt Color Code**

<table>
<thead>
<tr>
<th>Bolt Color Code</th>
<th>Bolt Length</th>
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</thead>
<tbody>
<tr>
<td>Red</td>
<td>10mm</td>
</tr>
<tr>
<td>Green</td>
<td>12mm</td>
</tr>
<tr>
<td>Blue</td>
<td>14mm</td>
</tr>
<tr>
<td>Purple</td>
<td>25mm</td>
</tr>
<tr>
<td>White</td>
<td>30mm</td>
</tr>
<tr>
<td>Yellow</td>
<td>41mm</td>
</tr>
<tr>
<td>Orange</td>
<td>45mm</td>
</tr>
</tbody>
</table>
3. Valve Body Disassembly: Step 2
NOTE: See Figure 4 for bolt locations.

a. Remove the seven lower valve body bolts shown.

b. Hold separator plate against lower valve body. Lift off of upper valve body and lay on bench with separator plate side up.

c. Remove separator plate from lower valve body. Note the location of all the checkballs and retainers. Verification on page 8 in booklet.

4. Installation
Install Zip Kit parts as shown on diagram of separate quick guide sheet included in this Zip Kit.

- When installing the lockup control plunger valve and sleeve kit in Step 2, reuse the OE spring in between the new valve and sleeve if applicable.
- The Sonnax O-ringed end plugs in Step 3 must be installed with the O-ring outboard.

5. Valve Body Assembly: Step 1
NOTE: See Figure 4 for bolt locations.

a. Loosely install the seven bolts.

b. Torque all bolts to 97 in-lb.

6. Valve Body Assembly: Step 2
NOTE: See Figure 5 for bolt locations and torque specifications.

a. Reinstall checkball, location A.

b. Install checkball and bracket, then loosely install bolt #1.

c. Loosely install the seven upper valve body cover bolts, #2 and #3.

d. Loosely install the eight upper valve body bolts #4 and #5.

e. Torque all bolts in previous steps according to specs in Figure 5.

f. Install the five solenoids and bolts shown in Figure 2 and torque per spec indicated.

7. Valve Body Reinstallation to Case
NOTE: See Figure 6 for bolt locations.

a. Loosely install all 17 bolts. Reference bolt color and length chart on previous page.

b. Torque all bolts to 8 ft-lb.

<table>
<thead>
<tr>
<th>Bolt ID &amp; Color Code</th>
<th>Installation Torque Specs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolt #1</td>
<td>58 in-lb</td>
</tr>
<tr>
<td>Bolt #2</td>
<td>58 in-lb</td>
</tr>
<tr>
<td>Bolt #3</td>
<td>58 in-lb</td>
</tr>
<tr>
<td>Bolt #4</td>
<td>97 ft-lb</td>
</tr>
<tr>
<td>Bolt #5</td>
<td>97 ft-lb</td>
</tr>
</tbody>
</table>
Critical Wear Areas & Vacuum Test Locations

NOTE: OE valves are shown in rest position and should be tested in rest position unless otherwise indicated. Test locations are pointed to with an arrow. Springs are not shown for visual clarity. Low vacuum reading indicates wear and Sonnax parts noted for replacement.

Upper Valve Body – Bottom Side • U241E Shown Here

C2 (Direct) Lockup Valve
- Burned C2 clutch
- Slipping/Flares in 3rd and 4th

C2 (Direct) Exhaust Valve
- Burned C2 clutch
- Slipping/Flares in 3rd and 4th

Clutch Apply Control Plunger Valve Assembly
- Clutch failure
- Burnt clutches
Replace with Sonnax Part No. 57917E-05K*

End Plugs, Multiple Locations
- Oil pressure loss
- Shift, engagement and converter complaints
Replace with Sonnax Part No. 57917E-20K*
NOTE: Four Locations = ★

Secondary Regulator Valve
- Harsh lockup
- Converter apply/release complaints
- Burnt converters
Replace with Sonnax Part No. 57917E-16K

Lockup Control Valve
- TCC apply/release problems
- Converter codes
- Burnt converters
NOTE: Test both ports at the same time.

Lockup Relay Valve
- TCC apply/release problems
- Converter codes
- Burnt converters
- Overheating

Solenoid Modulator Valve
- Harsh/Flare upshifts
- TCC slip or RPM cycling
- Low cooler flow
Replace with Sonnax Part No. 57917E-13K
- Overheating
- Excessive reverse pressure
- Bind-up or banging shifts

B1 (2nd Gear Brake) Control Valve
- Burned B1 brake
- Slipping/Flares in 2nd gear

*Part numbers with an asterisk (*) are included in this Zip Kit. Other part numbers are available separately.
Upper Valve Body – Top Side • U241E Shown Here

**C2 (Direct) Accumulator Piston**
- Burned C2 clutch
- Slipping/Flares in 3rd and 4th

*Replace with Sonnax Part No. 57917E-19K*

**B1 (2nd Gear) Accumulator Piston**
- Burned B1 brake
- Slipping/Flares in 2nd

*Replace with Sonnax Part No. 57917E-19K*

Items without part numbers are valid vacuum test locations for indicated drivability complaints, but do not have corresponding Sonnax parts due to low percentage of bore wear.
Critical Wear Areas & Vacuum Test Locations

NOTE: OE valves are shown in rest position and should be tested in rest position unless otherwise indicated. Test locations are pointed to with an arrow. Springs are not shown for visual clarity. Low vacuum reading indicates wear and Sonnax parts noted for replacement.

Lower Valve Body – Bottom Side • U241E Shown Here

Pressure Regulator Valve
- Low/High line pressure
- Soft/Harsh shifts
- Clutch and brake failure
- Higher than normal reverse pressure
- Low converter pressure
*Replace with Sonnax Part No. 57917E-08K*

C2 (Direct Clutch) Control Valve
- Burned C2 clutch
- Slipping/Flares in 3rd and 4th

Boost Valve Assembly
- Insufficient line rise in drive ranges
- Higher than normal reverse pressure
- Soft shifts
*Replace with Sonnax Part No. 57917E-01K*

B2 (1st and Reverse Brake) Control Valve
- Burned B2 brake
- Delayed reverse
- Delayed engagement in manual low

B1 (2nd Gear Brake) Control Valve
- Burned B1 brake
- Slipping/Flares in 2nd gear

End Plugs, Multiple Locations
- Oil pressure loss
- Shift, engagement and converter complaints
*Replace with Sonnax Part No. 57917E-20K*
*NOTE: Three Locations = ★*

*Part numbers with an asterisk (*) are included in this Zip Kit. Other part numbers are available separately.*
OE Exploded View

Upper & Lower Valve Body • U241E Shown Here

### Upper Valve Body Descriptions

<table>
<thead>
<tr>
<th>I.D. No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>C2 Lock Valve</td>
</tr>
<tr>
<td>102</td>
<td>Secondary Regulator Valve</td>
</tr>
<tr>
<td>103</td>
<td>Lockup Control Valve</td>
</tr>
<tr>
<td>104</td>
<td>Lockup Relay Valve</td>
</tr>
<tr>
<td>105</td>
<td>Solenoid Modulator Valve</td>
</tr>
<tr>
<td>106</td>
<td>B3 Orifice Control Valve</td>
</tr>
<tr>
<td>107</td>
<td>B1 Lock Valve</td>
</tr>
<tr>
<td>108</td>
<td>Clutch Apply Control Valve</td>
</tr>
<tr>
<td>109</td>
<td>C2 Exhaust Valve</td>
</tr>
<tr>
<td>110</td>
<td>Three-Way Check Valve</td>
</tr>
</tbody>
</table>

### Upper Valve Body Descriptions

<table>
<thead>
<tr>
<th>I.D. No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>111</td>
<td>C2 Accumulator Piston</td>
</tr>
<tr>
<td>112</td>
<td>B1 Accumulator Piston</td>
</tr>
</tbody>
</table>
OE Exploded View

Upper & Lower Valve Body • U241E Shown Here

<table>
<thead>
<tr>
<th>I.D No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>201</td>
<td>C2 Control Valve</td>
</tr>
<tr>
<td>202</td>
<td>Main Regulator Valve</td>
</tr>
<tr>
<td>203</td>
<td>B2 Control Valve</td>
</tr>
<tr>
<td>204</td>
<td>B1 Control Valve</td>
</tr>
<tr>
<td>205</td>
<td>3-4 Shift Valve</td>
</tr>
<tr>
<td>206</td>
<td>Manual Valve</td>
</tr>
</tbody>
</table>

Checkball is not used in all units. Only use in models that have a corresponding hole in the separator plate at this location.