



TOYOTA/LEXUS U140E, U140F, U240E, U241E ZIP KIT®

PART NUMBER U140E-U241E-ZIP

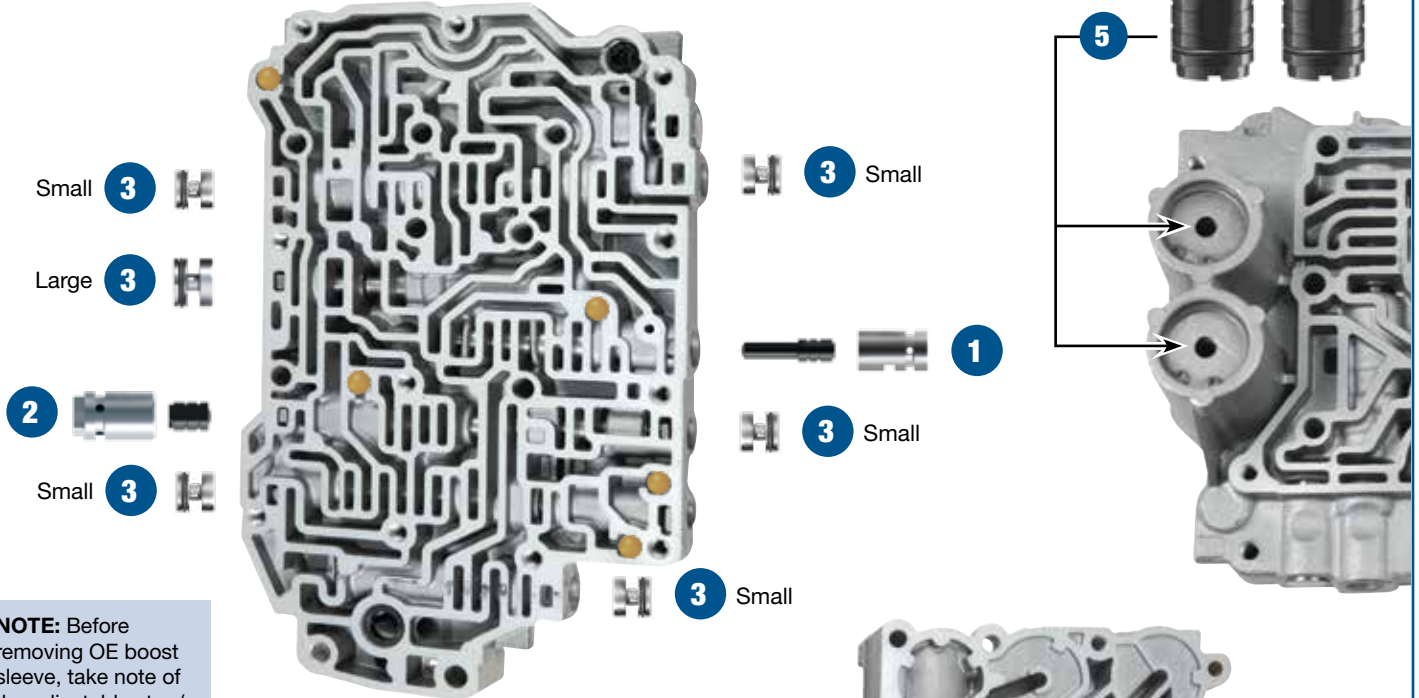
QUICK GUIDE

Parts are labeled here in order of installation. See other side of sheet for details on kit contents.

INSTALLATION DIAGRAM

Upper Valve Body

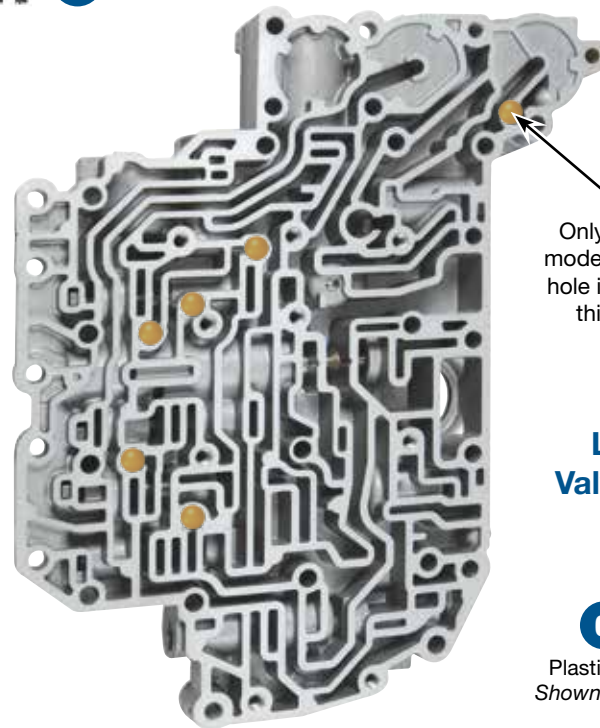
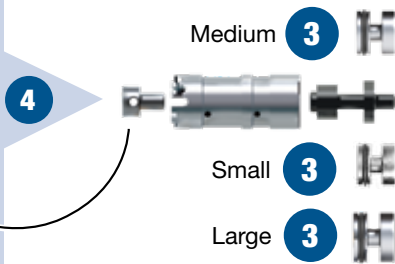
Install with open end out.



NOTE: Before removing OE boost sleeve, take note of the adjustable step/pin location and ensure the Sonnax sleeve is installed at the same height/location. Failure to do so will result in incorrect line rise.



Cutaway shows a side view of lower valve body with Sonnax boost valve kit installed.



Lower Valve Body

6

Plastic Checkball
Shown in 11 places.

In addition to general rebuilding tips and technical information, the technical booklet included in this kit contains vacuum testing and additional repair options for higher mileage units or for repairing specific complaints which are beyond the scope of this kit.

Kit Contents & Installation Steps

Step 1 Replace OE Clutch Apply Control Sleeve & Plunger Valve

Packaging Pocket 1

- Plunger Valve
- Plunger Sleeve

Step 2 Replace OE Lockup Control Sleeve & Plunger Valve



NOTE: Reuse OE spring if applicable.

Packaging Pocket 2

- Plunger Valve
- Plunger Sleeve

Step 3 Replace OE End Plugs



NOTE: Install all end plugs with the O-ring outboard. Place O-ring into end plug groove. Lubricate with Sonnax Slippery Stick **O-LUBE** and roll on bench to size.

Packaging Pocket 3

- Small End Plugs (6)
- Small O-Rings (9) 3 Extra

Packaging Pocket 4

- Medium End Plug
- Medium O-Rings (2) 1 Extra

Packaging Pocket 5

- Large End Plugs (2)
- Large O-Rings (3) 1 Extra

Step 4 Replace OE Boost Sleeve & Valve

Packaging Pocket 6

- Boost Valve
- Boost Sleeve
- Boost Plug

Step 5 Replace OE Accumulator Pistons



NOTE: Place O-ring into deepest piston groove. Lubricate with Sonnax Slippery Stick **O-LUBE** and roll on bench to size. Install into casting bore with the O-Ring inboard.

Packaging Pocket 7

Accumulator Piston

Packaging Pocket 8

Accumulator Piston

Packaging Pocket 9

O-Rings (3)

1 Extra

Step 6 Replace OE Checkballs

Packaging Pocket 10

Plastic Checkballs (11)



TOYOTA/LEXUS U140E, U140F, U240E, U241E ZIP KIT®

PART NUMBER **U140E-U241E-ZIP**

INSTALLATION & TESTING BOOKLET

| Torque Specifications | |
|--|---|
| Pan Filter to Valve Body 96 in-lb | Oil Pan to Transaxle 72 in-lb |
| Component Pack Clearance | |
| Forward (C1) Clutch U140E/F: 4-Cyl .069-.082" U140E/F: V6 .082-.095" U240/241E: .056-.069" | Low & Reverse (B2) Brake U140E/F: 4-Cyl .040-.048" U140E/F: V6 .043-.051" U240/241E: .043-.049" |
| 2nd (B1) Brake U140E/F: .024-.036" U240E: .024-.029" U241E: .024-.036" | Direct (C2) Input U140E/F: .024-.033" U240/241E: .024-.029" |
| Underdrive (C3) Clutch U140E/F: .059-.075" U240E/241E: .058-.067" | Underdrive (B3) Brake U140E/F: .071-.087" U240/241E: .074-.082" |
| End Play | |
| Input Shaft U140E/F: .010-.049" U240E/241E: .011-.049" | Underdrive Unit U140E/F: .020-.039" U240E/241E: .008-.027" |
| Direct Clutch Assembly U140E/F: .008-.037" U240E/241E: .008-.035" | |
| Fluid | |
| Toyota Type T-IV | |

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.

Toyota/Lexus U140E/F, U240E, U241E Clutch Application Chart

| Gear Range | C1 | C2 | C3 | B1 | B2 | B3 | F1 | F2 |
|--------------|----|----|----|----|----|----|----|----|
| Park | | | | | | ON | | |
| Reverse | | ON | | | ON | ON | | |
| Neutral | | | | | | ON | | |
| D-1st Gear | ON | | | | | ON | ON | ON |
| D-2nd Gear | ON | | | ON | | ON | | ON |
| D-3rd Gear | ON | ON | | | | ON | | ON |
| D-Overdrive | ON | ON | ON | | | | | |
| 2-1st Gear | ON | | | | | ON | ON | ON |
| 2-2nd Gear | ON | | | ON | ON | ON | | ON |
| Low-1st Gear | ON | | | | ON | ON | ON | ON |

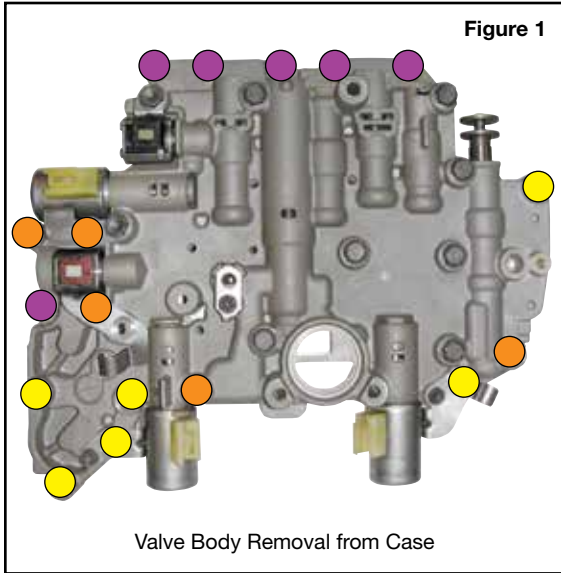
Toyota/Lexus U140E/F, U240E, U241E Solenoid Function & Apply Chart

| Gear | SL1 Controls B1 Brake | SL2 Controls C2 Clutch | S4 Controls 3-4 Shift |
|------|-----------------------|------------------------|-----------------------|
| 1st | ON | ON | Off |
| 2nd | Off | ON | Off |
| 3rd | | Off | Off |
| 4th | | Off | ON |

SLT: Controls line pressure.

DSL: Controls lockup clutch.

N-D ENGAGEMENT: 3rd gear is commanded during the engagement, then 1st after the engagement is complete.



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.

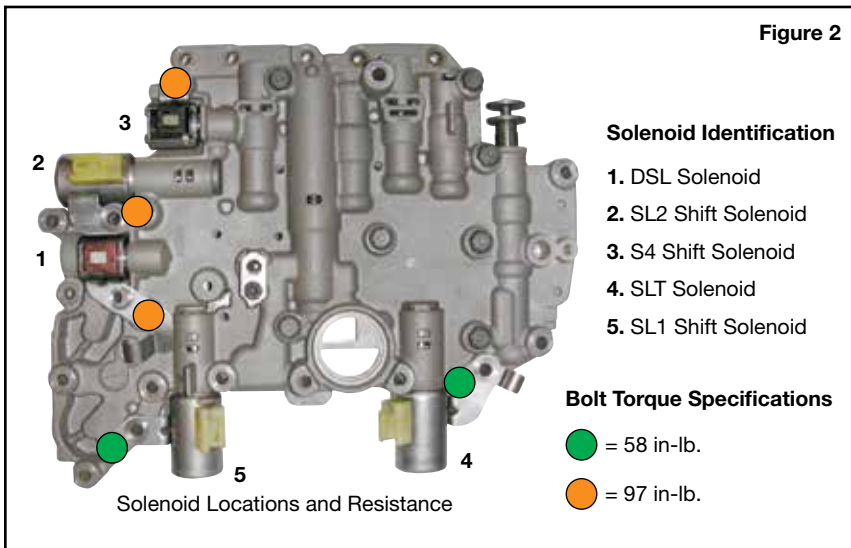
b. Remove the eight upper valve body bolts, **#1** and **#2**.

c. Remove the seven upper valve body cover bolts, **#3** and **#4**.

d. Remove bolt **#5**, bracket and checkball.

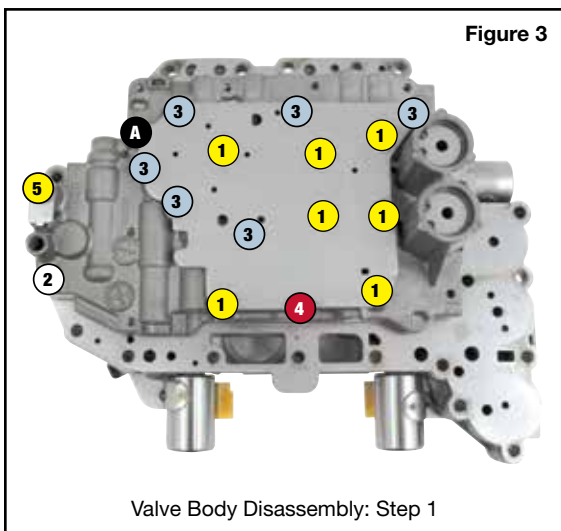
e. Remove checkball, location **A**.

| Bolt Color Code | Bolt Length |
|-----------------|-------------|
| Red | 10mm |
| Green | 12mm |
| Blue | 14mm |
| Purple | 25mm |
| White | 30mm |
| Yellow | 41mm |
| Orange | 45mm |



Solenoid Resistance Chart

| Solenoid | U140E | U140F | U240E | U241F |
|----------|--------------|--------------|--------------|--------------|
| SL1 | 5.1–5.5 ohms | 5.0–5.6 ohms | 5.0–5.6 ohms | 5.0–5.6 ohms |
| SL2 | 5.1–5.5 ohms | 5.1–5.5 ohms | 5.1–5.5 ohms | 5.1–5.5 ohms |
| S4 | 11–15 ohms | 11–15 ohms | 11–15 ohms | 11–15 ohms |
| DSL | 11–15 ohms | 11–13 ohms | 11–13 ohms | 11–13 ohms |
| SLT | 5.0–5.6 ohms | 5.1–5.5 ohms | 5.1–5.5 ohms | 5.1–5.5 ohms |



3. Valve Body Disassembly: Step 2

NOTE: See **Figure 4** for bolt locations.

- Remove the seven lower valve body bolts shown.
- Hold separator plate against lower valve body. Lift off of upper valve body and lay on bench with separator plate side up.
- 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.

- Loosely install the seven bolts.
- Torque all bolts to 97 in-lb.

6. Valve Body Assembly: Step 2

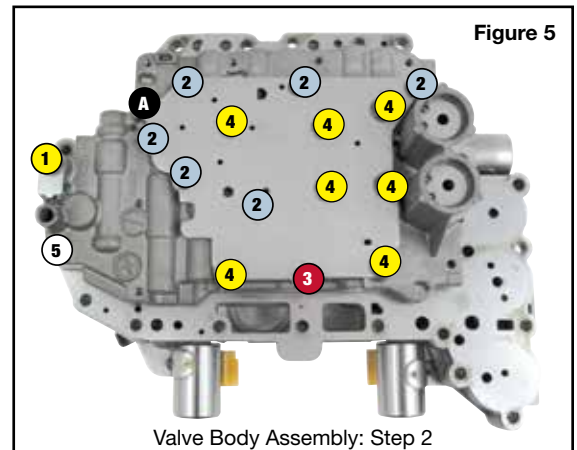
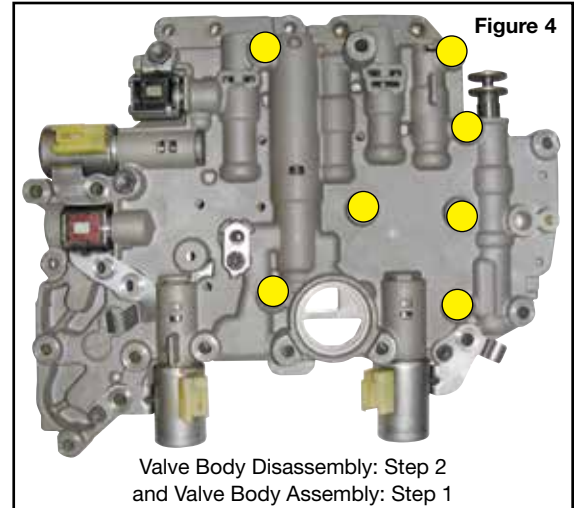
NOTE: See **Figure 5** for bolt locations and torque specifications.

- Reinstall checkball, location **A**.
- Install checkball and bracket, then loosely install bolt **#1**.
- Loosely install the seven upper valve body cover bolts, **#2** and **#3**.
- Loosely install the eight upper valve body bolts **#4** and **#5**.
- Torque all bolts in previous steps according to specs in **Figure 5**.
- Install the five solenoids and bolts shown in **Figure 2** and torque per spec indicated.

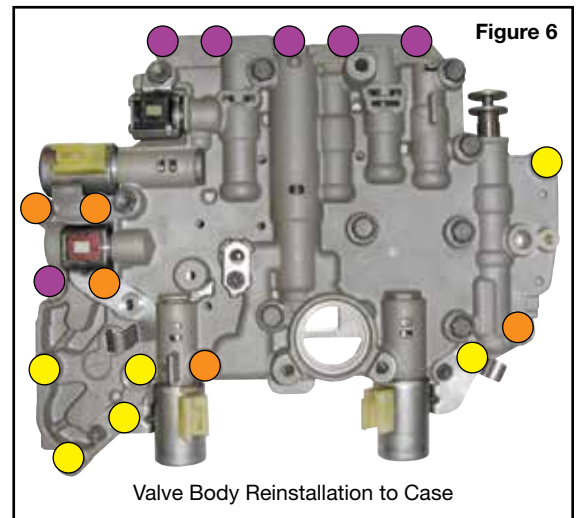
7. Valve Body Reinstallation to Case

NOTE: See **Figure 6** for bolt locations.

- Loosely install all 17 bolts. Reference bolt color and length chart on previous page.
- Torque all bolts to 8 ft-lb.



| Bolt ID & Color Code | Installation Torque Specs |
|----------------------|---------------------------|
| Bolt #1 | 58 in-lb |
| Bolt #2 | 58 in-lb |
| Bolt #3 | 58 in-lb |
| Bolt #4 | 97 in-lb |
| Bolt #5 | 97 in-lb |



Critical Wear Areas & Vacuum Test Locations



Drop-In Zip Valve™
Parts Available

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 are noted for replacement.

**Upper Valve Body – Bottom Side
U241E Shown**



For specific vacuum test information, refer to individual part instructions included in kits and available at www.sonnax.com.

End Plugs, Multiple Locations

- Inconsistent shift quality • Clutch failure
- Flare/Bump/Bang shifts • Shift codes

Replace with **Sonnax Part No. 57917E-20K** **NOTE:** Six Locations = ★

C2 (Direct) Exhaust Valve

- C2 Clutch burned
- Slipping/Flares in 3rd and 4th

Clutch Apply Control Plunger Valve Assembly

- Clutch failure • Burnt clutches • Shift concerns
- Replace with **Sonnax Part No. 57917E-05K**

C2 (Direct) Lockup Valve

- C2 Clutch burned
- Slipping/Flares in 3rd and 4th

Secondary Regulator Valve

- TCC apply & release concerns • TCC codes
- Burnt converter • Lube failures

Replace with **Sonnax Part No. 57917E-16K** Requires F-57917E-TL16 & VB-FIX

Lockup Control Valve

- TCC apply & release concerns • TCC codes
- Burnt converter • Harsh downshifts

Replace with **Sonnax Part No. 27741-25K** Requires F-27741-TL25 & VB-FIX
NOTE: Test both ports at the same time.

Lockup Control Plunger Assembly

- TCC apply & release concerns
- Burnt converter • TCC codes

Replace with **Sonnax Part No. 57917E-03K**

NOTE: Vacuum testing of lockup control plunger assembly not possible while in casting. Perform visual inspection to identify wear.

Lockup Relay Valve

- TCC apply & release concerns
- Overheating • TCC codes • Burnt converter

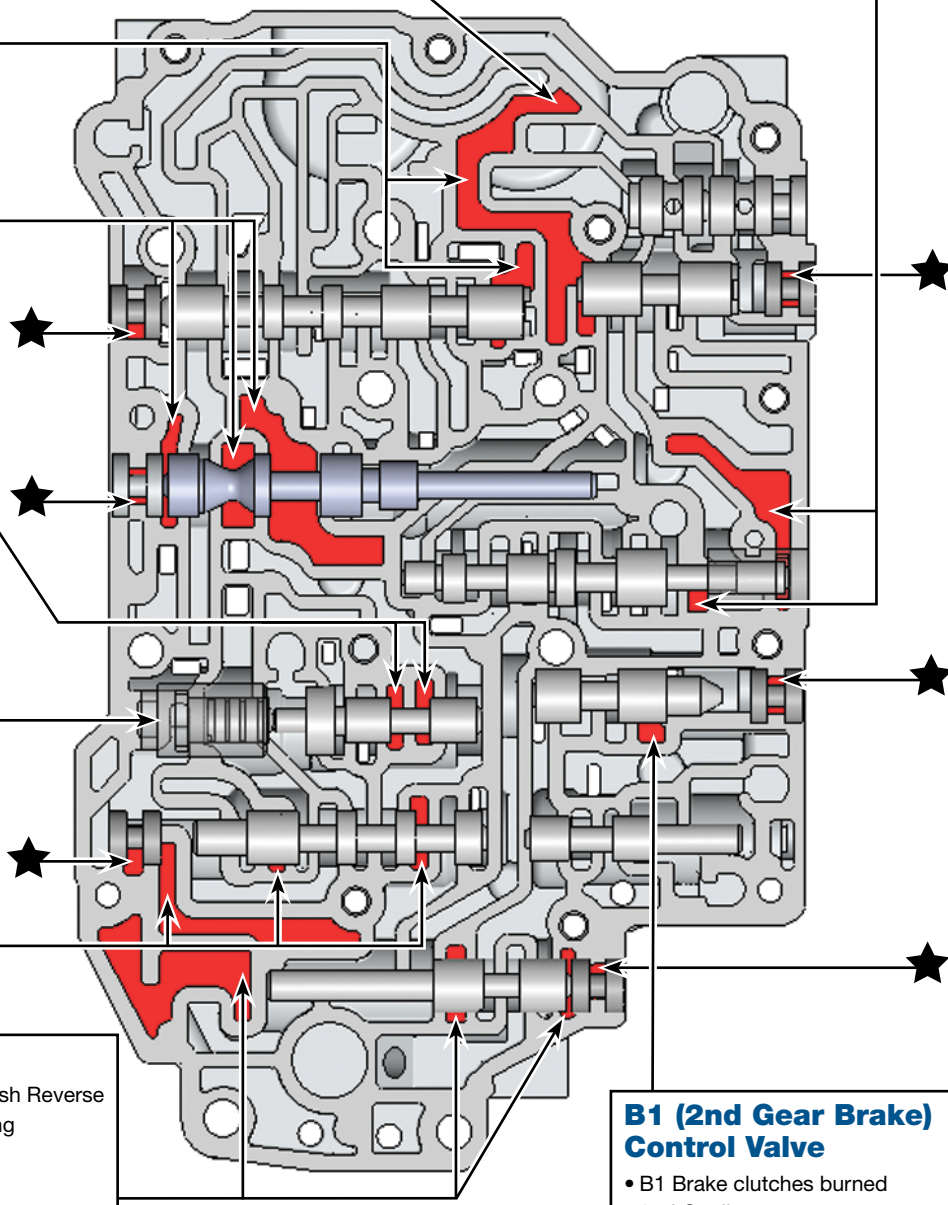
Solenoid Modulator Valve

- Slips & flares • Harsh upshifts • Bind-up • Harsh Reverse
- TCC cycling/slip • Low cooler flow • Overheating
- Excess Reverse pressure & distorted housings

Replace with **Sonnax Part No. 57917E-13K** Requires F-57917E-TL13 & VB-FIX

B1 (2nd Gear Brake) Control Valve

- B1 Brake clutches burned
- 2nd Quality poor



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

Upper Valve Body – Top Side
U241E Shown

C2 (Direct) Accumulator Piston ZIP

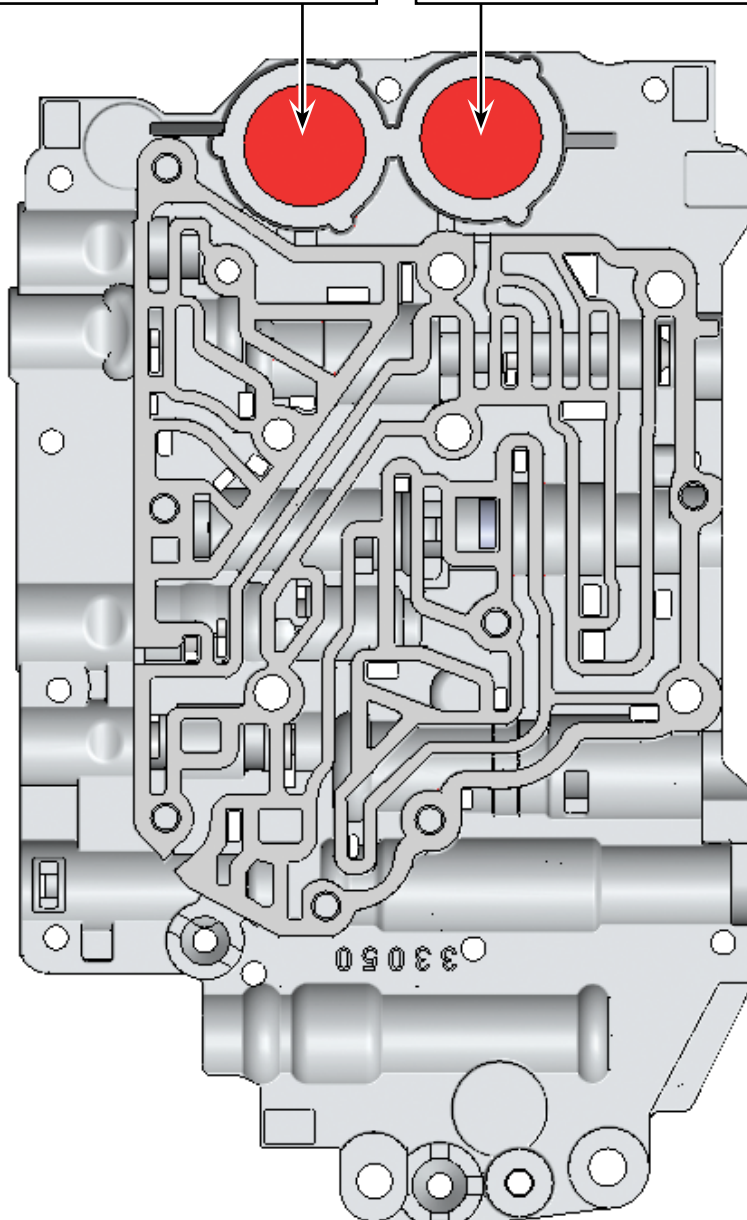
- Delayed engagement • Flare shifts
- Forward slip • Burnt clutches

Replace with Sonnax Part No.
57917E-19K

B1 (2nd Gear) Accumulator Piston ZIP

- Delayed engagement • Flare shifts
- Forward slip • Burnt clutches

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 are noted for replacement.

**Lower Valve Body – Bottom Side
U241E Shown**



For specific vacuum test information, refer to individual part instructions included in kits and available at www.sonnax.com.

End Plugs, Multiple Locations

- Inconsistent shift quality • Clutch failure
- Flare/Bump/Bang shifts • Shift codes

Replace with **Sonnax Part No. 57917E-20K**

NOTE: Three Locations = ★

Pressure Regulator Valve

- Low/High line pressure
- Soft/Harsh shifts
- Clutch & band failure
- High line pressure in Reverse
- Low converter pressure

Replace with **Sonnax Part No. 57917E-08K** Requires 57917E-TL8

C2 (Direct Clutch) Control Valve

- C2 Clutch burned
- Slipping/Flares in 3rd and 4th

Boost Valve Assembly

- Soft shifts
- Low line rise in Drive
- High line pressure in Reverse

Replace with **Sonnax Part No. 57917E-01K**

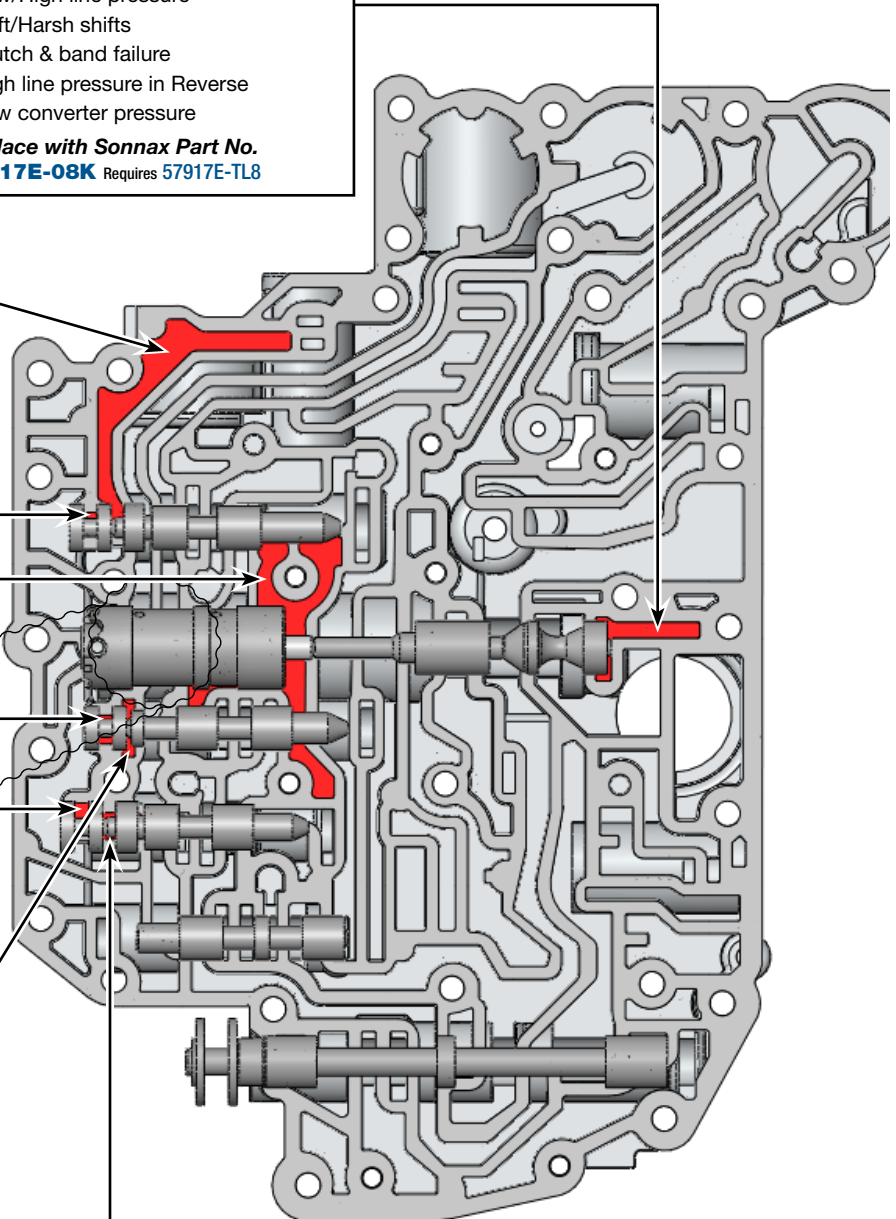


B2 (1st and Reverse Brake) Control Valve

- B2 Brake clutches burned
- Delayed Reverse
- Delayed engagement in manual low

B1 (2nd Gear Brake) Control Valve

- B1 Brake clutches burned
- 2nd Quality poor



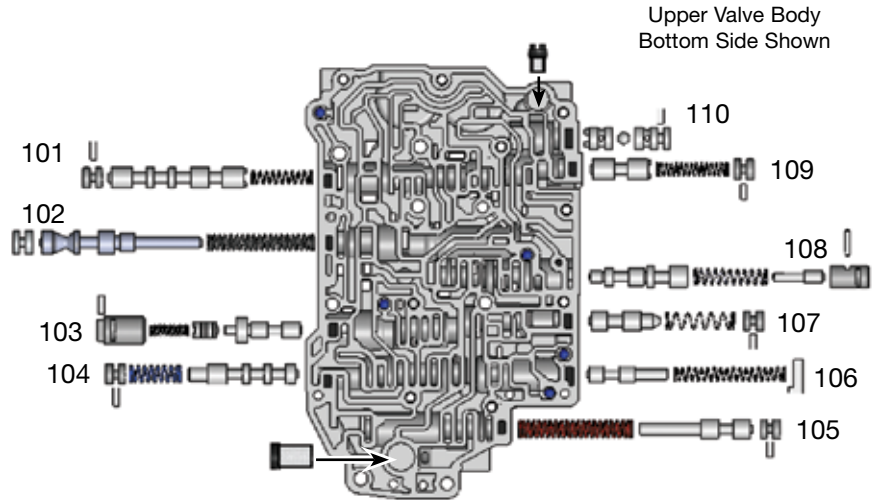
Part numbers with an asterisk () are included in this Zip Kit. Other part numbers are available separately.

OE Exploded View

Upper & Lower Valve Body • U241E Shown Here

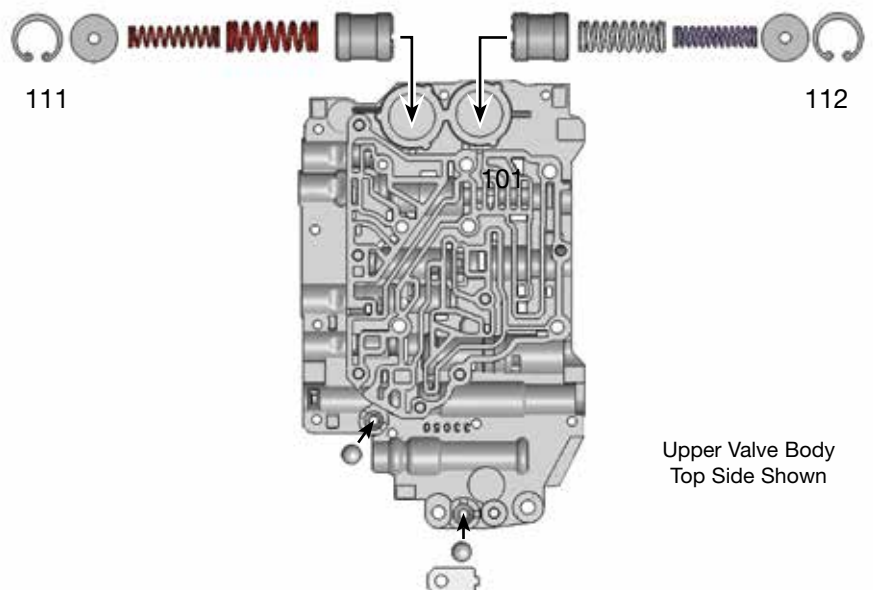
Upper Valve Body Descriptions

| I.D No. | Description |
|---------|----------------------------|
| 101 | C2 Lockup Valve |
| 102 | Secondary Regulator Valve |
| 103 | Lockup Control Valve |
| 104 | Lockup Relay Valve |
| 105 | Solenoid Modulator Valve |
| 106 | B3 Orifice Control Valve |
| 107 | B1 Lockup Valve |
| 108 | Clutch Apply Control Valve |
| 109 | C2 Exhaust Valve |
| 110 | Three-Way Check Valve |



Upper Valve Body Descriptions

| I.D. No. | Description |
|----------|-----------------------|
| 111 | C2 Accumulator Piston |
| 112 | B1 Accumulator Piston |

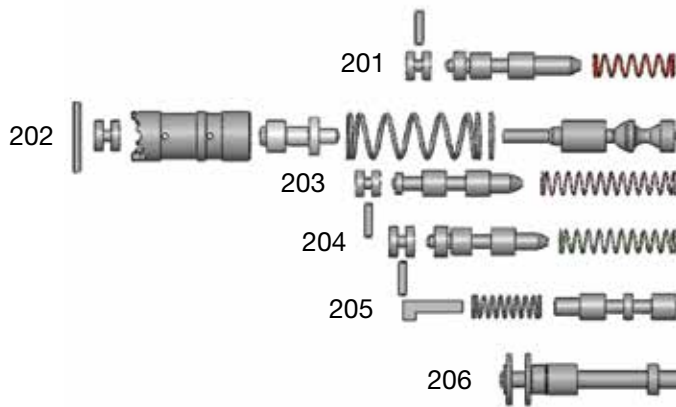


OE Exploded View

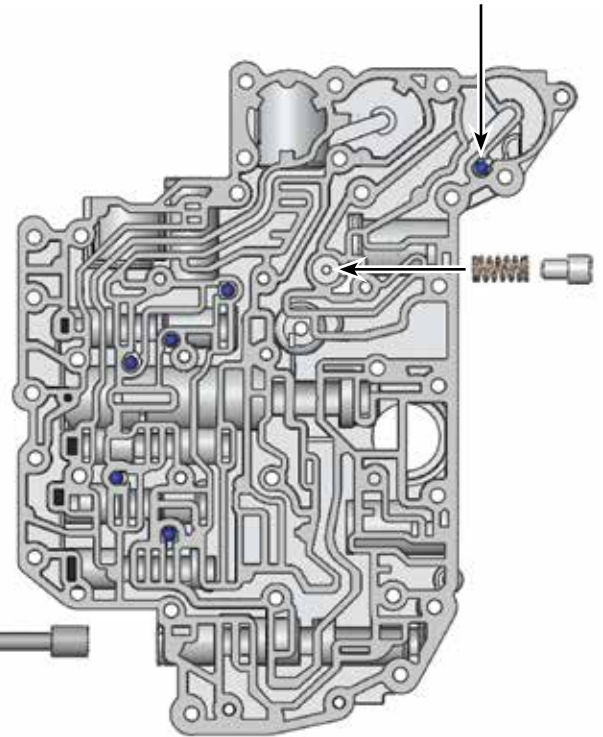
Upper & Lower Valve Body • U241E Shown Here

Lower Valve Body Descriptions

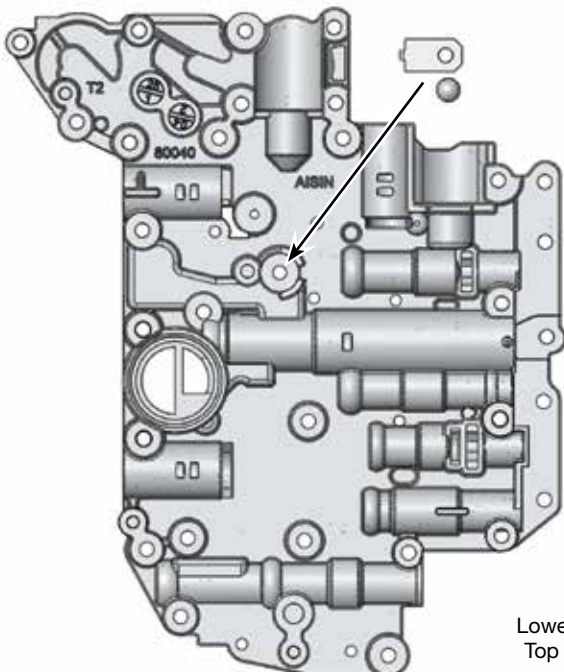
| I.D No. | Description |
|---------|----------------------|
| 201 | C2 Control Valve |
| 202 | Main Regulator Valve |
| 203 | B2 Control Valve |
| 204 | B1 Control Valve |
| 205 | 3-4 Shift Valve |
| 206 | Manual Valve |



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



Lower Valve Body
Bottom Side Shown



Lower Valve Body
Top Side Shown