

## Remanufactured Linear Solenoid Kit

**Part No.**  
**59947-69K**

- SLS Solenoid, Green
- SLT Solenoid, Blue
- SLU Solenoid, Black

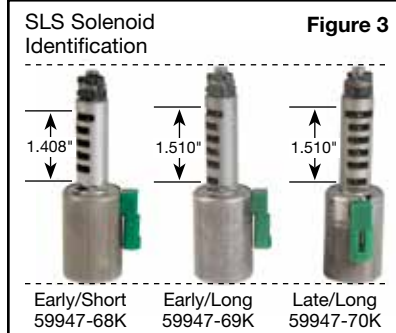
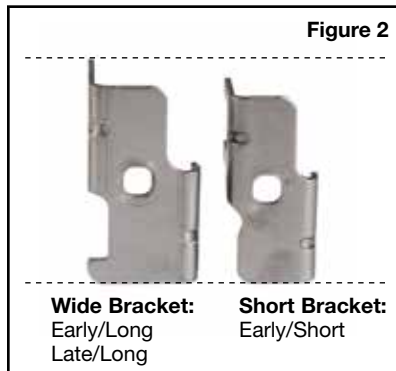
**NOTE:** Early/Long

**Also Available**

### Remanufactured Linear Solenoid Kits

**59947-68K** Early/Short  
**59947-70K** Late/Long

**CAUTION:** Ensure correct style (early/short, early/long or late) of SLS/SLT solenoid based on connector direction and bracket design (Figure 1).



## AW 55-50SN, AW 55-51SN, AF23/33, RE5F22A



**NOTE:** These rebuilt solenoids are 100% tested and calibrated to OE specifications. Readjustment should not be required if the valve body leakage has been addressed and a relearn process completed.

### 1. Installation

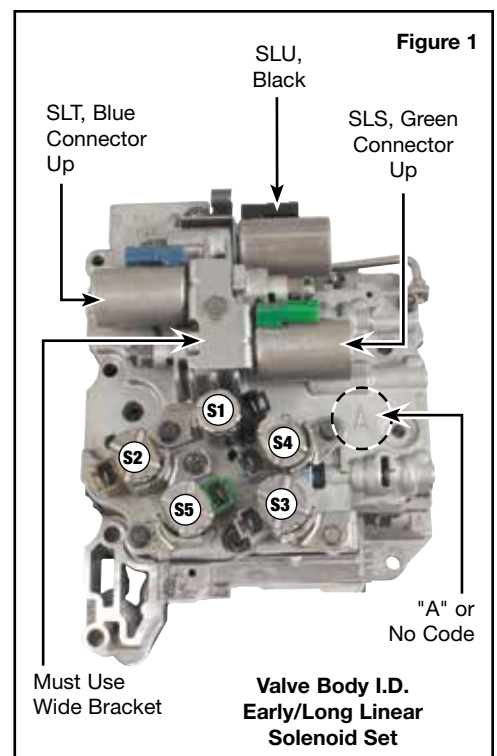
- Remove mounting bolts and brackets.
- Remove solenoids.
- Install Sonnax solenoids. Verify correct connector direction on SLS and SLT solenoids.
- Ensure proper orientation of OE bracket. Bolt to 62 in-lbs.

### 2. Relearn Process

A relearn process is **REQUIRED** to prevent shift feel complaints. Refer to OE information on specific relearn process.

### 3. Final Testing

Many wear areas are common in these valve bodies and solenoids alone will often not fix the complaints. The best practice is to vacuum test the valve body bores and



make repairs as required prior to completing the valve body. See Sonnax website for details on vacuum testing and our vacuum test guides by applications.

Sonnax has a full line of valve body solutions for this and other applications. Please see our website for further details and to view our valve body layouts for related complaints and solutions.

### Solenoid Identification & Function

Figure 4

| Solenoid | Connector        | Wire(s) Color         | Flow                      | Resistance             | Function                                   |
|----------|------------------|-----------------------|---------------------------|------------------------|--|
| SLU      | Black            | Green, Brown          | N.C.                      | 5.0–5.6 ohms at 68°F   | TCC apply, Reverse, 1-2, 2-3 Up/Down shift |
| SLT      | Blue             | Green, Gray           | N.O.                      |                        | Line rise, Engagements, Converter Pressure |
| SLS      | Green            | Blue, Red             | N.O.                      |                        | Clutch Pressure, Shift Quality             |
| S1       | Black            | White                 | N.O.                      | 13.5–15.5 ohms at 68°F | 1st, 1-2 Shift, Reverse                    |
| S2       | Black, Gray      | Black                 | N.O. - GM<br>N.C. - Volvo |                        | 2nd, 3rd-4-5 Shift                         |
| S3       | Gray             | Yellow                | N.C.                      |                        | Reverse, 3-4 Shift FWD-Engagement          |
| S4       | Blue, Green      | Purple, Red           | N.O.                      |                        | 3, 4, 5, 2-3 Shift                         |
| S5       | Green, Red, Gray | Blue, Black-'02 Volvo | N.C.                      |                        | Reverse Engagement                         |

### Linear Solenoid Strategy

Figure 5

| Gear                      | SLU | SLT | SLS |
|---------------------------|-----|-----|-----|
| Park/Drive                |     | X   |     |
| Park/Reverse              |     | X   | X   |
| 1-2, 2-1                  | X   |     |     |
| 2-3                       | X   | X   |     |
| 3-2                       | X   |     | X   |
| 3-4, 4-3                  | TC  |     | X   |
| 4-5, 5-4                  | TC  |     | X   |
| TCC                       | X   |     |     |
| All Upshifts & Downshifts |     | X   | X   |

Key: X = Greatest effect of this solenoid on shift indicated.  
TC = Drivability effect on converter clutch.

### Solenoid Adjustments

Figure 6

| Solenoid  | Adjust Inward (CW)  | Adjust Outward (CCW)   |
|---|---|--|
| SLT<br>Line Rise Solenoid<br>Blue Connector       | <p><b>Increase</b> SLT pressure if:</p> <ul style="list-style-type: none"> <li>• Neutral-to-Drive delay</li> <li>• Long shifts</li> <li>• Low cooler flow</li> </ul>                    | <p><b>Decrease</b> SLT pressure if:</p> <ul style="list-style-type: none"> <li>• Long 2-3 shift due to clutch overlap (2-3 Bind-up)</li> <li>• 3-2 Coastdown bump</li> <li>• Harsh forward engagement</li> <li>• Harsh TCC apply</li> <li>• Loss of lube or cooler flow</li> </ul> |
| SLS<br>Shift Pressure Solenoid<br>Green Connector | <p><b>Increase</b> SLS pressure if:</p> <ul style="list-style-type: none"> <li>• Soft upshifts</li> <li>• Low speed 2-3 flare</li> <li>• Slight RPM flare on 3-4, 4-5 shifts</li> </ul> | <p><b>Decrease</b> SLS pressure if:</p> <ul style="list-style-type: none"> <li>• Harsh reverse</li> <li>• Harsh 1-2 shift</li> <li>• Harsh 2-3 shift with end bump</li> <li>• Loss of TCC apply</li> <li>• High C1 clutch pressure</li> <li>• 3-2 Shift flare/bang</li> </ul>      |
| SLU<br>Lockup Solenoid<br>Black Connector         | <p><b>Decrease</b> SLU pressure if:</p> <ul style="list-style-type: none"> <li>• Soft shifts</li> <li>• Early TCC apply</li> <li>• No TCC lockup</li> </ul>                             | <p><b>Increase</b> SLU pressure if:</p> <ul style="list-style-type: none"> <li>• Hard 1-2, 2-1 shift</li> <li>• Firm/Late TCC apply</li> </ul>   |

### Valve Related Complaints

Figure 7

| OE Valve                         | Complaints  |
|----------------------------------|---|
| Solenoid Modulator Valve         | • Loss of 3rd, 4th, 5th gear • Low line pressure • 2-3 flare upshifts • No TCC apply • Delayed forward          |
| Neutral Relay Valve              | • No neutral control • Slips in reverse • No drive  |
| Solenoid Relay Plunger Assembly  | • No TCC apply • Harsh shifts • Engagement engine stall • Shift concerns • B5 clutch distress • 2-3 Shift flare |
| B4 Release Valve                 | • 2-3, 3-2 Shift concerns • 2-3 Flare • Harsh 3-2 coast downshift • 3-2 Neutral • 2-3 Neutral                   |
| Pressure Regulator Valve         | • Harsh/Soft shifts • Late shifts • Converter apply/release issues • Delayed engagements • Reverse slips        |
| Boost Valve Assembly             | • Harsh/Soft shifts • Late shifts • Converter apply/release issues • Delayed engagements • Reverse slips        |
| Lock-Up Relay Valve Assembly     | • Converter codes • Inadequate lube • TCC apply/release issues  |
| Secondary Regulator Valve        | • Overheated fluids • Poor shift quality • Overheated converters • High/Low SLT pressure • TCC slippage         |
| SLT Accumulator                  | • Delayed forward • Flare 2-3 upshift • Erratic SLT pressure • Low line pressure • Harsh shifts                 |
| Shift Pressure Control Assembly  | • Harsh 2-3, 3-4, 4-5 shift • No 5th gear • Burnt B1, B2, or C2 clutch • Low/High reverse pressure              |
| Lock-Up Control Valve & Assembly | • TCC apply/release issues • Converter codes • Burned converter   |
| End Plugs                        | • 2-3 Shift flare • Low SLT pressure • TCC slip, fluid overheated • Delayed forward • Poor shift quality        |