

SECTION : 5A

AISIN 50–40LE AUTOMATIC TRANSAXLE

CAUTION : *Disconnect the negative battery cable before removing or installing any electrical unit or when a tool or equipment could easily come in contact with exposed electrical terminals. Disconnecting this cable will help prevent personal injury and damage to the vehicle. The ignition must also be in LOCK unless otherwise noted.*

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|---|--------|---|---------|
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SPECIFICATIONS

TRANSAXLE SPECIFICATIONS

| Transaxle Capacity | |
|---|--|
| Maximum Torque Multiplication of the Torque Converter | 2.0 |
| Torque Converter Diameter | 241 mm (9.5 in.) |
| Ratios | |
| First Gear | 3.900:1 |
| Second Gear | 2.228:1 |
| Third Gear | 1.477:1 |
| Fourth Gear | 1.062:1 |
| Reverse | 4.271:1 |
| Measurements | |
| Weight of Transaxle | 81 kg (178.6 lb) |
| Fluid Capacity | 7.5 L (7.9 qts) |
| Automatic Transaxle Fluid | Texaco 1854 Automatic Transmission Fluid |

FLUID LEVEL SET AFTER SERVICE

| Repair | Amount of Fluid to Add After Repair |
|----------------------------|-------------------------------------|
| New Converter Installation | 2.5L (2.6 qts) |
| Complete Overhaul | 6.5–7.0L (6.9–7.4 qts) |
| Maintenance Replace | 5.5–6.0L (5.8–6.3 qts) |

Important : Make sure to maintain the proper fluid level in the transaxle. After each repair or service procedure, add the specified amount of fluid and check to confirm that the transaxle contains the appropriate fluid level. Refer to "Transaxle Fluid Level Checking Procedure" in this section.

LINE PRESSURE SPECIFICATION

| Application | Idling | Stall |
|-------------|--------------------------------|-----------------------------------|
| At "D"range | 3.5 – 4.1 kg/cm@ (50– 58 psi) | 10.6 – 13.6 kg/cm@ (151– 193 psi) |
| At "R"range | 6.0 – 7.0 kg/cm@ (85– 100 psi) | 16.3 – 20.5 kg/cm@ (282– 292 psi) |

RANGE REFERENCE

| Range | | Park/Neutral | Reverse | D | | | | 3 | | | L | |
|-------|---------------------|--------------|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gear | | P/N | R | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 1st | 2nd |
| C1 | Forward Clutch | | | A | A | A | A | A | A | A | A | A |
| C2 | Direct Clutch | | A | | | | A | | | | | |
| C3 | Under Drive Clutch | | | | | A | A | | | A | | |
| B1 | 2nd Coast Brake | | | | O | O | | | O | O | | O |
| B2 | 2nd Brake | | | | O | O | O | | O | O | | O |
| B3 | 1st & Reverse Brake | | O | | | | | | | | O | |
| B4 | Under Drive Brake | O | O | O | O | | | O | O | | O | O |

5A0 – 4 AISIN 50–40LE AUTOMATIC TRANSAXLE

| Gear | | P/N | R | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 1st | 2nd |
|------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| F1 | Planetary Sun gear Oneway Clutch | | | | L | L | | | L | L | | L |
| F2 | Ring Gear OneWay Clutch | | | L | | | | L | | | L | |
| F3 | Under Drive Plane- try Sun gear Oneway Clutch | | | L | L | | | L | L | | L | L |
| S1 | Solenoid No. 1 | OFF | OFF | OFF | ON | ON | OFF | OFF | ON | ON | OFF | ON |
| S2 | Solenoid No. 2 | OFF | OFF | ON | OFF | OFF | ON | ON | OFF | ON | ON | |

A : Applied L : Locking

FASTENER TIGHTENING SPECIFICATIONS

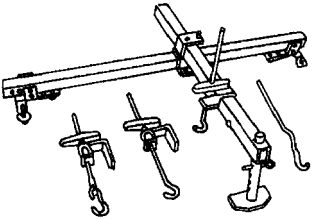
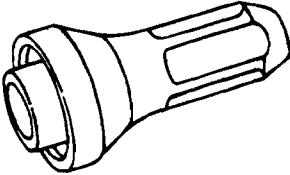
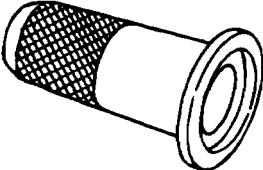
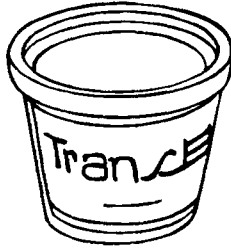
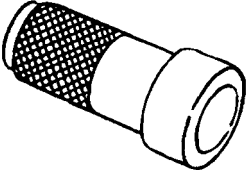
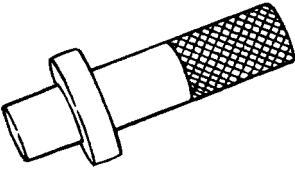
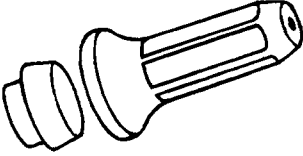
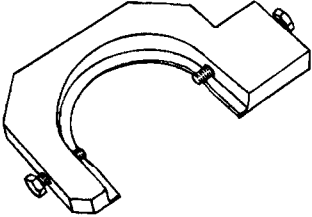
| Application | N•m | Lb–Ft | Lb–In |
|---|------------|--------------|--------------|
| Accumulator Piston Cover Screws | 8–12 | – | 71–106 |
| Coolant Surge Tank Bolt | 25 | 18 | – |
| Fluid Cooler Pipe to Radiator Bolt | 20–29 | 15–22 | – |
| Fluid Cooler Pipe to Transaxle Bolts | 20–29 | 15–22 | – |
| Fluid Filler Tube Bracket Nut | 15 | 11 | – |
| Front Engine Mount Bracket to Engine Bolts | 90 | 66 | – |
| Front Engine Mount Bracket to Transaxle through Bolts | 90 | 66 | – |
| Input Shaft Speed (ISS) Sensor | 4–7 | – | 35–62 |
| Key Interlock Solenoid Screws | 2 | – | 18 |
| Linear Solenoid to Valve Body Clamp Bolt | 6–7 | – | 53–62 |
| Lockup Solenoid to Valve Body Clamp Bolt | 6–7 | – | 53–62 |
| Lube Apply Tube Clamp Bolt | 4–7 | – | 35–62 |
| Oil Pan–to–Transaxle Case Bolts | 40 | 30 | – |
| Oil Pump–to–Transaxle Case Bolts | 20–29 | 15–22 | – |
| Output Shaft Speed (OSS) Sensor | 4–7 | – | 35–62 |
| Park/Neutral Position (PNP) Switch Bolt | 10–16 | 7–11 | – |
| Park/Neutral Position (PNP) Switch Retaining Nut | 6–8 | – | 53–71 |
| Park/Neutral Position (PNP) Switch Stud Bolt | 20–29 | 15–22 | – |
| Rear Valve Body Cover Plate No. 1 Bolts | 6–7 | – | 53–62 |
| Rear Valve Body Cover Plate No. 2 Bolts | 6–7 | – | 53–62 |
| Ring Gear Locking Plate Set Bolts | 90–103 | 66–76 | – |
| Shift Control Cable Adjuster Pinch Bolt Nut | 8 | – | 71 |
| Shift Control Cable Linkage Retaining Nut | 15 | 11 | – |
| Shift Control Cable Mounting Bracket Nuts | 6 | – | 53 |
| Shift Interlock Solenoid Bolts | 4 | – | 36 |
| Shift Solenoid 1 (SS1)–to–Valve Body Bolt | 6–7 | – | 53–62 |
| Shift Solenoid 2 (SS2)–to–Valve Body Bolt | 6–7 | – | 53–62 |
| Stator Support–to–Oil Pump Body M5 Bolts | 6–7 | – | 53–62 |
| Stator Support–to–Oil Pump Body M6 Bolts | 10–14 | – | 89–124 |
| Torque Converter–to–Flex Plate Bolts | 60 | 44 | – |
| Transaxle Cam Plate and Detent Spring Retaining Bolts | 8–12 | – | 71–106 |
| Transaxle Case Plate Bolts | 4–7 | – | 35–62 |
| Transaxle Center Bracket–to–Transaxle Bolts | 90 | 66 | – |
| Transaxle Center Mount–to–Center Member Bolts | 65 | 48 | – |
| Transaxle Housing–to–Transaxle Case Bolts | 23–35 | 17–26 | – |
| Transaxle Housing Cover–to–Transaxle Case Bolts | 6–9 | – | 53–78 |
| Transaxle Left Bracket–to–Transaxle Bolts | 48 | 35 | – |
| Transaxle Left Mount–to–Transaxle Left Bracket Bolt | 48 | 35 | – |
| Transaxle Fluid Drain Plug | 23–55 | 17–40 | – |
| Transaxle Oil Filter Bolts | 4–7 | – | 35–62 |

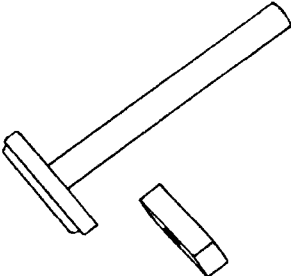
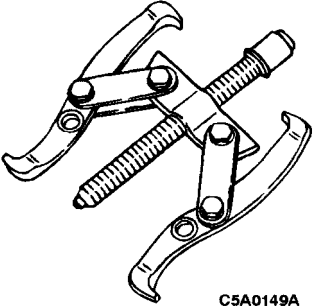
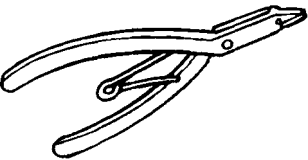
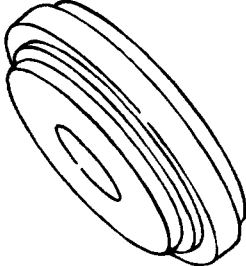
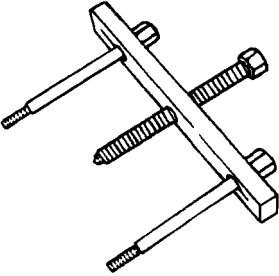
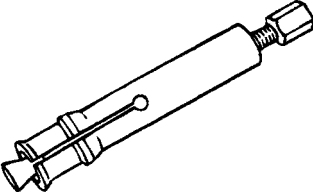
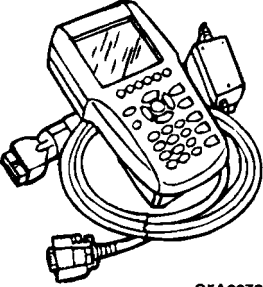
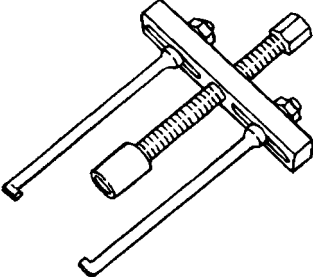
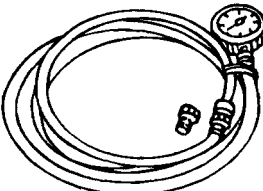
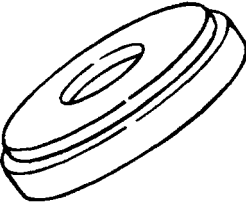
5A0 – 6 AISIN 50–40LE AUTOMATIC TRANSAXLE

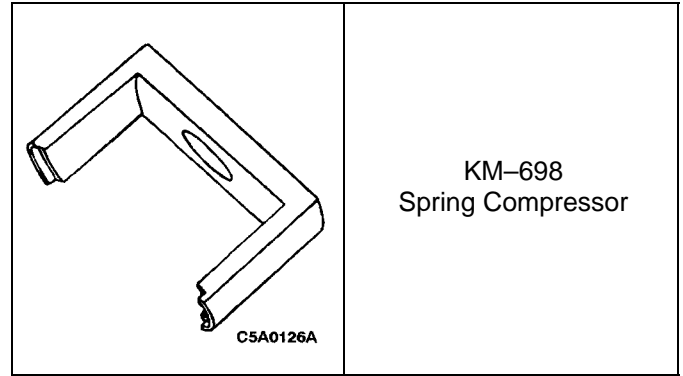
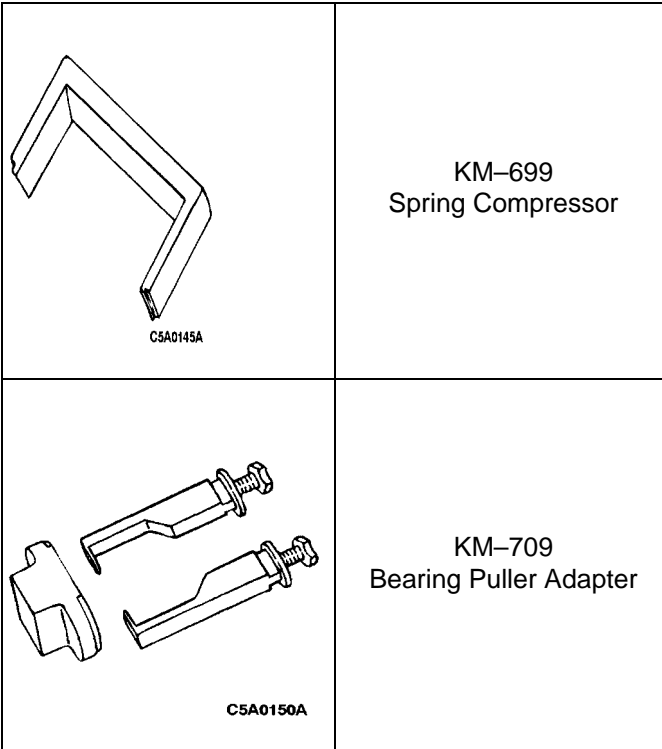
| Application | N•m | Lb-Ft | Lb-In |
|--|------------|--------------|--------------|
| Transaxle Oil Rver Plate Bolts | 4–7 | – | 35–62 |
| Transaxle Rear Case–to–Transaxle Case M6 Bolts | 8–12 | – | 71–106 |
| Transaxle Rear Case–to–Transaxle Case M8 Bolts | 20–29 | 15–22 | – |
| Transmission Fluid Temperature (TFT) Sensor | 7–13 | – | 62–115 |
| Transmission Fluid Temperature (TFT) Sensor Protector Bolt | 20–29 | 15–22 | – |
| Transmission Fluid Temperature (TFT) Sensor Protector Nut | 20–29 | 15–22 | – |
| Underdrive Brake Accumulator Bracket Bolts | 8–12 | – | 71–106 |
| Underdrive Brake Band Anchor Bolt | 133–200 | 100–149 | – |
| Valve Body–to–Case Bolts | 6–7 | – | 53–62 |
| Valve Body Cover–to–Case Bolts | 20–30 | 15–22 | – |
| Valve Body Suction Cover–to–Case Bolts | 6–7 | – | 53–62 |

SPECIAL TOOLS

SPECIAL TOOLS TABLE

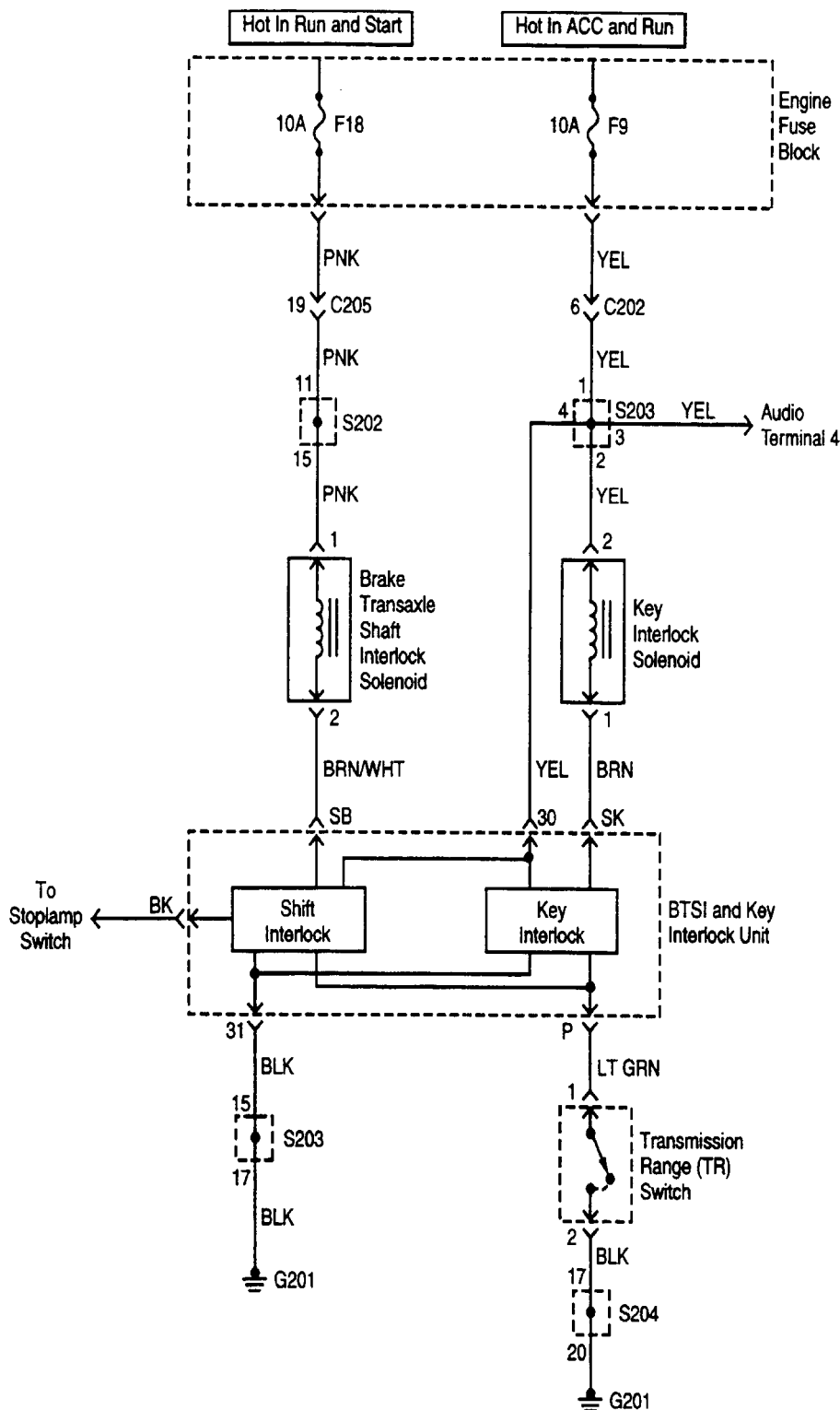
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|---|---|--|---------------------------------------|
|  <p>A102B152</p> | <p>J-28467-B Engine Support Fixture</p> |  <p>C5A0084A</p> | <p>J-28540-A Seal Installer</p> |
|  <p>C5A0010A</p> | <p>KM-674 Oil Seal Installer</p> |  <p>C5A0082A</p> | <p>J-36850 Assembly Lubricant</p> |
|  <p>C5A0076A</p> | <p>KM-697 Bearing Driver</p> |  <p>C5A0187A</p> | <p>KM-695 Bearing Driver</p> |
|  <p>C5A0083A</p> | <p>J-41102 Seal Installer</p> |  <p>C5A0148A</p> | <p>KM-696 Gear Holder</p> |

| | | | |
|---|--|--|---|
|  <p>C5A0155A</p> | <p>KM-305 Bearing Driver</p> |  <p>C5A0149A</p> | <p>KM-161-A Two-Jaw Puller</p> |
|  <p>C5A0088A</p> | <p>KM-396 Snap Ring Pliers</p> |  <p>C5A0151A</p> | <p>KM-695 Bearing Driver Adapter</p> |
|  <p>C5A0067A</p> | <p>KM-702 Oil Pump Remover</p> |  <p>C5A0153A</p> | <p>KM-J-28544 Bearing Pre-Load Tool</p> |
|  <p>C5A0079A</p> | <p>DC-11017-A Scan-100 Scan Tool</p> |  <p>C5A0154A</p> | <p>KM-210-A Bearing Puller</p> |
|  <p>C5A0080A</p> | <p>KM-498-B Universal Pressure Gauge Set</p> |  <p>C5A0156A</p> | <p>KM-695-A Bearing Driver Adapter</p> |

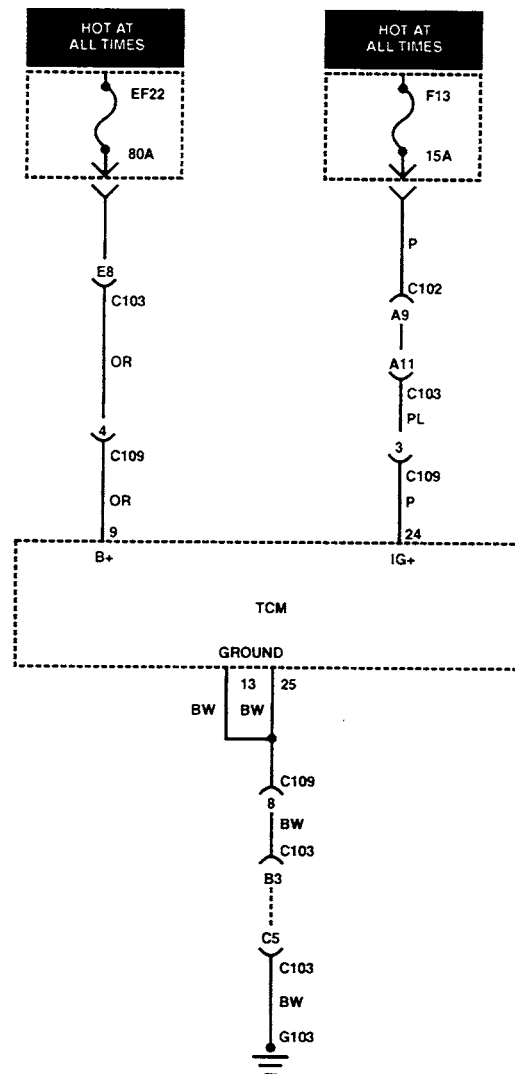


SCHEMATIC DIAGRAMS

BTSI AND KEY INTERLOCK UNIT

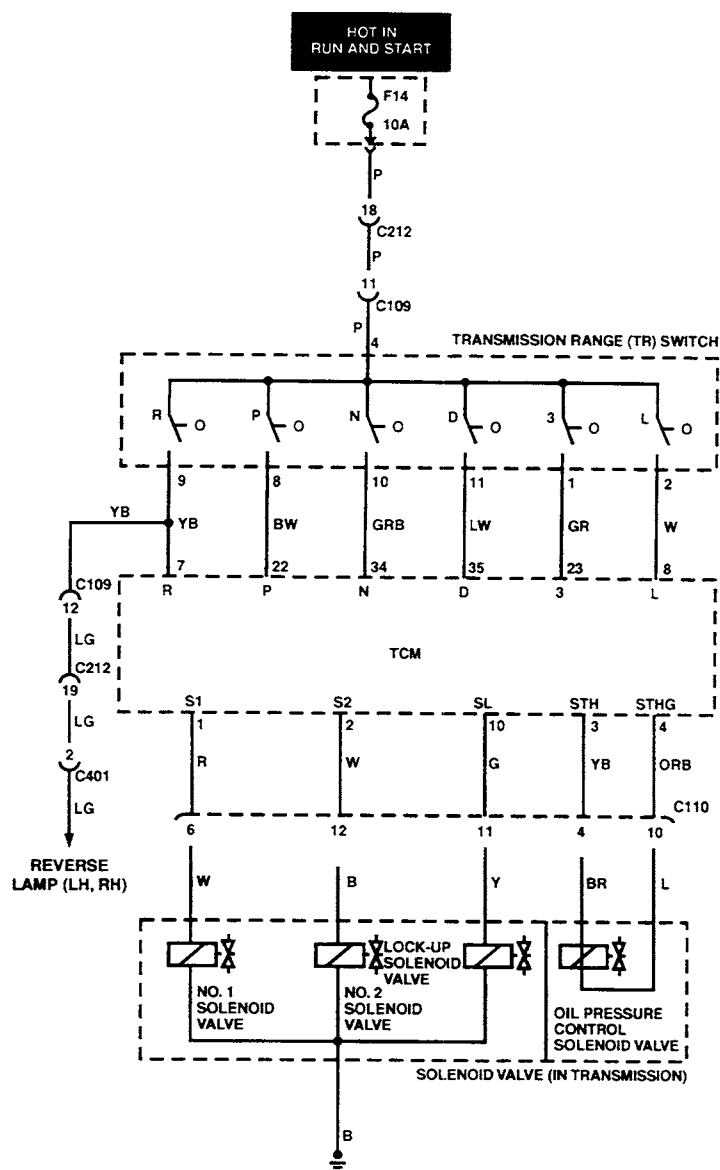


TRANSMISSION CONTROL MODULE (1 OF 5)

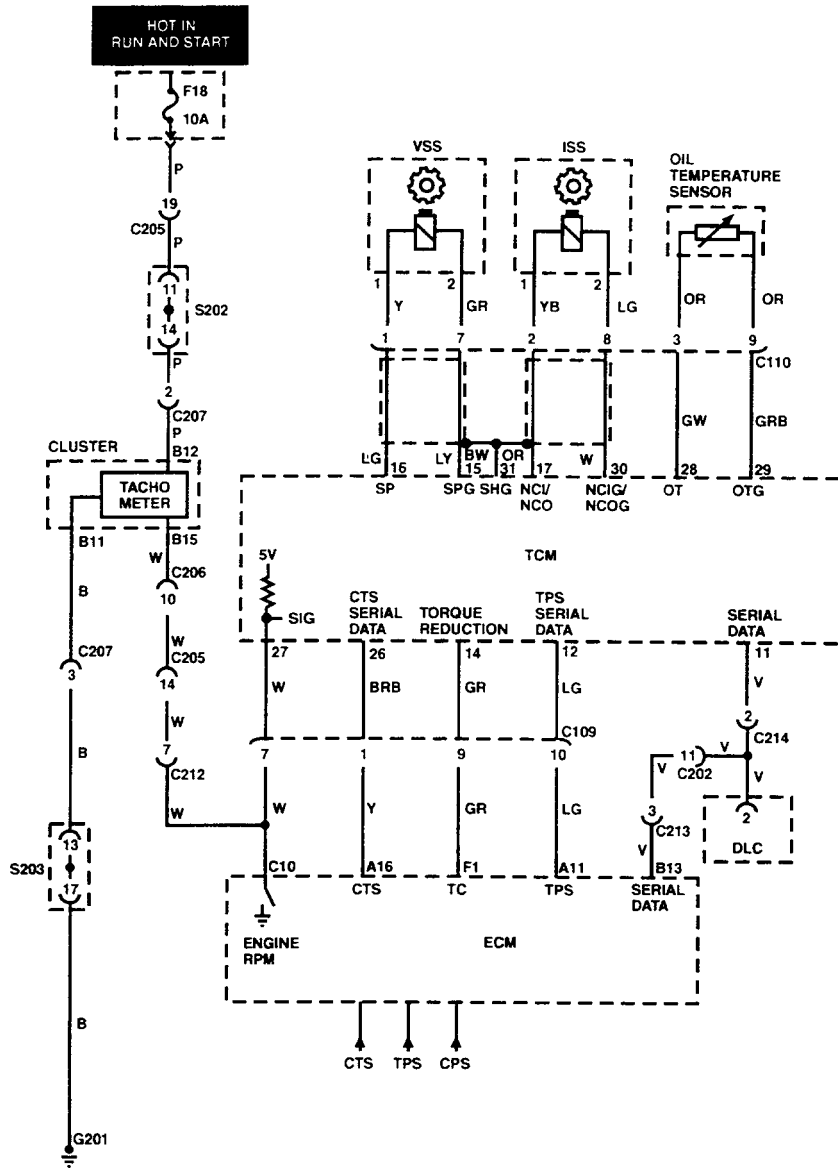


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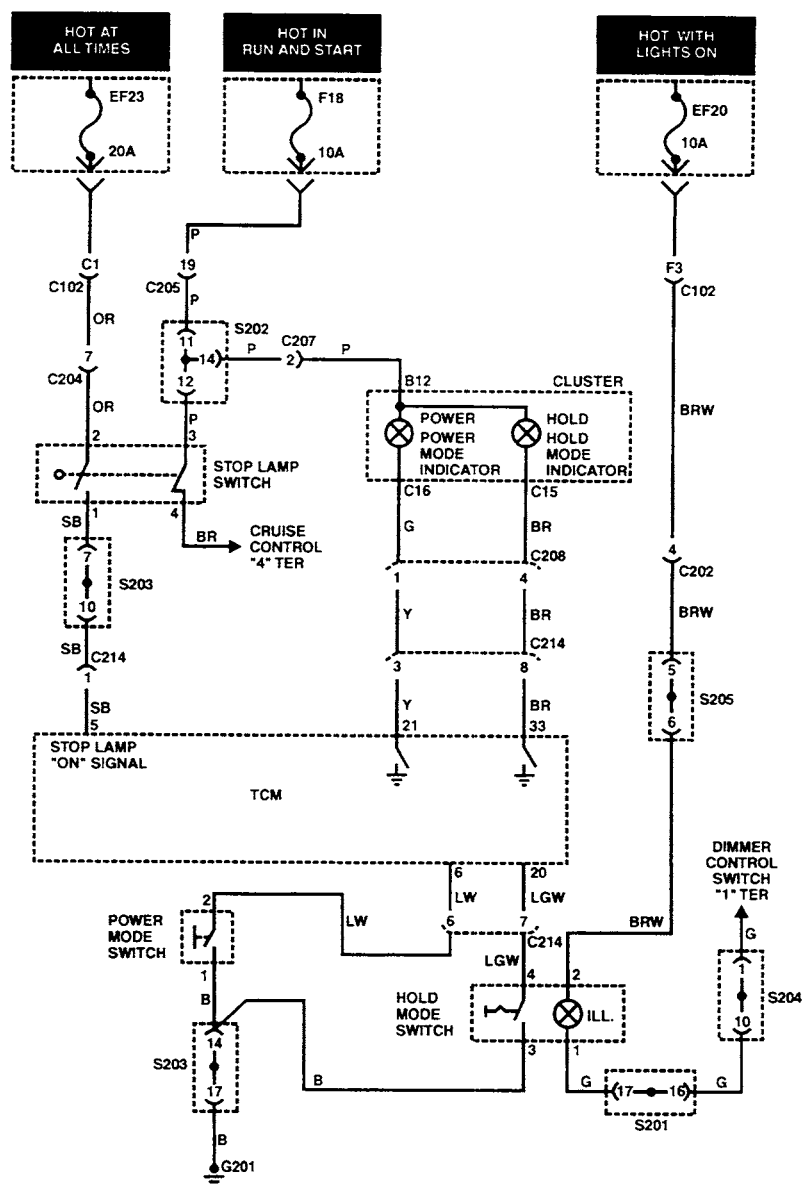
TRANSMISSION CONTROL MODULE (2 OF 5)



TRANSMISSION CONTROL MODULE (3 OF 5)

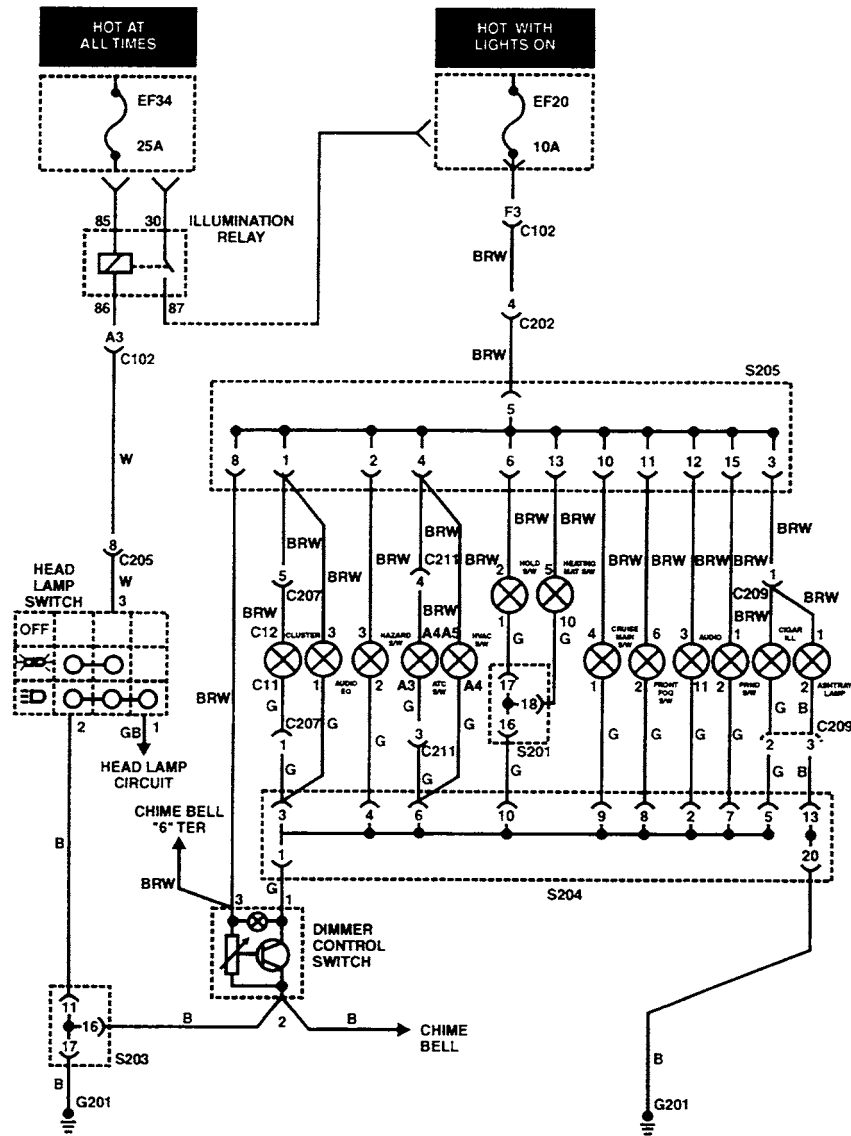


TRANSMISSION CONTROL MODULE (4 OF 5)

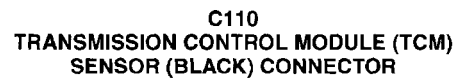


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TRANSMISSION CONTROL MODULE (5 OF 5)







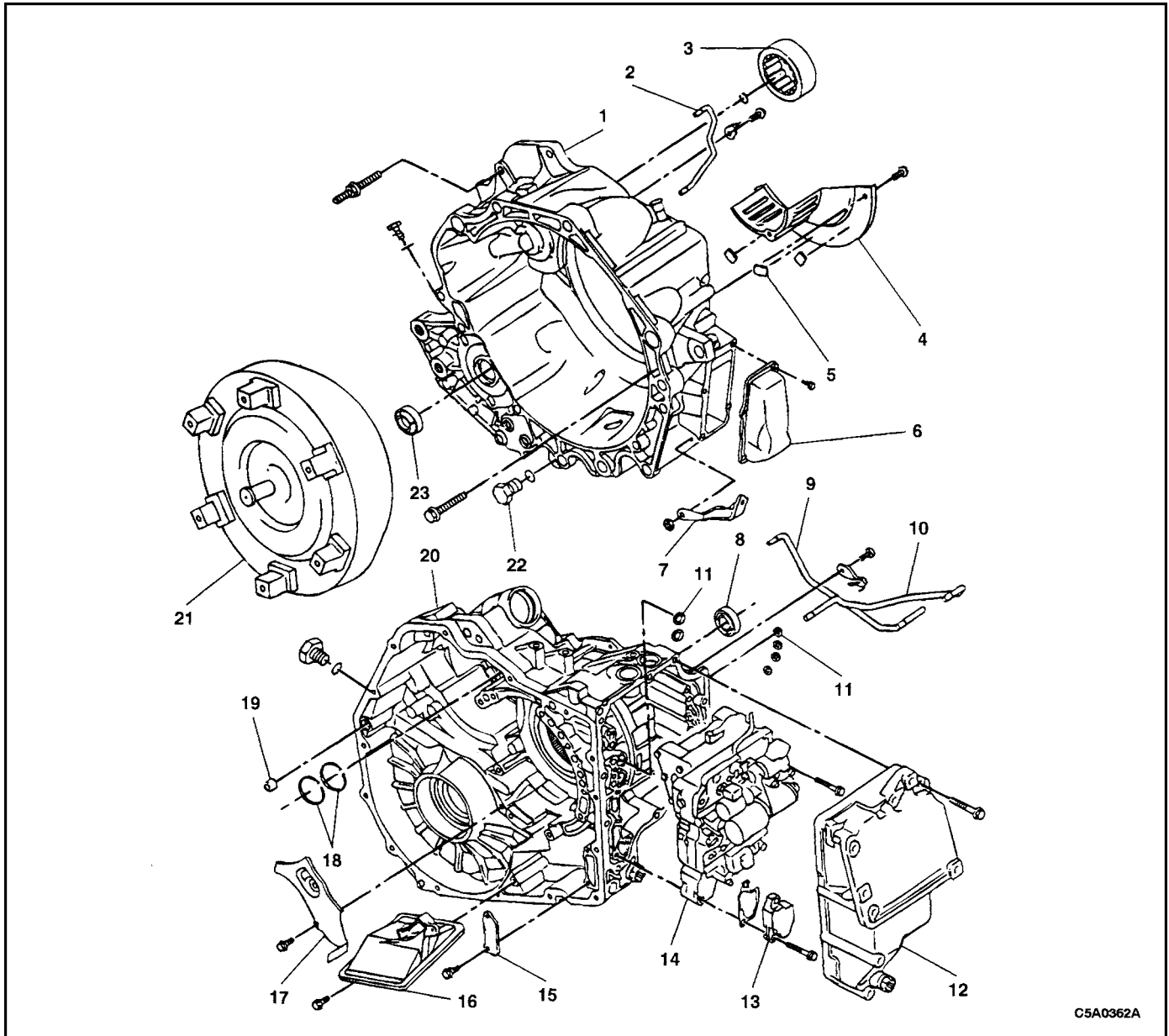




COMPONENT LOCATOR

50- 40LE AUTOMATIC TRANSAXLE

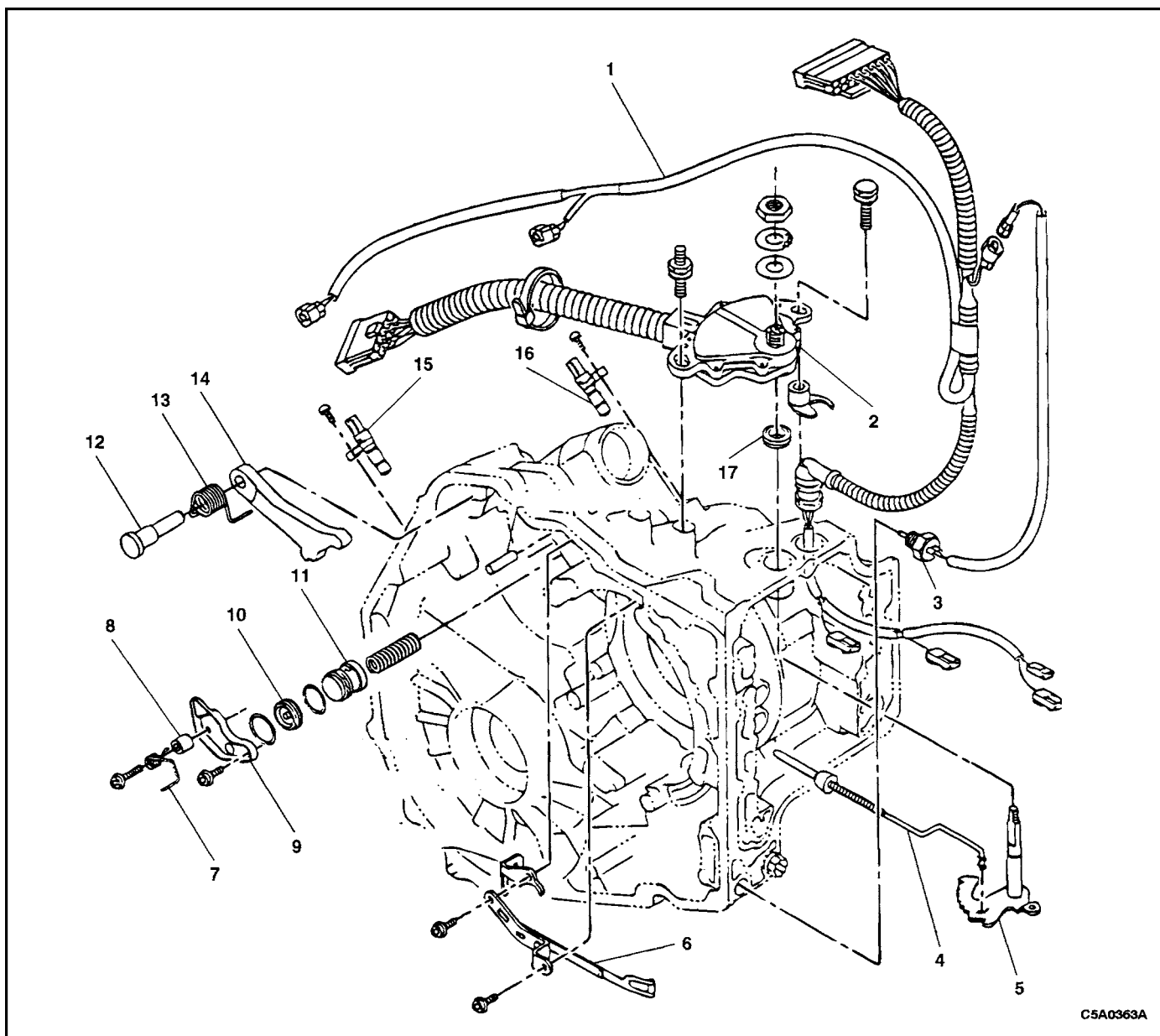
Component Locator



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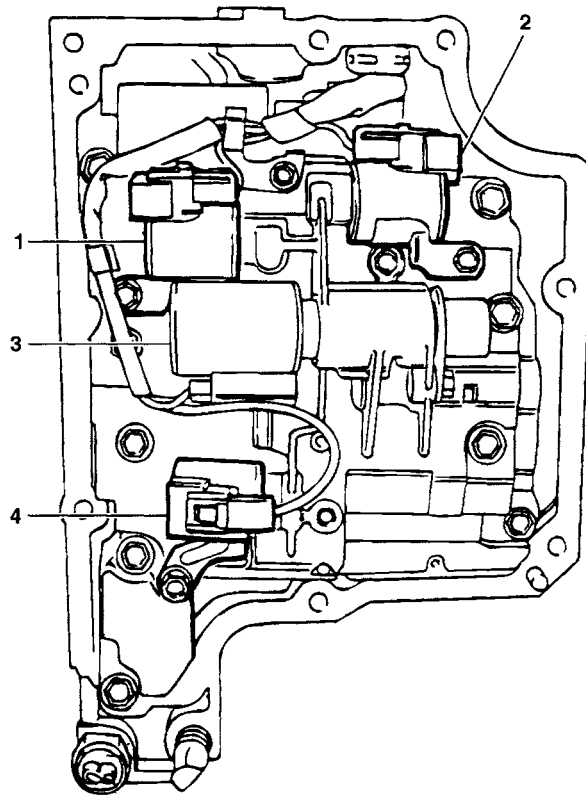
- | | |
|--|--------------------------|
| 1. Transaxle Housing Side | 12. Valve Body Cover |
| 2. Differential Bearing Lubrication Apply Tube | 13. Suction Cover |
| 3. Roller Bearing | 14. Valve Body |
| 4. Oil Reserver Plate | 15. Transaxle Case Plate |
| 5. Magnet | 16. Oil Filter |
| 6. Transaxle Housing Cover | 17. Oil Reserver Plate |
| 7. Transmission Fluid Temperature (TFT) Sensor Protector Bracket | 18. Seal Rings |
| 8. Oil Seal | 19. Apply Seal |
| 9. Apply Tube | 20. Transaxle Case Side |
| 10. Lubrication Apply Tube | 21. Torque Converter |
| 11. Apply Seal | 22. Plug |
| | 23. Oil Seal |

Component Locator



- | | |
|--|-------------------------------------|
| 1. Transmission Wire Loom | 10. Accumulator Cover |
| 2. Park/Neutral Position (PNP) Switch | 11. Accumulator Piston |
| 3. Transmission Fluid Temperature (TFT) Sensor | 12. Parking Lock Pawl Shaft |
| 4. Parking Lock Rod | 13. Spring |
| 5. Manual Valve Lever | 14. Parking Lock Pawl |
| 6. Detent Spring | 15. Output Shaft Speed (OSS) Sensor |
| 7. Torsion Spring | 16. Input Shaft Speed (ISS) Sensor |
| 8. Spring Guide Sleeve | 17. Oil Seal |
| 9. Accumulator Bracket | |

Component Locator



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1. Shift Solenoid 1 (SS1)
2. Shift Solenoid 2 (SS2)

3. Linear Solenoid (Pressure)
4. Lockup Solenoid

DIAGNOSIS

SYMPTOM DIAGNOSIS

PRELIMINARY CHECKS

To properly diagnose a concern, first understand the condition. Customer contact may be required to begin to verify the concern. Understand the conditions as to when the concern occurs. For example:

- Hot or cold vehicle temperature
- Hot or cold ambient temperature
- Vehicle driving conditions
- Vehicle loaded or unloaded

After understanding when and how the concern occurs, proceed to verify the concern. Perform the following initial steps before performing on-board diagnostic procedures.

- Verify the concern by driving the vehicle

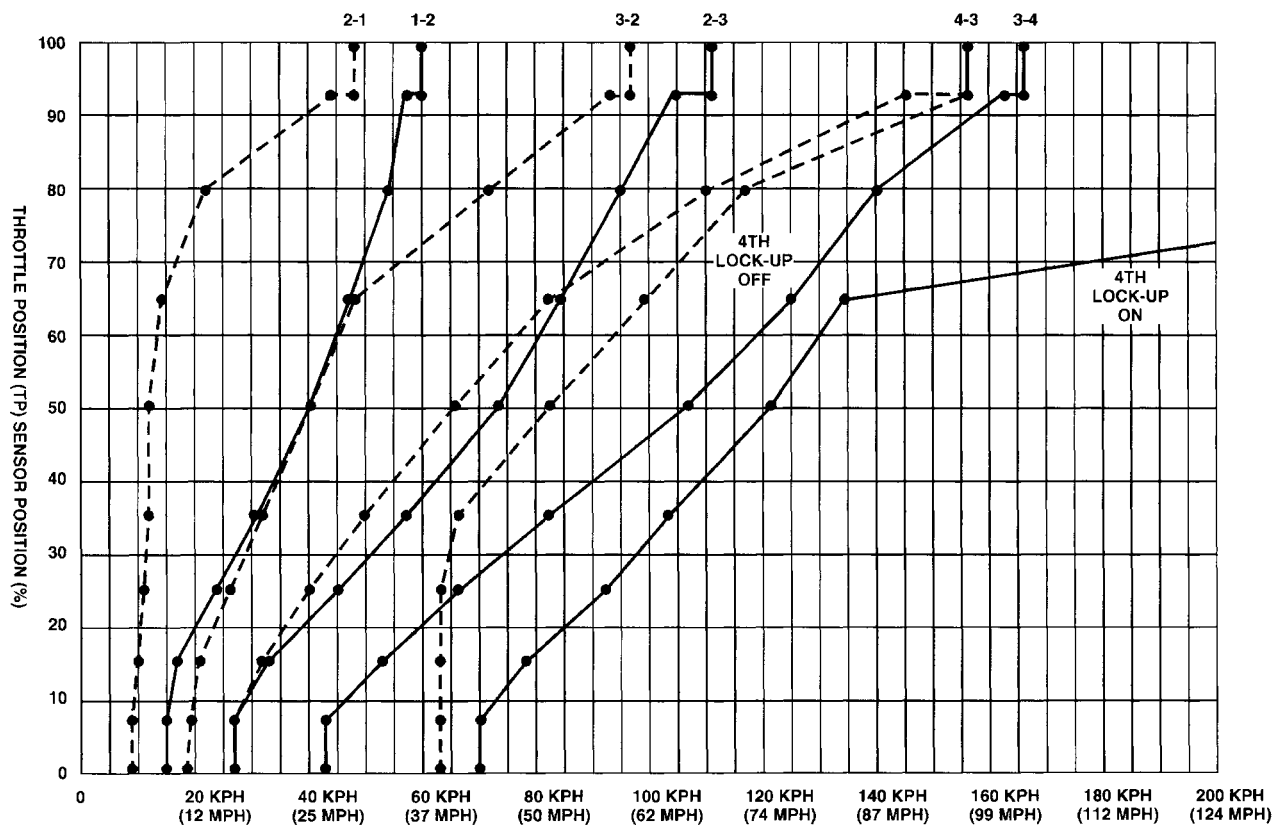
- Check the Automatic Transmission Fluid (ATF) level and condition
- Check shift linkage for proper adjustment.

Test Driving the Vehicle

Check the level of the ATF before performing a road test.

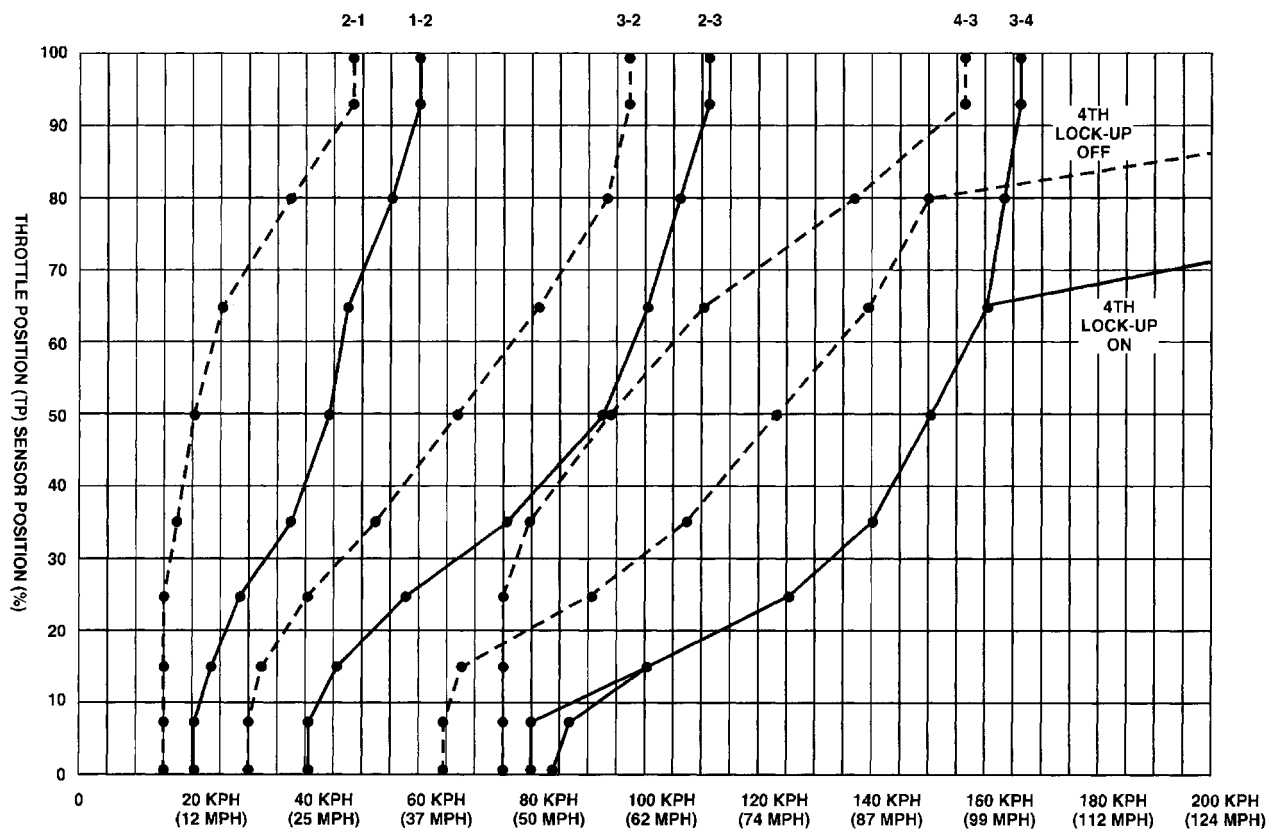
Begin the test drive with the vehicle in the D position. Drive the vehicle causing the transmission to upshift and downshift. Listen for abnormal sounds coming from the transmission or driveline related sounds. Check the shifting speeds at light acceleration and that the shift points are correct. Also check for any slipping or abrupt shifts. Check that the lockup function occurs and is correct.

Shift Point Chart–Economy Range



C5A0382A

Shift Point Chart-Power Range



C5A0383A

Check Fluid Level

Do not drive the vehicle if the ATF level is low. Check the level of the ATF, using the following procedure:

1. Position the vehicle on a level surface. Apply the parking brake and block the wheels.
2. Run the engine at idle speed, depress the brake pedal and move the shift lever through each range. Allow time in each range to engage the transmission, then return to park.
3. Allow the ATF to reach normal operating temperature. Normal operating temperature is 176–194°F (80–90°C). Do not turn off the engine during the fluid level check.
4. Pull the fluid level indicator out of the indicator tube, wipe it clean and put it back into the tube. Make sure it is fully seated. Pull the fluid level indicator out of the indicator tube again and check the fluid level.
5. The fluid level should be between the MIN and

MAX marks on the side of the fluid indicator marked 80°C (176°F). If the transmission fluid is below the specified level, add Texaco 1854 automatic transmission fluid as necessary.

High or Low Fluid Level

Do not overfill the transaxle. ATF that is too high will result in foaming. Foaming will cause erratic control pressure, and the aerated fluid will be forced from the vent. If an overfill occurs, excess fluid must be removed.

If the ATF is too low, the transaxle will experience loss of engagement or slipping. A low fluid level may indicate a leak that could cause transaxle damage.

Fluid Condition Check

Observe the color and odor of the ATF. It should be dark red, not brown or black. A burnt odor indicates an overheating condition, a clutch disc failure or band failure. Also inspect the fluid for specks, signs of engine coolant or varnish on the indicator. If fluid contamination or transmission failure is confirmed by further evidence of coolant or excessive solids in the transaxle, the transmission should be disassembled and completely cleaned and serviced.

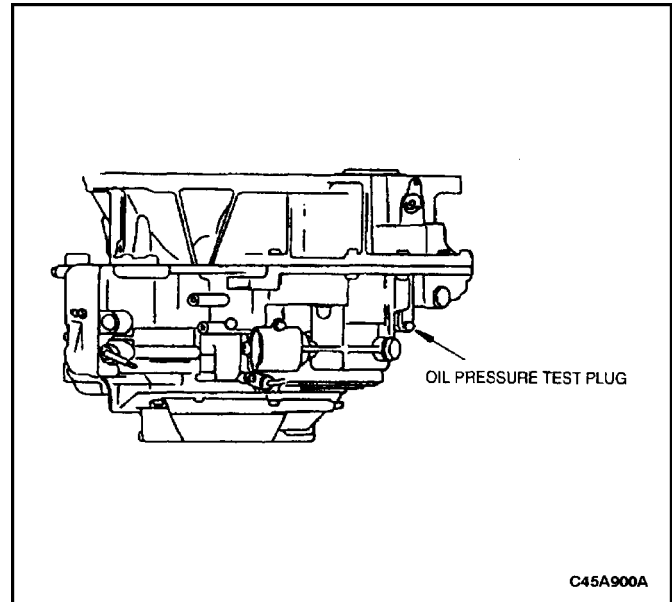
LEAK DIAGNOSIS

CAUTION : Do not racing more than 5 seconds or the automatic transaxle damaged.

LINE PRESSURE CHECK PROCEDURE

The AISIN 50–40LE Automatic transaxle uses a vane type oil pump to produce hydraulic pressure, and a transaxle pressure control solenoid to control that pressure at the pressure regulator valve, after it leaves the pump. Line pressure are calibrated for 2 sets of gear range Drive and Reverse. This allows the transaxle line pressure to be appropriate for different pressure needs in different gear range.

1. Remove the oil pressure test plug on transaxle case and mount oil pressure gauge (KM–498–B).
2. Check the four wheels.
3. Fully apply the parking brake.
4. Start the engine and allow it to warm up at idle.
5. Step down strongly on the brake pedal with your left foot.
6. Shift into "D" or "R" range to measure line pressure.
7. Apply the accelerator pedal with your right foot, and measure the line pressure at the engine speed (stall speed 2250 200 rpm).



LOCATING FLUID LEAKS

General Method

1. Verify that the material leaking is transaxle fluid.
2. Thoroughly clean the suspected leak area.
3. Allow the transaxle to reach the normal operating temperature of 176–194°F (80–90°C).
4. Park the vehicle over a clean paper or a clean card-board.
5. Turn the engine OFF and look for fluid spots on the paper.
6. Make the necessary repairs to correct the leak.

Powder Method

1. Thoroughly clean the suspected leak area.
2. Apply an aerosol type powder, such as foot powder, to the suspected leak area.
3. Allow the transaxle to reach the normal operating temperature of 176–194°F (80–90°C).
4. Turn the engine OFF.
5. Inspect the suspected leak area and trace the leak path through the powder to find the source of the leak.
6. Make the necessary repairs to correct the leak.

Once the leak point is found, the source of the leak must be determined and repaired.

FLUID DRIPS OUT OF CONVERTER BELL HOUSING

| Checks | Action |
|--|-------------------------------|
| Check for a leak at the weld seam of the torque converter. | Replace the torque converter. |

LEAK BETWEEN TRANSAXLE HOUSING AND CONVERTER BELL HOUSING

| Checks | Action |
|--|---|
| Check for loosened fastening bolts on the torque converter bell housing. | Tighten the bolts on the torque converter bell housing. |

LEAK BETWEEN TRANSAXLE HOUSING AND SIDE COVER

| Checks | Action |
|--|--|
| Check for loosened fastening bolts on the fluid pan. | Tighten the side cover bolts. Replace the silicone sealer, as needed. |
| Check for a damaged side cover. | Replace the side cover gasket. |

LEAK BETWEEN TRANSAXLE HOUSING AND TRANSAXLE HOUSING COVER

| Checks | Action |
|---|----------------------------------|
| Check for loosened bolts connecting the housing cover to the transaxle. | Tighten the housing cover bolts. |
| Check for a damaged housing cover. | Replace the housing cover. |

LEAK AT FLUID COOLER

| Checks | Action |
|---|---|
| Check for a loose cooler pipe bolt connection on the transaxle and/or the radiator. | Tighten the bolts on the transaxle and/or the radiator. |
| Check for a damaged gasket at the transaxle connection. | Replace the gasket. |
| Check for a leak in the cooler. | Replace the radiator. |

LEAK AT THE BRAKE ADJUSTING BOLT

| Checks | Action |
|---|---------------------|
| Check for a damaged O–ring at the brake band. | Replace the O–ring. |

LEAK AT DIFFERENTIAL

| Checks | Action |
|--|--------------------------|
| Check for any damaged shaft seals at the input shafts. | Replace the shaft seals. |

LEAK AT DIFFERENTIAL EXTENSION

| Checks | Action |
|---|--------------------------------------|
| Check for a damaged O–ring. | Replace the O–ring. |
| Check for loosened extension housing bolts. | Tighten the extension housing bolts. |

LEAK AT SPEED SENSORS

| Checks | Action |
|---|---------------------|
| Check for a damaged O–ring in the speed sensor. | Replace the O–ring. |

LEAK AT BREATHER

| Checks | Action |
|---|---|
| Check whether the fluid level is too high. | Correct the fluid level. |
| Check for the wrong grade of transaxle fluid. | Drain the transaxle fluid and replace it with the correct transaxle fluid. Replace the transaxle, as needed. |

LEAK AT SELECTOR SHAFT

| Checks | Action |
|--|----------------------------------|
| Check for a damaged selector shaft seal. | Replace the selector shaft seal. |