

## Product Service Bulletin

**SUBJECT:** TORQUE CONVERTER CLUTCH (TCC) CHUGGLE/HUNTING CONDITION

**MODELS:** 1989-1995 GEO TRACKER, CAMI VITARA, SUZUKI SIDEKICK  
WITH HYDRA-MATIC 3L30 AUTOMATIC TRANSMISSION

### CONDITION:

Some owners may experience a Torque Converter Clutch (TCC) chuggle/hunting condition.

TCC chuggle/hunting occurs with the vehicle at normal operating temperature, in 3rd gear, at approximately 40-45 mph on a level road or a slight grade (mostly occurring when driving uphill), the engine speed at approximately 2500-2700 rpm, and with the throttle opening at approximately 10 percent-50 percent. Under these conditions, rapid, repeated apply/release of the converter clutch may cause a bucking or jerking sensation.

### CAUSE:

This concern is due to Governor Pressure Switch instability when the vehicle speed is constant at TCC apply.

### CORRECTION:

Install the Time Delay Module Kit into the TCC relay circuit to address the TCC chuggle/hunting condition.

### SERVICE INFORMATION:

When servicing a transmission for a TCC chuggle/hunting condition, install the Time Delay Module Kit to resolve this condition.

### TCC APPLY TIME DELAY MODULE INSTALLATION INSTRUCTIONS:

1. Disconnect the battery. (Figure 2)
2. Disconnect the green connector from the TCC relay. (Figure 2)

3. Disconnect the white wire from the green connector. Remove the terminal **carefully** with a narrow screwdriver as indicated. (Figure 1)
4. Connect the white wire to the Time Delay Module and wrap with electrical tape. Install the red wire from the Time Delay Module into the open terminal of the green TCC relay connector. (Figure 4)
5. Reconnect the green connector to the TCC relay and install the TCC relay onto the relay center. (Figure 4)
6. Clip the Time Delay Module onto the A/C fan relay. (Figure 3)

**NOTE:** If the vehicle is not equipped with air conditioning, install the rubber connector from the kit onto the fuse box tab and then clip the Time Delay Module onto the rubber connector.

### PARTS INFORMATION:

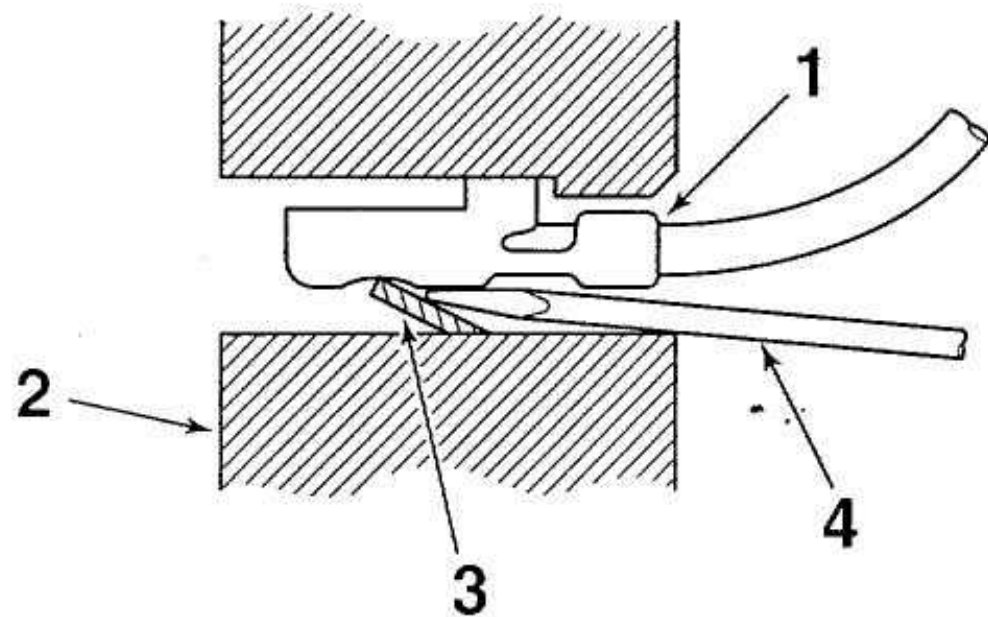
Part Number	Description
96041311	Kit, Time Delay Module Time Delay Module Rubber Connector Instruction Sheet

Parts are currently available from GMSPO.

### WARRANTY INFORMATION:

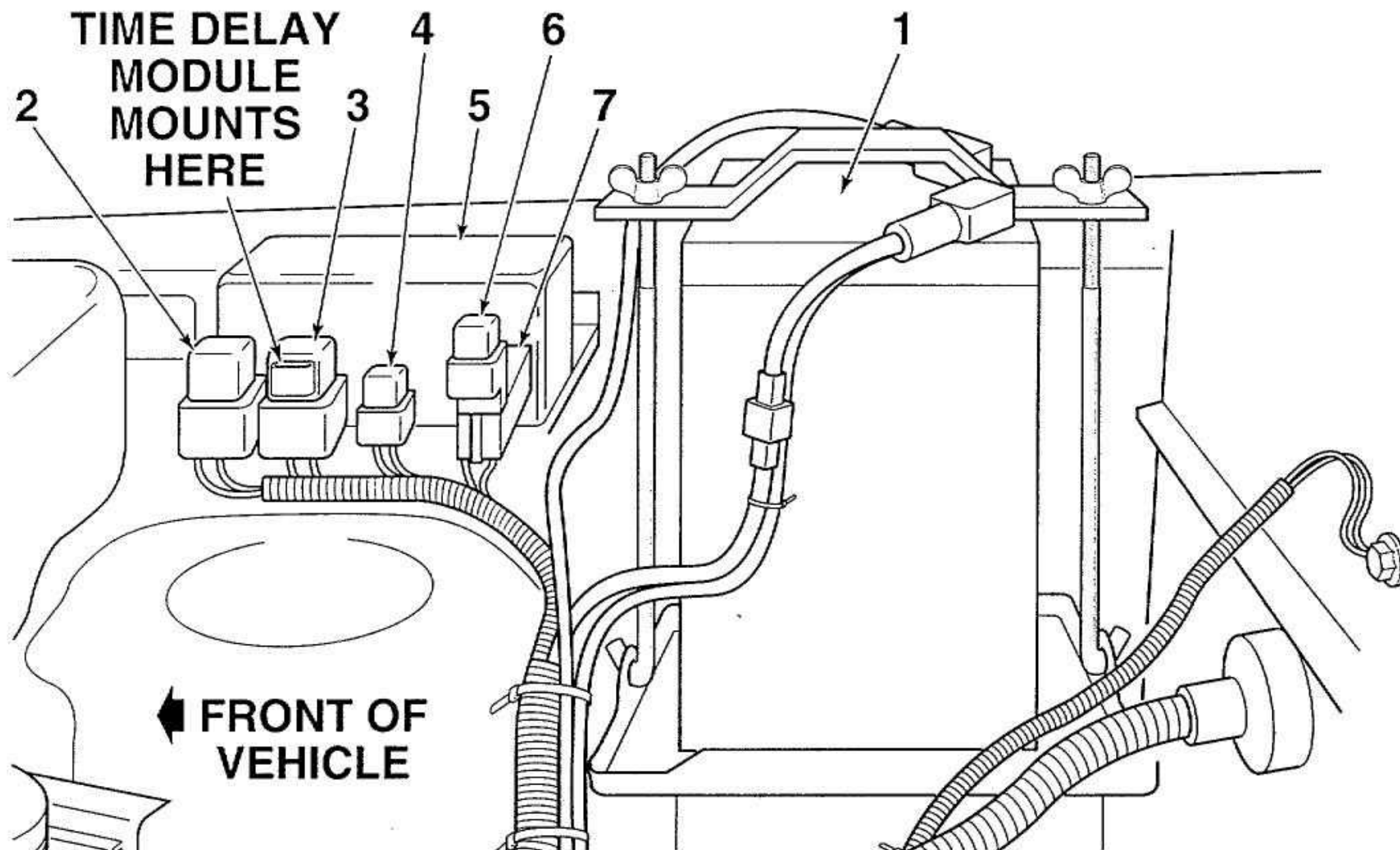
For vehicles repaired under warranty, use:

Labor Operations: K6108  
0.2 Hours



- 1 TERMINAL
- 2 CONNECTOR BODY
- 3 LOCKING TANG
- 4 SCREWDRIVER

Figure 1



- 1 BATTERY
- 2 TORQUE CONVERTER CLUTCH (TCC) RELAY (AUTOMATIC TRANSMISSION)
- 3 A/C CONDENSER FAN RELAY
- 4 DUTY CHECK DATA LINK CONNECTOR (DLC)
- 5 FUSIBLE LINK BOX
- 6 A/C FUSE HOLDER
- 7 A/C COMPRESSOR CLUTCH RELAY

Figure 2

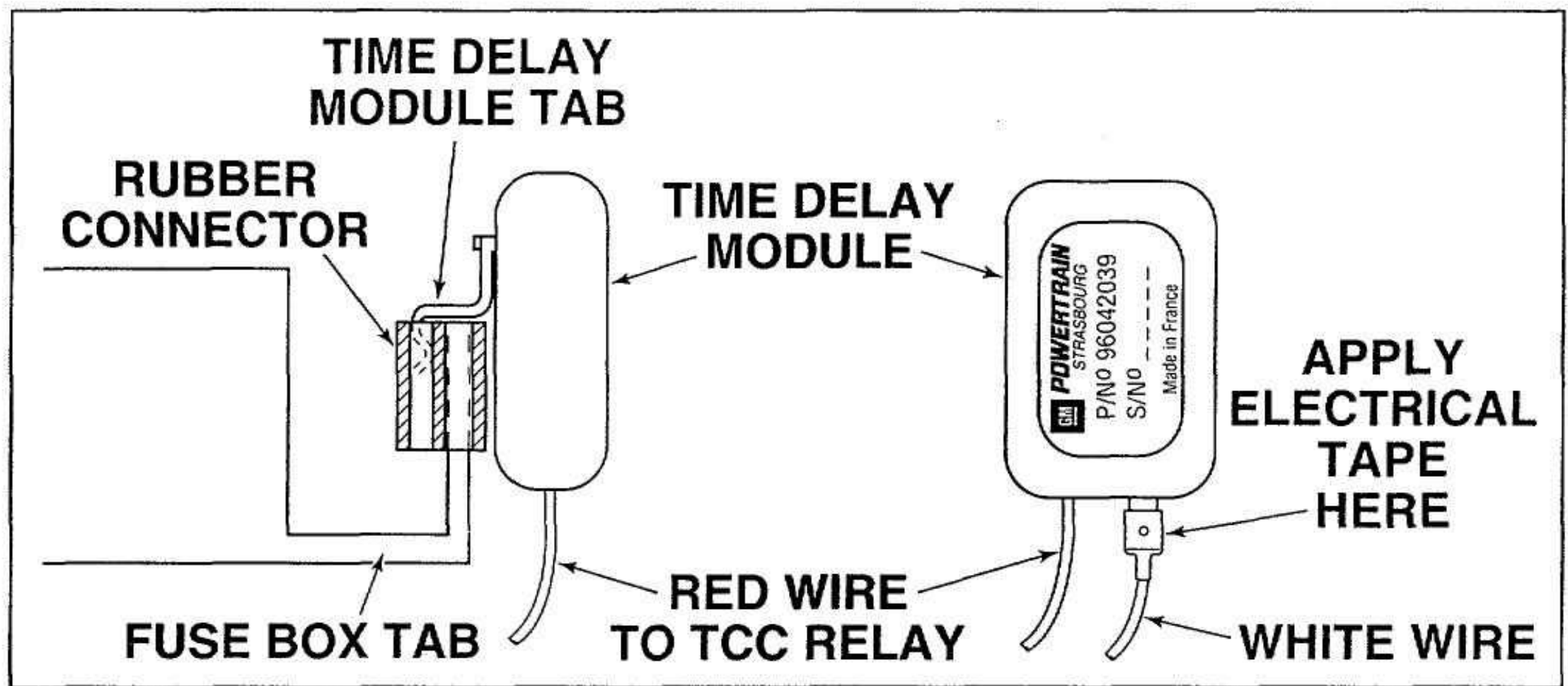


Figure 3

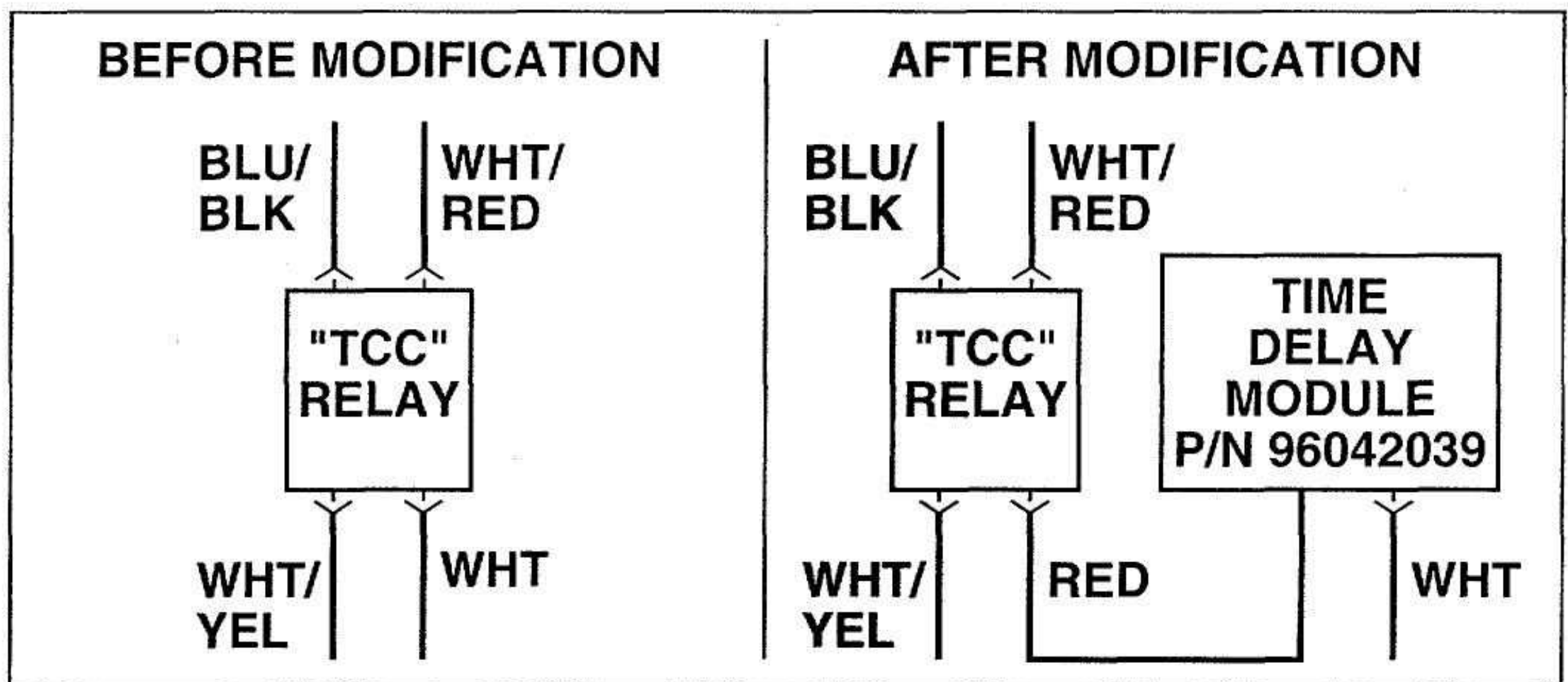


Figure 4

# Technical Bulletin

Division: Automotive  
Category: Technical

TSB No. TS3-25 02236(R)  
Section Title: Drivetrain

**SUBJECT:** MODIFICATION OF ENGINE CONTROL MODULE (ECM)  
**MODEL:** SIDEKICK 2-DOOR WITH GM 3-SPEED AUTOMATIC TRANSMISSION  
**YEAR:** 1995 AND LATER

**CONDITION:** Change in diagnosis of TCC Relay Control System.

**CAUSE:** Modification in the ECM.

**CORRECTION:** When diagnosing the TCC Relay Control System, use the testing procedures as listed in this bulletin.

**REVISION:** Correction of vehicle speed designations for 8-valve and 16-valve engines.

This bulletin is to inform you of a modification in the ECM which is effective in 1995 model year vehicles matching or exceeding the VIN numbers listed below. The Torque Converter Clutch (TCC) Relay Control System in 1995 and later 2-door Sidekick Automatic Transmissions has been modified to operate through ECM control, replacing the Pressure Switch in the valve body. Because of this modification, the ECM and the diagnostic procedures related to the TCC Relay Control System have been changed. If the vehicle matches or exceeds the starting VIN numbers listed below, please use the diagnostic procedures as listed in this bulletin.

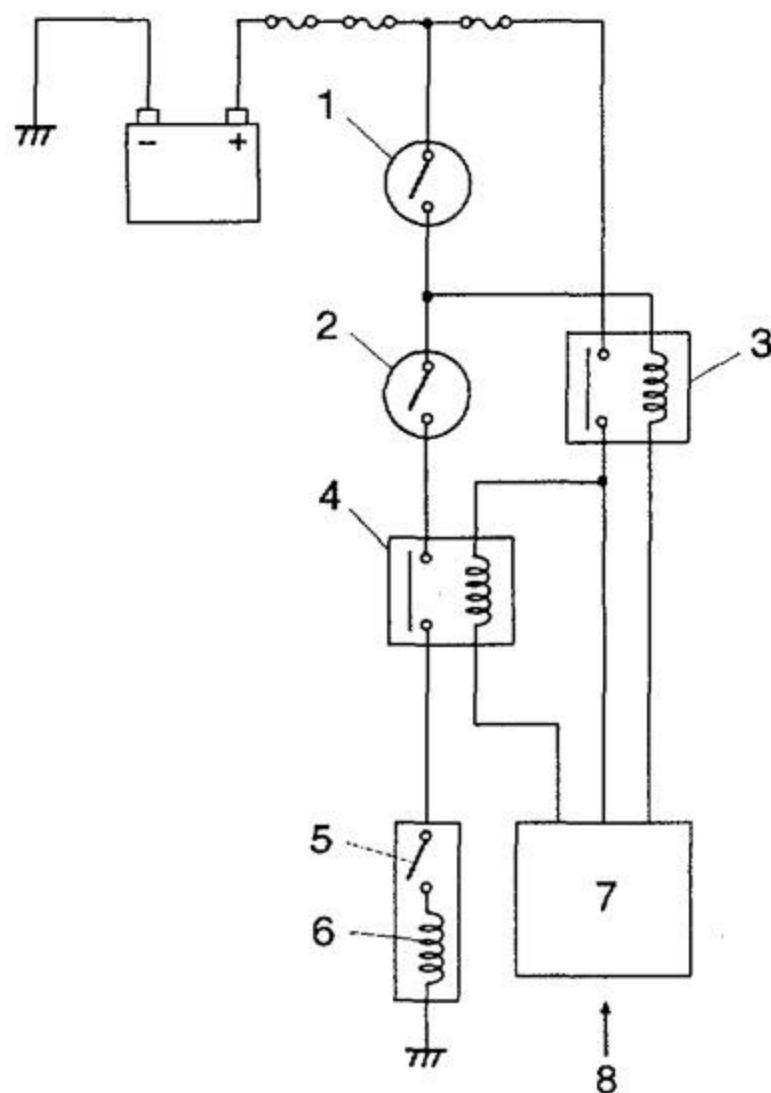
For a complete description of this modification, please see Technical Service Bulletin #TS 3-26.

STARTING VIN NUMBERS	
Engine Type	VIN
8-valve engine	2S3TC01C_S6415411~
16-valve engine	2S3TC02C_S6400001~
16-valve engine	2S3TA02C_S6400001~

Technical Service Department  
Dealership Circulation - Initial and File:

Service Manager	Parts Manager	Service Advisor				Technicians									

**Figure 1**



1. Ignition switch
2. Brake pedal switch (ON = open)
3. Main relay
4. TCC control relay
5. Oil pressure switch
6. TCC solenoid
7. ECM
8. Sensed information
  - Throttle Position Sensor (TPS)
  - Engine Coolant Temp. Sensor (ECTS)
  - Vehicle Speed Sensor (VSS)
  - (late type ECM only)

### **TORQUE CONVERTER CLUTCH (TCC) RELAY CONTROL SYSTEM (3 A/T)**

This system controls the TCC relay, one of the components that controls the torque converter clutch. A circuit diagram of this system is shown in Figure 1.

The TCC solenoid valve, under the control of the A/T oil pressure switch and TCC relay, opens and closes the A/T oil passage to lock and unlock the torque converter clutch.

The ECM controls the relay using information from the following sensors:

- Throttle Position Sensor (TPS)
- Camshaft Position Sensor (CMP)
- Engine Coolant Temperature Sensor (ECT)
- Vehicle Speed Sensor (VSS).

The ECM engages the relay only under the following conditions:

- Engine is running
- Engine coolant temperature is above 60°C (140°F)
- Throttle valve opening is between 6.4° and 62.5
- Vehicle speed is higher than
  - 40 mph (64 km/h, 8-valve engine) or
  - 47 mph (75 km/h, 16-valve engine, late type ECM only).

Battery voltage is applied to the TCC solenoid valve under the following conditions:

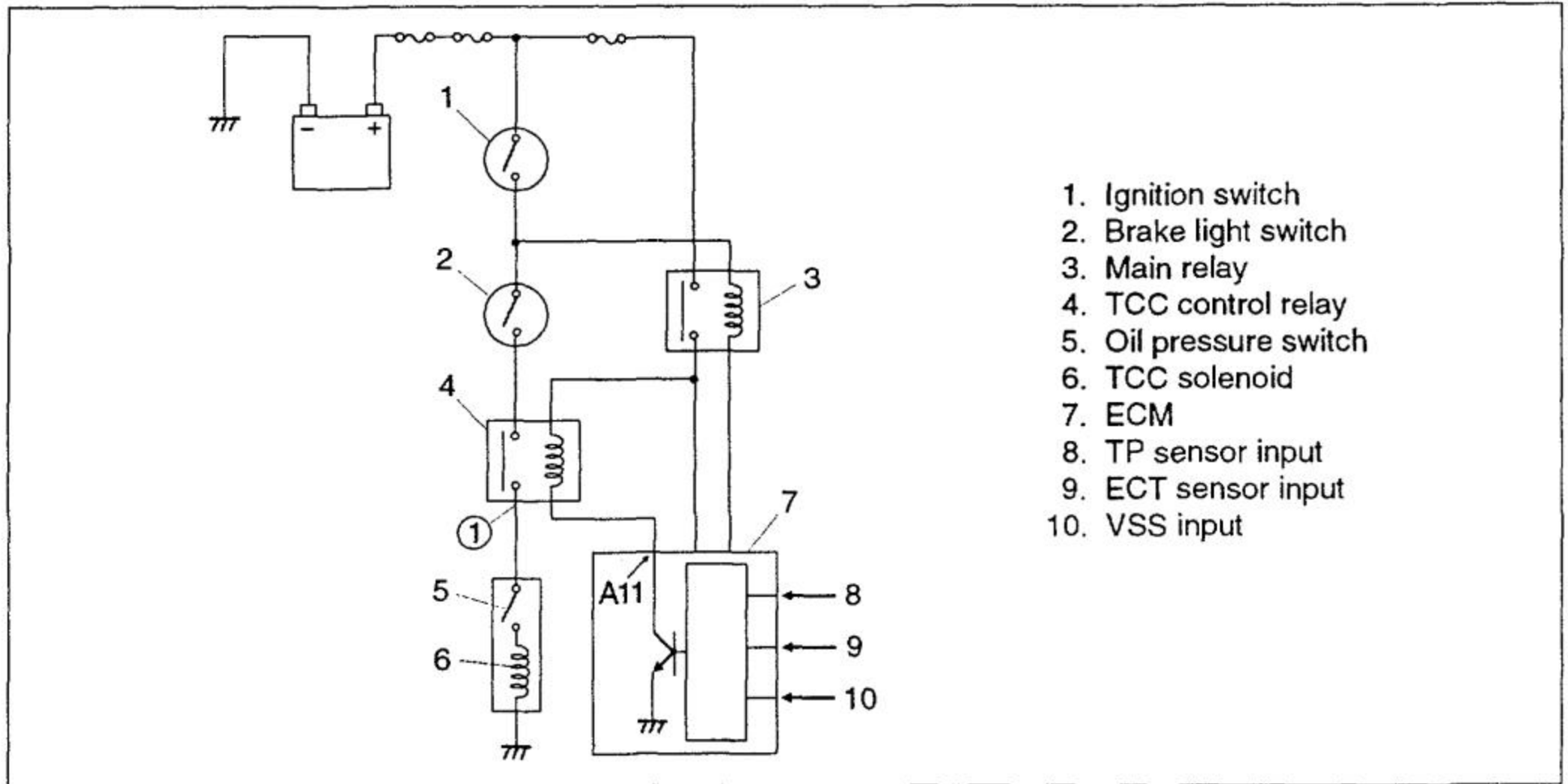
- The relay is ON
- The brake pedal is released (brake pedal switch is ON)
- The A/T oil pressure is higher than the specified pressure (the oil pressure switch is ON).

Even when the relay is ON, if the brake pedal is depressed or the A/T oil pressure is too low, the TCC solenoid valve circuit opens and voltage is not applied.

## TORQUE CONVERTER CLUTCH DIAGNOSIS (LATE TYPE ECM)

### ELECTRICAL CHECK

Preliminary checking procedure in Section 7B of Service Manual should be performed prior to this chart.



1. Connect a voltmeter between A11 terminal of the ECM coupler and body ground with ignition switch OFF.
2. Check voltage with ignition switch ON. Is it 10-14 V?

YES

NO

1. Warm up engine to normal operating temperature.
2. Hoist vehicle so the rear wheels rotate freely.

#### **WARNING:**

**Before this test, make sure that no one or nothing is near the rear wheels as they rotate at high speed during testing.**

3. Shift select lever to "D" range and accelerate vehicle on lift.
4. As the vehicle speed increases, does voltage indicated by the voltmeter change from 10-14 V to 0-1 V at about 47 mph (75 km/h, 16-valve engine), 40 mph (64 km/h, 8-valve engine) or higher speed?

YES

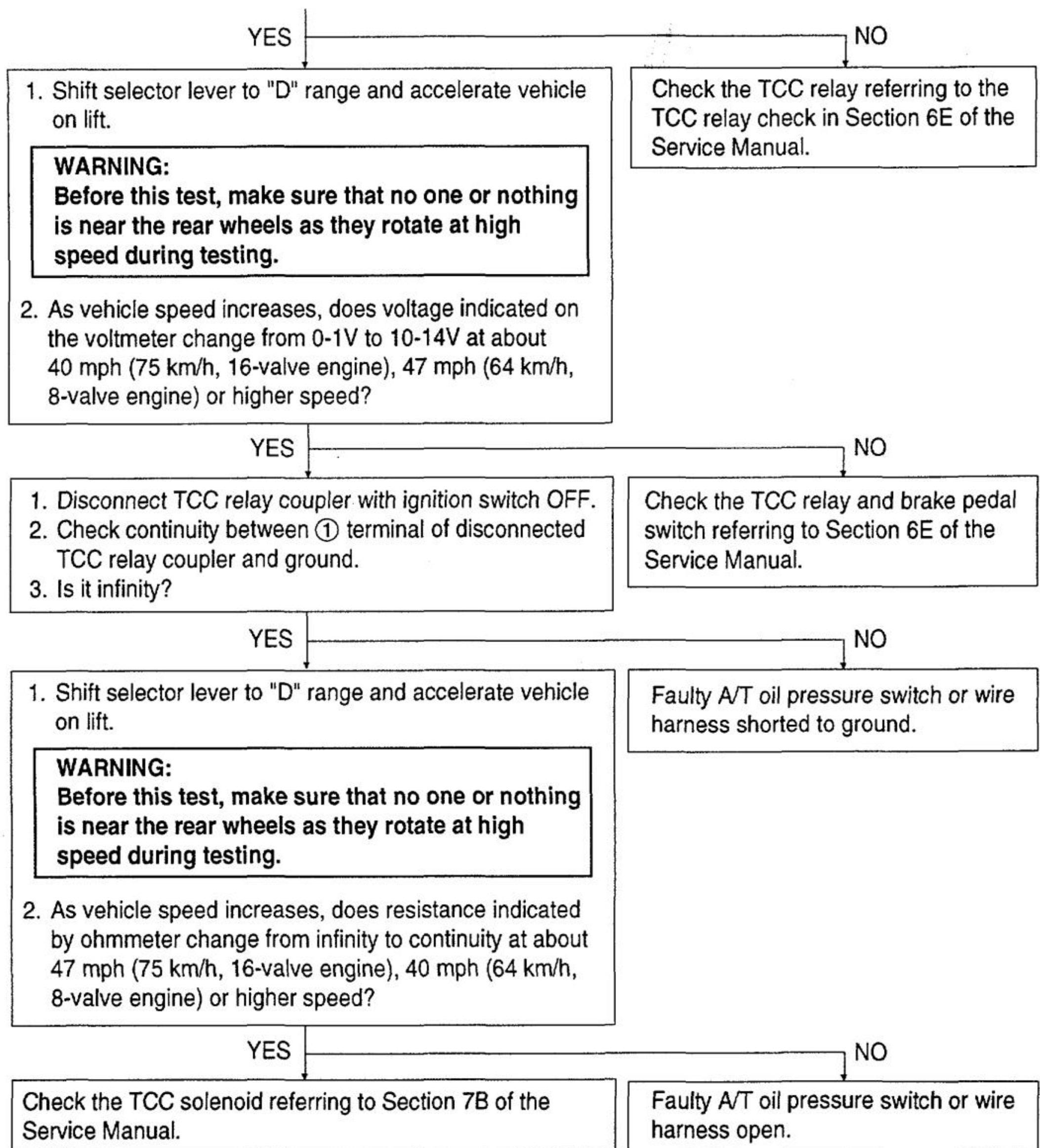
NO

1. Connect a voltmeter between terminal ① of the TCC relay and ground.
2. Check voltage with ignition switch ON. Is it 0-1 V?

Poor A11 connection. If connection is OK, substitute a known-good ECM and recheck.

GO TO NEXT PAGE

FROM PREVIOUS PAGE



## PARTS SUPPLY DATA

PART NAME	EARLY PART NO.	LATE PART NO.	#	SUPPLY OF SPARE PARTS	INTERCHANGEABILITY (O: OK, X: NO)
ECM 8-valve engine	33920-56B60	33920-56B61	1	Late only	Early $\xrightarrow{\times}$ Late
ECM 16-valve engine	_____	33920-70EB0			_____

**SIDEKICK**

# Technical Bulletin

Division: Automotive  
Category: Technical

TSB No. TS3-26 01126  
Section Title: Drivetrain

**SUBJECT:** MODIFICATION OF AUTOMATIC TRANSMISSION  
**MODEL:** SIDEKICK 2-DOOR WITH GM 3-SPEED AUTOMATIC TRANSMISSION  
**YEAR:** MAY 1995 PRODUCTION (CANADIAN MODELS)  
AUGUST 1995 PRODUCTION (JAPAN MODELS)

**CONDITION:** Change in Automatic Transmission; elimination of A/T oil pressure switch.

**CAUSE:** Factory modification.

**CORRECTION:** When diagnosing the TCC system, please use the information as listed in this bulletin.

**REVISION:** Correction in parts interchangeability.

This bulletin is to inform you of the elimination of the Torque Converter Clutch (TCC) Oil Pressure Switch which has been carried out since May 1995 production for Canadian models and August 1995 production for Japan models. Due to this modification, the diagnostic procedures for the TCC system in the service manual have been changed. Please refer to Technical Service Bulletin #TS 3-25 to diagnose this system.

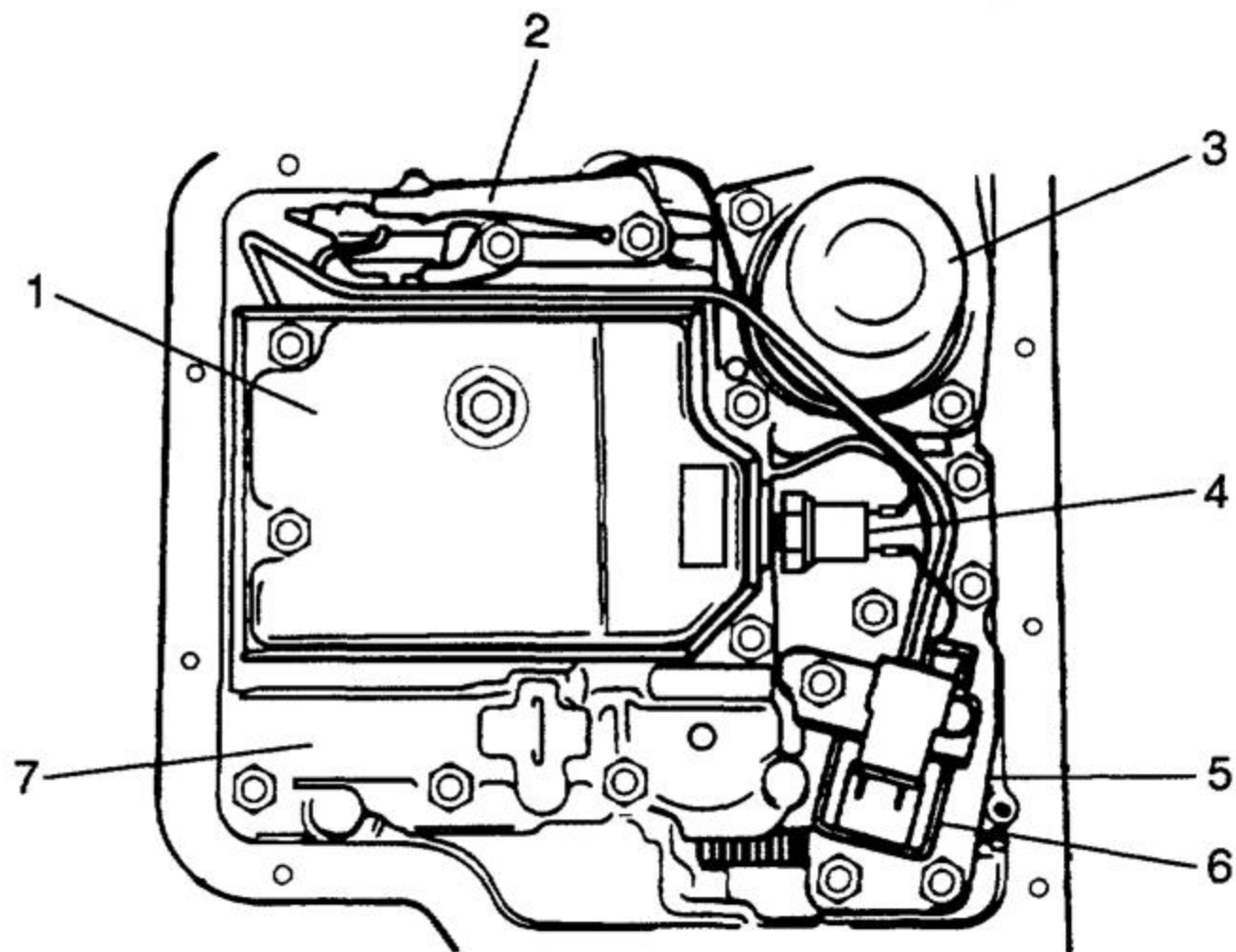
STARTING VIN NUMBERS
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2S3TC01C*S6417831~
2S3TC02C*S6418467~
2S3TA02C*S6417996~

Technical Service Department  
Dealership Circulation - Initial and File:

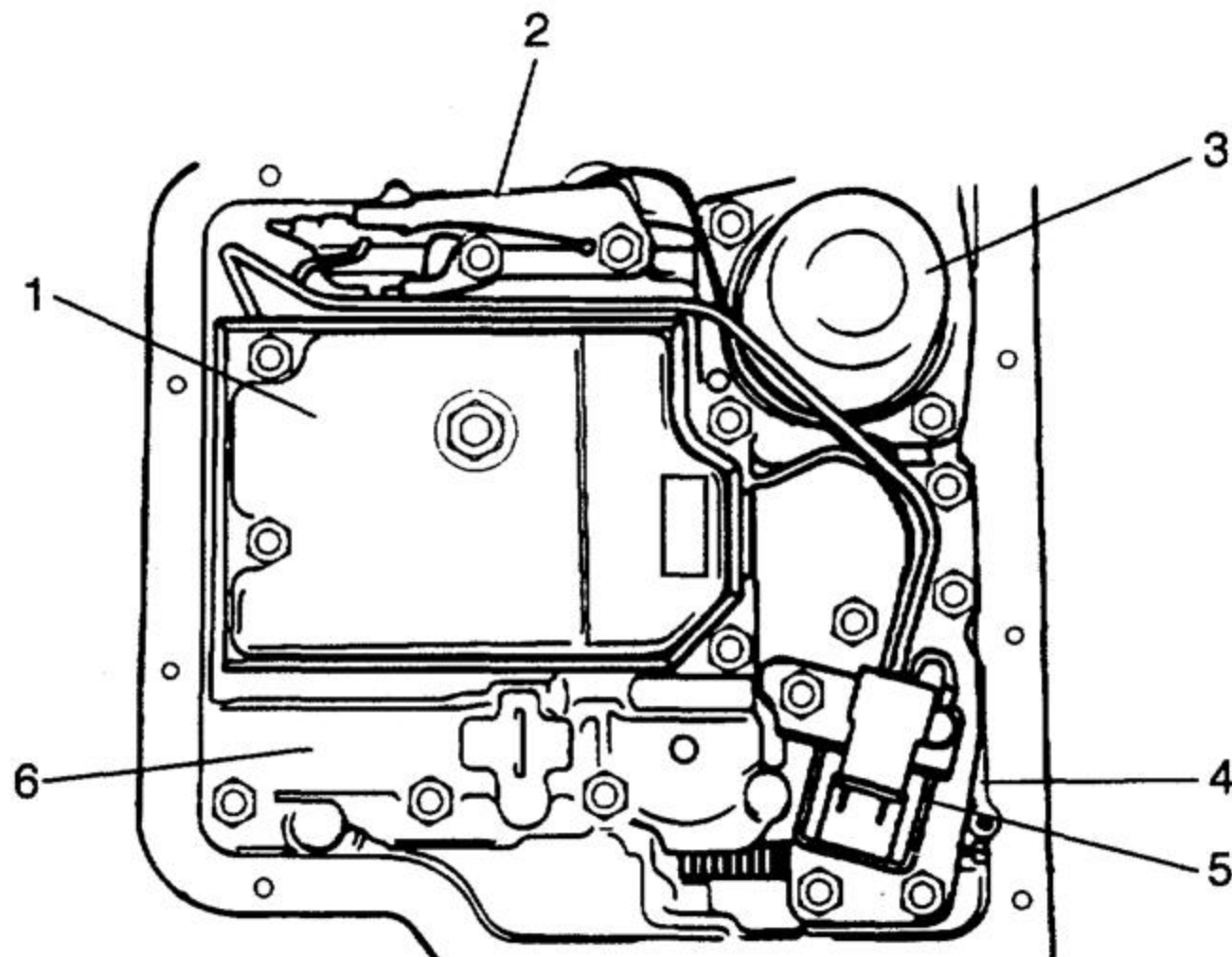
Service Manager	Parts Manager	Service Advisor				Technicians									

**EARLY**



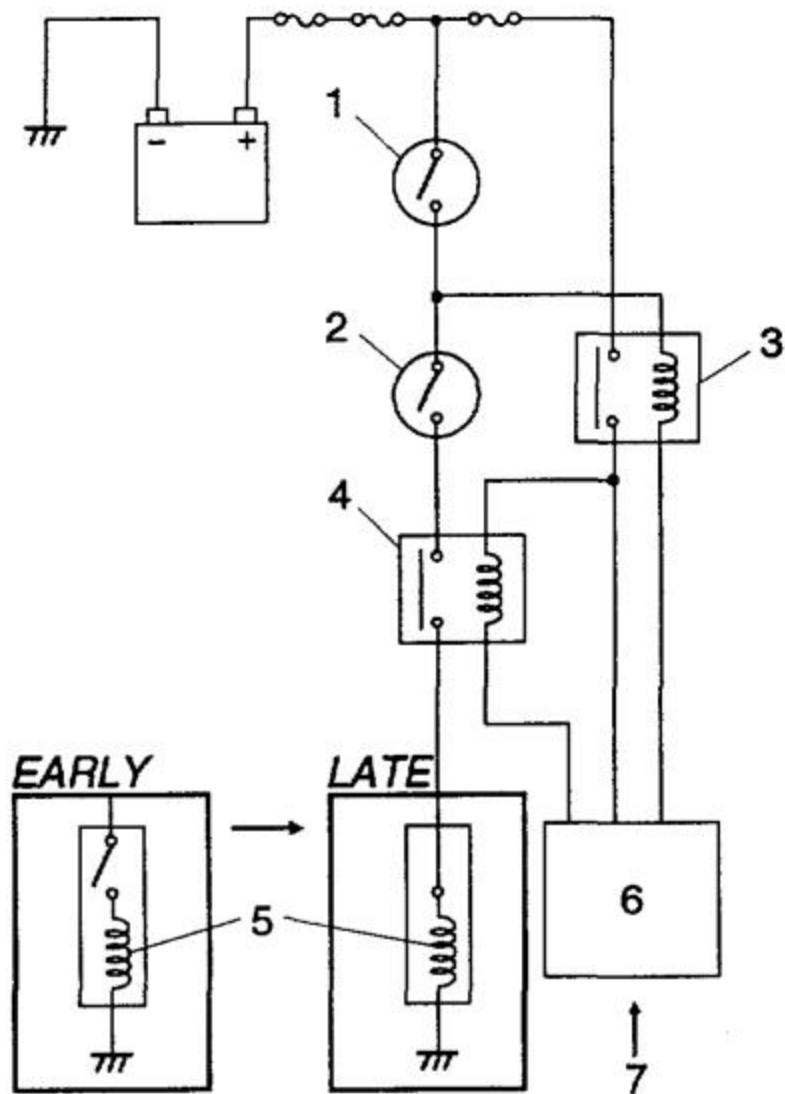
- |                           |                        |
|---------------------------|------------------------|
| 1. Oil pump screen        | 5. Reinforcement plate |
| 2. Detent roller assembly | 6. TCC solenoid valve  |
| 3. Servo piston cover     | 7. Valve body assembly |
| 4. Oil pressure switch    |                        |

**LATE**



- |                           |                        |
|---------------------------|------------------------|
| 1. Oil pump screen        | 4. Reinforcement plate |
| 2. Detent roller assembly | 5. TCC solenoid valve  |
| 3. Servo piston cover     | 6. Valve body assembly |

**Figure 1**



1. Ignition switch
2. Brake pedal switch (ON = open)
3. Main relay
4. TCC control relay
5. TCC solenoid
6. ECM
7. Sensed information
  - Throttle Position Sensor (TPS)
  - Engine Coolant Temp. Sensor (ECTS)
  - Vehicle Speed Sensor (VSS)
  - (late type ECM only)

### **TORQUE CONVERTER CLUTCH (TCC) RELAY CONTROL SYSTEM (3 A/T)**

This system controls the TCC relay, one of the components that controls the torque converter clutch. A circuit diagram of this system is shown in Figure 1.

The TCC solenoid valve, under the control of the A/T oil pressure switch and TCC relay, opens and closes the A/T oil passage to lock and unlock the torque converter clutch.

The ECM controls the relay using information from the following sensors:

- Throttle Position Sensor (TPS)
- Camshaft Position Sensor (CMP)
- Engine Coolant Temperature Sensor (ECT)
- Vehicle Speed Sensor (VSS).

The ECM engages the relay only under the following conditions:

- Engine is running
- Engine coolant temperature is above 60°C (140°F)
- Throttle valve opening is between 6.4° and 62.5°
- Vehicle speed is higher than
  - 40 mph (64 km/h, 8-valve engine)
  - 47 mph (75 km/h, 16-valve engine, late type ECM only).

Battery voltage is applied to the TCC solenoid valve under the following conditions:

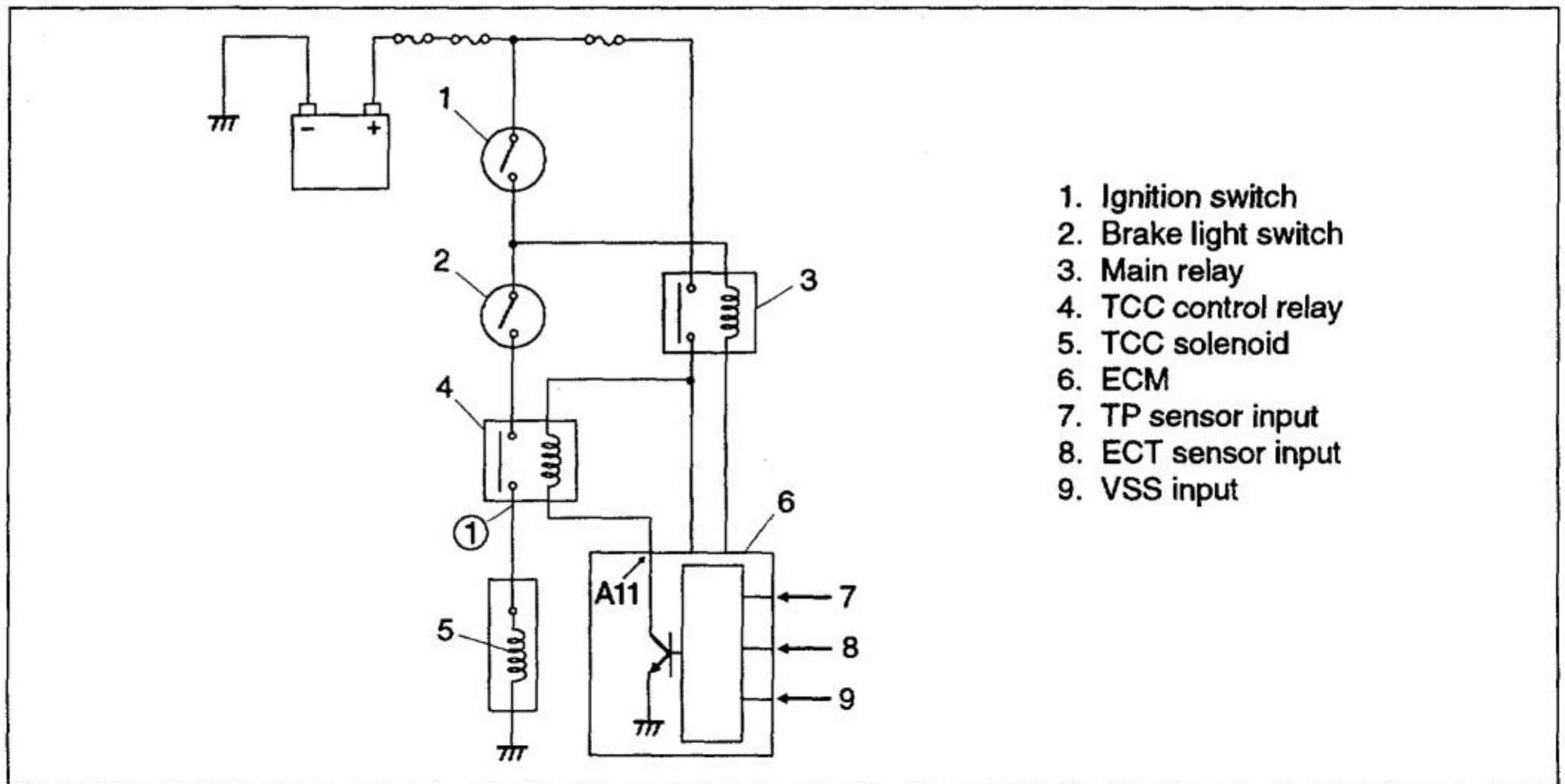
- The relay is ON
- The brake pedal is released (brake pedal switch is ON)
- The A/T oil pressure is higher than the specified pressure (the oil pressure switch is ON).

Even when the relay is ON, if the brake pedal is depressed or the A/T oil pressure is too low, the TCC solenoid valve circuit opens and voltage is not applied.

## TORQUE CONVERTER CLUTCH DIAGNOSIS (LATE TYPE ECM)

### ELECTRICAL CHECK

Preliminary checking procedure in Section 7B of Service Manual should be performed prior to this chart.



### DIAGNOSIS

For diagnostic procedure, please refer to Technical Service Bulletin #TS 3-25. Also note that the continuity check between ① pin of TCC relay coupler and ground is not needed due to the elimination of the A/T oil pressure switch.

## PARTS SUPPLY DATA

PART NAME	EARLY PART NO.	LATE PART NO.	#	SUPPLY OF SPARE PARTS	INTERCHANGEABILITY (O: OK, X: NO)
Automatic transmission 4WD 8-valve engine	21000-61A00	21000-61A01	1	Early and Late	<div> <div>Early</div> <div> <del>→</del> <del>←</del> </div> <div>Late</div> </div>
Automatic transmission 4WD 16-valve engine	21000-61A30	21000-61A31			
Automatic transmission 2WD 8-valve engine	21000-61A50	21000-61A51			
Automatic transmission 2WD 16-valve engine	21000-61A60	21000-61A61			

# Technical Bulletin

Division: Automotive

Category: Technical

TSB No. 3-30 06207

Section Title: Drivetrain

**SUBJECT:** MODIFICATION OF 4-SPEED AUTOMATIC INTERNAL PARTS  
**MODEL:** SIDEKICK AND X-90  
**YEAR:** ALL

**CONDITION:** Excessive gear shift shock.

**CAUSE:** N/A

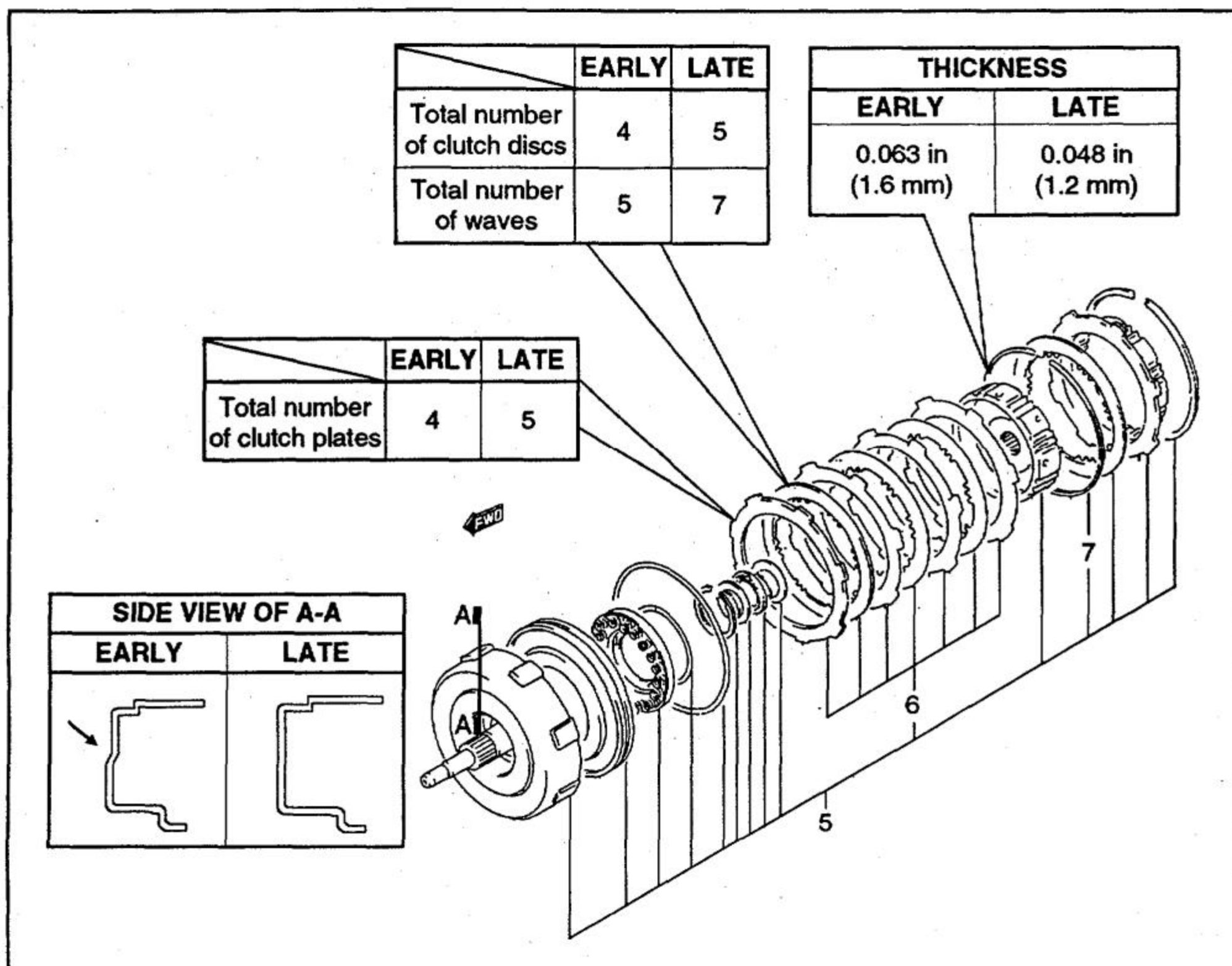
**CORRECTION:** Install updated parts as listed in this bulletin.

This bulletin is to inform you of the modification of the inner parts for the 4-Speed Automatic Transmission which has been carried out since January 1997 production. The modifications listed in this bulletin were introduced to reduce gear shift shock when shifting from Neutral to Drive, Neutral to Reverse, and First to Second gears. When rebuilding the transmission, please use the parts as listed in this bulletin.

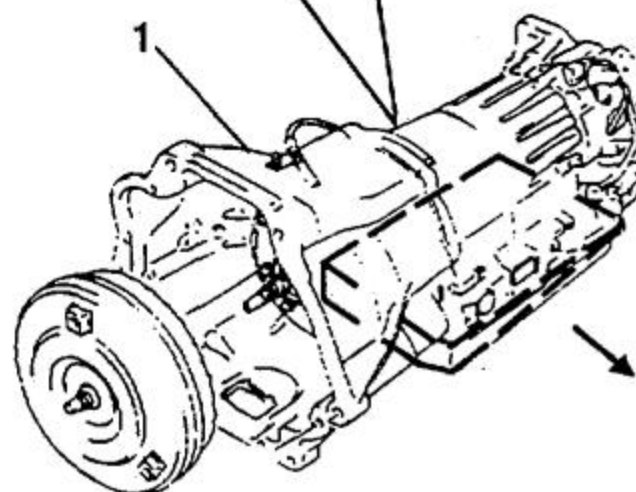
MODEL	EFFECTIVE STARTING VIN WITH UPDATED PARTS
Sidekick	JS3TE02V_V4100451~
	JS3TD03V_V4101739~
	2S3TD03V_V6406951~
	2S3TE02V_V6406948~
X-90	JS3LA11S_V4100841~
	JS3LB11S_V4101399~

Technical Service Department  
Dealership Circulation - Initial and File:

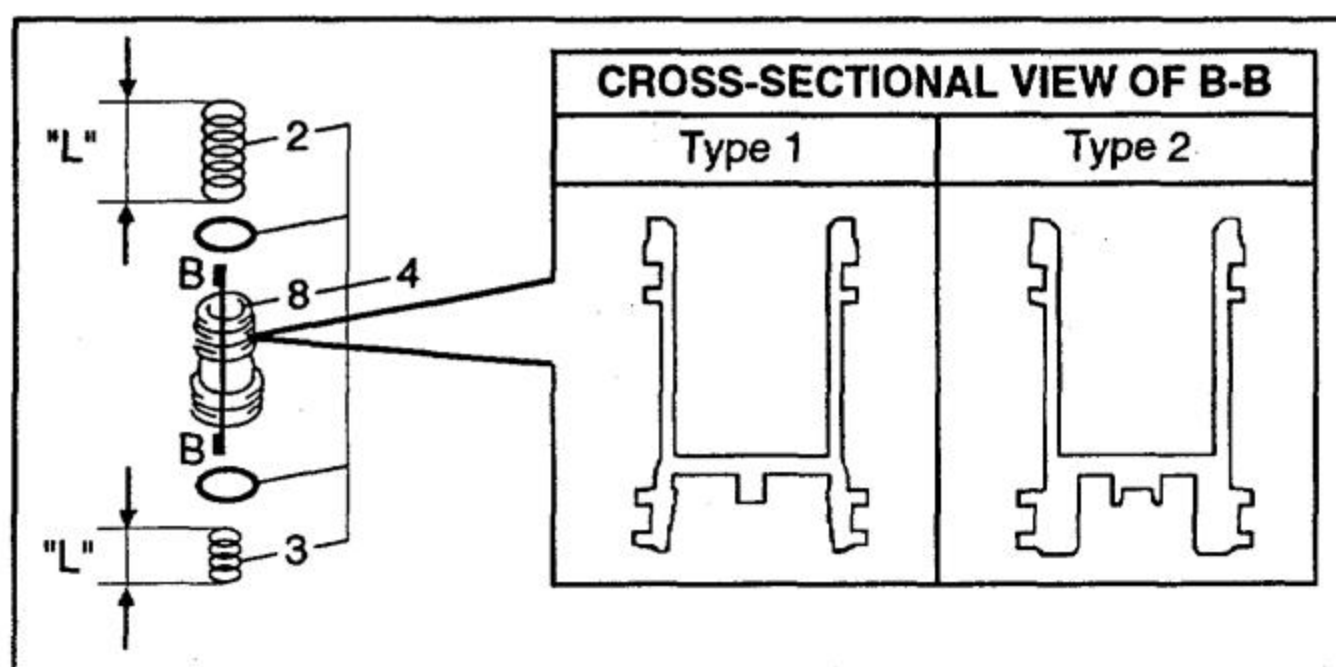
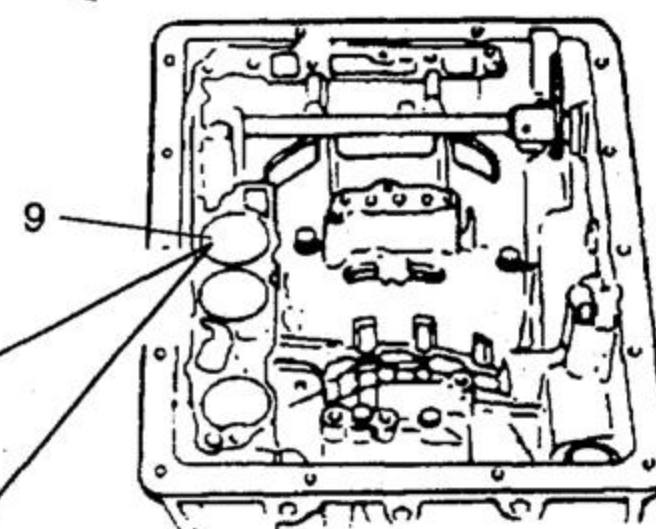
Service Manager	Parts Manager	Service Advisor	Technicians												



1. Automatic transmission assembly
2. Second brake accumulator No. 2 spring
3. Second brake accumulator No. 1 spring
4. Piston/spring set
5. Forward clutch assembly
6. Forward clutch plate set
7. Retaining ring
8. Second brake accumulator piston
9. Second brake accumulator



Underside view of A/T  
(without valve body)



## Second Brake Accumulator Spring Piston's Personal History

Three (3) types of A/T assemblies were manufactured with different pistons and springs, noted in the table below as ①, ②, and ③. These assemblies are identifiable by the following criteria:

- 1) Spring color/length
- 2) Piston shape
- 3) Serial number of A/T assembly

The information listed in the table below is given to help you identify the related parts installed in your transmission. Items highlighted with a "\*" are "production only" parts and are not available separately.

REF. NO.	PART NAME	SPRING LENGTH ("L"), SPRING ID COLOR, AND PISTON TYPE							
						EARLY		LATE	
		①	②	③	①				
2	Second brake accumulator No. 2 spring	2.172 in. (55.18 mm) (Light Green)	→	2.211 in. (56.16 mm) (Purple) *	→	2.220 in. (56.40 mm) (Green)	→	2.172 in. (55.18 mm) (Light Green)	
3	Second brake accumulator No. 1 spring	1.383 in. (35.13 mm) (Red)	→	0.728 in. (18.50 mm) (Purple) *	→	0.689 in. (17.50 mm) (Red)	→	1.383 in. (35.13 mm) (Red)	
8	Second brake accumulator piston	Type 2	→	Type 1 *	→	Type 1 *	→	Type 2	
AT Serial Number		To 95DQ61560 or 95HQ61360	From 95DQ61561 to 96MQ65010 or from 95HQ61361 to 96MQ65405				From 96MQ65011 or 96MQ65406		

## PARTS SUPPLY DATA

REF. #	PART NAME	EARLY PART NO.	LATE PART NO.	QTY	SUPPLY OF SPARE PARTS	INTERCHANGEABILITY (O: OK, X: NO)	NOTE
1	A/T Assembly	21000-57BC0	21000-57BC1	1	Late only after early stock is depleted	Early $\rightarrow \times \rightarrow$ Late $\leftarrow \ominus \leftarrow$	CAMI IWATA
		21000-57BD0	21000-57BD1				
2	Second brake accumulator No. 2 spring	29645-57B10	29645-57B00	1	Both early and late	Early $\rightarrow \times \rightarrow$ Late $\leftarrow \times \leftarrow$	—
3	Second brake accumulator No. 1 spring	29644-57B10	29644-57B00	1			
4	Piston/spring set	—	29700-57800	1	Late only	—	—
5	Forward clutch assy.	26601-57B01	26601-57B10	1	Late only after early stock is depleted	Early $\rightarrow \times \rightarrow$ Late $\leftarrow \ominus \leftarrow$	—
6	Forward clutch plate set	26631-57BT0	26631-57BU0				
7	Retaining ring	24191-57B00	26823-60G10	1	Both early and late	Early $\rightarrow \times \rightarrow$ Late $\leftarrow \times \leftarrow$	—

### ABBREVIATION

CAMI : Vehicles produced at the CAMI plant (Canada) with a VIN number that begins with a "2."

IWATA : Vehicles produced at the IWATA plant (Japan) with a VIN number that begins with a "J."

### INTERCHANGEABILITY:

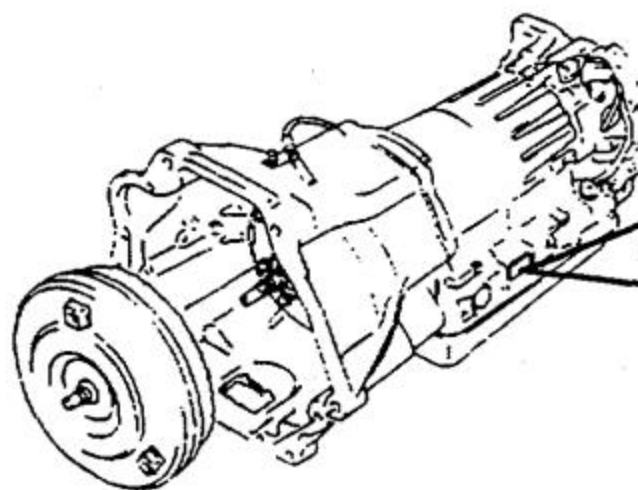
- The second brake accumulator springs listed below can be interchanged with A/T assemblies that are within the following serial numbers:
  - From 95DQ61561 to 96MQ65010 (CAMI)
  - From 95HQ61361 to 96MQ65405 (IWATA)

No. 2 spring 29645-57B10  $\rightarrow \ominus$  (29645-57B00  
 No. 1 spring 29644-57B10  $\leftarrow \ominus$  as a set 29644-57B00

- For all A/T assemblies that are outside of the serial number range listed above, the following second brake accumulator springs are interchangeable:

No. 2 spring 29645-57B10  $\rightarrow \ominus$   
 No. 1 spring 29644-57B10  $\leftarrow \ominus$  as a set 29700-57800

### LOCATION OF IDENTIFICATION PLATE



### EXAMPLE OF IDENTIFICATION PLATE

**AISIN AW CO., LTD.**  
 MADE IN JAPAN  
 MODEL NO. 03-72LE  
 SERIAL NO. 95D Q 61561