



Technical Service Information

SATURN NEW DESIGN SOLENOIDS

COMPLAINT: After rebuild, the vehicle exhibits one of the following "Erratic Upshift" patterns:

- A. Shifts 1st to 3rd, with no 2nd or 4th.
- B. Starts in 2nd, with no 1st, and upshifts to 3rd and 4th.
- C. Shifts from 1st to 4th, with no 2nd and no 3rd.

This condition usually occurs after one complete upshift pattern from 1 st to 2nd to 3rd to 4th, and will normally store one or more of the following trouble codes, depending on the particular "Gear Ratio Error":

Trouble Code 16 = No 1st Gear
Trouble Code 22 = No 2nd Gear
Trouble Code 23 = No 3rd Gear
Trouble Code 24 = No 4th Gear

CAUSE:

The cause may be, a mis-match of gear train parts (Drive and Driven Gears), between the 1st design "MP6" Base transaxle, and the 2nd design "MP6" Base transaxle, or the "MP7" Performance transaxle. Refer to the charts in Figures 1 and 2 for the proper gear tooth counts for the model you are rebuilding.

When a mis-match does occur, the Powertrain Control Module (PCM) will abort the particular gear, and not let it shift into that gear again, because the PCM noticed that the gear ratio was incorrect.

CORRECTION: When rebuilding a Saturn transaxle, and gear train wear is present, "*Always*" ensure that the replacement gears have the exact same tooth counts as the ones that you are removing. Refer to the charts in Figures 1 and 2 for the proper gear tooth counts for the model you are rebuilding.

Important Note: Refer to Figure 3 to identify the transaxle design level and type of transaxle. They are as follows:

"MP6" Base = 1st Design
"MP6" Base (With "SV") = 2nd Design
"MP7" = Performance Version



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| GEAR TOOTH COUNTS AND GEAR RATIOS | | | |
|--|---|--|---|
| <i>All SOHC engines use MP6 Transaxles</i> | | | |
| <i>All DOHC engines use MP7 Transaxles</i> | | | |
| GEAR | 1991-1993 1ST DESIGN* MP6 BASE | 1991-1993 2ND DESIGN** MP6 BASE | 1991-1993 Performance MP7 BASE |
| 1st Drive | 21 | 19 | 19 |
| 1st Driven | 47 | 48 | 48 |
| 2nd Drive | 30 | 30 | 27 |
| 2nd Driven | 38 | 38 | 42 |
| 3rd Drive | 37 | 37 | 33 |
| 3rd Driven | 30 | 30 | 34 |
| 4th Drive | 42 | 42 | 40 |
| 4th Driven | 25 | 25 | 28 |
| Reverse Drive | 21 | 21 | 21 |
| Reverse Driven | 40 | 40 | 40 |
| Reverse Idler | 27 | 27 | 27 |
| Output Shaft | 15 | 15 | 15 |
| Ring Gear | 62 | 62 | 62 |
| <i>* Vehicles built prior to, and including VIN PZ156139</i> | | | |
| <i>** Vehicles built after, and including VIN PZ156140 ("SV" Cast into case)</i> | | | |
| GEAR | GEAR RATIO | | |
| 1st Gear | 2.24 | 2.53 | 2.53 |
| 2nd Gear | 1.17 | 1.17 | 1.56 |
| 3rd Gear | 0.81 | 0.81 | 1.03 |
| 4th Gear | 0.60 | 0.60 | 0.70 |
| Reverse Gear | 2.39 | 2.39 | 2.39 |
| Final Drive | 4.13 | 4.13 | 4.13 |

Figure 1

GEAR TRAIN IDENTIFICATION

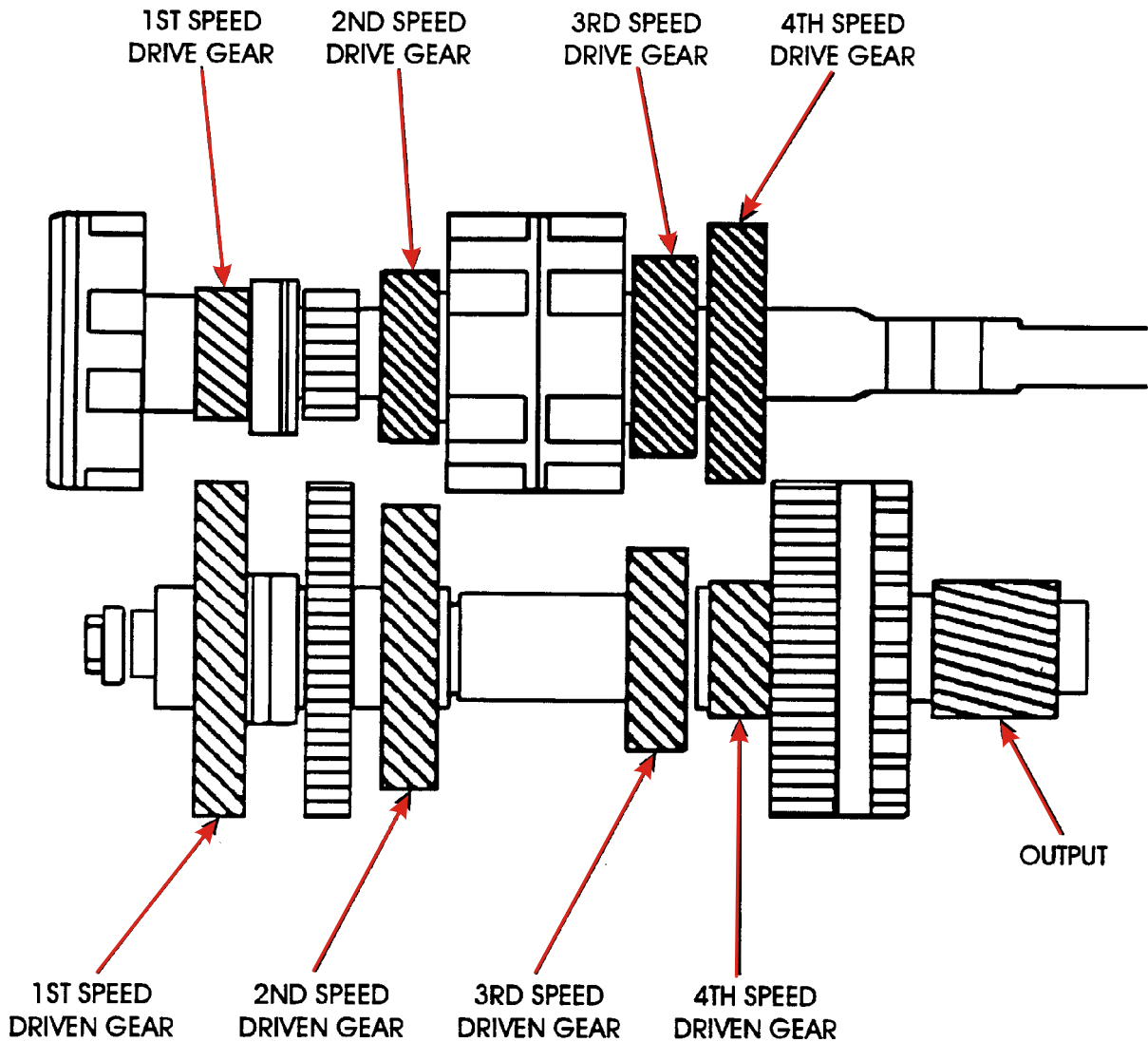
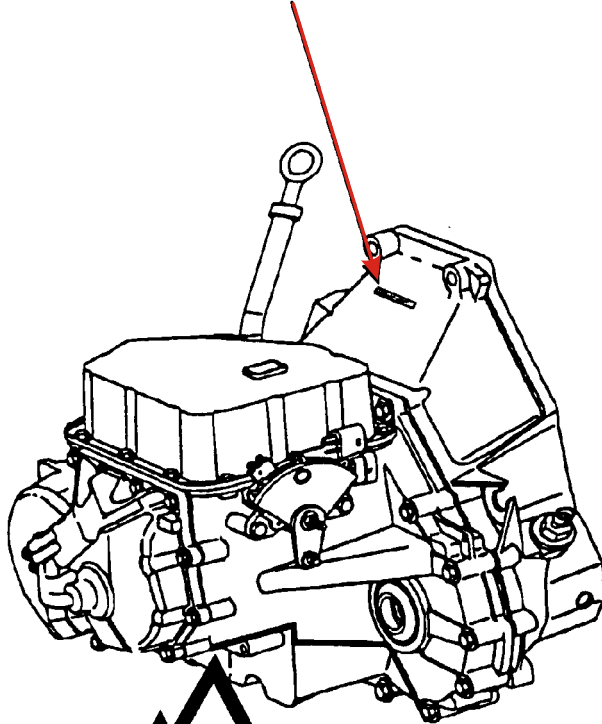


Figure 2

*A STAMPED IDENTIFICATION CODE
CAN BE FOUND IN THIS AREA*



IDENTIFICATION CODE BREAKDOWN

| | | | | | |
|---|-----|---|-----|---|---|
| 3 | MP7 | 1 | 043 | 0 | 4 |
| 1 | 2 | 3 | 4 | 5 | 6 |

1 = Model Year (3 = 93)

2 = Model Code:

MP2 = Base Manual

MP3 = Performance Manual

MP6 = Base Automatic

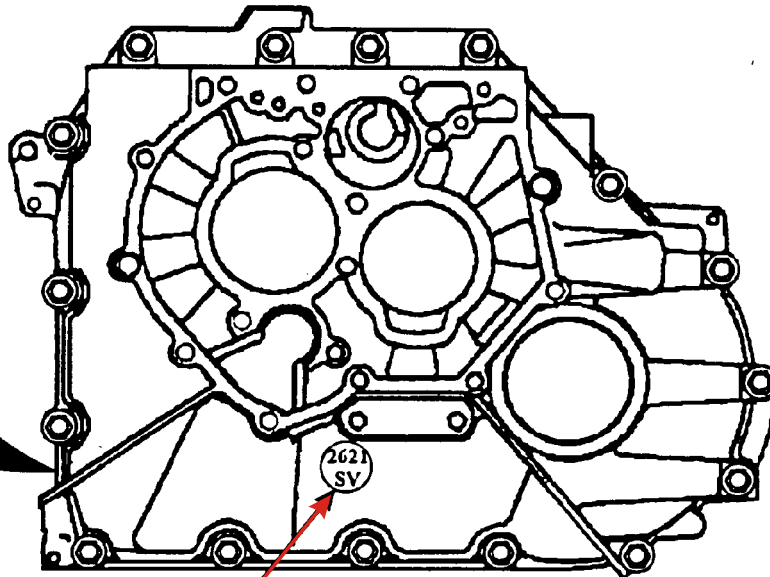
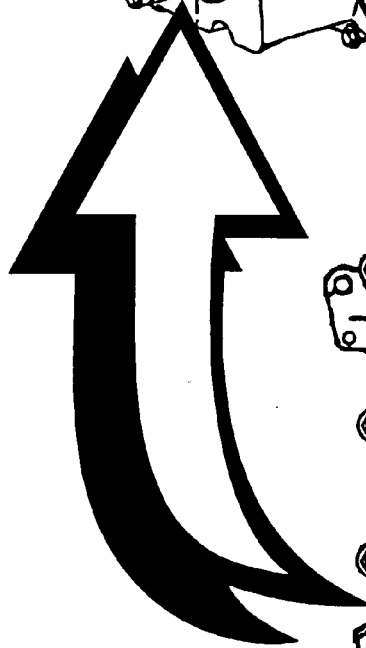
MP7 = Performance Automatic

3 = Plant Code (1 = Spring Hill, TN)

4 = Julian Date (043 = Feb. 12)

5 = Hour of Day (0 = Midnight)

6 = Update Code (Increments 0 - 9)



Identification "SV" here for 2nd design level

Figure 3