REPAIR INSTRUCTIONS - ON VEHICLE

MANUAL SHIFT DETENT LEVER WITH SHAFT POSITION SWITCH ASSEMBLY REPLACEMENT

Special Tools

DT-41229 Manual Shaft Pin Installer

For equivalent regional tools, refer to Special Tools.

Removal Procedure

1. Remove the control valve body. Refer to Control Valve Body Replacement.
2. Remove the manual shaft detent lever hub pin (1) using a pry bar and pliers.
3. Remove and DISCARD the manual shift shaft pin (5) using diagonal pliers or equivalent tool.
4. Remove the manual shaft (2).
5. Disconnect the actuator rod (3) from the detent lever assembly. Do not remove the actuator rod from the transmission case.

**NOTE:** Do not pull the park actuator rod end out beyond the machined oil passage surface in the case. A no park condition will exist if the park pawl actuator assembly is pulled out of the transmission too far and the actuator rod disengages from the park pawl. The transmission assembly will require disassembly to re-install the actuator rod over the park pawl.

6. Remove the manual shaft detent (with shift position switch) lever assembly (4).

**Installation Procedure**

1. Connect the actuator rod (3) to the detent lever assembly.
2. Install the manual shaft detent (with shift position switch) lever assembly (4).
3. Install the manual shaft (2).
4. Install the manual shaft detent lever hub pin (1) to height of 7.9 mm (0.38 in) (b).

CAUTION: Use J 41229 to install the manual shaft pin at the correct height in order to properly secure the manual shaft. If you install the pin too deep, the case bore may crack.

5. Install the NEW manual shaft pin (5) using DT-41229 pin installer. Use a NEW pin to ensure proper engagement with the case.
6. Inspect pin installed height is within 7.2-8.2 mm (0.28-0.32 in) (a).
7. Install the control valve body. Refer to Control Valve Body Replacement.
8. Perform the transmission adaptive values learn procedure. Refer to Transmission Adaptive Values Learn.

TRANSMISSION CONTROL LEVER KNOB REPLACEMENT

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**Fig. 3: Transmission Control Lever Knob**  
Courtesy of GENERAL MOTORS COMPANY

<table>
<thead>
<tr>
<th>Callout</th>
<th>Component Name</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Transmission Control Lever Knob</td>
</tr>
</tbody>
</table>
Procedure
Remove the transmission control lever knob from the transmission control. Pulling upward with a twisting motion will aid in disengaging the retainer.

Transmission Control Replacement

<table>
<thead>
<tr>
<th>Callout</th>
<th>Component Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Transmission Control Bolt (Qty: 4)</td>
</tr>
</tbody>
</table>

Callout Component Name

**Preliminary Procedures**

1. Remove control lever knob. Refer to Transmission Control Lever Knob Replacement.
2. Remove the front floor console extension panel. Refer to Front Floor Console Extension Panel Replacement - Left Side.
3. Remove instrument panel center molding. Refer to Instrument Panel Center Molding Replacement.

Transmission Control Bolt (Qty: 4)

**CAUTION:**
Refer to Fastener Caution.
Removal Procedure

1. Set the park brake and chock the wheels.

Procedure

1. Unclip wiring harness and disconnect electrical connector transmission control.

2. Disconnect range selector lever cable from transmission control. Refer to Range Selector Lever Cable Replacement.

3. Adjust range selector lever cable. Refer to Range Selector Lever Cable Adjustment.

Tighten

9 N.m (80 lb in)
2. Disconnect the transmission range selector lever cable terminal (1) from the transmission manual shift lever pin.

3. Press the locking tabs inward in order to release the transmission range selector lever cable (2) from the cable bracket.

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**Fig. 5: View Of Transmission Range Selector Lever & Cable Connection**  
Courtesy of GENERAL MOTORS COMPANY

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**Fig. 6: View Of Transmission Range Selector Lever**  
Courtesy of GENERAL MOTORS COMPANY

**WARNING:** Hold the transmission range selector lever while removing or installing the lever retaining nut. Excessive torque on the manual shaft can damage the detent lever hub retainer which could allow the vehicle to roll when placed in the park position.

4. Remove the transmission range selector lever nut (1).

5. Remove the transmission range selector lever (2).

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**Installation Procedure**