SECTION 07-05 Transaxle, Automatic—External Controls

VEHICLE APPLICATION

Taurus, Taurus SHO / Sable.

DESCRIPTION AND OPERATION

The transaxle shift control linkage consists of a column or floor mounted shifter assembly, a cable connecting the column or shifter to the transaxle shift lever, and on floor shift vehicles an interlock cable connecting the shifter to the steering column lock assembly. The interlock cable locks the floor shift lever in the PARK position when the ignition switch is in the LOCK position. It also requires the floor shift lever to be in the PARK position to turn the ignition switch to the LOCK position.

Brake-Shift Interlock

A shift interlock mechanism is installed on vehicles with an automatic transaxle. This is to prevent shifting the transaxle out of the PARK position unless the brake pedal is depressed. The column shift interlock system is covered in Section 11-04. The floor shift interlock system consists of a solenoid assembly attached to the key interlock assembly, a bracket retaining the solenoid, and the necessary wiring. The solenoid is energized when the ignition switch is turned to the ON position, locking the floor shifter in the PARK position. When the brake pedal is depressed and the stoplamp switch is activated, the shift lock solenoid is deactivated and the floor shifter can be moved out of the PARK position.

DESCRIPTION AND OPERATION (Continued)

Overdrive Lockout

The Taurus SHO floor shifter includes an overdrive lockout switch in the shift knob. The system automatically engages the overdrive mode each time the ignition is turned to RUN. Depressing the overdrive button with the ignition in RUN locks out the overdrive mode. Depressing the button again reverts to the overdrive mode.

DIAGNOSIS

Use the diagnosis chart as an aid in determining possible problem sources and necessary service actions for shift control linkage.

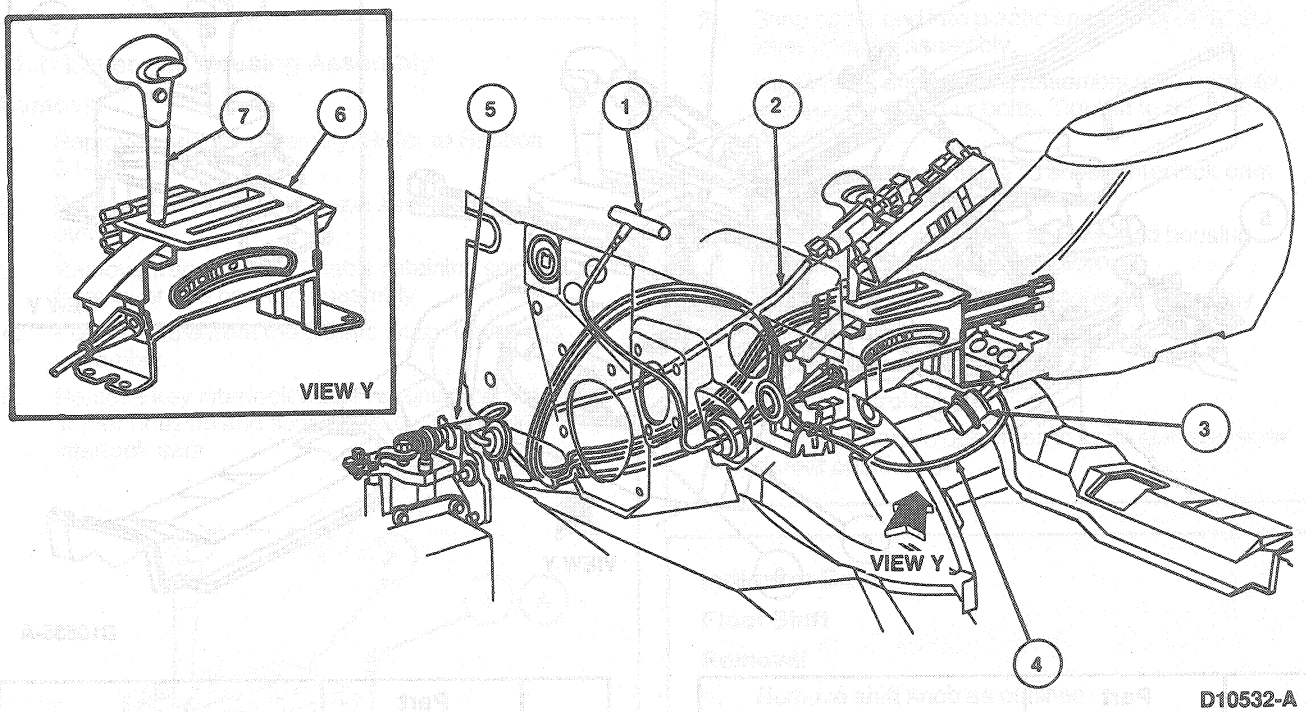
SHIFT CONTROL LINKAGE DIAGNOSIS

CONDITION	POSSIBLE SOURCE	ACTION
• Starter Inoperative in PARK and / or NEUTRAL • Back-up Lamps Not Operating Correctly	• Neutral switch worn or damaged. • Transaxle cable retainer bracket loose at steering column. • Cable is loose at transaxle retainer bracket. • Shift linkage misadjusted.	• Check neutral switch for continuity, proper connection. • Secure bracket by tightening two bolts. • Secure cable in bracket. • Re-adjust shift linkage.
• PRNDL Indicator Does Not Correspond to the Transaxle Gear	• Shift cable retainer bracket is loose at steering column. • PRNDL linkage misadjusted. • Cable is loose at transaxle retainer bracket. • Shift linkage misadjusted.	• Tighten bracket retaining bolts. • Adjust PRNDL linkage at column. • Secure cable in bracket. • Re-adjust shift linkage.
• PRNDL Does Not Illuminate	• Bulb burned out. • Wiring harness damaged.	• Replace bulb. • Install new wiring harness.
• Rattle, Noise, Buzz, etc.	• Shift knob loose. • Selector lever and housing assembly loose. • Cable assembly grommet not secure to dash panel.	• Tighten knob locknut. • Tighten housing attaching bolts. • Secure grommet to dash panel.
• Water Enters Inside the Vehicle	• Cable assembly grommet not secure to dash panel. • Cable assembly grommet torn.	• Secure grommet to dash panel. • Install new cable assembly.
• Difficult to, or Cannot Remove Ignition Key (Floor Shift Only)	• Shifter not fully locked in PARK position. • Shifter not properly adjusted.	• Make sure shifter is locked in PARK position. • Adjust shift linkage.
• Shifter Will Not Release From PARK	• Key interlock cable damaged, restricted.	• Service, replace or remove restriction as necessary.
• Shifter Will Not Release From PARK With Key in ON Position and Brake Pedal Depressed	• Stoplamp switch inoperative. • Shift knob loose or not fully seated. • Interlock cable damaged or restricted.	• Replace switch. • Properly install knob or replace. • Service or replace as necessary.
• Shifter Will Not Release With Key in OFF Position	• Shift knob loose or not fully seated. • Interlock cable damaged or restricted.	• Properly install knob or replace. • Service or replace as necessary.
• Shifter Release From Park (Ignition in LOCK or ACC Position)	• Interlock cable loose at column or shifter.	• Tighten as necessary.
• Shifter Releases From Park (Ignition in RUN Position)	• Interlock cable and solenoid damaged. • Electrical connector loose or disconnected.	• Service as necessary. • Connect electrical connector securely.
• Cannot Engage / Disengage Overdrive Lockout	• O / D switch worn or damaged. • Wire harness damaged. • Loose connections in wire harness.	• Replace switch. • Replace wire harness. • Secure connectors.

REMOVAL AND INSTALLATION

Floor Shift

Transaxle, AX4S



Item	Part Number	Description
1	—	Vacuum Manifold
2	3F719	Key Interlock Cable
3	—	Parking Brake Vacuum Solenoid

(Continued)

Item	Part Number	Description
4	2B653	Vacuum Hose Assy
5	7E395	Transmission Shift Cable
6	7K004	Lever and Housing Assy
7	7H263	Knob Assy

Shift Knob

Taurus/Sable

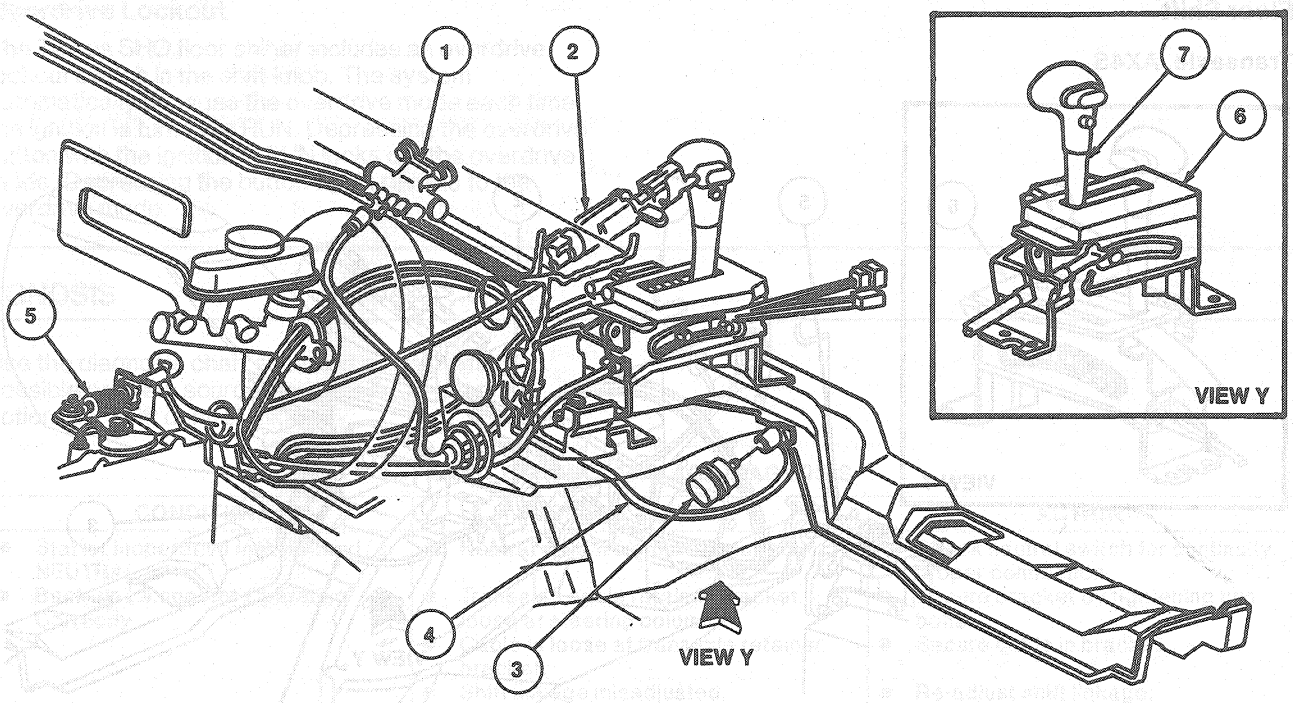
Removal

1. Remove retaining clip from shift knob.
2. Hold shift knob securely and depress release button.
3. Pull up on shift knob.
4. Remove shift knob shroud.

Installation

1. Slide shroud over shift lever.
2. Hold shift knob securely.
3. Firmly and fully press shift knob onto lever assembly.
4. Insert retaining clip.

REMOVAL AND INSTALLATION (Continued)



Item	Part Number	Description
1	—	Vacuum Manifold
2	3F719	Key Interlock Cable
3	—	Parking Brake Vacuum Solenoid

Item	Part Number	Description
4	2B653	Vacuum Hose Assy
5	7E395	Transmission Shift Cable
6	7K004	Lever and Housing Assy
7	7H263	Knob Assy

(Continued)

Taurus SHO

Removal

1. Remove overdrive lockout switch using needle nose pliers.
2. Remove retaining clip from shift knob.
3. Hold shift knob securely and depress release button.
4. Pull up on shift knob.
5. Place the shifter in the 1 position and gently pull the overdrive lockout connector up. Remove shift knob shroud.

Installation

1. Slide shroud over shift lever and overdrive lockout connector and wiring. Push excess wiring through shroud. Gently shift into PARK position to help pull wires through.
2. Slide overdrive lockout connector into shift knob and firmly press shift knob fully onto shaft lever.
3. Insert retaining clip.
4. Press overdrive lockout switch into shift knob.

Bezel Assembly

Removal

1. Remove shift knob as outlined.
2. Remove console assembly. Refer to Section 01-12.
3. Remove three screws from bezel assembly.
4. Lift bezel assembly slightly. Disconnect indicator bulb harness and remove bezel assembly.

Installation

NOTE: Care should be taken to ensure that all sides are properly aligned.

1. Install bezel assembly over shift lever being sure to align the PRNDL indicator driving pin with the PRNDL indicator. Connect indicator bulb harness, and secure bezel assembly to selector housing with three screws.
2. Install console assembly. Refer to Section 01-12.
3. Install shift knob as outlined.
4. Adjust control linkage.

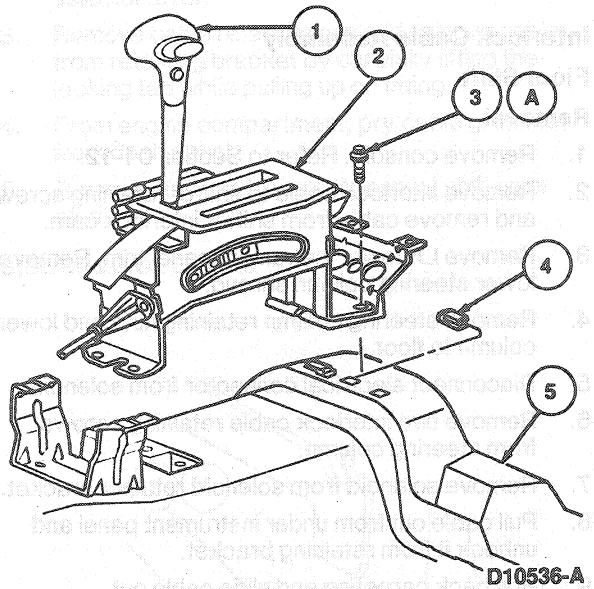
REMOVAL AND INSTALLATION (Continued)

5. Check transaxle operation for all selector lever detent positions.

Shift Lever and Housing Assembly

Removal

1. Remove console assembly. Refer to Section 01-12.
2. Remove shift knob and bezel assembly as outlined.
3. Remove transaxle shift cable retaining screws from lever and housing assembly.
4. Pull the cable from the plastic snap retainer on assembly.
5. Remove key interlock cable retaining screw from shifter housing and slide cable out of shifter interlock cam.



Item	Part Number	Description
1	7H263	Knob Assy
2	7K004	Lever and Housing Assy
3A	N605774-S2	Bolt (4 Req'd)
4	N623332-S2	J-Nut (4 Req'd)
5	—	Floorpan Assy
A		Tighten to 6-8 N·m (5-6 Lb-Ft

6. Remove four bolts retaining lever and housing assembly to floorpan. Remove assembly.

Installation

1. Position control cable assembly into lever and housing assembly and install retaining screws.
2. Snap cable end into plastic snap retainer on the lever housing assembly.
3. Install lever and housing assembly onto floorpan and secure with four bolts. Tighten to 6-8 N·m (5-6 lb-ft).
4. Connect interlock cable to shifter interlock cam. Install cable retaining screw.
5. Position bezel assembly on lever and housing assembly. Secure with four screws.
6. Install console on lever and housing assembly with two screws.
7. Install shift knob as outlined.
8. Adjust control linkage.
9. Check transaxle operation in each selector lever detent position.

Indicator Bulb

Floor Shift

Removal

1. Remove shift knob as outlined.
2. Remove bezel as outlined.
3. Remove bulb assembly from bezel.
4. Remove indicator bulb.

Installation

1. Install indicator bulb onto indicator bulb assembly.
2. Connect light housing to bezel assembly.
3. Install shift bezel.
4. Install shift knob.

Shift Control Cable Assembly

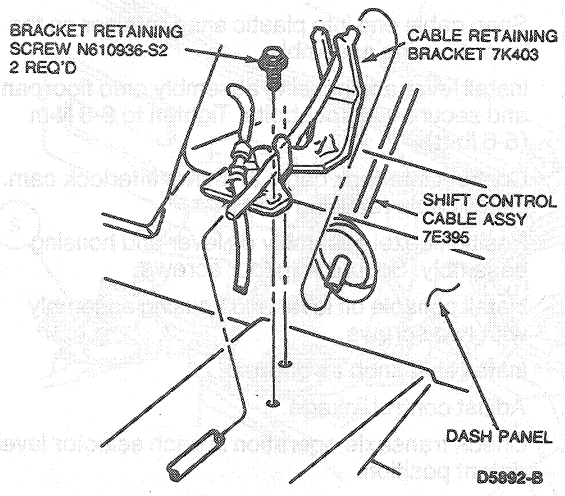
Floor Shift

Removal

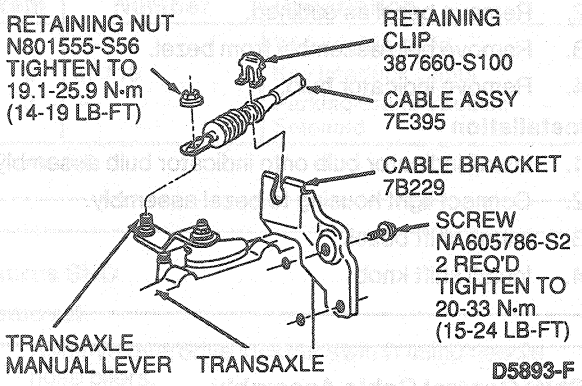
1. Remove console. Disconnect cable and remove shifter assembly as outlined.
2. Pull back carpeting.

REMOVAL AND INSTALLATION (Continued)

3. Remove cable bracket to dash panel retaining screw.



4. Disengage rubber grommet from floorpan by pushing it toward passenger compartment.
5. Remove retaining nut and control cable assembly from transaxle lever.
6. Remove cable retaining clip from cable bracket on transaxle.



7. Remove control cable assembly from bracket.
8. Pull cable through floorpan into passenger compartment.

Installation

1. From inside the passenger compartment, feed round end of control cable assembly through floorpan.
2. Press rubber boot on control cable assembly into body panel opening. Install cable bracket and carpeting.
3. Install bushing and control cable assembly into snap retainer on selector lever and housing assembly shaft.
4. Position control cable assembly in selector lever housing assembly. Install retaining screws.
5. Install shifter assembly as outlined.
6. Place selector lever in OVERDRIVE position against rearward stop. The selector lever must be held in the rearward position while attaching other end of control cable assembly. Position cable into cable bracket on transaxle and install retainer clip.
7. Attach cable to transaxle lever and install retaining nut.
8. Shift transaxle lever into OVERDRIVE position, second detent from full rearward position.
9. Place cable end on transaxle manual lever stud, using care to align flats on stud with slot in cable. Start retaining nut.
10. Make sure selector lever has not moved from OVERDRIVE detent, then tighten nut.
11. Check transaxle operation in each selector lever detent position. Ensure park mechanism and neutral start switch function properly.

Interlock Cable Assembly

Floor Shift

Removal

1. Remove console. Refer to Section 01-12.
2. Remove interlock cable to shifter retaining screw and remove cable from shifter interlock cam.
3. Remove LH lower instrument panel trim. Remove lower steering column shroud.
4. Remove steering column retaining nuts and lower column to floor.
5. Disconnect electrical connector from solenoid.
6. Remove two interlock cable retaining screws from steering column.
7. Remove solenoid from solenoid retainer bracket.
8. Pull cable out from under instrument panel and unhook it from retaining bracket.
9. Roll back carpeting and slide cable out.

Installation

1. Route cable under carpeting. Position cable under A/C plenum bracket and under accelerator pedal.
2. Connect cable to shifter interlock cam and install retaining screw at shifter.
3. Install solenoid into retainer bracket.
4. Install cable to steering column. Install two retaining screws. Tighten to 1.5-2 N·m (14-17 lb-in).
5. Connect electrical connector to solenoid.
6. Position column to support bracket and install retaining nuts. Tighten to 20 N·m (14 lb-ft).
7. Install column shroud and instrument panel trim panel.

REMOVAL AND INSTALLATION (Continued)

8. Check for proper interlock operation. The ignition key should be removeable only with the shifter in PARK. The shifter should be locked in the PARK position with the key removed.

Column Shift

NOTE: Whenever the cable is removed from the cable retaining brackets for any reason, the cable must be replaced.

NOTE: Whenever a steering column, engine or transaxle removal is required, **do not** remove shift control cable from the retaining brackets. The bracket must be removed with the cable attached.

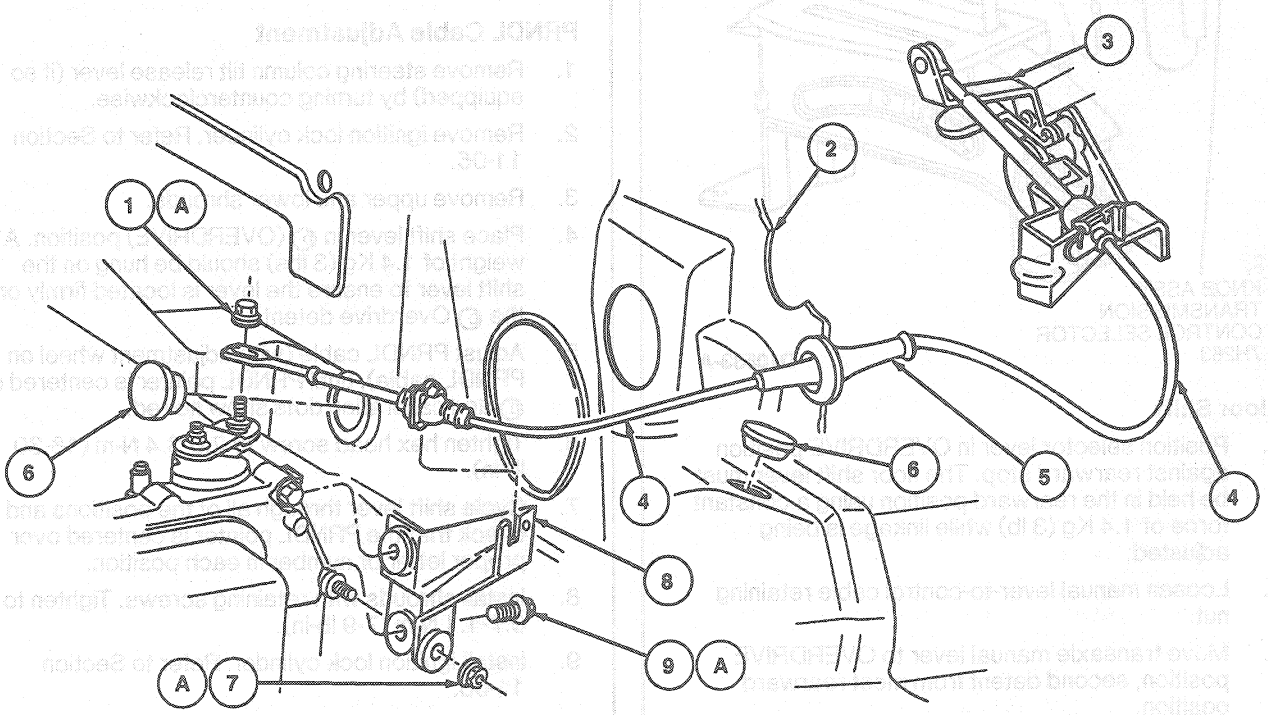
Removal

1. From under the instrument panel, remove shift control cable and retaining bracket from steering column.
2. Remove cable plastic terminal from column selector lever pivot ball, using a screwdriver, by prying between the cable plastic terminal and selector lever.
3. Remove cable retaining clip and remove cable from retaining bracket by carefully lifting the locking tab while pulling up on fitting.
4. From engine compartment, pry cable grommet from dash panel.
5. Remove nut from transaxle manual shift lever stud.
6. Remove cable locking tab and carefully remove cable from retaining bracket.
7. Remove shift cable from cable retaining bracket on transaxle and, from the engine compartment, pull cable through dash panel opening.

Installation

1. From the engine compartment, feed plastic terminal end of cable through opening in dash panel.
2. Press rubber boot on shift control cable into dash panel.
3. From engine compartment, install cable into cable retaining bracket on transaxle and make sure locking tab is in proper location.
4. Place cable on transaxle manual shift lever stud. Install cable retaining nut loosely.
5. From the passenger compartment, install cable-to-steering column retaining bracket onto cable and make sure locking tab is in proper location.
6. Install cable and bracket to steering column with two retaining screws. Tighten to 8-13 N·m (6-9 lb-ft).
7. Snap cable plastic terminal to selector lever pivot ball on steering column.
8. Adjust cable control as outlined.

3.8L and 3.0L Engine



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REMOVAL AND INSTALLATION (Continued)

Item	Part Number	Description
1A	N801555-S56	Nut
2	—	Dash Panel
3	—	Steering Column
4	7E395	Cable Assy
5	—	Grommet

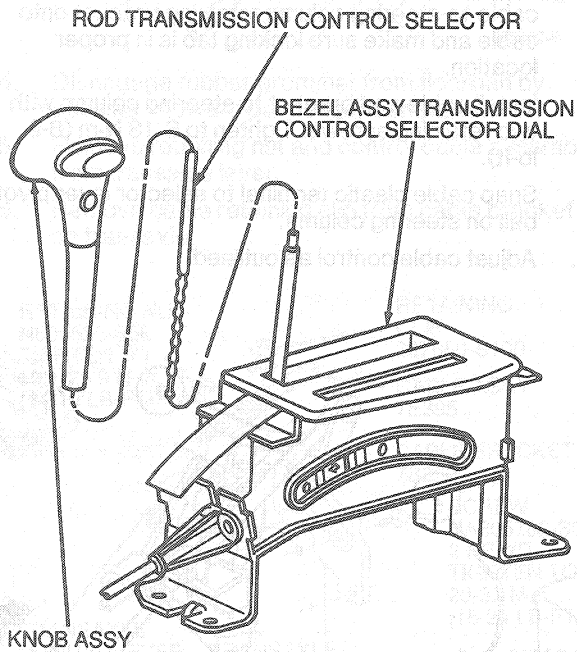
(Continued)

Item	Part Number	Description
6	378377-S	Plug
7A	N803766-S56	Nut
8	7K499	Bracket Assy
9A	N804804-S100	Bolt (2 Req'd)
A		Tighten to 19.1-25.9 N·m (14-19 Lb-Ft)

ADJUSTMENTS

Manual Linkage

The manual linkage adjustments must be performed in the order in which they appear.



Floor Shift

1. Position selector lever in OVERDRIVE position against rearward stop. The floor shift lever must be held in the rearward position using a constant force of 1.4 Kg (3 lb) while linkage is being adjusted.
2. Loosen manual lever-to-control cable retaining nut.
3. Move transaxle manual lever to OVERDRIVE position, second detent from most rearward position.
4. Tighten retaining nut to 19.1-25.9 N·m (14-19 lb-ft).
5. Check operation of transaxle in each selector lever position. Ensure that park and neutral start switch are functioning properly.

Column Shift

1. Place shift lever in D (OVERDRIVE) position. A weight of 1.4 Kg (3 lb) should be hung on the shift lever to ensure the lever is located firmly on the D Overdrive detent.
2. Loosen manual lever-to-control cable retaining nut.
3. Move transaxle manual lever to OVERDRIVE position, second detent from most rearward position.
4. Tighten retaining nut to 19.1-25.9 N·m (14-19 lb-ft). Check operation of transaxle in each selector lever position. Ensure that park and neutral start switch are functioning properly.

PRNDL Cable Adjustment

1. Remove steering column tilt release lever (if so equipped) by turning counterclockwise.
2. Remove ignition lock cylinder. Refer to Section 11-05.
3. Remove upper and lower shrouds.
4. Place shift lever in D (OVERDRIVE) position. A weight of 1.4 Kg (3 lbs) should be hung on the shift lever to ensure the lever is located firmly on the D Overdrive detent.
5. Adjust PRNDL cable (with adjustment wheel on PRNDL cable), until PRNDL pointer is centered on D and calibration dots show no red.
6. Tighten hex head screw to 2.0-3.4 N·m (18-30 lb-in).
7. Cycle shift lever through all of the positions and check that the PRNDL pointer is centered over proper letter or number in each position.
8. Install shrouds with retaining screws. Tighten to 0.7-1.1 N·m (7-9 lb-in).
9. Install ignition lock cylinder. Refer to Section 11-05.
10. Install tilt release lever (if so equipped).

SPECIFICATIONS

TORQUE SPECIFICATIONS

Description	N·m	Lb-Ft
Manual Lever to Control Cable Retaining Nut	19.1-25.9	14-19
Shift Lever and Housing Assembly	6-8	5-6
Control Cable Bracket-to-Column	7-11	5-8
Cable Retaining Bracket-to-Transaxle	20-33	15-24
Column to Support Bracket Nuts	20	14
Release Lever Retaining Screw	4.5-6.5	40-57 (Lb-In)
Column Shrouds Retaining Screws	0.7-1.1	7-9 (Lb-In)
Cable-to-Steering Column Retaining Screws	1.5-2	14-17 (Lb-In)

(Continued)

TORQUE SPECIFICATIONS (Cont'd)

Description	N·m	Lb-Ft
Cable and Bracket-to-Steering Column Retaining Screws	8-13	6-9
Hex Head Screws	2-3.4	18-30 (Lb-In)

LUBRICANT SPECIFICATIONS

Description	Lubricant
Adapter to Pivot Bolt Bushing and Pivot Bolt	ESA-M1C75-B (C1AZ-19590-F)
Lever Assembly Park Pawl	ESA-M1C75-B (C1AZ-19590-F)
Adapter Assembly Park Pawl Slot	ESA-M1C75-B (C1AZ-19590-F)