

Automatic Transmission/Transaxle External Controls - 4.0L SC V8 - AJ26 - External Controls

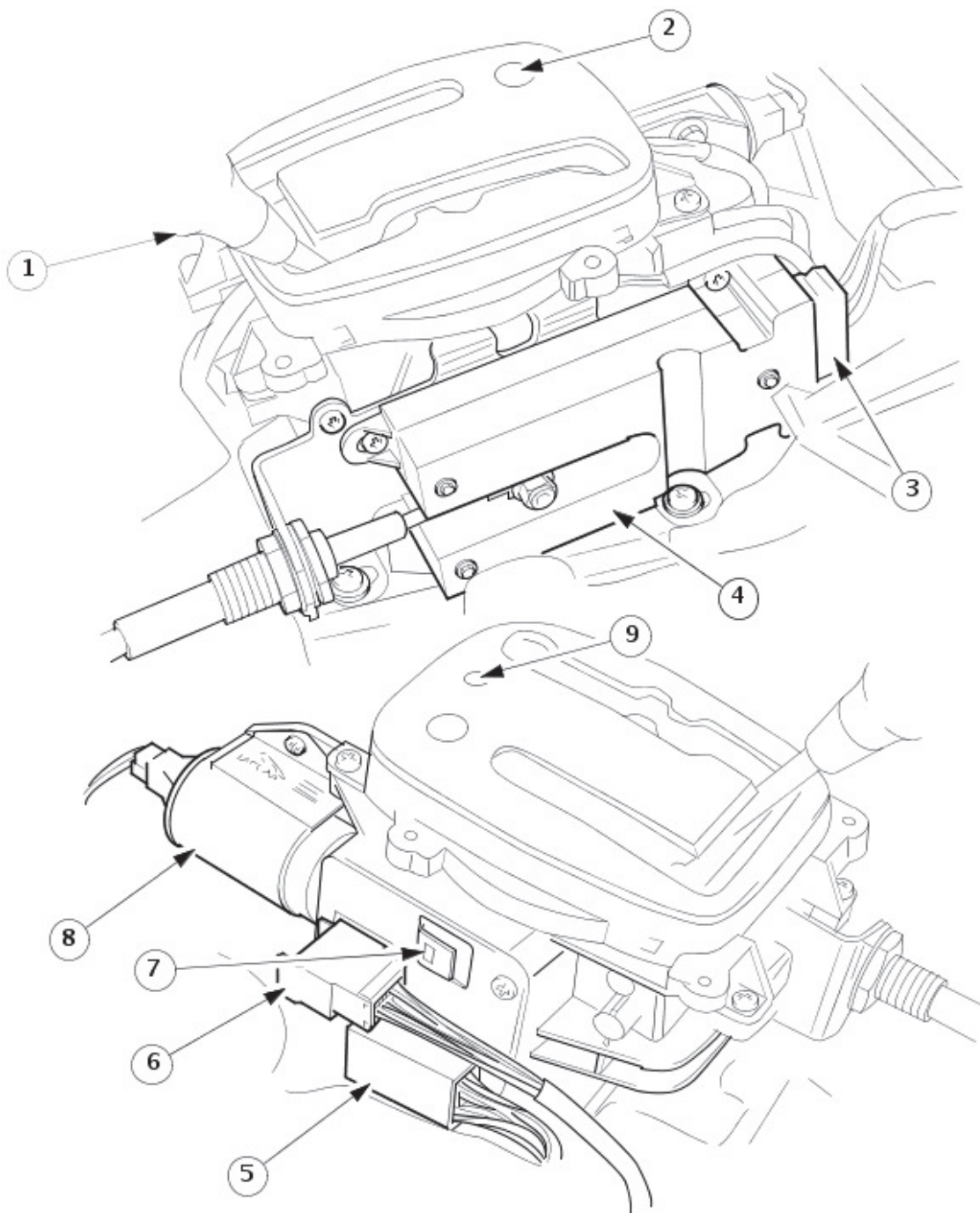
Description and Operation

Introduction

Operator gearshift control is effected by:

- The selector lever
- Accelerator pedal position
- Kickdown
- The mode switch

Operator's Selector Module ('J' Gate)



E34198

Item	Part Number	Description
1	—	Gear selector lever
2	—	Access blank - Gear-shift interlock solenoid
3	—	Connector - DLS
4	—	Dual Linear Switch (DLS)
5	—	Connector - Park position switch
6	—	Connector - Illumination module

7	—	Connector - Climate control
8	—	Solenoid - Gear selector
9	—	Security system Active LED

Selector lever:

Gear selector positions are:

- P Transmission mechanically locked, starting available *
- R Reverse gear
- N Neutral gear, no power to the rear wheels (starting available)
- D Drive gear, all 5 forward gears available (see Performance Mode Pushbutton)
- 4 Upshift to 4th gear only
- 3 Upshift to 3rd gear only
- 2 Upshift to 2nd gear only

Gearshift Interlock Manual Override*

The interlock system which locks the selector in P and prevents the ignition key from being removed except when P is selected, may be manually overridden in the event of an emergency.

1. **1.** With the parking brake applied
2. **2.** Remove the access blank using a suitable Torx bit
3. **3.** Insert a small screwdriver into the vacated hole
4. **4.** Push the screwdriver downwards, gently, and hold whilst simultaneously moving the selector from P towards R , but do not engage R until the tool has been removed
5. **5.** An audible warning may be heard when operation 4 is carried out
6. **6.** With the selector in N and the access blank replaced, the vehicle may be started

Range Selection

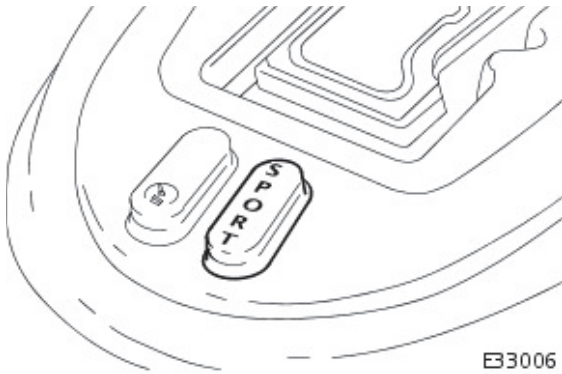
- The selector lever transmits operator demand to the transmission and TCM by means of a cable and Dual-Linear Switch (DLS).
- The lever operates the transmission assembly selector shaft, only for P R N D , by means of a cable. Movement of the lever across the gate to 4, 3 and 2 positions disengages the cable from the selector lever and engages the DLS which controls gear selection electronically.

Gear selector module:

- Provides illumination of the decal relevant to the gear selected. This information is provided by CAN from the TCM.
- Illuminates the security system Active LED on the gear selector surround, in response to an output from the BPM.

Transmission Switches

Performance Mode Pushbutton



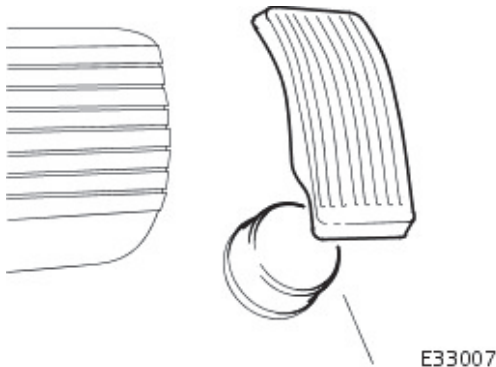
The performance mode pushbutton:

- Is mounted on the 'J' gate surround.
- This 'push-on push-off' switch selects Normal or Sport mode (push-on for Sport)
- Is illuminated when Sport mode is selected.
- Is hard-wired to the transmission control module.

With 'Normal' selected the transmission will start off in 2 nd gear with kickdown to 1 st being available.

'Sport' mode allows 1 st gear engagement from rest and modifies values in the TCM shift point calculations to provide higher upshift speeds and enhanced availability of downshifts.

Kickdown Switch



The kickdown switch:

- Is floor mounted under the accelerator pedal.
- Is operated by pressing the pedal beyond the full throttle position.
- Provides maximum acceleration on driver demand, by signalling the TCM to select the lowest gear to give maximum wheel torque.

Gear selector interlock solenoid:

- Prevents the gear selector lever from being moved from P , unless the ignition switch is in position II, and the brake pedal is depressed.
- Is controlled by an output from the BPM

Park position switch:

- Is hard-wired to the BPM
- Detects when the gear selector lever is moved to the Park position

Dual-Linear Switch (DLS)

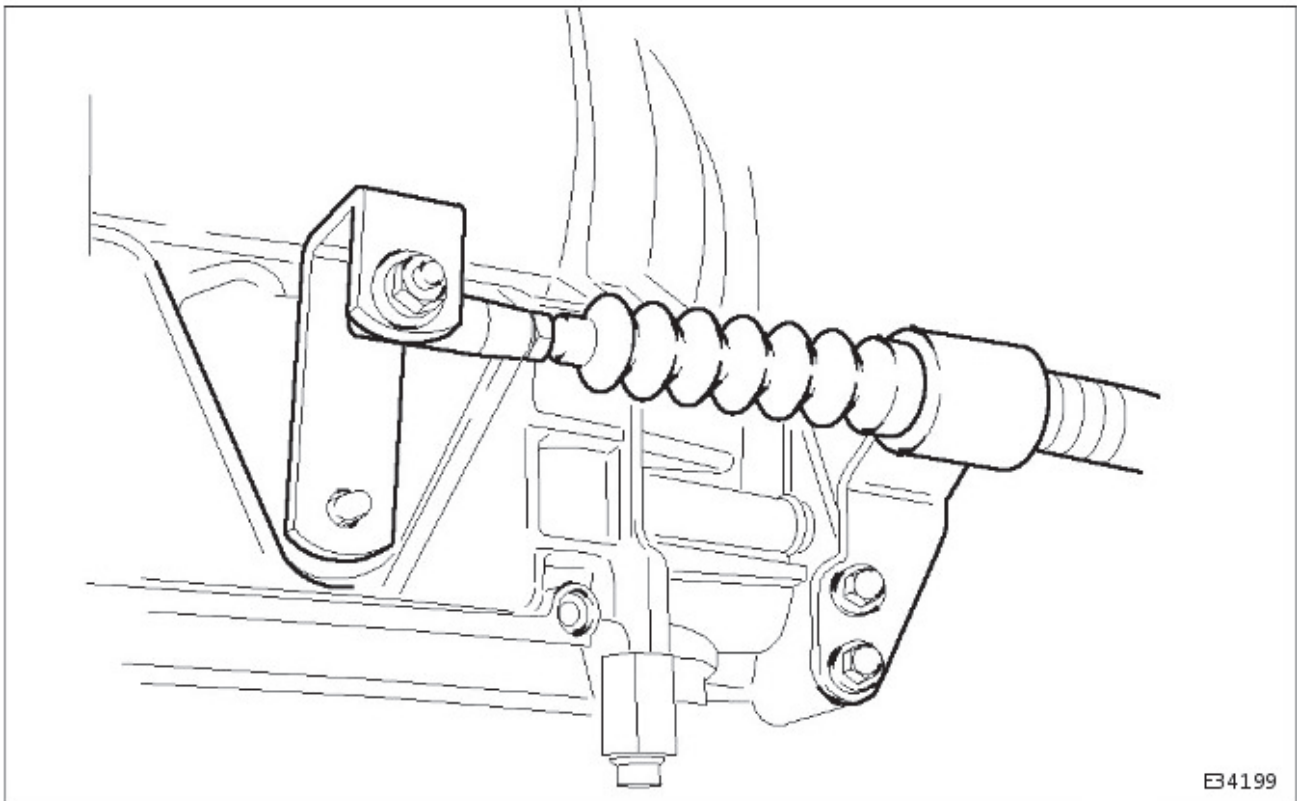
The TCM detects gear selection by means of a switch fitted to the 'J' gate; the DLS contains two multi-track slider switches, of which the upper controls P R N D and the lower 4 3 2 .

Output from the DLS is changed as the selector lever is moved, thus indicating selected gear position. The parallel signal is input to the TCM by 4 discrete logic wires W0, W1, W2 and W3. The particular sequence, or gray code, will indicate which shift position is selected, as shown in the following table where 0 = low and 1 = high:

Gray code

Selector Position	W3	W2	W1	W0
P	0	1	1	1
R	1	1	1	0
N	1	1	0	1
D	0	1	0	0
4	1	0	0	0
3	0	0	1	0
2	0	0	0	1

Transmission Unit Gear Selector


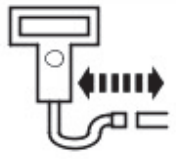


The gear selector at the transmission unit:

- Is connected to the operator's selector module by cable
- Operates the selector valve, at the electro-hydraulic control unit

Automatic Transmission/Transaxle External Controls - 4.0L SC V8 - AJ26 - External Controls

Diagnosis and Testing

Special Tool(s)	
 <p>E36420</p>	Digital multimeter
 <p>E36439</p>	Generic scan tool

Problem Solving - Transmission Shift

Quick Reference Fault Chart

Symptom	Possible Sources	Action
Shift stuck in P	* Selector cable seized	* GO to 44.15.08
	* Interlock solenoid not operating	* GO to PDU
	* Interlock latch seized	* Mechanical check
	* Transmission faulty	
	* Operator sequence error	* Correct the sequence
Vehicle rolls on P	* Incorrect cable adjustment	* GO 44.15.07
	* Faulty parking pawl (transmission internal)	* Mechanical check
R does not engage	* Incorrect cable adjustment	* GO to 44.15.07
	* Transmission fluid level incorrect	* GO to 44.24.02
N not achieved	* Incorrect cable adjustment	* GO to 44.15.07
	* Transmission faulty	
D does not engage	* Incorrect cable adjustment	* GO to 44.15.07
	* Transmission fluid level incorrect	* GO to 44.24.02
	* Transmission faulty	* Mechanical check
Lower ratios will not hold	* Excessive engine temperature	* GO to PDU
	* DLS fault	
Shift lever position not visually correct	* Incorrect DLS adjustment	* GO to 44.15.07
Shift lever has no effect upon the transmission and resistance cannot be felt	* Cable disconnected or broken	* Mechanical check
	* Transmission selector problem	
	* Shift lever drive pin adrift	
Shift lever position not align correctly following manual selection of lower ratios	* Sliding block drive pin displaced - following road debris contact	* Mechanical check. Renew the selector if damaged, or re-align the drive pin and sliding block
Shift lever detent indistinct in 3 causing poor location	* DLS detent fault	* GO to Renew the DLS
Shift may be moved from P without brake pedal operation	* Interlock latch fault	* Mechanical check
	* Solenoid permanently activated	* GO to PDU
Engine may be started in positions other than P or N	* Incorrect cable adjustment * DLS fault	* GO to 44.15.07
Shift lever vibration	* Loose selector assembly	* Mechanical check
	* Cable isolation fault	
Noise / rattle from 'J' gate	* Debris in the mechanism	* Clean
	* Worn 'J' gate track gasket allowing lever and moulding to contact	* GO to 44.15.05


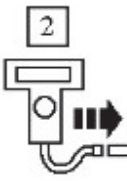
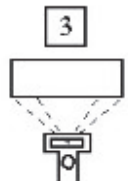

* Loose selector disc seal

Shift Selection and Gear Position

Symptom Chart

Symptom	Possible Sources	Action
DTC P0705 Transmission range sensor circuit malfunction	<ul style="list-style-type: none"> * Selector cable maladjusted * Linear switch maladjusted * Linear position switch fault * Harness fault * Connector pins(s) bent, loose or corroded 	* GO to Pinpoint Test A

Pinpoint test A: P0705

PINPOINT TEST A : P0705	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A1: RETRIEVE DTCS	
• NOTE: Battery and or ECM disconnection prior to scanning will erase all data, ensure that the correct DTC is present.	
   C1137.A1 E32153	
	1 Connect the scan tool Have the DTC(s) and freeze frame data been recorded? Yes GO to A2
A2: STATUS / RELATIONSHIP CHECK	
 E34925	
	1 Move the selector lever slowly from P to 2 and back, noting the illumination / position relationship as follows: Does state illumination match the lever position in each direction of travel? Yes GO to A4 No GO to A3 No With lever at D (when moving from 2 to P) is 3 or 4 illuminated? Yes GO to A3

No
GO to A5

No
With lever moved from P , to position 4 , is D illuminated?

Yes
GO to A4

No
GO to A5

A3: CHECK SELECTOR CABLE OR LINEAR SWITCH ADJUSTMENT

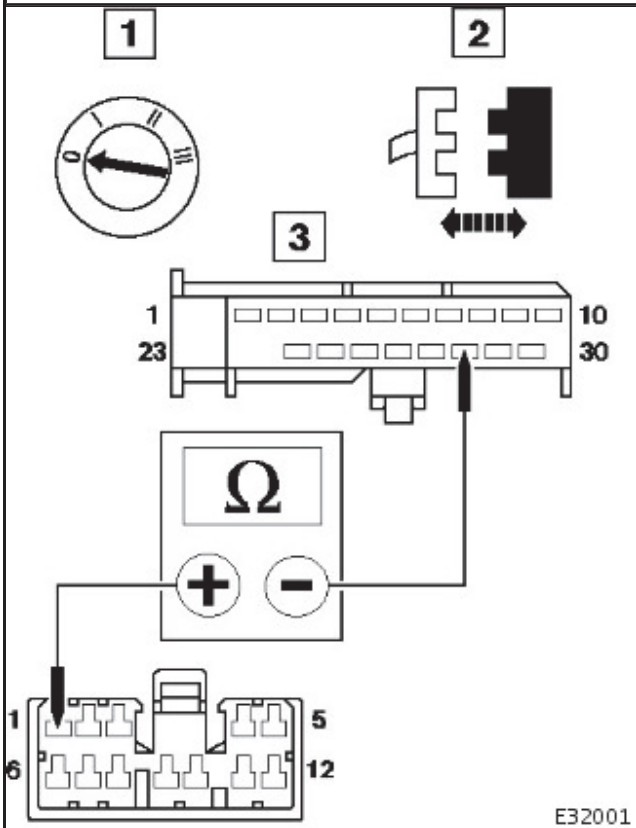
1 Verify and correct as required the selector cable or linear switch adjustment

OK?

Yes
GO to A4

No
Correct adjustment error, see 44.15.07 Workshop Manual 307-05B and test the system for normal operation.

A4: CHECK HARNESS SIGNAL CONTINUITY - DUAL LINEAR SWITCH



1 With EM0 61 and CC08 disconnected, measure the resistance between CC00 8/001 and EM061 /028

- Repeat for

2 CC008/008 and EM061/027

3 CC008/006 and EM061/026

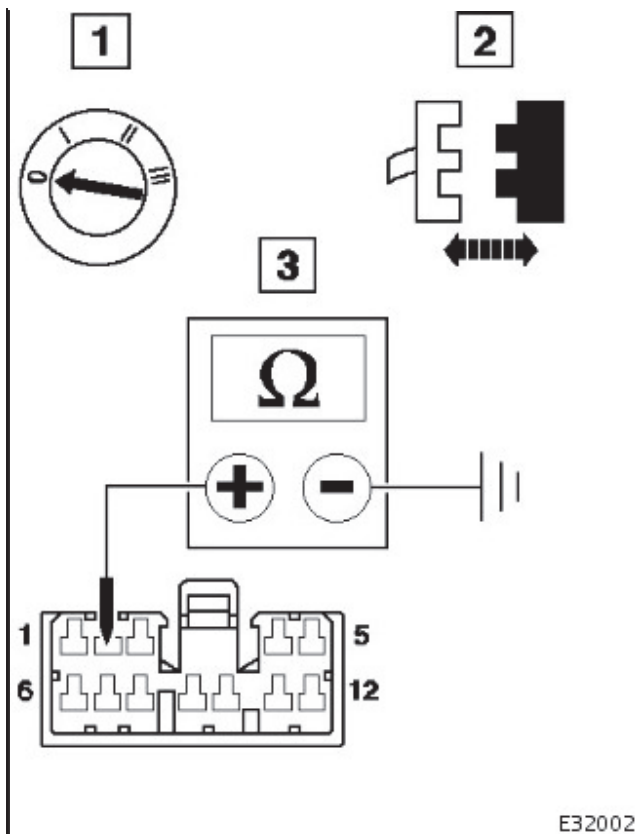
4 CC008/007 and EM061/025

Is the resistance < 0.5 OHM?

Yes
GO to A5

No
Inspect EM061, EM063 and CC008 for corrosion, bent / pushed back pins or locate harness. Repair as necessary and test the system for normal operation.

A5: CHECK HARNESS SWITCH GROUND CONTINUITY



E32002

1 With EM061 and CC008 disconnected, measure the resistance between CC008/002 and EM008R

Is the resistance < 0.5 OHM?

Yes
GO to A6

No
Inspect CC008 and EM063 for corrosion, bent / pushed back pins or locate harness / ground EM8R, splices EMS017 and EMS004. Repair as necessary and test the system for normal operation.

A6: END

1 Perform appropriate service drive cycle and check for the presence of DTC

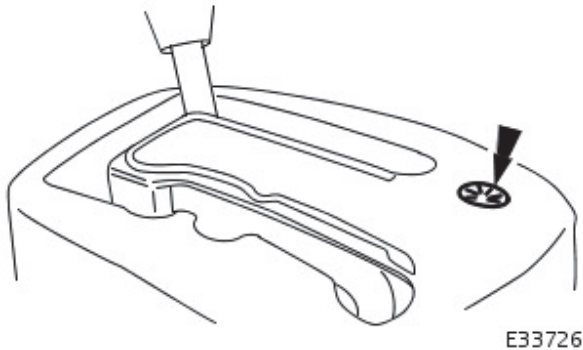
Has the fault code cleared?

Yes
STOP

No
Contact Jaguar Service

Automatic Transmission/Transaxle External Controls - 4.0L SC V8 - AJ26 - Brake Shift Interlock Actuator Manual Override

General Procedures



1. To override the gearshift interlock:

1. Unscrew the release catch blanking plug.
2. Insert the ignition key into the aperture, depress the release catch and simultaneously move the gear selector lever from the Park position. The lever will only move approximately 25 mm with the key inserted.
3. Remove the ignition key and replace the blanking plug.

Automatic Transmission/Transaxle External Controls - 4.0L SC V8 - AJ26 - Kickdown Switch Adjustment

General Procedures

1. Ensure that the throttle cable is correctly adjusted; refer to Operation 19.20.06.
2. Refer to the PDU User Guide for relevant software - 1040.
3. With PDU connected, running and the message 'EXISTING COMPONENTS TO BE TESTED YES / NO' displayed:

- Select YES.
- Select ENTER.
- Follow the messages given on the screen.

4. Press ENTER on the PDU screen.

5. Following the PDU instructions:

- Push the throttle pedal until light contact is made with the kickdown switch and hold in this position.
- Press ENTER on the display.
- Note the percentage throttle open data (displayed as a bar graph).

• **NOTE:** Ensure that contact with the switch does not result in movement of the switch.

- Release the throttle pedal.

6. If the target 90% throttle open specification is NOT achieved the switch must be adjusted as follows.

7. Disconnect the kickdown switch multiplug.

- Move the carpet for access.

8. Adjust the kickdown switch to the value as defined in step 6.

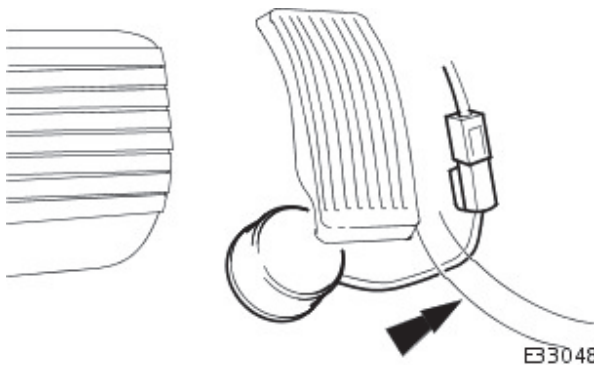
- Rotate the switch in the required direction.

9. Verify the setting.

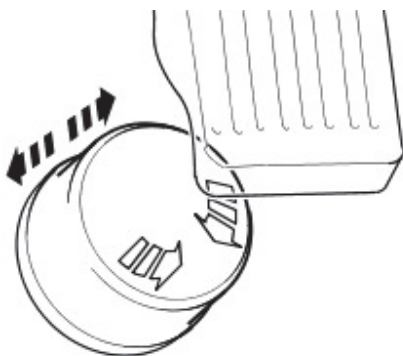
10. With the PDU instructions completed, connect the kickdown switch multiplug.



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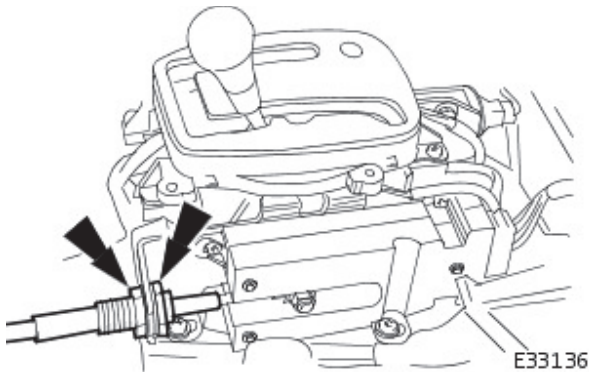


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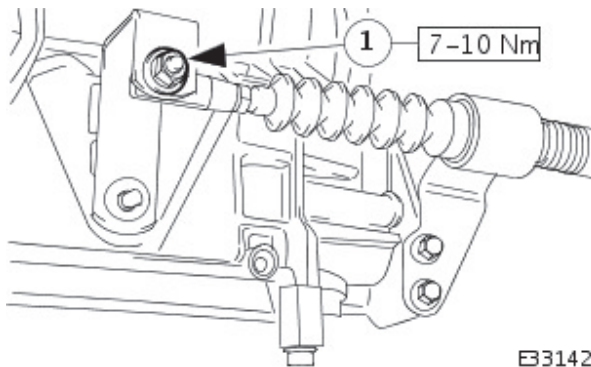
Automatic Transmission/Transaxle External Controls - 4.0L SC V8 - AJ26 - Selector Lever Cable Adjustment

General Procedures

1. Disconnect the vehicle battery ground lead.
2. Position the gear selector lever to N.
3. Remove the J-gate surround, Section 501-05.
4. Remove the console finisher veneer panel, Section 501-12.
5. Remove the center console assembly, Section 501-12.
6. Slacken the selector cable locking nuts and screw them away from the abutment.



7. Raise the vehicle for access.
8. Verify that the transmission selector lever is at position (N).

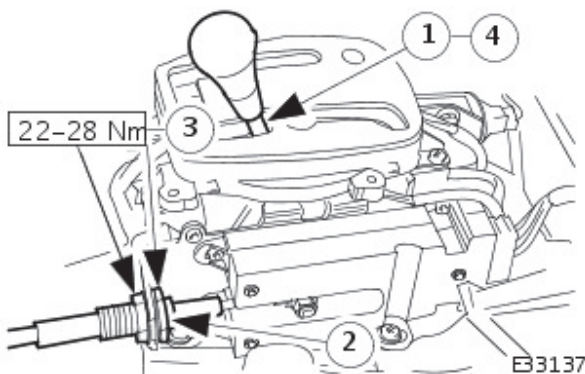


- At the transmission, detach the inner cable from the selector lever.
- With the lever moved fully rearward, push the lever forward two detents to achieve N.

1. Reconnect the inner cable.

9. **NOTE:** When setting the selector cable, ensure that the transmission selector does not move from the (N) position.

Adjust the selector cable from inside the vehicle.



1. Position the gear selector lever to the N detent.
2. Adjust the nuts to lock against the bracket without moving the set position of either the gear selector lever or the selector lever on the transmission case.
3. Tighten to specification.
4. Verify the (N) setting.

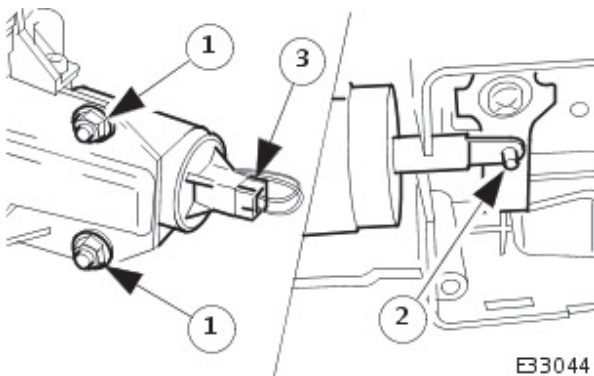
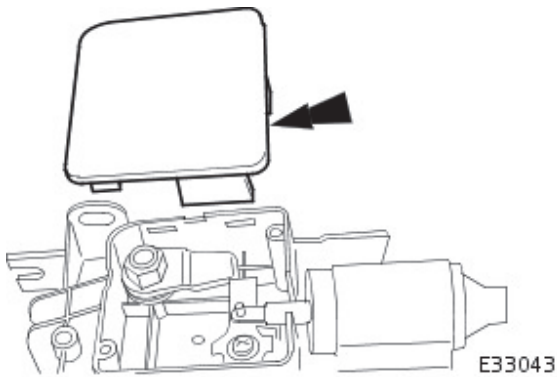
10. Further installation is the reverse of the removal procedure.

Automatic Transmission/Transaxle External Controls - 4.0L SC V8 - AJ26 - Brake Shift Interlock Actuator

Removal and Installation

Removal

1. Disconnect the vehicle battery ground lead.
2. Remove the J-gate surround, Section 501-05.
3. Remove the console finisher veneer panel, Section 501-12.
4. Remove the interlock solenoid lever cover.

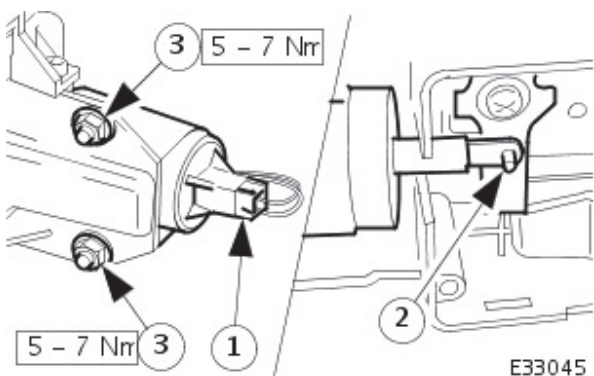


5. Remove the gearshift interlock solenoid.

1. Remove the (2) solenoid nuts.
2. Detach the solenoid from the latch pin.
3. Disconnect the solenoid multiplug.

Installation

1. Installation is the reverse of the removal procedure.
2. Refer to the illustration.



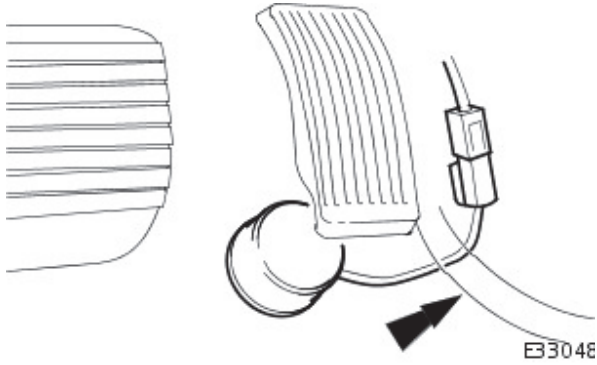
Automatic Transmission/Transaxle External Controls - 4.0L SC V8 - AJ26 - Kickdown Switch

Removal and Installation

Removal

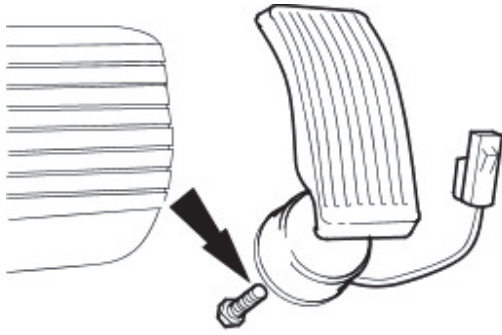
1. Disconnect the kickdown switch multiplug.

- Move the carpet for access.



2. Remove the kickdown switch.

- Rotate counter-clockwise.



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Installation

1. Installation is the reverse of the removal procedure.

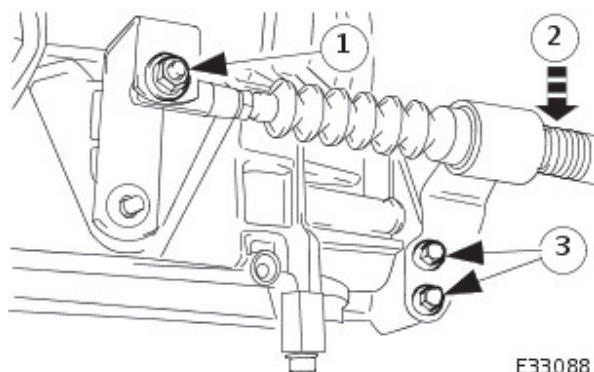
2. The kickdown switch MUST be adjusted in accordance with (44.15.38).

Automatic Transmission/Transaxle External Controls - 4.0L SC V8 - AJ26 - Selector Lever Cable and Bracket

Removal and Installation

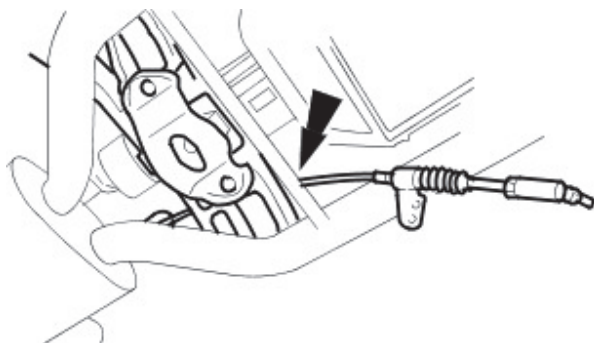
Removal

1. Disconnect the vehicle battery ground lead.
2. Position the selector to N.
3. Remove the J-gate surround, Section 501-05.
4. Remove the console finisher veneer panel, Section 501-12.
5. Remove the center console assembly, Section 501-12.
6. Raise the vehicle for access.
7. Detach the gear selector cable from the transmission unit.

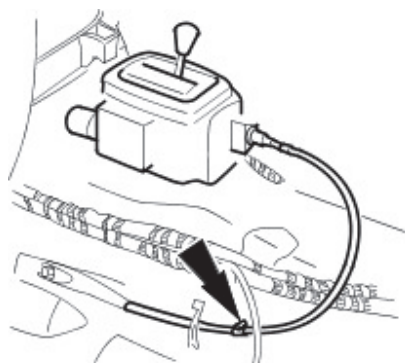


1. Remove the nut which secures the selector cable ball pin to the selector lever.
2. Lower the transmission lift for access.
3. Remove the bolts which secure the selector cable to the transmission casing.

8. Reposition the selector cable.

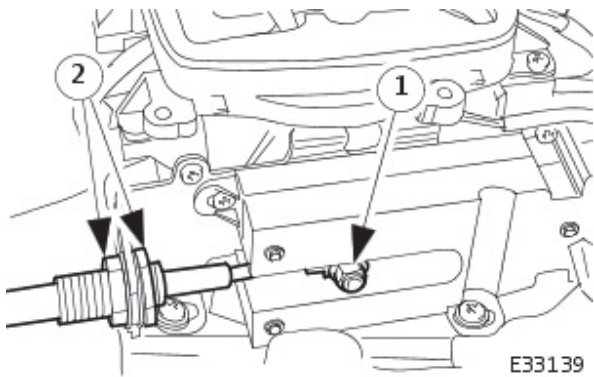


9. Remove the LH front seat, Section 501-10.
10. Reposition the LH floor carpet for access.
11. Remove the selector cable to tunnel clip tie strap.

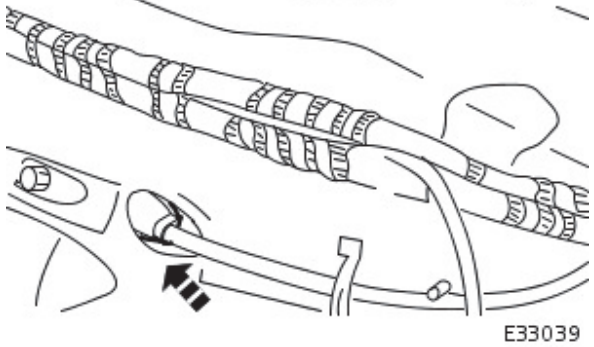


12. Detach the selector cable from the gear shift assembly.

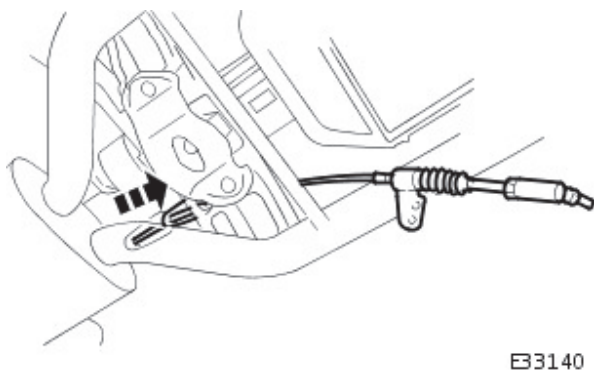
1. Remove the inner cable to shift lever nut.



2. Slacken the outer cable locknuts.

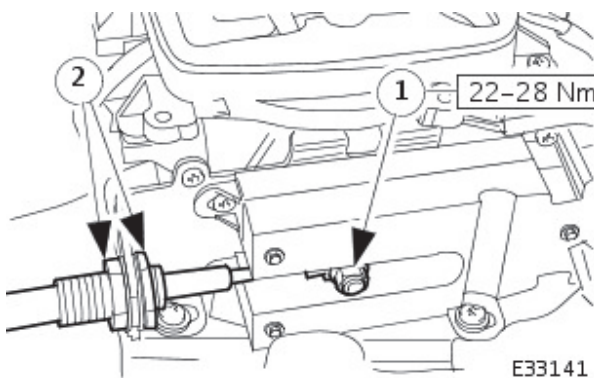


13. Push the outer cable grommet through the transmission tunnel aperture.



14. Remove the selector cable assembly from the vehicle.

Installation

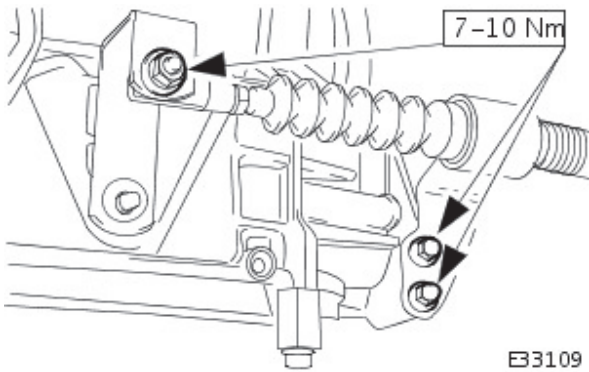


1. Assemble the cable to the gear shift assembly.

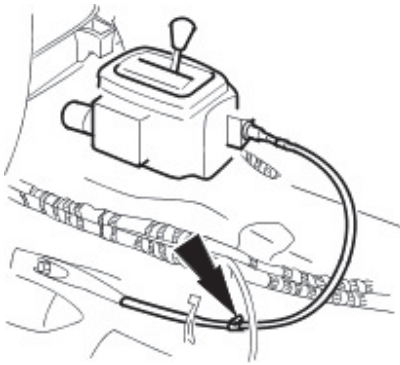
1. Locate the outer cable and fit the inner cable to the gear selector arm. Tighten to the specified torque figure.

2. Position the abutment nuts to the approximate position, but do not tighten.

2. Fit the cable to the transmission and tighten the fixings to the specified torque figure.



3. Secure the outer cable.



4. Adjust the selector cable in accordance with Operation 44.15.07.

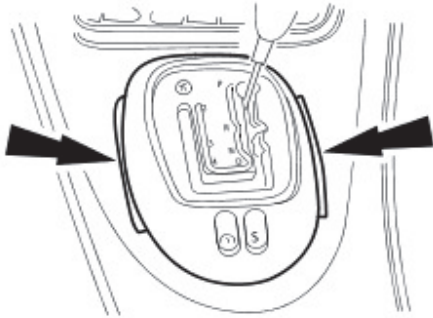
5. Further installation is the reverse of the removal procedure.

Automatic Transmission/Transaxle External Controls - 4.0L SC V8 - AJ26 - Selector Lever Gate Finish Panel

Removal and Installation

Removal

1. Apply protective tape to veneer along each side of 'J' gate finisher.
2. Using a screwdriver in the slot in front of the finisher, carefully lift the finisher and ease it from the 'J' gate surround.



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Installation

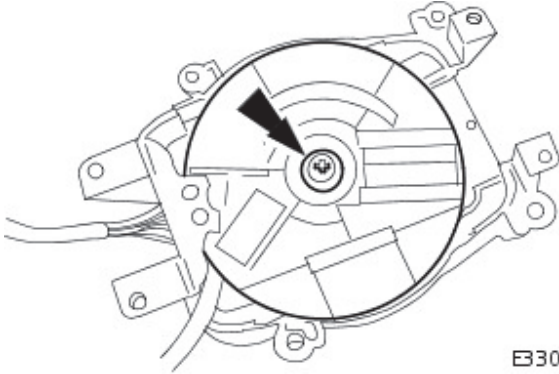
1. Position finisher over gear selector.
2. Firmly seat finisher on veneer panel.
3. Remove protective tape from veneer panel and using a suitable cleaner, remove any residual adhesive.

Automatic Transmission/Transaxle External Controls - 4.0L SC V8 - AJ26 - Selector Lever Indicator Disc

Removal and Installation

Removal

1. Disconnect the vehicle battery ground lead.
2. Remove the selector indicator module; Operation 44.15.14.
3. Remove the selector indicator module disc.
 - Remove the disc retaining screw.



E33042

Installation

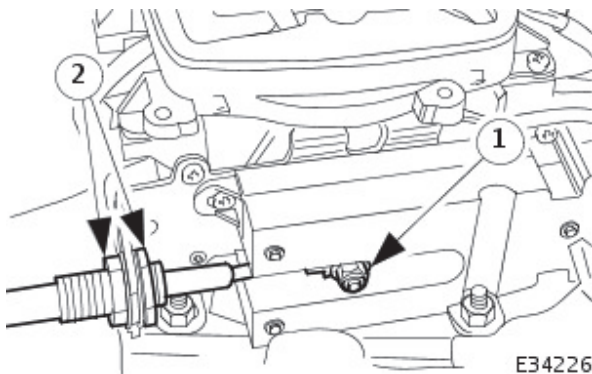
1. Installation is the reverse of the removal procedure.

Automatic Transmission/Transaxle External Controls - 4.0L SC V8 - AJ26 - Transmission Control Switch (TCS)

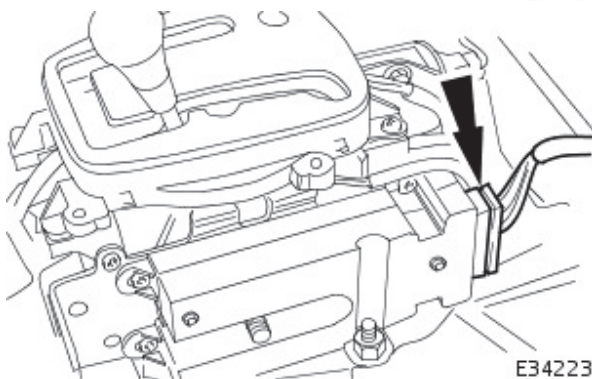
Removal and Installation

Removal

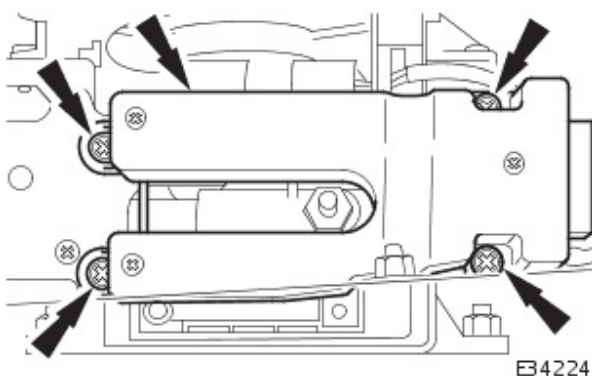
1. Position the gear selector to 'N' to provide clearance for removing the console.
2. Disconnect the vehicle battery ground lead.
3. Remove the J-gate surround, operation 76.25.24.
4. Remove the console finisher veneer panel, operation 76.47.26.
5. Remove the console assembly, operation 76.25.01.
6. Detach the selector cable from the gear shift assembly.



1. Remove the nut which secures the inner cable to the shift lever.
2. Slacken the outer cable locknuts. Move the cable clear.



7. Disconnect the electrical connector from the linear switch.



8. Position the selector to 'P' to align the mechanism for installing the new linear switch.

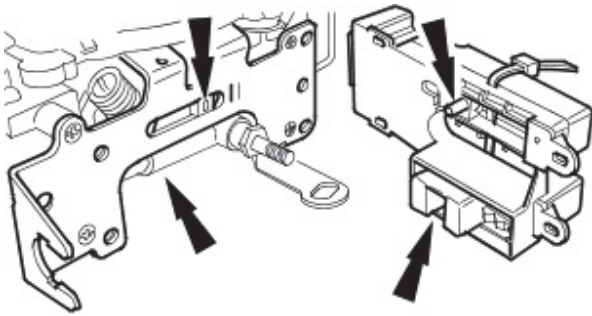
9. Remove the linear switch.

- Remove the four screws.
- Remove the linear switch from the mounting bracket.

Installation

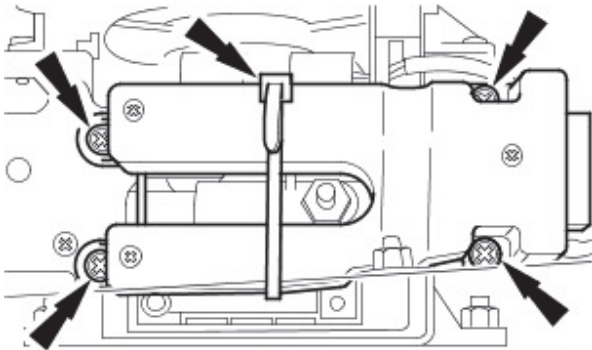
1. Install the linear switch.

- Position the linear switch to the mounting bracket.



- Align the drive peg and lower sliding block of the switch to the mating components of the selector mechanism.

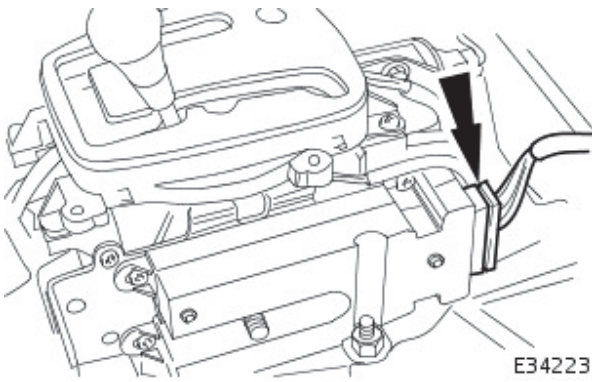
E34225



2. Install the four screws, but do not fully tighten.

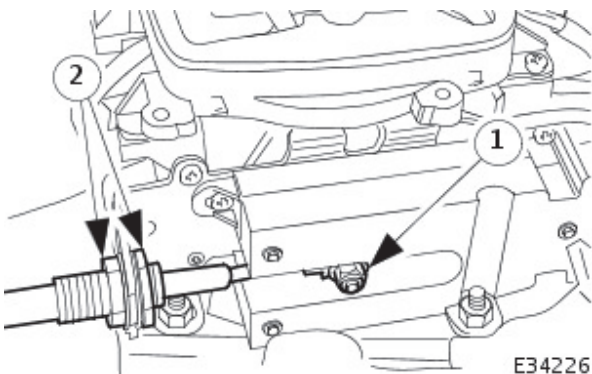
- Remove the Ty-Strap from the dual linear switch.
- Use the manual release and reposition the selector to 'N' for installation of the selector cable.

E34228



3. Connect the electrical connector to the linear switch.

E34223



4. Assemble the cable to the gear shift assembly.

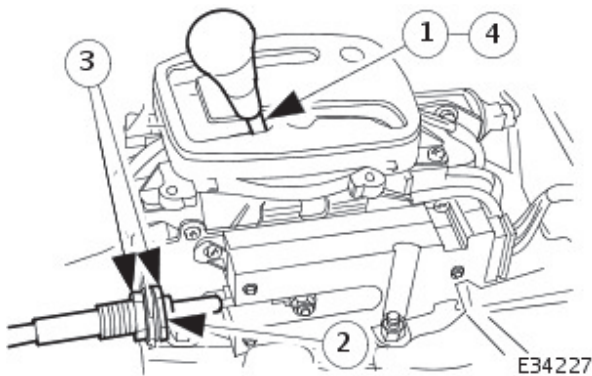
1. Locate the outer cable and fit the inner cable to the gear selector arm. Tighten to 22-28 Nm.
2. Position the abutment nuts to the approximate position, but do not tighten.

E34226

5. NOTE: When setting the selector cable, ensure that the selector lever on the transmission casing is still in the 'N' position.

Adjust the selector cable from inside the vehicle.

1. Confirm that the selector lever is in the 'N' position.
2. Adjust the nuts to lock against the bracket without



moving the set position of either the gear selector lever or the selector lever on the transmission casing.

3. Tighten to 22-28 Nm.
4. Verify the 'N' setting.

6. Check that all released connectors are safely insulated and connect the vehicle battery.
7. Switch ON the ignition.
8. Adjust the position of the linear switch so that the selector 'N' position graphic illuminates. Tighten the four screws to 0,7-1 Nm.
9. Move the gear selector to 'R' to confirm that the 'R' position graphic illuminates.
10. Check that the engine will start when the gear selector is in the 'N' and 'P' positions, but not in any other position.
11. Move the gear selector to 'N'.
12. Switch OFF the ignition.
13. Disconnect the battery.
14. Install the console assembly, operation 76.25.01.
15. Install the console finisher veneer panel, operation 76.47.26.
16. Install the J-gate surround, operation 76.25.24.
17. Perform the Battery Reconnection Procedure described in Operation 86.15.15.

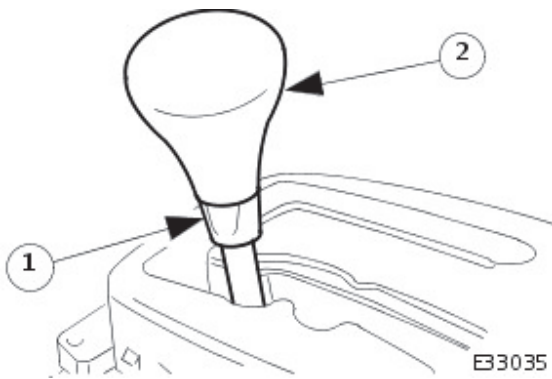
Automatic Transmission/Transaxle External Controls - 4.0L SC V8 - AJ26 - Selector Lever Knob

Removal and Installation

Removal

1. Disconnect the vehicle battery ground lead.
2. Remove the selector lever knob.

1. Slacken the ferrule, rotate clockwise.
2. Rotate the knob counter-clockwise to remove.



Installation

1. Refer to the illustration.

1. Fit the knob.
2. Refer to the illustration.

