

AUTO TRANS DIAGNOSIS

Article Text

1998 Volkswagen Passat

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ARTICLE BEGINNING

1997-98 AUTOMATIC TRANSMISSIONS
Volkswagen Shift Interlock Systems

1997-98; Cabrio, Golf, GTI, Jetta, Passat
1998; New Beetle

DESCRIPTION & OPERATION

Shift interlock system utilizes a shift selector lever lock solenoid, operated by Transmission Control Module (TCM) outputs. TCM receives signals from Transmission Range (TR) switch and brake light switch. Brake pedal must be depressed, brake lights operated and ignition switch turned to ON position to enable transmission to shift transmission out of Park or Neutral position. A mechanical control cable prevents ignition key from being removed unless gear selector is in Park. With ignition key removed, gear selector locks in Park. See Fig. 2. All models are equipped with an electronic shift lock system. TCM controls shift lock system. This system locks gear selector in Park or Neutral position unless brake pedal is pushed down. TCM uses shift lock control relay to release a solenoid mounted on gear selector assembly.

TROUBLE SHOOTING

NOTE: If battery is disconnected or discharged, gear selector can be moved out of Park by turning ignition key to START position. Shift lock relay will not lock gear selector when vehicle speed is greater than 3 MPH.

INTERLOCK SYSTEMS

1) If gear selector is stuck in Park or Neutral position, go to SHIFT LOCK SYSTEM. If gear positions are missing, shift quality is poor or no shifts are possible, ensure all electrical connections are okay and fluid level is correct.

2) If problems are still present, disconnect electrical connector at transaxle. Test drive vehicle. Check if transaxle will operate manually in reverse and 1st gear. Move gear selector to 2nd, 3rd or "D" position. Transaxle should operate in 3rd gear.

3) If transaxle operates as described, problem may be electrical. See appropriate VOLKSWAGEN/AUDI V.A.G. ELECTRONIC CONTROLS article. If transaxle does not operate as described, problem may be mechanical or hydraulic. See ROAD TEST in appropriate VOLKSWAGEN/AUDI V.A.G. OVERHAUL article.

SHIFT LOCK SYSTEM

NOTE: If battery is disconnected or discharged, gear selector can be moved out of Park position by turning ignition key to START position. Shift lock relay will not lock gear selector

when vehicle speed is greater than 3 MPH.

Operation

All models are equipped with an electronic shift lock system. TCM controls shift lock system. See Fig. 1. This system locks gear selector in Park or Neutral position unless brake pedal is pressed. TCM uses shift lock control relay to release a solenoid mounted on gear selector assembly. A mechanical control cable prevents ignition key from being removed unless gear selector is in Park position. With ignition key removed, gear selector locks in Park position.

Functional Check

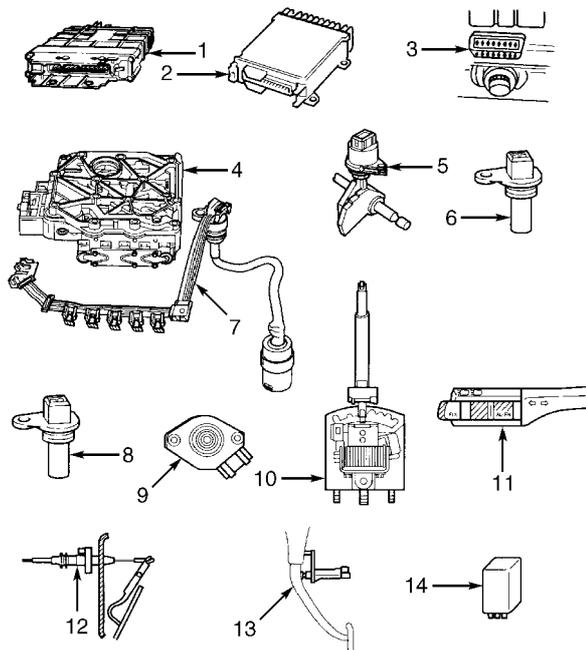
1) With ignition key removed, ensure gear selector cannot be moved from "P" position. Insert key in ignition switch.

2) Turn ignition on. Ensure gear selector can only be moved with brake pedal pressed. Move gear selector to "N" position.

3) Without pressing brake pedal, ensure gear selector cannot move out of "N" position. Press brake pedal down. Ensure it is now possible to move gear selector.

4) If shift lock system does not operate as described, adjust gear selector, solenoid and control cable. If shift lock system does not operate after adjustments are made, check shift lock electrical system with Scan Tool (VAG 1551).

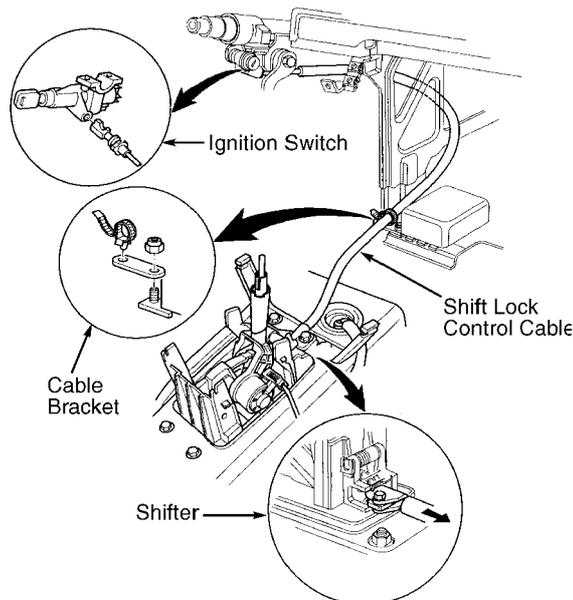
5) See testing information under ELECTRICAL TROUBLE SHOOTING in appropriate VOLKSWAGEN/AUDI V.A.G. ELECTRONIC CONTROLS article. If any problems are found, service harness or components. If no problems are found, TCM may be defective. If shift lock system still does not operate correctly, check for worn or damaged parts and replace as necessary. See Figs. 1, 3 and 4.



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| 1. Transmission Control Module (TCM) | 7. Conductor Strip (With Integrated Transmission Fluid Temperature Sensor) |
| 2. Powertrain Control Module (PCM) | 8. Vehicle Speed Sensor (VSS) |
| 3. Data Link Connector (DLC) | 9. Throttle Position (TP) Sensor |
| 4. Valve Body | 10. Shift Lock Solenoid |
| 5. Transmission Range (TR) Switch | 11. Cruise Control Solenoid |
| 6. Transmission Vehicle Speed Sensor (VSS) | 12. Kickdown Switch |
| | 13. Brake/Neutral Position Switch |
| | 14. Park/Neutral Position Relay |

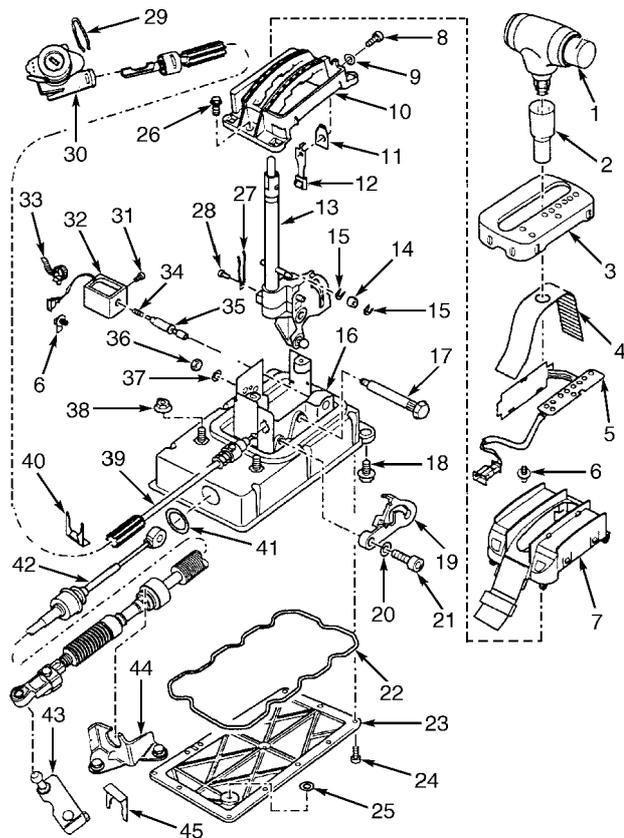
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Fig. 1: Identifying TCM & Shift Lock Electrical Components
 Courtesy of Audi of America, Inc.



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Fig. 2: Identifying Shift-Lock Components
 Courtesy of Audi of America, Inc.



- | | |
|---------------------------------------|--------------------------|
| 1. Selector Lever Handle | 23. Cover |
| 2. Sleeve | 24. Bolt (14) |
| 3. Cover | 25. "O" Ring |
| 4. Cover Strip | 26. Bolt (2) |
| 5. Selector Lever
Position Display | 27. Contact Spring |
| 6. Retainer | 28. Bolt |
| 7. Bracket | 29. Clip |
| 8. Bolt | 30. Steering Lock |
| 9. Washer | 31. Bolt (2) |
| 10. Locking Segment | 32. Shift Lock Solenoid |
| 11. Plate | 33. Cable Tie |
| 12. Locating Spring With
Roller | 34. Spring |
| 13. Selector Lever | 35. Locking Pin |
| 14. Roller | 36. Nut |
| 15. Circlip | 37. Washer |
| 16. Selector Lever Housing | 38. Nut (2) |
| 17. Fulcrum Pin | 39. Locking Cable |
| 18. Bolt | 40. Clip |
| 19. Locking Lever | 41. Gasket |
| 20. Washer | 42. Selector Lever Cable |
| 21. Bolt | 43. Lever |
| 22. Gasket | 44. Support Bracket |
| | 45. Clip |

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Fig. 4: Exploded View Of Shift Lock & Gear Selector Assembly (New Beetle)

Courtesy of Volkswagen United States,

ADJUSTMENTS

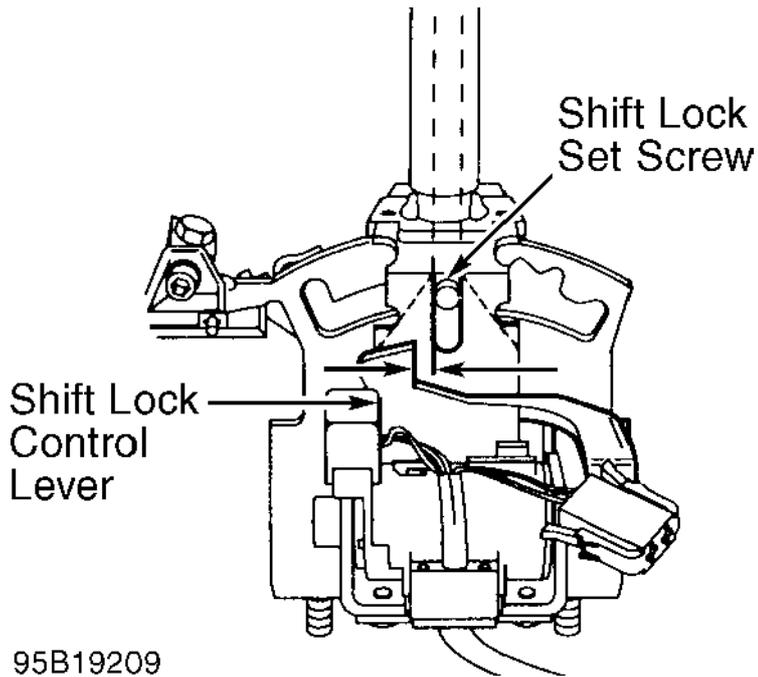
NOTE: Perform the following adjustments in order given.

SHIFT SELECTOR CONTROL CABLE ADJUSTMENT

Loosen lock screw at gear selector lever on transaxle. Move gear selector in center console to Park position. Ensure front wheels are locked. Tighten cable housing to gear selector lever lock screw.

SHIFT LOCK SOLENOID ADJUSTMENT (EXCEPT NEW BEETLE)

Place gear selector in "N" or "P" position. Loosen shift lock solenoid mounting screws. Insert a .019" (.30 mm) feeler gauge between shift lock solenoid push rod and shift lever. See Fig. 5. If necessary, move shift lock solenoid and tighten screws.



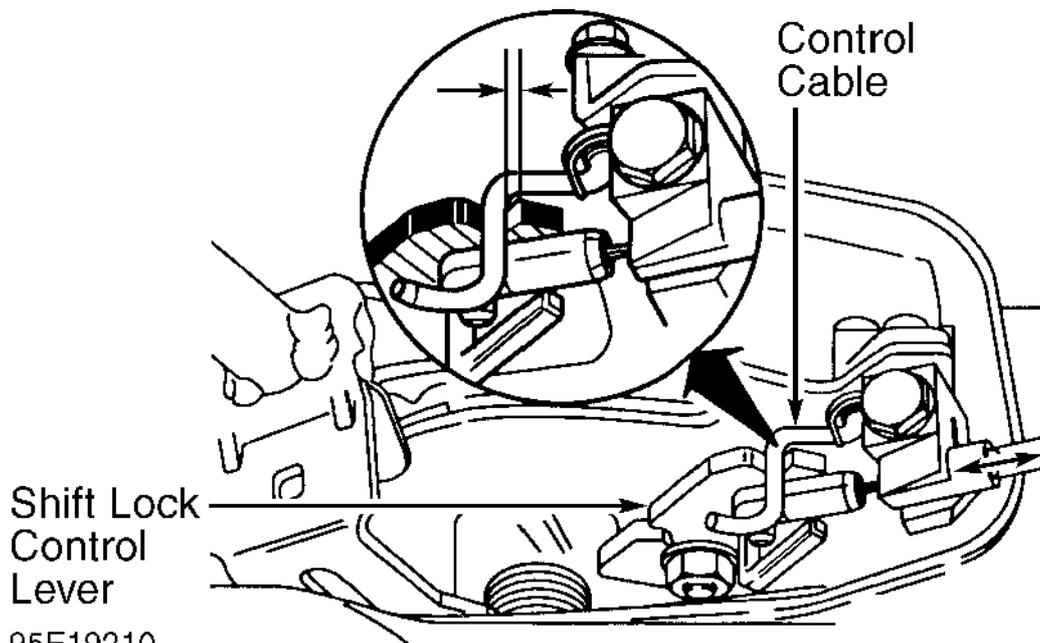
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Fig. 5: Adjusting Shift Lock Solenoid (Except New Beetle)
Courtesy of Volkswagen United States,

SHIFT LOCK CABLE ADJUSTMENT (EXCEPT NEW BEETLE)

1) Move gear selector to "1" position. Remove steering column covers. Turn ignition key to START position and release. Check clearance between shift lock cable lever and ignition switch locking pin.

2) Clearance should be .028" (.70 mm). If clearance is not correct, loosen lock nut on shift lock cable sheath. Position shift lock cable lever to obtain correct clearance. Tighten lock nut. See Fig. 6. Tighten gear selector housing screws and install steering column covers.



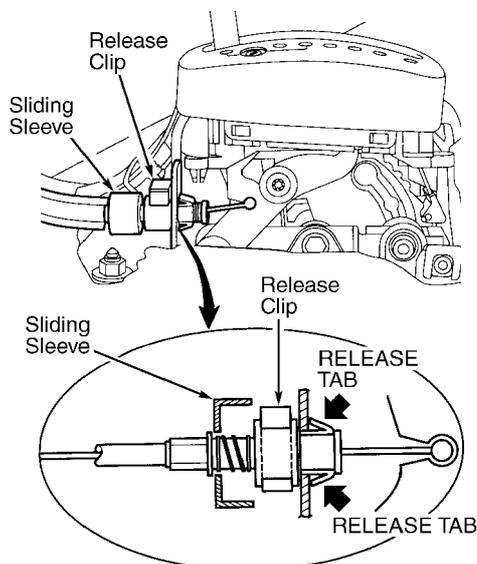
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Fig. 6: Adjusting Shift Lock Cable (Except New Beetle)
 Courtesy of Volkswagen United States,

SHIFT LOCK CABLE ADJUSTMENT (NEW BEETLE)

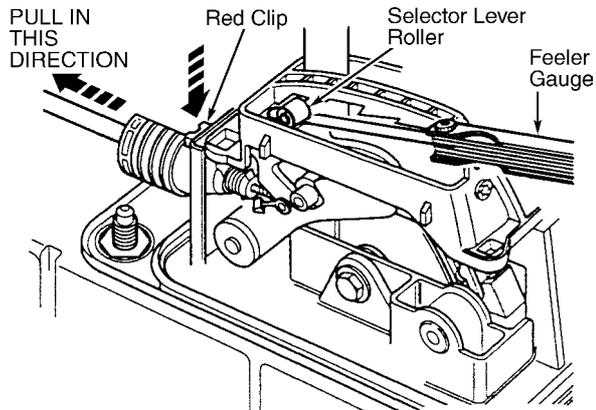
1) Ensure locking cable is routed correctly. Remove center console, place shift selector in "P" position and remove ignition key. Move sliding sleeve forward and pull release clip upwards. See Fig. 7. Carefully remove bracket from shifter assembly. See Fig. 4. DO NOT damage contact spring for shift lever position indicator.

2) Using .031" (.8 mm) feeler gauge, place between locking lever and selector lever roller. See Fig. 8. Pull outer sleeve of locking cable slightly forward and push Red clip down until it engages. Push sliding sleeve over clip and check operation.



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Fig. 7: Releasing Shift Lock Cable (New Beetle)
 Courtesy of Volkswagen United States,



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Fig. 8: Locking Shift Lock Cable (New Beetle)
 Courtesy of Volkswagen United States,

REMOVAL & INSTALLATION

SHIFT SELECTOR CONTROL CABLE (EXCEPT NEW BEETLE)

Removal & Installation

Remove lower cover from center console. Remove circlip from control cable end. Remove exhaust covers. On models equipped with V6 engines, remove catalytic converter. On all models, loosen lock nut and remove control cable from shift lever on transaxle. To install, reverse removal procedure. Adjust control cable. See SHIFT SELECTOR CONTROL CABLE ADJUSTMENT under ADJUSTMENTS.

SHIFT SELECTOR CONTROL CABLE (NEW BEETLE)

Removal & Installation

1) Move shift selector lever to "P" position and pull shift selector lever cable up and off shift selector shaft on transmission. Remove retaining clip from shift selector cable housing on support bracket at transmission. Raise vehicle and disconnect exhaust system at double clamp behind catalytic converter. Remove front bracket for exhaust system and cross member below exhaust system.

2) Remove both heat shields and cover from selector lever housing. Using screwdriver, carefully pry shift selector cable from shift selector lever. Pull retaining clip downward from shift selector cable housing and pull shift selector cable housing out of shift selector lever housing. To install, reverse removal procedure. Adjust control cable. See SHIFT SELECTOR CONTROL CABLE ADJUSTMENT under ADJUSTMENTS.

SHIFT LOCK CABLE (EXCEPT NEW BEETLE)

Removal & Installation

1) Remove shift lever handle. Remove center console cover. Disconnect negative battery cable and wait 30 seconds.

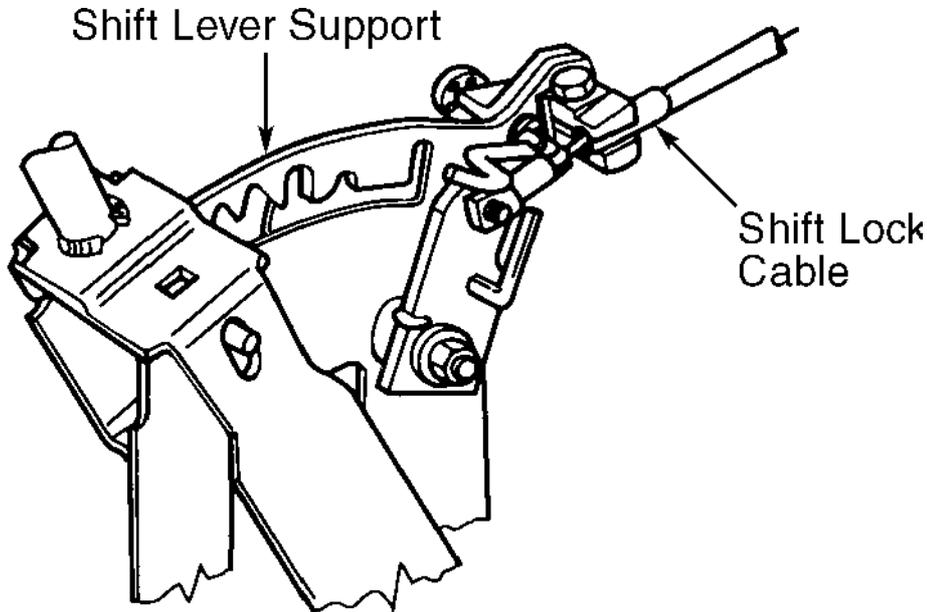
2) Using Torx wrench, remove air bag retaining screws from rear side of steering wheel. Lift off air bag unit from steering wheel, and tilt air bag unit downward. Disconnect wiring connector

from air bag unit. Remove steering wheel. Remove dash panel.

3) Place gear selector in rear position. Loosen screw holding cable sheath to gear selector support. Remove cable from lever. See Fig. 9.

4) Remove cover from ignition switch. Remove spring clip holding cable housing to ignition assembly. Lift and tilt shift lock cable housing upward. Pull up shift lock cable until shift lock cable unhooks from ignition switch. See Fig. 10.

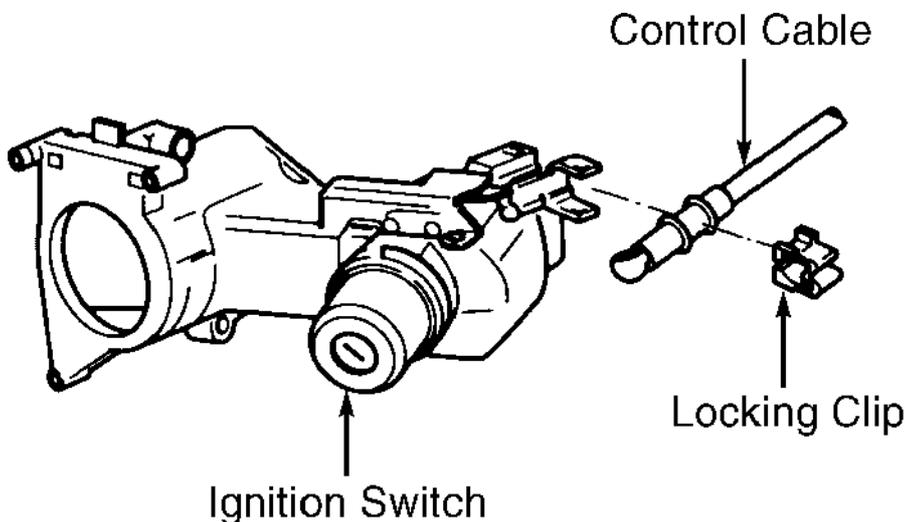
5) Remove shift lock cable from under dash near A/C-heater housing and remove from vehicle. To install, position shift lock cable through under-dash panels. See Fig. 11. To complete installation, reverse removal procedure. Adjust shift lock control cable. See SHIFT LOCK CABLE ADJUSTMENT (EXCEPT NEW BEETLE).



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Fig. 9: Removing Shift Lock Cable From Shift Lever Support (Except New Beetle)

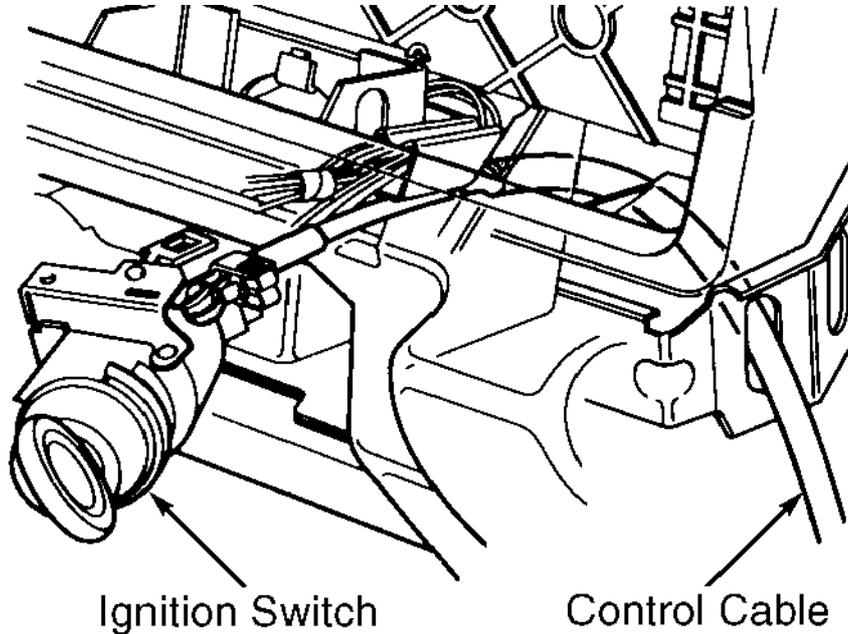
Courtesy of Volkswagen United States,



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Fig. 10: Removing Shift Lock Cable From Ignition Switch (Except

New Beetle)
Courtesy of Volkswagen United States,



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Fig. 11: Routing Shift Lock Cable To Ignition Switch (Except New Beetle)

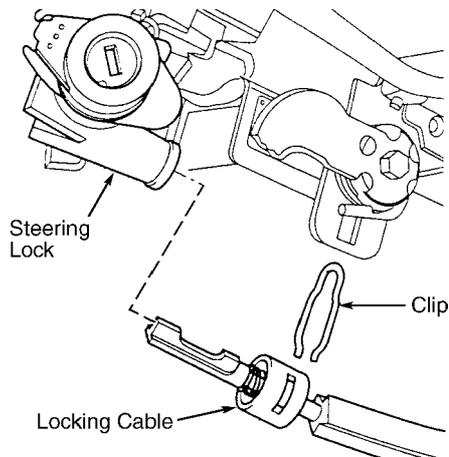
Courtesy of Volkswagen United States,

SHIFT LOCK CABLE (NEW BEETLE)

Removal & Installation

1) Remove steering wheel, handle for tilt column control and cover for ignition lock cylinder. Turn ignition switch to ON position and move shift selector to "P" position. Remove clip for locking cable and pull locking cable out of steering lock. See Fig. 12. While depressing shift selector knob, remove selector handle by pulling upward. Remove center console and arm rest, if equipped.

2) Remove bracket and locking segment. See Fig. 4. Disconnect locking cable from locking lever at selector mechanism. Press tabs of retaining clip together and pull locking cable out of selector mechanism. See Fig. 7. To install, reverse removal procedure. Adjust shift lock cable. See SHIFT LOCK CABLE ADJUSTMENT (NEW BEETLE).



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Fig. 12: Removing Shift Lock Control Cable - Steering Lock End (New Beetle)

Courtesy of Volkswagen United States,

WIRING DIAGRAMS

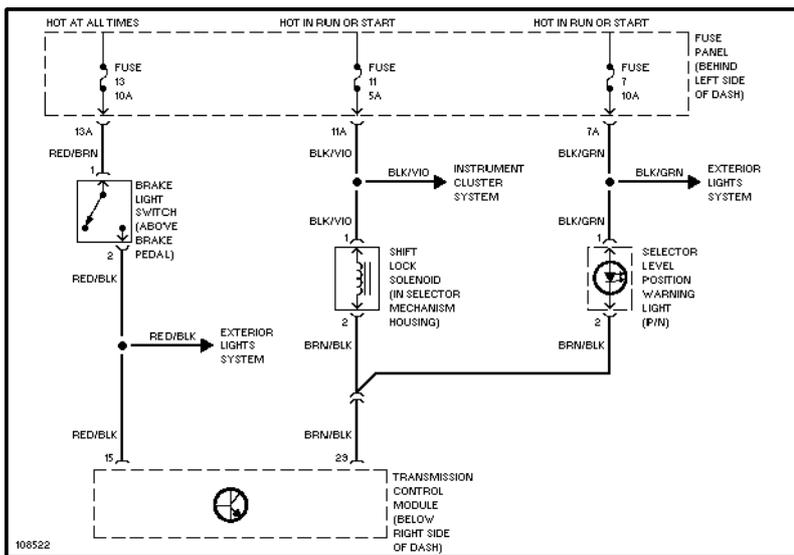


Fig. 13: Shift Interlock Wiring Diagram (New Beetle)

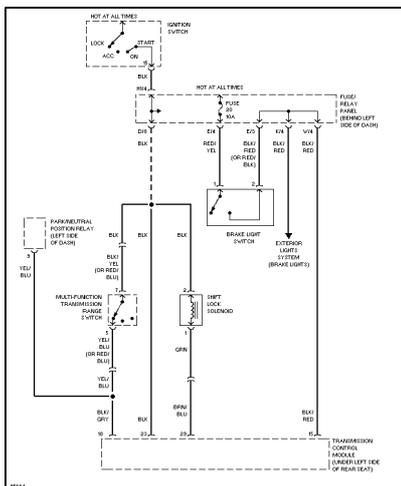


Fig. 14: Shift Interlock Wiring Diagram (Cabrio, Golf, GTI & Jetta)

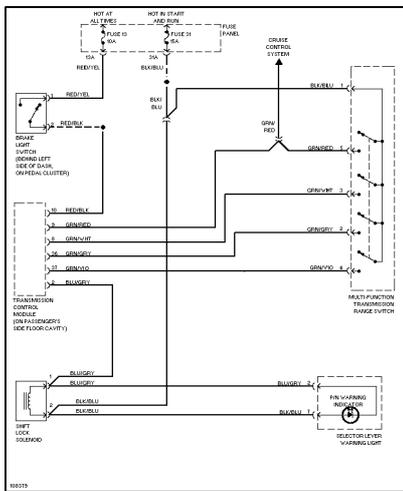


Fig. 15: Shift Interlock Wiring Diagram (Passat - 1.8L & 2.8L)

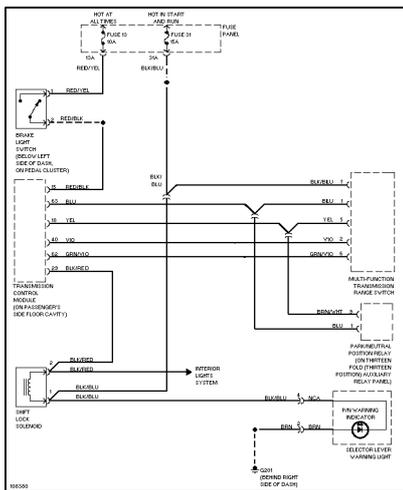


Fig. 16: Shift Interlock Wiring Diagram (Passat - 1.9L Turbo Diesel)

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