

CLUTCH

Article Text

1996 Volkswagen Golf

For Volkswagen Technical Site

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Thursday, August 19, 1999 11:52PM

ARTICLE BEGINNING

1995-96 CLUTCHES

Volkswagen - FWD

Golf

DESCRIPTION

Clutches are single disc type. A diaphragm spring is used to engage pressure plate. The clutch system is mechanically or hydraulically operated. Mechanically operated clutch is controlled by the clutch pedal, clutch cable, return spring, release fork and release bearing. Hydraulically operated clutch is controlled by clutch pedal, clutch master cylinder, transaxle housing-mounted release cylinder, return spring, release fork and release bearing.

ADJUSTMENTS

NOTE: Cable clutch and hydraulic clutch systems are automatically adjusted and require no manual adjustment.

GEARSHIFT LEVER CABLES

1) Place gearshift lever in Neutral position. Remove gearshift knob and boot. Loosen bolt and nut (at transaxle slotted levers) of both cables.

2) Loosen lock bolt below front of gearshift lever. See Fig. 1. Install Shift Lever Gauge (3193). Pivot gauge locating pin under bearing plate and tighten lock nut.

3) Push gearshift lever to left into detent of slide. Push gearshift lever and slide to left and hold against stop (opposite direction of arrow shown). See Fig. 1. Tighten gauge bolt.

4) Push gearshift lever to right into right side detent (direction of arrow shown). See Fig. 1. Tighten lock bolt. Install Gauge Wedge & Locating Pin (3192/1). See Fig. 2.

5) Push wedge in between lever and cover until there is no free play in lever. DO NOT push in so as to make shift lever ride up. Tighten shift cables to levers. DO NOT disturb wedge or lever positions. Recheck wedge location.

6) Remove shift lever gauge, gauge wedge and locating pin. Check transaxle shifting. If gear engagement is okay, adjustment is complete. If any gear fails to engage smoothly, go to next step.

7) Place gearshift lever in 1st gear. Have an assistant measure actuating arm movement while moving gearshift left. Actuating arm should not move more than .04" (1 mm). If actuating arm movement is as specified, adjustment is complete. If actuating arm movement is not as specified, go next step.

8) Place gearshift lever in Neutral position. Loosen nut No. 1 at actuating arm mounting. See Fig. 3. Move mounting toward bulkhead and tighten nut. If gear selector will not adjust, check for worn or

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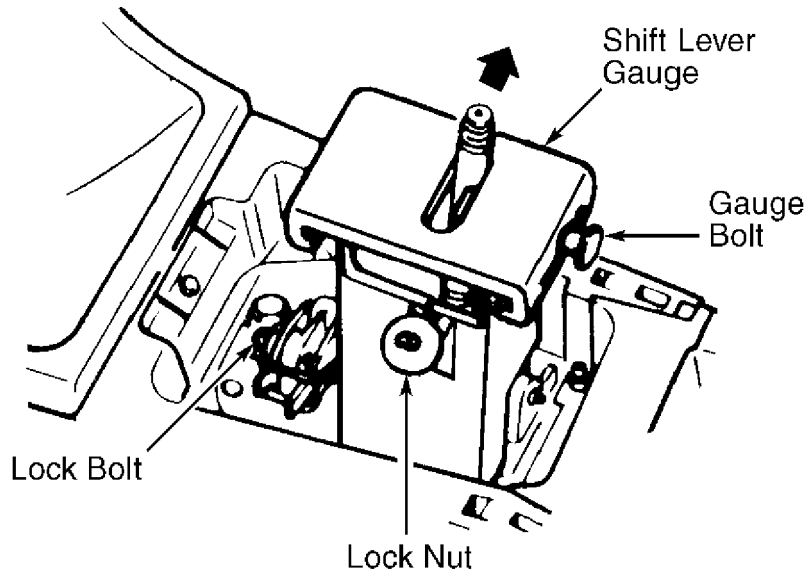
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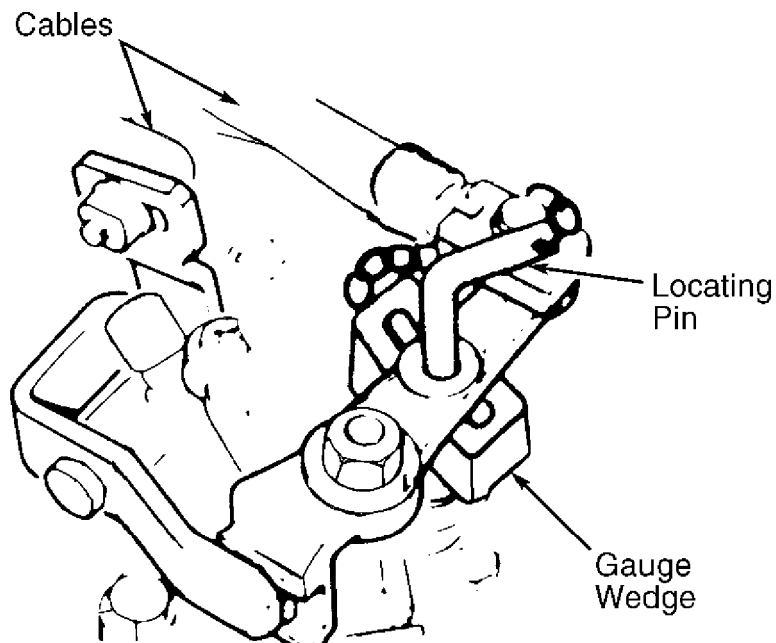
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damaged parts.



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Fig. 1: Identifying Shift Lever Gauge Installation
Courtesy of Volkswagen United States, Inc.



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Fig. 2: Identifying Gauge Wedge & Locating Pin Installation
Courtesy of Volkswagen United States, Inc.

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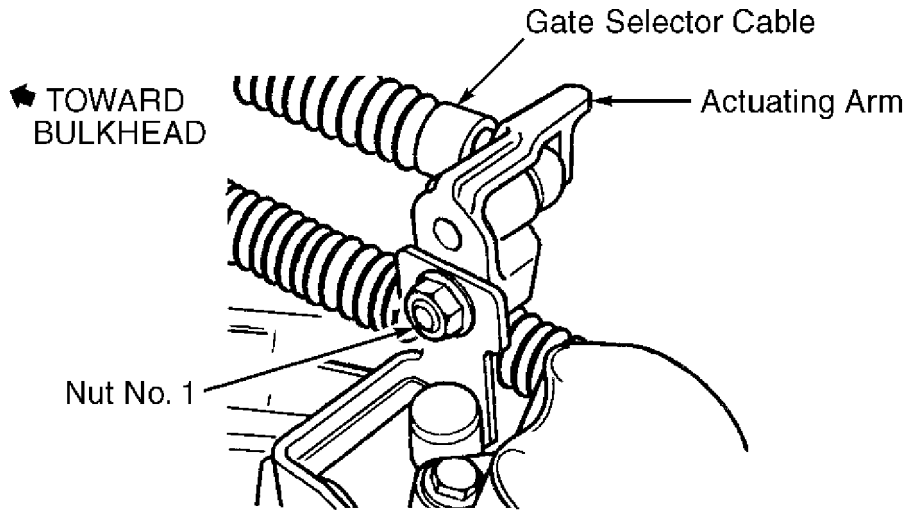
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Fig. 3: Adjusting Actuating Arm Position
Courtesy of Volkswagen United States, Inc.

TRANSAXLE ALIGNMENT

Loosen side engine mount. If side engine mount is equipped with a through-bolt, loosen through-bolt only. Loosen transaxle to sub-frame mount. Loosen front engine mount. Rock power train and tighten side engine mount (through-bolt if equipped). Tighten transaxle mount and front engine mount.

REMOVAL & INSTALLATION

NOTE: On models with theft protection system, obtain stereo security code from vehicle owner before disconnecting battery cable.

CLUTCH ASSEMBLY

Removal (Cable Clutch)

1) Disconnect negative battery cable. Remove upper clutch housing-to-transaxle bolts. Disconnect right engine mount. Disconnect back-up light switch wires, speedometer cable and clutch cable at transaxle. See Fig. 4.

2) Disconnect shift linkage at gearshift lever. Disconnect transaxle mounting brackets. Attach Engine Support (10-222) to engine. Disconnect front engine support bracket. Remove starter and clutch shields.

3) Remove exhaust pipe bracket. Support transaxle with floor jack. Remove rear transaxle mount. Disconnect left and right axle shafts at transaxle. See AXLE SHAFTS - FWD article in DRIVE AXLES section. Turn steering full left and secure axle shafts. Remove large clutch cover plate bolts (plate remains on engine). Remove small clutch cover plate bolts and clutch cover plate.

4) Push engine as far to the right as possible. Pull

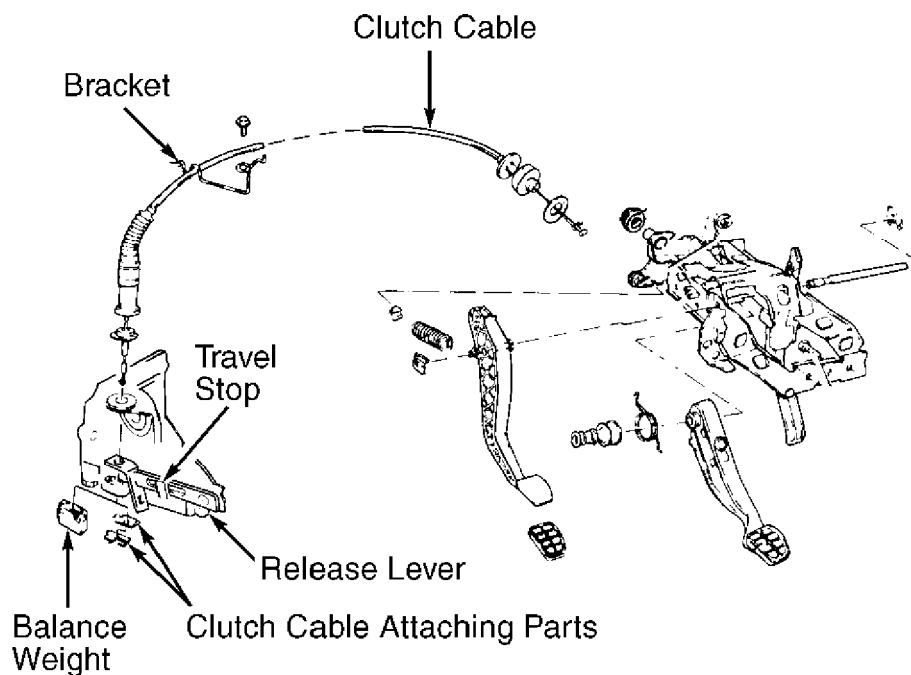
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transaxle away from engine while positioning engine so right drive flange clears flywheel. Lower and remove transaxle.

5) With transaxle removed, install Flywheel Holder (VW558) on flywheel. Remove pressure plate-to-crankshaft bolts in a diagonal pattern. Pry retaining ring from intermediate plate, and lift intermediate plate from pressure plate. Remove clutch disc and flywheel. See Fig. 4.



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Fig. 4: Identifying Clutch Cable & Related Components
Courtesy of Volkswagen United States, Inc.

Inspection

1) Inspect pressure plate surface for wear, cracks, burning, or warpage. Measure warpage with straightedge and feeler gauge at several different points. Maximum pressure plate warpage is .008" (.2 mm). Inspect clutch release bearing for smooth operation and looseness. Replace bearings if necessary. DO NOT wash release bearing in solvent.

2) Inspect clutch disc lining for excessive wear and burned or oil-soaked condition. Inspect clutch disc for loose rivets and torsion dampers. Inspect ring and intermediate plate. Measure clutch disc and flywheel runout. Inspect flywheel ring gear teeth for wear and damage. Inspect flywheel for wear, cracks and burned condition.

Installation

1) To install, reverse removal procedure. Apply grease to ball stud and inner surface of release bearing. Clean hub splines of input shaft and apply a light coat of grease. Ensure clutch disc slides smoothly on input shaft spines.

2) Ensure protrusion on intermediate plate points away from

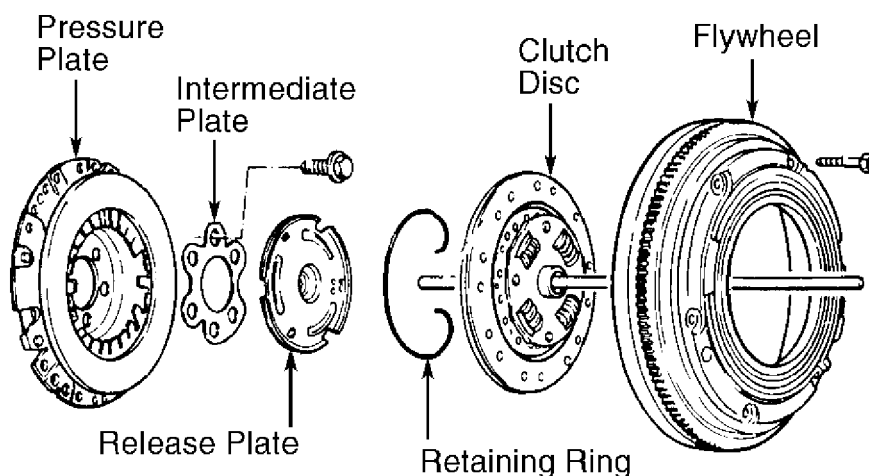
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pressure plate. See Fig. 5. Install pressure plate bolts finger tight. Using Clutch Centering Plug (3190), align clutch disc and pilot bushing holes. Tighten pressure plate bolts to specification using a crisscross pattern.

3) Using flywheel lock or similar device, hold crankshaft from turning. Tighten flywheel bolts, in a crisscross pattern, to specification. See **TORQUE SPECIFICATIONS**. On diesel models, align transaxle. See **TRANSAXLE ALIGNMENT** under **ADJUSTMENTS**. Ensure transaxle oil level is correct. Adjust gearshift lever cables. See **GEARSHIFT LEVER CABLES** under **ADJUSTMENTS**.



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Fig. 5: Exploded View Of Clutch Assembly (Cable Clutch)
Courtesy of Volkswagen United States, Inc.

Removal (Hydraulic Clutch)

1) Disconnect negative battery cable. Disconnect electrical connectors from transmission. Remove connecting tube to intercooler (if equipped).

2) Disconnect gearshift cables, cable supports and linkage from transmission. Remove clutch release cylinder, and wire aside. Disconnect speedometer drive from transmission. Remove upper engine-to-transaxle bolts.

3) Remove 3 right side engine mount-to-engine bolts and one left side transmission mount bracket through-bolt. On vehicles equipped with ABS, it may be necessary to remove coolant overflow reservoir to access left side through-bolt.

4) Remove radiator fan, cover and mount. Remove nut from front transmission mount. Attach Engine Support (10-222A) and Bases(10-222A/1) to engine. Slightly tighten engine support and remove starter. Remove left transaxle mount bracket.

5) Remove long left side transmission support bracket. Remove balance weight from mount. Remove heat shield for right side inner CV joint.

6) Disconnect axle shafts at flanges, and wire aside. See **AXLE SHAFTS - FWD** article in **DRIVE AXLES** section. Remove left side transaxle mount from transaxle. Push rearward on mount for clearance to remove long transaxle mount bolt.

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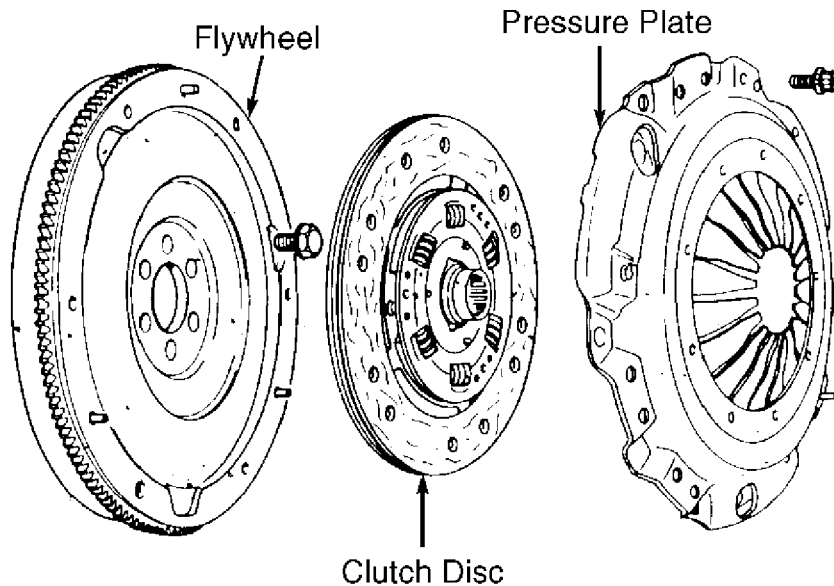
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7) Push transaxle mount to right and pull down to remove from vehicle. Remove small gear carrier housing cover. Support transaxle with floor jack. Remove rear transaxle mount. Remove lower transaxle-to-engine bolts. Carefully pry transaxle from engine and lower. Plug transaxle openings to prevent contamination or fluid loss.

8) Using Flywheel Lock (3067) or similar device, hold crankshaft from turning. Remove pressure plate bolts. Remove pressure plate and clutch disc. See Fig. 6.



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Fig. 6: Exploded View Of Clutch Assembly (Hydraulic Clutch)
Courtesy of Volkswagen United States, Inc.

Inspection

1) Inspect pressure plate surface for wear, cracks, burning, or warpage. Measure warpage with straightedge and feeler gauge at several different points. Maximum pressure plate warpage is .008" (.2 mm). Inspect clutch release bearing for smooth operation and looseness. Replace bearings if necessary. DO NOT wash release bearing in solvent.

2) Inspect clutch disc lining for excessive wear and burned or oil-soaked condition. Inspect clutch disc for loose rivets and torsion dampers. Measure clutch disc and flywheel runout. Inspect flywheel ring gear teeth for wear and damage. Inspect flywheel for wear, cracks and burned condition.

NOTE: Pressure plate has a protective grease coating. Remove contact surface grease only. Service life will be shortened if remaining portions of pressure plate protective grease are removed.

Installation

1) Replace input shaft "O" ring. See Fig. 7. To install, reverse removal procedure. Apply grease to ball stud and inner surface

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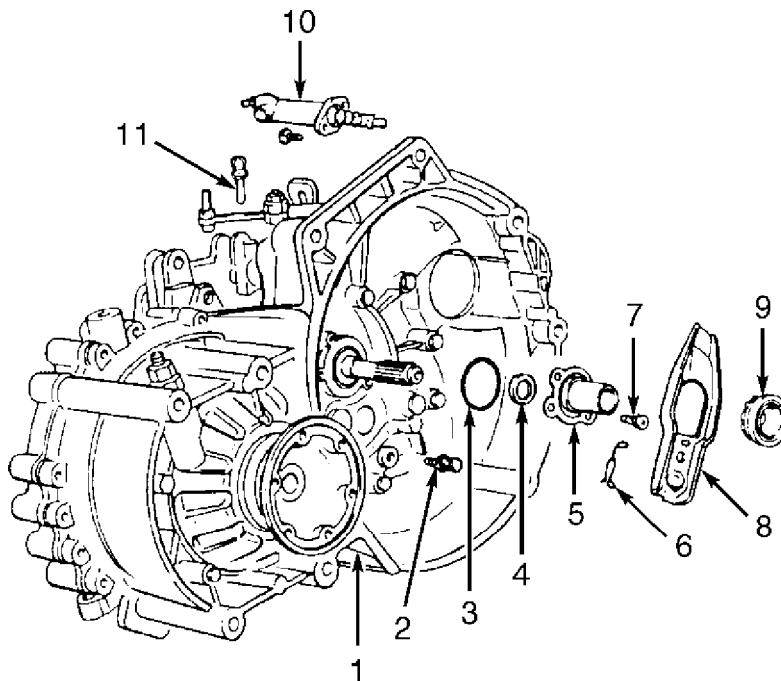
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of release bearing. Clean hub splines of input shaft and apply a light coat of grease. Ensure clutch disc slides on input shaft spines.

2) Install pressure plate bolts finger tight. Using Clutch Centering Plug (3190), align clutch disc and pilot bushing holes. Tighten pressure plate bolts to specification using a crisscross pattern.

3) On diesel models, align transaxle. See TRANSAXLE ALIGNMENT under ADJUSTMENTS. Ensure transaxle oil level is correct. Using Flywheel Lock (3067) or similar device, hold crankshaft from turning. Tighten flywheel bolts to specification. See TORQUE SPECIFICATIONS.

4) Push clutch release lever rearward and temporarily install mounting pin or an 8 x 22 mm bolt through pivot arm. Remove pin or bolt after installation is complete. Adjust gear selector mechanism. See GEARSHIFT LEVER CABLES under ADJUSTMENTS.



- | | |
|-------------------------|----------------------|
| 1. Transaxle | 7. Guide Sleeve Bolt |
| 2. Ball Stud | 8. Release Lever |
| 3. Input Shaft "O" Ring | 9. Release Bearing |
| 4. Input Shaft Seal | 10. Slave Cylinder |
| 5. Guide Sleeve | 11. Assembly Pin |
| 6. Retaining Spring | |

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Fig. 7: Exploded View Of Transaxle Assembly (Hydraulic Clutch)
Courtesy of Volkswagen United States, Inc.

CLUTCH CABLE

NOTE: If installing new cable, compress adjusting mechanism using same retaining strap used to compress adjusting mechanism of NEW cable. Strap is included with NEW cable.

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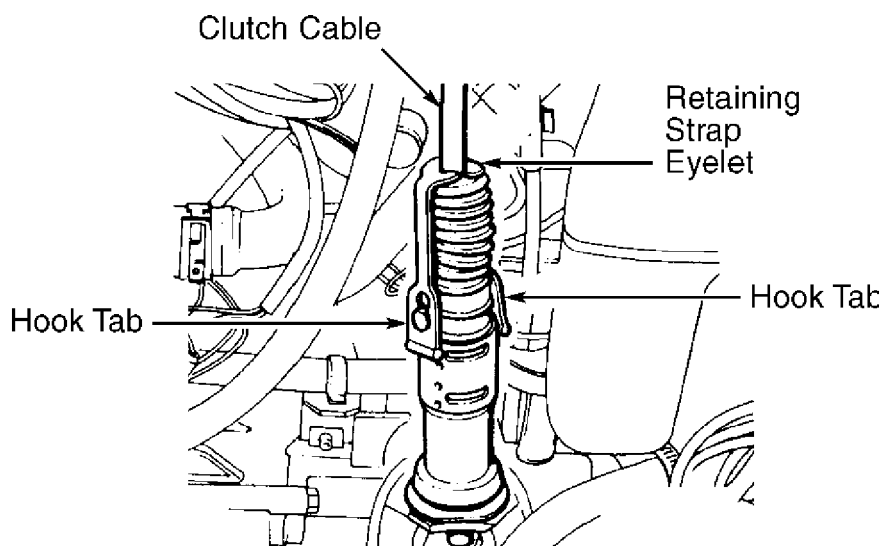
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Removal & Installation

1) Carefully cut 1/2 of retaining strap eyelet. Remove retaining strap from new clutch cable, being careful not to bend clutch cable. Depress clutch pedal at least 5 times. Install retaining strap onto old cable. See Fig. 8.

2) With an assistant, compress adjusting mechanism and hook retaining strap tabs onto pins of adjusting mechanism. If adjusting mechanism cannot be compressed, repair or replace adjusting mechanism. Remove over-center spring and clutch cable.



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Fig. 8: Removing Clutch Cable
Courtesy of Volkswagen United States, Inc.

CLUTCH MASTER CYLINDER

Removal & Installation

1) Remove coolant expansion tank. With hoses attached move aside. Remove and plug hydraulic line. Remove and plug fluid supply hose located between clutch master cylinder and brake master cylinder reservoir. Remove lower trim plate.

2) Using Clip Release Tool (3309), remove master cylinder push rod. Remove clutch pedal mounting bracket. Remove mounting nuts and master cylinder. To install, reverse removal procedure. Bleed hydraulic system. See BLEEDING CLUTCH HYDRAULIC SYSTEM.

CLUTCH RELEASE CYLINDER

Removal & Installation

1) Disconnect negative battery cable. Remove catalytic converter and heat shield. Remove gear selector cable and lever. Remove relay lever and actuating arm. If equipped, remove balance weight. Remove clutch release cylinder.

2) To install, reverse removal procedure. Bleed hydraulic

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system. See BLEEDING CLUTCH HYDRAULIC SYSTEM. Adjust gear selector mechanism. See GEARSHIFT LEVER CABLES under ADJUSTMENTS.

BLEEDING CLUTCH HYDRAULIC SYSTEM

Attach hose to bleeder fitting located on clutch release cylinder, next to hydraulic line. Submerge other end of hose in container half full of clean brake fluid. Fill reservoir with DOT 3 brake fluid. Open bleeder fitting. Have assistant press clutch pedal to full release position. Close bleeder fitting. Release clutch pedal. Repeat until air bubbles no longer emerge from hose. Refill reservoir.

OVERHAUL

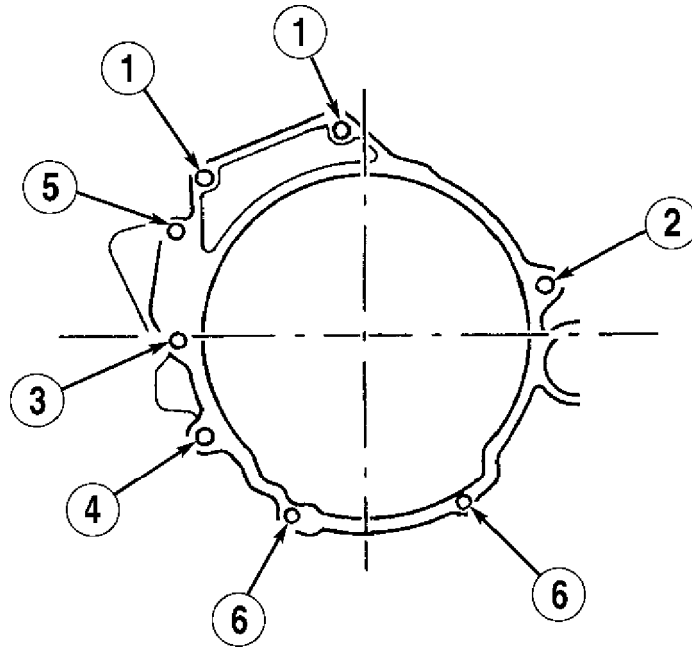
NOTE: Manufacturer recommends replacement of faulty clutch master and release cylinders and does not provide overhaul procedures.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

| Application | | | Ft. Lbs. (N.m) |
|-------------------------------|--------------------------|---------|----------------|
| Axle Shaft-To-Transaxle Bolt | ..... | 32 (43) | |
| Balance Weight-To-Mount Bolt | ..... | 22 (30) | |
| Clutch Master Cylinder Bolt | ..... | 18 (25) | |
| Clutch Release Cylinder Bolt | ..... | 18 (25) | |
| Engine Mount-To-Subframe Bolt | ..... | 37 (50) | |
| Engine-To-Transaxle Bolt (1) | | | |
| Flywheel-To-Crankshaft | 44 (60) + 1/4 Turn | | |
| Front Transaxle Mount Bolt | ..... | 44 (60) | |
| Gearshift Cable Bolt | ..... | 18 (25) | |
| Gearshift Cable Support Bolt | ..... | 18 (25) | |
| Pressure Plate Bolt | | | |
| Cable Clutch | 22 (30) + 1/4 Turn | | |
| Hydraulic Clutch | ..... | 15 (20) | |
| Right Engine Bracket Bolt | ..... | 44 (60) | |
| Starter Bolt | | | |
| Cable Clutch | ..... | 44 (60) | |
| Hydraulic Clutch | ..... | 18 (25) | |
| Transaxle Bracket Bolt | | | |
| Cable Clutch | ..... | 26 (35) | |
| Hydraulic Clutch | ..... | 18 (25) | |

(1) See Fig. 9 or 10.



| Item | Size | Quantity | Specification |
|------|-----------|----------|----------------------|
| 1 | M12 x 55 | 2 | 59 Ft. Lbs. (80 N.m) |
| 2 | M12 x 62 | 1 | 59 Ft. Lbs. (80 N.m) |
| 3 | M12 x 62 | 1 | 59 Ft. Lbs. (80 N.m) |
| 4 | M12 x 46 | 1 | 59 Ft. Lbs. (80 N.m) |
| 5 | M10 x 160 | 1 | 44 Ft. Lbs. (60 N.m) |
| 6 | M7 x 12 | 2 | 7 Ft. Lbs. (10 N.m) |

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Fig. 9: Identifying Bolt Locations & Tightening Specifications
(Mechanical Clutch)
Courtesy of Volkswagen United States, Inc.

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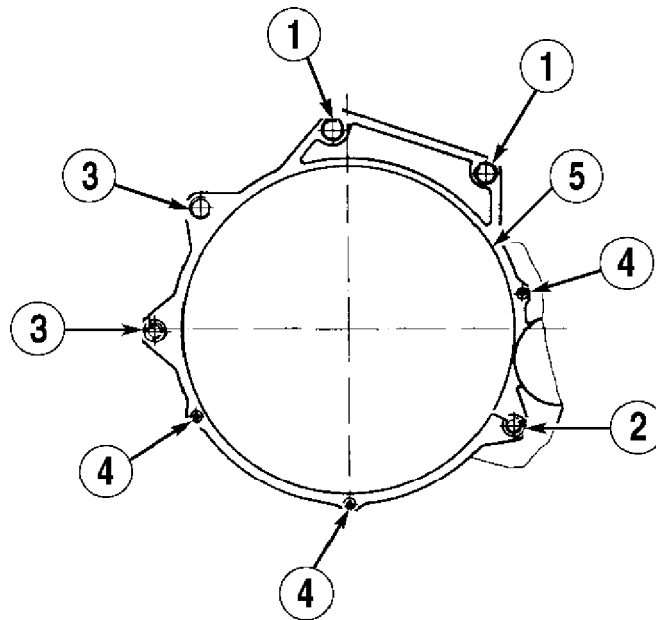
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| Fastener | Size | Qty. | Tightening torque |
|----------|-----------|------|----------------------|
| 1 | M12 x 55 | 2 | 59 Ft. Lbs. (80 N.m) |
| 2 | M12 x 64 | 1 | 59 Ft. Lbs. (80 N.m) |
| 3 | M10 x 140 | 2 | 44 Ft. Lbs. (60 N.m) |
| 4 | M7 x 12 | 3 | 7 Ft. Lbs. (10 N.m) |
| 5 | M6 x 8 | 1 | 7 Ft. Lbs. (10 N.m) |

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Fig. 10: Identifying Bolt Locations & Tightening Specifications (Hydraulic Clutch)

Courtesy of Volkswagen United States, Inc.

END OF ARTICLE