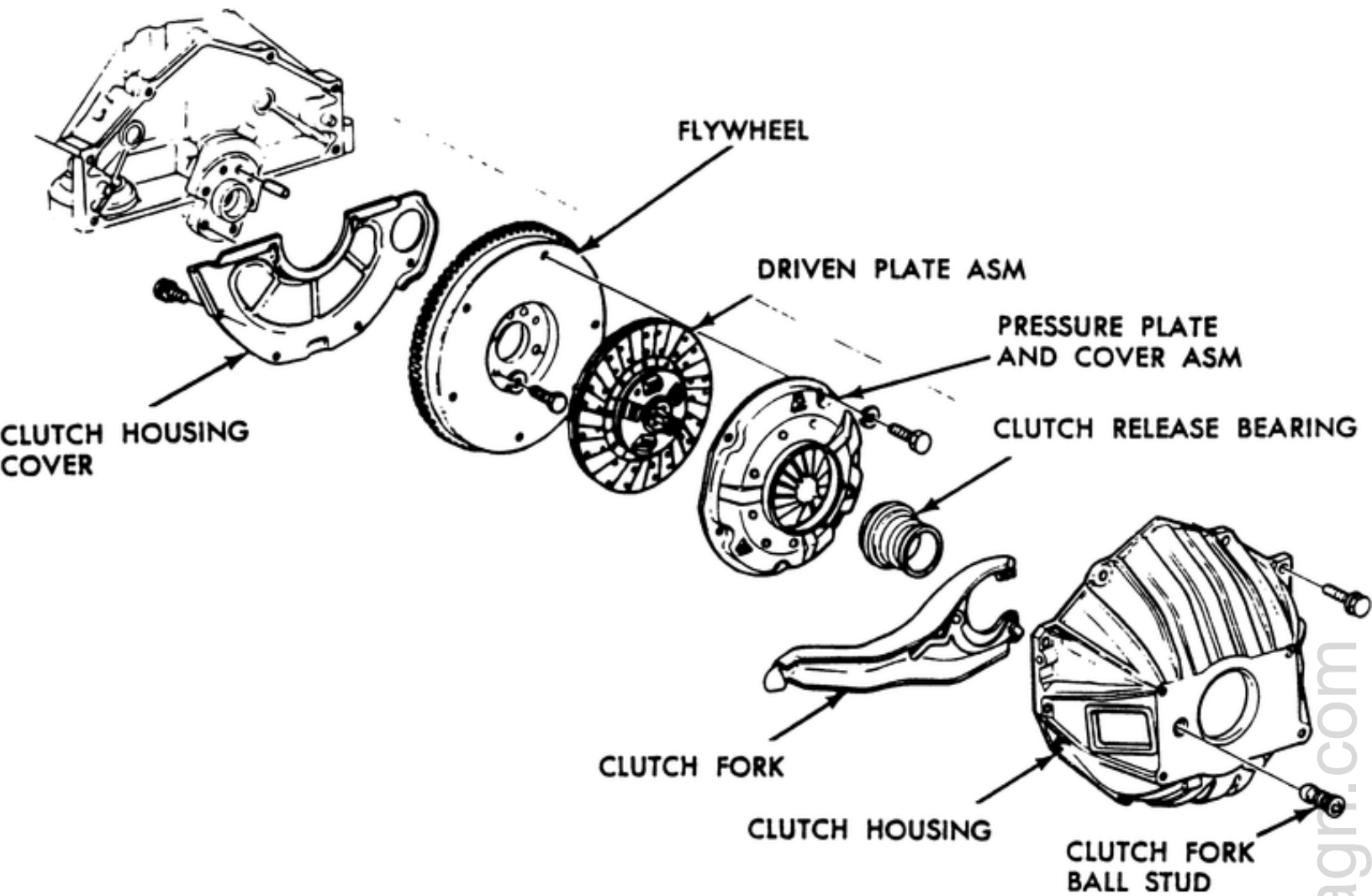
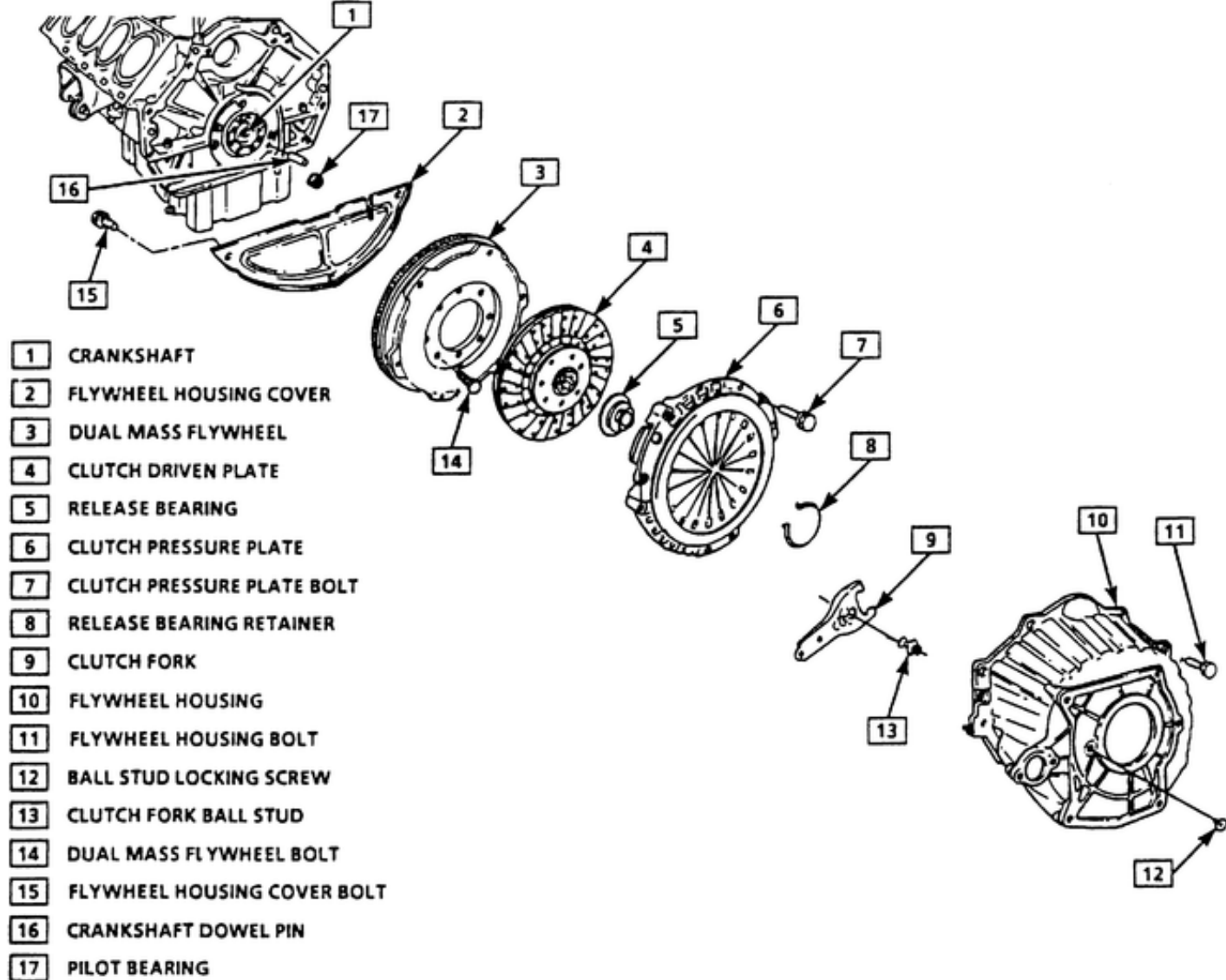
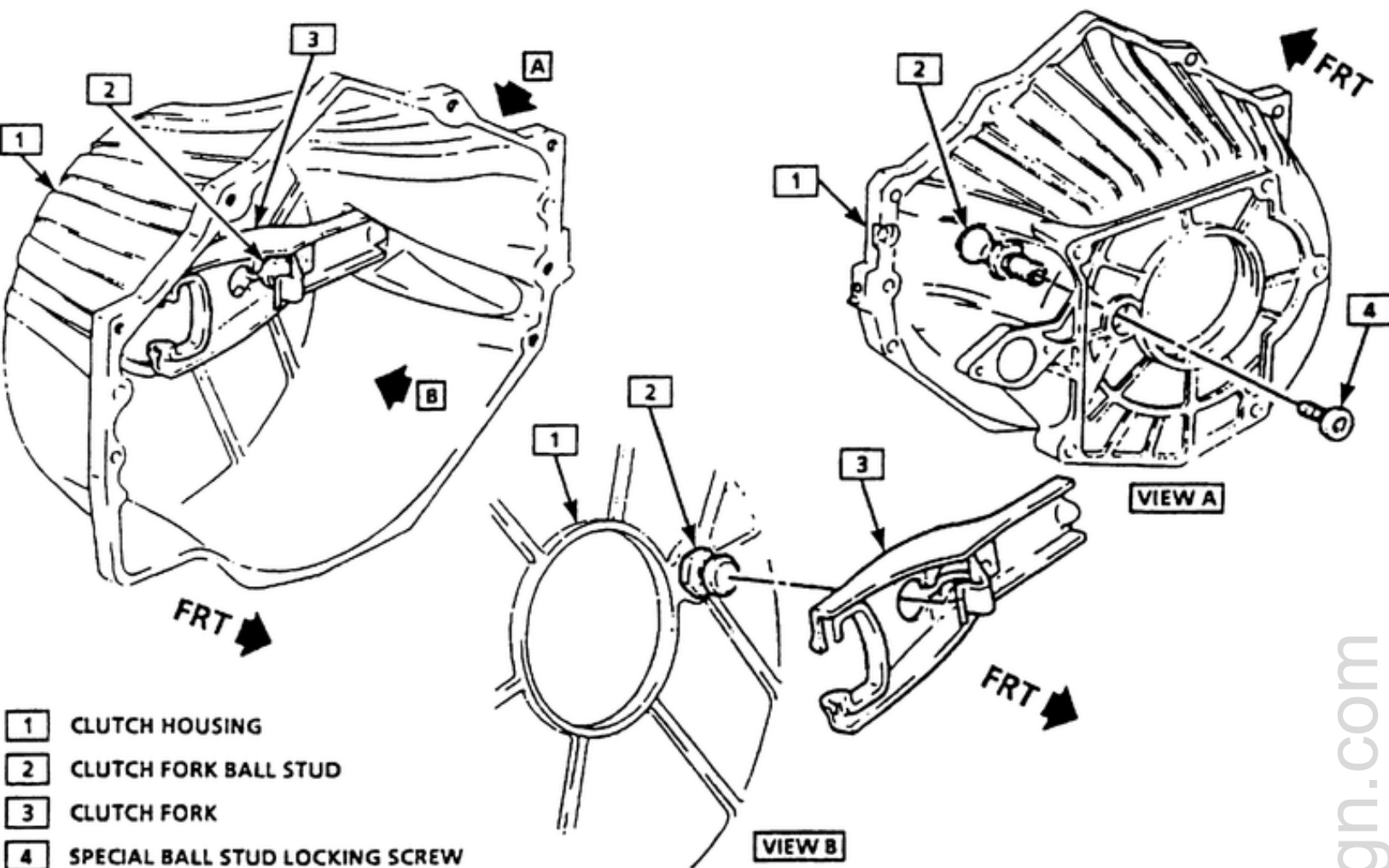
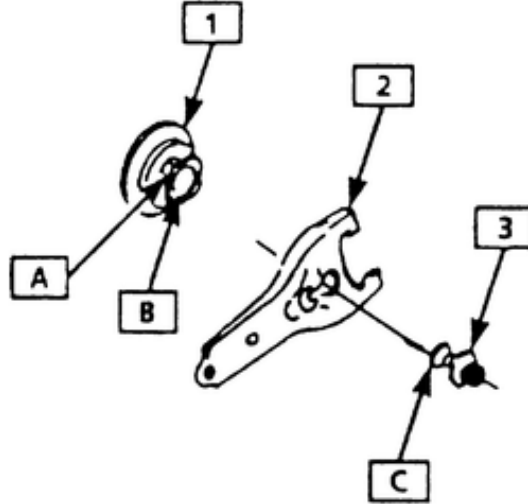










LIGHTLY LUBRICATE:

A BEARING OD

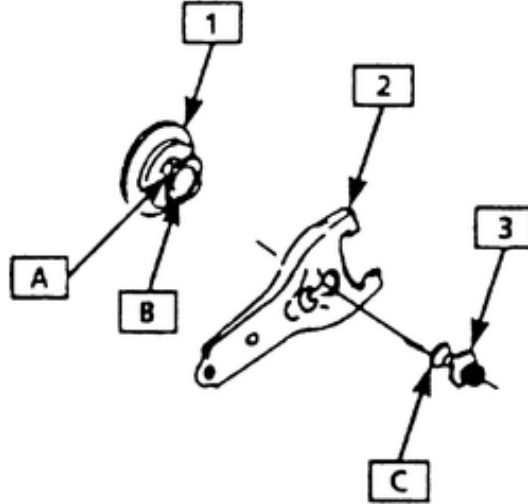
B BEARING ID

C BALL

1 CLUTCH RELEASE BEARING

2 CLUTCH FORK

3 CLUTCH FORK BALL STUD



LIGHTLY LUBRICATE:

A BEARING OD

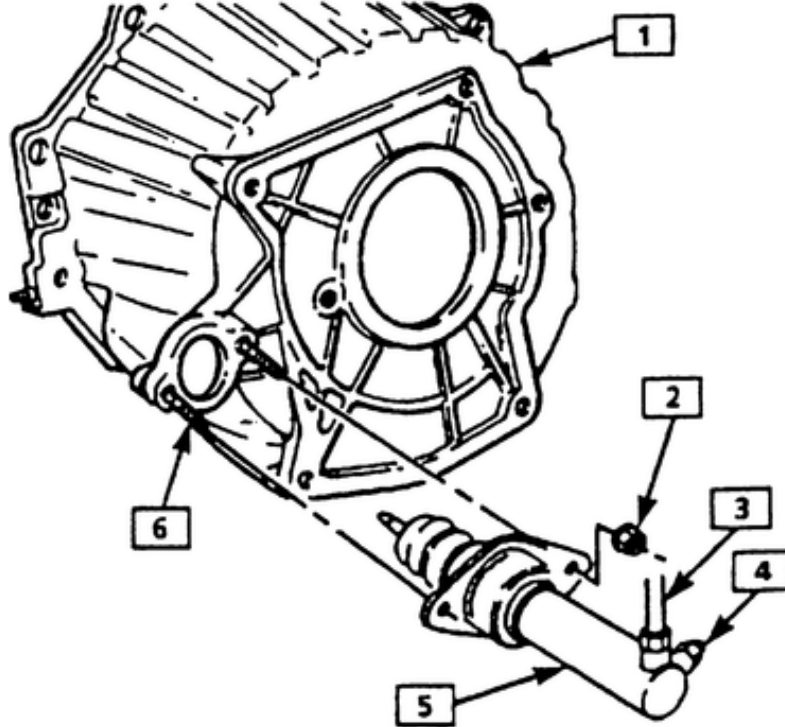
B BEARING ID

C BALL

1 CLUTCH RELEASE BEARING

2 CLUTCH FORK

3 CLUTCH FORK BALL STUD



- 1** CLUTCH HOUSING
- 2** CLUTCH ACTUATOR CYLINDER STUD NUT
- 3** HYDRAULIC LINE
- 4** BLEED SCREW
- 5** CLUTCH ACTUATOR CYLINDER
- 6** CLUTCH ACTUATOR CYLINDER STUD

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7
Fuel Delivery: FI | Fuel: GAS

CAUTION

The clutch driven disc may contain asbestos, which has been determined to be a cancer causing agent. Never clean clutch surfaces with compressed air! Avoid inhaling any dust from any clutch surface! When cleaning clutch surfaces, use a commercially available brake cleaning fluid.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1984–88 Vehicles

1. Disconnect the negative battery cable.
2. Raise and safely support the vehicle.
3. Support the engine assembly, then remove the transmission, as outlined earlier in this section.
4. Remove the slave cylinder attaching bolts.
5. Remove the flywheel housing.
6. Slide the clutch fork from the ball stud then remove the fork from the dust boot. The ball stud is threaded into the clutch housing and is easily replaced, if necessary.
7. Install a suitable clutch pilot tool to support the clutch assembly during removal. Look for the "X" mark or white painted letter on the clutch cover and the "X" mark on the flywheel. If you don't see any marks, matchmark the flywheel and clutch cover for proper alignment during installation.
8. Loosen the clutch-to-flywheel attaching bolts evenly, 1 turn at a time, until the spring pressure is released, then remove the bolts and remove the clutch and pressure plate assembly.

Fig. 1: Exploded view of the clutch pressure plate and related components — 1984–88 vehicles

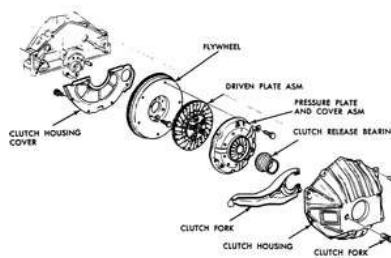
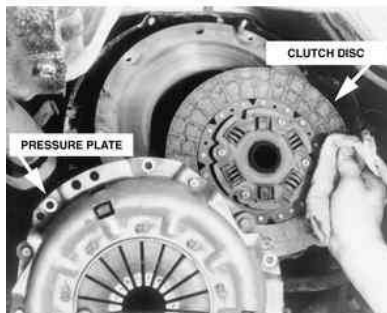


Fig. 2: Loosen and remove the clutch and pressure plate bolts evenly, a little at a time . . .



Fig. 3: . . . then carefully removing the clutch and pressure plate assembly from the flywheel



9. Inspect flywheel, clutch plate and disc for heat stress, cracks or worn parts and replace as necessary.

Fig. 4: Check across the flywheel surface, it should be flat

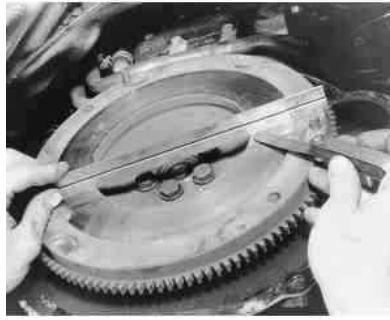


Fig. 5: If necessary, lock the flywheel in place and remove the retaining bolts . . .



Fig. 6: . . . then remove the flywheel from the crankshaft in order to replace it or have it machined



To install:

10. Clean the pressure plate and flywheel face. They must be free of any oil, grease, metal deposits or burned spots.
11. Place the clutch disc and pressure plate in their approximate installed position and support them with a suitable universal alignment tool or a drive gear. The driven disc is installed with damper springs to the transmission. The flywheel side should be marked.

Fig. 7: Install a clutch alignment arbor, to align the clutch assembly during installation



12. Turn the clutch assembly until the "X" mark (or other matchmark) on the cover lines up with the mark on the flywheel. Then, align the cover bolt holes to the nearest flywheel

holes.

13. Install a bolt in every hole, then tighten them down evenly and gradually until tight, to avoid distorting the clutch.

Fig. 8: You may want to use a threadlocking compound on the clutch assembly bolts

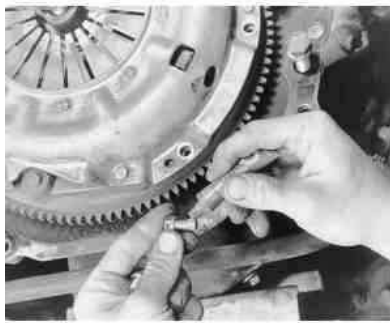
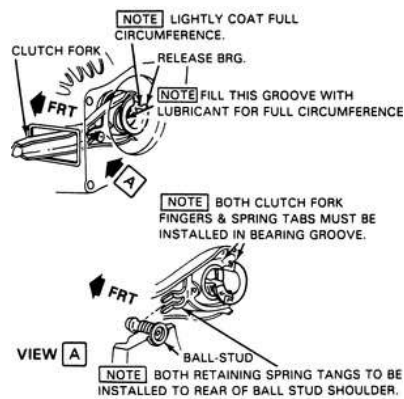


Fig. 9: Be sure to use a torque wrench to tighten all bolts



14. Remove the pilot tool.
15. Unhook the clutch fork and lubricate the ball socket and fork fingers at the release bearing end with a suitable high melting point grease (such as a graphite grease), then reinstall the fork on the ball stud.
16. Lubricate the recess on the inside of the release bearing collar and the clutch fork groove with a light coating of graphite grease.

Fig. 10: Use a suitable graphite grease to lubricate the areas shown on the release bearing



17. Install the clutch fork and dust boot into the clutch housing, then install the release bearing to the fork.
18. Install the flywheel housing.
19. Install the transmission, as outlined earlier in this section.
20. Install the slave cylinder, and secure with the attaching bolts.
21. Lubricate the clutch fork pushrod ends, then connect the pushrod.
22. Adjust the shift linkage, as outlined earlier in this section.

1989–96 Vehicles

1. Disconnect the negative battery cable, then raise and support the vehicle safely.
2. Remove the complete exhaust system.
3. Remove the transmission assembly.
4. Except for the VIN J and 1993–96 VIN P engines, remove the starter assembly.
5. Except for the VIN J engine, disconnect the ground wire attached to the left clutch housing stud.
6. Remove the nuts attaching the clutch slave cylinder to the housing and support the cylinder to the side. Do not allow the cylinder to hang freely.
7. For the VIN J engine, remove the nut retaining the left converter shield to the housing.
8. Remove the clutch housing cover.

9. Remove the bolts retaining the housing to the engine block, if applicable on the 5.7L (VIN J) engine, the right side converter heat shield.
10. Remove the housing by aligning the fork onto the 2 flats of the release bearing and push the fork away from the bearing with a twisting motion. Remove the clutch housing, for 5.7L (VIN P and 5) engine with magnesium housings, the aluminum spacers.

NOTE: Excessive clutch wear may require removal of the ball stud locking screw and loosening of the ball stud to disengage the fork and housing.

11. Mark the alignment of the clutch cover and flywheel for installation purposes.
12. Loosen the clutch cover bolts evenly, 1 turn at a time until spring pressure is released. Failure to properly release spring pressure may result in damage to the clutch cover assembly and the flywheel.
13. Remove the clutch plate and disc assembly.

Fig. 11: Exploded view of the clutch system components — 1995 5.7L (VIN J) engine shown, other engine similar

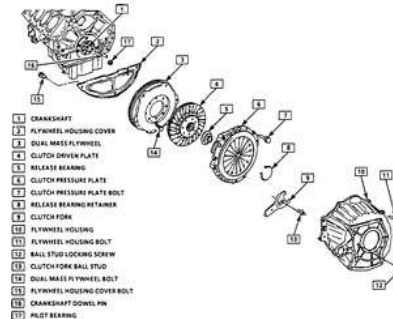
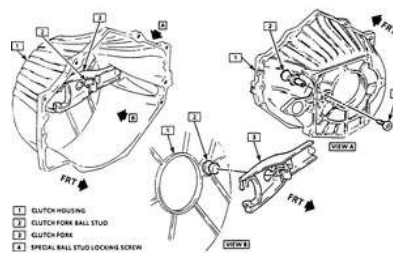


Fig. 12: Clutch fork and ball attachment



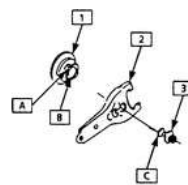
14. If necessary, remove the clutch release bearing as follows:

- A. Remove the clutch release bearing retainer.
- B. Remove the clutch release bearing.

To install:

NOTE: Before installation, lightly lubricate the release bearing as shown in the accompanying figure.

Fig. 13: The clutch release bearing must be lubricated at the points shown before installation



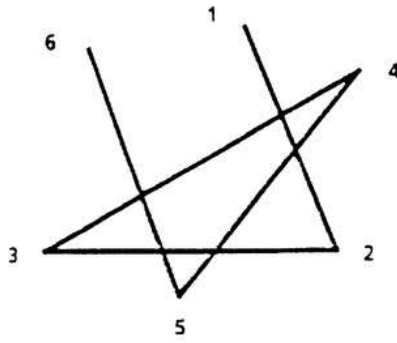
LIGHTLY LUBRICATE:

- A BEARING OD
- B BEARING ID
- C BALL

- 1 CLUTCH RELEASE BEARING
- 2 CLUTCH FORK
- 3 CLUTCH FORK BALL STUD

15. If removed, install the clutch release bearing and secure with the retainer. The retainer must be installed with the tangs facing away from the engine.
16. Inspect flywheel, clutch plate and disc for heat stress, cracks or worn parts and replace as necessary.
17. Install the clutch assembly using a suitable universal clutch disc alignment tool.
18. Be sure the marks made earlier are in alignment, then install the cover assembly-to-flywheel bolts. Tighten the bolts in the proper sequence, 1 turn at a time, until spring pressure is properly attained and the bolts are tightened to 30 ft. lbs. (41 Nm).

Fig. 14: The clutch pressure plate bolts must be tightened in the proper sequence



19. Position the clutch housing to the engine block and engage the fork onto the release bearing. If equipped, be sure the aluminum spacer is in position.
20. Verify the housing is properly positioned on the 2 engine dowel pins, for the 5.7L (VIN J) engine, that the right converter heat shield is installed.
21. Tighten the clutch housing bolts to 37 ft. lbs. (50 Nm) and the ball stud to 33 ft. lbs. (45 Nm). Tighten the ball stud locking screw to 11 ft. lbs. (15 Nm) for VIN P and 5 engines or to 16 ft. lbs. (22 Nm) for VIN J engine, as applicable.
22. If equipped, install the ground harness connection to the housing.
23. Install the housing cover and tighten the bolts to 80 inch lbs. (9 Nm).
24. For the VIN J engine, install the left heat shield and tighten the retaining nut to 12 inch lbs. (1.4 Nm).
25. Install the clutch slave cylinder and tighten the retaining nuts to 19 ft. lbs. (25 Nm).
26. Install the transmission assembly.
27. Install the exhaust system and lower the vehicle.
28. Connect the negative battery cable and check clutch for proper operation.

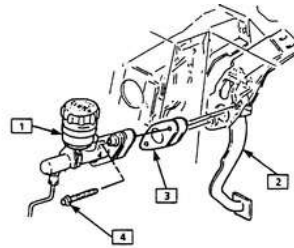
1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. Disconnect the negative battery cable.
2. For 1989–96 vehicles, disconnect the positive battery cable, then remove the battery from the vehicle.
3. If necessary, remove the ECM from its mounting bracket for access to the master cylinder.
4. Use a clean turkey baster or a suitable syringe to siphon as much fluid as possible from the master cylinder reservoir. Discard the fluid in the proper manner.
5. Remove the hush panel from under the dash.
6. Remove the pushrod retaining clip (if equipped), then disengage the pushrod from the clutch pedal.
7. Disconnect and plug the hydraulic line from the master cylinder.
8. Unfasten the master cylinder mounting bolts from the front of the dash, then remove the master cylinder from the vehicle.

Fig. 1: Exploded view of the master cylinder mounting



- | | |
|---|-------------------------------|
| 1 | CLUTCH MASTER CYLINDER |
| 2 | CLUTCH PEDAL |
| 3 | CLUTCH MASTER CYLINDER SPACER |
| 4 | CLUTCH MASTER CYLINDER BOLT |

To install:

9. Position the master cylinder to the front of the dash and secure with the mounting bolts. Tighten the bolts to 15–22 ft. lbs. (20–30 Nm) for 1984–88 vehicles or to 12 ft. lbs. (17 Nm) for 1989–96 vehicle.
10. Unplug and connect the hydraulic line to the master cylinder. Tighten the hydraulic line fitting, if equipped, to 13 ft. lbs. (18 Nm).
11. Attach the pushrod to the clutch pedal and secure with the retaining clip, if equipped.
12. Install the hush panel.
13. If removed, install the battery, then connect the positive battery cable.
14. Fill the master cylinder with the proper type of DOT 3 brake fluid from a fresh, sealed container.
15. Raise and safely support the vehicle, then bleed the system at the slave cylinder, as outlined later in this section.
16. Carefully lower the vehicle, then connect the negative battery cable.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

The bleeding procedure must be performed whenever any component of the hydraulic clutch system is disconnected, or the level of fluid has been allowed to fall low enough or air to be drawn into the master cylinder.

NOTE: This procedure will require the use of an assistant.

[1984–88 Vehicles](#)

1. Fill the master cylinder reservoir with the DOT 3 or equivalent fluid from a fresh, sealed container.

WARNING

NEVER fill the master cylinder with fluid that has already been bled from a system, as it may be aerated, contain too much moisture, or be contaminated.

2. Raise and safely support the vehicle.
3. Unfasten the slave cylinder attaching bolts.
4. Hold the slave cylinder at a 45° angle with the bleeder at the highest point. Have an assistant fully depress the clutch pedal, then open the bleeder.
5. Close the bleeder valve and release the clutch pedal.
6. Repeat Steps 4 and 5 until all air is evacuated from the system. Check and refill the master cylinder as necessary to prevent air from drawn through the master cylinder.

[1989–90 Vehicles](#)

1. Raise and support vehicle.
2. Remove the slave/actuator cylinder attaching stud nuts.
3. Remove the pushrod and slave/actuator cylinder from the clutch housing and the hydraulic line from the retaining clip.
4. Disconnect the hydraulic hose fitting from the slave/actuator cylinder.
5. Remove the bleed screw dust cap.
6. Remove the factory bleed screw from the slave/actuator cylinder using a fluted screw extractor. Install a new bleed screw.
7. Connect hydraulic hose fitting to the actuator, then install the clutch slave/actuator cylinder and nuts.
8. Install the hydraulic line into the retaining clip. Torque stud nuts to 19 ft. lbs. (25 Nm).
9. Lower vehicle.
10. Remove the ECM from the mounting bracket to gain access to the clutch master cylinder for filling.
11. Fill the master cylinder reservoir with the proper grade and type brake fluid.
12. To remove some of the air from the system prior to bleeding, proceed as follows:
 - A. Remove master cylinder cap and moisture barrier. Reinstall the cap.
 - B. Lightly stroke the clutch pedal to release the air in the system through the master cylinder.
 - C. Remove the master cylinder cap and reinstall moisture barrier.
 - D. Reinstall the cap.
13. Raise and support vehicle.
14. Fully depress the clutch pedal and open the bleeder screw. Close the bleed screw and release the clutch pedal.
15. Repeat Step 13 until all the air is expelled from the system.
16. Check the fluid reservoir and replenish, as required.
17. Tighten the bleeder screw until the screw breaks, requires for body clearance. Screw should break at approximately 10–14 ft. lbs. (14–19 Nm).
18. Install dust cap on the bleeder screw.
19. Lower the vehicle and install the ECM.

[1991–96 Models](#)

1. Disconnect the negative battery cable and remove the ECM from the mounting bracket to access the master cylinder for filling. Fill the master cylinder reservoir with the proper grade and type of fresh brake fluid or hydraulic clutch fluid.
2. Prior to bleeding the actuator, most of the air can be removed as follows:
 - A. Remove the master cylinder cap and moisture barrier.
 - B. Install the master cylinder cover.
 - C. Lightly stroke the clutch pedal to release trapped air through the master cylinder.
 - D. Remove the master cylinder cap and install the moisture barrier.
 - E. Install the master cylinder cap.
3. Raise and support the vehicle safely.
4. Remove the actuator cylinder attaching stud nuts.
5. Remove the pushrod and actuator cylinder from the clutch housing and the hydraulic line from the retaining clip.
6. Lower cylinder slightly for access and disconnect the hydraulic hose fitting from the actuator cylinder.
7. Remove the bleed screw dust cap.
8. Position a drain pan or attach a clear plastic hose.
9. Support the slave cylinder in a horizontal position, with the bleeder screw vertical.
10. Fully depress the clutch pedal and open the bleeder screw.
11. Close the bleed screw and release the clutch pedal.
12. Repeat Steps 11 and 12 until all the air is expelled from the system. Check the fluid reservoir and replenish, as required during the procedure. Be sure the reservoir is kept sufficiently full to prevent air from being drawn into the system.
13. Tighten the bleeder screw and install the dust cover.
14. Install the hydraulic line into the retaining clip, position the actuator cylinder and tighten the stud nuts to 19 ft. lbs. (25 Nm).
15. Lower the vehicle.
16. Install the ECM and connect the negative battery cable.

1990 Chevrolet CORVETTE

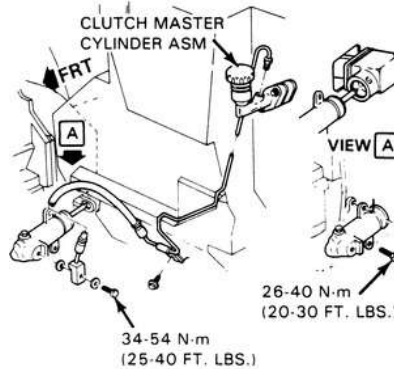
Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

[1984-88 Vehicles](#)

1. Disconnect the negative battery cable.
2. Raise and safely support the vehicle.
3. Disconnect and plug the hydraulic lines from the slave cylinder.
4. Unfasten the slave cylinder-to-clutch housing mounting bolts.
5. Remove the pushrod and slave cylinder from the vehicle.

Fig. 1: Exploded view of the clutch slave cylinder and related components — 1984-88 vehicles



To install:

6. Unplug and connect the fluid line to the slave cylinder.
7. Bleed the clutch hydraulic system, as outlined later in this section.
8. Lubricate the end of the slave cylinder with a suitable rubber lubricant.
9. Position the slave cylinder to the clutch housing and secure with the mounting bolts. Tighten the bolts to 25-40 ft. lbs. (34-54 Nm).
10. Carefully lower the vehicle.

[1989-96 Vehicles](#)

NOTE: On later model vehicles, the slave cylinder is referred to as the actuator cylinder.

1. Disconnect the negative battery cable.
2. Raise and safely support the vehicle.
3. Unfasten the clutch actuator cylinder retaining nuts.
4. Note the position of the hydraulic line, then detach the line from the retaining clip.
5. Remove the pushrod and clutch actuator cylinder from the clutch housing.

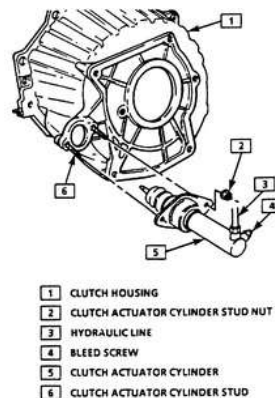
WARNING

Do not let the clutch actuator cylinder to hang by its fluid hose.

6. Disconnect and plug the fluid line fitting from the actuator cylinder.

To install:

Fig. 2: Exploded view of the clutch actuator (slave) cylinder — 1989-96 vehicles



7. Unplug and connect the fluid line to the actuator cylinder. Tighten the line fitting to 13 ft. lbs. (18 Nm).
8. Install the pushrod and clutch actuator cylinder. Secure with the mounting bolts and tighten to 18 ft. lbs. (25 Nm).
9. Place the hydraulic line into the retaining clip.
10. Carefully lower the vehicle, then bleed the clutch hydraulic system, as outlined later in this section.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

The purpose of the clutch is to disconnect and connect engine power at the transmission. A vehicle at rest requires a lot of engine torque to get all that weight moving. An internal combustion engine does not develop a high starting torque (unlike steam engines) so it must be allowed to operate without any load until it builds up enough torque to move the vehicle. To a point, torque increases with engine rpm. The clutch allows the engine to build up torque by physically disconnecting the engine from the transmission, relieving the engine of any load or resistance.

The transfer of engine power to the transmission (the load) must be smooth and gradual; if it weren't, drive line components would wear out or break quickly. This gradual power transfer is made possible by gradually releasing the clutch pedal. The clutch disc and pressure plate are the connecting link between the engine and transmission. When the clutch pedal is released, the disc and plate contact each other (the clutch is engaged) physically joining the engine and transmission. When the pedal is pushed in, the disc and plate separate (the clutch is disengaged) disconnecting the engine from the transmission.

Most clutch assemblies consists of the flywheel, the clutch disc, the clutch pressure plate, the throw out bearing and fork, the actuating linkage and the pedal. The flywheel and clutch pressure plate (driving members) are connected to the engine crankshaft and rotate with it. The clutch disc is located between the flywheel and pressure plate, and is splined to the transmission shaft. A driving member is one that is attached to the engine and transfers engine power to a driven member (clutch disc) on the transmission shaft. A driving member (pressure plate) rotates (drives) a driven member (clutch disc) on contact and, in so doing, turns the transmission shaft.

There is a circular diaphragm spring within the pressure plate cover (transmission side). In a relaxed state (when the clutch pedal is fully released) this spring is convex; that is, it is dished outward toward the transmission. Pushing in the clutch pedal actuates the attached linkage. Connected to the other end of this is the throw out fork, which hold the throw out bearing. When the clutch pedal is depressed, the clutch linkage pushes the fork and bearing forward to contact the diaphragm spring of the pressure plate. The outer edges of the spring are secured to the pressure plate and are pivoted on rings so that when the center of the spring is compressed by the throw out bearing, the outer edges bow outward and, by so doing, pull the pressure plate in the same direction—away from the clutch disc. This action separates the disc from the plate, disengaging the clutch and allowing the transmission to be shifted into another gear. A coil type clutch return spring attached to the clutch pedal arm permits full release of the pedal. Releasing the pedal pulls the throw out bearing away from the diaphragm spring resulting in a reversal of spring position. As bearing pressure is gradually released from the spring center, the outer edges of the spring bow outward, pushing the pressure plate into closer contact with the clutch disc. As the disc and plate move closer together, friction between the two increases and slippage is reduced until, when full spring pressure is applied (by fully releasing the pedal) the speed of the disc and plate are the same. This stops all slipping, creating a direct connection between the plate and disc which results in the transfer of power from the engine to the transmission. The clutch disc is now rotating with the pressure plate at engine speed and, because it is splined to the transmission shaft, the shaft now turns at the same engine speed.

The clutch is operating properly if:

1. It will stall the engine when released with the vehicle held stationary.
2. The shift lever can be moved freely between 1st and reverse gears when the vehicle is stationary and the clutch disengaged.