

NOTE

Service wear limits are given as a guideline for measuring components that are not new. For measurement specifications not given under SERVICE WEAR LIMITS, see NEW COMPONENTS.

Table 6-1. Primary Drive (Engine-to-transmission)

| ITEM | NEW COMPONENTS | SERVICE WEAR LIMITS |
|-----------------------------------|----------------|---------------------|
| Engine sprocket – number of teeth | 34 | N/A |
| Clutch sprocket – number of teeth | 57 | N/A |

Table 6-2. Final Drive (Transmission-to-rear Wheel)

| ITEM | NEW COMPONENTS | SERVICE WEAR LIMITS |
|---|----------------|----------------------|
| Transmission sprocket – number of teeth | 30 | Inspect at 15,000 mi |
| Rear wheel sprocket – number of teeth | 72 | Inspect at 15,000 mi |
| Secondary drive belt – number of teeth | 155 | Replace at 15,000 mi |

Table 6-3. Transmission

| ITEM | NEW COMPONENTS | SERVICE WEAR LIMITS |
|---|---------------------|---------------------|
| Primary drive / transmission lubricant capacity (approximately) | 32 fl. oz. (946 ml) | N/A |
| Overall gear ratios | | |
| First gear (low) | 12.74 | N/A |
| Second gear | 8.77 | N/A |
| Third gear | 6.79 | N/A |
| Fourth gear | 5.60 | N/A |
| Fifth gear (high) | 4.74 | N/A |

Table 6-4. Wet Clutch Multiple Disc-clutch Plate Thickness

| ITEM | NEW COMPONENTS | SERVICE WEAR LIMITS |
|------------------------------|--|---------------------------------|
| Friction plate (fiber) (in.) | 0.0866 + 0.0031 in. (2.200 + 0.079 mm) | N/A |
| Steel plate | 0.0629 + 0.0020 in. (1.598 + 0.051 mm) | N/A |
| Clutch pack (in.) | N/A | 0.661 in. (16.789 mm) (minimum) |

Table 6-5. Wet Clutch Multiple Disc-maximum Allowable Warpage

| ITEM | NEW COMPONENTS | SERVICE WEAR LIMITS |
|------------------------|----------------|-----------------------|
| Friction plate (fiber) | N/A | 0.0059 in. (0.150 mm) |
| Steel plate | N/A | 0.0059 in. (0.150 mm) |

TORQUE VALUES

| ITEM | TORQUE | | NOTES |
|--|-----------------------|----------------|---|
| Axle pinch fastener, rear | 40-45 ft-lbs | 54-61 Nm | page 6-24 |
| Axle, rear | 48-52 ft-lbs | 65-70 Nm | page 6-24 |
| Chin fairing fasteners | 36-48 in-lbs | 4-5 Nm | page 6-24, 6-25 |
| Clutch inspection cover fasteners | 84-108 in-lbs | 9.5-12.2 Nm | Tighten in a crosswise pattern, page 6-6,6-8 |
| Clutch mainshaft nut | 70-80 ft-lbs | 94.9-108.5 Nm | LOCTITE 262 , left hand threads, page 6-21 |
| Crankcase 5/16 in. fasteners | 15-19 ft-lbs | 20.3-25 Nm | LOCTITE 262 , page 1-49 |
| Engine sprocket nut | 190-210 ft-lbs | 257.6-284.7 Nm | page 6-20 |
| Footpeg mount, passenger | 25-28 ft-lbs | 34-38 Nm | page 6-24 |
| Footpeg mount, rider | 108-132 in-lbs | 12-15 Nm | page 6-24 |
| Front sprocket cover | 12-36 in-lbs | 1-4 Nm | page 6-24 |
| Idler pulley fasteners | 33-35 ft-lbs | 44.74-47.45 Nm | page 1-53 |
| Idler pulley wheel fastener | 20-23 ft-lbs | 27.1-31.2 Nm | page 6-25 |
| Lower belt guard | 12-36 in-lbs | 1-4 Nm | page 6-24 |
| Negative battery cable at battery terminal | 60-96 in-lbs | 6.8-10.9 Nm | page 6-6 |
| Primary cover bolts | 80-110 in-lbs | 9.0-12.4 Nm | Follow torque sequence, page 6- 6-6 |
| Primary cover magnetic drain plug | 14-30 ft-lbs | 19-54 Nm | page 6-6 |
| Rear axle pinch fastener | 40-45 ft-lbs | 54-61 Nm | page 1-53 |
| Rear axle | 48-52 ft-lbs | 65-70 Nm | page 1-53 |
| Retention collar screw | 13-17 ft-lbs | 18-23 Nm | LOCTITE 243 , page 1-50 |
| Shift lever pinch screw | 12-14 ft-lbs | 16.3-19.0 Nm | Page 6-6 |
| Transmission sprocket nut | See NOTES | See NOTES | LOCTITE 262, left hand threads, special torque turn method, page 1-52 |
| Transmission sprocket screws | 90-110 in-lbs | 10.2-12.4 Nm | Replace after 3 removals, page 1-52 |
| Upper belt guard to swingarm | 12-36 in-lbs | 1-4 Nm | page 6-24 |
| Upper belt guard | 12-36 in-lbs | 1-4 Nm | page 6-24 |

PRIMARY CHAIN

6.2

GENERAL

An opening between the primary drive and transmission compartments allows the same lubricant supply to lubricate moving parts in both areas.

Since the primary chain runs in lubricant, little service will be required other than checking lubricant level and chain tension. If, through hard usage, the primary chain does become worn, it must be replaced. Remove and install the chain following the procedure under [6.4 PRIMARY DRIVE/CLUTCH](#).

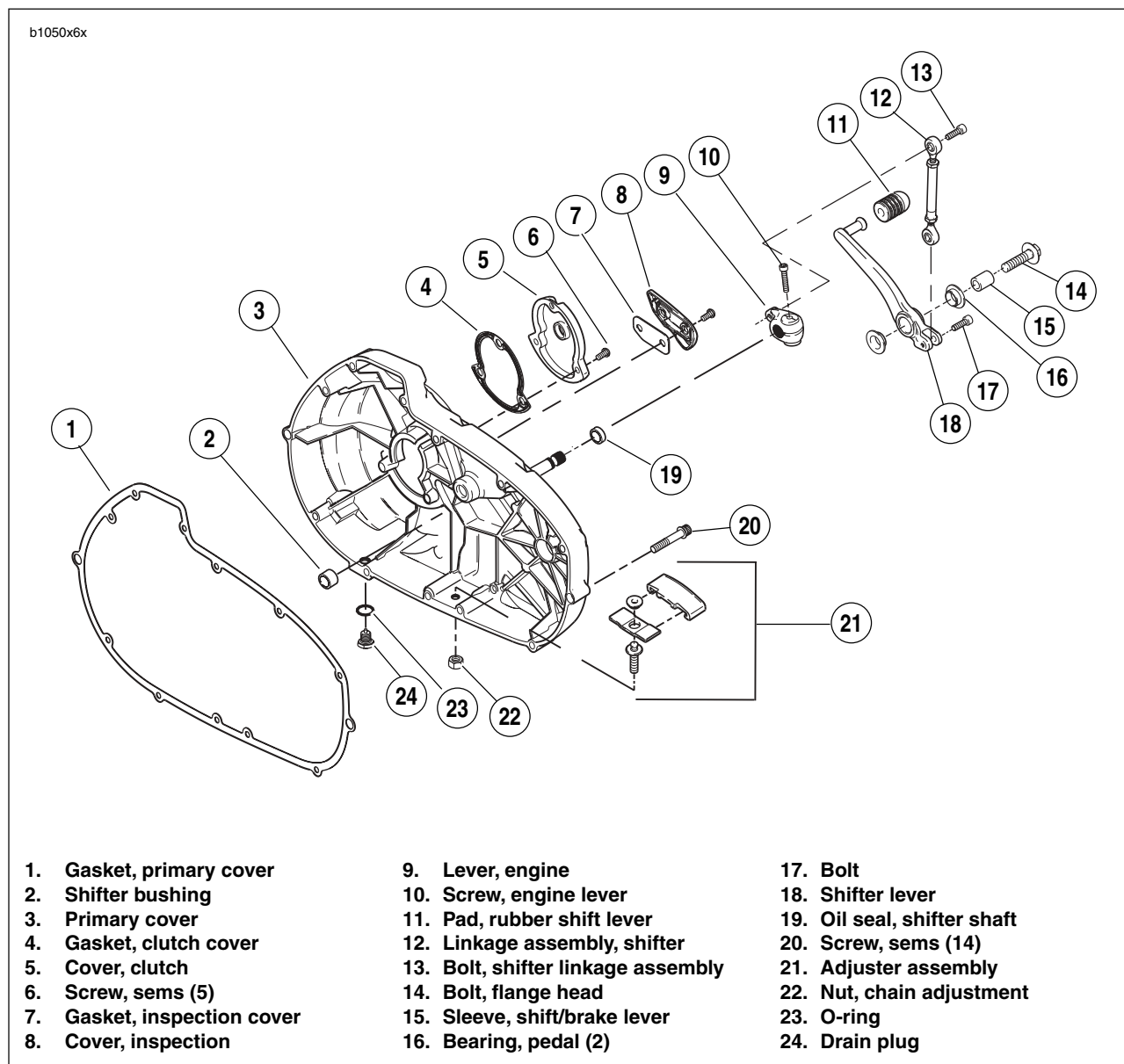


Figure 6-1. Primary Cover, Primary Chain Adjuster and Shifter Assembly

REMOVAL

Primary Cover

1. Remove seat. See [2.41 SEAT](#).

WARNING

To protect against shock and accidental start-up of vehicle, disconnect the negative battery cable before proceeding. Inadequate safety precautions could result in death or serious injury.

2. Disconnect negative battery cable from battery.
3. Remove chin fairing. See [2.34 CHIN FAIRING](#).

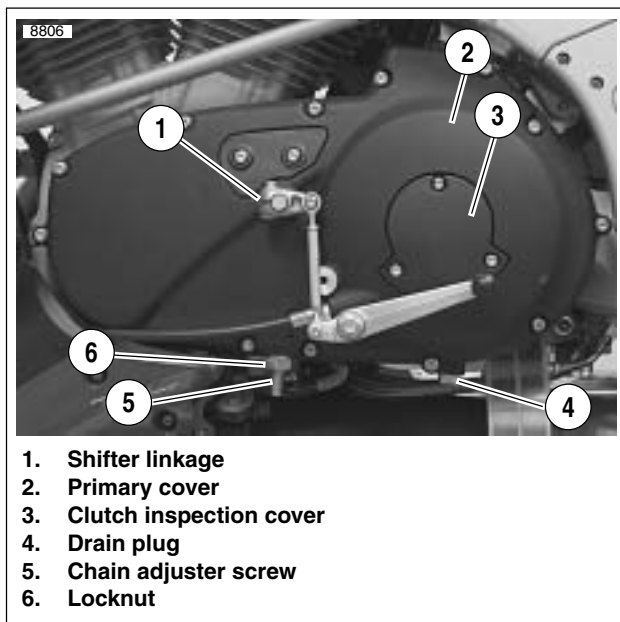


Figure 6-2. Removing Primary Cover

4. See [Figure 6-2](#). Place a drain pan under the engine/primary area. Remove drain plug (4) and drain lubricant from primary drive.
5. Remove shifter lever assembly and rubber washer. Do not scratch primary cover.

NOTE

It is recommended that the shifter shaft seal be replaced whenever the primary cover is removed.

6. Add freeplay to clutch cable. See [ADJUSTMENT](#) under [1.9 CLUTCH](#).
7. See [Figure 6-2](#). Loosen locknut (6). Turn chain adjuster screw (5) counterclockwise to remove tension on primary chain.
8. Remove three TORX screws with washers and clutch inspection cover.
9. See [Figure 6-2](#). Remove clutch inspection cover (3).

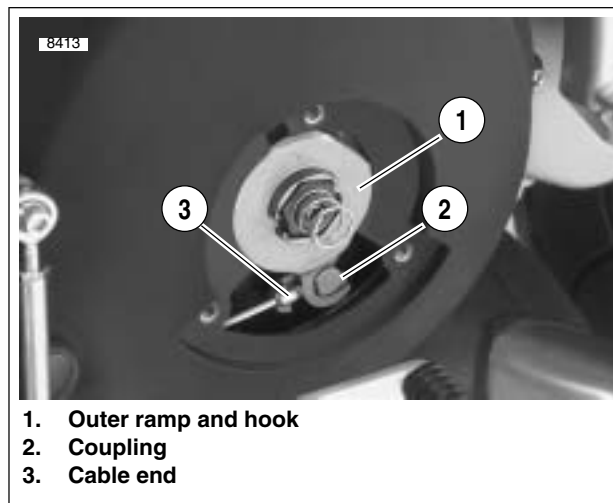


Figure 6-3. Clutch Release Mechanism

10. See [Figure 6-3](#). Remove the outer ramp and hook (1) from the cable end (3) and coupling (2). Remove cable end from slot in coupling. See [6.3 CLUTCH RELEASE MECHANISM](#)
11. Remove screws which secure primary cover. Remove cover and gasket.
12. Discard gasket.
13. Remove and discard shifter lever oil seal.
14. Clean all parts in a non-volatile cleaning solution or solvent.

WARNING

Low pressure compressed air can blow debris into your face and eyes. Always wear eye protection or a face shield when using pressurized air. Failure to take adequate safety precautions could result in death or serious injury.

15. Blow parts dry with low pressure compressed air.

Primary Chain Adjuster Inspection & Replacement

NOTE

The primary chain adjuster shoe should be inspected and measured for wear every 10,000 miles (16,000 km).

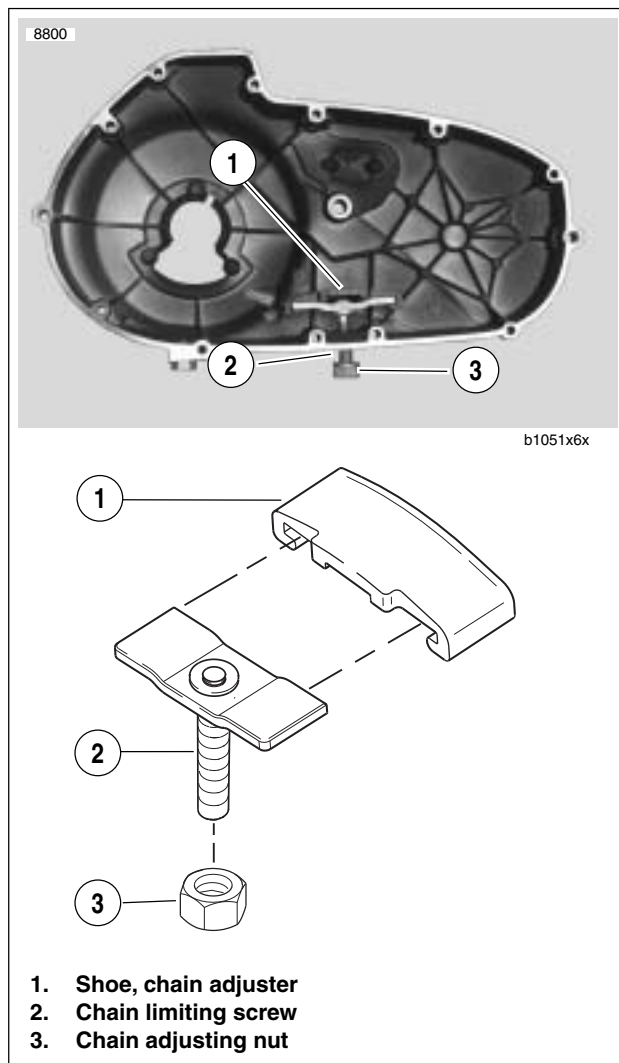


Figure 6-4. Primary Chain Adjuster

1. See [Figure 6-4](#). Remove chain adjusting nut from the chain limiting screw.
2. Turn the chain limiting screw clockwise until it can be removed from the inside of the primary cover along with the chain adjuster shoe.

NOTE

See [Figure 6-5](#). When measuring the shoe for wear it is necessary to measure from the top surface of the shoe to the bottom of the chain groove. If the measurement in any one of the four locations exceeds the listed specifications, the shoe should be replaced.

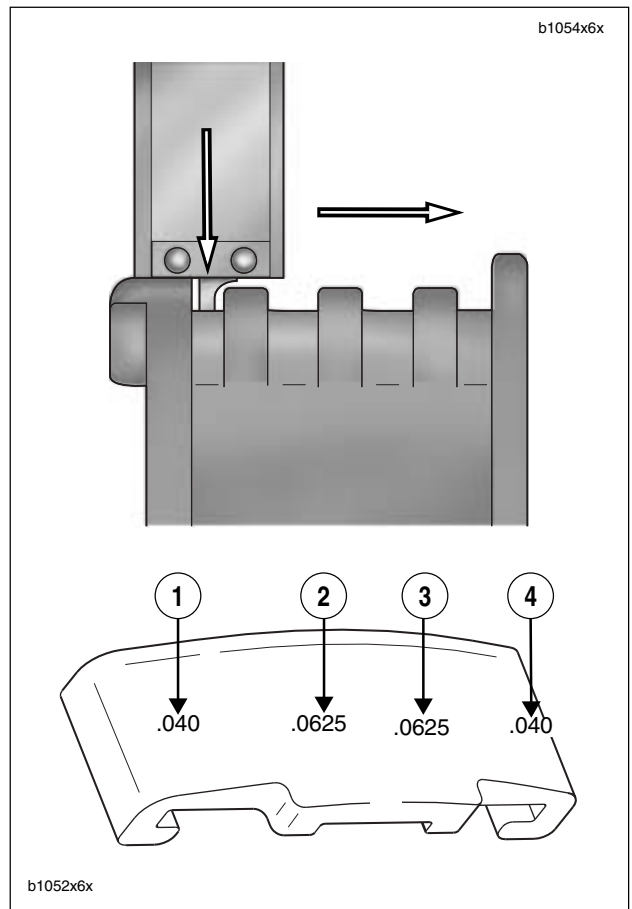


Figure 6-5. Measuring Chain Adjuster Shoe

3. See [Figure 6-4](#). Thread chain limiting screw (2), counter-clockwise, down through the bottom of the outer primary cover, on the inside, until it bottoms out.
4. Install the chain adjusting nut (3) but do not lock down.
5. Install primary cover. See [Primary Cover](#) in 6.2 PRIMARY CHAIN.

INSTALLATION

Primary Cover

1. Remove foreign material from magnetic drain plug. Install plug and tighten to 14-30 ft-lbs (19-54 Nm).
2. Wipe gasket surface clean. Install **new** gasket on primary cover.
3. Install primary cover and gasket onto left crankcase half using mounting bolts.

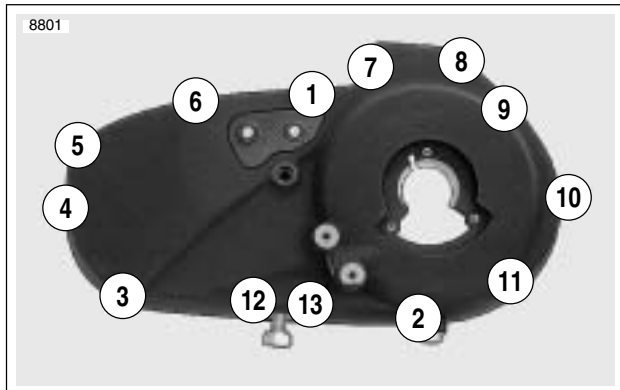


Figure 6-6. Primary Cover Tightening Sequence

4. See [Figure 6-6](#). Tighten bolts to 80-110 in-lbs (9-12.4 Nm) in sequence shown.
5. See [Figure 6-1](#). Install **new** shifter lever oil seal.

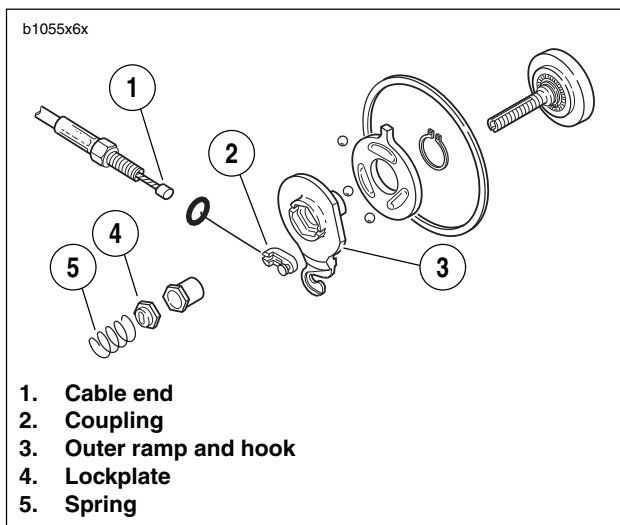
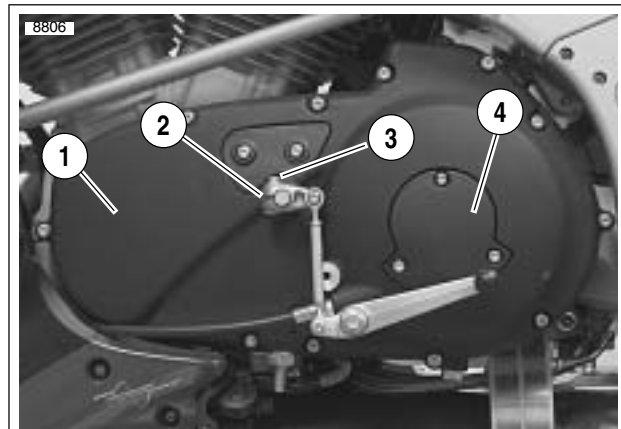


Figure 6-7. Clutch Release Mechanism

6. See [Figure 6-7](#). Fit coupling (2) over cable end (1) with rounded side inboard and the ramp connector button outboard. With retaining ring side of ramp assembly facing inward, place hook of ramp (3) around coupling button and rotate assembly counterclockwise until tang on inner ramp fits in slot of primary cover.
7. Thread nut on adjustment screw until slot of screw is accessible with a screwdriver. Fit nut hex into recess of outer ramp and turn adjustment screw counterclockwise.
8. Adjust clutch. See [ADJUSTMENT](#) under [1.9 CLUTCH](#).

9. Adjust primary chain tension. See [1.11 PRIMARY CHAIN](#).
10. Fill transmission to proper level with fresh lubricant. See [1.9 CLUTCH](#).



1. Primary cover
2. Lever, engine
3. Engine lever pinch screw
4. Clutch inspection cover

Figure 6-8. Installing Primary Cover

11. See [Figure 6-8](#). Install clutch inspection cover (4) with **new** gasket and three TORX screws with washers. Tighten screws in a crosswise pattern to 84-108 in-lbs (9.5-12.2 Nm).
12. Install rubber washer and shifter lever assembly (2).
13. Tighten engine lever pinch screw (3) to 12-14 ft-lbs 16.3-19.0 Nm)
14. Install left footpeg support bracket. See [2.30 FOOTPEG, HEEL GUARD AND MOUNT](#).
15. Install chin fairing. See [2.34 CHIN FAIRING](#).

WARNING

Always connect positive battery cable first. If the positive cable should contact ground with the negative cable installed, the resulting sparks may cause a battery explosion which could result in death or serious injury.

16. Connect negative battery cable to battery terminal. Tighten fastener to 60-96 in-lbs (6.8-10.9 Nm).

WARNING

Pull up on seat to verify that it is properly secured, front and rear. A loose seat may shift during vehicle operation and startle the rider, possibly causing loss of vehicle control resulting in death or serious injury.

17. Install seat. See [2.41 SEAT](#).

DISASSEMBLY

NOTE

For clutch adjustment procedure, See [1.9 CLUTCH](#).

1. Remove seat. See [2.41 SEAT](#).

WARNING

To protect against shock and accidental start-up of vehicle, disconnect the negative battery cable before proceeding. Inadequate safety precautions could result in death or serious injury.

2. Disconnect negative battery cable.
3. Slide rubber boot on clutch cable adjuster upward to expose adjuster mechanism. Loosen jam nut from adjuster. Turn adjuster to shorten cable housing until there is a large amount of freeplay at clutch hand lever. See [1.9 CLUTCH](#).
4. See [Figure 6-9](#). Remove three TORX screws with washers and clutch inspection cover.
5. Slide spring (4) with attached screw lockplate (5) from flats of adjusting screw.

6. Turn adjusting screw clockwise to release ramp and coupling mechanism (7). As the adjusting screw is turned, ramp assembly moves forward. Unscrew nut (6) from end of adjusting screw.
7. Remove hook of ramp from cable end coupling (10). Remove cable end from slot in coupling.
8. Remove and discard retaining ring from ramp assembly to separate inner and outer halves. Remove three balls from ramp sockets.

CLEANING AND INSPECTION

1. Thoroughly clean all parts in cleaning solvent.
2. See [Figure 6-9](#). Inspect three balls of release mechanism and ball socket surfaces of inner and outer ramps for wear, pitting, surface breakdown and other damage. Replace parts as necessary.
3. Check hub fit of inner and outer ramps. Replace ramps if excessively worn.
4. Check clutch cable for frayed or worn ends. Replace cable if damaged or worn.
5. Change or add transmission fluid if necessary. See [1.9 CLUTCH](#).

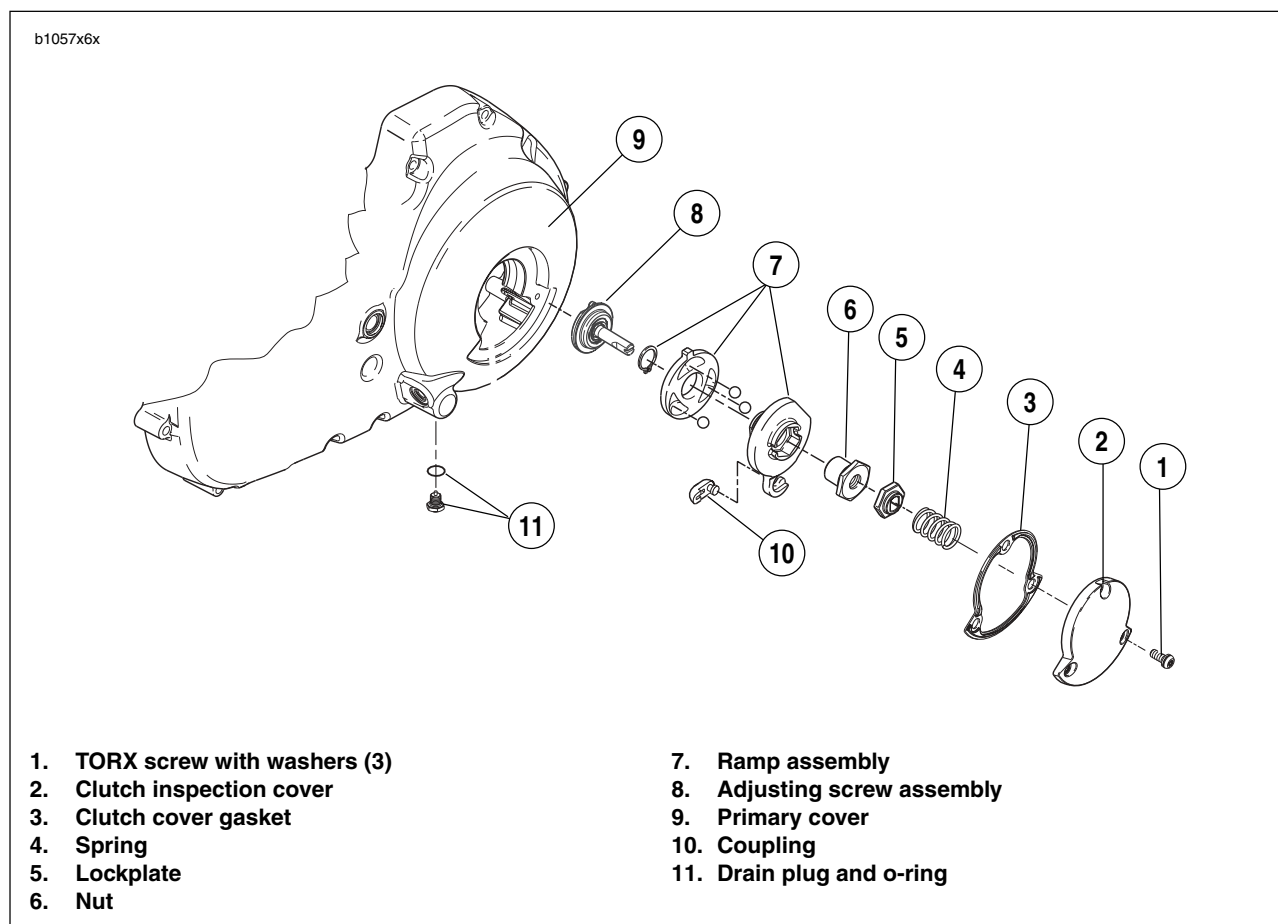


Figure 6-9. Clutch Release Mechanism

ASSEMBLY

1. See [Figure 6-10](#). Assemble inner and outer ramps.
 - a. Apply multi-purpose grease to balls and ramps.
 - b. Insert balls in sockets of outer ramp.
 - c. Install inner ramp on hub of outer ramp with tang 180° from hook of outer ramp.
 - d. Install **new** retaining ring in groove of outer ramp hub.
2. See [Figure 6-11](#). Install ramp assembly.
 - a. Fit coupling over cable end with rounded side inboard, the ramp connector button outboard.
 - b. With retaining ring side of ramp assembly facing inward, place hook of ramp around coupling button.
 - c. Rotate assembly counterclockwise until tang on inner ramp fits in slot of primary cover.
3. Secure assembly in place.
 - a. Thread nut on adjusting screw until slot of screw is accessible with a screwdriver.
 - b. Turn adjusting screw counterclockwise until resistance is felt.
 - c. Adjust clutch release mechanism. See [6.3 CLUTCH RELEASE MECHANISM](#).
 - d. Fit nut hex into recess of outer ramp.
 - e. Install clutch adjusting lockplate and spring.
4. Install clutch inspection cover and **new** gasket with three TORX screws with washers. Tighten in a crosswise pattern to 84-108 **in-lbs** (9.5-12.2 Nm).
5. Adjust clutch cable. See [1.9 CLUTCH](#).

WARNING

Always connect positive battery cable first. If the positive cable should contact ground with the negative cable installed, the resulting sparks may cause a battery explosion which could result in death or serious injury.

6. Connect negative battery cable to battery terminal. Tighten fastener to 60-96 **in-lbs** (6.8-10.9 Nm).
7. Install seat. See [2.41 SEAT](#).

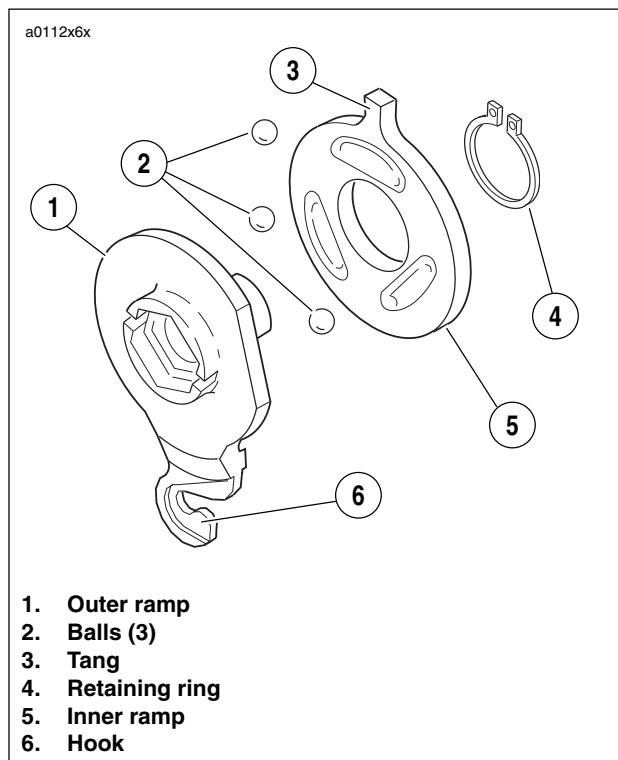


Figure 6-10. Inner & Outer Ramp

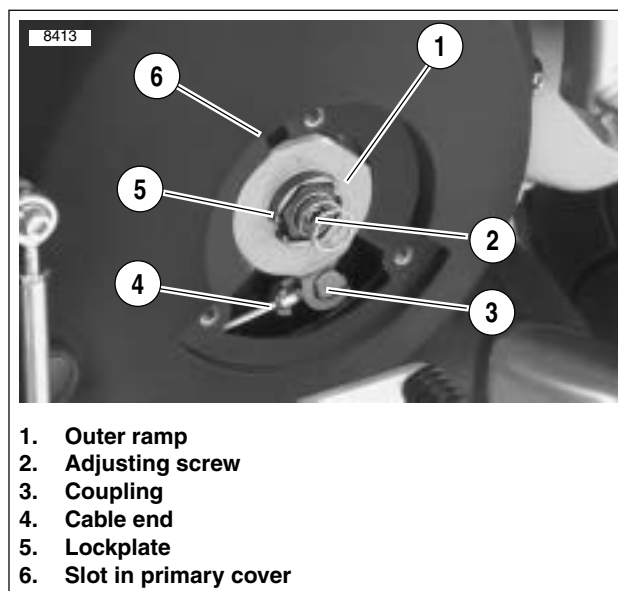


Figure 6-11. Nut and Outer Ramp

GENERAL

The purpose of the clutch is to smoothly disengage and engage the engine from the rear wheel for starting, stopping and shifting gears.

See [Figure 6-12](#). The clutch is a wet, multiple-disc clutch with steel plates and fiber (friction) plates stacked alternately in the clutch shell. The pack consists of seven fiber plates, seven steel plates, one narrow fiber plate, one damper spring and one damper spring seat. The fiber plates (clutch driving plates) are keyed to the clutch shell, which is driven by the engine through the primary chain. The steel plates (clutch driven plates) are keyed to the clutch hub, which drives the rear wheel through the transmission and secondary drive belt.

When the clutch is engaged (clutch lever released), the diaphragm spring applies strong inward force against the pressure plate. The pressure plate then presses the clutch plates together, allowing no slippage between the plates and caus-

ing the plates to turn as a single unit. The result is that the rotational force of the clutch shell is fully transmitted through the “locked” clutch plates to the clutch hub. As long as the transmission is set in a forward gear, power from the engine will be transmitted to the rear wheel.

When the clutch is disengaged (clutch lever pulled to left handlebar grip), the pressure plate is pulled outward (by clutch cable action) against the diaphragm spring, thereby compressing the diaphragm spring. With the pressure plate retracted, strong inward force no longer squeezes the clutch plates together. The fiber plates are now free to rotate at a different relative speed than that of the steel plates (i.e. – Slippage between the clutch plates occurs). The result is that the rotational force of the clutch shell is no longer fully transmitted through the “unlocked” clutch plates to the clutch hub. The engine is free to rotate at a different speed than the rear wheel.

Table 6-6. Troubleshooting

| SYMPTOM | CAUSE (CHECK IN FOLLOWING ORDER) | REMEDY |
|---------------|---|---|
| Clutch slips. | Incorrect clutch release adjustment. Worn clutch plates. | Check and adjust clutch release mechanism. Check service wear limits. Replace plates. |
| Clutch drags. | Incorrect clutch release adjustment. Worn clutch release ramps or balls. Warped clutch steel plates. Blade worn or damaged clutch gear splines. Overfilled primary. | Check and adjust clutch release mechanism. Replace release ramps and/or balls. Replace clutch steel plates. Replace clutch gear or hub as required. Drain lubricant to correct level. |

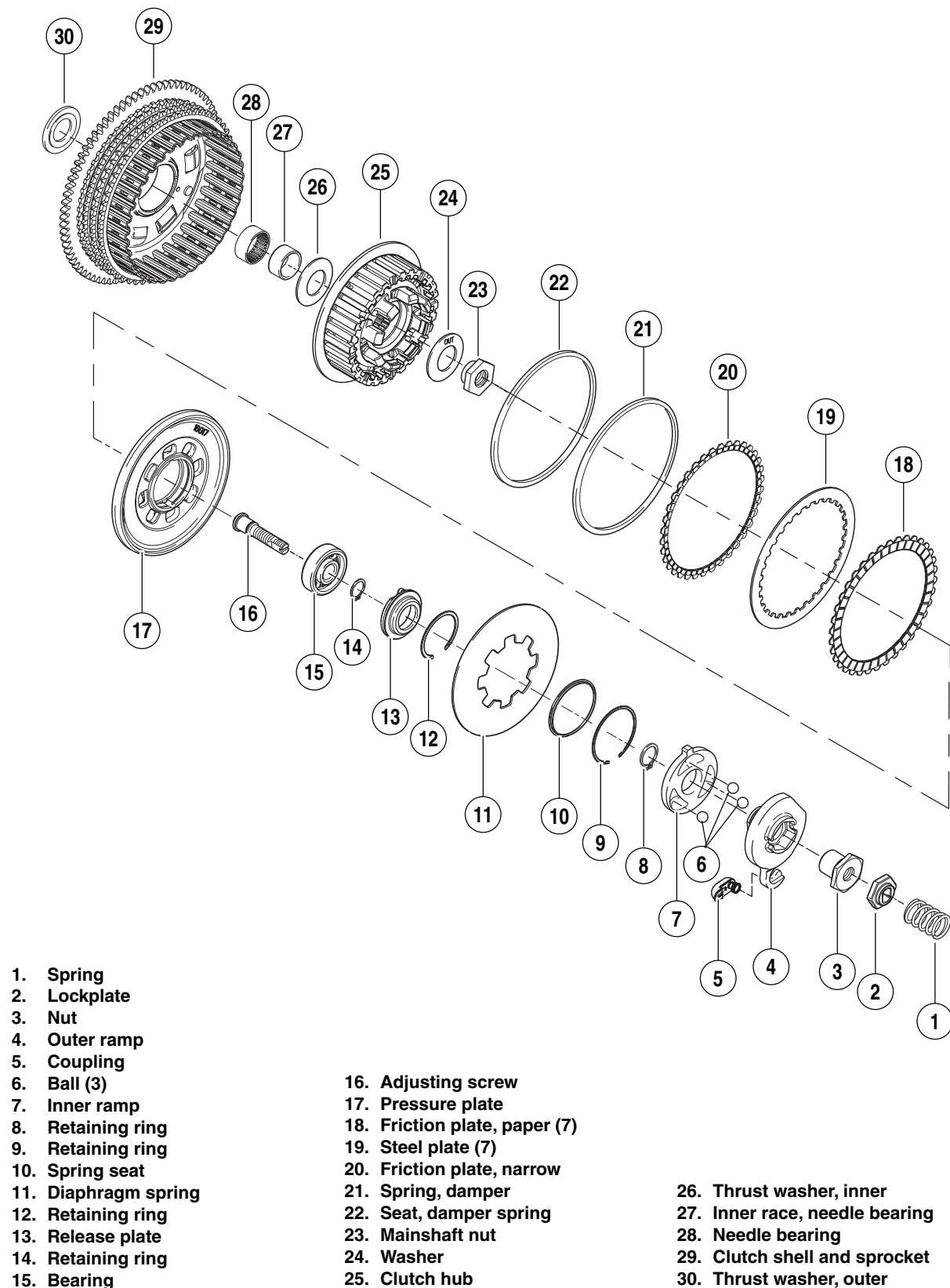


Figure 6-12. Clutch Assembly

REMOVAL/DISASSEMBLY

Clutch Pack

⚠ WARNING

To protect against shock and accidental start-up of vehicle, disconnect the negative battery cable before proceeding. Inadequate safety precautions could result in death or serious injury.

1. Remove primary cover. See 6.2 PRIMARY CHAIN.

⚠ WARNING

Do not attempt to disassemble the clutch without **SPRING COMPRESSING TOOL** (Part No. HD-38515-A), **CLUTCH SPRING FORCING SCREW** (Part No. HD-38515-91) and proper eye protection. Otherwise, the highly compressed diaphragm spring could fly out with great force which could result in death or serious injury.

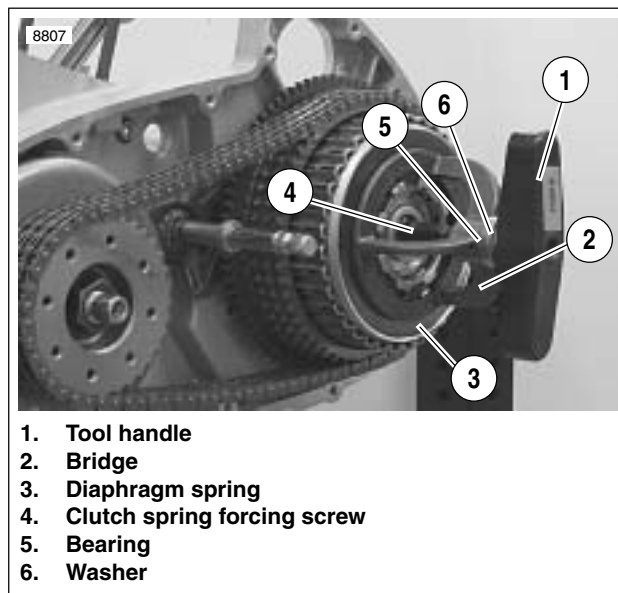


Figure 6-13. Compressing Clutch Diagram Spring

2. See Figure 6-13. Attach tools to compress clutch diaphragm spring.
 - a. Thread the CLUTCH SPRING FORCING SCREW (Part No. HD-38515-91) onto the clutch adjusting screw.
 - b. Place the bridge of SPRING COMPRESSING TOOL (Part No. HD-38515-A) against diaphragm spring.
 - c. Install bearing and washer.
 - d. Thread the tool handle onto end of forcing screw.

CAUTION

See Figure 6-14. Turn compressing tool handle only the amount required to release spring seat and remove snap ring. Excessive compression of diaphragm spring could damage clutch pressure plate.

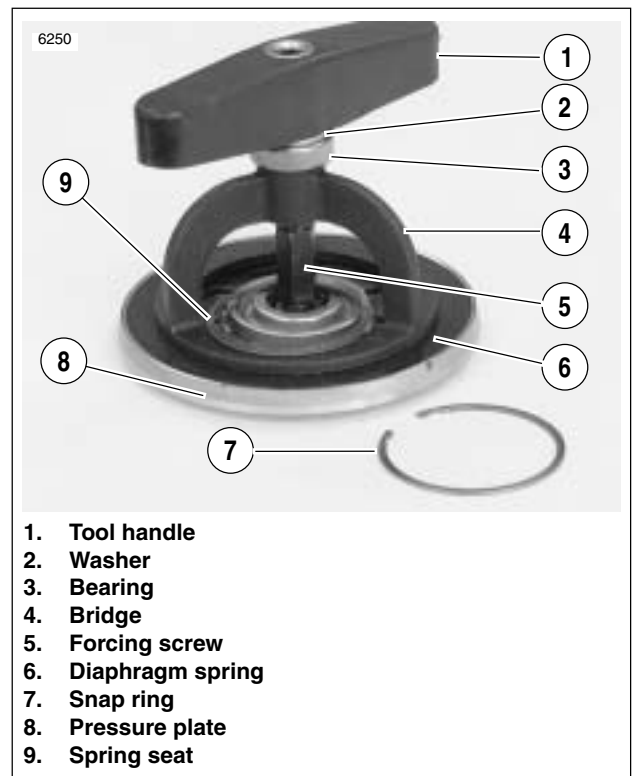


Figure 6-14. Pressure Plate Assembly

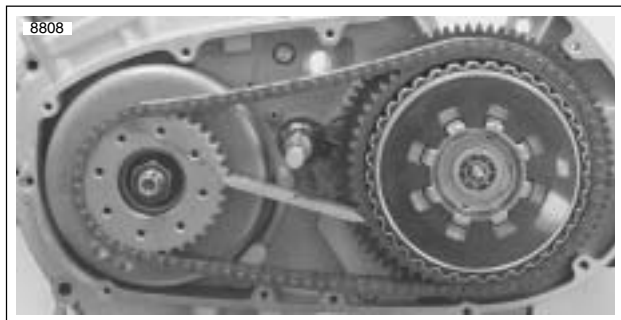
3. See Figure 6-14. Remove pressure plate assembly.
 - a. Place a wrench on the clutch spring forcing screw flats to prevent the forcing screw from turning.
 - b. Turn compressing tool handle clockwise until tool relieves pressure on retaining ring and spring seat. Remove and discard retaining ring.
 - c. Unseat spring seat from the groove in clutch hub prongs.
 - d. Remove pressure plate assembly.
4. See Figure 6-12. Remove the clutch pack from the hub/shell assembly. The pack consists of seven fiber plates, seven steel plates, one narrow fiber plate, one damper spring and one damper spring seat.

Primary Chain/Drive

WARNING

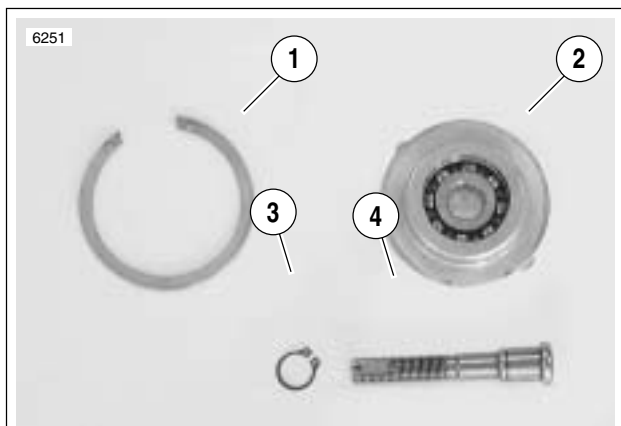
To protect against shock and accidental start-up of vehicle, disconnect the negative battery cable before proceeding. Inadequate safety precautions could result in death or serious injury.

1. Remove negative battery cable from battery.
2. Remove primary cover. See [6.2 PRIMARY CHAIN](#).



**Figure 6-15. Sprocket Locking Link Tool
(Part No. HD-38362)**

3. Loosen engine sprocket.
 - a. See [Figure 6-15](#). Install SPROCKET LOCKING LINK (Part No. HD-38362).
 - b. Remove the engine sprocket nut.
 - c. Loosen but do not remove engine sprocket. If necessary, use the slotted portion of TWO CLAW PULLER (Part No. HD-97292-61) and two bolts to loosen the engine sprocket.



1. Retaining ring
2. Bearing and release plate
3. Retaining ring
4. Adjusting screw

Figure 6-16. Adjusting Screw Assembly

4. See [Figure 6-16](#). Remove adjusting screw assembly.
 - a. Remove large retaining ring.
 - b. Remove adjusting screw assembly from pressure plate.

CAUTION

See [Figure 6-12](#). Mainshaft nut has left-hand threads. To prevent damage, turn nut clockwise to loosen and remove from mainshaft.

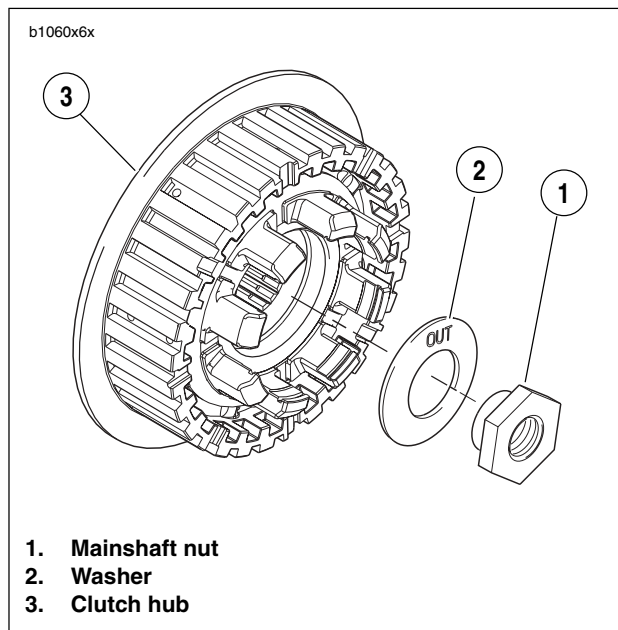


Figure 6-17. Mainshaft Nut and Washer

5. See [Figure 6-17](#). Remove mainshaft nut and washer.
6. Remove the clutch assembly, primary chain and engine sprocket as a unit.
7. Inspect primary chain and sprockets for damage or excessive wear.
8. Inspect stator and rotor. See [7.7 ALTERNATOR](#).
9. Replace damaged parts as necessary.

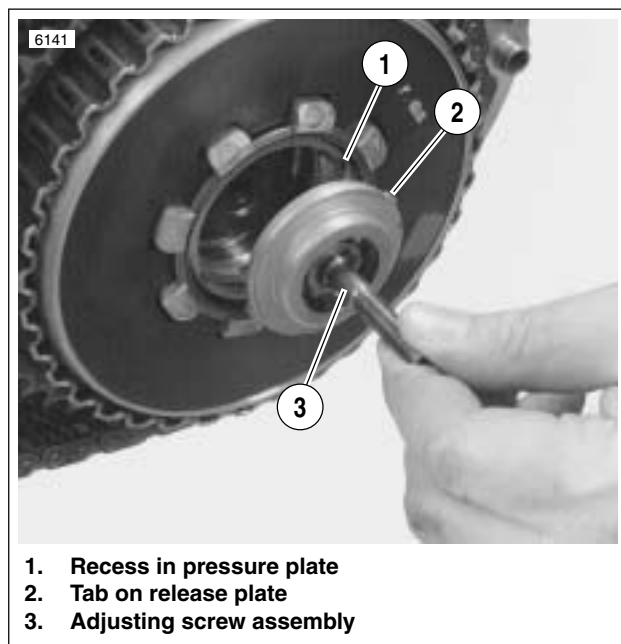


Figure 6-18. Aligning Tabs

5. Install adjusting screw assembly into pressure plate.
 - a. See [Figure 6-18](#). Align two tabs on perimeter of release plate with corresponding recesses in pressure plate.
 - b. See [Figure 6-16](#). Secure the adjusting screw assembly with large retaining ring.
6. Attach tools to compress clutch diaphragm spring. See Step 2 of CLUTCH PACK under [6.4 PRIMARY DRIVE/CLUTCH](#).
7. Remove pressure plate assembly.

CAUTION

The clutch hub and clutch shell are no longer pressed together. There are no retaining rings securing the clutch hub to the clutch shell. Once the pressure plate assembly has been removed the clutch hub will slide out of the clutch shell.

8. Remove clutch pack components. See Steps 3-4 of [CLUTCH PACK](#) under [6.4 PRIMARY DRIVE/CLUTCH](#).

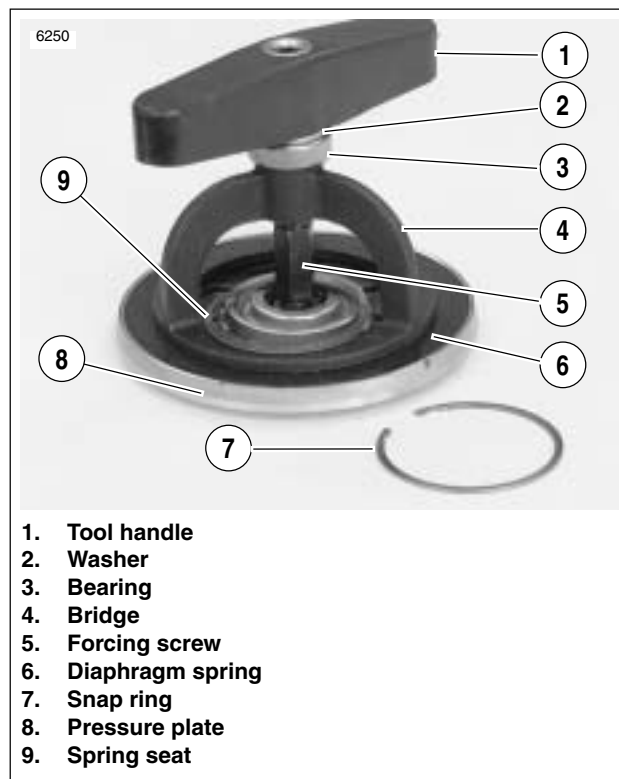


Figure 6-19. Pressure Plate Assembly

9. See [Figure 6-19](#). Disassemble pressure plate.
 - a. Place a wrench on the clutch spring forcing screw flats to prevent the forcing screw from turning.
 - b. Turn the compressing tool handle counterclockwise until the handle spins off.
 - c. Remove washer, bearing and bridge.
 - d. Remove clutch spring forcing screw from clutch adjusting screw.
 - e. Remove spring seat and diaphragm spring from pressure plate.

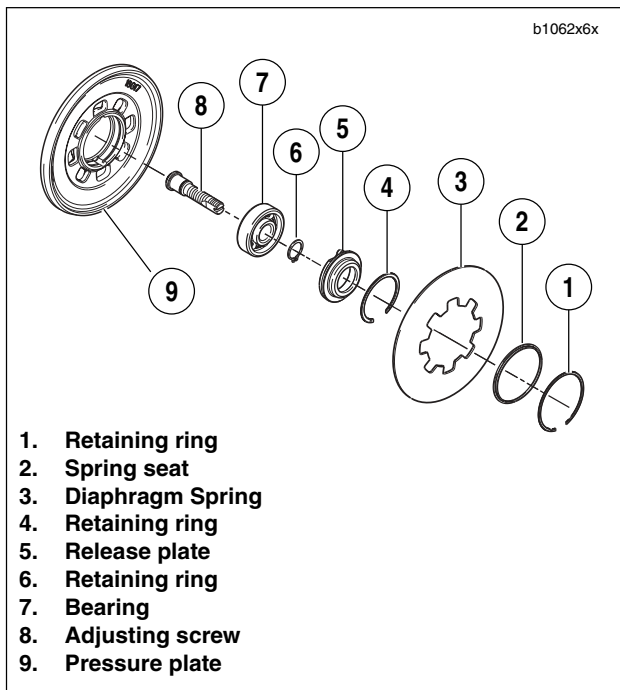


Figure 6-20. Adjusting Screw Assembly

10. See [Figure 6-20](#). Remove and disassemble adjusting screw assembly.
 - a. Remove large retaining ring.
 - b. Remove adjusting screw assembly from pressure plate.
 - c. If necessary, disassemble adjusting screw assembly. Remove and discard small retaining ring (6) and then separate the adjusting screw (8) from the bearing (7) and release plate (5). Remove bearing (7) from release plate (5).

11. Remove clutch hub from clutch shell for inspection.

NOTE

See [Figure 6-21](#). The clutch shell incorporates a compensating spring set and new style needle bearing.

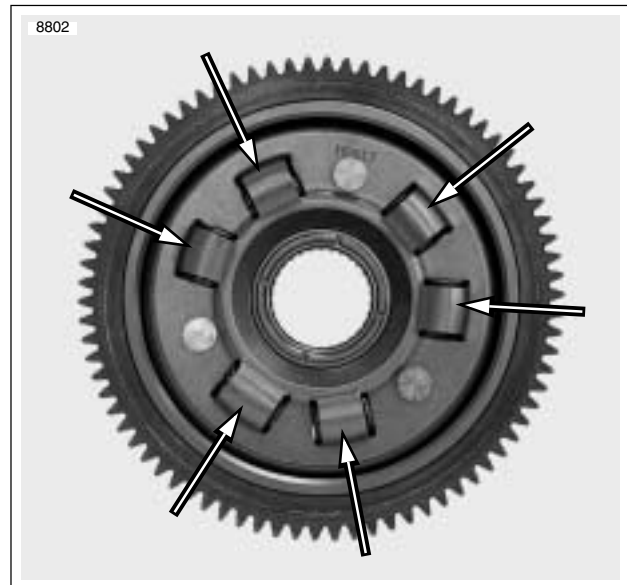


Figure 6-21. Compensating Spring Set

CLEANING AND INSPECTION

WARNING

Low pressure compressed air can blow debris into your face and eyes. Always wear eye protection or a face shield when using pressurized air. Failure to take adequate safety precautions could result in death or serious injury.

1. Wash all parts, except fiber (friction) plates and bearing, in cleaning solvent. Blow dry with compressed air. Examine the clutch components as follows:
 - a. Check all clutch plates for wear and discoloration.
 - b. Inspect each steel (drive) plate for grooves.
 - c. Place each steel plate on a flat surface. Using a feeler gauge, check for flatness in several places. Replace any plates that are damaged or are warped more than 0.006 in. (0.152 mm).
2. Inspect the damper spring for cracks or distortion. Install a **new** spring if either condition exists.



Figure 6-22. Measuring Friction Plates

3. See [Figure 6-22](#). Check fiber plates for thickness.
 - a. Wipe the lubricant from the eight fiber plates (7 regular and 1 narrow) and stack them on top of each other.
 - b. Measure the thickness of the eight stacked fiber plates with a dial caliper or micrometer. The minimum thickness must be 0.661 in. (16.789 mm).
 - c. If the thickness is less than specified, discard the fiber plates and steel plates. Install a **new** set of both friction and steel plates.

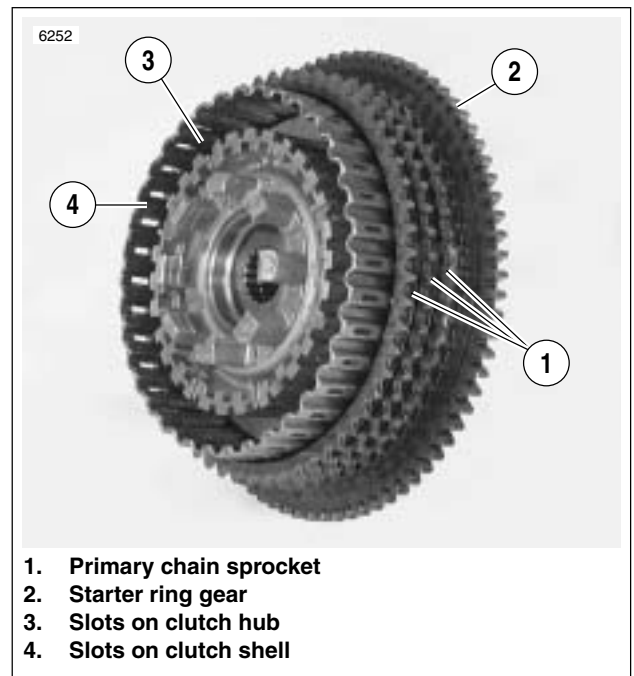


Figure 6-23. Checking Clutch Shell

4. See [Figure 6-23](#). Inspect primary chain sprocket and the starter ring gear on the clutch shell. If either sprocket or ring gear are badly worn or damaged, replace the clutch shell.
5. Inspect slots that mate with the clutch plates on both clutch shell and hub. If slots are worn or damaged, replace shell and/or hub.



Figure 6-24. New Needle Bearing in Clutch Shell

6. See [Figure 6-24](#). Inspect clutch shell needle bearing for smoothness. Rotate the clutch shell while holding the clutch hub. If bearing is rough or binds, it must be replaced. See [Replacing Clutch Shell Bearing](#).



Figure 6-25. Clutch Hub Bearing Race

7. See [Figure 6-25](#). Inspect clutch shell bearing inner race on the back side of the clutch hub for pitting and wear. If the inner race shows any of these signs the complete hub assembly must be replaced.

Replacing Clutch Shell Bearing

Removal

The XB9S clutch shell uses a caged needle bearing that corresponds to an inner race installed on the clutch hub.

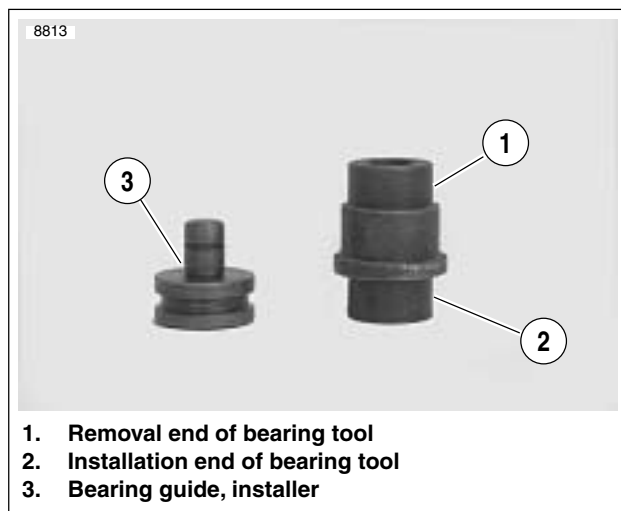


Figure 6-26. Clutch Shell Bearing Remover/Installer B-45926

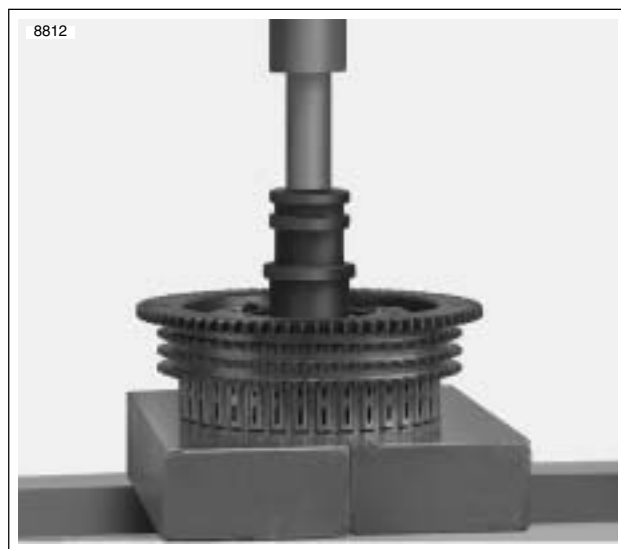


Figure 6-27. Removing Clutch Shell Needle Bearing

1. See [Figure 6-27](#). Place clutch shell on support blocks with sprocket side facing up.

NOTE

The CLUTCH SHELL BEARING REMOVER/INSTALLER (Part No. B-45926) is clearly marked for removal and installation purposes.

2. See [Figure 6-27](#). Insert removal end of tool into bearing assembly and remove bearing from clutch shell.
3. Continue with [CLEANING AND INSPECTION](#).

Installation

1. See [Figure 6-28](#). Remove bearing guide from end of CLUTCH SHELL BEARING REMOVER/INSTALLER (Part No. B-45926).

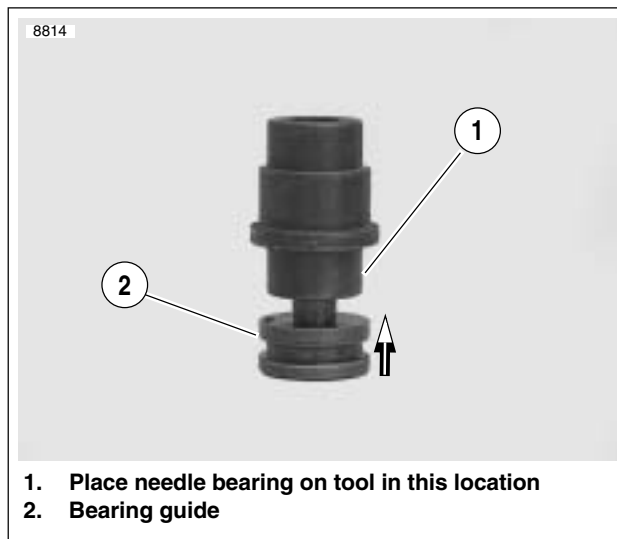


Figure 6-28. Bearing Installer

2. Place **new** needle bearing onto installer end of tool and insert the bearing guide to prevent the bearing from falling off during installation and to align bearing with clutch shell.

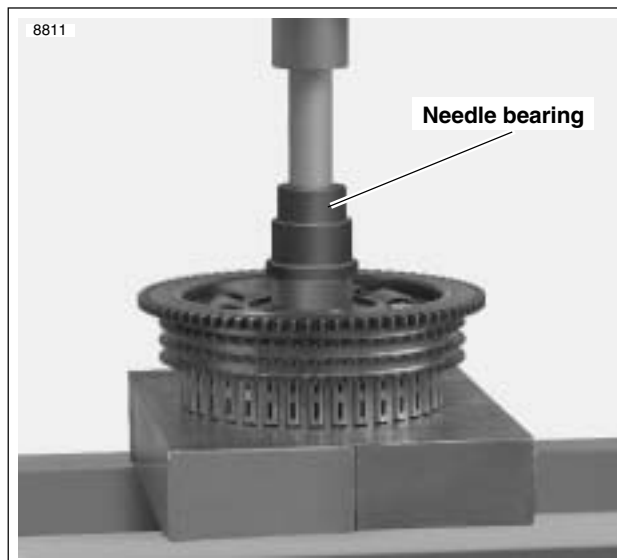


Figure 6-29. Installing Clutch Shell Needle Bearing Clutch Shell Bearing Remover/Installer B-45926

3. See [Figure 6-29](#). Place clutch shell on support blocks with sprocket side facing up.
4. Press bearing into clutch shell until tool bottoms on the shell. This will be the correct installed height.

ASSEMBLY

Clutch Pack

1. Submerge and soak all friction and steel plates in SPORT-TRANS FLUID for at least five minutes.

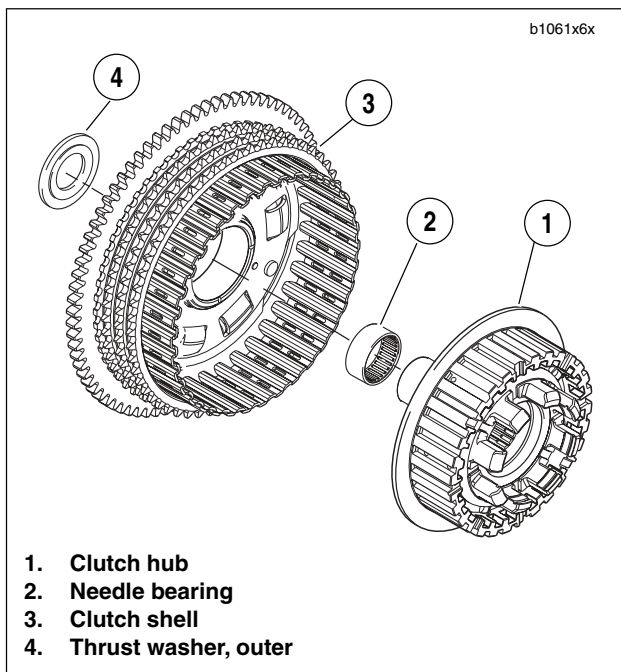


Figure 6-30. Clutch Hub and Shell Assembly

1. See [Figure 6-30](#). Assemble clutch hub and shell by sliding inboard end of clutch hub into shell bearing by hand. No tools are required for this operation.

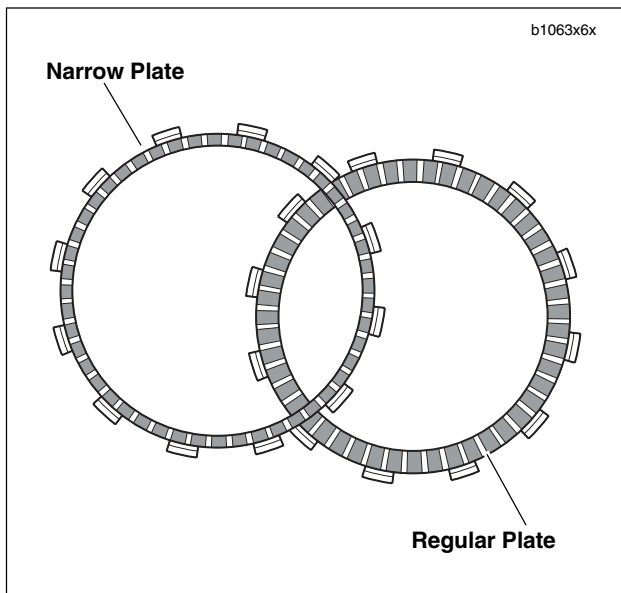


Figure 6-31. Friction Plates

2. See [Figure 6-31](#). Install the narrow friction plate on the clutch hub engaging tabs on plate with slots in clutch shell.

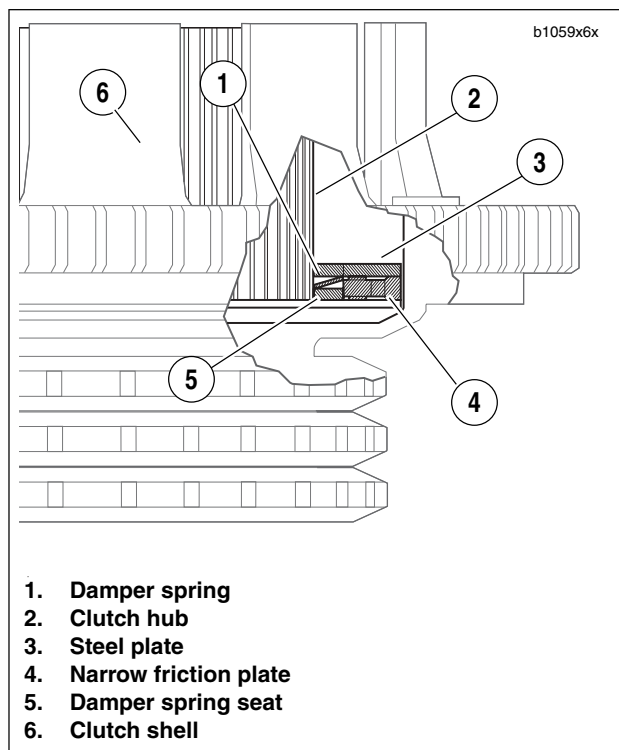


Figure 6-32. Clutch Pack Stack-Up (Cut-Away View)

3. See [Figure 6-32](#). Install damper spring seat (5) on clutch hub so that it seats inboard of narrow friction plate (4).
4. Install damper spring (1) on clutch hub with the concave side up (facing opposite damper spring seat).
5. Install a steel plate and then a friction plate on the clutch hub. Install six remaining sets in the same manner, alternating between steel plates and friction plates.

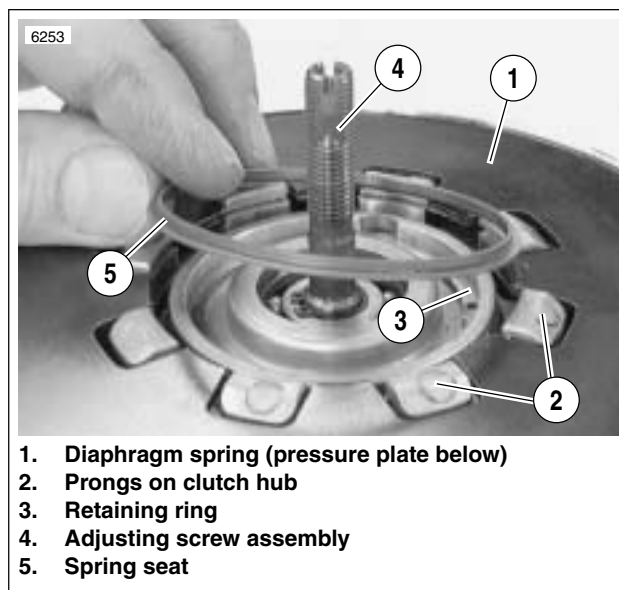


Figure 6-33. Spring Seat Installation

6. Place pressure plate, diaphragm spring, adjusting screw assembly with **new** retaining ring and spring seat onto clutch pack.
 - a. See [Figure 6-33](#). Align square openings of pressure plate and diaphragm spring so that the assembly can be installed over prongs on clutch hub.
 - b. Position spring seat with its larger outer diameter side toward diaphragm spring.

CAUTION

See [Figure 6-14](#). Turn compressing tool handle only the amount required to install spring seat and snap ring. Excessive compression of diaphragm spring could damage clutch pressure plate.



Figure 6-34. Pressure Plate Assembly

- c. See [Figure 6-34](#). Install compressing tool onto clutch hub against diaphragm spring.
- d. Place a wrench on the clutch spring forcing screw flats to prevent the forcing screw from turning.
- e. Turn compressing tool handle clockwise until diaphragm spring compresses just enough to install **new** retaining ring into the groove in clutch hub prongs.
- f. With retaining ring fully seated in groove of clutch hub, carefully loosen and remove compression tool.

NOTE

When the compressing tool is removed, the diaphragm spring will move outward forcing the spring seat up into the inside of the retaining ring. The spring seat provides an operating surface for the diaphragm spring at the same time preventing the retaining ring from coming out during operation.

INSTALLATION

NOTE

If clutch pack replacement was the only service work performed, start with Step 5.

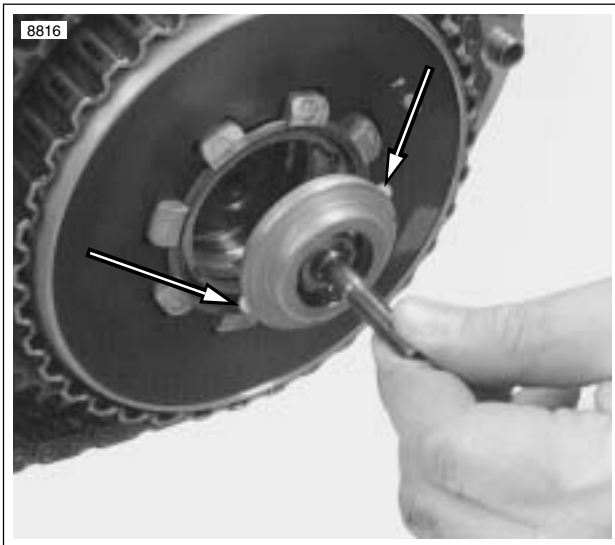


Figure 6-35. Adjusting Screw Assembly Aligning Tabs

1. See [Figure 6-35](#). Remove adjusting screw assembly in order to install mainshaft nut and washer.
2. Install the engine sprocket, clutch assembly and primary chain as a unit into primary chaincase.

NOTE

Prior to installing engine sprocket nut and the clutch hub nut, the threads on the sprocket shaft, sprocket nut, mainshaft and clutch hub nut must be thoroughly cleaned to remove any oil that might contaminate and interfere with the locking agent.

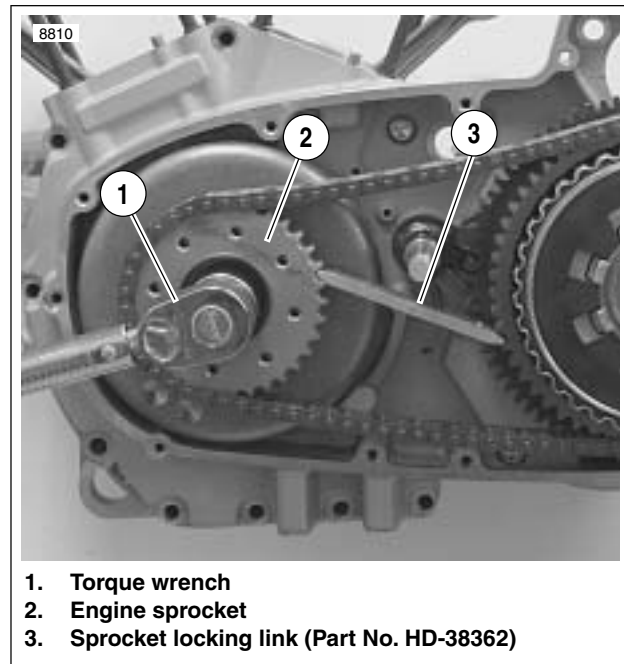


Figure 6-36. Sprocket Locking Link

3. See [Figure 6-36](#). Install the engine sprocket nut.
 - a. Install SPROCKET LOCKING LINK (Part No. HD-38362).
 - b. Apply two or three drops of LOCTITE 262 (red) onto threads of sprocket shaft.
 - c. Install engine sprocket nut. Tighten to 190-210 ft-lbs (257.6-284.7 Nm).

CAUTION

See [Figure 6-37](#). Washer must be installed with the word “out” facing the mainshaft nut or transmission may be damaged.

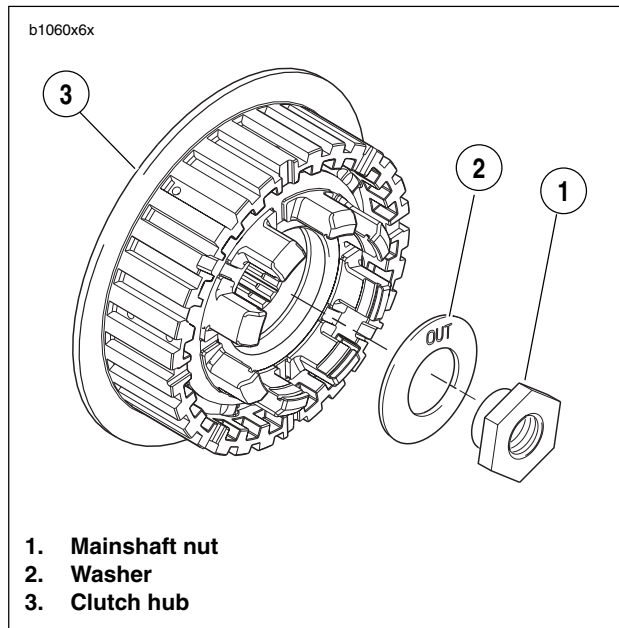


Figure 6-37. Mainshaft Nut and Washer

4. See [Figure 6-37](#). Install mainshaft nut and washer.
 - a. Apply two or three drops of LOCTITE 262 (red) onto threads on end of mainshaft.
 - b. Place washer on mainshaft with the word “out” facing away from clutch hub.
 - c. Install nut (**left-hand threads**). Tighten to 70-80 ft-lbs (94.9-108.5 Nm).
5. Remove SPROCKET LOCKING LINK.

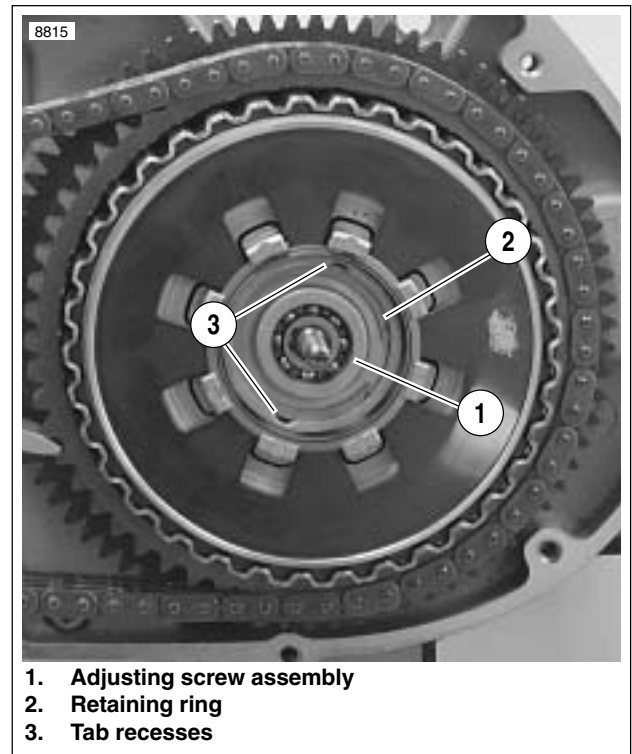


Figure 6-38. Clutch Adjusting Screw Assembly and Retaining Ring

6. Install adjusting screw assembly into pressure plate.
 - a. See [Figure 6-38](#). Align two tabs on perimeter of release plate with corresponding recesses (3) in pressure plate.
 - b. Secure the adjusting screw assembly with **new** retaining ring.
7. Install primary cover. See [6.2 PRIMARY CHAIN](#).
8. Add SPORT-TRANS FLUID. See [1.9 CLUTCH](#).

⚠ WARNING

Always connect positive battery cable first. If the positive cable should contact ground with the negative cable installed, the resulting sparks may cause a battery explosion which could result in death or serious injury.

9. Connect negative battery cable to battery terminal. Tighten fastener to 60-96 **in-lbs** (6.8-10.9 Nm).

⚠ WARNING

Pull up on seat to verify that it is properly secured, front and rear. A loose seat may shift during vehicle operation and startle the rider, possibly causing loss of vehicle control resulting in death or serious injury.

10. Install seat. See [2.41 SEAT](#).

GENERAL

There is no drive belt adjustment required for the Buell XB. The system utilizes a fixed idler pulley that maintains the desired tension throughout suspension travel and life of the belt.

INSPECTION & CLEANING

See [1.10 DRIVE BELT](#).

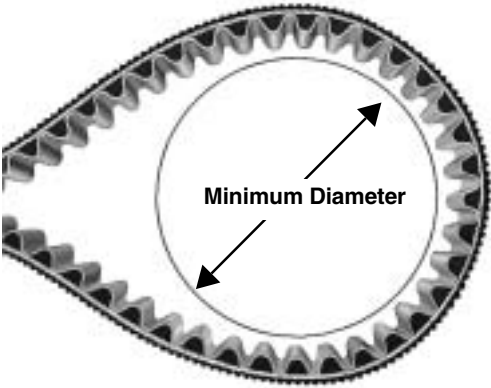
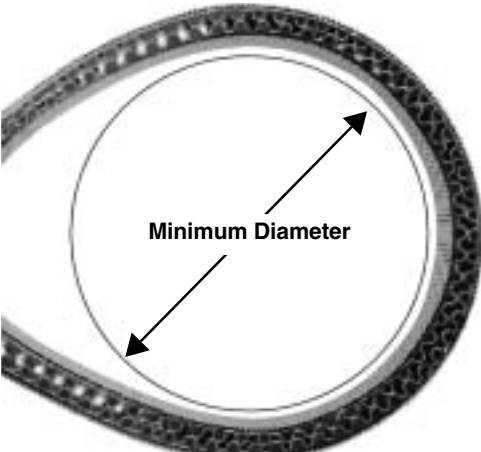






| | |
|---|---|
| <p>Forward bend must not be less than 5 in. (127 mm). A</p>  | <p>Reverse bend must not be less than 10 in. (254 mm). B</p>  |
| <p> Do not twist. C</p>  | <p> Do not crimp, pinch or kink. D</p>  |
| <p>CAUTION</p> <p>Mishandling drive belt will result in premature failure. For maximum strength, integrity and longevity, avoid over bending (A and B), twisting (C), crimping, pinching or kinking (D), and prying (E).</p> | <p> Do not pry. E</p>  |

Figure 6-39. Proper Drive Belt Handling

DRIVE BELT REMOVAL

1. Place a scissor jack under jacking point and raise rear wheel off ground. For location of jacking point see [Figure 2-99](#).
2. Remove right side rider footpeg support bracket. See [2.30 FOOTPEG, HEEL GUARD AND MOUNT](#).
3. Remove right passenger footpeg support bracket.

4. Remove chin fairing fasteners. See [2.34 CHIN FAIRING](#).
5. See [Figure 1-40](#). Remove front sprocket cover (5) by removing fasteners. See [2.31 SPROCKET COVER](#).

NOTE

Front belt guard (4) will dangle but can not be removed at this time.

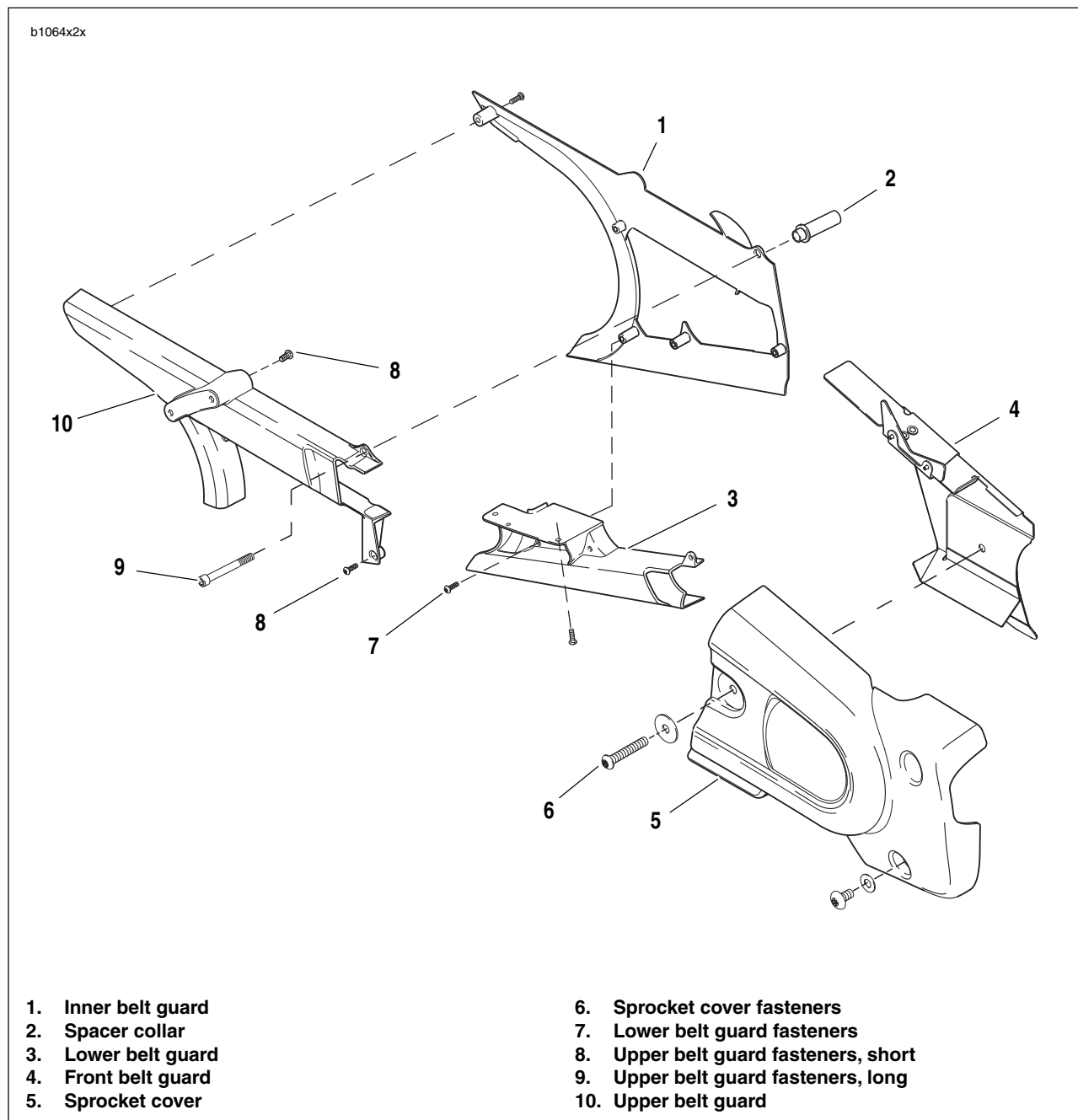


Figure 1-40. Belt Guard Assembly

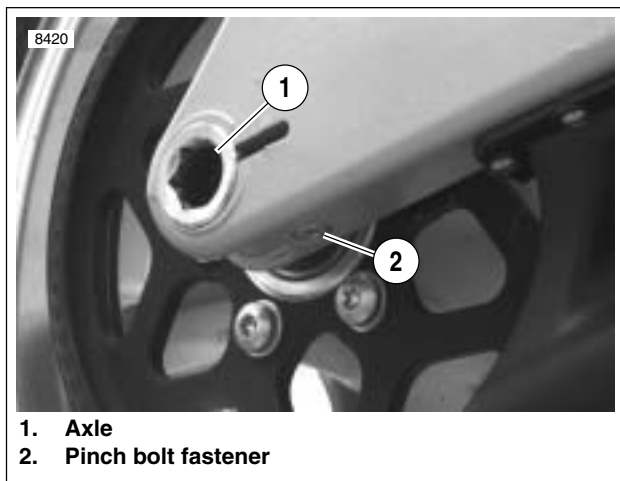


Figure 1-41. Rear Wheel Mounting, Right Side

6. See [Figure 1-41](#). Loosen rear axle pinch fastener (2).
7. Loosen rear axle (1) approximately 15 rotations to allow partial tension to be removed from rear drive system.
8. Remove idler pulley assembly by removing nuts and washers. See [IDLER PULLEY REMOVAL](#) in [6.5 DRIVE BELT SYSTEM](#).
9. See [Figure 1-40](#). Remove lower belt guard (3) by removing fasteners (6).
10. Remove upper belt guard (10) by removing fasteners (7).

NOTE

The upper belt guard is attached to the swingarm brace and can not be removed from vehicle at this time.

11. Remove swingarm brace. See [2.19 SWINGARM AND BRACE](#).
 - a. Remove fastener (8) and spacer collar (2) between upper belt guard (10), inner belt guard (1) and swingarm brace.
 - b. Allow inner belt guard (1) to drape.

NOTE

Inner belt guard does not have to be removed to remove belt or rear wheel.

12. Remove upper belt guard (10) by removing fasteners (9) from swingarm brace.

CAUTION

When removing or installing belt, do not bend or twist belt, partially slide belt onto sprocket and "roll" wheel or belt damage will occur.

13. Slide belt from sprocket and remove.

DRIVE BELT INSTALLATION

CAUTION

When removing or installing belt, do not bend or twist belt, partially slide belt onto sprocket and "roll" wheel or belt damage will occur.

1. Slide belt onto sprocket.
2. See [Figure 1-40](#). Install upper belt guard (10) to swingarm brace tightening fasteners (9) to 12-36 **in-lbs** (1-4 Nm).
3. Loosely install swingarm brace. See [2.19 SWINGARM AND BRACE](#).
 - a. Position the inner belt guard (1) and upper belt guard (10) onto swingarm.
 - b. Install fastener (8) and spacer collar (2) between upper belt guard (10), inner belt guard (1) and swingarm brace.
4. Install upper belt guard (10) and tighten fasteners (7) to 12-36 **in-lbs** (1-4 Nm).
5. Tighten swingarm brace fasteners to 25-27 ft-lbs (34-37 Nm).
6. Install lower belt guard (3) and tighten fasteners (6) to 12-36 **in-lbs** (1-4 Nm).
7. Install idler pulley assembly tightening washers and nuts to 33-35 ft-lbs (45-47 Nm). See [IDLER PULLEY INSTALLATION](#) in [6.5 DRIVE BELT SYSTEM](#).
8. See [Figure 1-41](#). Tighten rear axle (1) to 48-52 ft-lbs (65-70 Nm).
9. Tighten rear axle pinch fastener (2) to 40-45 ft-lbs (54-61 Nm).
10. Rotate rear wheel to ensure the belt does not make visible or audible contact. It may be necessary to loosen belt guard(s) to adjust for proper clearance.
11. See [Figure 1-40](#). Install front sprocket cover (5) by tightening fasteners to 12-36 **in-lbs** (1-4 Nm). See [2.31 SPROCKET COVER](#).
12. Install chin fairing fasteners and tighten to 36-48 **in-lbs** (4-5 Nm). See [2.34 CHIN FAIRING](#).
13. Install right side rider footpeg mount and tighten fasteners to 108-132 **in-lbs** (12-15 Nm). See [2.30 FOOTPEG, HEEL GUARD AND MOUNT](#).
14. Install right passenger footpeg mount. use LOCTITE 272 and tighten fasteners to 25-28 ft-lbs (34-38 Nm).
15. Remove scissor jack from motorcycle.

IDLER PULLEY REMOVAL

1. See [Figure 1-42](#). Loosen rear axle pinch fastener (2).
2. Unthread axle approximately 15 rotations to release tension from drive belt.
3. Remove chin fairing fasteners. See [2.34 CHIN FAIRING](#).
4. Remove front sprocket cover. See [2.31 SPROCKET COVER](#).
5. See [Figure 1-43](#). Remove idler pulley bracket nuts and washers (5) from studs (3).
6. Slide idler pulley bracket (4) off studs (3).

7. Inspect pulley by spinning wheel (1) and checking for wheel bearing wear.
8. If pulley wheel needs replacement, remove fastener (6), washer and nut (2) from idler pulley bracket (4) and discard wheel. Replace with **new** pulley wheel (1).

NOTE

The pulley wheel bearings can not be replaced separately.

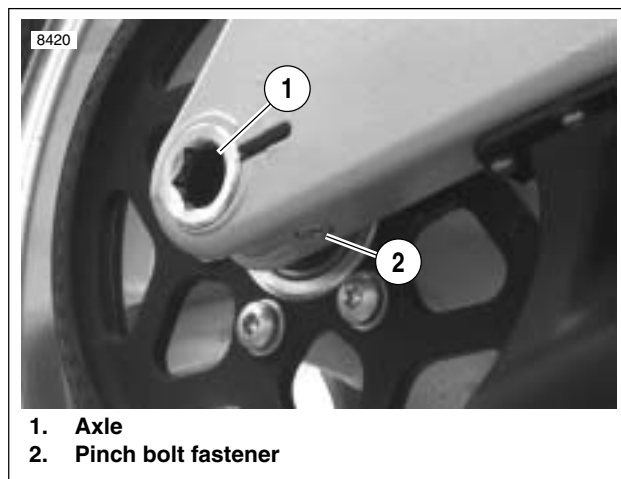


Figure 1-42. Rear Wheel Mounting, Right Side

IDLER PULLEY INSTALLATION

1. See [Figure 1-43](#). Install new or existing pulley wheel (1), if removed, and tighten washer and nut (2) wheel fastener (6) to 20-23 ft-lbs (27.1-31.2 Nm).
2. Slide idler pulley bracket (4), washer and nuts (5) on to studs (3) and tighten to 33-35 ft-lbs (45-47 Nm).
3. Install front sprocket cover. See [2.31 SPROCKET COVER](#).
4. Install chin fairing fasteners and tighten to 36-48 in-lbs (4-5 Nm). See [2.34 CHIN FAIRING](#).

CAUTION

Never tighten rear axle with swingarm brace removed.

5. See [Figure 1-42](#). Tighten rear axle to 48-52 ft-lbs (65-70 Nm).
6. Tighten rear axle pinch fastener (2) to 40-45 ft-lbs (54-61 Nm).

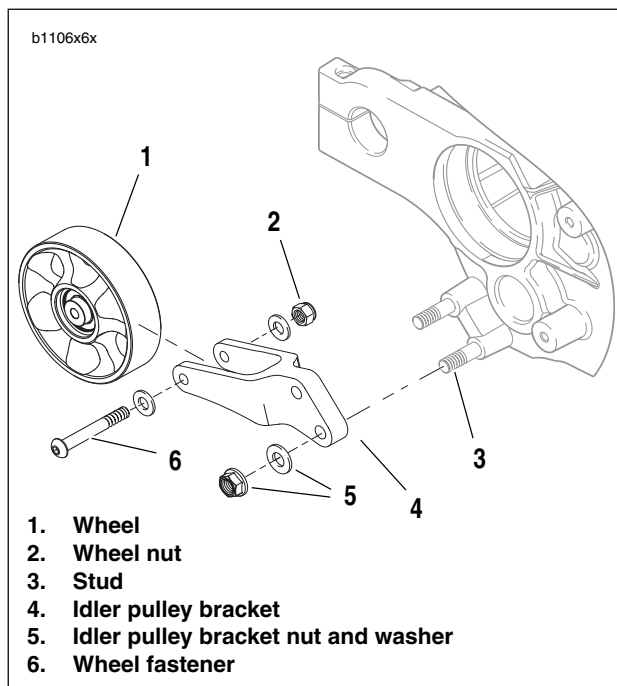


Figure 1-43. Idler Pulley Assembly

NOTES
