

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.

| ITEM | NEW COMPONENTS | Service Wear Limits |
|---|---------------------|----------------------|
| Primary Drive (Engine-to-Transmission) | | |
| Engine sprocket – number of teeth | 35 | N/A |
| Clutch sprocket – number of teeth | 56 | N/A |
| Ratio* | 1.60:1 | N/A |
| Final Drive (Transmission-to-Rear Wheel) | | |
| Transmission sprocket – number of teeth | 27 | N/A |
| Rear wheel sprocket – number of teeth | 80 | Replace at 15,000 mi |
| Secondary drive belt – number of teeth | 139 | Replace at 15,000 mi |
| Ratio | 2.96:1 | N/A |
| Transmission | | |
| Primary drive / transmission lubricant capacity | 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 |

* Internal gear ratios indicate number of mainshaft revolutions required to drive output sprocket one revolution.

** Overall gear ratios indicate number of engine revolutions required to drive rear wheel one revolution.

| WET CLUTCH Multiple disc | | |
|----------------------------------|-----------------|--------------------|
| CLUTCH PLATE THICKNESS | | |
| Friction plate (fiber) (in.) | 0.0866 + 0.0031 | N/A |
| Friction plate (fiber) (mm) | 2.200 + 0.079 | N/A |
| Steel plate (in.) | 0.0629 + 0.0020 | N/A |
| Steel plate (mm) | 1.598 + 0.051 | N/A |
| Clutch pack (in.) | N/A | .413 in. (minimum) |
| Clutch pack (mm) | N/A | (16.787) |
| MAXIMUM ALLOWABLE WARPAGE | | |
| Friction plate (fiber) (in.) | N/A | 0.0059 |
| Friction plate (fiber) (mm) | N/A | 0.150 |
| Steel plate (in.) | N/A | 0.0059 |
| Steel plate (mm) | N/A | 0.150 |

TORQUE VALUES

| ITEM | TORQUE | | NOTES |
|---------------------------------|-----------------------|-------------|--|
| Battery terminal bolts | 60-96 in-lbs | 7-11 Nm | Page 6-6 |
| Clutch inspection cover screws | 7-9 ft-lbs | 10-12 Nm | Tighten crosswise pattern, Page 6-11 |
| Clutch mainshaft nut | 70-80 ft-lbs | 95-109 Nm | LOCTITE® thread locker 262 (red), left hand threads, Page 6-20 |
| Crankcase 1/4 in. screws | 180-100 in-lbs | 9.0-12.4 Nm | LOCTITE® thread locker 262 (red), Page 6-39 |
| Crankcase 5/16 in. screws | 15-19 ft-lbs | 20-25 Nm | LOCTITE® thread locker 262 (red), Page 6-39 |
| Engine sprocket nut | 190-210 ft-lbs | 258-285 Nm | LOCTITE® thread locker 262 (red), Page 6-20 |
| Primary cover bolts | 100-120 in-lbs | 11-14 Nm | Follow torque sequence, Page 6-6 |
| Rear axel nut | 48-52 ft-lbs | 65-71 Nm | Page 6-9 |
| Retention collar screw | 13-17 ft-lbs | 18-23 Nm | LOCTITE® thread locker 243 (blue), Page 6-41 |
| Shift lever pinch fastener | 12-14 ft-lbs | 16-19 Nm | Page 6-6 |
| Shifter shaft assembly locknuts | 90-110 in-lbs | 10-12 Nm | Bottom nut first, same torque for top, Page 6-41 |
| Transmission drain plug | 14-30 ft-lbs | 19-54 Nm | Remove debris from end, Page 6-10 |
| Transmission sprocket nut | See NOTES | See NOTES | LOCTITE® thread locker 262 (red), left hand threads, special torque turn method, Page 6-43 |
| Transmission sprocket screws | 90-110 in-lbs | 10-12 Nm | Replace after 3 removals, Page 6-44 |

REMOVAL

Primary Cover

1. Remove seat. See [2.28 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. See [Figure 6-1](#). Place a drain pan under the engine. Remove drain plug and drain lubricant from primary drive.
4. Remove shifter lever assembly and rubber washer. Do not scratch primary cover.
5. See [ADJUSTMENT](#) under [6.5 CLUTCH RELEASE MECHANISM](#). Add freeplay to clutch cable.
6. Loosen locknut. Turn chain adjuster screw counterclockwise (outward).
7. Remove left foot peg support bracket. See [2.21 FOOT-PEGS AND FOOTPEG SUPPORT BRACKETS](#).
8. Remove three TORX screws with washers and clutch inspection cover.
9. Remove and discard gasket from groove in primary cover.
10. Slide spring with attached hex lockplate from flats of clutch limiting screw.
11. Turn clutch adjusting screw clockwise to release ramp and coupling mechanism. As the limiting screw is turned, ramp assembly moves forward. Unscrew nut from end of limiting screw.
12. Remove hook of ramp from button to the rear of cable end coupling. Remove cable end from slot in coupling. Remove coupling and ramp assembly.
13. Remove screws which secure primary cover. Remove cover and gasket.
14. Discard gasket.
15. Remove and discard shifter lever oil seal.

Primary Chain Adjuster

1. See [Figure 6-2](#). Remove primary cover.
2. Loosen locknut from chain limiting screw. Turn limiting screw out of threaded boss in primary cover.
3. Slide shoe outward and remove.
4. Remove chain tensioner spring.

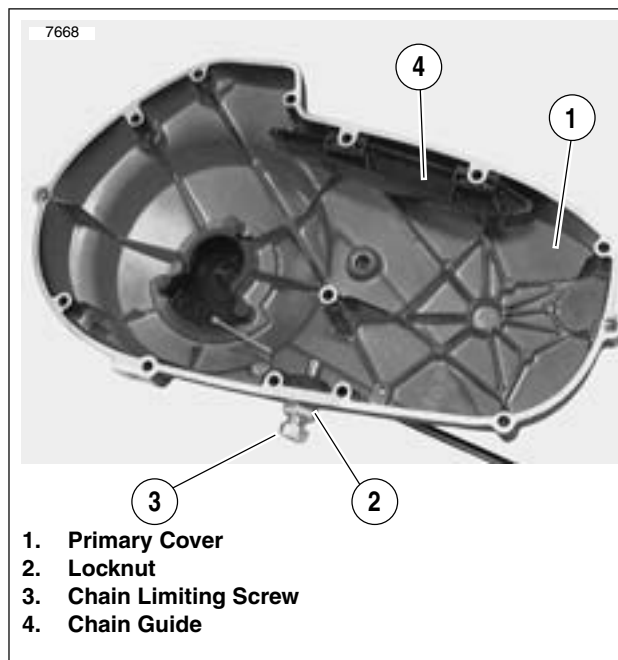


Figure 6-2. Removing Primary Chain Adjuster

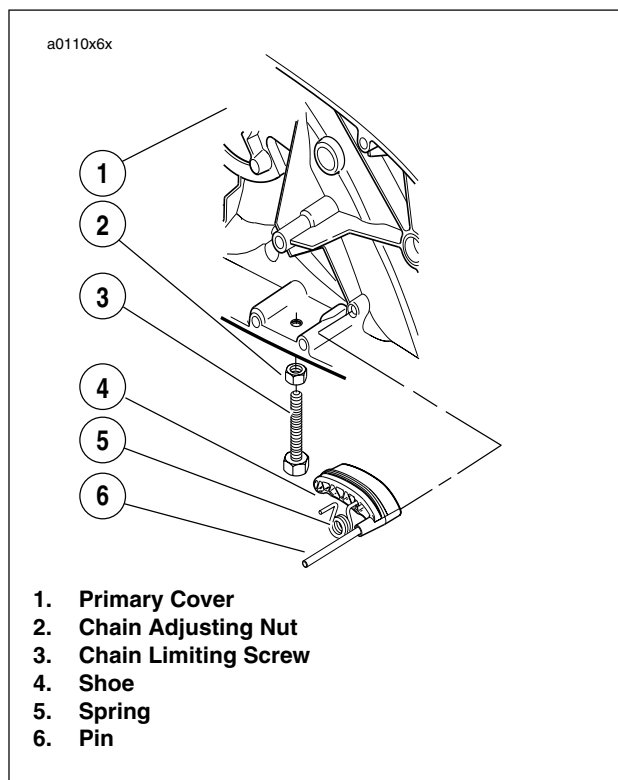


Figure 6-3. Primary Chain Adjuster

INSTALLATION

Primary Chain Adjuster

1. See [Figure 6-3](#). If shoe is badly worn, replace it.
2. Install chain tensioner spring into shoe.
3. Slide shoe onto pin.
4. Tilt shoe upward until spring aligns with crankcase mounting hole.
5. Tilt shoe downward under primary chain.
6. Press shoe inward.
7. Install primary cover. See [Primary Cover](#) in 6.2 PRIMARY CHAIN.

Primary Chain Adjustment

See [Figure 6-4](#). Buell Blast Models are shipped with a spacer between the primary chain limiting screw and the locknut. The spacer is used to quickly get proper adjustment during production. This spacer should be removed and discarded at the first adjustment interval.

1. See [Figure 6-5](#). Back-off locknut and chain limiting screw. Remove spacer.

IMPORTANT NOTE

*Be certain to use **Inch-Pound Wrench**. Chain adjuster shoe can be damaged by excessive force.*

2. See [Figure 6-6](#). Tighten chain limiting screw to 24 in-lbs.
3. Back-off chain limiting screw 3/4 turn (4 1/2 "flats").
4. Hold chain limiting screw while tightening jam nut.

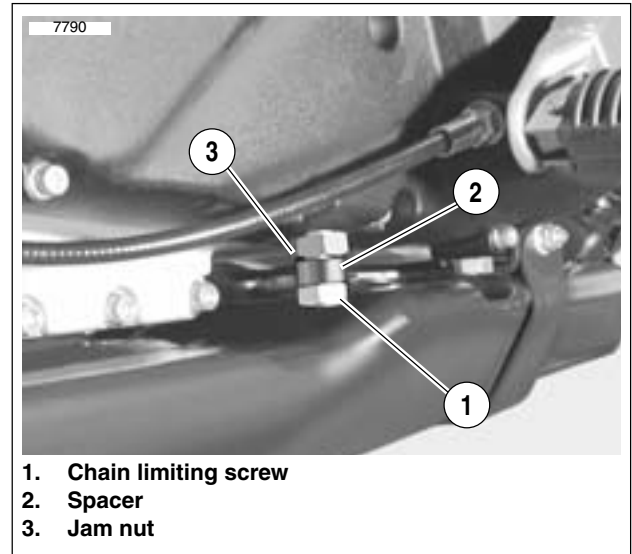


Figure 6-4. Adjustment Nut-with Spacer

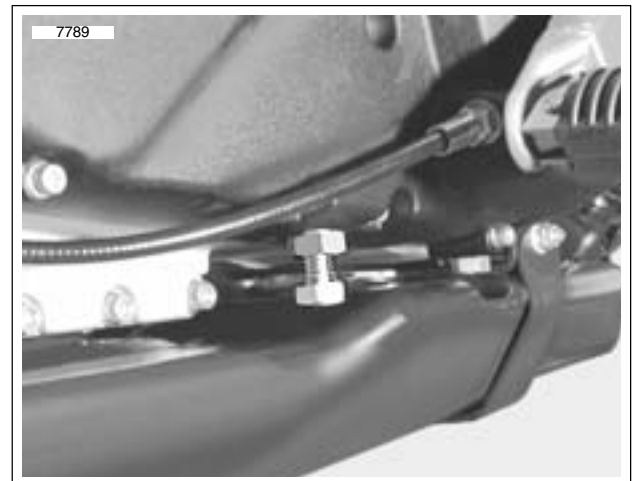


Figure 6-5. Chain Limiting Screw-without Spacer

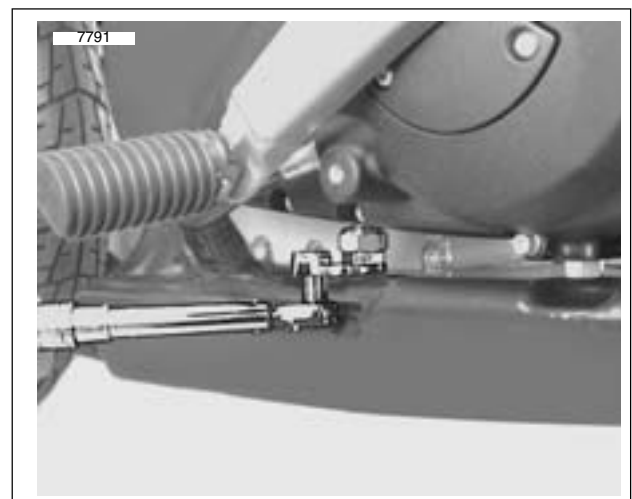


Figure 6-6. Torquing Chain Limiting Screw

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. See [Figure 6-7](#). Install primary cover and gasket onto left crankcase half using mounting bolts.
 - a. Tighten bolts to 100-120 **in-lbs** (11-14 Nm) in sequence shown.
4. See [Figure 6-1](#). Install **new** shifter lever oil seal.
5. Fit coupling over cable end with rounded side inboard and the ramp connector button outboard. With retaining ring side of ramp assembly facing inward, place hook of ramp around coupling button and rotate assembly counterclockwise until tang on inner ramp fits in slot of primary cover.
6. 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.
7. Adjust clutch. See [ADJUSTMENT](#) under [6.5 CLUTCH RELEASE MECHANISM](#).
8. Adjust primary chain tension. See [6.2 PRIMARY CHAIN](#).
9. Fill transmission to proper level with fresh lubricant. See [TRANSMISSION FLUID](#) under section [6.4 CLUTCH](#).
10. Install clutch inspection cover with **new** gasket and three TORX screws with washers. Tighten screws in a cross-wise pattern to 7-9 ft-lbs (10-12 Nm).
11. See [Figure 6-1](#). Install rubber washer and shifter lever assembly.
 - a. Tighten pinch screw to 12-14 ft-lbs (16-19 Nm)
12. Install left footpeg support bracket. See [2.21 FOOT-PEGS AND FOOTPEG SUPPORT BRACKETS](#).
13. Connect negative battery cable to battery terminal. Tighten fastener to 60-96 **in-lbs** (7-11 Nm).
14. Install seat. See [2.28 SEAT](#).

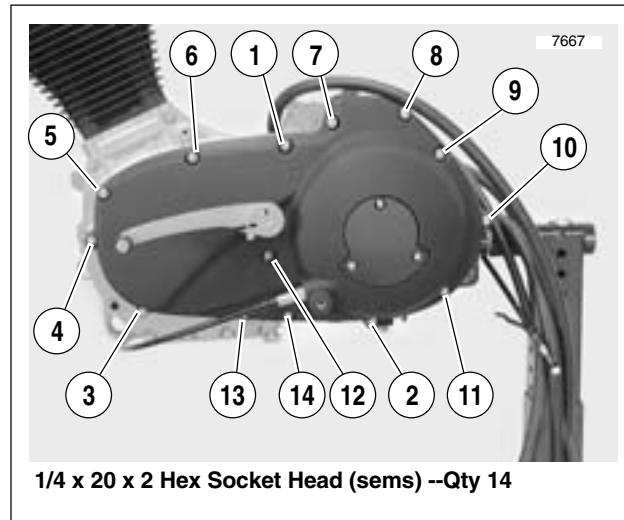


Figure 6-7. Primary Cover Tightening Sequence

GENERAL

Drive belt tension is not adjustable. Replace the belt and rear sprocket if either are worn or damaged.

Inspect the drive belt and rear sprocket:

- Replace every 15,000 mile (24,000 km) service interval.

NOTE

When a drive belt is replaced for any reason other than stone damage, it is recommended that the transmission and rear sprockets also be replaced to increase the longevity of the new drive belt. In the case of stone damage, inspect sprockets for damage and replace as required.

INSPECTION

Rear Sprocket

1. See [Figure 6-8](#). Inspect each tooth of rear sprocket for:
 - a. Major tooth damage.
 - b. Gouges caused by hard objects.
2. Replace rear sprocket if major tooth damage exists.

Drive Belt

See [Figure 6-9](#). Inspect drive belt for:

- Cuts or unusual wear patterns.
- Outside edge bevelling (8). Some bevelling is common, but it indicates that sprockets are misaligned.
- Outside ribbed surface for signs of stone puncture (7). If cracks/damage exists near edge of belt, replace belt immediately. Damage to center of belt will require belt replacement eventually, but when cracks extend to edge of belt, belt failure is imminent.
- Inside (toothed portion) of belt for exposed tensile cords (normally covered by nylon layer and polyethylene layer). This condition will result in belt failure and indicates worn transmission sprocket teeth. Replace belt and transmission sprocket.
- Signs of puncture or cracking at the base of the belt teeth. Replace belt if either condition exists.
- Replace belt if conditions 2, 3, 6 or 7 (on edge of belt) exist.

NOTE

Condition 1 may develop into 2 or 3 over time. Condition 1 is not grounds for replacing the belt, but it should be watched closely before condition 2 develops which will require belt replacement.

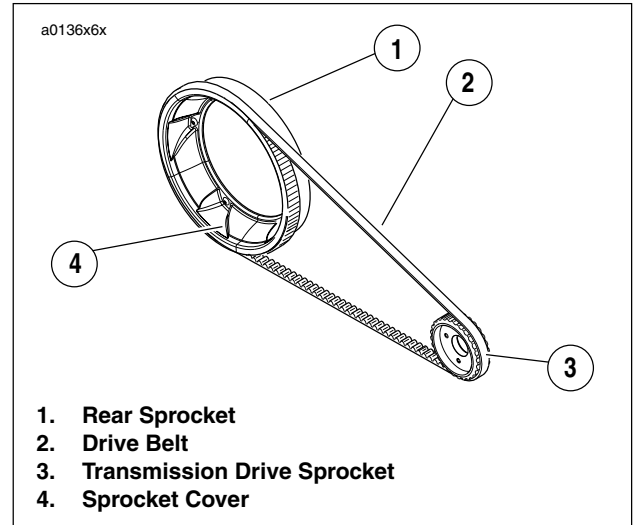


Figure 6-8. Secondary Drive Belt Assembly

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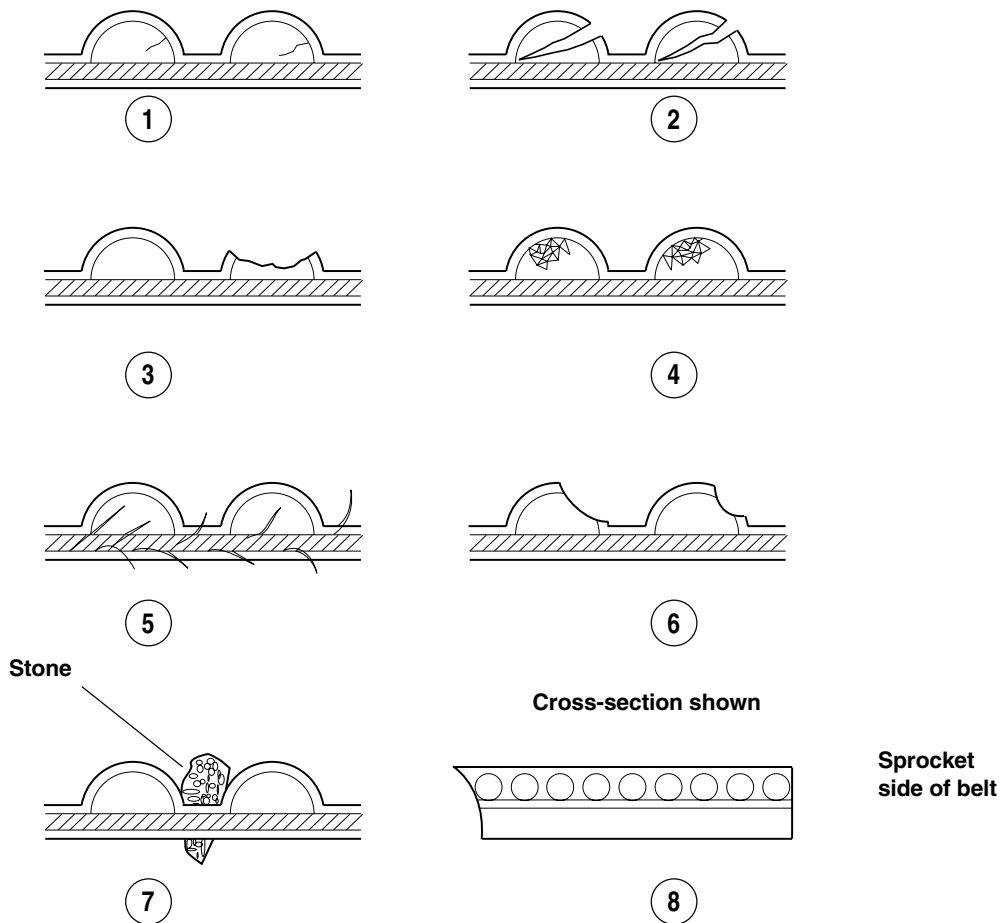


Figure 6-9. Drive Belt Wear Patterns

| PATTERN IN FIGURE 6-9. | CONDITION | REQUIRED ACTION |
|---------------------------|----------------------------------|---------------------------------------|
| 1 | Internal tooth cracks (hairline) | OK to run, but monitor condition |
| 2 | External tooth cracks | Replace belt |
| 3 | Missing teeth | Replace belt |
| 4 | Chipping (not serious) | OK to run, but monitor condition |
| 5 | Fuzzy edge cord | OK to run, but monitor condition |
| 6 | Hook wear | Replace belt |
| 7 | Stone damage | Replace belt if damage is on the edge |
| 8 | Bevel wear (outboard edge only) | OK to run, but monitor condition |

REMOVAL

NOTE

Usually the rear sprocket is replaced whenever the drive belt is replaced. This procedure covers drive belt replacement only. For instructions on replacing both drive belt and rear sprocket, see 1.11 DRIVE BELT AND REAR SPROCKET.

1. Secure motorcycle on suitable lift that secures the front wheel.
2. Remove seat. See 2.28 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.

3. Disconnect the negative battery cable from the battery.
4. Raise rear wheel off floor using REAR WHEEL SUPPORT STAND (Part No. B-41174).
5. See Figure 6-10. Place rod or screwdriver through axle hole. Loosen rear axle nut (metric).
6. Remove nut, lockwasher, and flat washer.
7. Pull axle out. Remove right side spacer.
8. Slide carrier with caliper off rotor.
9. Remove left side spacer.
10. Move wheel forward, disengage drive belt and remove rear wheel from motorcycle.
11. Remove rear brake master cylinder from right side footrest support. See 2.13 REAR BRAKE MASTER CYLINDER.
12. Remove right footrest support. See 2.21 FOOTPEGS AND FOOTPEG SUPPORT BRACKETS.
13. Remove three TORX bolts, washers and front sprocket cover from right side of motorcycle.
14. Remove two TORX screws and washers from right side of rear inner fender.
15. Carefully bend rear inner fender upwards and remove drive belt. Discard drive belt.

INSTALLATION

1. Install a **new** drive belt over transmission drive sprocket.
2. Install rear inner fender with two TORX screws and washers. See 2.23 FENDERS.
3. Install front sprocket cover with three TORX screws and washers.
4. Install right footrest support. See 2.21 FOOTPEGS AND FOOTPEG SUPPORT BRACKETS.
5. Install rear master cylinder. See 2.13 REAR BRAKE MASTER CYLINDER.
6. Position wheel in mounting position. Slide axle through washer, swing arm, carrier, left side spacer and wheel assembly. Position drive belt inboard of sprocket.
 - a. Hold right side spacer in place.
 - b. Insert axle through right side spacer and swingarm.
 - c. Install flat washer, lockwasher and axle nut.
7. Place screwdriver or rod through axle hole and tighten rear axle nut to 48-52 ft-lbs (65-71 Nm).
8. Slide belt on sprocket teeth by rotating rear wheel to "walk" belt onto teeth.
9. Lower motorcycle rear wheel.
10. Connect battery negative cable to battery terminal. Tighten fastener to 60-96 in-lbs (7-11 Nm).

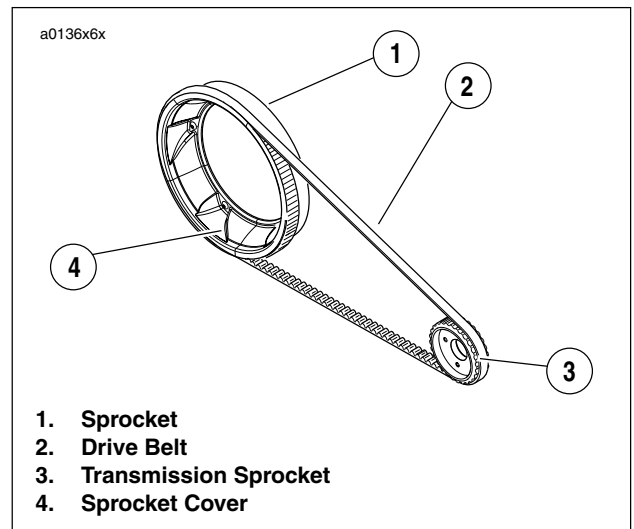


Figure 6-10. Secondary Drive Belt Assembly

TRANSMISSION FLUID

Drain and refill with fresh transmission fluid:

- At the 1000 mile (1600 km) initial service interval and at every 5000 mile (8000 km) service interval thereafter.

Transmission fluid capacity is 1.0 quart (0.95 liter). For best results, drain fluid while it is hot.

- Raise rear wheel off floor using REAR WHEEL SUPPORT STAND (Part No. B-41174). This prevents transmission fluid from spilling out of the clutch inspection cover opening.
- See [Figure 6-11](#). Position a suitable container under drain plug (3). Remove plug and drain fluid.
- Wipe any foreign material from the magnetic drain plug (3). Reinstall plug. Tighten to 14-30 ft-lbs (19-54 Nm).
- Remove seat. See [2.28 SEAT](#).

WARNING

To avoid accidental start-up of vehicle and possible personal injury, disconnect the battery cables before proceeding. Inadequate safety precautions could result in death or serious injury.

- Disconnect negative battery cable from battery.
- Remove left footpeg support bracket. See [2.21 FOOT-PEGS AND FOOTPEG SUPPORT BRACKETS](#).
- Remove three TORX screws with washers (1) from clutch inspection cover (2). Remove clutch inspection cover from primary cover.

CAUTION

Do not overfill the primary chaincase with lubricant. Overfilling may cause rough clutch engagement, incomplete disengagement, clutch drag and/or difficulty in finding neutral at engine idle.

- See [Figure 6-12](#). Add SPORT-TRANS FLUID (Part No. 98854-96 quart size; Part No. 98855-96 gallon size) as required until fluid level is even with bottom of clutch diaphragm spring.
- See [Figure 6-11](#). Install clutch inspection cover and new gasket with three TORX screws with washers. Tighten in a crosswise pattern to 7-9 ft-lbs (10-12 Nm).
- Install left footpeg support bracket. See [2.21 FOOT-PEGS AND FOOTPEG SUPPORT BRACKETS](#).
- Connect negative battery cable to battery. Tighten fastener to 60-96 in-lbs (7-11 Nm).
- Install seat. See [2.28 SEAT](#).

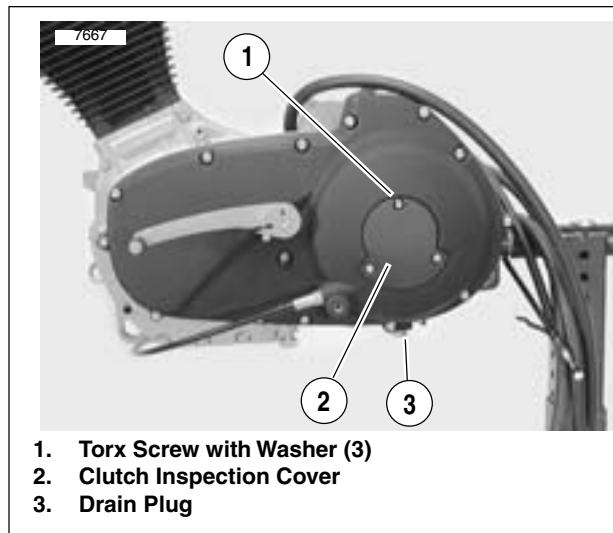


Figure 6-11. Primary Cover

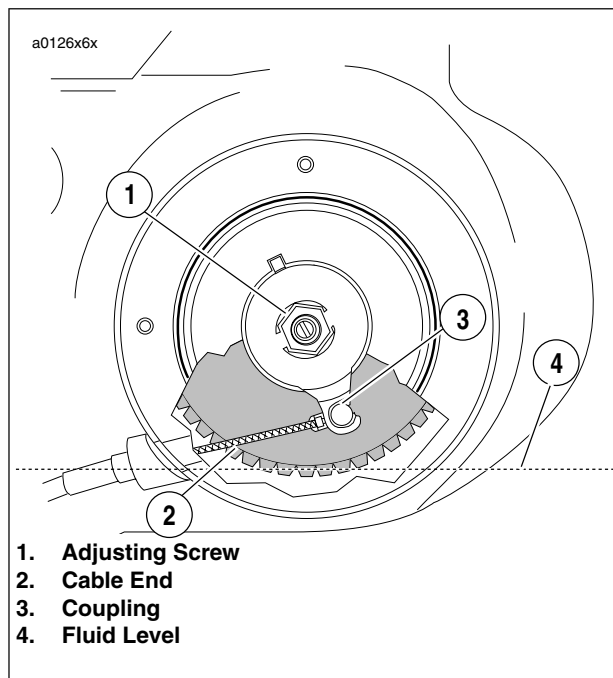


Figure 6-12. Fluid Level

ADJUSTMENT

Check clutch adjustment:

- At the 1000 mile (800 km) service interval.
- At every 5000 mile (8000 km) service interval thereafter.

If clutch slips under load or drags when released, first check control cable adjustment. If cable adjustment is within specifications, adjust clutch mechanism as described below.

When necessary, lubricate cable with LUBIT-8 TUFOIL® CHAIN AND CABLE LUBE (Part No. HD-94968-85TV).

1. Raise rear wheel off floor using REAR WHEEL SUPPORT STAND (Part No. B-41174).
2. Remove left footpeg support bracket. See [2.21 FOOTPEGS AND FOOTPEG SUPPORT BRACKETS](#).
3. See [Figure 6-13](#). Slide rubber boot (1) upward to expose adjuster mechanism. Loosen jam nut (3) from adjuster (4). Turn adjuster to shorten cable housing until there is a large amount of freeplay at clutch hand lever.
4. See [Figure 6-14](#). Remove three TORX screws with washers (1) from clutch inspection cover (2). Remove clutch inspection cover from primary cover.

NOTE

Quad ring removed from primary cover for illustrative purposes only in [Figure 6-14](#).

5. Remove spring (4) and lockplate (5). Turn adjusting screw (6) counterclockwise until it lightly bottoms.
6. Turn adjusting screw (6) clockwise 1/4 turn. Install lockplate (5) and spring (4) on adjusting screw flats. If hex on lockplate does not align with recess in outer ramp, rotate adjusting screw clockwise until it aligns.
7. Squeeze clutch hand lever to maximum limit three times. This sets the ball and ramp mechanism. Pull outer cable conduit and at the same time adjust cable adjuster to provide 0.0625-0.125 in. (1.6-3.2 mm) freeplay at clutch hand lever. Adjust as follows.
 - a. See [Figure 6-15](#). Pull ferrule (1) (end of cable housing) away from bracket (2). Gap between ferrule and bracket should be 0.0625-0.125 in. (1.6-3.2 mm).
 - b. See [Figure 6-13](#). Set freeplay by turning adjuster (4).
 - c. Tighten jam nut (3) against adjuster (4).
 - d. Slide boot (1) over cable adjuster mechanism.
8. Change or add transmission fluid if necessary.

NOTE

Clean parts before re-assembly.

9. See [Figure 6-14](#). Install clutch inspection cover and **new** gasket with three TORX screws with washers. Tighten in a crosswise pattern to 7-9 ft-lbs (10-12 Nm).
10. Check clutch cable freeplay. See Step 6 above.
11. Install footpeg support bracket. See [2.21 FOOTPEGS AND FOOTPEG SUPPORT BRACKETS](#).

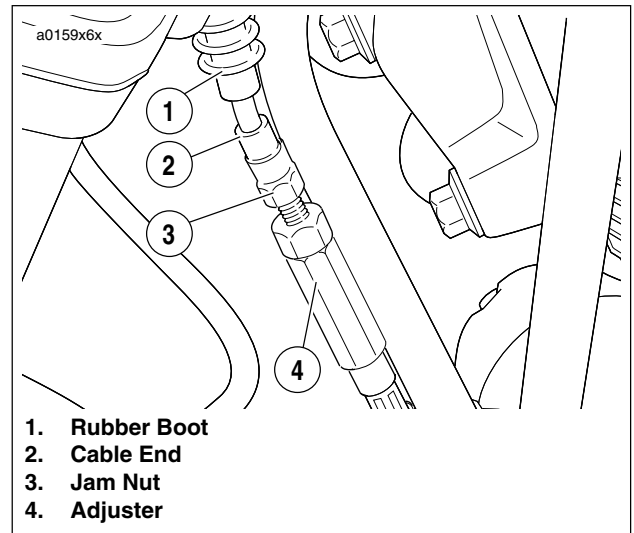


Figure 6-13. Clutch Cable Adjuster Mechanism

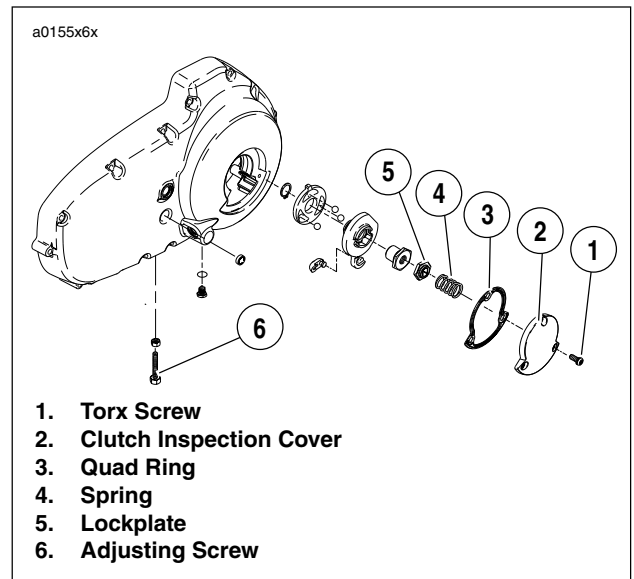


Figure 6-14. Clutch Release Mechanism

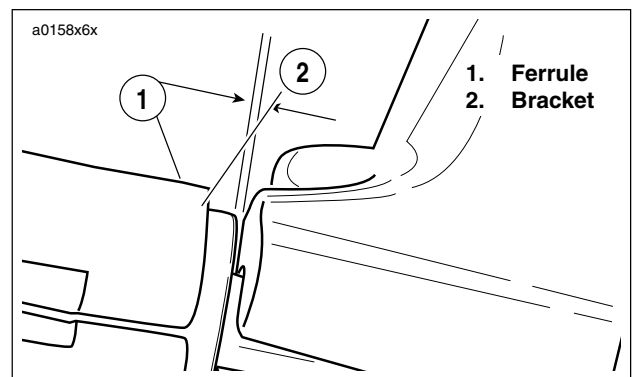


Figure 6-15. Adjusting Clutch Freeplay

CLUTCH RELEASE MECHANISM

6.5

NOTE

For clutch adjustment procedure, See [6.4 CLUTCH](#).

DISASSEMBLY

1. Remove seat. See [2.28 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. Pull clutch cable ferrule (end of cable housing) away from clutch hand lever bracket. Gap between ferrule and bracket should be 0.0625-0.125 (1.6-3.2 mm). Adjust freeplay by turning cable adjuster.
4. Remove left footpeg support bracket. See [2.21 FOOTPEGS AND FOOTPEG SUPPORT BRACKETS](#).
5. See [Figure 6-16](#). Remove three TORX screws with washers and clutch inspection cover.

6. Slide spring with attached screw lockplate from flats of adjusting screw.
7. Turn adjusting screw clockwise to release ramp and coupling mechanism. As the adjusting screw is turned, ramp assembly moves forward. Unscrew nut from end of adjusting screw.

CLEANING AND INSPECTION

1. Thoroughly clean all parts in cleaning solvent.
2. See [Figure 6-16](#). 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 [6.4 CLUTCH](#).

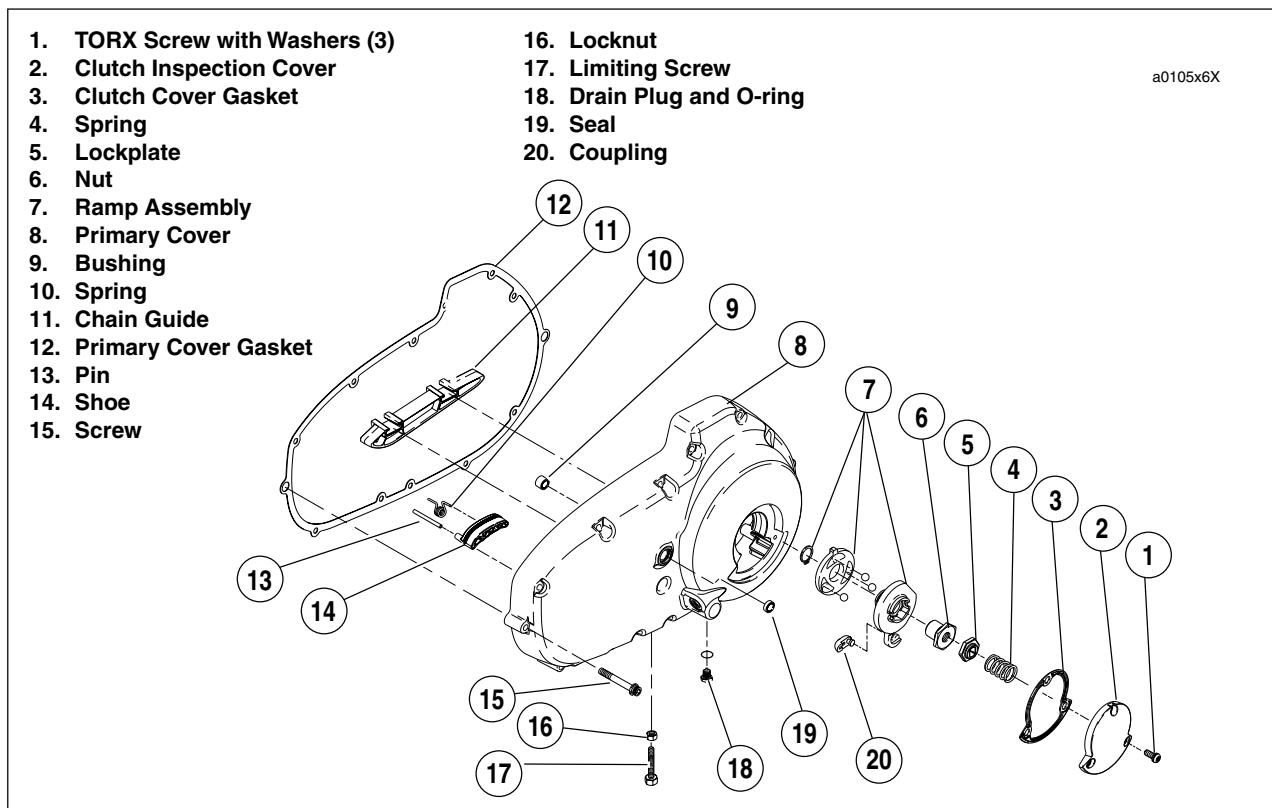


Figure 6-16. Clutch Release Mechanism

ASSEMBLY

1. See [Figure 6-17](#). Assemble inner and outer ramp.
 - 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 6-18](#). 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 [6.4 CLUTCH](#).
 - d. Fit nut hex into recess of outer ramp.

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.

4. Install left footpeg support bracket. See [2.21 FOOTPEGS AND FOOTPEG SUPPORT BRACKETS](#).
5. Connect negative battery cable to battery terminal. Tighten fastener to 60-96 **in-lbs** (6.8-10.9 Nm).
6. Install seat. See [2.28 SEAT](#).

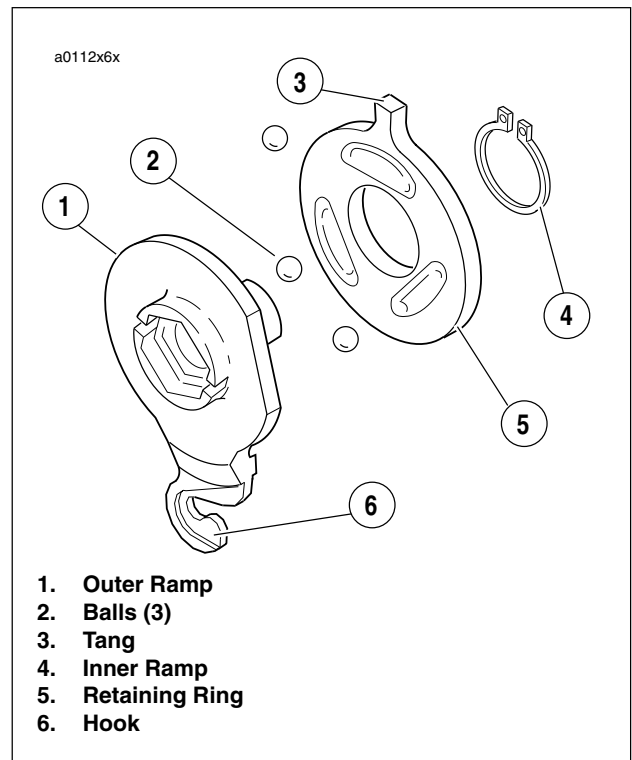


Figure 6-17. Inner & Outer Ramp

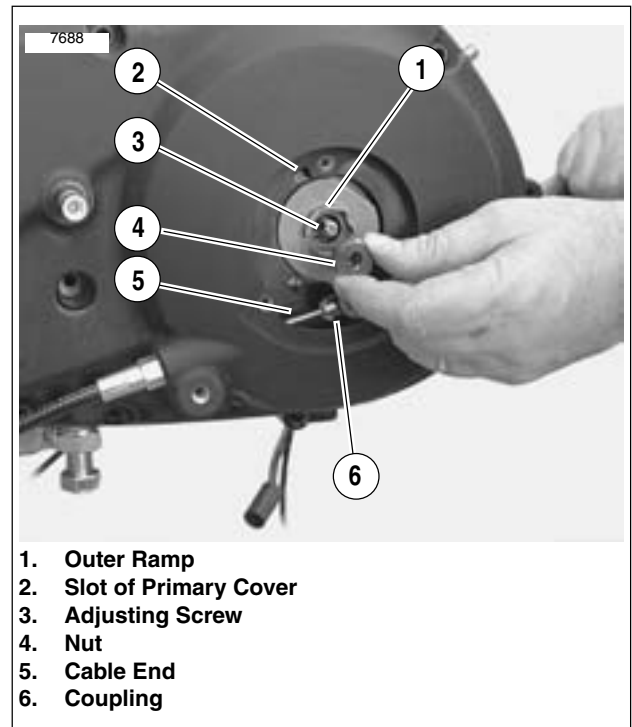


Figure 6-18. Nut & Outer Ramp

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 6-19](#). The clutch is a wet, multiple-disc clutch with five steel plates and five fiber (friction) plates stacked alternately in the clutch shell. The order of plate assembly, from inboard to outboard, is as follows:

St - F - St - F - St - F - St - F - St - F

(St = Steel plate, F = Fiber plate)

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) and the centrally located spring plate (also a clutch driven plate) 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 causing 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 and spring 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.

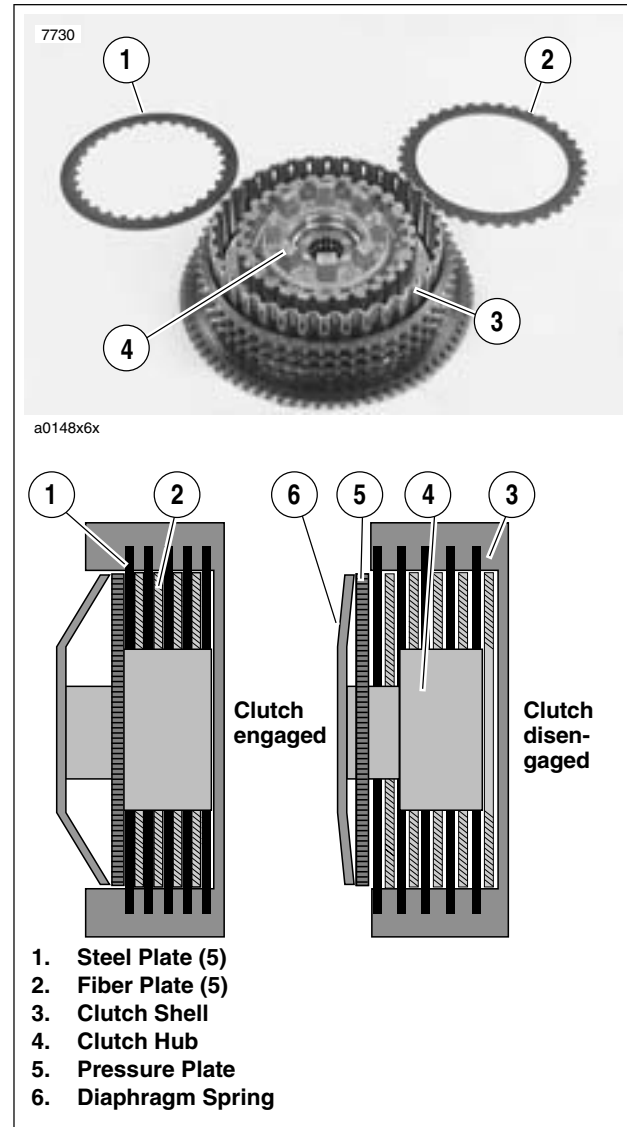


Figure 6-19. Clutch Plates and Hub/Shell Assembly

| 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. |

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.

2. See [Figure 6-20](#). 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 6-21](#). 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.

3. 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 snap ring and spring seat. Remove and discard snap ring.
 - c. Unseat spring seat from the groove in clutch hub prongs.
 - d. Remove pressure plate assembly.
4. See [Figure 6-23](#). Remove the clutch pack from the hub/shell assembly. The pack consists of five fiber plates and five steel plates.

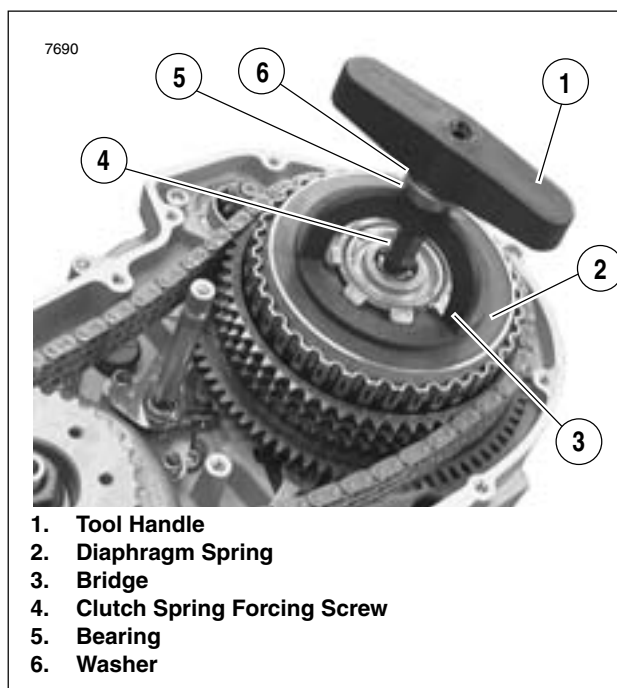
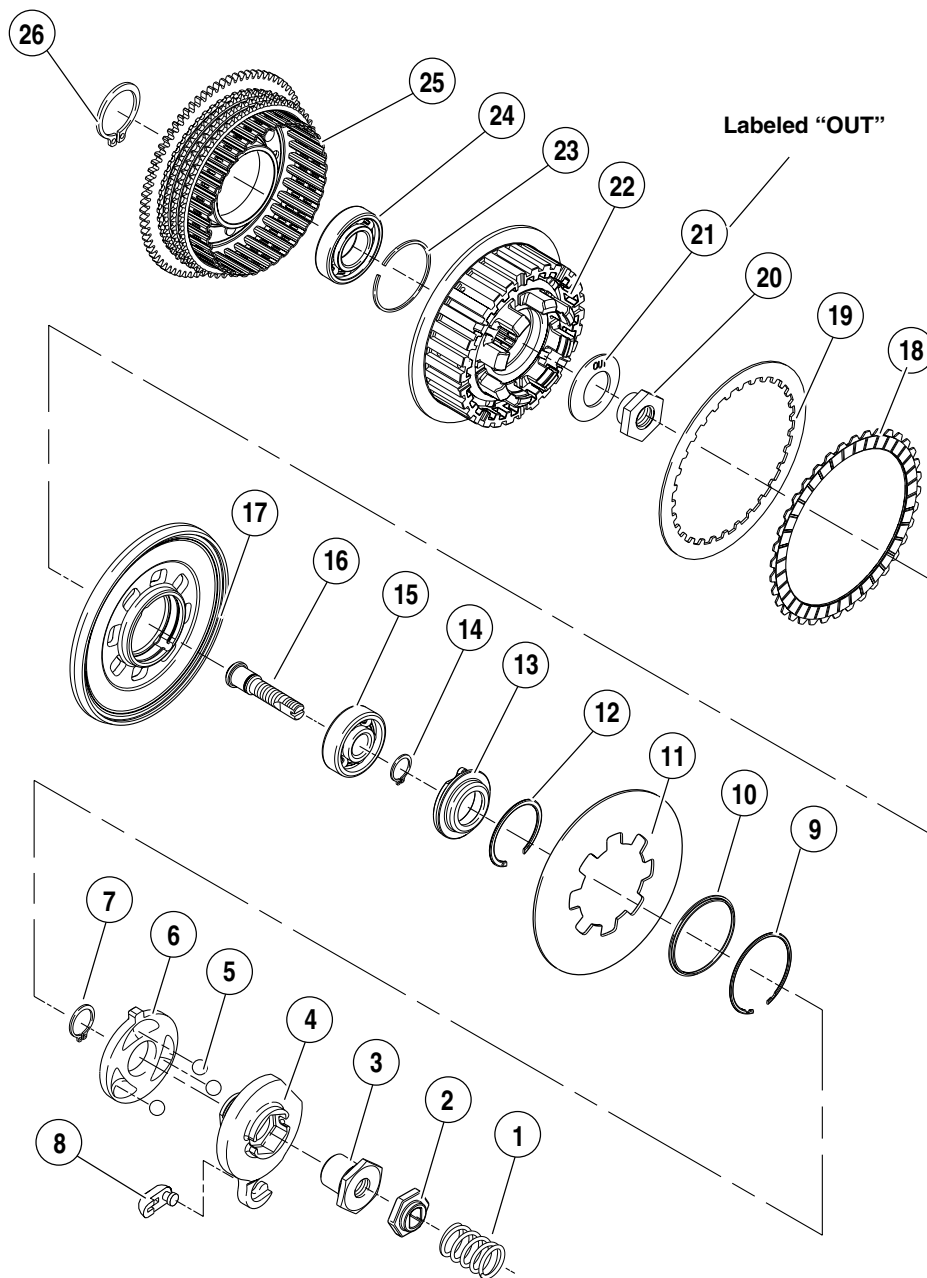


Figure 6-20. Compressing Clutch Diagram Spring



Figure 6-21. Pressure Plate Assembly

a0114x6x



1. Spring
2. Lockplate
3. Nut
4. Outer Ramp
5. Ball (3)
6. Inner Ramp
7. Retaining Ring
8. Coupling
9. Retaining Ring
10. Spring Seat
11. Diaphragm Spring
12. Retaining Ring
13. Release Plate
14. Retaining Ring
15. Bearing

16. Adjusting Screw
17. Pressure Plate
18. Friction Plate (paper) (5)
19. Steel Plate (5)
20. Mainshaft Nut
21. Washer
22. Clutch Hub
23. Retaining Ring
24. Bearing
25. Clutch Shell and Sprocket
26. Retaining Ring

Figure 6-22. Clutch Assembly

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](#).
3. Loosen engine sprocket.
 - a. 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.
4. See [Figure 6-23](#). Remove adjusting screw assembly.
 - a. Remove large retaining ring.
 - b. Remove adjusting screw assembly from pressure plate.

CAUTION

See [Figure 6-24](#). Mainshaft nut has left-hand threads. To prevent damage, turn nut clockwise to loosen and remove from mainshaft.

5. Remove mainshaft nut and washer.
6. Remove the clutch assembly, primary chain and engine sprocket as a unit.
 - a. Inspect primary chain and sprockets for damage or excessive wear.
 - b. Inspect stator and rotor. See [7.14 ALTERNATOR](#).
 - c. Replace damaged parts as necessary.
7. Install adjusting screw assembly into pressure plate.
 - a. See [Figure 6-24](#). Align two tabs on perimeter of release plate with corresponding recesses in pressure plate.
 - b. See [Figure 6-23](#). Secure the adjusting screw assembly with large retaining ring.
8. Attach tools to compress clutch diaphragm spring. See Step 2 of [CLUTCH PACK](#) under [6.6 PRIMARY DRIVE/CLUTCH](#).
9. Remove clutch pack components. See Steps 3-4 of [CLUTCH PACK](#) under [6.6 PRIMARY DRIVE/CLUTCH](#).

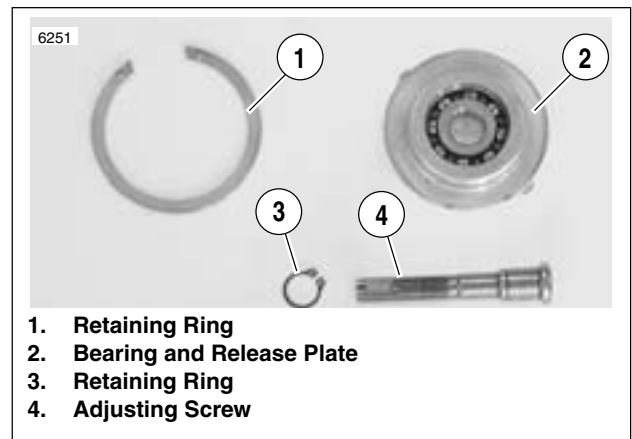


Figure 6-23. Adjusting Screw Assembly

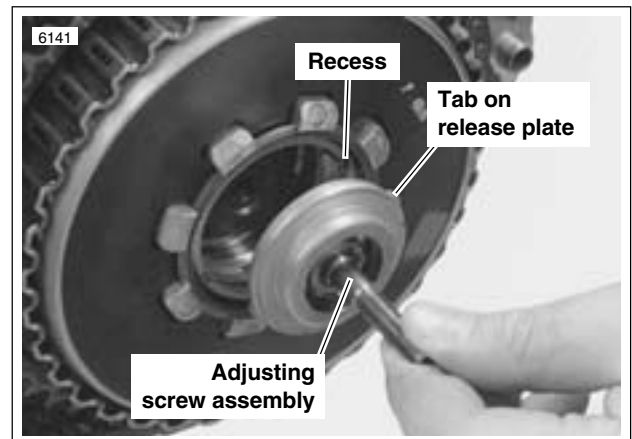


Figure 6-24. Aligning Tabs

10. See [Figure 6-21](#). 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.
11. See [Figure 6-23](#). 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 and then separate the adjusting screw from the bearing and release plate. Remove bearing from release plate.

CAUTION

See **Figure 6-22**. To prevent possible damage to the bearing, the clutch hub and shell assembly should not be disassembled unless the bearing, hub or shell require replacement. If the assembly is pressed apart, the bearing must be replaced.

12. Disassemble clutch hub and clutch shell if necessary.
 - a. Remove retaining ring from inboard end of clutch hub.
 - b. Using an arbor press, separate clutch hub from assembly of clutch shell, bearing and retaining ring.
 - c. Remove retaining ring from groove in clutch shell.
 - d. Press on the inboard side of bearing outer race to remove bearing from clutch shell.

INSPECTION

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. Check the diaphragm spring for cracks or bent tabs. Install a **new** spring if either condition exists.
3. See **Figure 6-25**. Check fiber plates for thickness.
 - a. Wipe the lubricant from the five fiber plates and stack them on top of each other.
 - b. Measure the thickness of the five stacked fiber plates with a dial caliper or micrometer. The minimum thickness must be 0.413 in. (10.490 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.
4. See **Figure 6-26**. Check the clutch shell.
 - a. 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.
 - b. Check the slots that mate with the clutch plates on both clutch shell and hub. If slots are worn or damaged, replace shell and/or hub.
 - c. If clutch shell was removed from motorcycle, check the bearing for smoothness. Rotate the clutch shell while holding the clutch hub. If bearing is rough or binds, it must be replaced.



Figure 6-25. Measuring Friction Plates

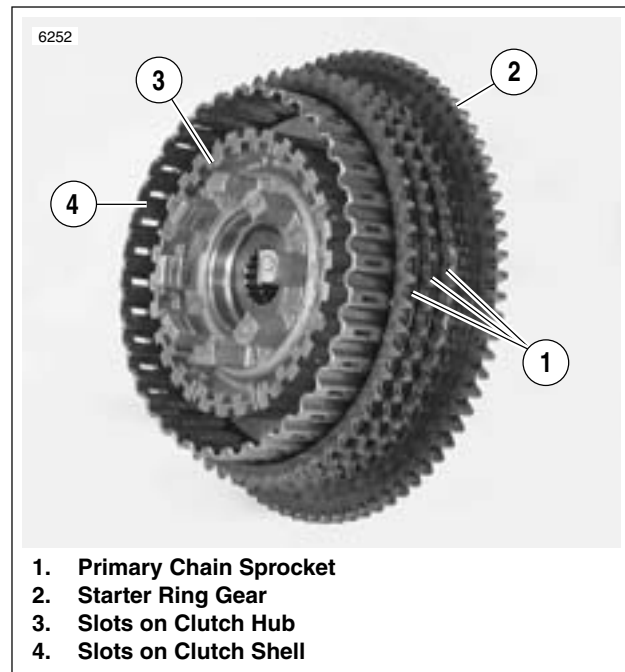


Figure 6-26. Checking Clutch Shell

ASSEMBLY

Clutch Pack

See [Figure 6-22](#). Install the clutch pack which consists of five fiber plates and five steel plates, into the clutch hub. The order of plate assembly, from inboard to outboard, is as follows:

St - F - St - F - St - F - St - F - St - F

(St = Steel plate, F = Fiber plate)

CAUTION

See [Figure 6-21](#). 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.

5. Place assembly of spring seat, **new** snap ring, diaphragm spring, pressure plate, adjusting screw components and compressing tool onto clutch hub and against clutch pack.
 - a. See [Figure 6-27](#). Align square openings of pressure plate and diaphragm spring so that the assembly can be installed over prongs of clutch hub.
 - b. Position spring seat with its larger O.D. side toward diaphragm spring.
 - c. See [Figure 6-28](#). Place a wrench on the clutch spring forcing screw flats to prevent the forcing screw from turning.
 - d. Turn compressing tool handle clockwise until diaphragm spring compresses just enough to install spring seat and **new** snap ring into the groove in clutch hub prongs.
 - e. With snap ring positioned against outboard side of spring seat, and fully seated in groove of clutch hub, carefully loosen and remove compression tool.

Primary Drive

1. See [Figure 6-28](#). Assemble clutch hub and shell if necessary.
 - a. Press **new** bearing in clutch shell. Secure bearing with a **new** retaining ring.
 - b. Press inboard end of clutch hub into shell bearing. Secure with **new** retaining ring on end of hub.
2. Assemble pressure plate hardware.
 - a. See [Figure 6-23](#). Place bearing inside release plate. Insert adjusting screw through bearing and release plate. Secure with **new** retaining ring.
 - b. See [Figure 6-27](#). Position diaphragm spring with its concave side facing toward pressure plate onto pressure plate assembly.

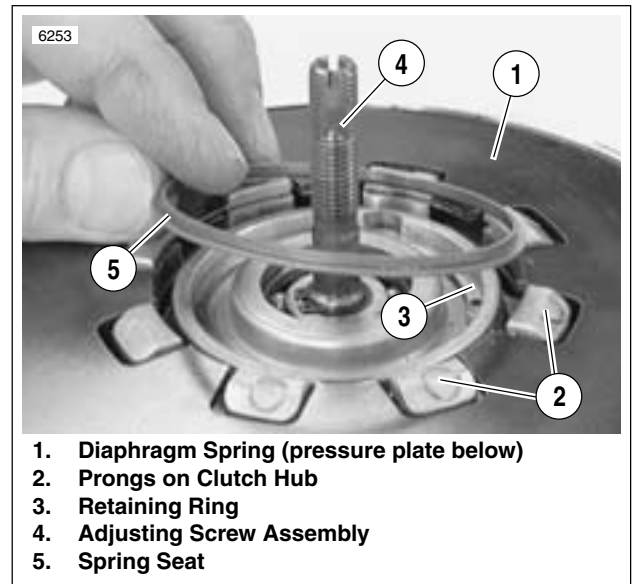


Figure 6-27. Spring Seat Installation

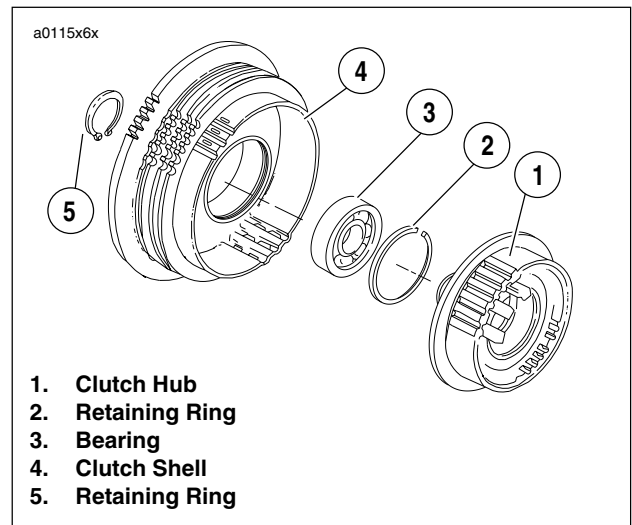


Figure 6-28. Clutch Hub and Shell Assembly

- c. Insert adjusting screw assembly into pressure plate. Secure with large retaining ring.
- d. Position spring seat with its larger O.D. side toward diaphragm spring.
3. Attach tools to compress clutch diaphragm spring. Do not tighten compressing tool against diaphragm spring at this time. See Step 2 of [CLUTCH PACK](#) under 6.6 [PRIMARY DRIVE/CLUTCH](#).
4. Install the clutch pack. Follow all instructions of [CLUTCH PACK](#) under 6.6 [PRIMARY DRIVE/CLUTCH](#).

INSTALLATION

NOTE

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

1. Install the engine sprocket, clutch assembly and primary chain as a unit into primary chaincase.
2. See [Figure 6-29](#). Install the engine sprocket nut.
 - a. Place SPROCKET LOCKING LINK (Part No. HD-38362) between primary chain and engine sprocket.
 - b. Apply two or three drops of LOCTITE® thread locker 262 (red) onto threads of sprocket shaft.
 - c. Install engine sprocket nut. Tighten to 190-210 ft-lbs (258-285 Nm).

CAUTION

See [Figure 6-30](#). Washer must be installed with the word “out” facing the mainshaft nut or transmission may be damaged.

3. Install mainshaft nut and washer.
 - a. Apply two or three drops of LOCTITE® thread locker 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 (95-109 Nm).
4. Remove SPROCKET LOCKING LINK.
5. Install adjusting screw assembly into pressure plate.
 - a. See [Figure 6-24](#). Align two tabs on perimeter of release plate with corresponding recesses in pressure plate.
 - b. See [Figure 6-23](#). Secure the adjusting screw assembly with retaining ring.
6. Install primary cover. See [6.2 PRIMARY CHAIN](#).
7. Install left footpeg support bracket. See [2.21 FOOT-PEGS AND FOOTPEG SUPPORT BRACKETS](#).
8. Connect negative battery cable to battery terminal. Tighten fastener to 60-96 **in-lbs** (7-11 Nm).
9. Install seat. See [2.28 SEAT](#).

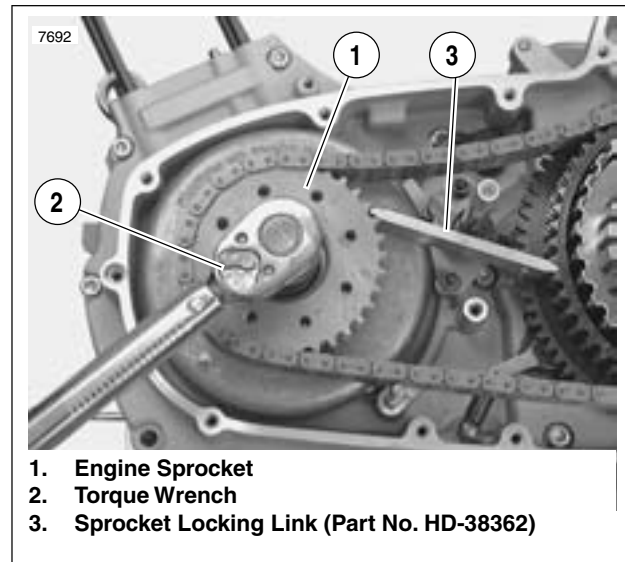


Figure 6-29. Sprocket Locking Link

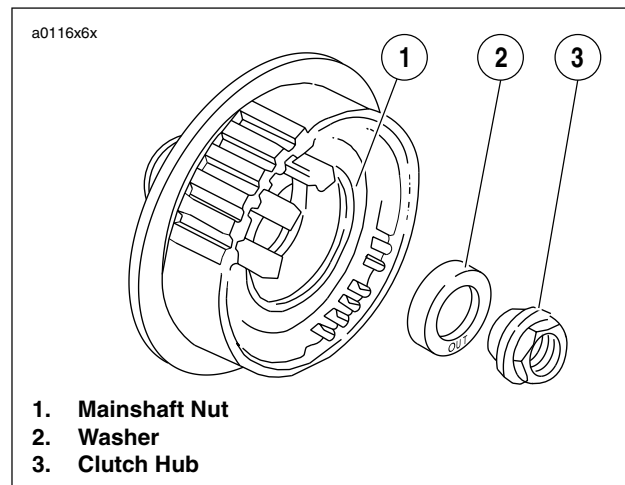


Figure 6-30. Mainshaft Nut and Washer