BATTERY 1.4

DISCONNECTION AND REMOVAL

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.

⚠WARNING

Always disconnect the negative 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.

2. Unthread bolt and remove battery negative cable (black) from battery negative (-) terminal.
3. Unthread bolt and remove battery positive cable (red) from battery positive (+) terminal.
4. Remove battery from motorcycle.

INSTALLATION AND CONNECTION

1. Place the fully charged battery on the battery pad, terminal side facing up.

CAUTION

Connect the cables to the correct battery terminals or damage to the motorcycle electrical system will occur.

⚠WARNING

Always connect the 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.

CAUTION

Overtightening bolts can damage battery terminals.

2. See Figure 1-1. Insert bolt through battery positive cable (red) into threaded hole of battery positive (+) terminal. Tighten bolt to 60-96 **in-lbs** (6.8-10.9 Nm).
3. See Figure 1-1. Insert bolt through battery negative cable (black) into threaded hole of battery negative (-) terminal. Tighten bolt to 60-96 **in-lbs** (6.8-10.9 Nm).
4. Apply a light coat of petroleum jelly or corrosion retardant material to both battery terminals.
5. Install seat. See 2.28 SEAT.

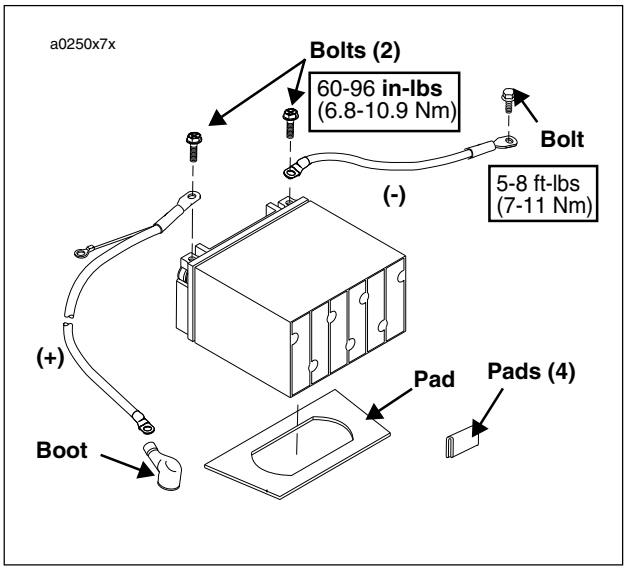


Figure 1-1. Battery Installation

ENGINE LUBRICATION SYSTEM 1.5

GENERAL

Check engine oil level (hot check):

- At every stop for fuel.

Inspect oil lines and filter for leaks:

- At 1,000 mi (1,600 km) initial service and every 2,500 mi (4,000 km) service interval.

Change engine oil and filter (and drain crankcase breather hose) under normal service in warm or moderate temperatures:

- At 1,000 mi (1,600 km) initial service and every 5,000 mi (8,000 km) service interval thereafter.

Change engine oil and filter (and drain crankcase breather hose) under severe service in warm or moderate temperatures (severe dust, temperatures above 80°F/27°C, extensive idling or speeds in excess of 65 mph/105 km/h, extensive two-up riding):

- At 1,000 mi (1,600 km) initial service and every 2,500 mi (4,000 km) service interval thereafter.

NOTE

Shorten oil change interval in cold weather.

CHECKING ENGINE OIL LEVEL

An accurate engine oil level reading can *only* be obtained with the engine is at normal operating temperature (Hot Check). The engine will require a longer warm up period in colder weather.

For pre-ride inspection, simply verify that there are no oil leaks from the oil filter and oil lines prior to operating the motorcycle.

- Perform a hot check of the engine oil level at each fuel stop.

Hot Check

CAUTION

Do not allow hot oil level to fall below lower mark on dipstick. To do so may result in equipment damage and/or equipment malfunction.

CAUTION

Do not overfill oil tank. Doing so may result in oil carryover to the air cleaner, equipment damage and/or equipment malfunction.

CAUTION

Do not switch engine oil brands indiscriminately. Some oils interact chemically when mixed. Use of inferior oils or non-detergent oils can damage the engine.

The motorcycle should be ridden for approximately 10 minutes to ensure oil is hot and engine is at normal operating temperature.

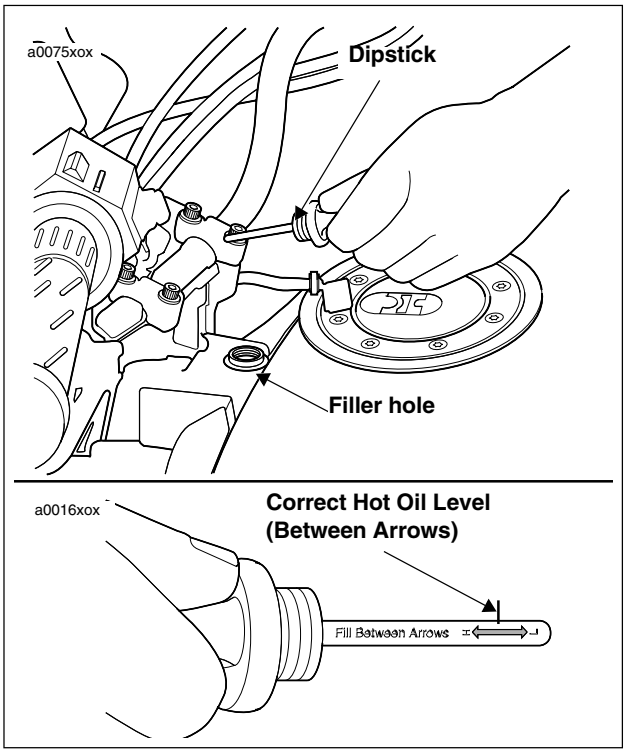


Figure 1-2. Dipstick Location/Engine Oil Level

1. The motorcycle must be in upright position and level (not on sidestand) with the engine OFF.
2. See Figure 1-2. Unscrew dipstick from frame filler hole.
3. Wipe off dipstick and insert into frame filler hole, screwing dipstick completely into filler neck.
4. See Figure 1-2. Remove dipstick and note oil level.
5. Hot oil level should be between the upper and lower “fill” marks on dipstick. If oil level is down to or below lower “fill” mark on dipstick, add only enough oil to bring level between lower and upper “fill” marks.

Table 1-3. Recommended Engine Oils

Harley-Davidson Type	Viscosity	Harley-Davidson Rating	Lowest Ambient Temperature	Cold Weather Starts Below 50˚F (10˚C)
HD Multi-grade	SAE 10W40	HD 360	Below 40˚F (4˚C)	Excellent
HD Multi-grade	SAE 20W50	HD 360	Above 40˚F (4˚C)	Good
HD Regular Heavy	SAE 50	HD 360	Above 60˚F (16˚C)	Poor
HD Extra Heavy	SAE 60	HD 360	Above 80˚F (27˚C)	Poor

CHANGING ENGINE OIL AND FILTER

CAUTION

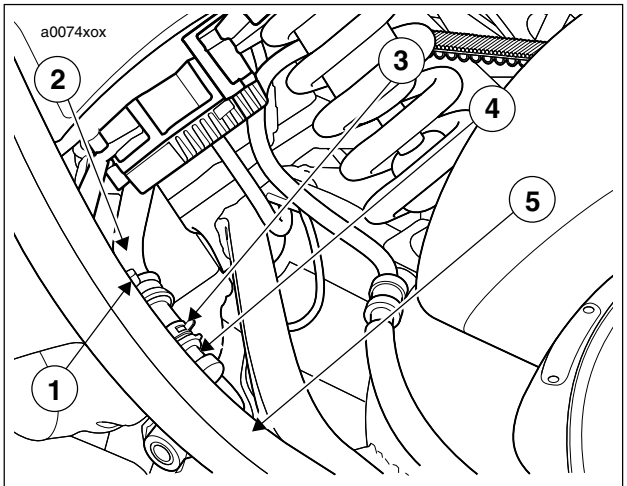
Do not switch oil brands indiscriminately; some oils interact chemically when mixed. Use of inferior oils or non-detergent oils can damage the engine.

1. See Figure 1-3. Locate the engine oil tank drain hose (normally the lower hose) and the crankcase breather drain hose (normally the upper hose) inside the foot peg support frame on the left side of the motorcycle.
2. Remove fastener from hose retention clamp.
3. Place a drain pan directly underneath the engine oil drain hose.
4. Loosen the spring clamp and remove engine oil drain drain plug from drain hose.
5. Allow used oil to drain completely.
6. Loosen spring clamp and remove crankcase breather hose drain plug to allow any oil present to drain.
7. See Figure 1-4. Remove the oil filter (located at the front of the engine).
8. Clean filter gasket contact surface on mounting plate (surface should be smooth and free of any debris, used oil or old gasket material).
9. See Figure 1-4. Apply a thin film of clean oil to gasket on new oil filter.
10. Install **new** oil filter (Part No. 63806-00Y) onto adapter until gasket contacts plate surface, then tighten another 1/2 to 3/4 turn. Do not overtighten.
11. Place two drain hoses back on the hose fixture. Install drain plugs to drain hoses and secure plugs with spring clamps.
12. See Figure 1-2. See Table 1-3. Remove dipstick and refill with approximately 1.5 qts (1,419.5 ml) recommended oil at filler hole.
13. Install dipstick and operate motorcycle for 10 minutes to reach normal operating temperature. Check oil level again (hot check) and add oil as necessary until oil registers between marks on dipstick.

⚠WARNING

Make sure no oil gets on tires when changing oil and filter. Failure to comply may adversely affect traction which could lead to a loss of control which could result in death or serious injury.

- Change oil more frequently if bike is operated under severe conditions (dusty, very hot or cold temperatures).
- Drain oil after operating motorcycle (while oil is still very warm).
- Replace oil filter every time the oil is changed.
- Drain the crankcase breather drain hose of any accumulated oil every time the oil is changed.



1. **Hose Retention Clamp Fastener**
2. **Oil Tank Drain Hose (lower hose) Crankcase Breather Hose (upper hose)**
3. **Spring Clamp**
4. **Engine Oil Drain Hose Cap**
5. **Foot peg Support Frame**

Figure 1-3. Oil Tank Drain Hose

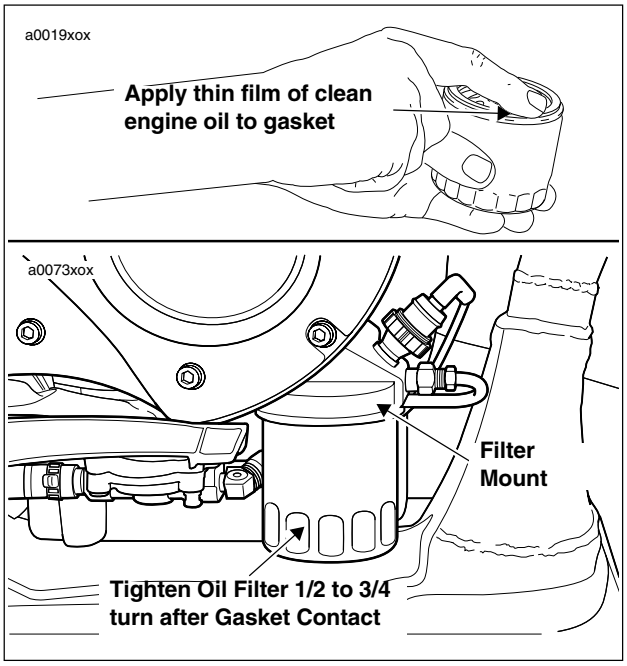


Figure 1-4. Installing New Oil Filter

GENERAL

Check the master cylinder reservoirs for proper fluid levels after the first 1000 miles (1600 km) and every 5000 miles (8000 km) thereafter. Also inspect fluid levels at the end of every riding season.

Check brake pads and rotors for wear at every service interval. See 1.7 BRAKE PADS AND ROTORS.

Inspect front and rear brake fluid level and condition:

- At 1,000 mile (1600 km) initial service and at every 5,000 mile (8,000 km) service thereafter.

Replace **D.O.T. 4 BRAKE FLUID**:

- Every 2 years.

Inspect front and rear brake system fitting and lines for leaks:

- At 1,000 mile (1600 km) initial service and at every service thereafter.

It is recommended to inspect both front and rear brake lines and replace as required:

- Every 4 years.

It is recommended to inspect both front and rear caliper and master cylinder seals and replace as required:

- Every 2 years.

Check rear brake pedal operation:

- Before every ride.
- At the 1000 mile (1600 km) service interval.
- At every 5000 mile (8000 km) service interval thereafter.

Lubricate the front brake hand lever:

- Every 5,000 miles (8,000 km)

FLUID LEVEL

See Figure 1-5. With motorcycle in a level position, check that brake fluid is between the upper and lower marks on front and rear reservoirs. Add **D.O.T. 4 BRAKE FLUID** if necessary. Be sure gasket and cap on reservoir fit securely.

BLEEDING BRAKES

⚠WARNING

D.O.T. 4 brake fluid can cause irritation of eyes and skin, and may be harmful if swallowed. If large amount of fluid is swallowed, induce vomiting by administering two tablespoons of salt in a glass of warm water. Call a doctor. In case of contact with skin or eyes, flush with plenty of water. Get medical attention for eyes. KEEP BRAKE FLUID OUT OF THE REACH OF CHILDREN. Failure to comply could result in death or serious injury.

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Figure 1-5. Rear Brake Fluid Reservoir

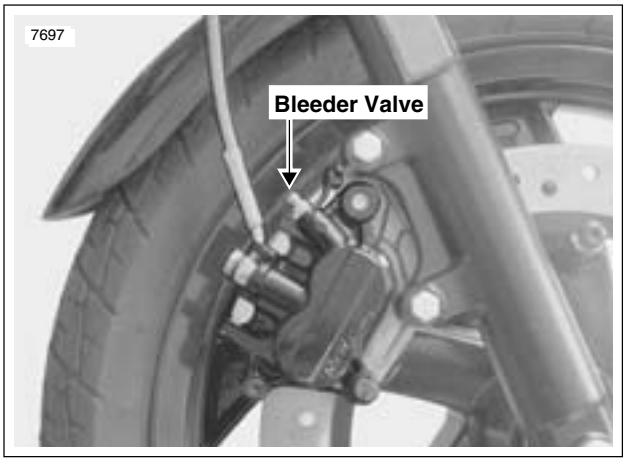


Figure 1-6. Front Brake Caliper Bleeder Valve

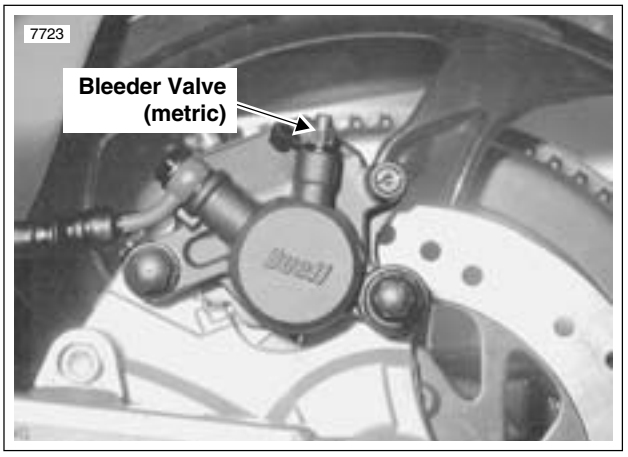


Figure 1-7. Rear Brake Caliper Bleeder Valve (Metric)

⚠WARNING

Never mix D.O.T. 4 with other brake fluids (such as D.O.T. 5). Use only D.O.T. 4 brake fluid in motorcycles that specify D.O.T. 4 fluid on the reservoir cap. Mixing different types of fluid may adversely affect braking ability and lead to brake failure which could result in death or serious injury

⚠WARNING

Use only fresh, uncontaminated D.O.T. 4 Fluid. Cans of fluid that have been opened may have been contaminated by moisture in the air or dirt. Use of contaminated brake fluid may adversely affect braking ability and lead to brake failure which could result in death or serious injury

⚠WARNING

Use only new black banjo washers (See Parts Catalog for Part No.) with D.O.T. 4 brake fluid. Earlier silver banjo washers are not compatible with D.O.T. 4 fluid and will not seal properly over time. Failure to comply may adversely affect braking ability and lead to brake failure which could result in death or serious injury.

NOTE

Hydraulic brake fluid bladder-type pressure equipment can be used to fill the brake master cylinder through the bleeder valve if master cylinder reservoir cover is removed to prevent pressurization.

1. Install end of a length of plastic tubing over caliper bleeder valve; place other end in a clean container. Stand motorcycle upright.
   a. See Figure 1-6. Front brake bleeder valve.
   b. See Figure 1-7. Rear brake bleeder valve.

CAUTION

Cover molded-in-color surfaces and right handlebar switches and use care when removing brake reservoir cover and adding D.O.T. 4 brake fluid. Spilling D.O.T. 4 brake fluid on molded-in-color surfaces will result in cosmetic damage. Spilling brake fluid on switches may render them inoperative.

2. Add **D.O.T. 4 BRAKE FLUID** to master cylinder reservoir. Do not reuse brake fluid.
   a. Remove two screws from front master cylinder cover. Bring fluid level to within 0.125 in. (3.2 mm) of molded boss inside front master cylinder.
   b. Remove cap and gasket from rear master cylinder reservoir. Bring fluid level to between upper and lower marks on reservoir.
3. Depress, release and then hold brake lever/pedal to build up hydraulic pressure.
4. Open bleeder valve (metric) about 1/2-turn counterclockwise; brake fluid will flow from bleeder valve and through tubing. When brake lever/pedal has moved 1/2-3/4 of its full range of travel, close bleeder valve (clockwise). Allow brake lever/pedal to return slowly to its released position.
5. Repeat Steps 2-4 until all air bubbles are purged.
6. Tighten bleeder valve (metric) to 3-5 ft-lbs (4.1-6.8 Nm).
7. Verify master cylinder fluid level as described in Step 2.

⚠WARNING

Always test motorcycle brakes at low speed after servicing or bleeding system. If brakes are not operating properly, or braking efficiency is poor, testing at high speeds could result in death or serious injury.

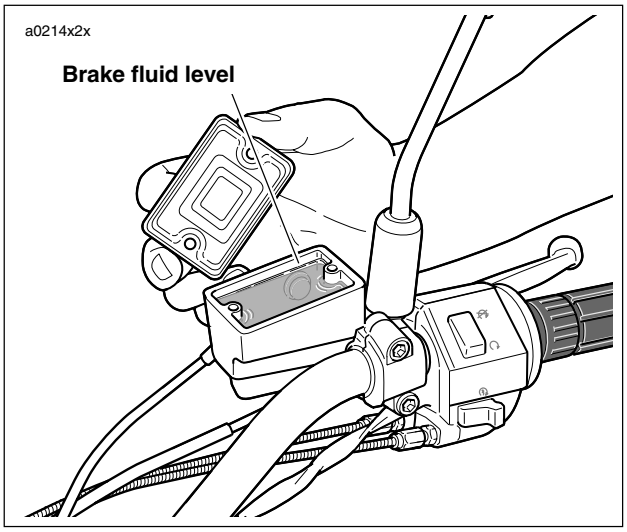


Figure 1-8. Brake Fluid Level - Front Reservoir

8. Attach covers to master cylinder reservoirs.
   a. Tighten screws on master cylinder reservoir cover to 9-13 **in-lbs** (1.0-1.5 Nm).
   b. Tighten cap on rear master cylinder securely.

REAR BRAKE PEDAL

⚠WARNING

Always test motorcycle brakes at low speed after servicing or bleeding system. If brakes are not operating properly, or braking efficiency is poor, testing at high speeds could result in death or serious injury.

Check rear brake pedal for proper operation.

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

1. Inspect locknut installation. Locknut should be flush with top surface of clevis.
2. Observe the position of brake pedal and foot peg. Brake pedal should be set so top surface of brake pedal is even with top surface of foot peg.
3. Set brake pedal height.
   a. Loosen locknut.
   b. Turn rod adjuster to obtain correct position.
   c. Tighten locknut.

NOTE

Brake pedal has no freeplay adjustment.

BRAKE PADS

⚠WARNING

Always replace brake pads in complete sets for correct brake operation. Never replace just one brake pad. Failure to install brake pads as a set could result in death or serious injury.

Check front and rear brake pads for minimum thickness:

- At the 1000 mile (1600 km) service interval.
- At every scheduled service interval thereafter.

See Figure 1-9. See Figure 1-10. Inspect brake pads for damage or excessive wear. Replace both pads as a set if friction material of either pad is worn to 0.1 in. (1.5 mm) or less. If this amount of wear occurs, wear grooves (2) will disappear from friction material surface.

Replace rear brake pads and pins:

- Every 15,000 miles (24,000 km)

NOTE

Always replace brake pads in pairs.

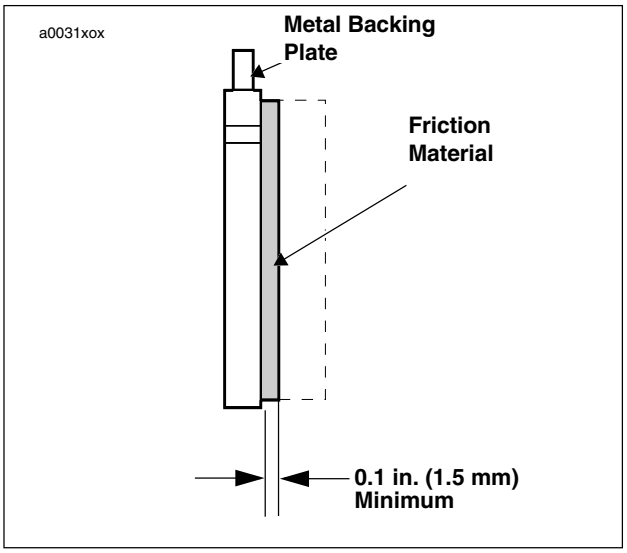


Figure 1-9. Brake Pad - Side View

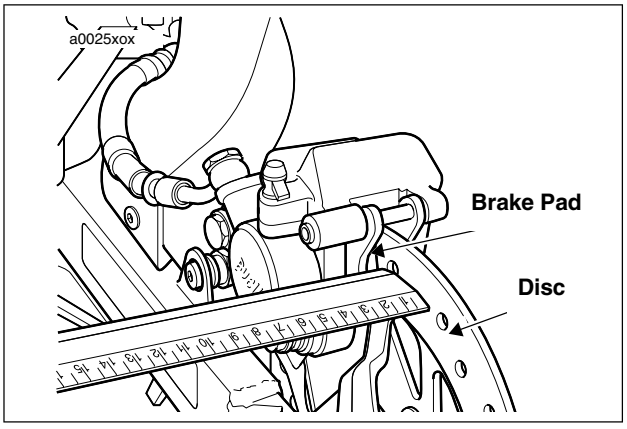


Figure 1-10. Measuring Rear Brake Outer Pad

BRAKE ROTORS

⚠WARNING

Do not allow brake fluid, bearing grease or other lubricants to contact brake rotor or reduced braking ability may occur, which could result in death or serious injury.

Check front and rear brake rotors for minimum thickness:

- At the 1000 mile (1600 km) service interval.
- At every scheduled service interval thereafter.

1. Measure rotor thickness. Replace if minimum thickness is less than 0.18 in. (4.5 mm).
2. Check rotor surface. Replace if warped or badly scored.
3. The brake rotor must be within the following specifications. If the brake rotor is suspected of being damaged, inspect rotor using the following measurements:
   - Lateral Movement: 0.01-0.02 in. (0.3-0.5 mm)
   - Radial Movement: 0.02 in. (0.45 mm)
   - Rotational Movement: 0.02 in. (0.39 mm)

TIRE INFLATION

Check front and rear tires for proper inflation and inspect tread for cuts or punctures:

- Weekly, and at 1,000 mile (1,600 km) initial service and at every 2,500 mile (4,000 km) service interval thereafter.

WHEEL BEARINGS

The wheel bearings are sealed units, no greasing or maintenance is required. Replace when worn. Excessive play or roughness indicates worn bearings that require replacement.

Check wheel bearings:

- Whenever wheel is removed (tire change, fork oil change).

1-4. Tire Specifications/Pressures

P3 Tires	SOLO RIDING	LOADED TO GVWR
Front Dunlop 100/80 16 50s K330	28 psi (193 kPa)	32 psi (220 kPa)
Rear Dunlop 120/80 16 60s K330	30 psi (207 kPa)	36 psi (248 kPa)

GENERAL

Check clutch for proper adjustment:

- At the 1,000 mile (1,600 km) initial service and at every 5,000 mile (8,000 km) service interval thereafter.

Oil and adjust the clutch control cable:

- Every 5,000 miles (8,000 km) with LUBIT-8 TUFOIL CHAIN AND CABLE LUBE (Part No. 94968-85TV).

ADJUSTMENT

Clutch control cable adjustment is required at this interval to compensate for normal clutch lining wear. If the clutch slips under load, or drags when released, adjust the clutch control cable.

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 1-11. 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 1-12. 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 1-12.

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 1-13. Pull ferrule (end of cable housing) away from bracket. Gap between ferrule and bracket should be 0.0625-0.125 in. (1.6-3.2 mm).
   b. See Figure 1-11. Set freeplay by turning adjuster.
   c. Tighten jam nut against adjuster.
   d. Slide rubber boot over cable adjuster mechanism.
8. Change or add transmission fluid if necessary.

NOTE

Clean parts before re-assembly and use a new gasket.

9. See Figure 1-12. Install clutch inspection cover using three TORX screws with washers. Tighten in a crosswise pattern to 7-9 ft-lbs (9.5-12.2 Nm).
10. Check clutch cable freeplay. See Step 6 above.
11. Install left footpeg support bracket. See 2.21 FOOTPEGS AND FOOTPEG SUPPORT BRACKETS.

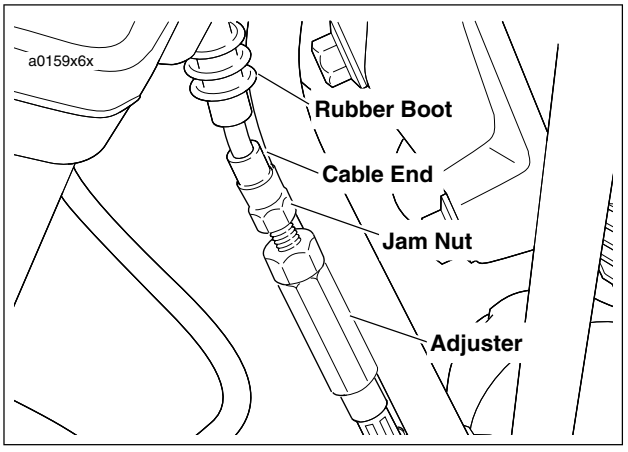
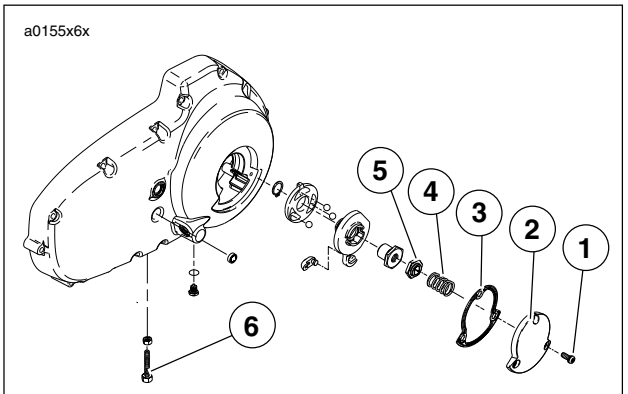


Figure 1-11. Clutch Cable Adjuster Mechanism



1. **TORX Screw**
2. **Clutch Inspection Cover**
3. **Quad Ring**
4. **Spring**
5. **Lockplate**
6. **Adjusting Screw**

Figure 1-12. Clutch Release Mechanism

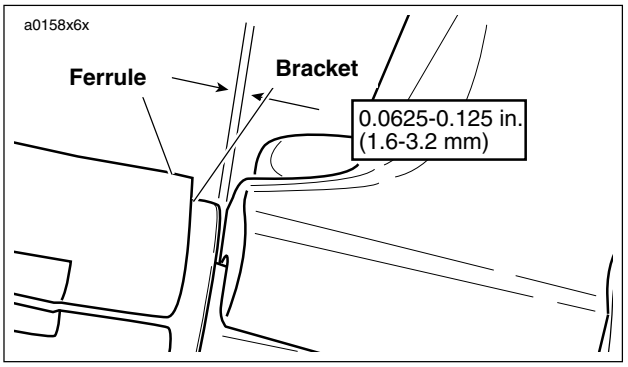


Figure 1-13. Adjusting Clutch Freeplay

GENERAL

The transmission should be drained and refilled with fresh fluid:

- At the 1,000 mile (1,600 km) initial service and at every 5,000 (8,000 km) service interval thereafter.

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

INSPECTION

1. Remove seat. See 2.28 SEAT.

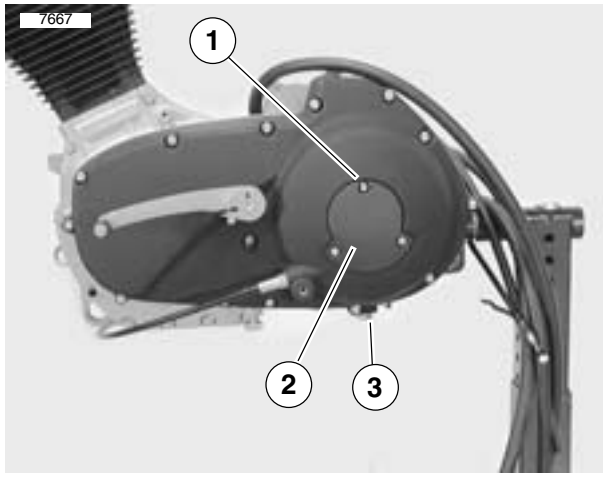
⚠WARNING

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. Remove left footpeg support bracket. See 2.21 FOOTPEGS AND FOOTPEG SUPPORT BRACKETS.
4. Remove three TORX screws with washers (1) from clutch inspection cover (2). Remove clutch inspection cover from primary cover.
5. See Figure 1-15. Inspect fluid level with motorcycle in upright position.
6. See Figure 1-14. Install clutch inspection cover using three TORX screws with washers. Tighten in a crosswise pattern to 7-9 ft-lbs (9.5-12.2 Nm).
7. Install left footpeg support bracket. See 2.21 FOOTPEGS AND FOOTPEG SUPPORT BRACKETS.
8. Connect negative battery cable to battery. See 1.4 BATTERY.
9. Install seat. See 2.28 SEAT.

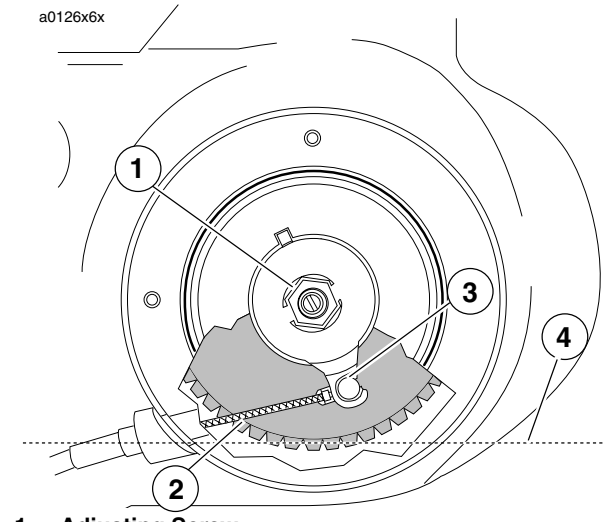
CHANGING TRANSMISSION FLUID

1. 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.
2. See Figure 1-14. Position a suitable container under drain plug (3). Remove magnetic drain plug with O-ring and drain fluid.
3. Wipe any foreign material from the magnetic drain plug (3). Inspect O-ring for deterioration and replace as required. Reinstall drain plug with O-ring. Tighten drain plug to 14-30 ft-lbs (19.0-54 Nm).
4. Remove seat. See 2.28 SEAT.



1. **Torx Screws with washers (3)**
2. **Clutch Inspection Cover**
3. **Magnetic Drain Plug (with O-ring)**

Figure 1-14. Primary Cover



1. **Adjusting Screw**
2. **Cable End**
3. **Coupling**
4. **Correct Fluid Level**

Figure 1-15. Fluid Level

⚠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.

5. Disconnect negative battery cable from battery.
6. Remove left footpeg support bracket. See 2.21 FOOTPEGS AND FOOTPEG SUPPORT BRACKETS.
7. 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.

8. See Figure 1-15. 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.
9. See Figure 1-14. Install clutch inspection cover using three TORX screws with washers. Tighten in a crosswise pattern to 7-9 ft-lbs (9.5-12.2 Nm).
10. Install footpeg support bracket. See 2.21 FOOTPEGS AND FOOTPEG SUPPORT BRACKETS.
11. Connect negative battery cable to battery. Tighten fastener to 60-96 **in-lbs** (6.8-10.9 Nm).
12. Install seat. See 2.28 SEAT.

⚠WARNING

After installing seat, pull upward on front of seat to be sure it is locked in position. If seat is loose, it could shift during vehicle operation, causing loss of control of vehicle and death or serious injury.

DRIVE BELT AND REAR SPROCKET 1.11

GENERAL

Drive belt tension is not adjustable. Replace the belt and sprocket if out of specification.

The drive belt and rear sprocket should be replaced:

- Every 15,000 miles (24,000 km)

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.

CLEANING

Use only mild soap and water spray solution to clean drive belt. Dry thoroughly. Do not immerse belt in solution.

INSPECTION

Checking Belt Deflection

NOTES:

Vehicle must be at room temperature and dry to obtain a correct measurement.

There are tight and loose spots during rear wheel rotation that affect belt deflection. For a more precise measurement, take three deflection readings, rotating the rear wheel between measurements. Average the three readings for a more precise measurement.

- Deflection should be measured with the rear wheel on the ground and a 160 lb. rider or equivalent weight sitting on the motorcycle.
- Maximum allowable deflection (measured with 10 lbs./ 4.5 kg. of force) is 0.5 in. (12.7 mm) at the bottom strand.

See Figure 1-16. Using BELT TENSION GAUGE (Part No. **HD-35381),** apply 10 lbs (4.5 kg) of force at the midpoint of the belt's appropriate strand. The maximum allowable deflection is 0.5 in. (12.7 mm) at the bottom strand.

- Replace belt and drive sprocket that exceed maximum allowable deflection.

⚠WARNING

Check alignment of the rear wheel and/or brake calipers when servicing motorcycle. A misaligned rear wheel and/ or brake caliper could cause the rear brake disc to bind resulting in loss of control and death or serious injury.

Rear Sprocket

1. See Figure 1-17. Inspect each tooth of rear sprocket for:
   a. Major tooth damage.
   b. Gouges caused by hard objects.

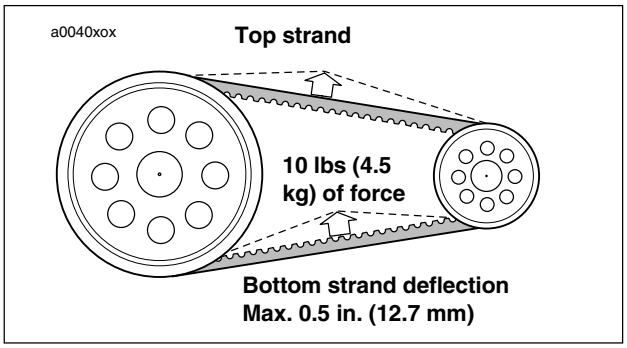


Figure 1-16. Measuring Belt Deflection

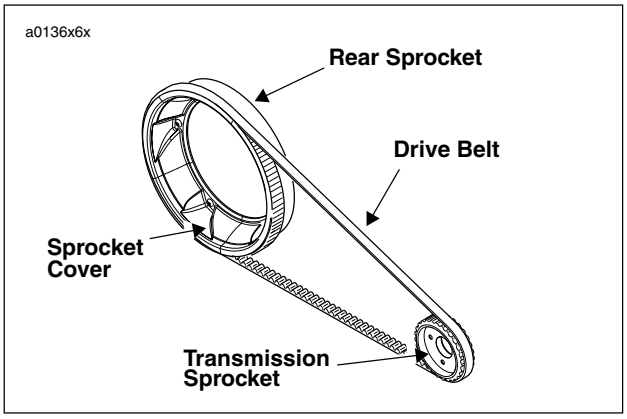


Figure 1-17. Drive Belt Assembly

2. Replace rear sprocket if major tooth damage exists.

Drive Belt

See Figure 1-18. 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.

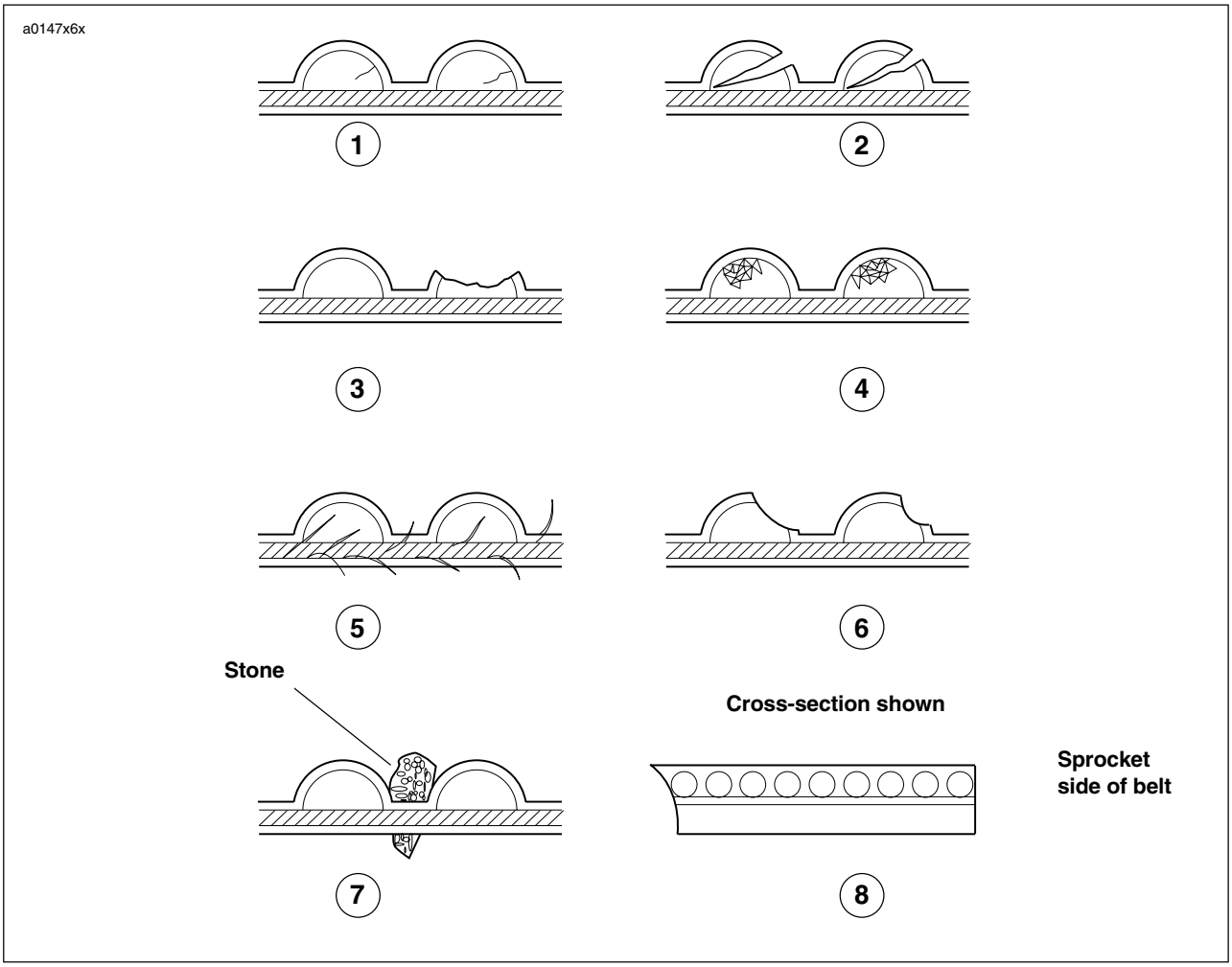


Figure 1-18. Drive Belt Wear Patterns

Table 1-5. Drive Belt Wear Analysis

PATTERN IN FIGURE 1-18.	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

DRIVE BELT AND REAR SPROCKET REPLACEMENT

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 the negative battery cable from the battery.
3. Raise rear wheel off floor using REAR WHEEL SUPPORT STAND (Part No. B-41174).
4. See Figure 1-19. Place rod or screwdriver through axle hole. Loosen rear axle nut (1) (metric).
5. Remove nut, lockwasher, and flat washer.
6. Pull axle out. Remove right side spacer.
7. Slide carrier with caliper off rotor.
8. Remove left side spacer.
9. Move wheel forward and slide belt off.
10. Remove sprocket cover and five washers from sprocket.
11. Remove and discard sprocket. Discard five washers.

⚠WARNING

Always wear proper eye protection and gloves when working with compressed air. Compressed air may eject debris with enough force to cause injury. Inadequate safety precautions may result in death or serious injury.

12. Clean residual loctite from threads in wheel sprocket towers with a suitable non-flammable solvent. Dry with compressed air.
13. Remove three TORX bolts, washers and front sprocket cover from right side of motorcycle. NOTE: It may be necessary to compress suspension to gain access to front sprocket cover TORX bolt.
14. Remove two TORX screws and washers from right side of rear inner fender. Carefully bend rear inner fender upwards and remove drive belt. Discard drive belt.
15. Position **new** drive belt over transmission drive sprocket.
16. Install rear inner fender with two TORX screws and washers. See 2.23 FENDERS.
17. Install front sprocket cover with three TORX screws and washers. See 2.22 SPROCKET COVER.
18. Position rear sprocket on rear wheel with mounting holes aligned.

⚠WARNING

Use only new P/N BA0511.2Z hardened washers between sprocket cover and sprocket. Failure to use hardened washers could cause sprocket to fail. Drive sprocket failure could lead to loss of control of vehicle which could result in death or serious injury.

19. Place **new** hardened washers on sprocket and install **new** sprocket cover over washers and sprocket.
20. Install sprocket and sprocket cover with five **new** sprocket bolts. Tighten bolts to 28-31 ft-lbs (38-42 Nm).
21. Place wheel centrally in the swingarm. Slide wheel far enough forward to slip belt over sprocket and rest belt on sprocket inboard of the teeth.

NOTE

Do not place belt on sprocket teeth at this time. Alignment of parts will be difficult. Resting belt next to teeth allows slack for easier alignment of wheel assembly.

22. Hold left side spacer in place and slide caliper and carrier over rotor.
23. Slide axle through washer, swing arm, carrier, left side spacer and wheel assembly.
    a. See Figure 1-20. Hold right side spacer in place.
    b. Insert axle through right side spacer and swingarm.
    c. Install flat washer, lockwasher and axle nut.
24. Place screwdriver or rod through axle hole and torque rear axle nut to 48-52 ft-lbs (65.1-70.5 Nm).
25. Slide belt on sprocket teeth by rotating wheel to “walk” belt onto teeth.
26. Lower motorcycle rear wheel.
27. Connect negative battery cable to battery. Tighten fastener to 60-96 in-lbs (6.8-10.9 Nm).
28. Install seat. See 2.28 SEAT.

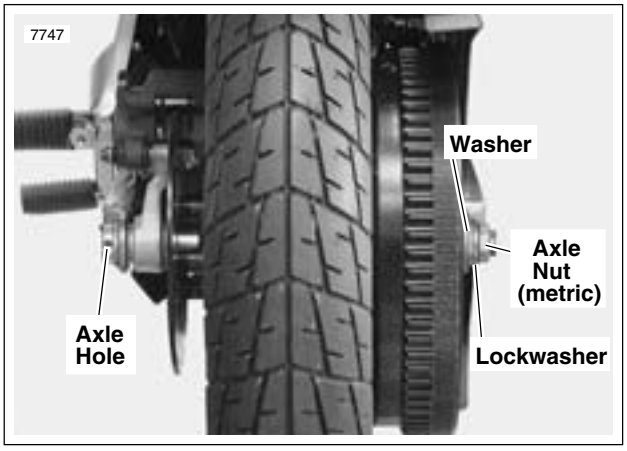


Figure 1-19. Rear Wheel Mounting

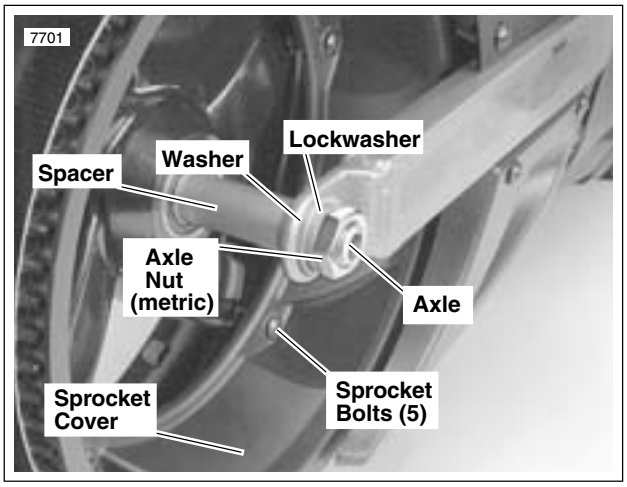


Figure 1-20. Rear Axle, Right Side

PRIMARY CHAIN 1.12

GENERAL

Adjust primary chain tension:

- At the 1,000 mile (1,600 km) initial service interval.
- At every 2,500 mile (4,000 km) interval thereafter.

ADJUSTMENT

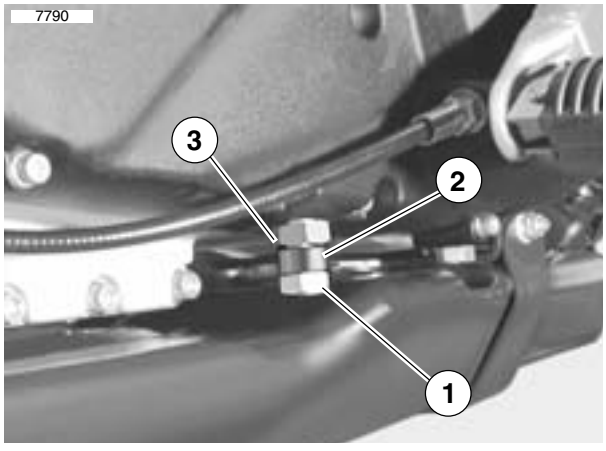
See Figure 1-21. Buell Blast Models are shipped with a spacer between the primary chain limiting screw and the locknut. The spacer is used to quickly get proper adjustment during production. This spacer should be removed and discarded at the first adjustment interval.

1. See Figure 1-22. 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 1-23. 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.



1. **Chain Limiting Screw**
2. **Spacer (discard after initial adjustment is made)**
3. **Jam Nut**

Figure 1-21. Adjustment Nut-with Spacer

Figure 1-22. Chain Limiting Screw-without Spacer

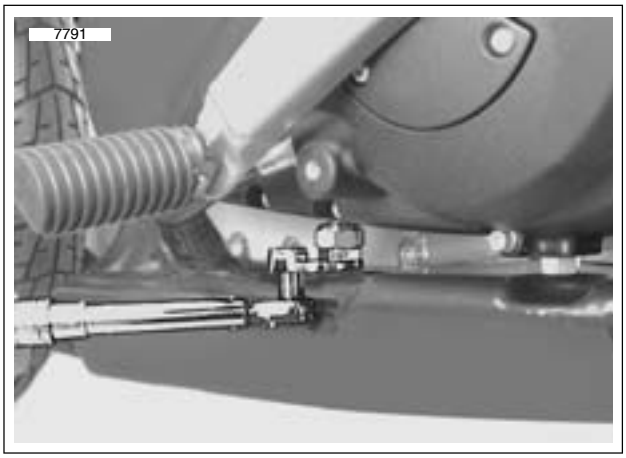


Figure 1-23. Tightening Chain Limiting Screw

REAR SHOCK ABSORBER 1.13

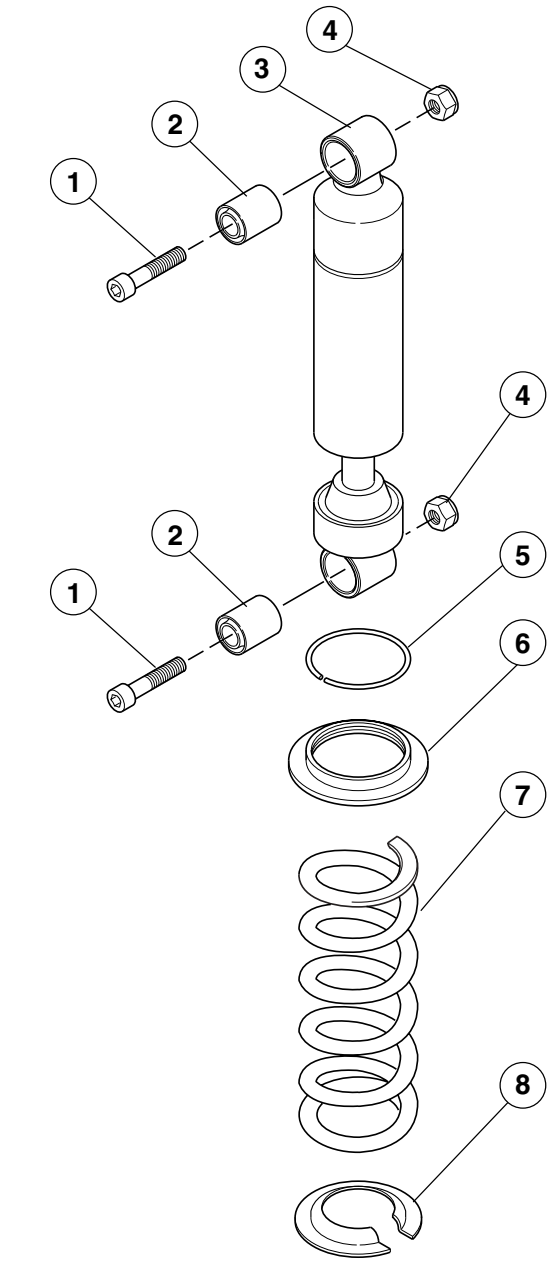
GENERAL

Inspect rear shock absorber for proper operation and for oil leaks. Inspect rubber shock eye bushings for deterioration:

- At every 10,000 mile (16,000 km) service interval.

NOTE

Rear shock absorber contains no user serviceable parts. Replace the shock absorber if it fails.



1. **Bolt**
2. **Damper Bushing**
3. **Damper**
4. **Nut**
5. **Stopper Ring**
6. **Spring Seat**
7. **Spring**
8. **Spring Seat Stopper**

Figure 1-24. Rear Shock Absorber Assembly

FRONT FORK OIL 1.14

GENERAL

Drain and refill the front forks with fresh fork oil:

- At every 20,000 mile (32,000 km) service interval.

FORK OIL CHANGE

1. Remove front forks. See 2.17 FRONT FORK.
2. See Figure 1-25. Clamp the fork in a vise with front fork holding tool (part no. B-4177).

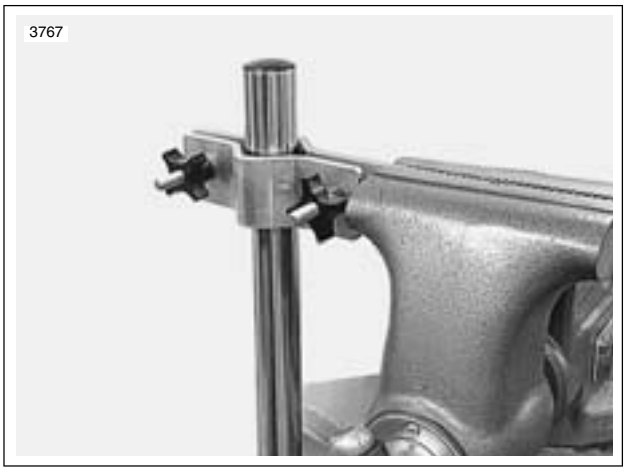


Figure 1-25. Clamping the Fork

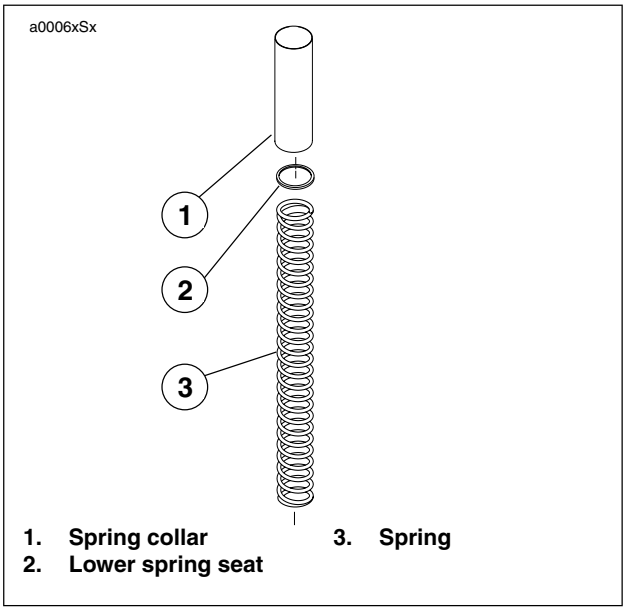
3. See Figure 1-26. Remove slider tube cap.

Figure 1-26. Slider Tube Cap

4. See Figure 1-27. Push down on the B-spring seat (O-ring included) and remove the stopper ring and spring seat.

Figure 1-27. B-Spring Seat

5. See Figure 1-28. Remove the spring collar, lower spring seat and spring from slider tube.
6. See Figure 1-29. Remove the fork oil by pumping the fork leg and rod 8-10 times until the rod moves freely.



1. **Spring collar**
2. **Lower spring seat**
3. **Spring**

Figure 1-28. Removing Sub-Assembly

Figure 1-29. Pumping Fork Oil

NOTE

The recommended fork oil is hydraulic fork oil type "E".

7. Pour 9.2 oz. fork oil into fork.
8. Install lower spring seat and spring collar.
9. Coat a new O-ring with fork oil or sealing grease.
10. Install new O-ring onto spring seat.
11. See Figure 1-30. Push down on spring seat past groove to install stopper ring. Stopper ring will lock into groove when installed correctly.
12. See Figure 1-31. Install slider tube cap.
13. Install front forks. See 2.17 FRONT FORK.

Figure 1-30. Compressing Spring Seat

Figure 1-31. Slider Tube Cap

STEERING HEAD BEARINGS 1.15

GENERAL

Check steering head bearings:

- At the 1000 mile (1600 km) initial service and at every 2,500 mile (4,000 km) service interval thereafter.
- When storing or removing the motorcycle for the season.

Lubricate and adjust steering head bearings:

- At every 20,000 mile (32,000 km) service interval. Lubricate the steering head bearings with WHEEL BEARING GREASE (Part No. 99855-89)

INSPECTION

With motorcycle front end raised off of floor, check to make sure front fork turns freely, without any binding or interference. Also check to make sure there is no appreciable front to rear fork shake indicating excessive bearing looseness.

1. Detach clutch cable at handlebar.
2. Remove seat and fuel tank. See 4.2 FUEL TANK COVER/FUEL TANK.
3. Attach lifting straps to frame tube behind steering neck. Raise front wheel off floor using a floor hoist and lifting straps. Turn front wheel to full right lock.
4. See Figure 1-32. Attach a spring scale into the hole in the front axle. With scale 90 degrees from fork leg, pull front wheel to center position. It should take **6.5-7 lbs (2.9-3.2 kg)** to pull front wheel to center.
5. Attach clutch cable to handlebar.

NOTE

Check that clutch and throttle cables do not bind when measuring bearing resistance.

ADJUSTMENT

1. Detach clutch cable at handlebar.
2. Remove seat and fuel tank. See 4.2 FUEL TANK COVER/FUEL TANK.
3. Attach lifting straps to frame backbone behind steering neck. Raise front wheel off floor using a floor hoist and lifting straps.
4. Turn front wheel to full right lock.
5. See Figure 1-32. Attach a spring scale into the hole in the front axle. Pull front wheel to center position. It should take **6.5-7 lbs (2.9-3.2 kg)** to pull front wheel to center.
6. See Figure 1-33. To adjust:
   a. Loosen both pinch screws on lower triple clamp.
   b. Loosen center cap pinch screw on upper triple clamp.
   c. Loosen cap nut, then tighten to 48-52 ft-lbs (65-71 Nm) to seat bearing. Loosen cap nut and retighten to 28-32 ft-lbs (38-43 Nm).
7. Recheck tension using spring scale. See Step 5.
8. Tighten both lower triple clamp pinch screws to 22-29 ft-lbs (30-39 Nm).
9. Tighten center cap pinch screw to 7-10 ft-lbs (10-14 Nm).

Figure 1-32. Steering Head Bearing Check

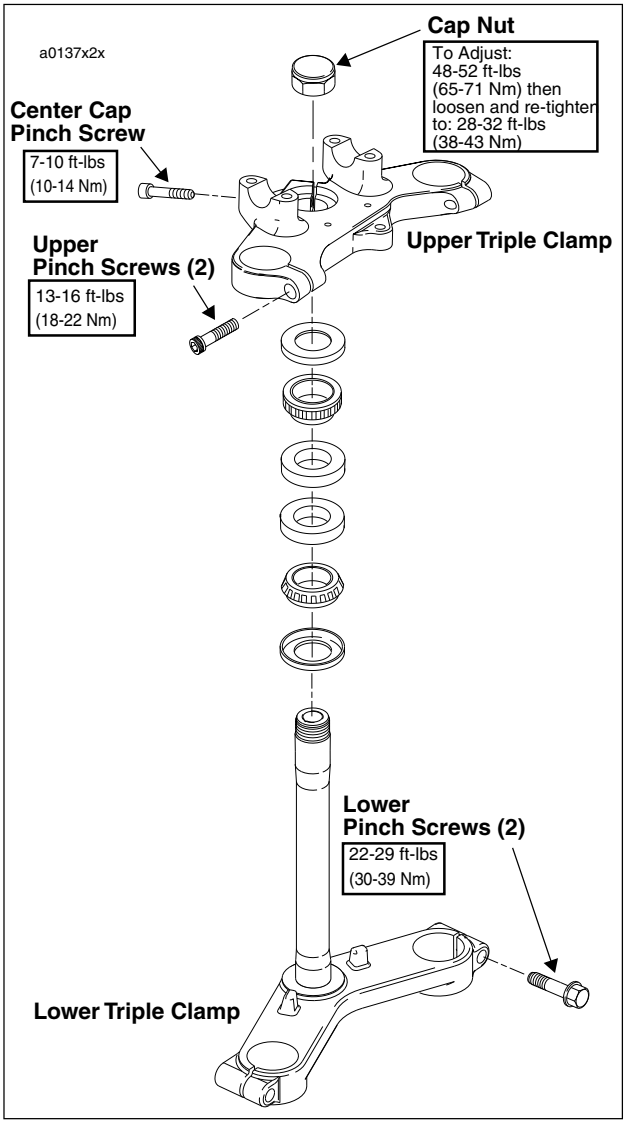


Figure 1-33. Fork Stem and Bracket Assembly

SPARK PLUG 1.16

GENERAL

Change spark plug:

- At every 10,000 mile (16,000 km) service interval. Use only Harley-Davidson No. 10R12 plug (Part No. 27661-00Y) as a replacement.

INSPECTION

1. Disconnect cable from both spark plug by pulling on rubber boot (not cable).
2. Remove spark plug and examine.
3. See Figure 1-34. Compare your observations of the plug deposits with the descriptions provided below.
   a. A wet, black and shiny deposit on plug base, electrodes and ceramic insulator tip indicates an oil fouled plug. The condition may be caused by one or more of the following: worn pistons, worn piston rings, worn valves, worn valve guides, worn valve seals, a weak battery or a faulty ignition system.
   b. A dry, fluffy or sooty black deposit indicates a carburetor air-fuel mixture that is too rich, engine idling for excessive periods of time and/or enrichener usage for excessive periods of time.
   c. A light brown, glassy deposit indicates an overheated plug. This condition may be accompanied by cracks in the insulator or by erosion of the electrodes and is caused by an air-fuel mixture that is too lean, a hot-running engine, valves not seating or improper ignition timing. The glassy deposit on the spark plug is a conductor when hot and may cause high-speed misfiring. A plug with eroded electrodes, heavy deposits or a cracked insulator must be replaced.
   d. A plug with a white, yellow, tan or rusty brown powdery deposit indicates balanced combustion. Clean off spark plug deposits at regular intervals.
4. If the plug requires cleaning between tune-ups and replacement plug is not available, proceed as follows:
   a. De-grease firing end of spark plug using ELECTRICAL CONTACT CLEANER. Dry plug with compressed air.
   b. Use a thin file to flatten spark plug electrode. A spark plug with sharp edges on its electrodes requires 25%-40% less firing voltage than one with rounded edges.
5. If the plug cannot be cleaned, replace with HD No. 10R12 spark plug (Part No. 27661-00Y).
6. Check electrode gap with a wire-type feeler gauge. Gap should be 0.038-0.043 in. (0.97-1.09 mm).
7. Apply LOCTITE ANTI-SEIZE to threads of spark plug. Install and tighten to 11-18 ft-lbs (14.9-24.4 Nm).
8. Connect spark plug cable. Verify that cable is securely connected to ignition coil and spark plug.

Figure 1-34. Typical Spark Plug Deposits

GENERAL

Inspect the air cleaner filter element:

- At every 10,000 mile (16,000 km) service interval. Inspect the filter element more frequently if operated in dusty conditions.

Replace the air cleaner filter element:

- Every 30,000 miles (48,000 km) or as required.

REMOVAL

1. Release five latches around perimeter of air box cover. See Figure 1-35.
2. Remove single Phillips screw at bottom of air box cover (7 o'clock position).
3. Pull cover from air box.
4. Pull conical shaped filter from air box.
5. Squeeze wings on spring clamp with pliers and pull clean air inlet hose from fixed position on allen head screw (gold) at top of venturi ring. Remove screw with spacer.
6. Remove remaining two allen head screws to free venturi ring from carburetor flange.
7. Remove hex screw at bottom of air box (6 o'clock position) to release bracket from crankcase hole.
8. Moving to left side of vehicle, remove two flange bolts to release side of air box from triangular shaped bracket. Do not remove bottom bolt to crankcase. See Figure 1-36.

CAUTION

Do not take bolt in and out of the crankcase unless necessary. Since the potential for stripping always exists during removal and installation, leave the bolt intact to avoid possible damage to the crankcase.

9. Returning to the right side of the vehicle, carefully pull out air box. When partially removed, detach clean air inlet hose from middle fitting on 3-way connector.
10. Remove gasket from inboard side of air box. Discard gasket.

CLEANING AND IINSPECTION

1. Thoroughly clean air cleaner cover and backplate.
2. Replace the filter element if damaged or if filter media cannot be adequately cleaned.

⚠WARNING

Do not use gasoline or solvents to clean the filter element. Volatile or flammable cleaning agents may cause an intake system fire, which could result in death or serious injury.

3. Wash the filter element (and hose connections) in warm, soapy water. To remove soot and carbon, soak element for 30 minutes in warm water with mild detergent.

⚠WARNING

Compressed air can pierce the skin and cause injury. Never use your hand to check for leaks or to determine air flow rates. Wear safety glasses to shield your eyes from flying dirt and debris. Failure to comply could result in death or serious injury.

4. Dry the filter element using low pressure compressed air (32 psi/221 kPa maximum). Rotate the element while moving air nozzle up and down the element exterior. Do not rap the element on a hard surface.
5. Hold the filter element up to a strong light source. The element can be considered sufficiently clean if light is uniformly visible through the media.
6. Inspect all hose connections for cuts, tears, holes or signs of deterioration. Replace as necessary. Direct compressed air through hoses to verify that they are not plugged.

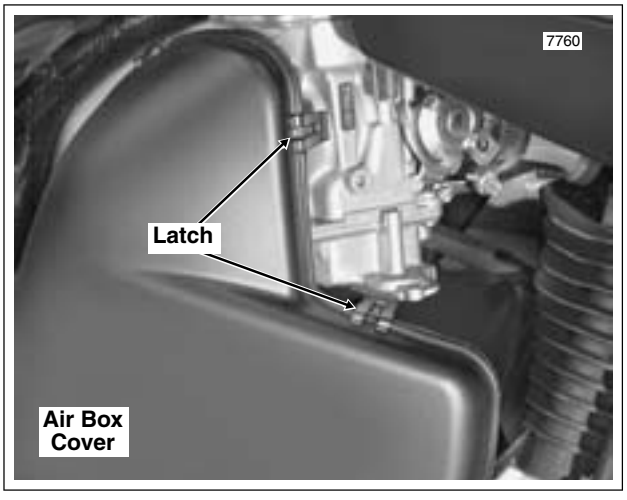


Figure 1-35. Release Air Box Cover Latches

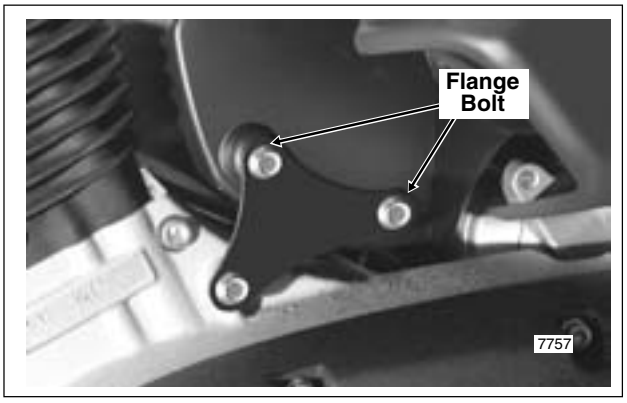


Figure 1-36. Remove Air Box From Bracket

INSTALLATION

1. Obtain a **new** carburetor gasket. Remove the protective paper and place the sticky side of the gasket against the back of the airbox. Use care to align the holes in the gasket with the slotted holes in the airbox.

2. Standing on the right side of the vehicle, start air box into opening below and to the rear of the carburetor. When partially installed, push clean air inlet hose onto middle fitting of 3-way connector.

3. Moving to opposite side of vehicle, apply a small dab of Loctite Low Strength Threadlocker 222 (Purple) to threads of two flange bolts. Slide bolts through top two holes of triangular bracket and install into left side of air box. Alternately tighten screws to 3-5 ft-lbs (4.1-6.8 Nm).

4. Returning to right side of vehicle, align slots in air box with holes in carburetor flange.

5. Apply a small dab of Loctite Medium Strength Threadlocker 243 (blue) to threads of two short allen head screws. With the flat edge at the top, align holes in venturi ring with holes in carburetor flange. Install screws in the 5 o'clock and 9 o'clock positions. Alternately tighten screws to 18-22 **in-lbs** (20.-2.5 Nm).

6. Slide spacer onto longer allen head screw (gold), if removed. Apply a small dab of Loctite Medium Strength Threadlocker 243 (blue) to threads of screw and install into remaining hole in venturi ring (2 o'clock position). Tighten screw to 18-22 **in-lbs** (20.-2.5 Nm).

7. Squeeze wings on spring clamp with pliers and push free end of clean air inlet hose over head of gold screw (and spacer) to fix position. See Figure 1-37.

8. Apply one drop of Loctite High Strength Threadlocker 262 (red) to threads of hex screw. Install screw at bottom of air box (6 o'clock position) to secure air box bracket to crankcase hole. Tighten screw to 10-12 ft-lbs (13.6-16.3 Nm).

9. With the larger OD inboard, install conical shaped filter into air box.

10. Taking note of index pin on inboard side of cover and small depression at tip of cone, position cover onto air box so that pin engages depression. See Figure 1-38.

11. Lock five latches around perimeter of air box cover.

12. Install Phillips screw at bottom of air box cover (7 o'clock position) to secure cover to air box. Tighten screw to 4-6 **in-lbs** (0.5-0.7 Nm).

Figure 1-37. Fix Hose End Onto Allen Head Screw

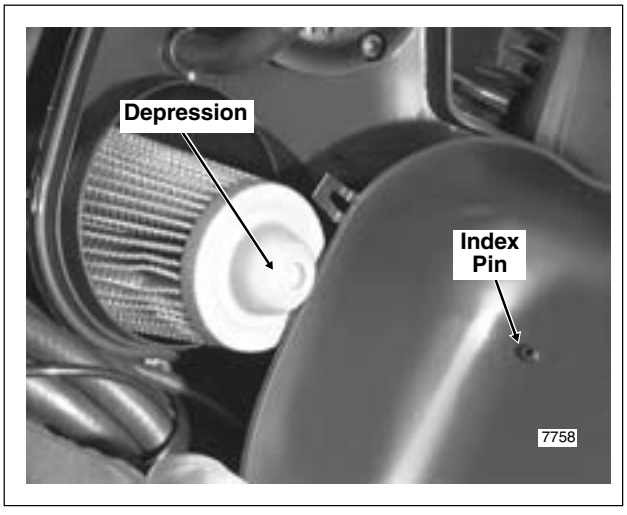


Figure 1-38. Install Air Box Cover

THROTTLE CABLES 1.18

GENERAL

Lubricate throttle control cables with LUBIT-8 TUFOIL CHAIN AND CABLE LUBE (Part No. 94968-85TV):

- Every 5,000 mile (8,000 km) service interval.

Check throttle cable adjustment:

- Before every ride.
- At the 1,000 mile initial service interval and at every 2,500 mile (4,000 km) service interval thereafter.

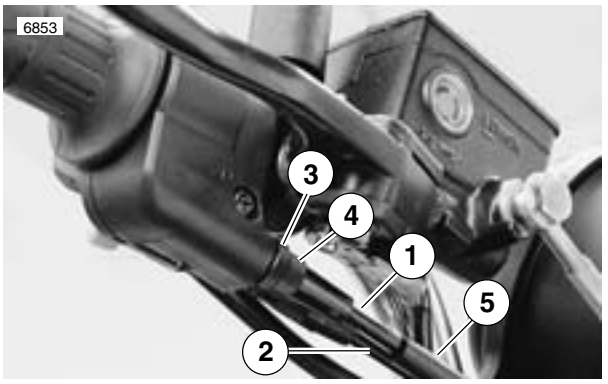
ADJUSTMENT

⚠WARNING

Throttle cables must not pull tight when handlebars are turned fully to left or right fork stops. Be sure wires and throttle cables are clear of fork stops at steering head so they will not be pinched when fork is turned against stops. Steering must be smooth and free with no binding or interference. Anything interfering with carburetor operation may cause loss of vehicle control which could result in death or serious injury.

With engine running, turn handlebars through full range of travel. If engine speed changes during this maneuver, adjust throttle cables as follows:

1. See Figure 1-39. Slide rubber boot (5) off cable adjuster (4).
2. Loosen cable adjuster lock (3) on each adjuster.
3. Turn adjusters (4) in direction which will shorten cable housings to minimum length.
4. Point front wheel straight ahead. Twist throttle control grip to fully open position; hold in position.
5. Turn adjuster (4) on throttle control cable (1) until throttle cam stop touches carburetor stop plate. Tighten adjuster lock on throttle control cable (1) adjuster (4); release throttle control grip.
6. Turn handlebars fully to right. Turn adjuster (4) on idle control cable (2) until end of cable housing just touches the carburetor cable guide.
7. Twist and release throttle control grip a few times. Carburetor throttle must return to idle position each time throttle grip is released. If this is not the case, turn adjuster (4) on idle control cable (2) (shortening cable housing) until throttle control functions properly.
8. Tighten adjuster lock (3) on idle control cable (2) adjuster (4). Recheck operation of throttle control (Step 7).
9. Slide rubber boot (5) over each cable adjuster (4). Recheck engine slow idle speed; adjust if required.
10. Install air cleaner assembly. See 4.3 AIR CLEANER.



1. **Throttle control cable**
2. **Idle control cable**
3. **Cable adjuster lock**
4. **Cable adjuster**
5. **Rubber boot**

Figure 1-39. Throttle Control Cables

GENERAL

Check ignition timing:

- Every 10,000 mile (16,000 km) service interval.

Check engine idle speed (**after** bike has warmed up):

- At the 1,000 mile (1,600 km) initial service and every 2,500 mile (4,000 km) service interval thereafter.

DYNAMIC TIMING

NOTE

Use static timing method if inductive timing light is not available. See 7.8 IGNITION MODULE/ CAM POSITION SENSOR.

Dynamic Timing

1. Remove hex socket timing plug from timing inspection hole, which is located on right crankcase half and centered below engine cylinders. Install TIMING MARK VIEW PLUG (Part No. HD-96295-65D) into timing inspection hole. Make sure view plug does not touch flywheel.
2. Connect leads of INDUCTIVE TIMING LIGHT (Part No. HD-33813) to spark plug cable, battery positive (+) terminal, and suitable ground.
3. Make sure vacuum hose is properly installed at carburetor. Start engine.
4. Make sure sidestand is up and transmission is in NEUTRAL.
5. Set engine speed to 1200 rpm.

CAUTION

When checking ignition timing, always check at the rpm listed. Failure to do so may result in running engine with too much spark advance, and may cause extreme engine knock and engine failure.

6. See Figure 1-40. Timing light will flash each time an ignition system spark occurs. Aim timing light into timing inspection hole. The advance timing mark (two dots) should be centered in timing inspection hole. If this is the case, ignition timing is properly adjusted. Go to Step 11. If timing mark is not centered or is not visible in the timing inspection hole, see to Steps 7-12.
7. See Figure 1-41. Drill hole in location shown and remove outer timer cover, if not removed.
8. Loosen module plate screws just enough to allow sensor plate to be rotated using a screwdriver in the plate's notch.
9. With timing light aimed into inspection hole, rotate module plate until advance timing mark is centered in timing inspection hole (as shown in Figure 7-17).
10. See Figure 1-41. Tighten module plate screws to 15-30 **in-lbs** (1.7-3.4 Nm)

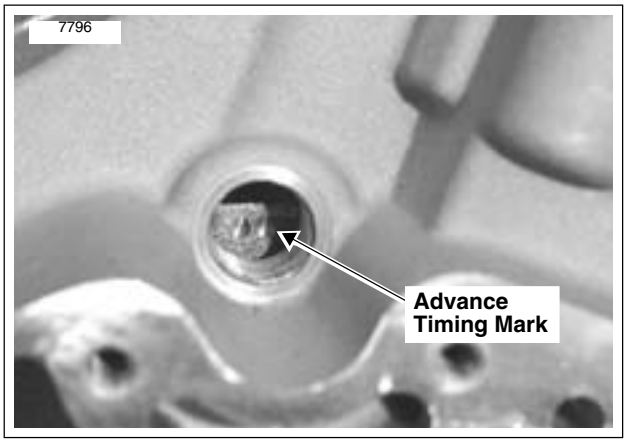


Figure 1-40. Dynamic Ignition Timing

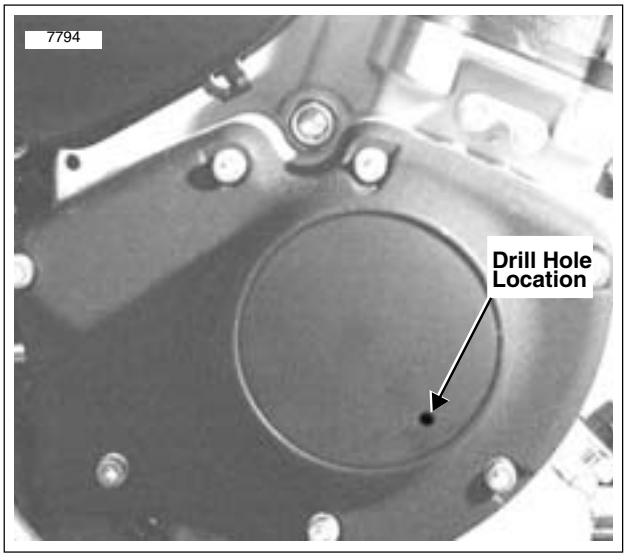


Figure 1-41. Drilling/Removing Timer Cover

11. Install **new** outer cover, if removed.
12. Remove TIMING MARK VIEW PLUG from timing inspection hole. Install hex socket timing plug. Torque timing plug to 10-15 ft. lbs (14-21 Nm).

IDLE SPEED ADJUSTMENT

NOTE

The Blast P3 is equipped with an auto-enrichener that automatically increases the idle speed and richens the fuel mixture at startup. To correctly set the idle speed, the auto-enrichment cycle must be complete (idle speed has slowed from startup).

Check idle speed adjustment:

- **After** the bike is warmed up.

Regular idle speed is 1200 RPM. Set idle speed using remote idle adjustment screw. See Figure 1-43.

1. Perform dealer road test first.

NOTE:

Be sure the engine is warmed up to normal operating temperature. Be aware that because there are variations in individual components, it is possible for a properly warmed-up engine to idle at 2000 RPM.

2. See Figure 1-42. The ignition coil cable is located on the left side of the bike behind the fuel supply valve. Place HAND-HELD TACHOMETER (SNAP-On Part No. ONO-SE-1100) on ignition coil cable.
3. Press the tachometer button to obtain a reading for the current RPM.
4. See Figure 1-43. Set engine speed by turning the idle adjuster clockwise to increase speed or counter clockwise to decrease speed.
5. Repeat steps 1, 2 and 3 until the tachometer has a reading of 1200 RPM.
6. Turn the ignition switch to off position.

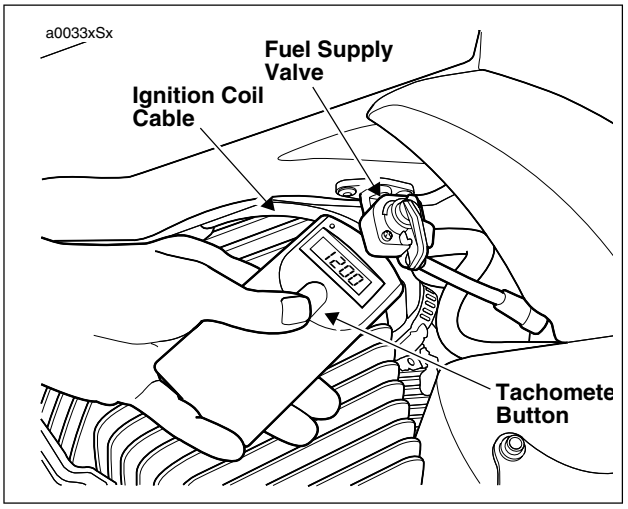


Figure 1-42. Checking RPM

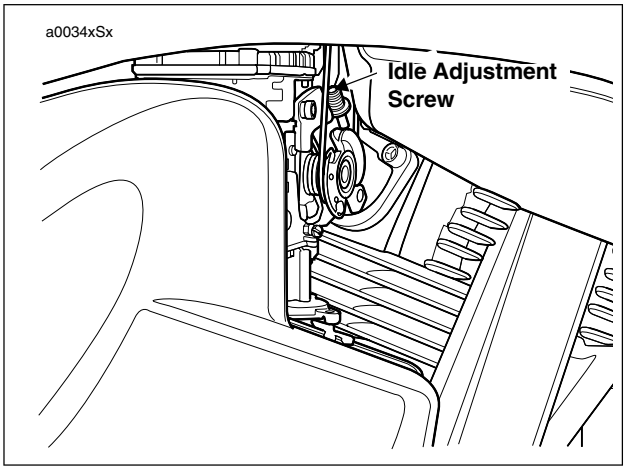


Figure 1-43. Adjusting Idle Speed

FUEL SUPPLY VALVE AND FILTER STRAINER 1.20

GENERAL

Inspect fuel supply valve, fuel lines and fittings for leaks:

- At the 1,000 mile (1,600 km) initial service and every 2,500 mile (4,000 km) service interval thereafter.

Inspect and clean the fuel filter strainer:

- At every 20,000 mile (32,000 km) service interval. Replace as required.

REMOVAL

⚠WARNING

Gasoline is extremely flammable and highly explosive. When servicing the fuel system, do not smoke or allow open flame or sparks in the vicinity. Inadequate safety precautions could result in death or serious injury.

1. Remove seat. Depress latch at bottom and pull seat up and back to remove.

⚠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. Unthread bolt and remove battery negative cable (black) from battery negative (-) terminal.
3. Drain fuel tank as follows:
   a. Rotate handle on the fuel supply valve to the fully vertical position to shut the gasoline supply to the carburetor OFF. See A of Figure 1-44.

⚠WARNING

Some gasoline will drain from the outlet hose when disconnected from the fuel valve. Thoroughly wipe up any spilt fuel immediately. Dispose of rags in a suitable manner. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

   b. Turn slotted screw to loosen band clamp on outlet fitting at side of fuel valve. Pull hose from fitting.
   c. Attach length of spare hose to outlet fitting. Place free end of hose into a suitable container.
   d. Rotate handle of fuel supply valve to RES(ERVE) to start the flow of fuel. See C of Figure 1-44.
   e. Once the fuel tank is completely drained, rotate handle of fuel supply valve to OFF. Remove spare hose from outlet fitting.

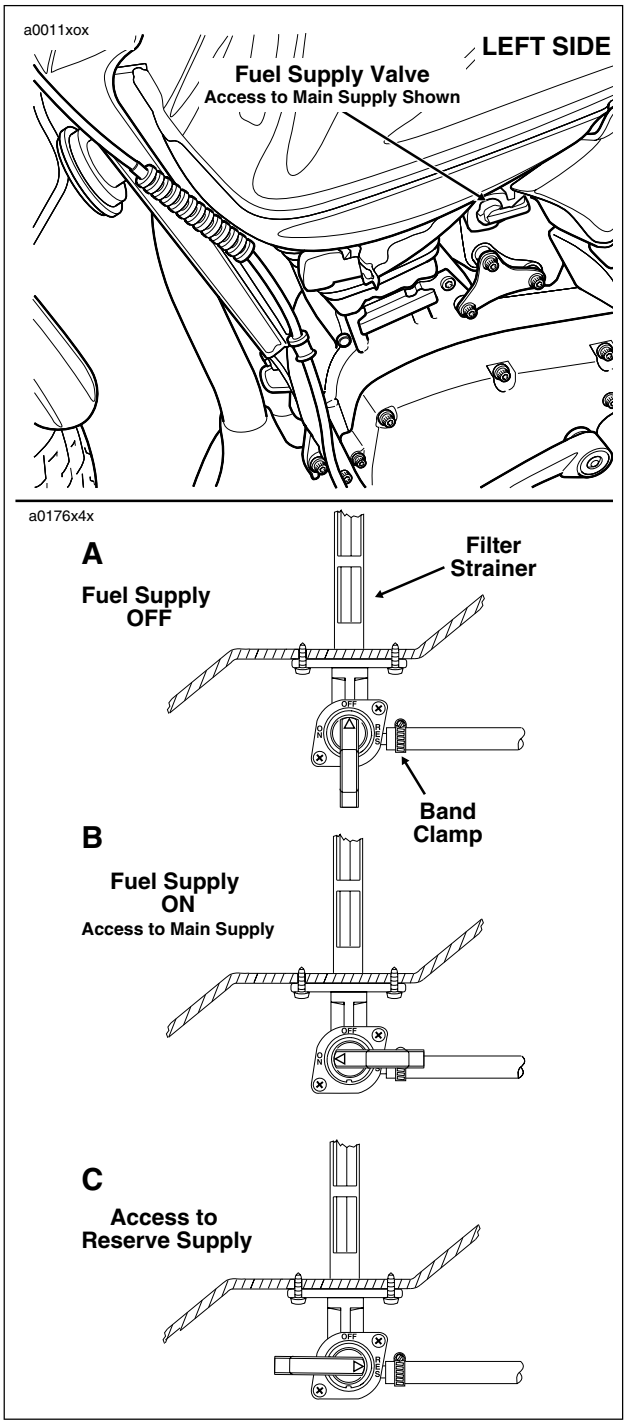


Figure 1-44. Fuel Supply Valve

⚠WARNING

Even with the fuel tank completely drained, a small amount of gasoline may leak from the bore when the fuel supply valve is loosened or removed. Thoroughly wipe up any spilt fuel immediately. Dispose of rags in a suitable manner. Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious injury.

4. Remove two allen head screws from fuel valve and pull assembly from fuel tank bore.

5. Remove O-ring from flange of fuel valve assembly. Discard O-ring.

6. Carefully unthread fuel filter strainer from fuel valve assembly.

CLEANING AND INSPECTION

Clean strainer using a suitable solvent. Discard strainer if any damage is found.

INSTALLATION

1. Carefully thread fuel filter strainer onto fuel valve assembly.

2. Install **new** O-ring into groove on flange of fuel valve assembly.

3. Insert fuel valve assembly into fuel tank bore and install two allen head screws. Alternately tighten screws to 6-10 **in-lbs** (0.7-1.1 Nm).

4. Push hose onto outlet fitting at side of fuel valve. Turn slotted screw to tighten band clamp.

5. Verify that handle of fuel supply valve is in the OFF position and fill the fuel tank.

6. Rotate handle of fuel supply valve to ON and carefully inspect for leaks. Return the valve to the OFF position when finished.

7. Insert bolt through battery negative cable (black) into threaded hole of battery negative (-) terminal. Tighten bolt to 60-96 **in-lbs** (6.8-10.9 Nm).

8. Position seat on frame backbone, so that tongue at bottom engages slot in frame weldment. Push down on rear of seat until spring-loaded latch fully engages groove of seat pin.

⚠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 that could result in death or serious injury.

STARTER INTERLOCK AND ELECTRICAL SWITCHES 1.21

GENERAL

Lubricate sidestand with LOCTITE LUBRIPLATE or LITHIUM GREASE:

- At every 5,000 mile (8,000 km) service interval.

Inspect all electrical equipment and switches, including starter interlock for proper operation:

- At the 1,000 mile (1,600 km) initial service and every 2,500 mile (4,000 km) service interval thereafter.

TESTING INTERLOCK

The starter/ignition interlock system is designed to prevent unintended start-up and/or forward motion of the motorcycle. One of three conditions must exist to allow operation of the vehicle:

- Clutch disengaged (lever pulled in - must be done whenever starting motorcycle).
- Transmission in Neutral
- Sidestand retracted

If the motorcycle starts and operates without any of the three conditions being met, see 7.11 STARTER/IGNITION INTERLOCK, for troubleshooting procedures.

TESTING SWITCHES

Check the following electric switches for proper operation:

- Left and Right directional signals and dash indicator.
- Neutral indicator Light on dash
- Headlamp low and high beam, high beam flash and high beam indicator light
- Oil Pressure Indicator Light
- Odometer reset switch
- Tail lamp
- Brake lamp with both front and rear brake application
- Speedometer
- Horn
- Ignition stop/run switch
- Electric starter switch

CRITICAL FASTENER TORQUE VALUES 1.22

GENERAL

Check stabilizer links and engine mounts for damage and hardware for proper tightness:

- At every 10,000 mile (16,000 km) service interval.

Inspect muffler strap and exhaust system hardware for damage and proper tightness:

- At every 10,000 mile (16,000 km) service interval.

Inspect critical fasteners (listed below) for proper tightness:

- At every 10,000 mile (16,000 km) service interval.

CRITICAL FASTENER TORQUES

Left and Right Handlebar Control Fasteners:

- Left: 25-33 **in-lbs** (2.8-3.7 Nm)
- Right: 25-33 **in-lbs** (2.8-3.7 Nm)

Handlebar Fasteners:

- 10-12 ft-lbs (14-16 Nm)

Brake Banjo Bolts:

- 16-20 ft-lbs (22-27 Nm)

Brake Caliper Mounting Bolts:

- Front: 18-22 ft-lbs (24-30 Nm)
- Rear (Large): 18-22 ft-lbs (24-30 Nm)
- Rear (Small): 14.5-18 ft-lbs (20-24 Nm)
- Caliper Pin: 11-14.5 ft-lbs (15-20 Nm)

Front and Rear Rotor TORX Screws:

- 24-27 ft-lbs (33-37 Nm)

Front and Rear Axle Nuts:

- Front: 38-42 ft-lbs (52-57 Nm)
- Rear: 48-52 ft-lbs (65-71 Nm)

Front Fork Upper Triple Clamp Pinch Bolts:

- (At Sliders): 13-16 ft-lbs (18-22 Nm)
- (At Center Cap): 7-10 ft-lbs (10-14 Nm)

Front Fork Lower Triple Clamp Pinch Bolts:

- 22-29 ft-lbs (30-39 Nm)

Muffler Fasteners (Front and Rear):

- 22-25 ft-lbs (30-34 Nm)

Tie Bar (all):

- 30-33 ft-lbs (41-45 Nm)

Engine Mount Fasteners:

- Front Isolator Mounting Bolt: 63-70 ft-lbs (86-95 Nm)
- Frame to rear isolator fastener: 30-33 ft-lbs (41-45 Nm)

GENERAL

If the motorcycle will not be operated for several months, such as during the winter season, there are several things which should be done to protect parts against corrosion, to preserve the battery and to prevent the buildup of gum and varnish in the carburetor.

This work should be performed by your local Buell dealer or other qualified technician following Service Manual procedures.

⚠WARNING

Gasoline is extremely flammable and highly explosive. Do not store motorcycle having gasoline in tank within the home or garage where open flames, pilot lights, sparks or electric motors are present. Failure to heed this warning could lead to an explosion or fire resulting in death or serious injury.

1. Fill fuel tank and add a gasoline stabilizer. Use one of the commercially available gasoline stabilizers following the manufacturer's instructions. Start and run engine until stabilizer reaches carburetor bowl. Turn engine OFF. Turn fuel supply valve off.
2. Fill the oil reservoir. Pinch off (or remove and plug) the line leading from the oil reservoir bottom to the oil pump feed fitting. This prevents oil from seeping past the check ball into the oil pump and filling the engine flywheel compartment.
3. Remove the spark plug, inject a few squirts of engine oil into the cylinder and crank the engine 5-6 revolutions. Reinstall spark plug.
4. Adjust primary chain. See 1.12 PRIMARY CHAIN
5. Check tire inflation. If the motorcycle will be stored for an extended period of time, securely support the motorcycle under the frame so that all weight is off the tires.
6. See 1.3 BODY PANEL CARE/MAINTENANCE. Wash colored surfaces. Apply a light film of oil to exposed unpainted metal surfaces.

⚠WARNING

Do not apply any oil to brake discs or brake pads. Oil on disc pads degrades braking efficiency which could result in an accident, death or serious injury.

7. Remove battery from vehicle. Charge battery until the correct voltage is obtained. Charge the battery every other month if it is stored at temperatures below 60˚F (16˚C). Charge battery once a month if it is stored at temperatures above 60˚F (16˚C).

⚠WARNING

Always unplug or turn off battery charger before connecting or disconnecting charger clamps at battery. Connecting or disconnecting clamps with charger on could cause a spark and a possible battery explosion. A battery explosion may rupture the battery case and spray sulfuric acid onto the surrounding area and personnel, which could result in death or serious injury.

- **Store battery out of reach of children. Battery contains sulfuric acid which can cause severe burns to eyes, skin and clothing.**

8. If motorcycle is to be covered, use a material that will breathe, such as light canvas. Plastic materials that do not breathe promote the formation of condensation.

REMOVAL FROM STORAGE

⚠WARNING

After extended periods of storage and prior to starting vehicle, place transmission in gear, disengage clutch and push vehicle back and forth a few times to ensure proper clutch disengagement. Failure to do so could result in death or serious injury.

1. See 7.16 BATTERY for proper battery care.
2. Remove and inspect the spark plug. Replace if necessary. See 1.16 SPARK PLUG.
3. Clean the air cleaner element. See 1.17 AIR CLEANER.
4. Start the engine and run until it reaches normal operating temperature. Turn off engine.
5. Check amount of oil in the oil reservoir. Check the transmission lubricant level.
6. Check controls to be sure they are operating properly. Operate the front and rear brakes, throttle, clutch and shifter.
7. Check steering for smoothness by turning the handlebars through the full operating range.

⚠WARNING

Maintain proper tire pressure; including wheel and tire balance. Inspect your tires periodically and replace tires with approved tires only. (See your Buell Dealer.) Improper balance, abnormal tread wear and poor handling could result in death or serious injury.

8. Check tire pressure. Incorrect pressure will result in poor riding characteristics and can affect handling and stability.
9. Check all electrical equipment and switches including the stop lamp, turn signals and horn for proper operation.
10. Check for any fuel, oil or brake fluid leaks.
11. Perform all of the items listed in the PRE-RIDING CHECKLIST in the Owner's Manual.

CAUTION

Turn engine over a few times to be sure there is no oil in the crankcase and that all oil has been pumped back into the oil reservoir. Stop engine and re-check oil level. Failure to do so may result in engine damage.

The following check list can be helpful in locating most operating troubles. Refer to the appropriate sections in this Service Manual for detailed procedures.

ENGINE

Starting Motor Does Not Operate or Does Not Turn Engine Over

1. Engine run switch in OFF position.
2. Ignition switch not on.
3. Discharged battery, loose or corroded connections. (Solenoid chatters.)
4. Starter control relay or solenoid not functioning.
5. Electric starter shaft pinion gear not engaging or overrunning clutch slipping.
6. Clutch lever not pulled in.

Engine Turns Over But Does Not Start

1. Fuel tank empty.
2. Fuel valve turned off.
3. Fuel valve or filter clogged.
4. Discharged battery, loose or broken battery terminal connections.
5. Fouled spark plug.
6. Spark plug cable in bad condition and shorting or cable connections loose.
7. Ignition timing badly out of adjustment.
8. Loose wire connection at coil or battery connection or plug between ignition sensor and module.
9. Ignition coil not functioning.
10. Ignition module not functioning.
11. Ignition sensor not functioning.
12. Sticking or damaged valve or valves.
13. Engine flooded with gasoline as a result of over choking.
14. Engine oil too heavy (winter operation).

Starts Hard

1. Spark plug in bad condition, have improper gap or are partially fouled.
2. Spark plug cable in bad condition and shorting.
3. Battery nearly discharged.
4. Loose wire connection at one of the battery terminals, at coil, or at plug between ignition sensor and module.
5. Carburetor controls not adjusted correctly.
6. Ignition coil not functioning.
7. Engine oil too heavy (winter operation).
8. Ignition not timed properly.
9. Fuel tank filler cap vent plugged, or carburetor fuel line closed off restricting fuel flow.
10. Water or dirt in fuel system and carburetor.
11. Enrichener valve inoperative.
12. Air leak at intake manifold.
13. Valves sticking.

Starts But Runs Irregularly or Misses

1. Spark plug in bad condition or partially fouled.
2. Spark plug cable in bad condition and shorting.
3. Spark plug gap too close or too wide.
4. Ignition coil not functioning.
5. Ignition module not functioning.
6. Ignition sensor not functioning.
7. Battery nearly discharged.
8. Damaged wire or loose connection at battery terminals or coil.
9. Intermittent short circuit due to damaged wire insulation.
10. Water or dirt in fuel system and carburetor or filter.
11. Fuel tank filler cap vent plugged or carburetor float bowl vent closed off.
12. Carburetor controls improperly adjusted.
13. Air leak at intake manifold or air cleaner.
14. Damaged intake or exhaust valve.
15. Weak or broken valve springs.
16. Incorrect valve timing.

Spark Plug Fouls Repeatedly

1. Incorrect spark plug.
2. Piston rings badly worn or broken.
3. Fuel mixture too rich (see CARBURETOR TROUBLESHOOTING).
4. Valve stem seals worn or damaged.
5. Valve guides badly worn.

Pre-Ignition or Detonation (Knocks or Pings)

1. Excessive carbon deposit on piston head or combustion chamber.
2. Incorrect heat range spark plug.
3. Spark plug not firing.
4. Ignition timing advanced.
5. Fuel octane rating too low.
6. Intake manifold vacuum leak.

Overheating

1. Insufficient oil supply, or oil not circulating.
2. Leaking valves.
3. Heavy carbon deposit.
4. Ignition timing retarded.

Valve Train Noise

1. Hydraulic lifter not functioning properly.
2. Bent push rod.

3. Cam, cam gears, or cam bushings worn.
4. Rocker arm binding on shaft.
5. Valve sticking in guide.

Excessive Vibration

1. Upper mounting bracket loose, broken or improperly spaced.
2. Lower mounting bolts loose.
3. Broken frame.
4. Primary chain badly worn or links tight as a result of insufficient lubrication.
5. Wheels not aligned and/or tires worn.
6. Internal engine problem.
7. Engine mount loose, or broken.

ENGINE LUBRICATION SYSTEM

Oil Does Not Return To Oil Reservoir

1. Oil reservoir empty.
2. Return pump gears damaged.
3. Oil feed pump not functioning.
4. Restricted oil lines or fittings.

Engine Uses Too Much Oil or Smokes Excessively

1. Piston rings badly worn or broken.
2. Valve stem seals worn or damaged.
3. Valve guides worn.

Engine Leaks Oil From Cases, Push Rods, Hoses, Etc.

1. Loose parts.
2. Imperfect seal at gaskets, push rod cover, washers, etc. To aid locating leaks, use BLACK LIGHT LEAK DETECTOR (Part No. HD-35457).
3. Restricted oil return line to reservoir.
4. Restricted breather passage(s) to air cleaner.

ELECTRICAL SYSTEM

Alternator Does Not Charge

1. Regulator-rectifier module not functioning.
2. Rectifier not grounded.
3. Engine ground wire loose or broken.
4. Loose or broken wires in charging circuit.
5. Stator not functioning.
6. Rotor not functioning.

Alternator Charge Rate Is Below Normal

1. Regulator-rectifier module not functioning.
2. Stator not functioning.
3. Rotor not functioning.
4. Weak battery.
5. Loose connections.

FUEL

Carburetor Floods

1. Excessive “pumping” of hand throttle grip.
2. Inlet valve sticking.
3. Inlet valve and/or valve seat worn or damaged.
4. Dirt or other foreign matter between valve and its seat.
5. Float misadjusted or filled with fuel.

TRANSMISSION

Shifts Hard

1. Clutch dragging slightly.
2. Shifter forks (inside transmission) damaged.
3. Corners worn off shifter clutch dogs (inside transmission).

Jumps Out of Gear

1. Shifter pawl improperly adjusted.
2. Shifter engaging parts (inside transmission) badly worn and rounded.
3. Shifter forks bent.
4. Damaged gears.

CLUTCH

Slips

1. Clutch controls improperly adjusted.
2. Worn friction plates.

Drags or Does Not Release

1. Clutch controls improperly adjusted.
2. Clutch plates excessively warped.

Chatters

1. Friction or steel plates worn, warped, or dragging.

CHASSIS

Irregular/Inadequate Brake Action

1. Master cylinder low on fluid.
2. Brake line contains air bubbles.
3. Master or wheel cylinder piston worn.
4. Brake pads impregnated with grease or oil.
5. Brake pads badly worn (1/16 in. (1.6 mm) minimum lining thickness).
6. Brake disc badly worn or warped.
7. Brake pads dragging or excessive braking (brake fades due to heat buildup).
8. Insufficient brake pedal or hand lever free play (brake drags).

Handling Irregularities

1. Tires improperly inflated. Check 2.2 TIRE SPECIFICATIONS. Do not overinflate.
2. Loose wheel axle nuts. Tighten front nut to 38-42 ft-lbs (51.5-56.94 Nm). Tighten rear nut to 48-52 ft-lbs (65-70 Nm).
3. Excessive wheel hub bearing play.
4. Rear wheel out of alignment with frame and front wheel.
5. Rims and tires out-of-true sideways (tire runout should not be more than 5/64 in. (2.0 mm).
6. Rims and tires out-of-round or eccentric with hub (tire runout should not be more than 3/32 in. (2.4 mm).
7. Irregular or peaked front tire tread wear.
8. Tire and wheel unbalanced.
9. Steering head bearings improperly adjusted. Correct adjustment, and replace pitted or worn bearings and races. See 2.18 FORK STEM AND BRACKET ASSEMBLY.
10. Shock absorber not functioning normally.
11. Heavy front end loading. Non-standard equipment on the front end (such as heavy radio receivers, extra lighting equipment, or luggage) tends to cause unstable handling.