

DIMENSIONS	IN.	MM
Wheel Base	55.30	1404
Seat Height - Low Seat	25.50	648
High Seat	27.50	698
Road Clearance	5.10	129.5
Trail	3.4	86
Rake	25°	

WEIGHT-U.S. MODELS	LBS.	KG
Wet Weight	380	172
GVWR	780	353
GAWR Front	280	127
GAWR Rear	500	226
Load Capacity	400	181

NOTE

See information decal on frame steering head for Gross Vehicle Weight Rating (GVWR) (maximum allowable loaded vehicle weight) and corresponding Gross Axle Weight Ratings (GAWR).

CAPACITIES	U.S.	Metric
Fuel Tank:		
Total (including reserve)	2.8 gallons	10.60 liters
Reserve	0.55 gallons	2.08 liters
Oil Tank (with filter)	2.0 quarts	1.89 liters
Transmission/Primary	32.0 ounces	946.35 ml
Front Fork (each-wet capacity)	9.2 ounces	272.08 ml

⚠ WARNING

Do not inflate any tire beyond its maximum inflation pressure as specified on tire sidewall. Overinflation may lead to premature tire failure which could result in death or serious injury.

TIRE AND POSITION	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)

IGNITION SYSTEM		
Spark Plug	10R12	
Size	12 mm	
Gap	0.038-0.043 in.	0.97-1.09 mm
Torque	11-18 ft-lbs	15-24.4 Nm

TRANSMISSION GEAR RATIOS	FINAL*	OVERALL**
First (low) Gear	2.69	12.74
Second Gear	1.85	8.77
Third Gear	1.43	6.79
Fourth Gear	1.18	5.60
Fifth (high) Gear	1.00	4.74

*Final 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.

SPROCKET TEETH	
Engine	35
Clutch	56
Transmission	27
Rear Wheel	80

ENGINE		
Number of Cylinders	1	
Type	4-Cycle, Air cooled, four stroke	
Bore	3.5 in.	88.9 mm
Stroke	3.125 in.	79.375 mm
Engine Displacement	30 cu. in.	492 cc
Compression Ratio	9.2:1	
Horsepower @ RPM	30 @ 6500	
Torque ft-lbs @ RPM	27 @ 3200	
Valve Train	OHV, two valves	
Valve Adjustment	Hydraulic, self-adjusting lifters	
Fuel Delivery	40mm Keihin CV carburetor	

Gasoline

Use a good quality unleaded gasoline which is **87 pump octane** or higher (R+M)/2. Octane rating is usually found on the pump.

TORQUE VALUES

ITEM	TORQUE		NOTES
Brake bleeder valve	3-5 ft-lbs	4-7 Nm	Metric, Page 2-19
Clutch lever screw	50-60 in-lbs	6-7 Nm	Page 2-63
Footpeg support mounting bracket bolts	25-30 ft-lbs	34-41 Nm	Page 2-53
Frame-to-isolator rear fastener	30-33 ft-lbs	41-45 Nm	Apply several drops of LOCTITE® thread locker 272 (red) to last few threads, Page 2-65
Front and rear brake rotor screws, TORX	24-27 ft-lbs	33-37 Nm	Tighten in criss-cross pattern. Apply several drops of LOCTITE® thread locker 272 (red) to last few threads, Page 2-11
Front axle nut	38-42 ft-lbs	52-57 Nm	Apply several drops of LOCTITE® thread locker 243 (blue) to last few threads. Metric, Page 2-9
Front axle pinch screw	13-16 ft-lbs	18-22 Nm	Metric, Page 2-9
Front brake caliper mounting bolts	18-22 ft-lbs	24-30 Nm	Apply several drops of LOCTITE® thread locker 272 (red) to last few threads, Page 2-25
Front brake caliper pad hanger pin	11-15 ft-lbs	15-20 Nm	Metric, Page 2-25
Front brake hand lever nut	44-62 in-lbs	5-7 Nm	Metric, Page 2-21
Front brake hand lever pivot bolt	4-13 in-lbs	0.5-1.5 Nm	LOCTITE ANTI-SEIZE, Page 2-21
Front brake line clamp screw	3-5 ft-lbs	4-7 Nm	Page 2-26
Front brake switch screw	7-13 in-lbs	0.8-1.5 Nm	Page 2-21
Front fender mounting screws	27-30 in-lbs	3.1-3.4 Nm	Page 2-55
Front isolator mount bolt	See NOTES	See NOTES	Torque to 20 ft-lbs (27.1 Nm), turn bolt clockwise an additional 63°-67°, Page 2-64
Front muffler bolts	22-25 ft lbs	30-34 Nm	Page 2-52
Front sprocket cover bolts	30-36 in-lbs	3-4 Nm	Page 2-54
Front tie bar bolt	30-33 ft-lbs	41-45 Nm	Page 2-64
Handlebar clamp fasteners	10-12 ft-lbs	14-16 Nm	Page 2-63
Handlebar left and right housing screws	25-33 in-lbs	3-4 Nm	Page 2-63
Instrument panel screws	30-36 in-lbs	3-4 Nm	Apply several drops of LOCTITE® thread locker 243 (blue) to last few threads, metric, Page 2-60
Lower and upper header nuts	6-8 ft-lbs	8-11 Nm	Lower first, Page 2-52
Lower belt guard	30-36 in-lbs	3-4 Nm	Page 2-56
Master cylinder cover screws	9-13 in-lbs	1.0-1.5 Nm	Page 2-25
Outboard isolator bolts	30-33 ft-lbs	41-45 Nm	Page 2-64
Rear axle nut	48-52 ft-lbs	65-71 Nm	Page 2-50
Rear brake caliper mounting screw, large	18-22 ft-lbs	24-30 Nm	Metric, Page 2-31
Rear brake caliper mounting screw, small	15-18 ft-lbs	20-24 Nm	Metric, Page 2-31

ITEM	TORQUE		NOTES
Rear brake caliper pad hanger pin	11-15 ft-lbs	15-20 Nm	Metric, Page 2-31
Rear brake fastener	6-8 ft-lbs	8-11 Nm	Page 2-54
Rear brake reservoir mounting screw	12-15 in-lbs	1.4-1.7 Nm	Page 2-28
Rear drive sprocket bolts	18-22 +40° ft-lbs	24-30 Nm +40°	Apply several drops of LOCTITE® thread locker 272 (red) to last few threads. Page 2-11
Rear fender mounting screws	30-36 in-lbs	3-4 Nm	Page 2-55
Rear isolator-to engine crankcase	32-34 ft-lbs	46-50 Nm	Apply several drops of LOCTITE® thread locker 243 (blue) to last few threads, Page 2-65
Rear master cylinder mounting screws	4-6 ft-lbs	5-8 Nm	Apply several drops of LOCTITE® thread locker 243 (blue) to last few threads, metric, Page 2-28
Rear muffler strap bolts	22-25 ft lbs	30-34 Nm	Page 2-52
Rear shock top and bottom bolt	35-40 ft-lbs	47-54 Nm	Page 2-33
Steering head cap nut pinch screw	7-10 ft-lbs	10-14 Nm	Page 2-49
Steering head cap nut	28-32 ft-lbs	38-43 Nm	Page 2-49
Steering head lower triple tree clamp screws	22-29 ft-lbs	30-39 Nm	Page 2-49
Steering head upper triple tree clamp screws (at sliders)	13-16 ft-lbs	18-22 Nm	LOCTITE ANTI-SEIZE, Page 2-47
Swingarm bolt	24-26 ft-lbs	33-35 Nm	Apply anti-seize to bolt and install, Page 2-50
Swingarm pinch bolt	17-19 ft-lbs	23-26 Nm	Apply several drops of LOCTITE® thread locker 243 (blue) to last few threads, Page 2-50
Switchgear housing screws, right side	12-17 in-lbs	1-2 Nm	Metric, Page 2-34
Valve stem nut	42-44 in-lbs	4.7-5.0 Nm	Page 2-17
Windscreen screws	9-11 in-lbs	1 Nm	Page 2-59

GENERAL

 WARNING

Tires must be correctly matched to wheel rims. Only the tires listed in the fitment table below can be used for replacement. Mismatching tires and rims can cause damage to the tire bead during mounting. Using tires other than those specified can adversely affect motorcycle handling which could result in death or serious injury.

Tire sizes are molded on the sidewall. Rim size and contour are marked on the rim's exterior surface.

Example: **MT 2.5 x 16.0 DOT**

- **MT** designates the rim contour.
- **2.5** is the width of the bead seat measured in inches.
- **16.0** is the normal diameter of the rim in inches, measured at the bead seat diameter.
- **DOT** means that the rim meets Department of Transportation Federal Motor Vehicle Safety Standards.

See the table below.

Table 2-1. Tire Fitment-Tubeless Cast Wheels

WHEEL SIZE & POSITION	CONTOUR & RIM SIZE	RIM VALVE HOLE DIAMETER	DUNLOP RADIAL TIRE SIZE
16 in. – Front	MT 2.5 x 16.0 DOT	0.33 in. (8.38 mm)	100/80 16 K330
16 in. – Rear	MT 2.75 x 16.0 DOT	0.33 in. (8.38 mm)	120/80 16 K330

GENERAL

See Figure 2-1. Each vehicle has a 17-digit serial or Vehicle Identification Number (V.I.N.) stamped on the steering head. A Motor Identification Number is stamped on the left side crankcase near the front of the engine.

NOTE

Always give the full 17-digit Vehicle Identification Number when ordering parts or making inquiries about your Buell motorcycle.

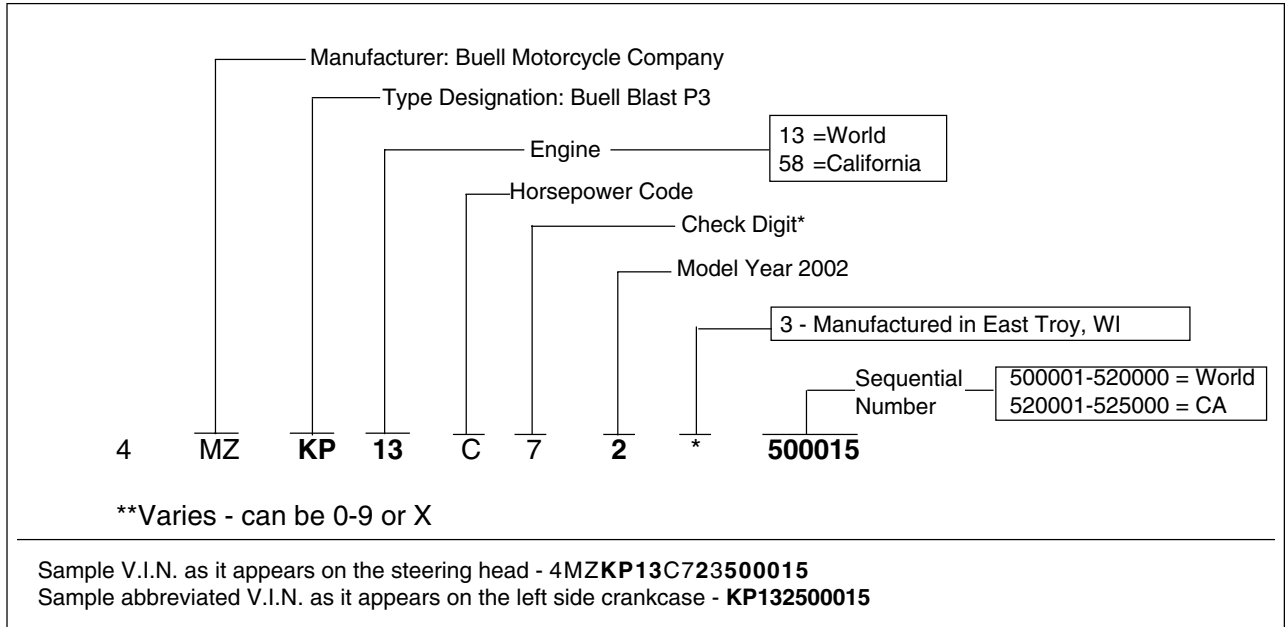


Figure 2-1. Vehicle Identification Numbers (V.I.N.)

GENERAL

Good handling and maximum tire mileage are directly related to the care of wheels and tires. Regularly inspect wheels and tires for damage and wear. If handling problems occur, see [Table 2-2](#).

Keep tires inflated to the recommended air pressure. Always balance the wheel after replacing a tire.

WARNING

Do not inflate any tire beyond its maximum inflation pressure as specified on tire sidewall. Overinflation may lead to premature tire failure which could result in death or serious injury.

TROUBLESHOOTING

See [Figure 2-2](#). Check tire inflation pressure at least once each week. At the same time, inspect tire tread for punctures, cuts, breaks and other damage. Repeat the inspection before long trips.

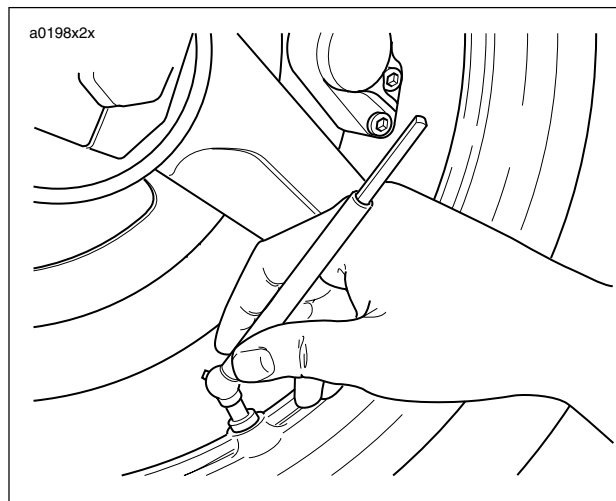


Figure 2-2. Checking Tire Inflation Pressure

Table 2-2. Wheel Service

CHECK FOR	REMEDY
Loose axle nuts.	Apply LOCTITE THREADLOCKER 243 (Blue) and tighten front axle nut (metric) to 38-42 ft-lbs (52-57 Nm). Tighten rear axle nut (metric) to 48-52 ft-lbs (65-71 Nm).
Excessive side-play or radial (up-and-down) play in wheel hubs.	Replace wheel hub bearings.
Alignment of rear wheel in frame or with front wheel.	Repair swingarm as described under 2.19 SWINGARM .
Rims and tires out-of-true sideways; should not be more than 0.080 in. (2.03 mm).	Replace rims. See 2.9 TIRES .
Rims and tires out-of-round or eccentric with hub; should not be more than 0.090 in. (2.29 mm).	Replace rims. See 2.9 TIRES .
Irregular or peaked front tire wear.	Replace as described under 2.5 FRONT WHEEL or 2.9 TIRES .
Correct tire inflation.	Inflate tires to correct pressure. See 2.2 TIRE SPECIFICATIONS .
Correct tire and wheel balance.	Static balance may be satisfactory if dynamic balancing facilities are not available. However, dynamic balancing is strongly recommended.
Steering head bearings.	Correct adjustment and replace pitted or worn bearings. See 2.18 FORK STEM AND BRACKET ASSEMBLY .
Damper tubes.	Check for leaks. See 2.17 FRONT FORK .
Shock absorber.	Check damping action and mounts. See 2.15 REAR SHOCK ABSORBER .
Swingarm bearings.	Check for looseness. See 2.19 SWINGARM .

⚠ WARNING

Use the following guidelines when installing a new tire or repairing a flat. Failure to comply with the guidelines below could result in death or serious injury.

1. **Always locate and eliminate the cause of the original tire failure.**
2. **Do not patch or vulcanize a tire casing. These procedures weaken the casing and increase the risk of a blowout.**
3. **Do not use tires other than those specified.**
4. **Tires and wheels are critical items. Since the servicing of these components requires special tools and skills, Buell recommends that you see your dealer for these services.**

⚠ WARNING

Buell recommends replacement of any tire punctured or damaged. In some cases small punctures in the tread area may be repaired from within the demounted tire by your Buell dealer. Speed should not exceed 50 mph (80 km/h) for the first 24 hours after repair and the repaired tire should NEVER be used over 80 mph (128 km/h).

In emergency situations, if a temporary repair is made, ride slowly with as light of a load as possible until the tire is permanently repaired or replaced.

Failure to follow this warning could result in death or serious injury.

⚠ WARNING

Excessively worn tires adversely affect motorcycle traction, steering and handling, which could result in death or serious injury.

At regular intervals of 5000 miles (8000 km) or whenever handling irregularities are noted, perform the recommended service checks. See [Table 2-2](#).

If tires must be replaced, same as original equipment tires must be used. Other tires may not fit correctly and may be hazardous to use.

REMOVAL

1. Raise front wheel off floor.
2. Inspect wheel bearing end play and service bearings if necessary. See 2.7 SEALED WHEEL BEARINGS.
3. Remove brake pads.
 - a. See Figure 2-3. Remove pin plug (4).
 - b. See Figure 2-4. Remove pad hanger pin (metric).
 - c. Remove brake pads from caliper.
4. See Figure 2-3. Detach caliper from mounts.
 - a. Remove lower mounting screw (5).
 - b. Remove upper mounting screw (5) and brakeline wireform (7) while supporting caliper above brake rotor.
 - c. Remove caliper by tilting away from wheel and then pulling away from rotor.

NOTE

Do not operate front brake lever with front wheel removed or caliper pistons may be forced out. Reseating pistons requires caliper disassembly.

5. See Figure 2-5. Insert screwdriver/rod through axle hole (1). Loosen front axle nut (4).
6. Loosen pinch screw (2).
7. Remove front axle nut, spacer and washer. Pull front axle out of wheel hub while supporting front wheel.

DISASSEMBLY

1. See Figure 2-6. Remove five bolts (10) and washers (11) to detach front brake rotor (12) from wheel hub. Discard washers.
2. Remove tire. See 2.9 TIRES.

CLEANING AND INSPECTION

1. Thoroughly clean all parts in solvent.
2. Inspect all parts for damage or excessive wear.

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.

3. Inspect brake rotor and pads.

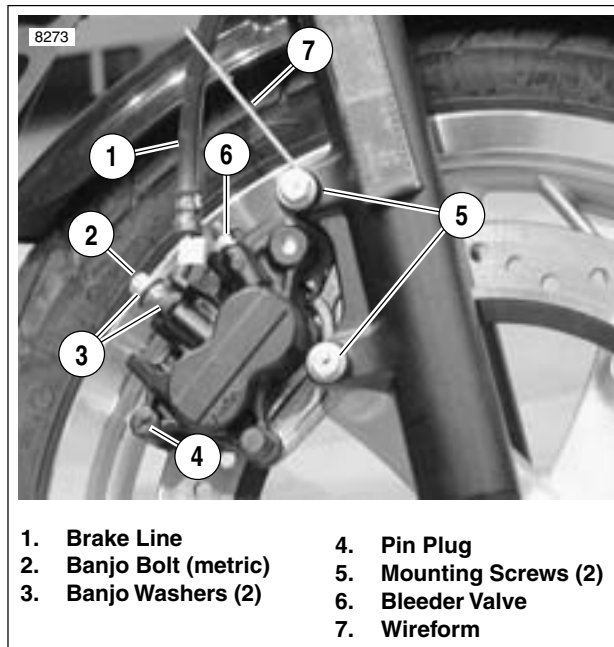


Figure 2-3. Front Brake Caliper

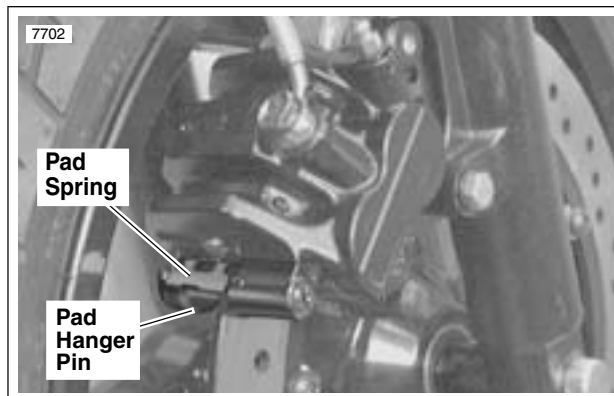


Figure 2-4. Pad Spring

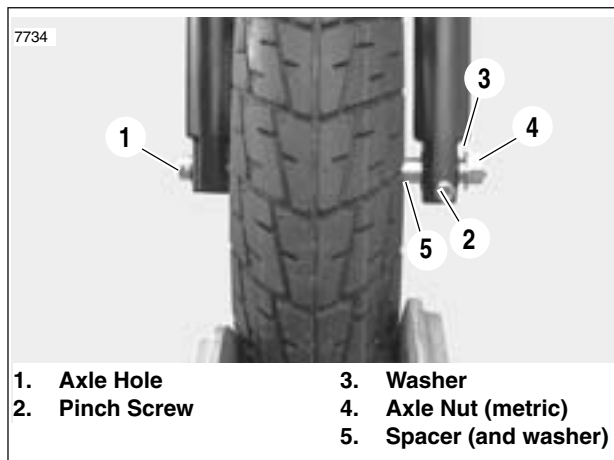


Figure 2-5. Front Wheel Mounting

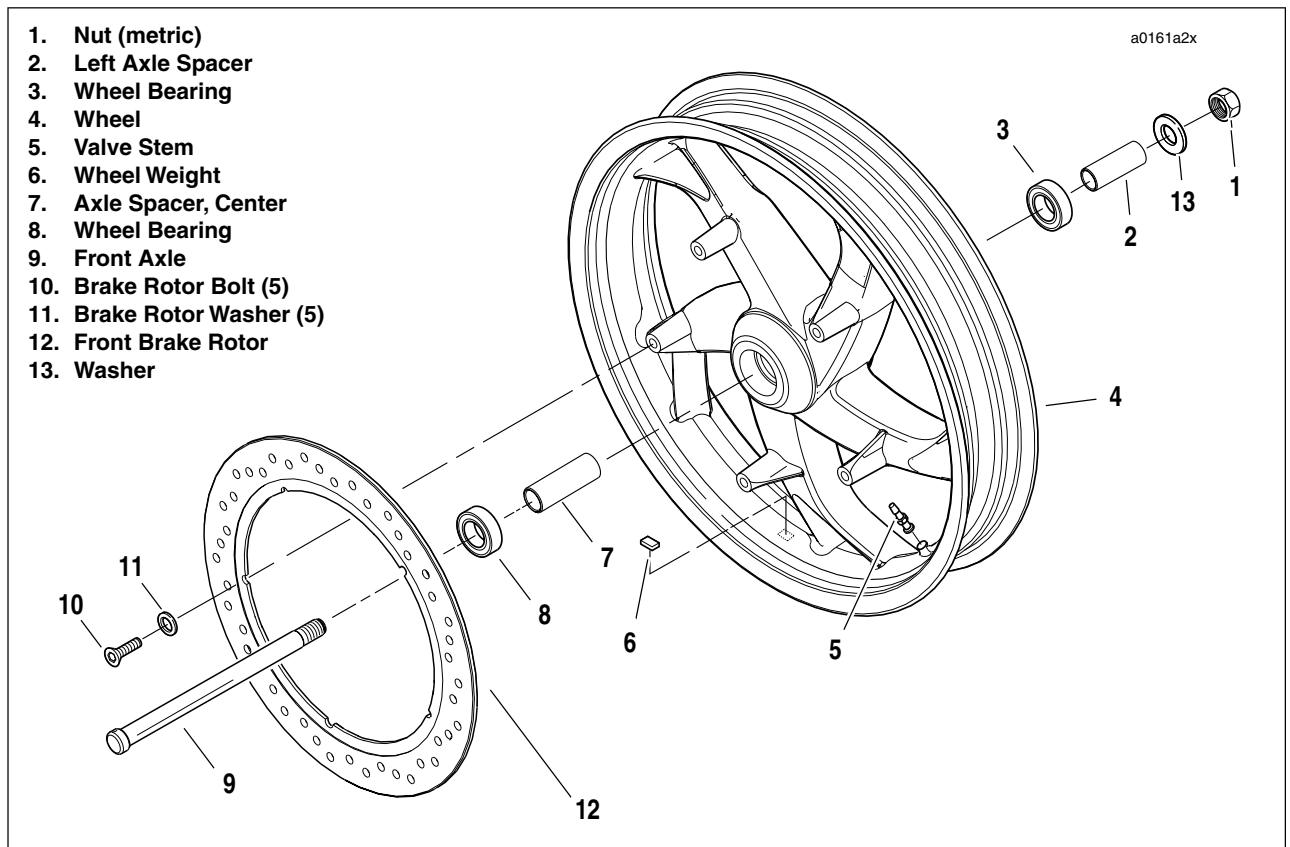


Figure 2-6. Front Wheel Assembly

ASSEMBLY

WARNING

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

1. See [Figure 2-6](#). Install front brake rotor (12) on right side of wheel.
 - a. Verify that the front brake rotor is thoroughly clean.
 - b. Apply LOCTITE THREADLOCKER 272 (red) to threads of each of the five T40 TORX screws (10).

NOTE

Do NOT reuse brake rotor mounting washers (11). Always use new washers (P/N CB0004.T) when assembling wheel.

- c. Install rotor (12) on wheel hub. Tighten TORX screws (10) with NEW washers (11) in criss-cross pattern to 24-27 ft-lbs (33-37 Nm).
2. Install tire, if removed. See [2.9 TIRES](#).
3. Verify that wheel and tire are true. See [2.8 CHECKING CAST RIM RUNOUT](#).
4. Balance tire. See [2.9 TIRES, Adjustment](#).

INSTALLATION

1. Install front axle.
 - a. Position wheel between forks with brake rotor on gearcase side of motor.
 - b. With pinch screw (metric) loose, insert threaded end of axle through right side fork.
 - c. Push axle through fork and wheel hub until axle begins to emerge from left side of hub.
 - d. Install axle spacer (2) and washer (13).
2. Compress the front suspension to make sure it is free and not binding.
3. See [Figure 2-6](#). Install axle nut.
 - a. Apply LOCTITE THREADLOCKER 243 (blue) to axle threads.
 - b. Install axle nut (1) (metric) over threaded end of axle.
 - c. Insert screwdriver or steel rod through hole in axle.
 - d. While holding axle stationary, tighten axle nut (1) (metric) to 38-42 ft-lbs (52-57 Nm).
4. Tighten the front axle pinch screw to 13-16 ft-lbs (18-22 Nm).
5. Install front brake caliper. See [2.11 FRONT BRAKE CALIPER](#).

REMOVAL

1. Raise rear wheel off floor using REAR WHEEL SUPPORT STAND (Part No. B-41174).
2. Inspect wheel bearing end play and service bearings if necessary. See 2.8 SEALED WHEEL BEARINGS.

NOTE

Do not operate rear brake pedal with rear wheel removed or caliper piston may be forced out. Reseating piston requires caliper disassembly.

3. See Figure 2-7. Place rod or screwdriver through axle hole. Loosen rear axle nut (1) (metric).
4. Remove nut, lockwasher, and flat washer.
5. Pull axle out. Remove right side spacer.
6. Slide carrier with caliper off rotor.
7. Remove left side spacer.
8. Move wheel forward and slide belt off.

DISASSEMBLY

1. See Figure 2-8. Remove and discard five sprocket bolts (6) from sprocket cover.
2. Remove sprocket cover (7) from sprocket.
3. Remove and discard hardened washers from sprocket.
4. Remove sprocket from rear wheel.
5. Remove five T40 TORX screws and brake rotor from rear wheel.

CLEANING AND INSPECTION

1. Thoroughly clean all parts in solvent.
2. Inspect all parts for damage or excessive wear.
3. Inspect brake rotor.
 - a. Measure rotor thickness. **Replace if less than 4.5 mm.** See 2.14 REAR BRAKE CALIPER.
 - b. Check rotor surface. Replace if warped or badly scored.
4. Inspect tire. See 2.9 TIRES.

ASSEMBLY

⚠ WARNING

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

1. Lay wheel on clean work area with rotor side down.
2. Position sprocket on rim with holes in sprocket and rim aligned.

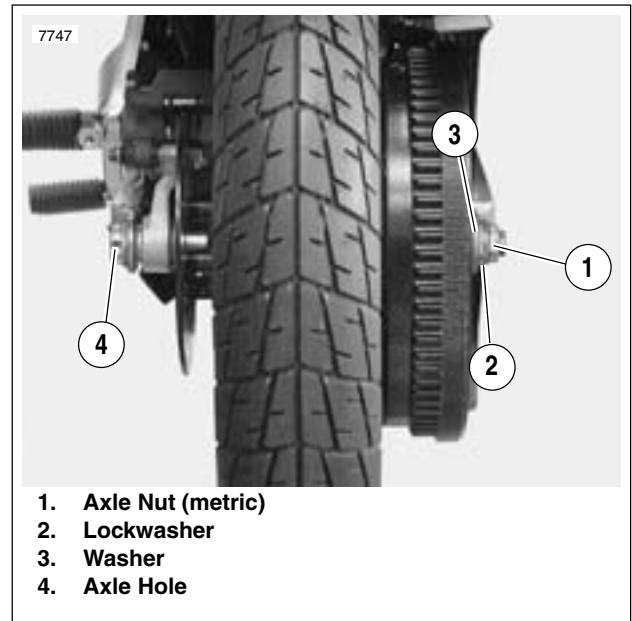


Figure 2-7. Rear Wheel Mounting

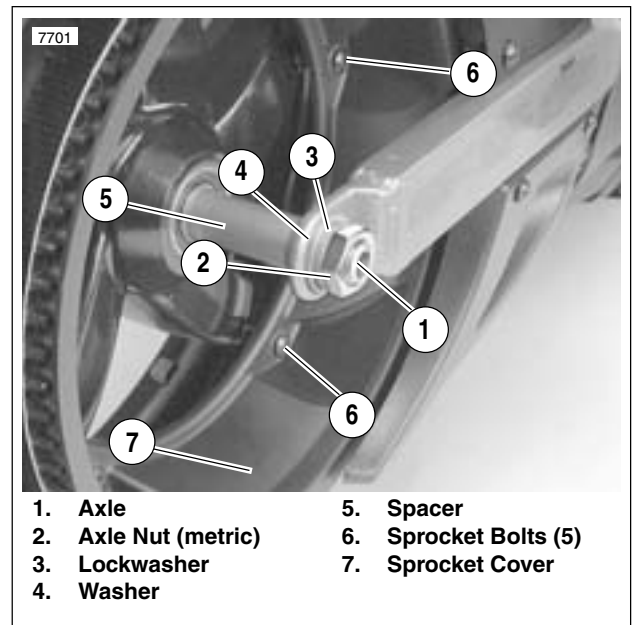


Figure 2-8. Rear Axle, Right Side

⚠ 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.

3. Place **new** hardened washers on sprocket.
4. Position sprocket cover over washers and install to sprocket with five **new** sprocket bolts. Tighten sprocket bolts to 18-22 ft-lbs (24-30 Nm).
5. See [Figure 2-9](#). Install brake rotor (9) to wheel.
 - a. Verify that the brake rotor is thoroughly clean.
 - b. Apply **LOCTITE THREADLOCKER 272 (red)** to threads of each of the five T40 TORX screws (8).
 - c. Install rotor (9) on wheel hub. Tighten TORX screws in criss-cross pattern to 24-27 ft-lbs (33-37 Nm).

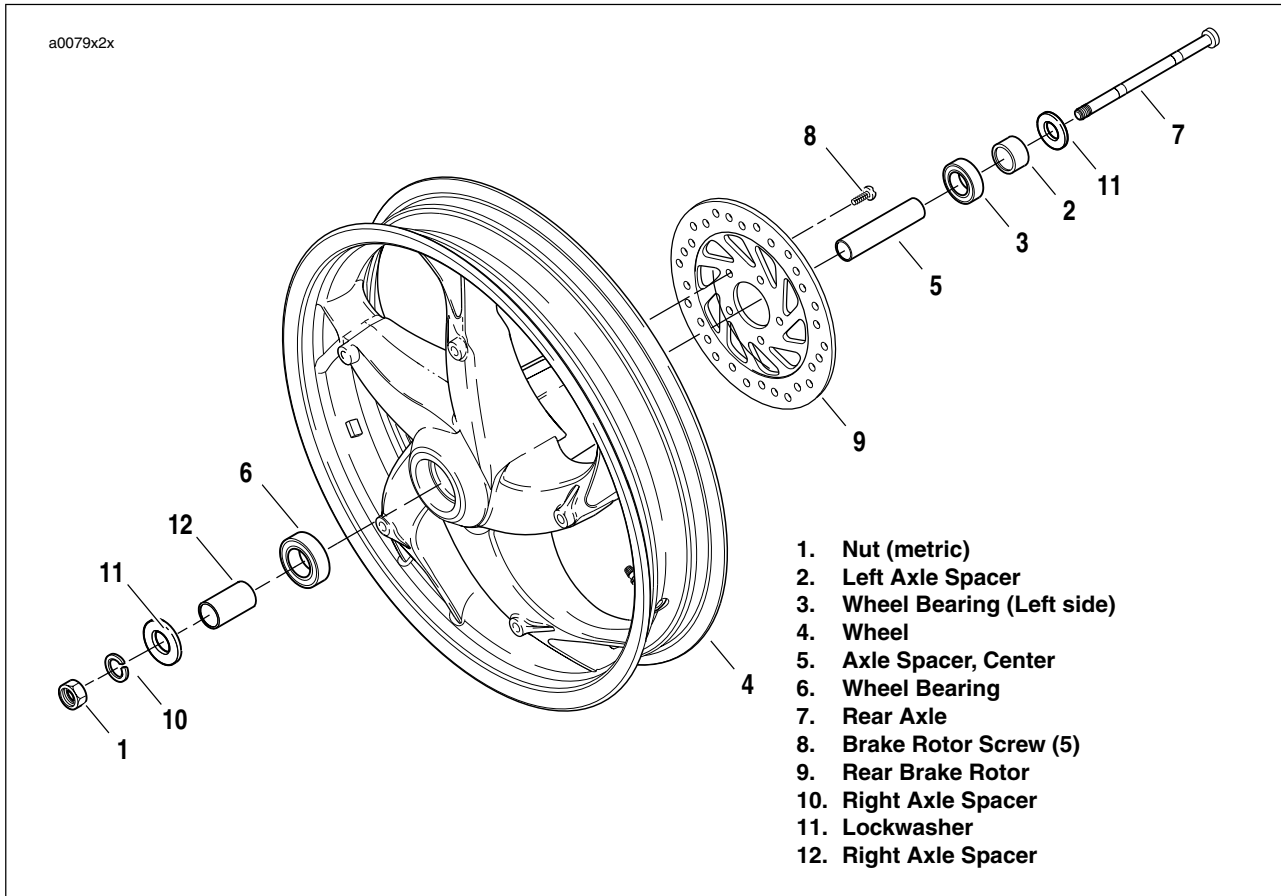


Figure 2-9. Rear Wheel Assembly

INSTALLATION

- 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.

- See [Figure 2-10](#). Hold left side spacer in place and slide caliper and carrier over rotor.
- Slide axle through washer, swing arm, carrier, left side spacer and wheel assembly.
 - See [Figure 2-11](#). Hold right side spacer in place.
 - Insert axle through right side spacer and swingarm.
 - Install flat washer, lockwasher and axle nut.
- Place screwdriver or rod through axle hole and torque rear axle nut to 48-52 ft-lbs (65-71 Nm).
- Slide belt on sprocket teeth by rotating wheel to “walk” belt onto teeth.
- Lower motorcycle rear wheel.

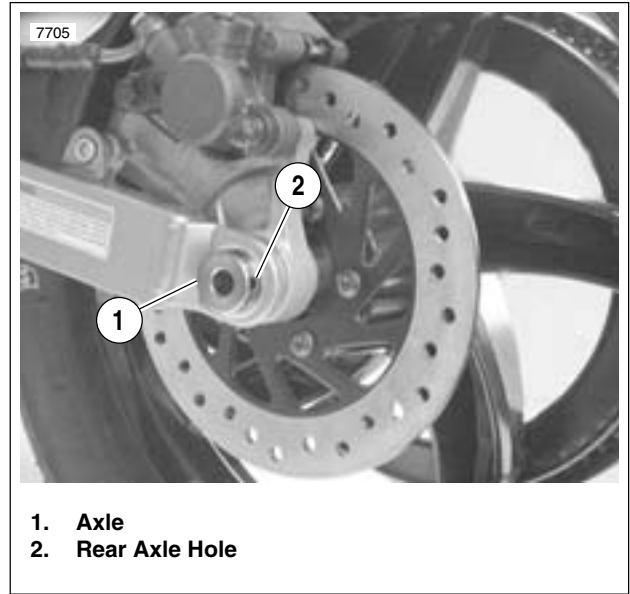


Figure 2-10. Rear Axle, Left Side

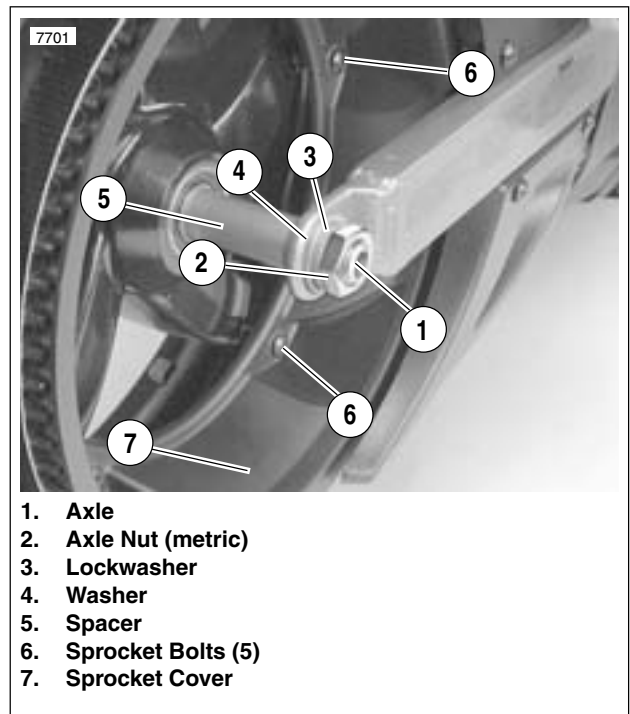


Figure 2-11. Rear Axle, Right Side

INSPECTION

1. Block motorcycle underneath frame so wheel is raised off the ground.
2. See [Figure 2-12](#). Mount a magnetic base dial indicator to the brake disc with the dial's contact point on the end of the axle.
3. Turn the wheel through several rotations, then move the wheel side to side to check for lateral end play.
 - a. If the end play is less than the service wear limit of 0.002 in. (0.051 mm), bearing passes inspection.
 - b. If the end play exceeds service wear limit or feels rough, remove wheel and replace both wheel bearings.

REMOVAL

PART NO.	SPECIALTY TOOL
B-43933	Wheel bearing installer/remover

1. Remove wheel from motorcycle.
2. See [Figure 2-13](#). Obtain WHEEL BEARING INSTALLER/REMOVER (Part No. HD-44060) and assemble.
 - a. Sparingly apply graphite lubricant to threads of forcing screw (1) to prolong service life and ensure smooth operation.
 - b. Install nut (2), washer (3) and Nice bearing (4) on screw. Insert assembly through hole in bridge (5).
 - c. Drop ball bearing inside collet (6). Fasten collet and ball bearing to forcing screw (1).
3. Hold end of forcing screw (1) and turn collet (6) to expand edges of collet.
4. See [Figure 2-14](#). When expanded collet has gripped bearing edges, hold end of forcing screw (1) and turn the nut (2) to remove bearing from wheel.
5. Remove spacer from inside wheel hub.
6. Repeat procedure for opposite side bearing. Discard all bearings upon removal.

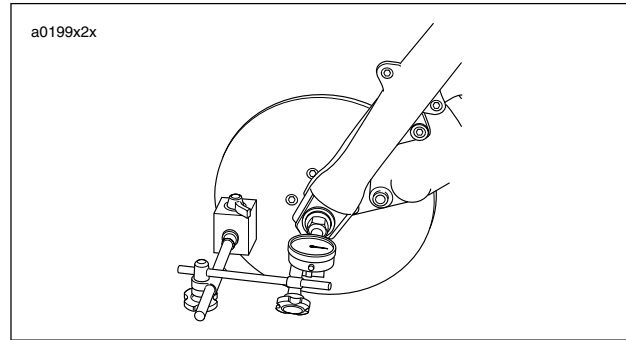


Figure 2-12. Wheel Bearing Inspection (Front Wheel Shown)

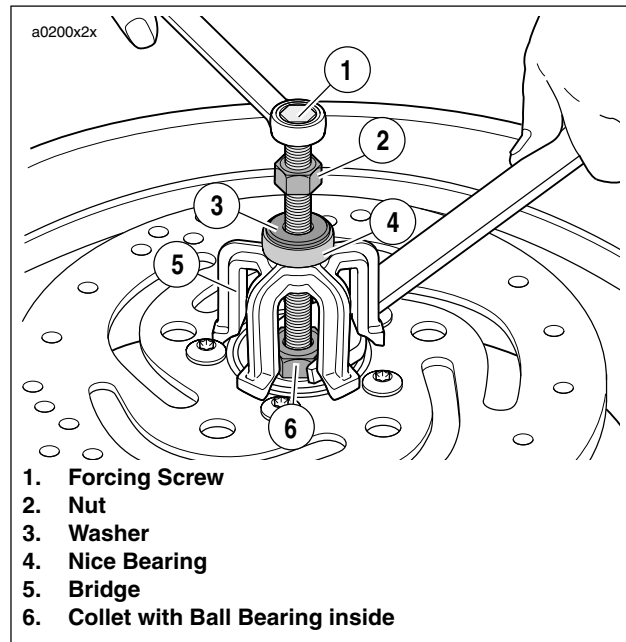


Figure 2-13. Removal Tool

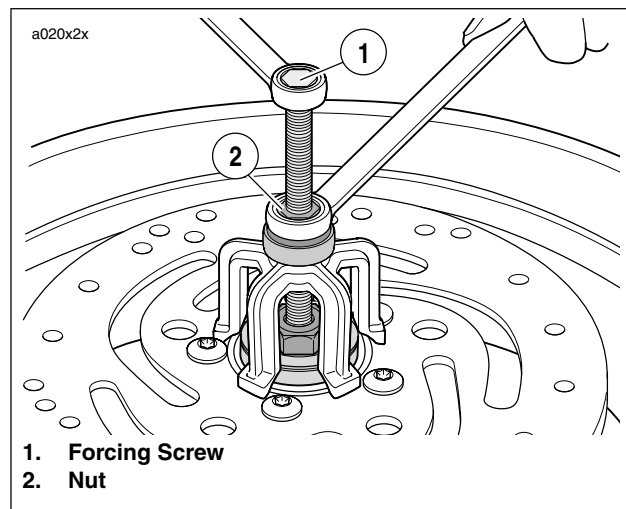


Figure 2-14. Remove Bearing

INSTALLATION

PART NO.	SPECIALTY TOOL
B-43933	See Figure 2-17 . Wheel bearing installer/remover.

NOTE

Always install first bearing on primary brake disc side. If front wheel has two brake discs, install bearing on the left side first.

1. Obtain WHEEL BEARING INSTALLER/REMOVER (Part No. B-43933) and assemble.
 - a. Sparingly apply graphite lubricant to threads of threaded rod to prolong service life and ensure smooth operation.
 - b. See [Figure 2-15](#). Place threaded rod through support plate. Insert assembly through wheel.
 - c. See [Figure 2-16](#). Place the **new** bearing (6) on rod (1) with lettered side outward.
 - d. Install pilot (5), Nice bearing (4), washer (3) and nut (2) over rod.
2. Hold hex end of threaded rod (1) and turn nut (2) to install bearing (6). Bearing will be fully seated when nut can no longer be turned. Remove tool.
3. Install spacer sleeve inside wheel hub.
4. Reverse tool and install opposite side bearing.

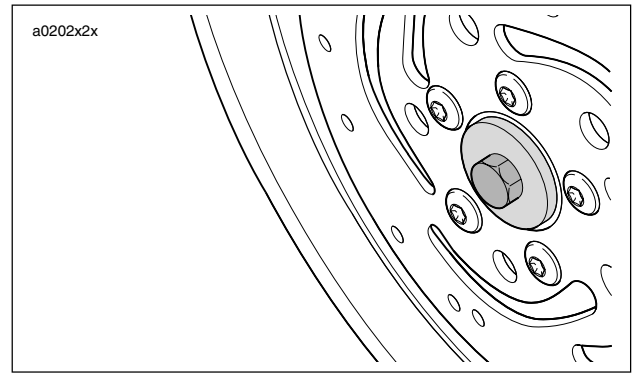
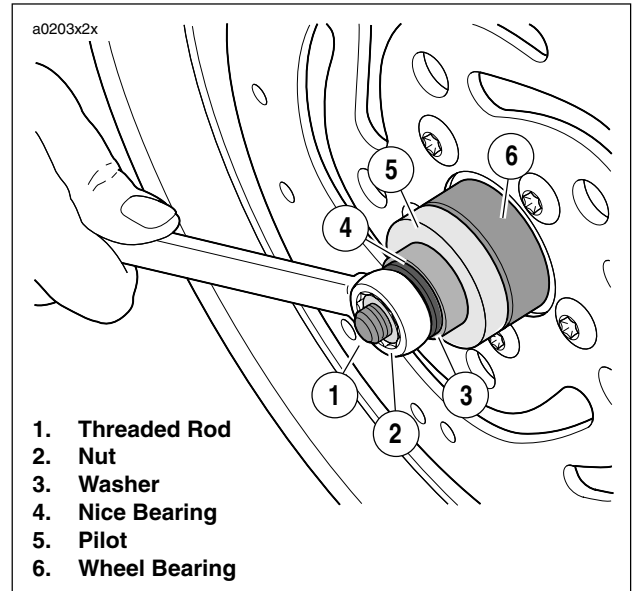


Figure 2-15. Installation Tool Support Plate



1. Threaded Rod
2. Nut
3. Washer
4. Nice Bearing
5. Pilot
6. Wheel Bearing

Figure 2-16. Installing Bearing

Parts 1-7 common to removal/installation.
Parts 8-9 used for removal only.
Parts 10-13 used for installation only.

NO.	DESCRIPTION	PART NO.
1	Bridge	HD-44060-5
2	Steel Ball	12547
3	Forcing Screw	HD-44060-4
4	Nut	10210
5	Washer	12004
6	Nice Bearing	RS25100-200
7	Lubricant	J-23444A
8	Collet, 3/4 in.	B-43993-3
9	Collet, 1.0 in.	B-43993-7
10	Pilot, 1.0 in.	B-43993-8
11	Pilot, 3/4 in.	B-43993-6
12	Support Plate	B-43993-1
13	Threaded Rod	280856

Figure 2-17. Wheel Bearing Remover/Installer (Part No. B-43933)

GENERAL

Check wheels for lateral and radial runout before installing a new tire.

Rim Lateral Runout

1. See [Figure 2-18](#). Install truing arbor in wheel hub and place wheel in WHEEL TRUING AND BALANCING STAND (Part No. HD-99500-80).
2. Tighten arbor nuts so hub will turn on its bearings.
3. Check rim lateral runout by placing a gauge rod or dial indicator near the rim bead. Replace wheel if lateral runout exceeds specification shown in [Table 2-3](#).

Rim Radial Runout

1. See [Figure 2-19](#). Install truing arbor in wheel hub and place wheel in WHEEL TRUING AND BALANCING STAND (Part No. HD-99500-80).
2. Tighten arbor nuts so hub will turn on its bearings.
3. Check radial runout as shown. Replace wheel if runout exceeds specification shown in [Table 2-3](#).

Table 2-3. Wheel Runout

WHEEL TYPE	MAXIMUM LATERAL RUNOUT	MAXIMUM RADIAL RUNOUT
Cast	0.040 in. (1.02 mm)	0.030 in. (0.76 mm)

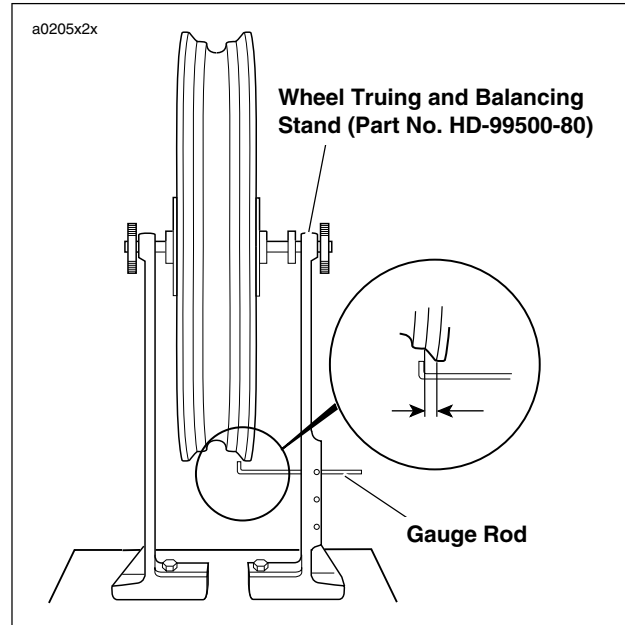


Figure 2-18. Checking Cast Rim Lateral Runout

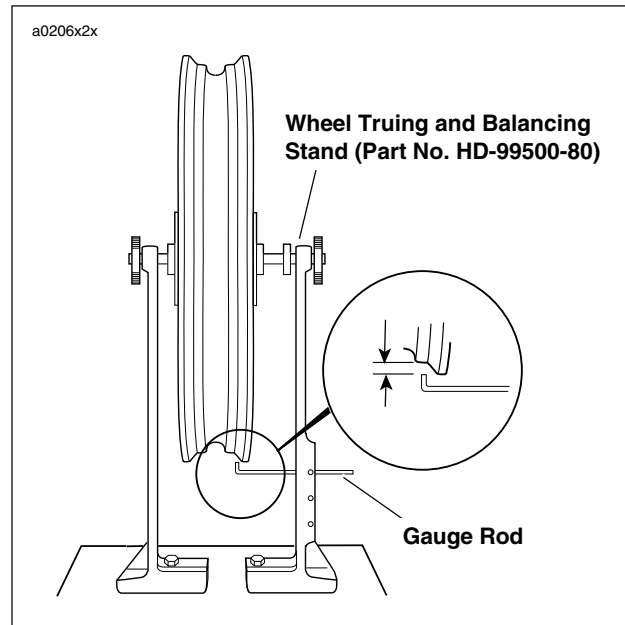


Figure 2-19. Checking Cast Rim Radial Runout

GENERAL

Inspect tires for punctures, cuts, breaks and wear at least weekly.

WARNING

Always check both tire sidewalls for arrows indicating forward rotation. Some tires require different tire rotation depending on whether tire is used on front or rear wheel. Installing a tire with the wrong rotation may lead to tire failure which could result in death or serious injury.

WARNING

Dunlop front and rear tires for Buell motorcycles are not the same. They are not interchangeable. Use front tire ONLY for a front tire. DO NOT put a rear tire on the front of a vehicle. Failure to follow this warning could result in death or serious injury.

Some tires have arrows molded into the tire sidewall. These tires should be mounted on the rim with the arrow pointing in the direction of forward rotation. The red circle on the sidewall is a balance mark and should be located next to the valve stem hole.

REMOVAL

1. Remove wheel from motorcycle. See [2.5 FRONT WHEEL](#) or [2.6 REAR WHEEL](#).
2. **Rear wheel only:** Remove rear sprocket. See [2.6 REAR WHEEL \(Disassembly\)](#).
3. Deflate tire.
4. See [Figure 2-20](#). Loosen both tire beads from rim flange.

WARNING

Do not use excessive force when starting bead over rim. Excessive force may damage tire or rim and adversely affect handling which could result in death or serious injury.

5. If a bead breaker machine is not available, attach RIM PROTECTORS (Part No. HD-01289) to the rim. Using tire tools (not sharp instruments), start upper bead over edge of rim at valve. Repeat all around rim until first bead is over rim.
6. See [Figure 2-21](#). Push lower bead into rim well on one side and insert tire tool underneath bead from opposite side. Pry bead over rim edge. Remove tire from rim.
7. Remove valve stem if it is damaged or leaks.
8. Mount tire on TIRE SPREADER (Part No. HD-21000) for inspection and repair procedures.

CLEANING AND INSPECTION

1. Clean inside of tire.
2. If rim is dirty or corroded, clean with a stiff wire brush.
3. Inspect tire for wear and damage. Replace worn tires.

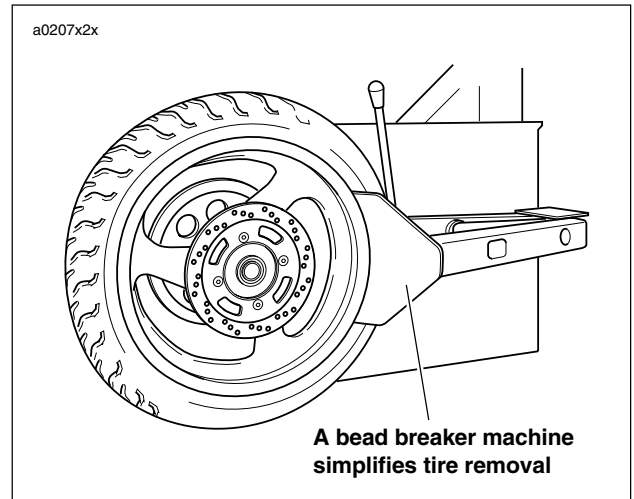


Figure 2-20. Loosening Beads from Rim Flange (Typical)

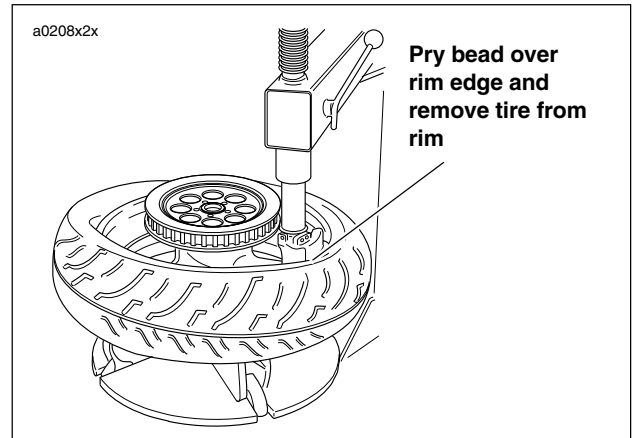


Figure 2-21. Starting Tire Off Rim (Typical)

INSTALLATION

WARNING

Only install original equipment (stock) tire valves and valve caps. A valve or valve and cap combination that is too long may interfere with (strike) adjacent components, damage the valve and cause rapid tire deflation. Rapid tire deflation could cause loss of control which could result in death or serious injury.

WARNING

Aftermarket valve caps that are heavier than the stock cap may have clearance at slow speeds; but, at high speed the valve/cap will be moved outward by centrifugal force. This outward movement could cause the valve/cap to strike the adjacent components, damage the valve and cause rapid tire deflation. Rapid tire deflation could cause loss of control which could result in death or serious injury.

1. Damaged or leaking valve stems must be replaced. Place rubber grommet on valve stem with shoulder in recess of the valve stem head.
2. Install and tighten nut to 42-44 **in-lbs** (4.7-5.0 Nm).
3. Thoroughly lubricate rim flanges and both beads of tire with tire lubricant.
4. See [Figure 2-22](#). Starting at the valve stem, start first bead into the rim well using a bead breaker machine. If no machine is available, work bead on as far as possible by hand. Use a tire tool to pry the remaining bead over rim flange.
5. Start 180° from valve stem hole and place second bead on rim. Work bead onto rim with tire tools, working toward valve in both directions.

WARNING

Do not inflate over 40 psi (276 kPa) to seat the beads. Inflating the tire beyond 40 psi (276 kPa) to seat the beads can cause the tire rim assembly to burst with force which could result in death or serious injury.

6. Apply air to stem to seat beads on rim. It may be necessary to use a TIRE BEAD EXPANDER (Part No. HD-28700) on the tire until beads seal on rim.

Checking Tire Lateral Runout

1. See [Figure 2-23](#). Turn wheel on axle and measure amount of displacement from a fixed point to tire side-wall.
2. Tire tread lateral runout should be no more than 0.080 in. (2.03 mm). If runout is more than 0.080 in. (2.03 mm), remove tire from rim.
3. Check rim bead side runout. See [2.8 CHECKING CAST RIM RUNOUT](#). Replace rims not meeting specifications.
4. Install tire and check again for tire tread lateral runout.

Checking Tire Radial Runout

1. See [Figure 2-24](#). Turn wheel on axle and measure tread radial runout.
2. Tire tread radial runout should not be greater than 0.060 in. (1.52 mm). If runout exceeds specification, remove tire from rim.
3. Check rim bead runout. See [2.8 CHECKING CAST RIM RUNOUT](#). Replace rims not meeting specifications.
4. Install tire and check tire tread radial runout again.

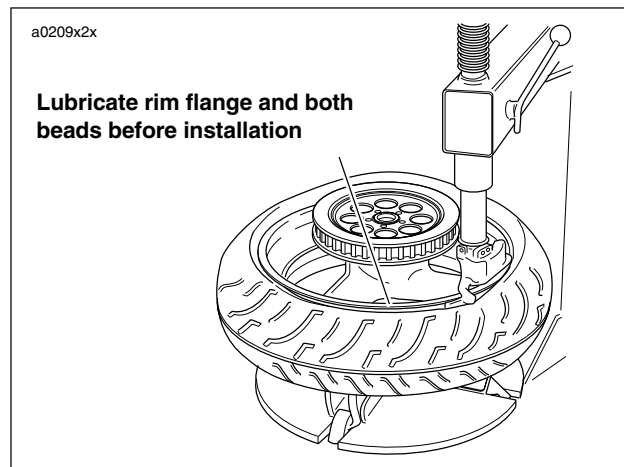


Figure 2-22. Starting Bead on Rim (Typical)

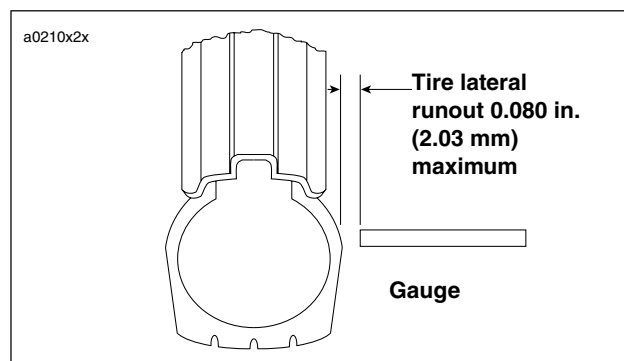


Figure 2-23. Checking Tire Lateral Runout

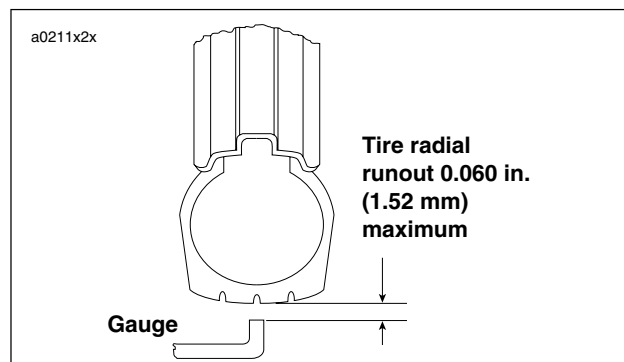


Figure 2-24. Checking Tire Radial Runout

ADJUSTMENT

Wheel Balancing

Wheel balancing is recommended to improve handling and reduce vibration, especially at high road speeds.

In most cases, static balancing using WHEEL TRUING AND BALANCING STAND (Part No. HD-99500-80) will produce satisfactory results. However, dynamic balancing, utilizing a wheel spinner, can be used to produce finer tolerances for better high-speed handling characteristics. Follow the instructions supplied with the balance machine you are using.

WEIGHTS FOR CAST WHEELS

The maximum weight permissible to accomplish balance is:

- 1.0 oz. (28 g) total weight applied to the front wheel.
- 2.0 oz. (56 g) total weight applied to the rear wheel.

Wheels should be balanced to within 1/4 oz. (7 g) at 60 MPH (97 KM/H).

See [Figure 2-25](#). Use only WHEEL WEIGHTS (Part No. 43692-94Y) which have special self-adhesive backings. Apply WHEEL WEIGHTS to the flat surface of the wheel rim.

1. Make sure that area of application is completely clean, dry and free of oil and grease.
2. Remove paper backing from weight. For additional adhesive strength, apply three drops of LOCTITE SUPER-BONDER 420 to adhesive side of weight.
3. Place weight on flat surface of wheel rim.
4. Press weight firmly in place and hold for ten seconds.
5. Allow eight hours for adhesive to cure completely before using wheel.

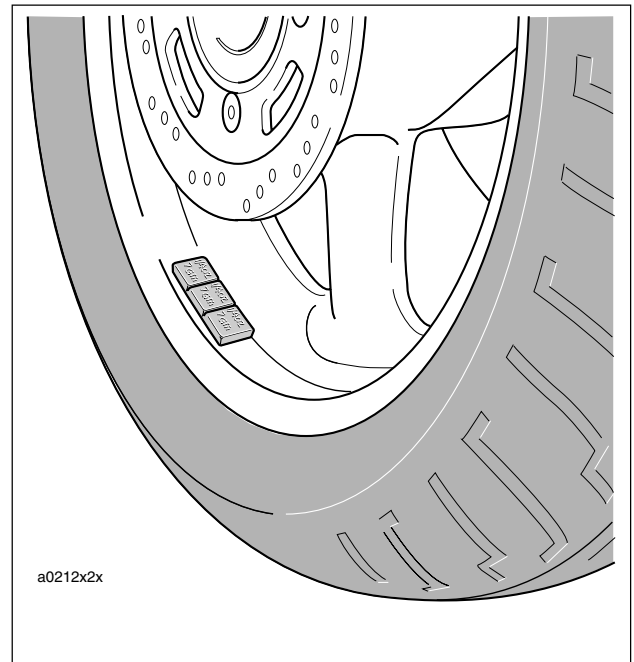


Figure 2-25. Wheel Weights (Typical)

REMOVAL

NOTE

Do not remove the master cylinder unless problems are being experienced.

1. See Figure 2-26. Drain brake fluid into a suitable container. Discard used fluid according to local laws.
 - a. Open bleeder valve (metric) about 1/2-turn.
 - b. Install a length of plastic tubing over caliper bleeder valve. Place free end in a suitable container.
 - c. Pump brake hand lever to drain brake fluid.
 - d. Tighten bleeder valve to 3-5 ft-lbs (4-7 Nm)
2. Remove mirror from right handlebar.

CAUTION

Damaged banjo bolt seating surfaces will leak when reassembled. Prevent damage to seating surfaces by carefully removing brake line components.

3. See Figure 2-27. Remove banjo bolt (6) (metric) and two banjo washers (4) to disconnect brake line (5) from master cylinder. Discard banjo washers.
4. Unplug both terminals to detach brake lamp switch.

NOTE

The individual parts of the brake lamp switch are not serviceable. Replace switch upon failure.

5. Remove two screws (1) (metric) and clamp (2) to detach master cylinder assembly from handlebar.

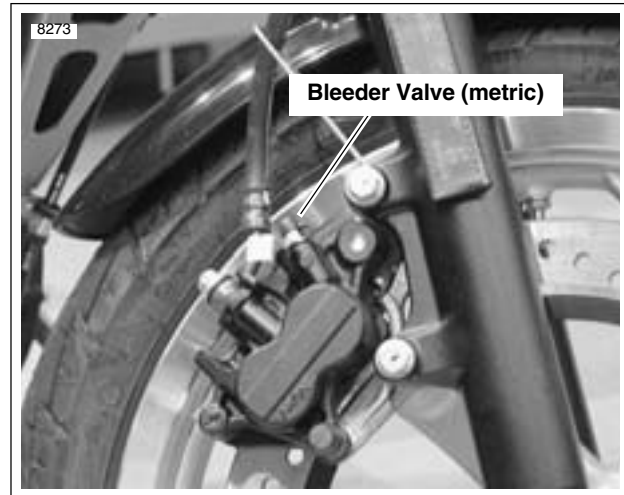


Figure 2-26. Draining Front Brake System

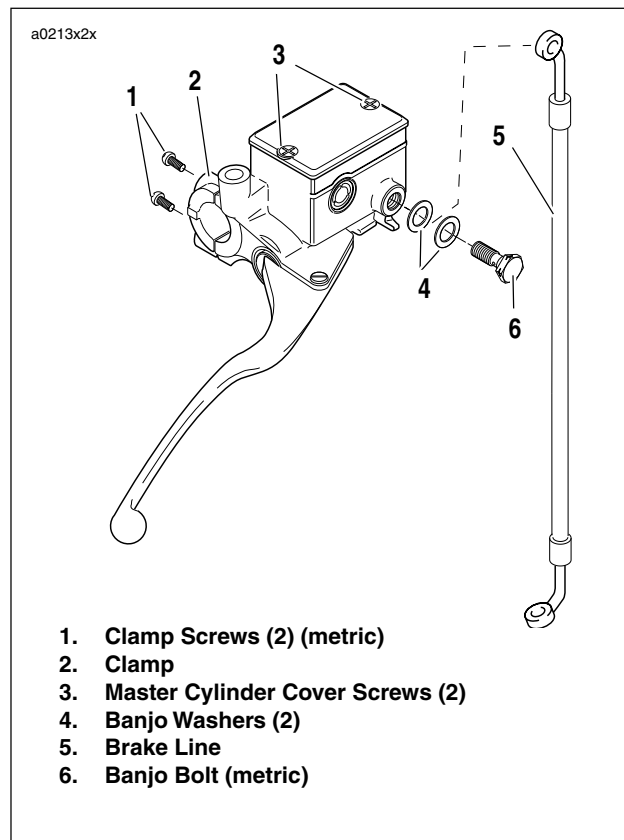


Figure 2-27. Front Master Cylinder

DISASSEMBLY

1. See [Figure 2-28](#). Detach front brake hand lever.
 - a. Remove nut (1) (metric) from lever pivot.
 - b. Remove pivot bolt (2) from lever pivot.
2. Detach front brake hand lever (3) from master cylinder assembly.
3. See [Figure 2-29](#). Remove screw, lockwasher and washer (1) holding front brake switch (3) to master cylinder assembly. Remove switch.
4. See [Figure 2-30](#). Compress piston (2) and remove rubber boot (1).
5. Depress piston assembly and remove internal snap ring (3). Discard snap ring.
6. See [Figure 2-31](#). Remove piston assembly (1-4) from front master cylinder.

CLEANING AND INSPECTION

WARNING

Clean brake system components using denatured alcohol. Do not use mineral-base cleaning solvents, such as gasoline or paint thinner. Use of mineral-base solvents causes deterioration of rubber parts that continues after assembly. This could result in improper brake operation which could result in death or serious injury.

1. Clean all parts with denatured alcohol or **D.O.T. 4 BRAKE FLUID**. Do not contaminate with mineral oil or other solvents. Wipe dry with a clean, lint free cloth. Blow out drilled passages and bore with a clean air supply. Do not use a wire or similar instrument to clean drilled passages in bottom of reservoir.
2. Carefully inspect all parts for wear or damage and replace as necessary.
3. Inspect piston bore in master cylinder housing for scoring, pitting or corrosion. Replace housing if any of these conditions are found.
4. Inspect outlet port that mates with brake line fitting. As a critical sealing surface, replace housing if any scratches, dents or other damage is noted.
5. Inspect boot for cuts, tears or general deterioration. Replace as necessary.

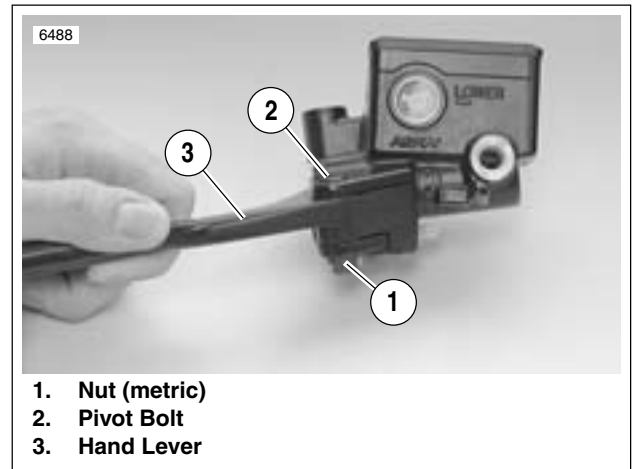


Figure 2-28. Hand Lever

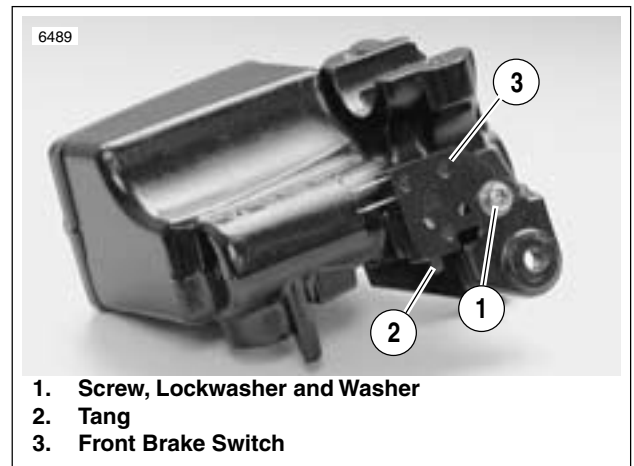


Figure 2-29. Front Brake Switch

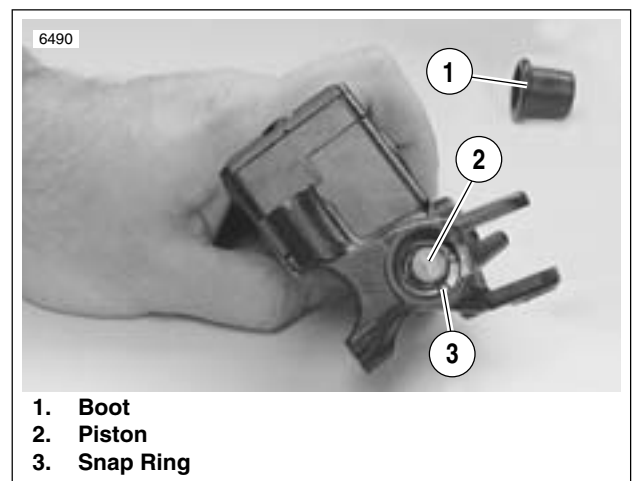


Figure 2-30. Snap Ring

ASSEMBLY

- See [Figure 2-31](#). Check piston assembly components.
 - Small end of spring (1) sits behind primary cup (2). Large side of primary cup faces spring.
 - Secondary cup (3) sits within ridge at middle of piston (4).
- Insert piston assembly, spring first, into master cylinder. Secure with a **new** snap ring (6).
- Install ridge on boot (5) into groove on piston (4).
- See [Figure 2-28](#). Install front brake hand lever.
 - Align hole in lever (3) with hole in master cylinder assembly.
 - Lubricate pivot bolt (2) with LOCTITE ANTI-SEIZE.
 - Install pivot bolt through top of assembly. Tighten to 4-13 **in-lbs** (0.5-1.5 Nm).
 - Install nut (1) (metric). Tighten to 44-62 **in-lbs** (5-7 Nm).
- See [Figure 2-27](#). Install front brake lamp switch (7).
 - Attach front brake switch with screw, washer and lockwasher (1). Tighten to 7-13 **in-lbs** (0.8-1.5 Nm).
 - Test switch action. Tang (3) on switch must release when hand lever (2) is moved.

INSTALLATION

- See [Figure 2-27](#). Fasten master cylinder to handlebar by installing clamp (2) and screws (1) (metric). Tighten to 80-120 **in-lbs** (9-14 Nm).

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.

CAUTION

To avoid leakage, ensure that banjo washers, banjo bolt, hydraulic brake line and master cylinder bore are completely clean.

- Connect brake line (5) to master cylinder using two **new** banjo washers (4) and banjo bolt (6) (metric). Tighten to 16-20 ft-lbs (22-27 Nm).
- See [Figure 2-32](#). Verify brake lamp switches are secure. Attach wires to switches.
- Install mirror parallel to handlebars.
- See [Figure 2-27](#). Remove the two master cylinder cover screws (3), cover and cover gasket.
- See [Figure 2-33](#). With the master cylinder in a level position, add **D.O.T. 4 BRAKE FLUID**. Bring fluid level to within 0.125 in. (3.2 mm) of molded boss inside front master cylinder reservoir.

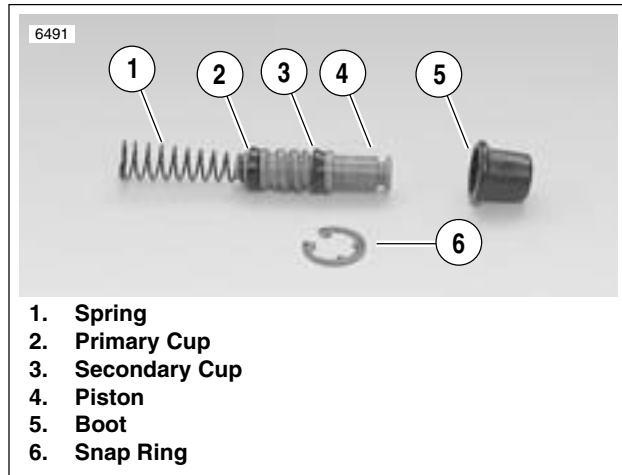


Figure 2-31. Piston Assembly

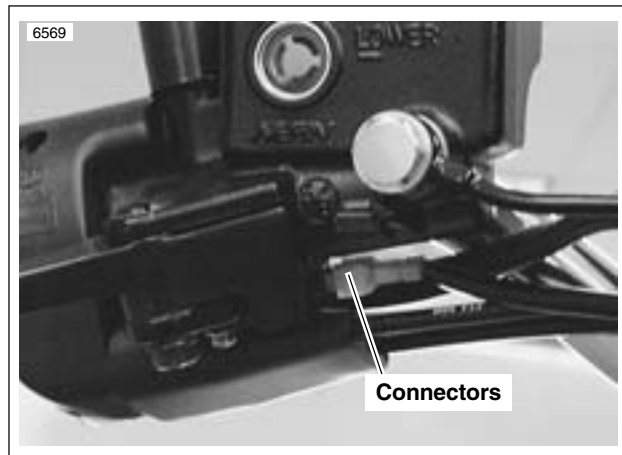


Figure 2-32. Brake Lamp Switch Connectors

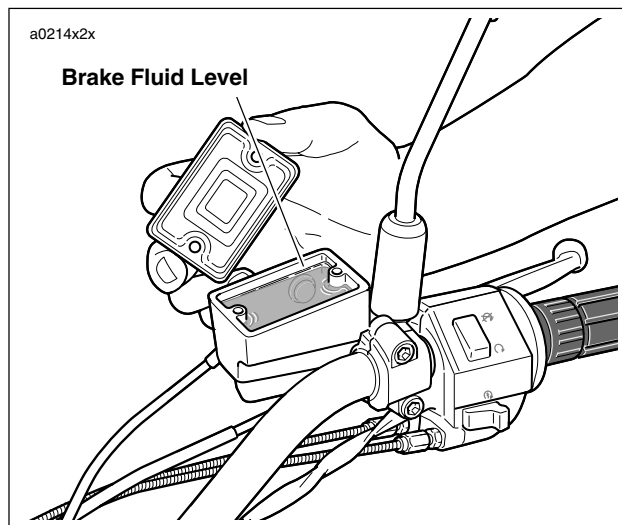


Figure 2-33. Brake Fluid Level

WARNING

See [Figure 2-34](#). Verify proper operation of the master cylinder relief port. A plugged or covered relief port can cause brake drag or lockup, which could result in loss of vehicle control and death or serious injury

7. See [Figure 2-34](#). Verify proper operation of the master cylinder relief port.
8. See [Figure 2-35](#). Actuate the brake lever with the reservoir cover removed. A slight spurt of fluid will break the surface if all internal components are working properly.
9. See [Figure 2-27](#). Attach master cylinder cover and cover gasket with the two cover screws (3). Tighten to 9-13 in-lbs (1.0-1.5 Nm).
10. Bleed brake system. See [1.6 BRAKE SYSTEM MAINTENANCE](#).

WARNING

Check for proper brake lamp operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper brake lamp operation could result in death or serious injury.

11. Turn ignition key switch to IGN. Apply brake hand lever to test brake lamp operation. Turn ignition switch to LOCK.

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.

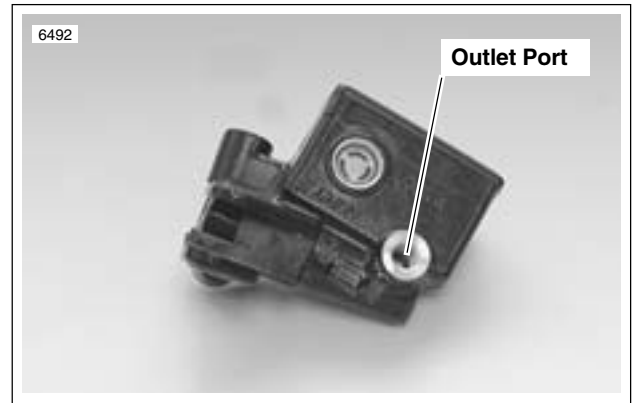


Figure 2-34. Master Cylinder Body



Figure 2-35. Testing Hand Lever

REMOVAL

NOTE

Steps 1 and 2 are not required for detaching caliper from rotor. Drain fluid only when disassembling caliper.

1. Drain and discard brake fluid.

CAUTION

Damaged banjo bolt seating surfaces will leak when reassembled. Prevent damage to seating surfaces by carefully removing brake line components.

2. See Figure 2-36. Remove banjo bolt (2) (metric) and two banjo washers (3) to disconnect brake line (1) from caliper. Discard banjo washers.
3. Remove brake pads.
 - a. Remove pin plug (4).
 - b. See Figure 2-37. Remove pad hanger pin (1) (metric).
 - c. Remove brake pads from caliper.
4. See Figure 2-36. Detach caliper from mounts.
 - a. Remove lower mounting screw (5).
 - b. Remove upper mounting screw (5) and brake line wireform (7) while supporting caliper above brake rotor.
 - c. Slowly remove caliper by tilting away from wheel and then pulling away from rotor.
 - d. Separate carrier and caliper.

DISASSEMBLY

1. See Figure 2-38. Use BRAKE CALIPER PISTON REMOVER (Part No. B-42887) to pull the two pistons from caliper bores.
2. See Figure 2-39. Remove piston outer seals (4) and inner seals (2) from their respective grooves in caliper. Discard seals.
3. Check bleeder valve (metric). Remove and replace if damaged.

CLEANING AND INSPECTION

WARNING

Clean brake system components using denatured alcohol. Do not use mineral-base cleaning solvents, such as gasoline or paint thinner. Use of mineral-base solvents causes deterioration of rubber parts that continues after assembly. This could result in improper brake operation which could result in death or serious injury.

1. Clean all parts with denatured alcohol or D.O.T. 4 BRAKE FLUID. Do not contaminate with mineral oil or other solvents. Wipe dry with a clean, lint free cloth. Blow out drilled passages and bore with a clean air supply. Do not use a wire or similar instrument to clean drilled passages.

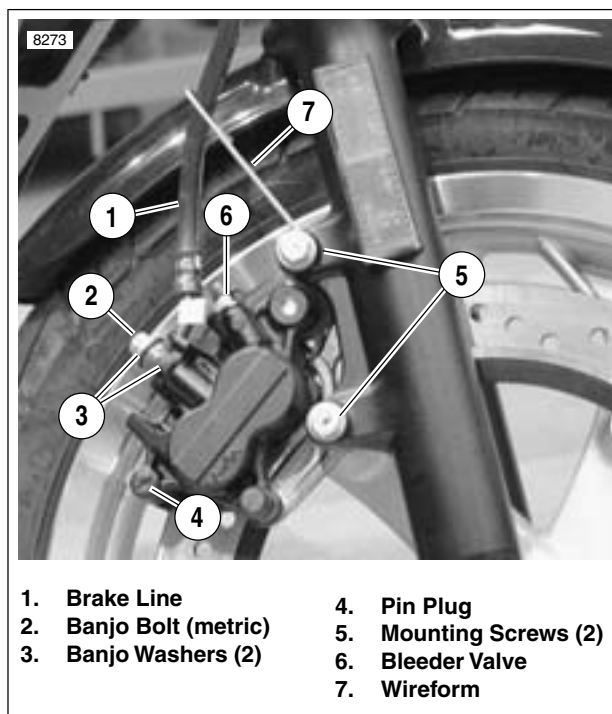
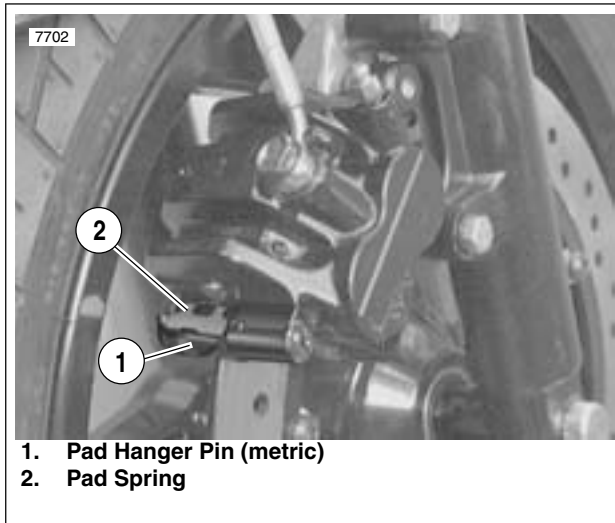


Figure 2-36. Front Brake Caliper



1. Pad Hanger Pin (metric)
2. Pad Spring

Figure 2-37. Pad Spring

2. Carefully inspect all components. Replace any parts that appear damaged or worn. Do not hone caliper piston bore.
3. Inspect brake rotor.
 - a. Measure rotor thickness. Replace if minimum thickness is less than 0.18 in. (4.5 mm).
 - b. Check rotor surface. Replace if warped or badly scored.

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.

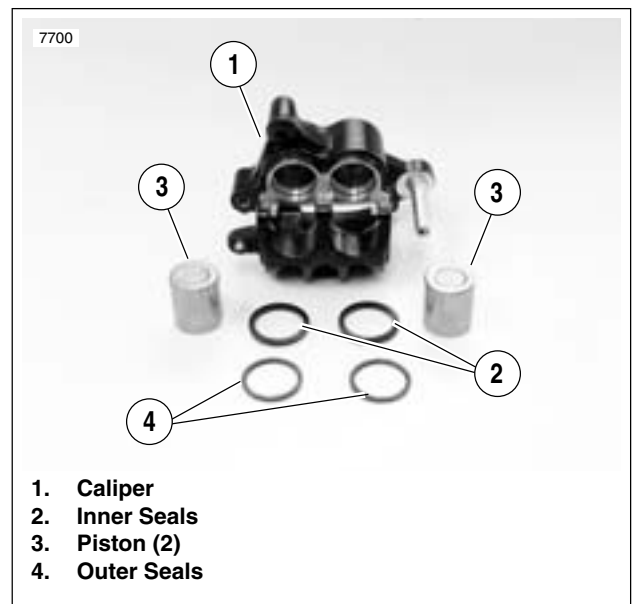
4. Inspect brake pads for damage or excessive wear. Replace both pads as a set if the friction material of either pad is worn to 0.04 in. (1.0 mm) or less.

ASSEMBLY

1. See [Figure 2-39](#). Install pistons and O-rings.
 - a. Apply a light coat of **D.O.T. 4 BRAKE FLUID** to seals, pistons and caliper piston bores.
 - b. Install two **new** seals in outer grooves of each piston bore.
 - c. Install two **new** seals in inner grooves of each piston bore.
 - d. Install pistons (3) in each piston bore.
2. Install a **new** bleeder valve (metric) if necessary. Tighten to 3-5 ft-lbs (4-7 Nm).



Figure 2-38. Removing Pistons



1. Caliper
2. Inner Seals
3. Piston (2)
4. Outer Seals

Figure 2-39. Caliper O-rings and Pistons

INSTALLATION

1. Fit front brake caliper on rotor.
 - a. Slide carrier on caliper.
 - b. Slide caliper over front brake rotor without brake pads installed.
2. See [Figure 2-36](#). Apply LOCTITE THREADLOCKER 272 (red) to both caliper mounting screws (5). Install wireform to upper screw and tighten both screws to 18-22 ft-lbs (24-30 Nm).
3. Install brake pads.
 - a. See [Figure 2-37](#). Install pad spring (2) with opening at top as shown.
 - b. Insert inboard brake pad from rear of caliper.
 - c. Insert outboard pad.
 - d. See [Figure 2-37](#). Install pad hanger pin (1) (metric). Tighten to 11-15 ft-lbs (15-20 Nm).
 - e. See [Figure 2-36](#). Install pin plug (4). Tighten to 1.5-2.1 ft-lbs (2-3 Nm).

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.

CAUTION

To avoid leakage, verify that banjo washers, banjo bolt, hydraulic brake line and caliper bore are completely clean.

4. Connect brake line (1) to caliper using two **new** banjo washers (3) and banjo bolt (2) (metric). Tighten to 16-20 ft-lbs (22-27 Nm).
5. Route brake line through wireform.

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.

6. See [Figure 2-40](#). Remove both master cylinder cover screws (2). Remove master cylinder cover (1) and gasket.
7. With the master cylinder in a level position, verify that the brake fluid level is 0.125 in. (3.2 mm) from molded boss inside reservoir. Add **D.O.T. 4 BRAKE FLUID** if necessary.

WARNING

Verify proper operation of the master cylinder relief port. A plugged or covered relief port can cause brake drag or lockup, which could result in loss of vehicle control and death or serious injury

8. Verify proper operation of the master cylinder relief port. Actuate the brake lever with the reservoir cover removed. A slight spurt of fluid will break the surface if all internal components are working properly.
9. Install master cylinder cover (1) and cover gasket with two screws (2). Tighten to 9-13 **in-lbs** (1.0-1.5 Nm).
10. Depress front brake lever several times to set brake pads to proper operating position within caliper. Bleed brake system.

WARNING

Check for proper brake lamp operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper brake lamp operation could result in death or serious injury.

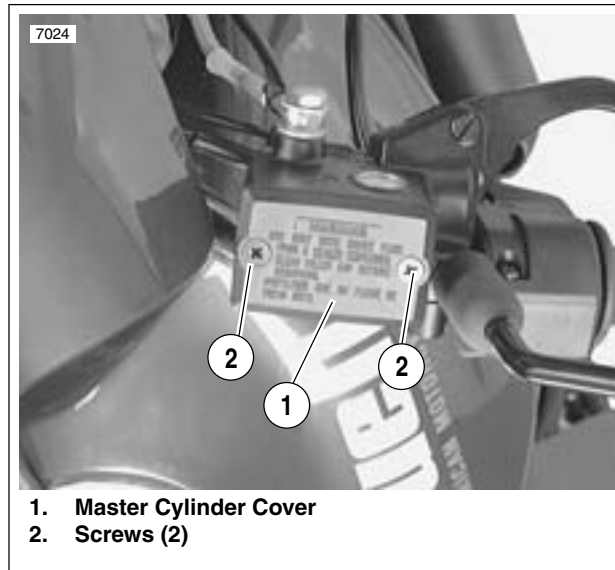
11. Turn ignition key switch to IGN. Apply brake hand lever to test brake lamp operation. Turn ignition key switch to LOCK.

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.

NOTE

Avoid making hard stops for the first 100 miles (160 km) to allow **new brake pads** to "wear in" properly with the brake rotor.



1. Master Cylinder Cover
2. Screws (2)

Figure 2-40. Master Cylinder Cover

REMOVAL

1. Drain and discard brake fluid. See Step 1 under [2.10 FRONT BRAKE MASTER CYLINDER](#).
2. See [Figure 2-41](#). Remove screw (4) to detach brake line clamp (5) from right side of lower triple clamp. Remove brake line from wireform.

CAUTION

Damaged banjo bolt seating surfaces will leak when reassembled. Prevent damage to seating surfaces by carefully removing brake line components.

3. Remove master cylinder banjo bolt (1) (metric) and two banjo washers (2) to disconnect brake line from master cylinder. Discard banjo washers.
4. Remove caliper banjo bolt (6) (metric) and two banjo washers (7) to disconnect brake line from caliper. Discard banjo washers.
5. Carefully inspect the brake line for dents, cuts or other defects. Replace the brake line if any damage is noted.

INSTALLATION

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

CAUTION

To avoid leakage, ensure that banjo washers, banjo bolt, hydraulic brake line and master cylinder bore are completely clean.

1. See [Figure 2-41](#). Connect brake line to master cylinder using two **new** banjo washers (2) and banjo bolt (1) (metric). Loosely install bolt into master cylinder.
2. From the master cylinder, the brake line runs downward in front of the right handlebar, where it turns inboard at the upper triple clamp. Loosely install clamp (5) with screw (4) to attach front brake line to right side of lower triple clamp. Position brake line in wireform.
3. Connect brake line to caliper using two **new** banjo washers (7) and banjo bolt (6) (metric). Tighten banjo bolt (6) to 16-20 ft-lbs (22-27 Nm).
4. Tighten clamp screw (4) on lower triple clamp to 3-5 ft-lbs (4-7 Nm).
5. Tighten master cylinder banjo bolt (1) (metric) to 16-20 ft-lbs (22-27 Nm).
6. Install bleeder valve if removed. Refill master cylinder and bleed brakes.

WARNING

Check for proper brake lamp operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper brake lamp operation could result in death or serious injury.

7. Turn ignition key switch to IGN. Apply brake hand lever to test brake lamp operation. Turn ignition key switch to LOCK.

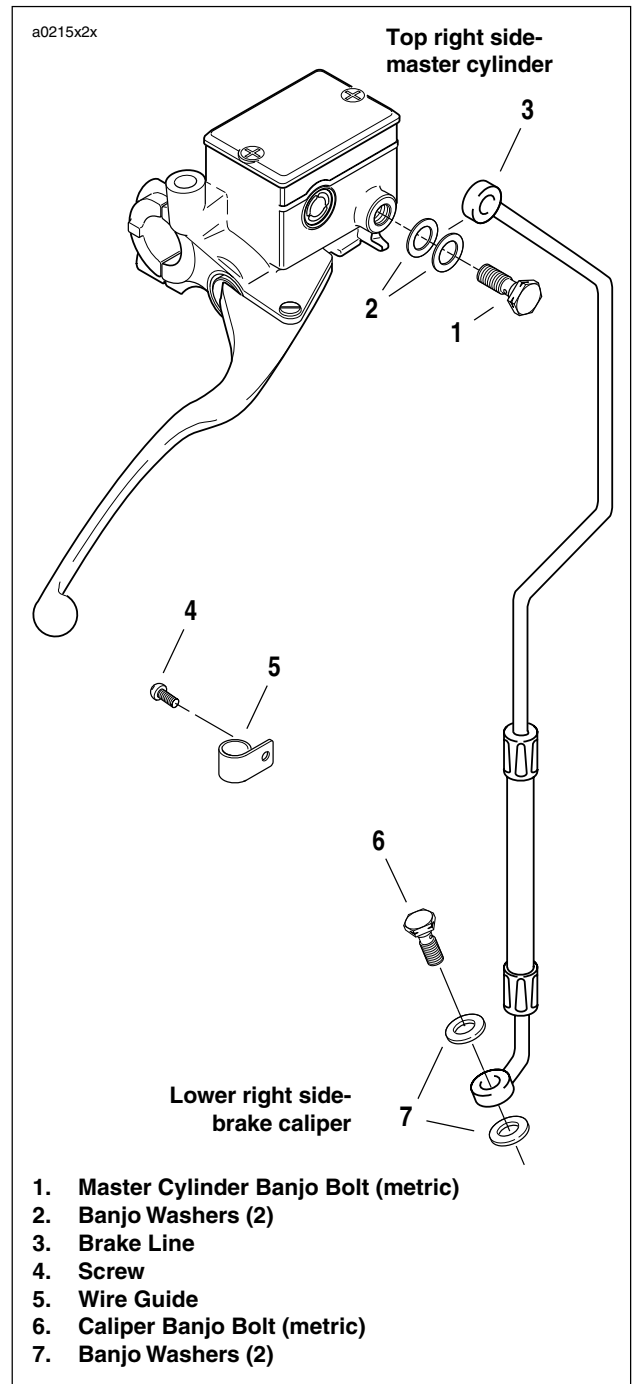


Figure 2-41. Front Brake Line

REMOVAL

1. See Figure 2-42. Drain brake fluid into a suitable container. Discard used fluids according to local laws.
 - a. Remove cap from rear caliper bleeder valve. Open bleeder valve (metric) about 1/2 turn.
 - b. Install a length of plastic tubing over caliper bleeder valve. Place free end in a suitable container.
 - c. Pump brake pedal to drain brake fluid.
 - d. Tighten bleeder valve (metric) to 3-5 ft-lbs (4-7 Nm). Reinstall cap.

CAUTION

Damaged banjo bolt surfaces will leak when reassembled. Prevent damage to seating surfaces by carefully removing brake line components.

2. See Figure 2-43. Remove banjo bolt (1) (metric) and two banjo washers (2) to detach brake line (3) from master cylinder (4). Discard banjo washers.
3. See Figure 2-43. Disconnect push rod from brake pedal clevis (11).
 - a. Spin locknut (10) away from top surface of clevis.
 - b. Turn rod adjuster (7) to free rod from clevis (11).
4. See Figure 2-44. Remove two screws (2) and spacers (3) to detach master cylinder from footrest support.
5. See Figure 2-45. Detach remote reservoir.

DISASSEMBLY

NOTE

Do not disassemble master cylinder unless problems are experienced. Discard all seals during the disassembly procedure. Install a complete rebuild kit upon assembly.

1. See Figure 2-46. Slide rubber boot on rod assembly (3) away from master cylinder body (1).
2. Depress rod assembly (3) and remove internal snap ring (2). Discard snap ring.
3. Remove piston assembly (4) from master cylinder body.

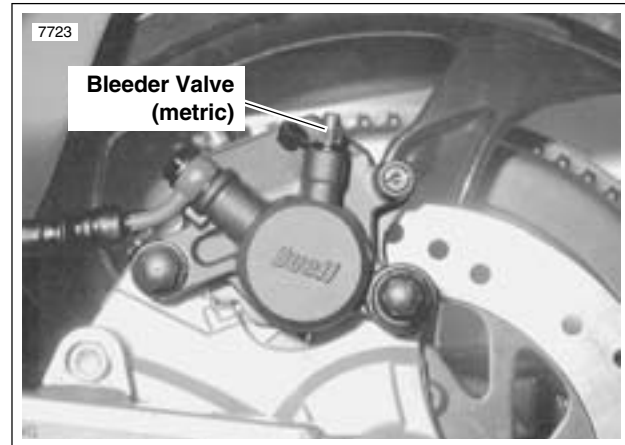


Figure 2-42. Rear Caliper Bleeder Valve (Metric)

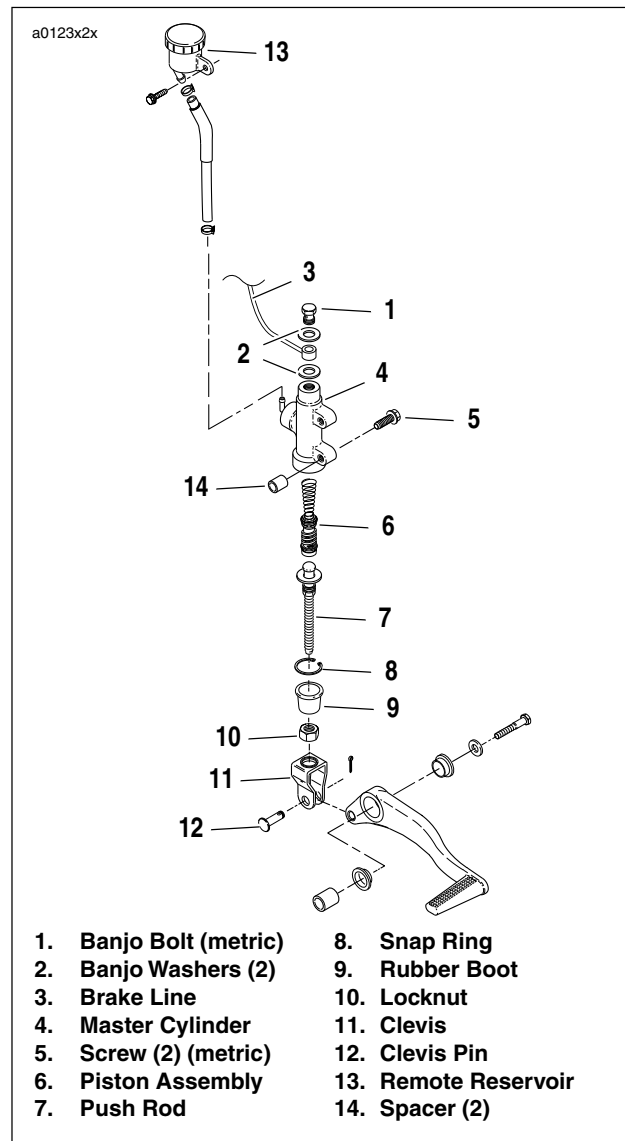


Figure 2-43. Rear Master Cylinder Assembly

CLEANING AND INSPECTION

⚠ WARNING

Clean brake system components using denatured alcohol. Do not use mineral-base cleaning solvents, such as gasoline or paint thinner. Use of mineral-base solvents causes deterioration of rubber parts that continues after assembly. This could result in improper brake operation which could result in death or serious injury.

1. Thoroughly clean master cylinder and all brake system components. Stand master cylinder on wooden block or towel to protect seating surfaces.
 - a. Examine walls of master cylinder reservoir for scratches and grooves. Replace if damaged.
 - b. Verify that vent holes on master cylinder are completely open and free of dirt or debris.
2. Inspect boot on front of master cylinder for cuts, tears or general deterioration. Replace if necessary.

ASSEMBLY

1. See [Figure 2-46](#). Insert piston assembly (4), spring first, into master cylinder.
2. Place round side of rod assembly (3) over piston. Depress piston into master cylinder body (1) and secure with a **new** snap ring (2).
3. Tuck rubber boot on rod assembly (3) into master cylinder body (1).

INSTALLATION

1. See [Figure 2-45](#). Connect remote reservoir.
 - a. If removed, attach remote reservoir to frame using screw. Tighten to 12-15 **in-lbs** (1.4-1.7 Nm).
 - b. Attach reservoir hose to master cylinder with clamp (if removed).
2. See [Figure 2-44](#). Apply LOCTITE THREADLOCKER 243 (blue) to both screws. Attach master cylinder (3) to frame with spacers between master cylinder and footrest support. Tighten to 4-6 ft-lbs (5-8 Nm).

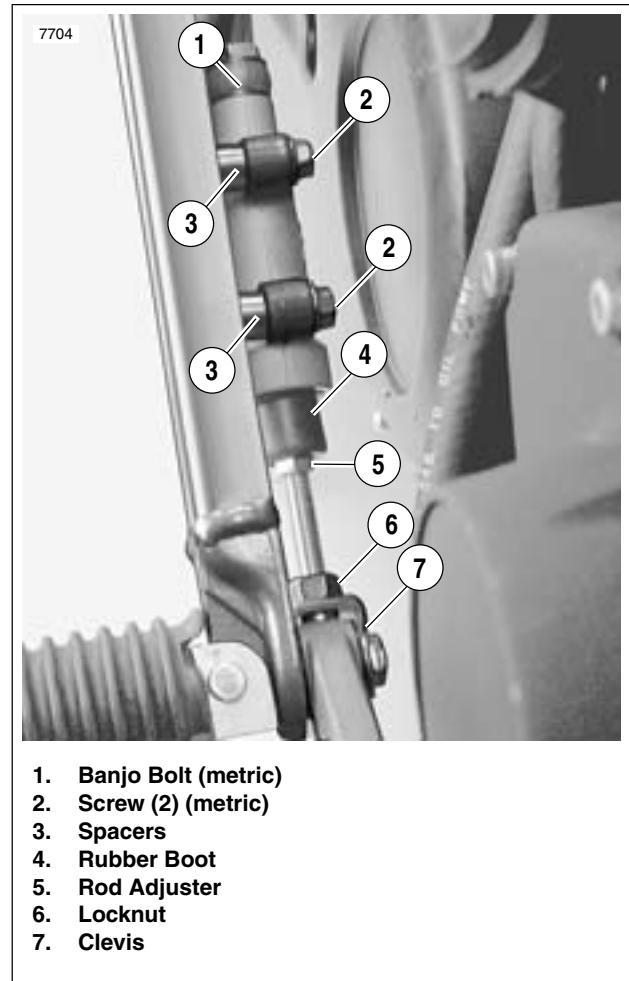
⚠ WARNING

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.

CAUTION

To avoid leakage after assembly, verify that banjo washers, banjo bolt, hydraulic brake line and bore of master cylinder are completely clean.

3. See [Figure 2-43](#). Connect brake line (3) to master cylinder (4) with two **new** banjo washers (2) and banjo bolt (1) (metric). Tighten to 16-20 ft-lbs (22-27 Nm).



1. Banjo Bolt (metric)
2. Screw (2) (metric)
3. Spacers
4. Rubber Boot
5. Rod Adjuster
6. Locknut
7. Clevis

Figure 2-44. Master Cylinder Mounting

4. Install push rod by screwing push rod into clevis.

NOTE

Brake pedal height should be set so top surface of brake pedal is even with the top surface of the foot peg.

5. See [Figure 2-44](#). Set brake pedal height.
 - a. Loosen locknut (6).
 - b. Turn rod adjuster (5) to obtain correct position.
 - c. Tighten locknut (6).

⚠ WARNING

Verify proper operation of the master cylinder relief port. A plugged or covered relief port can cause brake drag or lockup, which could result in loss of vehicle control and death or serious injury

6. Add brake fluid and bleed brake system. See [Bleeding Brakes](#).
7. With motorcycle in a level position, check that brake fluid is between the upper and lower marks on reservoir. Add **D.O.T. 4 BRAKE FLUID** if necessary. Be sure gasket and cap on reservoir fit securely.

WARNING

Check for proper brake lamp operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper brake lamp could result in death or serious injury.

8. Turn ignition key switch to IGN. Apply rear brake pedal to test brake lamp operation. Turn ignition key switch to LOCK.

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 2-45. Remote Reservoir

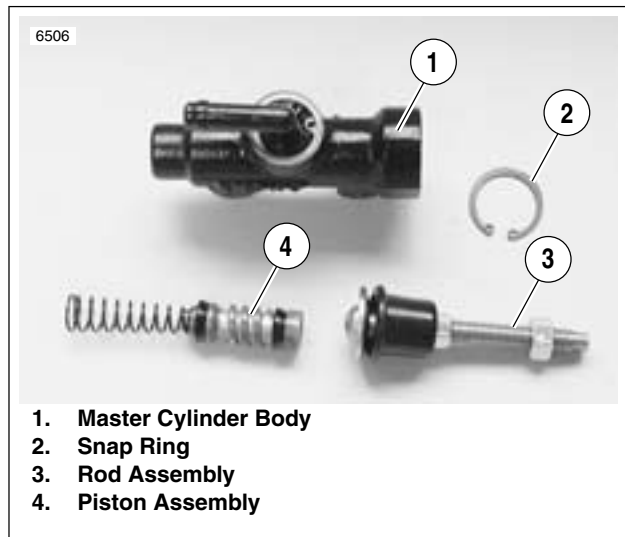


Figure 2-46. Master Cylinder Internals

REMOVAL

NOTE

Steps 1 and 2 are not required for detaching caliper from rotor. Drain fluid only when disassembling caliper.

1. Drain and discard brake fluid.

CAUTION

Damaged banjo bolt seating surfaces will leak when reassembled. Prevent damage to seating surfaces by carefully removing brake line components.

2. See Figure 2-47. Remove banjo bolt (2) (metric) and two banjo washers (3) to disconnect brake line (1) from caliper. Discard banjo washers.
3. Remove small screw (6) (metric) and large screw (7) (metric) to detach caliper from mount.
4. See Figure 2-48. Remove clip (1) from rear caliper mount (2) if necessary.

DISASSEMBLY

1. See Figure 2-47. Remove pin plug and pad hanger (5) (metric) to free brake pads.
2. See Figure 2-48. Remove clip (1) from caliper body.
3. See Figure 2-49. Remove piston (3) using BRAKE CALIPER PISTON REMOVER (1) (Part No. B-42887) with adaptor (2).
4. Remove two O-rings from groove in caliper bore. Discard O-rings.

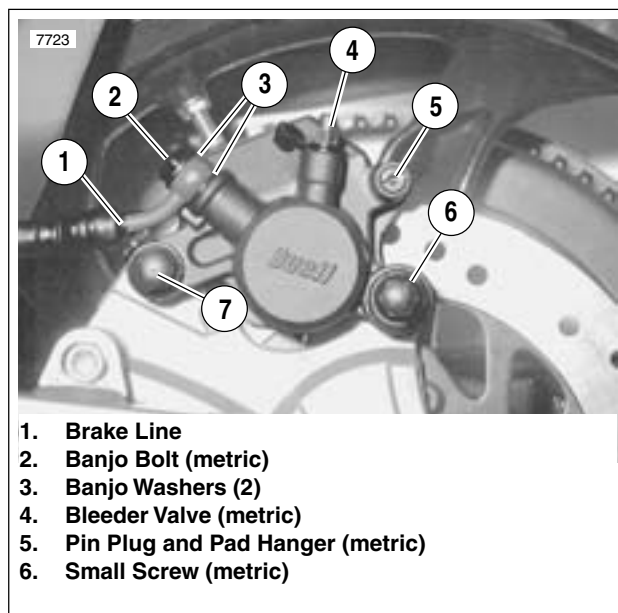


Figure 2-47. Rear Brake Caliper (Typical)

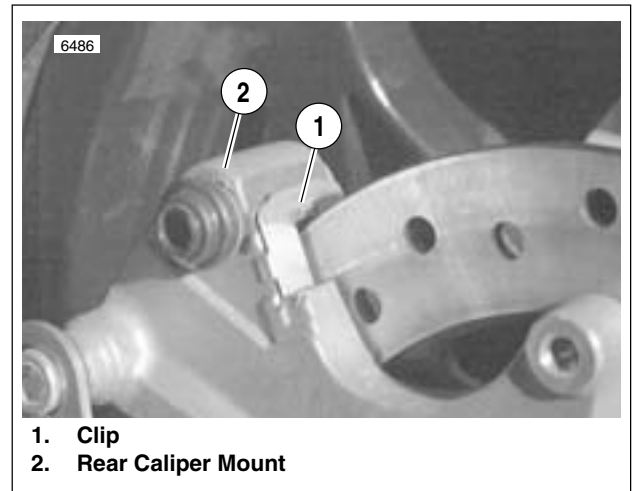


Figure 2-48. Caliper Mount Clip

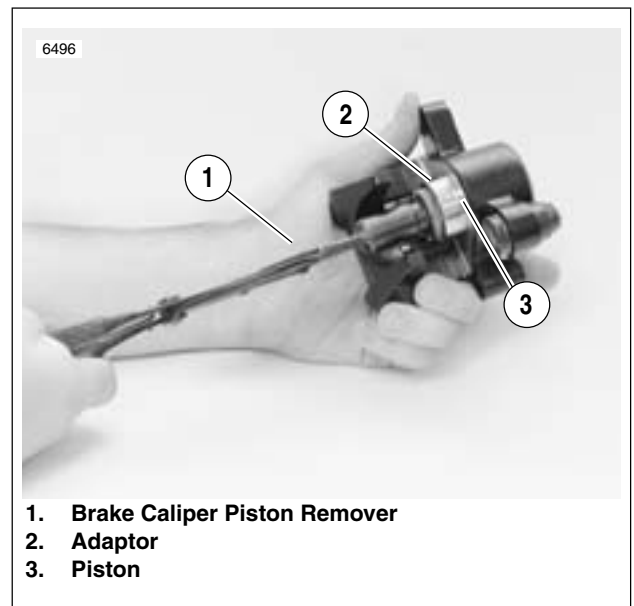


Figure 2-49. Removing Rear Brake Caliper Piston

CLEANING AND INSPECTION

WARNING

Clean brake system components using denatured alcohol. Do not use mineral-base cleaning solvents, such as gasoline or paint thinner. Use of mineral-base solvents causes deterioration of rubber parts that continues after assembly. This could result in improper brake operation which could result in death or serious injury.

- Clean all parts with denatured alcohol or **D.O.T. 4 BRAKE FLUID**. Do not contaminate with mineral oil or other solvents. Wipe dry with a clean, lint free cloth. Blow out drilled passages and bore with a clean air supply. Do not use a wire or similar instrument to clean drilled passages.
- Carefully inspect all components. Replace any parts that appear damaged or worn. Do not hone caliper piston bore.
- Inspect brake rotor.
 - Measure rotor thickness. Replace if minimum thickness is less than 0.18 in. (4.5 mm).
 - Check rotor surface. Replace if warped or badly scored.

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.

- Inspect brake pads for damage or excessive wear. Replace both pads as a set if the friction material of either pad is worn to 0.04 in. (1.0 mm) or less.

ASSEMBLY

- See [Figure 2-50](#). Place clip (1) inside caliper body as shown.

NOTE

To ensure proper brake pad-to-brake rotor clearance when the caliper is installed, piston must be pressed all the way into the bore whenever **new** brake pads are used.

- Install pistons and O-rings.
 - Apply a light coat of **D.O.T. 4 BRAKE FLUID** to O-rings, piston and caliper piston bore.
 - Place **two** new O-rings inside grooves of piston bore.
 - Install piston inside caliper body.
- See [Figure 2-50](#). Install brake pads (3) using pad hanger and pin plug (2).
 - Install pad hanger pin (metric). Tighten to 11-15 ft-lbs (15-20 Nm).
 - Install pin plug. Tighten to 1.5-2.1 ft-lbs (2-3 Nm).
- Install a **new** bleeder valve (metric) if necessary. Tighten to 3-5 ft-lbs (4-7 Nm).

INSTALLATION

- See [Figure 2-48](#). Install caliper mount clip (1) if removed.
- See [Figure 2-47](#). Install caliper assembly on caliper mount. Brake pad surfaces must face rear brake rotor.
 - Apply LOCTITE THREADLOCKER 271 (red) to both caliper mounting screws (6, 7) (metric).
 - Install large caliper screw (7) (metric). Tighten to 18-22 ft-lbs (24-30 Nm)
 - Install small caliper screw (6) (metric). Tighten to 15-18 ft-lbs (20-24 Nm).

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

CAUTION

To avoid leakage, verify that banjo washers, banjo bolt, hydraulic brake line and caliper bore are completely clean.

- Connect brake line (1) to caliper using two **new** banjo washers (3) and banjo bolt (2) (metric). Tighten to 16-20 ft-lbs (22-27 Nm).
- Depress rear brake pedal several times to set brake pads to proper operating position within caliper. Bleed brake system.
- Verify proper fluid level in reservoir.

WARNING

Check for proper brake lamp operation before riding motorcycle. Visibility is a major concern for motorcyclists. Failure to have proper brake lamp operation could result in death or serious injury.

- Turn ignition key switch to IGN. Apply brake pedal to test brake lamp operation. Turn ignition key switch to LOCK.

WARNING

Always test motorcycle brakes at low speed after servicing or bleeding system. To prevent death or serious injury, Buell strongly recommends that all brake repairs be performed by a Buell dealer or other qualified technician.

NOTE

Avoid making hard stops for the first 100 miles (160 km) to allow **new** brake pads to "wear in" properly with the brake rot.

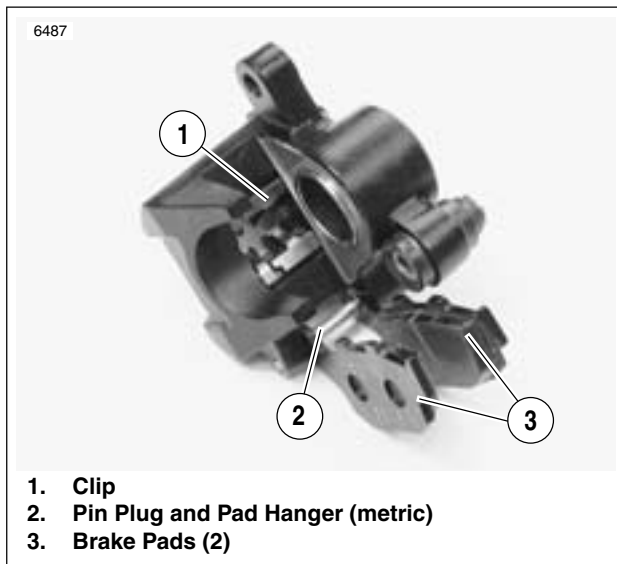


Figure 2-50. Brake Pads

Table 2-4. Brake Troubleshooting

CONDITION	CHECK FOR	REMEDY
Excessive lever/pedal travel or spongy feel.	Air in system.	Bleed brake(s).
	Master cylinder low on fluid.	Fill master cylinder with approved brake fluid.
Brake fade	Moisture in system.	Bleed brake(s).
		Fill master cylinder with approved brake fluid.
Chattering sound when brake is applied.	Worn pads.	Replace brake pads.
	Loose mounting bolts.	Tighten bolts.
	Warped rotor.	Replace rotor.
Ineffective brake – lever/pedal travels to limit.	Low fluid level.	Fill master cylinder with approved brake fluid, and bleed system.
	Piston cup not functioning.	Rebuild cylinder.
Ineffective brake – lever/pedal travel normal.	Distorted or glazed rotor.	Replace rotor.
	Distorted, glazed or contaminated brake pads.	Replace pads.
Brake pads drag on rotor – will not retract.	Cup in master cylinder not uncovering relief port.	Inspect master cylinder.
	Rear brake pedal linkage out of adjustment.	Adjust linkage.

GENERAL

See [Figure 2-51](#). The rear suspension preload and compression and rebound damping are controlled by a non-adjustable shock absorber.

NOTE

Rear shock absorber contains no user serviceable parts.

REMOVAL

1. Lift rear wheel off ground using REAR WHEEL SUPPORT STAND (Part No. B-41174)
2. See [2.28 SEAT](#). Remove seat.
3. Attach lifting straps to motorcycle. Insert lifting straps under frame tubes.
4. Attach lifting straps to a floor hoist placed behind the motorcycle. Raise motorcycle off lift until rear suspension is unloaded.
5. See [Figure 2-51](#). Remove bolt (1) and nut (4) on top mount.
6. While supporting the shock absorber, remove the bolt (1) and nut (4) from the bottom mount.
7. Remove shock absorber assembly.

INSTALLATION

1. See [Figure 2-51](#). Place **new** damper bushings (2) into mounting holes of shock absorber (if not installed).
2. See [Figure 2-51](#). Loosely install bottom bolt and nut.
3. Loosely install top bolt and nut.

NOTE

Torque bolts and nuts from the bolt side only.

4. Tighten bottom bolt to 35-40 ft-lbs (47-54 Nm).
5. Tighten top bolt to 35-40 ft-lbs (47-54 Nm).

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.

6. See [2.28 SEAT](#). Remove lifting straps and install seat.

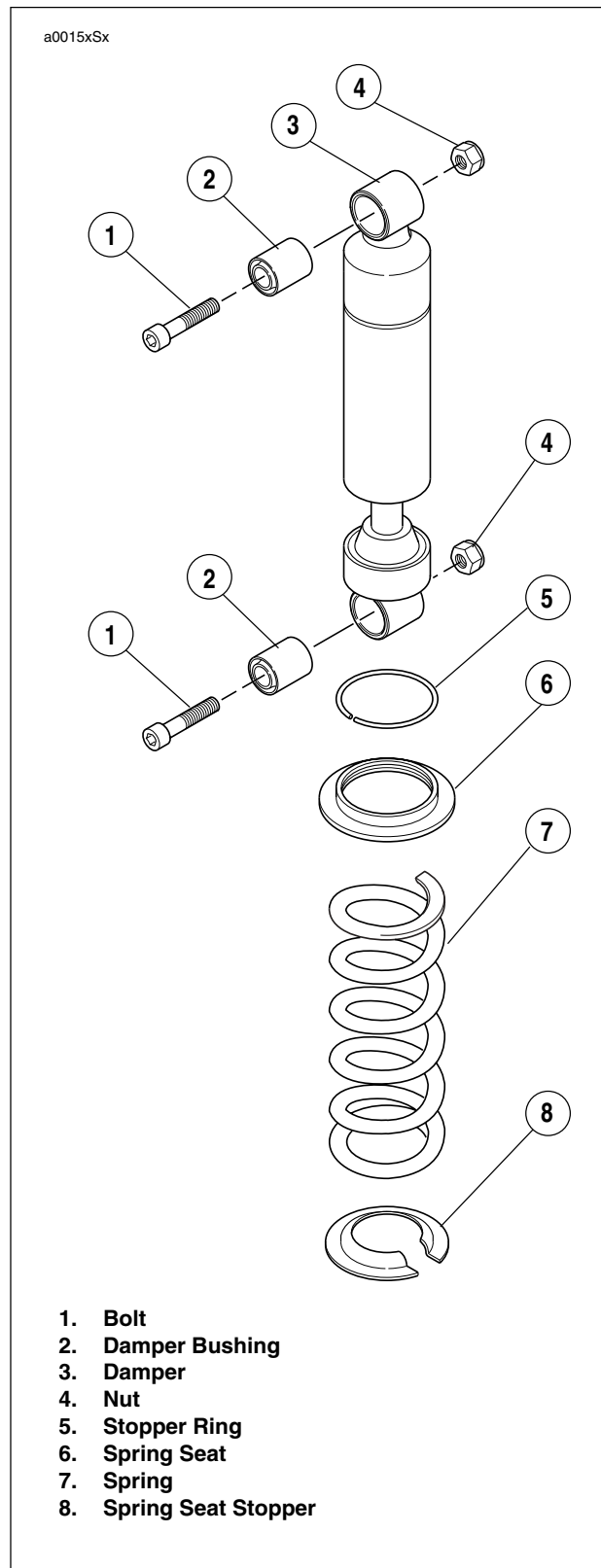


Figure 2-51. Rear Shock Absorber Assembly

REMOVAL/DISASSEMBLY

1. See [Figure 2-52](#). Slide rubber boot off the cable adjusters. Loosen cable adjuster lock on each adjuster.
2. Remove two screws on front housing. Separate housings from handlebar.
3. Remove cables from notches in housings.
4. Unhook ferrules from cable wheel.
5. Remove fuel tank assembly. See [4.2 FUEL TANK COVER/FUEL TANK](#).
6. Cut cable ties along frame.
7. Remove throttle cable clamp.
8. Remove cables from throttle.
9. Carefully note the routing of the cables through/around the forks, along the frame backbone and front/rear of handlebars. Pull cables toward the rear.

CLEANING AND INSPECTION

Clean all parts in a non-flammable cleaning solvent. Blow dry with compressed air. Replace cables if frayed, kinked or bent.

ASSEMBLY/INSTALLATION

1. Route cables as noted in step 9.
2. Connect cables at carburetor.
3. Attach throttle cable clamp. Use **LOCTITE THREAD-LOCKER 222** (purple) on screw.
4. Position ferrules on cable wheel.
5. Insert idle control into front switch housing.
6. Slide switch housing over throttle.
7. Insert throttle cable into front switch housing.
8. Attach rear switch housing and position housings on right handlebar by engaging locating pin on front housing with hole in handlebar. Attach housings with two screws, installing longer screw on bottom. Tighten to **12-17 in-lbs** (1-2 Nm).
9. Adjust cables. See [1.18 THROTTLE CABLES](#).
10. Install fuel tank. See [4.2 FUEL TANK COVER/FUEL TANK](#).

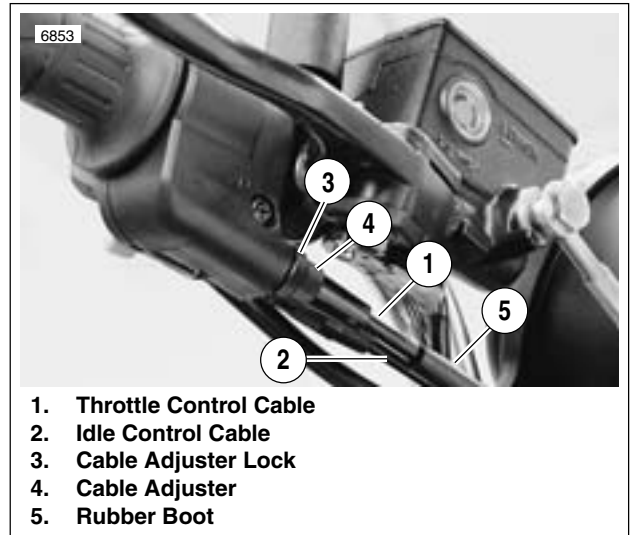


Figure 2-52. Throttle Control Cables

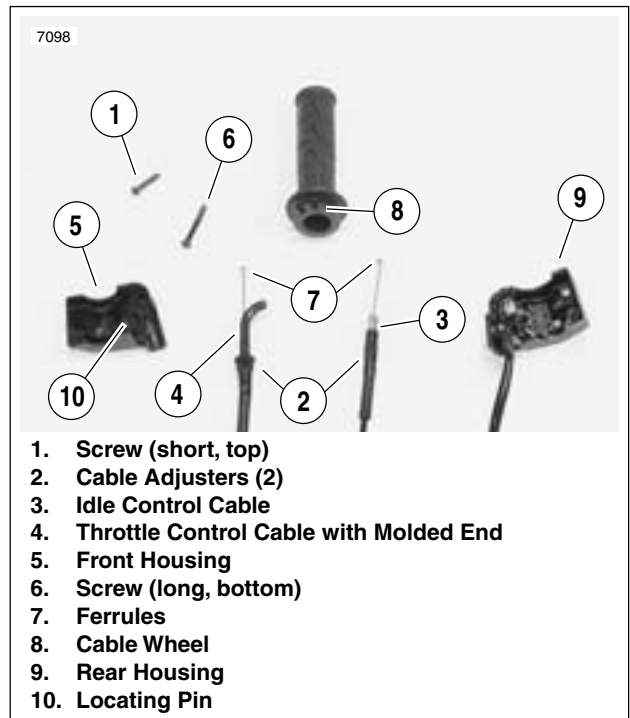


Figure 2-53. Cable Connections

NOTES
