

Periodic Maintenance

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2-2 PERIODIC MAINTENANCE

Periodic Maintenance Chart

The maintenance must be done in accordance with this chart to keep the motorcycle in good running condition.

Periodic Inspection

OPERATION	FREQUENCY hours(month (s))	Initial	Every		See Page
		5 (1)	50 (6)	100 (12)	
E N G I N E	Spark plug - clean and inspect †		•	•	2-36
	Clutch plates - inspect †	•	•	•	2-19
	Clutch - inspect	•	•	•	2-17
	Valve clearance - inspect †	•		•	2-16
	Air cleaner element - clean †	•	•	•	2-13
	Idle speed - inspect †		Every ride		2-12
	Throttle cable - inspect and adjust	•	•	•	2-11
	Fuel tap - clean		•	•	2-15
	Spark arrester - clean			•	2-17
	Engine sprocket - inspect †		•	•	2-27
Fuel hose, connections - inspect †		•	•	2-11	
C H A S S I S	Brake - adjust †		Every ride		2-27
	Brake lining wear - inspect †		Every ride		2-29
	Brake camshaft - lubricate		•	•	2-32
	Spoke tightness and rim runout - inspect †	•	•	•	2-22
	Drive chain - inspect and adjust		Every ride		2-24
	Drive chain - lubricate		Every ride		2-26
	Drive chain wear - inspect †	•	•	•	2-25
	Drive chain guide and slipper - inspect †		•	•	2-27
	Front fork - clean and inspect		•	•	2-32
	Front fork oil - inspect †		Every year		2-32
C H A S S I S	Nuts, bolts, fasteners - inspect †	•	•	•	2-39
	Steering play - inspect †	•	•	•	2-34
	Steering stem bearing - lubricate			•	2-35
	Rear sprocket - inspect †		•	•	2-27
	Battery - inspect †		•	•	2-37
	Battery terminal - inspect †		•	•	2-37
	General lubrication - perform	•	•	•	2-38
	Sidestand - inspect †	•		•	2-36
	Wheel bearing - inspect †		•	•	2-23
	Swingarm pivots - inspect †	•	•	•	2-34
Rear shock absorber - inspect †		•	•	2-33	
Frame - inspect	•	•	•	2-36	
Wheels/tires - inspect	•	•	•	2-21	
Cable - inspect		Every year		2-38	

†: Replace, add, adjust, clean or torque if necessary.

PERIODIC MAINTENANCE 2-3

Periodic Maintenance Chart

Periodic Replacement Parts

OPERATION	FREQUENCY	Initial	Every		See Page
	hours (month (s))	5 (1)	50 (6)	100 (12)	
Engine oil - change		•	•	•	2-19
Oil filter - replace		•		•	2-20
Fuel hose - replace		Every 5 years			2-14
Front fork oil - change			•	•	2-32

2-4 PERIODIC MAINTENANCE

Torque and Locking Agent

Tighten all bolts and nuts to the proper torque using an accurate torque wrench. If insufficiently tightened, a bolt or nut may become damaged, strip an internal thread, or break and then fall out. The following table lists the tightening torque for the major bolts and nuts, and the parts requiring use of a non-permanent locking agent or liquid gasket.

When checking the tightening torque of the bolts and nuts, first loosen the bolt or nut by half a turn and then tighten to specified torque.

Letters used in the "Remarks" column mean:

AL: Tighten the two clamp bolts alternately two times to ensure even tightening torque.

L: Apply a non-permanent locking agent to the threads.

Lh: Left-hand Threads

MO: Apply molybdenum disulfide oil.

S: Tighten the fasteners following the specified sequence.

Si: Apply Silicone grease.

R: Replacement Parts

T: First, tighten the stem nut with 39 N·m (4.0 kgf·m, 29 ft·lb) of torque, then loosen it and retighten it with 4.9 N·m (0.50 kgf·m, 43 in·lb) of torque.

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Fuel System				
Fuel Tap Mounting Bolts	4.4	0.45	39 in·lb	
Intake Pipe Bolts	5.2	0.53	46 in·lb	
Carburetor Holder Bolts	5.2	0.53	46 in·lb	
Air Cleaner Housing Bolts	3.5	0.36	31 in·lb	
Air Cleaner Cover Screws	1.5	0.15	13 in·lb	
Air Duct Clamp Screw	2.0	0.20	18 in·lb	
Throttle Cable Housing Cap Screws	0.6	0.06	5.3 in·lb	
Screw (for Seat Hook)	5.0	0.51	44 in·lb	
Screw (for Rubber Band Hook)	5.0	0.51	44 in·lb	
Engine Top End				
Valve Adjusting Cap Bolts	5.2	0.53	46 in·lb	
Valve Adjusting Screw Locknuts	8.8	0.90	78 in·lb	
Camshaft Chain Guide Bolt	5.2	0.53	46 in·lb	
Camshaft Chain Plate Screw	5.2	0.53	46 in·lb	
Camshaft Sprocket Bolts	12	1.2	106 in·lb	L
Camshaft Sprocket Cover Bolts	5.2	0.53	46 in·lb	
Camshaft Chain Tensioner Cap Bolt	5.2	0.53	46 in·lb	
Camshaft Chain Tensioner Mounting Bolts	5.2	0.53	46 in·lb	L
Cylinder Head Nuts	22	2.2	16	S
Cylinder Head Bolts	12	1.2	106 in·lb	S, L
Rocker Shaft Holder Plate Bolts (KLX110CA/DA Early Models)	5.2	0.53	46 in·lb	
Rocker Shaft Holder Plate Bolts (KLX110CA/DA Late Models ~)	5.2	0.53	46 in·lb	L
Exhaust Pipe Holder Nuts	16	1.6	12	
Muffler Mounting Nut	30	3.1	22	R
Muffler Mounting Bolt	9.8	1.0	87 in·lb	
Muffler Cover Screws	3.0	0.31	27 in·lb	
Spark Arrester Mounting Bolts	8.8	0.90	78 in·lb	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Clutch				
Primary Clutch Hub Nut (KLX110C)	72	7.3	53	
Secondary Clutch Hub Nut (KLX110C)	72	7.3	53	
Clutch Hub Nut (KLX110D)	72	7.3	53	
Primary Gear Nut (KLX110D)	72	7.3	53	
Clutch Spring Bolts	5.0	0.51	44 in·lb	
Oil Seal Retaining Plate Screws	2.9	0.30	26 in·lb	L
Clutch Adjusting Screw Locknut (KLX110C)	19	1.9	14	
Engine Lubrication System				
Engine Oil Drain Plug	29	3.0	21	
Clutch Cover Bolts	8.8	0.90	78 in·lb	
Oil Filter Cap Bolts	5.2	0.53	46 in·lb	
Oil Pump Mounting Screws (L = 25)	5.2	0.53	46 in·lb	
Oil Pump Mounting Screw (L = 30)	5.2	0.53	46 in·lb	
Oil Pipe Banjo Bolts	15	1.5	11	
Oil Pipe Clamp Screw	5.2	0.53	46 in·lb	
Engine Removal/Installation				
Engine Mounting Nuts	54	5.5	40	R, S
Crankshaft/Transmission				
Primary Gear Nut	72	7.3	53	
Crankcase Bolts (L=75)	9.8	1.0	87 in·lb	S, L (1)
Crankcase Bolts (L=50)	9.8	1.0	87 in·lb	S
Shift Drum Bearing Retaining Screws	2.5	0.25	22 in·lb	L
Drive Shaft Bearing Retaining Screw	5.2	0.53	46 in·lb	L
Shift Drum Cam Bolt	5.2	0.53	46 in·lb	L
Shift Return Spring Pin (Bolt)	22	2.2	16	L
Shift Drum Position Plate Screw	5.2	0.53	46 in·lb	
Shift Drum Position Lever Pivot Bolt	5.2	0.53	46 in·lb	
Kick Pedal Bolt	8.8	0.90	78 in·lb	
Shift Pedal Bolt	5.2	0.53	46 in·lb	
Wheels/Tires				
Front Axle Nut	44	4.5	32	R
Rear Axle Nut	64	6.5	47	
Spoke Nipples	4.0	0.41	35 in·lb	
Torque Link Nuts	25	2.5	18	
Final Drive				
Rear Sprocket Nuts	44	4.5	32	R
Engine Sprocket Cover Bolts	5.2	0.53	46 in·lb	
Rear Axle Nut	64	6.5	47	
Chain Guide Roller Mounting Bolt (KLX110D)	23	2.3	17	
Brakes				
Brake Cam Lever Bolt	7.0	0.71	62 in·lb	
Torque Link Nuts	25	2.5	18	

2-6 PERIODIC MAINTENANCE

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Brake Pedal Bolt	8.8	0.90	78 in·lb	
Suspension				
Front Fork Clamp Bolts (Upper)	20	2.0	15	
Front Fork Clamp Bolts (Lower)	30	3.1	22	
Steering Stem Nut	4.9	0.50	43 in·lb	
Steering Stem Head Nut	44	4.5	32	
Swingarm Pivot Nut	78	8.0	58	R
Torque Link Nuts	25	2.5	18	
Fork Bottom Bolt	20	2.0	15	
Rear Shock Absorber Mounting Bolt (Upper)	39	4.0	29	
Rear Shock Absorber Mounting Nut (Upper)	39	4.0	29	R
Rear Shock Absorber Mounting Nut (Lower)	39	4.0	29	R
Steering				
Handlebar Holder Bolts	25	2.5	18	
Steering Stem Head Nut	44	4.5	32	
Steering Stem Nut	4.9	0.50	43 in·lb	T
Front Fork Clamp Bolts (Upper)	20	2.0	15	
Front Fork Clamp Bolts (Lower)	30	3.1	22	
Frame				
Footpeg Bracket Bolts	25	2.5	18	
Sidestand Nut	29	3.0	21	R
Sidestand Bolt	9.8	1.0	87 in·lb	
Rear Reflector Bracket Screws (CA Model)	7.4	0.75	65 in·lb	
Screw (for Seat Hook)	5.0	0.51	44 in·lb	
Screw (for Rubber Band Hook)	5.0	0.51	44 in·lb	
Electrical System				
Ignition Coil Mounting Bolt	2.9	0.30	26 in·lb	
Regulator Mounting Screw	5.2	0.53	46 in·lb	
Spark Plug	13	1.3	115 in·lb	
End Cover Screws	4.4	0.45	39 in·lb	
Starter Motor Terminal Screw	2.0	0.20	18 in·lb	
Starter Motor Mounting Screws	5.2	0.53	46 in·lb	
Brush Holder Plate Screws	0.9	0.09	8.0 in·lb	
Terminal Cover Plate Screws	2.0	0.20	18 in·lb	
Starter Motor Clutch Bolts	11.8	1.20	104 in·lb	L
Alternator Rotor Nut	53.9	5.50	39.8	
Stator Mounting Screws	5.2	0.53	46 in·lb	
Alternator Cover Bolts (L=45)	8.8	0.90	78 in·lb	
Alternator Cover Bolts (L=25)	8.8	0.90	78 in·lb	
Alternator Lead Clamp Screws	5.2	0.53	46 in·lb	
Crankshaft Sensor Mounting Screws	2.9	0.30	26 in·lb	
Gear Position Switch Screws	2.9	0.30	26 in·lb	

Torque and Locking Agent

Basic Torque for General Fasteners

Threads dia. (mm)	Torque		
	N·m	kgf·m	ft·lb
5	3.4 ~ 4.9	0.35 ~ 0.50	30 ~ 43 in·lb
6	5.9 ~ 7.8	0.60 ~ 0.80	52 ~ 69 in·lb
8	14 ~ 19	1.4 ~ 1.9	10.0 ~ 13.5
10	25 ~ 34	2.6 ~ 3.5	19.0 ~ 25
12	44 ~ 61	4.5 ~ 6.2	33 ~ 45
14	73 ~ 98	7.4 ~ 10.0	54 ~ 72
16	115 ~ 155	11.5 ~ 16.0	83 ~ 115
18	165 ~ 225	17.0 ~ 23.0	125 ~ 165
20	225 ~ 325	23 ~ 33	165 ~ 240

2-8 PERIODIC MAINTENANCE

Specifications

Item	Standard	Service Limit
Fuel System		
Throttle Grip Free Play	2 ~ 3 mm (0.08 ~ 0.12 in.)	---
Idle Speed	1 600 ~ 1 700 r/min (rpm)	---
Air Cleaner Element Oil	High quality foam air filter oil	---
Engine Top End		
Valve Clearance:		
Exhaust	0.08 ~ 0.12 mm (0.003 ~ 0.005 in.)	---
Inlet	0.04 ~ 0.08 mm (0.002 ~ 0.003 in.)	---
Clutch (KLX110C)		
Friction Plate Thickness	3.1 ~ 3.3 mm (0.12 ~ 0.13 in.)	3.0 mm (0.12 in.)
Friction Plate Warp	0.2 mm (0.008 in.) or less	0.3 mm (0.01 in.)
Steel Plate Warp	0.15 mm (0.0059 in.) or less	0.3 mm (0.01 in.)
Clutch (KLX110D)		
Clutch Lever Free Play	2 ~ 3 mm (0.08 ~ 0.12 in.)	---
Friction Plate Thickness	3.12 ~ 3.28 mm (0.123 ~ 0.129 in.)	3.0 mm (0.12 in.)
Friction Plate Warp	0.15 mm (0.0059 in.) or less	0.3 mm (0.01 in.)
Steel Plate Warp	0.15 mm (0.0059 in.) or less	0.3 mm (0.01 in.)
Engine Lubrication System		
Engine oil:		
Type	API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2	---
Viscosity	SAE 10W-40	---
Capacity	0.9 L (1.0 US qt) (when filter is not removed)	---
	1.0 L (1.1 US qt) (when filter is removed)	---
	1.1 L (1.2 US qt) (when engine is completely dry)	---
Wheels/Tires		
Rim Runout:		
Axial	TIR 0.8 mm (0.031 in.) or less	TIR 2.0 mm (0.08 in.)
Radial	TIR 1.2 mm (0.047 in.) or less	TIR 2.0 mm (0.08 in.)
Front and Rear Tires Air Pressure	100 kPa (1.0 kgf/cm ² , 14 psi)	---
Standard Tire:		
Front:		
Size	2.50-14 4P.R.	---
Make	IRC	---
Type	GS-45F, Tube	---
Rear:		
Size	3.00-12 4P.R.	---
Make	IRC	---
Type	GS-45F, Tube	---

Specifications

Item	Standard	Service Limit
Final Drive		
Drive Chain Slack		
KLX110C Models	11 ~ 16 mm (0.4 ~ 0.6 in.)	---
KLX110D Models	8 ~ 13 mm (0.3 ~ 0.5 in.)	---
Drive Chain 20-Link Length	254.0 ~ 254.6 mm (10.00 ~ 10.02 in.)	259 mm (10.2 in.)
Standard Chain:		
Make	DAIDO	---
Type	DID 420DX	---
Link	90 Links	---
Rear Sprocket Warp	TIR 0.4 mm (0.016 in.) or less	TIR 0.5 mm (0.020 in.)
Brakes		
Brake Lever Free Play	4 ~ 5 mm (0.16 ~ 0.20 in.)	---
Brake Pedal Free Play	20 ~ 30 mm (0.79 ~ 1.18 in.)	---
Brake Shoe Lining Thickness:		
Front	2.10 ~ 3.00 mm (0.08 ~ 0.12 in.)	1.2 mm (0.05 in.)
Rear	3.85 ~ 4.15 mm (0.152 ~ 0.163 in.)	2.0 mm (0.08 in.)
Brake Cam Lever Angle:		
Front	80° ~ 90°	---
Rear	80° ~ 90°	---
Suspension		
Front Fork		
Suspension Oil	Kawasaki SS-8 or equivalent	---
Amount:		
KLX110C	165 ±2.5 mL (5.58 ±0.085 US oz)	
KLX110D	182 ±2.5 mL (5.71 ±0.085 US oz)	---
Electrical System		
Spark Plug Gap	0.6 ~ 0.7 mm (0.024 ~ 0.028 in.)	---

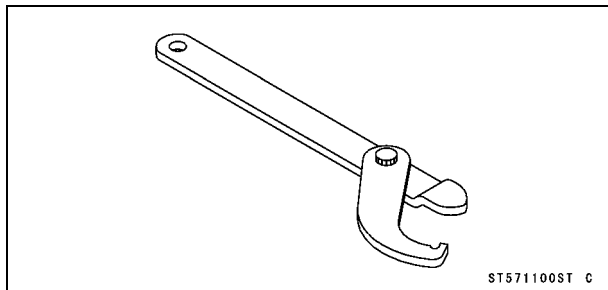
TIR: Total Indicator Readings

2-10 PERIODIC MAINTENANCE

Special Tools

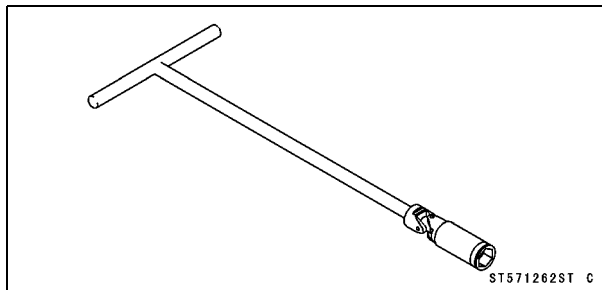
Steering Stem Nut Wrench:

57001-1100



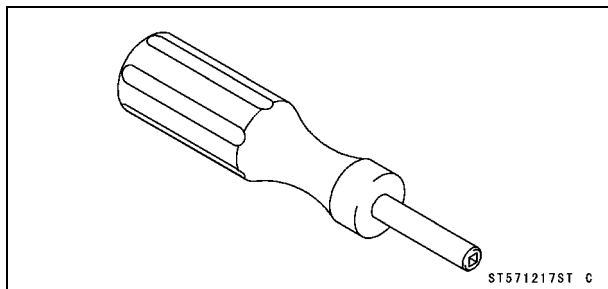
Spark Plug Wrench, Hex 16:

57001-1262



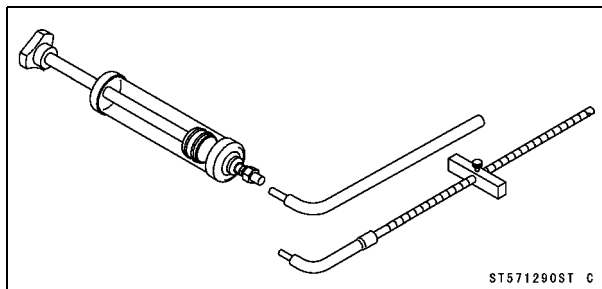
Valve Adjusting Screw Holder:

57001-1217



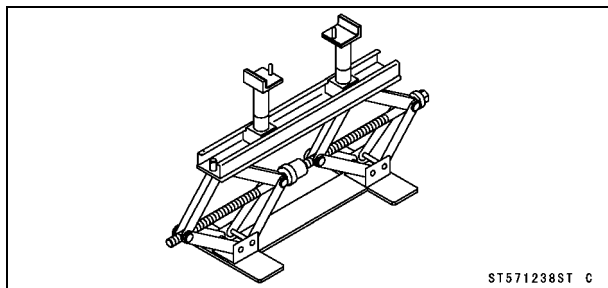
Fork Oil Level Gauge:

57001-1290



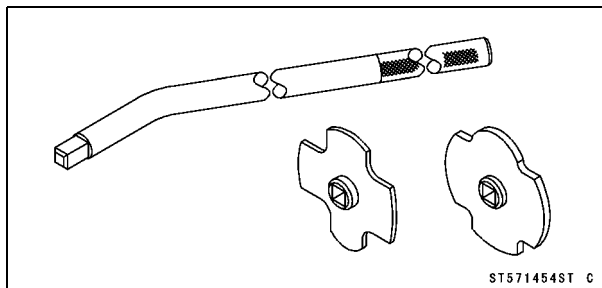
Jack:

57001-1238



Filler Cap Driver:

57001-1454



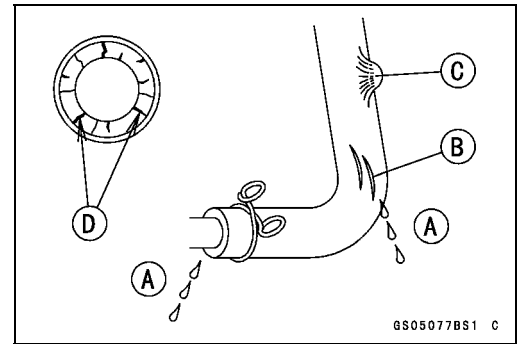
Periodic Maintenance Procedures

Fuel System

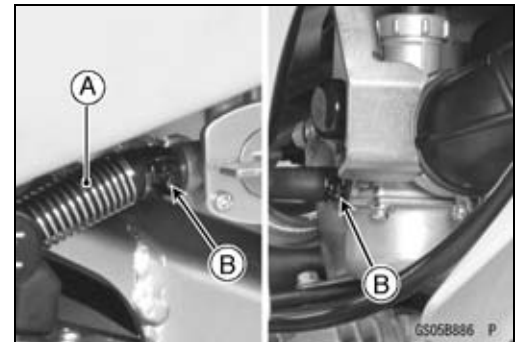
Fuel Hose and Connection Inspection

○The fuel hoses are designed to be used throughout the motorcycle's life without any maintenance, however, if the motorcycle is not properly handled, the inside the fuel line can cause fuel to leak [A] or the hose to burst.

- Check the fuel hose.
- ★ Replace the fuel hose if any fraying, cracks [B], bulges [C] or ozonic cracks [D] are noticed.



- Check that the hose [A] is securely connected and clamps [B] are tightened correctly.
- When installing the fuel hose, avoid sharp bending, kinking, flattening or twisting, and route the fuel hose with a minimum of bending so that the fuel flow will not be obstructed.
- ★ Replace the hose if it has been sharply bent or kinked.



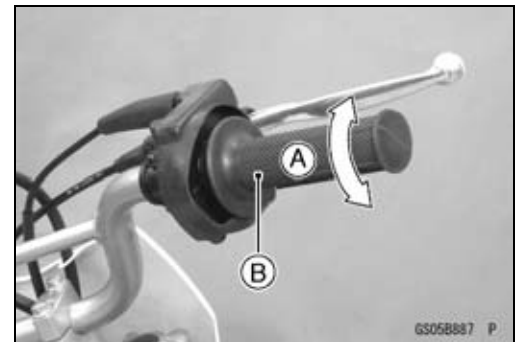
Throttle Cable Inspection

- Check throttle grip free play [A] by lightly turning the throttle grip [B] back and forth.
- ★ If the free play is improper, adjust the throttle cable.

Throttle Grip Free Play

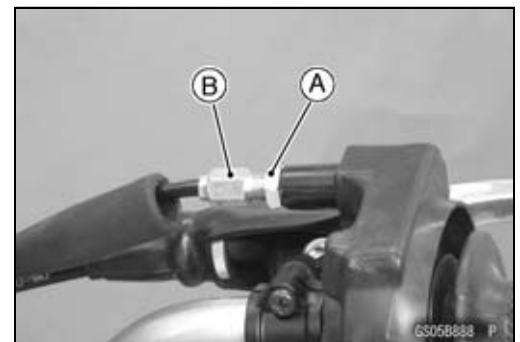
Standard: 2 ~ 3 mm (0.08 ~ 0.12 in.)

- Check that the throttle grip moves smoothly from full open to close, and the throttle closes quickly and completely in all steering positions by the return spring.
- ★ If the throttle grip does not return properly, check the throttle cable routing, grip free play and cable damage. Then lubricate the throttle cable.
- Run the engine at the idle speed, and turn the handlebar all the way to the right and left to ensure that the idle speed does not change.
- ★ If the idle speed increase, check the throttle cable free play and the cable routing.



Throttle Cable Adjustment

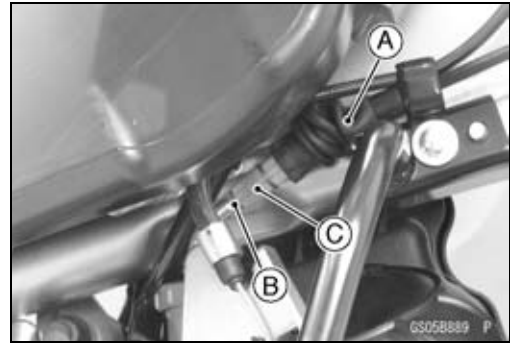
- Loosen the locknut [A] at the upper end of the throttle cable.
- Screw throttle cable adjuster [B] until 2 ~ 3 mm (0.08 ~ 0.12 in.) of throttle grip free play is obtained.
- Tighten the locknut.



2-12 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

- ★ If the throttle grip free play cannot be adjusted with the adjuster at the upper end of the throttle cable, use the lower cable adjuster at the carburetor.
- Remove the shroud (see Shroud Removal in the Frame chapter).
- Pull off the boot [A] of the carburetor top.
- Loosen the locknut [B], and make the necessary free play adjustment at the lower cable adjuster [C].
- Tighten the locknut, and install the boot.
- Check if the throttle grip moves smoothly from full open to close, and the throttle closes quickly and completely in all steering positions by the return spring. If not, check the throttle cable routing, grip free play, and cable damage. Then lubricate the throttle cable.
- With the engine idling, turn the handlebar both ways and check if handlebar movement changes the idling speed. If so, the throttle cable may be improperly adjusted or incorrectly routed, or damaged. Be sure to correct any of these conditions before riding.



⚠ WARNING

Operation with improperly adjusted, incorrectly routed or damaged cables could result in an unsafe riding condition. Follow the service manual to be make sure to correct any of these conditions.

Idle Speed Inspection

- Start the engine and warm it up thoroughly.
- With the engine idling, turn the handlebar to both sides [A].
- ★ If handlebar movement changes the idle speed, the throttle cable may be improperly adjusted or incorrectly routed, or it may be damaged. Be sure to correct any of these conditions before riding (see Cable, Wire, and Hose Routing section in the Appendix chapter).



⚠ WARNING

Operation with improperly adjusted, incorrectly routed or damaged cables could result in an unsafe riding condition. Follow the service manual to be make sure to correct any of these conditions.

- Check the idle speed, using the engine revolution tester for high accuracy.
- ★ If the idle speed is out of specified range, adjust it.

Idle Speed:

Standard: 1 600 ~ 1 700 r/min (rpm)

Periodic Maintenance Procedures

Idle Speed Adjustment

NOTICE

The pilot screw [A] is set at the factory and should not be adjusted. But if necessary, set the pilot screw as follows:

NOTE

○For US and CA models, the pilot screw cannot be adjusted.

- Remove the shroud (see Shroud Removal in the Frame chapter).
- Turn in the pilot screw and count the number of turns until it seats fully but not tightly.
- Back out the same number of turns counted when turned in. This is to set the screw to its original position.

NOTE

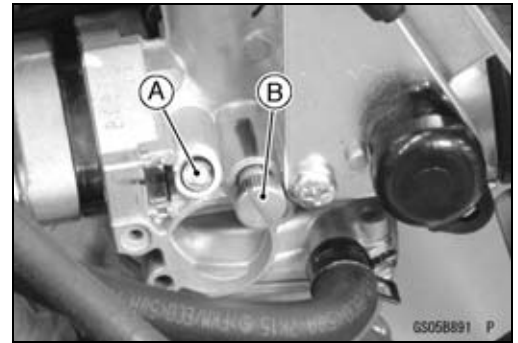
○A carburetor has different “turns out” of the pilot screw for each individual unit. When setting the pilot screw, use the “turns out” determined during disassembly. Use the specifications in this manual only if the original number is unknown.

- Start the engine and warm it up thoroughly.
- Turn the idle adjusting screw [B] until idle speed is correct.
- Open and close the throttle a few times to make sure that the idle speed is within the specified range. Readjust if necessary.
- Install the shroud (see Shroud Installation in the Frame chapter).

Air Cleaner Element Cleaning

NOTE

- In dusty areas, the element should be cleaned more frequently than recommended interval.
- After riding through rain or on muddy roads, the element should be cleaned immediately.
- Since repeated cleaning opens the pores of the element, replace it with a new one in accordance with the Periodic Maintenance Chart. Also, if there is a break in the element material or any other damage to the element, replace the element with a new one.



2-14 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

⚠ WARNING

Gasoline and low flash-point solvents can be flammable and/or explosive and cause severe burns. Clean the element in a well-ventilated area, and take care that there is no spark or flame anywhere near the working areas. Do not use gasoline or low flash-point solvents to clean the element.

- Remove:
 - Air Cleaner Element [A] (see Air Cleaner Element Removal in the Fuel System chapter)
- Stuff a clean, lint-free towel into the carburetor so no dirt is allowed to enter the carburetor.
- Wipe out the inside of the air cleaner housing with a clean damp towel.

NOTICE

Gasoline and low flash-point solvents can be flammable and/or explosive and cause severe burns. Clean the element in a well-ventilated area, and take care that there is no spark or flame anywhere near the working areas. Do not use gasoline or low flash-point solvents to clean the element.

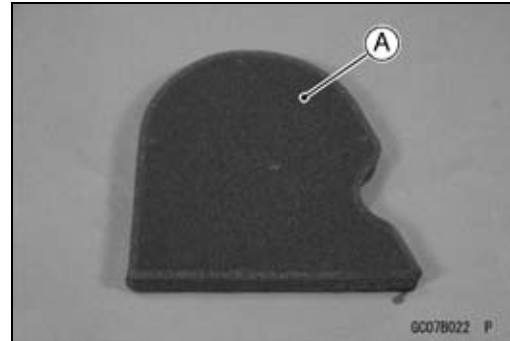
- Clean the element in a bath of high flash-point solvent using a soft bristle brush.
- Squeeze it dry in a clean towel. Do not wring the element or blow it dry; the element can be damaged.
- Check all the parts of the element for visible damage.
- ★ If any of the parts of the element are damaged, replace them.
- After cleaning, saturate the element with high-quality foam-air-filter oil, squeeze out the excess, then wrap it in a clean towel and squeeze it as dry as possible.
- Be careful not to tear the sponge filter.
- Remove the towel from the carburetor.

- Install the air cleaner element (see Air Cleaner Element Installation in the Fuel System chapter).

Fuel Hose Replacement

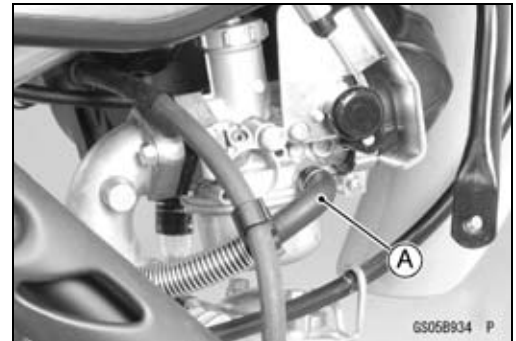
⚠ WARNING

Gasoline is extremely flammable and can be explosive under certain conditions. Always stop the engine and do not smoke. Make sure the area is well-ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

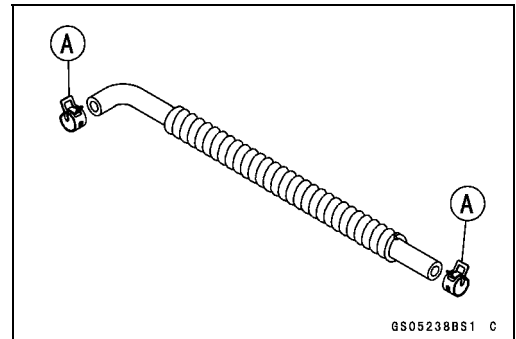


Periodic Maintenance Procedures

- Remove:
 - Fuel Tank (see Fuel Tank Removal in the Fuel System chapter)
 - Fuel Hose [A]



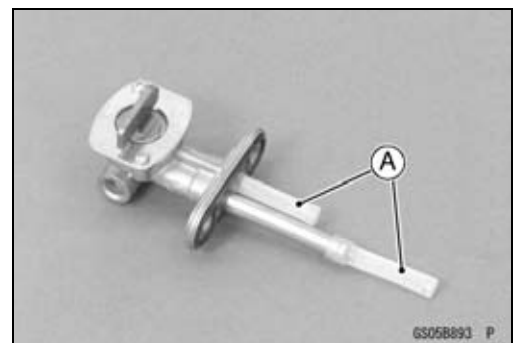
- Replace the fuel hose with a new one.
- Fix the both ends of the fuel hose with the clamps [A] securely.
- Start the engine and check the fuel hose for leaks.



Fuel Tap Cleaning

<p>⚠ WARNING</p>
<p>Gasoline and low flash-point solvents can be flammable and/or explosive and cause severe burns. Clean the tank in a well-ventilated area, and take care that there are no sparks or flame anywhere near the working area. Do not use gasoline or low flash-point solvents to clean the tank.</p>

- Remove the fuel tank and drain the fuel (see Fuel Tank Removal in the Fuel System chapter).
- Pour some high flash-point solvent into the fuel tank and shake the tank to remove dirt and fuel deposits.
- Pour the solvent out of the tank.
- Remove the fuel tap (see Fuel Tap Removal in the Fuel System chapter).
- Clean the fuel tap and the fuel filter screens [A] in high flash-point solvent. After cleaning, install the fuel tap.
- Dry the tank, filter and tap with compressed air.
- Install the fuel tank (see Fuel Tank Installation in the Fuel System chapter).



2-16 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

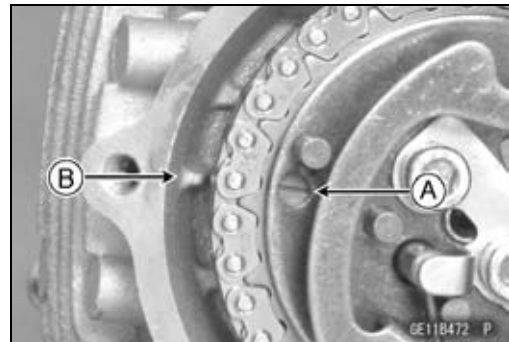
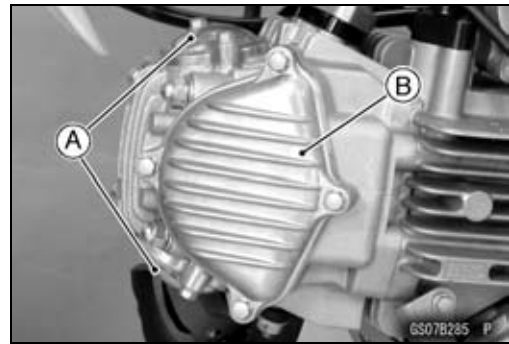
Engine Top End

Valve Clearance Inspection

NOTE

○ Valve clearance must be checked and adjusted when the engine is cold (at room temperature).

- Remove:
 - Valve Adjusting Covers [A] (see Camshaft Sprocket Removal in the Engine Top End chapter)
 - Camshaft Sprocket Cover [B] (see Rocker Arm Removal in the Engine Top End chapter)
- Remove the alternator rotor nut cap.
Special Tool - Filler Cap Driver: 57001-1454
- Turn the crankshaft counterclockwise until the line mark [A] on the KACR unit aligns with the sprocket cover mating surface projection [B].

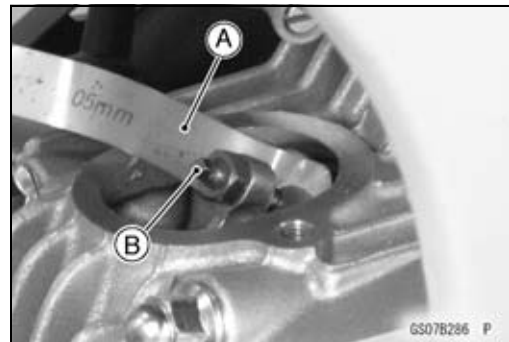


- Using a thickness gauge [A], measure the valve clearance between the adjusting screw [B] and valve stem. Measure the clearance for both valves at a time.

Valve Clearance (when cold)

Standard:

Inlet	0.04 ~ 0.08 mm (0.002 ~ 0.003 in.)
Exhaust	0.08 ~ 0.12 mm (0.003 ~ 0.005 in.)

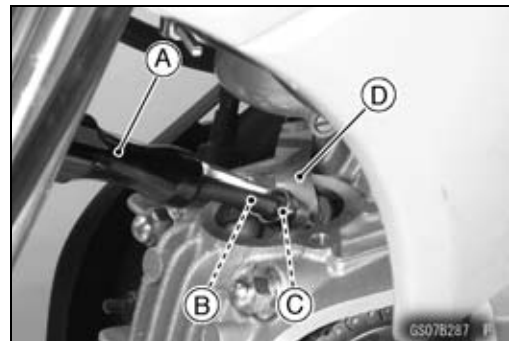


Valve Clearance Adjustment

- ★ If a valve clearance is incorrect, adjust it.
- Use the valve adjusting screw holder [A] to holding the valve adjusting screw [B], loosen the adjusting screw locknut [C] and insert the thickness gauge [D] between the valve and adjusting screw, and turn the screw until the adjusting screw stops.

Special Tool - Valve Adjusting Screw Holder: 57001-1217

- Tighten:
Torque - Valve Adjusting Screw Locknut: 8.8 N·m (0.90 kgf·m, 78 in·lb)
- Install the removed parts (see appropriate chapters).



Periodic Maintenance Procedures

Spark Arrester Cleaning

This vehicle is equipped with a spark arrester. It must be properly maintained to ensure its efficiency.

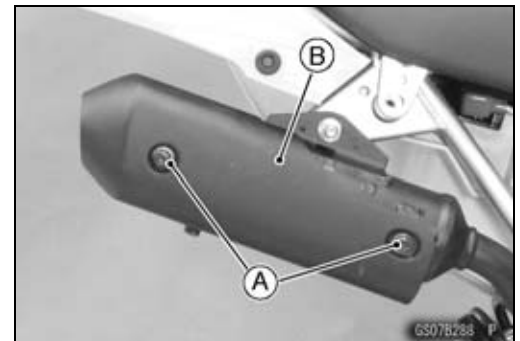
NOTICE

The spark arrester must be installed correctly and functioning properly to provide adequate fire protection.

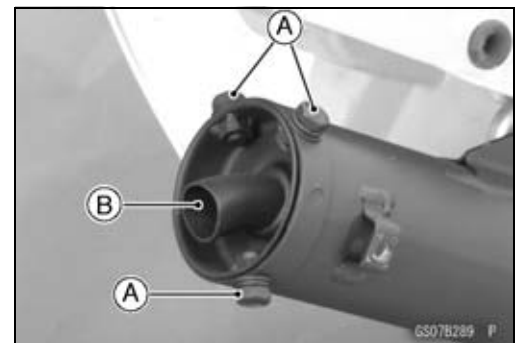
⚠ WARNING

Hot exhaust system parts can cause serious burns. The exhaust system becomes very hot soon after the engine is started. To avoid burns, be sure the exhaust system is cold before cleaning the spark arrester.

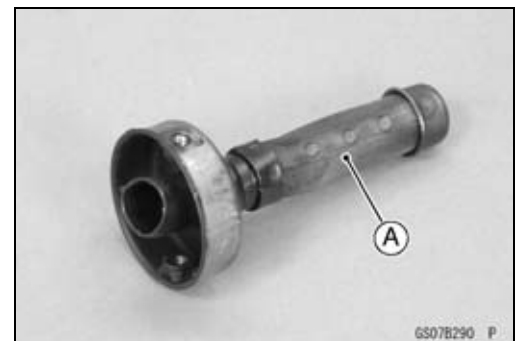
- Remove;
 - Right Side Cover (see Side Cover Removal in the Frame chapter)
 - Muffler Cover Screws [A]
 - Muffler Cover [B]



- Remove:
 - Spark Arrester Mounting Bolts [A]
 - Spark Arrester [B]



- With a wire brush, remove the carbon off the inside of the spark arrester [A] and muffler.
- Inspect the spark arrester.
- ★ If the spark arrester is damaged, replace it with a new one.
- Install the spark arrester into the rear end of the muffler.
 - Torque - Spark Arrester Mounting Bolts: 8.8 N·m (0.90 kgf·m, 78 in·lb)
- Install the muffler cover.
 - Torque - Muffler Cover Screws: 3.0 N·m (0.31 kgf·m, 27 in·lb)



Clutch

⚠ WARNING

The engine and exhaust system get extremely hot during normal operation and can cause serious burns. Never touch the engine or exhaust pipe during clutch adjustment.

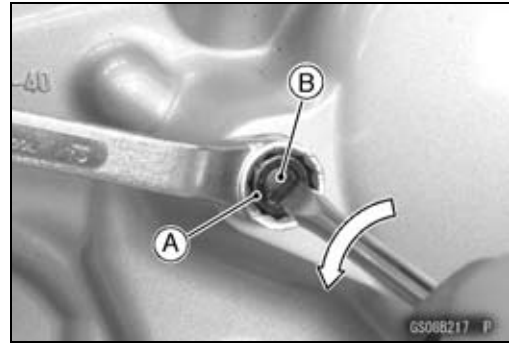
2-18 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Clutch Release Adjustment (KLX110C)

- Loosen the adjusting screw locknut [A].
- Turn the adjusting screw [B] counterclockwise until it becomes hard to turn.
- Loosen the adjusting screw until the specified value.

Clutch Release: 1/4 turn out



- Tighten the locknut without changing the adjusting screw position.

Torque - Clutch Adjusting Screw Locknut: 19 N·m (1.9 kgf·m, 14 ft·lb)

- Start the engine and inspect the conditions of engine shifting the pedal a few times.

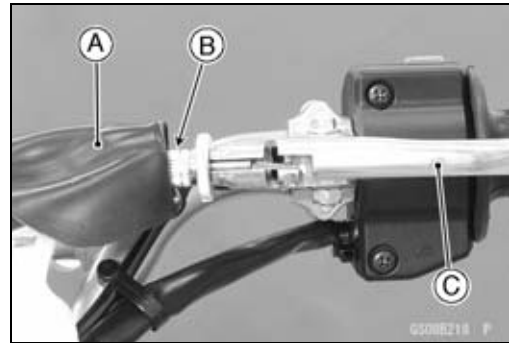
Clutch Lever Free Play Inspection (KLX110D)

- Slide the dust cover [A] out of place.
- Check that the clutch cable upper end is fully seated in the adjuster [B].
- Pull the clutch lever [C] lightly, and check the clutch lever free play.

Clutch Lever Free Play

Standard: 2 ~ 3 mm (0.08 ~ 0.12 in.)

- ★ If it does not, adjust the lever play.



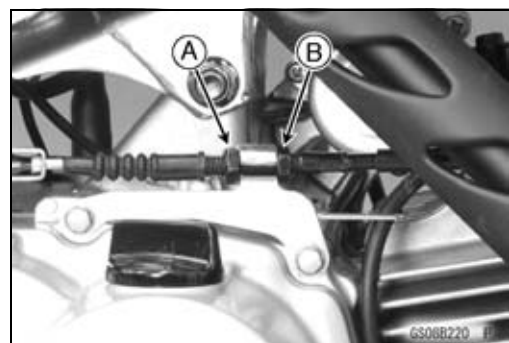
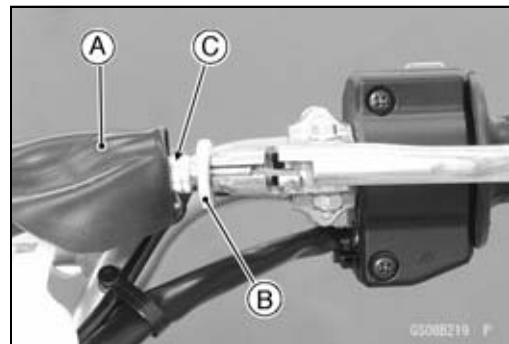
Clutch Lever Free Play Adjustment (KLX110D)

- Slide the dust cover [A] out of place.
- Loosen the locknut [B] and turn the adjuster [C] so that the clutch lever will have 2 ~ 3 mm (0.08 ~ 0.12 in.) of play.

NOTE

○ Be sure that the outer cable end at the clutch lever is fully seated in the adjuster at the clutch lever, or it could slip into the place later, creating enough cable play to prevent clutch disengagement.

- If it cannot be done, loosen the rear locknut [A] at the lower of the clutch cable, and turn the front locknut [B] so that clutch lever has 2 ~ 3 mm (0.08 ~ 0.12 in.) of play.
- After the adjustment is made, tighten the locknut, and start the engine and check that the clutch does not slip and that it release properly.



Periodic Maintenance Procedures

Friction and Steel Plates Inspection

- Remove the clutch plates (see Secondary Clutch Disassembly (KLX110C) or Clutch Hub Disassembly (KLX110D) in the Clutch chapter).
- Visually inspect the friction and steel plates to see if they show any signs of seizure, or uneven wear.
- ★ If any plates show signs of damage, replace the friction plates and steel plates as a set.
- Measure the thickness of the friction plates [A] with vernier calipers.
 - [B] KLX110C
 - [C] KLX110D
- ★ If they have worn past the service limit, replace them with new ones.

Friction Plate Thickness

Standard:

KLX110C	3.1 ~ 3.3 mm (0.12 ~ 0.13 in.)
KLX110D	3.12 ~ 3.28 mm (0.123 ~ 0.129 in.)

Service Limit: 3.0 mm (0.12 in.)

- Place each friction plate or steel plate on a surface plate, and measure the gap between the surface plate [A] and each friction plate or steel plate [B] with a thickness gauge [C]. The gap is the amount of friction or steel plate warp.
- ★ If any plate is warped over the service limit, replace it with a new one.

Friction Plate Warp

Standard:

KLX110C	0.2 mm (0.008 in.) or less
KLX110D	0.15 mm (0.0059 in.) or less

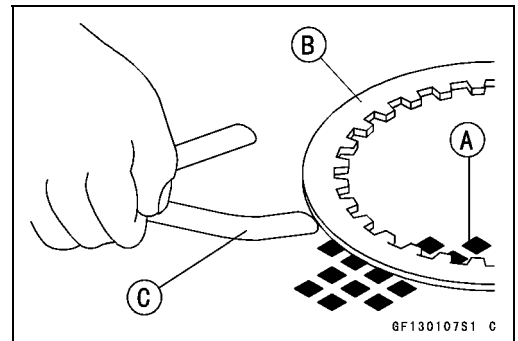
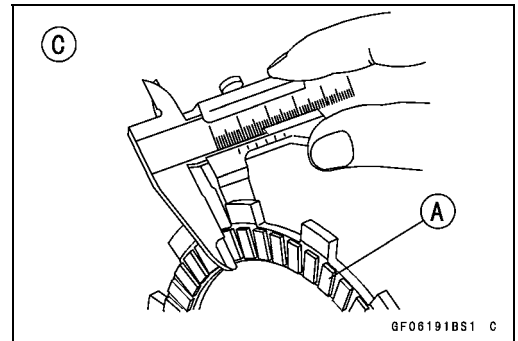
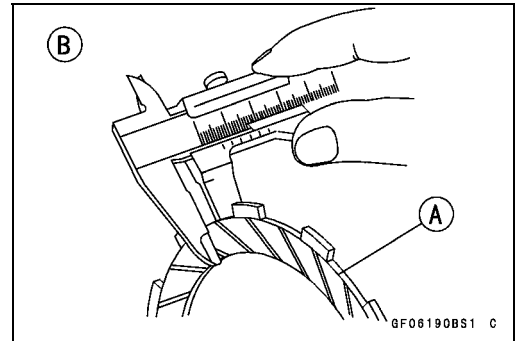
Service Limit: 0.3 mm (0.01 in.)

Steel Plate Warp

Standard:

0.15 mm (0.0059 in.) or less

Service Limit: 0.3 mm (0.01 in.)



Engine Lubrication System

Engine Oil Change

- Warm up the engine thoroughly so that the oil will pick up any sediment and drain easily. Then stop the engine.

2-20 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

⚠ WARNING

The engine and exhaust system get extremely hot during normal operation and can cause serious burns. Never touch the engine or exhaust pipe during oil change.

- Place an oil pan beneath the engine.
- Remove the engine oil drain plug [A], and let the oil drain completely.
- Replace the oil drain gasket with a new one if it is damaged.
- After draining, install the drain plug.

Torque - Engine Oil Drain Plug: 29 N·m (3.0 kgf·m, 21 ft·lb)

- Fill the engine with a good quality motor oil specified below.

Recommended Engine

Type: API SG, SH, SJ, SL or SM with JASO MA, MA1 or MA2

Viscosity: SAE 10W-40

Capacity: 0.9 L (1.0 US qt) (when filter is not removed)
1.0 L (1.1 US qt) (when filter is removed)
1.1 L (1.2 US qt) (when engine is completely dry)

NOTE

- Do not add any chemical additive to the oil. Oils fulfilling the above requirements are fully formulated and provide adequate lubrication for both the engine and the clutch.
- Although 10W-40 engine oil is the recommended oil for most conditions, the oil viscosity may need to be changed to accommodate atmospheric conditions in your riding area.

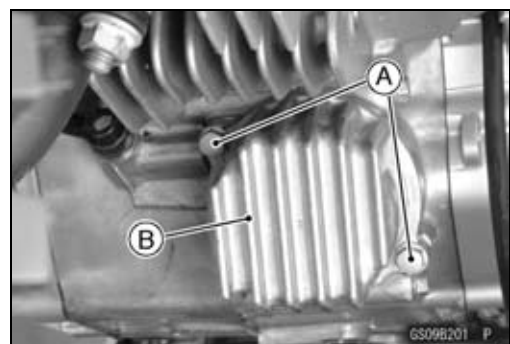
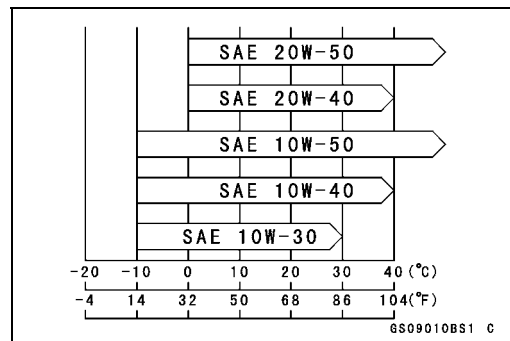
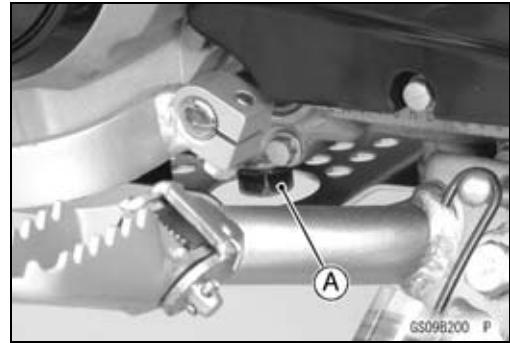
- Tighten:

Torque - Oil Filler Cap: Hand-tighten

- Check the oil level (see Oil Level Inspection in the Engine Lubrication System chapter).

Oil Filter Replacement

- Drain the engine oil (see Engine Oil Change).
- Remove the engine guard (see Engine Guard Removal/Installation in the Frame chapter).
- Remove:
 - Oil Filter Cap Bolts [A]
 - Oil Filter Cap [B]

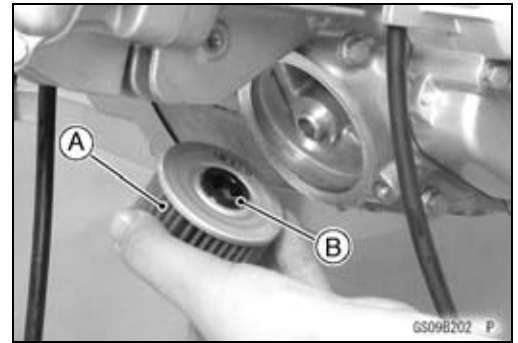


Periodic Maintenance Procedures

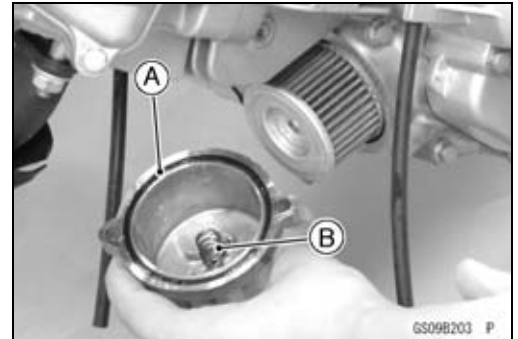
- Replace the oil filter [A] with a new one.
- Apply engine oil to the grommet [B].
- Be sure to install the filter with the grommet facing inside.

NOTICE

Inside out installation stops oil flow, causing engine seizure.



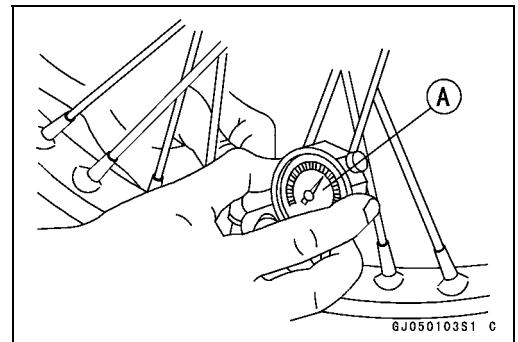
- Replace the O-ring [A] with a new one.
 - Apply grease to the O-ring.
 - Install the spring [B] securely.
 - Install the oil filter cap.
- Torque - Oil Filter Cap Bolt: 5.2 N·m (0.53 kgf·m, 46 in·lb)**
- Install the engine guard (see Engine Guard Removal/Installation in the Frame chapter).
 - Pour in the specified type and amount of oil (see Engine Oil Change).



Wheel/Tires

Tire Air Pressure Inspection

- Remove the air valve cap.
 - Measure the tire air pressure with an air pressure gauge [A] when the tires are cold (that is, when the motorcycle has not been ridden more than a mile during the past 3 hours).
 - Install the air valve cap.
- ★ Adjust the tire air pressure according to the specifications if necessary.



Air Pressure (when Cold)

Front	100 kPa (1.0 kgf/cm², 14 psi)
Rear	100 kPa (1.0 kgf/cm², 14 psi)

2-22 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

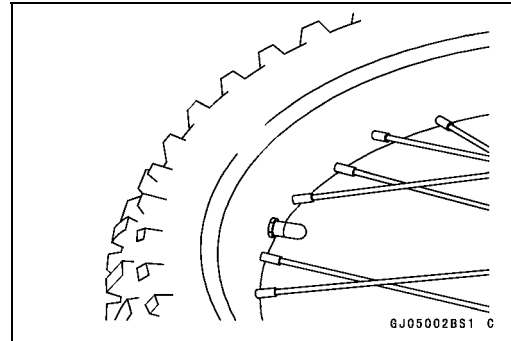
Tires Inspection

As the tire tread wears down, the tire becomes more susceptible to puncture and failure.

- Remove any imbedded stones or other foreign particles from the tread.
- Visually inspect the tire for cracks and cuts, replacing the tire in case of bad damage. Swelling or high spots indicate internal damage, requiring tire replacement.

⚠ WARNING

Some replacement tires may adversely affect handling and cause an accident resulting in serious injury or death. To ensure proper handling and stability, use only the recommended standard tires for replacement, inflated to the standard pressure.



NOTE

- Check and balance the wheel when a tire is replaced with a new one.

Standard Tire

Front:

Size: 2.50-14 4P.R.
Make: IRC
Type: GS-45F

Rear:

Size: 3.00-12 4P.R.
Make: IRC
Type: GS-45F

Spoke Tightness Inspection

- Check that all the spokes are tightened evenly.
- ★ If spoke tightness is uneven or loose, tighten the spoke nipples evenly.

Torque - Spoke Nipples: 4.0 N·m (0.41 kgf·m, 35 in·lb)

- Check the rim runout (see Rim Runout Inspection).

⚠ WARNING

A missing spoke places an additional load on the other spokes, which will eventually cause other spokes to break, creating the potential for an accident resulting in serious injury or death. Immediately replace any broken spoke(s).

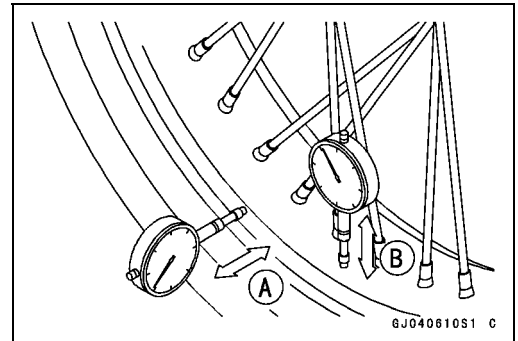
Periodic Maintenance Procedures

Rim Runout Inspection

- Place the jack under the frame so that the front/rear wheel off the ground.

Special Tool - Jack: 57001-1238

- Inspect the rim for small cracks, dents, bending, or warping.
- ★ If there is any damage to the rim, it must be replaced.
- Set a dial gauge against the side of the rim, and rotate the rim to measure the axial runout [A]. The difference between the highest and lowest dial readings is the amount of runout.
- Set a dial gauge against the outer circumference of the rim, and rotate the rim to measure radial runout [B]. The difference between the highest and lowest dial readings is the amount of runout.
- ★ If rim runout exceeds the service limit, check the wheel bearings first. Replace them if they are damaged. If the problem is not due to the bearings, correct the rim warp (runout). A certain amount of rim warp can be corrected by recentering the rim. Loosen some spokes and tighten others within the standard torque to change the position of different parts of the rim. If the rim is badly bent, however, it must be replaced.



Rim Runout (with tire installed)

Standard:

Axial **TIR 0.8 mm (0.031 in.) or less**

Radial **TIR 1.2 mm (0.047 in.) or less**

Service Limit:

Axial **TIR 2.0 mm (0.08 in.)**

Radial **TIR 2.0 mm (0.08 in.)**

Wheel Bearing Inspection

- Raise the front/rear wheel off the ground.
- Special Tool - Jack: 57001-1238**
- Spin the wheel lightly, and check for roughness, binding or noise.
- ★ If roughness, binding, abnormal noise is found, replace the hub bearing.
- Turn the handlebar until the handlebar doesn't move to either side.
- The wheel edge is moved to one direction gripping the edge of the wheel by both hands and the play of the wheel bearing is checked.
- ★ If the play is found, replace the bearing.



2-24 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Final Drive

Drive Chain Slack Inspection

- Raise the rear wheel off the ground, rotate the rear wheel to find the place where the chain is tightest (because it wears unevenly).
- Check the wheel alignment (see Wheel Alignment Inspection in the Final Drive chapter), and adjust it if necessary (see Drive Chain Slack Adjustment).

NOTE

○ Clean the drive chain if it is dirty, and lubricate it if it appears dry.

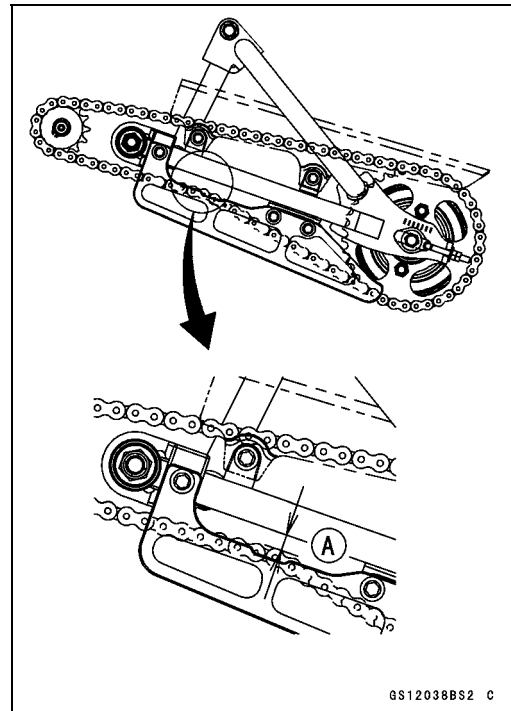
- Push up the chain midway between the engine sprocket and rear sprocket.
- Measure the space (chain slack) [A] between the chain and the swingarm as shown.
- ★ If the drive chain slack exceeds the standard, adjust it.

Drive Chain Slack

Standard:

KLX110C Models 11 ~ 16 mm (0.4 ~ 0.6 in.)

KLX110D Models 8 ~ 13 mm (0.3 ~ 0.5 in.)



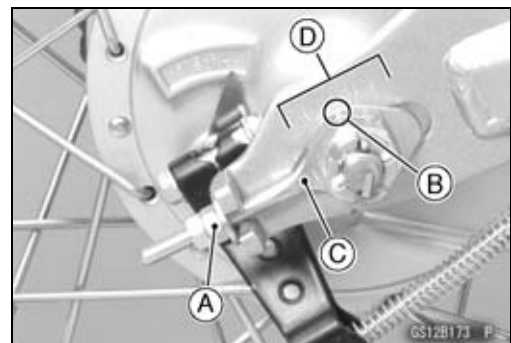
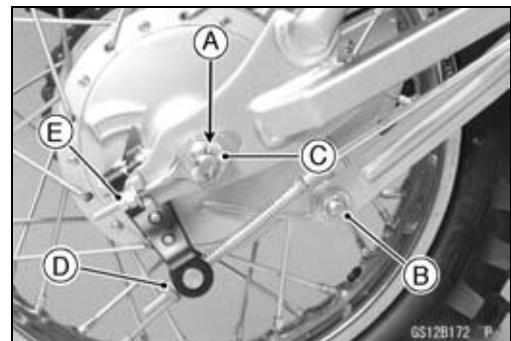
Drive Chain Slack Adjustment

- Remove:
 - Cotter Pin [A]
- Loosen:
 - Rear Torque Link Nut [B]
 - Axle Nut [C]
 - Brake Adjusting Nut [D]
 - Right and Left Chain Adjuster Locknuts [E]

NOTICE

If you don't loosen the torque link nut, it may lead to the brake parts damage when the adjusters are set.

- If the chain is too tight, back out the left and right chain adjusting nuts [A] evenly, and push the wheel forward until the chain is too loose.
- Turn both chain adjusting nuts evenly until the drive chain has the correct amount of slack. To keep the chain and wheel properly aligned, the notch [B] on the right chain adjuster [C] should align with the same swingarm mark [D] that the left chain adjuster notch aligns with.



- ★ Check the wheel alignment.

⚠ WARNING

Misalignment of the wheel will result in abnormal wear and may result in an unsafe riding condition. Be sure the wheel is properly aligned.

Periodic Maintenance Procedures

- Tighten both chain adjuster locknuts securely.
- Tighten the axle nut.

Torque - Rear Axle Nut: 64 N·m (6.5 kgf·m, 47 ft·lb)

- Rotate the wheel, measure the chain slack again at the tightest position, and readjust if necessary.
- Tighten the rear torque link nut.

Torque - Rear Torque Link Nut: 25 N·m (2.5 kgf·m, 18 ft·lb)

- Insert a new cotter pin [A] into the axle.

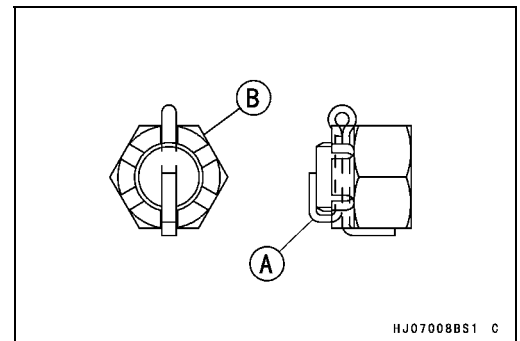
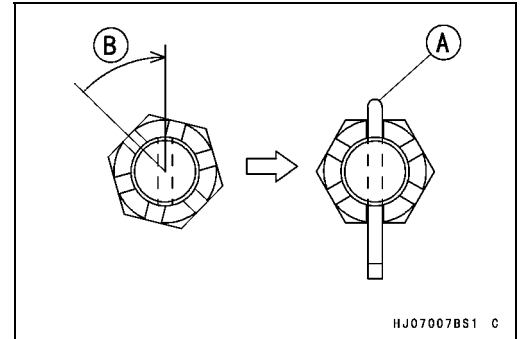
NOTE

○When inserting the cotter pin, if the slots in the nut do not align with the cotter pin hole in the axle, tighten the nut clockwise [B] up to next alignment.

○It should be within 30 degrees.

○Loosen once and tighten again when the slot goes past the nearest hole.

- Bend the cotter pin [A] over the nut [B].
- Check the rear brake effectiveness.

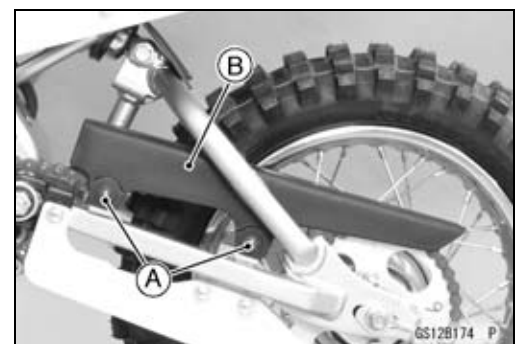


⚠ WARNING

A loose axle nut can lead to an accident resulting in serious injury or death. Tighten the axle nut to the proper torque and install a new cotter pin.

Drive Chain Wear Inspection

- Remove the bolts [A] and take off the chain cover [B].
- Rotate the rear wheel to inspect the drive chain for damaged rollers, and loose pins and links.
- ★ If there is any irregularity, replace the drive chain (see Drive Chain Removal and Installation in the Final Drive chapter).
- ★ Lubricate the drive chain if it appears dry (see Drive Chain Lubrication).



2-26 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

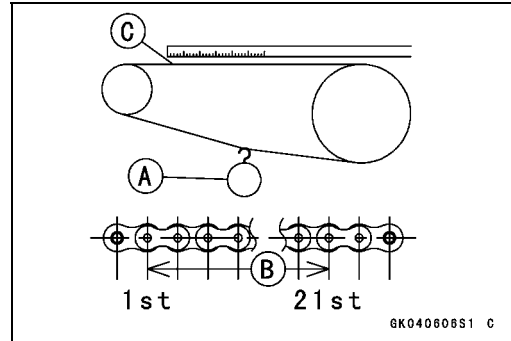
- Stretch the chain taut by hanging a 10 kg (20 lb) weight [A] on the chain.
- Measure the length of 20 links [B] on the straight part [C] of the chain from the pin center of the 1st pin to the pin center of the 21st pin. Since the chain may wear unevenly, take measurements at several places.

Drive Chain 20-link Length

Standard: 254.0 ~ 254.6 mm (10.00 ~ 10.02 in.)

Service Limit: 259 mm (10.2 in.)

- ★ If any measurements exceed the service limit, replace the chain. Also, replace the front and rear sprockets when the drive chain is replaced.



⚠ WARNING

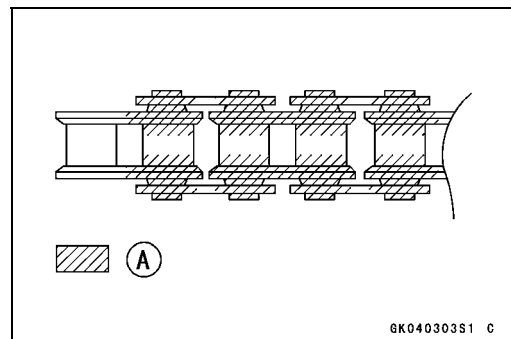
A chain that breaks or jumps off the sprockets could snag on the engine sprocket or lock the rear wheel, severely damaging the motorcycle and causing it to go out of control. Inspect the chain for damage and proper adjustment before each ride. If chain wear exceeds the service limit, replace it with the standard chain.

Standard Chain

Make: DAIDO
Type: DID 420DX
Link: 90 Links

Drive Chain Lubrication

- The chain should be lubricated with a lubricant which will both prevent the exterior from rusting and also absorb shock and reduce friction in the interior of the chain.
- ★ If the chain is especially dirty, it should be washed in diesel oil or kerosene, and afterward soaked in heavy oil. Shake the chain while it is in the oil so that oil will penetrate to the inside of each roller.
- An effective, good quality lubricant specially formulated for chains is best for regular chain lubrication.
- If a special lubricant is not available, a heavy oil such as SAE90 is preferred to a lighter oil because it will stay on the chain longer and provide better lubrication.
- Apply oil to the sides of the rollers so that oil will penetrate to the rollers and bushings.
- Wipe off any excess oil.
Oil applied area [A]



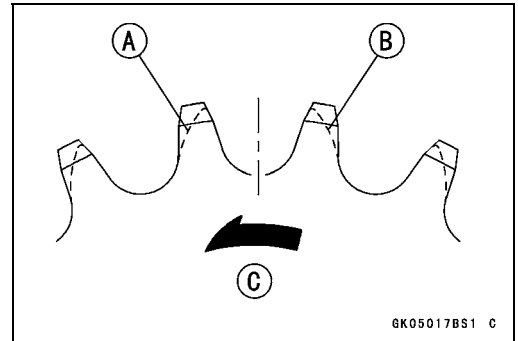
Periodic Maintenance Procedures

Sprocket Wear Inspection

- Visually inspect the front and rear sprocket teeth for wear and damage.
- ★ If they are worn as illustrated or damaged, replace the sprocket.
 - [A] Worn Tooth (Engine Sprocket)
 - [B] Worn Tooth (Rear Sprocket)
 - [C] Direction of Rotation

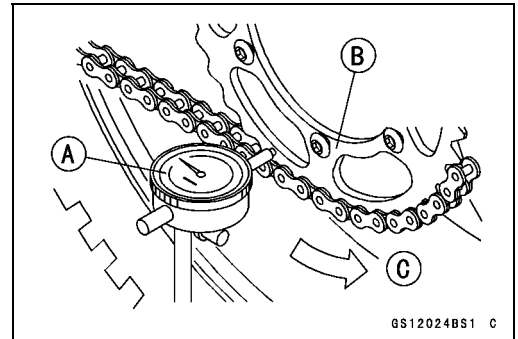
NOTE

○ If a sprocket requires replacement, the chain is probably worn also. When replacing a sprocket, inspect the chain.



Rear Sprocket Warp Inspection

- Using the jack, raise the rear wheel off the ground.
 - Special Tool - Jack: 57001-1238**
- Set a dial gauge [A] against the rear sprocket [B] near the teeth as shown.
- Rotate [C] the rear wheel to measure the sprocket runout (warp).
- The difference between the highest and lowest dial gauge readings is the amount of runout (warp).
- ★ If the runout exceeds the service limit, replace the rear sprocket.

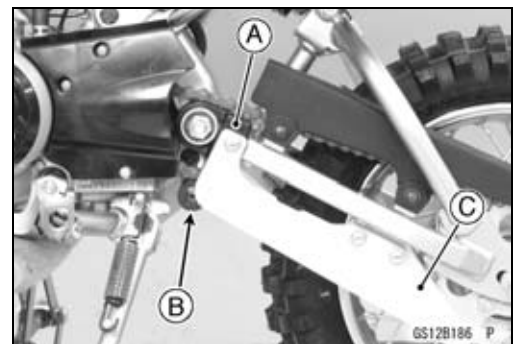


Rear Sprocket Warp

- Standard:** TIR 0.4 mm (0.016 in.) or less
- Service Limit:** TIR 0.5 mm (0.020 in.)

Drive Chain Guide and Slipper Wear Inspection

- Visually inspect the following parts.
 - Chain Slipper [A]
 - Chain Guide Roller [B] (KLX110D Models)
 - Chain Guide [C]
- ★ If the chain guides, chain slipper and chain guide roller show any signs of abnormal wear or damage, replace them.



Brakes

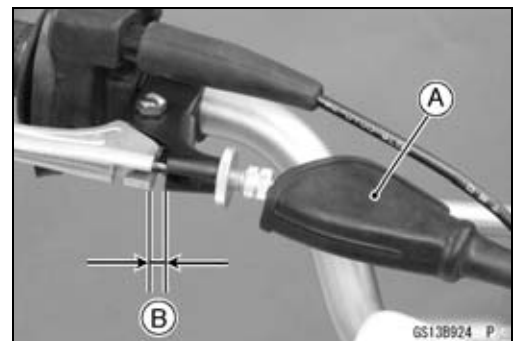
Brake Lever Free Play Inspection

- Slide the brake lever dust cover [A] out of place.
- Check the front brake lever free play [B] when the brake is lightly applied.

Brake Lever Free Play

- Standard:** 4 ~ 5 mm (0.16 ~ 0.20 in.)

- ★ If the lever has improper play, adjust it.
- Operate the lever a few times to see that it returns to its rest position immediately upon release.
- Check for brake drag.
- Check braking effectiveness.
- Slide the brake lever dust cover back into place.

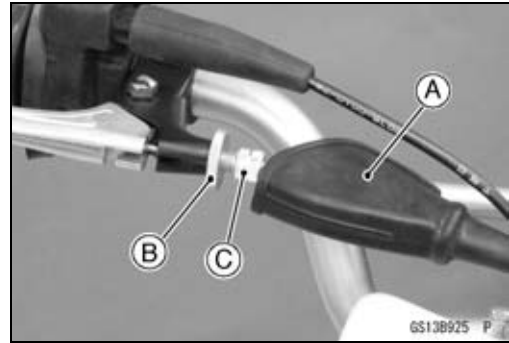


2-28 PERIODIC MAINTENANCE

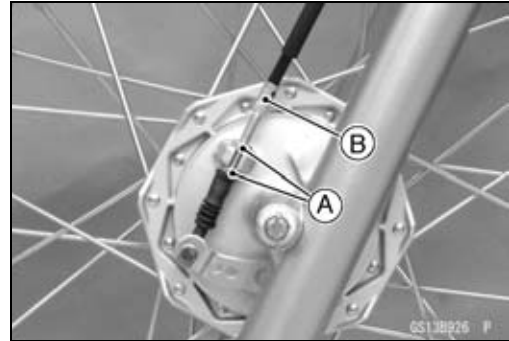
Periodic Maintenance Procedures

Brake Lever Free Play Adjustment

- Slide the brake lever dust cover [A] out of place.
- Loosen the locknut [B] and turn the adjuster [C] so that the brake lever will have 4 ~ 5 mm (0.16 ~ 0.20 in.) of play.



- If it cannot be done, use the adjuster at the end of the brake cable.
- Loosen the locknuts [A] at the lower end of the brake cable.
- Turn the adjuster [B] so that the brake lever has the correct amount of play, and tighten the locknuts.
- If sufficient adjustment can not be made with the adjuster at the lower end of the brake cable, complete the adjustment with the adjuster at the brake lever, and then tighten the locknut.
- Check for brake drag.
- Check braking effectiveness.
- Slide the brake lever dust cover back into place.



NOTE

- For minor corrections, use the adjuster at the front brake lever.
- If the brake lever adjustment cannot be made with the adjuster, move the front brake cam lever to a new position on the brake camshaft.

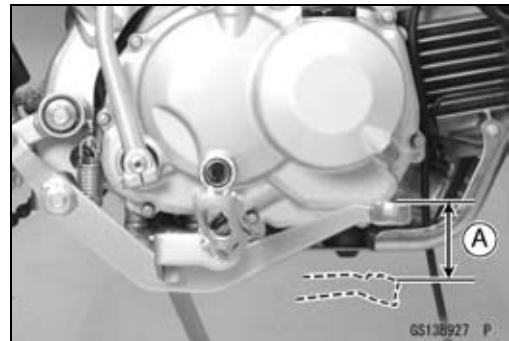
Brake Pedal Free Play Inspection

- Check the brake pedal free play [A] when the pedal is pushed down lightly by hand.

Brake Pedal Free Play

Standard: 20 ~ 30 mm (0.76 ~ 1.18 in.)

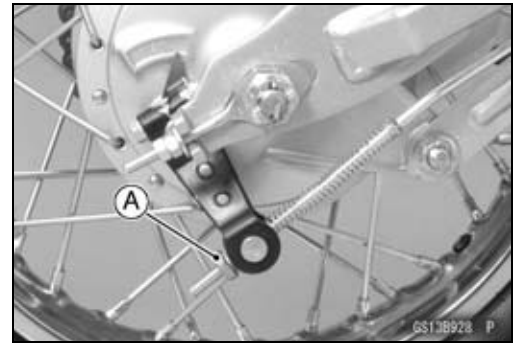
- ★ If the pedal has improper play, adjust it.
- Operate the pedal a few times to see that it returns to its rest position immediately upon release.
- Rotate the rear wheel to check for brake drag.
- Check braking effectiveness.
- ★ If there is any doubt as to the conditions of the brake, check the brake parts for wear or damage.



Periodic Maintenance Procedures

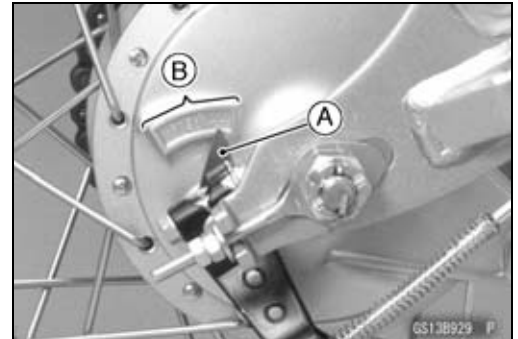
Brake Pedal Free Play Adjustment

- Turn the adjusting nut [A] at the brake cam lever so that the pedal has proper play.
- Operate the pedal a few times to see that it returns to its rest position immediately upon release.
- Rotate the rear wheel to check for brake drag.
- Check braking effectiveness.
- ★ If there is any doubt as to the conditions of the brake, check the brake parts for wear or damage.



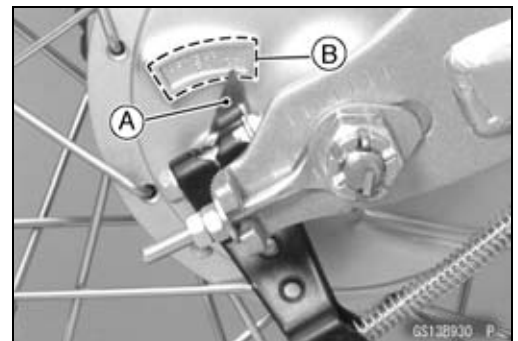
Brake Lining Wear Inspection

- Check the brake lining wear indicator [A] (only rear brake) points within the USABLE RANGE [B] when the brake is fully applied.
- ★ If it does not, the brake shoes must be immediately replaced and the other brake parts examined.



Brake Shoe Lining Wear Inspection

- Check whether the brake lining wear indicator [A] points within the USABLE RANGE [B] when the brakes are firmly applied, or remove the brake shoes and inspect the lining thickness at few locations.
- ★ If the lining thickness is out of the range, or beyond the service limit, replace the brake shoes as a set and inspect other brake parts.
- ★ If the lining thickness is greater than the service limit, do the following before installing the shoes.
 - File or sand down any high spots on the surface of the lining.
 - Use a wire brush to remove any foreign particles from the lining.



2-30 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Brake Shoe Lining Thickness [A]

Standard:

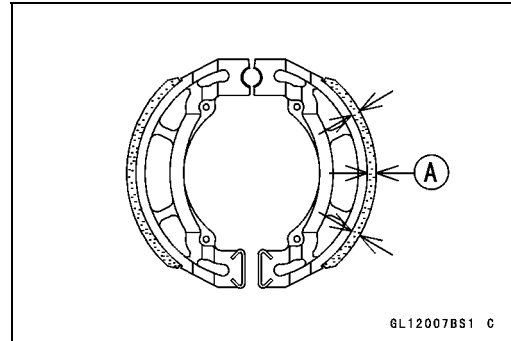
Front	2.10 ~ 3.00 mm (0.08 ~ 0.12 in.)
Rear	3.85 ~ 4.15 mm (0.152 ~ 0.163 in.)

(When the wear indicator is within the **USABLE RANGE**.)

Service limit:

Front	1.2 mm (0.05 in.)
Rear	2.0 mm (0.08 in.)

(When the wear indicator is out of the **USABLE RANGE**.)



- Wash off any oil or grease with oilless cleaning fluid such as trichloroethylene or acetone.

⚠ WARNING

These cleaning fluids are usually highly flammable and harmful if breathed for prolonged periods. Be sure to heed the fluid manufacturer's warnings.

- Install the brake panel (see Brake Panel Installation in the Brakes chapter).

Cam Lever Angle Inspection

- Check that the brake cam lever comes to an 80° ~ 90° angle [A] with the brake rod when the brake is fully applied.
- ★ If it does not, adjust the brake cam lever angle.

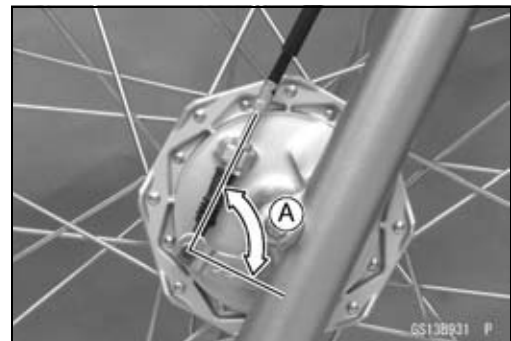
Brake Cam Lever Angle

Standard: 80 ~ 90°

- After adjusting the cam lever angle, make sure to adjust the brake pedal free play (see Brake Pedal Free Play Adjustment).

⚠ WARNING

Since a cam lever angle greater than 90° reduces braking effectiveness, periodically check and adjust the cam lever angle.



Cam Lever Angle Adjustment

Front Brake Cam Lever Angle:

- Remove:
 - Front Wheel (see Front Wheel Removal in the Wheels/Tires chapter)
 - Brake Panel (see Brake Panel Removal in the Brakes chapter)

Periodic Maintenance Procedures

- Before removing the cam lever [A], mark the position [B] of the cam lever.
- Remove the brake cam lever bolt [C] and nut [D], and then pull out the brake cam lever from the brake camshaft.
- Mount the cam lever at a new position so that the cam lever has a proper angle when the brake is fully applied.

Brake Cam Lever Angle

Standard: 80 ~ 90°

- Tighten the brake cam lever bolt and nut.
- Install the removed parts (see appropriate chapters).
- Adjust the brake lever free play (see Brake Lever Free Play Adjustment).

Rear Brake Cam Lever Angle:

NOTICE

Do not depress the brake pedal deeply in order to separate the brake rod from the brake cam lever joint, this may extend the brake spring beyond its allowable spring extension. Rotate the rear brake panel clockwise as far as it will go with the brake rod inserted into the brake cam lever joint, then depress the brake pedal lightly, the brake rod will be separated from the brake cam lever joint.

- Remove the brake rod end [A] from the brake cam lever [B] (see Rear Wheel Removal in the Wheels/Tires chapter).
- Before removing the cam lever, mark the position [C] of the cam lever.
- Remove the brake cam lever bolt [D] and nut [E], and then pull out the brake cam lever from the brake camshaft.
- Mount the cam lever at a new position so that the cam lever has a proper angle when the brake is fully applied.

Brake Cam Lever Angle

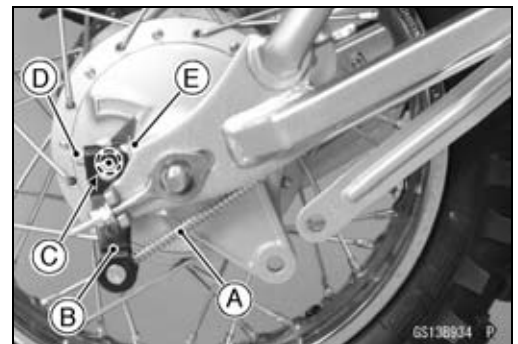
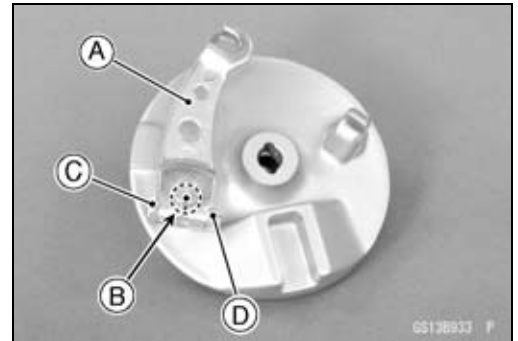
Standard: 80 ~ 90°

- Tighten the brake cam lever bolt and nut.
- Torque - Brake Cam Lever Bolt: 7.0 N·m (0.71 kgf·m, 62 in·lb)

WARNING

When remounting the cam lever, be sure that the position of the wear indicator on the serrated shaft is not altered. A change in cam lever angle is caused by wear of internal brake parts. Whenever the cam lever angle is adjusted, also check for drag and proper operation, taking particular note of the brake lining wear indicator position. In case of doubt as to braking effectiveness, disassemble and inspect all internal brake parts. Worn parts can result in the brake locking or failing.

- Install the removed parts (see appropriate chapters).
- Adjust the brake pedal free play (see Brake Pedal Free Play Adjustment).

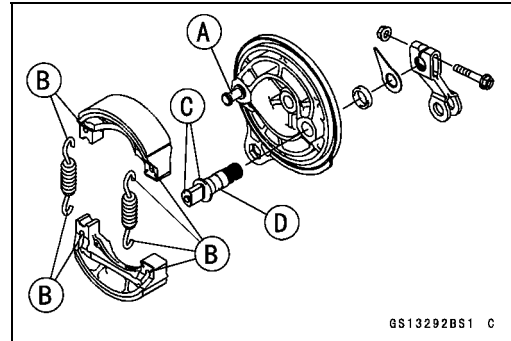


2-32 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Brake Panel Lubrication

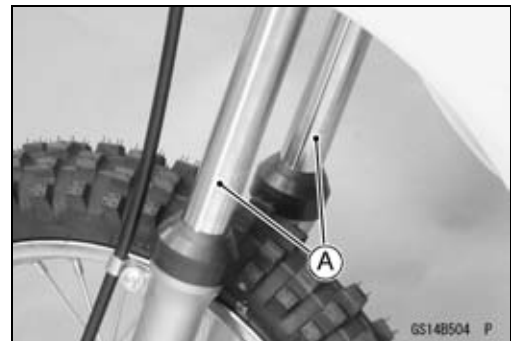
- Disassemble the brake panel (see Brake Panel Disassembly in the Brakes chapter).
- Clean all old grease out of the brake parts with a cloth.
- Apply high-temperature grease to the following.
 - Brake Shoe Anchor Pin [A]
 - Spring Ends [B]
 - Cam Surfaces [C]
 - Cam Shaft Groove [D]



Suspension

Front Fork Inspection

- Visually inspect the front fork for oil leakage, scoring or scratches on the outer surface of the inner tubes [A].
- Holding the brake lever, pump the front fork down and up manually to check for smooth operation.
- ★ If the fork shown damages or oil leak, replace the damaged parts.
- ★ If the fork rattles, inspect the oil level or tightening torque.

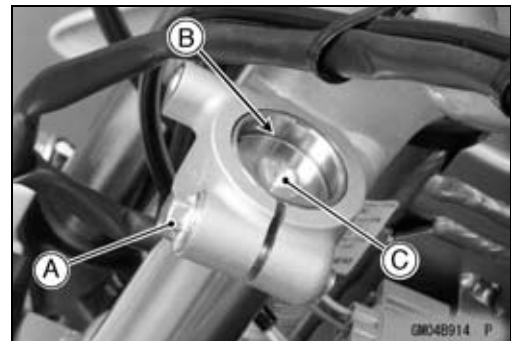


NOTICE

If the inner tube is badly bent or creased, replace it. Excessive bending, followed by subsequent straightening, can weaken the inner tube.

Front Fork Oil Change

- Remove the cap.
- Loosen the front fork upper clamp bolt [A].
- Remove the snap ring [B] while pressing the top plug [C], and then remove the top plug with O-ring.



- Remove the front fork (see Front Fork Removal in the Suspension chapter).
- Thoroughly clean the fork before disassembly.

NOTICE

Be careful not scratch the inner tube and not to damage the dust seal. Avoid scratching or damaging the inner tube or the dust seal. Use a mild detergent and sponge out dirt with plenty of water.

- Remove:
 - Fork Spring
 - Dust Seal

Periodic Maintenance Procedures

- Drain the fork oil [A] with the fork upside down.

NOTE

○ Pump the fork tube several times to discharge the oil.

- Pour in the specified type and amount of oil.

Suspension Oil - SS-8 (1 L): 44091-0007

Fork Oil Amount:

KLX110C Models 165 ±2.5 mL (5.58 ±0.085 US oz)

KLX110D Models 182 ±2.5 mL (5.71 ±0.085 US oz)

- Hold the outer tube vertically in a vise and compress the fork completely.
- Wait until the oil level stabilizes.
- Use the fork oil level gauge [A] to measure the distance between the top of the inner tube to the oil level.

Special Tool - Fork Oil Level Gauge: 57001-1290

- Set the oil level gauge stopper [B] so that the distance [C] from the bottom of the stopper to the lower end of the pipe is the standard oil level distance.
- A correct measurement can not be obtained unless the level gauge pipe is placed in the center of the inner tube.

Oil Level (fully compressed, without spring)

Standard:

KLX110C Models 85 ±2 mm (3.35 ±0.08 in.)

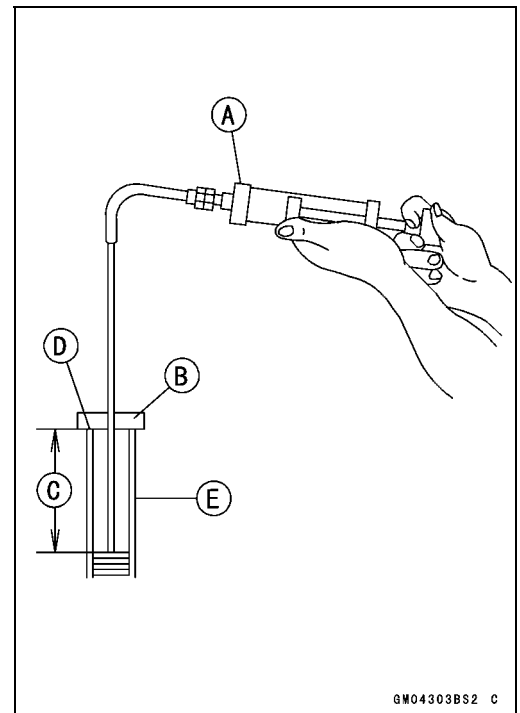
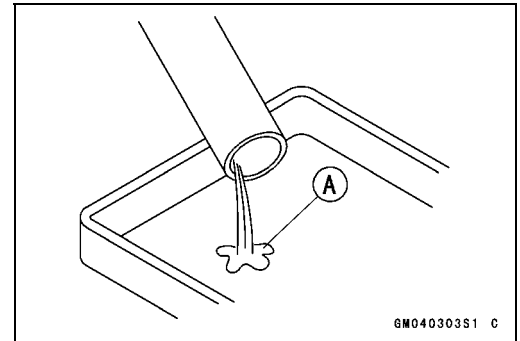
KLX110D Models 118 ±2 mm (4.65 ±0.08 in.)

- Place the stopper of the level gauge at the top [D] of the inner tube [E] and pull the handle slowly to draw out the excess oil from fork into the gauge, thus attaining the standard level.

- ★ If no oil is drawn out, there is not enough oil in the fork. Pour in some more oil and measure again.
- Change the oil in the another fork leg in the same manner.
- Install the removed parts (see appropriate chapters).

Rear Shock Absorber Operation Inspection

- Bounce [A] the rear of the motorcycle up and down and check for smooth suspension stroke.
- Remove the side cover (see Side Cover Removal in the Frame chapter).
- Check for a broken or collapsed spring.
- Check the shock for a bent shaft or oil leaks.
- ★ If the shock does not smoothly or damaged, replace or repair defective parts.



2-34 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Swingarm Pivot Inspection

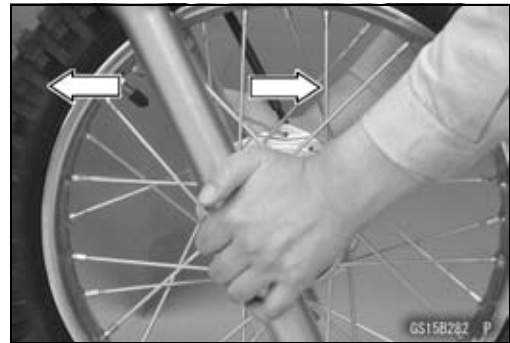
- Raise the rear wheel off the ground with the jack.
Special Tool - Jack: 57001-1238
- Move the swingarm [A] side to side to check for worn, damaged or loose suspension pivot components.
- ★ If any play is detected, check for looseness of swingarm pivot shaft nut or for damage to the swingarm rubber bushings.



Steering

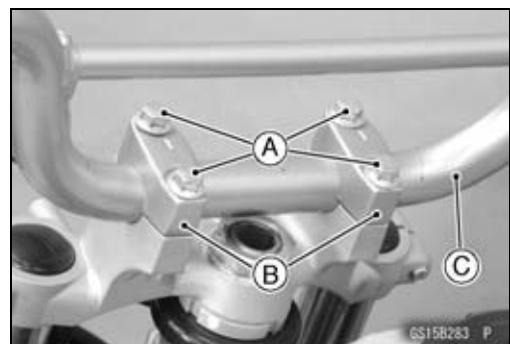
Steering Inspection

- Raise the front wheel off the ground with the jack.
Special Tool - Jack: 57001-1238
- With the front wheel pointing straight ahead, alternately nudge each end of the handlebar. The front wheel should swing fully left and right from the force of gravity until the fork hits the stop.
- ★ If the steering binds or catches before the stop, check the routing of the cables, hoses and harnesses.
- ★ If the steering feels tight, adjust or lubricate the steering.
- Feel for steering looseness by pushing and pulling the forks.
- ★ If you feel looseness, adjust the steering.



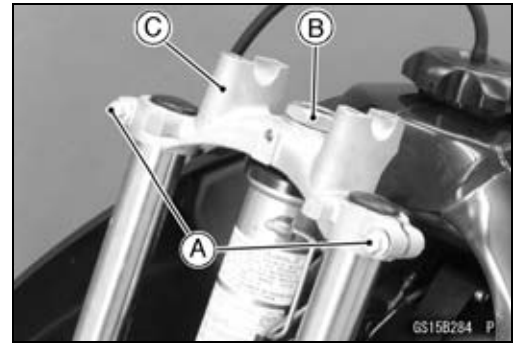
Steering Adjustment

- Raise the front wheel off the ground with the jack.
Special Tool - Jack: 57001-1238
- Remove:
 - Number Plate (see Number Plate Removal in the Frame chapter)
 - Handlebar Holder Bolts [A]
 - Handlebar Holders [B]
 - Handlebar [C] (from holder)



Periodic Maintenance Procedures

- Loosen the front fork upper clamp bolts [A], and remove the steering stem head nut [B] and steering stem head [C].

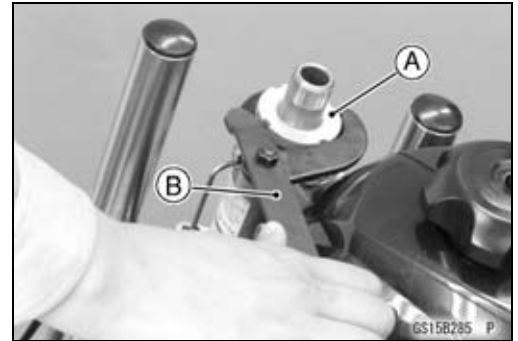


- Turn the steering stem nut [A] with the steering stem nut wrench [B] to obtain the proper adjustment.
- ★ If the steering is too tight, loosen the stem nut a fraction of a turn; if the steering is too loose, tighten the nut a fraction of a turn.

Special Tool - Steering Stem Nut Wrench: 57001-1100

NOTE

○ Turn the stem nut 1/8 turn at a time maximum.



- Install the steering stem head.
- Tighten the following:

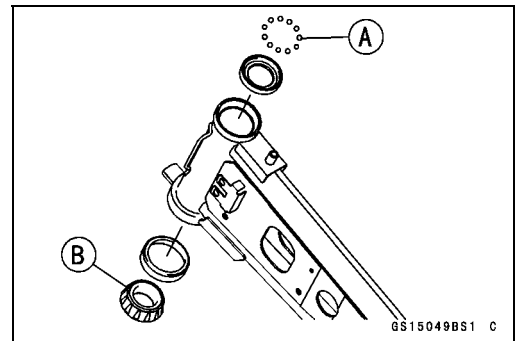
Torque - Steering Stem Head Nut: 44 N·m (4.5 kgf·m, 32 ft·lb)

Front Fork Clamp Bolts (Upper): 20 N·m (2.0 kgf·m, 15 ft·lb)

- Check the steering again.
- ★ If the steering is too tight or too loose, repeat the adjustment as mentioned above.
- Install the removed parts (see appropriate chapters).

Stem Bearing Lubrication

- Remove the steering stem (see Steering Stem, Stem Bearing Removal in the Steering chapter).
- Using a high flash-point solvent, wash the upper ball bearing and lower tapered rollers in the cages, and wipe the upper and lower outer races, which are press-fitted into the frame head pipe, clean off grease and dirt.
- Visually check the outer races and the rollers.
- ★ Replace the bearing part if they show wear or damage.
- Apply grease liberally to the upper races, and stick the ball bearing in place with grease. There are 23 steel balls [A] installed in the upper outer race.
- Pack the lower tapered roller bearings [B] in the cages with grease, and apply a light coat of grease to the lower outer race.
- Install the steering stem, and adjust the steering (see Steering Adjustment).



2-36 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Frame

Frame Inspection

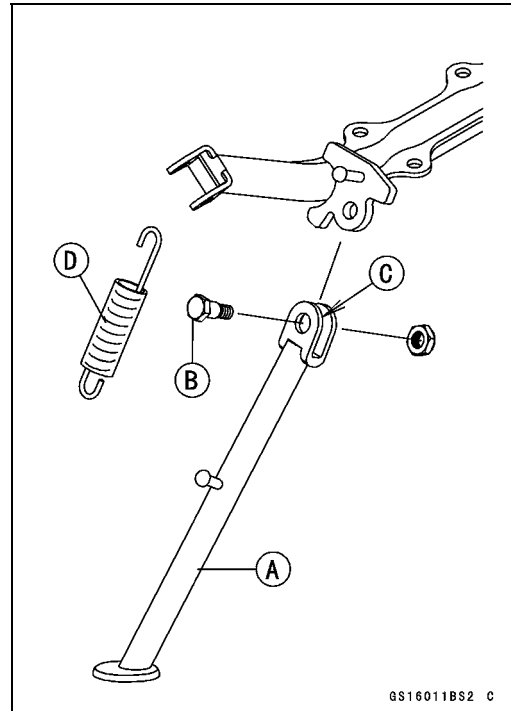
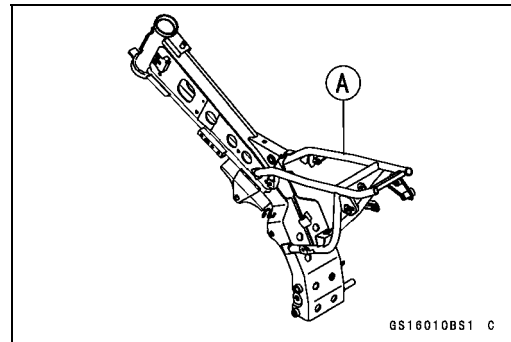
- Clean the frame with steam cleaner.
- Visually inspect the frame [A] for cracks, dents, bending, or warp.
- ★ If there is any damage to the frame, replace it.

⚠ WARNING

A repaired frame may fail in use, possibly causing an accident resulting in injury or death. If the frame is bent, dented, cracked, or warped, replace it.

Sidestand Inspection

- See if the sidestand [A] moves smoothly and retracts fully.
- ★ If not, clean and grease the pivot [B] and sliding portion [C].
- Check the sidestand spring [D] for damage.
- ★ If necessary, replace the spring.



Electrical System

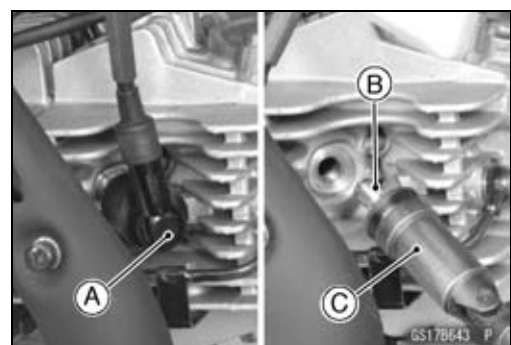
Spark Plug Cleaning and Inspection

- Remove the spark plug cap [A].
- Remove the spark plug [B], using the spark plug wrench [C].

Special Tool - Spark Plug Wrench: 57001-1262

Owner's Tool - Spark Plug Wrench, 16 mm: 92110-1206

- The plug may also be cleaned using high flash-point solvent and a nonmetal brush (nylon etc.).
- ★ If the spark plug electrodes are corroded or damaged or if the insulator is cracked, replace the plug. Use the standard spark plug.



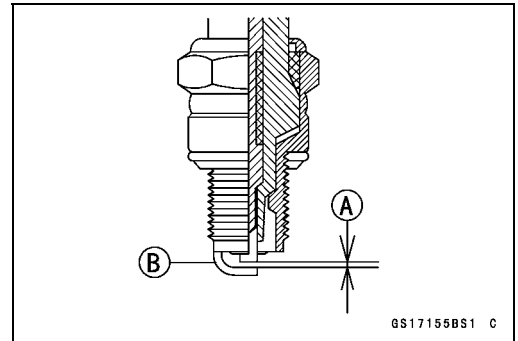
Periodic Maintenance Procedures

- Measure the gap [A] with a wire-type thickness gauge.
- ★ If the gap is incorrect, carefully bend the side electrode [B] with a suitable tool to obtain the correct gap.

Spark Plug Gap

Standard: 0.6 ~ 0.7 mm (0.024 ~ 0.028 in.)

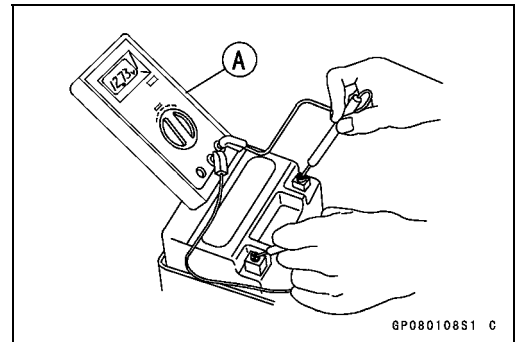
- Install the spark plug.
- Torque - Spark Plug: 13 N·m (1.3 kgf·m, 115 in·lb)



- Insert the plug cap, and confirm for the spark plug not to come off.

Battery Charging Condition Inspection

- Battery charging condition can be checked by measuring battery terminal voltage with a digital voltmeter [A].
- Remove:
 - Left Side Cover (see Side Cover Removal in the Frame chapter)
 - Seat (see Seat Removal in the Frame chapter)
- Open the battery cover (see Battery Removal in the Electrical System chapter).
- Disconnect the battery terminals.



NOTICE

Be sure to disconnect the negative (-) cable first.

- Measure the battery terminal voltage.

NOTE

○ Measure with a digital voltmeter which can be read one decimal place voltage.

- ★ If the reading is 12.6 V or more, no refresh charge is required, however, if the read is below the specified, refresh charge is required.

Battery Terminal Voltage

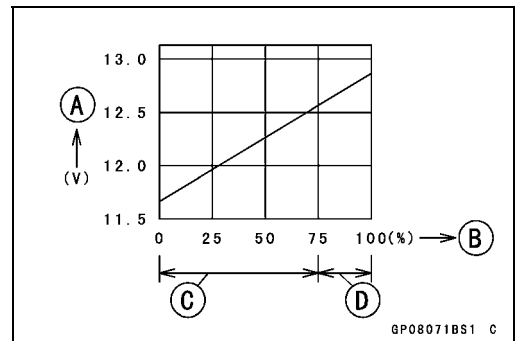
Standard: 12.6 V or more

Terminal Voltage (V) [A]

Battery Charge Rate (%) [B]

Refresh charge is required [C]

Good [D]

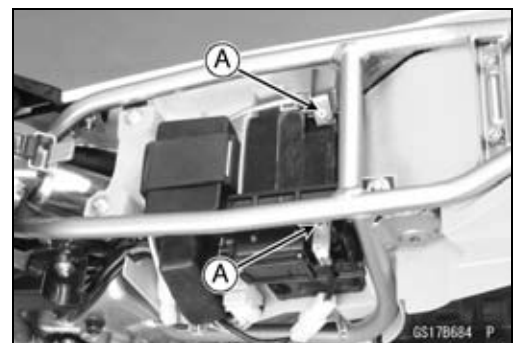


Battery Terminals Inspection

- Check the battery terminal screws [A] for tightness and make sure the terminal cover is in place.

⚠ WARNING

Loose battery cables can create sparks which can cause a fire or explosion resulting in injury or death. Make sure the battery terminal screws are tightened securely and the covers are installed over the terminals.



2-38 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

- Check that the battery terminals are not corroded.
- ★ If necessary, remove the battery (see Battery Removal in the Electrical System chapter) and clean the terminals and cable ends using a solution of baking soda and water.
- After attaching both cables, coat the terminals and cable ends with grease to prevent corrosion.
- Install the battery (see Battery Installation in the Electrical System chapter).

Cable Inspection

General Lubrication

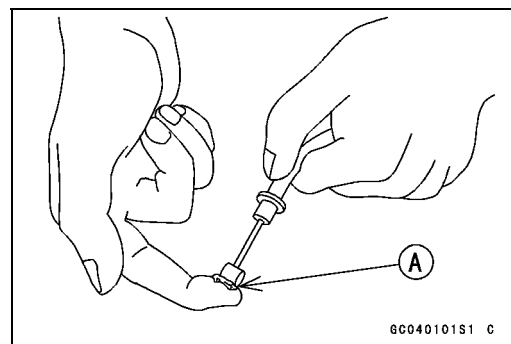
- Before lubricating each part, clean off any rusty spots with rust remover and wipe off any grease, oil, dirt, or grime.
- Lubricate the points listed below with indicated lubricant.

NOTE

○ *Whenever the vehicle has been operated under wet or rainy conditions, or especially after using a high-pressure water spray, perform the general lubrication.*

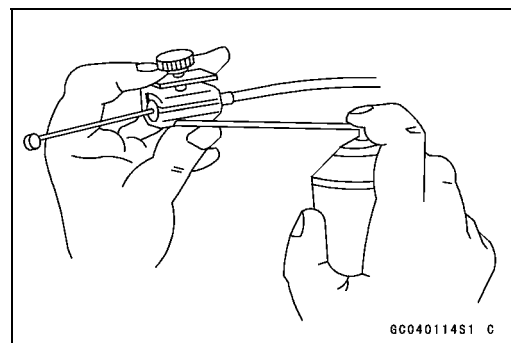
Points: Lubricate with Grease.

Clutch Inner Cable Upper and Lower Ends [A] (KLX110D)
Choke Inner Cable Upper End
Throttle Inner Cable Upper End



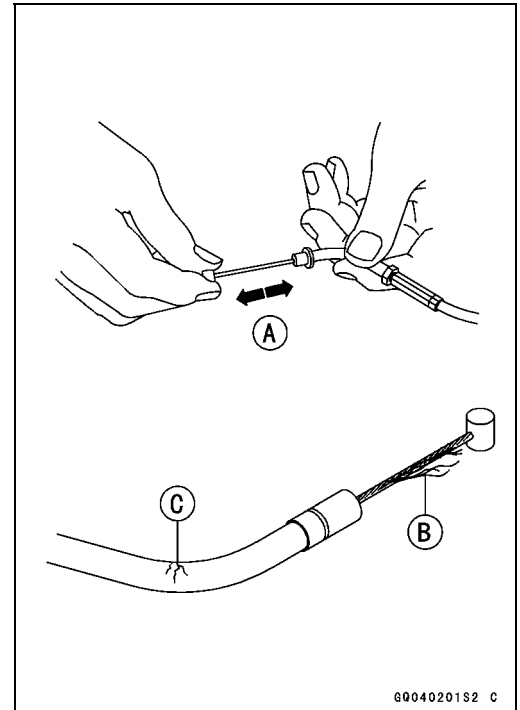
Cables: Lubricate with Rust Inhibitor.

Throttle Cables
Clutch Cable (KLX110D)
Choke Cable



Periodic Maintenance Procedures

- With the cable disconnected at the both ends, the cable should move freely [A] within the cable housing.
- ★ If cable movement is not free after lubricating, if the cable is frayed [B], or if the cable housing is kinked [C], replace the cable.



Nut, Bolt, and Fastener Tightness Inspection

Tightness Inspection

- Check the tightness of the bolts and nuts listed here in accordance with the Periodic Maintenance Chart. Also, check to see that each cotter pin is in place and in good condition.

NOTE

○ *For the engine fasteners, check the tightness of them when the engine is cold (at room temperature).*

- ★ If there are loose fasteners, retorque them to the specified torque following the specified tightening sequence. Refer to the Torque and Locking Agent section in this chapter for torque specifications. For each fastener, first loosen it by 1/2 turn, then tighten it.
- ★ If cotter pins are damaged, replace them with new ones.

Nut, Bolt and Fastener to be checked

Wheels:

- Spoke Nipples
- Front Axle Nut
- Front Axle Nut Cotter Pin
- Rear Axle Nut
- Rear Axle Nut Cotter Pin

Final Drive:

- Chain Adjuster Locknuts
- Rear Sprocket Nuts

2-40 PERIODIC MAINTENANCE

Periodic Maintenance Procedures

Brakes:

- Rear Brake Adjust Nut
- Brake Lever Pivot Bolt
- Brake Pedal Bolt
- Torque Link Nuts
- Torque Link Nut Cotter Pins

Suspension:

- Front Fork Clamp Bolts
- Rear Shock Absorber Mounting Bolts, Nuts
- Swingarm Pivot Nut

Steering:

- Steering Stem Head Nut
- Handlebar Holder Bolts

Engine:

- Throttle Cable Adjuster Locknuts
- Engine Mounting Nuts
- Shift Pedal Bolt
- Muffler Mounting Nut
- Exhaust Pipe Holder Nuts
- Clutch Cable Adjuster Locknut (KLX110D)
- Clutch Lever Pivot Nut (KLX110D)

Others:

- Footpeg Cotter Pins
- Footpeg Bracket Bolts
- Sidestand Nut