Kawasaki

KX450F

Motorcycle Service Manual

Quick Reference Guide

This quick reference guide will assist you in locating a desired topic or procedure.

- Bend the pages back to match the black tab of the desired chapter number with the black tab on the edge at each table of contents page.
- Refer to the sectional table of contents for the exact pages to locate the specific topic required.

Kawasaki

KX450F

Motorcycle Service Manual

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LIST OF ABBREVIATIONS

A	ampere(s)	lb	pound(s)
ABDC	after bottom dead center	m	meter(s)
AC	alternating current	min	minute(s)
ATDC	after top dead center	N	newton(s)
BBDC	before bottom dead center	Pa	pascal(s)
BDC	bottom dead center	PS	horsepower
BTDC	before top dead center	psi	pound(s) per square inch
°C	degree(s) Celsius	r	revolution
DC	direct current	r/min, rpm	revolution(s) per minute
F	farad(s)	TDC	top dead center
°F	degree(s) Fahrenheit	TIR	total indicator reading
ft	foot, feet	V	volt(s)
g	gram(s) (mass)	W	watt(s)
h	hour(s)	Ω	ohm(s)
kg	(mass)		
kgf	(force)		
L	liter(s)		

Foreword

This manual is designed primarily for use by trained mechanics in a properly equipped shop. However, it contains enough detail and basic information to make it useful to the owner who desires to perform his own basic maintenance and repair work. A basic knowledge of mechanics, the proper use of tools, and workshop procedures must be understood in order to carry out maintenance and repair satisfactorily. Whenever the owner has insufficient experience or doubts his ability to do the work, all adjustments, maintenance, and repair should be carried out only by qualified mechanics.

In order to perform the work efficiently and to avoid costly mistakes, read the text, thoroughly familiarize yourself with the procedures before starting work, and then do the work carefully in a clean area. Whenever special tools or equipment are specified, do not use makeshift tools or equipment. Precision measurements can only be made if the proper instruments are used, and the use of substitute tools may adversely affect safe operation.

To get the longest life out of your vehicle:

- Follow the Periodic Maintenance Chart in the Service Manual.
- Be alert for problems and non-scheduled maintenance.
- Use proper tools and genuine Kawasaki Motorcycle parts. Special tools, gauges, and testers that are necessary when servicing Kawasaki motorcycles are introduced by the Service Manual. Genuine parts provided as spare parts are listed in the Parts Catalog.
- Follow the procedures in this manual carefully. Don't take shortcuts.
- Remember to keep complete records of maintenance and repair with dates and any new parts installed.

How to Use This Manual

In this manual, the product is divided into its major systems and these systems make up the manual's chapters. The Quick Reference Guide shows you all of the product's system and assists in locating their chapters. Each chapter in turn has its own comprehensive Table of Contents.

For example, if you want ignition coil information, use the Quick Reference Guide to locate the Electrical System chapter. Then, use the Table of Contents on the first page of the chapter to find the Ignition Coil section.

Whenever you see these WARNING and CAUTION symbols, heed their instructions! Always follow safe operating and maintenance practices.

⚠ WARNING

This warning symbol identifies special instructions or procedures which, if not correctly followed, could result in personal injury, or loss of life.

CAUTION

This caution symbol identifies special instructions or procedures which, if not strictly observed, could result in damage to or destruction of equipment.

This manual contains four more symbols (in addition to WARNING and CAUTION) which will help you distinguish different types of information.

NOTE

○*This note symbol indicates points of particular interest for more efficient and convenient operation.*

- Indicates a procedural step or work to be done.

○Indicates a procedural sub-step or how to do the work of the procedural step it follows. It also precedes the text of a NOTE.

★Indicates a conditional step or what action to take based on the results of the test or inspection in the procedural step or sub-step it follows.

In most chapters an exploded view illustration of the system components follows the Table of Contents. In these illustrations you will find the instructions indicating which parts require specified tightening torque, oil, grease or a locking agent during assembly.

General Information

Table of Contents

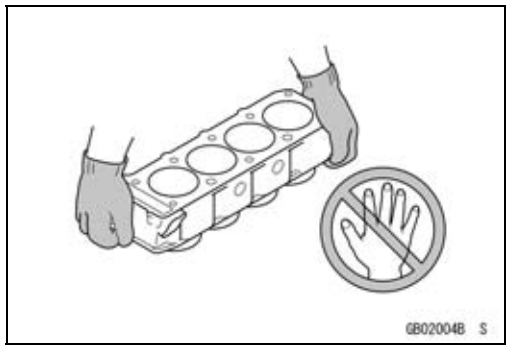
Before Servicing

Before starting to perform an inspection service or carry out a disassembly and reassembly operation on a motorcycle, read the precautions given below. To facilitate actual operations, notes, illustrations, photographs, cautions, and detailed descriptions have been included in each chapter wherever necessary. This section explains the items that require particular attention during the removal and reinstallation or disassembly and reassembly of general parts.

Especially note the following:

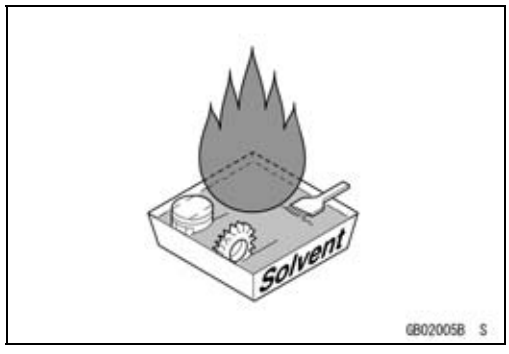
Edges of Parts

Lift large or heavy parts wearing gloves to prevent injury from possible sharp edges on the parts.



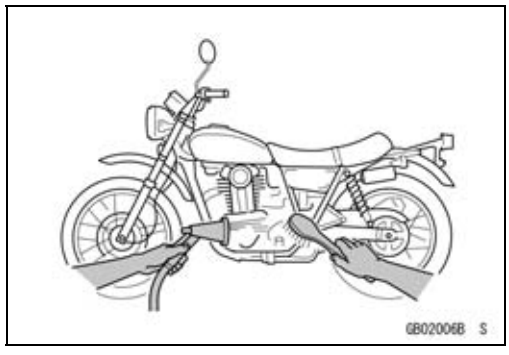
Solvent

Use a high-flush point solvent when cleaning parts. High -flush point solvent should be used according to directions of the solvent manufacturer.



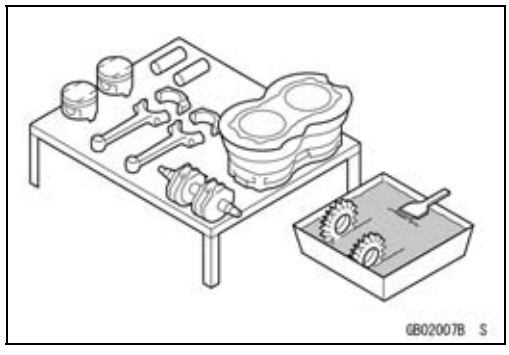
Cleaning vehicle before disassembly

Clean the vehicle thoroughly before disassembly. Dirt or other foreign materials entering into sealed areas during vehicle disassembly can cause excessive wear and decrease performance of the vehicle.



Arrangement and Cleaning of Removed Parts

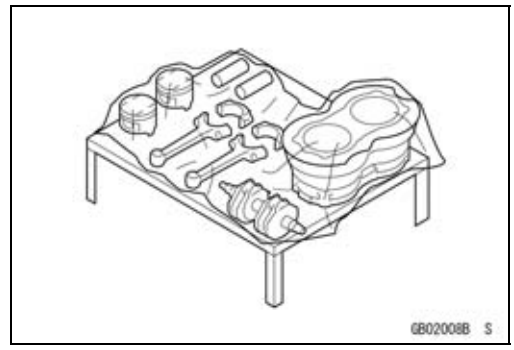
Disassembled parts are easy to confuse. Arrange the parts according to the order the parts were disassembled and clean the parts in order prior to assembly.



Before Servicing

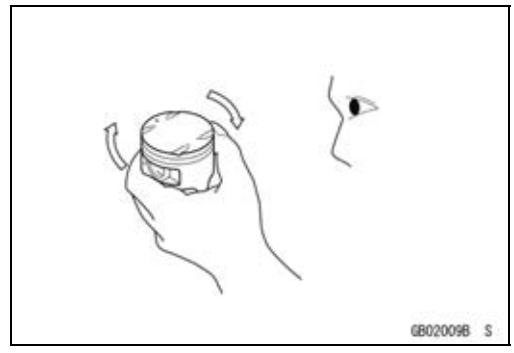
Storage of Removed Parts

After all the parts including subassembly parts have been cleaned, store the parts in a clean area. Put a clean cloth or plastic sheet over the parts to protect from any foreign materials that may collect before re-assembly.



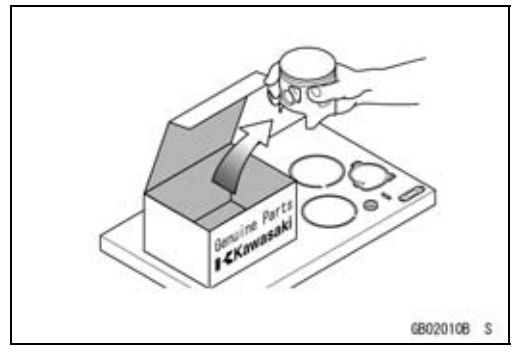
Inspection

Reuse of worn or damaged parts may lead to serious accident. Visually inspect removed parts for corrosion, discoloration, or other damage. Refer to the appropriate sections of this manual for service limits on individual parts. Replace the parts if any damage has been found or if the part is beyond its service limit.



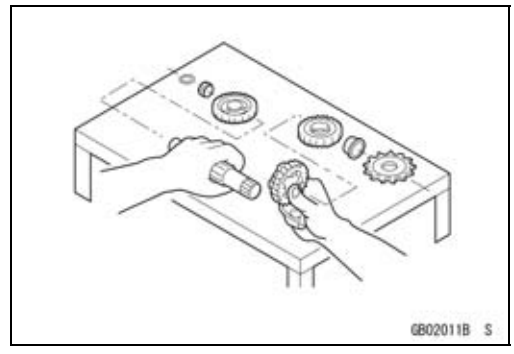
Replacement Parts

Replacement Parts must be KAWASAKI genuine or recommended by KAWASAKI. Gaskets, O-rings, Oil seals, Grease seals, circlips or cotter pins must be replaced with new ones whenever disassembled.



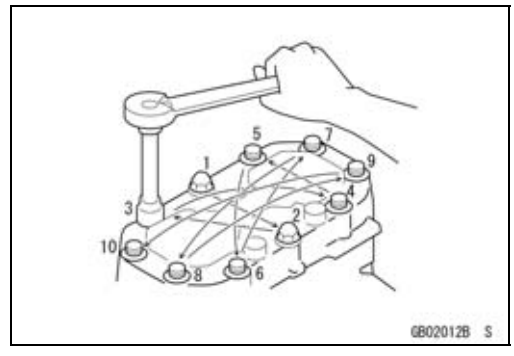
Assembly Order

In most cases assembly order is the reverse of disassembly, however, if assembly order is provided in this Service Manual, follow the procedures given.



Tightening Sequence

Generally, when installing a part with several bolts, nuts, or screws, start them all in their holes and tighten them to a snug fit. Then tighten them according to the specified sequence to prevent case warpage or deformation which can lead to malfunction. Conversely when loosening the bolts, nuts, or screws, first loosen all of them by about a quarter turn and them remove them. If the specified tightening sequence is not indicated, tighten the fasteners alternating diagonally.

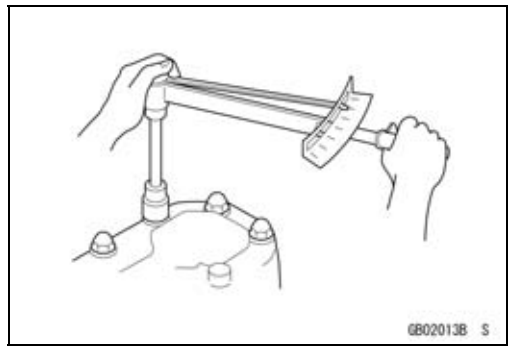


Before Servicing

Tightening Torque

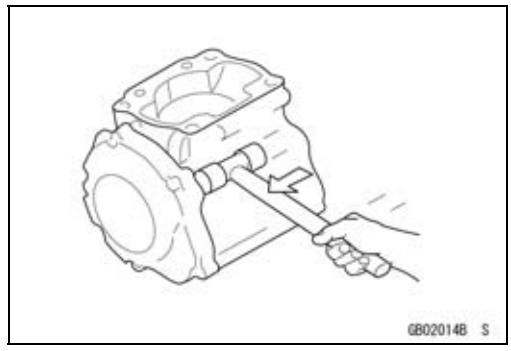
Incorrect torque applied to a bolt, nut, or screw may lead to serious damage. Tighten fasteners to the specified torque using a good quality torque wrench.

Often, the tightening sequence is followed twice-initial tightening and final tightening with torque wrench.



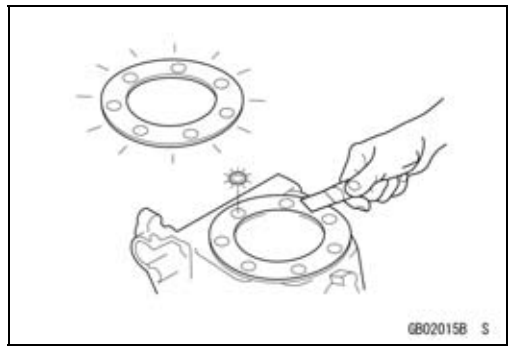
Force

Use common sense during disassembly and assembly, excessive force can cause expensive or hard to repair damage. When necessary, remove screws that have a non -permanent locking agent applied using an impact driver. Use a plastic-faced mallet whenever tapping is necessary.



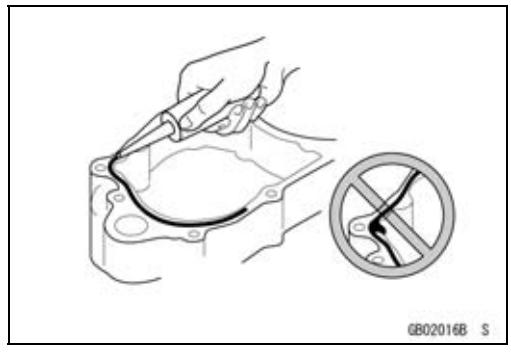
Gasket, O-ring

Hardening, shrinkage, or damage of both gaskets and O-rings after disassembly can reduce sealing performance. Remove old gaskets and clean the sealing surfaces thoroughly so that no gasket material or other material remains. Install new gaskets and replace used O-rings when re-assembling



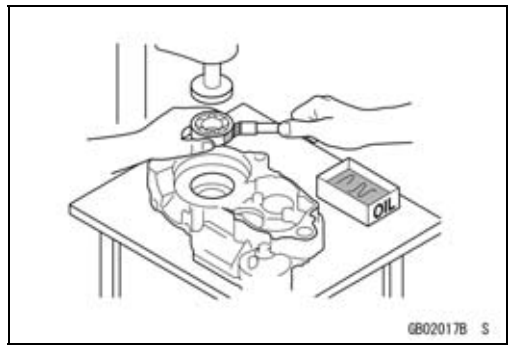
Liquid Gasket, Non-permanent Locking Agent

For applications that require Liquid Gasket or a Non-permanent Locking agent, clean the surfaces so that no oil residue remains before applying liquid gasket or Non-permanent locking agent. Do not apply them excessively. Excessive application can clog oil passages and cause serious damage.



Press

For items such as bearings or oil seals that must be pressed into place, apply small amount of oil to the contact area. Be sure to maintain proper alignment and use smooth movements when installing.

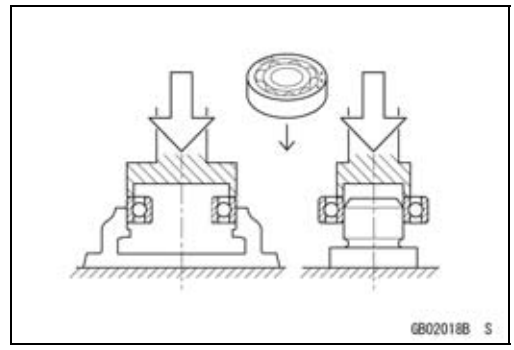


Before Servicing

Ball Bearing and Needle Bearing

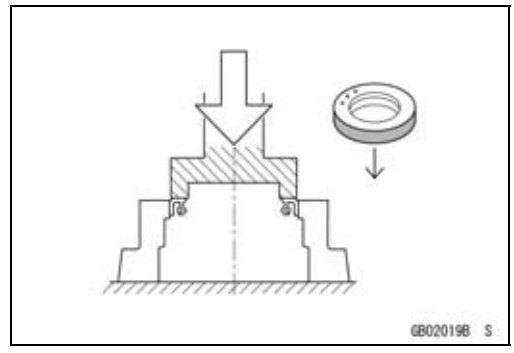
Do not remove pressed ball or needle unless removal is absolutely necessary. Replace with new ones whenever removed. Press bearings with the manufacturer and size marks facing out. Press the bearing into place by putting pressure on the correct bearing race as shown.

Pressing the incorrect race can cause pressure between the inner and outer race and result in bearing damage.

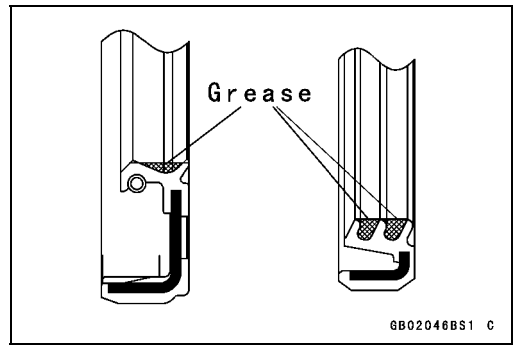


Oil Seal, Grease Seal

Do not remove pressed oil or grease seals unless removal is necessary. Replace with new ones whenever removed. Press new oil seals with manufacture and size marks facing out. Make sure the seal is aligned properly when installing.

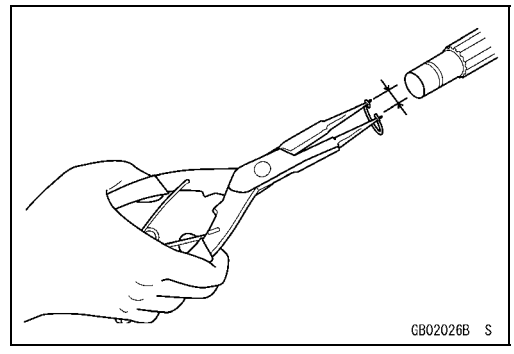


Apply specified grease to the lip of seal before installing the seal.



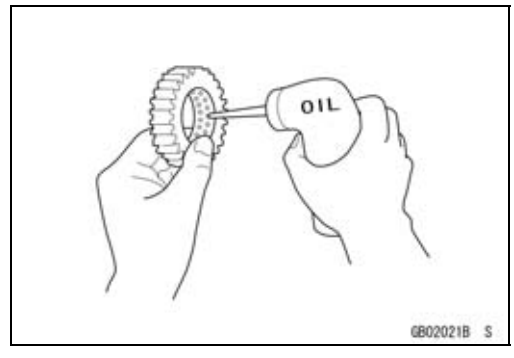
Circlips, Cotter Pins

Replace circlips or cotter pins that were removed with new ones. Take care not to open the clip excessively when installing to prevent deformation.



Lubrication

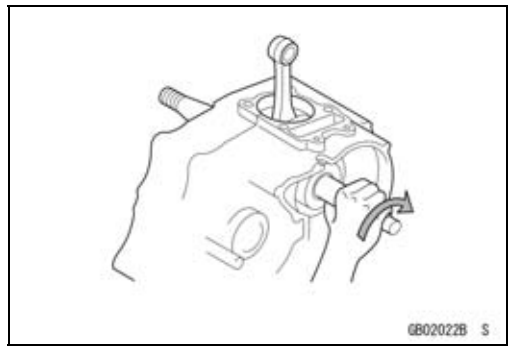
It is important to lubricate rotating or sliding parts during assembly to minimize wear during initial operation. Lubrication points are called out throughout this manual, apply the specific oil or grease as specified.



Before Servicing

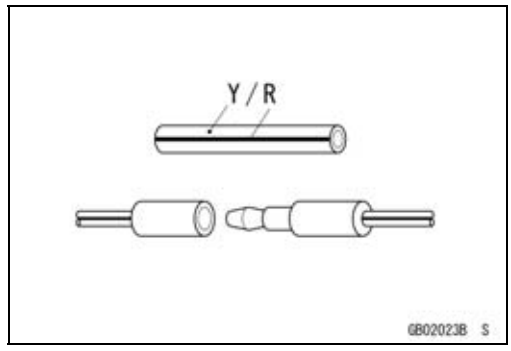
Direction of Engine Rotation

When rotating the crankshaft by hand, the free play amount of rotating direction will affect the adjustment. Rotate the crankshaft to positive direction (clockwise viewed from output side).



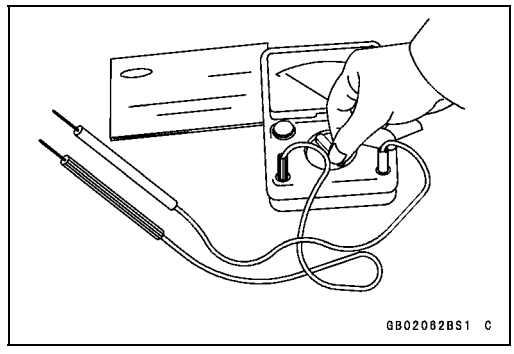
Electrical Wires

A two-color wire is identified first by the primary color and then the stripe color. Unless instructed otherwise, electrical wires must be connected to those of the same color.



Instrument

Use a meter that has enough accuracy for an accurate measurement. Read the manufacture's instructions thoroughly before using the meter. Incorrect values may lead to improper adjustments.



Model Identification

KX450D6F Left Side View

KX450D6F Right Side View

General Specifications

Items	KX450D6F
Dimensions	
Overall Length	2 185 mm (86.02 in.)
Overall Width	820 mm (32.3 in.)
Overall Height	1 280 mm (50.39 in.)
Wheelbase	1 485 mm (58.46 in.)
Road Clearance	345 mm (13.6 in.)
Seat Height	965 mm (38.0 in.)
Dry Mass	99.8 kg (220 lb)
Fuel Tank Capacity	7.2 L (1.9 US gal)
Performance	
Minimum Turning Radius	–
Engine	
Type	4-stroke, single cylinder, DOHC 4 valve
Cooling System	Liquid-cooled
Bore and Stroke	96.0 × 62.1 mm (3.78 × 2.44 in.)
Displacement	449 cm³ (27.4 cu in.)
Compression Ratio	12.0 : 1
Carburetion System	Carburetor, KEIHIN FCR40
Starting System	Primary kick
Ignition System	Digital AC-CDI
Timing Advance	
Ignition Timing	BTDC 10° @1 800 r/min (rpm)
Spark Plug	NGK CPR8EB-9
Valve Timing:	
Inlet:	
Open	BTDC 32°
Close	ABDC 72°
Duration	284°
Exhaust:	
Open	BBDC 62°
Close	ATDC 42°
Duration	284°
Lubrication System	Forced lubrication (semi-dry sump)
Engine Oil:	
Type	API SG, SH, SJ or SL with JASO MA
Viscosity	SAE 10W-40
Capacity	1.2 L (1.3 US qt)
Drive Train	
Primary Reduction System:	
Type	Gear
Reduction Ratio	2.727 (60/22)
Clutch Type	Wet, multi disc
Transmission:	
Type	4-speed, constant mesh, return shift

General Specifications

Items	KX450D6F
Gear ratios:	
1st	1.800 (27/15)
2nd	1.411 (24/17)
3rd	1.187 (19/16)
4th	1.000 (19/19)
Final Drive System:	
Type	Chain drive
Reduction Ratio	3.4846 (50/13)
Overall Drive Ratio	10.489 @Top gear
Frame	
Type	Tubular, semi-double cradle
Steering Angle	42° to either side
Caster (rake angle)	27.1°
Trail	117 mm (4.60 in.)
Front tire:	
Size	90/100-21 57M
Make/Type	DUNLOP D742F, Tube type
Rear tire:	
Size	120/80-19 63M
Make/Type	DUNLOP D756, Tube type
Rim size:	
Front	1.60-21
Rear	2.15-19
Front suspension:	
Type	Telescopic fork (up side down)
Wheel travel	315 mm (12.4 in.)
Rear suspension:	
Type	Swingarm (New Uni-trak)
Wheel travel	315 mm (12.4 in.)
Brake type:	
Front and Rear	Single disc
Effective disc diameter:	
Front (effect. dia.)	225 mm (8.86 in.)
Rear (effect. dia.)	215 mm (8.46 in.)

Specifications subject to change without notice, and may not apply to every country.

Unit Conversion Table

Prefixes for Units:

Prefix	Symbol	Power
mega	M	× 1 000 000
kilo	k	× 1 000
centi	c	× 0.01
milli	m	× 0.001
micro	**μ**	× 0.000001

Units of Mass:

kg	×	2.205	=	lb
g	×	0.03527	=	oz

Units of Volume:

L	×	0.2642	=	gal (US)
L	×	0.2200	=	gal (imp)
L	×	1.057	=	qt (US)
L	×	0.8799	=	qt (imp)
L	×	2.113	=	pint (US)
L	×	1.816	=	pint (imp)
mL	×	0.03381	=	oz (US)
mL	×	0.02816	=	oz (imp)
mL	×	0.06102	=	cu in

Units of Force:

N	×	0.1020	=	kgf
N	×	0.2248	=	lb
kgf	×	9.807	=	N
kgf	×	2.205	=	lb

Units of Length:

km	×	0.6214	=	mile
m	×	3.281	=	ft
mm	×	0.03937	=	in

Units of Torque:

N·m	×	0.1020	=	kgf·m
N·m	×	0.7376	=	ft·lb
N·m	×	8.851	=	in·lb
kgf·m	×	9.807	=	N·m
kgf·m	×	7.233	=	ft·lb
kgf·m	×	86.80	=	in·lb

Units of Pressure:

kPa	×	0.01020	=	kgf/cm²
kPa	×	0.1450	=	psi
kPa	×	0.7501	=	cm Hg
kgf/cm²	×	98.07	=	kPa
kgf/cm²	×	14.22	=	psi
cm Hg	×	1.333	=	kPa

Units of Speed:

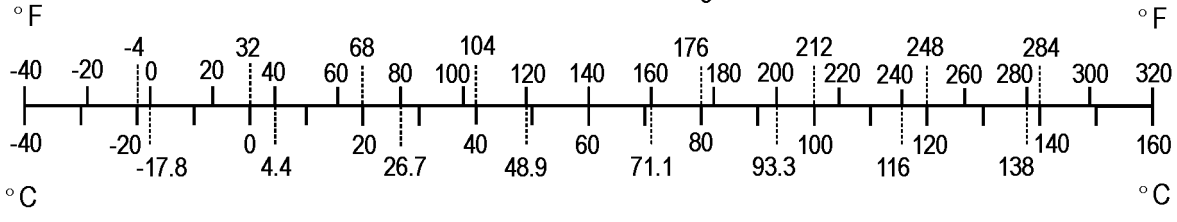
km/h	×	0.6214	=	mph

Units of Power:

kW	×	1.360	=	PS
kW	×	1.341	=	HP
PS	×	0.7355	=	kW
PS	×	0.9863	=	HP

Units of Temperature:

$$\frac{9(°C+40)}{5} - 40 = °F \qquad \frac{5(°F+40)}{9} - 40 = °C$$



Periodic Maintenance

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Periodic Maintenance Chart

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

	FREQUENCY / OPERATION	Each race or 2.5 hr	Every 3 races or 7.5 hr	Every 6 races or 15 hr	Every 12 races or 30 hr	See Page
ENGINE	Spark plug-clean, gap †	●				2-61
	Spark plug-replace		●			2-61
	Clutch cable-adjust	●				2-25
	Clutch and friction plates-inspect †	●				2-25
	Throttle cable-adjust	●				2-12
	Air cleaner element-clean †	●				2-14
	Air cleaner element-replace	If damaged				2-14
	Carburetor-inspect and adjust	●				2-13
	Engine Oil-change			●		2-26
	Piston and piston ring-replace	Every 6 races				2-23
	Cylinder head, cylinder-inspect			●		2-22
	Piston pin-replace				●	2-23
	Valve clearance-inspect †			●		2-19
	Hot starter cable-adjust	●				2-13
	Oil filter-replace			●		2-27
	Muffler-clean and inspect†	●				2-23
	Muffler Baffle-change			●		2-23
	Kick pedal and shift pedal-clean	●				–
	Engine sprocket-inspect †	●				2-33
	Coolant-check †	●				2-18
	Radiator hoses and connections-inspect †	●				2-19
	Crankshaft-inspect			●		2-28
	Breather hose-inspect	●				2-27
CHASSIS	Brake adjustment-inspect †	●				2-34
	Brake pad wear-inspect †	●				2-38
	Brake fluid level-inspect †	●				2-35
	Brake fluid-change	Every 2 years				2-36
	Brake master cylinder cup and dust seal-replace	Every 2 years				2-38
	Brake caliper piston seal and dust seal-replace	Every 2 years				2-40
	Brake hoses and pipe-replace	Every 4 years				2-43
	Brake hoses, connections-inspect †	●				2-43
	Spoke tightness and rim runout-inspect †	●				2-29
	Wheel bearing-inspect †	●				2-30
	Frame-inspect and clean	●				2-60
	Drive chain wear-inspect †	●				2-32
	Drive chain-inspect and adjust	●				2-31

2-4 PERIODIC MAINTENANCE

Periodic Maintenance Chart

OPERATION / FREQUENCY		Each race or 2.5 hr	Every 3 races or 7.5 hr	Every 6 races or 15 hr	Every 12 races or 30 hr	See Page
	Drive chain-lubricate	●				2-33
	Wheels/tires-inspect	●				2-28
	Rear sprocket-inspect †	●				2-33
	Front fork-inspect and clean	●				2-44
	Front fork oil-change			●		2-44
	Rear shock oil-replace			●		2-53
	Cable-inspect	●				2-61
	Fuel hose-replace	Every 4 years				2-12
	Fuel hose, connections-inspect †	●				2-12
	Fuel system-clean		●			2-16
	Steering play-inspect †	●				2-58
	Steering stem bearing-grease			●		2-60
	Swingarm and Uni-Trak linkage pivots-grease		●			2-58
	Swingarm and Uni-Trak linkage pivots-inspect †		●			2-58
	Nuts, bolts, fasteners-inspect †	●				2-62
	Chassis parts-lubricate	●				–

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

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 toque for the major bolts and nuts, and the parts requiring use of a non-permanent locking agent or liquid gasket.

When checking the tightening toque 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

S: Tighten the fasteners following the specified sequence.

2T: Apply 2-stroke oil.

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Fuel System				
Throttle Pulley Cover Bolt	3.4	0.35	30 in·lb	
Throttle Cable Locknut	6.9	0.70	61 in·lb	
Air Cleaner Duct Clamp Screw	2.0	0.20	18 in·lb	
Air Cleaner Duct Mounting Nuts	3.0	0.31	27 in·lb	
Air Cleaner Duct Mounting Screw	3.0	0.31	27 in·lb	
Air Cleaner Housing Bolts	9.8	1.0	87 in·lb	
Cooling System				
Water Pump Cover Bolts	9.8	1.0	87 in·lb	
Water Pump Impeller Bolt	9.8	1.0	87 in·lb	
Radiator Hose Clamp Screws	1.5	0.15	13 in·lb	
Coolant Drain Plug	6.9	0.70	61 in·lb	
Radiator Mounting Bolts	9.8	1.0	87 in·lb	
Radiator Screen Bolts	9.8	1.0	87 in·lb	
Radiator Shroud Bolts	9.8	1.0	87 in·lb	
Engine Top End				
Cylinder Head Cover Bolts	9.8	1.0	87 in·lb	
Cylinder Head Bolts (M10)	59	6.0	44	S, MO
Cylinder Head Bolts (M6)	12	1.2	106 in·lb	S
Camshaft Cap Bolts	9.8	1.0	87 in·lb	S, MO
Camsfaft Sprocket Bolts	12	1.2	106 in·lb	L
Decompressor Plug Plate Bolt	9.8	1.0	87 in·lb	
Radiator Hose Fitting Bolts	9.8	1.0	87 in·lb	
Oil Line Plug	3.0	0.31	27 in·lb	L
Carburetor Holder Clamp Screws	2.0	0.20	18 in·lb	
Plug	20	2.0	15	L
Lower Camshaft Chain Guide Bolt	9.8	1.0	87 in·lb	
Rear Camshaft Chain Guide Bolt	15	1.5	11	
Chain Tensioner Mounting Bolts	9.8	1.0	87 in·lb	
Chain Tensioner Cap	5.0	0.51	44 in·lb	
Cylinder Bolt	12	1.2	106 in·lb	S
Exhaust Pipe Cover Screws	12	1.2	106 in·lb	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Exhaust Pipe Holder Nuts	21	2.1	15	
Muffler Mounting Bolts	21	2.1	15	
Engine Right Side				
Primary Gear Nut	98	10	72	Lh
Shift Drum Cam Bolt	24	2.4	18	L
Clutch Spring Bolts	8.8	0.90	78 in·lb	
Clutch Hub Nut	98	10	72	
Gear Set Lever Nut	8.8	0.90	78 in·lb	
Ratchet Plate Mounting Bolt	9.8	1.0	87 in·lb	S
Ratchet Plate Mounting Screw	6.4	0.65	57 in·lb	S, L
Ratchet Guide Bolt	8.8	0.90	78 in·lb	
Kick Pedal Bolt	25	2.5	18	L
Shift Pedal Bolt	9.8	1.0	87 in·lb	
Clutch Cover Bolts	9.8	1.0	87 in·lb	
Right Engine Cover Bolts	9.8	1.0	87 in·lb	
Engine Lubrication System				
Engine Oil Drain Bolt (M10) (for crank room oil sump)	15	1.5	11	
Engine Oil Drain Bolt (M6) (for transmission room oil sump)	7.0	0.71	62 in·lb	
Oil Pump (Scavenge) Cover Bolts	9.8	1.0	87 in·lb	S
Oil Pump (Feed) Cover Bolts	9.8	1.0	87 in·lb	S
Oil Filter Cover Bolt	9.8	1.0	87 in·lb	
Oil Screen (Feed) Mounting Bolts	9.8	1.0	87 in·lb	
Oil Pressure Relief Valve	15	1.5	11	L
Piston Oil Nozzle	2.9	0.30	26 in·lb	
Breather Fitting	15	1.5	11	L
Engine Removal/Installation				
Engine Mounting Bolt, Nuts	49	5.0	36	
Engine Bracket Bolt, Nuts	29	3.0	21	
Swingarm Pivot Shaft Nut	98	10	72	
Crankshaft/Transmission				
Piston Oil Nozzle	2.9	0.30	26 in·lb	
Crankcase Bolts (M6)	12	1.2	106 in·lb	S
Crankcase Bolts (M7)	15	1.5	1.1	S
Engine Oil Drain Bolt (M10) (for crank room oil sump)	15	1.5	11	
Engine Oil Drain Bolt (M6) (for transmission room oil sump)	7.0	0.71	62	
Bearing Retaining Screw	15	1.5	11	L
Gear Set Lever Nut	8.8	0.90	78 in·lb	
Shift Drum Cam Bolt	24	2.4	17	L
Balancer Weight Mounting Nut	52	5.3	38	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Gear Position Switch Screws	2.9	0.30	26 in·lb	L
Wheels/Tires				
Front Axle	79	8.1	58	
Front Axle Clamp Bolts	20	2.0	15	AL
Rear Axle Nut	110	11.2	81.1	
Spoke Nipples	Not less than 2.2	Not less than 0.22	Not less than 19 in·lb	
Final Drive				
Rear Sprocket Nuts	34	3.5	25	
Engine Sprocket Nut	127	13.0	93.7	
Engine Sprocket Cover Bolts	9.8	1.0	87 in·lb	
Brakes				
Brake Lever Pivot Locknut	5.9	0.60	52 in·lb	
Brake Reservoir Cap Screws	1.5	0.15	13 in·lb	
Brake Lever Pivot Bolt	5.9	0.60	52 in·lb	
Caliper Mounting Bolts (Front)	25	2.5	18	
Brake Hose Banjo Bolts	34	3.5	25	
Front Master Cylinder Clamp Bolts	8.8	0.90	78 in·lb	S
Rear Master Cylinder Mounting Bolts	10	1.0	89 in·lb	
Rear Master Cylinder Push Rod Locknut	17	1.7	13	
Brake Reservoir Cap Bolts	1.5	0.15	13 in·lb	
Brake Disc Mounting Bolts:				
(Front)	10	1.0	89 in·lb	L
(Rear)	23	2.3	17	L
Caliper Bleed Valves (Front, Rear)	7.8	0.80	69 in·lb	
Caliper Holder Bolt (Rear)	27	2.8	20	
Brake Pad Bolt	17	1.7	13	
Rear Brake Pad Bolt Plug	2.5	0.25	22 in·lb	
Brake Pedal Mounting Bolt	25	2.5	18	L, G
Suspension				
Front Fork Clamp Bolts (Upper)	23	2.3	17	AL
Front Fork Clamp Bolts (Lower)	20	2.0	15	AL
Front Fork Top Plug	30	3.1	22	
Adjuster Assembly	58	5.9	43	L
Base Valve Assembly	28	2.9	21	
Locknut/Adjuster Assembly	29	3.1	21	
Swingarm Pivot Shaft Nut	98	10	72	
Rear Shock Absorber Mounting Nuts:				
(Upper)	39	4.0	29	
(Lower)	34	3.5	25	
Air Bleed Bolt	6.4	0.65	57 in·lb	
Tie-Rod Mounting Nut (Front, Rear)	83	8.5	61	
Rocker Arm Pivot Nut	83	8.5	61	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Steering				
Steering Stem Head Nut	98	10	72	
Steering Stem Nut	4.9	0.50	43 in·lb	
Handlebar Clamp Bolts	25	2.5	18	2T
Frame				
Rear Frame Mounting Bolts	34	3.5	25	
Upper Footpeg Bracket Bolts	54	5.5	40	L
Electrical System				
Gear Position Switch Screws	2.9	0.30	26 in·lb	L
Flywheel Nut	78	8.0	58	
Stator Bolts	4.0	0.41	35 in·lb	L
Crankshaft Sensor Bolts	7.0	0.71	62 in·lb	
Spark Plug	13	1.3	115 in·lb	
C.D.I. Unit Bolts	9.8	1.0	87 in·lb	
Magneto Cover Bolts	9.8	1.0	87 in·lb	
Breather Fitting	15	1.5	11	L
Ignition Coil Bolts	7.0	0.71	62 in·lb	

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

Specifications

Item	Standard	Service Limit
Fuel System		
Throttle Grip Free Play	2 ~ 3 mm (0.08 ~ 0.12 in.)	– – –
Hot Starter Lever Free Play	0.5 ~ 1.0 mm (0.02 ~ 0.04 in.)	– – –
Air Cleaner Element Oil	High quality foam air filter oil	– – –
Cooling System		
Coolant:		
Type (recommended)	Permanent type antifreeze	
Color	Green	
Mixed Ratio	Soft water 50% and coolant 50%	
Freezing Point	–35 °C (–31 °F)	
Total Amount	1.05 L (1.11 US qt)	
Engine Top End		
Valve Clearance:		
Exhaust	0.17 ~ 0.22 mm (0.0067 ~ 0.0087 in.)	– – –
Inlet	0.10 ~ 0.15 mm (0.0039 ~ 0.0059 in.)	– – –
Cylinder Head Warp	– – –	0.05 mm (0.002 in.)
Cylinder Inside Diameter (see text)	96.000 ~ 96.012 mm (3.7795 ~ 3.7800 in.)	96.10 mm (3.783 in.)
Piston/cylinder Clearance	0.020 ~ 0.042 mm (0.00079 ~ 0.0016 in.)	– – –
Engine Right Side		
Clutch Lever Free Play	8 ~ 13 mm (0.3 ~ 0.5 in.)	– – –
Friction Plate Thickness	2.92 ~ 3.08 mm (0.115 ~ 0.121 in.)	2.6 mm (0.10 in.)
Friction Plate Warp	Not more than 0.15 mm (0.0059 in.)	0.3 mm (0.01 in.)
Steel Plate Warp	Not more than 0.2 mm (0.008 in.)	0.3 mm (0.01 in.)
Engine Lubrication System		
Engine oil:		
Type	Castrol “R4 superbike” 5W-40 or API SG, SH, SJ or SL with JASO MA	
Viscosity	SAE 10W-30, 10W-40, or 10W-50	
Capacity	1.2 L (1.3 US qt)	
Crankshaft/Transmission		
Connecting Rod Big End Side Clearance	0.25 ~ 0.35 mm (0.0098 ~ 0.014 in.)	0.6 mm (0.02 in.)
Wheels/Tires		
Rim Runout:		
Axial	Under 1.0 mm (0.039 in.)	2 mm (0.08 in.)
Radial	Under 1.0 mm (0.039 in.)	2 mm (0.08 in.)
Front and Rear Tires Air Pressure	100 kPa (1.0 kgf/cm², 14 psi)	– – –
Standard Tire:		
Front:		
Size	90/100-21 57M	– – –
Make	DUNLOP	
Type	D742F	

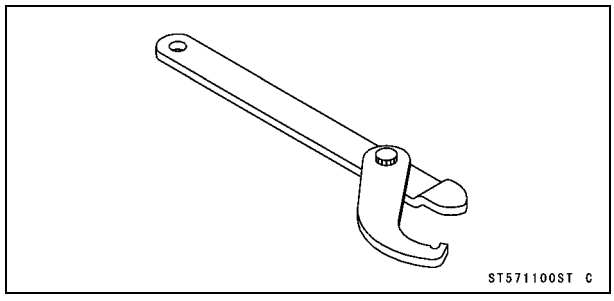
Specifications

Item	Standard	Service Limit
Rear:		
Size	120/80-19 63M	– – –
Make	DUNLOP	
Type	D756, Tube	
Final Drive		
Drive Chain Slack	52 ~ 58 mm (2.0 ~ 2.3 in.)	– – –
Drive Chain 20 Link Length	317.5 ~ 318.2 mm (12.50 ~ 12.53 in.)	323 mm (12.7 in.)
Rear Sprocket Warp	Under 0.4 mm (0.016 in.)	0.5 mm (0.020 in.)
Brakes		
Brake Lever Free Play	(to suit rider)	– – –
Brake Fluid:		
Type:		
Front	DOT3 or DOT4	– – –
Rear	DOT4	– – –
Brake pad lining thickness:		
Front	3.8 mm (0.15 in.)	1 mm (0.04 in.)
Rear	6.4 mm (0.25 in.)	1 mm (0.04 in.)
Suspension		
Fork Oil:		
Oil Viscosity	KHL15-10 (KAYABA 01) or equivalent	– – –
Oil Quantity:		(Adjustable range)
Outer (Outer/Inner Tubes)	345 mL (11.7 US oz.)	325 ~ 365 mL (11.0 ~ 12.3 US oz.)
	(EUR) 350 mL (11.8 US oz.)	(EUR) 330 ~ 370 mL (11.2 ~ 12.5 US oz.)
Inner (Subtank)	170 mL (5.75 US oz.)	– – –
Electrical System		
Spark Plug Gap	0.8 ~ 0.9 mm (0.03 ~ 0.04 in.)	– – –

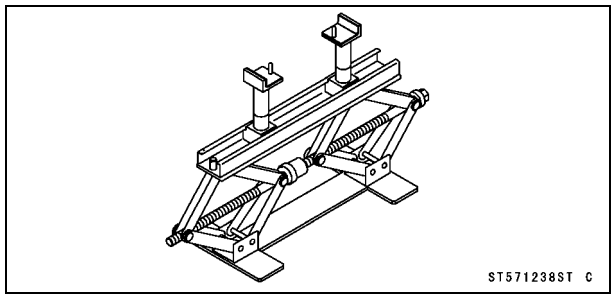
TIR: Total Indicator Readings
EUR: Europe Model

Special Tools

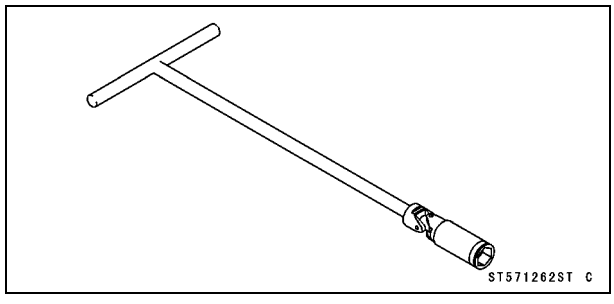
Steering Stem Nut Wrench:
57001-1100



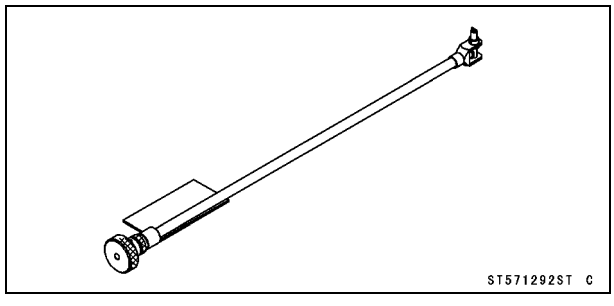
Jack:
57001-1238



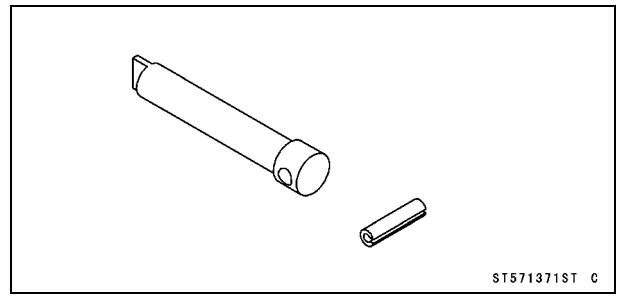
Spark Plug Wrench, Hex 16:
57001-1262



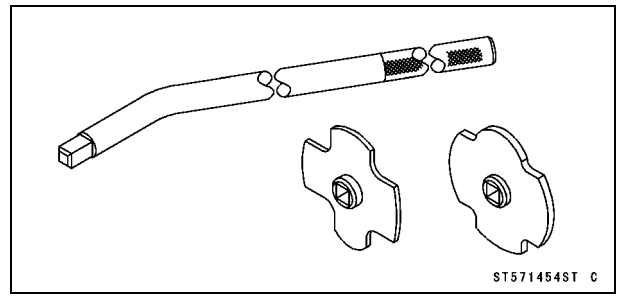
Pilot Screw Adjuster, C:
57001-1292



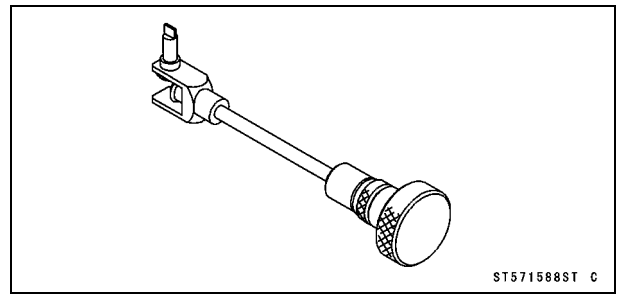
Pilot Screw Adjuster Adapter, ϕ4:
57001-1371



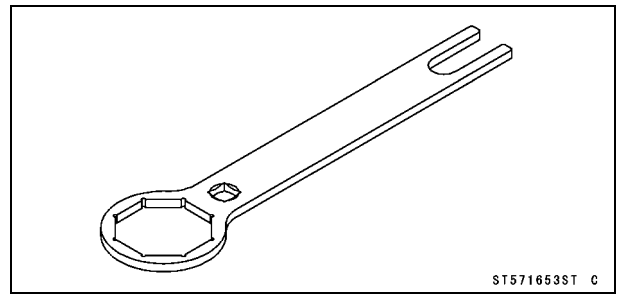
Filler Cap Driver:
57001-1454



Pilot Screw Adjust, D:
57001-1588



Top Plug Wrench, 49 mm:
57001-1653



Periodic Maintenance Procedures

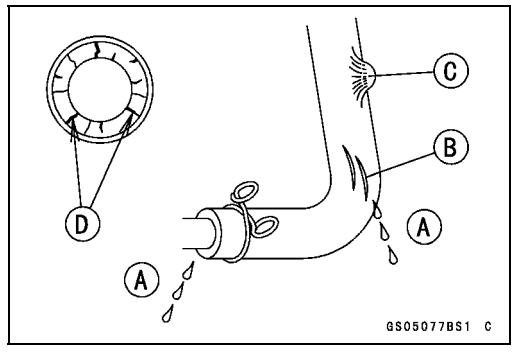
Fuel System

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 cranks [D] are noticed.

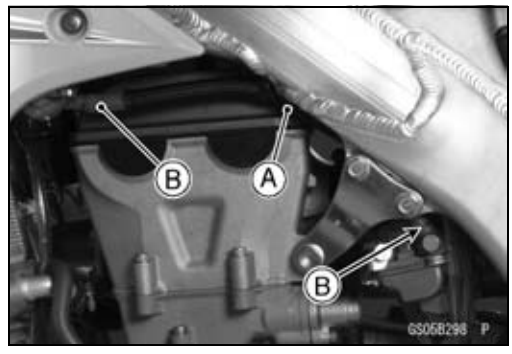


● Check that the hose [A] are securely connected and clamps [B] are tightened correctly.

● When installing, route the hose according to Cable, Wire, and Hose Routing section in the Appendix chapter.

● 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 Grip Free Play Inspection

● Check throttle grip free play [B] by lightly turning the throttle grip [A] back and forth.

★If the free play is improper, adjust the throttle cable.

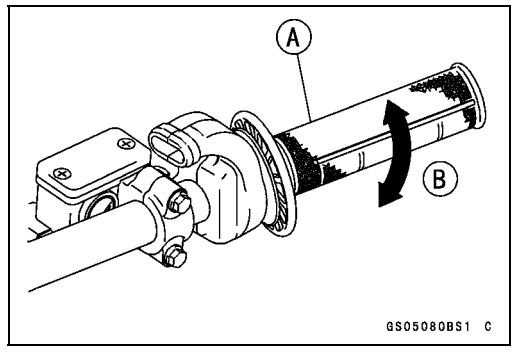
Throttle Grip Free Play
Standard: 2 ~ 3 mm (0.08 ~ 0.12 in.)

● 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 Grip Free Play Adjustment

● Loosen the locknuts [A] [B] at the upper end of the throttle cable.

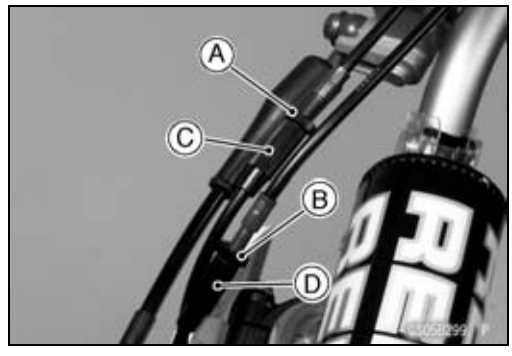
● Screw both throttle cable adjuster [C] [D] to give the throttle grip plenty of play.

● Turn out the decelerator adjuster [C] until there is no play when the throttle grip is completely closed.

● Tighten the locknut [A].

● Turn the accelerator cable adjuster [D] until 2 ~ 3 mm (0.08 ~ 0.12 in.) of throttle grip play is obtained.

● Tighten the locknut [B].



⚠ WARNING

Operation with an improperly adjusted, incorrectly routed, or damaged cable could result in an unsafe riding condition.