Kawasaki

KFX 700V FORCE

All Terrain Vehicle 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

KFX 700 V FORCE

All Terrain Vehicle Service Manual

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LIST OF ABBREVIATIONS

A	ampere(s)	lb	pounds(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) Celcius	r	revolution
DC	direct current	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)	W	watt(s)
h	hour(s)	Ω	ohm(s)
L	liter(s)		

Read OWNER'S MANUAL before operating.

EMISSION CONTROL INFORMATION

To protect the environment in which we all live, Kawasaki has incorporated crankcase emission (1) and exhaust emission (2) control systems in compliance with applicable regulations of the California Air Resources Board.

1. Crankcase Emission Control System
   A sealed-type crankcase emission control system is used to eliminate blow-by gases. The blow-by gases are led to the breather chamber through the crankcase. Then, it is led to the air cleaner.
   Oil is separated from the gases while passing through the inside of the breather chamber from the crankcase, and then returned back to the bottom of crankcase.
2. Exhaust Emission Control System
   The exhaust emission control system applied to this engine family is engine modifications that consist of a modified carburetor and an ignition system having optimum ignition timing characteristics.
   The carburetor has been calibrated to provide lean air/fuel mixture characteristics and optimum fuel economy with a suitable air cleaner and exhaust system.
   A maintenance free ignition system provides the most favorable ignition timing and helps maintain a thorough combustion process within the engine which contributes to a reduction of exhaust pollutants entering the atomosphere.

The Clean Air Act, which is the Federal law covering motor vehicle pollution, contains what is commonly referred to as the Act's "tampering provisions."

"Sec. 203(a) The following acts and the causing thereof are prohibited...

(3)(A) for any person to remove or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title prior to its sale and delivery to the ultimate purchaser, or for any manufacturer or dealer knowingly to remove or render inoperative any such device or element of design after such sale and delivery to the ultimate purchaser.

(3)(B) for any person engaged in the business of repairing, servicing, selling, leasing, or trading motor vehicles or motor vehicle engines, or who operates a fleet of motor vehicles knowingly to remove or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title following its sale and delivery to the ultimate purchaser..."

NOTE

- *The phrase "remove or render inoperative any device or element of design" has been generally interpreted as follows:*
  1. *Tampering does not include the temporary removal or rendering inoperative of devices or elements of design in order to perform maintenance.*
  2. *Tampering could include:*
     a. *Maladjustment of vehicle components such that the emission standards are exceeded.*
     b. *Use of replacement parts or accessories which adversely affect the performance or durability of the vehicle.*
     c. *Addition of components or accessories that result in the vehicle exceeding the standards.*
     d. *Permanently removing, disconnecting, or rendering inoperative any component or element of design of the emission control systems.*

WE RECOMMEND THAT ALL DEALERS OBSERVE THESE PROVISIONS OF FEDERAL LAW, THE VIOLATION OF WHICH IS PUNISHABLE BY CIVIL PENALTIES NOT EXCEEDING $10,000 PER VIOLATION.

PLEASE DO NOT TAMPER WITH NOISE CONTROL SYSTEM (US MODEL only)

To minimize the noise emissions from this product, Kawasaki has equipped it with effective intake and exhaust silencing systems. They are designed to give optimum performance while maintaining a low noise level. Please do not remove these systems, or alter them in any which results in an increase in noise level.

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.

For the duration of the warranty period, we recommend that all repairs and scheduled maintenance be performed in accordance with this service manual. Any owner maintenance or repair procedure not performed in accordance with this manual may void the warranty.

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 Vehicle parts. Special tools, gauges, and testers that are necessary when servicing Kawasaki vehicles are introduced by the Special Tool Catalog or 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

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1-2 GENERAL INFORMATION

Before Servicing

Before starting to perform an inspection service or carry out a disassembly and reassembly operation on a vehicle, 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:

(1) Dirt

Before removal and disassembly, clean the vehicle. Any dirt entering the engine will shorten the life of the vehicle. For the same reason, before installing a new part, clean off any dust or metal filings.

(2) Battery Ground

Disconnect the ground (–) wire from the battery before performing any disassembly operations on the vehicle. This prevents the engine from accidentally turning over while work is being carried out, sparks from being generated while disconnecting the wires from electrical parts, as well as damage to the electrical parts themselves. For reinstallation, first connect the positive wire to the positive (+) terminal of the battery

(3) Installation, Assembly

Generally, installation or assembly is the reverse of removal or disassembly. However, if installation or assembly sequence is given in this Service Manual, follow it. Note parts locations and cable, wire, and hose routing during removal or disassembly so they can be installed or assembled in the same way. It is preferable to mark and record the locations and routing whenever possible.

(4) Tightening Sequence

When installing bolts, nuts, or screws for which a tightening sequence is given in this Service Manual, make sure to follow the sequence. When installing a part with several bolts, nuts, or screws, start them all in their holes and tighten them to a snug fit, thus ensuring that the part has been installed in its proper location. Then, tighten them to the specified torque in the tightening sequence and method indicated. If tightening sequence instructions are not given, tighten them evenly in a cross pattern. Conversely, to remove a part, first loosen all the bolts, nuts, or screws that are retaining the part a 1/4–turn before removing them.

(5) Torque

When torque values are given in this Service Manual, use them. Either too little or too much torque may lead to serious damage. Use a good quality, reliable torque wrench.

(6) Force

Common sense should dictate how much force is necessary in assembly and disassembly. If a part seems especially difficult to remove or install, stop and examine what may be causing the problem. Whenever tapping is necessary, tap lightly using a wooden or plastic-faced mallet. Use an impact driver for screws (particularly for the removing screws held by non-permanent locking agent) in order to avoid damaging the screw heads.

(7) Edges

Watch for sharp edges, as they could cause injury through careless handling, especially during major engine disassembly and assembly. Use a clean piece of thick cloth when lifting the engine or turning it over.

(8) High-Flash Point Solvent

A high-flash point solvent is recommended to reduce fire danger. A commercial solvent commonly available in North America is standard solvent (generic name). Always follow manufacturer and container directions regarding the use of any solvent.

(9) Gasket, O-Ring

Replace a gasket or an O-ring with a new part when disassembling. Remove any foreign matter from the mating surface of the gasket or O-ring to ensure a perfectly smooth surface to prevent oil or compression leaks.

Before Servicing

(10)Liquid Gasket, Locking Agent

Clean and prepare surfaces where liquid gasket or non-permanent locking agent will be used. Apply them sparingly. Excessive amount may block engine oil passages and cause serious damage.

(11)Press

When using a press or driver to install a part such as a wheel bearing, apply a small amount of oil to the area where the two parts come in contact to ensure a smooth fit.

(12)Ball Bearing and Needle Bearing

Do not remove a ball bearing or a needle bearing unless it is absolutely necessary. Replace any ball or needle bearings that were removed with new ones. Install bearings with the manufacturer and size marks facing out, applying pressure evenly with a suitable driver. Apply force only to the end of the race that contacts the press fit portion, and press it evenly over the base component.

(13)Oil Seal and Grease Seal

Replace any oil or grease seals that were removed with new ones, as removal generally damages seals. Oil or grease seals should be pressed into place using a suitable driver, applying a force uniformly to the end of seal until the face of the seal is even with the end of the hole, unless instructed otherwise. When pressing in an oil or grease seal which has manufacturer's marks, press it in with the marks facing out.

(14)Circlip, Retaining Ring, and Cotter Pin

When installing circlips and retaining rings, take care to compress or expand them only enough to install them and no more. Install the circlip with its chamfered side facing load side as well.

Replace any circlips, retaining rings, and cotter pins that were removed with new ones, as removal weakens and deforms them. If old ones are reused, they could become detached while the vehicle is driven, leading to a major problem.

(15)Lubrication

Engine wear is generally at its maximum while the engine is warming up and before all the sliding surfaces have an adequate lubricative film. During assembly, make sure to apply oil to any sliding surface or bearing that has been cleaned. Old grease or dirty oil could have lost its lubricative quality and may contain foreign particles that act as abrasives; therefore, make sure to wipe it off and apply fresh grease or oil. Some oils and greases in particular should be used only in certain applications and may be harmful if used in an application for which they are not intended.

(16)Direction of Engine Rotation

To rotate the crankshaft manually, make sure to do so in the direction of positive rotation. Positive rotation is counterclockwise as viewed from the left side of the engine. To carry out proper adjustment, it is furthermore necessary to rotate the engine in the direction of positive rotation as well.

(17)Replacement Parts

When there is a replacement instruction, replace these parts with new ones every time they are removed.

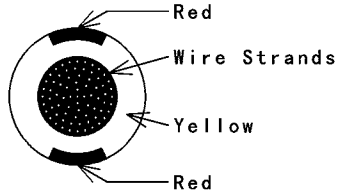
Replacement parts will be damaged or lose their original function once they are removed. Therefore, always replace these parts with new ones every time they are removed. Although the previously mentioned gasket, O-ring, ball bearing, needle bearing, grease seal, oil seal, circlip, and cotter pin have not been so designated in their respective text, they are replacement parts.

(18)Electrical Wires

All the electrical wires are either one-color or two-color. A two-color wire is identified first by the primary color and then the stripe color. For example, a yellow wire with thin red stripes is referred to as a "yellow/red" wire; it would be a "red/yellow" wire if the colors were reversed. Unless instructed otherwise, electrical wires must be connected to wires of the same color.

Before Servicing

Two-Color Electrical

Wire(cross-section)	Color Indicated on the Wire	Color Indicated on the Wiring Diagram
	Yellow/Red	Y/R

GB020601W1 C

(19)Inspection

When parts have been disassembled, visually inspect these parts for the following conditions or other damage. If there is any doubt as to the condition of them, replace them with new ones.

Abrasion	Crack	Hardening	Warp
Bent	Dent	Scratch	Wear
Color change	Deterioration	Seizure	

(20)Specifications

Specification terms are defined as follows:

"Standards" show dimensions or performances which brand-new parts or systems have.

"Service Limits" indicate the usable limits. If the measurement shows excessive wear or deteriorated performance, replace the damaged parts.

Model Identification

KSV700–A1 Left Side View

KSV700–A1 Right Side View

General Specifications

Items		KSV700-A1
Dimensions:		
Overall length		1 985 mm (78.15 in.)
Overall width		1 195 mm (47.05 in.)
Overall height		1 170 mm (46.06 in.)
Wheelbase		1 285 mm (50.60 in.)
Ground clearance:		
Rear final gear case		160 mm (6.30 in.)
Center of frame		245 mm (9.65 in.)
Seat height		850 mm (33.46 in.)
Dry mass		234 kg (516 lb)
Curb mass:	Front	115 kg (254 lb)
	Rear	135 kg (298 lb)
Fuel tank capacity		12 L (3.2 US gal)
Performance:		
Minimum turning radius		3.2 m (10.50 ft)
Engine:		
Type		4-stroke, SOHC, V2-cylinders
Cooling system		Liquid-cooled
Bore and stroke		82.0 × 66.0 mm (3.23 × 2.60 in.)
Displacement		697 mL (42.5 cu in.)
Compression ratio		9.9 : 1
Maximum horsepower		36.3 kW (49.4 PS) @6 500 r/min (rpm), (US) -
Maximum torque		59.2 N·m (6.04 kgf·m, 43.67 ft·lb) @5 000 r/min (rpm)
Carburetion system		Carburetor, Keihin CVKR–D32
Starting system		Electric Starter
Ignition system		Digital DC-CDI
Timing advance		Electronically advanced
Ignition timing		From 5° BTDC @1 100 r/min (rpm) to 28° BTDC @5 000 r/min (rpm)
Spark plug		NGK CR7E
Valve timing:		
Inlet	Open	20° BTDC
	Close	44° ABDC
	Duration	244°
Exhaust:	Open	44° BBDC
	Close	20° ATDC
	Duration	244°
Lubrication system		Forced lubrication (wet sump)
Engine oil:	Type	API SF or SG API SH or SJ with JASO MA class
	Viscosity	SAE 10W-40
	Capacity	2.2 L (2.33 US qt)

General Specifications

Items		KSV700-A1
Drive Train:		
Primary reduction system:		
Type		Belt converter
Reduction ratio		3.122 ~ 0.635
Transmission:		
Type		1-speed and reverse
Gear ratios:		
Forward:		2.416 (29/27 × 27/20 × 20/12)
Reverse		4.285 (16/12 × 20/14 × 27/20 × 20/12)
Final drive system:		
Type		Shaft 2WD
Reduction ratio		4.375 (35/8)
Overall drive ratio:		
Forward:		32.999 ~ 6.711
Reverse		58.527 ~ 11.904
Final gear case oil:	Type	MOBIL Fluid 424 or CITGO TRANSGARD TRACTOR HYDRAULIC FLUID
	Capacity	900 mL (0.95 US qt)
Frame:		
Type		Double cradle, tubular steel
Caster (rake angle)		4.5°
Camber		–0.5°
King pin angle		12.5°
Trail		20 mm (0.79 in.)
Tread:	Front	1 000 mm (39.37 in.)
	Rear	900 mm (35.43 in.)
Front tire:	Type	Tubeless
	Size	AT22 × 7 – 10
Rear tire:	Type	Tubeless
	Size	AT22 × 11 – 10
Suspension:		
Front:	Type	Double A-arms
	Wheel travel	236 mm (9.29 in.)
Rear:	Type	Swingarm
	Wheel travel	200 mm (7.87 in.)
Brake:		
Front		Disc × 2
Rear		Enclosed wet multi-plate
Electrical Equipment:		
Battery		12 V 14 Ah
Headlight:	Type	Semi-sealed beam
	Bulb	12 V 45/45 W × 2

General Specifications

Items		KSV700-A1
Tail/brake light Alternator:		
	Bulb	12 V 5/21 W
Alternator:	Type	Three - phase AC
	Rated output	25 A, 14 V @6 000 r/min (rpm)

Specifications subject to change without notice, and may not apply to every country.
US: United States model.

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	=	kg
N	×	0.2248	=	lb
kg	×	9.807	=	N
kg	×	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	=	kg·m
N·m	×	0.7376	=	ft·lb
N·m	×	8.851	=	in·lb
kg·m	×	9.807	=	N·m
kg·m	×	7.233	=	ft·lb
kg·m	×	86.80	=	in·lb

Units of Pressure:

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

Units of Speed:

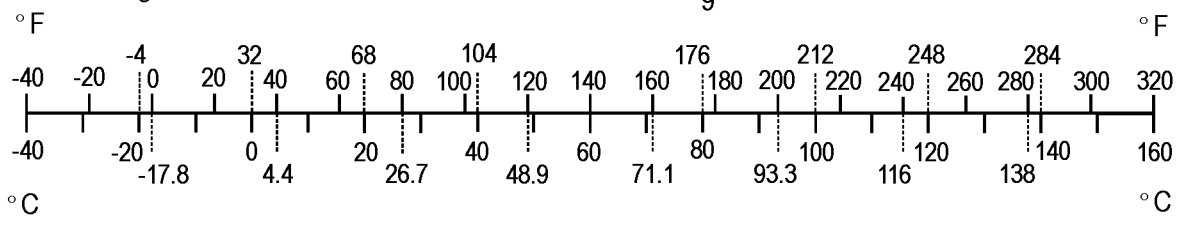
km/h	×	0.6214	=	mph

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 scheduled maintenance must be done in accordance with this chart to keep the vehicle in good running condition. **The initial maintenance is vitally important and must not be neglected.**

FREQUENCY / OPERATION	First Service	Regular Service				
	After 10 hrs. or 100 km (60 mi.) of use	Every 10 days or 200 km (120 mi.) of use	Every 30 days or 600 km (360 mi.) of use	Every 90 days, 1 700 km (1 100 mi.) or when belt indicator light turns on (100 hrs of use) whichever comes first	Every year of use	See page
ENGINE						
Converter drive belt wear – inspect *				●		2–24
Converter drive belt deflection - inspect *				●		2–25
Air cleaner – inspect *	●	●				2–16
Throttle lever play – inspect	●	●				2–15
Cable adjustment*	●	●				2–28
Idle speed – inspect			●			2–15
Valve clearance – inspect					●	2–22
Fuel system cleanliness – inspect *	●			●		2–16
Engine oil – change *	●			●		2–27
Oil filter – replace *	●			●		2–27
Spark plug – clean and gap	●			●		2–37
Spark arrester – clean					●	2–24
Fuel hoses and connections – inspect				●		2–17
Fuel hose and fuel filter replace	4 years					2–18
Radiator – clean*	●	●				2–19
Radiator hoses, and connections – check*					●	2–19
Coolant – change*	2 years					2–20
Coolant filter of carburetor – clean					●	2–22
CHASSIS						
Joint boots – inspect *	●	●				2–30 2–35 2–36
Rear brake pedal and lever play – inspect *	●	●				2–34
Rear brake plates – change *	every 9 600 km (6 000 mi.)					2–34
Bolts and nuts – tighten	●	●				2–39

2-4 PERIODIC MAINTENANCE

Periodic Maintenance Chart

FREQUENCY / OPERATION	First Service	Regular Service				
	After 10 hrs. or 100 km (60 mi.) of use	Every 10 days or 200 km (120 mi.) of use	Every 30 days or 600 km (360 mi.) of use	Every 90 days, 1 700 km (1 100 mi.) or when belt indicator light turns on (100 hrs of use) whichever comes first	Every year of use	See page
Front brake pad wear – inspect *	●		●			2–30
Brake light switch – inspect *	●		●			2–37
Steering – inspect	●			●		2–36
Tire wear – inspect *			●			2–29
Final gear case oil – change	●				●	2–29
General lubrication *			●			2–37
Front brake fluid level – inspect	●		●			2–31
Front brake fluid – change					●	2–31
Front brake master cylinder piston assembly and dust seal – replace	2 years					2–33
Front brake caliper piston seal and dust seal – replace	2 years					2–34
Front brake hoses and connections– inspect				●		2–30
Front brake hose – replace	4 years					2–30

*: Service more frequently when operated in mud, dust, or other harsh riding conditions, or when carrying heavy loads or pulling a trailer.

●: Clean, adjust, lubricate, torque, or replace parts as necessary.

Torque and Locking Agent

The following tables list the tightening torque for the major fasteners, and the parts requiring use of a non-permanent locking agent or liquid gasket.

Letters used in the “Remarks” column mean:
L: Apply a non-permanent locking agent.
MO: Apply molybdenum disulfide oil solution (mixture of the engine oil and molybdenum disulfide grease in a weight ratio 10:1).
EO: Apply engine oil.
SS: Apply silicone sealant (Kawasaki Bond: 56019-120).
Lh: Left-hand Threads
R: Replacement Parts
S: Follow the specific tightening sequence.

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Fuel System:				
Throttle Limiter Screw	3.7	0.38	33 in·lb	
Throttle Limiter Locknut	3.7	0.38	33 in·lb	
Throttle Case Assembly Screws	3.7	0.38	33 in·lb	
Choke Lever Mounting Screw	3.5	0.36	35 in·lb	
Left Handlebar Switches Assembly Screws	3.5	0.36	35 in·lb	
Air Cleaner Housing Bolts (M5)	5.9	0.60	52 in·lb	L
Air Cleaner Housing Bolts (M6)	8.8	0.90	78 in·lb	
Air Cleaner Element Bracket Screws	4.9	0.60	43 in·lb	
Fuel Tap Plate Screws	0.80	0.080	7 in·lb	
Fuel Tap Cover Screws	1.0	0.10	8 in·lb	
Fuel Pump Bolts	2.0	0.20	17 in·lb	
Cooling System				
Radiator Fan Switch	18	1.8	13	
Water Pump Fitting Bolt	9.8	1.0	87 in·lb	
Water Pump Impeller	7.8	0.80	69 in·lb	
Thermostat Housing Cover Bolts	8.8	0.90	78 in·lb	
Coolant Temperature Warning Light Switch	7.8	0.80	69 in·lb	SS
Radiator Fan Assembly Bolts	8.8	0.90	78 in·lb	
Radiator Mounting Bolts	8.8	0.90	78 in·lb	
Water Pump Cover Bolts	8.8	0.90	78 in·lb	
Coolant Drain Plug	8.8	0.90	78 in·lb	
Engine Top End:				
Water Pipe Bolts	9.8	1.0	87 in·lb	
Rocker Case Bolts 55 mm (2.2 in.)	8.8	0.90	78 in·lb	S
Rocker Case Bolts 130 mm (5.1 in.)	9.8	1.0	87 in·lb	S
Rocker Case Bolts 30 mm (1.2 in.)	9.8	1.0	87 in·lb	
Rocker Case Bolts 25 mm (1.0 in.)	9.8	1.0	87 in·lb	S
Cylinder Head Bolts (M10), First Torque	25	2.5	18	S, MO

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Cylinder Head Bolt (M10), Final Torque	49	5.0	36	S
Cylinder Head Bolts (M6)	9.8	1.0	87 in·lb	
Cylinder Head Jacket Plugs	20	2.0	14	
Valve Adjusting Cap Bolts	8.8	0.90	78 in·lb	
Valve Adjusting Screw Locknuts	12	1.2	104 in·lb	
Rocker Shaft Bolts	8.8	0.90	78 in·lb	
Chain Tensioner Mounting Bolts	8.8	0.90	78 in·lb	
Chain Tensioner Cap Bolt	22	2.2	16	
Intermediate Shaft Sprocket Nut	44	4.5	33	
Intermediate Shaft Chain Guide Bolts	8.8	0.90	78 in·lb	
Intermediate Shaft Chain Tensioner Bolts	8.8	0.90	78 in·lb	
Camshaft Sprocket Bolts	12	1.2	104 in·lb	L
Position Plate Bolts	8.8	0.90	78 in·lb	
Cylinder Bolts 40 mm (1.6 in.)	9.8	1.0	87 in·lb	
Cylinder Bolts 30 mm (1.2 in.)	9.8	1.0	87 in·lb	
Front Cylinder Camshaft Chain Guide Bolt	20	2.0	14	
Rear Cylinder Camshaft Chain Guide Bolt	20	2.0	14	
Exhaust Pipe Cover Bolts	8.8	0.90	78 in·lb	
Muffler Cover Bolts	8.8	0.90	78 in·lb	
Muffler Mounting Bolts	20	2.0	14	
Exhaust Pipe Clamp Bolts	8.8	0.90	78 in·lb	
Converter System:				
Converter Cover Bolts	8.8	0.90	78 in·lb	S
Driven Pulley Nut	93	9.5	69	
Ramp Weight Nuts	6.9	0.70	61 in·lb	
Spider	275	28	203	Lh
Drive Pulley Cover Bolts	13	1.3	113 in·lb	
Drive Pulley Bolt	93	9.5	69	R, Lh
Joint Duct Bolts	8.8	0.90	78 in·lb	
Engine Lubrication System:				
Engine Drain Plug	20	2.0	14	
Oil Filter	18	1.8	13	R
Oil Pressure Switch	15	1.5	11	SS
Oil Pressure Relief Valve	15	1.5	11	L
Oil Pump Bolt	8.8	0.90	78 in·lb	
Oil Pipe Bolts	8.8	0.90	78 in·lb	
Oil Filter Mounting Bolt	25	2.5	18	L (15mm)
Oil Pressure Switch Terminal Bolt	1.5	0.15	13 in·lb	
Chain Guide Bolts	8.8	0.90	78 in·lb	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Oil Pump Drive Chain Tensioner Bolt	25	2.5	18	
Engine Removal/Installation				
Engine Mounting Bracket Bolts	52	5.3	38	
Engine Mounting Nuts	62	6.3	46	
Crankshaft/Transmission:				
Crankcase Bolts (M8)	20	2.0	14	S, L (1)
Crankcase Bolts (M6)	9.8	1.0	87 in·lb	
Shift Shaft Positioning Bolt	25	2.5	18	
Shift Shaft Spring Bolt	25	2.5	18	L
Shift Shaft Cover Bolts	8.8	0.90	78 in·lb	
Connecting Rod Big End Cap Nuts	34	3.5	25	MO
Engine Drain Plug	20	2.0	14	
Position Plate Mounting Screws	4.9	0.50	43 in·lb	L
Shift Shaft Lever Nut	8.8	0.90	78 in·lb	
Shift Shaft Lever Bolts	14	1.4	10	
Reverse Cable Bracket Mounting Bolts	8.8	0.90	78 in·lb	
Neutral Position Switch	8.8	0.90	78 in·lb	
Reverse Position Switch	15	1.5	11	
Reverse Cable Locknut	12	1.2	104 in·lb	
Cable Holder Mounting Bolts	9.8	1.0	87 in·lb	
Wheels/Tires:				
Tire Rod End Nuts	42	4.3	31	
Tie-Rod Adjusting Locknuts	22	2.2	16	
Wheel Nuts	78	8.0	58	
Front Axle Nuts	52	5.3	38	
Rear Axle Nuts	265	27	195	
Final Drive:				
(Output Bevel Gears)				
Output Driven Bevel Gear Housing Bolts	26	2.7	20	
Output Drive Bevel Gear Cover Bolts	8.8	0.90	78 in·lb	
Bearing Holder	137	14	101	L
Bevel Gear Holder Nut	157	16	116	L
Output Drive Bevel Gear Housing Bolts	26	2.7	20	
Bearing Holder	120	12	89	L
Output Shaft Holder Nut	157	16	116	L
(Final Gear Case)				
Oil Filler Cap	29	3.0	22	
Oil Drain Plug	20	2.0	14	
Final Gear Case Bolts	42	4.3	31	S

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Pinion Gear Bearing Holder	137	14	101	L
Final Gear Case Left Cover Bolts	49	5.0	36	L
Final Gear Case Right Cover Bolts (M8)	24	2.4	17	L,S
Final Gear Case Right Cover Bolts (M10)	49	5.0	36	L,S
Final Gear Case Right Cover Bolts (M12)	94	9.6	69	L,S
Pinion Gear Bearing Holder Nut	157	16	116	L
Brakes:				
Reservoir Cap Screws	1.5	0.15	13 in·lb	
Bleed Valves	7.9	0.80	69 in·lb	
Master Cylinder Clamp Bolts	8.8	0.90	78 in·lb	
Brake Switch Mounting Bolt	1.2	0.12	10 in·lb	
Brake Hose Banjo Bolts	25	2.5	18	
Brake Lever Pivot Bolt	5.9	0.60	52 in·lb	
Brake Lever Pivot Bolt Locknut	5.9	0.60	52 in·lb	
Caliper Mounting Bolts	25	2.5	18	
Disc Mounting Bolts	37	3.8	27	L
Parking Brake Lever Screw	–	–	–	L
Gasket Screws	–	–	–	L
Brake Pedal Bolt	8.8	0.90	78 in·lb	
Suspension:				
Front Shock Absorber Clamp Bolts and Nuts	47	4.8	35	
Front Shock Absorber Mounting Nuts	42	4.3	31	
Rear Shock Absorber Mounting Nuts	62	6.3	46	
Suspension Arm Pivot Bolts	42	4.3	31	
Steering Knuckle Joint Nuts	29	3.0	21	
Swingarm Pivot Right Shaft	152	15.5	112	L
Swingarm Pivot Left Shaft	20	2.0	14	L
Swingarm Pivot Left Nut	152	15.5	112	
Steering:				
Steering Stem Bottom End Nut	40	4.1	30	
Steering Stem Clamp Bolts	25	2.5	18	
Tie-Rod End Nuts	42	4.3	31	
Steering Knuckle Joint Nuts	29	3.0	22	
Tie-Rod Adjusting Locknuts	22	2.2	16	
Handlebar Lower Holder Nuts	37	3.8	27	L
Handlebar Holder Bolts	29	3.0	22	S
Master Cylinder Clamp Bolts	8.8	0.90	78 in·lb	
Frame:				
Engine Mounting Bracket Bolts	52	5.3	38	

Torque and Locking Agent

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Engine Mounting Nut	62	6.3	46	
Footrest Mounting Bolts	44	4.5	33	
Electrical System:				
Alternator Cover Bolts	8.8	0.90	78 in·lb	
Alternator Rotor Bolts	127	13	94	
Alternator Stator Bolts	13	1.3	113 in·lb	
Alternator Cover Plugs	18	1.8	13	
Spark Plug	13	1.3	113 in·lb	
Crankshaft Sensor Mounting Bolts	5.9	0.60	52 in·lb	
Starter Motor Mounting Bolts	8.8	0.90	78 in·lb	
Starter Motor Terminal Nut	4.9	0.50	43 in·lb	
Starter Motor Terminal Locknut	6.9	0.70	61 in·lb	
Starter Motor Bolts	4.9	0.50	43 in·lb	
Starter Motor Clutch Bolts	34	3.5	25	L
Reverse Position Switch	15	1.5	11	
Neutral Position Switch	15	1.5	11	
Oil Pressure Switch	15	1.5	11	SS
Oil Pressure Switch Terminal Bolt	1.5	0.15	13 in·lb	
Radiator Fan Switch	18	1.8	13	
Coolant Temperature Warning Light Switch	6.9	0.70	61 in·lb	SS

Torque and Locking Agent

The tables below, relating tightening torque to thread diameter, lists the basic torque for the bolts and nuts. Use this table for only the bolts and nuts which do not require a specific torque value. All of the values are for use with dry solvent-cleaned threads.

Basic Torque for General Fasteners of Engine Parts

Threads dia. mm	Mark of bolt head	Torque		
		N·m	kgf·m	ft·lb
5	4T	2.2 ~ 2.6	0.22 ~ 0.27	19 ~ 23 in·lb
6	9T	12 ~ 15	1.2 ~ 1.5	104 ~ 130 in·lb
6	7T	7.8 ~ 9.8	0.80 ~ 1.0	69 ~ 87 in·lb
6	4T	3.9 ~ 4.9	0.40 ~ 0.50	35 ~ 43 in·lb
8	7T	18 ~ 22	1.8 ~ 2.2	13 ~ 16
8	4T	10 ~ 14	1.0 ~ 1.4	87 ~ 122 in·lb
10	7T	39 ~ 44	4.0 ~ 4.5	29 ~ 33
10	4T	20 ~ 24	2.0 ~ 2.4	14 ~ 17

Basic Torque for General Fasteners of Frame Parts

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 ~ 14
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	54 ~ 72
16	115 ~ 155	11.5 ~ 16	83 ~ 155
18	165 ~ 225	17 ~ 23	125 ~ 165
20	225 ~ 325	23 ~ 33	165 ~ 240