Quick Reference Guide

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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.

1

General Information

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Before Servicing

Before starting to service a motorcycle, careful reading of the applicable section is recommended to eliminate unnecessary work. Photographs, diagrams, notes, cautions, warnings, and detailed descriptions have been included wherever necessary. Nevertheless, even a detailed account has limitations, a certain amount of basic knowledge is also required for successful work.

Especially note the following:

(1) Dirt

Before removal and disassembly, clean the motorcycle. Any dirt entering the engine or other parts will work as an abrasive and shorten the life of the motorcycle. For the same reason, before installing a new part, clean off any dust or metal filings.

(2) Battery Ground

Remove the ground (−) lead from the battery before performing any disassembly operations on the motorcycle. This prevents:

(a) the possibility of accidentally turning the engine over while partially disassembled.

(b) sparks at electrical connections which will occur when they are disconnected.

(c) damage to electrical parts.

(3) 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 evenly in a cross pattern. This is to avoid distortion of the part and/or causing gas or oil leakage. Conversely when loosening the bolts, nuts, or screws, first loosen all of them by about a quarter of turn and then remove them. Where there is a tightening sequence indication in this Service Manual, the bolts, nuts, or screws must be tightened in the order and method indicated.

(4) 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.

(5) 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 removal of screws held by a locking agent) in order to avoid damaging the screw heads.

(6) Edges

Watch for sharp edges, especially during major engine disassembly and assembly. Protect your hands with gloves or a piece of thick cloth when lifting the engine or turning it over.

(7) 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.

(8) Gasket, O-Ring

Do not reuse a gasket or O-ring once it has been in service. The mating surfaces around the gasket should be free of foreign matter and perfectly smooth to avoid oil or compression leaks.

(9) Liquid Gasket, Non-Permanent Locking Agent

Follow manufacturer's directions for cleaning and preparing surfaces where these compounds will be used. Apply sparingly. Excessive amounts may block engine oil passages and cause serious damage. An example of a non-permanent locking agent commonly available in North America is Locktite Lock'n Seal (Blue).

(10) Press

A part installed using a press or driver, such as a wheel bearing, should first be coated with oil on its outer or inner circumference so that it will go into place smoothly.

(11) Ball Bearing

When installing a ball bearing, the bearing race which is affected by friction should be pushed by a suitable driver. This prevents severe stress on the balls and races, and prevents races and balls from being dented. Press a ball bearing until it stops at the stop in the hole or on the shaft.

(12) Oil Seal and Grease Seal

Replace any oil or grease seals that were removed with new ones, as removal generally damages seals.

When pressing in a seal which has manufacturer's marks, press it in with the marks facing out. Seals should be pressed into place using a suitable driver, which contacts evenly with the side of seal, until the face of the seal is even with the end of the hole.

(13) Seal Guide

A seal guide is required for certain oil or grease seals during installation to avoid damage to the seal lips. Before a shaft passes through a seal, apply a little high temperature grease on the lips to reduce rubber to metal friction.

(14) Circlip, Retaining Ring

Replace any circlips and retaining rings that were removed with new ones, as removal weakens and deforms them. When installing circlips and retaining rings, take care to compress or expand them only enough to install them and no more.

(15) Cotter Pin

Replace any cotter pins that were removed with new ones, as removal deforms and breaks them.

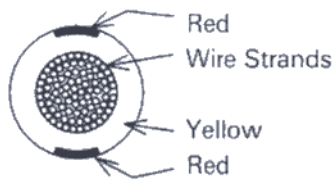
(16) Lubrication

Engine wear is generally at its maximum while the engine is warming up and before all the rubbing surfaces have an adequate lubricative film. During assembly, oil or grease (whichever is more suitable) should be applied to any rubbing surface which has lost its lubricative film. Old grease and dirty oil should be cleaned off. Deteriorated grease has lost its lubricative quality and may contain abrasive foreign particles.

Don't use just any oil or grease. 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. This manual makes reference to molybdenum disulfide grease (MoS_2) in the assembly of certain engine and chassis parts. Always check manufacturer recommendations before using such special lubricants.

(17) Electrical Wires

All the electrical wires are either single-color or two-color and, with only a few exceptions, must be connected to wires of the same color. On any of the two-color wires there is a greater amount of one color and a lesser amount of a second color, so a two-color wire is identified by first the primary color and then the secondary 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 to make red the main color.

Wire (cross-section)	Name of Wire Color
	Yellow/Red

(18) Replacement Parts

When there is a replacement instruction, replace these parts with new ones every time they are removed. These replacement parts will be damaged or lose their original function once removed.

(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

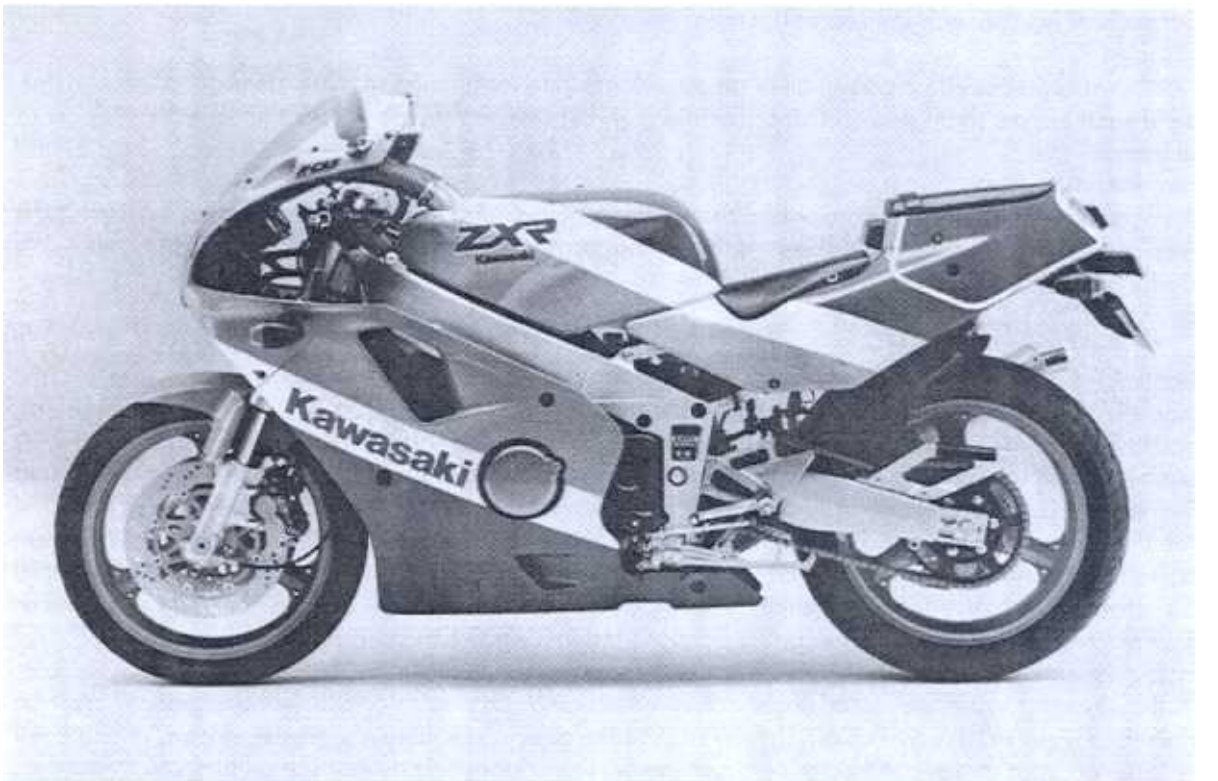
Specification terms are defined as follows.

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

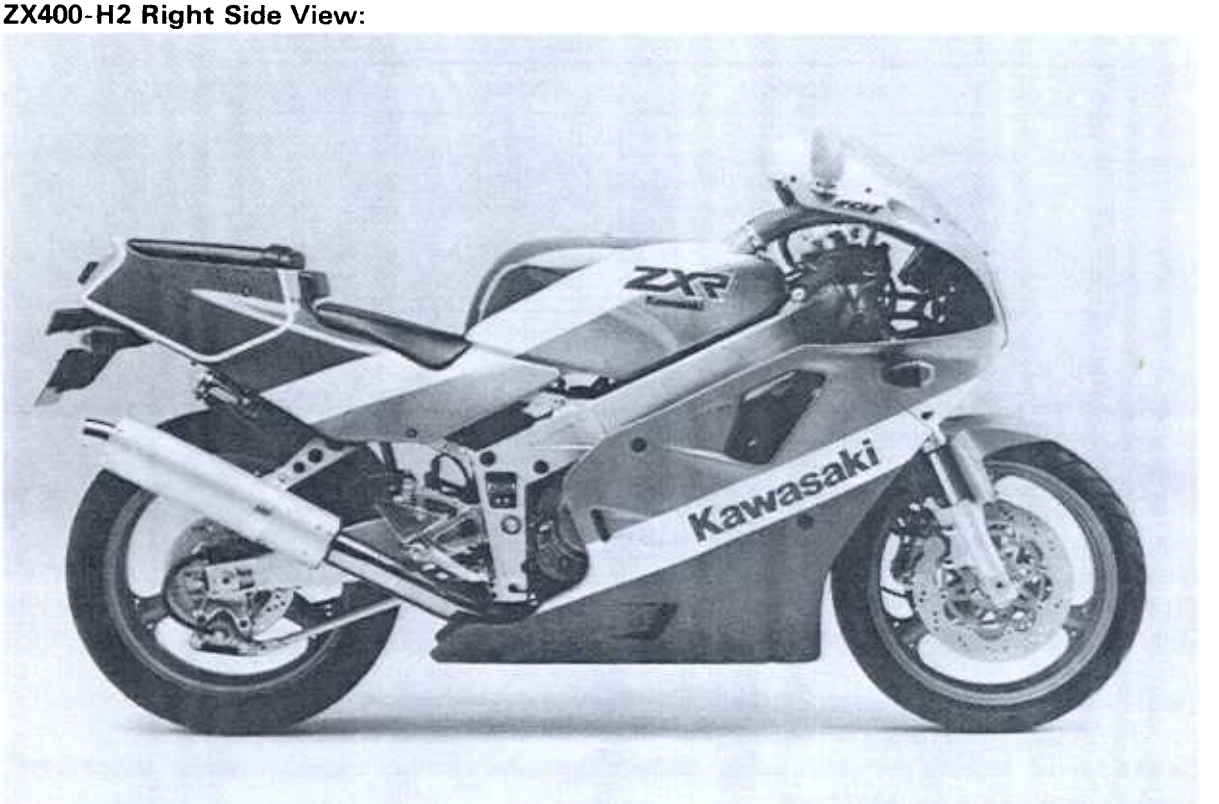
"Service Limits" indicate the usable limits. If the measurement shows excessive wear or deteriorated performance, replace the damaged parts.

Model Identification

ZX400-H2 Left Side View:



ZX400-H2 Right Side View:



General Specifications

Items		ZX400-H2
Dimensions:		
Overall length		2 035 mm, (I) 2 050 mm,
Overall width		705 mm
Overall height		1 125mm
Wheelbase		1 395 mm
Road clearance		120 mm
Seat height		765 mm
Dry weight		163 kg
Curb weight:	Front	95 kg
	Rear	94 kg
Fuel tank capacity		16.0 L
Performance:		
Braking distance		13.5 m from 50 km/h
Minimum turning radius		3.2 m
Engine:		
Type		4-stroke, DOHC, 4-cylinder
Cooling system		Liquid-cooled
Bore and stroke		57.0 x 39.0 mm
Displacement		398 mL
Compression ratio		12.1
Maximum horsepower		45.6 kW (62 PS) @12 500 r/min (rpm), (F) 44.2 kW (– PS) @12 500 r/min (rpm) (UTAC's norm)
Maximum torque		39.2 N-m (4.0 kg-m, 29.0 ft-lb) @10 000 r/min (rpm)
Carburetion system		Carburetors, Keihin CVK-D32 x 4
Starting system		Electric starter
Ignition system		Battery and coil (transistorized)
Timing advance		Electronically advanced
Ignition timing		From 12.5° BTDC @1 200 r/min (rpm) to 45° BTDC @6 000 r/min (rpm)
Spark plug		NGK CR9EK or ND U27ETR
Cylinder numbering method		Left to right, 1-2-3-4
Firing order		1-2-4-3
Valve timing:		
Inlet	Open	23° (BTDC)
	Close	65° (ABDC)
	Duration	268°
Exhaust	Open	57.5° (BBDC)
	Close	27.5° (ATDC)
	Duration	265°
Lubrication system		Forced lubrication (wet sump with cooler)
Engine oil:	Grade	SE or SF class
	Viscosity	SAE10W-40
	Capacity	3.0 L
Drive Train:		
Primary reduction system:		
	Type	Gear
	Reduction ratio	2.195 (90/41)

Items			ZX400-H2
Clutch type			Wet multi disc
Transmission:	Type		6-speed, constant mesh, return shift
	Gear ratios:	1st	2.846 (37/13)
		2nd	2.055 (37/18)
		3rd	1.631 (31/19)
		4th	1.380 (29/21)
		5th	1.240 (31/25)
		6th	1.111 (30/27)
Final drive system:			
	Type		Chain drive
	Reduction ratio		3.000 (45/15)
	Overall drive ratio		7.317 @Top gear
Frame:			
Type			Tubular, diamond
Caster (rake angle)			24°
Trail			85 mm
Front tire:	Size, type		120/60 VR17 TUBELESS
	Mark		DUNLOP K510F
			BRIDGESTONE CYROX-17
Rear tire:	Size, type		160/60 VR17 TUBELESS
	Mark		DUNLOP K510
			BRIDGESTONE CYROX-16
Front suspension:	Type		Telescopic fork
	Wheel travel		120 mm
Rear suspension:	Type		Swing arm (uni-trak)
	Wheel travel		140 mm
Brake type:	Front		Dual discs
	Rear		Single disc
Electrical Equipment:			
Battery			12 V 10 Ah
Headlight:	Type		Semi-sealed beam
	Bulb		Quartz-halogen 12 V 60/55 W x 2,
Tail/brake light			12 V 5/21 W x 2
Alternator:	Type		Three-phase AC
	Rated output		23 A @10 000 r/min (rpm), 14 V

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

(F) France Model

(I) Italy Model

Torque and Locking Agent

The following tables list the tightening torque for the major fasteners 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 to the threads.
LG : Apply liquid gasket to the threads.
M : Apply molybdenum disulfide grease.
O : Apply an oil to the threads and seating surface.
S : Tighten the fasteners following the specified sequence.
SS : Apply silicone sealant.
St : Stake the fasteners to prevent loosening.
R : Replace the part.

The table 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

Threads dia. (mm)	Torque		
	N-m	kg-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

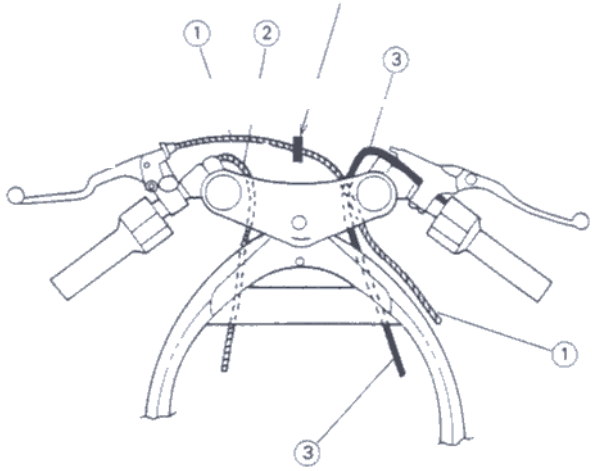
Fastener	Torque			Remarks
	N-m	kg-m	ft-lb	
Cooling System:				
Coolant Drain Plugs (Cylinder)	8.8	0.90	78 in-lb	
Thermostatic Housing Bolt (cylinder head)	8.8	0.90	78 in-lb	L
Thermostatic Fan Switch	18	1.8	13	
Water Temperature Sensor	7.8	0.80	69 in-lb	SS
Water Pump Mounting Bolt	8.8	0.90	78 in-lb	
Water Pump Pipe Mounting Bolt	8.8	0.90	78 in-lb	
Radiator Hose Clamp Bolts	2.0	0.2	17 in-lb	
Radiator Horse Fitting Mounting Bolt (cylinder)	8.8	0.90	78 in-lb	L
Radiator Fan Mounting Bolt	3.4	0.35	30 in-lb	
Engine Top End:				
Cylinder Head Cover Bolts	9.8	1.0	7.0	
Cylinder Head Cover Woodruff Plug Mounting	–	–	–	SS
Camshaft Chain Guide Bolt (Rear)	25	2.5	18.0	
Chain Tensioner Mounting Bolt	8.8	0.90	78 in-lb	L
Rocker Shaft Plug	9.8	1.0	7.0	
Upper Chain Guide Bolt	12	1.2	8.5	
Inlet Pipe Mounting Bolt (carburetor holder)	8.8	0.90	78 in-lb	
Outlet Pipe Mounting Bolt (cylinder head)	8.8	0.90	78 in-lb	
Camshaft Cap Bolts	12	1.2	8.5	
Cylinder Head Bolts: 8 mm	25	2.5	18.0	
6 mm	12	1.2	8.5	
Clutch				
Clutch Cover Mating Surfaces	–	–	–	SS
Clutch Cover Bolts	9.8	0.90	78 in-lb	L (two bolts)
Clutch Cover Damper Bolts	9.8	1.0	7.0	L
Clutch Hub Nut	130	13.5	98	R
Clutch Spring Bolts	12	1.2	8.5	
Engine Lubrication System:				
Engine Drain Plug	20	2.0	14.5	
Oil Hose Mounting Bolt (cylinder head, crankcase)	8.8	0.90	78 in-lb	
Oil Filter	9.8	1.0 or hand-tight	7.0	R
Oil Filter Mounting Bolt	29	3.0	22	
Oil Pressure Relief Valve	15	1.5	11.0	L

Fastener	Torque			Remarks
	N-m	kg-m	ft-lb	
Oil Pressure Switch Terminal	1.5	0.15	13 in-lb	
Oil Pressure Switch	15	1.5	11.0	SS
Oil Pump Cover Screws	4.4	0.45	39 in-lb	
Oil Plug (Right, M18)	15	1.5	11.0	
Oil Plug (Left, PT3/8)	17	1.75	12.5	SS
Oil Cooler Pipe Fitting Bolt	12	1.2	8.5	
Oil Pan Bolts	12	1.2	8.5	
Engine Removal/Installation:				
Engine Mounting Bracket Bolt	30	3.1	22	
Engine Mounting Bolts	36	3.7	27	
Crankshaft/Transmission:				
Shift Drum Cam Mounting Bolts	12	1.2	8.5	L
Shift Drum Set Lever Bolt	8.8	0.90	78 in-lb	
Shift Drum Bearing Retainer Bolt	8.8	0.90	78 in-lb	
Shift Return Spring Bolt	20	2.0	14.5	L
Neutral Switch	15	1.5	11.0	
Breather Plate Mating Surfaces	–	–	–	SS
Breather Plate Bolt	9.8	1.0	7.0	L
Crankcase Bolts Φ6	12	1.2	8.5	
Φ8	27	2.8	20	S
Crankcase Mating Surfaces	–	–	–	LG, SS (one portion only)
Connecting Rod Big End Cap Nuts	25	2.6	19	
Shift Pedal Mounting Bolt	25	2.5	18	
Wheels/Tires:				
Front Axle Clamp Bolts	20	2.0	14.5	
Front Axle Nut	110	11.0	80	
Rear Axle Nut	110	11.0	80	
Final Drive:				
Engine Sprocket Cover Bolts	–	–	–	L (one bolt only)
Engine Sprocket Plate Bolt	9.8	1.0	7.0	
Rear Sprocket Nuts	74	7.5	54	
Rear Sprocket Studs	–	–	–	L
Brakes:				
Bleed Valves	7.8	0.80	69 in-lb	
Caliper Mounting Bolts (Front)	34	3.5	25	
Caliper Assembly Bolts: Front	21	2.1	15	
Rear	32	3.3	24	
Pad Spring Screws	2.9	0.30	26 in-lb	
Disk Mounting Bolt (Front)	27	2.8	20	
Brake Hose Banjo Bolts	25	2.5	18.0	
Brake Lever Pivot Bolt	1.0	0.10	9 in-lb	
Brake Lever Pivot Locknut	5.9	0.60	52 in-lb	
Front Brake Light Switch Mounting Screw	1.2	0.12	10 in-lb	
Brake Pedal Mounting Bolt	25	2.5	18.0	
Rear Master Cylinder Rod Locknut	18	1.8	13.0	
Caliper Mounting Bolts (Rear)	25	2.5	18.0	
Rear Master Cylinder Mounting Bolts	23	2.3	16.5	
Torque Link Nut: Front	34	3.5	25	
Rear	25	2.5	18.0	
Suspensions:				
Front Fork Clamp Bolts (Upper, Lower)	20	2.0	14.5	
Front Fork Top Bolt	23	2.3	16.5	
Piston Rod Nut	15	1.5	11.0	
Front Fork Bottom Allen Bolts	39	4.0	29	L
Rear Shock Absorber Spring Adjuster Locknut	88	9.0	65	
Rear Shock Absorber Mounting Nuts	49	5.0	36	
Swing Arm Pivot Shaft Nut	110	11.0	80	
Rocker Arm Nuts	49	5.0	36	

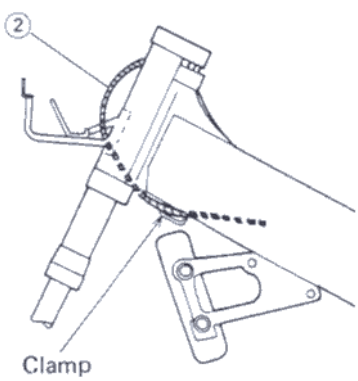
Fastener	Torque			Remarks
	N-m	kg-m	ft-lb	
Tie-Rod Nuts	49	5.0	36	
Steering:				
Steering Stem Head Nut	39	4.0	29	
Handlebar Mounting Bolts	25	2.6	19.0	
Handlebar Holder Allen Bolts	9.8	1.0	7.0	
Handle Holder Clamp Bolt	23	2.3	16.5	
Frame:				
Fairing Inner Cover Mounting Screws	–	–	–	L (engine side)
Side Stand Bracket Bolts	31	3.2	23	L
Electrical System:				
Spark Plugs	13	1.3	113 in-lb	
Pickup Coil Cover Bolts	8.8	0.90	78 in-lb	L (one bolt only)
Pickup Coil Bolt	6.4	0.65	56 in-lb	
Timing Rotor Allen Bolts	25	2.5	18.0	
Alternator				
Alternator Cover Bolts	8.8	0.90	73 in-lb	
Alternator Rotor Bolt	78	8.0	58	
Alternator Stator Allen Bolt	8.3	0.85	74 in-lb	
Alternator Stator Lead Clamp Bolt	8.3	0.85	74 in-lb	
Alternator Cover Mating Surfaces	–	–	–	SS (three portions)
Starter Motor Mounting Bolts	8.8	0.90	78 in-lb	
Starter Motor Clutch Allen Bolt	34	3.5	25	L
Battery Ground Lead Bolt (Crankcase)	8.8	0.90	78 in-lb	

Cable, Wire, and Hose Routing

Run the cable into the clamp.



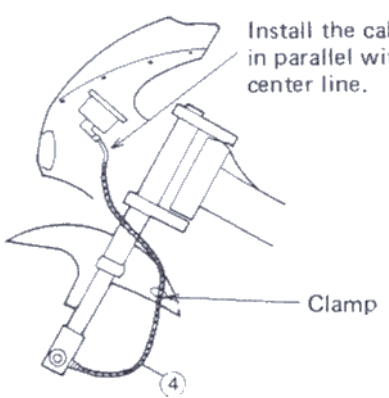
1. Clutch Cable
2. Choke Cable
3. Throttle Cable
4. Speedometer Cable



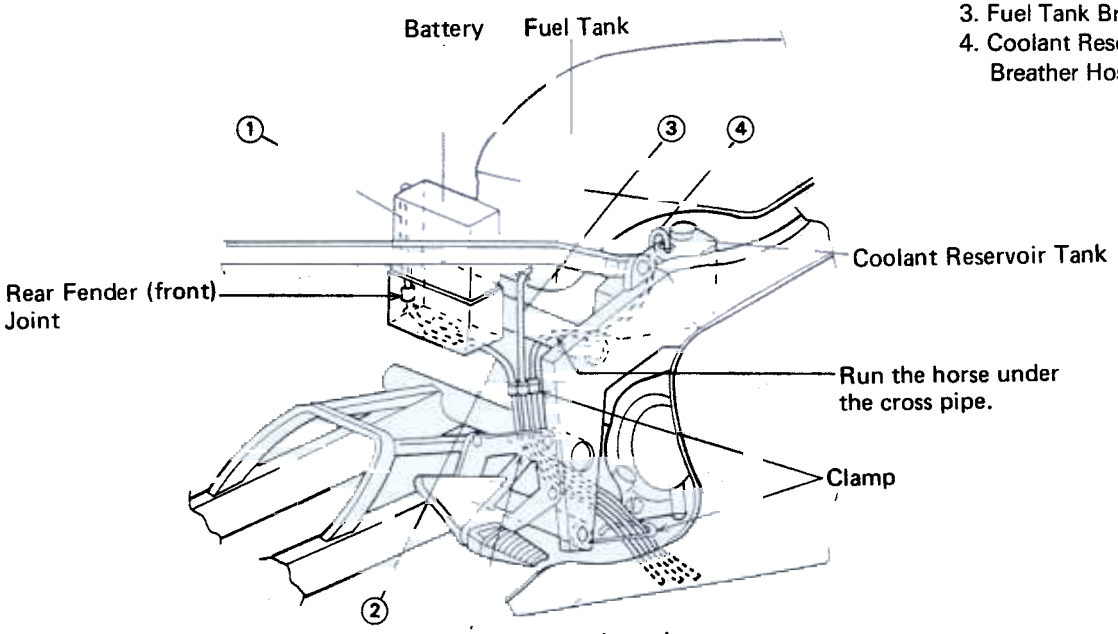


Clamp

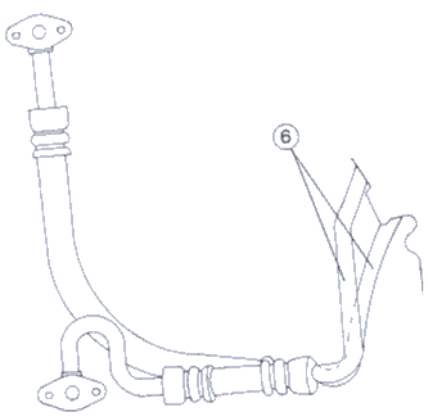
Install the cable elbow in parallel with the frame center line.

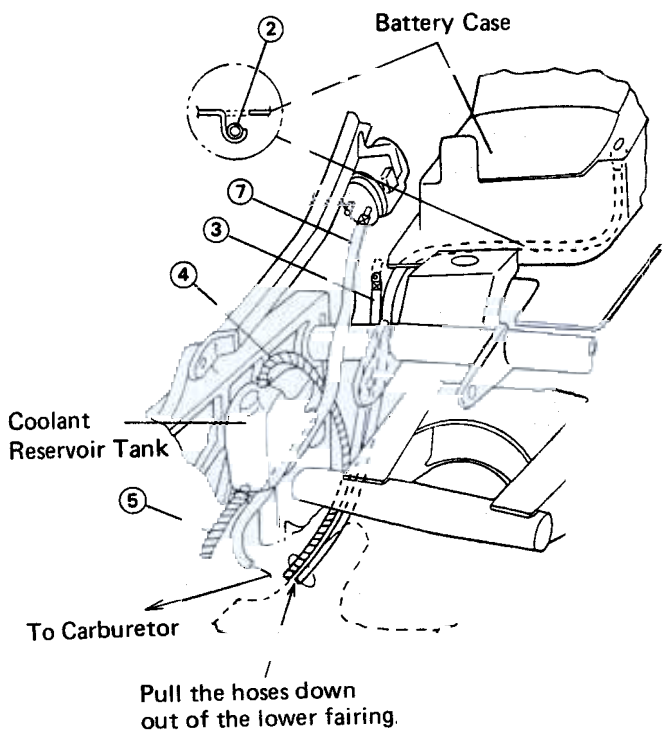


1. Battery Vent Hose (Transparent)
2. Battery Vent Hose (Black)
3. Fuel Tank Breather Hose
4. Coolant Reservoir Tank Breather Hose

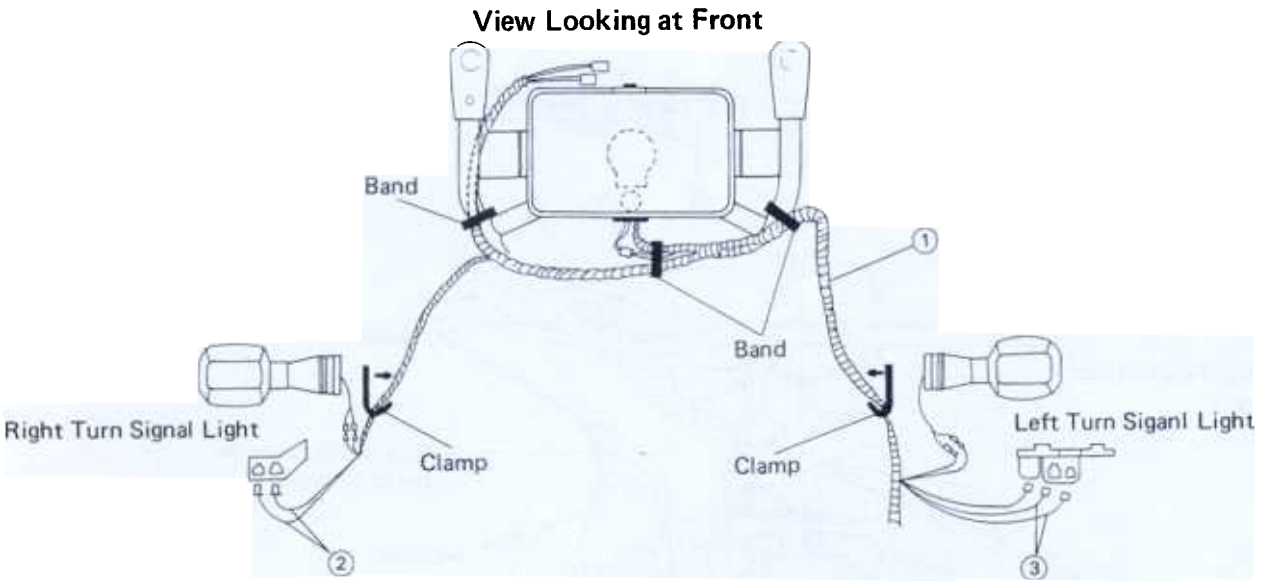


View Looking at Top

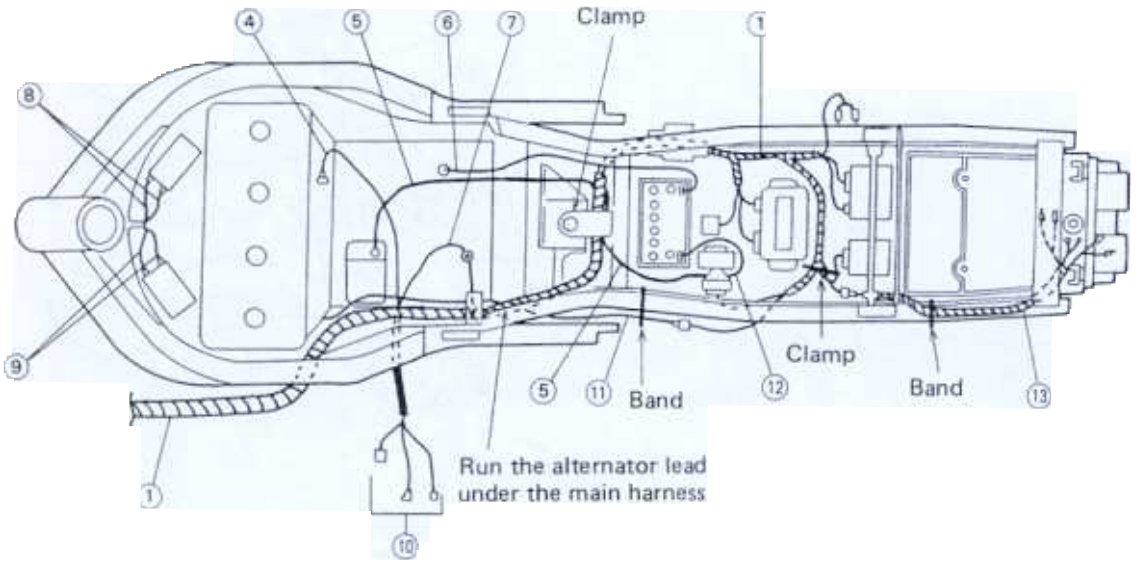




5. Coolant Reservoir Hose
6. Oil Cooler Pipe
7. Fuel Hose (from Fuel Pump to Carburetor)

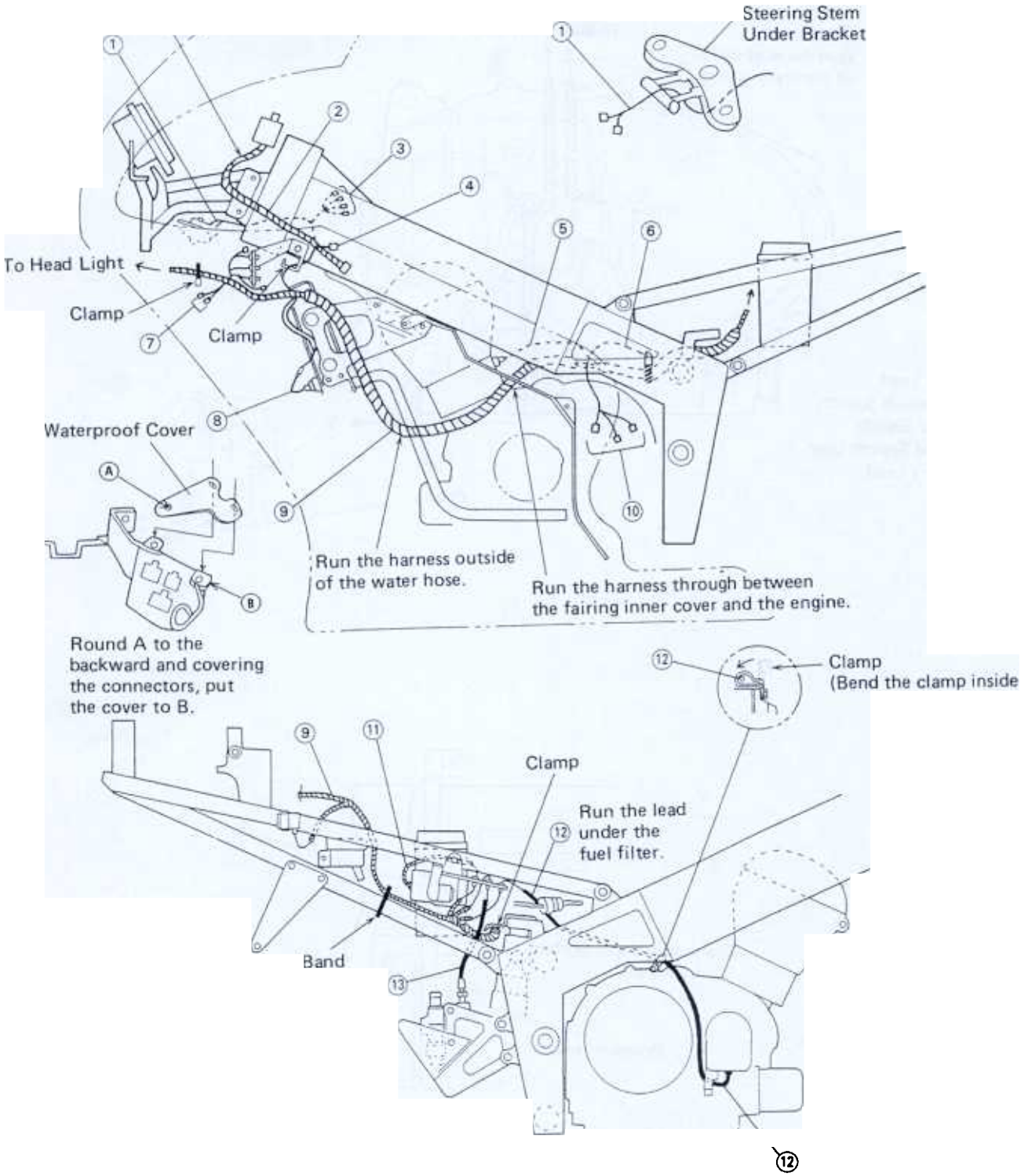


1. Main Harness
2. To Right Grip Switch
3. To Left Grip Switch
4. To Water Temperature Sensor
5. Starter Motor lead
6. Battery (−) Lead
7. Ground Lead
8. To Ignition Coil (#1, #4)
9. To Ignition Coil (#2, #3)

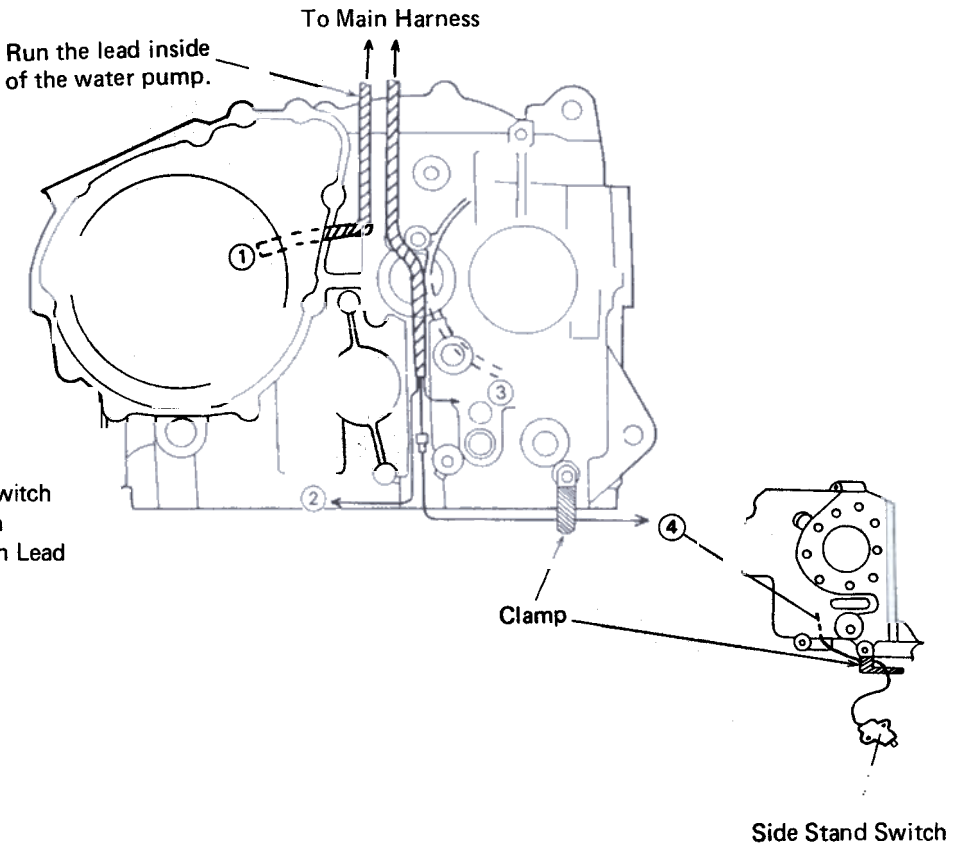


10. To Oil Pressure Switch,
    Neutral Switch and
    Side Stand Switch
11. Alternator Lead
12. Battery (+) Lead
13. Rear Harness

Run the lead over the fairing stay.



1. To Horn
2. Ignition Switch Lead
3. To Ignition Coil
4. To Radiator Fan
5. Water Temperature Sensor
6. Ground Lead
7. To Left Turn Signal Light
8. Radiator Fan Switch Lead
9. Main Harness
10. To Oil Pressure Switch, Neutral Switch and Side Stand Switch
11. Fuel Pump Lead
12. Pickup Coil Lead
13. Rear Brake Light Switch Lead



1. Alternator Lead
2. To Oil Pressure Switch
3. To Neutral Switch
4. Side Stand Switch Lead
5. Battery (−) Lead

