



## SPECIFICATIONS

## GENERAL SPECIFICATIONS

Model	FZR400U/FZR400SUC
Model Code Number:	3BF (FZR400U) 3FH (FZR400SUC)
Vehicle Identification Number:	JYA3FHC0 * JA000101 JYA3BFE0 * JA000101
Engine Starting Number:	3BF-000101 (FZR400U) 3FH-000101 (FZR400SUC)
Dimensions:	
Overall Length	2,070 mm (81.5 in)
Overall Width	690 mm (27.2 in)
Overall Height	1,125 mm (44.3 in)
Seat Height	785 mm (30.9 in)
Wheelbase	1,400 mm (55.1 in)
Minimum Ground Clearance	135 mm ( 5.31 in)
Basic Weight:	
With Oil and Full Fuel Tank	186 kg (410 lb) (FZR400U) 189 kg (417 lb) (FZR400SUC)
Minimum Turning Radius:	3,100 mm (122 in)
Engine:	
Engine Type	Liquide cooled 4-stroke, gasoline, DOHC
Cylinder Arrangement	4-cylinder parallel
Displacement	399 cm <sup>3</sup> (24.3 cu.in)
Bore x Stroke	56.0 x 40.5 mm (2.2047 x 1.5945 in)
Compression Ratio	11.5 : 1
Compression Pressure	932 kPa (9.5 kg/cm <sup>2</sup> , 135 psi)
Starting System	Electric starter
Lubrication System:	Wet sump
Engine Oil Type or Grade:	
	Yamalube 4-cycle oil or SAE 20W40 type SE motor oil SAE 10W30 type SE motor oil
Engine Oil Capacity:	
Engine Oil:	2.2 L (1.9 Imp qt, 2.33 US qt)
Periodic Oil Change:	2.5 L (2.2 Imp qt, 2.64 US qt)
With Oil Filter Replacement	3.0 L (2.6 Imp qt, 3.17 US qt)
Total Amount	
Coolant Total Amount:	
(Including All Routes)	1.9 L (1.7 Imp qt, 2.0 US qt)
Air Filter:	Dry type element

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**SPEC**



Model	FZR400U/FZR400SUC	
Fuel: Type Tank capacity Reserve Amount	Unleaded fuel recommended 18.0 L (3.94 Imp gal, 4.8 US gal) 3.0 L (0.66 Imp gal, 0.79 US gal)	
Carburetor: Type x Quantity Manufacturer	BDS32 x 4 MIKUNI	
Spark Plug: Type (Manufacture) Gap	CR8E (NGK), U24ESR-N (N.D.) 0.7 ~ 0.8 mm (0.028 ~ 0.032 in)	
Clutch Type:	Wet, multiple-disc	
Transmission: Primary Reduction System Primary Reduction Ratio Secondary Reduction System Secondary Reduction Ratio Transmission Type Operation Gear Ratio	Spur gear 89/41 (2.170) Chain drive 55/19 (2.894) Constant-mesh, 6-speed Left foot operation 43/13 (3.307) 40/18 (2.222) 36/21 (1.714) 33/23 (1.434) 28/22 (1.272) 27/23 (1.173)	
Chassis: Frame Type Caster Angle Trail	Double cradle 24° 89 mm (3.5 in)	
Tire Type Size Manufacture (Type)	Front	Rear
	Tubeless 110/70R17-53H BRIDGESTONE (CYROX-03) DUNLOP (K455F)	Tubeless 140/60R18-64H BRIDGESTONE (CYROX-04) DUNLOP (K455)
Maximum Load*	156 kg (344 lb) (Except for California) 153 kg (337 lb) (For California)	
Tire Pressure (Cold tire):  Up to 90 kg (198 lb) load*  90 kg (198 lb) ~ Maximum load*  High speed riding	Front	Rear
	200 kPa (2.0 kg/cm <sup>2</sup> , 28 psi)	230 kPa (2.3 kg/cm <sup>2</sup> , 32 psi)
	200 kPa (2.0 kg/cm <sup>2</sup> , 28 psi)	250 kPa (2.5 kg/cm <sup>2</sup> , 36 psi)
	200 kPa (2.0 kg/cm <sup>2</sup> , 28 psi)	250 kPa (2.5 kg/cm <sup>2</sup> , 36 psi)
* Load is total weight of cargo, rider, passenger, and accessories.		

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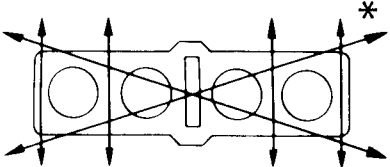
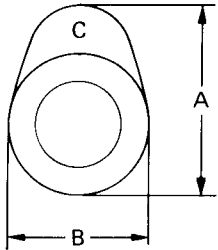
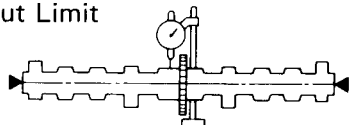
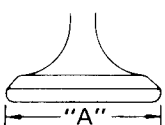
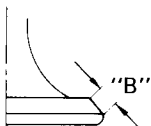
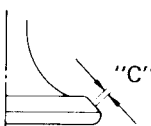
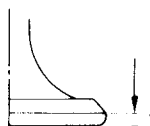


Model	FZR400U/FZR400SUC
Brake: Front Brake Type Operation Rear Brake Type Operation	Dual disc brake Right hand operation Single disc brake Right foot operation
Suspension: Front Suspension Rear Suspension	Telescopic fork Swingarm (New monocross)
Shock Absorber: Front Shock Absorber Rear Shock Absorber	Coil spring/Oil damper Coil gas spring/Oil damper
Wheel Travel: Front Wheel Travel Rear Wheel Travel	130 mm (5.12 in) 130 mm (5.12 in)
Electrical: Ignition System Generator System Battery Type or Model Battery Capacity	T.C.I. (Digital ignition) A.C. magneto generator GM12AZ-3A-2 12V 12AH
Headlight type:	Quartz bulb (Halogen)
Bulb Wattage x Quantity: Headlight Tail/Brake Light Rear Flasher Light Front Position Light/Front Flasher Light License Light Meter Light Auxiliary Light	35W/35W x 2 8W/27W x 1 27W x 2 27W/8W x 2 3.8W x 2 1.7W x 5 3.4W x 2
Indicator Light: Wattage x Quantity    "NEUTRAL" "HIGH BEAM" "TURN" "OIL LEVEL"	3.4W x 1 3.4W x 1 3.4W x 1 3.4W x 1

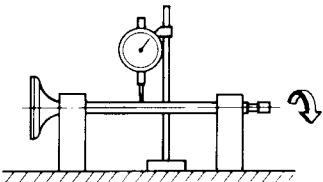
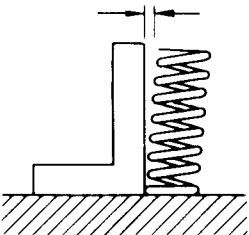



# MAINTENANCE SPECIFICATIONS

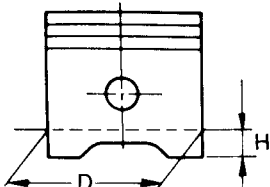
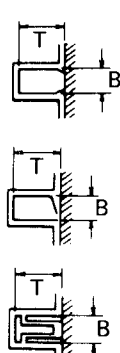
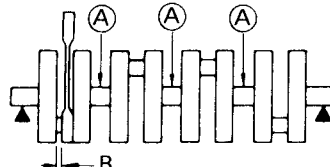
## Engine

Model	FZR400U/FZR400SUC
Cylinder Head: Warp Limit * 	0.03 mm (0.0012 in) * Lines indicate straightedge measurement
Cylinder: Bore Size Taper Limit Out of Round Limit	56.000 ~ 56.005 mm (2.2047 ~ 2.2049 in) 0.05 mm (0.002 in) 0.03 mm (0.0012 in)
Camshaft: Drive Method Cam Cap Inside Dia.  Camshaft Outside Dia. Shaft-to-Cap Clearance < Limit > Cam Dimensions: Intake   Exhaust  Camshaft Runout Limit 	Chain drive (Center) 23.000 ~ 23.021 mm (0.9055 ~ 0.9063 in)  22.967 ~ 22.980 mm (0.9042 ~ 0.9047 in) 0.020 ~ 0.054 mm (0.0008 ~ 0.0021 in) 0.08 mm (0.0031 in) 32.55 ~ 32.65 mm (1.2815 ~ 1.2854 in) 32.51 mm (1.2799 in) 25.045 ~ 25.145 mm (0.986 ~ 0.990 in) 25.005 mm (0.9844 in)  32.25 ~ 32.35 mm (1.2697 ~ 1.2736 in) 32.21 mm (1.2681 in) 25.0 ~ 25.1 mm (0.9843 ~ 0.9882 in) 24.96 mm (0.9827 in)  0.03 mm (0.0012 in)
Cam Chain: Cam Chain Type/No. of Links Cam Chain Adjustment Method Valve, Valve Seat, Valve Guide: Valve Clearance (Cold):  Valve Dimensions:   Head Dia.   Face Width   Seat Width   Margin Thickness	BF04MA/112 Links Automatic  IN. 0.11 ~ 0.20 mm (0.004 ~ 0.008 in) EX. 0.21 ~ 0.30 mm (0.008 ~ 0.012 in)  



Model		FZR400U/FZR400SUC
"A" Head Dia.	IN. EX.	21.9 ~ 22.1 mm (0.8622 ~ 0.8701 in) 18.9 ~ 19.1 mm (0.7441 ~ 0.7520 in)
"B" Face Width	IN. EX.	1.6 ~ 2.4 mm (0.0630 ~ 0.0945 in) 1.6 ~ 2.4 mm (0.0630 ~ 0.0945 in)
"C" Seat Width	IN. EX.	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in) 0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
< Limit >	IN. EX.	1.6 mm (0.063 in) 1.6 mm (0.063 in)
"D" Margin Thickness	IN. EX.	0.6 ~ 0.8 mm (0.0236 ~ 0.0315 in) 0.6 ~ 0.8 mm (0.0236 ~ 0.0315 in)
< Limit >	IN. EX.	0.4 mm (0.0157 in) 0.4 mm (0.0157 in)
Stem Outside Diameter	IN. EX.	4.475 ~ 4.490 mm (0.1762 ~ 0.1768 in) 4.460 ~ 4.475 mm (0.1756 ~ 0.1762 in)
< Limit >	IN. EX.	4.45 mm (0.175 in) 4.435 mm (0.175 in)
Guide Inside Diameter	IN. EX.	4.500 ~ 4.512 mm (0.1772 ~ 0.1776 in) 4.500 ~ 4.512 mm (0.1772 ~ 0.1776 in)
< Limit >	IN. EX.	4.542 mm (0.179 in) 4.542 mm (0.179 in)
Stem-to-Guide Clearance	IN. EX.	0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in) 0.025 ~ 0.052 mm (0.001 ~ 0.002 in)
< Limit >	IN. EX.	0.08 mm (0.0031 in) 0.1 mm (0.0039 in)
Stem Runout Limit		0.02 mm (0.0008 in)
		
Valve Seat Width	IN. EX.	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in) 0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
< Limit >	IN. EX.	1.6 mm (0.063 in) 1.6 mm (0.063 in)
Valve Spring:		
Free Length	IN. EX.	41.94 mm (1.65 in) 41.94 mm (1.65 in)
Installed Length (Valve Closed)	IN. EX.	37.5 mm (1.48 in) 37.5 mm (1.48 in)
Compressed Pressure (Valve closed)	IN. EX.	14.2 ~ 16.4 kg (31.3 ~ 36.2 lb) 14.2 ~ 16.4 kg (31.3 ~ 36.2 lb)
Tilt Limit	IN. EX.	2.5°/1.8 mm (0.0709 in) 2.5°/1.8 mm (0.0709 in)
		
Direction of Winding (Top view)	IN. EX.	



Model	FZR400U/FZR400SUC
<b>Piston:</b> Piston Size "D" Measuring Point "H"   Piston-to-Cylinder Clearance < Limit > Oversize:        2nd 4th	55.945 ~ 55.960 mm (2.2026 ~ 2.2031 in) 5 mm (0.197 in) (From bottom line of piston skirt)  0.04 ~ 0.06 mm (0.0016 ~ 0.0024 in) < 0.15 mm (0.006 in) > 56.5 mm (2.22 in) 57.0 mm (2.24 in)
<b>Piston Ring:</b> Sectional Sketch   End Gap (Installed):  Side Clearance:	 Top Ring Barrel B = 0.8 mm (0.0315 in) T = 2.1 mm (0.0827 in)  2nd Ring Taper B = 0.8 mm (0.0315 in) T = 2.1 mm (0.0827 in)  Oil Ring Expander B = 2.0 mm (0.0787 in) T = 2.2 mm (0.0866 in)  Top Ring    0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in) 2nd Ring    0.15 ~ 0.30 mm (0.0059 ~ 0.0118 in) Oil Ring     0.2 ~ 0.8 mm (0.0079 ~ 0.0315 in) Top Ring    0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in) < Limit >   0.10 mm (0.004 in) 2nd Ring    0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in) < Limit >   0.10 mm (0.004 in) Oil Ring     —
<b>Connecting Rod:</b> Connecting Rod Oil Clearance Bearing Size No. Color Code	0.043 ~ 0.066 mm (0.0017 ~ 0.0026 in) 1. Blue    2. Black    3. Blown    4. Green
<b>Crankshaft:</b>   Runout Limit "A" Big End Side Clearance "B"	  0.03 mm (0.0012 in) 0.160 ~ 0.262 mm (0.0063 ~ 0.0103 in)



Model	FZR400U/FZR400SUC
Main Journal Oil Clearance	0.025 ~ 0.043 mm (0.0010 ~ 0.0017 in)
Bearing Size No. Color Code	1. Blue 2. Black 3. Brown 4. Green 5. Yellow
Clutch:	
Friction Plate Thickness x Quantity	2.9 ~ 3.1 mm (0.114 ~ 0.122 in) x 8
Wear Limit	2.8 mm (0.11 in)
Clutch Plate Thickness x Quantity	1.8 ~ 2.2 mm (0.072 ~ 0.085 in) x 7
Warp Limit	0.1 mm (0.04 in)
Clutch Spring Free Length x Quantity	0.1 mm (0.004 in)
Clutch Spring Minimum Length	29.0 mm (1.14 in)
Clutch Housing Thrust Clearance	0.02 ~ 0.10 mm (0.0008 ~ 0.0039 in)
Clutch Release Method	Inner push, screw – push
Push Rod Bending Limit	0.5 mm (0.020 in)
Transmission:	
Main Axle Deflection Limit	0.08 mm (0.0031 in)
Drive Axle Deflection Limit	0.08 mm (0.0031 in)
Shifter:	
Shifter Type	Guide bar
Carburetor:	
Type/Manufacture x Quantity	BD32/MIKUNI x 4
I.D. Mark	3BF-00 (Except for California) 3FH-00 (For California)
Main Jet (M.J.)	#87.5
Main Air Jet (M.A.J.)	#60
Jet Needle-Clip Position (J.N.)	5CFZ2
Needle Jet (N.J.)	Y-0
Pilot Jet (P.J.)	#15
Pilot Outlet Size (P.O.)	0.85
Pilot Air Jet (P.A.J.)	#130
Pilot Screw (P.S.)	3½
Valve Seat Size (V.S.)	1.2
Starter Jet (G.S <sub>1</sub> )	#27.5
(G.S <sub>2</sub> )	0.5
Bypass 1 (B.P. 1)	0.8
Bypass 2 (B.P. 2)	0.8
Throttle Valve Size (Th. V)	#130
Fuel Level (F.L.)	4.5 ~ 6.5 mm (0.18 ~ 0.26 in) Below from the float chamber line



Model	FZR400U/FZR400SUC
<b>Lubrication System:</b> Oil Filter Type Oil Pump Type Tip Clearance < Limit > Side Clearance < Limit > Bypass Valve Setting Pressure Relief Valve Operating Pressure	Paper Trochoid pump 0.09 ~ 0.15 mm (0.0035 ~ 0.0060 in) < 0.2 mm (0.008 in) > 0.03 ~ 0.08 mm (0.0012 ~ 0.0031 in) < 0.15 mm (0.006 in) > 80 ~ 120 kPa (0.8 ~ 1.2 kg/cm <sup>2</sup> , 11.38 ~ 17.06 psi) 450 ~ 550 kPa (4.5 ~ 5.5 kg/cm <sup>2</sup> , 63.99 ~ 78.21 psi)
<b>Cooling System:</b> Radiator Core Size      Width Height Thickness Radiator Cap Opening Pressure Reservoir Tank Capacity < To Full level > Water Pump Type Reduction Ratio	325 mm (12.8 in) 160 mm (6.3 in) 32 mm (1.26 in) 74 ~ 103 kPa (0.75 ~ 1.05 kg/cm <sup>2</sup> , 10.7 ~ 14.9 psi) 0.28 L (0.25 Imp qt, 0.30 US qt) Single-suction centrifugal pump 89/41 x 48/49 (2.126)





Model

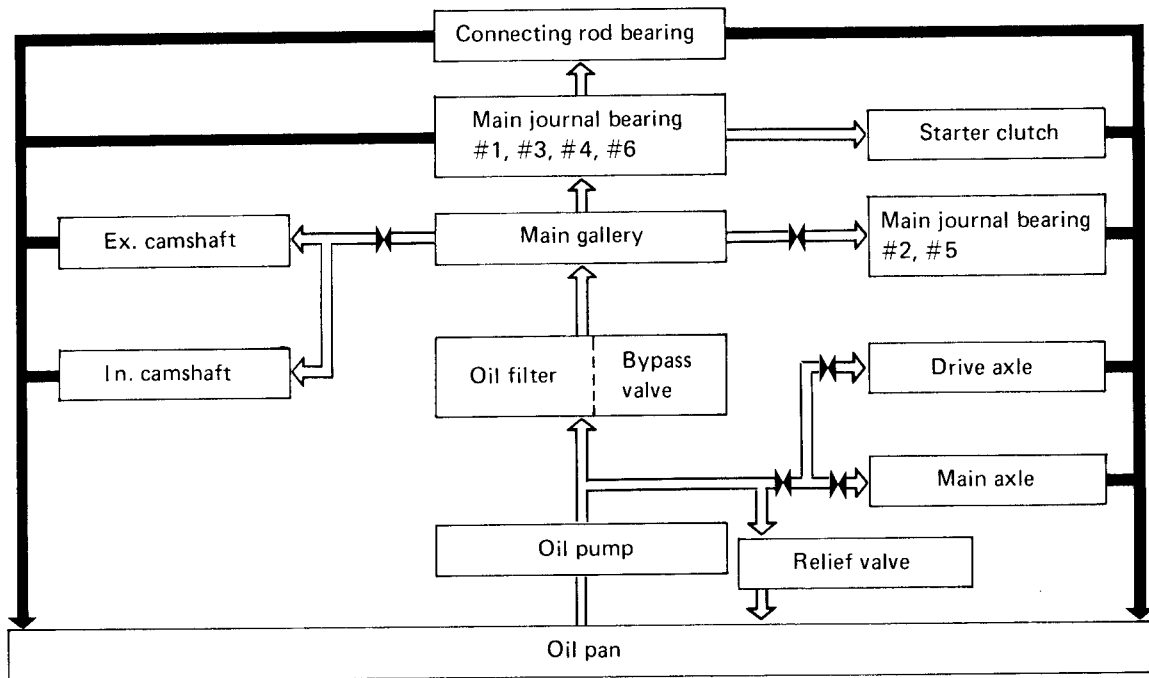
FZR400U/FZR400SUC

Lubrication chart:

⇒ Pressured feed

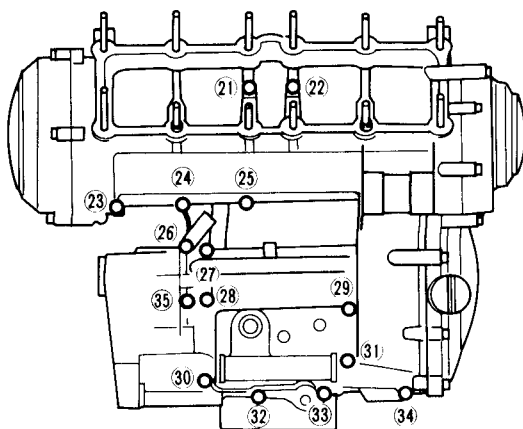
➔ Splashed

⌞ Nozzle

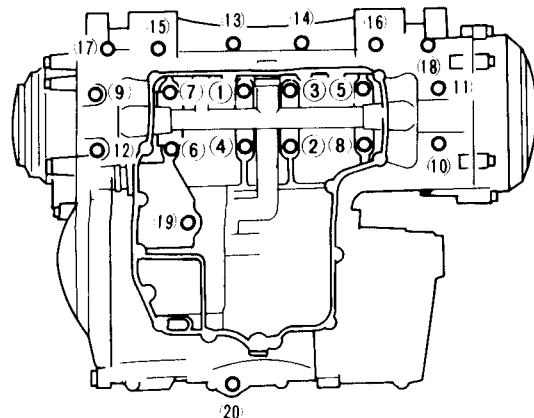


Crankcase Tightening Sequence:

Crankcase (Upper)



















Crankcase (Lower)



- ① ~ ⑫ , ③①    8 mm Bolt: 24 Nm (2.4 m•kg, 17 ft•lb)  
 ⑬ ~ ⑲ , ③② ~ ③⑤    6 mm Bolt: 12 Nm (1.2 m•kg, 8.7 ft•lb)

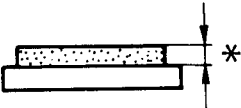
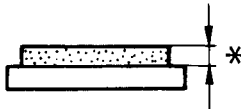
### TIGHTENING TORQUE

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m · kg	ft · lb	
Camshaft Cap	Flange bolt	M6	24	10	1.0	7.2	
Cylinder Head	Nut	M8	12	25	2.5	18	
Spark Plug	—	M10	4	13	1.3	9.4	
Cylinder Head Cover	Bolt	M6	8	10	1.0	7.2	
Blind Plug (Sand)	Screw	M12	6	37	3.7	27	
Blind Plug (Water)	Screw	M6	3	7	0.7	5.1	
Connecting Rod	Nut	M7	8	23	2.3	17	
Cam Chain Sprocket	Bolt	M7	4	24	2.4	17	
Cam Chain Tensioner	Bolt	M6	2	10	1.0	7.2	
Cam Chain Guide (Intake)	Bolt	M6	2	10	1.0	7.2	
Cam Chain Tensioner End	Cap bolt	M11	1	20	2.0	14	
Pipe Stopper	Bolt	M6	6	10	1.0	7.2	
Thermostat Housing Assembly	Flange bolt	M6	1	10	1.0	7.2	
Thermostat Housing Cover	Bolt	M6	2	10	1.0	7.2	
Radiator	Flange bolt	M6	2	7	0.7	5.1	
Water Pipe Joint	Bolt	M6	4	10	1.0	7.2	
Water Pump	Bolt	M6	2	10	1.0	7.2	
Water Pump Cover	Bolt	M6	2	10	1.0	7.2	
Radiator Cover	Screw	M5	4	5	0.5	3.6	
Oil Pump Housing	Screw	M6	1	7	0.7	5.1	
Oil Pump Mount	Bolt	M6	3	10	1.0	7.2	
Drain Plug	Bolt	M14	1	43	4.3	31	
Oil Delivery Pipe	Bolt	M10	2	20	2.0	14	
Carburetor Joint	Bolt	M6	8	10	1.0	7.2	
Exhaust Pipe	Nut	M6	8	10	1.0	7.2	
Muffler Bracket	Bolt	M8	1	20	2.0	14	
Exhaust Pipe Blind Plug (CO test)	Bolt	M6	4	10	1.0	7.2	
Crankcase	Flange bolt	M8	13	24	2.4	17	
Crankcase	Flange bolt	M6	21	12	1.2	8.7	
Oil baffle plate	Screw	M6	4	7	0.7	5.1	
Crankcase Cover (Left)	Bolt	M6	5	10	1.0	7.2	
Crankcase Cover (Right)	Bolt	M6	10	10	1.0	7.2	
Bearing Plate	Bolt	M6	2	10	1.0	7.2	
Generator Cover	Bolt	M6	5	10	1.0	7.2	
Starter Clutch Cover	Bolt	M6	7	10	1.0	7.2	
Starter Clutch	Flange bolt	M10	1	80	8.0	58	
Starter Clutch Outer and Starter Wheel	Screw	M6	3	10	1.0	7.2	
Pressure Plate	Bolt	M5	5	6	0.6	4.3	
Clutch Boss	Nut	M18	1	70	7.0	51	
Push Lever	Screw	M5	2	5	0.5	3.6	
Push Rod	Nut	M6	1	16	1.6	11	
Drive Sprocket	Nut	M18	1	70	7.0	51	
Stopper Plate	Flange bolt	M6	1	10	1.0	7.2	
A.C. Magneto	Bolt	M10	1	80	8.0	58	
Stator Coil	Bolt	M6	3	10	1.0	7.2	
Pickup Coil	Screw	M5	2	5	0.5	3.6	
Starter Motor	Bolt	M6	2	10	1.0	7.2	
Neutral Switch	Screw	M6	2	4	0.4	2.9	
Oil Level Switch	Flange bolt	M6	2	7	0.7	5.1	

## Chassis

Model			FZR400U/FZR400SUC							
Steering System: Steering Bearing Type			Taper Roller Bearing							
Front Suspension:			130 mm (5.12 in)							
Front Fork Travel			412 mm (16.2 in)							
Front Spring Free Length			408 mm (16.1 in)							
< Limit >			160 mm (6.3 in)							
Collar Length			4.4 N/mm (0.5 kg/mm, 25.2 lb/in)							
Spring Rate:			K1	6.6 N/mm (0.7 kg/mm, 37.5 lb/in)						
			K2	0.0 ~ 90 mm (0.0 ~ 3.54 in)						
Stroke			K1	90 ~ 130 mm (3.54 ~ 5.12 in)						
			K2	No						
Optional Spring			444 cm <sup>3</sup> (15.6 Imp oz, 15 US oz)							
Oil Capacity			92 mm (3.62 in)							
Oil Level (Fully Compression)			Bellow the top of inner fork tube without fork spring							
Oil Grade			Yamaha Fork Oil 10WT or equivalent							
Rear Suspension:			50 mm (1.97 in)							
Shock Absorber Travel			196.5 mm (7.74 in)							
Spring Free Length			186.5 mm (7.34 in)							
< Limit >			174 mm (6.85 in)							
Fitting Length			98.1 N/mm (10 kg/mm, 560 lb/in)							
Spring Rate			K1	0 ~ 50 mm (0.0 ~ 1.97 in)						
Stroke			K1	No						
Optional Spring										



Model	FZR400U/FZR400SUC
<b>Front Disc Brake:</b> Type Disc Outside Diameter x Thickness Pad Thickness Inner < Limit > * Pad Thickness Outer < Limit > *  Master Cylinder Inside Diameter Caliper Cylinder Inside Diameter:  Brake Fluid Type	Dual 282 x 4 mm (11.10 x 0.16 in) 5.5 mm (0.22 in) 0.5 mm (0.02 in) 5.5 mm (0.22 in) 0.5 mm (0.02 in)  15.87 mm (0.62 in) 42.85 mm (1.69 in)  DOT # 4 or DOT # 3
<b>Rear Disc Brake:</b> Type Disc Outside Diameter x Thickness Pad Thickness Inner < Limit > * Pad Thickness Outer < Limit > *  Master Cylinder Inside Diameter Caliper Cylinder Inside Diameter Brake Fluid Type	Single 210 x 5 mm (8.27 x 0.20 in) 5.5 mm (0.22 in) 0.5 mm (0.02 in) 5.5 mm (0.22 in) 0.5 mm (0.02 in)  14.0 mm (0.55 in) 38.18 mm (1.5 in) DOT # 4 or DOT # 3
<b>Clutch Lever:</b> Clutch Lever Free Play	10 ~ 15 mm (0.4 ~ 0.6 in)
<b>Brake Lever and Brake Pedal:</b> Brake Lever Free Play Brake Pedal Position	2 ~ 5 mm (0.08 ~ 0.20 in) 42 mm (1.7 in) Below the top of the footrest.

# MAINTENANCE SPECIFICATIONS

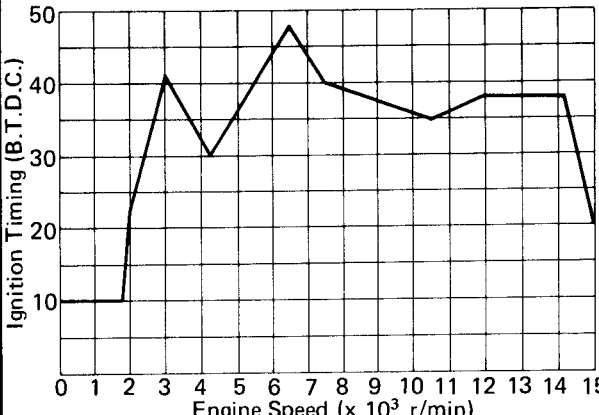
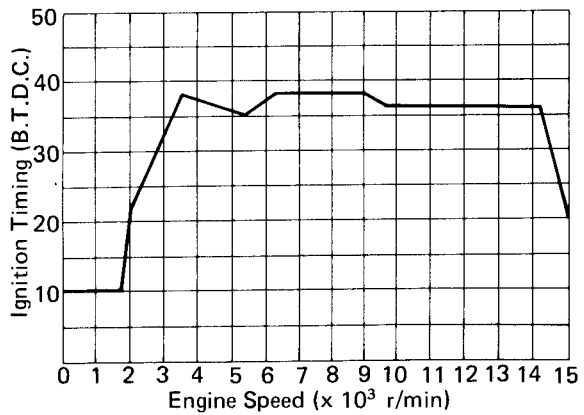
**SPEC**



Part to be tightened	Thread size	Tightening torque		
		Nm	m · kg	ft · lb
Front Axle and Outer Tube	M14 x 1.5	58	5.8	42
Rear Axle and Nut	M16 x 1.5	107	10.7	77
Handlebar Crown and Inner Tube	M8 x 1.25	26	2.6	19
Handlebar Crown and Steering Stem	M22 x 1.0	110	11.0	80
Brake Caliper (Front/Rear)	M10 x 1.25	35	3.5	25
Bleed Screw and Brake Caliper	M8 x 1.25	6	0.6	4.3
Brake Hose and Union Bolt	M10 x 1.25	26	2.6	19
Front Master Cylinder and Master Cylinder Holder	M6 x 1.0	9	0.9	6.5
Front Master Cylinder and Cylinder Cap	M5 x 0.8	2	0.2	1.4
Front Fender and Outer Tube	M6 x 1.0	6	0.6	4.3
Handlebar and Inner Tube	M8 x 1.25	23	2.3	17
Engine Mounting: Front	M10 x 1.25	55	5.5	40
Rear – Upper	M10 x 1.25	55	5.5	40
Rear – Lower	M10 x 1.25	45	4.5	32
Down Tube and Frame: Front	M10 x 1.25	60	6.0	43
Rear	M8 x 1.25	33	3.3	24
Footrest Bracket and Frame	M8 x 1.25	28	2.8	20
Pivot Axle and Nut	M14 x 1.5	90	9.0	65
Relay Arm and Frame	M10 x 1.25	40	4.0	29
Arm and Swingarm	M10 x 1.25	40	4.0	29
Arm and Relay Arm	M10 x 1.25	40	4.0	29
Swingarm and Frame	M10 x 1.25	40	4.0	29
Rear Shock Absorber	M10 x 1.25	40	4.0	29
Footrest and Footrest Bracket	M10 x 1.25	57	5.7	41
Rear Footrest Bracket and Frame	M8 x 1.25	20	2.0	14
Rear Master Cylinder and Rear Arm Bracket	M8 x 1.25	20	2.0	14
Cowling and Stay	M6 x 1.0	4	0.4	2.9
Tension Bar and Brake Caliper Bracket	M8 x 1.25	28	2.8	20
Front Fork Pinch Bolt	M8 x 1.25	20	2.0	14
Sprocket and Clutch Hub	M8 x 1.25	32	3.2	23
Brake Disc and Clutch Hub	M8 x 1.25	20	2.0	14
Inner Tube and Steering Stem	M8 x 1.25	22	2.2	16
Frame and Rear Frame: Upper	M10 x 1.25	64	6.4	46
Lower	M12 x 1.25	88	8.8	64



## Electrical

Model	FZR400U/FZR400SUC
Voltage: Ignition System: Ignition Timing (B.T.D.C.) Advanced Timing (B.T.D.C.)  Advancer Type 3BF: 	12V  10° at 1,300 r/min 48° at 6,500 r/min (3BF), 38° at 3,500 r/min (3FH) Electrical 3FH: 
T.C.I.: Pickup Coil Resistance (Color) T.C.I. Unit/Manufacturer	85 ~ 115Ω at 20°C (68°F) (White/Red — White/Black) TID14-53A/HITACHI (3BF) TID14-63A/HITACHI (3FH)
Ignition Coil: Model/Manufacturer Minimum Spark Gap Primary Winding Resistance Secondary Winding Resistance Spark Plug Cap Resistance	CM12-30/HITACHI 6 mm (0.24 in) 1.8 ~ 2.2Ω at 20°C (68°F) 9.6 ~ 14.4kΩ at 20°C (68°F) 10 kΩ
Charging System: Type	A.C. Magneto Generator
A.C. Generator: Model/Manufacturer Nominal Output Stator Coil Resistance	FL118-13/HITACHI 12V, 18A at 5,000 r/min 0.44 ~ 0.66Ω at 20°C (68°F)
Voltage Regulator: Type Model/Manufacturer No Load Regulated Voltage	Semi conductor — short circuit SH569/SHINDENGEN 14.3 ~ 15.3V
Battery: Capacity Specific Gravity	12V, 12AH 1.280

# MAINTENANCE SPECIFICATIONS

**SPEC**



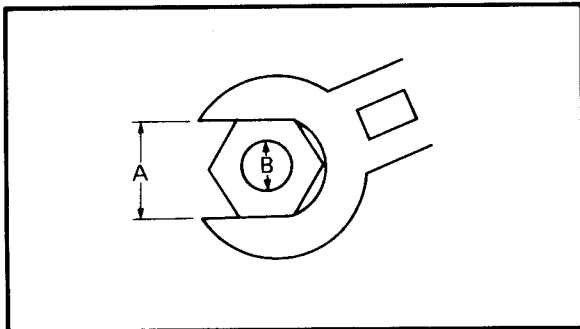
Model	FZR400U/FZR400SUC
Electrical Starter System:	
Type	Constant mesh type
Starter Motor:	
Model/Manufacturer	SM-7/MITSUBA
Output	0.4kw
Armature Coil Resistance	0 $\Omega$ at 20°C (68°F)
Brush — Overall Length	11 mm (0.43 in)
< Limit >	5 mm (0.20 in)
— Spring Force	540 ~ 660 g (19.05 ~ 23.28 oz)
Commutator Dia.	23 mm (0.91 in)
Wear Limit	22 mm (0.87 in)
Mica Undercut	1.8 mm (0.07 in)
Starter Switch:	
Model/Manufacturer	A104-128/HITACHI
Amperage Rating	100A
Horn:	
Type/	Plane Type/1 pcs.
Model/Manufacturer	MF-12/NIKKO
Maximum Amperage	1.5A
Flasher Relay (Relay Assembly):	
Type	Semi transistor type
Model/Manufacturer	FX257N/NIPPON DENSO
Self Cancelling Device	Yes
Flasher Frequency	60 ~ 120 cycle/min
Wattage	27W x 2 pcs + 3.4W
Sidestand Relay:	
Model/Manufacturer	G4MW-1121T-010-Y17/OMRON
Coil Winding Resistance	67.5 ~ 82.5 $\Omega$ at 20°C (68°F)
Diode	No
Oil Level Switch:	
Model/Manufacturer	1WG/NIPPON DENSO
Starting Circuit Cut-Off Relay:	
Model/Manufacturer	G4MW/OMRON
Coil Winding Resistance	67.5 ~ 82.5 $\Omega$ at 20°C (68°F)
Diode	No
Fuel Pump Relay:	
Model/Manufacturer	G4MW/OMRON
Coil Winding Resistance	67.5 ~ 82.5 $\Omega$ at 20°C (68°F)
Color Code	Black
Electric Fan:	
Model/Manufacturer	NAAB08/NIPPON DENSO
Thermostat Switch:	
Model/Manufacturer	47X/NIPPON THERMOSTAT
Thermo Unit:	
Model/Manufacturer	11H/NIPPON SEIKI
Circuit Breaker:	
Type	Fuse
Amperage for Individual Circuit x Quantity:	
MAIN	30A x 1
HEADLIGHT	10A x 1
SIGNAL	10A x 1
IGNITION	10A x 1
RESERVE	10A x 1, 30A x 1



## GENERAL TORQUE SPECIFICATIONS

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specifications for special components or assemblies are included in the applicable sections of this book. To avoid warpage, tighten multi-fastener assemblies in a crisscross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications call for clean, dry threads. Components should be at room temperature.

A (Nut)	B (Bolt)	General torque specifications		
		Nm	m·kg	ft·lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13.0	94



A: Distance across flats

B: Outside thread diameter





























## DEFINITION OF UNITS

Unit	Read	Definition	Measure
mm	millimeter	$10^{-3}$ meter	Length
cm	centimeter	$10^{-2}$ meter	Length
kg	kilogram	$10^3$ gram	Weight
N	Newton	$1 \text{ kg} \times \text{m/sec}^2$	Force
Nm	Newton meter	$\text{N} \times \text{m}$	Torque
m·kg	Meter kilogram	$\text{m} \times \text{kg}$	Torque
Pa	Pascal	$\text{N/m}^2$	Pressure
N/mm	Newton per millimeter	N/mm	Spring rate
L	Liter		Volume or Capacity
cm <sup>3</sup>	Cubic centimeter		Volume or Capacity
r/min	Rotation per minute		Engine Speed























## LUBRICATION POINT AND GRADE OF LUBRICANT

## ENGINE

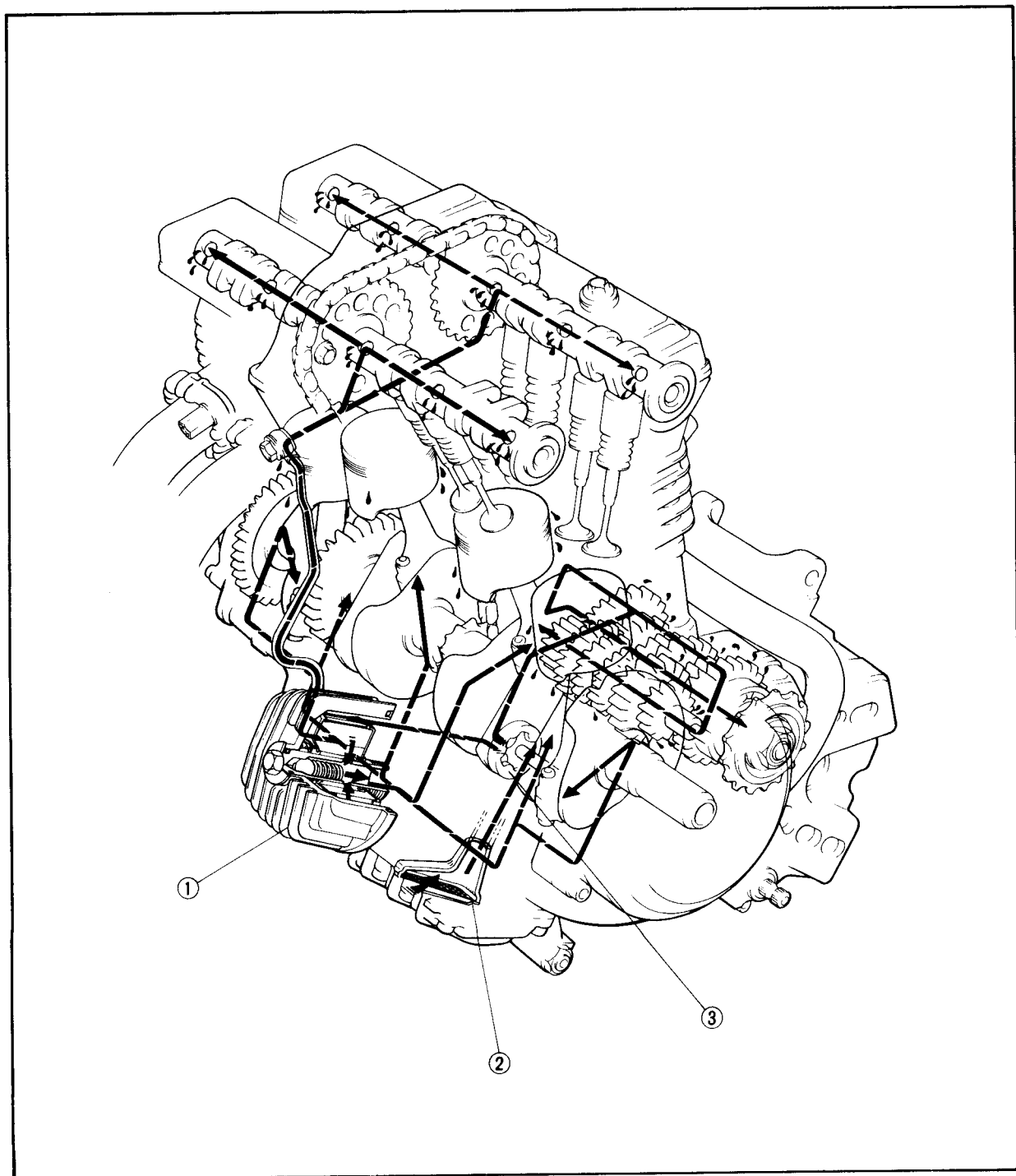
Lubrication Point	Symbol
Oil seal lip	
O-Ring	
Bearing	
Piston surface	
Piston pin	
Cylinder head bolt	
Crankshaft pin	
Crankshaft journal	
Connecting rod bolt/Nut	
Camshaft cam lobe/Journal	
Valve stem (IN, EX)	
Valve stem end (IN, EX)	
Valve lifter	
Water pump impeller shaft	
Oil pump rotor (Inner/Outer), housing	
Oil strainer assembly	
Idle gear surface/Bearing	
Starter idle gear	
Starter idle gear shaft	
Primary driven gear	
Transmission gear (Wheel/Pinion)	
Axe (Main/Drive)	
Push lever assembly	
Push rod	
Shift cam	
Shift fork/Guide bar	
Shift shaft assembly	
Neutral switch O-Ring	

**CHASSIS**

Lubrication Point	Symbol
Steering bearing (Upper/Lower)	
Wheel bearing/Axle	
Front wheel oil seal (Right/Left)	
Rear wheel oil seal	
Clutch hub oil seal	
Clutch hub fitting area	
Rear brake pedal shaft	
Change pedal	
Side stand sliding surface	
Tube guide (Throttle grip) inner surface	
Brake lever bolt, sliding surface	
Clutch lever bolt, sliding surface	
Rear shock absorber (Upper/Lower)	
Swingarm pivot bearing	
Pivot shaft	
Arm bearing	
Thrust cover (Inner)	
Swingarm bearing (Inner)	
Rear footrest ball	
Rear footrest pin	

## LUBRICATION DIAGRAM

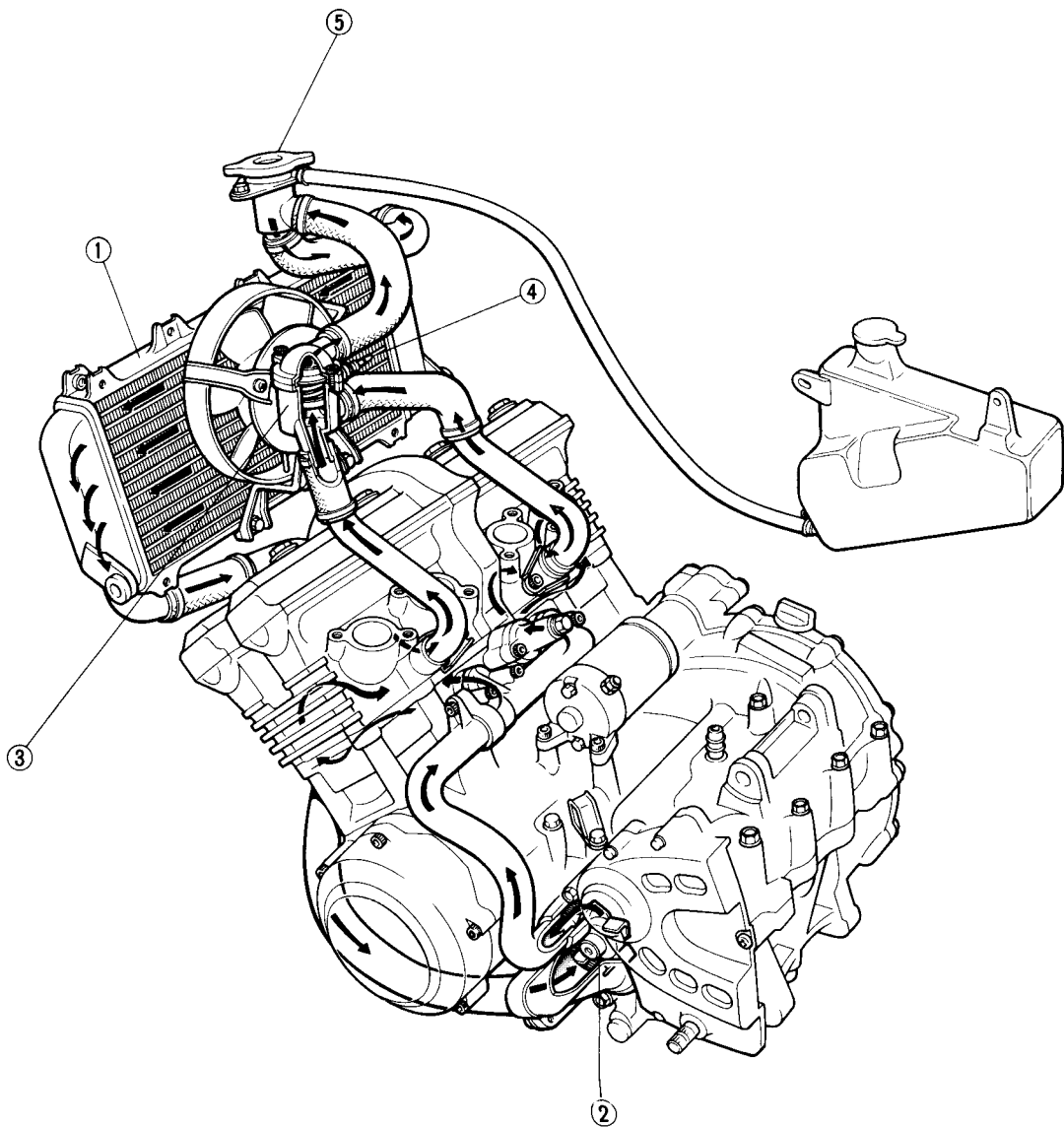
- ① Oil filter
- ② Oil strainer
- ③ Oil pump





## COOLANT DIAGRAM

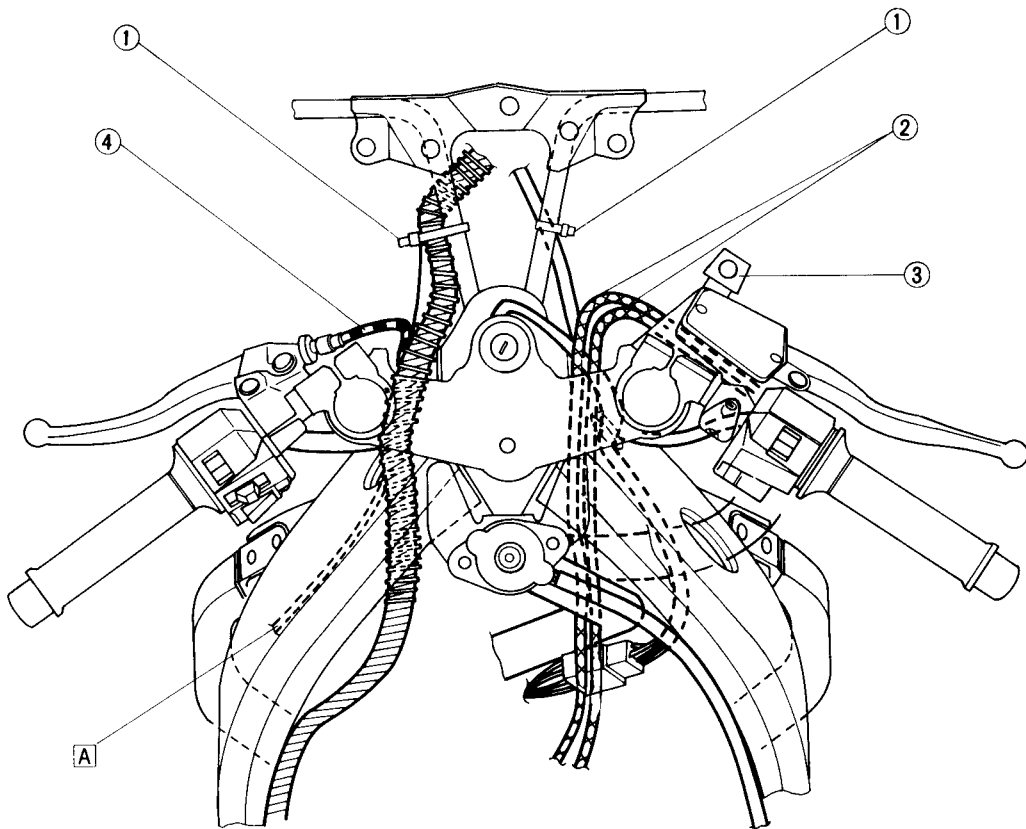
- ① Radiator
- ② Water pump
- ③ Thermostat housing
- ④ Thermostatic valve
- ⑤ Radiator cap



## CABLE ROUTING (1)

- ① Band
- ② Throttle cables
- ③ Brake hose
- ④ Clutch cable

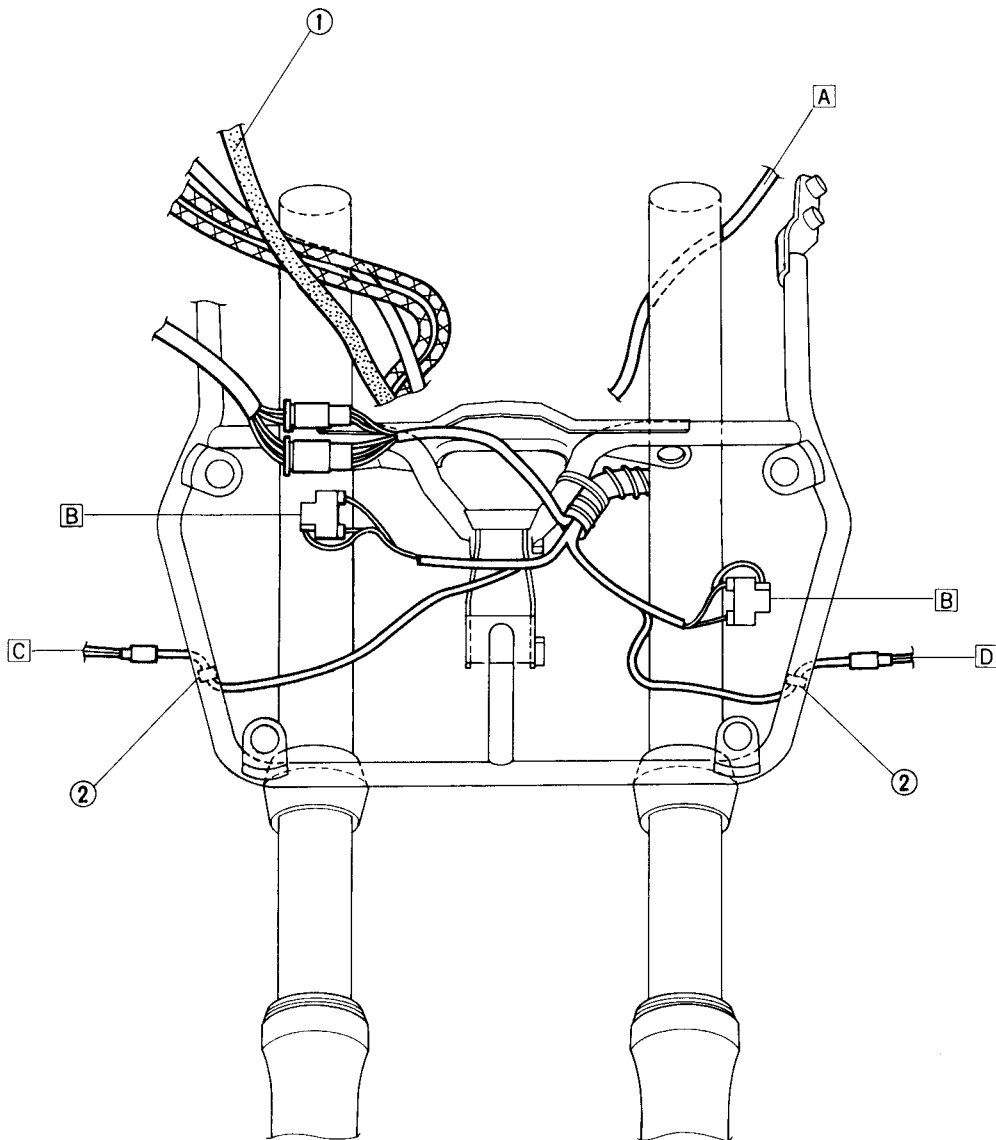
**A** Insert the clutch cable into the frame inner hole.



**CABLE ROUTING (2)**

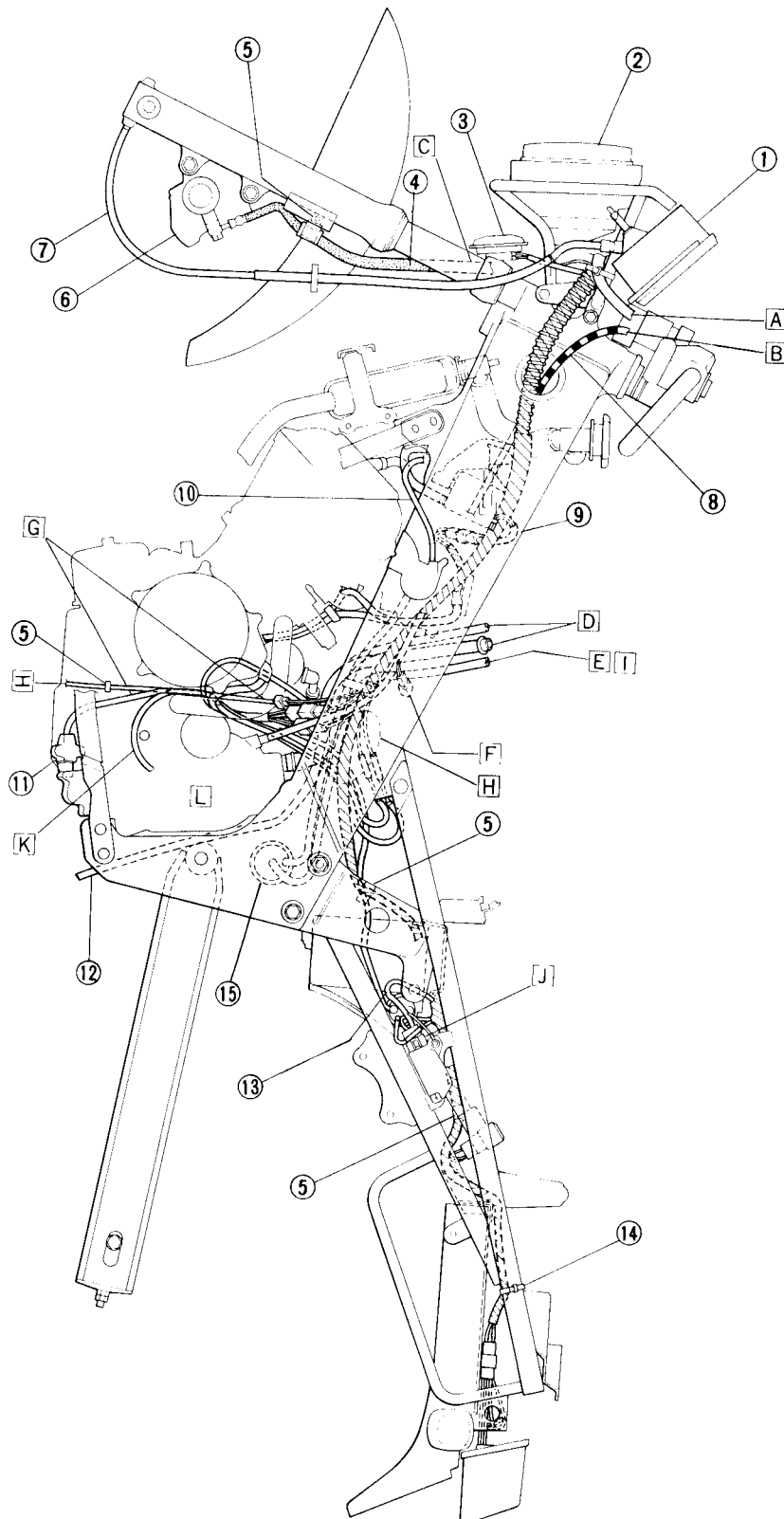
- ① Brake hose
- ② Clamp

- A Pass the handlebar switch lead (Left) behind the inner tube
- B To headlight unit
- C To flasher light (Left)
- D To flasher light (Right)





## CABLE ROUTING (3)



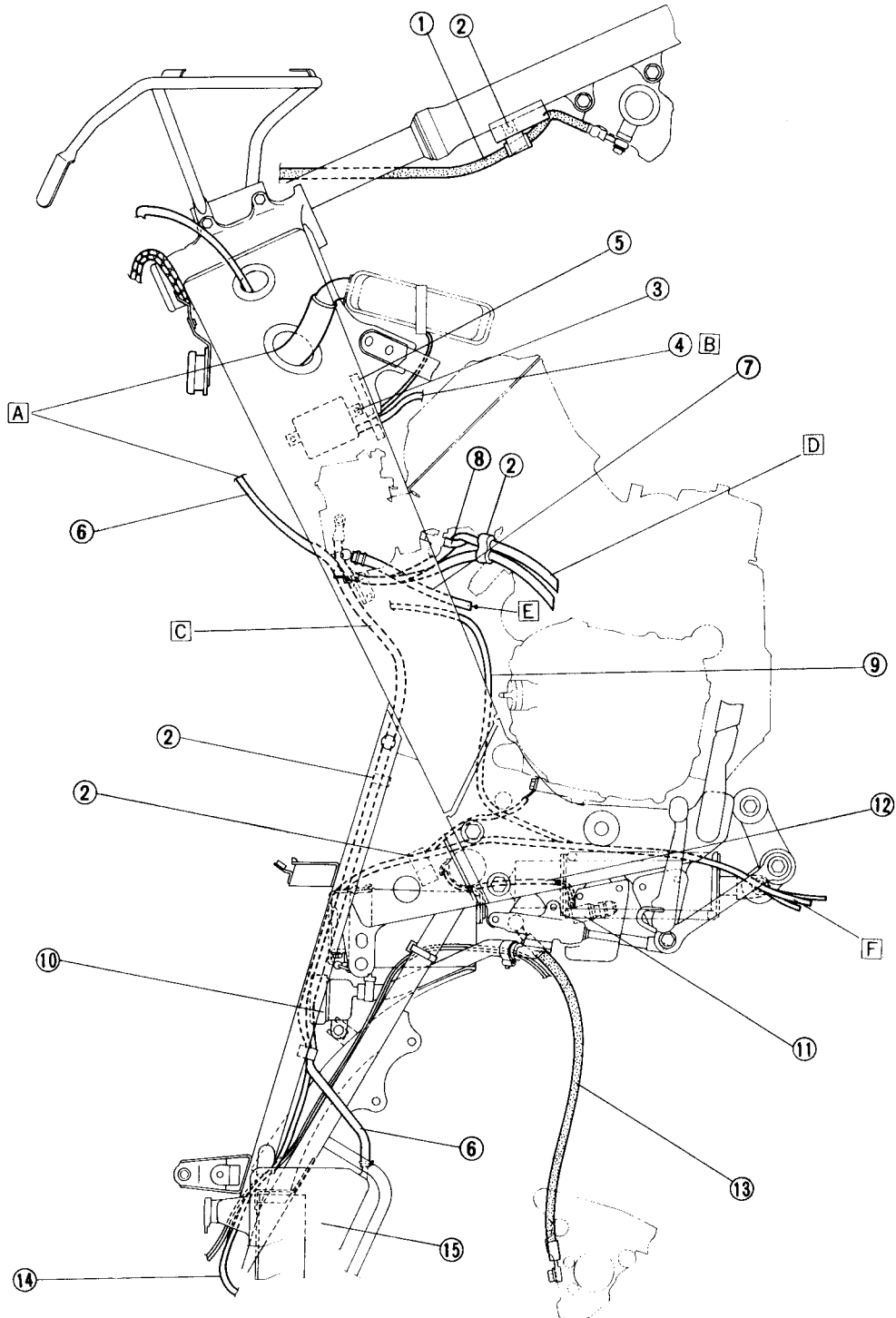


- ① Speedometer assembly
- ② Headlight unit
- ③ Horn
- ④ Brake hose
- ⑤ Clamp
- ⑥ Front brake caliper (Left)
- ⑦ Speedometer cable
- ⑧ Clutch cable
- ⑨ Ignition coil lead (Left)
- ⑩ Starter cable
- ⑪ Sidestand switch
- ⑫ Air vent hose
- ⑬ Rectifier/Regulator lead
- ⑭ Band
- ⑮ Canister (For California only)

- A To handlebar switch (Left)
- B To clutch lever
- C Pass the speedometer cable outside the inner tube.
- D To air filter case
- E To fuel tank
- F To fuel pump
- G Pass the sidestand switch lead inside the water pipe.
- H To oil level gauge
- I Get these cords together, put them in the recess on the left inside of the frame, and place the cover on them.
- J Fasten the lead and the rectifier/regulator together.
- K Fasten the lead under the water pump installing bolt.
- L To neutral lead



## CABLE ROUTING (4)



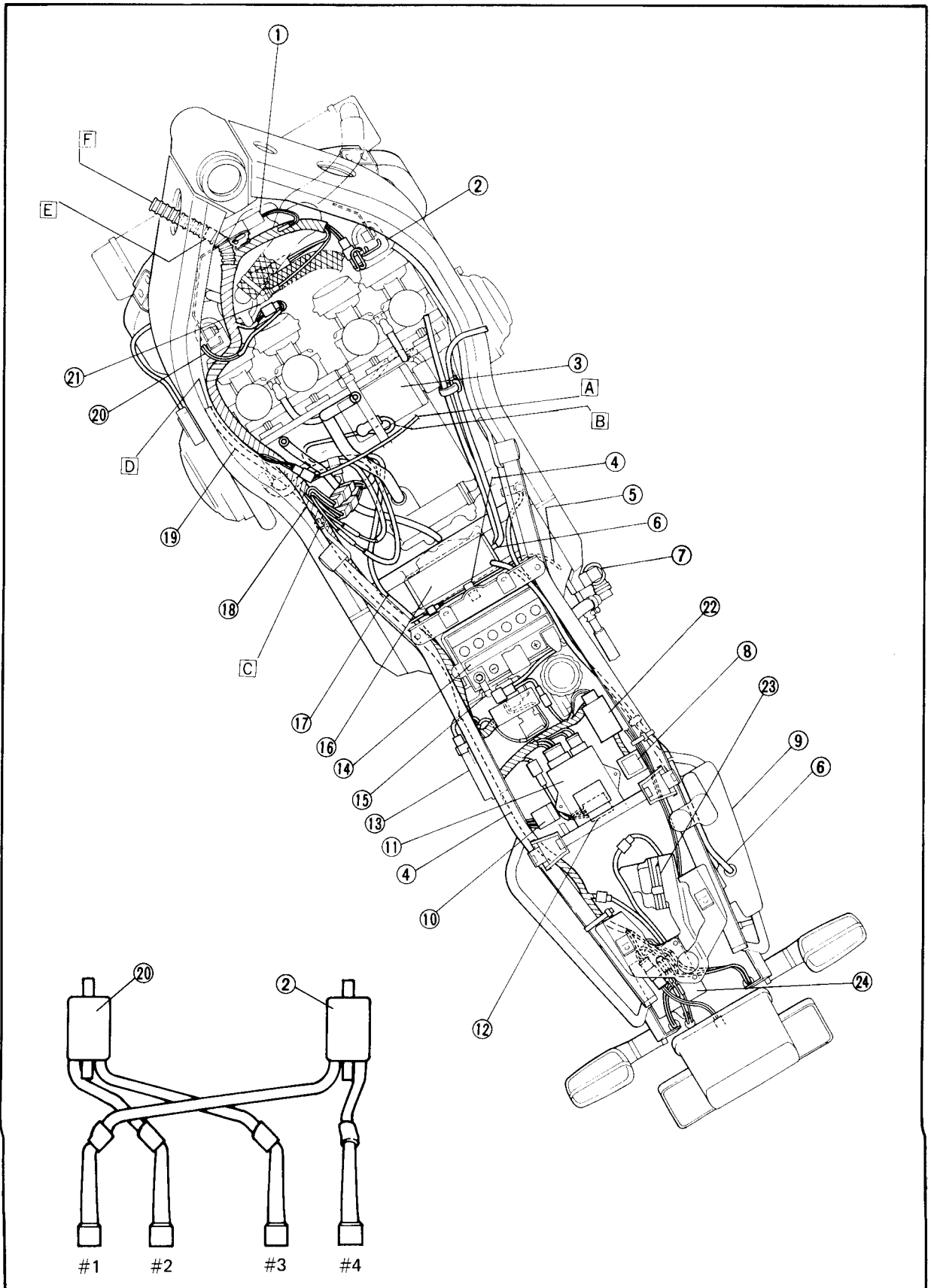


- ① Brake hose (Right)
- ② Clamp
- ③ Ignition coil (Right)
- ④ Spark lead (Right)
- ⑤ Air guide
- ⑥ Recovery tank hose
- ⑦ Fuel hose
- ⑧ Water pipe
- ⑨ Breather hose (Fuel tank)
- ⑩ Rear brake reservoir tank
- ⑪ Rear brake switch
- ⑫ Rear brake switch lead
- ⑬ Rear brake hose
- ⑭ Breather hose (Recovery tank)
- ⑮ Recovery tank

- A To radiator cap assembly
- B Pass the spark lead and fan motor lead along the air guide groove.
- C Pass the recovery tank hose on the fuel tank bracket.
- D Pass on the inside of the water pipe the carburetor air vent hose on the side of the #1 and #2 cylinders, and clamp this hose together with the carburetor air vent hose on the side of the #3 and #4 cylinders. Then let these hoses go down in front of the starter motor.
- E To fuel pump.
- F Pass breather hose (Fuel tank), Breather hose (Recovery tank) and carburetor air vent hose inside the relay arm.



## CABLE ROUTING (5)





- ① Fuel pump relay
- ② Ignition coil (Right)
- ③ Starter motor
- ④ Clamp
- ⑤ Rear brake switch lead
- ⑥ Breather hose (Recovery tank)
- ⑦ Rear brake master cylinder
- ⑧ Main fuse
- ⑨ Recovery tank
- ⑩ Sidestand relay
- ⑪ Digital ignitor unit
- ⑫ Diode assembly
- ⑬ Rectifier/Regulator
- ⑭ Battery
- ⑮ Battery (–) terminal
- ⑯ Canister (For California only)
- ⑰ Starter lead
- ⑱ Generator lead
- ⑲ Clutch cable
- ⑳ Ignition coil (Left)
- ㉑ Thermo unit
- ㉒ Relay assembly
- ㉓ Exup servo motor (For California only)
- ㉔ Exup control unit (For California only)

- A To fuel pump
- B Pass the starter motor lead under the starter motor.
- C Pass on the inside of the water pipe the carburetor air vent hose on the side of the #1 and #2 cylinders, and clamp this hose together with the carburetor air vent hose on the side of the #3 and #4 cylinders. Then let these hoses go down in front of the starter motor.
- D To clutch lever
- E Locate the wire harness with its white taped portion in line with the hole on the inside of the tank rail.
- F To headlight unit

## PERIODIC INSPECTIONS AND ADJUSTMENTS

### INTRODUCTION

This chapter includes all information necessary to perform recommended inspections and adjustments. These preventive maintenance procedures, if followed, will ensure more reliable vehicle operation and a longer service life. The need for costly overhaul work will be greatly reduced. This information applies to vehicles already in service as well as new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

### MAINTENANCE INTERVALS CHART

Proper periodic maintenance is important. Especially important are the maintenance services related to emissions controls. These controls not only function to ensure cleaner air but are also vital to proper engine operation and maximum performance. In the following maintenance tables, the services related to emissions control are grouped separately.

#### PERIODIC MAINTENANCE EMISSION CONTROL SYSTEM

No.	Item	Remarks	Initial	Odometer readings				
			1,000 km or 1 month (600 mi)	<sup>**1</sup> 7,000 km or 7 months (4,400mi)	<sup>**2</sup> 13,000 km or 13 months (8,200mi)	19,000 km or 19 months (12,000mi)	<sup>**3</sup> 25,000 km or 25 months (15,800mi)	31,000 km or 31 months (19,600mi)
1*	Valve clearance	Check and adjust valve clearance when engine is cold.					○	
2	Spark plug	Check condition. Adjust gap and clean. Replace at 13,000 km (or 13 months) and thereafter every 12,000 km (or 12 months).		○	Replace	○	Replace	○
3*	Crankcase ventilation system	Check ventilation hose for cracks or damage. Replace if necessary.		○	○	○	○	○
4*	Fuel line	Check fuel hose and vacuum pipe for cracks or damage. Replace if necessary.		○	○	○	○	○
5*	Fuel filter	Replace initial 31,000 km (19,600 mi) and thereafter every 30,000km (19,000mi).						Replace
6*	Exhaust system	Check for leakage. Retighten if necessary. Replace gasket(s) if necessary.		○	○	○	○	○
7*	Carburetor synchronization	Adjust synchronization of carburetors.	*○	○	○	○	○	○
8*	Idle speed	Check and adjust engine idle speed. Adjust cable free play.		○	○	○	○	○

\*It is recommended that these items be serviced by a Yamaha dealer or other qualified mechanic.

#### NOTE:

For father odometer reading, repeat the above maintenance at the period established; <sup>\*\*1</sup>: Every 6,000 km (3,800 mi), <sup>\*\*2</sup>: Every 12,000 km (7,600 mi), and <sup>\*\*3</sup>: Every 24,000 km (15,200 mi) intervals.

# MAINTENANCE INTERVALS CHART



## GENERAL MAINTENANCE/LUBRICATION

No.	Item	Remarks	Type	Initial	Odometer readings					
				1,000 km or 1 month (600 mi)	**1 7,000 km or 7 months (4,400 mi)	**2 13,000 km or 13 months (8,200 mi)	19,000 km or 19 months (12,000 mi)	**3 25,000 km or 25 months (15,800 mi)	31,000 km or 31 months (19,600 mi)	
1	Engine oil	Warm-up engine before draining	*1)Yamalube 4-cycle oil or SAE 20W40 type "SE" motor oil *2)SAE 10W30 type "SE" motor oil	○	○	○	○	○	○	
2*	Oil filter	Replace.	—	○		○		○		
3*	Air filter	Clean with compressed air. Replace if necessary.	—		○	○	○	○	○	
4	Cooling system	Check hose for cracks or damage, replace if necessary.	—		○	○	○	○	○	
		Replace coolant 24 months.	Ethylene glycol anti-freeze coolant					Replace		
5*	Brake system	Adjust free play. Replace pads if necessary.	—	○	○	○	○	○	○	
6	Drive chain	Check chain condition. Adjust and lubricate chain thoroughly.	SAE 30W-50W motor oil.		Every 500 km (300 mi)					
7	Control and meter cable	Apply chain lube thoroughly.	Yamaha chain and cable lube or SAE 10W30 motor oil.	○	○	○	○	○	○	
8*	Rear arm pivot shaft and rear suspension link pivots.	Apply grease lightly.	Lithium soap base grease.					○		
9	Brake/clutch lever pivot shaft	Apply chain lube lightly.	Yamaha chain and cable lube or SAE 10W30 motor oil.		○	○	○	○	○	
10	Brake pedal and change pedal shaft	Lubricate. Apply chain lube lightly.	Yamaha chain and cable lube or SAE 10W30 motor oil.		○	○	○	○	○	

# MAINTENANCE INTERVALS CHART

**INSP**  
**ADJ**



No.	Item	Remarks	Type	Initial	Odometer readings					
				1,000 km or 1 month (600 mi)	**1 7,000 km or 7 months (4,400 mi)	**2 13,000 km or 13 months (8,200 mi)	19,000 km or 19 months (12,000 mi)	**3 25,000 km or 25 months (15,800 mi)	31,000 km or 31 months (19,600 mi)	
11*	Side stand pivot	Check operation and lubricate. Apply chain lube lightly.	Yamaha chain and cable lube or SAE 10W30 motor oil.		○	○	○	○	○	
12*	Front fork oil	Check operation and leakage.	Yamaha Fork Oil 10WT or equivalent		○	○	○	○	○	
13*	Steering bearing	Check bearings assembly for looseness. Moderately repack every 24,000 km (15,000 mi).	Medium weight wheel bearing grease.		○	○	○	Repack	○	
14*	Wheel bearings	Check bearings for smooth rotation.	—		○	○	○	○	○	
15	Battery	Check specific gravity and breather pipe for proper operation.	—		○	○	○	○	○	
16*	Sidestand switch	Check and clean or replace if necessary.	—	○	○	○	○	○	○	

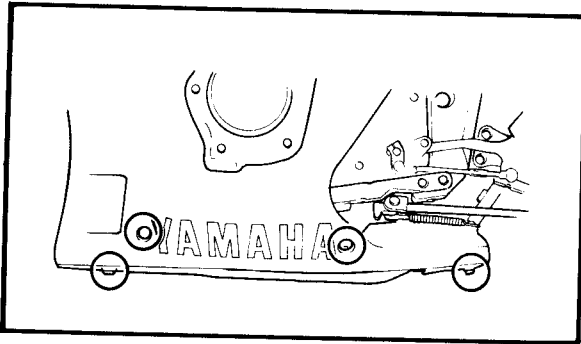
\*1) If ambient temperature does not go below 5°C (41°F).

\*2) If ambient temperature does not go below 15°C (59°F).

\* It is recommended that these items be serviced by a Yamaha dealer or other qualified mechanic.

## NOTE:

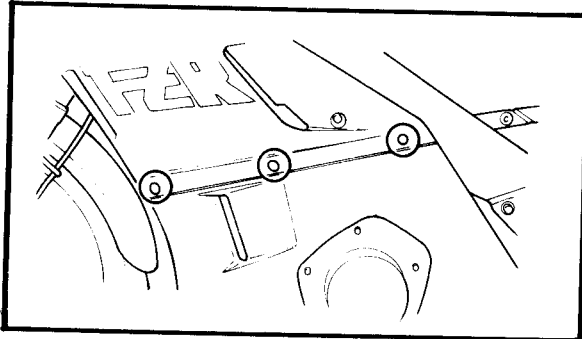
For farther odometer reading, repeat the above maintenance at the period established, \*\*1: Every 6,000 km (3,800 mi), \*\*2: Every 12,000 km (7,600 mi) and \*\*3: Every 24,000 km (15,200 mi) intervals.



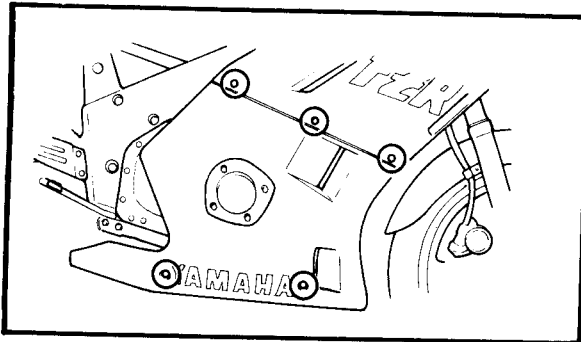
## COWLING REMOVAL AND INSTALLATION

### REMOVAL

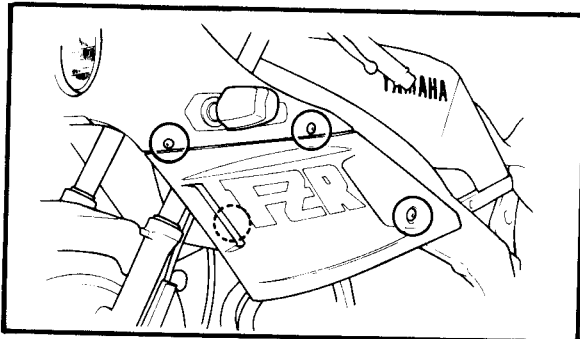
1. Remove:
  - Lower cowling (Left)



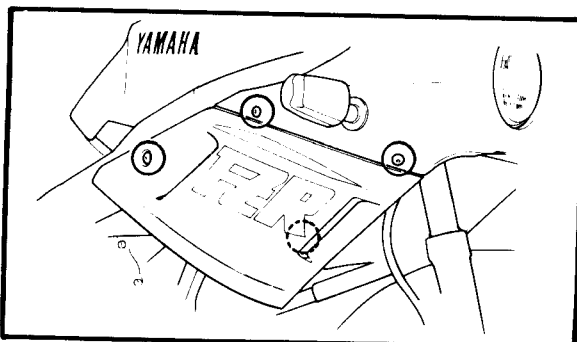
2. Remove:
  - Lower cowling (Right)



3. Remove:
  - Center cowling (Left)



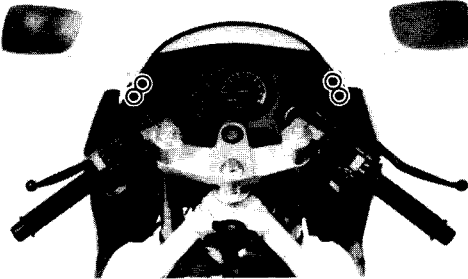
4. Remove:
  - Center cowling (Right)





## 5. Remove:

- Rear view mirrors (Left and right)

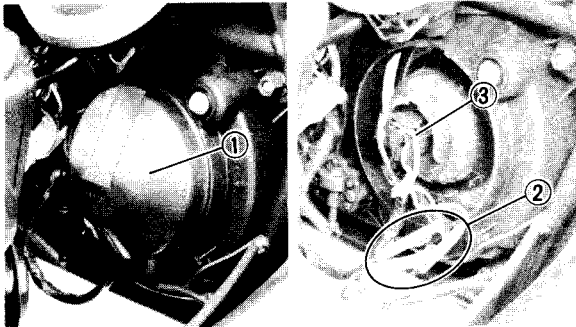


## 6. Remove:

- Headlight covers (Left and right) ①

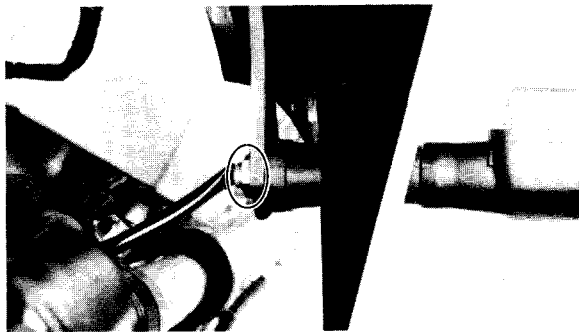
## 7. Disconnect:

- Flasher light leads (Left and right) ②
- Headlight coupler ③



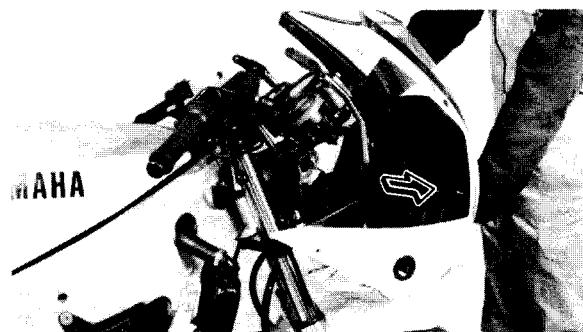
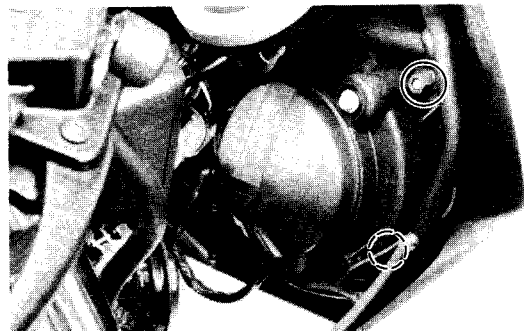
## 8. Remove:

- Flasher lights (Left and right)

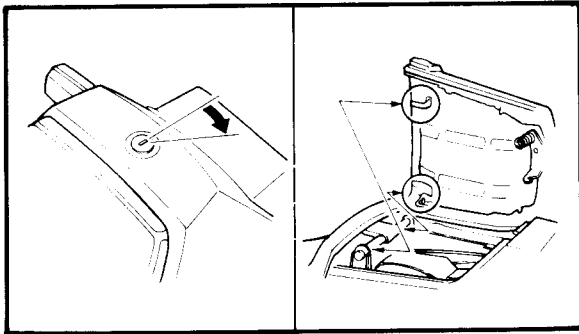


## 9. Remove:

- Upper cowlings



## COWLINGS REMOVAL AND INSTALLATION

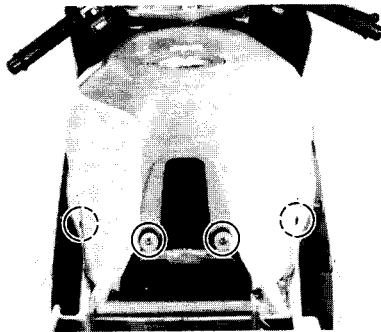
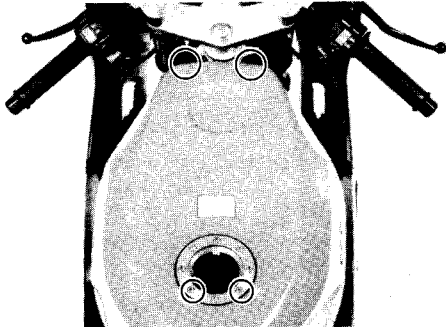


10. Remove:

- Seat

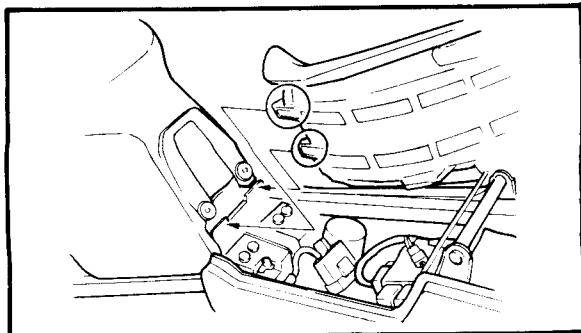
**NOTE:** \_\_\_\_\_

To open the seat lock, insert the key in the lock and turn it clockwise.



11. Remove:

- Top cover



### INSTALLATION

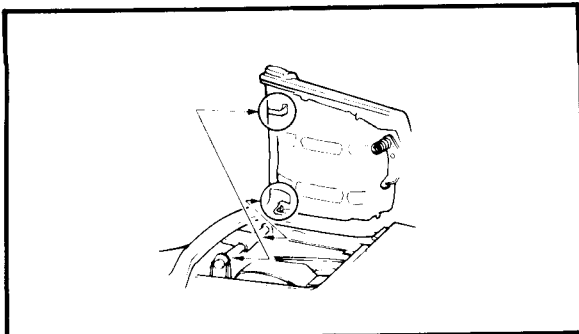
Reverse the "REMOVAL" procedure.  
Note the following points.

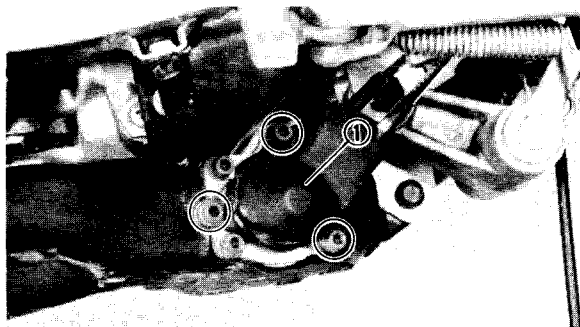
1. Install:

- Seat

**NOTE:** \_\_\_\_\_

- Make sure that the seat is securely fitted.
- When reinstalling the seat, insert the lobes on the seat front into the receptacles on the frame, then push down the seat.





## ENGINE

### EXUP CABLE ADJUSTMENT (For California only)

#### 1. Remove:

- Lower cowling (Left)
- Seat

Refer to the "COWLINGS REMOVAL AND INSTALLATION – REMOVAL" section.

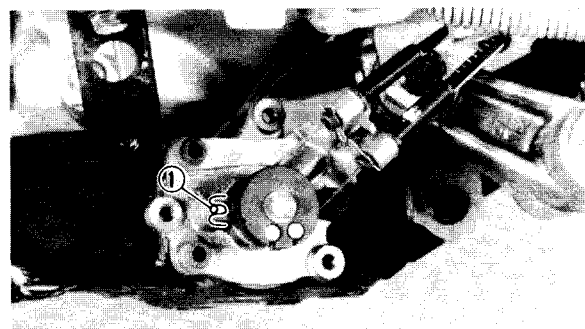
#### 2. Remove:

- Valve cover ①

#### 3. Turn on the main switch.

#### NOTE:

If does not operate EXUP servo motor, refer to the "YAMAHA EXHAUST VARIABLE VALVE SYSTEM" section in the CHAPTER 8.

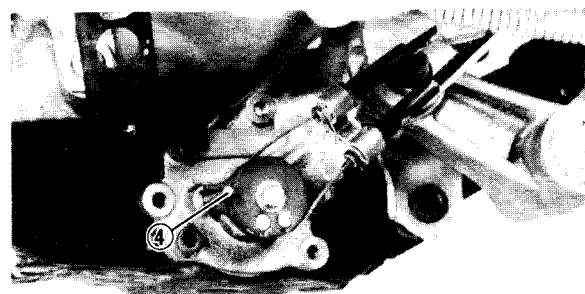
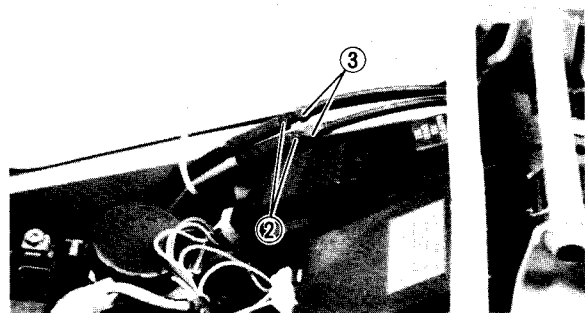


#### 4. Check:

- Alignment mark ①
- Not aligned → Adjust EXUP cables.

#### 5. Adjust:

- EXUP cables



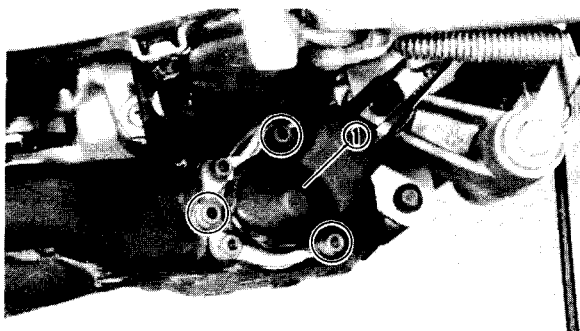
#### Adjustment steps:

- Loosen both locknuts ② and turn in both adjuster ③ .
- Insert a [ $\phi 4$  mm ( $\phi 0.16$  in)] pin ④ through the aligning indent in the pulley and into the hole.
- Turn both adjusters, counterclockwise so that the cables free play becomes Zero mm (Zero in) with fingers.
- Turn both adjuster 1/2 turn clockwise.
- Tighten the locknuts.




**Locknuts:**  
8 Nm (0.8 m·g, 5.8 ft·lb)

- Remove the pin.
- Turn on the main switch and, check that the alignment mark is aligned. If not, repeat the above step.



7. Install:

- Valve cover ①

	<b>Bolts (Valve Cover):</b> <b>10 Nm (1.0 m·kg, 7.2 ft·lb)</b>
---	---

## VALVE CLEARANCE ADJUSTMENT

### ⚠ WARNING:

The engine must be cool before servicing the valve clearance.

### NOTE:

Measure and adjust valve clearance when piston is at TDC on compression stroke.

## REMOVAL

1. Remove:

- Lower cowlings (Left and Right)
- Center cowlings (Left and Right)
- Seat

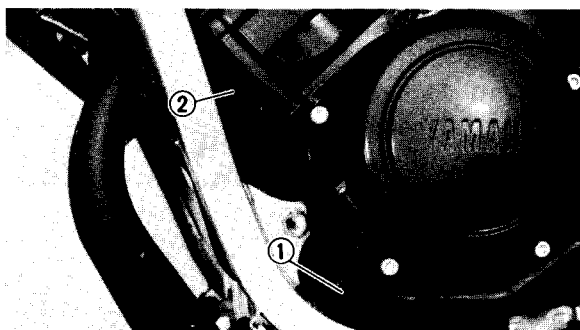
Refer to the "COWLING REMOVAL AND INSTALLATION — REMOVAL" section.

2. Remove:

- Fuel tank

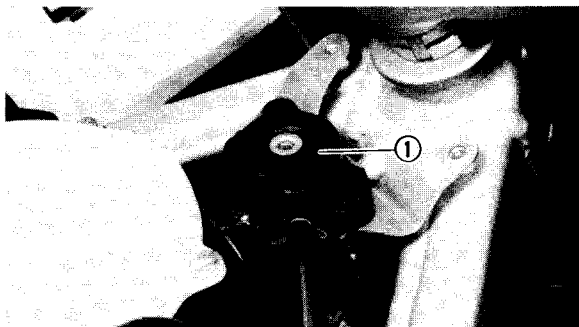
Refer to the "CARBURETOR — REMOVAL" section in the CHAPTER 6.

3. Place a drain pan under the drain bolts.

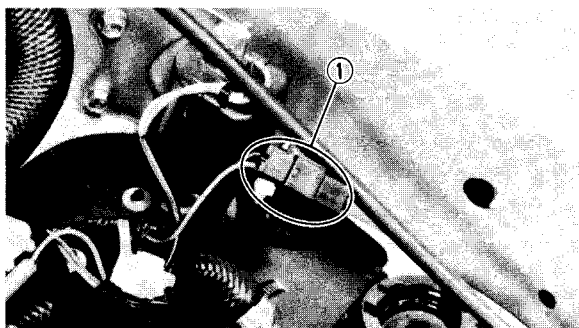


4. Remove:

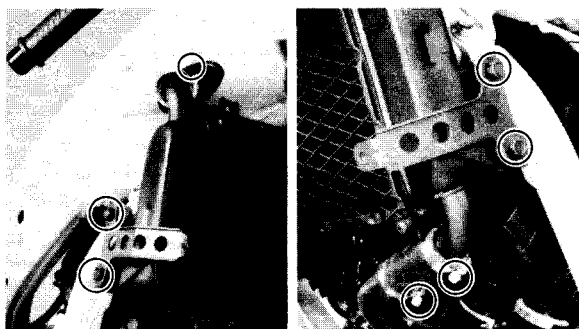
- Drain bolt (Outlet pipe) ①
- Drain bolt (Cylinder) ②



5. Remove:
  - Radiator cap ①



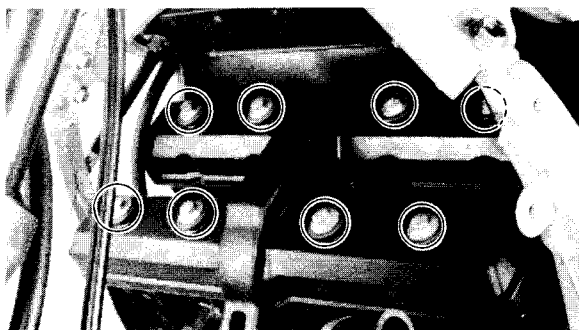
6. Drain:
  - Cooling systemRefer to the "COOLANT REPLACEMENT" section.



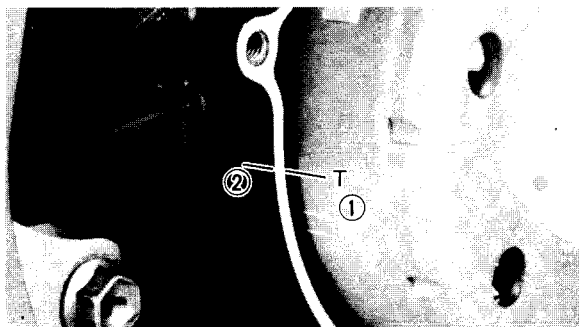
7. Disconnect:
  - Fan motor coupler ①

8. Disconnect:
  - Hose (Radiator – Inlet)
  - Hose (Radiator – Outlet)

9. Remove:
  - Radiator



10. Remove:
  - Spark plug leads
  - Cylinder head cover
  - Generator cover



## Valve Clearance Measurement

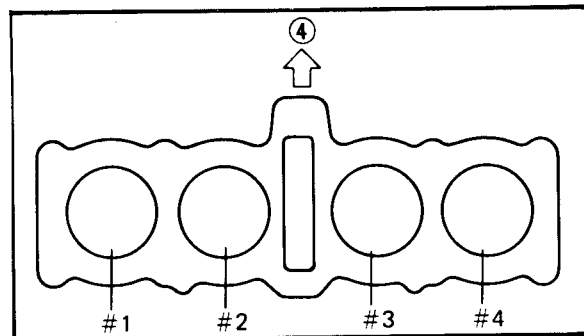
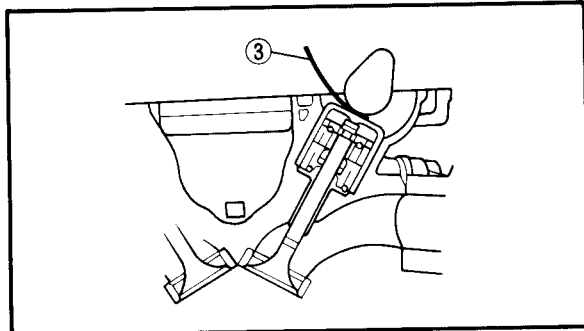
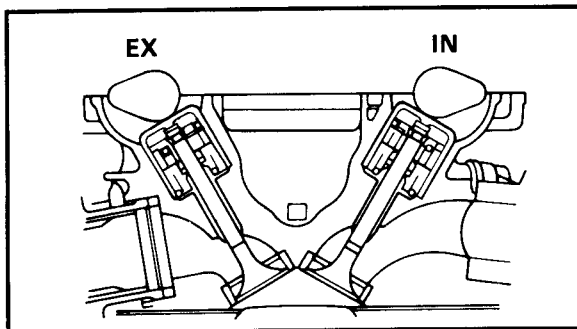
1. Measure:
  - Valve clearance

### Valve clearance measurement steps:

- Turn the crankshaft counterclockwise.
- Align the "T" mark ① on the magneto with the crankcase end ② when #1 piston is at TDC on compression stroke.

# VALVE CLEARANCE ADJUSTMENT

**INSP  
ADJ**



		0°	180°	360°	540°	720°
A		----- ----- ----- -----				
B	#1	(5)				
	#2		(5)			
	#3				(5)	
	#4			(5)		

## NOTE:

Compression T.D.C. can be found when the cam lobes are apart from each other, as shown.

- Measure the valve clearance using Thickness Gauge (3).
- Out of specification → Adjust valve clearance.



**Intake Valve (Cold):**  
0.11 ~ 0.20 mm (0.004 ~ 0.008 in)  
**Exhaust Valve (Cold):**  
0.21 ~ 0.30 mm (0.008 ~ 0.012 in)

- Record the measured amount if the clearance is incorrect.
- Measure the valve clearance in sequence, for #2, #4 and #3 cylinders.
- Out of specification → Adjust valve clearance.

## Firing Sequence:

#1 → #2 → #4 → #3

(4) Front

## NOTE:

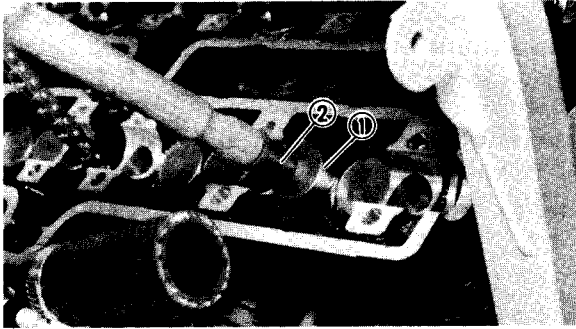
Turn crankshaft each degrees counterclockwise from #1 Cylinder TDC.

#2 Cylinder	180 degrees
#4 Cylinder	360 degrees
#3 Cylinder	540 degrees

- (A) Crankshaft counterclockwise turning angle
- (B) Cylinder
- (5) Combustion

## Adjusting Pad Replacement

- Remove:
  - Cam chain tensioner
  - Chain guide (Upper)
  - Chain guide (Exhaust side)
  - Cam caps
  - Cam chain
  - Cam shafts



## NOTE:

Refer to the "ENGINE DISASSEMBLY CAM-SHAFT AND CYLINDER HEAD – Procedure 2", in the CHAPTER 4.

Fasten the wire to the cam chain to prevent it from falling into the crankcase.

## 2. Remove:

- Valve lifter ①

- Pad

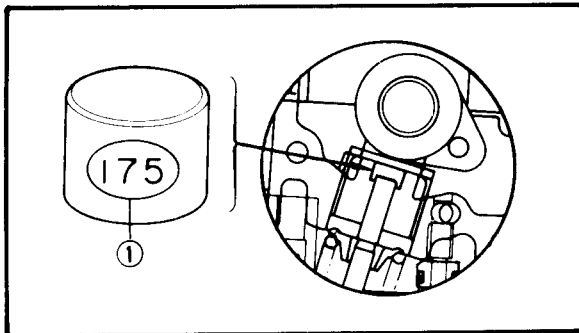
Use valve lapper ②

Record the installed pad number.

## NOTE:

- Place a piece of rug in the cam chain room to prevent the pad from falling into the crankcase.

- Remove the rug after adjustment.



## 3. Select:

- Proper pad

### Proper pad selection steps:

- Select the proper pad from the table:

Pad range		Pad Availability: 25 increments
No. 120 ~ No. 240	1.20 mm (0.047 in) 2.40 mm (0.094 in)	Pads stepped in 0.05 mm (0.002 in) increments

## NOTE:

Thickness ① of each pad is marked on the pad side wall.

- Round off the hundredths digit of the installed pad number to the nearest 0.05 mm increment.

Hundredths digit	Rounded valve
0 or 2	0
5	(NOT ROUNDED OFF)
8	10

## EXAMPLE:

Installed pad number = 148 (1.48 mm)

Rounded off digit = 150

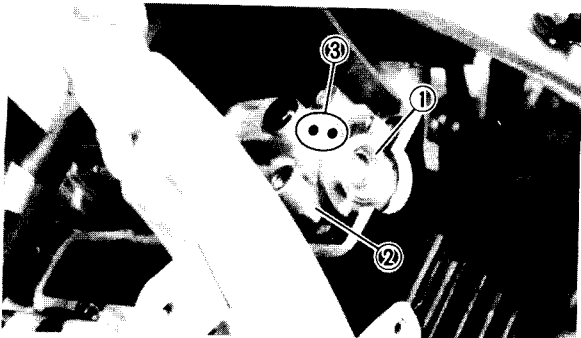
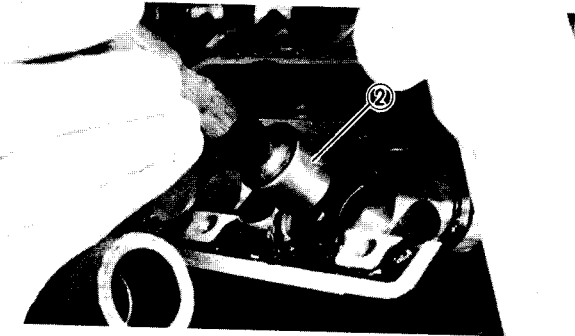
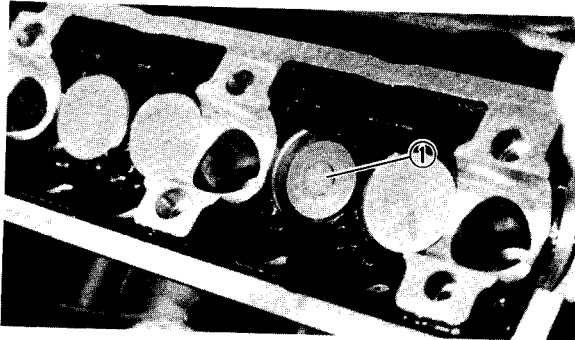
## NOTE:

Pads can only be selected in 0.05 mm (0.002 in) increments.

- Locate the "Rounded off Pad Number" on the chart, and then find the measured valve clearance. The point where these coordinates intersect is the new pad number.

## NOTE:

Use the new pad number as a guide only as the number must be verified.



## 4. Install:

- Pad (New) ①

## 5. Install:

- Valve lifter ②

## NOTE:

- Apply molybdenum disulfide grease to the pad.
- Valve lifter must be rotated smoothly by a finger.

## 5. Install:

- Camshafts ①
- Cam chain
- Camshaft caps ②



**Bolts (Camshaft Cap):**  
10 Nm (1.0 m·kg, 7.2 ft·lb)

## NOTE:

- Install the exhaust camshaft first.
- Align the matching marks ③.
- Apply molybdenum disulfide grease to the camshafts and cam caps.



# VALVE CLEARANCE ADJUSTMENT



## INTAKE

B MEASURED CLEARANCE	A INSTALLED PAD NUMBER																									
	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	
0.00 ~ 0.02				120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
0.03 ~ 0.07			120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	
0.08 ~ 0.10		120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	
0.11 ~ 0.20	RECOMMENDED CLEARANCE																									
0.21 ~ 0.22	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240		
0.23 ~ 0.27	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240			
0.28 ~ 0.32	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240				
0.33 ~ 0.37	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240					
0.38 ~ 0.42	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240						
0.43 ~ 0.47	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240							
0.48 ~ 0.52	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240								
0.53 ~ 0.57	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240									
0.58 ~ 0.62	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240										
0.63 ~ 0.67	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240											
0.68 ~ 0.72	175	180	185	190	195	200	205	210	215	220	225	230	235	240												
0.73 ~ 0.77	180	185	190	195	200	205	210	215	220	225	230	235	240													
0.78 ~ 0.82	185	190	195	200	205	210	215	220	225	230	235	240														
0.83 ~ 0.87	190	195	200	205	210	215	220	225	230	235	240															
0.88 ~ 0.92	195	200	205	210	215	220	225	230	235	240																
0.93 ~ 0.97	200	205	210	215	220	225	230	235	240																	
0.98 ~ 1.02	205	210	215	220	225	230	235	240																		
1.03 ~ 1.07	210	215	220	225	230	235	240																			
1.08 ~ 1.12	215	220	225	230	235	240																				
1.13 ~ 1.17	220	225	230	235	240																					
1.18 ~ 1.22	225	230	235	240																						
1.23 ~ 1.27	230	235	240																							
1.28 ~ 1.32	235	240																								
1.33 ~ 1.37	240																									

VALVE CLEARANCE (cold):  
0.11 ~ 0.20 mm (0.004 ~ 0.008 in)  
Example: Installed is 170  
Measured clearance is 0.24 mm (0.009 in)  
Replace 170 pad with 180 pad

## EXHAUST

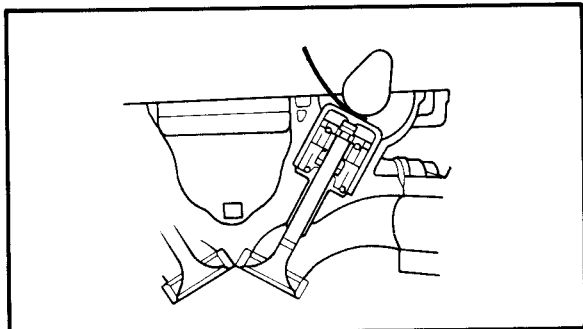
B MEASURED CLEARANCE	A INSTALLED PAD NUMBER																									
	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	
0.00~0.02						120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
0.03~0.07					120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225
0.08~0.12				120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
0.13~0.17			120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235
0.18~0.20		120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240
0.21~0.30	RECOMMENDED CLEARANCE																									
0.31~0.32	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240		
0.33~0.37	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240			
0.38~0.42	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240				
0.43~0.47	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240					
0.48~0.52	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240						
0.53~0.57	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240							
0.58~0.62	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240								
0.63~0.67	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240									
0.68~0.72	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240										
0.73~0.77	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240											
0.78~0.82	175	180	185	190	195	200	205	210	215	220	225	230	235	240												
0.83~0.87	180	185	190	195	200	205	210	215	220	225	230	235	240													
0.88~0.92	185	190	195	200	205	210	215	220	225	230	235	240														
0.93~0.97	190	195	200	205	210	215	220	225	230	235	240															
0.98~1.02	195	200	205	210	215	220	225	230	235	240																
1.03~1.07	200	205	210	215	220	225	230	235	240																	
1.08~1.12	205	210	215	220	225	230	235	240																		
1.13~1.17	210	215	220	225	230	235	240																			
1.18~1.22	215	220	225	230	235	240																				
1.23~1.27	220	225	230	235	240																					
1.28~1.32	225	230	235	240																						
1.33~1.37	230	235	240																							
1.38~1.42	235	240																								
1.43~1.47	240																									

VALVE CLEARANCE (cold):  
0.21 ~ 0.30 mm (0.008 ~ 0.012 in)  
Example: Installed is 175  
Measured clearance is 0.35 mm (0.014 in)  
Replace 175 pad with 185 pad



**NOTE:**

- Refer to the "ENGINE ASSEMBLY AND ADJUSTMENT — CYLINDER HEAD AND CAMSHAFT" section in the CHAPTER 4.
- Turn the crankshaft counterclockwise several turns for the installed parts to settle into the correct position.

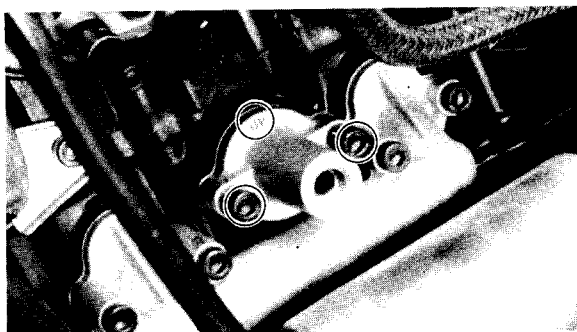


**6. Measure:**

- Valve clearance

**Valve clearance verification steps:**

- Follow the valve clearance measurement steps.
- If the clearance is incorrect, repeat all Adjusting Pad Replacement steps until the proper clearance is obtained.



**INSTALLATION**

Reverse the "REMOVAL" procedure.

Note the following points.

**1. Install:**

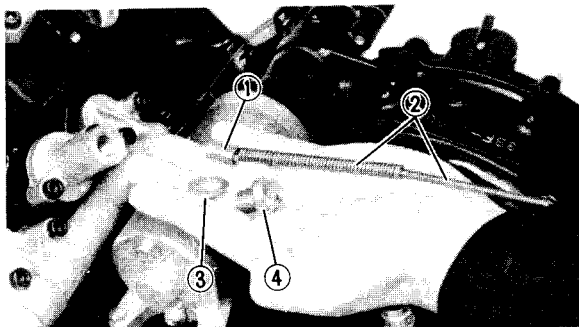
- Cam chain tensioner

**NOTE:**

Install the cam chain tensioner with the "UP" mark facing upward.

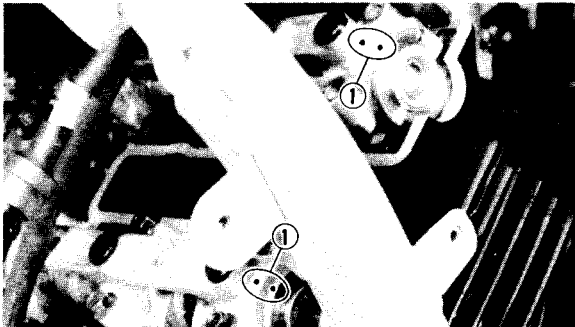


**Bolts (Cam Chain Tensioner):**  
10 Nm (1.0 m·kg, 7.2 ft·lb)



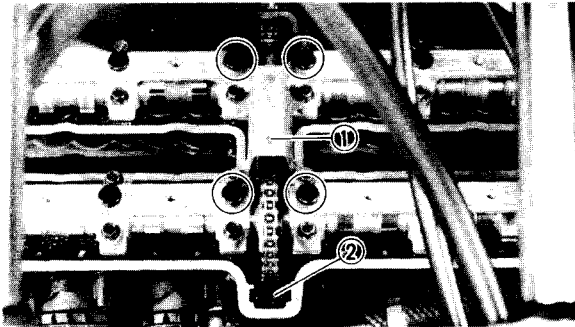
**2. Install:**

- Guide collar ①
- Spring ②
- Washer ③
- Cam chain tensioner cap ④



## 3. Recheck:

- Align the matching marks ① .



## 4. Install:

- Chain guide (Upper) ①
- Chain guide (Exhaust side) ②



**Bolts (Chain Guide):**  
10 Nm (1.0 m·kg, 7.2 ft·lb)

## 5. Install:

- Cylinder head cover



**Bolts (Cylinder Head Cover):**  
10 Nm (1.0 m·kg, 7.2 ft·lb)

## 6. Fill:

- Cooling system



**Coolant Total Amount**  
(Including All Routes):  
1.9 L (1.7 Imp qt, 2.0 US qt)

## CARBURETOR SYNCHRONIZATION

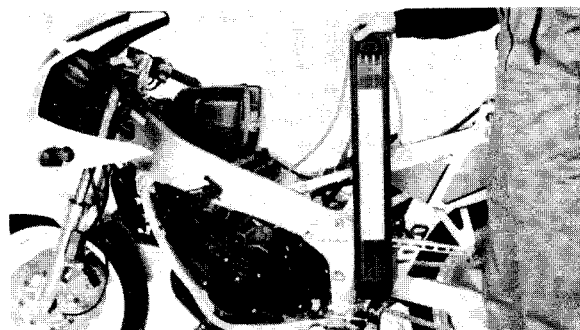
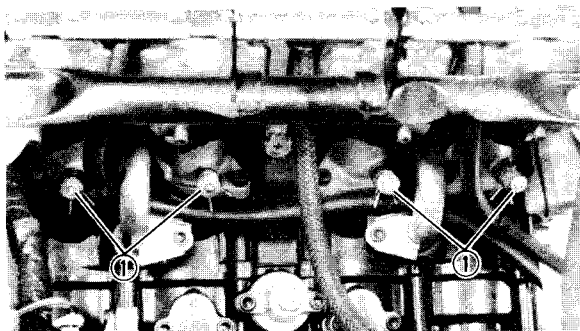
Carburetors must be adjusted to open and close simultaneously.

### NOTE: \_\_\_\_\_

Valve clearance must be set properly before synchronizing the carburetors.



1. Remove:
  - Center cowlings
  - Seat
 Refer to the "COWLING REMOVAL AND INSTALLATION – REMOVAL" section.
2. Remove:
  - Fuel tank
 Refer to the "CARBURETOR – REMOVAL" section in the CHAPTER 6.
3. Remove:
  - Vacuum plugs ①

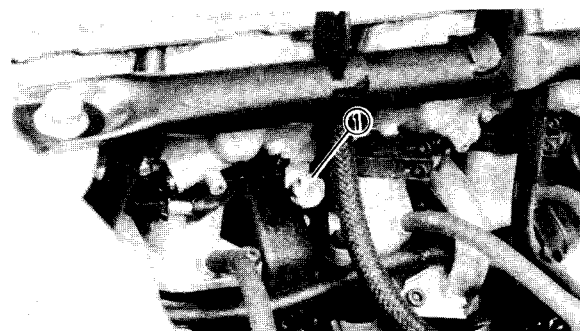


4. Install:
  - Vacuum gauge
  - Sub tank



**Vacuum Gauge:**  
P/N YU-08030

5. Start the engine and let it warm up.



6. Adjust:
  - Idle speed
 Turn the throttle stop screw ① .

Turn in	Engine speed is increased.
Turn out	Engine speed is decreased.

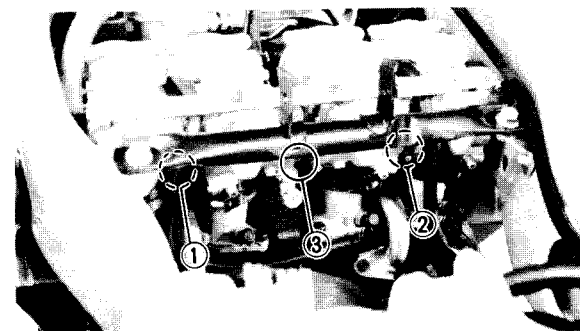


**Idle Speed:** 1,250 ~ 1,350 r/min

7. Adjust:
  - Carburetors synchronization

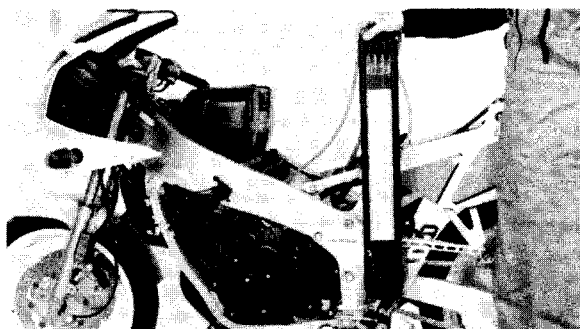
## Carburetor synchronization adjustment steps:

- Lift up the front of fuel tank
- Synchronize carburetor No. 1 to carburetor No. 2 by turning synchronizing screw ① until both gauges read the same.



## IDLE SPEED ADJUSTMENT

**INSP  
ADJ**



- Racing the engine for less than a second, two or three times, and check the synchronization again.

**Vacuum Pressure at Idle Speed:**

**$21.33 \pm 0.6$  kPa**

**$(160 \pm 5$  mmHg,  $6.30 \pm 0.2$  inHg)**

**Vacuum Synchronous Difference:**

**$1.33$  kPa ( $10$  mmHg,  $0.4$  inHg)**

- Repeat the above steps to synchronize carburetor No. 4 to carburetor No. 3 by turning synchronizing screw ② until both gauges read the same.
- Repeat the same steps to synchronize No. 2 carburetor to No. 3 carburetor by turning synchronizing screw ③ until both gauges read the same.

### 8. Adjust:

- Idle speed

### 9. Install:

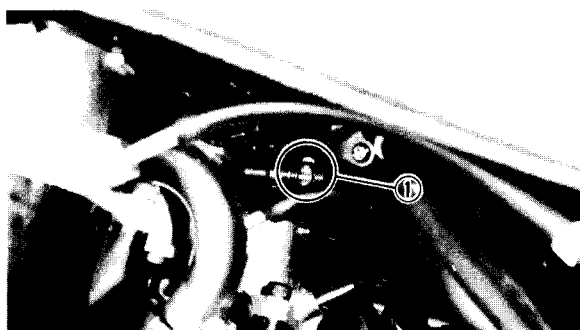
- Vacuum plug
- Fuel tank
- Seat
- Center cowlings

## IDLE SPEED ADJUSTMENT

1. Start the engine and let it warm up.
2. Inspect:
  - Idle speed
 Out of specification → Adjust.



**Idle Speed: 1,250 ~ 1,350 r/min**



### 3. Adjust:

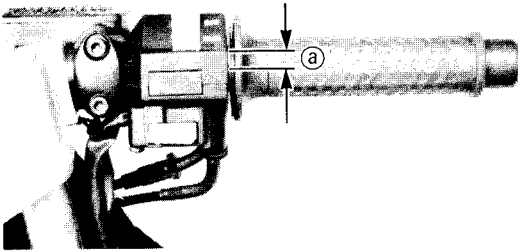
- Idle speed

Turn the throttle stop screw ①

Turn in	Engine speed is increased.
Turn out	Engine speed is decreased.

## THROTTLE CABLE FREE PLAY ADJUSTMENT

**INSP  
ADJ**



### THROTTLE CABLE FREE PLAY ADJUSTMENT

#### NOTE:

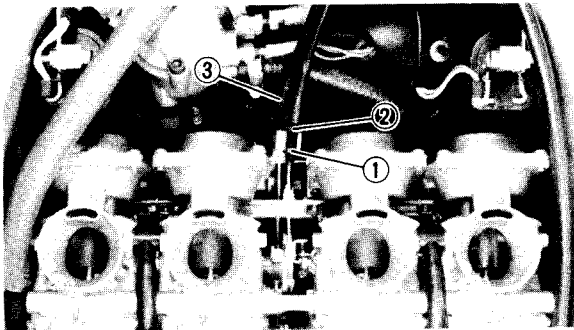
Before adjusting the throttle cable free play, the engine idle speed should be adjusted.

#### 1. Check:

- Throttle cable free play (a)  
Out of specification → Adjust.



**Throttle Cable Free Play  
(Throttle Grip)(a):**  
2 ~ 5 mm (0.08 ~ 0.20 in)



#### 2. Adjust:

- Throttle cable free play

#### Throttle cable adjustment steps:

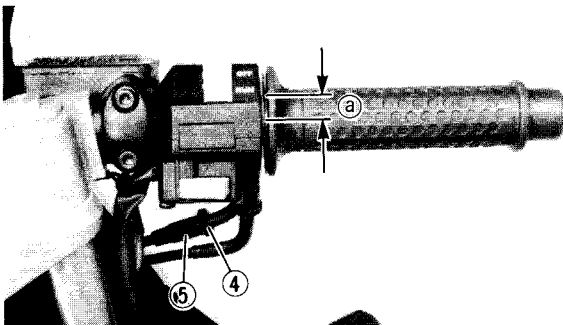
- Remove the seat, top cover and air filter case.  
Refer to the "CARBURETOR – REMOVAL" section in the CHAPTER 6.
- Loosen the locknut (Throttle cable 1) ①.
- Turn the adjuster (Throttle cable 1) ② clockwise or counterclockwise until proper free play (Throttle grip) is attained.

③ Throttle cable 2



**Throttle Cable Free Play  
(Throttle Grip)(a):**  
2 ~ 3 mm (0.08 ~ 0.12 in)

- Tighten the locknut ①.
- If the free play is incorrect, adjust the throttle cable free play with the adjuster (Throttle grip side).
- Loosen the locknut (Throttle cable 1 – Throttle grip side) ④.
- Turn the adjuster (Throttle cable 1 – Throttle grip side) ⑤ clockwise or counterclockwise until proper free play (Throttle grip) (a) is attained.



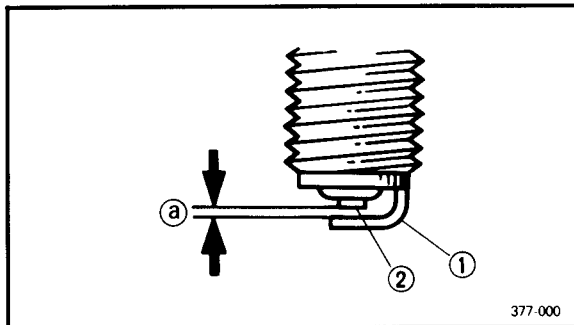


Throttle Cable Free Play  
(Throttle Grip) ③ :  
2 ~ 5 mm (0.08 ~ 0.20 in)

- Tighten the locknut ④ .

**NOTE:**

Normally, once the throttle cable length adjuster (carburetor) is properly set; the only adjustment required is maintenance of free play at the throttle cable length adjuster (Throttle grip).

**SPARK PLUG INSPECTION****1. Inspect:**

- Electrode ①  
Wear/Damage → Replace.
- Insulator color ②  
Normal condition is a medium to light tan color.  
Distinctly different color → Check the engine condition.

③ Spark plug gap

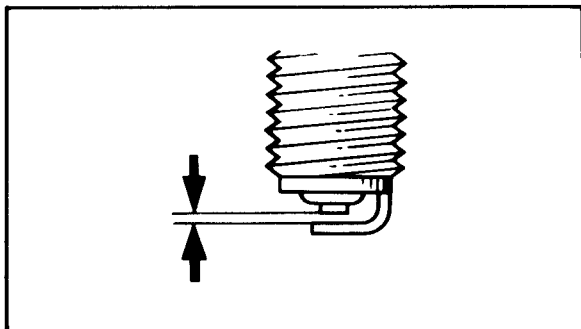
**2. Clean:**

- Spark plug  
Clean the spark plug with a spark plug cleaner or wire brush.

**3. Inspect:**

- Spark plug type  
Incorrect → Replace.

**Standard Spark Plug:**  
CR8E (NGK),  
U24ESR-N (NIPPON DENSO)



## 4. Measure:

- Spark plug gap  
Out of specification → Regap.  
Use a wire gauge.



**Spark Plug Gap:**  
0.7 ~ 0.8 mm (0.028 ~ 0.032 in)

## 5. Tighten:

- Spark plug

### NOTE:

Before installing a spark plug, clean the gasket surface and plug surface.



**Spark Plug:**  
13 Nm (1.3 m·kg, 9.4 ft·lb)

### NOTE:

If a torque wrench is not available when you are installing a spark plug, a good estimate of the correct torque is 1/4 to 1/2 turns part finger tight. Have the spark plug torqued to the correct value as soon as possible with a torque wrench.

## IGNITION TIMING CHECK

### 1. Remove:

- Lower cowling (Left)
- Center cowling

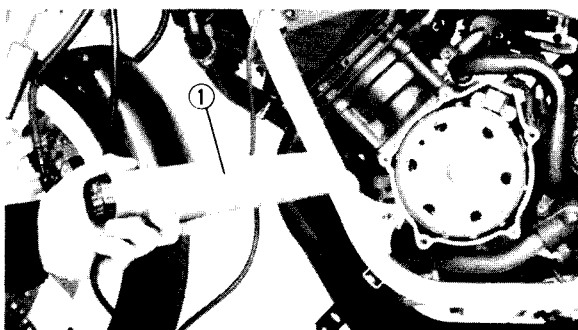
Refer to the "COWLING REMOVAL AND INSTALLATION – REMOVAL" section.

### 2. Remove:

- Generator cover

### 3. Connect:


- Timing light ①  
To the #1 spark plug lead.
- Inductive tachometer

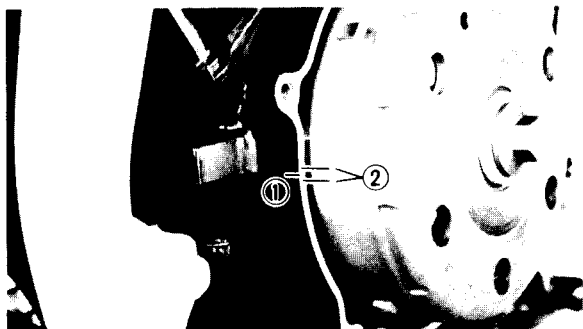


**Timing Light:**  
P/N YU-33223  
**Inductive Tachometer:**  
P/N YU-08037



4. Warm up the engine and allow it to idle at the specified speed.

	<b>Engine Idle Speed:</b> 1,250 ~ 1,350 r/min
---	--



5. Check:
  - Ignition timing
 

Visually check the crankcase end ① is within the firing range ② on the magneto.

Out of firing range → Check pickup assembly.

**NOTE:** \_\_\_\_\_  
 Ignition timing is not adjustable.

6. Install:
  - Generator cover

## COMPRESSION PRESSURE MEASUREMENT

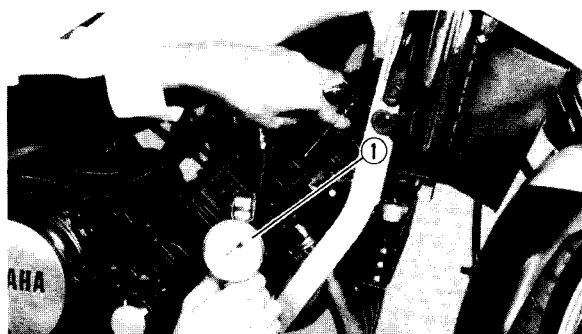
**NOTE:** \_\_\_\_\_  
 Insufficient compression pressure will result in performance loss.

1. Measure:
  - Valve clearance
 

Out of specification → Adjust.

Refer to the "VALVE CLEARANCE ADJUSTMENT" section.
2. Warm up the engine.
3. Remove:
  - Spark plugs
4. Remove:
  - Lower cowling (Left)
  - Center cowling (Left)

Refer to the "COWLING REMOVAL AND INSTALLATION – REMOVAL" section.
5. Measure:
  - Compression pressure



### Compression pressure measurement steps:

- Install the Compression Gauge ① using an adapter.

# COMPRESSION PRESSURE MEASUREMENT



- Crank over the engine with the electric starter (be sure the battery is fully charged) with the throttle wide open until the compression reading on the gauge stabilizes.
- Check readings with specified levels (See chart).



Compression Gauge:  
P/N YU-33223

**Compression Pressure (At sea level):**  
**Standard:**  
 950 kPa (9.5 kg/cm<sup>2</sup> , 138 psi)  
**Minimum:**  
 750 kPa (7.5 kg/cm<sup>2</sup> , 109 psi)  
**Maximum:**  
 1,150 kPa (11.5 kg/cm<sup>2</sup> , 164 psi)

## ⚠ WARNING:

**When cranking the engine, ground spark plug lead to prevent sparking.**

- Repeat the previous steps for the other cylinders.
- If pressure falls below the minimum level:  
 1) Squirt a few drops of oil into the affected cylinder.  
 2) Measure the compression again.

## Compression Pressure (with oil introduced into cylinder)

Reading	Diagnosis
Higher than without oil	Worn or damaged pistons
Same as without oil	Defective ring(s), valves, cylinder head gasket or piston is possible.
Above maximum level	Inspect cylinder head, valve surfaces, or piston crown for carbon deposits.

## NOTE:

The difference between the highest and lowest cylinder compression readings must not vary more than the specified value.

**Difference Between Each Cylinder:**  
 Less than 100 kPa (1 kg/cm<sup>2</sup> , 15 psi)

## ENGINE OIL LEVEL INSPECTION/ ENGINE OIL REPLACEMENT

**INSP**  
**ADJ**

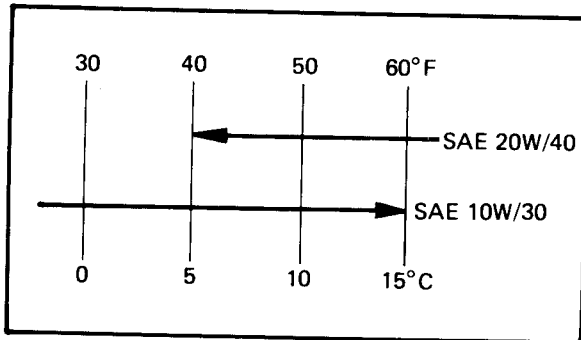
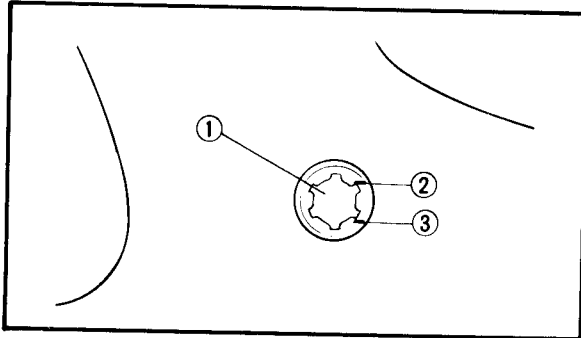


### ENGINE OIL LEVEL INSPECTION

1. Place the motorcycle on its centerstand and warm up the engine for several minutes.

#### NOTE:

Position motorcycle straight up when checking oil level, a slight tilt to the side can produce false readings.



2. Stop the engine and visually check the oil level through the level window ①.

3. Inspect:

- Oil level

Oil level should be between maximum ② and minimum ③ marks.

Low oil level → Add oil to proper level.

#### NOTE:

Wait a few minutes until level settles before inspecting.



#### Recommended Engine Oil:

At 5°C (40°F) or Higher:

Yamalube 4-cycle oil or

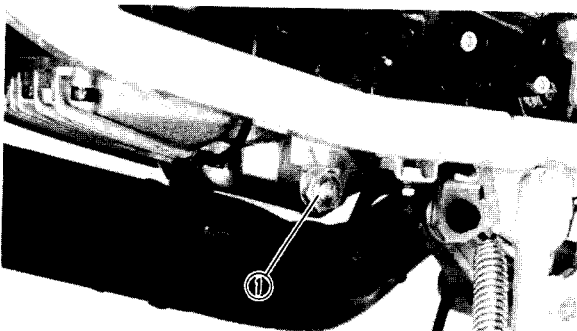
SAE 20W40 Type SE Motor Oil

At 15°C (60°F) or Lower:

SAE 10W30 Type SE Motor Oil

### ENGINE OIL REPLACEMENT

1. Warm up the engine for several minutes.
2. Place a drain pan under the engine.
3. Remove:
  - Lower cowl (Left)  
Refer to the "COWLING REMOVAL AND INSTALLATION – REMOVAL" section.
4. Remove:
  - Oil filler cap
5. Remove:
  - Drain plug ①  
Drain the engine oil.
6. Tighten:
  - Drain plug ①



#### Oil Drain Plug:

43 Nm (4.3 m.kg, 31 ft.-lb)

## 7. Fill:

- Crankcase

## ⚠ CAUTION:

Do not allow foreign material to enter the crankcase.



### Periodic Oil Change:

2.7 L (2.4 Imp qt, 2.9 US qt)

### Recommended Engine Oil:

At 5°C (40°F) or Higher:

Yamalube 4-cycle oil or

SAE 20W40 Type SE Motor Oil

At 15°C (60°F) or Lower:

SAE 10W30 Type SE Motor Oil

## 8. Install:

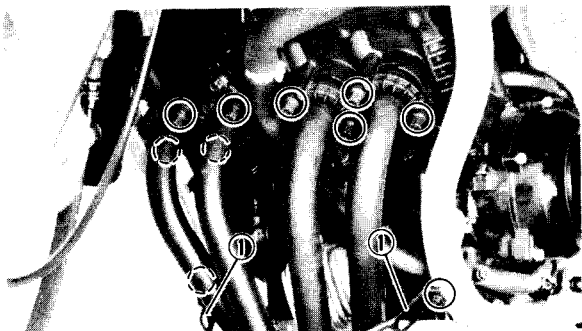
- Oil filler cap

# ENGINE OIL FILTER REPLACEMENT

## 1. Remove:

- Lower cowlings (Left and right)  
Refer to the COWLING REMOVAL AND INSTALLATION – REMOVAL” section.

## 2. Warm up the engine for several minutes.



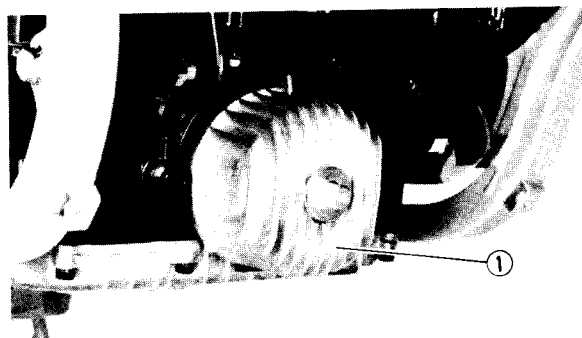
## 3. Remove:

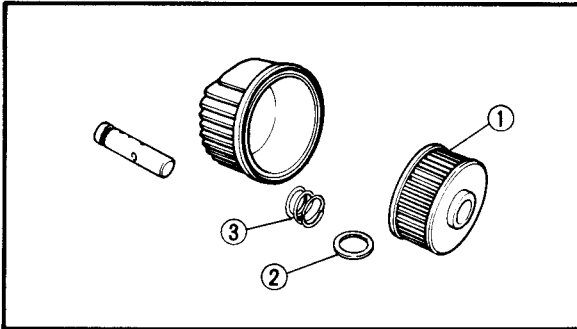
- Cowling stays (Left and right) ①
- Exhaust pipe  
Refer to the “ENGINE REMOVAL – MUFFLER ASSEMBLY” section in the CHAPTER 4.

## 4. Drain the oil.

## 5. Remove:

- Oil filler cap
- Filter cover ①



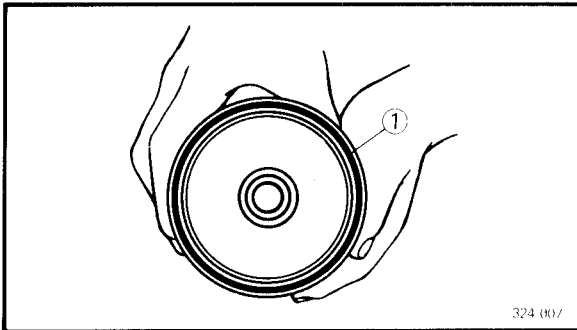


## 6. Remove:

- Oil filter ①
- Shim ②
- Spring ③

## 7. Check:

- O-ring
- Cracks/Damage → Replace.

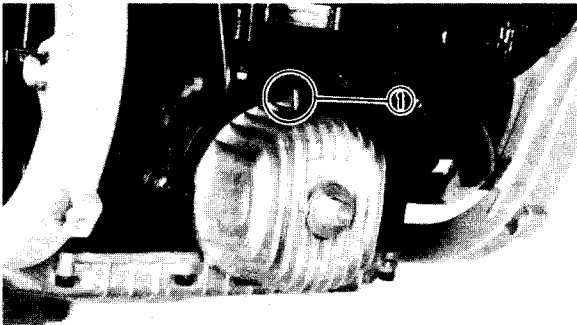


## 8. Install:

- Oil filter (New)
  - Shim
  - Spring
- To oil filter cover.

## NOTE:

Be sure the O-ring ① is positioned properly.



## 9. Install:

- Oil filter cover



**Bolt (Oil Filter Cover):**  
15 Nm (1.5 m·kg, 11 ft·lb)

## NOTE:

Mesh the oil filter cover projection ① with the crankcase slot.

## 10. Fill:

- Crankcase



**With Oil Filter Replacement:**  
2.5 L (2.2 Imp qt, 2.64 US qt)

11. Warm up the engine for a few minutes, then stop the engine.

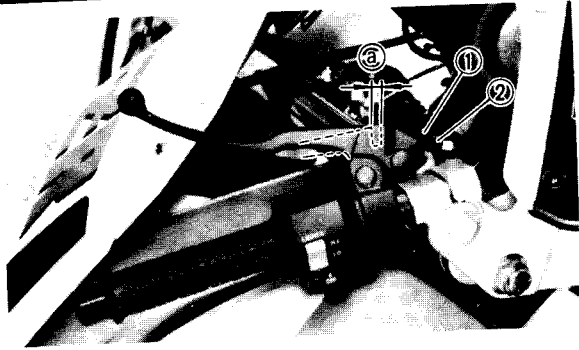
## 12. Observe:

- Oil level

## 13. Install:

- Center cowlings (Left and right)
- Lower cowlings (Left and right)

# CLUTCH ADJUSTMENT



## CLUTCH ADJUSTMENT

### 1. Check:

- Clutch lever free play <sup>a</sup>  
Out of specification → Adjust.



**Free Play:**  
2 ~ 3 mm (0.08 ~ 0.12 in)

### 2. Adjust:

- Clutch lever free play

#### Adjustment steps:

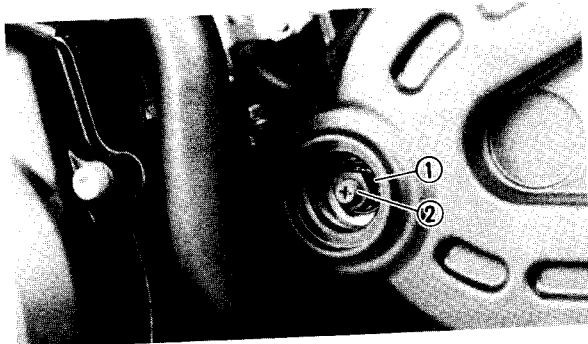
- Loosen the locknut ① .
- Turn the adjuster ② in or out until the specified free play is obtained.

Turn in	Free play is increased.
Turn out	Free play is decreased.

- Tighten the locknut.

#### NOTE:

Normally, once the clutch cable length adjuster (crankcase) is properly set; the only adjustment required is maintenance of free play at the clutch cable length adjuster (handlebar lever).



### 3. Remove:

- Lower cowling (Left)
- Cover

### 4. Loosen:

- Lock nut ①

### 5. Screw in adjuster ② until lightly tight and back it out 1/4 turn.

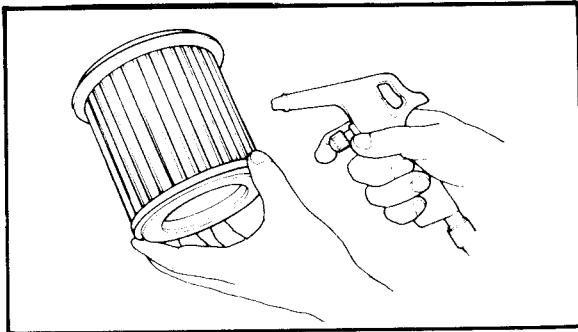
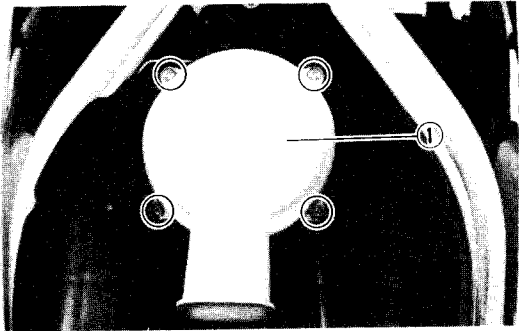
### 6. Tighten:

- Locknut ①

### 7. Check:

- Clutch lever free play <sup>a</sup>





### AIR FILTER CLEANING

1. Remove:

- Seat
- Top cover

Refer to the "COWLING REMOVAL AND INSTALLATION – REMOVAL" section.

2. Remove:

- Air filter case cover ①
- Air filter element

**⚠ CAUTION:**

The engine should never be run without the air/filter element installed; excessive piston and/or cylinder wear may result.

3. Clean:

- Air filter element

Blow out dust in the element from the outer surface using compressed air.

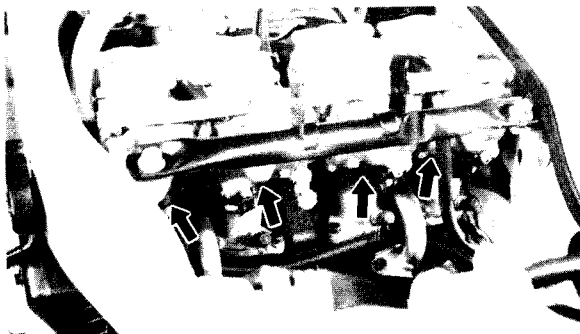
4. Inspect:

- Air filter element

Damage → Replace.

5. Install:

- Air filter element
- Air filter case cover
- Top cover
- Seat



### CARBURETOR JOINT INSPECTION

1. Remove:

- Fuel tank
- Air filter case

Refer to the "CARBURETOR – REMOVAL" section in the CHAPTER 6.

2. Inspect:

- Carburetor joint

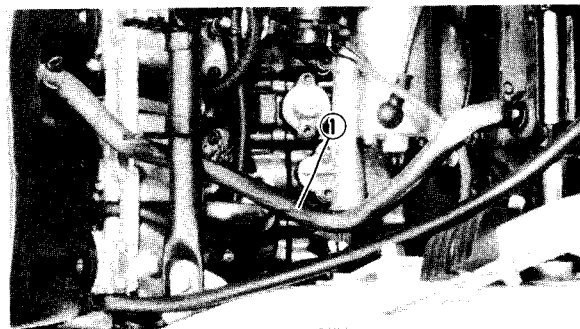
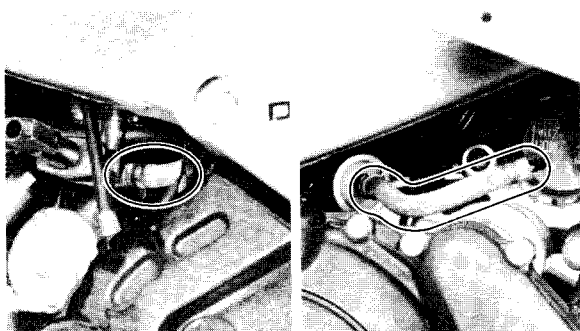
Cracks/Damage → Replace.

### FUEL LINE INSPECTION

1. Remove:

- Lower cowlings (Left and right)

## CRANKCASE VENTILATION HOSE INSPECTION/ EXHAUST SYSTEM INSPECTION



### 2. Inspect:

- Fuel pipes  
Cracks/Damage → Replace.
- Fuel filter  
Contamination/Damage → Replace.

### NOTE:

Drain and flush the fuel tank if abrasive damage to any components is evident.

## CRANKCASE VENTILATION HOSE INSPECTION

### 1. Remove:

- Seat
- Top cover  
Refer to the "COWLING REMOVAL AND INSTALLATION – REMOVAL" section.

### 2. Inspect:

- Crankcase ventilation hose ①  
Cracks/Damage → Replace.

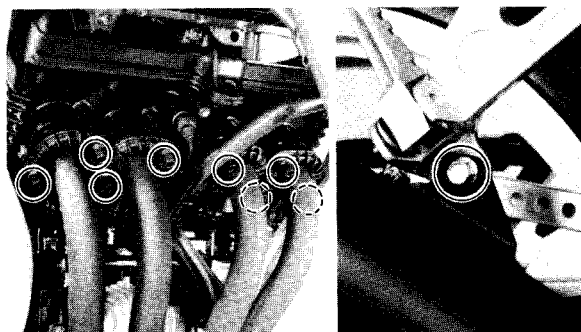
## EXHAUST SYSTEM INSPECTION

### 1. Remove:

- Lower cowlings (Left and right)
- Center cowlings (Left and right)  
Refer to the "COWLING REMOVAL AND INSTALLATION – REMOVAL" section.

### 2. Inspect:

- Exhaust pipe
- Gaskets (Exhaust pipe)
- Muffler  
Cracks/Damage → Replace.
- Bolt
- Nut  
Loose → Tighten.







## 3. Tighten:

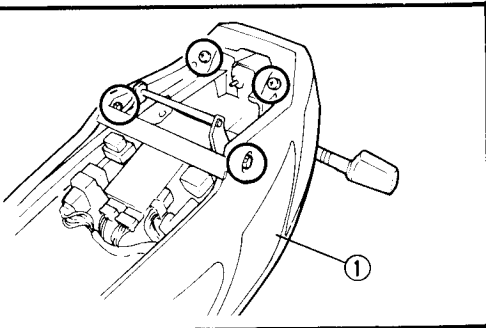


Nuts (Exhaust Pipe):  
10 Nm (1.0 m·kg, 7.2 ft·lb)  
Bolt (Muffler/Rear Footrest):  
20 Nm (2.0 m·kg, 14 ft·lb)  
Bolt (Muffler Star):  
(For California only)  
20 Nm (2.0 m·kg, 14 ft·lb)

## COOLANT LEVEL INSPECTION

### 1. Remove:

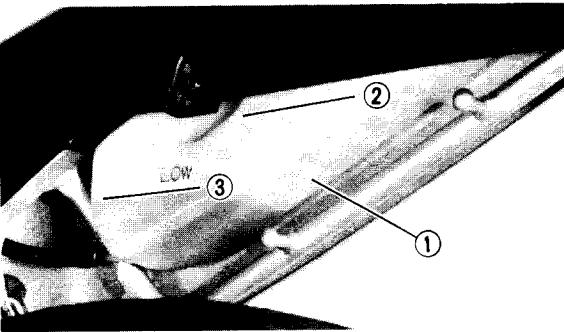
- Seat
- Seat cowling ①



### 2. Inspect:

- Coolant level  
(Reservoir tank ①)
- Low level → Add tap water (Soft water).

- ① Coolant reservoir tank
- ② "FULL" level
- ③ "LOW" level



### ⚠ WARNING:

Do not remove the radiator cap when the engine is hot.

### ⚠ CAUTION:

Hard water or salt water is harmful to the engine parts; use boiled or distilled water if you can't get soft water.

## COOLANT REPLACEMENT

### ⚠ WARNING:

Do not remove the radiator cap when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. When the engine has cooled, open the radiator cap by the following procedure:

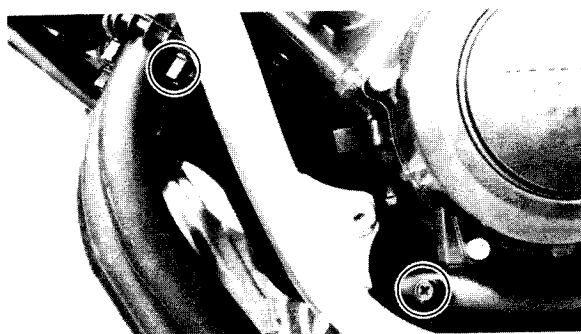
Place a thick rag, like a towel, over the radiator cap, slowly rotate the cap counterclockwise to the detent. This procedure allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning counterclockwise and remove it.

1. Remove:

- Lower cowling (Left)

*Refer to the "COWLING REMOVAL AND INSTALLATION - REMOVAL" section.*

2. Place a drain pan under the drain bolts.



3. Remove:

- Drain bolt (Outlet pipe) ①
  - Drain bolt (Cylinder) ②
  - Radiator cap
- Drain the coolant.

NOTE:

Remove the drain bolts first, then remove the radiator cap to prevent the coolant spilling.

4. Tighten:

- Drain bolt (Cylinder)
- Drain bolt (Outlet pipe)



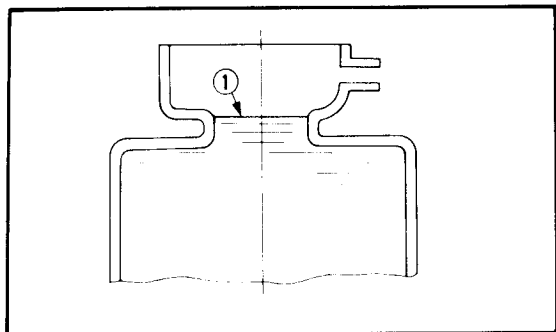
Drain Bolt (Cylinder):  
7 Nm (0.7 m·kg, 5.1 ft·lb)  
Drain Bolt (Outlet Pipe):  
7 Nm (0.7 m·kg, 5.1 ft·lb)

NOTE:

Replace with new copper gasket.

5. Fill:

- Cooling system



## Coolant filling steps:

- Fill the coolant into the radiator until the radiator is full.
- Start the engine (Coolant level decreases.)

## ⚠ CAUTION:

Always check coolant level, and check for coolant leakage before starting engine.

- Add the coolant while engine is running.
- Stop the engine when coolant level stabilizes.
- Add the coolant again to specified level ①.
- Install the radiator cap.



## Recommended Coolant:

High Quality Ethylene Glycol  
Anti-Freeze Containing  
Anti-Corrosion for Aluminum  
Engine Inhibitors

Coolant and Water Mixed Ratio:  
50%/50%

## Total Amount:

1.9 L (1.7 Imp qt, 2.0 US qt)

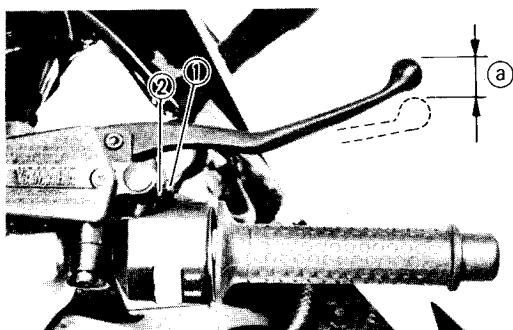
## Reservoir Tank Capacity:

(From Low to Full Level):

0.28 L (0.25 Imp qt, 0.30 US qt)

## ⚠ CAUTION:

- Hard water or salt water is harmful to the engine. You may use distilled water if you can't get soft water.
- Do not mix more than one type of ethlen glycol antifreeze containing corrosion for aluminum engine inhabitants.



## CHASSIS

### FRONT BRAKE ADJUSTMENT

1. Loosen:
  - Adjuster locknut ①
2. Adjust:
  - Free play

Turn the adjuster ② until the free play ③ is within the specified limits.

Turn in	Free play is decreased.
Turn out	Free play is increased.

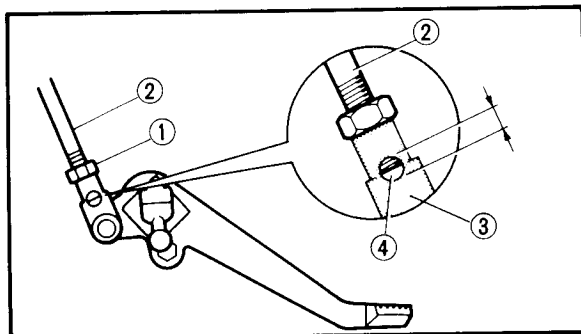
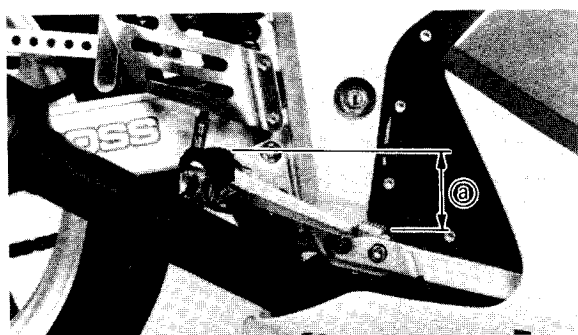


**Front Brake Lever Free Play:**  
2 ~ 5 mm (0.08 ~ 0.20 in)

#### ⚠ CAUTION:

Proper lever free play is essential to avoid excessive brake drag.

3. Tighten:
  - Adjuster locknut



### REAR BRAKE ADJUSTMENT

1. Loosen:
  - Adjuster locknut ①
2. Adjust:
  - Brake pedal height ③

Turn the adjuster ② until the brake pedal position is at the specified height.

  - Rear brake light switch

Refer to the "REAR BRAKE LIGHT SWITCH ADJUSTMENT" section.



**Brake Pedal Height:**  
42 mm (1.7 in)  
Below the Top of the Footrest

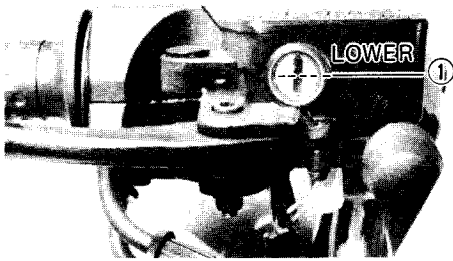
#### ⚠ WARNING:

After adjusting the brake pedal height, visually check the adjuster end ② through the hole of the joint holder ③. The adjuster end must appear within this hole ④.

3. Lock:
  - Lock nut ①

# BRAKE FLUID INSPECTION/BRAKE PAD INSPECTION REAR BRAKE LIGHT SWITCH ADJUSTMENT

**INSP  
ADJ**



## BRAKE FLUID INSPECTION

### 1. Inspect:

- Brake fluid level  
Fluid at lower level → Replenish.

① Front brake fluid lower level

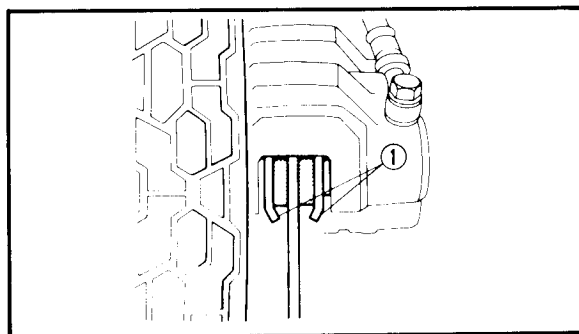
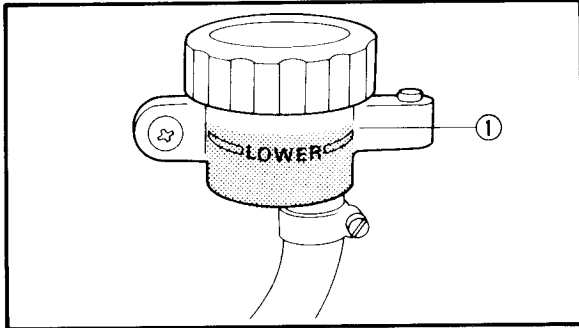


Brake Fluid: DOT #4  
If DOT #4 is not available,  
#3 can be used.

### ⚠ WARNING:

- Use only designated quality brake fluid to avoid poor brake performance.
- Refill with same type and brand of brake fluid; mixing fluids could result in poor brake performance.
- Be sure that water or other contaminants do not enter master cylinder when refilling.
- Clean up spilled fluid immediately to avoid erosion of painted surfaces or plastic parts.

① Rear brake fluid lower level

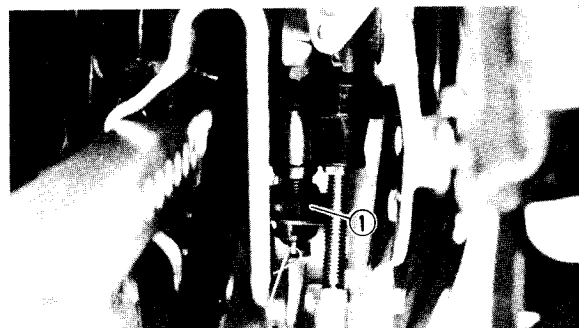


## BRAKE PAD INSPECTION

### 1. Activate the brake lever or brake pedal.

### 2. Inspect:

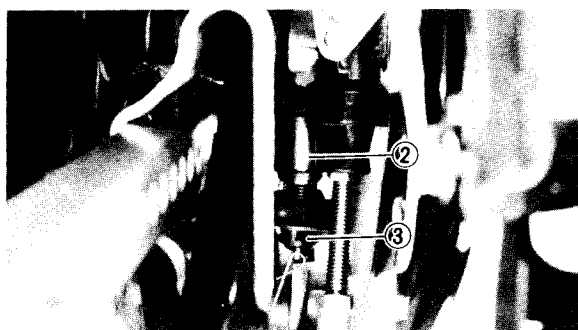
- Wear indicator ①  
Indicator almost contacts disc → Replace pads.



## REAR BRAKE LIGHT SWITCH ADJUSTMENT

### 1. Loosen:

- Locknut ①

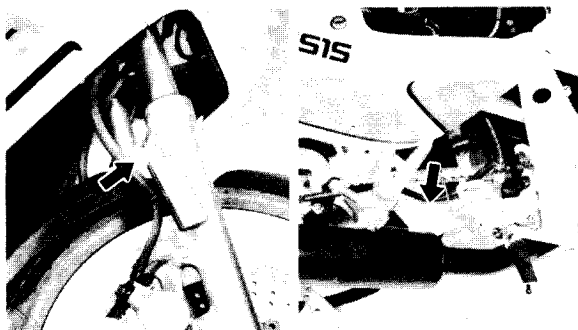


**2. Adjust:**

- Rear brake light switch
- Hold the switch body (2) with your hand so it does not rotate and turn the adjuster (3).

**NOTE:**

Proper adjustment is achieved when the brake light comes on just before the brake begins to take effect.



**BRAKE HOSE INSPECTION**

**1. Inspect:**

- Brake hoses
- Cracks/Damage → Replace.

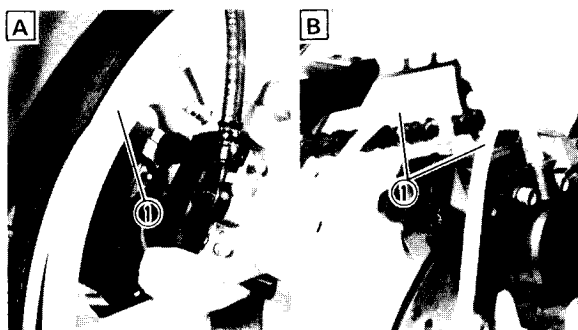
**AIR BLEEDING**

**⚠ WARNING:**

Bleed the brake system if:

- The system has been disassembled.
- A brake hose has been loosened or removed.
- The brake fluid is very low.
- The brake operation is faulty.

A dangerous loss of braking performance may occur if the brake system is not properly bled.



**1. Bleed:**

- Brake system

**Air bleeding steps:**

- a. Add proper brake fluid to the reservoir.
- b. Install the diaphragm. Be careful not to spill any fluid or allow the reservoir to overflow.
- c. Connect the clear plastic tube (1) tightly to the caliper bleed screw.



- [A] Front
- [B] Rear

- d. Place the other end of the tube into a container.
- e. Slowly apply the brake lever or pedal several times.
- f. Pull the lever in or push down on the pedal. Hold the lever or pedal in position.
- g. Loosen the bleed screw and allow the lever or pedal to travel towards its limit.
- h. Tighten the bleed screw when the lever or pedal limit has been reached; then release the lever or pedal.



**Bleed Screw:**  
6 Nm (0.6 m·kg, 4.3 ft·lb)

- i. Repeat steps (e) to (h) until the air bubbles have been removed from the system.

**NOTE:** \_\_\_\_\_

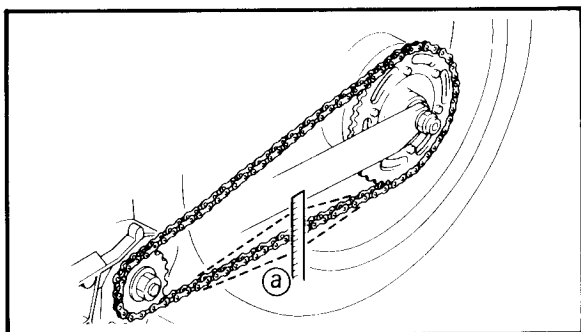
If bleeding is difficult, it may be necessary to let the brake fluid system stabilize for a few hours. Repeat the bleeding procedure when the tiny bubbles in the system have disappeared.

- j. Add brake fluid to the level line on the reservoir.

## DRIVE CHAIN SLACK ADJUSTMENT

**NOTE:** \_\_\_\_\_

Before checking and/or adjusting the chain slack, rotate the rear wheel through several revolutions. Check the chain slack several times to find the point where the chain is the tightest. Check and/or adjust the chain slack where the rear wheel is in this "tight chain" position.

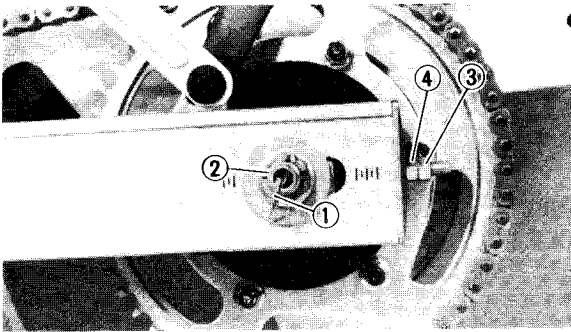


1. Place the motorcycle vertically on a level place.
2. Measure:
  - Drive chain slack (a)
 Out of specification → Adjust.



**Drive Chain Slack:**  
10 ~ 20 mm (0.4 ~ 0.8 in)

## DRIVE CHAIN SLACK ADJUSTMENT



### 3. Remove:

- Cotter pin ①

### 4. Loosen:

- Nut (Rear axle) ②
- Locknut ③

### 5. Adjust:

- Chain slack  
Turn the adjuster ④ in or out.

Turn in	Chain slack is decreased.
Turn out	Chain slack is increased.

### NOTE: \_\_\_\_\_

There are marks on each side of rear arm and on each chain puller; use them to check for proper alignment.

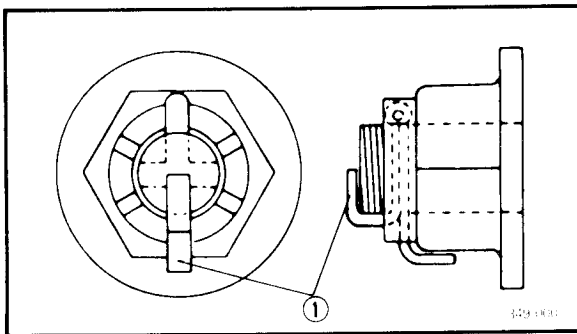
### ⚠ CAUTION: \_\_\_\_\_

Too small chain slack will overload the engine and other vital parts; keep the slack within the specified limits.

### 6. Tighten:

- Nut (Rear axle)

	<b>Nut (Rear Axle):</b> 107 Nm (10.7 m · kg, 77 ft · lb)
--	---



### 7. Tighten:

- Adjuster
- Locknut

### 8. Install:

- Cotter pin ① (New)

### ⚠ WARNING: \_\_\_\_\_

Always use a new cotter pin on the axle nut.

### NOTE: \_\_\_\_\_

Do not loosen the axle nut after torque tightening. If the axle nut groove is not aligned with the wheel shaft cotter pin hole, align groove to hole by tightening up on the axle nut.



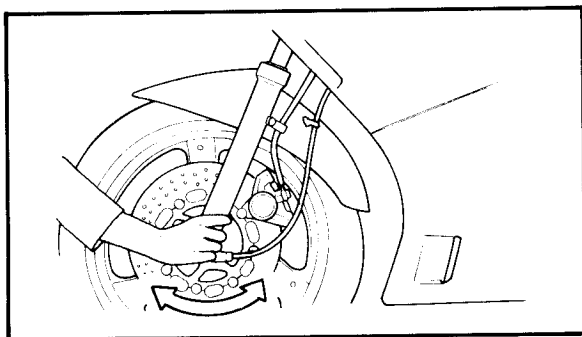
## DRIVE CHAIN LUBRICATION

The chain consists of many parts which work against each other. If the chain is not maintained properly, it will wear out rapidly, therefore, form the habit of periodically servicing the chain. This service is especially necessary when riding in dusty conditions.

This motorcycle has a drive chain with small rubber O-rings between the chain plates. Steam cleaning, high-pressure washes, and certain solvents can damage these O-rings. Use only kerosene to clean the drive chain. Wipe it dry, and thoroughly lubricate it with SAE 30 ~ 50W motor oil. Do not use any other lubricants on the drive chain. They may contain solvents that could damage the O-rings.



**Recommended Lubricant:**  
SAE 30 ~ 50 Motor Oil or Chain Lubricants Suitable for "O-ring" Chains

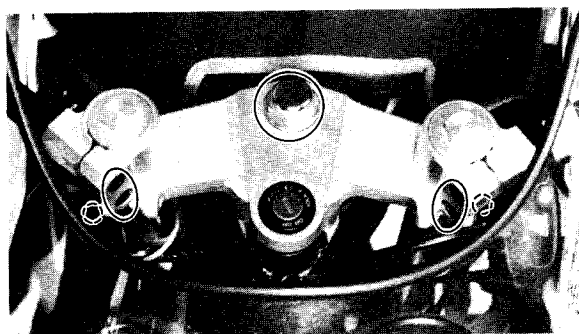


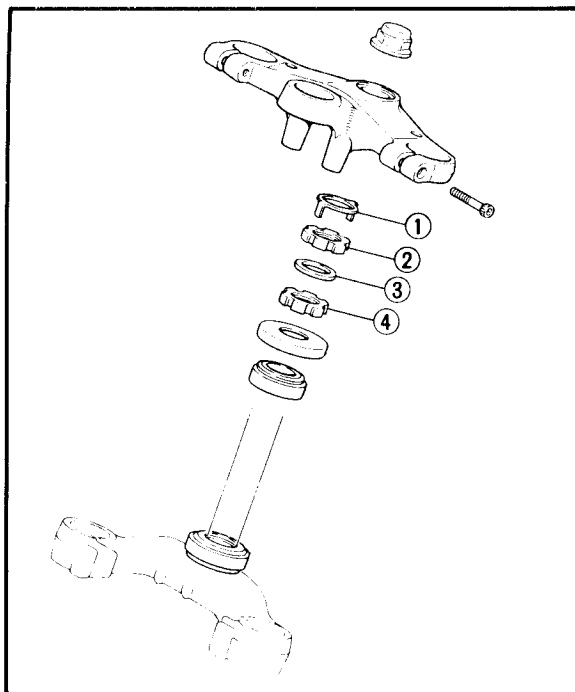
## STEERING HEAD INSPECTION

### ⚠ WARNING:

Securely support the motorcycle so there is no danger of it falling over.

1. Place the motorcycle on a level place.
2. Elevate the front wheel by placing a suitable stand under the engine.
3. Check:
  - Steering assembly bearings  
Grasp the bottom of the front forks and gently rock the fork assembly back and forth.  
Looseness → Adjust the steering head.
4. Remove:
  - Seat
  - Top cover  
Refer to the "COWLING REMOVAL AND INSTALLATION – REMOVAL" section.
5. Remove:
  - Handlebars bosses (Left and right)
  - Handlebar crown  
Refer to the "STEERING HEAD HANDLEBAR – REMOVAL" section in the CHAPTER 7.





## 6. Remove:

- Lock washer ①
- Ring nut (Upper) ②
- Washer ③

## 7. Remove:

- Front fork

Refer to the "FRONT FORK – REMOVAL" section in the CHAPTER 7.

## 8. Tighten:

- Ring nuts (Lower and upper)

## Ring nuts tightening steps:

**NOTE:** \_\_\_\_\_

Set the Torque Wrench to the Ring Nut Wrench so that they form a right angle.

- Install the ring nut (Lower) ④ .

**NOTE:** \_\_\_\_\_

The tapered side of ring nut must faced downward.

- Tighten the ring nut ④ using the Ring Nut Wrench.



**Ring Nut Wrench:**  
P/N YU-33975



**Ring Nut ④ (Initial Tightening):**  
52 Nm (5.2 m·kg, 37 ft·lb)

- Loosen the ring nut ④ completely and retighten it to specification.

**⚠ WARNING:** \_\_\_\_\_

Do not over-tightening.



**Ring Nut ④ (Final Tightening):**  
3 Nm (0.3 m·kg, 2.2 ft·lb)

**NOTE:** \_\_\_\_\_

Recheck the steering head by turning the steering from lock to lock, after adjusting steering head.



If steering is binded, loosen the ring nut so that there is no free play on bearing.  
If steering is loosened, repeat the adjustment steps.

- Install the washer ③ .
- Install the ring nut (Upper) ② .

**NOTE:**

The tapered side of ring nut must face downward.

- Finger tighten the ring nut ② , then align the slots of both ring nuts. If not aligned, hold the lower ring nut ④ and tighten the other until they are aligned.
- Install the lock washer ① .

**NOTE:**

Make sure the lock washer tab is placed in the slots.

- Install the handle crown and tighten the steering stem nut to specification.



**Nut (Steering Stem):**  
110 Nm (11.0 m·kg, 80 ft·lb)

- Tighten the pinch bolts to specification.



**Pinch Bolt (Handle Crown):**  
20 Nm (2.0 m·kg, 14 ft·lb)

## 10. Install:

- Front fork
- Handlebars (Left and right)



**Nut (Front Axle):**  
58 Nm (5.8 m·kg, 42 ft·lb)

**Bolt (Front Fork Pinch):**  
20 Nm (2.0 m·kg, 14 ft·lb)

**Bolts (Brake Caliper):**  
35 Nm (3.5 m·kg, 25 ft·lb)

**Bolts (Handlebar):**  
20 Nm (2.0 m·kg, 14 ft·lb)

## 11. Install:

- Top cover
- Seat

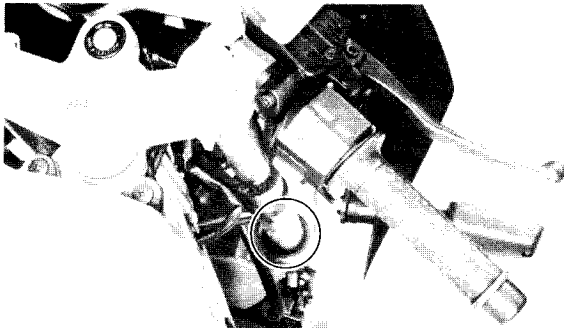
# FRONT FORK INSPECTION/ REAR SHOCK ABSORBER ADJUSTMENT



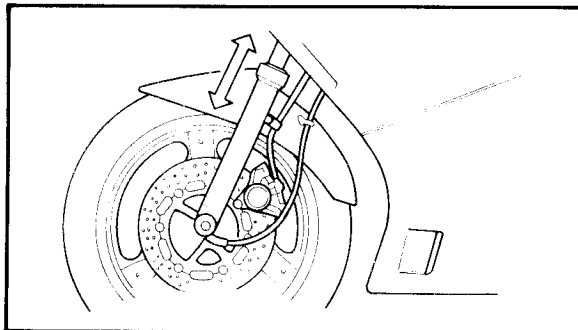
## FRONT FORK INSPECTION

### ⚠ WARNING:

Securely support the motorcycle so there is no danger of it falling over.



1. Place the motorcycle on a level place.
2. Check:
  - Inner tube  
Scratch/Damage → Replace.
  - Oil seal  
Excessive oil leakage → Replace.
3. Hold the motorcycle on upright position and apply the front brake.



4. Check:
  - Operation  
Pump the front fork up and down for several times.  
Unsmooth operation → Repair.

## REAR SHOCK ABSORBER ADJUSTMENT

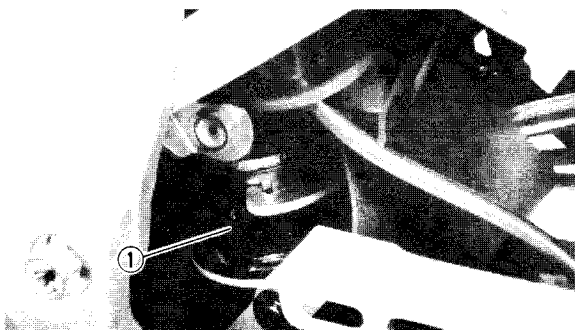
The spring preload of the rear shock absorber can be adjusted to suit rider's preference, weight, and the course conditions.

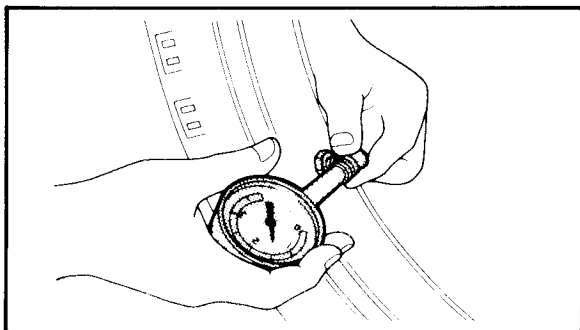
1. Adjust:
  - Spring preload

### Adjustment steps:

- To increase preload, adjuster ① is turned toward the "H". To decrease preload, adjuster is turned toward the "S".

	Hard				STD	Soft	
Adjusting position	7	6	5	4	3	2	1





## TIRE INSPECTION

## 1. Measure:

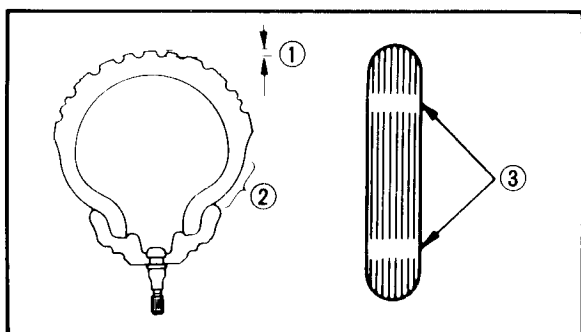
- Tire pressure
- Out of specification → Adjust.

**⚠ WARNING:**

Tire inflation pressure should be checked and adjusted when the temperature of the tire equals the ambient air temperature. Tire inflation pressure must be adjusted according to total weight of cargo, rider, passenger, and accessories (fairing, saddlebags, etc. if approved for this model), and vehicle speed.

Basic weight: With oil and full fuel tank	186 kg (410 lb) (Except for California) 189 kg (417 lb) (For California)	
Maximum load*	156 kg (344 lb) (Except for California) 153 kg (337 lb) (For California)	
Cold tire pressure	Front	Rear
Up to 90 kg (198 lb) load*	200 kPa (2.0 kg/cm <sup>2</sup> , 28 psi)	230 kPa (2.3 kg/cm <sup>2</sup> , 32 psi)
90 kg (198 lb) ~ Maximum load*	200 kPa (2.0 kg/cm <sup>2</sup> , 28 psi)	250 kPa (2.5 kg/cm <sup>2</sup> , 36 psi)
High speed riding	200 kPa (2.0 kg/cm <sup>2</sup> , 28 psi)	250 kPa (2.5 kg/cm <sup>2</sup> , 36 psi)

\* Load is the total weight of cargo, rider, passenger, and accessories.



## 2. Inspect:

- Tire surfaces
- Wear/Damage → Replace.



**Minimum Tire Tread Depth**  
(Front and Rear):  
1 mm (0.04 in)

- ① Tread depth
- ② Side wall
- ③ Wear indicator

**⚠ WARNING:**

- After extensive tests, the tires mentioned below have been approved by Yamaha motor Co., Ltd. for this model. No guarantee for handling characteristics can be given if tire combinations other than what is approved are used on this motorcycle. The front and rear tires should be of the same manufacture and design.

**FRONT:**

Manufacture	Size	Type
Bridgestone	110/70 R17-53H	CY03
Dunlop	110/70 R17-53H	K455F

**REAR:**

Manufacture	Size	Type
Bridgestone	140/60 R18-64H	CY04
Dunlop	140/60 R18-64H	K455

- It is dangerous to ride with a worn-out tire. When a tire tread begins to show line, replace the tire immediately.
- Patching a punctured tube is not recommended. If it is absolutely necessary to do so, use great care and replace the tube as soon as possible with a good quality replacement.
- Do not attempt to use tubeless tires on a wheel designed for tube type tires only. Tire failure and personal injury may result from sudden deflation.

Be sure to instal

Wheel	Tire
Tube type	Tube type only
Tubeless	Tube type or tubeless

Be sure to install the correct tube when using tube type tires.

**WHEEL INSPECTION****1. Inspect:**

- Aluminum wheels  
Damage/Bends → Replace.  
Never attempt even small repairs to the wheel.

**NOTE:**

Always balance the wheel when a tire or wheel has been changed or replaced.

**CABLE INSPECTION**

## 1. Inspect:

- Throttle cables
- Cable sheaths
- Clutch cable
- Starter cable

Check for damage to the cable insulation.

Corrosion/Damage → Replace.

Obstruction → Reroute.

Unsmoothness → Lubricate.

**LUBRICATION****Throttle cables/Clutch cable/Starter cable****Cable lubrication steps:**

- Remove the two grip ends that secure throttle to handlebar.
- Hold cable end high and apply several drops of lubricant to cable.
- Coat metal surface of disassembled throttle twist grip with suitable all-purpose grease to minimize friction.

**SAE 10W30 Motor Oil****Lever/Pedal**

Lubricate pivoting part of each lever and pedal.

**SAE 10W30 Motor Oil****Sidestand**

Lubricate the pivoting part.

**SAE 10W30 Motor Oil**



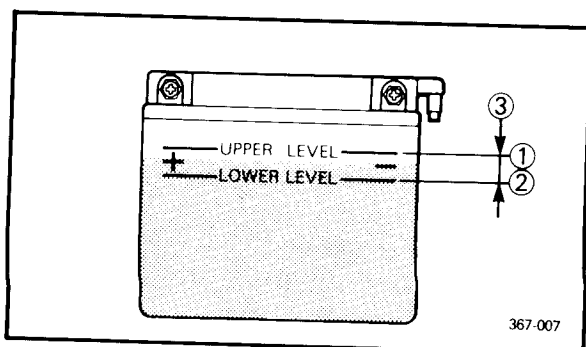
## ELECTRICAL

## BATTERY INSPECTION

## 1. Remove:

- Seat

Refer to the "COWLING REMOVAL AND INSTALLATION - REMOVAL" section.



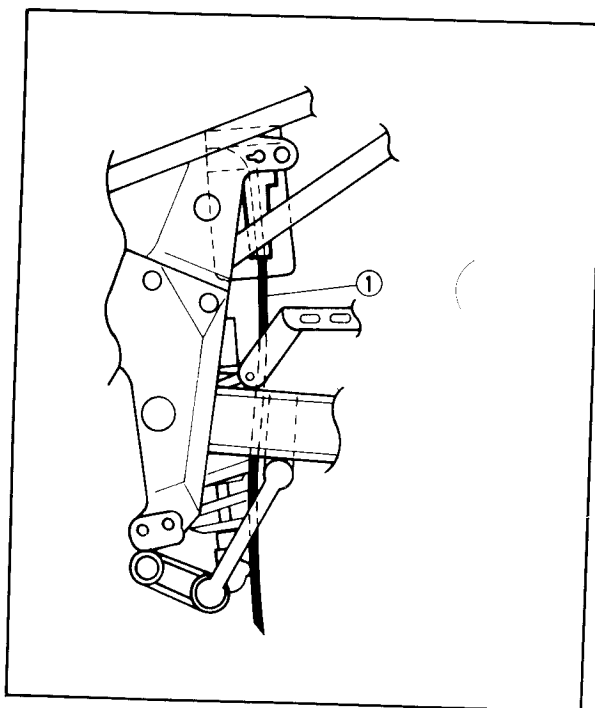
## 2. Inspect:

Fluid level ③ should be between upper ① and lower ② marks.

Incorrect → Refill.

**⚠ CAUTION:**

Refill with distilled water only; tap water contains minerals harmful to a battery.



## 3. Connect:

- Breather pipe (Battery) ①

Be sure the hose is properly attached and routed.

## 4. Inspect:

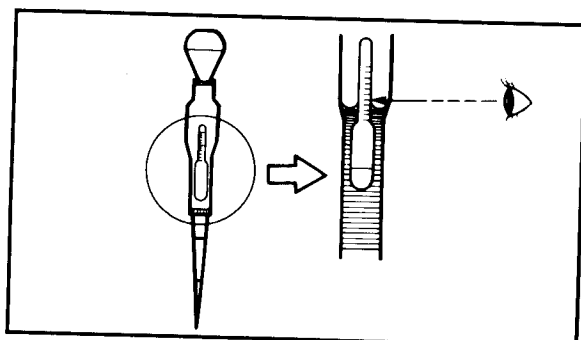
- Breather pipe (Battery) ①

Obstruction → Reroute.

Damage → Replace.

**⚠ CAUTION:**

When inspecting the battery, be sure the breather pipe is routed correctly. If the breather pipe touches the frame or exits in such a way as to cause battery electrolyte or gas to exit onto the frame, structural and cosmetic damage to the motorcycle can occur.



## 5. Check:

- Specific gravity:

Less than 1.280 → Recharge battery.

**Charging Current:**

1.2 amps/10 hrs

**Specific Gravity:**

1.280 at 20°C (68°F)



**Replace the battery if:**

- Battery voltage will not rise to a specific value or bubbles fail to rise even after many hours of charging.
- Sulfation of one or more cells occurs, as indicated by the plates turning white, or an accumulation of material exists in the bottom of the cell.
- Specific gravity readings after a long, slow charge indicate one cell to be lower than the rest.
- Warpage or buckling of plates or insulators is evident.

**⚠ CAUTION:**

Always charge a new battery before using it to ensure maximum performance.

**⚠ WARNING:**

Battery electrolyte is dangerous; it contains sulfuric acid and therefore is poisonous and highly caustic.

Always follow these preventive measures:

- Avoid bodily contact with electrolyte as it can cause severe burns or permanent eye injury.
- Wear protective eye gear when handling or working near batteries.

**Antidote (EXTERNAL):**

- SKIN—Flush with water.
- EYES—Flush with water for 15 minutes and get immediate medical attention.

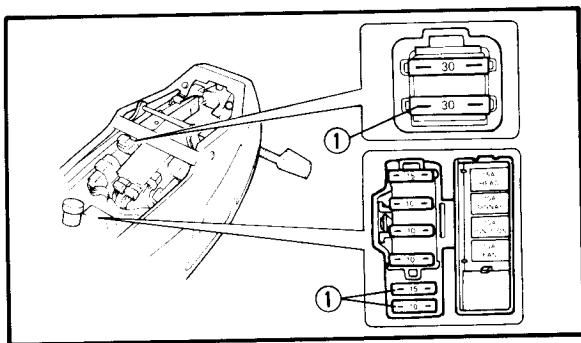
**Antidote (INTERNAL):**

- Drink large quantities of water or milk follow with milk of magnesia, beaten egg, or vegetable oil. Get immediate medical attention.

Batteries also generate explosive hydrogen gas, therefore you should always follow these preventive measures:

- Charge batteries in a well-ventilated area.
- Keep batteries away from fire, sparks, or open flames (e.g., welding equipment, lighted cigarettes, etc.)
- DO NOT SMOKE when charging or handling batteries.

**KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.**



## FUSE INSPECTION

The fuse panel is located under the seat.

### 1. Inspect:

#### •Fuses

Defective→Replace.

Blown fuse (New)→Inspect circuit.

### NOTE:

Install new fuses of proper amperage.

#### ① Spare fuses

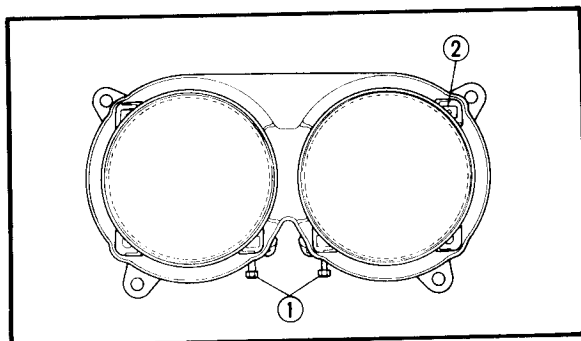
Description	Amperage	Quantity
Main	30A	1
Headlight	10A	1
Signal	10A	1
Ignition	10A	1
Reserve	10A	1
	30A	1

### Blown fuse replacement steps:

- Turn off ignition and the circuit.
- Install a new fuse of proper amperage.
- Turn on switches to verify operation of electrical device.
- If fuse blows immediately again, check circuit in question.

### ⚠ WARNING:

Do not use fuses of higher amperage rating than recommended. Extensive electrical system damage and fire could result from substitution of a fuse of improper amperage.



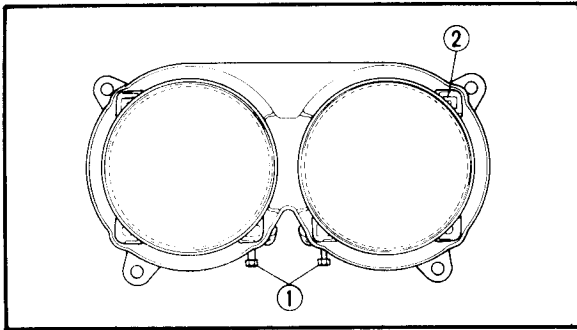
## HEADLIGHT BEAM ADJUSTMENT

### 1. Adjust:

#### •Horizontal adjustment:

To adjust the beam to the right, turn the adjusting screw ① clockwise.

To adjust the beam to the left, turn the screw ① counterclockwise.



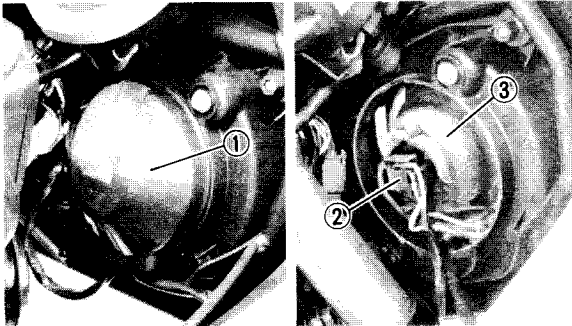
## 2. Adjust:

### •Vertical adjustment:

To raise the beam, turn the adjusting screw

② clockwise.

To lower the beam, turn the screw ② counterclockwise.



## HEADLIGHT BULB REPLACEMENT

### 1. Remove:

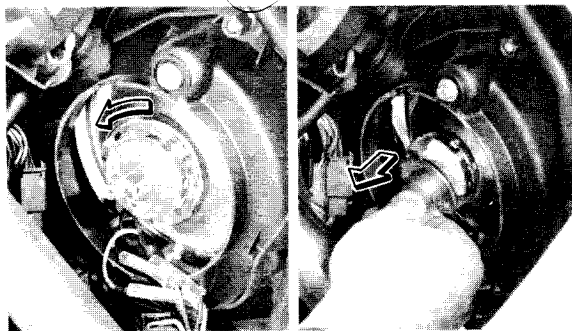
- Headlight cover ①

### 2. Disconnect:

- Headlight bulb coupler ②

### 3. Remove:

- Headlight bulb cover ③



### 4. Remove:

- Bulb

Turn the bulb holder counterclockwise to release bulb.

### **⚠ WARNING:**

**Keep flammable products or your hands away from the bulb while it is on, it will be hot. Do not touch the bulb until it cools down.**

### 5. Install:

- Bulb (New)

Secure the new bulb with the bulb holder.

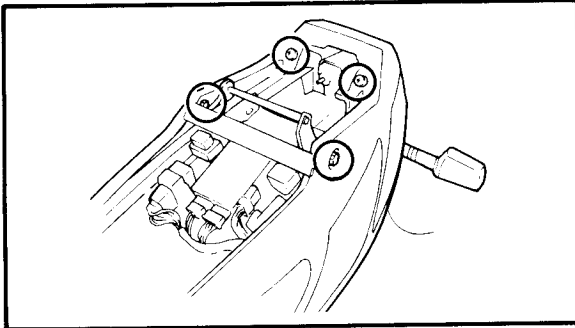
### **⚠ CAUTION:**

**Avoid touching glass part of bulb. Also keep it free from oil otherwise, transparency of glass, bulb life and illuminous flux will be adversely affected. If oil gets on bulb, clean it with a cloth moistened thoroughly with alcohol or lacquer thinner.**

### 6. Install:

- Headlight bulb cover

7. Connect:
  - Headlight bulb coupler
8. Install:
  - Headlight cover.



## TAIL/BRAKE BULB REPLACEMENT

1. Remove:
  - Seat
  - Seat cowling
2. Remove:
  - Bulb socket

Turn the bulb socket approximately 30° counterclockwise.
3. Remove:
  - Defective bulb
4. Install:
  - Bulb socket
  - Seat cowling
  - Seat

