

## CHAPTER 7. APPENDICES

GENERAL SPECIFICATIONS .....	7-1
MAINTENANCE SPECIFICATIONS .....	7-3
A. Engine .....	7-3
B. Chassis .....	7-8
C. Electrical .....	7-9
TORQUE SPECIFICATIONS .....	7-12
GENERAL TORQUE SPECIFICATIONS .....	7-13
CONSUMER INFORMATION .....	7-14
STOPPING DISTANCE .....	7-14
DEFINITION OF UNITS .....	7-14
COLOR CODES .....	7-14
CONVERSION TABLE .....	7-15
LUBRICATION DIAGRAMS .....	7-16
CRANKSHAFT CONNECTING ROD/PISTON .....	7-18
CAM CHAIN .....	7-19
CYLINDER HEAD COVER CYLINDER HEAD/VALVE .....	7-20
TRANSMISSION .....	7-21
FRONT WHEEL .....	7-22
FRONT FORK .....	7-23
FRONT BRAKE CALIPER .....	7-24
REAR WHEEL/REAR BRAKE .....	7-25
ELECTRICAL COMPONENTS .....	7-26
WIRING DIAGRAM .....	7-28
CABLE ROUTING .....	7-29

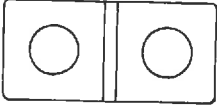
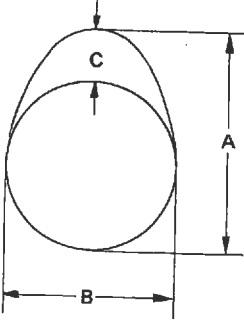
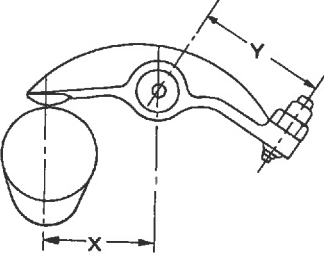
## GENERAL SPECIFICATIONS

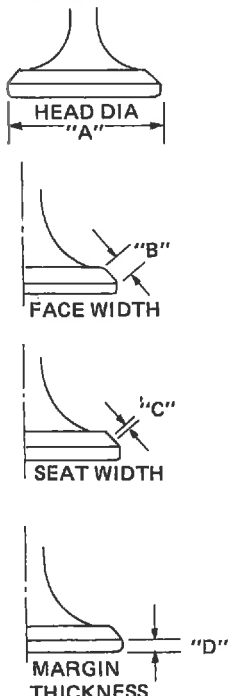
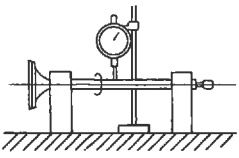
Model IBM Number:	5V4
Engine Starting Number:	5V4-000101
Frame Starting Number:	5V4-000101
Dimension:	
Overall Length	2,120 mm (83.5 in)
Overall Width	925 mm (36.4 in)
Overall Height	1,220 mm (48.0 in)
Seat Height	790 mm (31.1 in)
Wheelbase	1,435 mm (56.5 in)
Minimum Ground Clearance	130 mm ( 5.1 in)
Weight:	
Net Weight	212 kg (467 lb)
Performance:	
Minimum Turning Radius	2,500 mm (98.4 in)
Engine:	
Type	Air Cooled, 4-Stroke, Gasoline, SOHC
Model	5V4
Cylinder	Vertical-Twin, Parallel forward incline
Displacement	653 cm <sup>3</sup>
Bore x Stroke	75 x 74 mm (2.95 x 2.91 in)
Compression Ratio	8.7 : 1
Starting System	Electric or Kick Starter
Ignition System	TCI
Engine Oil:	
Type	Yamalube 4-cycle oil or SAE 20W/40 SE motor oil
Oil Capacity:	
Total Amount	2.5 ℓ (2.20 Imp qt, 2.64 US qt)
Periodic Oil change	2.0 ℓ (1.76 Imp qt, 2.11 US qt)
Lubrication System	Wet Sump
Generator System	AC Magneto
Spark Plug	BP7ES (NGK) N-7Y (CHAMPION)
Carburetor x Quantity	BS34 x 2
Air Cleaner Element	Dry Type Element
Clutch Type	Wet, Multiple-Disc
Transmission:	
Primary Reduction System	Gear
Primary Reduction Ratio	72/27 (2.666)
Secondary Reduction System	Chain Drive
Secondary Reduction Ratio	34/17 (2.000)
Transmission Type	Constant Mesh, 5-Speed
Operation System	Left Foot Operation
Gear Ratio 1st	32/13 (2.461)
2nd	27/17 (1.588)
3rd	26/20 (1.300)
4th	23/21 (1.095)
5th	22/23 (0.956)

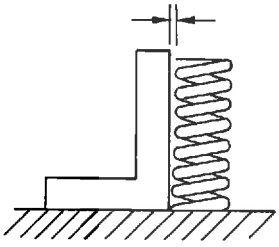
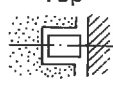
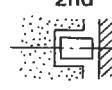

Chassis: Frame Type	Double cradle, high tensile frame					
Steering: Caster Trail	27° 115 mm (45.3 in)					
Fuel: Type Tank Capacity', Total Reserve	Regular Gasoline 11.5 ℓ (10.1 Imp gal, 12.2 US gal) 2.3 ℓ (2.02 Imp gal, 2.43 US gal)					
Tire Size: Front Rear	3.50S 19-4PR (Tube-type tire) 130/90-16 67S (Tube-type tire)					
Tire Pressure (Cold):  Up to 90 kg (198 lb) load  90 kg (198 lb) load ~ 206 kg (453 lb) load  High Speed Riding	Front			Rear		
	kPa	kg/cm <sup>2</sup>	psi	kPa	kg/cm <sup>2</sup>	psi
	157	1.6	23	196	2.0	28
	196	2.0	28	226	2.3	32
	196	2.0	28	226	2.3	32
Braking System: Front Rear	Disc Brake/Right-Hand operation Drum/Right Foot Operation					
Suspension: Front Rear	Telescopic Fork Swingarm					
Shock Absorber: Front Rear	Coil Spring, Oil Damper Coil Spring, Oil Damper					
Electrical: Voltage	12V					
Bulb Wattage x Quantity: Headlight Tail/Brake Light Turn Light Meter Light License Light Indicator Lights Neutral Highbeam Headlight failure Turn  Battery: Model/Capacity	50-40W x 1 (Sealed beam) 3/32 cp (8W/27W) x 2 32 cp (27W) x 4 3.4W x 2 3.8W x 2  3.4W x 1 3.4W x 1 3.4W x 1 3.4W x 2  YB14L-A2 (YUASA)/12V 14AH					

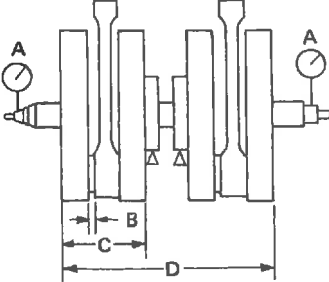
# MAINTENANCE SPECIFICATIONS

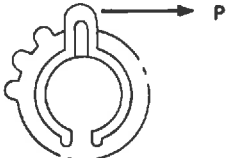
## A. Engine

<b>Cylinder Head:</b> Volume Warp Limit Head Gasket Thickness (New)	$59.2 \pm 0.4 \text{ cm}^3$ $0.03 \text{ mm (0.0012 in)}$ $1.2 \text{ mm (0.047 in)}$		
<b>Cylinder:</b> Material Bore Size Taper Limit	Aluminum alloy with cast iron sleeve $75.0 \text{ mm (2.95 in)}$ $0.05 \text{ mm (0.002 in)}$		
<b>Camshaft:</b> Drive Method Bearing Type/Number Cam Bearing Size	Chain drive Ball bearing (6005) x 4		
<b>Camshaft Outside Diameter</b>  <b>Shaft-to-Bearing Clearance</b>  <b>Cam Dimensions</b>  	$24_{-0.033}^{-0.020} \text{ mm (0.9448}_{-0.0013}^{-0.0008} \text{ in)}$ $/25_{-0.033}^{-0.020} \text{ mm (0.9843}_{-0.0013}^{-0.0008} \text{ in)}$ $0.020 \sim 0.054 \text{ mm (0.0008} \sim 0.0021 \text{ in)}$		
	<b>Intake</b>	<b>Standard</b>	<b>Wear Limit</b>
	<b>A</b>	$39.99 \text{ mm (1.574 in)}$	$39.84 \text{ mm (1.569 in)}$
	<b>B</b>	$32.24 \text{ mm (1.269 in)}$	$32.09 \text{ mm (1.263 in)}$
	<b>C</b>	$7.99 \text{ mm (0.314 in)}$	—
	<b>Exhaust</b>		
	<b>A</b>	$40.03 \text{ mm (1.576 in)}$	$39.88 \text{ mm (1.570 in)}$
	<b>B</b>	$32.30 \text{ mm (1.271 in)}$	$32.15 \text{ mm (1.266 in)}$
	<b>C</b>	$8.03 \text{ mm (0.316 in)}$	—
	<b>Cam Chain Type/No. of Links</b>	TSUBAKIMOTO BF05M/106L	
<b>Rocker Arm/Rocker Arm Shaft:</b> Rocker Arm Inside Diameter Shaft Outside Diameter Arm-to-Shaft Clearance Lift Ratio/X:Y  	$15_{-0}^{+0.018} \text{ mm (0.591}_{-0}^{+0.0007} \text{ in)}$ $15_{-0.015}^{-0.009} \text{ mm (0.591}_{-0.0006}^{-0.0004} \text{ in)}$ $0.009 \sim 0.033 \text{ mm (0.00035} \sim 0.00130 \text{ in)}$ $40 : 48.41 \text{ mm (1.575 : 1.906 in)}/1:1.21$		

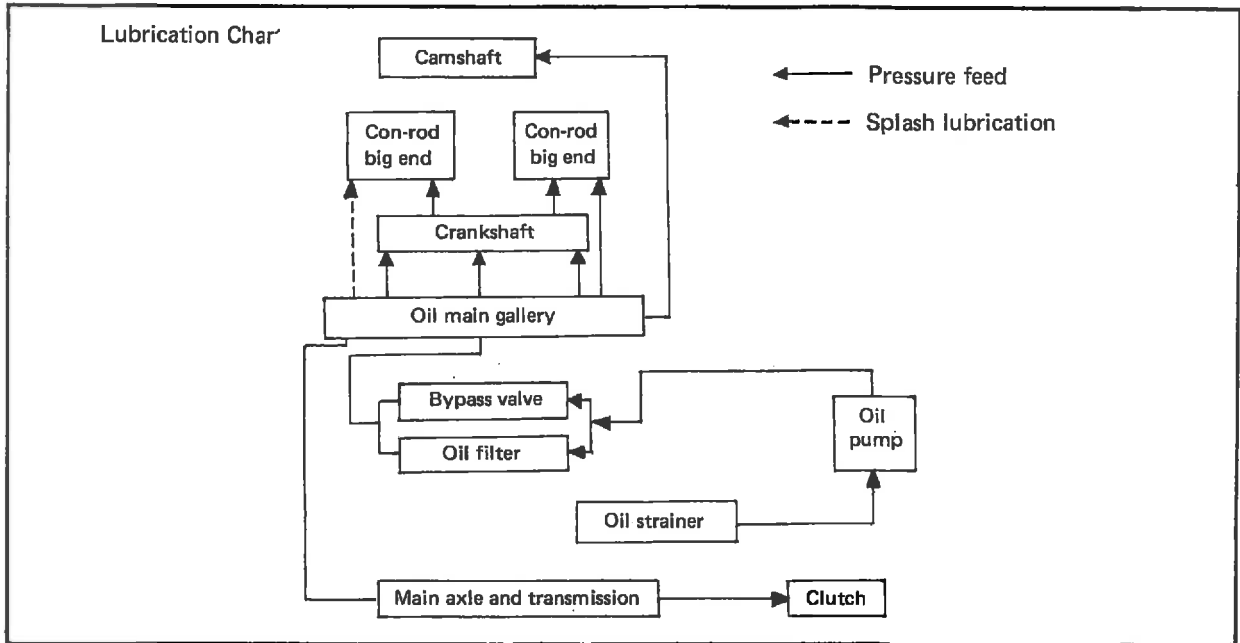
<p>Valve/Valve Seat/Valve Guide:  Valve Clearance (Cold) IN:  EX.</p> <p>Valve Dimensions</p> 	<p>0.06 mm (0.0024 in)  0.15 mm (0.0059 in)</p> <table border="1"> <thead> <tr> <th>Intake</th> <th>Standard</th> <th>Limit</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>41.0 mm (1.614 in)</td> <td>—</td> </tr> <tr> <td>B</td> <td>2.1 mm (0.083 in)</td> <td>—</td> </tr> <tr> <td>C</td> <td>1.3 mm (0.051 in)</td> <td>2.0 mm (0.08 in)</td> </tr> <tr> <td>D</td> <td>1.3 mm (0.051 in)</td> <td>0.7 mm (0.028 in)</td> </tr> <tr> <td>Exhaust</td> <td>Standard</td> <td>Limit</td> </tr> <tr> <td>A</td> <td>35.0 mm (1.378 in)</td> <td>—</td> </tr> <tr> <td>B</td> <td>2.1 mm (0.083 in)</td> <td>—</td> </tr> <tr> <td>C</td> <td>1.3 mm (0.051 in)</td> <td>2.0 mm (0.08 in)</td> </tr> <tr> <td>D</td> <td>1.3 mm (0.051 in)</td> <td>0.7 mm (0.028 in)</td> </tr> </tbody> </table>	Intake	Standard	Limit	A	41.0 mm (1.614 in)	—	B	2.1 mm (0.083 in)	—	C	1.3 mm (0.051 in)	2.0 mm (0.08 in)	D	1.3 mm (0.051 in)	0.7 mm (0.028 in)	Exhaust	Standard	Limit	A	35.0 mm (1.378 in)	—	B	2.1 mm (0.083 in)	—	C	1.3 mm (0.051 in)	2.0 mm (0.08 in)	D	1.3 mm (0.051 in)	0.7 mm (0.028 in)
Intake	Standard	Limit																													
A	41.0 mm (1.614 in)	—																													
B	2.1 mm (0.083 in)	—																													
C	1.3 mm (0.051 in)	2.0 mm (0.08 in)																													
D	1.3 mm (0.051 in)	0.7 mm (0.028 in)																													
Exhaust	Standard	Limit																													
A	35.0 mm (1.378 in)	—																													
B	2.1 mm (0.083 in)	—																													
C	1.3 mm (0.051 in)	2.0 mm (0.08 in)																													
D	1.3 mm (0.051 in)	0.7 mm (0.028 in)																													
<p>Stem Diameter (O.D.) IN.  EX.</p> <p>Guide Diameter (I.D.) IN.  EX.</p> <p>Stem-to-Guide  Clearance/Limit IN.  EX.</p> <p>Stem Run-Out Limit</p> 	<p><math>8 \begin{smallmatrix} 0 \\ -0.015 \end{smallmatrix}</math> mm (<math>0.315 \begin{smallmatrix} 0 \\ -0.0006 \end{smallmatrix}</math> in)</p> <p><math>8 \begin{smallmatrix} -0.025 \\ -0.040 \end{smallmatrix}</math> mm (<math>0.315 \begin{smallmatrix} -0.0010 \\ -0.0016 \end{smallmatrix}</math> in)</p> <p><math>8 \begin{smallmatrix} +0.019 \\ +0.010 \end{smallmatrix}</math> mm (<math>0.315 \begin{smallmatrix} +0.0007 \\ +0.0004 \end{smallmatrix}</math> in)</p> <p><math>8 \begin{smallmatrix} +0.019 \\ +0.010 \end{smallmatrix}</math> mm (<math>0.315 \begin{smallmatrix} +0.0007 \\ +0.0004 \end{smallmatrix}</math> in)</p> <p>0.01~0.034 mm (0.0004 ~ 0.0013 in)  0.035~0.059 mm (0.0014~0.0023 in)  0.03 mm (0.0012 in)</p>																														

Valve Spring:	Inner		Outer	
	Intake	Exhaust	Intake	Exhaust
Free Length	42.0 mm (1.654 in)	←	42.55 mm (1.675 in)	←
Spring Rate	K1 = 141 N/mm (K1 = 1.43kg/mm) (K1 = 80.1 lb/in) K2 = 17.8 N/mm (K2 = 1.81kg/mm) (K2 = 101 lb/in)	←  ←	K1 = 314 N/mm (K1 = 3.2kg/mm) (K1 = 179 lb/in) K2 = 40.1 N/mm (K2 = 4.18kg/mm) (K2 = 234 lb/in)	←  ←
Installed Length (Valve Closed)	35.00mm (1.378 in)	←	37.0 mm (1.457 in)	←
Installed Pressure (Valve Closed)	10.0 ± 0.7 kg (22.0 ± 1.5 lb)	←	17.7 ± 1.25 kg (39.0 ± 2.8 lb)	←
Tilt Limit	2.5°	←	2.5°	←
Allowable Tilt From Vertical 				
Direction of Winding	Left		Right	
Piston: Piston Size/Measuring Point Piston Clearance Oversize    1st 2nd 3rd 4th Offset	75.0 mm (2.95 in) 0.050 ~ 0.055 mm (0.0020 ~ 0.0022 in) 75.25 mm (2.95 in) 75.50 mm (2.95 in) 75.75 mm (2.99 in) 76.00 mm (2.99 in) 0 mm (0 in)			
Piston Ring:	Top	2nd	Oil ring	
Design				
	1.2 mm (0.047 in)	1.5 mm (0.059 in)	2.8 mm (0.110 in)	
End Gap (Installed)	0.2 ~ 0.4 mm (0.0079 ~ 0.0157 in)	0.2 ~ 0.4 mm (0.0079 ~ 0.0157 in)	0.3 ~ 0.9 mm (0.0118 ~ 0.0351 in)	
Side Clearance	0.04 ~ 0.08 mm (0.0016 ~ 0.0031 in)	0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)	0 (0)	
Plating/Coating	Chrome/Ferox	Chrome/Ferox	Chrome/Ferox	

<p>Connecting Rod: Big End I.D.</p> <p>Big End Bearing -- Type -- Size</p> <p>Small End I.D.</p>	<p><math>34^{+0.016}_0</math> mm (<math>1.339^{+0.0006}_0</math> in)</p> <p>Needle Bearing <math>\phi 26 \times \phi 34 \times 19.8</math></p> <p><math>20^{+0.028}_{+0.015}</math> mm (<math>0.787^{+0.0011}_{+0.0006}</math> in)</p>
<p>Crankshaft:</p>  <p>Crankshaft Deflection Limit (A)</p> <p>Con-rod Large End Clearance (B)</p> <p>Width of Crankshaft (C)</p> <p>(D)</p> <p>Crank Pin I.D.</p> <p>Crank Pin O.D. x Length</p> <p>Crankshaft Bearing</p> <ul style="list-style-type: none"> <li>- Type (Right)</li> <li>- Type (Others)</li> </ul> <p>Oil Seal</p> <ul style="list-style-type: none"> <li>- Type (Right)/Quantity</li> </ul>	<p>0.05 mm (0.002 in)</p> <p>0.15 ~ 0.4 mm (0.0059 ~ 0.0157 in)</p> <p><math>66^{+0.05}_{-0.10}</math> mm (<math>2.598^{+0.002}_{-0.004}</math> in)</p> <p><math>186^{+0}_{-0.3}</math> mm (<math>7.323^{+0}_{-0.012}</math> in)</p> <p><math>26^{+0.077}_{-0.095}</math> mm (<math>1.024^{+0.003}_{-0.004}</math> in)</p> <p><math>26^{+0}_{-0.006} \times 65^{+0.1}_{-0.2}</math> mm</p> <p><math>(1.024^{+0}_{-0.0002} \times (2.559^{+0.004}_{-0.008}</math> in)</p> <p>Ball Bearing <math>\phi 30</math>-<math>\phi 78</math>-19</p> <p>Ball Bearing <math>\phi 32</math>-<math>\phi 68</math>-17</p> <p>Rollar Bearing SD-25-40-9</p>
<p>Clutch:</p> <p>Clutch Type</p> <p>Clutch Operating Mechanism</p> <p>Primary Reduction Ratio and Method</p> <p>Primary Reduction Gear Back Lash (4 teeth)</p> <p>Friction Plate</p> <ul style="list-style-type: none"> <li>Thickness/Quantity</li> <li>Wear Limit</li> </ul> <p>Clutch Plate</p> <ul style="list-style-type: none"> <li>Thickness/Quantity</li> <li>Warp Limit</li> </ul> <p>Clutch Spring</p> <ul style="list-style-type: none"> <li>Free Length/Quantity</li> </ul> <p>Clutch Housing Radial Play</p> <p>Push Rod Bending Limit</p>	<p>Wet, multiple type</p> <p>Inner push type, screw push system</p> <p>72/27 (2.666), Spar gear</p> <p><math>21.45^{+0}_{-0.025}</math> mm (<math>0.8445^{+0}_{-0.00010}</math> in)</p> <p>3 mm (0.118 in)/6 pcs.</p> <p>2.7 mm (0.106 in)</p> <p>1.4 mm (0.055 in)/5 pcs.</p> <p>0.05 mm (0.002 in)</p> <p>42.8 mm (1.69 in)/6 pcs.</p> <p>0.027 ~ 0.081 mm (0.0011 ~ 0.0032 in)</p> <p>0.2 mm (0.008 in)</p>

<b>Transmission:</b> Main Axle Deflection Limit Drive Axle Deflection Limit Main Axle Bearing - Type (Left) - Type (Right) Drive Axle Bearing - Type (Left) - Type (Right) Gear Ratio: 1st 2nd 3rd 4th 5th	0.08 mm (0.0031 in) 0.08 mm (0.0031 in) Needle Bearing φ 20-φ 30-20 Ball Bearing φ 25-φ 52-20.6 Ball Bearing φ 30-φ 62-23.8 Needle Bearing φ 20-φ 30-16 32/13 (2.461) 27/17 (1.588) 26/20 (1.300) 23/21 (1.095) 22/23 (0.956)
<b>Shifter:</b> Shifting Type Change Pedal Shaft Oil Seal Type	Cam Drum, Guide Bar SDO-14-24-6
<b>Kick Starter:</b> Type Spring Clip Friction Weight:  Kick Axle Oil Seal Type	Bendix Type P = 1.2 ~ 1.7 kg (2.6 ~ 3.7 lb)  SD-25-35-7
<b>Carburetor:</b> Type/Manufacturer/Quantity I.D. Mark Venturi Size Main Jet (M.J.) Main Air Jet (M.A.J.) Jet Needle (J.N.) Pilot Jet (P.J.) Pilot Air Jet (P.A.J.) Pilot Screw (P.S.) Starter Jet (G.S.) Valve Seat Size (V.S.) Fuel Level (F.L.) Float Height (F.H.) Engine Idling Speed Vacuum Pressure	BS34III/MIKUNI/2 5V4 00 φ 34 # 132.5 # 85 5HX12 # 42.5 # 135 Preset # 30 φ 2.0 1.0 ± 1.0 mm (0.12 ± 0.04 in) 22.0 ± 1.0 mm (0.87 ± 0.04 in) 1,200 ± 50 rpm 180 mm Hg (7.09 in Hg)
<b>Lubrication System:</b> Oil Filter Type Oil Pump Type Tip Clearance Side Clearance Bypath Valve Setting Pressure Relief Valve Operating Pressure	Paper Type Trochoid Pump 0.03 ~ 0.09 mm (0.0012 ~ 0.0035 in) 0.03 ~ 0.08 mm (0.0012 ~ 0.0031 in) 1.0 ± 0.2 kg/cm <sup>2</sup> (14.2 ± 2.8 psi) 5 ± 0.5 kg/cm <sup>2</sup> (71.1 ± 7.1 psi)





## B. Chassis

<b>Steering System:</b> Head Pipe Bearing Type Number and Size of Balls in Steering Head - Upper - Lower	Ball Bearing  19 pcs 1/4 in 19 pcs 1/4 in
<b>Front Suspension:</b> Front Fork — Travel/Diameter -- Spring Free Length -- Spring Rate  -- Oil Capacity -- Oil Type	150 mm (5.91 in)/36 mm (1.42 in) 482 mm (19.0 in) $K_1 = 4.71 \text{ N/mm}$ (0.48 kg/mm, 26.9 lb/in)/ 0 ~ 100 mm (0 ~ 3.94 in) $K_2 = 6.37 \text{ N/mm}$ (0.65 kg/mm, 36.4 lb/in)/ 100 ~ 150 mm (3.94 ~ 5.91 in) 169 cm <sup>3</sup> (5.96 Imp oz, 5.71 US oz) Yamaha Fork Oil 10 wt or Equivalent
<b>Rear Suspension:</b> Shock Absorber - Travel - Spring Free Length - Spring Rate  Swing Arm Free Play - Side Pivot Shaft - Bearing Type - Dust Seal Type	80 mm (3.15 in) 226 mm (8.90 in) $K_1 = 63.7 \text{ N/mm}$ (6.5 kg/mm, 3.64 lb/in)/ 0 ~ 27.5 mm (0 ~ 1.08 in) $K_2 = 84.3 \text{ N/mm}$ (8.6 kg/mm, 482 lb/in)/ 27.5 ~ 55 mm (1.08 ~ 2.17 in) 1 mm (0.04 in) Bush Type Thrust Cover

<p>Wheel:</p> <p>Type – Front/Rear</p> <p>Rim Size - Front/Material - Rear/Material</p> <p>Rim Run Out Limit (Front/Rear) - Vertical - Lateral</p> <p>Front Wheel Bearing Type - Left - Right</p> <p>Rear Wheel Bearing Type - Left - Right</p> <p>Front Wheel Oil Seal Type - Right</p> <p>Meter Gear Oil Seal Type</p>	<p>Spoke wheel</p> <p>MT1.85 x 19/Steel</p> <p>MT2.75 x 16/Steel</p> <p>2 mm (0.079 in)</p> <p>2 mm (0.079 in)</p> <p>6302Z</p> <p>6302Z</p> <p>6203RS/6203</p> <p>6303RS</p> <p>SD-22-42-7-1</p> <p>SDD-45-56-6</p>
<p>Disc Brake (Front):</p> <p>Type</p> <p>Disc Size- Outside Dia. x Thickness</p> <p>Disc Wear Limit</p> <p>Pad Thickness</p> <p>Pad Wear Limit</p> <p>Master Cylinder Inside Diameter</p> <p>Caliper Cylinder Inside Diameter</p> <p>Brake Fluid Type/Quantity</p>	<p>Single Disc</p> <p>298 x 7 mm (11.73 x 0.28 in)</p> <p>6.5 mm (0.256 in)</p> <p><b>6.5 mm (0.26 in)</b></p> <p><b>1.0 mm (0.04 in)</b></p> <p>14.0 mm (0.551 in)</p> <p>38.1 mm (1.50 in)</p> <p>DOT#3 Brake Fluid/38.1 cm<sup>3</sup> (1.34 Imp oz, 1.29 US oz)</p>
<p>Drum Brake (Rear):</p> <p>Type</p> <p>Drum Diameter</p> <p>Lining Thickness</p> <p>Lining Wear Limit</p> <p>Shoe Spring Free Length</p>	<p>Leading Trailing</p> <p>180 mm (7.087 in)</p> <p>4 mm (0.157 in)</p> <p>2 mm (0.079 in)</p> <p>68 mm (2.677 in)</p>

### C. Electrical

<p>Voltage</p>	<p>12V</p>
<p>Ignition System:</p> <p>Ignition Timing (BTDC) - Advance (BTDC)</p>	<p>15° at 1,200 rpm</p> <p>41° at 3,200 rpm</p> <p>15° / 1,200 r/min</p> <p>3,200 r/min at 41 ± 1.5°</p> <p>1,900 ± 100 r/min at 16°</p> <p>Advance degree (at rotor shaft)</p> <p>Engine speed (x 10<sup>3</sup> r/min)</p>

<p>Advancer Type Ignition Type Pickup Coil Resistance (Color)</p> <p>TCI Unit - Model/Manufacturer Ignition Coil - Model/Manufacturer - Minimum Spark Gap - Primary Winding Resistance - Secondary Winding Resistance Spark Plug Gap/Torque/Cap Resistance</p>	<p>Electrical TCI 700Ω ± 10% at 20°C (68°F) (Gy ~ B), (Or ~ B) TID12-01B/Hitachi CM12-11/Hitachi 6 mm (0.236 in) 2.5Ω ± 10 % at 20°C (68°F) 11KΩ ± 20% at 20°C (68°F) 0.7 ~ 0.8 mm (0.028 ~ 0.32 in)/20 Nm (2,0 m-kg, 14.5 ft-lb)/5KΩ ± 15% at 20°C (68°F)</p>
<p>Charging System: Type Model /Manufacturer Output Armature Coil Resistance (Color) Rectifier - Model/Manufacturer - Capacity Voltage Regulator - Type - Model/Manufacturer - No Load Regulated Voltage</p>	<p>AC Magneto LD115-07B/Hitachi 14V-16A at 5,000 rpm 0.46Ω ± 10% at 20°C (68°F)(W-W) S8515/Toshiba 16A IC Type S8515/Toshiba 14.5 ± 0.3V</p>
<p>Battery: Capacity Specific Gravity</p>	<p>12V-14AH 1.280</p>
<p>Electric Starter System: Type Starter Motor - Model/Manufacturer - Output - Armature Coil Resistance - Field Coil Resistance - Brush - Overall Length - Wear Limit - Spring Pressure - Commutator - Min Diameter - Mica Undercut Starter Switch Manufacturer - Amperage Rating - Coil Winding Resistance</p>	<p>Constant Mesh S108-35/Hitachi 0.5 kw 0.006Ω ± 10% 0.003Ω ± 10% 16 mm (0.630 in) 4 mm (0.157 in) 800 g (28.2 oz) 33 mm 0.7 mm A104-70/Hitachi 100A 3.5Ω ± 10%</p>
<p>Horn: Type/Quantity Model/Manufacturer Maximum Amperage</p>	<p>Plain type CF-12/Nikko 2.5 ± 0.5A</p>
<p>Flasher Relay: Type Model/Manufacturer Self-Cancelling Device Flasher Frequency Capacity</p>	<p>Condenser type FU257CD/ND Yes 85 12V-27 x 2W + 3.4W</p>

<b>Headlight Relay/Starter Cut-off Relay</b> Model/Manufacturer Coil Winding Resistance Color Code	C2MW-1121T-100-YZ/Omron 100Ω ± 10% at 20°C
<b>Sidestand Relay:</b> Model/Manufacturer Coil Winding Resistance Color Code	G2MW-1121T-100Y4/Omron 100Ω ± 10% at 20°C Blue
<b>Circuit Breaker:</b> Type Rating	Fuse Main        20A-1 Headlight 10A-1 Signal     10A-1 Ignition   10A-1

## TORQUE SPECIFICATIONS

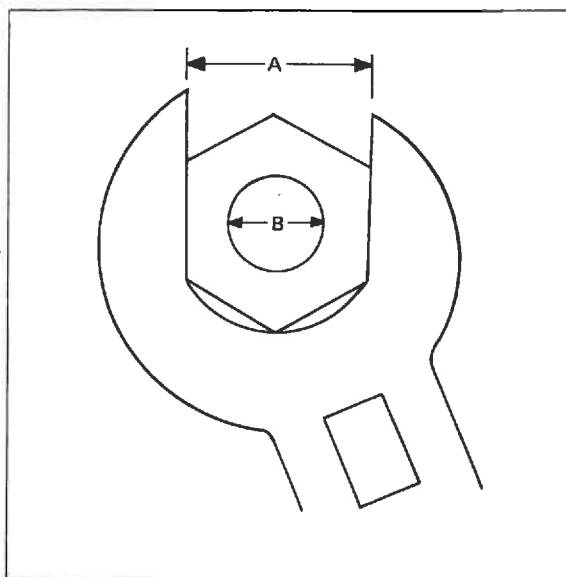
Part to be tightened	Thread dia. and part name	Tightening torque
<b>Engine:</b>		
Cylinder head and cylinder head cover	10 mm nut 8 mm bolt	36.3 Nm (3.7 m·kg, 27.0 ft·lb) 20.6 Nm (2.1 m·kg, 15.0 ft·lb)
Cylinder head	6 mm bolt	8.8 Nm (0.9 m·kg, 6.5 ft·lb)
Cylinder head cover side	6 mm crown nut 8 mm crown nut	8.8 Nm (0.9 m·kg, 6.5 ft·lb) 12.7 Nm (1.3 m·kg, 9.5 ft·lb)
Spark plug	14 mm	19.6 Nm (2.0 m·kg, 14.5 ft·lb)
Generator	12 mm nut	37.3 Nm (3.8 m·kg, 27.5 ft·lb)
Stator coil	6 mm pan head screw	8.8 Nm (0.9 m·kg, 6.5 ft·lb)
Governor	6 mm bolt	7.8 Nm (0.8 m·kg, 6.0 ft·lb)
Valve clearance adjustment nut	8 mm nut	26.5 Nm (2.7 m·kg, 19.5 ft·lb)
Cam chain tensioner	18 mm cap	20.6 Nm (2.1 m·kg, 15.0 ft·lb)
Pump cover	6 mm pan head screw	9.8 Nm (1.0 m·kg, 7.2 ft·lb)
Strainer cover	6 mm bolt	9.8 Nm (1.0 m·kg, 7.2 ft·lb)
Drain plug	30 mm bolt	41.2 Nm (4.2 m·kg, 30.5 ft·lb)
Oil filter	6 mm bolt	8.8 Nm (0.9 m·kg, 6.5 ft·lb)
Delivery pipe	10 mm union bolt	20.6 Nm (2.1 m·kg, 15.0 ft·lb)
Exhaust pipe	8 mm nut	12.7 Nm (1.3 m·kg, 9.5 ft·lb)
Crankcase	8 mm bolt/nut	20.6 Nm (2.1 m·kg, 15.0 ft·lb)
Kick crank boss	8 mm bolt	19.6 Nm (2.0 m·kg, 14.5 ft·lb)
Primary drive gear	14 mm nut	88.3 Nm (9.0 m·kg, 65.0 ft·lb)
Clutch boss	18 mm nut	78.5 Nm (8.0 m·kg, 58.0 ft·lb)
Drive sprocket	22 mm nut	63.7 Nm (6.5 m·kg, 47.0 ft·lb)
Change pedal	6 mm bolt	9.8 Nm (1.0 m·kg, 7.2 ft·lb)
<b>Chassis:</b>		
Front wheel axle	14 mm nut	105 Nm (10.7 m·kg, 77.5 ft·lb)
Front fork and axle holder	8 mm nut	13.7 Nm (1.4 m·kg, 10.0 ft·lb)
Handle crown and inner tube	8 mm nut	9.8 Nm (1.0 m·kg, 8.0 ft·lb)
Handle crown and steering shaft	8 mm nut	9.8 Nm (1.0 m·kg, 8.0 ft·lb)
Handle crown and steering shaft	14 mm bolt	53 Nm (5.4 m·kg, 39.0 ft·lb)
Handle crown and handlebar holder	8 mm bolt	17.7 Nm (1.8 m·kg, 13.0 ft·lb)
Under bracket and inner tube	8 mm nut	19.6 Nm (2.0 m·kg, 14.5 ft·lb)
Engine mounting Upper	8 mm nut	17.7 Nm (1.8 m·kg, 13.0 ft·lb)
Engine mounting Upper	10 mm nut	29.4 Nm (3.0 m·kg, 21.5 ft·lb)
Engine mounting Front	10 mm nut	45.1 Nm (4.6 m·kg, 33.5 ft·lb)
Engine mounting Rear	10 mm nut	40.2 Nm (4.1 m·kg, 29.5 ft·lb)
Engine mounting Rear-Lower	10 mm nut	45.1 Nm (4.6 m·kg, 33.5 ft·lb)
Engine mounting Lower	10 mm nut	88.3 Nm (9.0 m·kg, 65.0 ft·lb)
Front flasher and headlight	8 mm nut	9.8 Nm (1.0 m·kg, 7.2 ft·lb)
Master cylinder and brake hose	10 mm union bolt	25.5 Nm (2.6 m·kg, 19.0 ft·lb)

Part to be tightened	Thread dia. and part name	Tightening torque
Brake disc and hub	8 mm bolt	19.6 Nm (2.0 m·kg, 14.5 ft·lb)
Caliper and support bracket	8 mm bolt	17.7 Nm (1.8 m·kg, 13.0 ft·lb)
Caliper and pad	5 mm bolt	2.9 Nm (0.3 m·kg, 2.2 ft·lb)
Caliper and bleed screw	8 mm bolt	5.9 Nm (0.6 m·kg, 4.5 ft·lb)
Front caliper and front fork	10 mm bolt	34.3 Nm (3.5 m·kg, 25.5 ft·lb)
Master cylinder and cylinder bracket	6 mm bolt	5.9 Nm (0.6 m·kg, 4.5 ft·lb)
Pivot shaft	14 mm nut	63.7 Nm (6.5 m·kg, 47.0 ft·lb)
Rear wheel axle	16 mm nut	147 Nm (15.0 m·kg, 108.5 ft·lb)
Tension bar and brake caliper (plate)	8 mm nut	17.7 Nm (1.8 m·kg, 13.0 ft·lb)
Tension bar and rear arm	8 mm nut	31.4 Nm (3.2 m·kg, 23.0 ft·lb)
Rear shock absorber Upper	10 mm bolt	29.4 Nm (3.0 m·kg, 21.5 ft·lb)
Rear shock absorber Lower	10 mm bolt	38.2 Nm (3.9 m·kg, 28.0 ft·lb)
Rear arm and rear arm end	8 mm bolt	9.8 Nm (1.0 m·kg, 7.2 ft·lb)
Front fender	8 mm bolt	9.8 Nm (1.0 m·kg, 7.2 ft·lb)
Neutral switch	12 mm	12.7 Nm (1.3 m·kg, 9.5 ft·lb)

### 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 criss-cross 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)	Standard tightening torque		
		Nm	m·kg	ft·lb
10 mm	6 mm	5.9	0.6	4.5
12 mm	8 mm	14.7	1.5	11
14 mm	10 mm	29.4	3.0	22
17 mm	12 mm	53.9	5.5	40
19 mm	14 mm	83.4	8.5	61
22 mm	16 mm	127.5	13.0	94



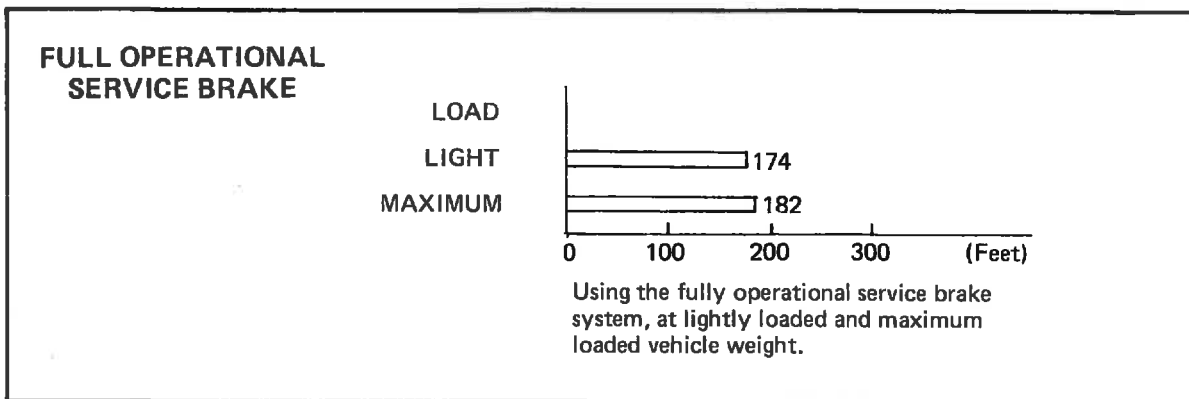
**CONSUMER INFORMATION**

**NOTICE**

The information presented represents results obtainable by skilled drivers under controlled road and vehicle conditions, and the information may not be correct under other conditions.

**STOPPING DISTANCE**

This figure indicates braking performance that can be met or exceeded by the vehicles to which it applies, without locking the wheels, under different conditions of loading and with partial failures of the braking system.



**DEFINITION OF UNITS:**

Unit	Read	Definition	Measure
mm	millimeter	10 <sup>-3</sup> meter	Length
cm	centimeter	10 <sup>-2</sup> meter	Length
kg	kilogram	10 <sup>3</sup> gram	Weight
N	Newton	1 kg x m/sec <sup>2</sup>	Force
N.m	Newton meter	N x m	Torque
m.kg	Meter kilogram	m x kg	Torque
Pa	Pascal	N/m <sup>2</sup> .	Pressure
N/mm	Newton per millimeter	N/mm	Spring rate
L	Liter	--	Volume or
cm	Cubic centimeter	--	or Capacity
r/min	Rotation per minute	—	Engine speed

**COLOR CODES**

Dg : Dark green	Br : Brown	L/W : Blue/White
Ch : Chocolate	O : Orange	Br/W: Brown/White
B : Black	L : Blue	Y/G : Yellow/Green
Y : Yellow	P : Pink	B/W : Black/White
Lg : Light green	L/B : Blue/Black	W/G: White/Green
G : Green	R/W : Red/White	W/R : White/Red
W : White	R/Y : Red/Yellow	G/Y : Green/Yellow
Sb : Sky blue	L/Y : Blue/Yellow	Y/R : Yellow/Red
R : Red	L/G : Blue/Green	Y/B : Yellow/Black

## CONVERSION TABLE

### DEFINITION OF TERMS:

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

### LENGTH

	mm	cm	m	in	ft
1 mm	1	0.1	0.001	0.03937	0.003281
1 cm	10	1	0.01	0.39 37	0.03281
1 m	1000	100	1	39.37	3.281
1 in	25.40	2.54	0.02540	1	0.08333
1 ft	304.8	30.48	0.3048	12.00	1

### WEIGHT

	kg	g	lb	oz
1 kg	1	1000	2.205	35.27
1 g	0.001	1	0.002205	0.03527
1 lb	0.4535	453.5	1	16.00
1 oz	0.02833	28.33	0.0625	1

### PRESSURE

	kpa	kg/cm <sup>2</sup>	psi	mmHg	inHg
1 kpa	1	0.01020	0.1450	7.502	0.2955
1 kg/cm <sup>2</sup>	98.07	1	14.22	735.7	28.97
1 psi	6.897	0.07033	1	51.74	2.037
1 mmHg	0.1333	0.001360	0.01933	1	0.03937
1 in Hg	3.386	0.03454	0.4910	25.40	1

### VOLUME OR CAPACITY

	cm <sup>3</sup>	L	Cu.in	US oz	Imp oz	US gal	Imp gal
1 cm <sup>3</sup>	1	0.001	0.06102	0.03381	0.03527	0.0002642	0.0002200
1 L	1000	1	61.02	33.81	35.27	0.2642	0.2200
1 cu in	16.39	0.01639	1	0.5545	5.784	0.004333	0.003608
1 US oz	29.57	0.02957	1.804	1	10.44	0.007817	0.006509
1 Imp oz	28.35	0.02835	1.730	0.959	1	0.007494	0.006240
1 US gal	3785	3.785	231.0	128.0	135.5	1	0.8331
1 Imp gal	4545	4.545	277.4	153.7	160.3	1.201	1

### FORCE

	N	kgf	lb
1 N	1	0.1020	0.2248
1 kgf	9.807	1	2.205
1 lb	4.448	0.4536	1

### TORQUE

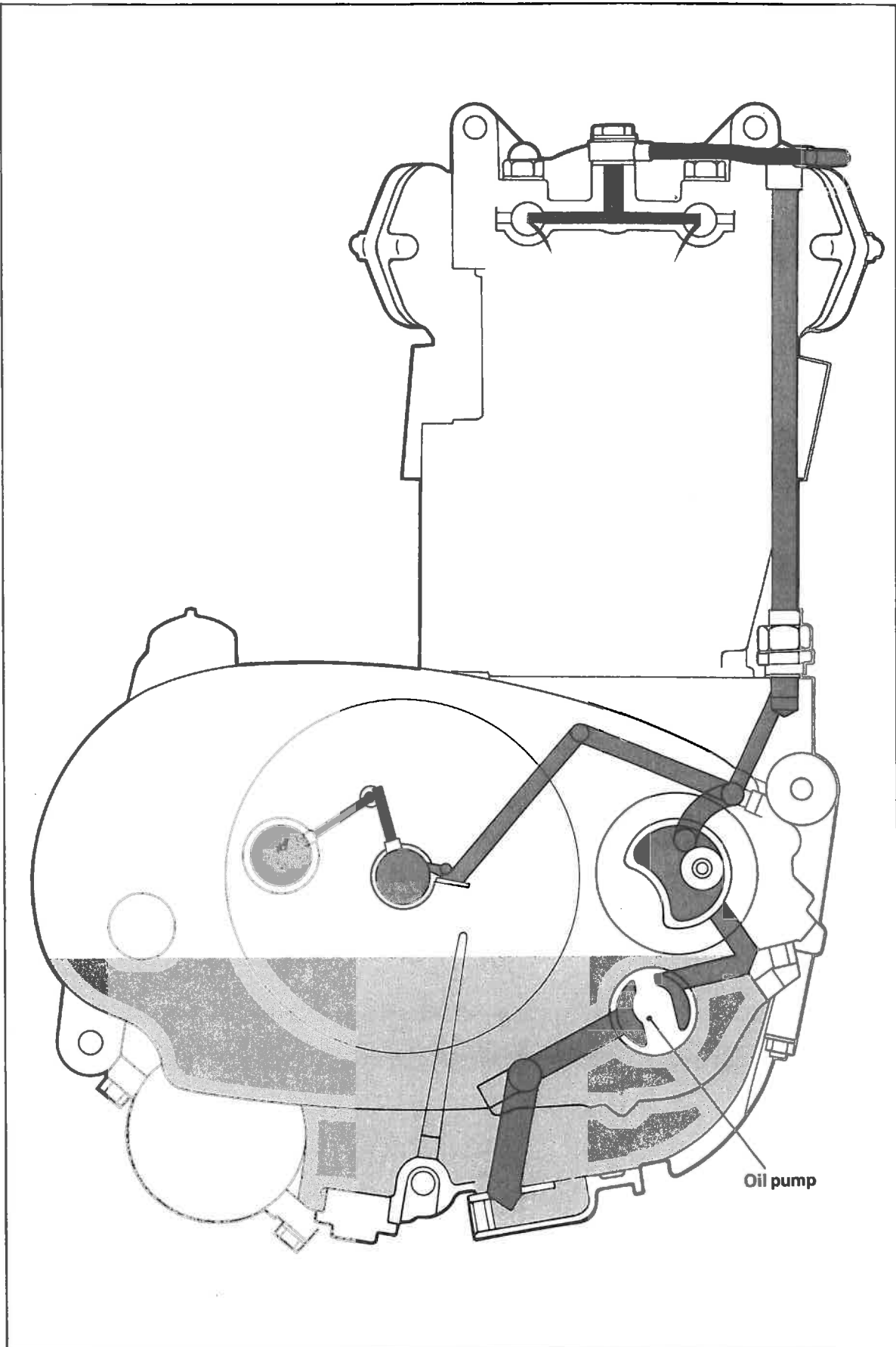
	N m	m.kg	ft.lb
1 Nm	1	0.1020	0.7375
1 m·kg	9.807	1	7.233
1 ft·lb	1.356	0.1383	1

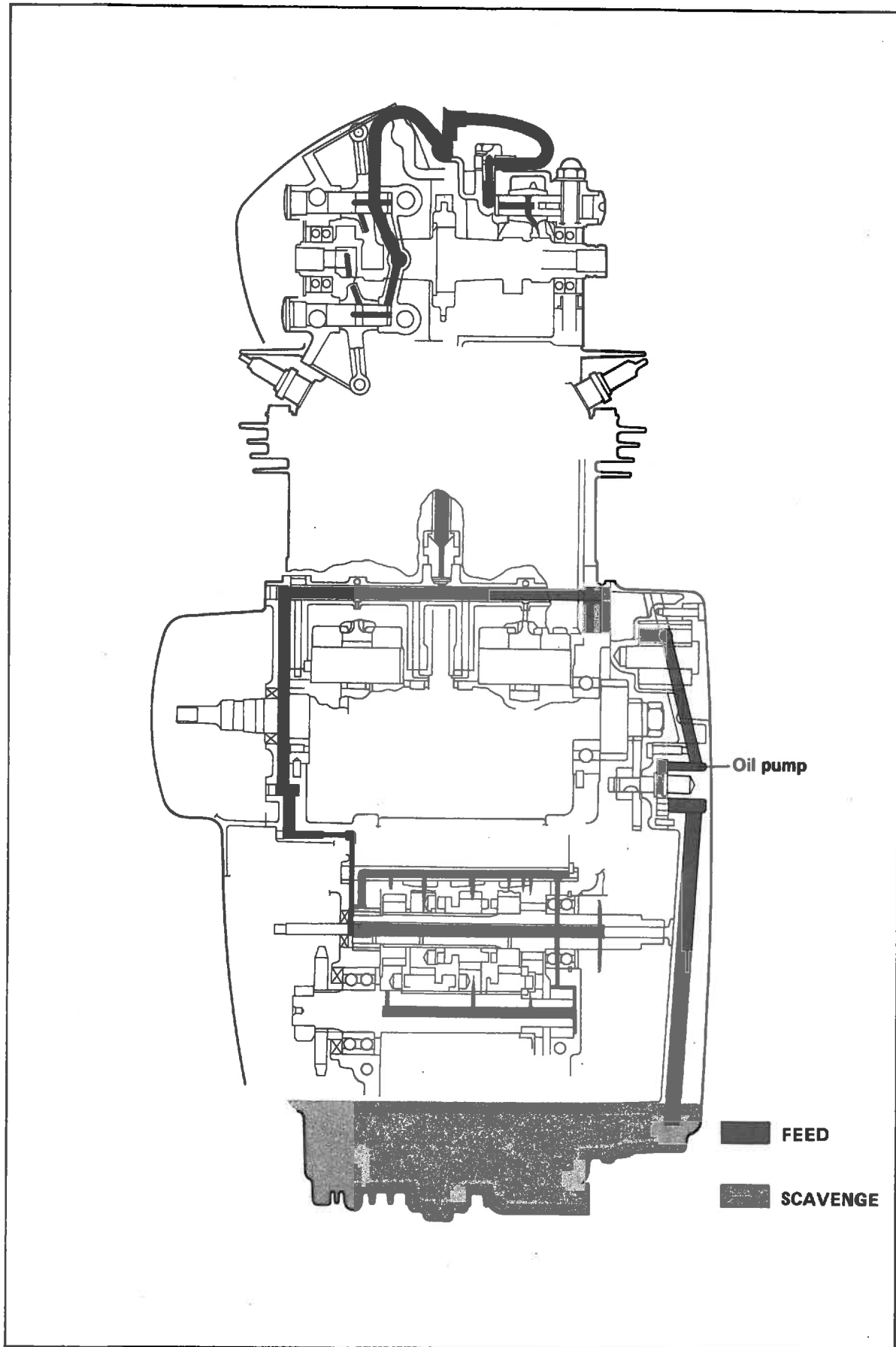
### SPRING RATE

	N/mm	kg/mm	lb/in
1 N/mm	1	0.1020	5.708
1 kg/mm	9.807	1	55.98
1 lb/in	0.1752	0.01786	1

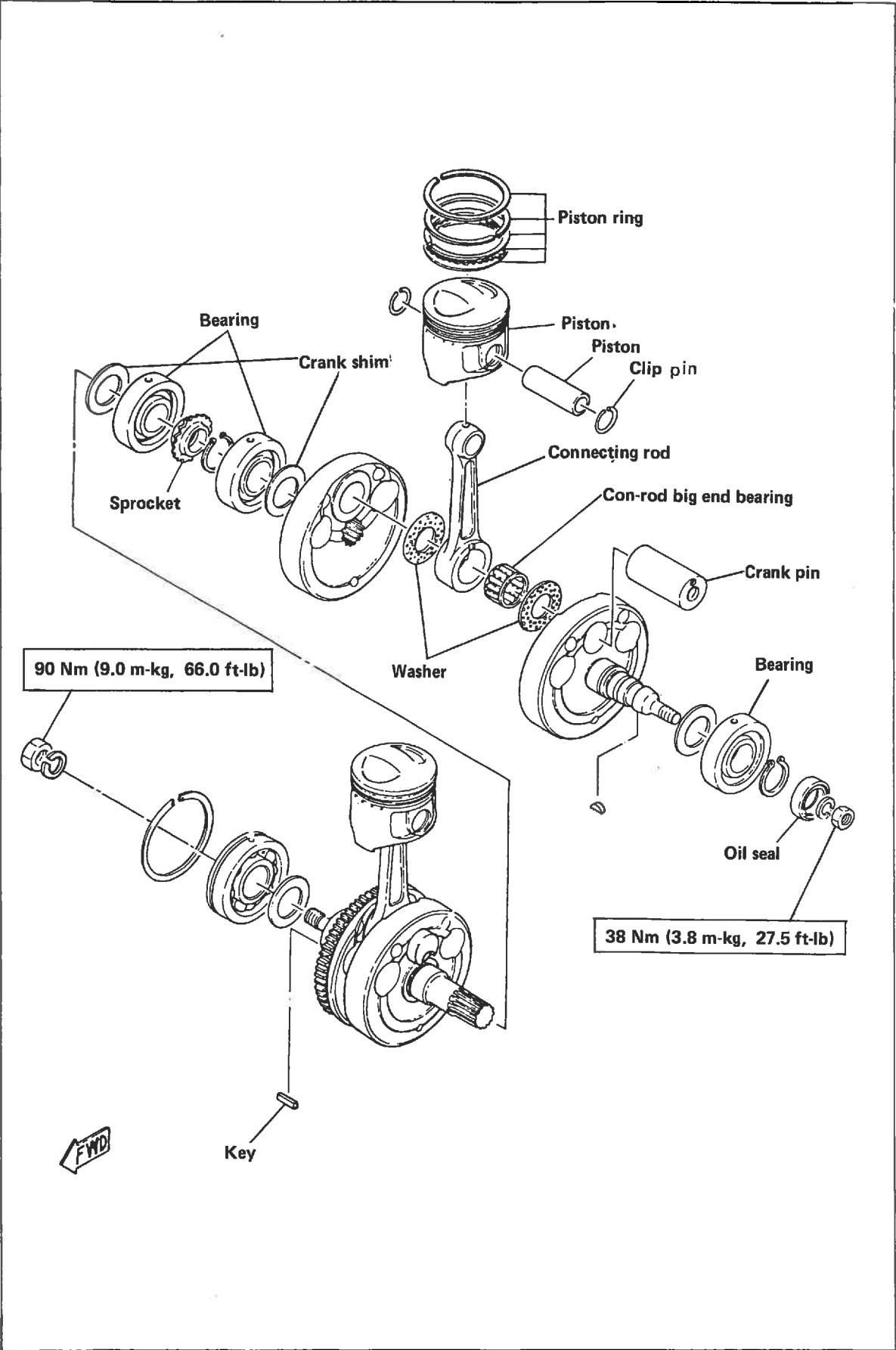


LUBRICATION DIAGRAMS

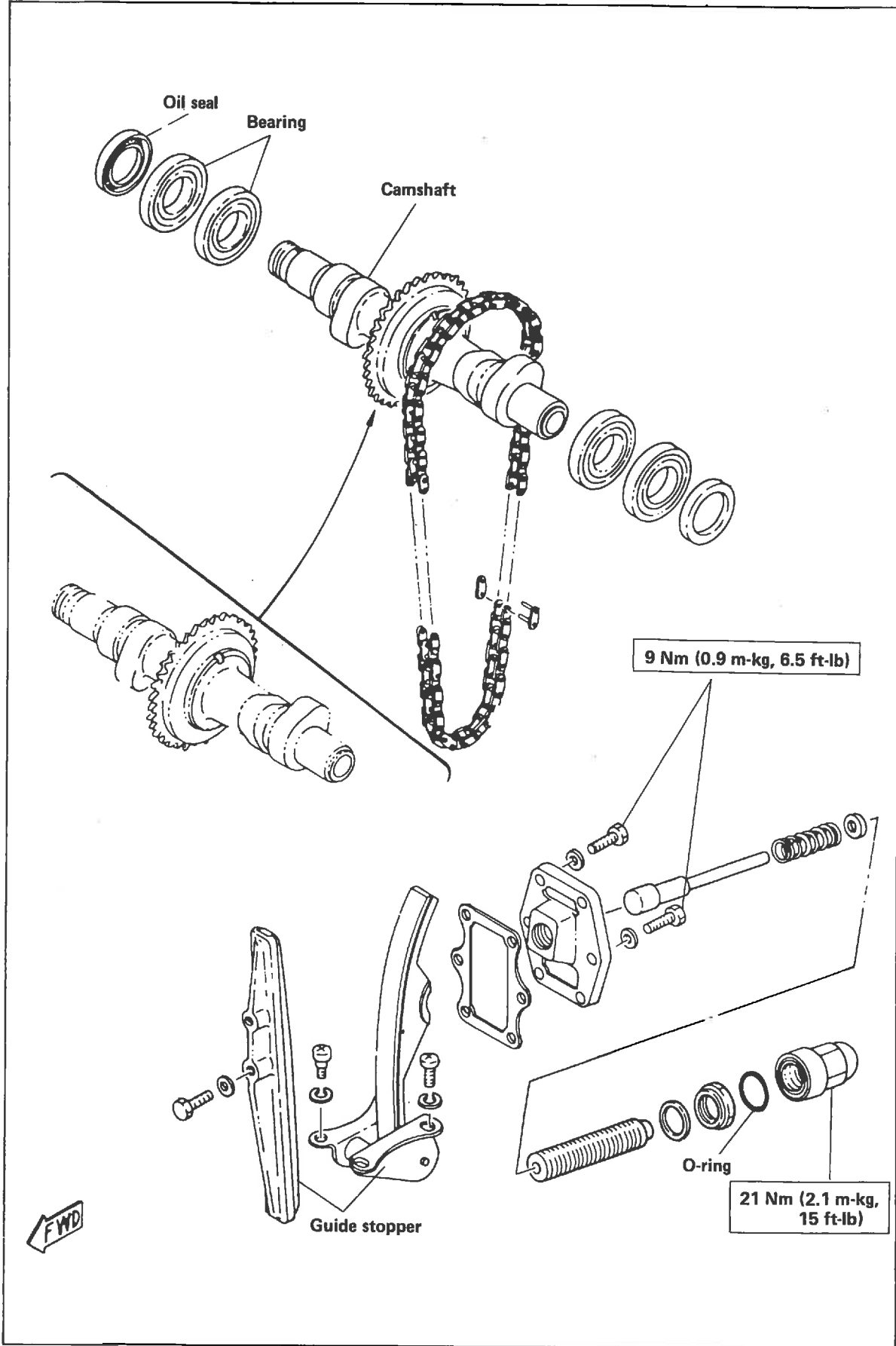




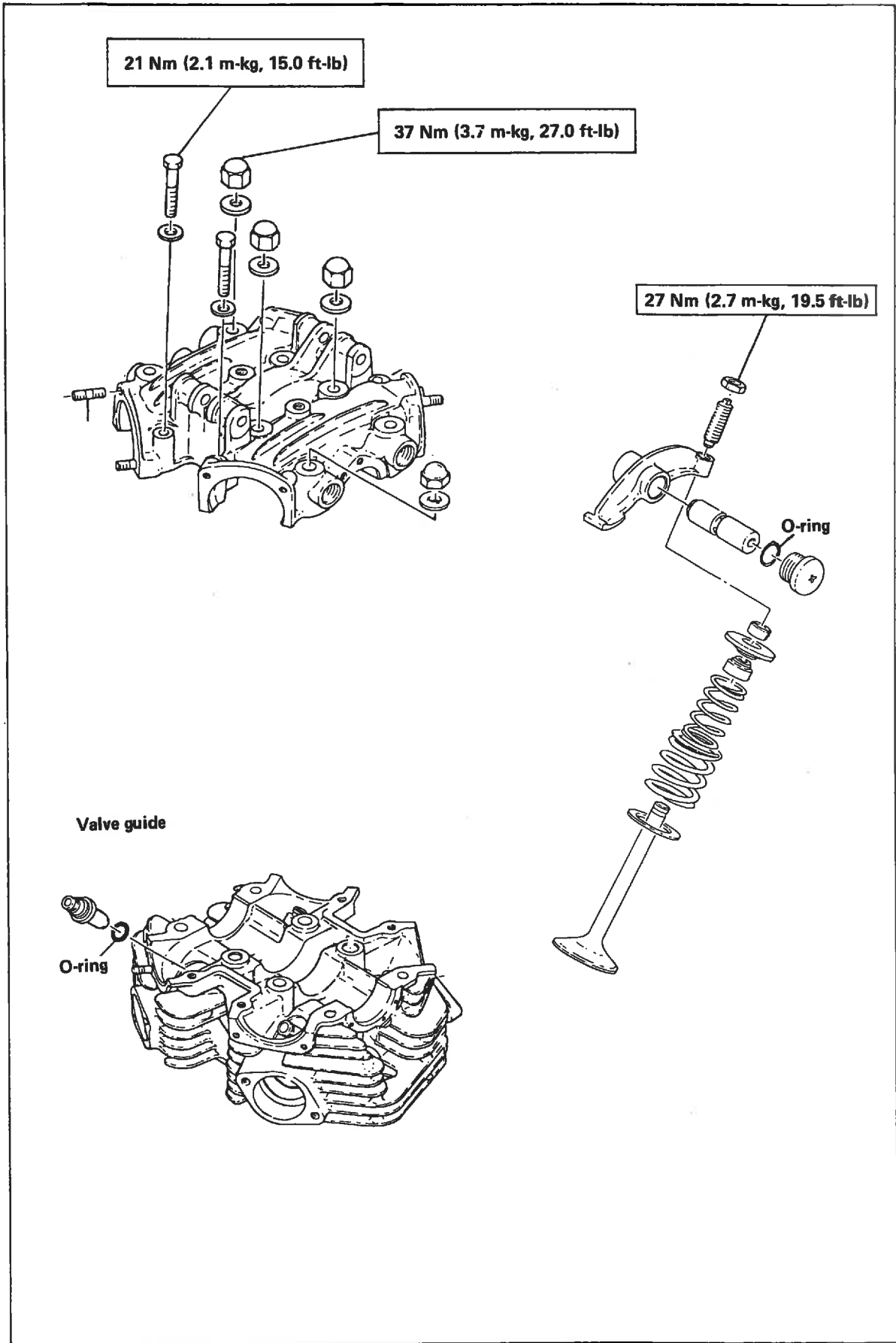
**CRANKSHAFT CONNECTING ROD/PISTON**



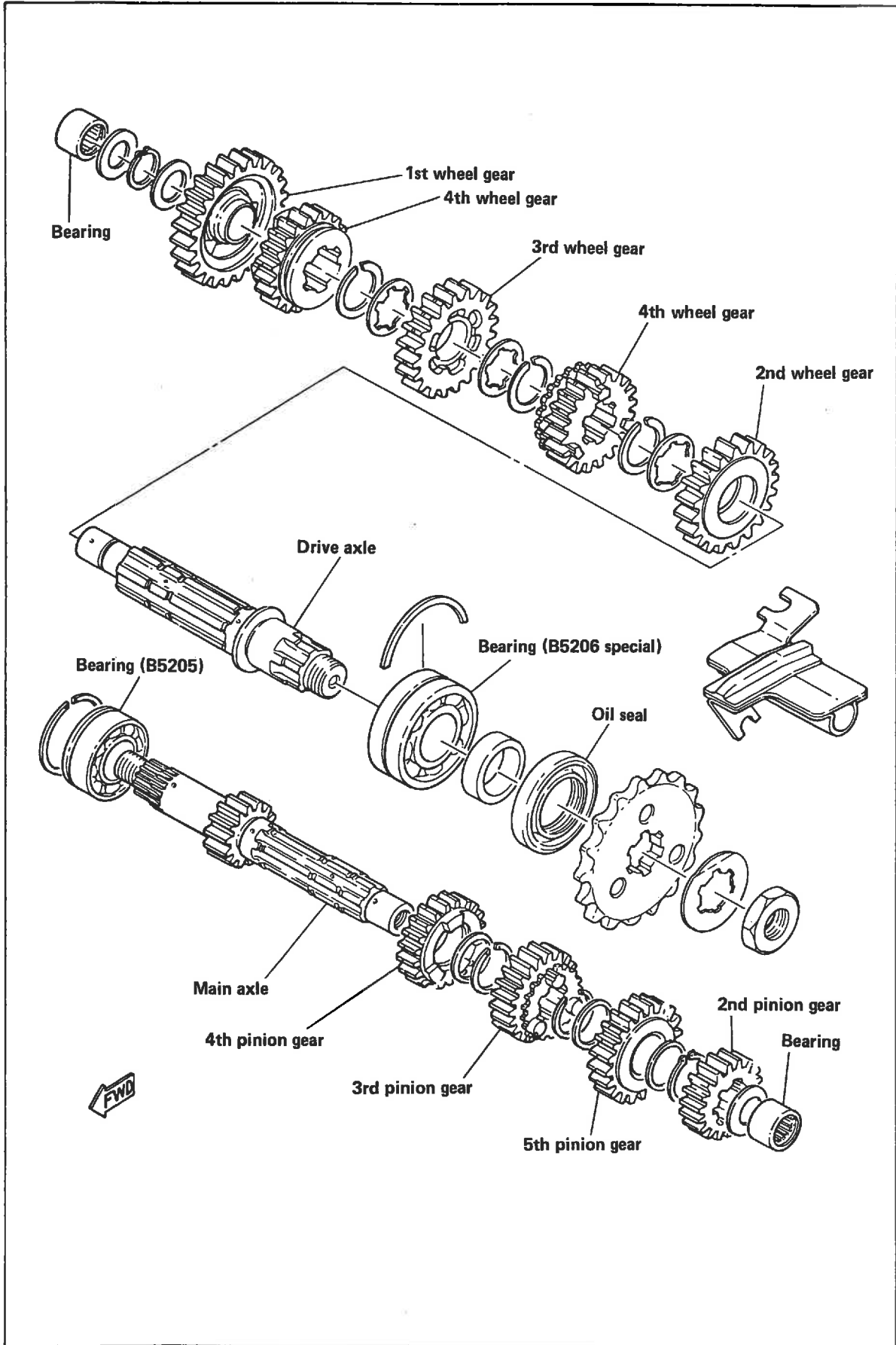
# CAM CHAIN



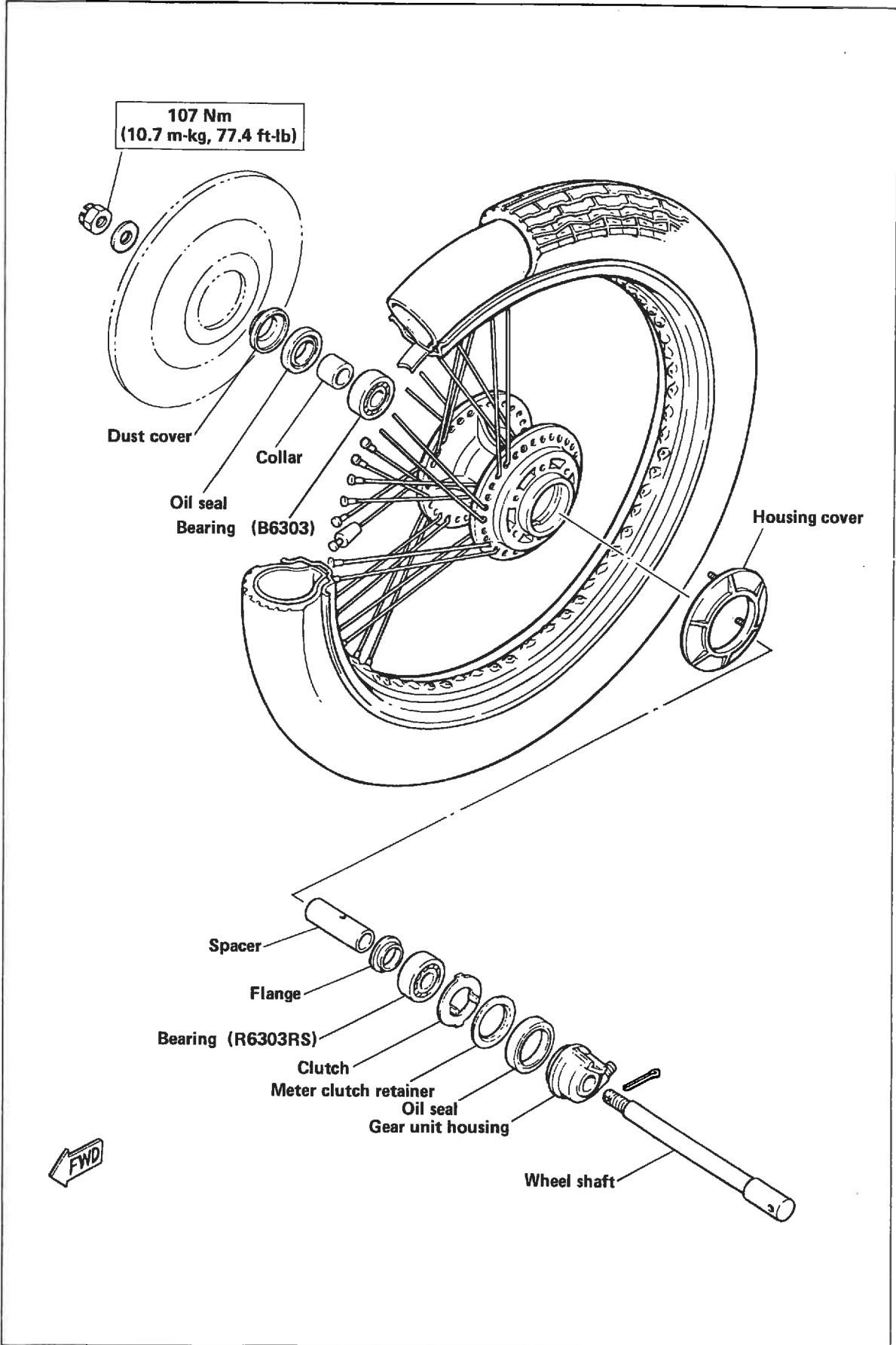
# CYLINDER HEAD COVER/CYLINDER HEAD/VALVE



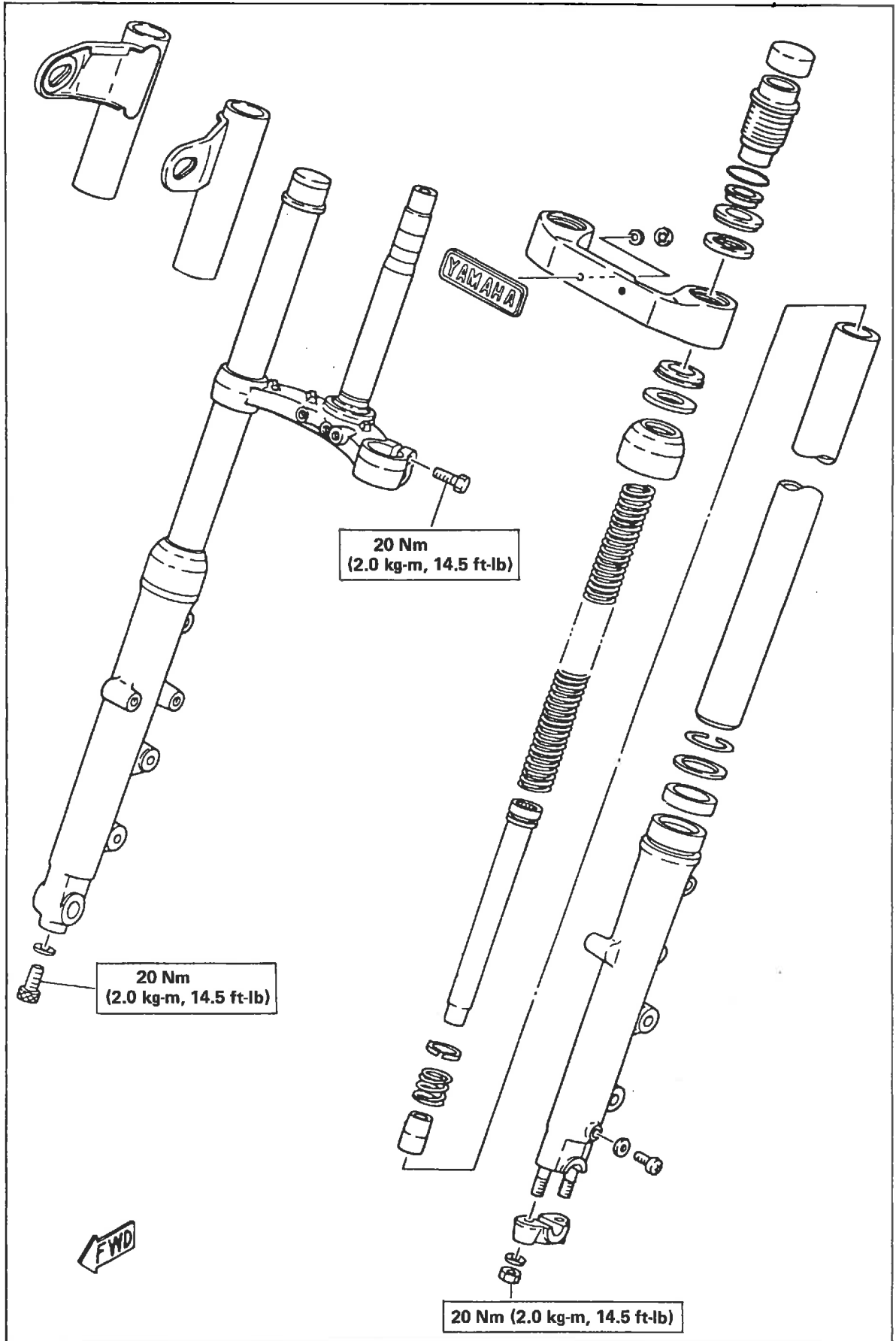
# TRANSMISSION



# FRONT WHEEL

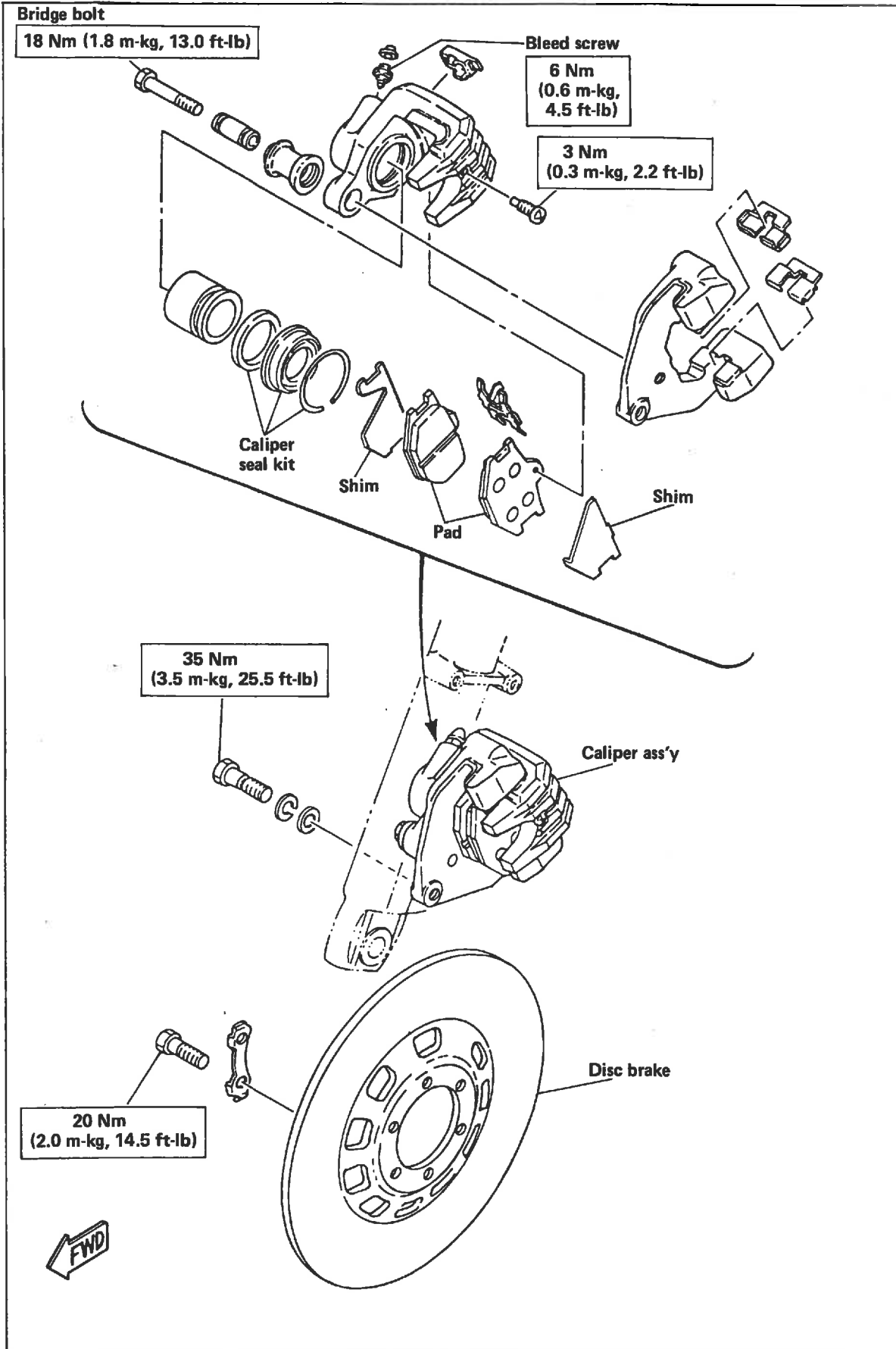


**FRONT FORK**

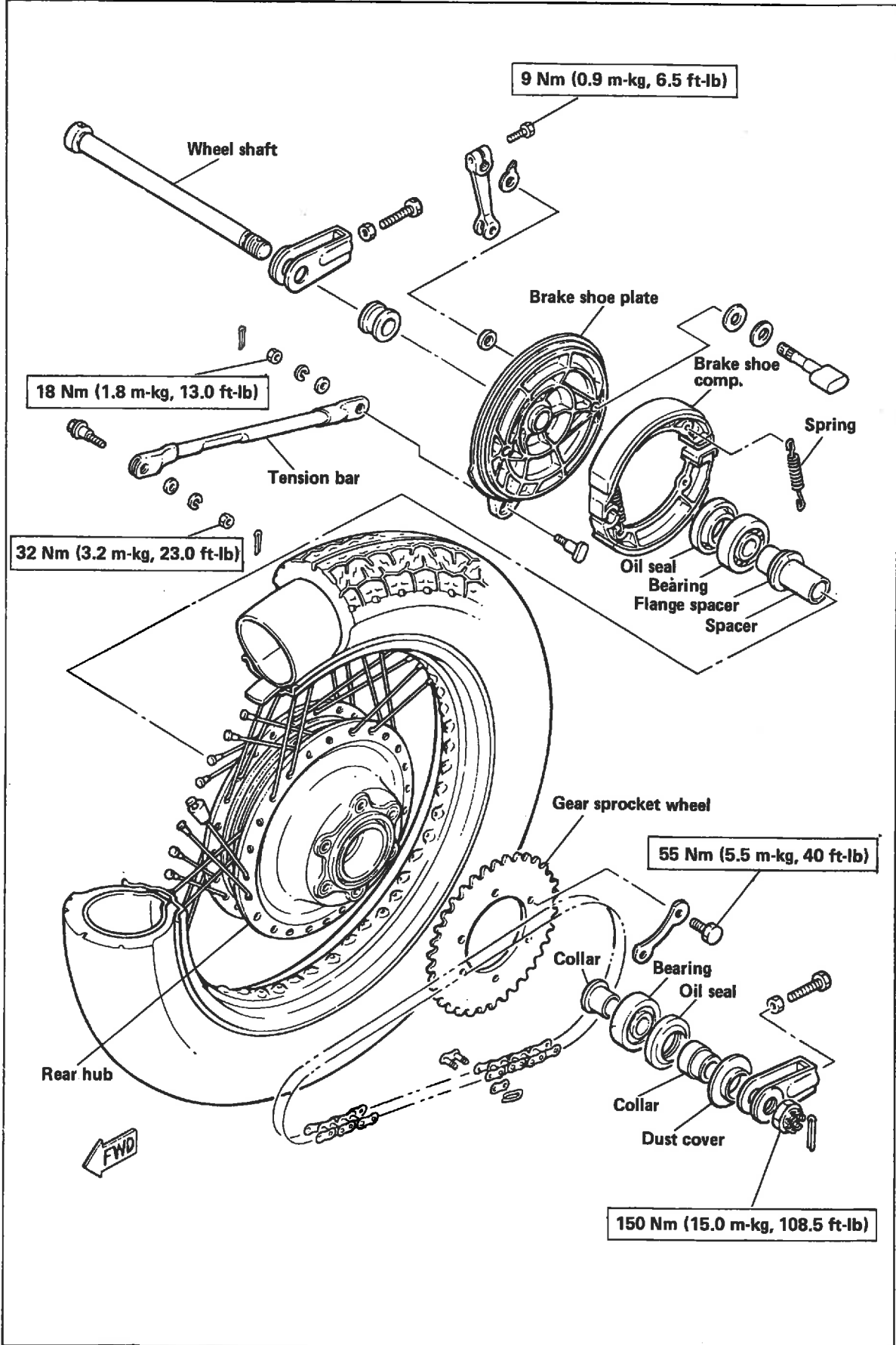




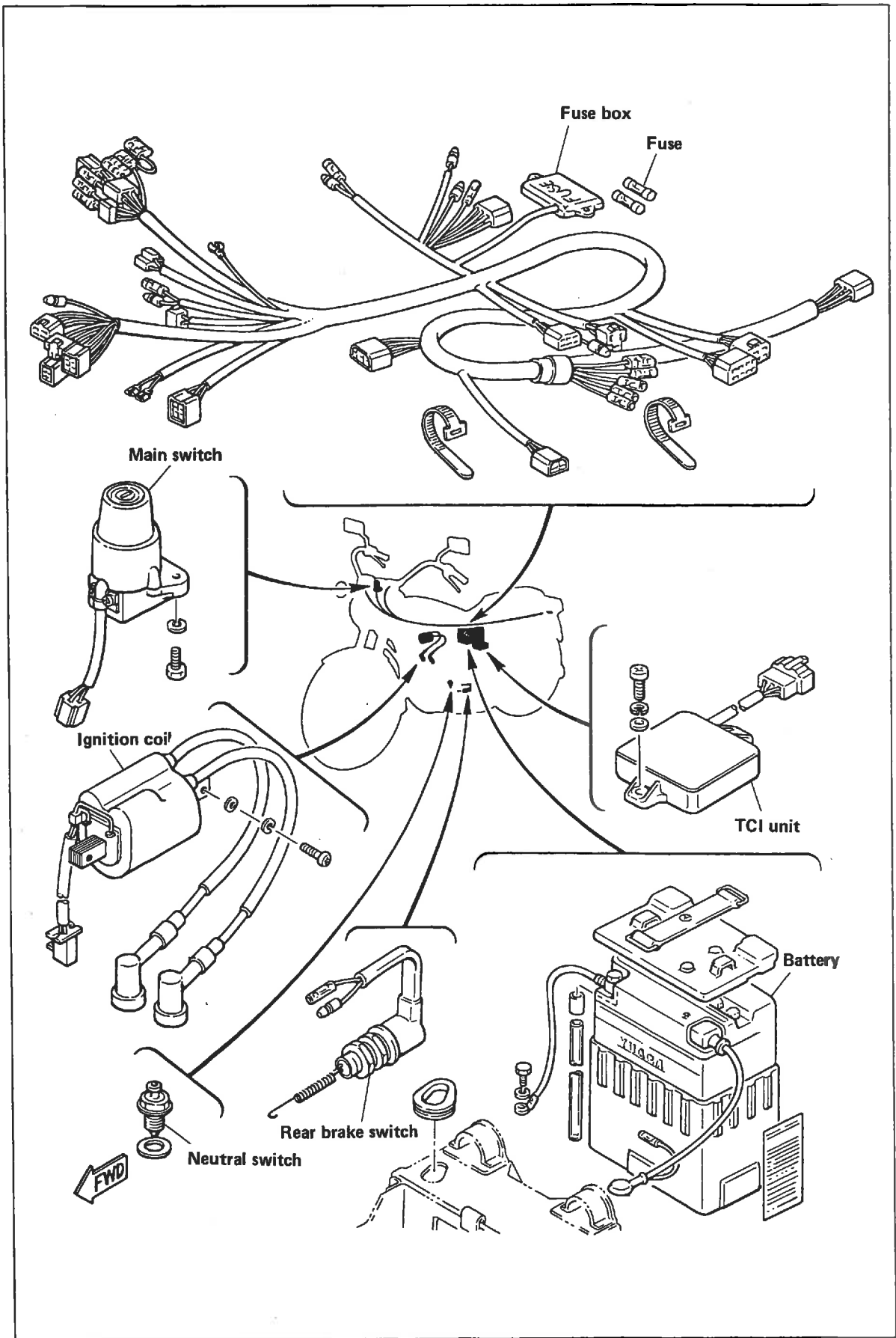
# FRONT BRAKE CALIPER



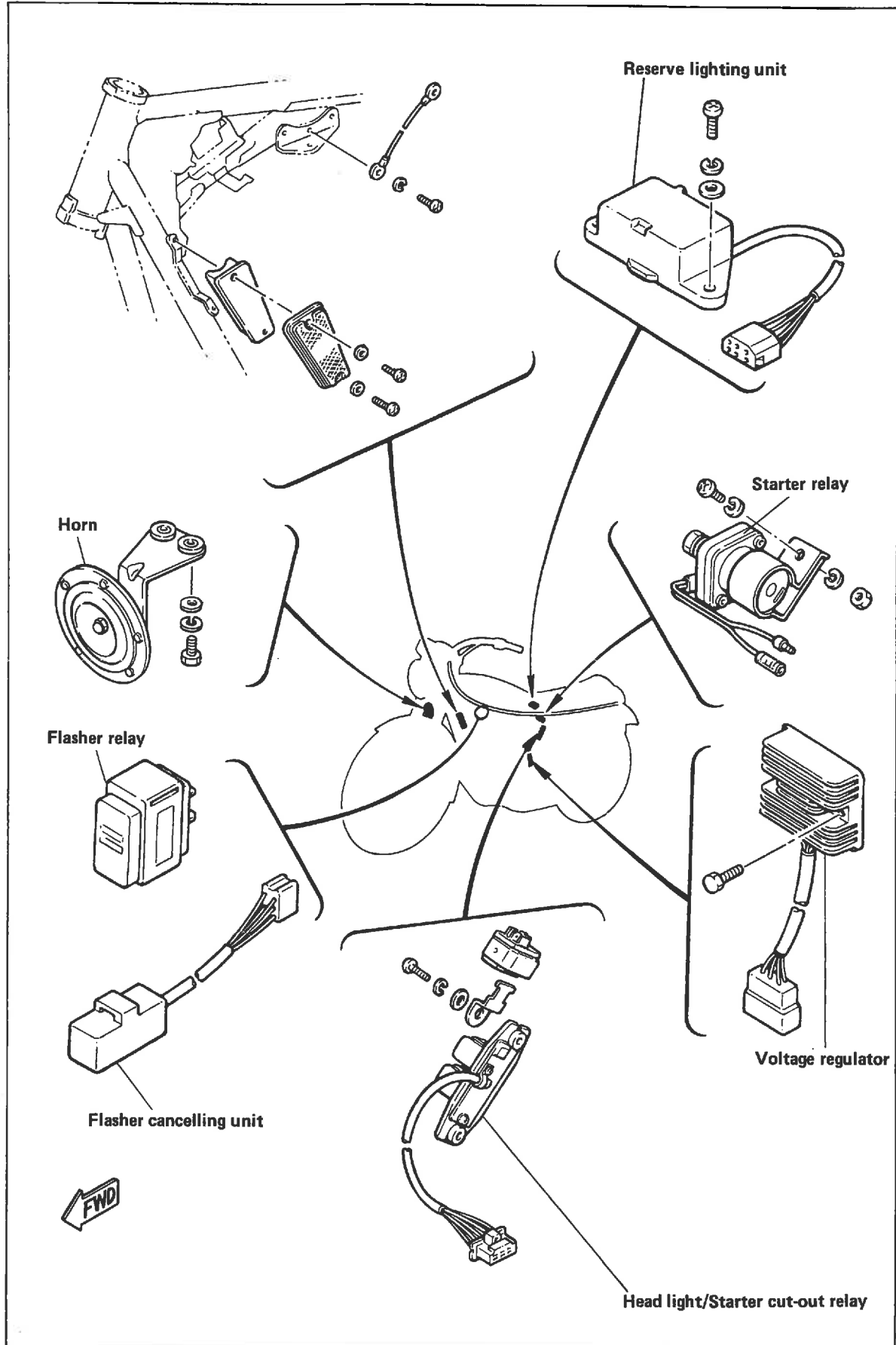
# REAR WHEEL/REAR BRAKE



# ELECTRICAL COMPONENTS

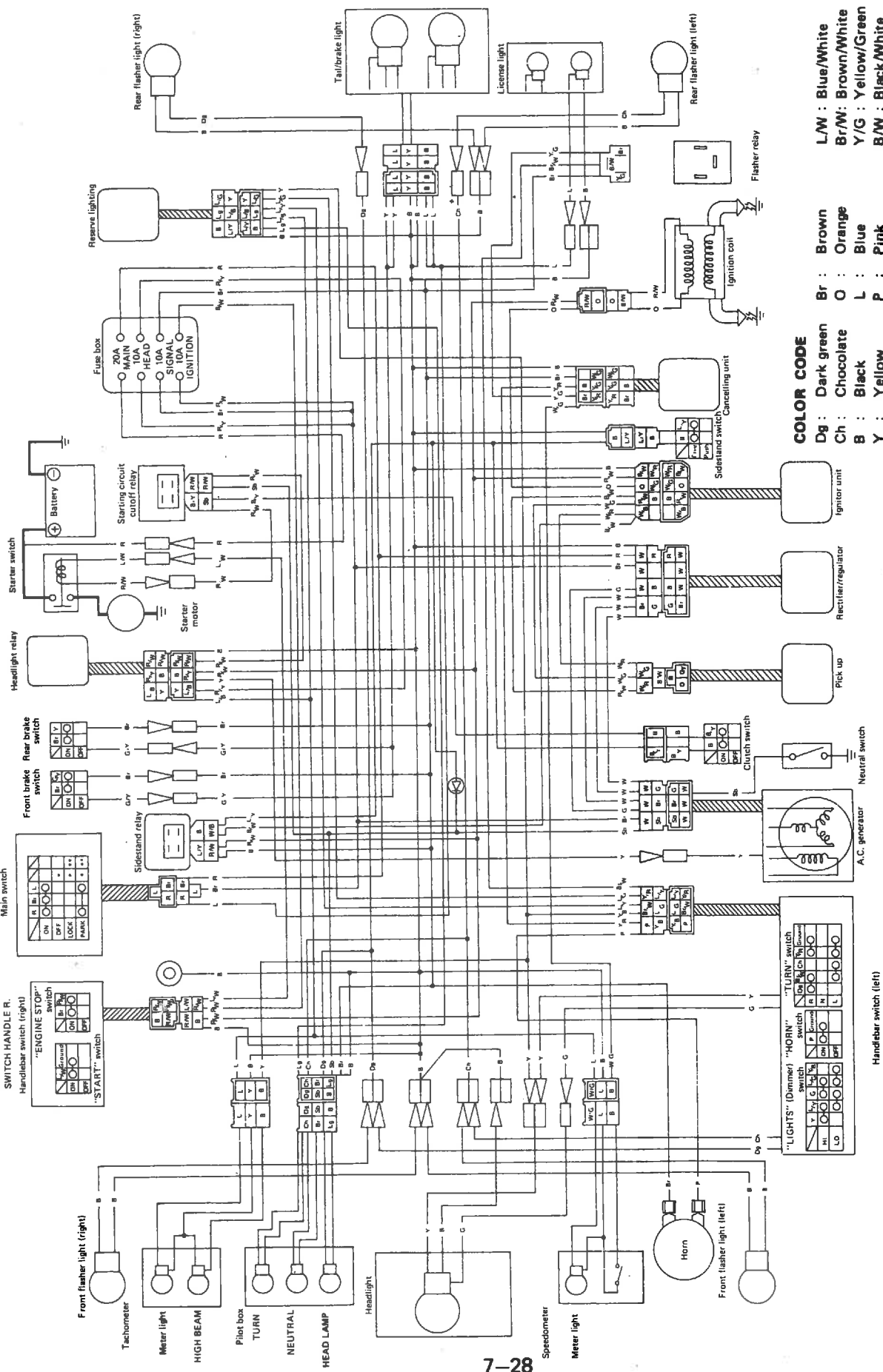


# ELECTRICAL COMPONENTS



# XS650SJ WIRING DIAGRAM

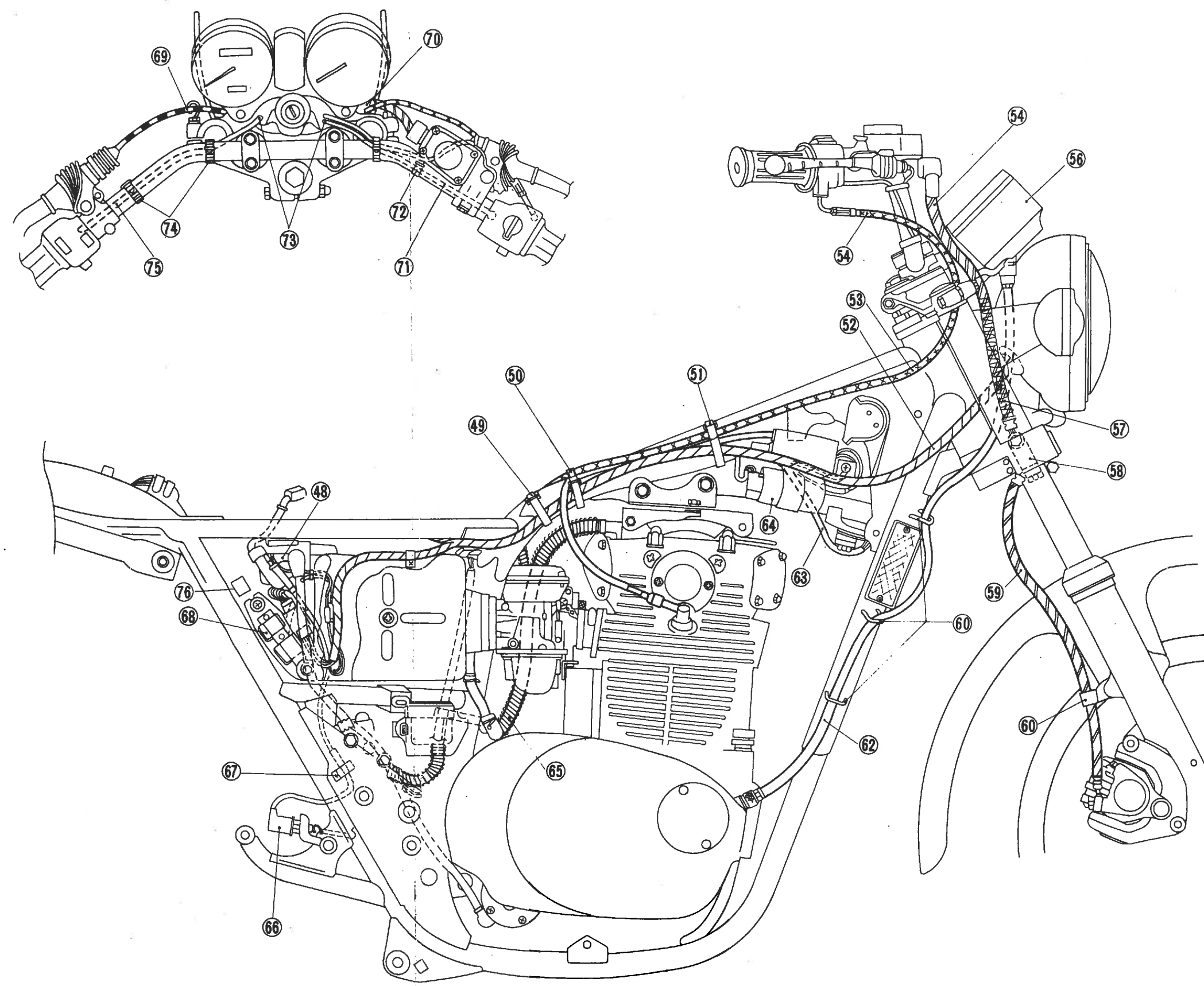
\*The key can be removed in this position.  
 \*\*The handlebar can be locked in this position.



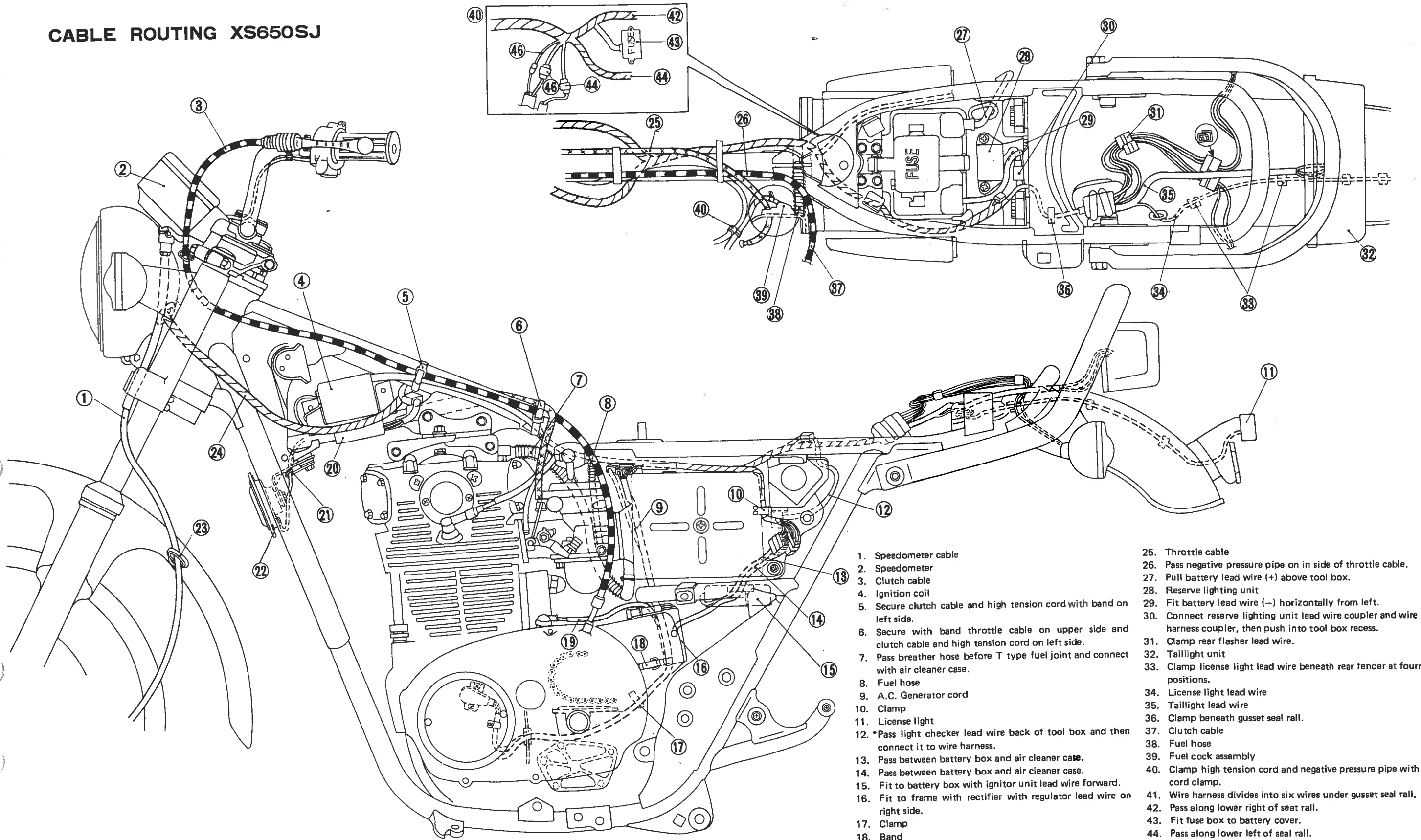
### COLOR CODE

- |    |              |     |               |      |                |
|----|--------------|-----|---------------|------|----------------|
| Dg | : Dark green | Br  | : Brown       | L/W  | : Blue/White   |
| Ch | : Chocolate  | O   | : Orange      | Br/W | : Brown/White  |
| B  | : Black      | L   | : Blue        | Y/G  | : Yellow/Green |
| Y  | : Yellow     | P   | : Pink        | B/W  | : Black/White  |
| G  | : Green      | L/B | : Blue/Black  | W/G  | : White/Green  |
| W  | : White      | R/W | : Red/White   | G/Y  | : Green/Yellow |
| Sb | : Sky blue   | R/Y | : Red/Yellow  | Y/R  | : Yellow/Red   |
| R  | : Red        | L/Y | : Blue/Yellow | B/Y  | : Black/Yellow |
| GY | : Gray       | B/R | : Black/Red   |      |                |

- 48. Starter switch
- 49. Secure wire harness with band.
- 50. Secure with band throttle cable on upper side and wire harness and high tension cord on right side.
- 51. Secure flasher relay lead wire, ground lead wire, throttle cable, high tension cord, wire harness and ignition coil lead wire with band on right side.
- 52. Pass wire harness (right) under fuel tank fitting bracket (right).
- 53. Pass throttle cable upper fuel tank fitting bracket (right).
- 54. Throttle cable
- 55. Brake hose
- 56. Tachometer
- 57. Pass brake hose between light stay and tachometer cable.
- 58. Joint
- 59. Brake hose
- 60. Clamp
- 61. Pass tachometer cable through three cable holders.
- 62. Tachometer cable
- 63. Horn lead wire
- 64. Flasher relay
- 65. Breather pipe
- 66. Rear brake switch
- 67. Rear brake switch lead wire clamp
- 68. Head Light/Stator Cut Out Relay
- 69. Pass first through cable holder and then between light stay and meter bracket.
- 70. Pass between light stay and meter bracket.
- 71. Handlebar switch (right) lead wire.
- 72. Band
- 73. Pass between main switch and meter bracket.
- 74. Band
- 75. Handlebar switch (left) lead wire
- 76. Starting Circuit Cut-off Relay



# CABLE ROUTING XS650SJ



- 1. Speedometer cable
- 2. Speedometer
- 3. Clutch cable
- 4. Ignition coil
- 5. Secure clutch cable and high tension cord with band on left side.
- 6. Secure with band throttle cable on upper side and clutch cable and high tension cord on left side.
- 7. Pass breather hose before T type fuel joint and connect with air cleaner case.
- 8. Fuel hose
- 9. A.C. Generator cord
- 10. Clamp
- 11. License light
- 12. \*Pass light checker lead wire back of tool box and then connect it to wire harness.
- 13. Pass between battery box and air cleaner case.
- 14. Pass between battery box and air cleaner case.
- 15. Fit to battery box with ignitor unit lead wire forward.
- 16. Fit to frame with rectifier with regulator lead wire on right side.
- 17. Clamp
- 18. Band
- 19. Neutral switch lead wire
- 20. Flasher cancelling unit
- 21. Clamp horn lead wire
- 22. Horn
- 23. Through cable holder.
- 24. Pass wire harness (left) under fuel tank fitting bracket (left).
- 25. Throttle cable
- 26. Pass negative pressure pipe on in side of throttle cable.
- 27. Pull battery lead wire (+) above tool box.
- 28. Reserve lighting unit
- 29. Fit battery lead wire (-) horizontally from left.
- 30. Connect reserve lighting unit lead wire coupler and wire harness coupler, then push into tool box recess.
- 31. Clamp rear flasher lead wire.
- 32. Taillight unit
- 33. Clamp license light lead wire beneath rear fender at four positions.
- 34. License light lead wire
- 35. Taillight lead wire
- 36. Clamp beneath gusset seal rail.
- 37. Clutch cable
- 38. Fuel hose
- 39. Fuel cock assembly
- 40. Clamp high tension cord and negative pressure pipe with cord clamp.
- 41. Wire harness divides into six wires under gusset seal rail.
- 42. Pass along lower right of seat rail.
- 43. Fit fuse box to battery cover.
- 44. Pass along lower left of seal rail.
- 45. Pick-up coil lead wire
- 46. A.C. Generator lead wire
- 47. Yellow