YAMAHA

1991 - 2000

MOTORCYCLE

SERVICE MANUAL

Model : CY50B, CY50D, CY50E, CY50F, CY50G, CY50H, CY50J, CY50M, SH50G

3SA281972000

CY50B '91
SERVICE MANUAL

1st Edition, August 1990

Printed in Japan

NOTICE

This manual was written by the Yamaha Motor Company primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so it is assumed that persons using this book to perform maintenance and repairs on Yamaha scooter have a basic understanding of the mechanical concepts and procedures inherent in scooter repair technology. Without such knowledge, attempted repairs or service to this model may render it unfit to use and/or unsafe.

Yamaha Motor Company, Ltd. is continually striving to improve all models manufactured by Yamaha. Modifications and significant changes in specifications or procedures will be forwarded to all Authorized Yamaha dealers and will, where applicable, appear in future editions of this manual.

TECHNICAL PUBLICATIONS
SERVICE DIVISION
MOTORCYCLE GROUP
YAMAHA MOTOR CO., LTD.

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.

⚠	The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!
⚠ WARNING	Failure to follow WARNING instructions could result in severe injury or death to the scooter operator, a bystander, or a person inspecting or repairing the scooter.
CAUTION:	A CAUTION indecates special precautions that must be taken to avoid damage to the scooter.
NOTE:	A NOTE provides key information to make procedures easier or clearer.

HOW TO USE THIS MANUAL

CONSTRACTION OF THIS MANUAL

This manual consists of chapters for the main categories of subjects. (See "Illustrated symbols")

1st title ① : This is a chapter with its symbol on the upper right of each page.

2nd title ② : This title appears on the upper of each page on the left of the chapter symbol. (For the chapter "Periodic inspection and adjustment" the 3rd title appears.)

3rd title ③ : This is a final title.

MANUAL FORMAT

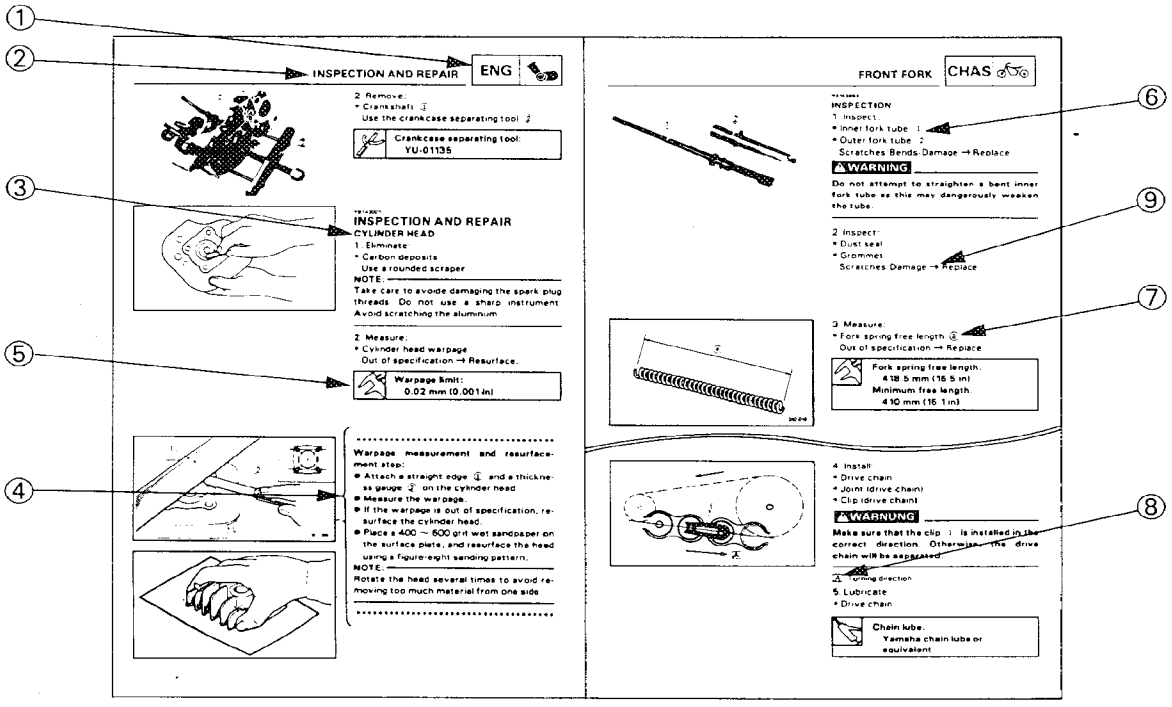
All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspections.
A set of particularly important procedure ④ is placed between a line of asterisks "*" with each procedure preceded by " ● ".

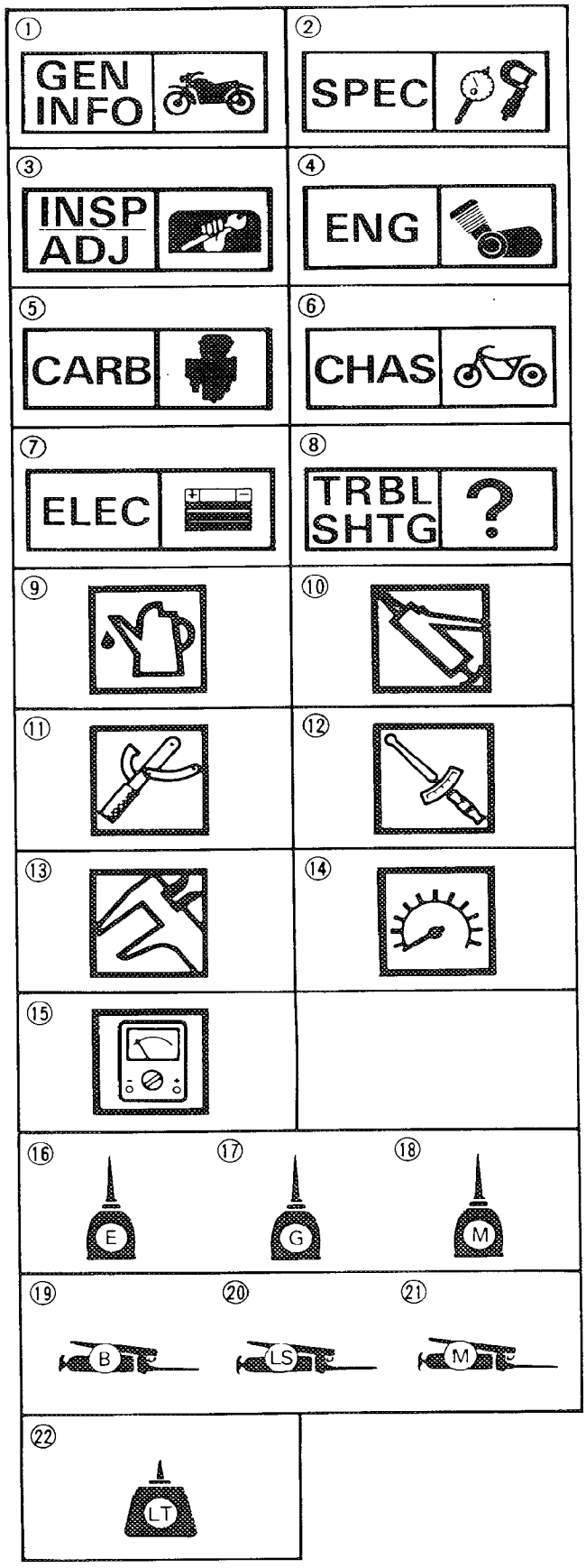
IMPORTANT FEATURES

- Data and a special tool are framed in a box preceded by a relevant symbol ⑤ .
- An encircled numeral ⑥ indicates a part name, and an encircled alphabetical letter data or an alignment mark ⑦ , the others being indicated by an alphabetical letter in a box ⑧ .
- A condition of a faulty component will precede an arrow symbol and the course of action required the symbol ⑨ .

EXPLODED DIAGRAM

Each chapter provides exploded diagrams before each disassembly section for ease in identifying correct disassembly and assembly procedures.





ILLUSTRATED SYMBOLS

(Refer to the illustration)

Illustrated symbols ① to ⑧ are designed as thumb tabs to indicate the chapter's number and content.

① General information
② Specifications
③ Periodic inspection and adjustment
④ Engine
⑤ Carburetion
⑥ Chassis
⑦ Electrical
⑧ Troubleshooting

Illustrated symbols ⑨ to ⑮ are used to identify the specifications appearing in the text.

⑨ Filling fluid
⑩ Lubricant
⑪ Special tool
⑫ Tightening
⑬ Wear limit, clearance
⑭ Engine speed
⑮ Ω, V, A

Illustrated symbols ⑯ to ㉒ in the exploded diagram indicate grade of lubricant and location of lubrication point.

⑯ Apply engine oil
⑰ Apply gear oil
⑱ Apply molybdenum disulfide oil
⑲ Apply wheel bearing grease
⑳ Apply lightweight lithium-soap base grease
㉑ Apply molybdenum disulfide grease
㉒ Apply locking agent (LOCTITE®)

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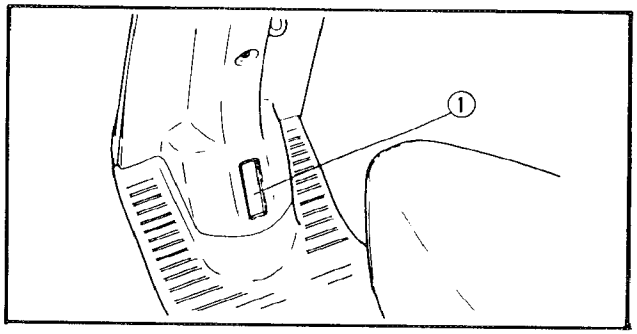
CHAPTER 1.
GENERAL INFORMATION

GENERAL INFORMATION



SCOOTER IDENTIFICATION

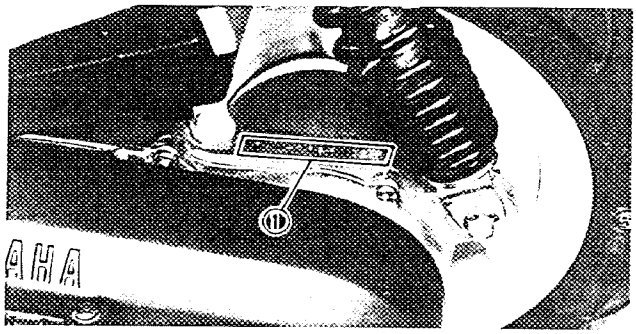
VEHICLE IDENTIFICATION NUMBER

The vehicle identification number ① is stamped into the frame.

NOTE:

The vehicle identification number is used to identify your scooter and may be used to register your scooter with the licensing authority in your state.

Starting serial number:
JYA3SAN0 ✳ MA000101



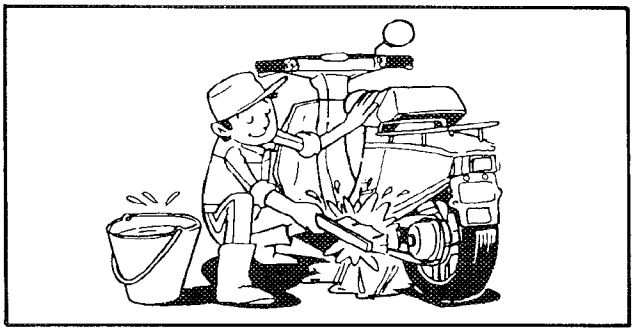
ENGINE SERIAL NUMBER

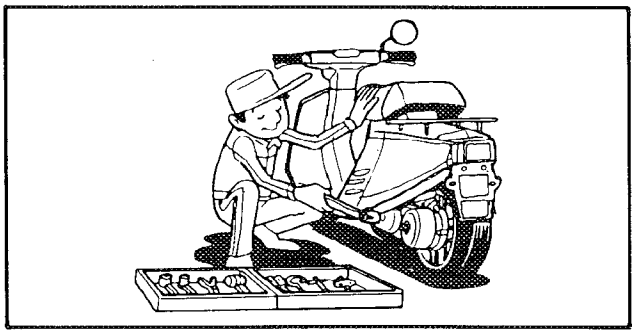
The engine serial number ① is stamped into the crankcase.

Starting serial number:
3SA-000101

NOTE:

- The first three digits of these numbers are for model identifications; the remaining digits are the unit production number.
- Designs and specifications are subject to change without notice.





IMPORTANT INFORMATION

PREPARATION FOR REMOVAL AND DISASSEMBLY

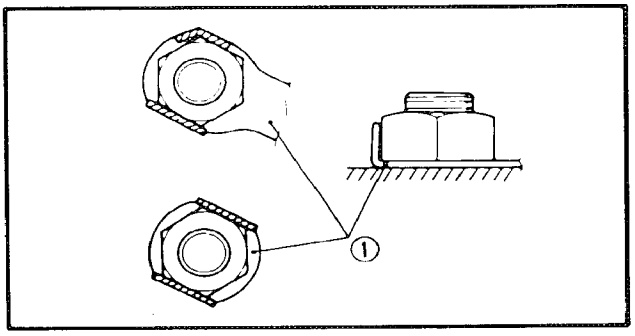
1. Remove all dirt, mud, dust and foreign material before removal and disassembly.
2. Use proper tools and cleaning equipment. Refer to "SPECIAL TOOL".
3. When disassembling the scooter, keep mated parts together. This includes gears, cylinders, pistons and other mated parts that have been "mated" through normal wear. Mated parts must be reused as an assembly or replaced.
4. During the scooter disassembly, clean all parts and place them in trays in the order of disassembly. This will speed up assembly time and help assure that all parts are correctly reinstalled.
5. Keep away from fire.

ALL REPLACEMENT PARTS

1. Use only genuine Yamaha parts for all replacements. Use oil and/or grease recommended by Yamaha for assembly and adjustment. Other brands may be similar in function and appearance, but inferior in quality.

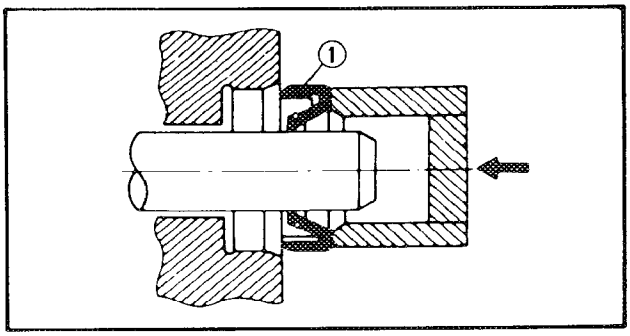
GASKETS, OIL SEALS, AND O-RINGS

1. All gaskets, seals, and O-rings should be replaced when an engine is overhauled. All gasket surfaces, oil seal lips, and O-rings must be cleaned.
2. Properly oil all mating parts and bearings during reassembly. Apply grease to the oil seal lips.



LOCK WASHERS/PLATES AND COTTER PINS

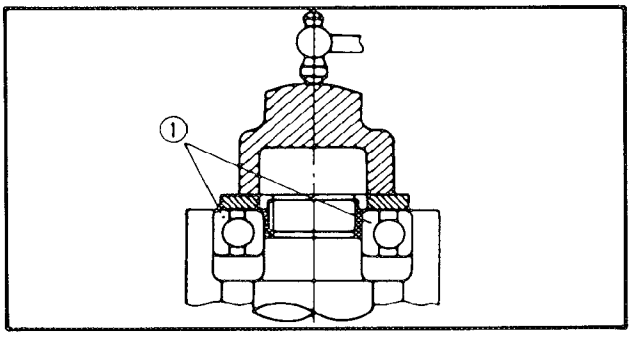
1. All lock washers/plates ① and cotter pins must be replaced when they are removed. Lock tab(s) should be bent along the bolt or nut flat(s) after the bolt or nut has been properly tightened.



BEARINGS AND OIL SEALS

1. Install the bearing(s) and oil seal(s) with their manufacturer's marks or numbers facing outward. (In other words, the stamped letters must be on the side exposed to view.) When installing oil seal(s), apply a light coating of light-weight lithium base grease to the seal lip (s). Oil the bearings liberally when installing.

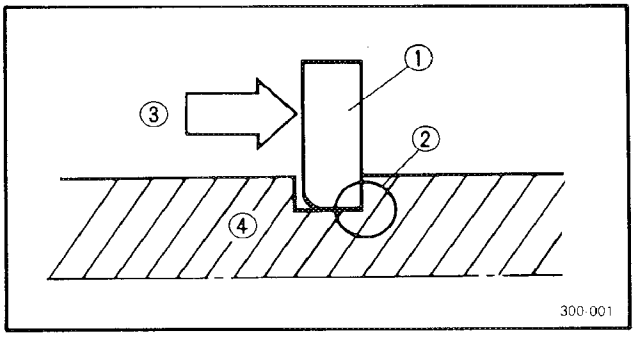
① Oil seal



CAUTION:

Do not use compressed air to spin the bearings dry. This causes damage to the bearing surfaces.

① Bearing



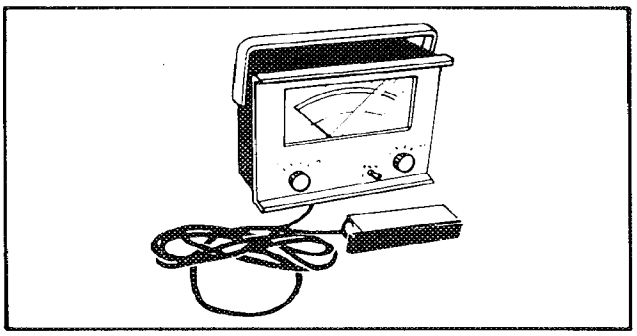
CIRCLIPS

1. All circlips should be inspected carefully before reassembly. Always replace piston pin clips after one use. Replace distorted circlips. When installing a circlip ①, make sure that the sharp edged corner ② is positioned opposite to the thrust ③ it receives. See the sectional view.

④ Shaft

SPECIAL TOOLS

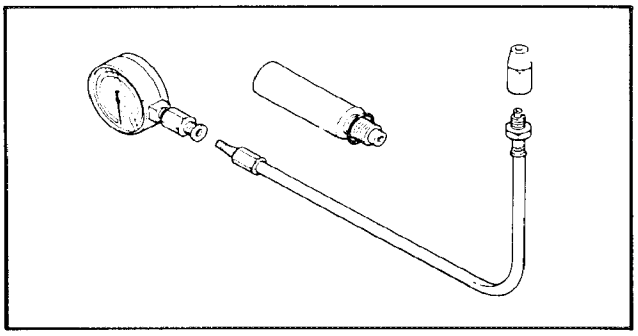
The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques.



FOR TUNE UP

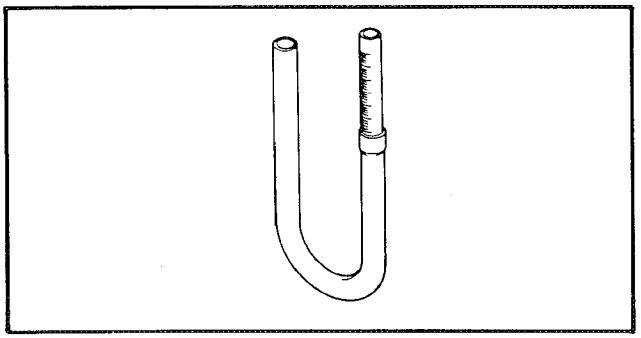
1. Inductive Tachometer
   P/N. YU-08036-A

This tool is needed for detecting engine rpm.



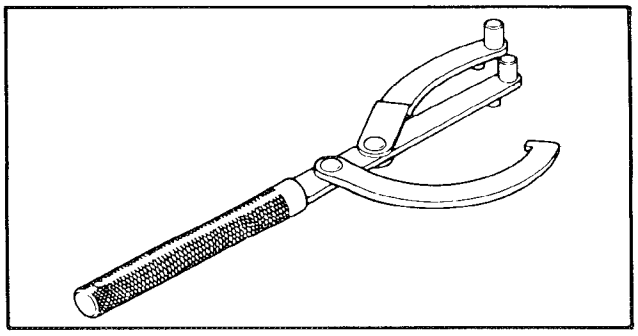
2. Compression Gauge
   P/N. YU-33223

This gauge is used to measure engine compression.



3. Fuel level gauge
   P/N. YM-01312-A

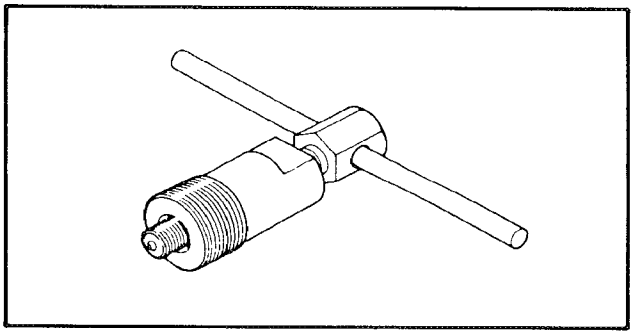
This gauge is used to measure the fuel level in the float chamber.



FOR ENGINE SERVICE

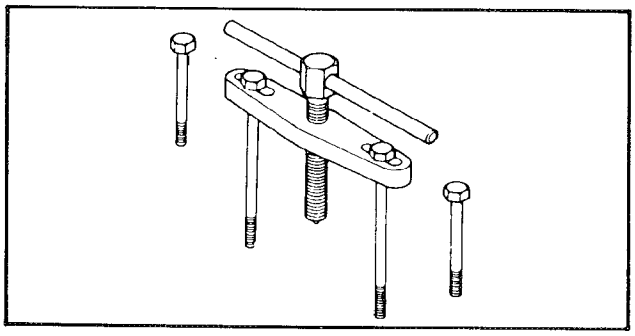
1. Flywheel Holding Tool
   P/N. YU-01235

This tool is used to the hold the flywheel magneto and clutch assembly when removing or installing the securing nut.



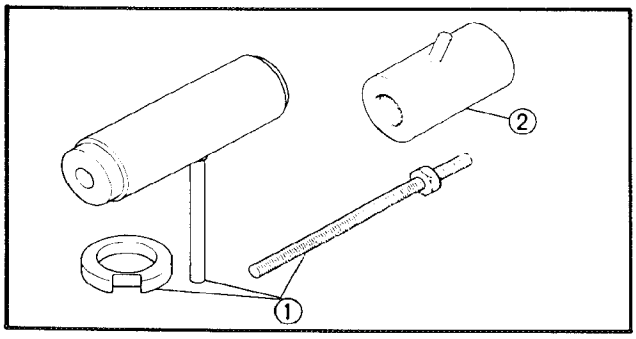
2. Flywheel Magneto Puller
   P/N. YM-01189

This tool is used to remove the flywheel.



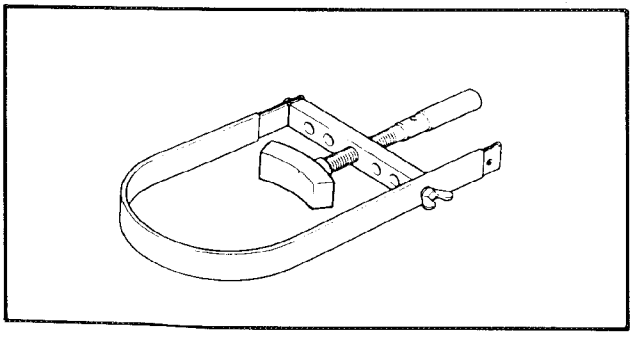
3. Crankcase Separating Tool
   P/N. YU-01135

This tool is used to remove the crankshaft or separate the crankcase.



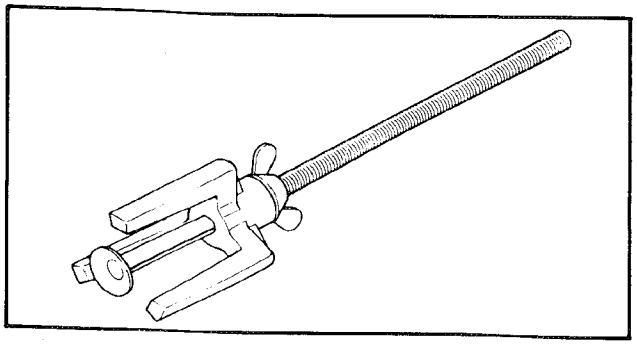
4. Crankshaft Installing Set
   P/N. YU-90050- ①
   Adapter (M10)
   P/N. YM-90062- ②

This tools are used to install the crankshaft.



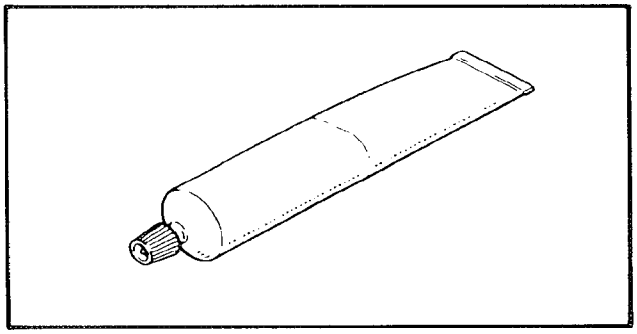
5. Sheave Holder
   P/N. YS-01880

This tool is used when holding the clutch hub.



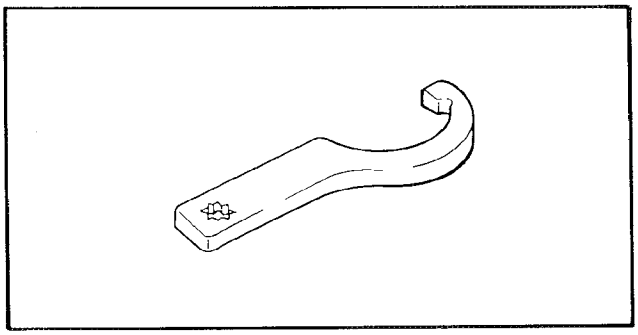
6. Clutch Spring Holder
   P/N. YS-28891

This tool is used to disassembly and assembly the secondary sheave.



7. Quick Gasket®
   P/N. ACC-11001-01
   YAMAHA Bond No. 1215

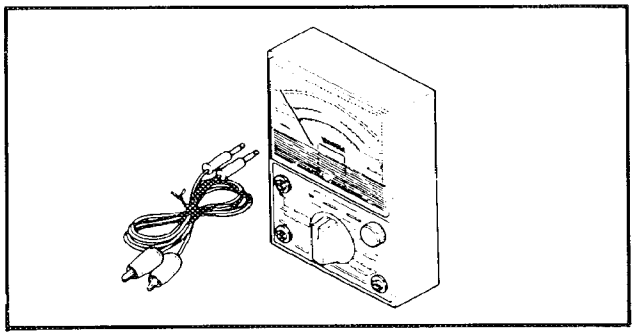
This sealant (Bond) is used for crankcase mating surfaces, etc.



FOR CHASSIS SERVICE

1. Ring Nut Wrench
   P/N. YU-33975

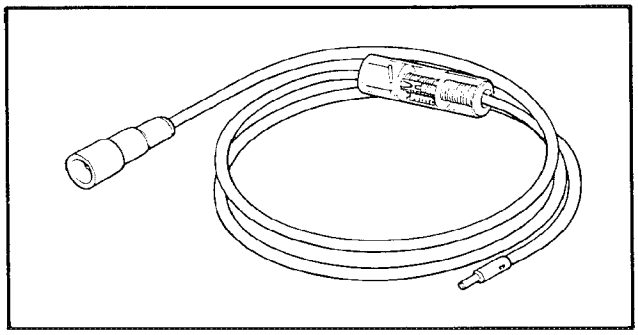
This tool is used to loosen and tighten the steering ring nut.



FOR ELECTRICAL COMPONENTS

1. Pocket Tester
   P/N. YU-03112

This instrument is invaluable for electrical system inspection and adjustment.



2. Dynamic spark tester
   P/N. YM-34487

This instrument is necessary for checking the ignition system components.

CHAPTER 2.
SPECIFICATIONS

SPECIFICATIONS

GENERAL SPECIFICATIONS

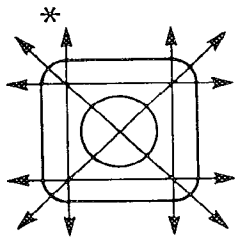
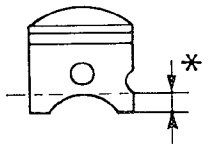
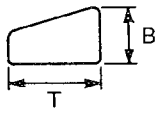
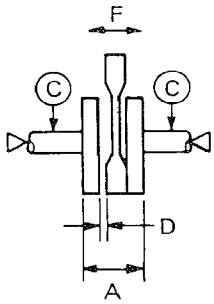
Model	CY50B
Model Code Number	3SA
Vehicle Identification Number	JYA3SAN0*MA000101
Engine Starting Number	3SA-000101
Dimensions:	
Overall Length	1,645 mm (64.8 in)
Overall Width	630 mm (24.8 in)
Overall Height	980 mm (38.6 in)
Seat Height	710 mm (28.0 in)
Wheelbase	1,115 mm (43.9 in)
Minimum Ground Clearance	80 mm (3.1 in)
Basic Weight:	
With Oil and Full Fuel Tank	65 kg (143 lb)
Minimum Turning Radius:	1,600 mm (63 in)
Engine:	
Engine Type	Air cooled 2-stroke, gasoline
Cylinder Arrangement	Single cylinder, Vertical
Displacement	49 cm^3
Bore x Stroke	40.0 x 39.2 mm (1.575 x 1.543 in)
Compression Ratio	6.9 : 1
Starting System	Electric and kick starter
Lubrication System	Separate lubrication (Yamaha Autolube)
Oil Type or Grade:	
Engine Oil	Yamalube2 or equivalent air-cooled, 2-stroke engine oil
Transmission Oil	SAE 10W30 type SE motor oil
Oil Capacity:	
Oil Tank (engine oil)	0.8 L (0.7 Imp qt, 0.84 US qt)
Transmission Oil:	
Periodic Oil Change	0.10 L (0.09 Imp qt, 0.11 US qt)
Total Amount	0.11 L (0.10 Imp qt, 0.12 US qt)
Air Filter	Wet type element
Fuel:	
Type	Regular gasoline
Tank Capacity	3.5 L (0.77 Imp gal, 0.92 US gal)

Model	CY50B	
Carburetor: Type/Manufacturer	Y14P/TEIKEI KIKAKI	
Spark Plug: Type/Manufacturer Gap	BPR7HS/NGK or W22FPR-U/ND 0.6 ~ 0.7 mm (0.024 ~ 0.028 in)	
Clutch Type	Dry, Centrifugal automatic	
Transmission: Primary Reduction System Primary Reduction Ratio Secondary Reduction System Secondary Reduction Ratio Transmission Type Operation	 Helical gear 48/13 (3.692) Spur gear 38/11 (3.455) V-belt Automatic	
Chassis: Frame Type Caster Angle Trail	 Steel tube underbone 26.5° 72 mm (2.83 in)	
Tire: Type Size Manufacture Tire pressure (cold tire)	Front Tubuless MB38/C-922 80/90-10 34J INOUE/CHENGSHIN 125 kPa (1.25 kg/cm², 18 psi)	Rear Tubeless MB38/C-922 80/90-10 34J INOUE/CHENGSHIN 200 kPa (2.00 kg/cm², 29 psi)
Brake: Front Brake Type Operation Rear Brake Type Operation	 Drum brake Right hand operation Drum brake Left hand operation	
Suspension: Front Suspension Rear Suspension	 Telescopic fork Unit swing	
Shock Absorber: Front Rear	 Coil spring Coil spring/Oil damper	
Wheel Travel: Front Wheel Travel Rear Wheel Travel	 42 mm (1.65 in) 42 mm (1.65 in)	

Model	CY50B
Electrical:	
Ignition System	CDI
Generator System	Flywheel magneto
Battery Type or Model	YT4L-BS/GT4L-BS
Battery Capacity	12V 4AH
Headlight type:	Bulb type
Bulb Wattege x Quantity:	
Headlight	12V 25W/25W X 1
Tail/Brake light	12V 5W/21W X 1
Flasher light	12V 10W X 4
Meter light	12W 3.4W X 1
Indicator Light Wattage x Quantity:	
"TURN"	12V 1.7W X 1
"HIGH BEAM"	12V 1.7W X 1
"OIL"	12V 3.4W X 1

MAINTENANCE SPECIFICATIONS

ENGINE

Model	CY50B
Cylinder Head: Warp Limit 	0.02 mm (0.00079 in) * Lines indicate straightedge measurement
Cylinder: Bore Size <Limit> Taper Limit Out of Round Limit	39.993 ~ 40.012 mm (1,575 in) <40.1 mm (1.579 in)> 0.05 mm (0.002 in) 0.01 mm (0.0004 in)
Piston: Piston Size Measuring Point *  Piston Clearance <Limit> Oversize: 1st 2nd Piston Pin Bore Size	39.952 ~ 39.972 mm (1.573 ~ 1.574 in) 5 mm (0.2 in) 0.034 ~ 0.047 mm (0.0013 ~ 0.0018 in) <0.1 mm (0.004 in)> 40.25 mm (1.585 in) 40.50 mm (1.594 in) 10.004 ~ 10.015 mm (0.3939 ~ 0.3943 in)
Piston Pin: Outside Diameter Piston Pin Clearance <Limit>	9.996 ~ 10.000 mm (0.3935 ~ 0.3937 in) 0.004 ~ 0.019 mm (0.0007 ~ 0.0008 in) <0.07 mm (0.0028 in)>
Piston Ring: Sectional Sketch (B x T)/Type Top Ring 2nd Ring End Gap (installed): Top Ring 2nd Ring Side Clearance (installed): Top Ring 2nd Ring 	1.5 x 1.8 mm (0.059 x 0.071 in)/Keystone 1.5 x 1.8 mm (0.059 x 0.071 in)/Keystone 0.15 ~ 0.35 mm (0.006 ~ 0.014 in) 0.15 ~ 0.35 mm (0.006 ~ 0.014 in) 0.03 ~ 0.05 mm (0.0012 ~ 0.0020 in) 0.03 ~ 0.05 mm (0.0012 ~ 0.0020 in)
Crankshaft:  Crank Width "A" Run Out Limit "C" Connecting Rod Big End Side Clearance "D" Small End Free Play "F"	37.90 ~ 37.95 mm (1.492 ~ 1.494 in) 0.03 mm (0.0012 in) 0.2 ~ 0.5 mm (0.008 ~ 0.020 in) 0.4 ~ 0.8 mm (0.015 ~ 0.031 in)

Model		CY50B
Automatic Centrifugal Clutch:		
Shoe Thickness		2.5 mm (0.10 in)
<Wear Limit>		<2.0 mm (0.08 in)>
Clutch Shoe Spring Free Length		26.2 mm (1.03 in)
Clutch Spring Free Length		95.4 mm (3.76 in)
<Limit>		<92.4 mm (3.64 in)>
Clutch Housing Inside Diameter		105.0 mm (4.13 in)
<Wear Limit>		<105.4 mm (4.15 in)>
Clutch-In Revolution		3100 ~ 3500 r/min
Clutch-Stall Revolution		6050 ~ 6550 r/min
V-Belt:		
Width		16.6 mm (0.65 in)
<Wear Limit>		<15.2 mm (0.60 in)>
Transmission:		
Main Axle Runout Limit		0.08 mm (0.003 in)
Drive Axle Runout Limit		0.08 mm (0.003 in)
Kick Starter:		
Type		Ratchet type
Kick Clip Tension		150 ~ 250 g (5.3 ~ 8.8 oz)
Carburetor:		
I.D. Mark		3KJ10
Main Jet	(M.J.)	#76
Jet Needle-clip Position	(J.N.)	3R00 3/5
Main Air Jet	(M.A.J.)	ø2.0
Cutaway	(C.A.)	2.5
Pilot Jet	(P.J.)	#42
Pilot Air Screw	(A.S.)	1 and 5/8 turns out
Valve Seat Size	(V.S.)	ø1.8
Starter Jet	(P.J.)	#48
Float Height		15.0 ~ 17.0 mm (0.59 ~ 0.67 in)
Engine Idling speed		1,800 r/min
Reed Valve:		
Valve Stopper Height		6.0 ~ 6.4 mm (0.24 ~ 0.25 in)
Reed Valve Clearance		Less than 0.2 mm (0.008 in)
Lubrication System:		
Autolube Pump Stroke		0.5 mm (0.020 in)

Tightening Torque

Parts to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m·kg	ft·lb	
Spark Plug	—	M14 x 1.25	1	20	2.0	14	
Cylinder Head	Nut	M7 x 1.0	4	14	1.4	10	
Stud Bolt	—	M7 x 1.0	4	17	1.7	12	
Stator Assembly	Screw	M6 x 1.0	2	8	0.8	5.8	
C.D.I. Magneto	Nut	M10 x 1.25	1	38	3.8	27	
Air Shroud	Screw	M6 x 1.0	2	7	0.7	5.1	
Fan	Screw	M6 x 1.0	3	7	0.7	5.1	
Autolube Pump	Screw	M5 x 0.8	2	4	0.4	2.9	
Reed Valve (carburetor joint)	Bolt	M6 x 1.0	4	9	0.9	6.5	
Air Cleaner Case	Screw	M6 x 1.0	2	9	0.9	6.5	
Exhaust Pipe	Screw	M6 x 1.0	2	9	0.9	6.5	
Muffler	Bolt	M8 x 1.25	2	26	2.6	19	
Muffler Protector	Screw	M6 x 1.0	2	9	0.9	6.5	
Crankcase cover 1	Screw	M6 x 1.0	11	9	0.9	6.5	
Cover 3	Screw	M6 x 1.0	2	7	0.7	5.1	
Transmission Oil Drain Bolt	—	M8 x 1.25	1	18	1.8	13	
Kick Crank	Bolt	M6 x 1.0	1	9	0.9	6.5	
Clutch Housing	Nut	M10 x 1.0	1	40	4.0	29	
Clutch Carrier	Nut	M28 x 1.0	1	50	5.0	36	
Primary Sheeve	Nut	M10 x 1.25	1	33	3.3	24	
Idle Gear Plate	Screw	M6 x 1.0	2	8	0.8	5.8	
Starter Motor	Bolt	M6 x 1.0	2	13	1.3	9.4	

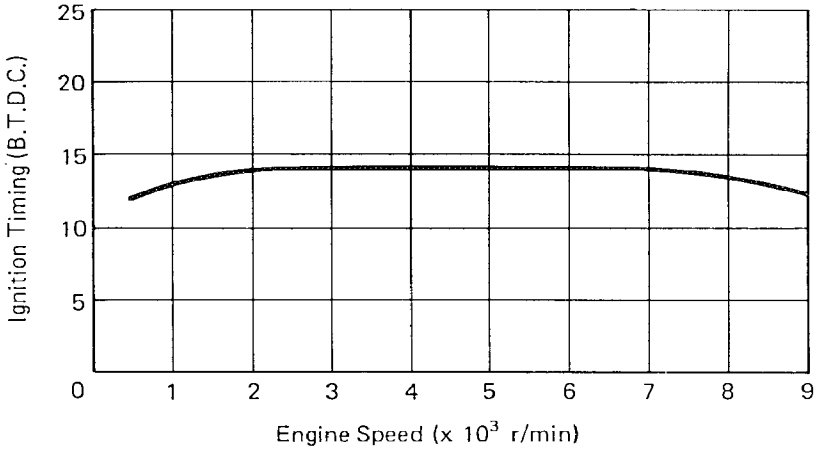
CHASSIS

Model	CY50B
Steering System:	
Steering Bearing Type	Ball bearing
No./Size of Steel Balls	
Upper	5/32 in 26 pcs.
Lower	5/32 in 26 pcs.
Front Suspension:	
Front Fork Travel	47.8 mm (1.68 in)
Fork spring Free Length	91.5 mm (3.60 in)
<Limit>	<87 mm (3.42 in)>
Spring Rate	5.64 N/mm (0.564/mm, 31.6 lb/in)
Stroke	Zero ~ 47.8 mm (Zero ~ 1.88 in)
Optional Spring	No.
Rear Suspension:	
Shock absorber Travel	45 mm (1.77 in)
Spring Free Length	176.5 mm (6.95 in)
Spring Fitting Length	166.5 mm (6.56 in)
Spring Rate: (K1)	25.0 N/mm (2.5 kg/mm, 140.0 lb/in)
(K2)	37.0 N/mm (3.7 kg/mm, 207.2 lb/in)
(K3)	53.0 N/mm (5.3 kg/mm, 296.8 lb/in)
Stroke: (K1)	Zero ~ 20 mm (Zero ~ 0.79 in)
(K2)	20 ~ 35 mm (0.79 ~ 1.38 in)
(K3)	35 ~ 45 mm (1.38 ~ 1.77 in)
Optional Spring	No.
Wheel:	
Front Wheel Type	Panel wheel
Rear Wheel Type	Panel wheel
Front Rim Size/Material	MT 2.15 x 10 / Steel
Rear Rim Size/Material	MT 2.15 x 10 / Steel
Rim Runout Limit:	
Vertical	2.0 mm (0.08 in)
Lateral	2.0 mm (0.08 in)
Front Drum Brake:	
Type	Leading, Trailing
Drum Inside Diameter	95.0 mm (3.74 in)
<Wear Limit>	<96.0 mm (3.78 in)>
Lining Thickness	4.0 mm (0.16 in)
<Wear Limit>	<2.0 mm (0.08 in)>
Rear Drum Brake:	
Type	Leading, Trailing
Drum Inside Diameter	110.0 mm (4.33 in)
<Wear Limit>	<111.0 mm (4.37 in)>
Lining Thickness	4.0 mm (0.16 in)
<Wear Limit>	<2.0 mm (0.08 in)

Tightening Torque

Parts to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m·kg	ft·lb	
Frame and Engine Bracket	Nut	M10 x 1.25	2	46	4.6	33	
Engine Bracket and Engine	Bolt	M12 x 1.25	1	84	8.4	61	
Rear Suspension (upper)	Nut	M10 x 1.25	1	32	3.2	23	
(lower)	Bolt	M8 x 1.25	1	18	1.8	13	
Handlebar and Steering Column	Bolt	M10 x 1.25	1	60	6.0	43	
Ring nut (steering column)	—	M25 x 1.0	1	30	3.0	22	
Front Wheel Axle	Nut	M10 x 1.25	1	47	4.7	34	
Front Brake Cam Lever	Bolt	M5 x 0.8	1	4	0.4	2.9	
Rear Brake Cam Lever	Bolt	M6 x 1.0	1	8	0.8	5.8	
Rear Wheel Axle	Nut	M14 x 1.5	1	104	10.4	75.4	
Fuel Sender	Bolt	M5 x 0.8	4	3	0.3	2.2	
Carrier	Nut	M6 x 1.0	2	10	1.0	7.2	
Carrier	Bolt	M8 x 1.25	1	16	1.6	11	
Bridge Plate		M8 x 1.25	4	26	2.6	19	
Fuel cock	Bolt	M6 x 1.0	2	5	0.5	3.6	
Fuel tank (upper)	Nut	M6 x 1.0	2	7	0.7	5.1	
Fuel tank (lower)	Bolt	M6 x 1.0	2	7	0.7	5.1	
Seat lock	Bolt	M6 x 1.0	2	7	0.7	5.1	
Box (front)	Bolt	M6 x 1.0	2	8	0.8	5.8	
Plastic Part (M6)	—	M6 x 1.0	—	6	0.6	4.3	
(M5)	—	M5 x 1.0	—	1	0.1	0.7	

ELECTRICAL

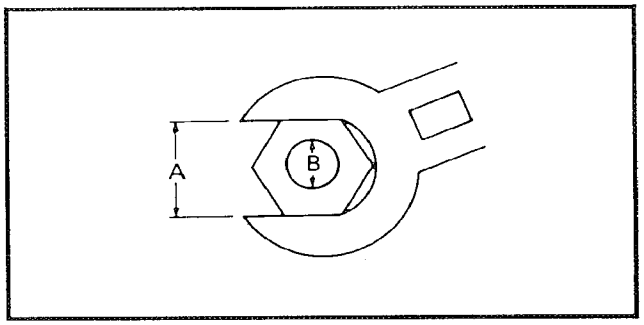
Model	CY50B
Voltage:	12V
Ignition System: Ignition Timing (B.T.D.C.) Advancer Type	 14° at 5,000 r/min Electrical
	
C.D.I.: Magneto Model/Manufacturer Pickup Coil Resistance (color) Source Coil Resistance (color) C.D.I. Unit-Model/Manufacturer	 3KJ/YAMAHA 400 ~ 600Ω at 20°C (68°F) (White/Red – Black) 640 ~ 960Ω at 20°C (68°F) (Black/Red – Black) 3KJ/YAMAHA
Ignition Coil: Model/Manufacturer Primary Coil Resistance Secondary Coil Resistance	 3KJ/YAMAHA 0.56 ~ 0.84Ω at 20°C (68°F) 5.68 ~ 8.52kΩ at 20°C (68°F)
Spark plug cap: Resistance	 4 ~ 6kΩ at 20°C (68°F)
Charging System/Type:	Flywheel magneto
C.D.I. Magneto: Model/Manufacturer Charging Coil Resistance (color) Charging Current Lighting Coil Resistance (color) Lighting Voltage	 3KJ/YAMAHA 0.48 ~ 0.72Ω at 20°C (68°F) (White – Black) 0.4 A at 3000 r/min ~ 1.0A at 8000 r/min 0.45 ~ 0.55 at 20°C (68°F) (Yellow/Red – Black) 12V at 3000r/min ~ 15V at 8000 r/min
Voltage Regulator/Rectifier: Type Model/Manufacturer No Load Regulated Voltage Capacity Withstand Voltage	 Semi conductor short circuit type EHU-01TR27/MATSUSHITA or SH580-12/SHINDENGEN 13.5 – 14.5V 5A 240V

Model	CY50B	
Battery:		
Capacity	12V, 4AH	
Specific Gravity	1.32	
Starter Motor:		
Model	DA5AN	3KJ
Manufacturer	NIPPON DENSO	YAMAHA
Output	0.15 kW	0.14 kW
Armature Coil Resistance	0.08 ~ 0.10Ω at 20°C (68°F)	0.06 ~ 0.08Ω at 20°C (68°F)
Brush Length	4.5 mm (0.18 in)	3.9 mm (0.15 in)
<Wear Limit>	<2.5 mm (0.10 in)>	<0.9 mm (0.035 in)>
Brush Spring Pressure	250 ~ 450 gf (8.8 ~ 15.9 oz)	560 ~ 840 gf (19.8 ~ 29.7 oz)
Commutator Diameter	15.5 mm (0.61 in)	15.8 mm (0.62 in)
<Wear Limit>	<14.5 mm (0.57 in)>	<14.8 mm (0.58 in)>
Mica Undercut	0.9 ~ 1.2 mm (0.035 ~ 0.047 in)	1.15 mm (0.045 in)
Starter Relay:		
Model/Manufacturer	27V/TATEISHI	27V/MATSUSHITA
Amperage Rating	20A	26A
Coil Resistance	54 ~ 66Ω at 20°C (68°F)	72 ~ 88Ω at 20°C (68°F)
Horn:		
Type/Quantity	Plain type/1 pc	
Model/Manufacturer	GF-12/NIKKO	
Maximum Amperage	1.5A	
Flasher Relay:		
Type	Condenser type	
Model/Manufacturer	FZ222SD/NIPPON DENSO	
Self Cancelling Device	No	
Flasher Frequency	60 ~ 120 cycle/min	
Wattage	10W x 2 + 3.4W	
Oil Level Gauge:		
Model/Manufacturer	3KJ/NIPPON BINYLON, 53L/TAIHEIYOU ASTI	
Circuit Breaker:		
Type	Fuse	
Amperage for Individual Circuit x Quantity:		
Main	7A x 1	
Fuel Sender Unit:		
Model/Manufacturer	YA-750-01-NO-FU/NIPPON SEIKI	
Resistance (full)	4 ~ 10Ω at 20°C (68°F)	
(empty)	90 ~ 100Ω at 20°C (68°F)	

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	6.1
22 mm	16 mm	130	13.0	94



A: Distance across flats
B: Outside thread diameter

DEFINITION OF UNITS

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

LUBRICATION POINTS AND LUBRICANT TYPE

ENGINE

Lubrication Points (part name)	Lubricant Type
Oil seal lips (all)	LS
O-rings (all)	LS
Bearing retainer	
Crankshaft bearings	E
Needle bearings (connecting rod)	E
Main axle bearings	G
Drive axle bearings	LS
Secondary sheave axle bearing	G
Piston rings, piston pins and pistons	E
Kick pinion gear	LS
Kick shaft	LS
Starter idle gear	E
Starter clutch pin	M
Oil pump driven gear and drive gear	LS
Secondary sliding sheave cam groove	BEL-RAY assembly lube®
Secondary fixed sheave in-side dia.	BEL-RAY assembly lube®
Crankcase mating surfaces	Yamaha bond No. 1215®