



XVS1100(L) '99

5EL1-AE1

SERVICE MANUAL

EB000000

**XVS1100 (L)
SERVICE MANUAL**

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First edition, October 1998

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NOTICE

This manual was produced by the Yamaha Motor Company primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to include all the knowledge of a mechanic in one manual, so it is assumed that anyone who uses this book to perform maintenance and repairs on Yamaha motorcycles has a basic understanding of the mechanical ideas and the procedures of motorcycle repair. Repairs attempted by anyone without this knowledge are likely to render the motorcycle unsafe and unfit for use.

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

NOTE:

Designs and specifications are subject to change without notice.

IMPORTANT INFORMATION

Particularly important information is distinguished in this manual by the following notations.



The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



Failure to follow WARNING instructions could result in severe injury or death to the motorcycle operator, a bystander or a person inspecting or repairing the motorcycle.

CAUTION:

A CAUTION indicates special precautions that must be taken to avoid damage to the motorcycle.

NOTE:

A NOTE provides key information to make procedures easier or clearer.

HOW TO USE THIS MANUAL

MANUAL ORGANIZATION

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

- 1st title ①: This is the title of the chapter with its symbol in the upper right corner of each page.
- 2nd title ②: This title indicates the section of the chapter and only appears on the first page of each section. It is located in the upper right corner of the page.
- 3rd title ③: This title indicates a sub-section that is followed by step-by-step procedures accompanied by corresponding illustrations.

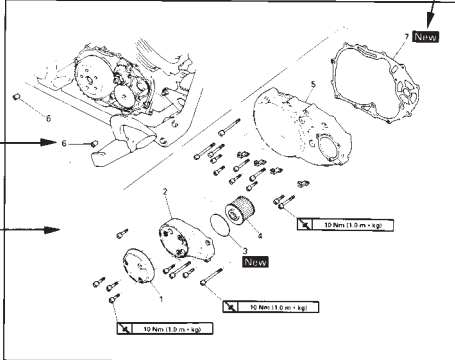
EXPLODED DIAGRAMS

To help identify parts and clarify procedure steps, there are exploded diagrams at the start of each removal and disassembly section.

- 1. An easy-to-see exploded diagram ④ is provided for removal and disassembly jobs.
- 2. Numbers ⑤ are given in the order of the jobs in the exploded diagram. A number that is enclosed by a circle indicates a disassembly step.
- 3. An explanation of jobs and notes is presented in an easy-to-read way by the use of symbol marks ⑥. The meanings of the symbol marks are given on the next page.
- 4. A job instruction chart ⑦ accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.
- 5. For jobs requiring more information, the step-by-step format supplements ⑧ are given in addition to the exploded diagram and the job instruction chart.

② CLUTCH ① ENG

CLUTCH CRANKCASE COVER (RIGHT)



⑤ → 6

④ → 3

⑦ →

Order	Job name/Part name	Qty	Remarks
	Crankcase cover (right) removal		Remove the parts in the order below. Stand the motorcycle on a level surface. WARNING Securely support the motorcycle so there is no danger of it falling over.
	Engine oil		Refer to "ENGINE OIL REPLACEMENT" in CHAPTER 3.
	Muffler assembly 1,2		Refer to "ENGINE REMOVAL".
	Brake pedal link		
1	Oil filter cover plate	1	
2	Oil filter cover	1	
3	O-ring	1	
4	Oil filter	1	L=70 mm × 1, 65 mm × 1, 25 mm × 3
5	Crankcase cover (right)	1	L=65 mm × 1, 55 mm × 1, 45 mm × 4, 30 mm × 4

4-34

③ CLUTCH ENG

CLUTCH REMOVAL

1. Straighten:
 - Lock washer tab
2. Loosen:
 - Nut (clutch boss) ①

NOTE:
Loosen the nut (clutch boss) ① while holding the clutch boss ② with the clutch holding tool ③.

Clutch holding tool: 90890-04086

PRIMARY DRIVE GEAR REMOVAL

1. Straighten:
 - Lock washer tab
2. Loosen:
 - Nut (primary drive gear) ①

NOTE:
Place a copper plate ② between the teeth of the primary drive gear ③ and primary driven gear to lock them.

CLUTCH INSPECTION

























1. Inspect:
 - Friction plates
 Wear/damage → Replace the friction plates as a set.
2. Measure:
 - Friction plate thickness
 Out of specification → Replace the friction plates as a set.
Measure at four places.

Thickness (friction plate): 2.9 – 3.1 mm
 <Wear limits> 2.6 mm

3. Inspect:
 - Clutch plate
 Damage → Replace the clutch plates as a set.
4. Measure:
 - Clutch plate warpage
 Out of specification → Replace the clutch plates as a set.
Use a surface plate and a feeler gauge ①.

Warp limit (clutch plate): Less than 0.2 mm

4-38

① GEN INFO 	② SPEC 	
③ INSP ADJ 	④ ENG 	
⑤ COOL 	⑥ CARB 	
⑦ CHAS 	⑧ ELEC 	
⑨ TRBL SHTG 	⑩ 	
⑪ 	⑫ 	
⑬ 	⑭ 	
⑮ 	⑯ 	⑰ 
⑱ 	⑲ 	⑳ 
㉑ 	㉒ 	㉓ 
㉔ 	㉕ New	

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ILLUSTRATED SYMBOLS

Illustrated symbols ① to ⑨ are printed on the top right of each page and indicate the subject of each chapter.

- ① General information
- ② Specifications
- ③ Periodic inspections and adjustments
- ④ Engine
- ⑤ Cooling system
- ⑥ Carburetion
- ⑦ Chassis
- ⑧ Electrical
- ⑨ Troubleshooting

Illustrated symbols ⑩ to ⑰ are used to identify the specifications appearing in the text.

- ⑩ Can be serviced with engine mounted
- ⑪ Filling fluid
- ⑫ Lubricant
- ⑬ Special tool
- ⑭ Torque
- ⑮ Wear limit, clearance
- ⑯ Engine speed
- ⑰ Ω, V, A








Illustrated symbols ⑱ to ㉓ in the exploded diagrams indicate the types of lubricants and lubrication points.

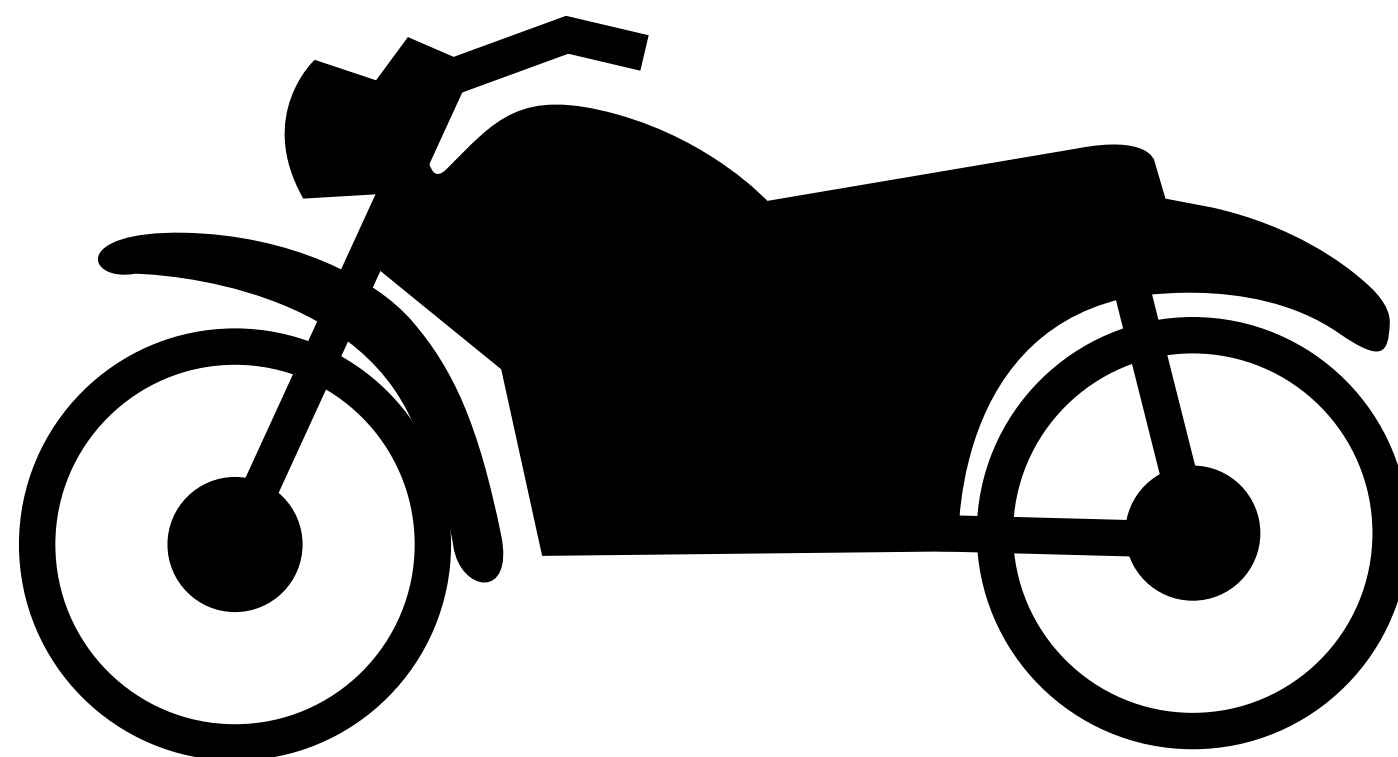
- ⑱ Apply engine oil
- ⑲ Apply gear oil
- ⑳ Apply molybdenum disulfide oil
- ㉑ Apply wheel bearing grease
- ㉒ Apply lightweight lithium-soap base grease
- ㉓ Apply molybdenum disulfide grease

Illustrated symbols ㉔ to ㉕ in the exploded diagrams indicate where to apply locking agent ㉔ and when to install new parts ㉕.

- ㉔ Apply locking agent (LOCTITE®)
- ㉕ Replace

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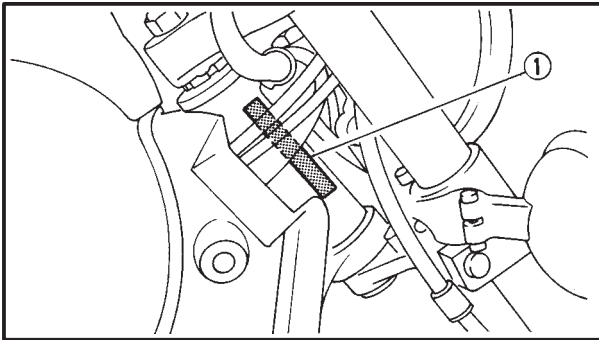


**GEN
INFO**

1

**CHAPTER 1.
GENERAL INFORMATION**

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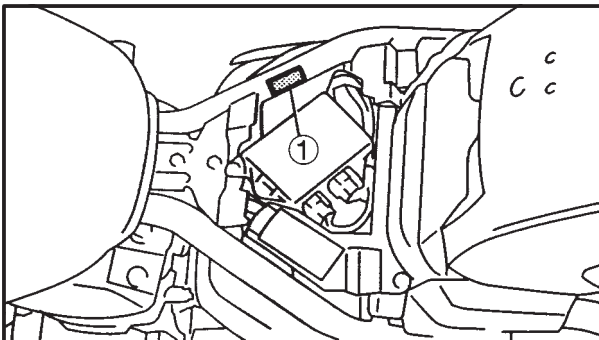
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GENERAL INFORMATION MOTORCYCLE IDENTIFICATION

EB100010

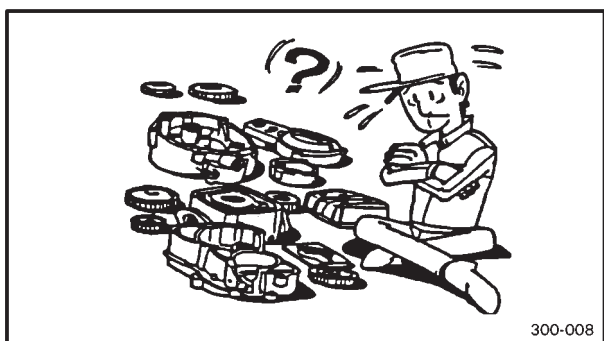
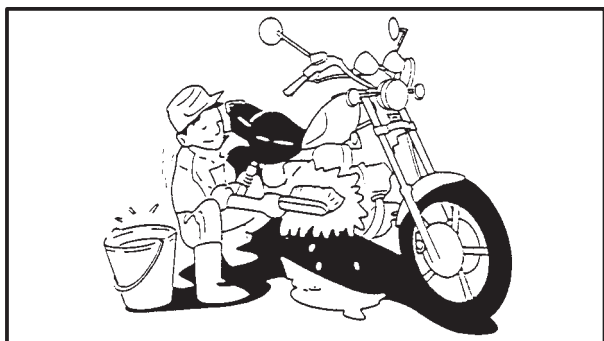
VEHICLE IDENTIFICATION NUMBER

The vehicle identification number ① is stamped into the right side of the steering head.



MODEL LABEL

The model label ① is affixed to the frame. This information will be needed to order spare parts.



EB101000

**IMPORTANT INFORMATION
PREPARATION FOR REMOVAL PROCE-
DURES**

1. Remove all dirt, mud, dust and foreign material before removal and disassembly.
2. Use proper tools and cleaning equipment. Refer to the "SPECIAL TOOLS" section.
3. When disassembling the machine, always keep mated parts together. This includes gears, cylinders, pistons and other parts that have been "mated" through normal wear. Mated parts must always be reused or replaced as an assembly.
4. During machine disassembly, clean all parts and place them in trays in the order of disassembly. This will speed up assembly and allow for the correct installation of all parts.
5. Keep all parts away from any source of fire.



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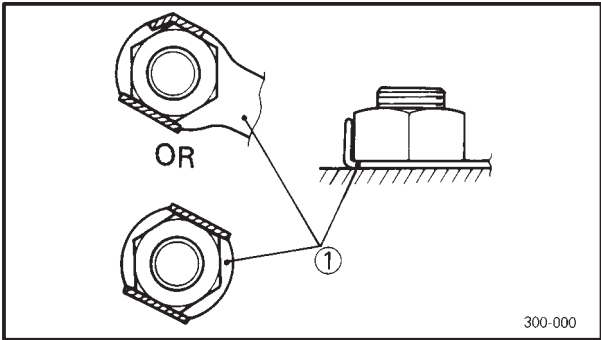
REPLACEMENT PARTS

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

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GASKETS, OIL SEALS AND O-RINGS

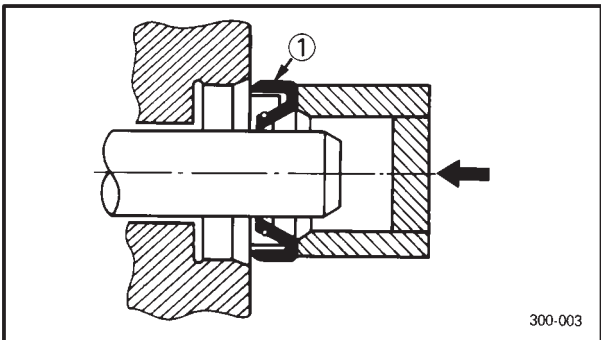
1. Replace all gaskets, seals and O-rings when overhauling the engine. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. Properly oil all mating parts and bearings during reassembly. Apply grease to the oil seal lips.



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LOCK WASHERS/PLATES AND COTTER PINS

1. Replace all lock washers/plates ① and cotter pins after removal. Bend lock tabs along the bolt or nut flats after the bolt or nut has been tightened to specification.



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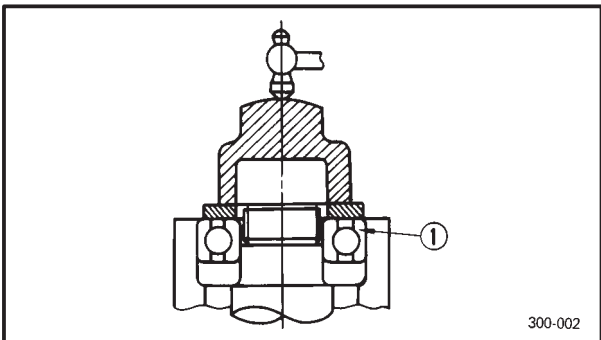
BEARINGS AND OIL SEALS

1. Install bearings and oil seals so that the manufacturer's marks or numbers are visible. When installing oil seals, apply a light coating of lightweight lithium base grease to the seal lips. Oil bearings liberally when installing, if appropriate.

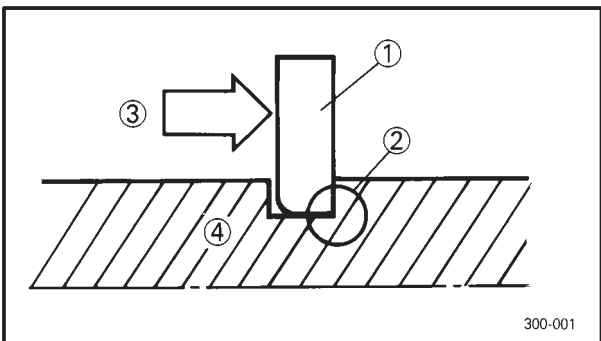
- ① Oil seal

CAUTION: _____

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



- ① Bearing

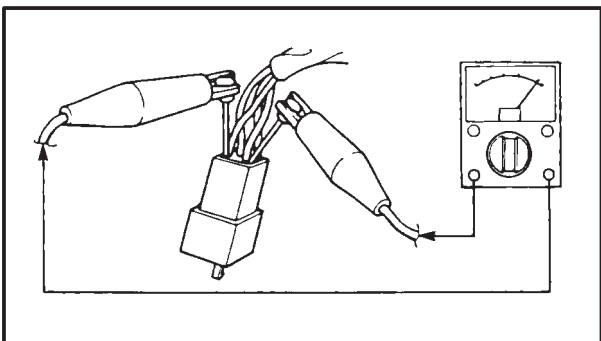
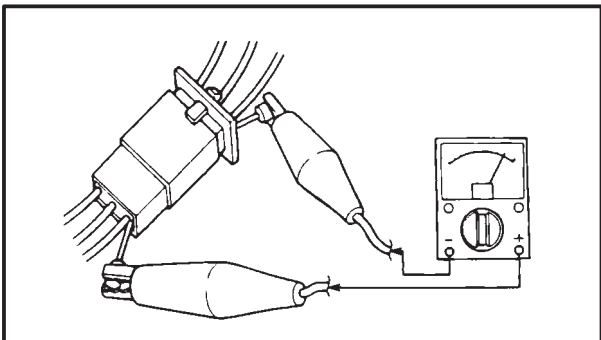
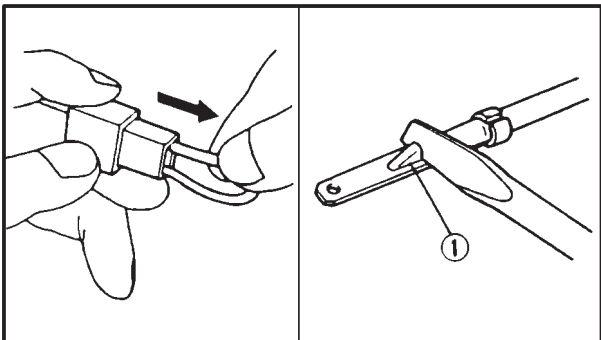
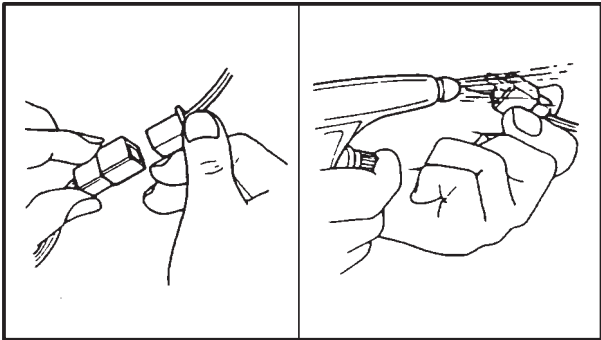


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CIRCLIPS

1. Check all circlips 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 the thrust ③ it receives. See sectional view.

- ④ Shaft



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CHECKING OF CONNECTIONS

Check the connectors for stains, rust, moisture, etc.

1. Disconnect:
 - Connector
2. Check:
 - Connector
 - Moisture → Dry each terminal with an air blower.
 - Stains/rust → Connect and disconnect the terminals several times.
3. Check:
 - Connector leads
 - Looseness → Bend up the pin ① and connect the terminals.

4. Connect:
 - Connector terminals

NOTE: _____
The two terminals “click” together.

5. Check:
 - Continuity (using a pocket tester)

NOTE: _____

- If there is no continuity, clean the terminals.
- When checking the wire harness be sure to perform steps 1 to 3.
- As a quick remedy, use a contact revitalizer available at most part stores.
- Check the connector with a pocket tester as shown.

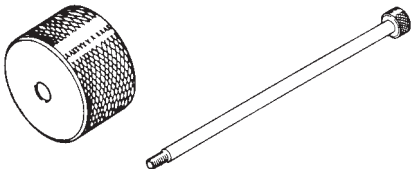
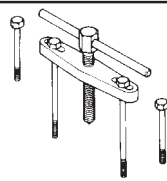
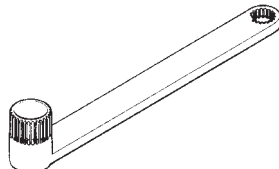
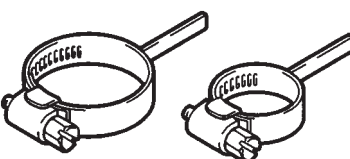
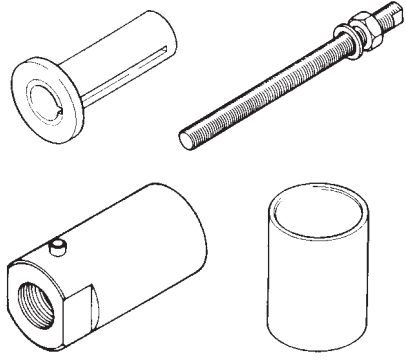
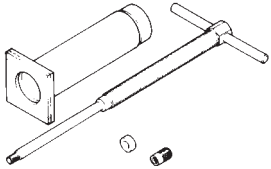
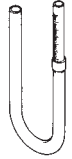


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SPECIAL TOOLS

The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools; this will help prevent damage caused by the use of inappropriate tools or improvised techniques. Special tools may differ by shape and part number from country to country. In such a case, two types are provided.

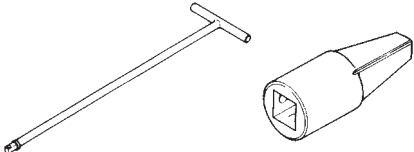
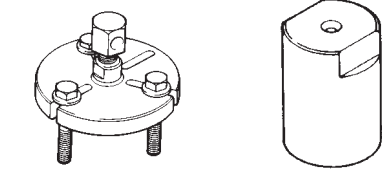
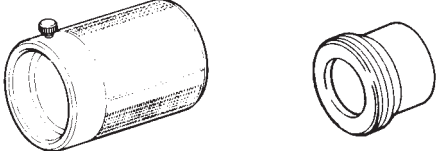
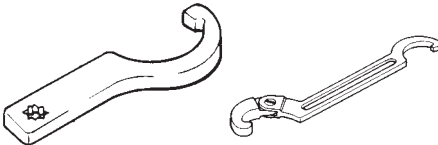
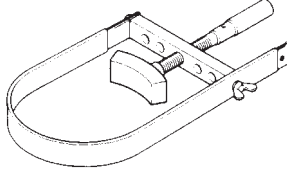
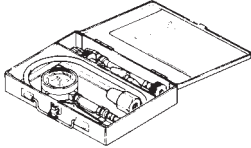
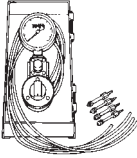
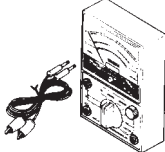
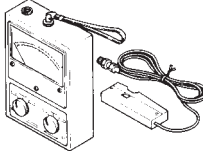
When placing an order, refer to the list provided below to avoid any mistakes.

Tool No.	Tool name/How to use	Illustration
Weight 90890-01084 Bolt 90890-01085	Slide hammer bolt/weight These tools are used to remove the rocker arm shaft.	
90890-01135	Crankcase separating tool This tool is used to remove the crankshaft.	
90890-01229	Coupling gear/Middle shaft tool This tool is needed when removing or installing the final pinion shaft nut.	
Final gear backlash band 90890-01230 Middle gear backlash band 90890-01231	Final gear backlash band This tool is needed when measuring final gear /middle gear backlash.	
Installer pot 90890-01274 Bolt 90890-01275 Adaptor 90890-04130 Spacer 90890-04060	Crankshaft installer pot/bolt/adaptor/spacer These tools are used to install the crankshaft.	
90890-01304	Piston pin puller This tool is used to remove the piston pin.	
90890-01312	Fuel level gauge This gauge is used to measure the fuel level in the float chamber.	

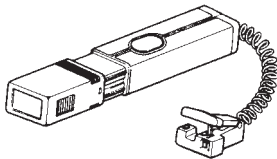
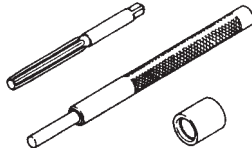
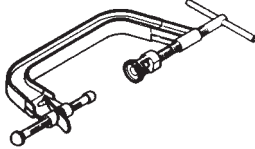
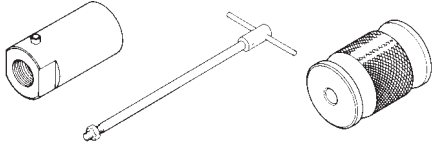
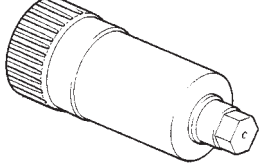
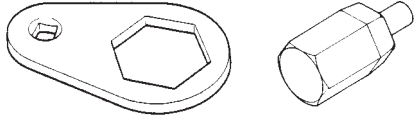
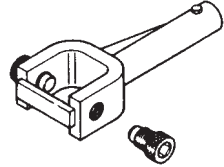
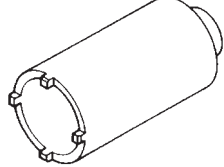
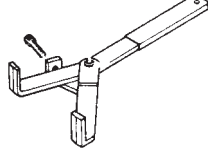
SPECIAL TOOLS

**GEN
INFO**



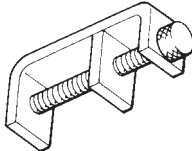
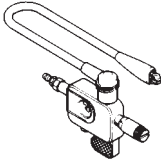

Tool No.	Tool name/How to use	Illustration
T-handle 90890-01326 Holder 90890-01460	T-handle/damper rod holder These tools are needed to loosen and tighten the damper rod holding bolt.	
Puller 90890-01362 Adapter 90890-04131	Flywheel puller/adaptor These tools are needed to remove the rotor.	
Weight 90890-01367 Adapter 90890-01381	Fork seal driver weight/adaptor These tools are needed when installing the slide metal, oil seal and dust seal into the fork.	
Ring nut wrench 90890-01403 Exhaust nut wrench 90890-01268	Ring nut wrench/exhaust and steering nut wrench This tool is needed to loosen and tighten the steering stem ring nut.	
90890-01701	Sheave holder This tool is needed to hold the rotor when removing or installing the rotor bolt.	
90890-03081	Compression gauge set These tools are needed to measure engine compression.	
90890-03094	Vacuum gauge This gauge is needed for carburetor synchronization.	
90890-03112	Pocket tester This instrument is needed for checking the electrical system.	
90890-03113	Engine tachometer This tool is needed for observing engine r/min.	



Tool No.	Tool name/How to use	Illustration
90890-03141	<p>Timing light</p> <p>This tool is necessary for checking ignition timing.</p>	
90890-04014	<p>Valve guide remover & installer</p> <p>This tool is needed to remove and install the valve guide.</p>	
90890-04019	<p>Valve spring compressor</p> <p>This tool is needed to remove and install the valve assemblies.</p>	
<p>Adapter 90890-01277 Shock puller 90890-01290 Weight 90890-01291</p>	<p>Crankshaft installer bolt adapter/armature shock puller/weight</p> <p>These tools are needed when removing the final pinion shaft.</p>	
90890-04137	<p>Bearing retainer wrench</p> <p>This tool is needed when removing or installing the middle drive shaft assembly.</p>	
<p>Wrench 90890-04138 Holder 90890-04055</p>	<p>Middle drive shaft nut wrench/Middle drive shaft holder</p> <p>These tools are needed when removing or installing the middle drive shaft bearing.</p>	
90890-04062	<p>Universal joint holder</p> <p>This tool is needed when removing or installing the driven pinion gear nut.</p>	
90890-04077	<p>Bearing retainer wrench</p> <p>This tool is needed when removing or installing the final drive pinion gear assembly.</p>	
90890-04086	<p>Clutch holding tool</p> <p>This tool is needed to hold the clutch when removing or installing the clutch boss nut.</p>	

SPECIAL TOOLS



Tool No.	Tool name/How to use	Illustration
90890-04090	<p>Damper spring compressor</p> <p>This tool is needed when removing or installing the damper spring.</p>	
90890-06754	<p>Dynamic spark tester Ignition checker</p> <p>This instrument is necessary for checking the ignition system components.</p>	
90890-85505	<p>Yamaha bond No.1215</p> <p>This sealant (bond) is used on crankcase mating surfaces, etc.</p>	



SPEC

2



CHAPTER 2. SPECIFICATIONS

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SPECIFICATIONS

GENERAL SPECIFICATIONS

Item	Standard
Model code:	XVS1100: 5EL1 (For Europe) 5EL2 (For D, A, FIN) 5EL3 (For Australia)
Dimensions: Overall length Overall width Overall height Seat height Wheelbase Minimum ground clearance Minimum turning radius	2,405 mm 895 mm 1,095 mm 690 mm 1,640 mm 145 mm 3,200 mm
Basic weight: With oil and a full fuel tank	274 kg (5EL2 : 275kg)
Engine: Engine type Cylinder arrangement Displacement Bore × stroke Compression ratio Compression pressure (STD) Starting system	Air cooled 4-stroke, SOHC V-type 2-cylinder 1.063 L 95 × 75mm 8.3 : 1 1,000 kPa (10 kg/cm ² , 10 bar) at 400 r/min Electric starter
Lubrication system:	Wet sump
Oil type or grade: Engine oil 	API standard: "SE" or higher grade ACEA standard: G4 or G5
Final gear oil:	SAE80API "GL-4" Hypoid Gear Oil
Oil quantity: Engine oil Periodic oil change With oil filter replacement Total amount Final gear case oil Total amount	3.0 L 3.1 L 3.6 L 0.2 L
Air filter:	Dry type element
Fuel: Type Fuel tank capacity Fuel reserve amount	Regular unleaded gasoline 17 L 4.5 L

GENERAL SPECIFICATIONS

SPEC



Item	Standard
Carburetor: Type/quantity Manufacturer	BSR37/2 MIKUNI
Spark plug: Type Manufacturer Spark plug gap	BPR7ES/W22EPR-U NGK/DENSO 0.7 ~ 0.8 mm
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 78/47 (1.660) Shaft drive 44/47 × 19/18 × 32/11 (2.875) Constant mesh 5-speed Left foot operation 1st 40/17 (2.353) 2nd 40/24 (1.667) 3rd 36/28 (1.286) 4th 32/31 (1.032) 5th 29/34 (0.853)
Chassis: Frame type Caster angle Trail	Double cradle 33° 136 mm
Tire: Type Size Manufacturer Type	With tube 110/90-18 61S 170/80-15M/C 77S BRIDGESTONE/DUNLOP BRIDGESTONE/DUNLOP EXEDRA L309/K555F EXEDRA G546/K555
Maximum load-except motorcycle:	201 kg (5EL2 : 200kg)
Tire pressure (cold tire): 0 ~ 90 kg (0 ~ 198 lb) load * 90 kg (198 lb) ~ Maximum load *	front 200 kPa (2.00 kg/cm ²) rear 225 kPa (2.25 kg/cm ²) front 225 kPa (2.25 kg/cm ²) rear 250 kPa (2.50 kg/cm ²) * Load is the total weight of the cargo, rider, passenger and accessories.
Brake: Front brake Rear brake	type operation Dual disc brake Right hand operation type operation Single disc brake Right foot operation