YAMAHA

XVS1100(L) '99

5EL1-AE1

SERVICE MANUAL

EB000000

XVS1100 (L)
SERVICE MANUAL

EB001000

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!

⚠ WARNING 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.

EB002000

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.

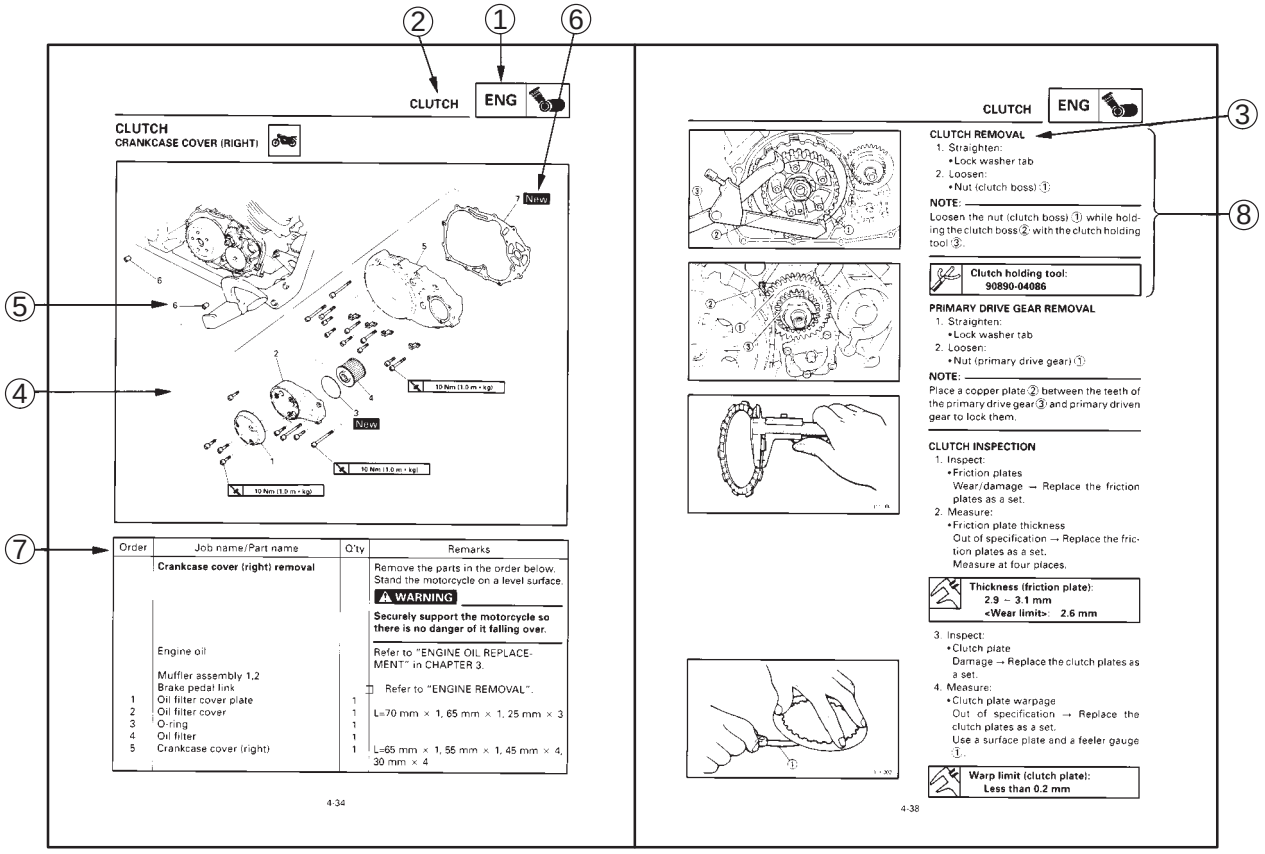
2nd title ②: This title indicates the section of the chapter and only appears on the first page of each section. It is located in the upper right corner of the page.

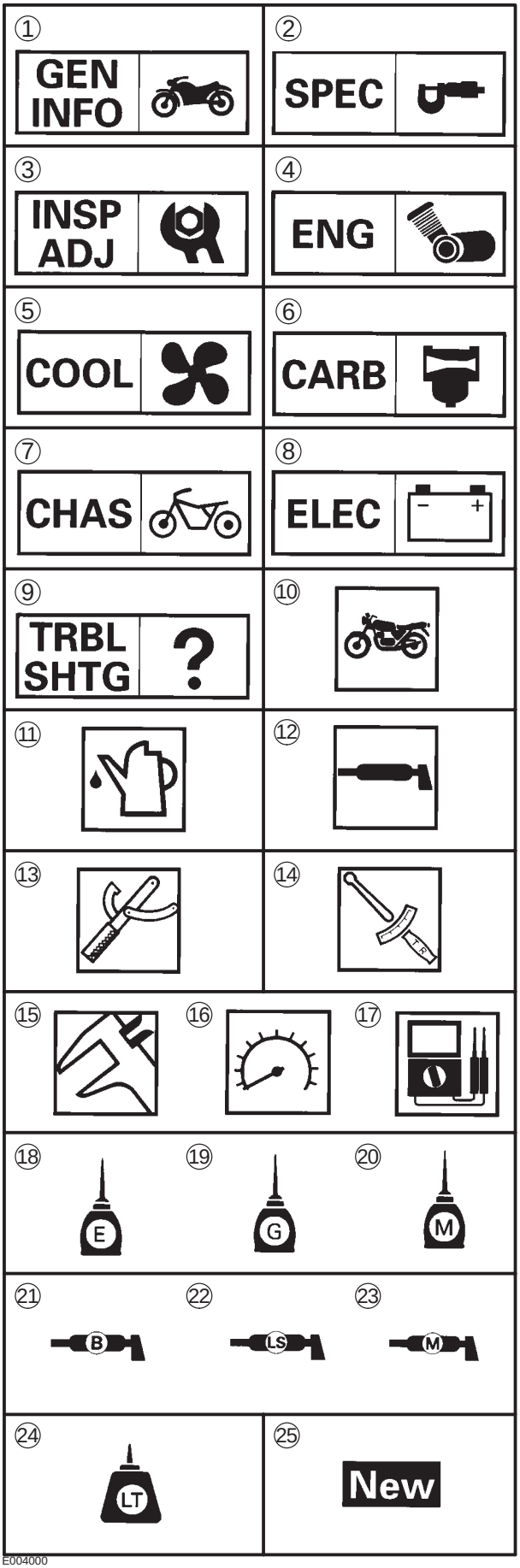
3rd title ③: This title indicates a sub-section that is followed by step-by-step procedures accompanied by corresponding illustrations.

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.





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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

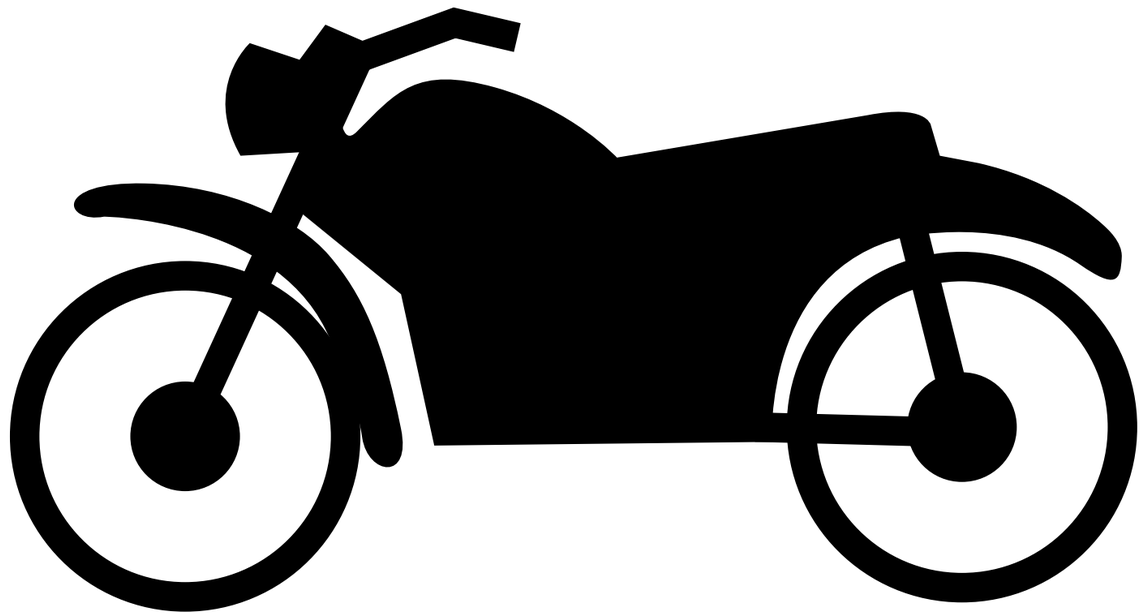
Illustrated symbols ⑱ to ㉓ in the exploded diagrams indicate the types of lubricants and lubrication points.

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

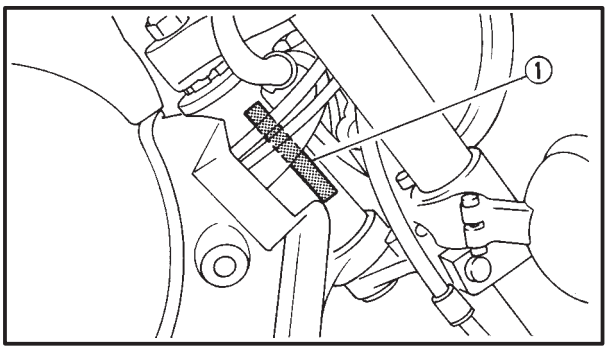
CHAPTER TITLES

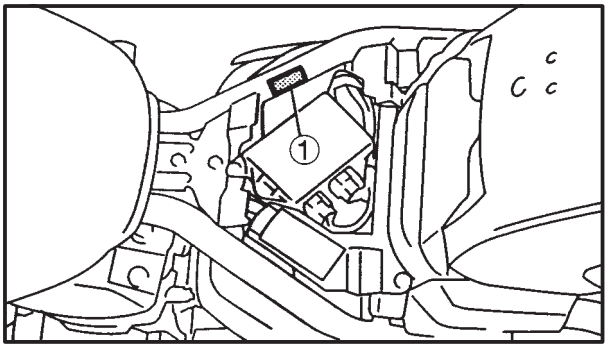


GEN INFO

1

CHAPTER 1.
GENERAL INFORMATION





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GENERAL INFORMATION

MOTORCYCLE IDENTIFICATION

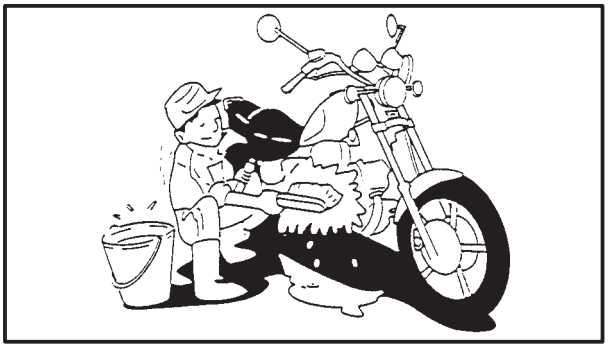
EB100010

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.

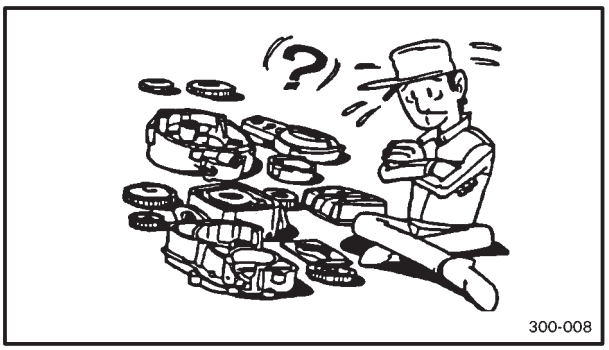


EB101000

IMPORTANT INFORMATION

PREPARATION FOR REMOVAL PROCEDURES

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.

EB101010

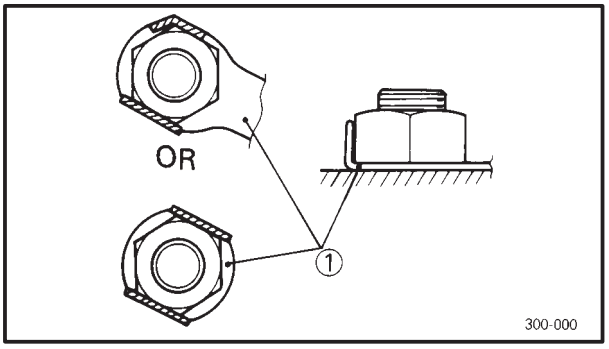
REPLACEMENT PARTS

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.

EB101020

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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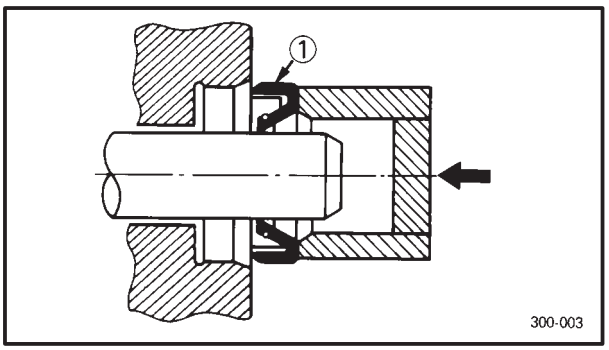
LOCK WASHERS/PLATES AND COTTER PINS

1. Replace all lock washers/plates① and cotter pins after removal. Bend lock tabs along the bolt or nut flats after the bolt or nut has been tightened to specification.



EB101040

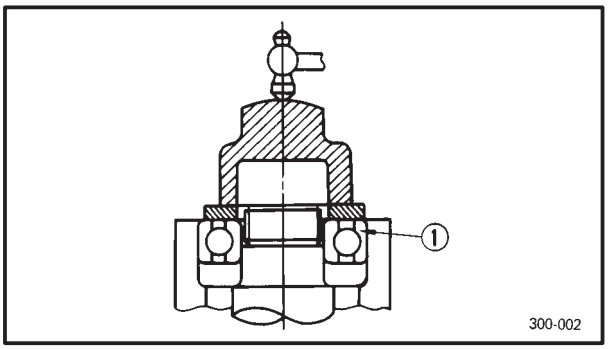
BEARINGS AND OIL SEALS

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.

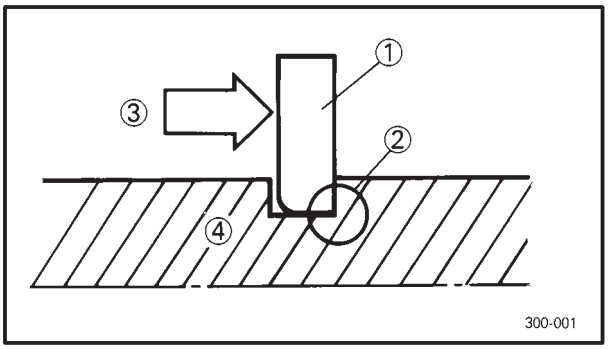
① Oil seal

CAUTION:

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



① Bearing



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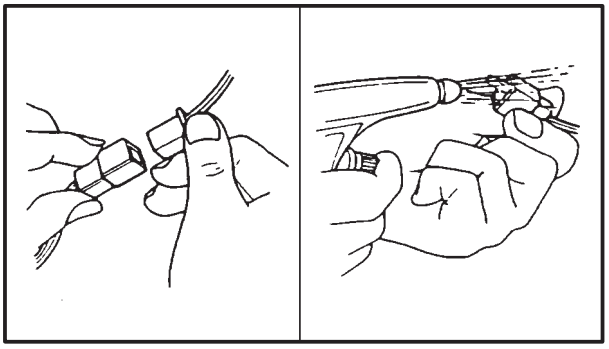
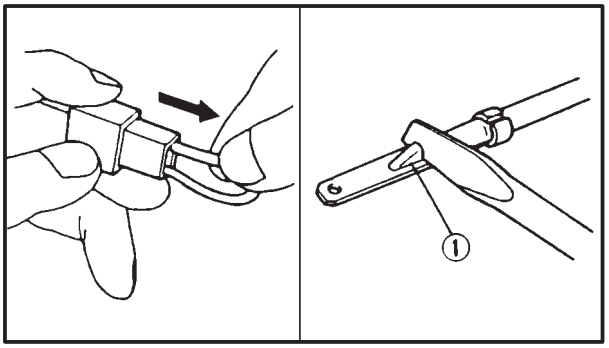
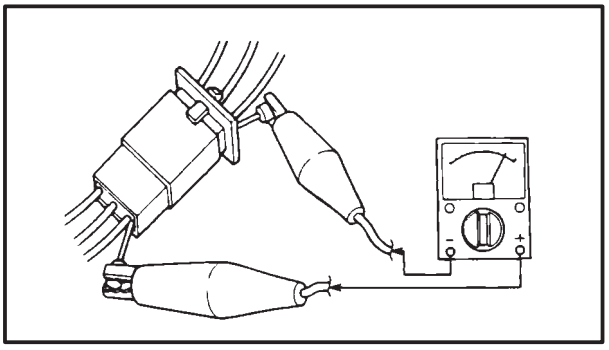
CIRCLIPS

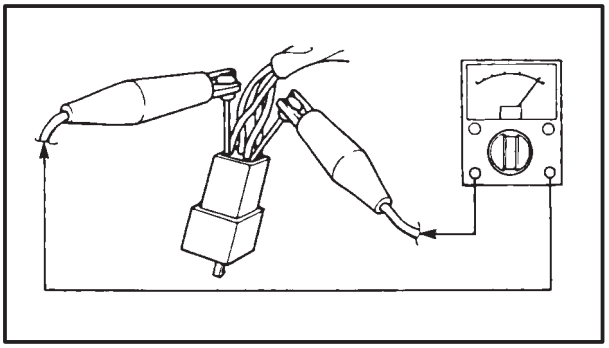
1. Check all circlips carefully before reassembly. Always replace piston pin clips after one use. Replace distorted circlips. When installing a circlip ①, make sure that the sharp-edged corner ② is positioned opposite the thrust ③ it receives. See sectional view.

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)

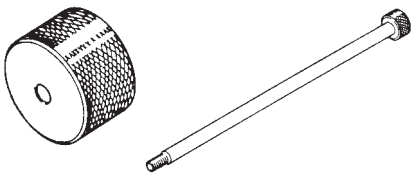
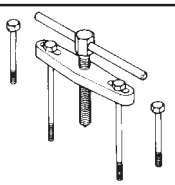
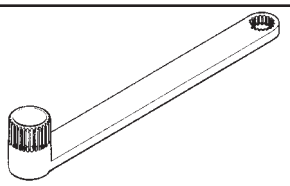
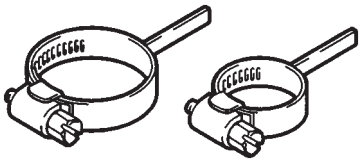
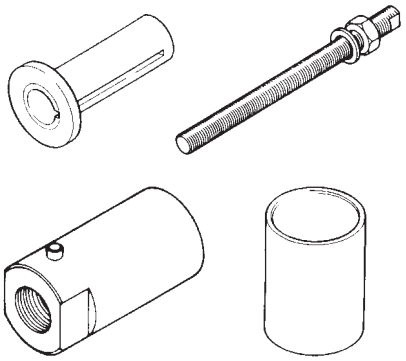
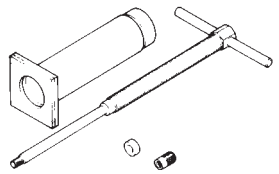
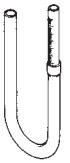
NOTE:

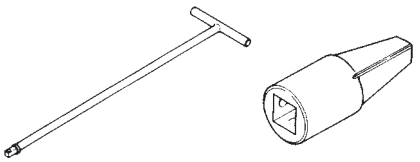
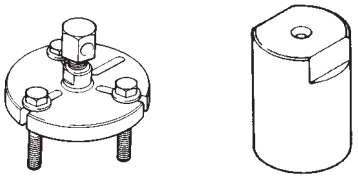
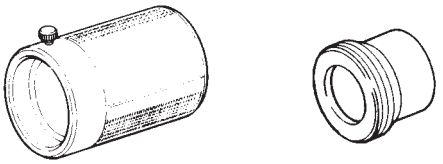
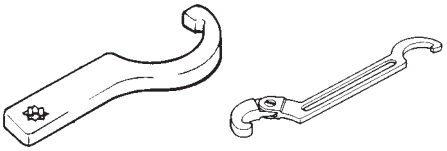
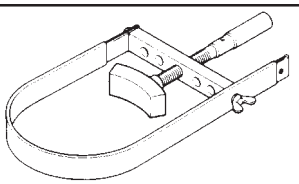
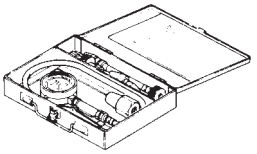
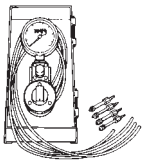
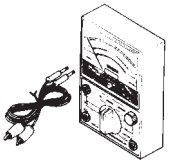
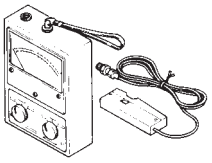
- If there is no continuity, clean the terminals.
- When checking the wire harness be sure to perform steps 1 to 3.
- As a quick remedy, use a contact revitalizer available at most part stores.
- Check the connector with a pocket tester as shown.

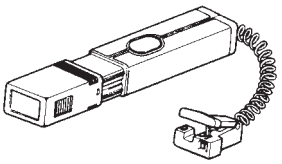
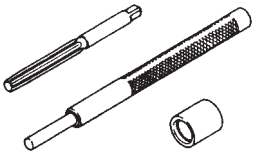
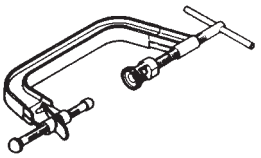
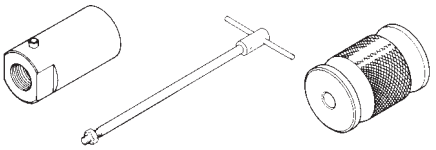
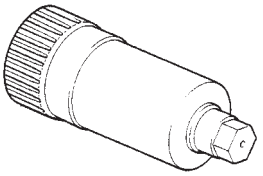
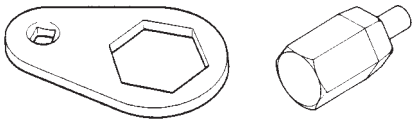
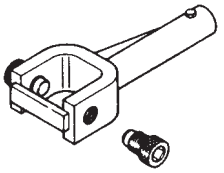
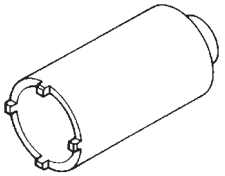
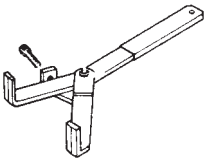
EB102001

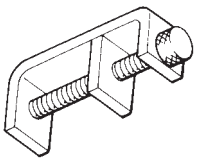
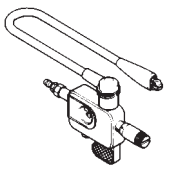
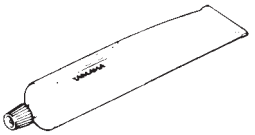
SPECIAL TOOLS

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/adapter/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.	

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/adapter These tools are needed to remove the rotor.	
Weight 90890-01367 Adapter 90890-01381	Fork seal driver weight/adapter 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/ehaust 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	Timing light This tool is necessary for checking ignition timing.	
90890-04014	Valve guide remover & installer This tool is needed to remove and install the valve guide.	
90890-04019	Valve spring compressor This tool is needed to remove and install the valve assemblies.	
Adapter 90890-01277 Shock puller 90890-01290 Weight 90890-01291	Crankshaft installer bolt adapter/armature shock puller/weight These tools are needed when removing the final pinion shaft.	
90890-04137	Bearing retainer wrench This tool is needed when removing or installing the middle drive shaft assembly.	
Wrench 90890-04138 Holder 90890-04055	Middle drive shaft nut wrench/Middle drive shaft holder These tools are needed when removing or installing the middle drive shaft bearing.	
90890-04062	Universal joint holder This tool is needed when removing or installing the driven pinion gear nut.	
90890-04077	Bearing retainer wrench This tool is needed when removing or installing the final drive pinion gear assembly.	
90890-04086	Clutch holding tool This tool is needed to hold the clutch when removing or installing the clutch boss nut.	

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

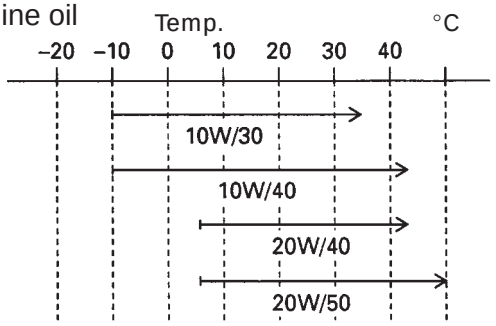
SPEC 2

SPEC

CHAPTER 2.
SPECIFICATIONS

SPECIFICATIONS

GENERAL SPECIFICATIONS

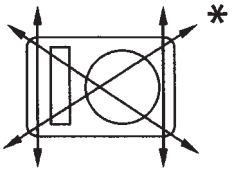
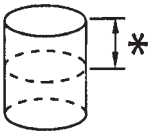
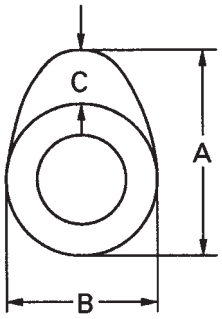
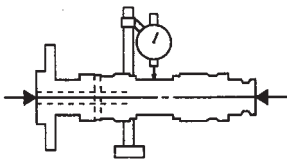
Item	Standard
Model code:	XVS1100: 5EL1 (For Europe) 5EL2 (For D, A, FIN) 5EL3 (For Australia)
Dimensions: Overall length Overall width Overall height Seat height Wheelbase Minimum ground clearance Minimum turning radius	 2,405 mm 895 mm 1,095 mm 690 mm 1,640 mm 145 mm 3,200 mm
Basic weight: With oil 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

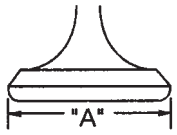
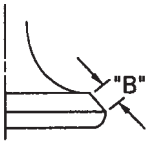
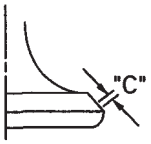
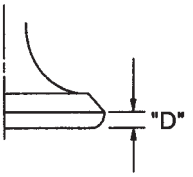
Item		Standard
Carburetor:		
Type/quantity		BSR37/2
Manufacturer		MIKUNI
Spark plug:		
Type		BPR7ES/W22EPR–U
Manufacturer		NGK/DENSO
Spark plug gap		0.7 ~ 0.8 mm
Clutch type:		Wet, multiple-disc
Transmission:		
Primary reduction system		Spur gear
Primary reduction ratio		78/47 (1.660)
Secondary reduction system		Shaft drive
Secondary reduction ratio		44/47 × 19/18 × 32/11 (2.875)
Transmission type		Constant mesh 5-speed
Operation		Left foot operation
Gear ratio	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		Double cradle
Caster angle		33°
Trail		136 mm
Tire:		
Type		With tube
Size	front	110/90-18 61S
	rear	170/80-15M/C 77S
Manufacturer	front	BRIDGESTONE/DUNLOP
	rear	BRIDGESTONE/DUNLOP
Type	front	EXEDRA L309/K555F
	rear	EXEDRA G546/K555
Maximum load-except motorcycle:		201 kg (5EL2 : 200kg)
Tire pressure (cold tire):		
0 ~ 90 kg (0 ~ 198 lb) load *		
	front	200 kPa (2.00 kg/cm^2)
	rear	225 kPa (2.25 kg/cm^2)
90 kg (198 lb) ~ Maximum load *		
	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	type	Dual disc brake
	operation	Right hand operation
Rear brake	type	Single disc brake
	operation	Right foot operation

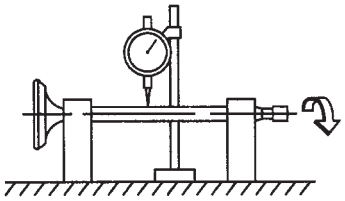
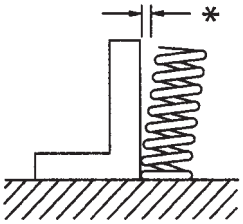
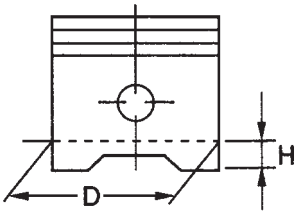
Item	Standard
Suspension:	
Front suspension	Telescopic fork
Rear suspension	Swingarm (link suspension)
Shock absorber:	
Front shock absorber	Coil spring/Oil damper
Rear shock absorber	Coil spring/Gas-oil damper
Wheel travel:	
Front wheel travel	140 mm
Rear wheel travel	113 mm
Electrical:	
Ignition system	T.C.I. (digital)
Generator system	A.C. magneto
Battery type	GT14B-4
Battery capacity	12 V 12 AH
Headlight type:	Quartz bulb (halogen)
Bulb wattage × quantity:	
Headlight	12 V 60 W/55 W × 1
Auxiliary light	12 V 4 W × 1
Tail/brake light	12 V 5 W/21 W × 1
Turn signal	12 V 21 W × 4
Licence light	12 V 5 W × 1
Meter light	14 V 1.4 W × 2
Neutral indicator light	12 V 1.7 W × 1
High beam indicator light	12 V 1.7 W × 1
Turn indicator light	12 V 1.7 W × 1
Oil level caution light	12 V 1.7 W × 1
Engine warning light	12 V 1.7 W × 1

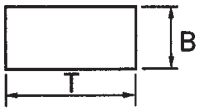
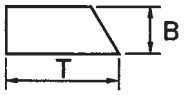
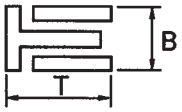
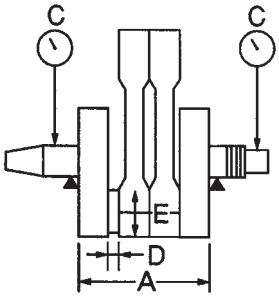
MAINTENANCE SPECIFICATIONS

ENGINE

Item	Standard	Limit
Cylinder head:		
Warp limit*	•••	0.03 mm
		
Cylinder:		
Bore size	95.00 ~ 95.01 mm	95.1 mm
Measuring point*	40 mm	•••
		
Camshaft:		
Drive method	Chain drive (left & right)	•••
Cam cap inside diameter	25.000 ~ 25.021 mm	•••
Camshaft outside diameter	24.96 ~ 24.98 mm	•••
Shaft-to-cap clearance	0.020 ~ 0.061 mm	•••
Cam dimensions		
		
Intake “A”	39.112 ~ 39.212 mm	39.012 mm
“B”	#1: 32.093 ~ 32.193 mm	#1: 31.993 mm
	#2: 32.127 ~ 32.227 mm	#2: 32.027 mm
“C”	7.162 mm	7.012 mm
Exhaust “A”	39.145 ~ 39.245 mm	39.045 mm
“B”	32.200 ~ 32.300 mm	32.100 mm
“C”	7.195 mm	7.045 mm
Camshaft runout limit	•••	0.03 mm
		

Item		Standard	Limit
Timing chain:			
Timing chain type/No. of links		SILENT CHAIN/98L	•••
Timing chain adjustment method		Automatic	•••
Rocker arm/rocker arm shaft:			
Bearing inside diameter		14.000 mm ~ 14.018 mm	14.036 mm
Shaft outside diameter		13.985 mm ~ 13.991 mm	13.95 mm
Arm-to-shaft clearance		0.009 mm ~ 0.033 mm	0.086 mm
Valve, valve seat, valve guide:			
Valve clearance (cold)	IN	0.07 ~ 0.12 mm	•••
	EX	0.12 ~ 0.17 mm	•••
Valve dimensions:			
 Head Dia		 Face width	 Seat Width
 Margin Thickness			
"A" head diameter	IN	47.0 ~ 47.2 mm	•••
	EX	39.0 ~ 39.2 mm	•••
"B" face width	IN	2.1 mm	•••
	EX	2.1 mm	•••
"C" seat width	IN	1.2 ~ 1.4 mm	1.8 mm
	EX	1.2 ~ 1.4 mm	1.8 mm
"D" margin thickness	IN	1.1 ~ 1.5 mm	0.8 mm
	EX	1.1 ~ 1.5 mm	0.8 mm
Stem outside diameter	IN	7.975 ~ 7.990 mm	•••
	EX	7.960 ~ 7.975 mm	•••
Guide inside diameter	IN	8.000 ~ 8.012 mm	•••
	EX	8.000 ~ 8.012 mm	•••
Stem-to-guide clearance	IN	0.010 ~ 0.037 mm	0.08 mm
	EX	0.025 ~ 0.052 mm	0.10 mm

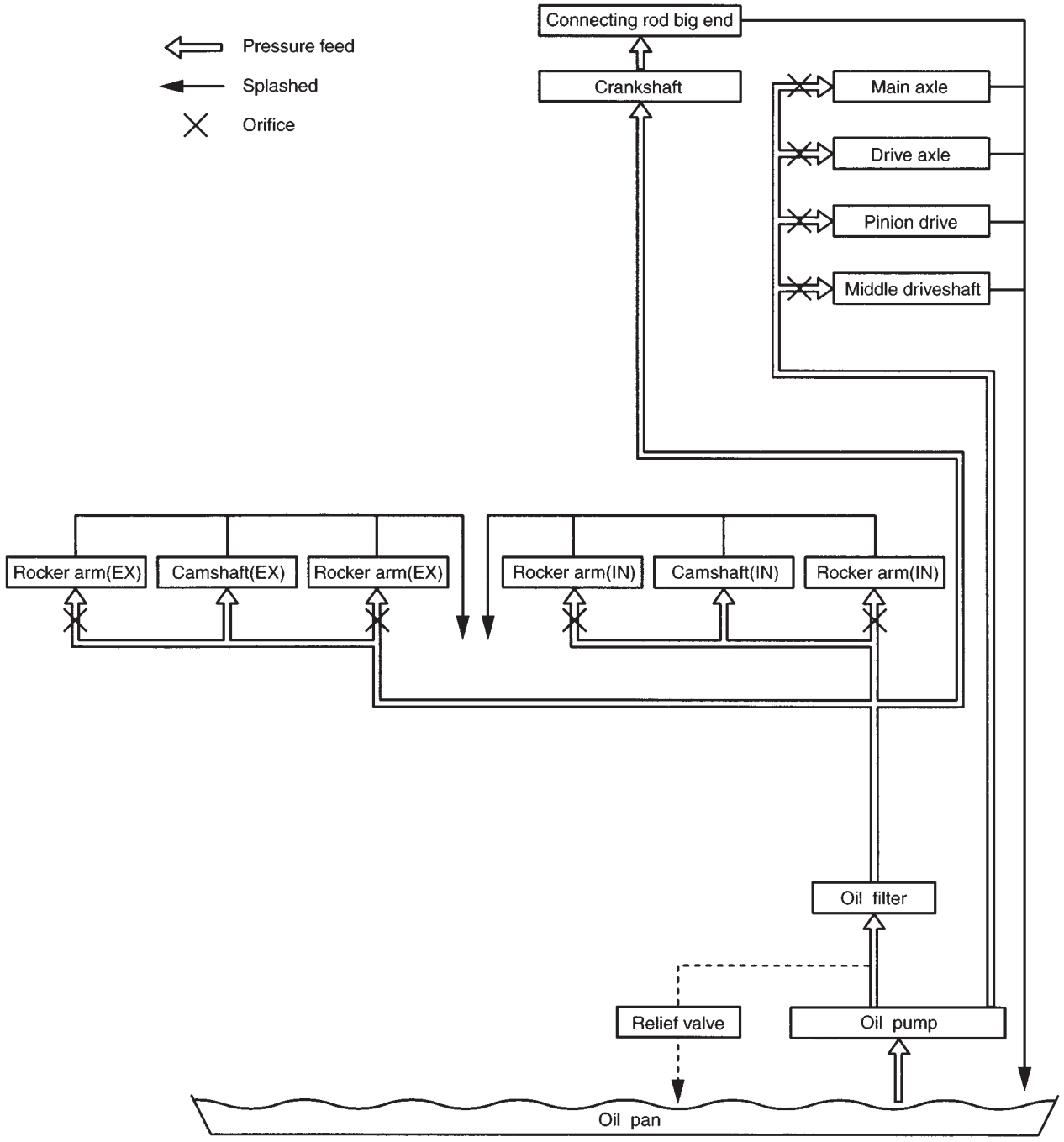
Item		Standard	Limit
Stem runout limit		•••	0.03 mm
			
Valve seat width	IN	1.2 ~ 1.4 mm	2.0 mm
	EX	1.2 ~ 1.4 mm	2.0 mm
Valve spring:			
Free length	IN	44.6 mm	43.5 mm
	EX	44.6 mm	43.5 mm
Set length (valve closed)	IN	40 mm	•••
	EX	40 mm	•••
Compressed pressure	IN	160.7 N (16.4 kg)	•••
(installed)	EX	160.7 N (16.4 kg)	•••
Tilt limit *	IN	•••	2.5°/1.9mm
	EX	•••	2.5°/1.9mm
			
Direction of winding			
(top view)	IN	Clockwise	•••
	EX	Clockwise	•••
Piston:			
Piston to cylinder clearance		0.025 ~ 0.050 mm	0.15 mm
Piston size "D"		94.960 ~ 94.975 mm	•••
			
Measuring point "H"		5 mm	•••
Piston off-set		0 mm	•••

Item	Standard	Limit
Piston pin bore inside diameter	22.004 ~ 22.015 mm	•••
Piston pin outside diameter	21.991 ~ 22.000 mm	•••
Piston rings:		
Top ring: 		
Type	Plain	•••
Dimensions (B × T)	1.5 × 3.8 mm	•••
End gap (installed)	0.3 ~ 0.5 mm	0.8 mm
Side clearance (installed)	0.04 ~ 0.08 mm	0.1 mm
2nd ring: 		
Type	Taper	•••
Dimensions (B × T)	1.2 × 3.8 mm	•••
End gap (installed)	0.30 ~ 0.45 mm	0.8 mm
Side clearance	0.03 ~ 0.07 mm	0.1 mm
Oil ring: 		
Dimensions (B × T)	2.5 × 3.4 mm	•••
End gap (installed)	0.2 ~ 0.7 mm	•••
Connecting rod:		
Oil clearance	0.044 ~ 0.073 mm	•••
Color code (corresponding size)	①Blue ②Black ③Brown ④Green ⑤Yellow	•••
Crankshaft: 		
Crank width "A"	101.95 ~ 102.00 mm	•••
Runout limit "C"	•••	0.02 mm
Big end side clearance "D"	0.320 ~ 0.474 mm	•••

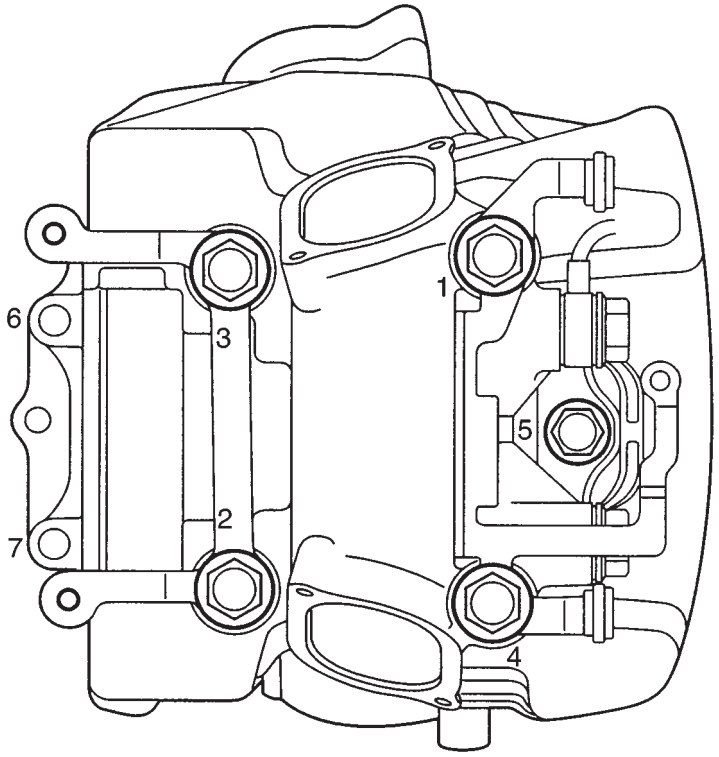
Item		Standard	Limit
Clutch:			
Friction plate thickness		2.9 ~ 3.1 mm	2.8 mm
Quantity		8	•••
Clutch plate thickness		2.5 ~ 2.7 mm	0.1 mm
Quantity		1	•••
Clutch plate thickness		1.9 ~ 2.1 mm	0.1 mm
Quantity		7	
Clutch spring free length		7.2 mm	6.5 mm
Quantity		1	•••
Clutch housing thrust clearance		0.05 ~ 0.40 mm	•••
Clutch housing radial clearance		0.010 ~ 0.044 mm	•••
Clutch release method		Inner push, screw push	•••
Push rod bending limit		•••	0.5 mm
Transmission:			
Main axle deflection limit		•••	0.08 mm
Drive axle deflection limit		•••	0.08 mm
Shifter:			
Shifter type		Guide bar	•••
Carburetor:			
I. D. mark		5EL1 00	•••
Main jet	(M.J)	#1: #110, #2: #112.5	•••
Main air jet	(M.A.J)	#55	•••
Jet needle	(J.N)	#1: 5DL39-53-3/5, #2: 5DL40-53-3/5	•••
Needle jet	(N.J)	P-0M	•••
Pilot air jet	(P.A.J.1)	#63.8	•••
	(P.A.J.2)	#145	•••
Pilot outlet	(P.O)	1.0	•••
Pilot jet	(P.J)	#17.5	•••
Bypass 1	(B.P.1)	0.8	•••
Bypass 2	(B.P.2)	0.8	•••
Bypass 3	(B.P.3)	0.8	•••
Pilot screw	(P.S)	3	•••
Valve seat size	(V.S)	1.2	•••
Starter jet	(G.S.1)	#42.5	•••
Starter jet	(G.S.2)	0.8	•••
Throttle valve size	(Th.V)	#125	•••
Fuel level	(F.L)	4~5 mm	•••
Engine idle speed		950 ~ 1,050 r/min	•••
Intake vacuum		34.7 ~ 37.3 kPa (260 ~ 280 mmHg)	•••
Engine oil temperature		75 ~ 85°C	•••
Fuel pump:			
Type		Electrical type	•••
Model/manufacturer		UC-Z6M/MITSUBISHI	•••
Consumption amperage	<max>	0.8 A	•••
Output pressure		12 kPa (0.12 kg/cm^2)	•••

Item	Standard	Limit
Lubrication system:		
Oil filter type	Paper type	•••
Oil pump type	Trochoid type	•••
Tip clearance “A” or “B”	0.03 ~ 0.09 mm	0.15 mm
Side clearance	0.03 ~ 0.08 mm	0.15 mm
Relief valve operating pressure	450 ~ 550 kPa (4.5 ~ 5.5 kg/cm^2)	•••
Shaft drive:		
Middle gear backlash	0.1 ~ 0.2 mm	•••
Final gear backlash	0.1 ~ 0.2 mm	•••

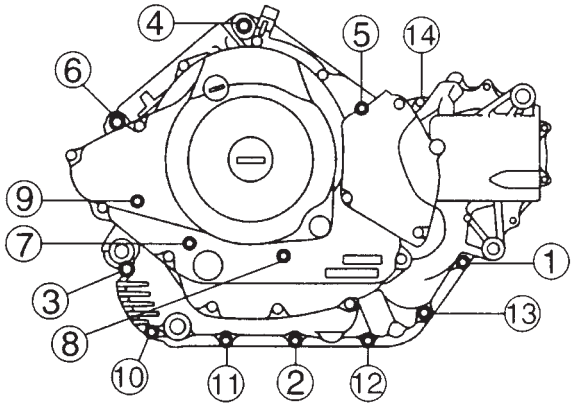
Item	Standard
Lubrication chart:	



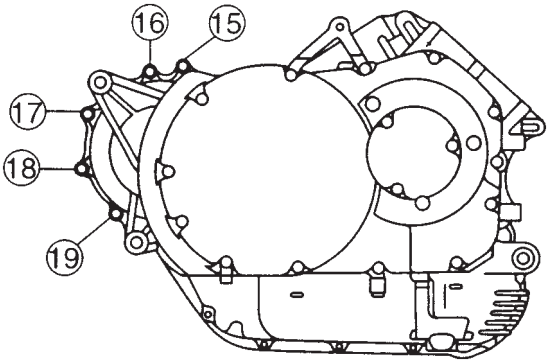
Cylinder head tightening sequence:



Crankcase tightening sequence:



Left crankcase



Right crankcase

Tightening torques

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque		Remarks
				Nm	m•kg	
Cylinder head	Nut	M12	8	50	5.0	E
Cylinder head	Nut	M10	2	35	3.5	
Plate	Bolt	M8	2	20	2.0	
Cylinder head cover	Screw	M6	4	4	0.4	
Cylinder head (exhaust pipe)	Stud bolt	M8	4	12.5	1.25	
Rocker arm shaft	Union bolt	M16	2	37.5	3.75	
Camshaft sprocket cover	Bolt	M6	4	10	1.0	
Tappet cover	Bolt	M6	8	10	1.0	
Rocker arm shaft (oil passage)	Bolt	M16	4	38	3.8	
Stopper plate (camshaft)	Bolt	M8	4	20	2.0	Use lock washer
Spark plug	—	M14	2	20	2.0	
Cylinder	Bolt	M6	2	10	1.0	
Lower cylinder head cover	Bolt	M6	6	10	1.0	
Upper cylinder head cover	Screw	M6	8	5	0.5	
Connecting rod	Nut	M9	4	48	4.8	M
Rotor	Nut	M16	1	175	17.5	
Valve adjusting locknut	Nut	M8	4	27	2.7	
Camshaft sprocket	Bolt	M10	2	55	5.5	
Timing chain tensioner	Bolt	M6	4	10	1.0	
Timing chain tentioner cap	Bolt	M6	2	8	0.8	
Timing chain guide	Bolt	M6	4	10	1.0	
Oil pump	Bolt	M6	3	10	1.0	
Oil strainer cover	Bolt	M6	3	10	1.0	
Oil filter cover	Bolt	M6	5	10	1.0	
Oil pump gear	Bolt	M6	1	12	1.2	
Oil pump cap	Bolt	M6	1	10	1.0	
Oil deliuery pipe (cylinder head)	Union bolt	M16	2	20	2.0	
(crankcase)	Union bolt	M10	1	20	2.0	
Drain bolt	—	M14	1	43	4.3	
Carburetor cover	Bolt	M5	2	7	0.7	
Air filter case stay	Bolt	M6	2	10	1.0	
Air filter case assembly	Bolt	M5	3	2	0.2	
Exhaust pipe joint and cylinder head	Nut	M8	4	20	2.0	
Exhaust pipe joint and muffler assembly	Bolt	M8	2	20	2.0	
Muffler	Bolt	M10	2	25	2.5	
Crankcase (cylinder)	Stud bolt	M12	8	24	2.4	
Crankcase (cylinder)	Stud bolt	M10	2	20	2.0	
Crankcase	Bolt	M10	3	38.5	3.85	E
Crankcase	Bolt	M6	10	10	1.0	
Bearing retainer (middle drive pinion gear)	Bolt	M8	3	25	2.5	
Crankcase cover (left)	Bolt	M6	13	10	1.0	
Crankcase cover (right)	Bolt	M6	11	10	1.0	
Clamp	Bolt	M6	1	10	1.0	
One-way clutch	Bolt	M6	8	12	1.2	LT
Primary drive gear	Nut	M20	1	110	11.0	Use lock washer