



YAMAHA

XJR1300(L) '99
5EA3-AE1

SERVICE MANUAL

HOW TO USE THIS MANUAL

This manual is intended as a handy, easy-to-read reference book for the mechanic. Comprehensive explanations of all installation, removal, disassembly, assembly, repair and check procedures are laid out with the individual steps in sequential order.

- ① The manual is divided into chapters. An abbreviation and symbol in the upper right corner of each page indicate the current chapter. Refer to "SYMBOLS".
- ② Each chapter is divided into sections. The current section title is shown at the top of each page, except in Chapter 3 ("PERIODIC CHECKS AND ADJUSTMENTS"), where the sub-section title(-s) appears.
- ③ Sub-section titles appear in smaller print than the section title.
- ④ To help identify parts and clarify procedure steps, there are exploded diagrams at the start of each removal and disassembly section.
- ⑤ Numbers are given in the order of the jobs in the exploded diagram. A circled number indicates a disassembly step.
- ⑥ Symbols indicate parts to be lubricated or replaced.
- ⑦ A job instruction chart accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.
- ⑧ Jobs requiring more information (such as special tools and technical data) are described sequentially.

② CLUTCH

① ENG

④

CLUTCH

ENG

⑤

③

REMOVING THE CLUTCH

1. Straighten the lock washer tab.
2. Loosen:
 - clutch boss nut ①

NOTE:
While holding the clutch boss ② with the universal clutch holder, loosen the clutch boss nut.

Universal clutch holder ③
90890-04086

3. Remove:
 - clutch boss nut ①
 - lock washer ②
 - clutch boss ③
 - thrust washer
 - spacer ⑤
 - bearing ⑥
 - clutch housing ⑦

NOTE:
Insert two 6 mm bolts ⑧ into the spacer and then remove the spacer by pulling on the bolts.

⑧

⑦

Order	Job/Part	Qty	Remarks
14	Clutch boss	1	Refer to "REMOVING/INSTALLING THE CLUTCH".
15	Stopper ring	1	
16	Clutch plate	1	
17	Clutch spring plate	1	
18	Clutch spring plate seat	1	
19	Friction plates (narrow)	1	
20	Thrust washer	1	
21	Spacer	1	
22	Bearing	1	
23	Clutch housing	1	

For installation, reverse the removal procedure.

CHECKING THE FRICTION PLATES

The following procedure applies to all of the friction plates.























1. Check:
 - friction plate
 - Damage/wear → Replace the friction plates as a set.
2. Measure:
 - friction plate thickness
 - Out of specification → Replace the friction plates as a set.

NOTE:
Measure the friction plate at four places.

Friction plate thickness
2.9 – 3.1 mm
◀Limit▶: 2.8 mm

4-34

4-35

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

SYMBOLS

The following symbols are not relevant to every vehicle.

Symbols ① to ⑧ indicate the subject of each chapter.

- ① General information
- ② Specifications
- ③ Periodic checks and adjustments
- ④ Engine
- ⑤ Carburetor(-s)
- ⑥ Chassis
- ⑦ Electrical system
- ⑧ Troubleshooting

Symbols ⑨ to ⑯ indicate the following.

- ⑨ Serviceable with engine mounted
- ⑩ Filling fluid
- ⑪ Lubricant
- ⑫ Special tool
- ⑬ Tightening torque
- ⑭ Wear limit, clearance
- ⑮ Engine speed
- ⑯ Electrical data








Symbols ⑰ to ㉒ in the exploded diagrams indicate the types of lubricants and lubrication points.

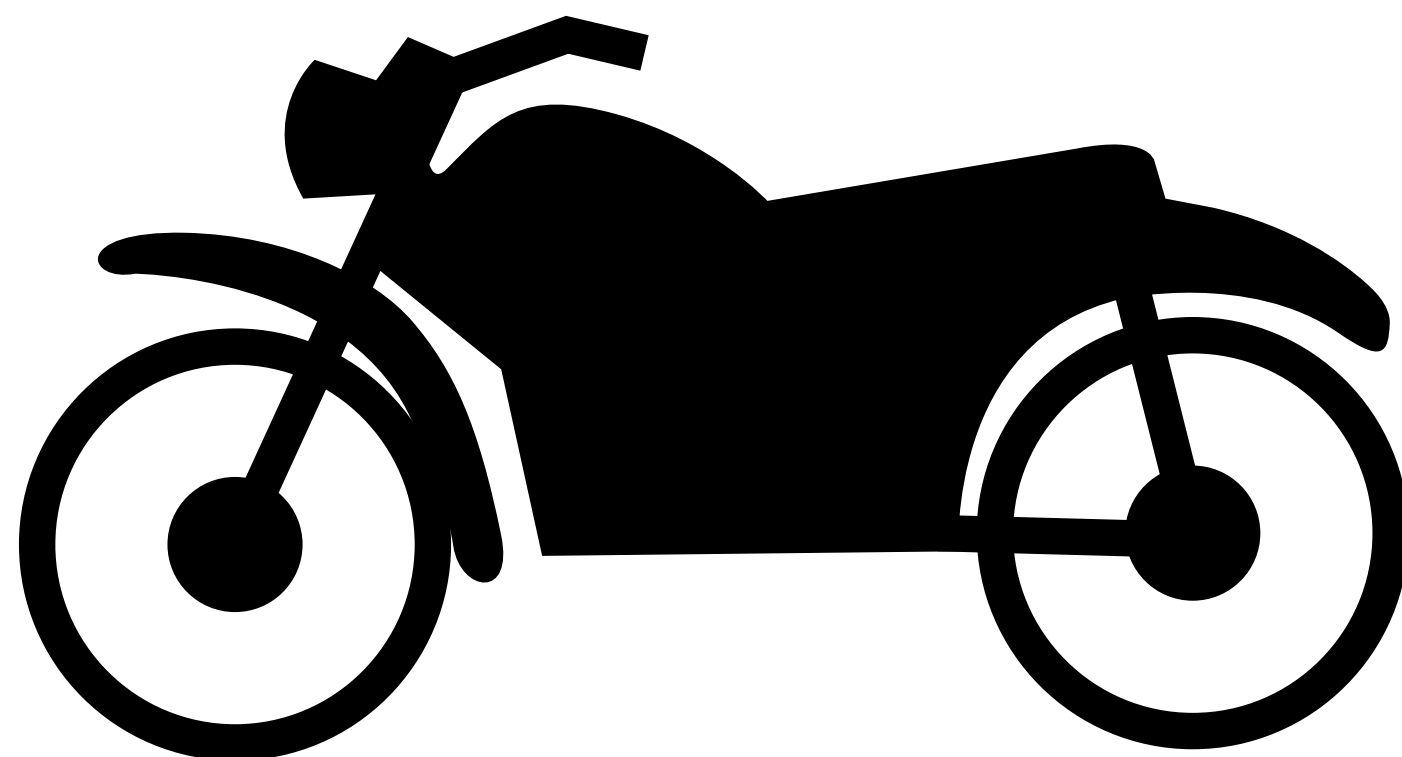
- ⑰ Engine oil
- ⑱ Gear oil
- ⑲ Molybdenum disulfide oil
- ⑳ Wheel bearing grease
- ㉑ Lithium soap base grease
- ㉒ Molybdenum disulfide grease

Symbols ㉓ to ㉔ in the exploded diagrams indicate the following:

- ㉓ Apply locking agent (LOCTITE®)
- ㉔ Replace the part

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**GEN
INFO**

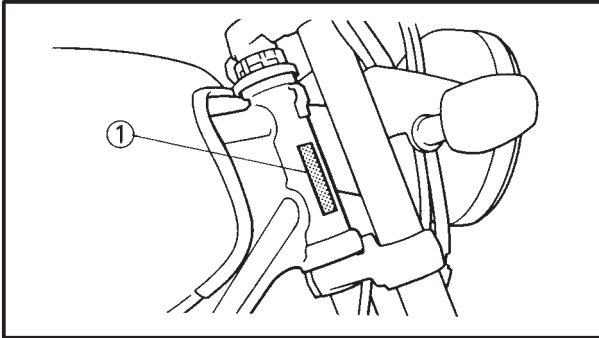
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CHAPTER 1. GENERAL INFORMATION

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MOTORCYCLE IDENTIFICATION

GEN
INFO



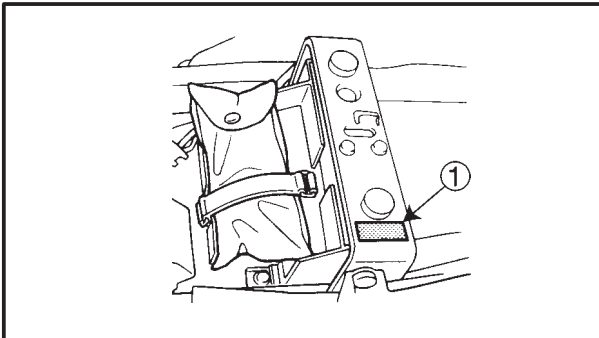
EAS00014

GENERAL INFORMATION MOTORCYCLE IDENTIFICATION

EAS00017

VEHICLE IDENTIFICATION NUMBER (For E)

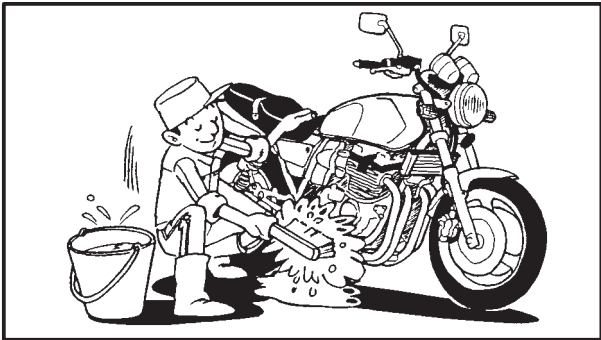
The vehicle identification number ① is stamped into the right side of the steering head.



EAS00018

MODEL CODE

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



EAS00020

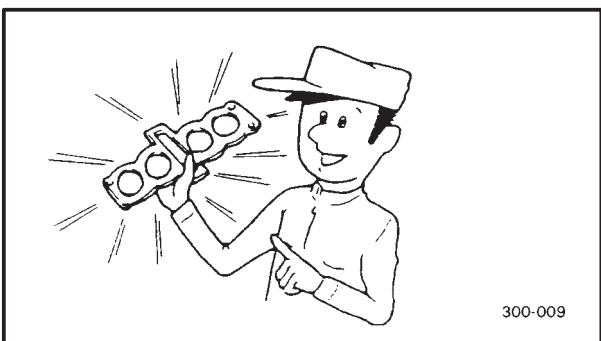
IMPORTANT INFORMATION PREPARATION FOR REMOVAL AND DIS- ASSEMBLY

1. Before removal and disassembly, remove all dirt, mud, dust, and foreign material.
2. Use only the proper tools and cleaning equipment.
Refer to "SPECIAL TOOLS".
3. When disassembling, 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 disassembly, clean all of the 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.

EAS00021

REPLACEMENT PARTS

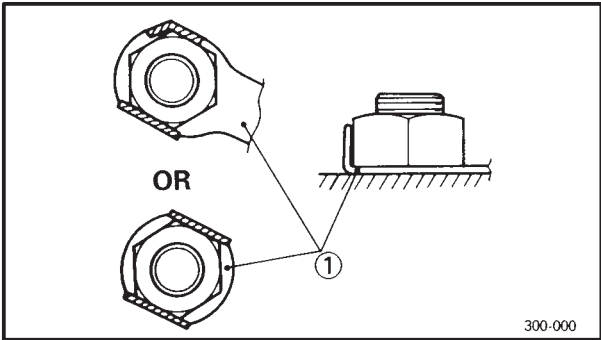
Use only genuine Yamaha parts for all replacements. Use oil and grease recommended by Yamaha for all lubrication jobs. Other brands may be similar in function and appearance, but inferior in quality.



EAS00022

GASKETS, OIL SEALS AND O-RINGS

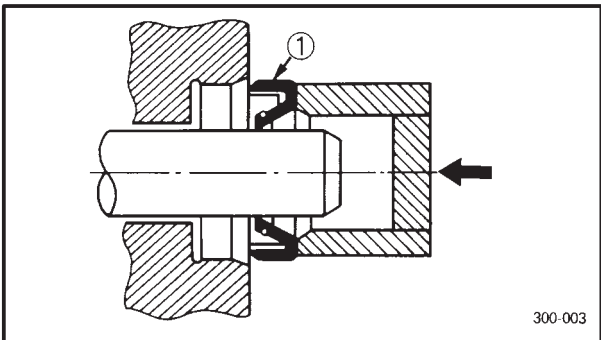
1. When overhauling the engine, replace all gaskets, seals and O-rings. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. During reassembly, properly oil all mating parts and bearings and lubricate the oil seal lips with grease.



EAS00023

LOCK WASHERS/PLATES AND COTTER PINS

After removal, replace all lock washers/plates ① and cotter pins. After the bolt or nut has been tightened to specification, bend the lock washer tabs and the cotter pin ends along a flat of the bolt or nut.



EAS00024

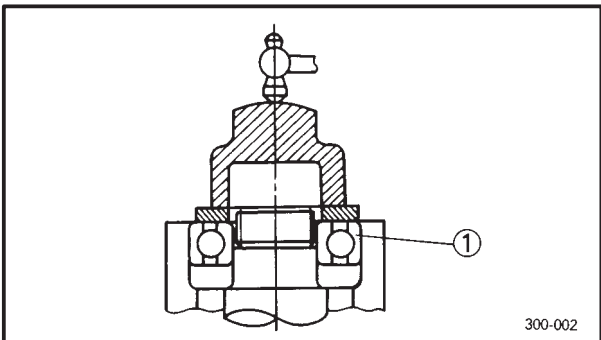
BEARINGS AND OIL SEALS

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

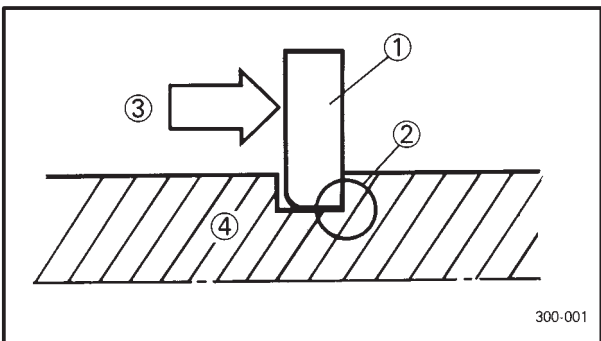
① Oil seal

CAUTION:

Do not spin the bearing with compressed air because this will damage the bearing surfaces.



① Bearing



EAS00025

CIRCLIPS

Before reassembly, check all circlips carefully and replace damaged or distorted circlips. Always replace piston pin clips after one use. When installing a circlip ①, make sure that the sharp-edged corner ② is positioned opposite the thrust ③ that the circlip receives.

④ Shaft

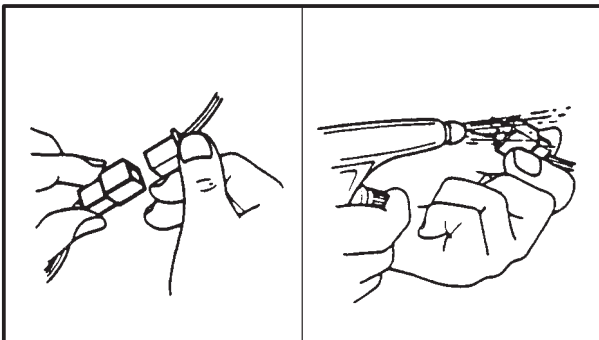
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CHECKING THE CONNECTIONS

Check the leads, couplers, and connectors for stains, rust, moisture, etc.

1. Disconnect:

- lead
- coupler
- connector

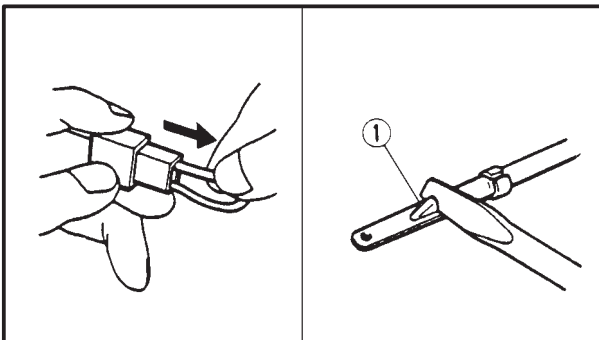


2. Check:

- lead
- coupler
- connector

Moisture → Dry with an air blower.

Rust/stains → Connect and disconnect several times.



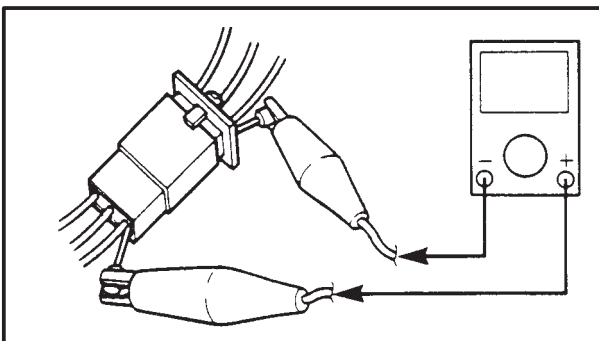
3. Check:

- all connections

Loose connection → Connect properly.

NOTE:

If the pin ① on the terminal is flattened, bend it up.

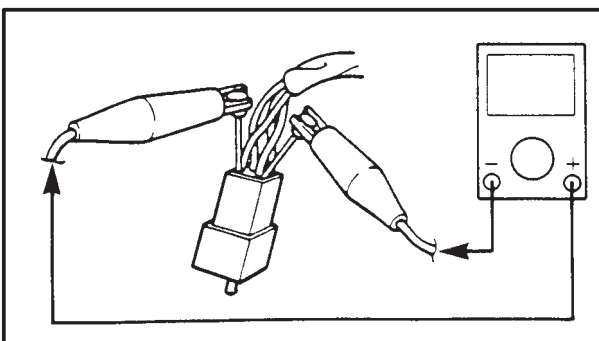


4. Connect:

- lead
- coupler
- connector


NOTE:

Make sure that all connections are tight.



5. Check:

- continuity
(with a pocket tester)

	Pocket tester 90890-03112
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NOTE:

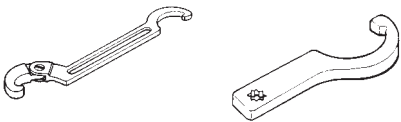
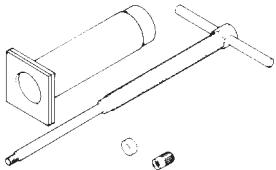


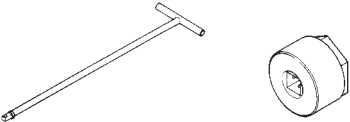
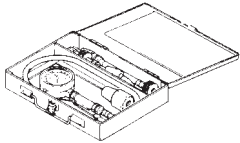
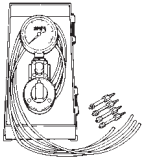
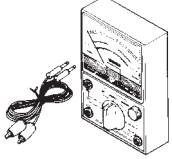
- If there is no continuity, clean the terminals.
- When checking the wire harness, perform steps (1) to (3).
- As a quick remedy, use a contact revitalizer available at most part stores.

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SPECIAL TOOLS

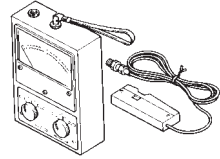
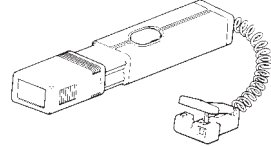
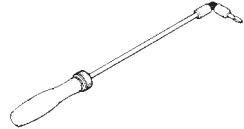
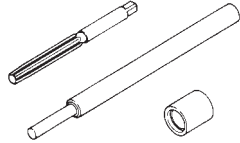
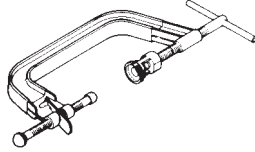
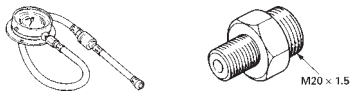
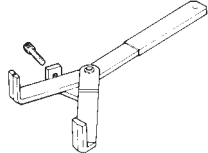

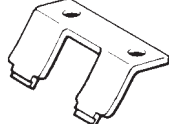
The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools as this will help prevent damage caused by the use of inappropriate tools or improvised techniques.

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

Tool No.	Tool name/Function	Illustration
90890-01268 90890-01403	Exhaust & steering nut wrench Ring nut wrench This tools are used to loosen and tighten the steering ring nut.	
90890-01304	Piston pin puller This tool is used to remove the piston pins.	
90890-01312	Fuel level gauge This tool is used to measure the fuel level in the float chamber.	
90890-01367 90890-01374	Fork seal driver weight Fork seal driver attachment (ø43) These tools are used when installing the fork seal.	
90890-01326 90890-01327	T-handle Damper rod holder These tools are used to hold the damper rod assembly when loosening or tightening the damper rod assembly bolt.	
90890-03081 90890-04082	Compression gauge Adapter These tools are used to measure engine compression.	
90890-03094	Vacuum gauge This guide is used to synchronize the carburetors.	
90890-03112	Pocket tester This tool is used to check the electrical system.	

SPECIAL TOOLS

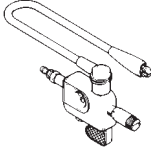
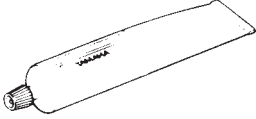


Tool No.	Tool name/Function	Illustration
90890-03113	Engine tachometer This tool is used to check engine speed.	
90890-03141	Timing light This tool is used to check the ignition timing.	
90890-03158	Carburetor angle driver This tool is used to turn the pilot screw when adjusting the engine idling speed.	
90890-04016	Valve guide reamer, remover and installer (5.5 mm) These tools are used to rebore, remove and install the valve guide.	
90890-04019	Valve spring compressor This tool is used to remove or install the valve assemblies.	
90890-03153 90890-03124	Oil pressure gauge Oil pressure adaptor B These tools are used to measure the engine oil pressure.	
90890-04086	Clutch holding tool This tool is used to hold the clutch boss when removing or installing the clutch boss nut.	
90890-04101	Valve lapper This tool is used for removing and installing the valve lifter and for lapping the valve.	
90890-04110	Tappet adjusting tool This tool is necessary to replace valve adjusting pads.	

SPECIAL TOOLS

GEN
INFO



Tool No.	Tool name/Function	Illustration
90890-06754	Ignition checker This tool is used to check the ignition system components.	 A technical drawing of an ignition checker tool, which consists of a long, thin metal rod with a hook-like end and a specialized probe tip.
90890-85505	Yamaha bond No. 1215 This bond is used to seal two mating surfaces (e.g., crankcase mating surfaces).	 A technical drawing of a tube of Yamaha bond No. 1215, showing its cylindrical shape and a small nozzle at one end.



SPEC

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CHAPTER 2. SPECIFICATIONS

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SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	XJR1300(L)
Model code:	5EA2/5EA3/5EA4
Dimensions:	
Overall length	2175 mm (GB) (D) (NL) (B) (F) (E) (P) (I) (GR) (SF) (AUS)
Overall width	2250 mm (N) (SF) (G) (A)
Overall height	775 mm
Seat height	1115 mm
Wheelbase	775 mm
Minimum ground clearance	1500 mm
Minimum turning radius	120 mm
	2800 mm
Basic weight:	
With oil and full fuel tank	253 kg
Engine:	
Engine type	Air-cooled 4-stroke, DOHC
Cylinder arrangement	Forward-inclined parallel 4-cylinder
Displacement	1250 cm ³
Bore × stroke	79.0 × 63.8 mm
Compression ratio	9.7: 1
Compression pressure (STD)	1050 kPa (10.5 kg/cm ² , 10.5 bar) at 400 r/min
Starting system	Electric starter
Lubrication system:	Wet sump
Oil type or grade:	SE or higher grade
Engine oil	
<p style="text-align: right;">11750703</p>	
Engine oil	
Periodic oil change	3.0 L
With oil filter replacement	3.35 L
Total amount	4.2 L
Oil cooler capacity (including all routes)	0.2 L
Air filter:	Dry type element
Fuel:	
Type	Regular unleaded gasoline
Fuel tank capacity	21 L
Fuel reserve amount	4.5 L

GENERAL SPECIFICATIONS

SPEC



Model	XJR1300(L)
Carburetor: Type/quantity Manufacturer	BS36/4 MIKUNI
Spark plug: Type × quantity Manufacturer Spark plug gap	DPR8EA-9/X24EPR-U9 × 4 NGK/DENSO 0.8 ~ 0.9 mm
Clutch type:	Wet, multiple-disc
Transmission: Primary reduction system Primary reduction ratio Secondary reduction system Secondary reduction ratio Transmission type Operation Gear ratio 1st 2nd 3rd 4th 5th	Spur gear 98/56 (1.750) Chain drive 38/17 (2.235) Constant mesh 5-speed Left foot operation 40/14 (2.857) 36/18 (2.000) 33/21 (1.571) 31/24 (1.292) 29/26 (1.115)
Chassis: Frame type Caster angle Trail	Double cradle 25.5° 100 mm
Tire: Type Size front rear Manufacturer front rear Type front rear	Tubeless 120/70ZR17 (58W) 180/55ZR17 (73W) MICHELIN/DUNLOP/BRIDGESTONE MICHELIN/DUNLOP/BRIDGESTONE MACADAM 90X/D207F/BT57F MACADAM 90X/D207/BT57R
Tire pressure (cold tire): Maximum load-except motorcycle Loading condition A * front rear Loading condition B * front rear High-speed riding front rear	207 kg 0 ~ 90 kg 250 kPa (2.5 kg/cm ² , 2.5 bar) 250 kPa (2.5 kg/cm ² , 2.5 bar) 90 ~ 207 kg 250 kPa (2.5 kg/cm ² , 2.5 bar) 290 kPa (2.9 kg/cm ² , 2.9 bar) 250 kPa (2.5 kg/cm ² , 2.5 bar) 290 kPa (2.9 kg/cm ² , 2.9 bar)

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

GENERAL SPECIFICATIONS

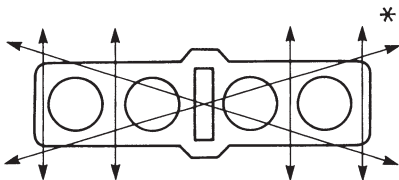
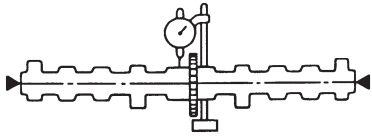
SPEC



Model	XJR1300(L)
Brake: Front brake type operation Rear brake type operation	Dual disc brake Right hand operation Single disc brake Right foot operation
Suspension: Front suspension Rear suspension	Telescopic fork Swingarm
Shock absorber: Front shock absorber Rear shock absorber	Coil spring/Oil Damper Coil spring/Gas-oil damper
Wheel travel: Front wheel travel Rear wheel travel	130 mm 110 mm
Electrical: Ignition system Generator system Battery type Battery capacity	T.C.I. (Digital) A.C. generator GT14B-4 12 V 12AH
Headlight type:	Halogen bulb
Bulb wattage × quantity: Headlight Auxiliary light Tail/brake light Flasher light Meter light Neutral indicator light High beam indicator light Oil level indicator light Turn indicator light	12 V 60 W/55 W × 1 12 V 4 W × 1 12 V 5 W/21 W × 2 12 V 21 W × 4 12 V 1.7 W × 4 12 V 1.7 W × 1 12 V 3.4 W × 1 12 V 1.7 W × 1 12 V 1.7 W × 2



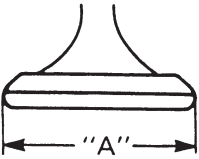
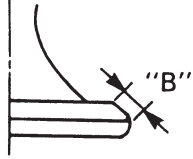
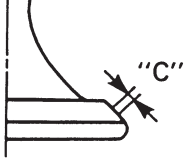
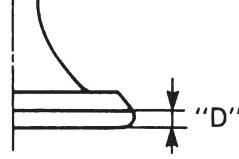
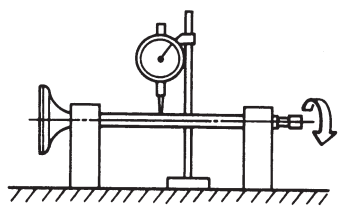
MAINTENANCE SPECIFICATIONS ENGINE

Model	Standard	Limit
Cylinder head: Warp limit 	•••	0.1 mm
Cylinder: Bore size Taper limit Out of round limit Wear limit	79.00 ~ 79.01 mm ••• ••• •••	••• 0.05 mm 0.05 mm 79.1 mm
Camshaft: Drive method Cam cap inside diameter Camshaft outside diameter Shaft-to-cap clearance Cam dimensions Intake "A" "B" "C" Exhaust "A" "B" "C" Camshaft runout limit 	Chain drive (Center) 25.000 ~ 25.021 mm 24.967 ~ 24.980 mm 0.020 ~ 0.054 mm 35.95 ~ 36.05 mm 28.248 ~ 28.348 mm 7.95 ~ 8.05 mm 35.95 ~ 36.05 mm 28.248 ~ 28.348 mm 7.95 ~ 8.05 mm •••	••• ••• ••• ••• 35.85 mm 28.15 mm ••• 35.85 mm 28.15 mm ••• 0.03 mm

MAINTENANCE SPECIFICATIONS

SPEC

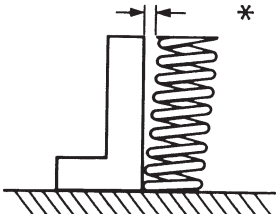
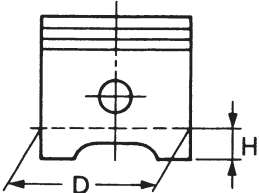


Model	Standard	Limit
Cam chain:		
Cam chain type/No. of links	79RH2015/156	•••
Cam chain adjustment method	Automatic	•••
Valve, valve seat, valve guide:		
Valve clearance (cold)	IN	0.11 ~ 0.15 mm
	EX	0.16 ~ 0.20 mm
Valve dimensions:		
		
		
Head Dia.	Face Width	Seat Width
Margin Thickness		
"A" head diameter	IN	28.9 ~ 29.1 mm
	EX	24.9 ~ 25.1 mm
"B" face width	IN	1.98 ~ 2.55 mm
	EX	1.98 ~ 2.55 mm
"C" seat width	IN	0.9 ~ 1.1 mm
	EX	0.9 ~ 1.1 mm
"D" margin thickness	IN	0.8 ~ 1.2 mm
	EX	0.8 ~ 1.2 mm
Stem outside diameter	IN	5.475 ~ 5.490 mm
	EX	5.460 ~ 5.475 mm
Guide inside diameter	IN	5.500 ~ 5.512 mm
	EX	5.500 ~ 5.512 mm
Stem-to-guide clearance	IN	0.010 ~ 0.037 mm
	EX	0.025 ~ 0.052 mm
Stem runout limit		•••
		0.01 mm
		
Valve seat width	IN	0.9 ~ 1.1 mm
	EX	0.9 ~ 1.1 mm
		1.6 mm
		1.6 mm

MAINTENANCE SPECIFICATIONS

SPEC



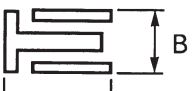
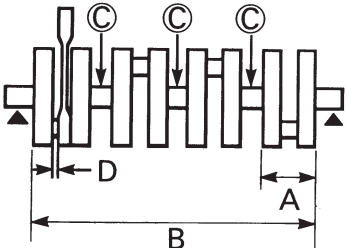


Model	Standard	Limit
Valve spring: Inner spring Free length Set length (valve closed) Compressed pressure (installed) Tilt limit 	IN 39.65 mm EX 39.65 mm IN 32.8 mm EX 32.8 mm IN 61.7 ~ 72.5 N (6.29 ~ 7.39 kg) EX 61.7 ~ 72.5 N (6.29 ~ 7.39 kg) IN ... EX ...	37.5 mm 37.5 mm 2.5°/1.7 mm 2.5°/1.7 mm
Direction of winding (top view) IN EX Outer spring Free length Set length (valve closed) Compressed pressure (installed) Tilt limit Direction of winding (top view) IN EX	Clockwise Clockwise IN 41.1 mm EX 41.1 mm IN 34.8 mm EX 34.8 mm IN 130.4 ~ 154.0 N (13.3 ~ 15.7 kg) EX 130.4 ~ 154.0 N (13.3 ~ 15.7 kg) IN ... EX ... Counterclockwise Counterclockwise 39 mm 39 mm 2.5°/1.7 mm 2.5°/1.7 mm
Piston: Piston to cylinder clearance Piston size "D" 	0.015 ~ 0.040 mm 78.970 ~ 78.985 mm	0.15 mm ...
Measuring point "H" Piston off-set Piston off-set direction Piston pin bore inside diameter Piston pin outside diameter	2 mm 1 mm IN side 18.004 ~ 18.015 mm 17.991 ~ 18.000 mm

MAINTENANCE SPECIFICATIONS

SPEC



Model	Standard	Limit
Piston rings: Top ring:  Type Dimensions (B × T) End gap (installed) Side clearance (installed) 2nd ring:  Type Dimensions (B × T) End gap (installed) Side clearance (installed) Oil ring:  Dimensions (B × T) End gap (installed) Side clearance	Barrel 1.00 × 3.05 mm 0.20 0.35 mm 0.045 0.080 mm Taper 1.2 × 3.0 mm 0.35 0.50 mm 0.03 0.07 mm 2.5 × 2.9 mm 0.2 0.5 mm 0.050 0.155 mm 0.6 mm 0.1 mm 0.75 mm 0.1 mm
Connecting rod: Oil clearance	0.017 0.040 mm	0.08 mm
Crankshaft:  Crank width "A" Assembly width "B" Runout limit "C" Big end side clearance "D" Journal oil clearance	62.25 63.85 mm 382.0 383.2 mm 0.02 mm 0.160 0.262 mm 0.030 0.064 mm 0.5 mm 0.09 mm

MAINTENANCE SPECIFICATIONS

SPEC


Model	Standard	Limit
Clutch:		
Friction plate thickness	2.9 ~ 3.1 mm	2.8 mm
Quantity	8 pcs	•••
Clutch plate thickness	1.9 ~ 2.1 mm	0.1 mm
Quantity	7 pcs	•••
Clutch spring height	6 mm	•••
Quantity	1 pc	•••
Clutch housing thrust clearance	0 ~ 0.2 mm	•••
Clutch housing radial clearance	0.004 ~ 0.048 mm	0.1 mm
Clutch release method	Hydraulic inner push	•••
Push rod bending limit	•••	0.3 mm
Transmission:		
Main axle deflection limit	•••	0.06 mm
Drive axle deflection limit	•••	0.06 mm
Shifter:		
Shifter type	Guide bar	•••
Guide bar bending limit	•••	0.1 mm
Carburetor:		
I.D. mark	5EA1 10	•••
Main jet (M.J)	#95	•••
Main air jet (M.A.J)	#45	•••
Jet needle (J.N)	5D96-2	•••
Needle jet (N.J)	Y-2	•••
Pilot jet (P.A.J.1)	#127.5	•••
Pilot outlet (P.O)	0.85	•••
Pilot jet (P.J)	#40	•••
Bypass 1 (B.P.1)	0.9	•••
Bypass 2 (B.P.2)	1.0	•••
Bypass 3 (B.P.3)	0.8	•••
Pilot screw (P.S)	1-1/2	•••
Valve seat size (V.S)	2.3	•••
Starter jet (G.S.1)	#32.5	•••
Starter jet (G.S.2)	0.6	•••
Throttle valve size (Th.V)	#125	•••
Float height (F.H)	21.3 ~ 23.3 mm	•••
Fuel level (using special tool)	3.5 ~ 4.5 mm	•••
Engine idle speed	1000 ~ 1100 r/min	•••
Intake vacuum	31.3 kPa (235 mmHg)	•••

MAINTENANCE SPECIFICATIONS

SPEC



Model	Standard	Limit
Lubrication system:		
Oil filter type	Paper type	•••
Oil pump type	Trochoid type	•••
Tip clearance	0.12 ~ 0.17 mm	0.2 mm
Housing and rotor clearance	0.03 ~ 0.08 mm	0.15 mm
Side clearance	0.03 ~ 0.08 mm	0.15 mm
Bypass valve setting pressure	180 ~ 220 kPa (1.8 ~ 2.2 kg/cm ² , 1.8 ~ 2.2 bar)	•••
Relief valve operating pressure	480 ~ 580 kPa (4.8 ~ 5.8 kg/cm ² , 4.8 ~ 5.8 bar)	•••
Oil pressure (hot)	80 kPa (0.8 kg/cm ² , 0.8 bar) at 1000 r/min	•••
Pressure check location	MAIN GALLERY	•••

MAINTENANCE SPECIFICATIONS

SPEC













Tightening torques

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque		Remarks
				Nm	m•kg	
Camshaft cap	Bolt	M6 × 1.0	18	12	1.2	
Oil gallery bolt	Screw	M6 × 1.0	1	7	0.7	
Spark plug	–	M12 × 1.25	4	18	1.8	
Cylinder head	Cap nut	M10 × 1.25	12	35	3.5	
Cylinder head cover	Bolt	M6 × 1.0	8	10	1.0	
Cylinder	Stud bolt	M8 × 1.25	1	8	0.8	
Cylinder	Nut	M8 × 1.25	3	20	2.0	
Cylinder	Nut	M6 × 1.0	6	10	1.0	
Connecting rod	Nut	M8 × 0.75	8	36	3.6	
Cam sprocket	Bolt	M7 × 1.0	4	20	2.0	
Timing chain tensioner	Bolt	M6 × 1.0	2	10	1.0	
Timing chain tensioner cap bolt	Bolt	M11 × 1.0	1	20	2.0	
Chain guide (upper)	Bolt	M6 × 1.0	4	10	1.0	
Chain guide (intake)	Plug	M10 × 1.25	1	10	1.0	
Oil pump	Screw	M6 × 1.0	2	10	1.0	
Oil pump	Bolt	M6 × 1.0	3	10	1.0	
Oil strainer housing	Bolt	M6 × 1.0	2	10	1.0	
Oil filter case	Union bolt	M20 × 1.5	1	15	1.5	
Oil pan	Bolt	M6 × 1.0	17	10	1.0	
Drain bolt (engine oil)	Plug	M14 × 1.5	1	43	4.3	
Oil gallery blind plug	Plug	M16 × 1.5	1	8	0.8	
Drain filter	Screw	M5 × 0.8	1	7	0.7	
Oil delivery pipe (oil pan)	Bolt	M6 × 1.0	4	10	1.0	
Oil delivery pipe (oil cooler)	Bolt	M6 × 1.0	4	10	1.0	
Oil cooler	Bolt	M6 × 1.0	2	10	1.0	
Oil cooler cover	Bolt	M6 × 1.0	4	8	0.8	
Oil delivery pipe (clamp)	Bolt	M6 × 1.0	1	10	1.0	
Intake manifold	Bolt	M6 × 1.0	8	10	1.0	
Air filter case cap	Bolt	M5 × 0.8	4	5	0.5	
Air filter case	Bolt	M6 × 1.0	3	7	0.7	
Exhaust pipe	Nut	M8 × 1.25	8	25	2.5	
Muffler and stay	Bolt	M8 × 1.25	2	20	2.0	
Exhaust chamber	Bolt	M10 × 1.25	1	25	2.5	
Exhaust pipe and exhaust chamber	Screw	M8 × 1.25	4	20	2.0	
Exhaust chamber and muffler	Bolt	M8 × 1.25	2	20	2.0	
Exhaust pipe blind plug (CO test)	Bolt	M6 × 1.0	4	10	1.0	
Bearing holder (main axle)	Screw	M6 × 1.0	3	12	1.2	
Timing plate cover	Bolt	M6 × 1.0	4	7	0.7	
Crankcase cover (right)	Screw	M5 × 0.8	2	4	0.4	
Clutch cover	Bolt	M6 × 1.0	11	10	1.0	
Drive sprocket cover	Bolt	M6 × 1.0	3	10	1.0	
Clutch release cylinder	Bolt	M6 × 1.0	3	10	1.0	
Crankcase	Bolt	M6 × 1.0	16	12	1.2	

MAINTENANCE SPECIFICATIONS

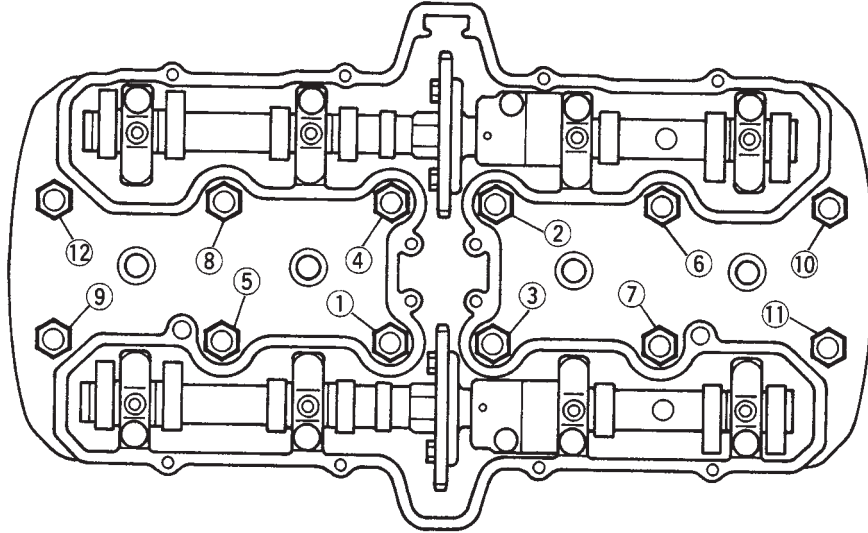
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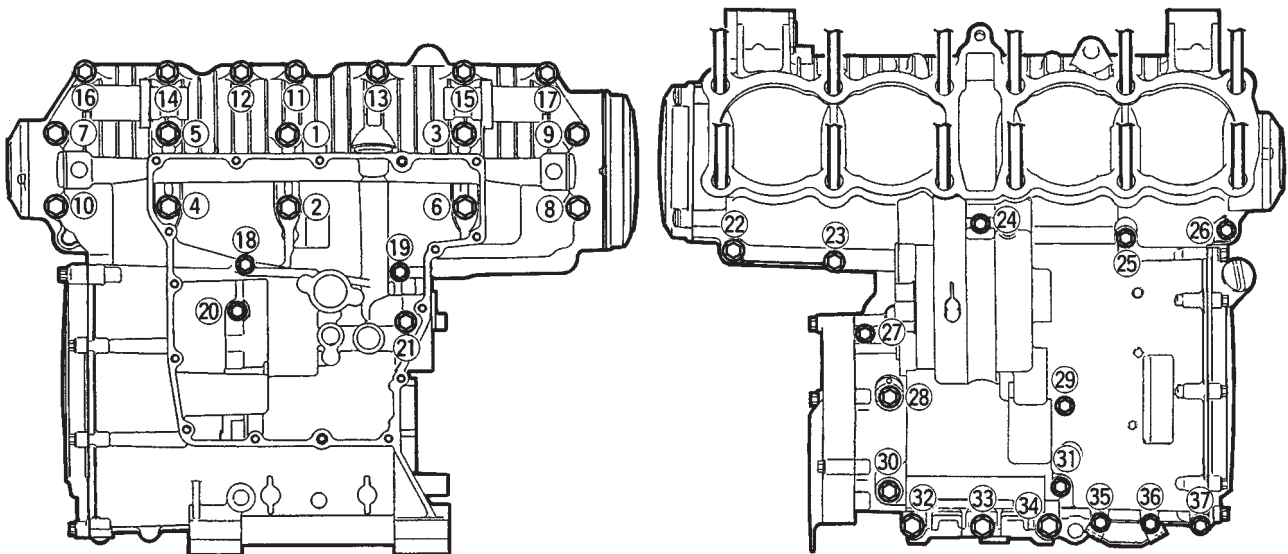
Part to be tightened	Part name	Thread size	Q'ty	Tightening torque		Remarks
				Nm	m•kg	
Crankcase	Bolt	M8 × 1.25	17	24	2.4	
Crankcase	Bolt	M10 × 1.25	5	35	3.5	
Main gallery	Plug	M20 × 1.5	3	12	1.2	
Oil baffle plate	Bolt	M5 × 0.8	3	4	0.4	
Stopper plate	Bolt	M6 × 1.0	1	10	1.0	
Bearing housing	Screw	M6 × 1.0	3	10	1.0	
HY-VO chain guide	Bolt	M6 × 1.0	2	10	1.0	
Clutch boss	Nut	M20 × 1.5	1	70	7.0	
Clutch pressure plate	Bolt	M6 × 1.0	6	8	0.8	
Push lever comp.	Bolt	M6 × 1.0	2	10	1.0	
Drive sprocket	Nut	M22 × 1.5	1	85	8.5	
Shift shaft stopper	Screw	M8 × 1.25	1	22	2.2	
Stopper plate (Starter clutch idle gear shaft)	Screw	M6 × 1.0	2	7	0.7	
Stopper lever	Bolt	M6 × 1.0	1	10	1.0	
Side plate	Screw	M5 × 0.8	1	4	0.4	
Shift arm	Bolt	M6 × 1.0	1	10	1.0	
Shift lod	Nut	M6 × 1.0	2	8	0.8	
A.C. generator	Bolt	M8 × 1.25	2	25	2.5	
Oil level sensor	Bolt	M6 × 1.0	2	10	1.0	
Rotor	Bolt	M10 × 1.25	1	45	4.5	

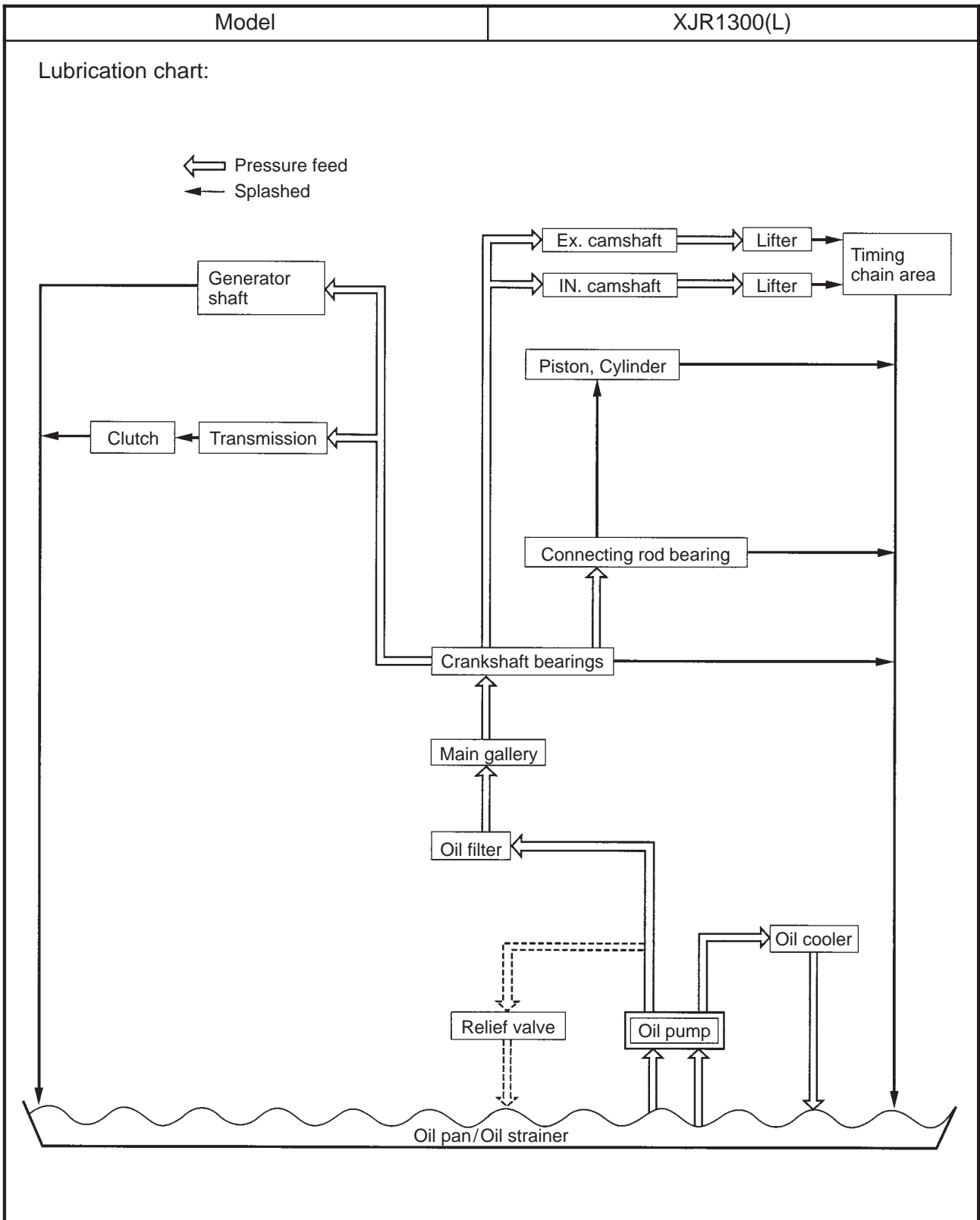


Tightening sequence
Cylinder head



Crankcase





MAINTENANCE SPECIFICATIONS

SPEC

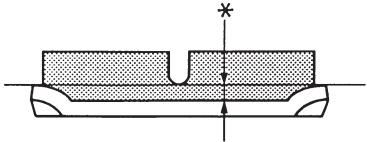
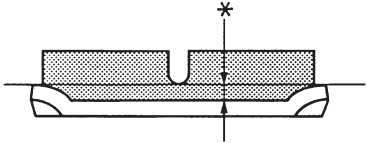
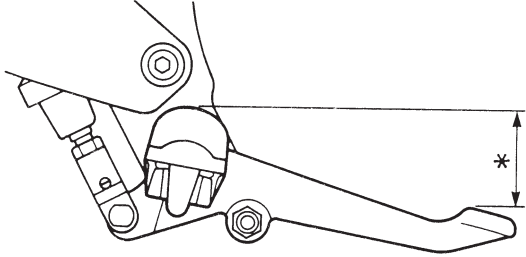

CHASSIS

Model	Standard	Limit
Steering system: Steering bearing type	Angular bearing	•••
Front suspension: Front fork travel Fork spring free length Fitting length Collar length Spring rate (K1) (K2) Stroke (K1) (K2) Optional spring Oil capacity Oil level Oil grade	130 mm 407.3 mm 363.3 mm 150 mm 4.9 N/mm (0.5 kg/mm) 8.8 N/mm (0.9 kg/mm) 0 83 mm 83 130 mm No 538 cm ³ 137 mm Fork oil 10W or equivalent	••• 395 mm ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• •••
Rear suspension: Shock absorber travel Spring free length Fitting length Spring rate (K1) (K2) Stroke (K1) (K2)	88 mm 210 mm 190 mm 20.6 N/mm (2.1 kg/mm) 31.4 N/mm (3.2 kg/mm) 0 50 mm 50 88 mm	••• 206 mm ••• ••• ••• ••• •••
Front wheel: Type Rim size Rim material Rim runout limit radial lateral	Cast wheel 17 × MT3.50 Aluminum ••• •••	••• ••• ••• 1 mm 0.5 mm
Rear wheel: Type Rim size Rim material Rim runout limit radial lateral	Cast wheel 17 × MT5.50 Aluminum ••• •••	••• ••• ••• 1 mm 0.5 mm
Drive chain: Type/manufacturer No. of links Chain free play	50ZVM/DAIDO 110 20 30 mm	••• ••• •••

MAINTENANCE SPECIFICATIONS

SPEC



Model	Standard	Limit
<p>Front disc brake:</p> <p>Type</p> <p>Disc outside diameter × thickness</p> <p>Disc deflection limit</p> <p>Pad thickness</p> 	<p>Dual</p> <p>298 × 5 mm</p> <p>•••</p> <p>5.5 mm</p>	<p>•••</p> <p>•••</p> <p>0.2 mm</p> <p>0.5 mm</p>
<p>Master cylinder inside diameter</p> <p>Caliper cylinder inside diameter</p> <p>Brake fluid type</p>	<p>14 mm</p> <p>30.2 mm and 27 mm</p> <p>DOT #4</p>	<p>•••</p> <p>•••</p> <p>•••</p>
<p>Rear disc brake:</p> <p>Type</p> <p>Disc outside diameter × thickness</p> <p>Disc deflection limit</p> <p>Pad thickness</p> 	<p>Single</p> <p>267 × 5 mm</p> <p>•••</p> <p>5.5 mm</p>	<p>•••</p> <p>•••</p> <p>0.15 mm</p> <p>0.5 mm</p>
<p>Master cylinder inside diameter</p> <p>Caliper cylinder inside diameter</p> <p>Brake fluid type</p>	<p>12.7 mm</p> <p>42.85 mm</p> <p>DOT #4</p>	<p>•••</p> <p>•••</p> <p>•••</p>
<p>Brake lever & brake pedal:</p> <p>Brake pedal position</p> 	<p>45 mm</p>	<p>•••</p>
<p>Throttle grip free play</p>	<p>3 5 mm</p>	<p>•••</p>

MAINTENANCE SPECIFICATIONS

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Part to be tightened	Part name	Thread size	Q'ty	Tightening torque		Remarks
				Nm	m•kg	
Hook	Screw	M6 × 1.0	2	7	0.7	
Helmet holder	Bolt	M6 × 1.0	2	13	1.3	
Tail light bracket	Bolt	M8 × 1.25	4	30	3.0	
Side stand	Bolt	M10 × 1.25	1	40	4.0	
Side stand	Nut	M10 × 1.25	1	40	4.0	
Side stand switch	Screw	M5 × 0.8	2	4	0.4	
Footrest bracket	Bolt	M8 × 1.25	4	28	2.8	
Rear footrest bracket	Bolt	M8 × 1.25	4	28	2.8	
Footrest and footrest bracket	Bolt	M10 × 1.25	2	55	5.5	
Rear brake reservoir tank	Screw	M6 × 1.0	1	5	0.5	
Rear master cylinder and bracket	Bolt	M8 × 1.25	2	23	2.3	
Center stand	Nut and Bolt	M10 × 1.25	2	41	4.1	
Front wheel axle	–	M16 × 1.5	1	73	7.3	
Front wheel axle pinch bolt	Bolt	M8 × 1.0	1	19	1.9	
Front brake caliper and front fork	Bolt	M10 × 1.25	4	40	4.0	
Front brake disk and hub	Bolt	M8 × 1.25	12	20	2.0	
Front brake caliper and bleed screw	–	M8 × 1.25	2	6	0.6	
Front brake hose	Union bolt	M10 × 1.25	2	30	3.0	
Tensionbar and swingarm	Nut and bolt	M8 × 1.25	2	23	2.3	
Driven sprocket and hub	Nut	M8 × 1.25	6	60	6.0	
Chain puller	Nut	M8 × 1.25	2	16	1.6	
Rear brake caliper and caliper bracket	Bolt	M10 × 1.25	2	40	4.0	
Rear wheel axle	Nut	M18 × 1.5	1	150	15.0	
Rear brake hose	Union bolt	M10 × 1.25	2	30	3.0	
Rear brake caliper and bleed screw	–	M8 × 1.25	1	6	0.6	
Rear brake disc and hub	Bolt	M8 × 1.25	6	20	2.0	

NOTE:

1. First, tighten the ring nut approximately 52 Nm (5.2 m•kg) by using the torque wrench, then loosen the ring nut one turn.
2. Retighten the ring nut to specification.

MAINTENANCE SPECIFICATIONS

SPEC


ELECTRICAL

Model	Standard	Limit
Voltage:	12 V	...
Ignition system: Ignition timing (B.T.D.C.) Advanced timing (B.T.D.C.) Advancer type	5° / 1050 r/min 50° / 5000 r/min TPS & Electrical type
T.C.I.: Pickup coil resistance/color T.C.I. unit model/manufacture	248 ~ 372 Ω/W/R-W/G 5EA20/YAMAHA
Ignition coil: Model/manufacture Minimum spark gap Primary winding resistance Secondary winding resistance	83R/YAMAHA 6 mm 1.9 ~ 2.9 Ω 9.5 ~ 14.3 kΩ
Spark plug cap: Type Resistance	Resin type 10 kΩ
Charging system: Type Model/manufacture Normal output Rotor coil resistance Stator coil resistance Brush overall length Spring force	A.C. generator B3G-B/DENSO 13.5 V 28 A/3000 r/min 2.8 ~ 3.0 Ω 0.19 ~ 0.21 Ω 13.7 mm 5.10 ~ 5.69 N (0.52 ~ 0.58 kg) 4.7 mm ...
Voltage regulator: Type Model/manufacture No load regulated voltage	Semi-conductor, field control type B3G-B/DENSO 14.2 ~ 14.8 V
Electric starter system: Type Starter motor: Model/manufacture Output Brush overall length Spring force Commutator diameter	Constant mesh type SM-13/MITSUBA 0.65 kW 10 mm 7.65 ~ 10.01 N (0.780 ~ 1.021 kg) 28 mm 5 mm ... 27 mm

MAINTENANCE SPECIFICATIONS

SPEC


Model	Standard	Limit
Mica undercut	0.7 mm	...
Starter relay:		
Model/manufacturer	MS5E-491/JIDECO	...
Amperage rating	100 A	...
Coil winding resistance	4.2 4.6 Ω	...
Horn:		
Type	Plane type	...
Quantity	2 pcs	...
Model/manufacturer	YF12/NIKKO	...
Maximum amperage	3 A	...
Flasher relay:		
Type	Full transistor type	...
Model/manufacturer	FE246BH/DENSO	...
Self cancelling device	No	...
Flasher frequency	75 95 cyl/min	...
Oil level switch:		
Model/manufacturer	5G2/DENSO	...
Fuel gauge:		
Model/manufacturer	4 KG/NIPPON SEIKI	...
Sender unit resistance	full 4 10 Ω	...
	empty 90 100 Ω	...
Starting circuit cut-off relay:		
Model/manufacturer	G8R-30Y-J/OMRON	...
Coil winding resistance	162 198 Ω	...
Diode	Yes	...
Oil level switch relay:		
Model/manufacturer	G8D-117Y-2/OMRON	...
Circuit breaker:		
Type	Fuse	...
Amperage for individual circuit × Q'ty		
MAIN	30 A × 1	...
HEAD LIGHT	15 A × 1	...
SIGNAL	15 A × 1	...
IGNITION	7.5 A × 1	...
Reserve	30 A × 1	...
	15 A × 1	...
	7.5 A × 1	...

CONVERSION TABLE/ GENERAL TORQUE SPECIFICATIONS



EAS00028

CONVERSION TABLE

All specification data in this manual are listed in SI and METRIC UNITS.

Use this table to convert METRIC unit data to IMPERIAL unit data.

Ex.

METRIC		MULTIPLIER	=	IMP
** mm	x	0.03937	=	** in
2 mm	x	0.03937	=	0.08 in

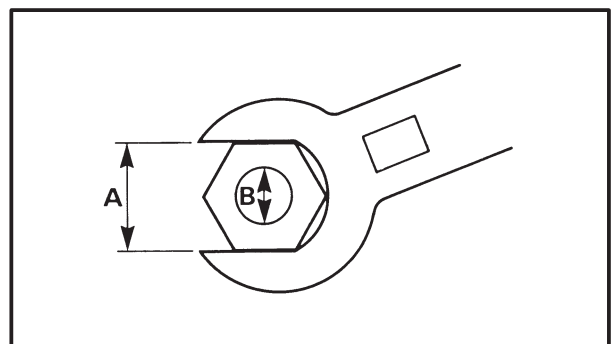
CONVERSION TABLE

METRIC TO IMP			
	Known	Multiplier	Result
Torque	m•kg	7.233	ft•lb
	m•kg	86.794	in•lb
	cm•kg	0.0723	ft•lb
	cm•kg	0.8679	in•lb
Weight	kg	2.205	lb
	g	0.03527	oz
Distance	km/hr	0.6214	mph
	km	0.6214	mi
	m	3.281	ft
	m	1.094	yd
	cm	0.3937	in
	mm	0.03937	in
Volume/ Capacity	cc (cm ³)	0.03527	oz (IMP liq.)
	cc (cm ³)	0.06102	cu•in
	lt (liter)	0.8799	qt (IMP liq.)
	lt (liter)	0.2199	gal (IMP liq.)
Miscella- neous	kg/mm	55.997	lb/in
	kg/cm ²	14.2234	psi (lb/in ²)
	Centigrade	9/5 (°C) + 32	Fahrenheit (°F)

EAS00029

GENERAL TIGHTENING TORQUES

This chart specifies tightening torques for standard fasteners with a standard ISO thread pitch. Tightening torque specifications for special components or assemblies are provided for each chapter of this manual. To avoid warpage, tighten multi-fastener assemblies in a criss-cross pattern and progressive stages until the specified tightening torque is reached. Unless otherwise specified, tightening torque specifications require clean, dry threads. Components should be at room temperature.



A: Distance across flats
B: Outside thread diameter

A (Nut)	B (Bolt)	General specifications torques	
		Nm	m•kg
10 mm	6 mm	6	0.6
12 mm	8 mm	15	1.5
14 mm	10 mm	30	3.0
17 mm	12 mm	55	5.5
19 mm	14 mm	85	8.5
22 mm	16 mm	130	13.0

LUBRICATION POINT AND GRADE OF LUBRICANT

SPEC



LUBRICATION POINT AND GRADE OF LUBRICANT ENGINE

Lubrication Point	Symbol
Oil seal lips	
O-ring	
Bearing	
Piston surface	
Piston pin	
Crankshaft pin	
Crankshaft journal/big end	
Connecting rod bolt/nut	
Camshaft cam lobe/journal	
Valve stem (IN, EX)	
Valve stem end (IN, EX)	
Valve lifter	
Oil pump rotor (inner/outer), housing	
Oil strainer assembly	
Starter idle gear inner surface	
Starter wheel gear inner surface	
Starter clutch (outer/roller)	
Crankcase cover (push rod hole)	
Primary drive gear/damper	
Transmission gear (wheel/pinion)	
Shift cam	
Shift fork/guide bar	
Shift shaft assembly	
Crankcase mating surfaces	Yamaha bond No. 1215
Blind plug and oil seal (crankcase main gallery)	Yamaha bond No. 1215

LUBRICATION POINT AND GRADE OF LUBRICANT



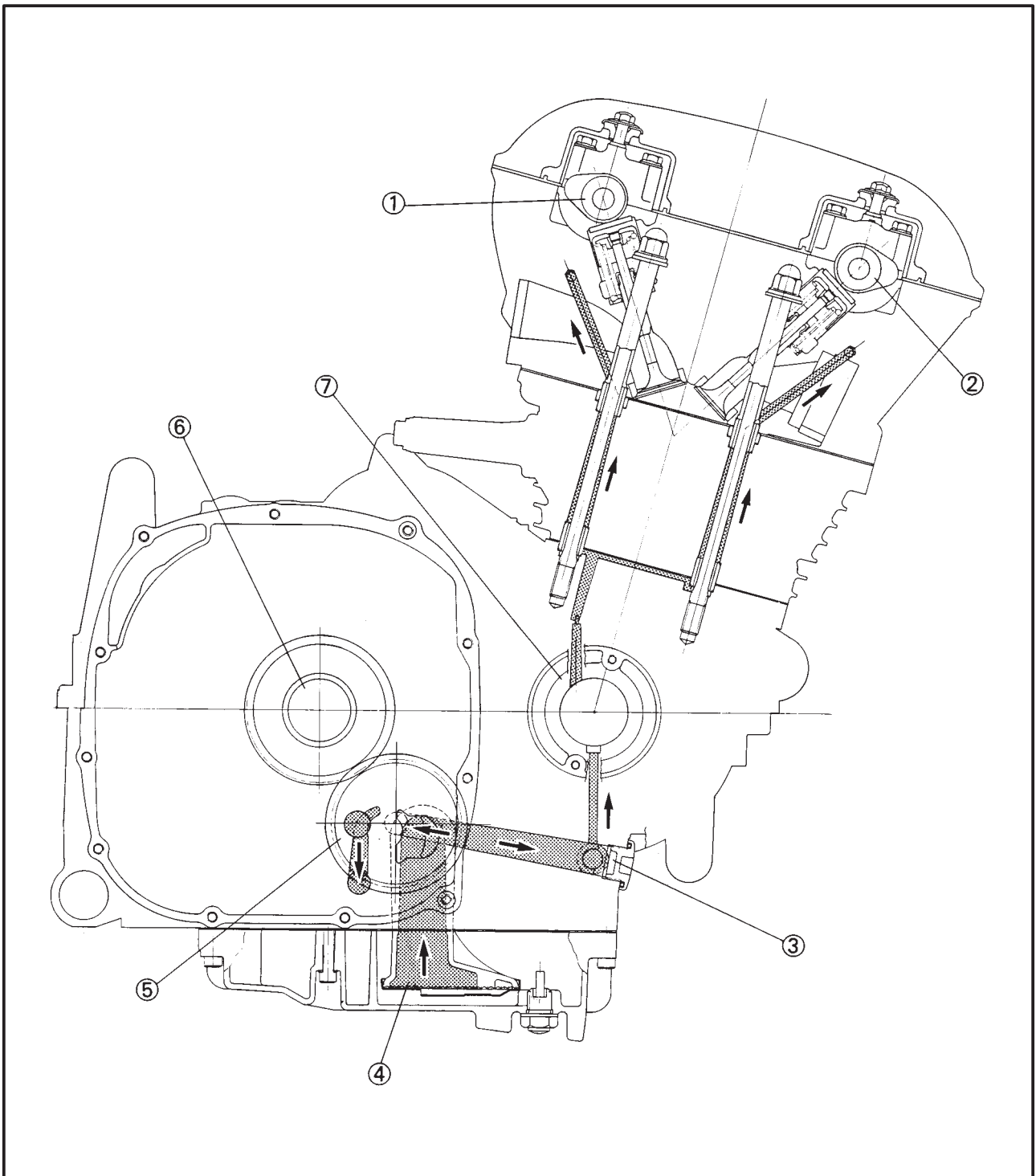
CHASSIS

Lubrication Point	Symbol
Steering bearing (upper/lower) and bearing cover lip	
Front wheel oil seal (left/right)	
Rear wheel oil seal (left/right)	
Clutch hub fitting area	
Rear brake pedal shaft	
Shift pedal	
Centerstand sliding surface	
Sidestand sliding surface	
Tube guide (throttle grip) inner surface	
Brake lever bolt, sliding surface	
Clutch lever bolt, sliding surface	
Rear footrest pivot	
Swingarm pivot bearing	
Swingarm pivot shaft outer surface	
Swingarm thrust cover lip	



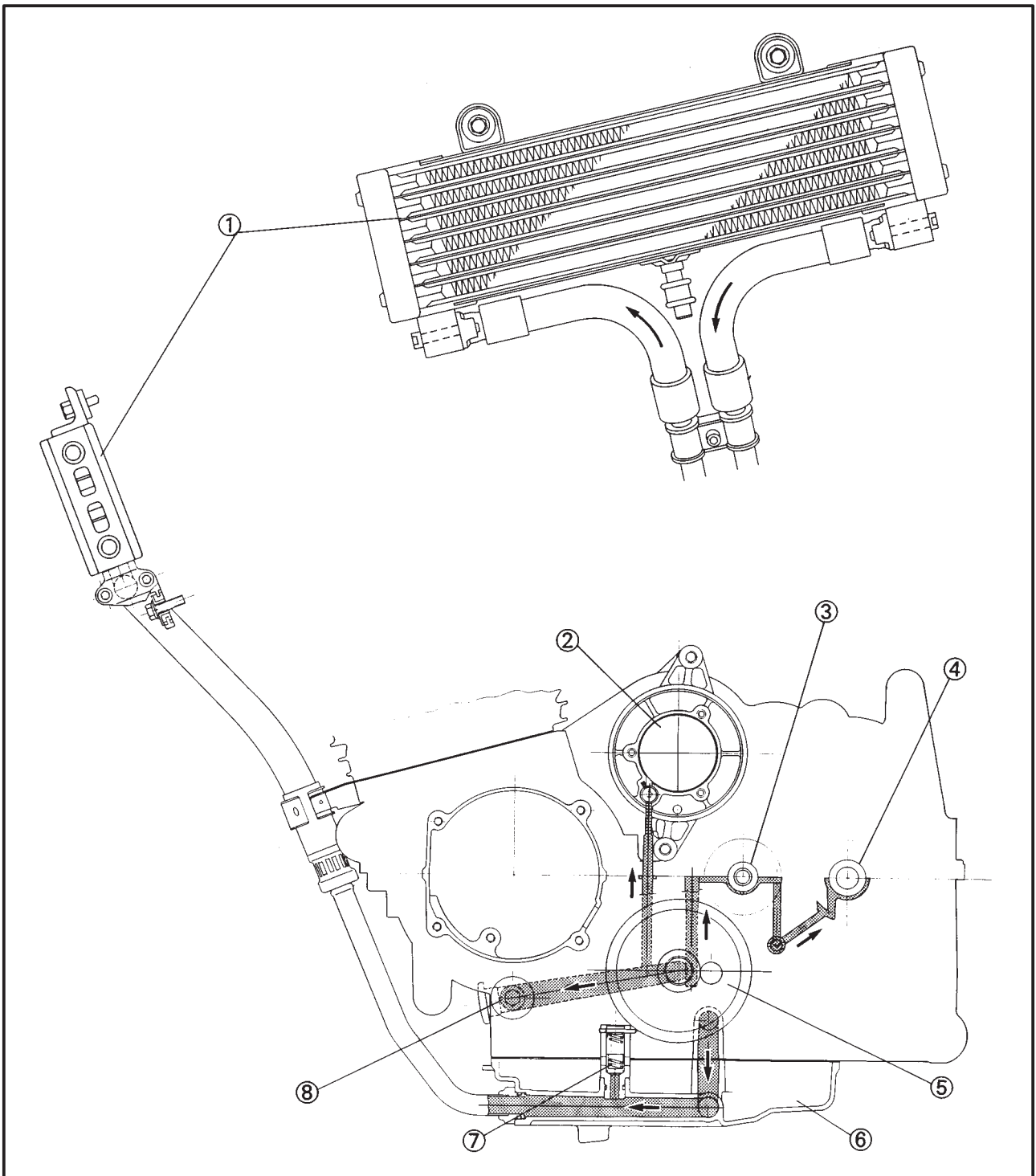
LUBRICATION DIAGRAMS

- ① Camshaft (intake)
- ② Camshaft (exhaust)
- ③ Main gallery
- ④ Oil strainer
- ⑤ Oil pump
- ⑥ Main axle
- ⑦ Crankshaft





- ① Oil cooler
- ② Starter clutch
- ③ Main axle
- ④ Drive axle
- ⑤ Oil pump
- ⑥ Oil pan
- ⑦ Relief valve
- ⑧ Main gallery





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