YAMAHA

FZS1000N
FZS1000NC

SERVICE MANUAL

LIT-11616-14-48

5LV-28197-E0

EAS00012

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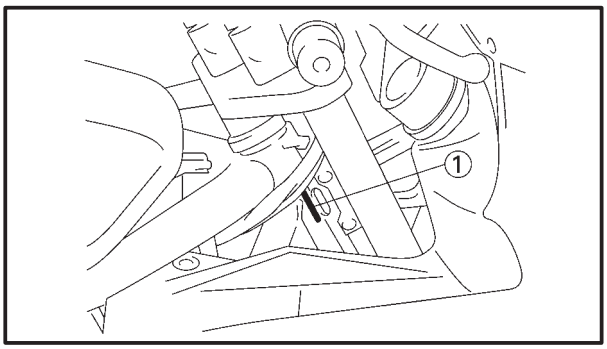
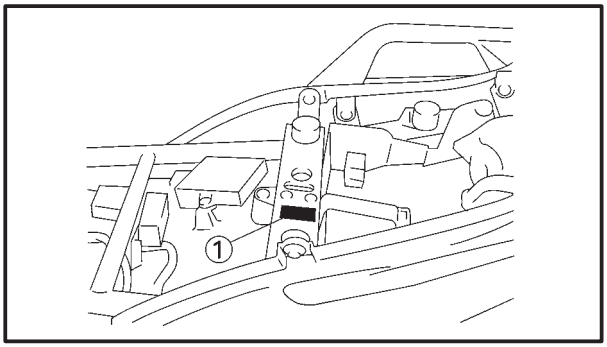
GENERAL INFORMATION





EAS00014

GENERAL INFORMATION

MOTORCYCLE IDENTIFICATION

EAS00017

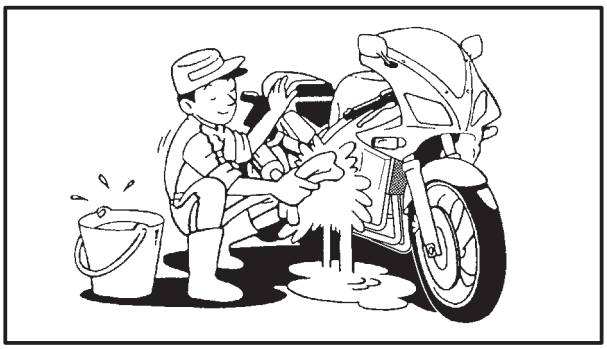
VEHICLE IDENTIFICATION NUMBER

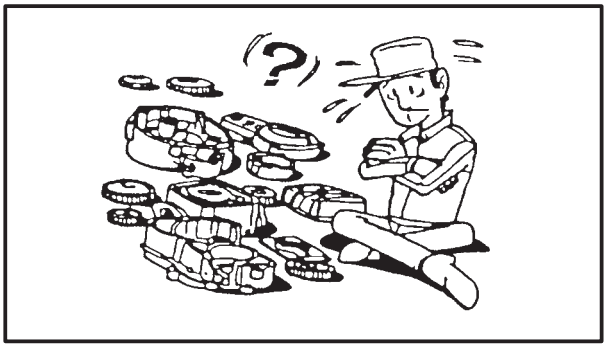
The vehicle identification number ① is stamped into the right side of the steering head.

EAS00018

MODEL CODE

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



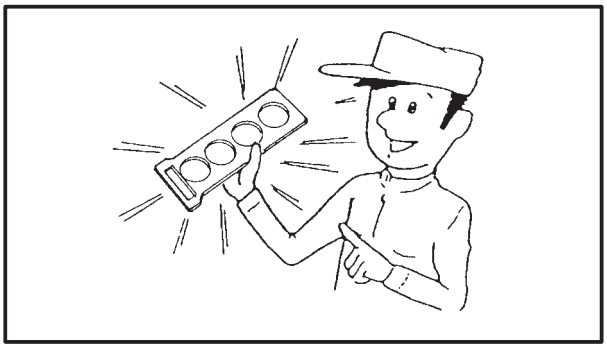


EAS00020

IMPORTANT INFORMATION

PREPARATION FOR REMOVAL AND DISASSEMBLY

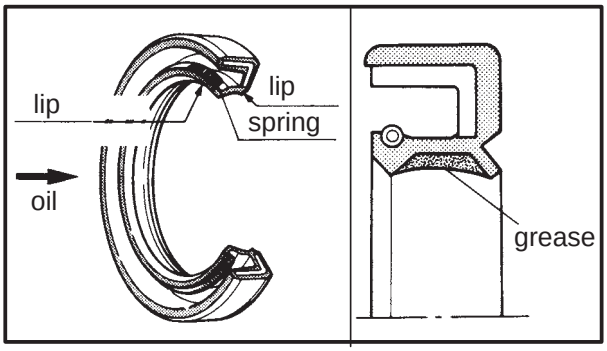
1. Before removal and disassembly, remove all dirt, mud, dust and foreign material.
2. Use only the proper tools and cleaning equipment.
   Refer to the “SPECIAL TOOLS” section.
3. When disassembling, always keep mated parts together. This includes gears, cylinders, pistons and other parts that have 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

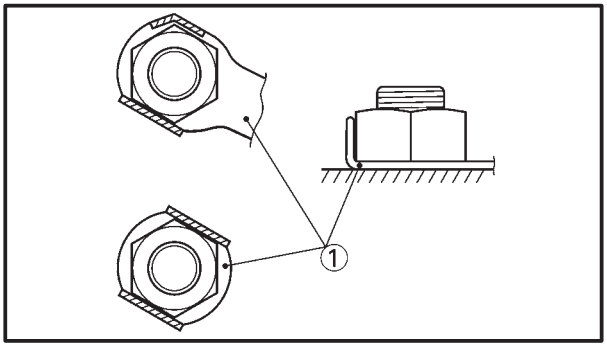
1. Use only genuine Yamaha parts for all replacements. Use oil and grease recommended by Yamaha for all lubrication jobs. Other brands may be similar in function and appearance, but inferior in quality.



EAS00022

GASKETS, OIL SEALS AND O-RINGS

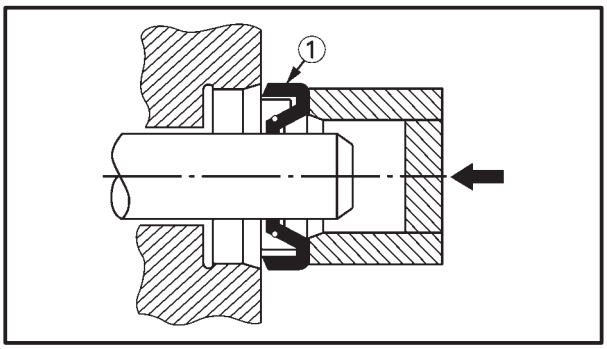
1. When overhauling the engine, replace all gaskets, seals and O-rings. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. During reassembly, properly oil all mating parts and bearings and apply grease onto the oil seal lips with greace.

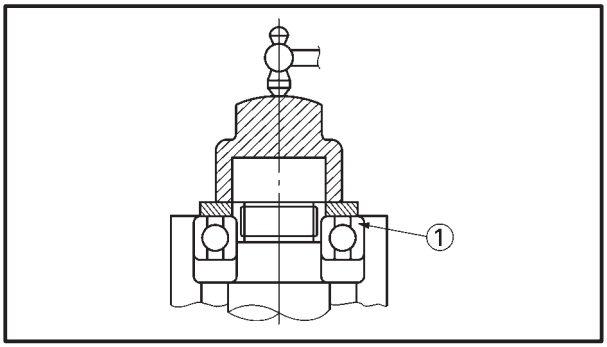


EAS00023

LOCK WASHERS/PLATES AND COTTER PINS

1. After removal, replace all lock washers/plates① and cotter pins. After the bolt or nut has been tightened to specification, bend the lock tabs along a flat of the bolt or nut.





EAS00024

BEARINGS AND OIL SEALS

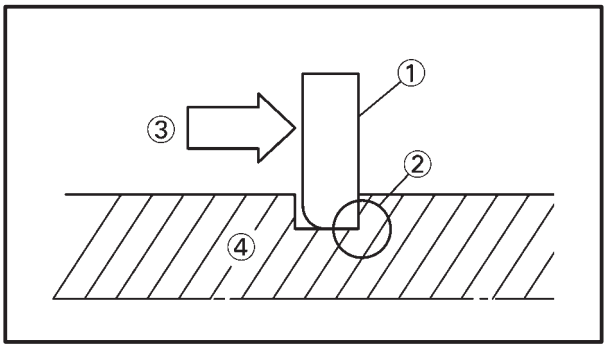
1. Install bearings and oil seals so that the manufacturer's marks or numbers are visible. When installing oil seals, apply a light coat of lithium soap base grease onto the oil seal lips. Oil bearings liberally when installing, if appropriate.

① Oil seal

CAUTION:

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

① Bearing

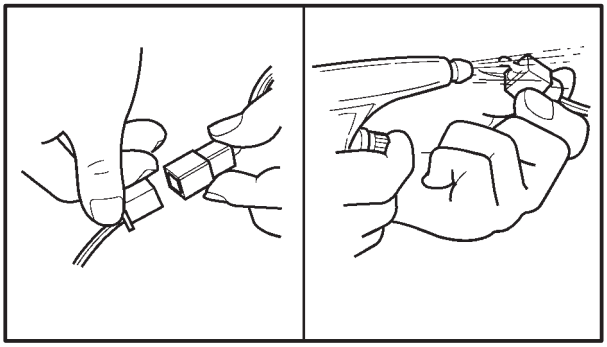


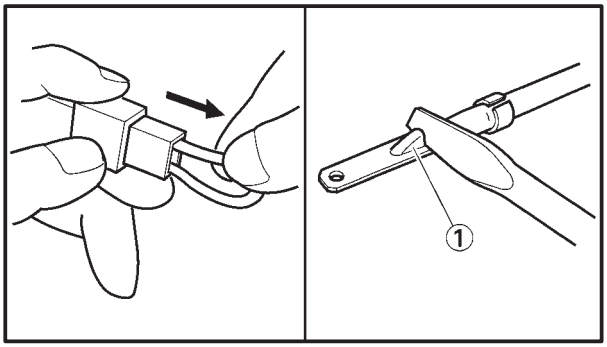
EAS00025

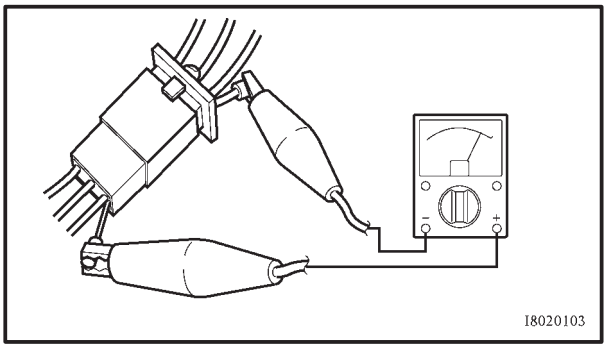
CIRCLIPS

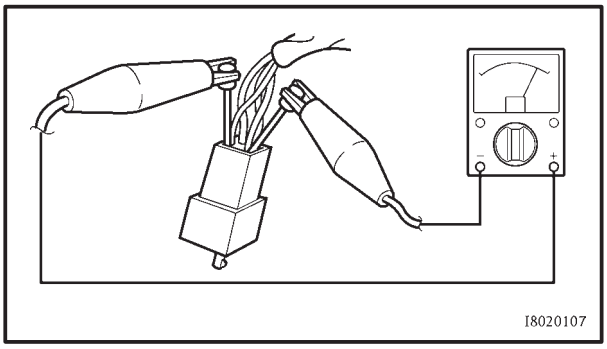
1. Before reassembly, check all circlips carefully and replace damaged or distorted circlips. Always replace piston pin clips after one use. When installing a circlip ①, make sure that the sharp-edged corner ② is positioned opposite the thrust ③ that the circlip receives.

④ Shaft









EAS00026

CHECKING THE CONNECTIONS

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

1. Disconnect:
   - lead ①
   - coupler ②
   - connector ③
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)

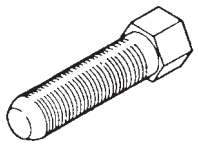
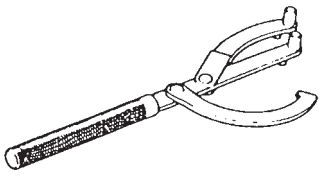
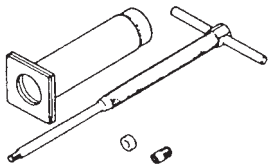
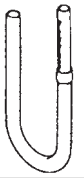
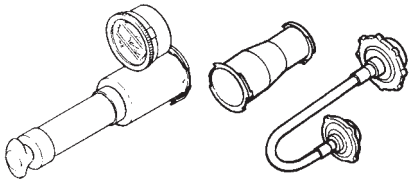
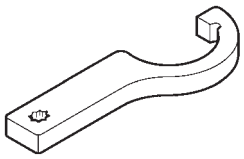
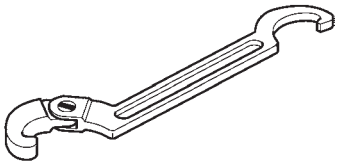
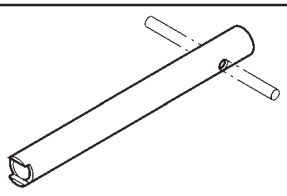
	Pocket tester measurement YU-03112-C

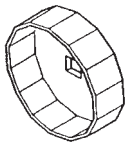
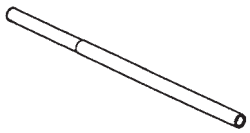
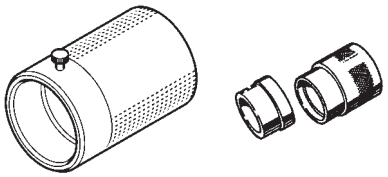
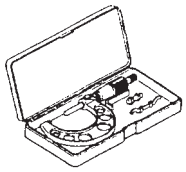
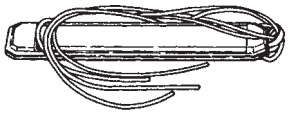
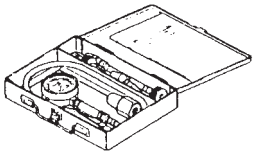
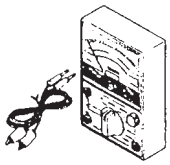
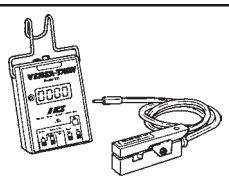
NOTE:

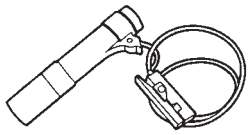
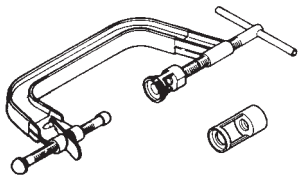
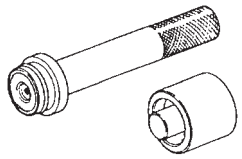
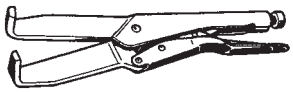
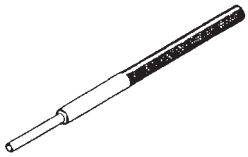
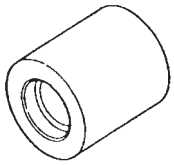
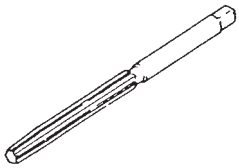
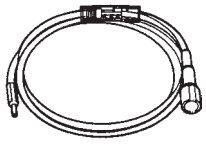
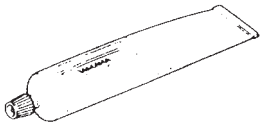
- If there is no continuity, clean the terminals.
- When checking the wire harness, perform steps 1 to 3.
- As a quick remedy, use a contact revitalizer available at most part stores.

EAS00027
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. Special tools, part numbers or both may differ depending on the country. When placing an order, refer to the list provided below to avoid any mistakes.

Tool No.	Tool name/Function	Illustration
YM-01080-A	Alternator Rotor Puller This tool is used to remove the generator rotor.	
YU-01235	Universal Magneto & Rotor Holder This tool is used to hold the generator rotor when removing or installing the generator rotor bolt or pickup coil rotor bolt.	
YU-01304	Piston Pin Puller This tool is used to remove the piston pins.	
YU-01312-A	Fuel Level Gauge This tool is used to measure the fuel level in the float chamber.	
Radiator Pressure Tester YU-24460-01 Radiator Pressure Tester Adapter YU-33984	Radiator Pressure Tester Radiator Pressure Tester Adapter These tools are used to check the cooling system.	
YU-33975	Spanner Wrench This tool is used to loosen or tighten the steering stem ring nuts.	
YU-1268	Steering Nut Wrench This tool is used to loosen the steering stem ring nuts.	
YM-01447	Damper Rod Holder This tool is used to hold the damper rod assembly when loosening or tightening the damper rod assembly bolt.	

Tool No.	Tool name/Function	Illustration
YU-38411	Oil Filter Wrench This tool is needed to loosen or tighten the oil filter cartridge.	
YM-01434	Rod Holder This tool is used to support the damper adjusting rod.	
Rod puller YM-01437	Rod Puller This tool is used to pull up the front fork damper rod.	
Driver YM-33963 43 mm Adapters YM-8020-A	Driver 43 mm Adapters This tool is used to install the front fork's oil seal and dust seal.	
YU-03008	Micrometers (50 ~ 75 mm) This tool is used to measure the piston skirt diameter.	
YU-8030	Carburetor Synchronizer This guide is used to synchronize the carburetors.	
Compression Gauge Set YU-33223	Compression Gauge Set Compression Gauge Adapter These tools are used to measure engine compression.	
YU-03112-C	Pocket Tester Measurement This tool is used to check the electrical system.	
YU-8036-B	Inductive Self-Powered Tachometer This tool is used to check engine speed.	

Tool No.	Tool name/Function	Illustration
YM-33277-A	Battery Powered Timing Light This tool is used to check the ignition timing.	
Valve Spring Compressor YM-04019 Adapter YM-4108 YM-4114	Valve Spring Compressor Set, Quick Release Adapter These tools are used to remove or install the valve assemblies.	
40 and 50 mm Bearing Driver YM-4058 Water Pump Seat Installer YM-33221	40 and 50 mm Bearing Driver Water Pump Seal Installer These tools are used to install the water pump seal.	
YM-91042	Universal Clutch Holder (Grabbit) This tool is used to hold the clutch boss when removing or installing the clutch boss nut.	
YM-04111 YM-4116	Valve Guide Remover (ø4) Valve Guide Remover (ø4.5) This tool is used to remove or install the valve guides.	
YM-04112 YM-4117	Valve Guide Installer (ø4) Valve Guide Installer (ø4.5) This tool is used to install the valve guides.	
YM-04113 YM-4118	Valve Guide Reamer (ø4) Valve Guide Reamer (ø4.5) This tool is used to rebore the new valve guides.	
YM-34487	Dynamic Spark Tester This tool is used to check the ignition system components.	
ACC-11001-05-01	Yamaha bond No. 1215 This bond is used to seal two mating surfaces (e.g., crankcase mating surfaces).	

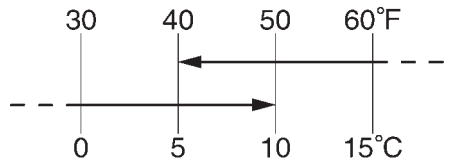
CHAPTER 2.
SPECIFICATIONS

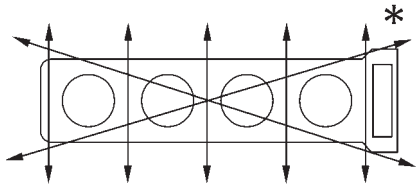
SPECIFICATIONS

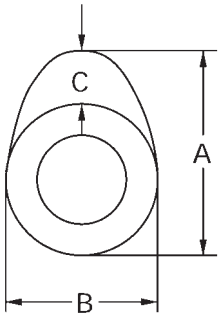
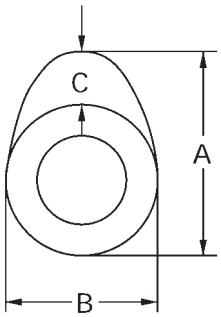
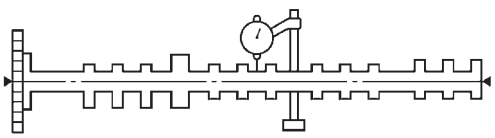
GENERAL SPECIFICATIONS

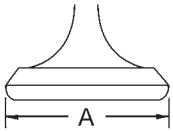
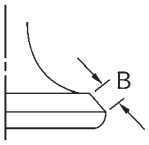
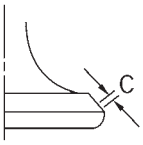
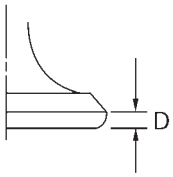
Item	Standard	Limit
Model code	5LV5 (USA except for California) 5LV6 (CDN) 5LV7 (California)	
Dimensions		
Overall length	2,125 mm (83.7 in)	
Overall width	765 mm (30.1 in)	
Overall height	1,190 mm (46.9 in)	
Seat height	820 mm (32.3 in)	
Wheelbase	1,450 mm (57.1 in)	
Minimum ground clearance	140 mm (5.5 in)	
Minimum turning radius	2,900 mm (114.2 in)	
Weight		
Wet (with oil and a full fuel tank)	231 kg (509 lb) 232 kg (512 lb) (for california)	
Dry (without oil and fuel)	208 kg (459 lb) 209 kg (461 lb) (for california)	
Maximum load (total of cargo, rider, passenger, and accessories)	189 kg (417 lb) 188 kg (415 lb) (for california)	

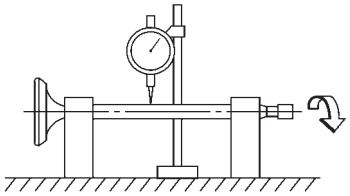
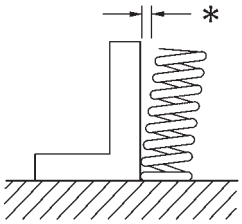
ENGINE SPECIFICATIONS

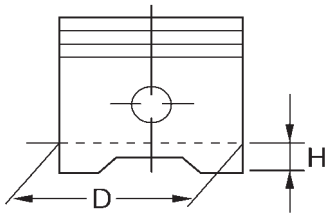
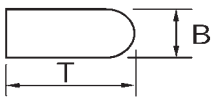
Item	Standard	Limit
Engine		
Engine type	Liquid-cooled, 4-stroke, DOHC	
Displacement	998 cm^3	
Cylinder arrangement	Forward-inclined parallel 4-cylinder	
Bore ~ stroke	74 ~ 58 mm (2.91 ~ 2.28 in)	
Compression ratio	11.4 : 1	
Engine idling speed	1,050 ~ 1,150 r/min	
Vacuum pressure at engine idling speed	30 kPa (225 mmHg, 8.86 in Hg)	
Standard compression pressure (at sea level)	1,450 kPa (14.5 kg/cm^2, 206 psi) at 400 r/min	
Fuel		
Recommended fuel	Unleaded fuel (for USA) Regular unleaded gasoline (for CDN)	
Fuel tank capacity		
Total (including reserve)	21 L (18.5 Imp qt, 22.2 US qt)	
Reserve only	4.0 L (3.52 Imp qt, 4.22 US qt)	
Engine oil		
Lubrication system	Wet sump	
Recommended oil	Yamalube 4 (20W40) or SAE 20W40 type SE motor oil	
		
Quantity		
Total amount	3.7 L (3.2 Imp qt, 3.8 US qt)	
Without oil filter cartridge replacement	2.8 L (2.4 Imp qt, 2.9 US qt)	
With oil filter cartridge replacement	3.0 L (2.6 Imp qt, 3.1 US qt)	
Oil pressure (hot)	45 kPa (0.45 kg/cm^2, 6.40 psi) at 1,100 r/min	
Relief valve opening pressure	490 ~ 570 kPa (4.9 ~ 5.7 kg/cm^2, 69.7 ~ 81.1 psi)	

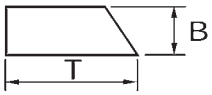
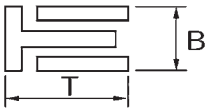
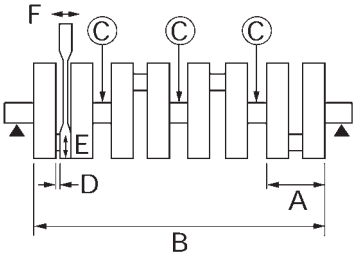
Item	Standard	Limit
Oil filter		
Oil filter type	Cartridge (paper)	
Bypass valve opening pressure	180 ~ 220 kPa (1.8 ~ 2.2 kg/cm^2, 25.6 ~ 31.3 psi)	
Oil pump		
Oil pump type	Trochoidal	
Inner-rotor-to-outer-rotor-tip clearance	0.09 ~ 0.15 mm (0.004 ~ 0.006 in)	
Outer-rotor-to-oil-pump-housing clearance	0.03 ~ 0.08 mm (0.001 ~ 0.003 in)	
Cooling system		
Radiator capacity	2.4 L (2.11 Imp qt, 2.53 US qt)	
Radiator cap opening pressure	95 ~ 125 kPa (0.95 ~ 1.25 kg/cm^2, 13.1 ~ 17.8 psi)	
Radiator core		
Width	340 mm (13.4 in)	
Height	238 mm (9.4 in)	
Depth	24 mm (0.94 in)	
Coolant reservoir		
Capacity	0.3 L (0.26 Imp qt, 0.32 US qt)	
Water pump		
Water pump type	Single-suction centrifugal pump	
Reduction ratio	68/43 ~ 28/28 (1.581)	
Max. impeller shaft tilt		0.15 mm (0.006 in)
Starting system type	Electric starter	
Spark plugs		
Model (manufacturer) ~ quantity	CR9E/U27ESR-N (NGK/DENSO) ~ 4	
Spark plug gap	0.7 ~ 0.8 mm (0.028 ~ 0.031 in)	
Cylinder head		
Max. warpage 		0.1 mm (0.004 in)

Item	Standard	Limit
Camshafts		
Drive system	Chain drive (right)	
Camshaft cap inside diameter	24.500 ~ 24.521 mm (0.9646 ~ 0.9654 in)	
Camshaft journal diameter	24.459 ~ 24.472 mm (0.9630 ~ 0.9635 in)	
Camshaft-journal-to-camshaft-cap clearance	0.028 ~ 0.062 mm (0.0011 ~ 0.0024 in)	
Intake camshaft lobe dimensions 		
Measurement A	32.5 ~ 32.6 mm (1.2795 ~ 1.2835 in)	32.4 mm (1.2756 in)
Measurement B	24.95 ~ 25.05 mm (0.9823 ~ 0.9862 in)	24.85 mm (0.9783 in)
Measurement C	7.45 ~ 7.65 mm (0.2933 ~ 0.3012 in)	
Exhaust camshaft lobe dimensions 		
Measurement A	32.95 ~ 33.05 mm (1.2972 ~ 1.3012 in)	32.85 mm (1.2933 in)
Measurement B	24.95 ~ 25.05 mm (0.9823 ~ 0.9862 in)	24.85 mm (0.9783 in)
Measurement C	7.75 ~ 7.95 mm (0.3051 ~ 0.3126 in)	
Max. camshaft runout 		0.03 mm (0.0012 in)

Item	Standard	Limit
Timing chain		
Model/number of links	RH2015/130	
Tensioning system	Automatic	
Valves, valve seats, valve guides		
Valve clearance (cold)	0.11 ~ 0.20 mm (0.0043 ~ 0.0079 in)	
Intake	0.21 ~ 0.25 mm (0.0083 ~ 0.0098 in)	
Exhaust		
Valve dimensions		
 Head Diameter	 Face Width	 Seat Width	 Margin Thickness
Valve head diameter A		
Intake	22.9 ~ 23.1 mm (0.9016 ~ 0.9094 in)	
Exhaust	24.4 ~ 24.6 mm (0.9606 ~ 0.9685 in)	
Valve face width B		
Intake	1.76 ~ 2.90 mm (0.0693 ~ 0.1142 in)	
Exhaust	1.76 ~ 2.90 mm (0.0693 ~ 0.1142 in)	
Valve seat width C		
Intake	0.9 ~ 1.1 mm (0.035 ~ 0.043 in)	
Exhaust	0.9 ~ 1.1 mm (0.035 ~ 0.043 in)	
Valve margin thickness D		
Intake	0.5 ~ 0.9 mm (0.020 ~ 0.035 in)	
Exhaust	0.5 ~ 0.9 mm (0.020 ~ 0.035 in)	
Valve stem diameter		
Intake	3.975 ~ 3.900 mm (0.1565 ~ 0.1535 in)	3.945 mm (0.1553 in)
Exhaust	4.465 ~ 4.480 mm (0.1758 ~ 0.1764 in)	4.43 mm (0.1744 in)
Valve guide inside diameter		
Intake	4.000 ~ 4.012 mm (0.1575 ~ 0.1580 in)	4.05 mm (0.1594 in)
Exhaust	4.500 ~ 4.512 mm (0.1772 ~ 0.1776 in)	4.55 mm (0.1791 in)
Valve-stem-to-valve-guide clearance		
Intake	0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in)	0.08 mm (0.0031 in)
Exhaust	0.020 ~ 0.047 mm (0.0008 ~ 0.0019 in)	0.10 mm (0.0039 in)

Item	Standard	Limit
Valve stem runout 	•••	0.01 mm (0.0004 in)
Valve seat width		
Intake	0.9 ~ 1.1 mm (0.035 ~ 0.043 in)	•••
Exhaust	0.9 ~ 1.1 mm (0.035 ~ 0.043 in)	•••
Valve springs		
Free length		
Intake	38.90 mm (1.53 in)	•••
Exhaust	40.67 mm (1.60 in)	•••
Installed length (valve closed)		
Intake	34.50 mm (1.36 in)	•••
Exhaust	35.00 mm (1.38 in)	•••
Compressed spring force (installed)		
Intake	82 ~ 96 N (8.2 ~ 9.6 kg, 18.4 ~ 25.4 lb)	•••
Exhaust	110 ~ 126 N (11.0 ~ 12.6 kg, 24.7 ~ 28.3 lb)	•••
Spring tilt 		
Intake	•••	2.5°/1.7 mm (2.5°/0.067 in)
Exhaust	•••	2.5°/1.8 mm (2.5°/0.071 in)
Winding direction (top view)		•••
Intake	Clockwise	•••
Exhaust	Clockwise 	

Item	Standard	Limit
Cylinders		
Cylinder arrangement	Forward-inclined, parallel 4-cylinder	
Bore ~ stroke	74 ~ 58 mm (2.91 ~ 2.28 in)	
Compression ratio	11.4 : 1	
Bore	74.00 ~ 74.01 mm (2.9134 ~ 2.9138 in)	
Max. taper		0.05 mm (0.0016 in)
Max. out-of-round		0.05 mm (0.0016 in)
Pistons		
Piston-to-cylinder clearance	0.030 ~ 0.055 mm (0.001 ~ 0.002 in)	0.12 mm (0.005 in)
Diameter D	73.955 ~ 73.970 mm (2.9118 ~ 2.9122 in)	
		
Height H	5 mm (0.20 in)	
Piston pin bore (in the piston)		
Diameter	17.002 ~ 17.013 mm (0.6694 ~ 0.6698 in)	17.043 mm (0.6710 in)
Offset	0.5 mm (0.0197 in)	
Offset direction	Intake side	
Piston pins		
Outside diameter	16.991 ~ 17.000 mm (0.6689 ~ 0.6693 in)	16.971 mm (0.6681 in)
Piston-pin-to-piston-pin-bore clearance	0.002 ~ 0.022 mm (0.00008 ~ 0.00087 in)	0.072 mm (0.0028 in)
Piston rings		
Top ring		
		
Ring type	Barrel	
Dimensions (B ~ T)	0.90 ~ 2.75 mm (0.035 ~ 0.108 in)	
End gap (installed)	0.32 ~ 0.44 mm (0.010 ~ 0.020 in)	
Ring side clearance	0.030 ~ 0.065 mm (0.0012 ~ 0.0026 in)	

Item	Standard	Limit
2nd ring 		
Ring type	Taper	
Dimensions (B ~ T)	0.8 ~ 2.8 mm (0.031 ~ 0.110 in)	
End gap (installed)	0.43 ~ 0.58 mm (0.017 ~ 0.023 in)	
Ring side clearance	0.020 ~ 0.055 mm (0.0008 ~ 0.0022 in)	
Oil ring 		
Dimensions (B ~ T)	1.5 ~ 2.6 mm (0.059 ~ 0.101 in)	
End gap (installed)	0.10 ~ 0.35 mm (0.004 ~ 0.014 in)	
Connecting rods		
Crankshaft-pin-to-big-end-bearing clearance	0.031 ~ 0.055 mm (0.0012 ~ 0.0022 in)	
Bearing color code	–1 = Violet 0 = White 1 = Blue 2 = Black	
Crankshaft		
		
Width A	52.40 ~ 57.25 mm (2.063 ~ 2.254 in)	
Width B	300.75 ~ 302.65 mm (11.84 ~ 11.92 in)	
Max. runout C		0.03 mm (0.0012 in)
Big end side clearance D	0.160 ~ 0.262 mm (0.006 ~ 0.010 in)	
Crankshaft-journal-to-crankshaft-journal-bearing clearance	0.029 ~ 0.053 mm (0.0011 ~ 0.0021 in)	
Bearing color code	–1 = Pink/violet 0 = Pink/white 1 = Pink/blue 2 = Pink/black 3 = Pink/brown	
Clutch		
Clutch type	Wet, multiple disc	
Clutch release method	Cam (pull rod type)	
Clutch release method operation	Cable operation	
Operation	Left-hand operation	
Clutch cable free play (at the end of the clutch lever)	10 ~ 15 mm (0.39 ~ 0.59 in)	

Item	Standard	Limit
Friction plates		
Thickness	2.92 ~ 3.08 mm (0.115 ~ 0.121 in)	2.82 mm (0.111 in)
Plate quantity	8	
Thickness	3.42 ~ 3.58 mm (0.135 ~ 0.141 in)	3.32 mm (0.131 in)
Plate quantity	1	
Clutch plates		
Thickness	1.9 ~ 2.1 mm (0.075 ~ 0.083 in)	
Plate quantity	8	
Max. warpage		0.1 mm (0.004 in)
Clutch springs		
Free length	50 mm (1.97 in)	
Spring quantity	6	
Transmission		
Transmission type	Constant mesh, 6-speed	
Primary reduction system	Spur gear	
Primary reduction ratio	68/43 (1.581)	
Secondary reduction system	Chain drive	
Secondary reduction ratio	44/16 (2.750)	
Operation	Left-foot operation	
Gear ratios		
1st gear	35/14 (2.500)	
2nd gear	35/19 (1.842)	
3rd gear	30/20 (1.500)	
4th gear	28/21 (1.333)	
5th gear	30/25 (1.200)	
6th gear	29/26 (1.115)	
Max. main axle runout		0.08 mm (0.003 in)
Max. drive axle runout		0.08 mm (0.003 in)
Shifting mechanism		
Shift mechanism type	Guide bar	
Max. shift fork guide bar bending		0.1 mm (0.004 in)
Installed shift rod length	260 mm (10.2 in)	
Air filter type	Dry element	
Fuel pump		
Pump type	Electrical	
Model (manufacturer)	4SV (MITSUBISHI)	
Output pressure	20 kPa (0.2 kg/cm^2, 2.8 psi)	

Item	Standard	Limit
Carburetors		
Model (manufacturer) ~ quantity	BSR37 (MIKUNI) ~ 4	
Throttle cable free play (at the flange of the throttle grip)	3 ~ 5 mm (0.12 ~ 0.20 in)	
ID mark	5LV5 40	
Main jet	Carburetors 1 and 4: #132.5 Carburetors 2 and 3: #130	
Main air jet	#80	
Jet needle	Carburetor 1 and 4: 5D129-3/5 Carburetor 2 and 3: 5D130-3/5	
Needle jet	P-OM	
Pilot air jet	#85	
Pilot outlet	1.0	
Pilot jet	#15	
Bypass 1	0.9	
Bypass 2	0.9	
Bypass 3	0.9	
Pilot screw turns out	2.0	
Valve seat size	1.5	
Starter jet 1	#42.5	
Starter jet 2	0.8	
Throttle valve size	#115	
Fuel level (above the line on the float chamber)	3.0 ~ 4.0 mm (0.118 ~ 0.157 in)	
Max. EXUP cable free play (at the EXUP valve pulley)	1.5 mm (0.059 in)	