



FZR400SP '91

3TJ-ME1

SERVICE MANUAL

NOTICE

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

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

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

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notations:



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



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

CAUTION:

A CAUTION indicates special precautions that must be taken by you, the operator, to the motorcycle.

NOTE

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

FZR400SP

SERVICE MANUAL

1990 by Yamaha Motor Co., Ltd.

1st Edition, November 1990

All rights reserved. Any reprinting or unauthorized use without the written permission of Yamaha Motor Co., Ltd. is expressly prohibited.

HOW TO USE THIS MANUAL

CONSTRUCTION OF THIS MANUAL

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

- 1st title : This is a chapter with its symbol on the upper right of each page.
 2nd title : This title appears on the upper of each page on the left of the chapter symbol. (For the chapter "Periodic inspection and adjustment," the 3rd title appears.)
 3rd title : This is a final title.

MANUAL FORMAT

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

IMPORTANT FEATURES

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

EXPLODED DIAGRAM

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



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

ILLUSTRATED SYMBOLS (Refer to the illustration)

Illustrated symbols 1 to 9 are designed as thumb tabs to indicate the chapter's number and content.

- 1 General information
- 2 Specifications
- 3 Periodic inspection and adjustment
- 4 Engine
- 5 Cooling system
- 6 Carburetor
- 7 Chassis
- 8 Electrical
- 9 Troubleshooting










Illustrated symbols 10 to 16 are used to identify the specifications appearing in the text.

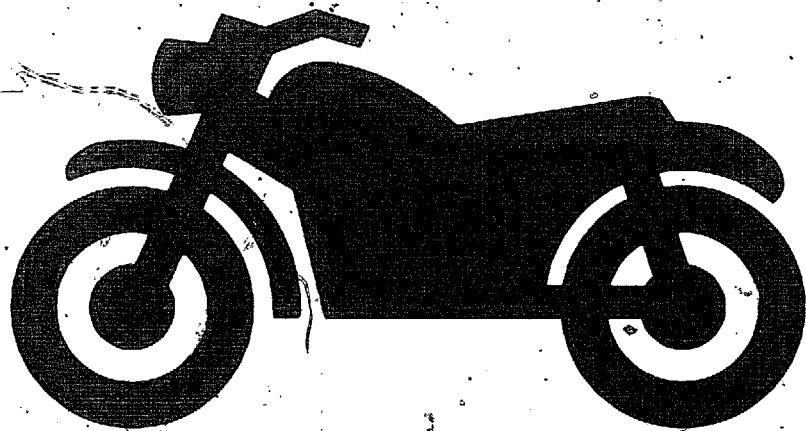
- 10 Filling fluid
- 11 Lubricant
- 12 Special tool
- 13 Tightening
- 14 Wear limit clearance
- 15 Engine speed
- 16 Δ V A

Illustrated symbols 17 to 23 in the exploded diagram indicate grade of lubricant and location of lubrication point.

- 17 Apply engine oil
- 18 Apply gear oil
- 19 Apply molybdenum disulfide oil
- 20 Apply wheel bearing grease
- 21 Apply lightweight lithium soap base grease
- 22 Apply molybdenum disulfide grease
- 23 Apply locking agent (LOCTITE)
- 24 Use new one

INDEX

GENERAL INFORMATION	
	GEN INFO 1
SPECIFICATIONS	
	SPEC 2
PERIODIC INSPECTION AND ADJUSTMENT	
	INSP ADJ 3
ENGINE OVERHAUL	
	ENG 4
COOLING SYSTEM	
	COOL 5
CARBURETION	
	CARB 6
CHASSIS	
	CHAS 7
ELECTRICAL	
	ELEC 8
TROUBLESHOOTING	
	TRBL SHTG 9



**GEN
INFO**

1



CHAPTER 1. GENERAL INFORMATION

MOTORCYCLE IDENTIFICATION

FRAME SERIAL NUMBER
ENGINE SERIAL NUMBER

A-8
A-8
A-8

IMPORTANT INFORMATION

PREPARATION FOR REMOVAL
ALL REPLACEMENT PARTS
GASKETS, OIL SEALS, AND O-RINGS
LOCK WASHER PLATES AND COTTER PINS
BEARINGS AND OIL SEALS
CIRCLIPS

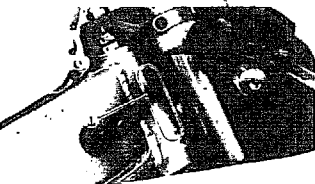
A-8
A-8
A-9
A-9
A-9
A-9

SPECIAL TOOLS

FOR TUNE UP
FOR ENGINE SERVICE
FOR CHASSIS SERVICE
FOR ELECTRICAL COMPONENTS

A-3
A-9
A-10
A-11
A-11

GENERAL INFORMATION



MOTORCYCLE IDENTIFICATION

FRAME SERIAL NUMBER

The frame serial number 1 is stamped into the right side of the steering head.

Starting serial number
3TJ-141101

ENGINE SERIAL NUMBER

The engine serial number 1 is stamped into the right side of the engine.

Starting serial number
3TJ 141101

NOTE

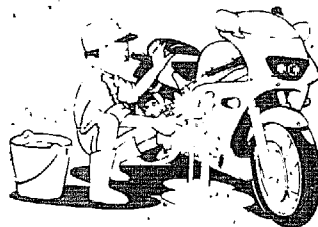
- The first three digits of these numbers are for model identifications; the remaining digits are the unit production number.
- Designs and specifications are subject to change without notice.



IMPORTANT INFORMATION

PREPARATION FOR REMOVAL

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



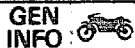
ALL REPLACEMENT PARTS

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

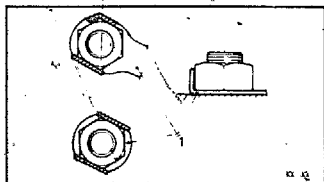
GASKETS, OIL SEALS, AND O-RINGS

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

IMPORTANT INFORMATION

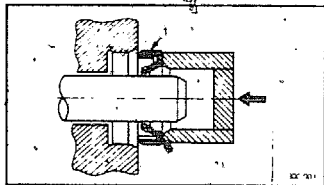


A-9



LOCK WASHERS PLATES AND COTTER PINS

- 1 All lock washers plates 1 and cotter pins must be replaced when they are removed. Lock tabs 2 should be bent along the bolt or nut flats 3 after the bolt or nut has been properly tightened.



BEARINGS AND OIL SEALS

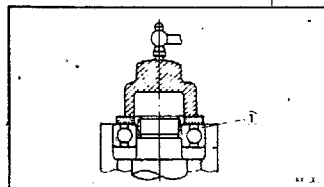
- 1 Install the bearing(s) and oil seal(s) with their manufacturer's marks or numbers facing outward. In other words, the stamped letters must be on the side exposed to view. When installing oil seal(s) apply a light coating of light weight lithium base grease to the seal lip(s). Oil the bearing(s) liberally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

- 1 Oil seal

CAUTION:

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

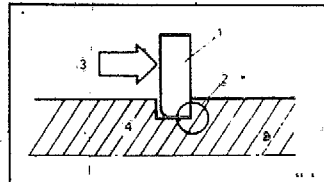
- 1 Bearing



CIRCLIPS

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

- 1 Shaft



SPECIAL TOOLS



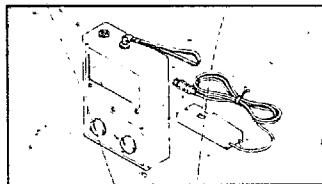
SPECIAL TOOLS

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

FOR TUNE UP

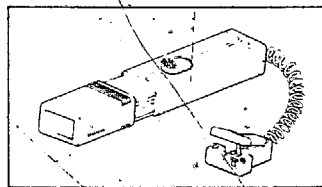
- 1 Inductive tachometer
P/N 90890 03113

This tool is needed for detecting engine rpm.



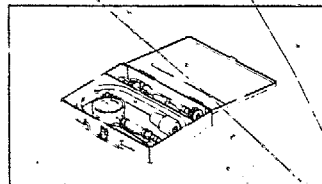
- 2 Inductive timing light
P/N 90890 03141

This tool is necessary for checking ignition timing.



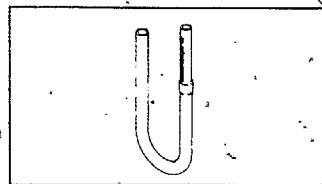
- 3 Compression gauge
P/N 90890 03081

This gauge is used to measure the engine compression.



- 4 Fuel level gauge
P/N 90890 01312

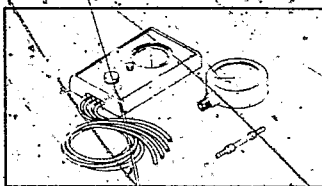
This gauge is used to measure the fuel level in the float chamber.



SPECIAL TOOLS

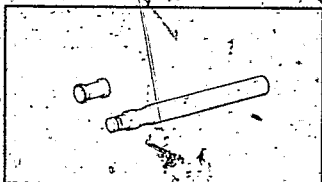


A-10



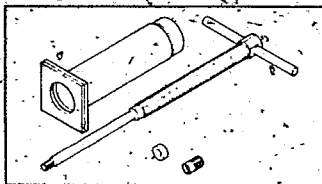
5 Vacuum gauge
P/N 90890-03094

This gauge is needed for carburetor synchronization.



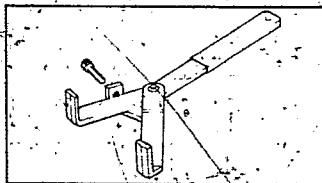
FOR ENGINE SERVICE
1 Valve lapper
P/N 90890-04101

This tool is used to lap the valves



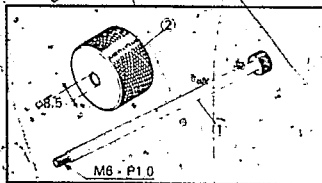
2 Piston pin puller
P/N 90890-01304

This tool is used to remove the piston pin.



3 Universal clutch holder
P/N 90890-04086

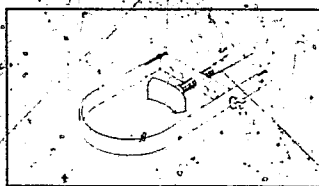
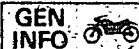
This tool is used to hold the clutch when removing or installing the clutch bowl locknut



4 Slide hammer bolt (M6)
P/N 90890-01083 - 1
Weight
P/N 90890-01084 - 2

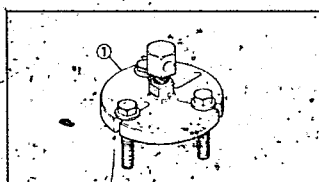
These tools are used to remove the clutch spacer

SPECIAL TOOLS



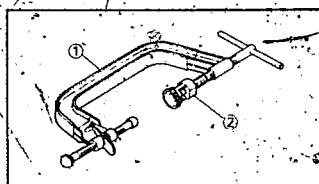
5 Rotor holder
P/N 90890-01761

This tool is used to hold the rotor



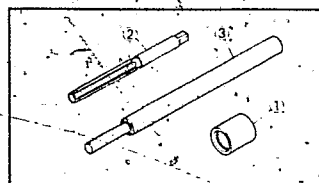
6 Rotor puller
P/N 90890-01362

This tool is used to remove the rotor



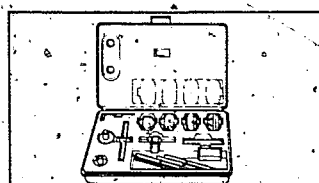
7 Valve spring compressor
P/N 90890-04019
Attachment
P/N 90890-04114

These tools are used to remove and install the valve assemblies.



8 Valve guide installer (4 mm)
P/N 90890-04112
Valve guide reamer (4 mm)
P/N 90890-04113
Valve guide remover (4 mm)
P/N 90890-04111

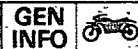
These tools are used to remove, install and re-bore the valve guide.



9 Valve seat cutter
P/N YM-91043

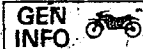
This tool is used to adjust the valve clearance.

SPECIAL TOOLS



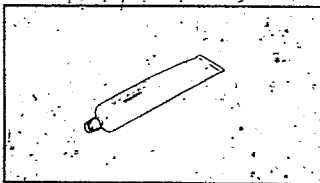
A-11

SPECIAL TOOLS



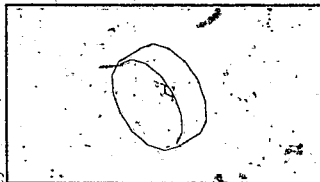
10. Plastigage set "Green"
P/N YU 33210

This gauge is needed to measure the clearance for the connecting rod bearing and the crankshaft bearing.



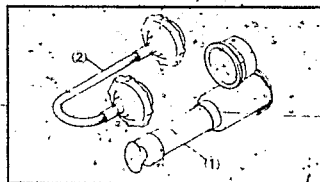
11. YAMAHA bond No. 1215
P/N 90890 85505

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



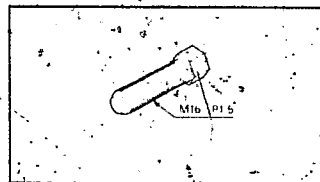
12. Oil filter wrench
P/N 90890 01426

This tool is used to remove and install the oil filter.



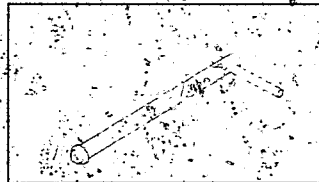
13. Radiator cap tester
P/N 90890-01325 1
Adapter
P/N 90890-01352 2

This tester is used for checking the cooling system.



14. Rotor puller
P/N 90890-01080

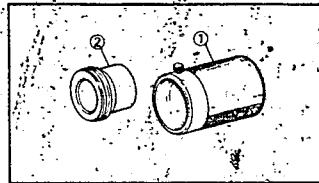
This tool is used to remove the rotor.



FOR CHASSIS SERVICE

1. Damper rod holder
P/N 90890 01425

This tool is used to loosen and tighten the front fork damper rod holding bolt.



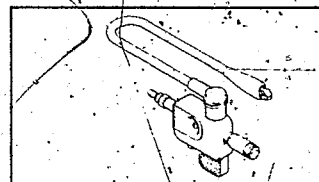
2. Front fork seal driver (weight)
P/N 90890 01367 1
Adapter (43 mm)
P/N 90890 01374 2

These tools are used when installing the fork oil seal.



3. Ring nut wrench
P/N 90890 01403

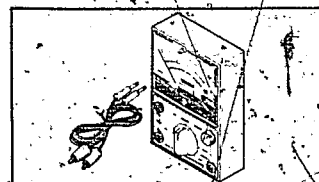
This tool is used to loosen and tighten the steering ring nut.



FOR ELECTRICAL COMPONENTS

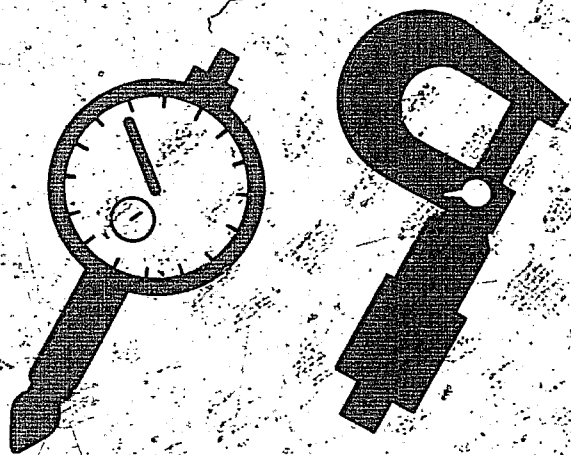
1. Ignition checker
P/N 90890-06754

This instrument is necessary for checking the ignition system components.



2. Pocket tester
P/N 90890 03112

This instrument is invaluable for checking the electrical system.



SPEC

2

CHAPTER 2 SPECIFICATIONS

GENERAL SPECIFICATIONS	A-15
MAINTENANCE SPECIFICATIONS	A-16
ENGINE	A-16
CHASSIS	B-4
ELECTRICAL	B-6
GENERAL TORQUE SPECIFICATIONS	B-8
DEFINITION OF UNITS	B-8
LUBRICATION POINT AND GRADE OF LUBRICANT	B-8
CABLE BOLTING	B-9

SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	FZR400SP
Model Code Number	3TJ2
Frame Starting Number	3TJ-141101
Engine Starting Number	3TJ-141101
Dimensions:	
Overall Length	1,975 mm (77.8 in)
Overall Width	705 mm (27.8 in)
Overall Height	1,090 mm (42.9 in)
Seat Height	760 mm (29.9 in)
Wheelbase	1,365 mm (53.7 in)
Minimum Ground Clearance	125 mm (4.9 in)
Basic Weight	
With Oil and Full Fuel Tank	185 kg (408 lb)
Engine:	
Engine Type	Liquid cooled 4-stroke, DOHC
Cylinder Arrangement	Forward inclined parallel 4-cylinder
Displacement	399 cm ³
Bore x Stroke	56.0 x 40.5 mm (2.20 x 1.59 in)
Compression Ratio	12.2 : 1
Compression Pressure	1,100 kPa (11.0 kg/cm ² , 156 psi)
Starting System	Electric starter
Lubrication System	Wet sump
Engine Oil Type or Grade	



Model	FZR400SP
Engine Oil Capacity	
Periodic Oil Change	2.6 L (2.3 Imp qt, 2.7 US qt)
With Oil Filter Replacement	2.9 L (2.6 Imp qt, 3.1 US qt)
Total Amount	3.5 L (3.1 Imp qt, 3.7 US qt)
Coolant Total Amount (Including All Routes)	2.18 L (1.9 Imp qt, 2.3 US qt)
Air Filter	Dry type element
Fuel:	
Type	Regular unleaded gasoline
Tank Capacity	15 L (3.9 Imp gal, 4.0 US gal)
Reserve Amount	3 L (0.7 Imp gal, 0.8 US gal)
Carburetor:	
Type x Quantity	BDST 32 x 4
Manufacturer	MIKUNI
Spark Plug:	
Type	CR8E, CR9E/U24ESR-N, U27ESR-N
Manufacturer	NGK/NIPPONDENSO
Gap	0.7 - 0.8 mm (0.028 - 0.031 in)
Clutch Type:	Wet, multiple-disc
Transmission:	
Primary Reduction System	Spur gear
Primary Reduction Ratio	89/41 (2.170)
Secondary Reduction System	Chain Drive
Secondary Reduction Ratio	52/19 (2.736)
Transmission Type	Constant mesh 6 speed
Operation	Left foot operation
Gear Ratio	
1st	32/13 (2.461)
2nd	33/17 (1.941)
3rd	31/19 (1.631)
4th	27/18 (1.500)
5th	26/19 (1.368)
6th	25/20 (1.250)
Chassis:	
Frame Type	Backbone
Caster Angle	24°
Trail	92 mm (3.62 in)
Type:	Front
Type	Tubeless
Size	120/60R17 55H
Manufacturer (Type)	MICHELIN (TX11)
	Rear
Type	Tubeless
Size	160/60R17 69H
Manufacturer (Type)	MICHELIN (TX23)

GENERAL SPECIFICATIONS

SPEC



A-16

MAINTENANCE SPECIFICATIONS

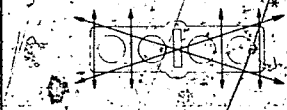
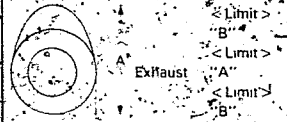
SPEC



Model	FZR400SP	
Tire Pressure (Cold Tire)	100 kg (220 lb)	
Maximum Load	100 kg (220 lb)	
Cold Tire Pressure	Front	Rear
	200 kPa (2.00 kg/cm ² , 28 psi)	250 kPa (2.50 kg/cm ² , 36 psi)
Up to Maximum Load*	200 kPa (2.00 kg/cm ² , 28 psi) (2.50 kg/cm ² , 36 psi)	
*Load is total weight of cargo, rider and accessories		
Brake		
Front Brake Type	Dual disc brake	
Operation	Right hand operation	
Rear Brake Type	Single disc brake	
Operation	Right foot operation	
Suspension		
Front Suspension	Telescopic fork	
Rear Suspension	Swingarm (Link suspension)	
Shock Absorber		
Front Shock Absorber	Coil spring/Oil damper	
Rear Shock Absorber	Coil Gas spring/Oil damper	
Wheel Travel		
Front Wheel Travel	120 mm (4.72 in)	
Rear Wheel Travel	130 mm (5.12 in)	
Electrical		
Ignition System	T.C.I. (Digital)	
Generator System	A.C. magneto generator	
Battery Type or Model	YTX9-BS	
Battery Capacity	12V 8AH	
Headlight Type		
Quartz bulb (Halogen)		
Bulb Wattage x Quantity		
Headlight	12V 55/40W x 2	
Tail/Brake Light	12V 5W/21W x 2	
Flasher Light	12V 15W x 4	
Indicator Light		
Wattage x Quantity	"METER LIGHT" 12V 1.7W x 4	
	"NEUTRAL" 12V 3.4W	
	"HIGH BEAM" 12V 3.4W	
	"TURN" 12V 3.4W	
	"OIL" 12V 3.4W	

MAINTENANCE SPECIFICATIONS

ENGINE

Model	FZR400SP	
Cylinder Head Warp Limit*	0.05 mm (0.0020 in) *Lines indicate straightedge measurement	
		
Cylinder: Bore Size	56.000 - 56.095 mm (2.2047 - 2.2049 in)	
<Wear Limit>	56.055 mm (2.226 in)	
Camshaft Drive Method	Chain drive (Center)	
Shaft-to-cap Clearance	0.020 - 0.054 mm (0.0008 - 0.0021 in)	
<Limit>	0.08 mm (0.0031 in)	
Cam Dimensions: Intake	32.55 - 32.65 mm (1.282 - 1.285 in)	
<Limit>	32.50 mm (1.28 in)	
Exhaust	25.045 - 25.145 mm (0.986 - 0.990 in)	
<Limit>	25.005 mm (0.98 in)	
	32.25 - 32.35 mm (1.270 - 1.274 in)	
<Limit>	32.20 mm (1.27 in)	
	25.00 - 25.10 mm (0.984 - 0.988 in)	
<Limit>	24.96 mm (0.98 in)	
Camshaft Runout Limit	0.03 mm (0.0012 in)	
		
Timing Chain: Chain Type: No. of Links	DID215F 110 Links	
Chain Adjustment Method	Automatic	



Model		FZR400SP	
Valve: Valve Seat, Valve Guide:			
Valve Clearance (Cold):			
	IN.	0.11 - 0.20 mm (0.004 - 0.008 in)	
	EX.	0.21 - 0.30 mm (0.008 - 0.012 in)	
Valve Dimensions:			
A Head Dia	IN.	21.9 - 22.1 mm (0.86 - 0.87 in)	
	EX.	18.9 - 19.1 mm (0.74 - 0.75 in)	
B Face Width	IN.	1.6 - 2.4 mm (0.063 - 0.094 in)	
	EX.	1.6 - 2.4 mm (0.063 - 0.094 in)	
C Seat Limit Width	IN.	0.9 - 1.1 mm (0.035 - 0.043 in)	
	EX.	0.9 - 1.1 mm (0.035 - 0.043 in)	
D Margin Thickness Limit	IN.	0.6 - 0.8 mm (0.024 - 0.032 in)	
	EX.	0.6 - 0.8 mm (0.024 - 0.032 in)	
Stem Outside Diameter	IN.	3.975 - 3.990 mm (0.1565 - 0.157 in)	
	EX.	3.960 - 3.975 mm (0.1559 - 0.1565 in)	
< Limit >	IN.	3.950 mm (0.156 in)	
	EX.	3.850 mm (0.152 in)	
Guide Inside Diameter	IN.	4.000 - 4.012 mm (0.1575 - 0.1580 in)	
	EX.	4.000 - 4.012 mm (0.1575 - 0.1580 in)	
< Limit >	IN.	4.042 mm (0.159 in)	
	EX.	4.042 mm (0.159 in)	
Stem Runout Limit		0.02 mm (0.008 in)	
Valve Seat Width	IN.	0.9 - 1.1 mm (0.035 - 0.043 in)	
	EX.	0.9 - 1.1 mm (0.035 - 0.043 in)	

Model		FZR400SP	
Valve Spring			
Free Length			
	IN.	40.05 mm (1.59 in)	
	EX.	40.05 mm (1.59 in)	
< Limit >			
	IN.	38.00 mm (1.50 in)	
	EX.	38.00 mm (1.50 in)	
Tilt Limit			
	IN.	2.5° ± 1.8 mm (2.5° ± 0.07 in)	
	EX.	2.5° ± 1.8 mm (2.5° ± 0.07 in)	
Direction of Winding (Top View)		IN.	Counter clockwise
		EX.	Counter clockwise
Piston:			
Piston Size "D"			
Measuring Point "H"			
	IN.	55.940 - 55.955 mm (2.202 - 2.203 in)	
	EX.	3 mm (0.12 in)	
Piston Off-set			
Piston Off-set Direction			
Piston-to-Cylinder Clearance			
< Limit >			
Piston Ring			
Top Ring			
Type			
Dimensions (B x T)			
End Gap (Installed)			Barrel
			0.8 - 2.1 mm (0.031 - 0.083 in)
			0.15 - 0.30 mm (0.006 - 0.012 in)
Side Clearance (Installed)			
			0.03 - 0.07 mm (0.0012 - 0.0028 in)
2nd Ring			
Type			
Dimensions (B x T)			
End Gap (Installed)			Taper
			0.8 - 2.1 mm (0.031 - 0.083 in)
			0.15 - 0.30 mm (0.006 - 0.012 in)
Side Clearance			
			0.02 - 0.06 mm (0.0008 - 0.0024 in)
Oil Ring			
Dimensions (B x T)			
End Gap (Installed)			
			1.5 - 2.2 mm (0.059 - 0.087 in)
			0.2 - 0.7 mm (0.008 - 0.028 in)

MAINTENANCE SPECIFICATIONS

SPEC

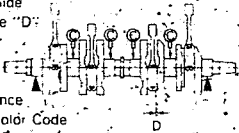


B-2

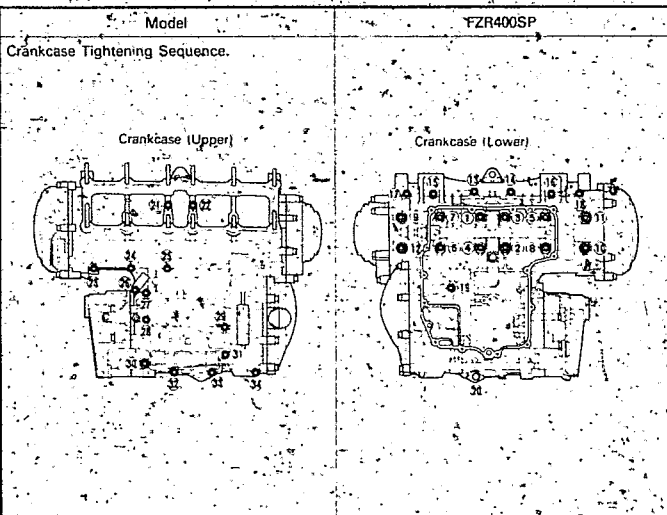
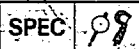
MAINTENANCE SPECIFICATIONS

SPEC



Model	FZR400SP
Connecting Rod:	
Oil Clearance	0.043 - 0.066 mm (0.0017 - 0.0026 in)
Bearing Color Code	1 Blue 2 Black 3 Brown 4 Green
Crankshaft:	
Runout Limit "C"	0.03 mm (0.0012 in)
Big End Side Clearance "D"	0.16 - 0.26 mm (0.006 - 0.010 in)
	
Oil Clearance	0.025 - 0.043 mm (0.0010 - 0.0017 in)
Bearing Color Code	1 Blue 2 Black 3 Brown 4 Green 5 Yellow
Clutch:	
Friction plate:	
Thickness	2.9 - 3.1 mm (0.114 - 0.122 in)
Quantity	9 pcs
Wear Limit	2.8 mm (0.11 in)
Clutch Plate:	
Thickness	1.8 - 2.2 mm (0.071 - 0.087 in)
Quantity	8 pcs
Warp Limit	0.1 mm (0.004 in)
Clutch Spring	
Free Length	33.5 mm (1.32 in)
Quantity	5 pcs
Minimum Free Length	32.5 mm (1.28 in)
Clutch Release Method	Inner push, Screw push
Transmission:	
Main Axle Runout Limit	0.02 mm (0.0008 in)
Drive Axle Runout Limit	0.02 mm (0.0008 in)
Shifter	
Type	Guide bar

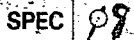
Model	FZR400SP
Carburetor:	
I.D. Mark	BTJ 10
Main Jet	(M.J.) #14 #100 #23 #97 5
Main Air Jet	(M.A.J.) #70
Jet Needle	(J.N.) #1.4 5CEW16 3 #2.3 5CKA33
Needle Jet	(N.J.) X-6
Throttle Valve Size	(Th.V.) #130
Pilot Jet	(P.J.) #92 5
Pilot Air Jet	(P.A.J.) #110
Bypass J	(B.B.) #0 8 (B.P.2) #0 8 (B.P.3) #0 8
Pilot Screw	(P.S.) 2.1 2 turns out
Valve Seat	(V.S.) #1.2
Starter Jet	(S.J.) #50
	(G.S.) #0.6
Fuel Level	20.9 - 21.9 mm (0.82 - 0.86 in) Above from the float chamber line
Engine Idling Speed	1,250 - 1,350 r/min
Vacuum Pressure at Idling Speed	19.1 kPa or more (145 mmHg, 5.7 inHg)
Lubrication System:	
Oil Filter Type	Paper type
Oil Pump Type	Trochoid pump type
Tip Clearance	0.03 - 0.08 mm (0.0012 - 0.0031 in)
Side Clearance	0.09 - 0.15 mm (0.0035 - 0.0059 in)
Cooling System:	
Radiator Core Size	Width 320 mm (12.6 in) Height 238 mm (9.37 in) Thickness 24 mm (0.94 in)
Radiator Cap Opening Pressure	105 - 125 kPa (1.05 - 1.25 kg/cm ² , 14.93 - 17.77 psi)
Reservoir Tank Capacity	0.3 L (0.26 imp qt, 0.32 US qt)
Water Pump	< 0.28 L (0.25 imp qt, 0.30 US qt)
Type	Single suction centrifugal pump
Reduction Ratio	81:41 - 48:49 (2:126)
Thermostat	
Opening Temperature	80 - 84°C (176 - 183°F)



TIGHTENING TORQUE

Part to be tightened	Part name	Thread size	Qty	Tightening torque			Remarks
				Nm	mKg	ft-lb	
Camshaft cap	Flange bolt	M 6	24	10	1.0	7.2	
Cylinder head	Nut	M 9	12	37	3.7	27	
Spark plug		M10	4	12.5	1.25	9.0	
Cylinder head cover	Bolt	M 6	8	10	1.0	7.2	
Cylinder drain	Bolt	M 6	2	7	0.7	5.1	
Connecting rod	Nut	M 7	8	23	2.3	17	
Camshaft sprocket	Bolt	M 7	4	24	2.4	17	
Timing chain tensioner	Bolt	M 6	2	10	1.0	7.2	
	Bolt	M11	1	20	2.0	14	
Chain tensioner guide link	Bolt	M 6	1	10	1.0	7.2	
Pipe 2	Bolt	M 6	2	10	1.0	7.2	
Thermo unit cover	Bolt	M 8	2	10	1.0	7.2	
	Flange bolt	M 6	2	7	0.7	5.1	
Radiator	Flange bolt	M 6	4	7	0.7	5.1	
Joint	Bolt	M 6	4	10	1.0	7.2	
Water pump cover	Bolt	M 6	4	10	1.0	7.2	
Pipe 1	Bolt	M 6	2	10	1.0	7.2	
Oil pump cover	Screw	M 6	1	7	0.7	5.1	
Oil pump assembly	Bolt	M 6	3	10	1.0	7.2	
Oil strainer housing	Bolt	M 6	2	10	1.0	7.2	
Oil pan	Bolt	M 8	14	10	1.0	7.2	
Drain bolt		M14	1	43	4.3	31	
Oil delivery pipe	Union bolt	M10	1	20	2.0	14	
	Bolt	M 6	4	10	1.0	7.2	
Oil filter		M20	1	17	1.7	12	
Oil filter housing	Union bolt	M20	1	63	6.3	45	
Carburetor, joint	Bolt	M 6	8	10	1.0	7.2	
	Screw	M 5	4	5	0.5	3.6	
Air filter case	Flange bolt	M 6	1	7	0.7	5.1	
Exhaust pipe	Nut	M 6	8	10	1.0	7.2	
	Bolt	M 6	4	10	1.0	7.2	
Muffler	Bolt	M 8	1	20	2.0	14	
EX-UP	Bolt	M 6	3	10	1.0	7.2	
Pulley	Bolt	M 5	1	5	0.5	3.6	
Exhaust joint	Bolt	M 8	3	20	2.0	14	
Exhaust pipe and muffler	Bolt	M 8	1	20	2.0	14	
EX-UP cover	Bolt	M 6	3	10	1.0	7.2	
Crank case upper and lower	Bolt	M 8	13	24	2.4	17	
	Bolt	M 6	21	12	1.2	8.7	
Breather plate	Screw	M 6	2	7	0.7	5.1	
	Screw	M 6	4	7	0.7	5.1	
AC magneto cover	Bolt	M 6	5	10	1.0	7.2	
Crankcase cover 1	Bolt	M 6	5	10	1.0	7.2	
	Screw	M 5	1	4	0.4	2.9	

MAINTENANCE SPECIFICATIONS



B-4

MAINTENANCE SPECIFICATIONS



Part to be tightened	Part name	Thread size	Qty.	Tightening torque			Remarks
				Nm	m·kg	ft·lb	
Bearing plate	Bolt	M 6	4	10	1.0	7.2	⊗
Crankcase cover 2	Bolt	M 6	7	10	1.0	7.2	
Plug (to crankcase 2)		M16	1	8	0.8	5.8	⊗
Crankcase cover 3	Bolt	M 6	10	10	1.0	7.2	
Cover 1	Screw	M 5	4	4	0.4	2.9	⊗
Plug (to crankcase 2)	Screw	M 6	1	7	0.7	5.1	
Starter clutch assembly	Flange bolt	M10	1	25	2.5	18	⊗
Starter clutch outer	Bolt	M 8	3	30	3.0	22	
Pressure plate	Bolt	M 5	5	6	0.6	4.3	⊗
Clutch boss	Nut	M18	1	70	7.0	50	
Push lever assembly	Screw	M 5	2	4.5	0.45	3.3	⊗
Push rod	Nut	M 8	1	16	1.6	11	
Drive sprocket	Nut	M18	1	70	7.0	50	⊗
Stopper plate	Flange bolt	M 6	1	10	1.0	7.2	
Shift arm	Flange bolt	M 6	1	10	1.0	7.2	⊗
Shift rod	Nut	M 6	2	10	1.0	7.2	
Stopper lever	Bolt	M 6	4	10	1.0	7.2	⊗
Side plate	Screw	M 5	1	4	0.4	2.9	
AC magneto rotor	Bolt	M10	1	80	8.0	58	⊗
Stator	Bolt	M 6	3	10	1.0	7.2	
Pick-up	Screw	M 5	2	5	0.5	3.6	⊗
Starter motor	Flange bolt	M 6	2	10	1.0	7.2	
Neutral switch	Screw	M 6	2	4	0.4	2.9	⊗
Oil pressure switch			1	12	1.2	8.7	
Thermo switch assembly		M16	1	22.5	2.25	16.3	⊗
Thermo unit			1	15	1.5	11	
Oil pressure lead	Bolt	M 4	1	1	0.1	0.7	

CHASSIS

Model		FZR400SP
Steering System:		
Steering Bearing Type	Taper Roller Bearing	
Front Suspension:		
Front Fork Travel	120 mm (4.72 in)	
Front Spring Free Length	359 mm (14.1 in)	
< Limit >	< 354 mm (13.9 in) >	
Spring Rate:	K1	6.5 N/mm (0.65 kg/mm, 36.4 lb/in)
Stroke:	KT	0.0 - 120 mm (0.0 - 4.72 in)
Optional Spring	No	
Oil Capacity:	433 cm ³ (15.2 Imp oz, 14.6 US oz)	
Oil Level:	106 mm (4.17 in)	
	From top of inner tube fully compressed without spring.	
Oil Grade	Fork oil 10W or equivalent	
Rear Suspension:		
Shock Absorber Travel	70 mm (2.8 in)	
Spring Free Length	205 mm (8.07 in)	
Fitting Length	190 mm (7.5 in)	
Spring Rate	K1	60 N/mm (6 kg/mm, 336 lb/in)
Stroke	K1	0.0 - 70 mm (0.0 - 2.8 in)
Optional Spring	No	
Enclosed Gas Pressure	Standard	
	2,000 kPa (20 kg/cm ² , 284 psi)	
Swingarm:		
Free Play/Limit	1.0 mm (0.039 in) at swingarm end Move swingarm end side to side	
Front Wheel:		
Type	Cast wheel	
Rim Size	J17 - MJ3.50	
Rim Material	Aluminum	
Rim Runout Limit	Radial	1.0 mm (0.039 in)
	Lateral	0.5 mm (0.020 in)
Rear Wheel:		
Type	Cast wheel	
Rim Size	J17 - MJ4.50	
Rim Material	Aluminum	
Rim Runout Limit	Radial	1.0 mm (0.039 in)
	Lateral	0.5 mm (0.020 in)
Drive Chain:		
Type/Manufacturer	RK428SMO TAKASAGO	
No. of Links	128	
Chain Free Play	15 - 20 mm (0.59 - 0.79 in)	


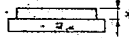
MAINTENANCE SPECIFICATIONS

SPEC. 99

B-5

MAINTENANCE SPECIFICATIONS

SPEC. 99

Model		FZR400SP
Front Disc Brake		
Type	Dual	
Disc Outside Diameter x Thickness	298 x 4 mm (11.7 x 0.16 in.)	
Pad Thickness	5.5 mm (0.22 in.)	
< Limit > *	< 0.5 mm (0.02 in.) >	
Pad Thickness	Outer	5.5 mm (0.22 in.)
< Limit > *	< 0.5 mm (0.02 in.) >	
		
Master Cylinder Inside Diameter	14 mm (0.55 in.)	
Caliper Cylinder Inside Diameter	34.0 x 27.0 mm (1.34 - 1.05 in.)	
Brake Fluid Type	DOT #4	
	If DOT #4 is not available, DOT #3 can be used.	
Rear Disc Brake		
Type	Single	
Disc Outside Diameter x Thickness	210 x 5 mm (8.27 x 0.20 in.)	
Pad Thickness	Inner	8.5 mm (0.22 in.)
< Limit > *	< 0.5 mm (0.02 in.) >	
Pad Thickness	Outer	5.5 mm (0.22 in.)
< Limit > *	< 0.5 mm (0.02 in.) >	
		
Master Cylinder Inside Diameter	14 mm (0.55 in.)	
Caliper Cylinder Inside Diameter	38.18 mm (1.50 in.)	
Brake Fluid Type	DOT #4	
	If DOT #4 is not available, DOT #3 can be used.	
Brake Lever and Brake Pedal	50 mm (1.97 in.)	
Brake Pedal Position	Below top of footrest.	

TIGHTENING TORQUE

Part to be tightened	Thread size	Tightening torque			Remarks
		Nm	m.kg	ft.-lb	
Handle crown and inner tube	M 8	22	2.2	17	
Handle crown and steering shaft	M22	110	11.0	80	
Handlebar and inner tube	M 8	22	2.2	17	
Handlebar and handle crown	M 6	13	1.3	9.4	
Steering shaft and ring nut	M 6	6	0.6	4.3	See note
Under bracket and inner tube	M10	38	3.8	27	
Brake hose joint and under bracket	M 6	10	1.0	7.2	
Handle crown and main switch	M 6	10	1.0	7.2	
Front master cylinder	M 6	4	0.4	2.9	
Brake hose and union bolt	M10	26	2.6	19	
Upper cowl and stay	M 6	4	0.4	2.9	
Upper cowl and lower cowl	M 5	3	0.3	2.2	
Front flasher light and stay	M 8	16	1.6	11	
Engine mounting bolt (front)	M10	40	4.0	2.9	
(rear upper)	M10	55	5.5	40	
(rear lower)	M10	55	5.5	40	
(front pinion bolt)	M 8	23	2.3	17	
Frame and rear frame	M 8	33	3.3	24	
Frame and engine bracket (rear)	M 8	33	3.3	24	
Pivot shaft nut	M18	90	9.0	6.5	
Relay arm and frame	M10	40	4.0	29	
Relay arm and arm	M10	40	4.0	29	
Rear arm and arm	M10	40	4.0	29	
Rear shock and relay arm	M10	40	4.0	29	
Rear shock and bracket	M10	40	4.0	29	
Frame and rear shock bracket	M16	52	5.2	37	
Chain case	M 6	7	0.7	5.1	
Seal garter	M 6	7	0.7	5.1	
Rear brake hose holder	M 6	7	0.7	5.1	
Fuel tank	M 6	7	0.7	5.1	
Fuel cock	M 6	7	0.7	5.1	
Fuel sender	M 6	7	0.7	5.1	
Reservoir tank	M 6	7	0.7	5.1	
Rear fender	M 6	7	0.7	5.1	
Rear flasher	M 8	16	1.6	11	
Front fork cap bolt		23	2.3	17	
Front fork locknut	M 8	15	1.5	11	
Front fork damper bolt		40	4.0	29	
Front wheel axle holder	M 8	20	2.0	14	
Front wheel shaft	M16	75	7.5	54	
Rear wheel shaft and nut	M18	105	10.5	75	
Rear wheel shaft and locknut	M18	45	4.5	32	
Front caliper and front fork	M10	35	3.5	25	
Rear caliper and bracket	M10	35	3.5	25	
Rear caliper bracket		55	5.5	40	

Part to be tightened	Thread size	Tightening torque*			Remarks
		Nm	m·kg	ft·lb	
Brake caliper retaining pin	M 8	10	1.0	7.2	
Brake disc and hub	M 8	20	2.0	14	
Rear Wheel sprocket and hub	M 8	43	4.3	31	
Bleed screw and caliper	M 8	6	0.6	4.3	
Sidestand bolt	M10	46	4.6	33	
Sidestand locknut	M10	39	3.9	28	
Bracket footrest and frame	M 8	22	2.2	16	
Rear master cylinder and frame	M 8	22	2.2	16	
Rear brake reservoir tank and frame	M 6	4	0.4	2.9	

NOTE:

1. First, tighten the ring nut approximately 38 Nm (3.8 m·kg, 27 ft·lb) by using the torque wrench, then loosen the ring nut one turn.
2. Retighten the ring nut to specification.

ELECTRICAL		Model	FZR400SP
Voltage			12V
Ignition System:			
Ignition Timing (B.T.D.C.)			10° at 1,200 r/min
Advanced Timing (B.T.D.C.)			37° at 3,500 r/min
Advancer Type			Electrical type
T.C.I.:			
Pickup Coil Resistance (Color)			80.8 - 121.2Ω at 20°C (68°F) (White: Red - White: Black)
T.C.I. Unit/Manufacturer			BB7208/HITACHI
Ignition Coil:			
Model/Manufacturer			CM12-50/HITACHI
Minimum Spark Gap			6 mm (0.24 in)
Primary Winding Resistance			1.8 - 2.2Ω at 20°C (68°F)
Secondary Winding Resistance			9.6 - 14.4 Ω at 20°C (68°F)
Spark Plug Cap:			
Type			Resin type
Resistance			10 kΩ at 20°C (68°F)
Charging System:			
Type			A.C. magneto generator