YAMAHA

XTZ660 ('91)

3YF-ME1

SERVICE MANUAL

NOTICE

This manual was written 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 motorcycle have a basic understanding of the mechanical concepts and procedures inherent in motorcycle repair technology. Without such knowledge, attempted repairs or service to this model may render it unfit to 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.

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.

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

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

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

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

HOW TO USE THIS MANUAL

CONSTRACTION OF THIS MANUAL

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

1st title ① : This is a chapter with its symbol on the upper right of each page.

2nd title ② : 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 ③ : This is a final title.

MANUAL FORMAT

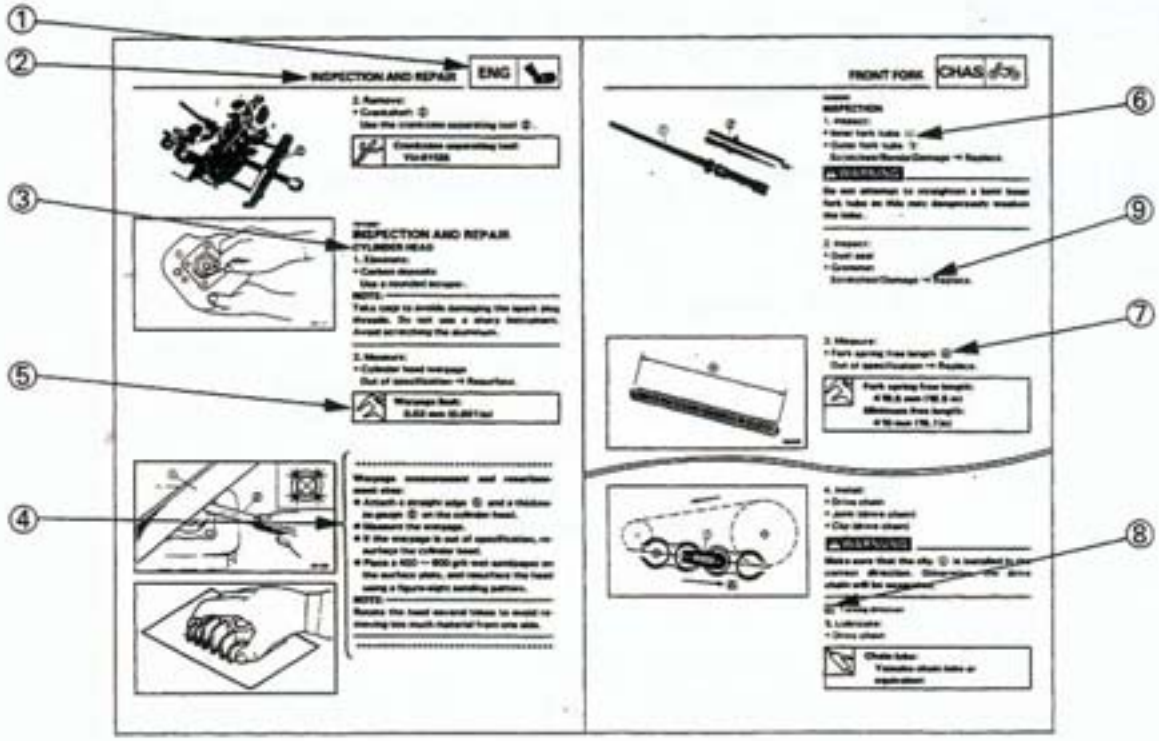
All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspections.
A set of particularly important procedure ④ 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 ⑤.
- An encircled numeral ⑥ indicates a part name, and an encircled alphabetical letter data or an alignment mark ⑦, the others being indicated by an alphabetical letter in a box ⑧.
- A condition of a faulty component will precede an arrow symbol and the course of action required the symbol ⑨.

EXPLODED DIAGRAM

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



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 Carburetion
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 Ω, 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®)

INDEX

CHAPTER 1.
GENERAL INFORMATION

GENERAL INFORMATION

MOTORCYCLE IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER
(For CNR, E)

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

Starting serial number:
JYA3YFS0✻MA029101

FRAME SERIAL NUMBER
(Except for CNR, E)

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

Starting serial number:	
XTZ660....3YF-000101	**(A)(B)(D)(DK) (F)(GB)(GR)(I) (N)(NL)(PRT) (S)(SF)**
XTZ660....4BW-000101	**(A)(CH)**

ENGINE SERIAL NUMBER

The engine serial number ① is stamped into the elevated part of the right rear section of the engine.

Starting serial number:	
XTZ660....3YF-000101	**(A)(B)(D)(DK) (F)(GB)(GR)(I) (N)(NL)(PRT) (S)(SF)**
XTZ660....3YF-029101	**(CNR)(E)**
XTZ660....4BW-000101	**(A)(CH)**

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 AND DISASSEMBLY

1. Remove all dirt, mud, dust, and foreign material before removing and disassembling.

2. Use proper tools and cleaning equipment. Refer to "SPECIAL TOOL."

3. When disassembling the motorcycle, 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 aseembly or replaced.

4. During the motorcycle 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.

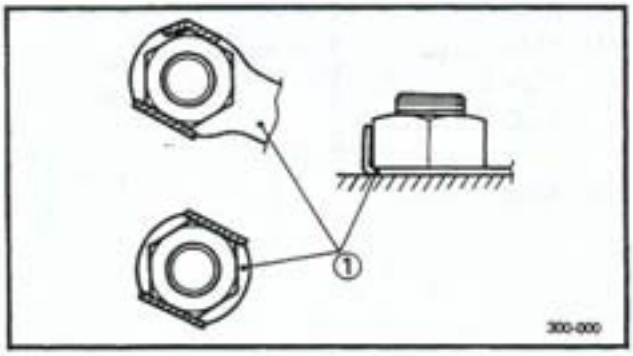
ALL REPLACEMENT PARTS

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

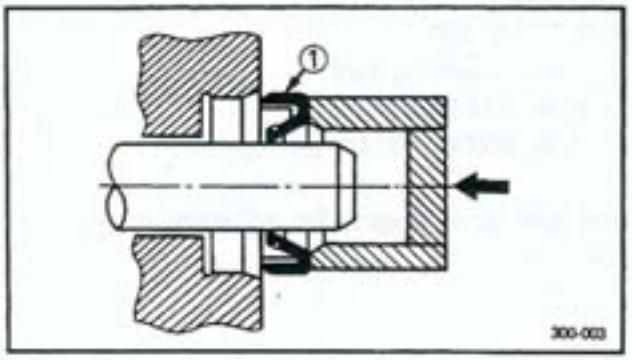
1. All gaskets, seals and O-rings should be replaced when an engine is overhauled. All gasket surfaces, oil seal lips and O-rings must be cleaned.

2. Properly oil all mating parts and bearings during reassembly. Apply grease to the oil seal lips.



LOCK WASHERS/PLATES AND COTTER PINS

1. All lock washers/plates ① and cotter pins must be replaced when they are removed. Lock tab(s) should be bent along the bolt or nut flat(s) after the bolt or nut has been properly tightened.



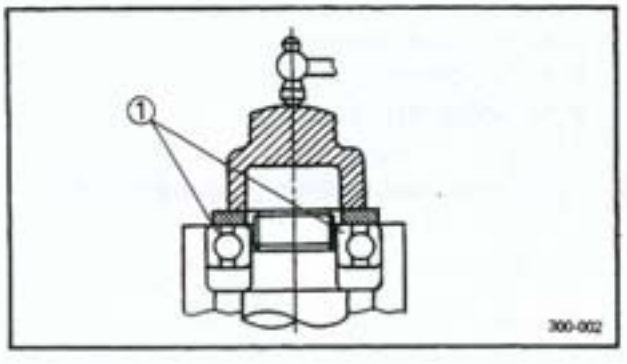
BEARINGS AND OIL SEALS

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 bearings liberally when installing.

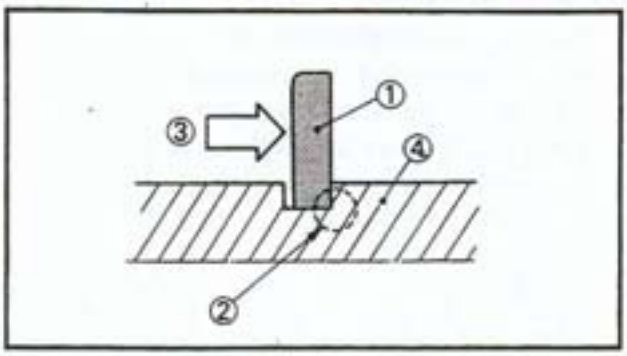
① Oil seal

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.

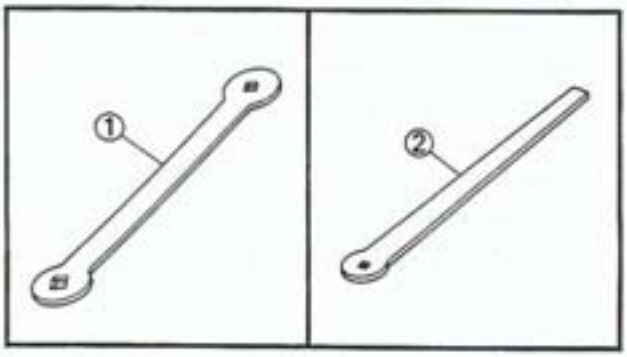
④ Shaft

SPECIAL TOOLS

The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool wil help prevent damage caused by the use of improper tools or improvised techniques.
The shape and part number used for the special tool differ by country, so two types are provided. Refer to the list provided to avoid errors when placing an order.

P/N. YM- □□□□□, YU- □□□□□
YS- □□□□□, YK- □□□□□ } For US, CDN
ACC-□□□□□

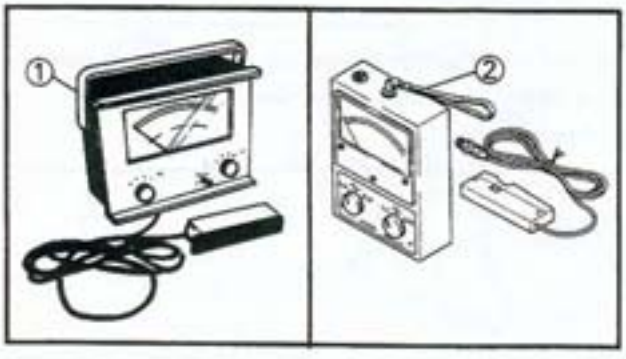
P/N. 90890-□□□□□ } Except for US, CDN



FOR TUNE UP

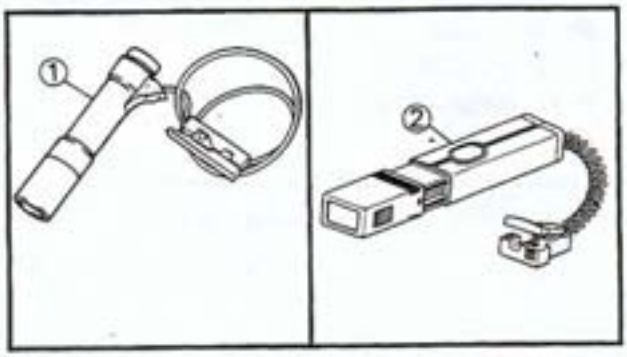
1. Valve adjusting tool
   P/N. YM-08035 – ①
   P/N. 90890-01311 – ②

This tool is necessary for adjusting the valve clearance.



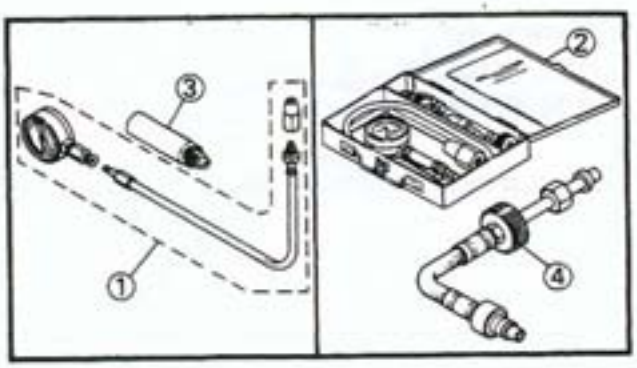
2. Inductive tachometer
   P/N. YU-08036-A – ①
   P/N. 90890-03113 – ②

This tool is needed for detecting engine rpm.



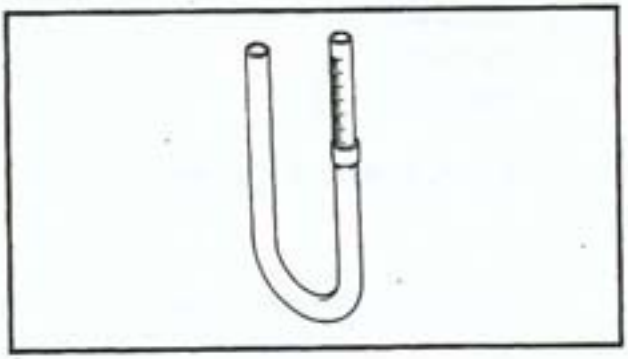
3. Inductive timing light
   P/N. YM-33277-A—①
   P/N. 90890-03141—②

This tool is necessary for checking ignition timing.



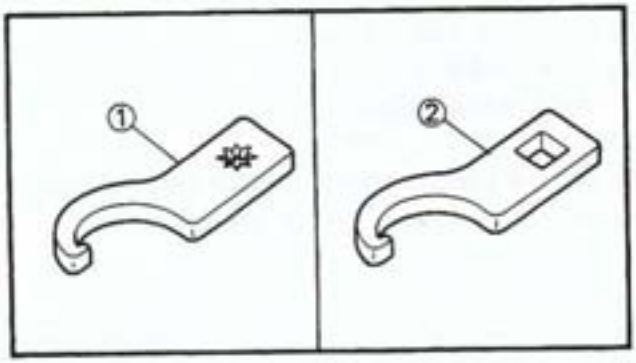
4. Compression gauge
   P/N. YU-33223—①
   P/N. 90890-03081—②
   Adapter (M12)
   P/N. YU-33223-3—③
   P/N. 90890-04082—④

These gauges are used to measure the engine compression.



5. Fuel level gauge
   P/N. YM-01312-A
   P/N. 90890-01312

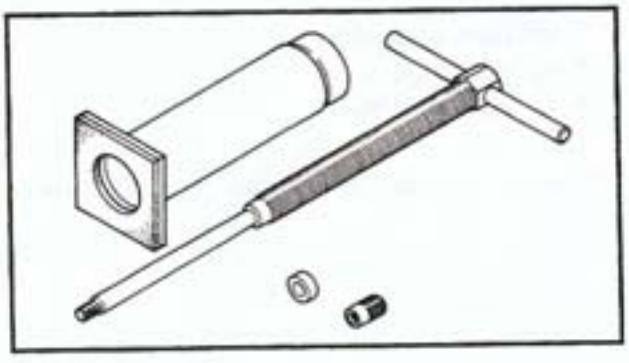
This gauge is used to measure the fuel level in the float chamber.



6. Steering nut wrench
   P/N. YM-38520—①
   P/N. 90890-01443—②

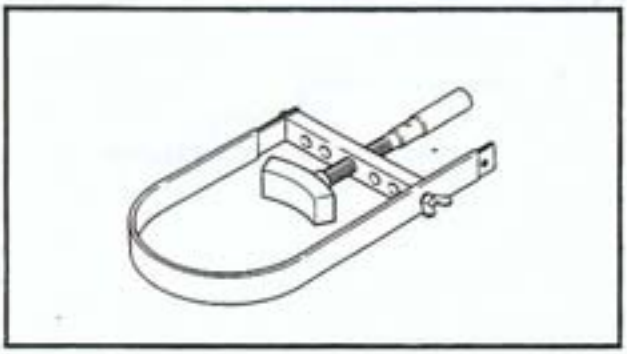
This tool is used to adjust the spring preload of rear shock absorber.

FOR ENGINE SERVICE



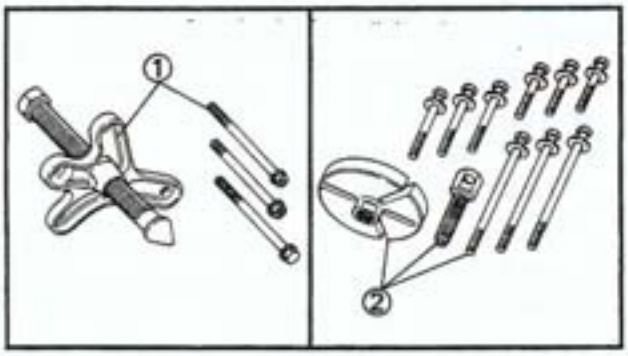
1. Piston pin puller
   P/N. YU-01304
   P/N. 90890-01304

This tool is used to remove the piston pin.



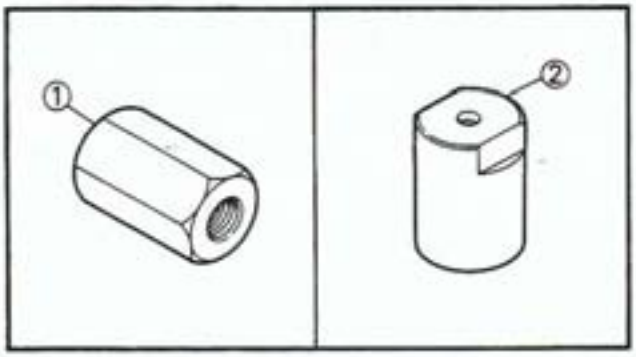
2. Rotor holder
   P/N. YS-01880
   P/N. 90890-01701

This tool is used to hold the rotor when removing or installing the rotor securing nut.



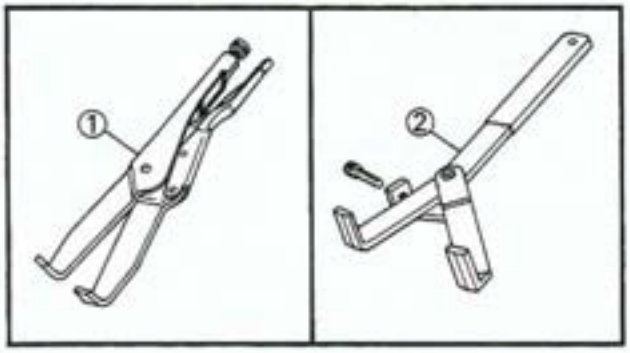
3. Rotor puller
   P/N. YU-33270—①
   P/N. 90890-01362—②

This tool is used to remove the rotor.



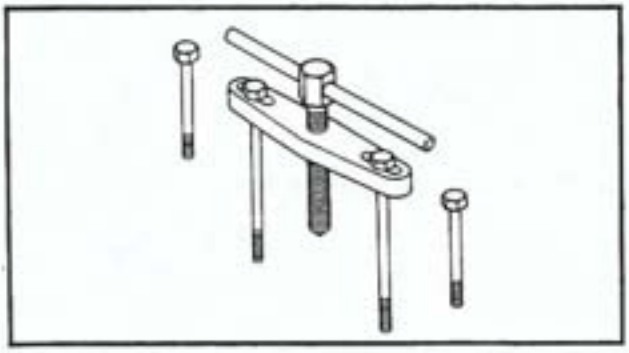
4. Rotor puller adapter
   P/N. YM-04063-A—①
   P/N. 90890-04063—②

This tool is used to remove the rotor.



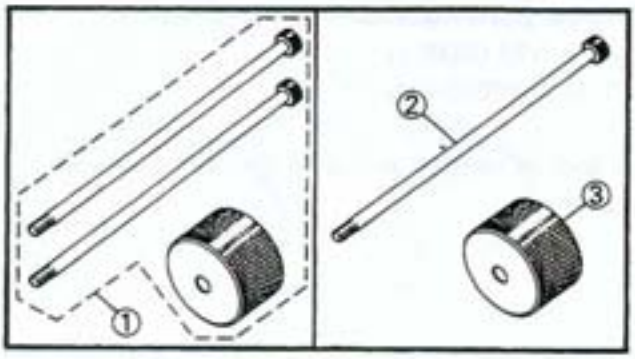
5. Universal clutch holder
   P/N. YM-91042—①
   P/N. 90890-04086—②

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



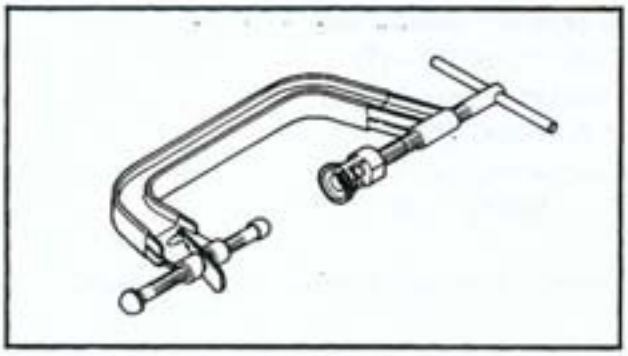
6. Crankcase separator
   P/N. YU-01135-A
   P/N. 90890-01135

This tool is necessary to separate the crankcase.



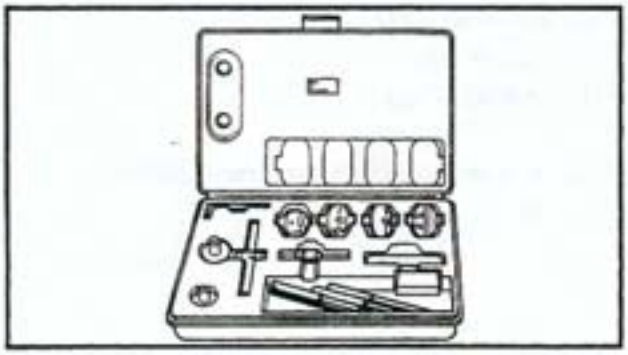
7. Slide hammer set
   P/N. YU-01083-A – ①
   Slide hammer bolt
   P/N. 90890-01083 – ②
   Weight
   P/N. 90890-01084 – ③

These tools are used when removing the rocker arm shaft.



8. Valve spring compressor
   P/N. YM-04019
   P/N. 90890-04019

This tool is needed to remove and install the valve assemblies.

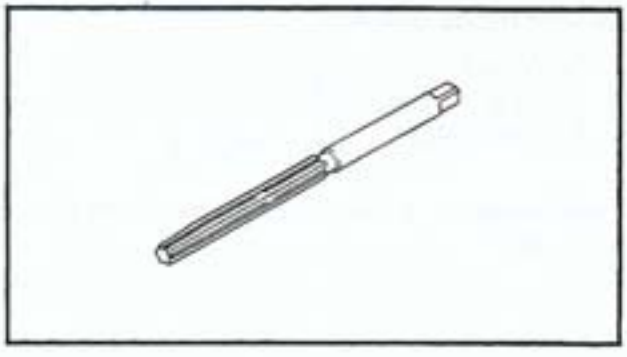


9. Valve seat cutter set
   P/N. YM-91043

This tool is needed to resurface the valve seat.

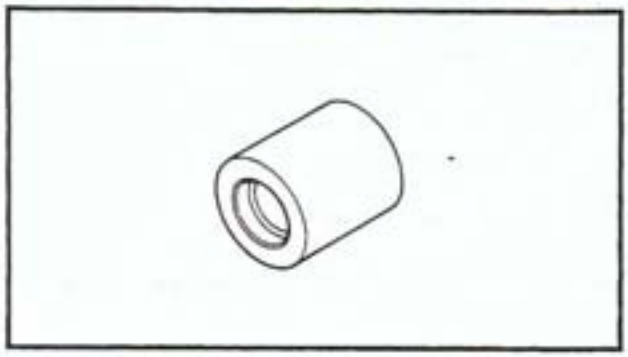
10. Valve guide remover 6 mm (0.24 in)
    P/N. YM-04064
    P/N. 90890-04064

This tool is used to remove the valve guides.



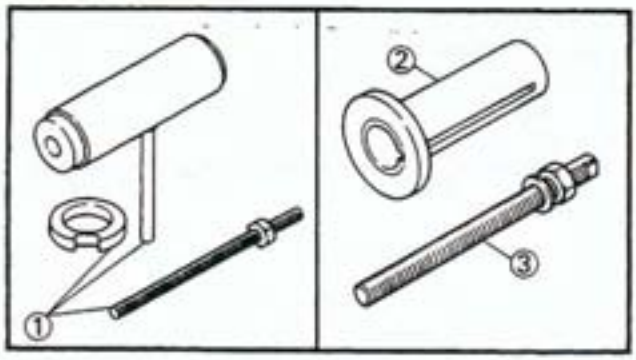
11. Valve guide reamer 6 mm (0.24 in)
    P/N. YM-04066
    P/N. 90890-04066

This tool is used to rebore the new valve guide.



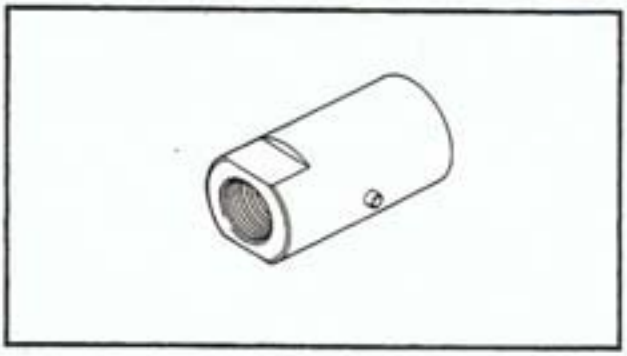
12. Valve guide installer 6 mm (0.24 in)
    P/N. YM-04065-A
    P/N. 90890-04065

This tool is needed to install the valve guides properly.



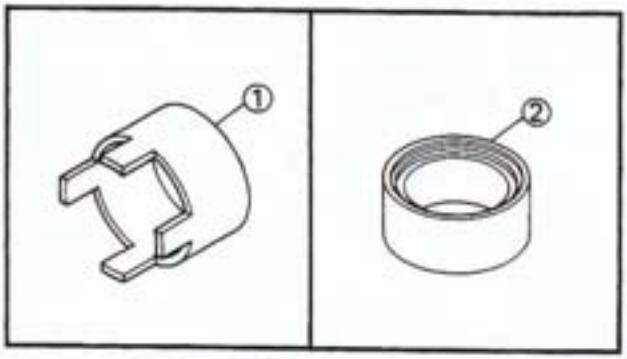
13. Crankshaft installer set
    P/N. YU-90050—①
    Crankshaft installer pot
    P/N. 90890-01274—②
    Crankshaft installer bolt
    P/N. 90890-01275—③

These tools are used to install the crankshaft.



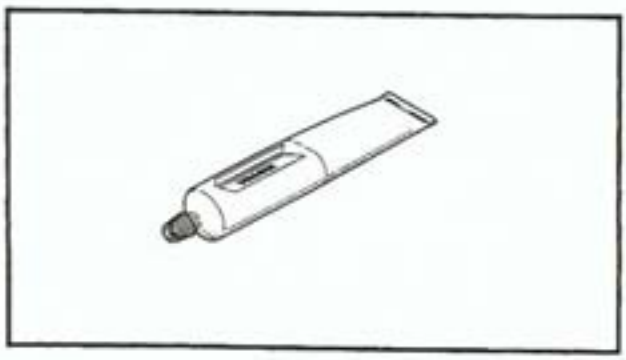
14. Adapter #10 (M14)
    P/N. YM-90069
    P/M. 90890-04059

This tool is used to install the crankshaft.



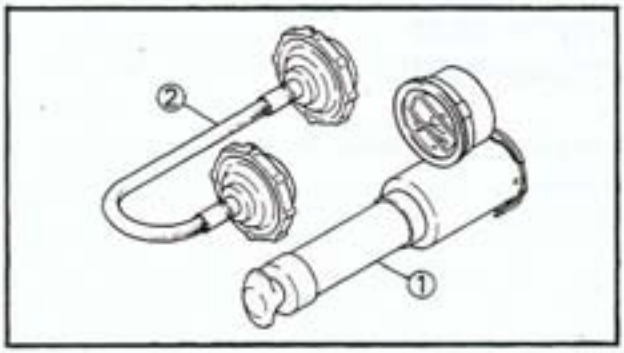
15. Crank pot spacer
    P/N. YM-91044
    P/N. 90890-04081—①
    Spacer
    P/N. 90890-01288—②

This tool is used to install the crankshaft.



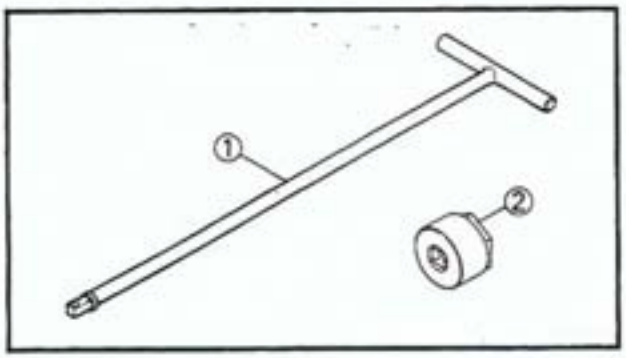
16. Sealant (quick gasket)®
    P/N. ACC-11001-01
    Yamaha Bond No. 1215®
    P/N. 90890-85505

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



17. Radiator cap tester
    P/N. YU-24460-01
    P/N. 90890-01325 – ①
    Adapter
    P/N. YU-33984
    P/N. 90890-01352 – ②

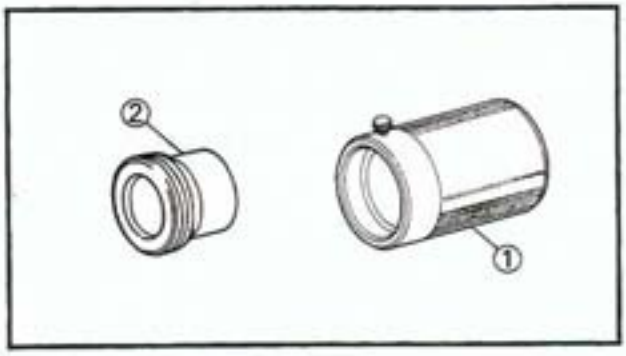
This tester is used for checking the cooling system.



FOR CHASSIS SERVICE

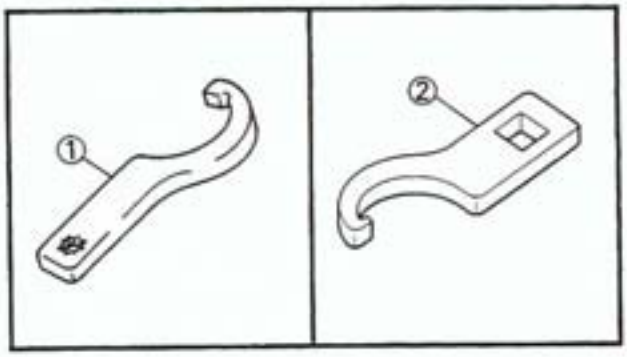
1. T-Handle
    P/N. YM-01326
    P/N. 90890-01326 – ①
    Damper rod holder 30 mm (1.18 in)
    P/N. YM-01327
    P/N. 90890-01327 – ②

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



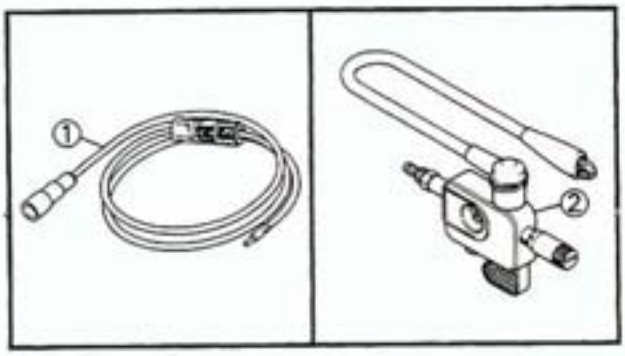
2. Front fork seal drive weight
    P/N. YM-33963
    P/N. 90890-01367 – ①
    Adapter 43 mm (1.69 in)
    P/N. YM-08020
    P/N. 90890-01374 – ②

These tools are used when installing the fork oil seal.



3. Ring nut wrench
    P/N. YU-33975 – ①
    P/N. 90890-01403 – ②

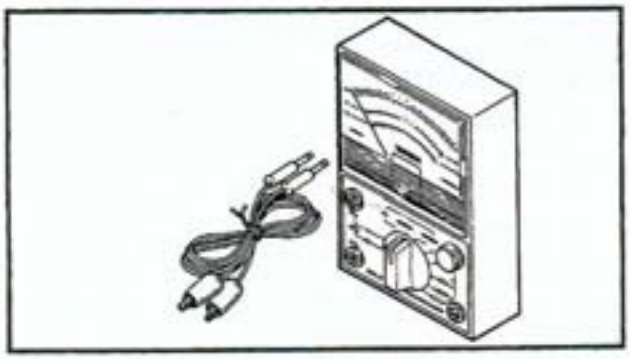
This tool is used to loosen and tighten the steering ring nut.



FOR ELECTRICAL COMPONENTS

1. Dynamic spark tester
    P/N. YM-34487 – ①
    Ignition checker
    P/N. 90890-06754 – ②

This instrument is necessary for checking the ignition system components.



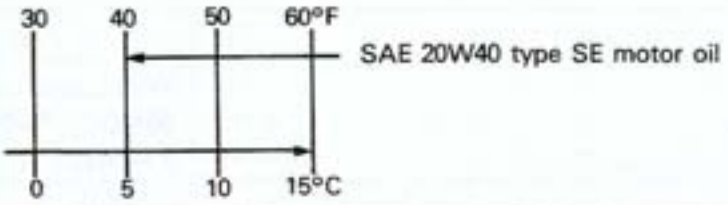
2. Pocket tester
   P/N. YU-03112
   P/N. 90890-03112

This instrument is available for checking the electrical system.

CHAPTER 2.
SPECIFICATIONS

SPECIFICATIONS

GENERAL SPECIFICATIONS

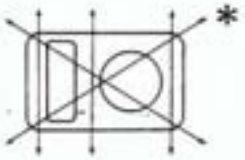
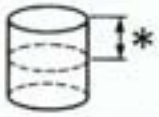
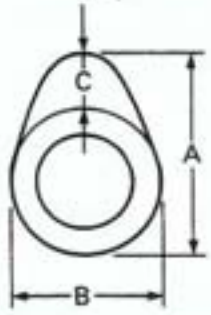
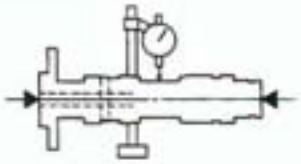
Model	XTZ660
Model Code Number:	3YF1: (A)(B)(D)(DK)(F)(GB)(GR)(I)(N)(NL)(PRT)(S)(SF) 3YF2: (CNR)(E) 4BW1: (A)(CH)
Vehicle Identification Number:	JYA3YFS0*MA029101: (CNR)(E)
Frame Starting Number:	3YF-000101: (A)(B)(D)(DK)(F)(GB)(GR)(I)(N)(NL)(PRT)(S)(SF) 4BW-000101: (A)(CH)
Engine Starting Number:	3YF-000101: (A)(B)(D)(DK)(F)(GB)(GR)(I)(N)(NL)(PRT)(S)(SF) 3YF-029101: (CNR)(E) 4BW-000101: (A)(CH)
Dimensions: Overall Length Overall Width Overall Height Seat Height Wheelbase Minimum Ground Clearance	 2,265 mm (89.2 in) 2,355 mm (92.7 in): (CH)(D)(DK)(N)(S)(SF) 885 mm (34.8 in) 1,355 mm (53.3 in) 865 mm (34.1 in) 1,495 mm (58.9 in) 245 mm (9.6 in)
Basic Weight: With Oil and Full Fuel Tank	 195 kg (430 lb)
Minimum Turning Radius:	2,400 mm (94.5 in)
Engine: Engine Type Cylinder Arrangement Displacement Bore × Stroke Compression Ratio Compression Pressure Starting System	 Liquid cooled 4-stroke, SOHC Forward inclined single cylinder 660 cm^3 100 × 84 mm (3.94 × 3.31 in) 9.2 : 1 1,100 kPa (11,0 kg/cm^2, 156 psi) Electric starter
Lubrication System:	Dry sump
Engine Oil Type or Grade:	

Model	XTZ660	
Engine Oil Capacity:		
Periodic Oil Change:	2.6 L (2.3 Imp qt, 2.7 US qt)	
With Oil Filter Replacement	2.7 L (2.4 Imp qt, 2.9 US qt)	
Total Amount	3.0 L (2.6 Imp qt, 3.2 US qt)	
Coolant Total Amount: (Including All Routes)	1.2 L (1.1 Imp qt, 1.3 US qt)	
Air Filter:	Dry type element	
Fuel:		
Type	Regular unleaded gasoline with a research octane number of 91 or higher	
Tank Capacity	20 L (17.6 Imp qt, 21.1 US gal)	
Reserve Amount	3.5 L (3.1 Imp qt, 3.7 US gal)	
Carburetor:		
Type × Quantity	Y26PV × 1	
Manufacturer	TEIKEI	
Spark Plu:		
Type	DPR8EA-9/DPR9EA-9	
Manufacturer	NGK	
Gap	0.8 ~ 0.9 mm (0.031 ~ 0.035 in)	
Clutch Type:	Wet, multiple-disc	
Transmission:		
Transmission Type	Constant mesh 5-speed	
Operation	Left foot operation	
Primary Reduction System	Spur gear	
Primary Reduction Ratio	71/34 (2.088)	
Secondary Reduction System	Chain Drive	
Secondary Reduction Ratio	45/15 (3.000)	
Gear Ratio 1st	31/12 (2.583)	
2nd	27/17 (1.588)	
3rd	24/20 (1.200)	
4th	21/22 (0.954)	
5th	19/24 (0.792)	
Chassis:		
Frame Type	Diamond	
Caster Angle	28.0°	
Trail	112 mm (4.41 in)	
Tire:	Front	Rear
Type	With tube	With tube
Size	90/90-21 54S	120/90-17 64S
Manufacture (Type)	BRIDGESTONE (TW41) DUNLOP (TRAIL MAX G)	BRIDGESTONE (TW42B) DUNLOP (TRAIL MAX G)

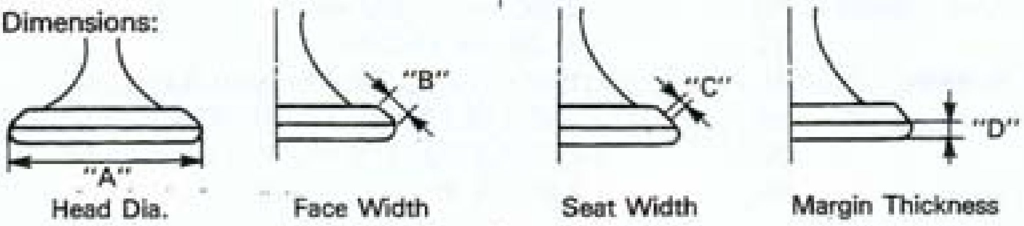
Model		XTZ660	
Tire Pressure (Cold Tire):			
Maximum load*		180 kg (397 lb)	
Cold tire pressure		Front	Rear
Up to 90 kg (198 lb) load*		200 kPa (2.00 kg/cm², 28 psi)	200 kPa (2.00 kg/cm², 28 psi)
90 kg (198 lb) ~ Maximum load*		200 kPa (2.00 kg/cm², 28 psi)	225 kPa (2.25 kg/cm², 32 psi)
*Load is total weight of cargo, rider, passenger, and accessories.			
Brake:			
Front Brake Type		Single 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 suspention)	
Shock absorber:			
Front Shock Absorber		Coil-Air spring/Oil damper	
Rear Shock Absorber		Coil-Gas spring/Oil damper	
Wheel Travel:			
Front Wheel Travel		220 mm (8.66 in)	
Rear Wheel Travel		200 mm (7.87 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 × Quantity:			
Headlight		12V 60W/55W × 1	
Auxiliary Light		12V 4W × 1	
		12V 3.4W × 1 (GB)	
Tail/Brake Light		12V 5W/21W × 1	
Flasher Light		12V 21W × 4	
Indicator Light:			
Wattage × Quantity	"METER LIGHT"	12V 1.7W × 2	
	"NEUTRAL"	12V 3.4W × 1	
	"HIGH BEAM"	12V 3.4W × 1	
	"TURN"	12V 3.4W × 2	

MAINTENANCE SPECIFICATIONS

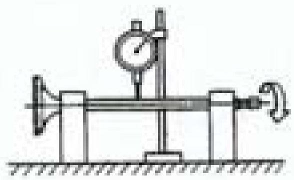
ENGINE

Model	XTZ660
Cylinder Head:	
Warp Limit*	0.03 mm (0.0012 in)
	* Lines indicate straightedge measurement.
Cylinder:	
Bore Size/Measureing Point*	100.005 – 100.045 mm (3.9372 – 3.9388 in)
	50 mm (1.97 in)
<Wear limit>	100.1 mm (3.941 in)
Camshaft:	
Drive Method	Chain drive (Left)
Camshaft Outside Diameter	22.967 – 22.980 mm (0.9042 – 0.9047 in)
Shaft-to-cap Clearance	0.020 – 0.054 mm (0.0008 – 0.0021 in)
Cam Dimensions: Intake "A"	35.69 – 35.79 mm (1.4051 – 1.4091 in)
<Limit>	35.54 mm (1.3992 in)
"B"	30.06 – 30.16 mm (1.1835 – 1.1874 in)
<Limit>	29.91 mm (1.1776 in)
"C"	5.74 mm (0.2260 in)
 Exhaust "A"	36.50 – 36.60 mm (1.4370 – 1.4409 in)
<Limit>	36.35 mm (1.4311 in)
"B"	30.11 – 30.21 mm (1.1854 – 1.1894 in)
<Limit>	29.96 mm (1.1795 in)
"C"	6.55 mm (0.2579 in)
Camshaft Runout Limit	0.03 mm (0.0012 in)
	
Timing Chain:	
Chain Type/No. of Links	75 RH 2015/126 Links
Chain Adjustment Method	Automatic
Rocker Arm/Rocker Arm Shaft:	
Rocker Arm Inside Diameter	12.000 – 12.018 mm (0.472 – 0.473 in)
Shaft Outside Diameter	11.976 – 11.991 mm (0.471 – 0.472 in)
Arm-to-shaft Clearance	0.009 – 0.042 mm (0.0004 – 0.0020 in)

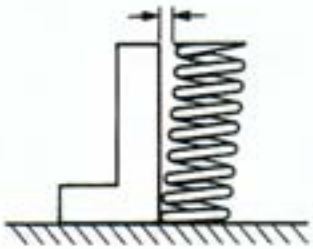
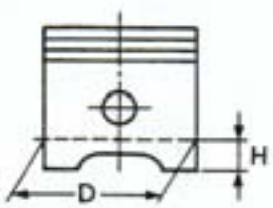
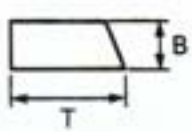
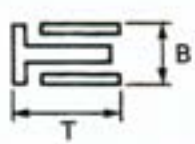
Model		XTZ660
Valve, Valve Seat, Valve Guide:		
Valve Clearance (Cold):		
	IN.	0.10 ~ 0.15 mm (0.004 ~ 0.006 in)
	EX.	0.15 ~ 0.20 mm (0.006 ~ 0.008 in)
Valve Dimensions:		



"A" Head Dia.	IN.	29.9 ~ 30.1 mm (1.1772 ~ 1.1850 in)
	EX.	31.9 ~ 32.1 mm (1.2560 ~ 1.2638 in)
"B" Face Width	IN.	2.25 mm (0.0886 in)
	EX.	2.26 mm (0.0890 in)
"C" Seat 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.	0.85 ~ 1.15 mm (0.0335 ~ 0.0453 in)
	EX.	0.85 ~ 1.15 mm (0.0335 ~ 0.0453 in)
Stem Outside Diameter	IN.	5.975 ~ 5.990 mm (0.2352 ~ 0.2358 in)
	EX.	5.960 ~ 5.975 mm (0.2346 ~ 0.2352 in)
<Limit>	IN.	5.95 mm (0.234 in)
	EX.	5.93 mm (0.233 in)
Guide Inside Diameter	IN.	6.000 ~ 6.012 mm (0.2362 ~ 0.2367 in)
	EX.	6.000 ~ 6.012 mm (0.2362 ~ 0.2367 in)
<Limit>	IN.	6.05 mm (0.238 in)
	EX.	6.55 mm (0.258 in)
Stem-to-Guide Clearance	IN.	0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in)
	EX.	0.025 ~ 0.052 mm (0.0010 ~ 0.0020 in)
<Limit>	IN.	0.08 mm (0.003 in)
	EX.	0.1 mm (0.004 in)
Stem Runout Limit		0.01 mm (0.0004 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		XTZ660
Valve Spring:		
Free Length	IN.	32.63 mm (1.285 in)
	EX.	36.46 mm (1.435 in)
Set Length (Valve Closed)	IN.	27.50 mm (1.083 in)
	EX.	31.00 mm (1.220 in)
Compressed Pressure	IN.	10.2 ~ 11.8 kg (22.49 ~ 26.01 lb)
(Valve Closed)	EX.	12.3 ~ 14.1 kg (27.12 ~ 31.08 lb)
Tilt Limit	IN.	2.5°/1.4 mm (2.5°/0.055 in)
	EX.	2.5°/1.6 mm (2.5°/0.063 in)
		
Direction of Winding (Top View)	IN.	Clockwise 
	EX.	Clockwise 
Piston:		
Piston Size "D"		99.945 ~ 99.985 mm (3.935 ~ 3.936 in)
Measuring Point "H"		2.5 mm (0.098 in)
		
Piston Off-set		1 mm (0.04 in)
Piston Off-set Direction		INSIDE
Piston-to-Cylinder Clearance		0.050 ~ 0.070 mm (0.0020 ~ 0.0028 in)
<Limit>		<0.15 mm (0.0059 in)>
Piston Ring:		
Top Ring:		
Type		Barrel
Dimensions (B × T)		1.2 × 3.8 mm (0.047 × 0.150 in)
End Gap (Installed)		0.30 ~ 0.45 mm (0.012 ~ 0.018 in)
		
Side Clearance (Installed)		0.04 ~ 0.08 mm (0.002 ~ 0.003 in)
2nd Ring:		
Type		Taper
Dimensions (B × T)		1.2 × 4.0 mm (0.047 × 0.157 in)
End Gap (Installed)		0.30 ~ 0.45 mm (0.012 ~ 0.018 in)
		
Side Clearance		0.03 ~ 0.07 mm (0.001 ~ 0.003 in)
Oil Ring:		
Dimensions (B × T)		2.5 × 3.4 mm (0.098 × 0.134 in)
End Gap (Installed)		0.2 ~ 0.7 mm (0.008 ~ 0.028 in)
Side Clearance		0.015 ~ 0.042 mm (0.0006 ~ 0.0017 in)
		

Model	XTZ660
Crankshaft:	
Crank Width "A"	74.95 ~ 75.00 mm (2.951 ~ 2.953 in)
Runout Limit "C"	0.03 mm (0.0012 in)
Big End Side Clearance "D"	0.35 ~ 0.65 mm (0.014 ~ 0.026 in)
Big End Radial Clearance "E"	0.01 ~ 0.025 mm (0.0004 ~ 0.0010 in)
Small End Free Play "F"	0.8 ~ 1.0 mm (0.0315 ~ 0.0394 in)
Balancer:	
Drive Method	Spur gear
Clutch:	
Friction Plate:	
Thickness	2.74 ~ 2.86 mm (0.108 ~ 0.113 in)
Quantity	6 pcs.
Wear Limit	2.6 mm (0.102 in)
Friction plate:	
Thickness	2.94 ~ 3.06 mm (0.116 ~ 0.120 in)
Quantity	2 pcs.
Wear limit	2.8 mm (0.110 in)
Clutch Plate:	
Thickness	1.2 mm (0.047 in)
Quantity	7 pcs.
Warp Limit	0.2 mm (0.008 in)
Clutch Spring:	
Free Length	42.8 mm (1.685 in)
Quantity	5 pcs.
Minimum Free Length	40.8 mm (1.606 in)
Clutch Release Method	Outer pull, rack and pinion pull
Transmission:	
Main Axle Runout Limit	0.08 mm (0.003 in)
Drive Axle Runout Limit	0.08 mm (0.003 in)
Shifter:	
Type	Cam Drum and Guide bar
Decompression Device:	
Type	Auto

Model		XTZ660	
Carburetor:			
I.D. Mark		3YF 00, 4BW 00 (A)(CH)	
		Primary	Secondary
Main Jet	(M.J.)	#130	#165
Main Air Jet	(M.A.J.)	φ1.0	φ1.0
Jet Needle	(J.N.)	5D96-3/5 5D97-3/5 (A)(CH)	5X7C-3/5
Needle Jet	(N.J.)	V00	φ2.7
Pilot Jet	(P.J.)	#48	—
Pilot Air Jet	(P.A.J.)	φ0.6	—
Bypass	(B.P.)	φ1.0	—
Pilot Screw	(P.S.)	2 and 1/2 turns out	—
Valve Seat	(V.S.)	φ2.5	—
Starter Jet	(G.S.)	#76	
Pilot Outlet	(P.O.)	φ0.8	
Fuel Level	(F.L.)	6.0 ~ 8.0 mm (0.24 ~ 0.31 in) Below from the float chamber mating surface	
Float Height	(F.H.)	25 ~ 27 mm (0.98 ~ 1.06 in)	
Engine Idling Speed		1,250 ~ 1,350 r/min	
Vacuum Pressure at Idling Speed		26.6 ~ 34.6 kPa (200 ~ 260 mmHg, 7.87 ~ 10.24 in Hg)	
Lubrication System:			
Oil Filter Type		Paper type	
Oil Pump Type		Trochoid pump type	
Tip Clearance		0.12 mm (0.005 in)	
Side Clearance		0.03 ~ 0.08 mm (0.001 ~ 0.003 in)	
Bypass Valve Setting Pressure		80 ~ 120 kPa (0.8 ~ 1.2 kg/cm^2, 11.38 ~ 17.07 psi)	
Cooling System:			
Radiator Core Size	Width	280 mm (11.02 in)	
	Height	147.8 mm (5.82 in)	
	Thickness	32 mm (1.26 in)	
Radiator Cap Opening Pressure		95 ~ 125 kPa (0.95 ~ 1.25 kg/cm^2, 13.51 ~ 17.77 psi)	
Recovery Tank Capacity		0.29 L (0.26 Imp qt, 0.31 US qt)	
<From Low to Full Level>		<0.17 L (0.15 Imp qt, 0.18 US qt)>	
Water Pump			
Type		Single-suction centrifugal pump	
Reduction Ratio		33/34 (0.971)	
Thermostat			
Opening Temperature		80 ~ 84°C (176 ~ 183°F)	

TIGHTENING TORQUE

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Cylinder head	Flange bolt	M9	4	38	3.8	27	
Cylinder head	Flange bolt	M9	2	38	3.8	27	
Cylinder head	Hexagon socket head bolt	M6	1	10	1.0	7.2	
Cylinder head (Exhaust pipe)	Stud bolt	M6	4	7	0.7	5.1	
Cylinder head	Straight plug screw	M18		55	5.5	40	LT
Spark plug	—	M12	1	17.5	1.75	13	
Cylinder head cover	Hexagon socket head bolt	M6	16	10	1.0	7.2	
Cylinder head cover	Hexagon socket head bolt	M6	1	10	1.0	7.2	
Cylinder head side cover	Hexagon socket head bolt	M6	4	10	1.0	7.2	
Gear unit assembly	Hexagon socket head bolt	M6	1	10	1.0	7.2	
Tachometer cable stopper	Flat head screw	M6	1	7	0.7	5.1	
Cylinder	Flange bolt	M10	2	42	4.2	30	
Cylinder	Flange bolt	M10	2	42	4.2	30	
Cylinder	Hexagon socket head bolt	M6	2	10	1.0	7.2	
Holder 1	Hexagon socket head bolt	M6	1	10	1.0	7.2	
Balance weight gear	Nut	M16	1	60	6.0	43	Use lock washer
AC generator rotor	Nut	M14	1	150	15.0	110	
Valve clearance	Nut	M6	4	14	1.4	10	
Stopper guide 2	Hexagon head bolt	M6	2	8	0.8	5.8	
Cam sprocket	Flange bolt	M7	2	20	2.0	14	
Tensioner assembly	Hexagon socket head bolt	M6	2	10	1.0	7.2	
Rocker shaft stopper	Hexagon socket head bolt	M6	2	10	1.0	7.2	
Water pump	Hexagon socket head bolt	M6	3	10	1.0	7.2	
Joint 1	Hexagon socket head bolt	M6	2	10	1.0	7.2	
Pipe 1	Hexagon socket head bolt	M6	1	10	1.0	7.2	
Conduction	Flange bolt	M6	2	10	1.0	7.2	
Conduction	Flange bolt	M6	1	10	1.0	7.2	
Protector	Panhead screw	M5	2	5	0.5	3.6	
Radiator	Flange bolt	M6	3	10	1.0	7.2	
Oil pump assembly	Flange bolt	M6	3	10	1.0	7.2	
Cover 2	Panhead screw	M6	1	7	0.7	5.1	

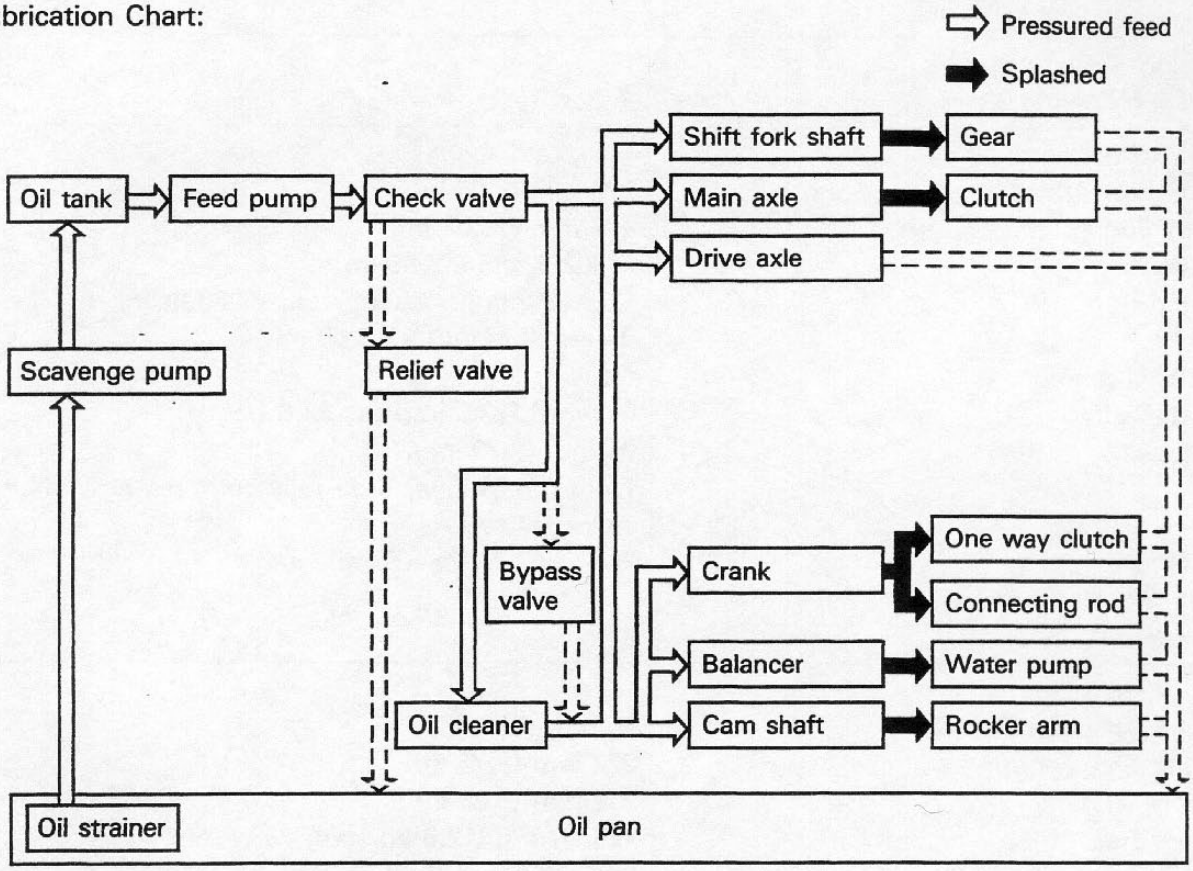
Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Strainer housing	Panhead screw	M6	2	7	0.7	5.1	
Drain plug	Straight screw plug	M14	1	30	3.0	22	
Element cover	Hexagon socket head bolt	M6	1	10	1.0	7.2	
Element cover	Hexagon socket head bolt	M6	2	10	1.0	7.2	
Element cover air bleed screw	Screw	M5	1	5	0.5	3.6	
Oil hose 1	Hexagon socket head bolt	M6	4	10	1.0	7.2	
Oil hose 2	Hexagon socket head bolt	M6	2	10	1.0	7.2	
Delivery pipe	Union bolt	M10	2	20	2.0	14	
Delivery pipe	Hexagon head bolt	M6	1	10	1.0	7.2	
Carburetor joint	Hexagon socket head bolt	M6	4	10	1.0	7.2	
Carburetor joint (carburetor left)	Hose clamp	M4	1	2	0.2	1.4	
Carburetor joint (carburetor right)	Hose clamp	M5	1	5	0.5	3.6	
Carburetor joint (air filter left)	Hose clamp	M4	1	2	0.2	1.4	
Carburetor joint (air filter right)	Hose clamp	M5	1	5	0.5	3.6	
Air filter assembly	Flange bolt	M6	4	10	1.0	7.2	
Air filter assembly	Flange bolt	M6	3	10	1.0	7.2	
Exhaust pipe	Nut	M6	4	10	1.0	7.2	
Exhaust pipe 1 & Exhaust pipe 2	Hexagon socket head bolt	M8	1	20	2.0	14	
Exhaust pipe protector	Bind head screw	M6	2	7	0.7	5.1	
Muffler protector (rubber)	Bind head screw	M6	2	7	0.7	5.1	
Muffler protector (cylinder)	Bind head screw	M6	4	7	0.7	5.1	
Exhaust pipe & Muffler	Flange bolt	M8	1	20	2.0	14	
Muffler mounting (front, lower)	Hexagon socket head bolt	M8	1	40	4.0	29	
Muffler mounting (upper)	Hexagon socket head bolt	M8	1	40	4.0	29	
Muffler mounting (lower)	Hexagon socket head bolt	M8	1	40	4.0	29	
Case 1 & 2	Hexagon socket head bolt	M6	9	10	1.0	7.2	
Case 1 & 2	Hexagon socket head bolt	M6	4	10	1.0	7.2	
Case 1 & 2	Hexagon socket head bolt	M6	1	10	1.0	7.2	
Clamp (lead)	Panhead screw	M6	1	7	0.7	5.1	

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Crankcase cover 1	Hexagon socket head bolt	M6	6	10	1.0	7.2	
Crankcase cover 1	Hexagon socket head bolt	M6	1	10	1.0	7.2	
Crankcase cover 1	Hexagon socket head bolt	M6	1	10	1.0	7.2	
Crankcase cover 1	Hexagon socket head bolt	M6	1	10	1.0	7.2	
Crankcase cover 1	Straight plug screw	M8	1	10	1.0	7.2	
Crankcase cover 2	Hexagon socket head bolt	M6	2	10	1.0	7.2	
Crankcase cover 3	Hexagon socket head bolt	M6	5	10	1.0	7.2	
Crankcase cover 3	Hexagon socket head bolt	M6	3	10	1.0	7.2	
Crankcase cover 3	Hexagon socket head bolt	M6	2	10	1.0	7.2	
Bearing plate cover	Flat head screw	M6	3	7	0.7	5.1	LT
Lock plate	Hexagon head bolt	M6	2	10	1.0	7.2	
Clutch spring	Screw with washer	M6	5	8	0.8	5.8	
Clutch boss	Nut	M20	1	90	9.0	65	Use lock washer
Plimary drive gear	Nut	M20	1	120	12.0	85	Use lock washer
Push lever assembly (stopper)	Bolt	M6	1	6.5	0.65	4.7	
Push lever assembly	Screw	M8	1	12	1.2	8.7	
Drive sprocket	Nut	M18	1	110	11.0	80	Use lock washer
Oilseal cover	Hexagon head bolt	M6	2	10	1.0	7.2	
Stopper lever	Screw with washer	M6	1	10	1.0	7.2	
Shift arm	Bolt	M6	1	10	1.0	7.2	
Stator coil	Panhead screw with washer	M6	3	7	0.7	5.1	LT
Neutral switch	—	M10	1	20	2.0	14	
Cylinder head side cover 1	—	M32	2	12	1.2	8.7	
Spring tensioner	Plug	M16	1	20	2.0	14	
Starting motor	Flange bolt	M6	2	10	1.0	7.2	
Cover 1	Hexagon socket head bolt	M6	1	10	1.0	7.2	

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Cover 1	Hexagon socket head bolt	M6	3	10	1.0	7.2	
Starter oneway clutch	Hexagon socket head bolt	M8	3	30	3.0	22	Stake (LT)
Pick up	Panhead screw	M5	2	5	0.5	3.6	(LT)
Ignition coil	Hexagon head bolt	M5	2	5	0.5	3.6	
Ignition coil bracket	Flange bolt	M6	2	10	1.0	7.2	
Ignition unit	Panhead screw	M6	2	5	0.5	3.6	
Thermo switch	Panhead screw	M16	1	28	2.8	20	
Thermo unit	Panhead screw	PT 1/8	1	15	1.5	11	

Model	XTZ660

Lubrication Chart:



Crankcase Tightening Sequence: