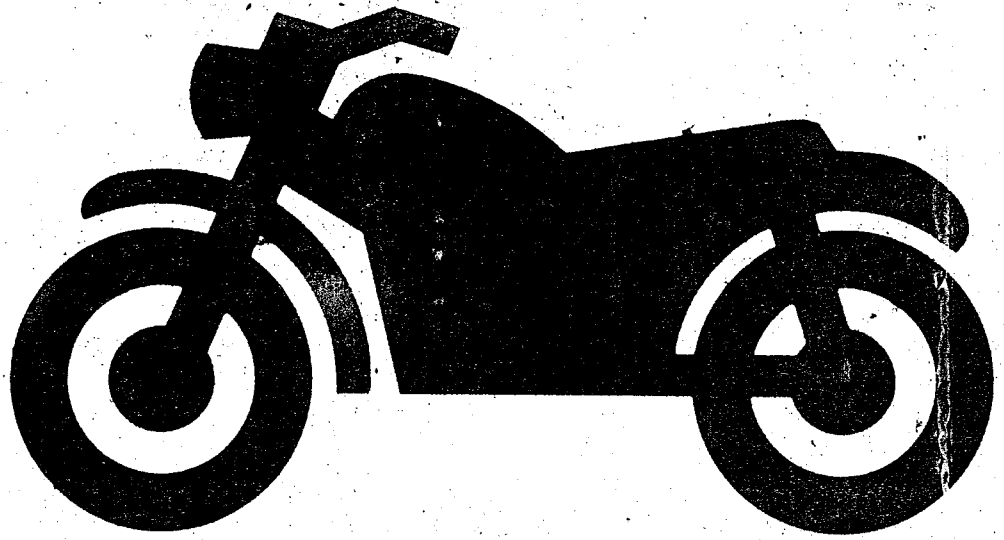
INDEX

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 A-8
VEHICLE IDENTIFICATION NUMBER (For CNR, E) A-8
FRAME SERIAL NUMBER (Except for CNR, E) A-8
ENGINE SERIAL NUMBER A-8
IMPORTANT INFORMATION A-8
PREPARATION FOR REMOVAL AND DISASSEMBLY A-8
ALL REPLACEMENT PARTS A-9
GASKETS, OIL SEALS, AND O-RINGS A-9
LOCK WASHERS/PLATES AND COTTER PINS A-9
BEARING AND OIL SEALS A-9
CIRCLIPS A-9
SPECIAL TOOLS A-9
FOR TUNE UP A-9
FOR ENGINE SERVICE A-10
FOR CHASSIS SERVICE A-12
FOR ELECTRICAL COMPONENTS A-12

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.

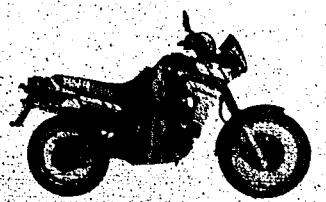
Starting serial number:		
XTZ660....3YF-000101	(A)(B)(D)(DK) (F)(GB)(GR)(I) (N)(NL)(PRT) (S)(SF)
XTZ660....4BW-000101	(A)(CH)

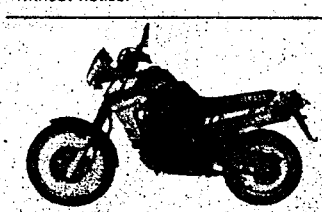


ENGINE SERIAL NUMBER
The engine serial number (1) is stamped into the elevated part of the right rear section of the engine.

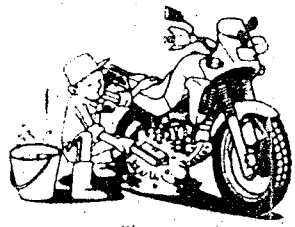
Starting serial number:	
XTZ660....3YF-000101	(A)(B)(D)(DK) (F)(GB)(GR)(I) (N)(NL)(PRT) (S)(SF)
XTZ660....3YF-029101	(CNR)(E)
XTZ660....4BW-000101	(A)(CH)

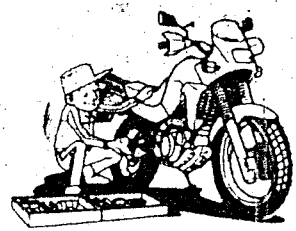
NOTE:
- The first three digits of these numbers are for model identifications; the remaining digits are the unit production number.
- Designs and specifications are subject to change without notice.



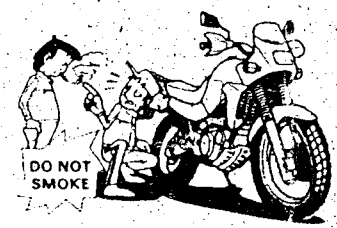


IMPORTANT INFORMATION



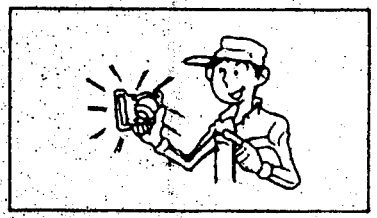






PREPARATION FOR REMOVAL AND DISASSEMBLY

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.



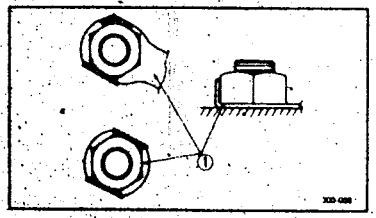
ALL REPLACEMENT PARTS

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

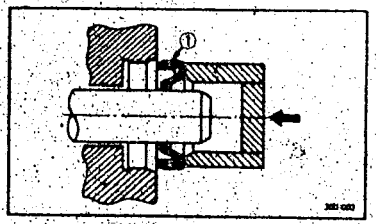
1. All gaskets, seals and O-rings should be replaced when an engine is overhauled. All gasket surfaces, oil seal lips and O-rings must be cleaned.

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.



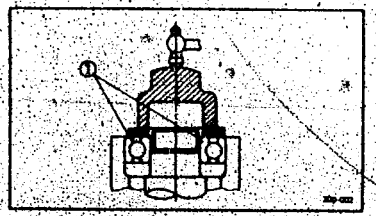
BEARINGS AND OIL SEALS

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.

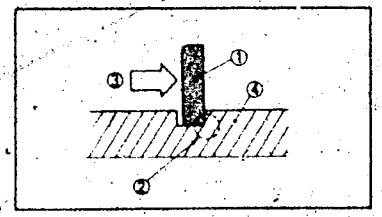
① Oil seal

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

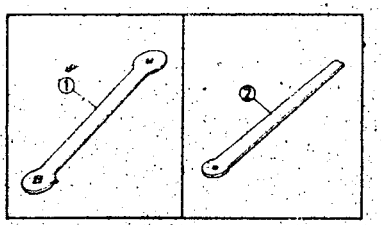
SPECIAL TOOLS

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-□□□□□

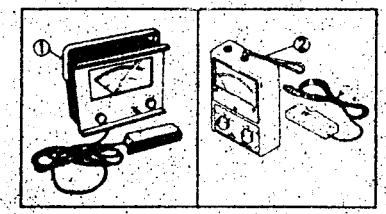
P/N. 90890-□□□□□ } Except for US, CDN



FOR TUNE UP

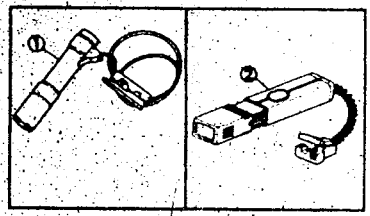
1. Valve adjusting tool
   P/N. YM-08035 – ①
   P/N. 90890-01311 – ②

This tool is necessary for adjusting the valve clearance.



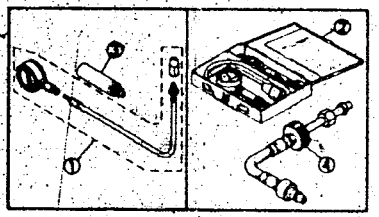
2. Inductive tachometer
   P/N. YU-08036-A – ①
   P/N. 90890-03113 – ②

This tool is needed for detecting engine rpm.



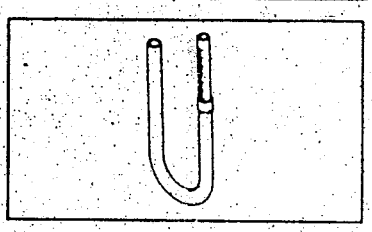
3. Inductive timing light
   P/N. YM-33277-A – ①
   P/N. 90890-03141 – ②

This tool is necessary for checking ignition timing.



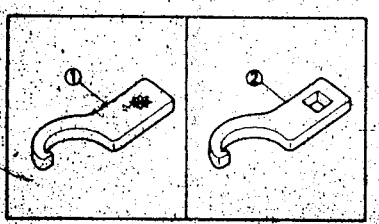
4. Compression gauge
   P/N. YU-33223 – ①
   P/N. 90890-03081 – ②
   Adapter (M12)
   P/N. YU-33223-3 – ③
   P/N. 90890-04082 – ④

These gauges are used to measure the engine compression.



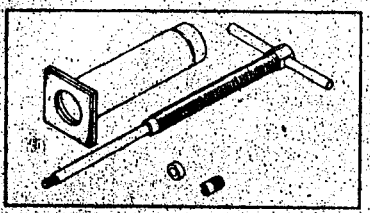
5. Fuel level gauge
   P/N. YM-01312-A
   P/N. 90890-01312

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

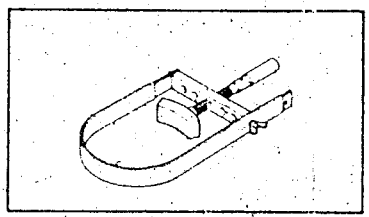
This tool is used to adjust the spring preload of rear shock absorber.



FOR ENGINE SERVICE

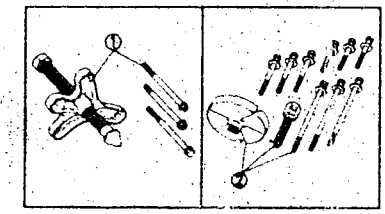
1. Piston pin puller
   P/N. YU-01304
   P/N. 90890-01304

This tool is used to remove the piston pin.



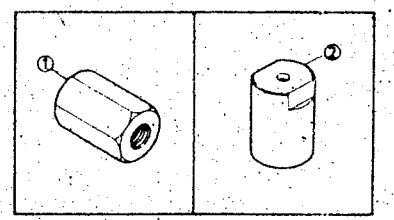
2. Rotor holder
   P/N. YS-01880
   P/N. 90890-01701

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



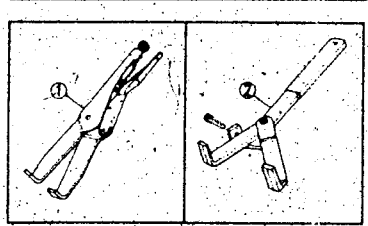
3. Rotor puller
   P/N. YU-33270 – ①
   P/N. 90890-01362 – ②

This tool is used to remove the rotor.



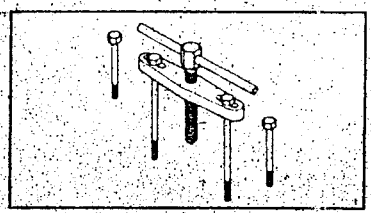
4. Rotor puller adapter
   P/N. YM-04063-A – ①
   P/N. 90890-04063 – ②

This tool is used to remove the rotor.



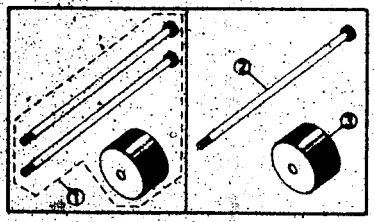
5. Universal clutch holder
   P/N. YM-91042 – ①
   P/N. 90890-04086 – ②

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



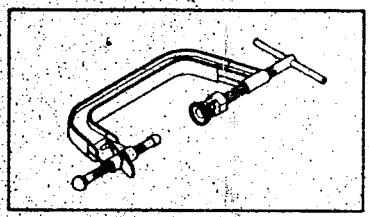
6. Crankcase separator
   P/N. YU-01135-A
   P/N. 90890-01135

This tool is necessary to separate the crankcase.



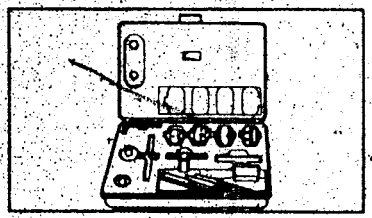
7. Slide hammer set
   P/N. YU-01083-A – ①
   Slide hammer bolt
   P/N. 90890-01083 – ②
   Weight
   P/N. 90890-01084 – ③

These tools are used when removing the rocker arm shaft.



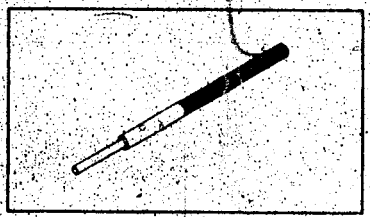
8. Valve spring compressor
   P/N. YM-04019
   P/N. 90890-04019

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



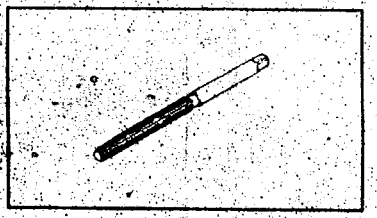
9. Valve seat cutter set
   P/N. YM-91043

This tool is needed to resurface the valve seat.



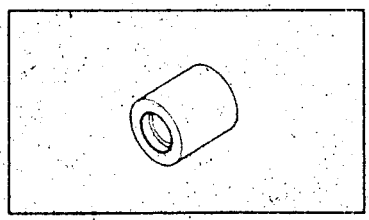
10. Valve guide remover 6 mm (0.24 in)
    P/N. YM-04064
    P/N. 90890-04064

This tool is used to remove the valve guides.



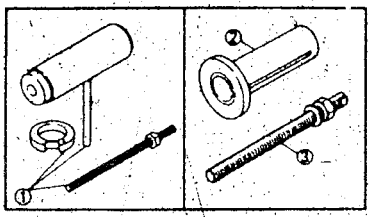
11. Valve guide reamer 6 mm (0.24 in)
    P/N. YM-04066
    P/N. 90890-04066

This tool is used to rebore the new valve guide.



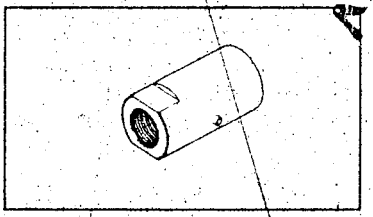
12. Valve guide installer 6 mm (0.24 in)
    P/N. YM-04065-A
    P/N. 90890-04065

This tool is needed to install the valve guides properly.



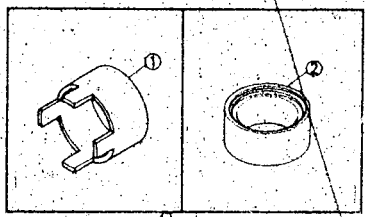
13. Crankshaft installer set
    P/N. YU-90050 – ①
    Crankshaft installer pot
    P/N. 90890-01274 – ②
    Crankshaft installer bolt
    P/N. 90890-01275 – ③

These tools are used to install the crankshaft.



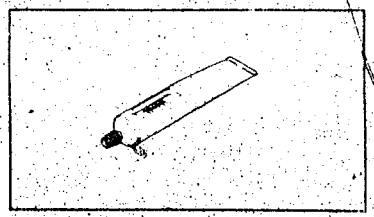
14. Adapter #10 (M14)
    P/N. YM-90069
    P/N. 90890-04059

This tool is used to install the crankshaft.



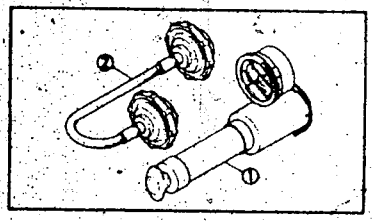
15. Crank pot spacer
    P/N. YM-91044
    P/N. 90890-04081 – ①
    Spacer
    P/N. 90890-01288 – ②

This tool is used to install the crankshaft.



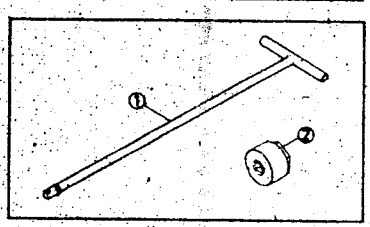
16. Sealant (quick gasket)*
    P/N. ACC-11001-01
    Yamaha Bond No. 1215*
    P/N. 90890-85505

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

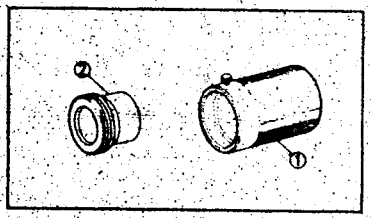
This tester is used for checking the cooling system.



FOR CHASSIS SERVICE

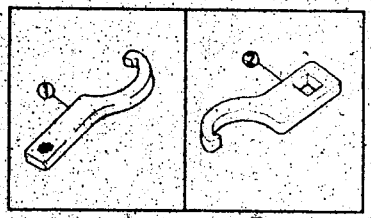
1. T-Handle
    P/N. YM-01326
    P/N. 90890-01326 – ①
    Damper rod holder 30 mm (1.18 in)
    P/N. YM-01327
    P/N. 90890-01327 – ②

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



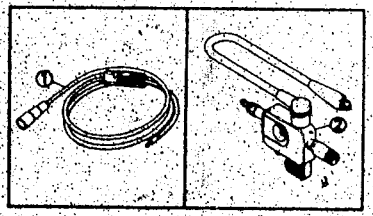
2. Front fork seal drive weight
    P/N. YM-33963
    P/N. 90890-01367 – ①
    Adapter 43 mm (1.69 in)
    P/N. YM-08020
    P/N. 90890-01374 – ②

These tools are used when installing the fork oil seal.



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

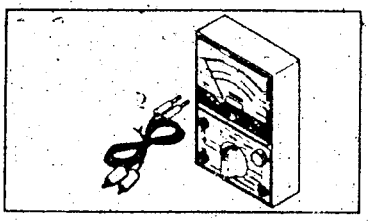
This tool is used to loosen and tighten the steering ring nut.



FOR ELECTRICAL COMPONENTS

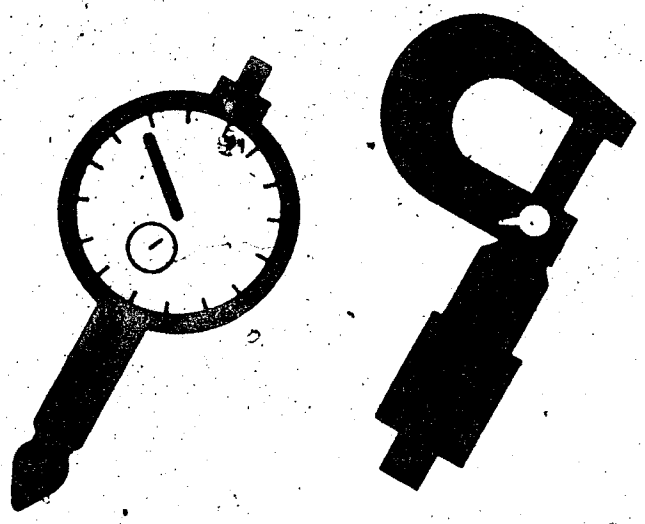
1. Dynamic spark tester
    P/N. YM-34487 – ①
    Ignition checker
    P/N. 90890-06754 – ②

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.



SPEC 2

CHAPTER 2.
SPECIFICATIONS

GENERAL SPECIFICATIONS A-16

MAINTENANCE SPECIFICATIONS B-1
- ENGINE B-1
- CHASSIS B-6
- ELECTRICAL B-8

GENERAL TORQUE SPECIFICATIONS B-10

DEFINITION OF UNITS B-10

LUBRICATION POINT AND LUBRICANT TYPE B-10
- ENGINE B-10
- CHASSIS B-11

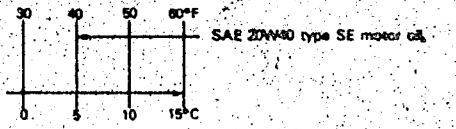
LUBRICATION DIAGRAM B-11

COOLANT DIAGRAM B-13

CABLE ROUTING B-14

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	2,265 mm (89.2 in) 2,355 mm (92.7 in): (CH)(D)(DK)(N)(S)(SF)
Overall Width	885 mm (34.8 in)
Overall Height	1,355 mm (53.3 in)
Seat Height	865 mm (34.1 in)
Wheelbase	1,495 mm (58.9 in)
Minimum Ground Clearance	245 mm (9.6 in)
Basic Weight:	
With Oil and Full Fuel Tank	196 kg (430 lb)
Minimum Turning Radius:	2,400 mm (94.5 in)
Engine:	
Engine Type	Liquid cooled 4-stroke, SOHC
Cylinder Arrangement	Forward inclined single cylinder
Displacement	660 cm^3
Bore × Stroke	100 × 84 mm (3.94 × 3.31 in)
Compression Ratio	9.2 : 1
Compression Pressure	1,100 kPa (11,0 kg/cm^2, 156 psi)
Starting System	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 Plug:		
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 6)

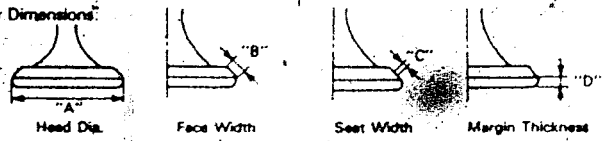
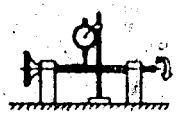
B-1

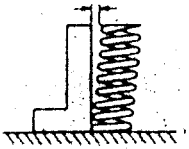
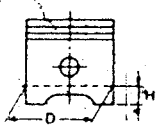
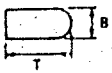
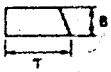
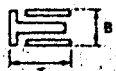
Model	XTZ660	
Tire Pressure (Cold Tire):		
Maximum load*	180 kg (397 lb)	
Cold tire pressure	Front	Rear
Up to 90 kg (198 lb) load*	200 kPa (2.00 kg/cm², 28 psi)	200 kPa (2.00 kg/cm², 28 psi)
90 kg (198 lb) – Maximum load*	200 kPa (2.00 kg/cm², 28 psi)	225 kPa (2.25 kg/cm², 32 psi)
*Load is total weight 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 x Quantity:		
Headlight	12V 60W/55W x 1	
Auxiliary Light	12V 4W x 1	
	12V 3.4W x 1 (GB)	
Tail/Brake Light	12V 5W/21W x 1	
Flasher Light	12V 21W x 4	
Indicator Light:		
Wattage x Quantity "METER LIGHT"	12V 1.7W x 2	
"NEUTRAL"	12V 3.4W x 1	
"HIGH BEAM"	12V 3.4W x 1	
"TURN"	12V 3.4W x 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 ~ 99.965 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/cm², 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/cm², 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 Nm	m·kg	ft·lb	Remarks
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	
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 6	Panhead screw	M6	1	7	0.7	5.1	

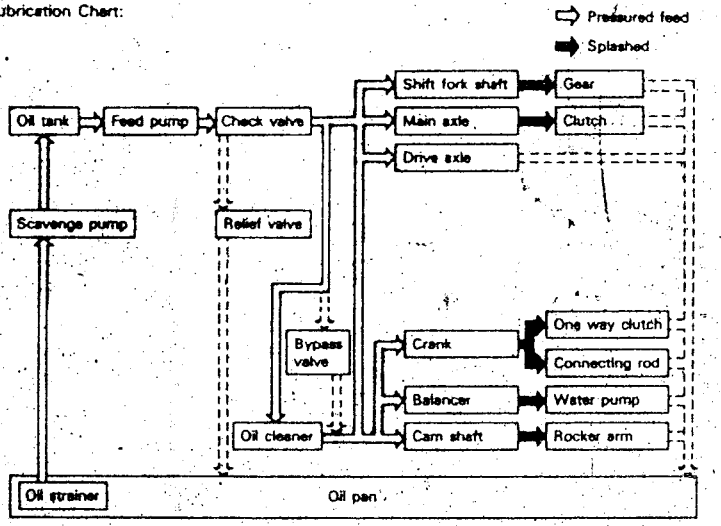
Part to be tightened	Part name	Thread size	Q'ty	Tightening torque Nm	m·kg	ft·lb	Remarks
Strainer housing	Panhead screw	M6	2	7	0.7	5.1	
Drain plug	Straight screw plug	M14	1	30	3.0	22	
Element cover	Hexagon socket head bolt	M6	1	10	1.0	7.2	
Element cover	Hexagon socket head bolt	M6	2	10	1.0	7.2	
Element 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 Nm	m·kg	ft·lb	Remarks
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	
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
Primary 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	
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	

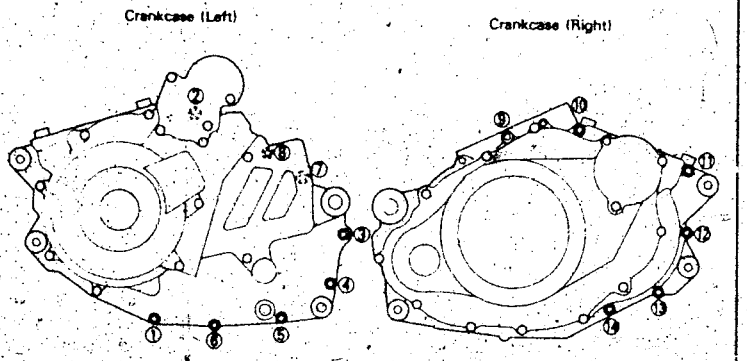
Part to be tightened	Part name	Thread size	Q'ty	Tightening torque Nm	m·kg	ft·lb	Remarks
Cover 1	Hexagon socket head bolt	M6	3	10	1.0	7.2	
Starter oneway clutch	Hexagon socket head bolt	M8	3	30	3.0	22	Stake
Pick up	Panhead screw	M5	2	5	0.5	3.6	
Ignition coil	Hexagon head bolt	M5	2	5	0.5	3.6	
Ignition 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:

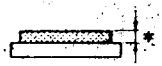


Crankcase Tightening Sequence:



CHASSIS

Model		XTZ660
Steering System:		
Steering Bearing Type		Taper Roller Bearing
Front Suspension:		
Front Fork Travel		220 mm (8.66 in)
Front Spring Free Length		407 mm (16.02 in)
< Limit >		< 402.9 mm (15.86 in) >
Spring Rate:	K1	4.25 N/mm (0.425 kg/mm, 23.80 lb/in)
Stroke	K1	0.0 – 220 mm (0.0 – 8.66 in)
Optional Spring		No
Oil Capacity		669 cm³ (23.5 Imp oz, 22.6 US oz)
Oil Level		94 mm (3.70 in)
		From top of inner tube fully compressed without spring
Oil Grade		Fork oil 10W or equivalent
Enclosed Air Pressure:		
Standard		Zero
Rear Suspension:		
Shock Absorber Travel		66 mm (2.60 in)
Spring Free Length		222 mm (8.74 in)
Fitting Length		212 mm (8.35 in)
Spring Rate	K1	125 N/mm (12.5 kg/mm, 700 lb/in)
Stroke	K1	0.0 – 83.0 mm (0.0 – 3.3 in)
Optional Spring		No
Enclosed Gas Pressure:		
Standard		1,500 kPa (15 kg/cm², 213 psi)
Swingarm:		
Free Play Limit		1.0 mm (0.039 in) at swingarm end
		Move swingarm end side to side
Side Clearance		0.4 – 0.7 mm (0.016 – 0.028 in) at swingarm pivot
Front Wheel:		
Type		Spoke wheel
Rim Size		21 × 1.85
Rim Material		Aluminum
Rim Runout Limit	Vertical	2 mm (0.08 in)
	Lateral	2 mm (0.08 in)
Rear Wheel:		
Type		Spoke wheel
Rim Size		17 × 2.75
Rim Material		Aluminum
Rim Runout Limit	Vertical	2 mm (0.08 in)
	Lateral	2 mm (0.08 in)
Drive Chain:		
Type/Manufacturer		520V6/DAIDO, 520SM0Z9/RK
No. of Links		110
Chain Free Play		20 – 45 mm (0.79 – 1.77 in)

Model	XTZ660
Front Disc Brake:	
Type	Dual
Disc Outside Diameter × Thickness	282 × 5 mm (11.1 × 0.20 in)
Pad Thickness Inner	5.0 mm (0.20 in)
<Limit> *	<1.0 mm (0.04 in)>
Pad Thickness Outer	5.0 mm (0.20 in)
<Limit> *	<1.0 mm (0.04 in)>
	
Master Cylinder Inside Diameter	14 mm (0.55 in)
Caliper Cylinder Inside Diameter	32.03 mm (1.26 in)
Brake Fluid Type	DOT #4
Rear Disc Brake:	
Type	Single
Disc Outside Diameter × Thickness	220 × 5 mm (8.66 × 0.20 in)
Pad Thickness Inner	6.0 mm (0.24 in)
<Limit> *	<0.8 mm (0.03 in)>
Pad Thickness Outer	6.0 mm (0.24 in)
<Limit> *	<0.8 mm (0.03 in)>
	
Master Cylinder Inside Diameter	12.7 mm (0.50 in)
Caliper Cylinder Inside Diameter	34.9 mm (1.37 in)
Brake Fluid Type	DOT #4
Brake Lever and Brake Pedal:	
Brake Lever Free Play	2 – 5 mm (0.08 – 0.20 in)
	At brake lever end.
Brake Pedal Position	25 mm (0.98 in)
	Below top of footrest.
Clutch Lever and Throttle Grip:	
Clutch Lever Free Play	10 – 15 mm (0.39 – 0.59 in)
	At clutch lever end.
Throttle Grip Free Play	3 – 5 mm (0.12 – 0.20 in)
	At grip flange.

TIGHTENING TORQUE

Part to be tightened	Thread size	Tightening torque Nm	m•kg	ft•lb	Remarks
Front fork/Handlebar:					
Handle crown and inner tube	M 8 × 1.25	23	2.3	17	
Handle crown and steering shaft	M14 × 1.25	110	11	80	
Handlebar holder (under) and handlebar holder (upper)	M 8 × 1.25	23	2.3	17	
Steering shaft and ring nut	M25 × 1.0	7	0.7	5.1	See note
Front brake hose and clamp	M 6 × 1.0	7	0.7	5.1	
Front master cylinder cap	M 4 × 0.7	2	0.2	1.4	
Front master cylinder and handlebar	M 6 × 1.0	7	0.7	5.1	
Cowling stay and cowling	M 6 × 1.0	7	0.7	5.1	
Horn and frame	M 6 × 1.0	7	0.7	5.1	
Main switch and handle crown	M 8 × 1.0	7	0.7	5.1	
Handlebar holder (under) and nut	M10 × 1.25	30	3.0	22	
Band (meter cable)	M 5 × 0.8	0.7	0.07	0.5	
Console panel and protector 1, 2	M 5 × 0.8	0.7	0.07	0.5	
Headlight and cowling stay	M 6 × 1.0	7	0.7	5.1	
Under bracket and inner tube	M 8 × 1.25	23	2.3	17	
Cowling stay and frame	M 8 × 1.25	15	1.5	11	
Cowling and fuel tank	M 6 × 1.0	7	0.7	5.1	
Protector 1, 2 and cowling	M 5 × 0.8	0.7	0.07	0.5	
Engine mount:					
Front engine stay and frame	M10 × 1.25	65	6.5	47	
Top engine stay and frame	M10 × 1.25	65	6.5	47	
Engine (rear under) and frame	M10 × 1.25	65	6.5	47	
Engine protector and frame	M 6 × 1.0	9	0.9	6.5	
Swingarm/Rear shock absorber:					
Pivot shaft and frame	M14 × 1.5	100	10.0	72	
Swingarm and relay arm	M12 × 1.25	80	8.0	58	
Relay arm and connecting rod	M10 × 1.25	48	4.8	35	
Connecting rod and frame	M10 × 1.25	48	4.8	35	
Rear shock absorber and frame	M12 × 1.25	58	5.8	42	
Chain tensioner securing bolt	M 8 × 1.25	23	2.3	17	
Chain case and swingarm	M 6 × 1.0	4	0.4	2.9	
Guard seat and swingarm	M 6 × 1.0	7	0.7	5.1	
Chain support and swingarm	M 6 × 1.0	7	0.7	5.1	
Fuel tank/Seat/Rear fender/Side cover:					
License bracket and number plate stay	M 6 × 1.0	7	0.7	5.1	
Rear reflector and stay	M 5 × 0.8	4	0.4	2.9	
Fuel tank and fuel cock	M 6 × 1.0	7	0.7	5.1	
License bracket and flap	M 4 × 0.7	3	0.3	22	
Helmet holder and carrier	M 6 × 1.0	7	0.7	5.1	
Fuel tank back stay and frame	M 6 × 1.0	7	0.7	5.1	
Clutch cable and engine	M 6 × 1.0	9	0.9	6.5	
Starter relay and lead	M 6 × 1.0	3	0.3	22	

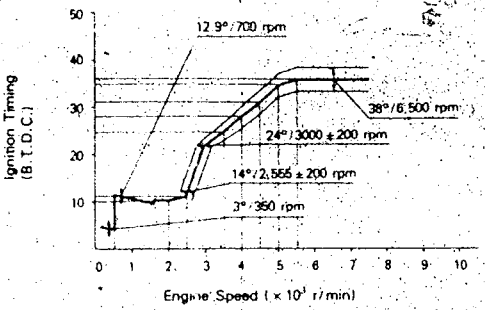
Part to be tightened	Thread size	Tightening torque Nm	m·kg	ft·lb	Remarks
License bracket and taillight	M 6×1.0	7	0.7	5.1	
Regulator and frame	M 6×1.0	7	0.7	5.1	
Fuel tank upper bracket and frame	M 8×1.25	15	1.5	11	
Fuel tank lower bracket and frame	M 8×1.25	15	1.5	11	
Fuel pump and frame	M 6×1.0	7	0.7	5.1	
Carrier and frame (front and rear)	M 8×1.25	15	1.5	11	
Fuel tank bracket and fuel tank	M 6×1.0	7	0.7	5.1	
Tool box and frame	M 8×1.0	7	0.7	5.1	
License bracket and frame	M 6×1.0	7	0.7	5.1	
Bracket 1 and frame	M 6×1.0	23	2.3	17	
Front wheel/Rear wheel:					
Front wheel and brake disc	M 8×1.25	20	2.0	14	◀9
Front wheel axle and front fork	M14×1.5	58	5.8	42	
Rear wheel axle and nut	M16×1.5	100	10.0	72	
Front axle holder	M 6×1.0	9	0.9	6.5	
Front brake caliper and front fork	M10×1.25	35	3.5	25	
Union bolt	M10×1.25	26	2.6	19	
Front brake caliper and bleed screw	M 8×1.25	6	0.6	4.3	
Rear brake caliper and bleed screw	M 7×1.0	6	0.6	4.3	
Rear wheel and sprocket	M10×1.25	60	6.0	4.3	
Rear wheel and brake disc	M 6×1.0	10	1.0	7.2	◀9
Footrest/Pedal:					
Sidestand securing bolt and nut	M12×1.25	45	4.5	32	
Sidestand securing bolt and frame	M12×1.25	45	4.5	32	
Rear brake switch and frame	M 6×1.0	4	0.4	2.9	
Footrest and frame	M10×1.25	50	5.0	36	
Rear footrest and frame	M 8×1.25	23	2.3	17	
Rear master cylinder and frame	M 8×1.25	23	2.3	17	
Rear brake reservoir tank and frame	M 6×1.0	4	0.4	2.9	
Rear brake pedal shaft and frame	M10×1.25	35	3.5	25	

NOTE:

1. First, tighten the ring nut (lower) approximately 43 Nm (4.3 m·kg, 31 ft·lb) by using the torque wrench. Turn the handlebar to the left and right making sure there is no binding and then fully loosen the ring nut.
2. Retighten the ring nut (lower) to specification.
3. Install the rubber washer on the ring nut (lower); then finger tighten the ring nut (upper) until it contacts the rubber washer. Align the grooves of the lower and upper nuts and install the stopper washer.

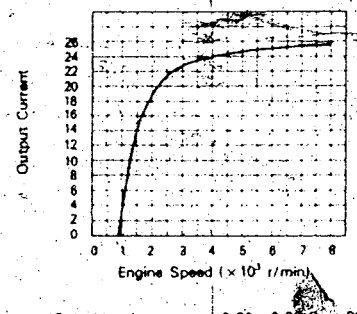
ELECTRICAL

Model	XTZ660
Voltage	12V
Ignition System:	
Ignition Timing (B.T.D.C.)	12° at 1,300 r/min
Advanced Timing (B.T.D.C.)	38° at 6,500 r/min
Advancer Type	Electrical type



Ignitor:	
Pickup Coil Resistance	184 – 276 Ω at 20°C (68°F)
(Color)	(Blue/Yellow – Green/White)
Ignitor Unit/Manufacturer	TNDF13/NIPPONDENSO
Ignition Coil:	
Model/Manufacturer	JO268/NIPPONDENSO
Minimum Spark Gap	6 mm (0.24 in)
Primary Winding Resistance	3.4 – 4.6 Ω at 20°C (68°F)
Secondary Winding Resistance	10.4 – 15.6 kΩ 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

B-9

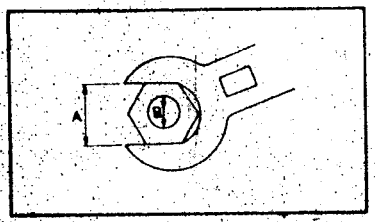
Model	XTZ660
A.C. Generator:	
Model/Manufacturer	TLMZ55/NIPPONDENSO
Nominal Output	14V 24.5A at 5,000 r/min
	
Stator Coil Resistance (Color)	0.20 ~ 0.30 Ω at 20°C (68°F) (White – White)
Rectifier/Regulator:	
Model/Manufacturer	SH569/SINDENGEN
Type	Semi conductor – Short circuit type
Voltage Regulator	
No load Regulated Voltage	14.3 ~ 15.3V
Rectifier	
Capacity	25A
Withstand Voltage	240V
Battery:	
Specific Gravity	1.320
Electrical Starter System:	
Type	Constant mesh type
Starter Motor:	
Model/Manufacturer	SM-13/MITSUBA
Output	0.8 kW
Brush – Overall Length	12.5 mm (0.49 in)
<Limit>	<5 mm (0.20 in)>
Commutator Dia.	28.0 mm (1.10 in)
Wear Limit	27.0 mm (1.06 in)
Mica Undercut	0.7 mm (0.028 in)
Starter Relay:	
Model/Manufacturer	MS5D-191/HITACHI
Amperage Rating	100A
Horn:	
Type/Quantity	Plane type/1 pc.
Model/Manufacturer	YF-12/NIKKO
Maximum Amperage	2.5A

Model	XTZ660
Flasher Relay (Relay Assembly):	
Type	Condenser type
Model/Manufacturer	FB257M/NIPPONDENSO, G8A-101/OMRON
Self Cancelling Device	No
Flasher Frequency	60 ~ 120 cyl/min
Wattage	21W × 4 + 3.4W
Starting Circuit Cut-Off Relay:	
Model/Manufacturer	G8MS/OMRON
Coil Winding Resistance	90 ~ 110 Ω
Diode	Yes
Electric Fan:	
Model/Manufacturer	NAAF48/NIPPONDENSO
Thermostat Switch:	
Model/Manufacturer	VF105A/N. THERMOSTAT
Function Temperature	102 ~ 108°C (215.6 ~ 226.4°F): ON 98°C (208.4°F): OFF
Thermo Unit:	
Model/Manufacturer	11H/NIPPON SEIKI
Coil Winding Resistance	153.9 Ω at 50°C (122°F) 47.5 ~ 52.8 Ω at 80°C (176°F) 26.2 ~ 29.3 Ω at 100°C (212°F) 16.1 Ω at 120°C (248°F)
Circuit Breaker:	
Type	Fuse
Amperage for Individual Circuit × Quantity:	
MAIN	20A/1 pc.
RESERVE	20A/1 pc.

GENERAL TORQUE SPECIFICATIONS

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specifications for special components or assemblies are included in the applicable sections of this book. To avoid warpage, tighten multi-fastener assemblies in a crisscross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications call for clean, dry threads. Components should be at room temperature.

A (Nut)	B (Bolt)	General torque specifications		
		Nm	m·kg	ft·lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13.0	94



A: Distance across flats
B: Outside thread diameter

DEFINITION OF UNITS

Unit	Read	Definition	Measure
mm cm	millimeter centimeter	10^{-3} meter 10^{-2} meter	Length Length
kg	kilogram	10^{3} gram	Weight
N	Newton	1 kg × m/sec^2	Force
Nm m·kg	Newton meter Meter kilogram	N × m m × kg	Torque Torque
Pa N/mm	Pascal Newton per millimeter	N/m^2 N/mm	Pressure Spring rate
L cm^3	Liter Cubic centimeter	—	Volume or capacity
r/min	Revolution per minute	—	Engine speed

LUBRICATION POINTS AND LUBRICANT TYPE

ENGINE

Lubrication points (part name)	Lubricant type
Oil seal lips (all)	SE
Bearing retainer	E
Crank pin	E
Connecting rod (big end)	E
Piston and piston ring	E
Boss (balancer drive gear)	E
Piston pin	E
Valve stem and valve guide	M
Oil seal (valve stem end)	M
Rocker arm shaft and rocker arm	E
Cam and bearing (camshaft)	E
Decomp cam and decomp shaft	E
Rotor and rotor housing (oil pump)	E
Push rod	SE
Primary driven gear and main axle	E
Sliding gear (transmission)	M
Free movement gear (transmission)	M
Driven gear and drive gear (tachometer gear unit)	SE
Shift fork and guide bar	E
Shift cam and bearing (shift cam)	E
Shift shaft	E
Crankcase mating surfaces	Sealant (quick gasket)* Yamaha Bond No. 1215
Mating surfaces (cylinder head and cylinder head cover)	Sealant (quick gasket)* Yamaha Bond No. 1215

LUBRICATION POINTS AND LUBRICANT TYPE

SPEC 9

CHASSIS

Lubrication points (part name)	Lubricant type
Gear unit (speedometer)	
Oil seal lips (all)	
Wheel axle (front wheel and rear wheel)	
Rear wheel hub and clutch hub	
Bush (swingarm) and thrust cover	
Pivot shaft (swingarm)	
Bushes (rear shock absorber)	
Bushes (relay arm and connecting rod)	
Bearings (relay arm and connecting rod)	
Pivoting points (brake pedal and change pedal)	
Bearings (steering head)	
Right handlebar end	
Pivoting points (brake lever and clutch lever)	
Clutch cable end	
Pivoting point (sidestand)	
Bushes (chain tensioner)	
Grease nipple (swingarm)	
Grease nipple (relay arm)	
Grease nipple (connecting rod)	

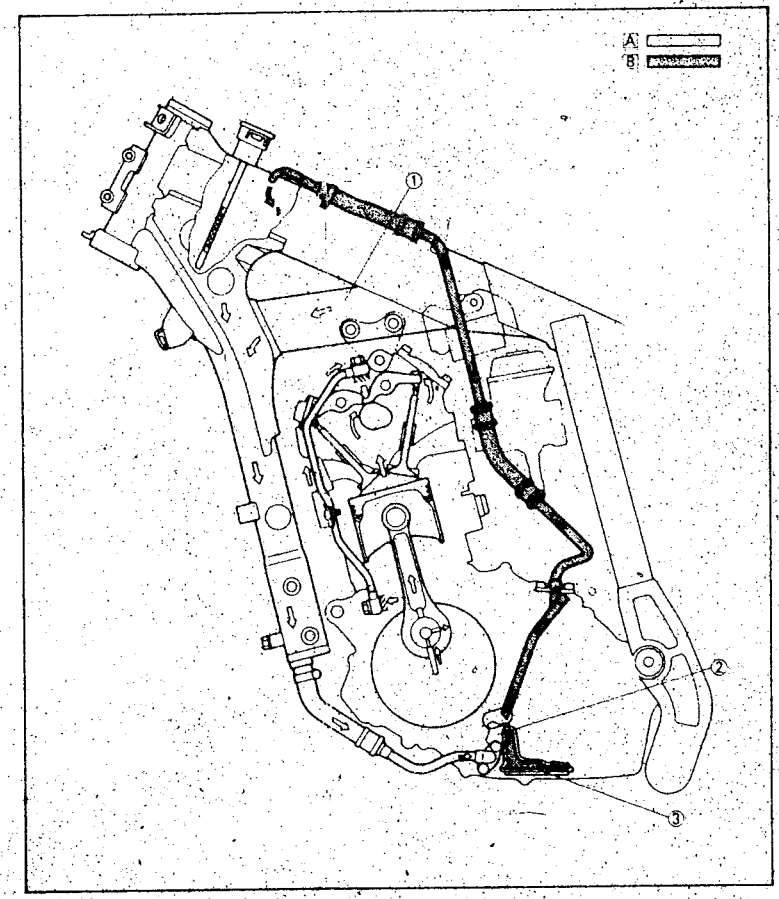
LUBRICATION DIAGRAM

SPEC 9

LUBRICATION DIAGRAM

① Oil tank
② Oil pump
③ Oil strainer (engine)

Ⓐ Feed
Ⓑ Scavenge

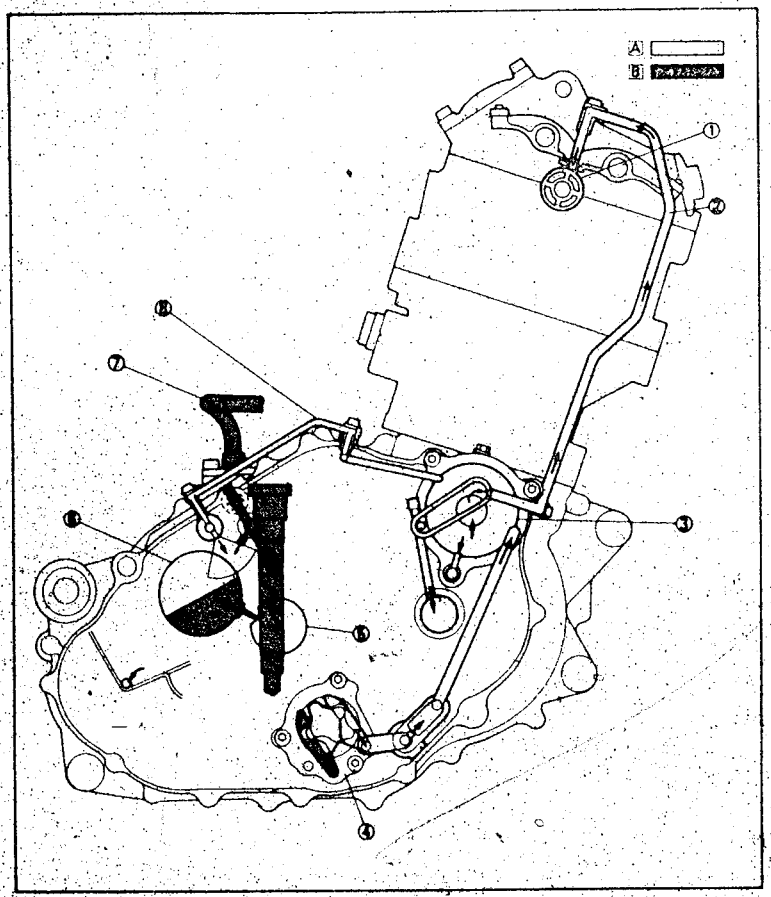


LUBRICATION DIAGRAM

SPEC 98

① Cam shaft
② Oil delivery pipe
③ Oil filter
④ Oil pump
⑤ Main axle
⑥ Drive axle
⑦ Oil hose
⑧ Oil delivery pipe

Ⓐ Feed
Ⓑ Scavenge

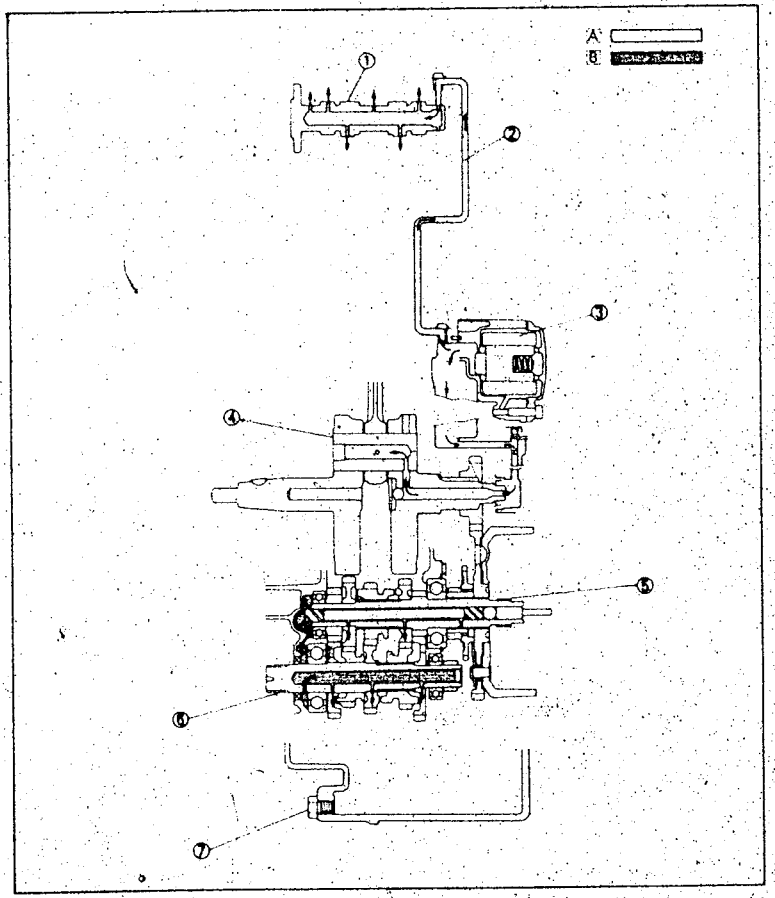


LUBRICATION DIAGRAM

SPEC 98

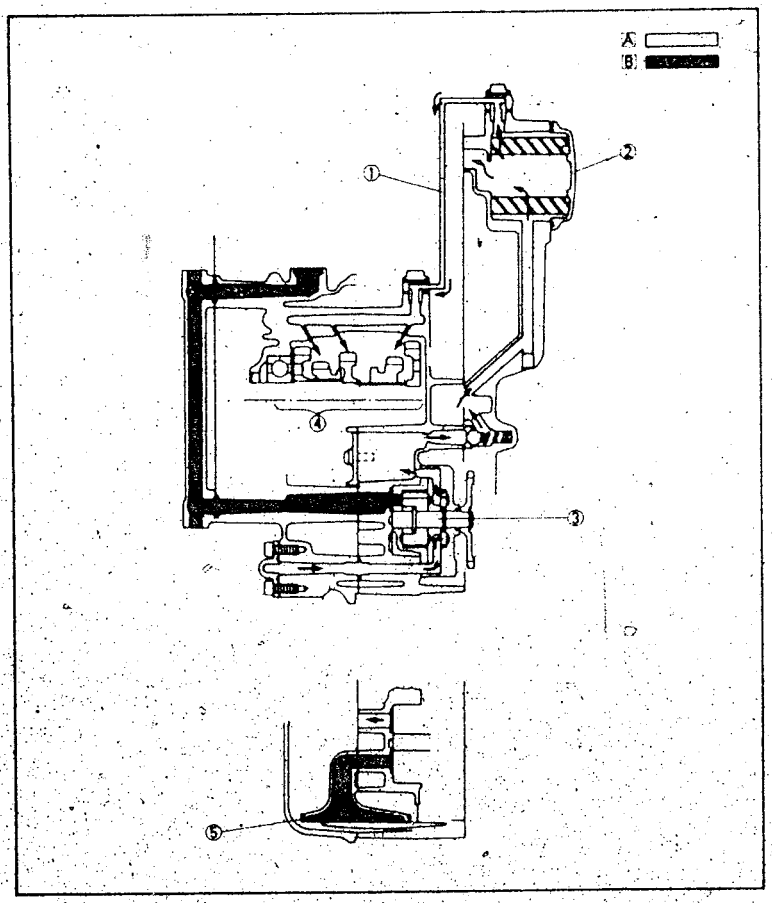
① Cam shaft
② Oil delivery pipe
③ Oil filter
④ Crank pin
⑤ Main axle
⑥ Drive axle
⑦ Drain bolt

Ⓐ Feed
Ⓑ Scavenge



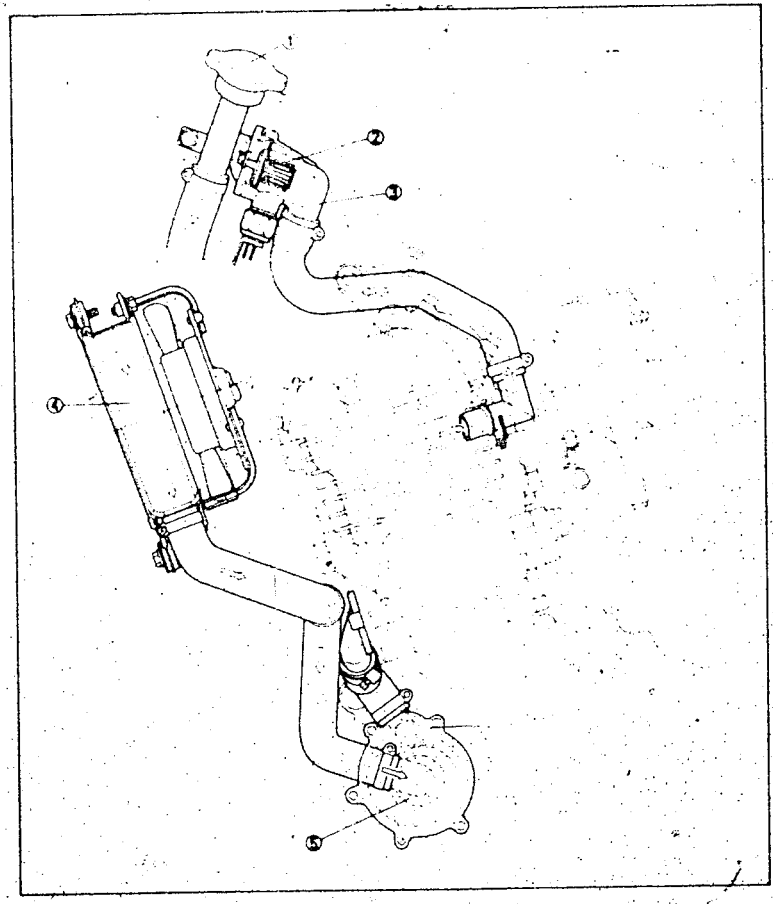
① Oil delivery pipe
② Oil filter
③ Oil pump
④ Transmission
⑤ Oil strainer

Ⓐ Feed
Ⓑ Scavenge



COOLANT DIAGRAM

① Radiator cap
② Thermostat
③ Thermostat housing
④ Radiator
⑤ Water pump

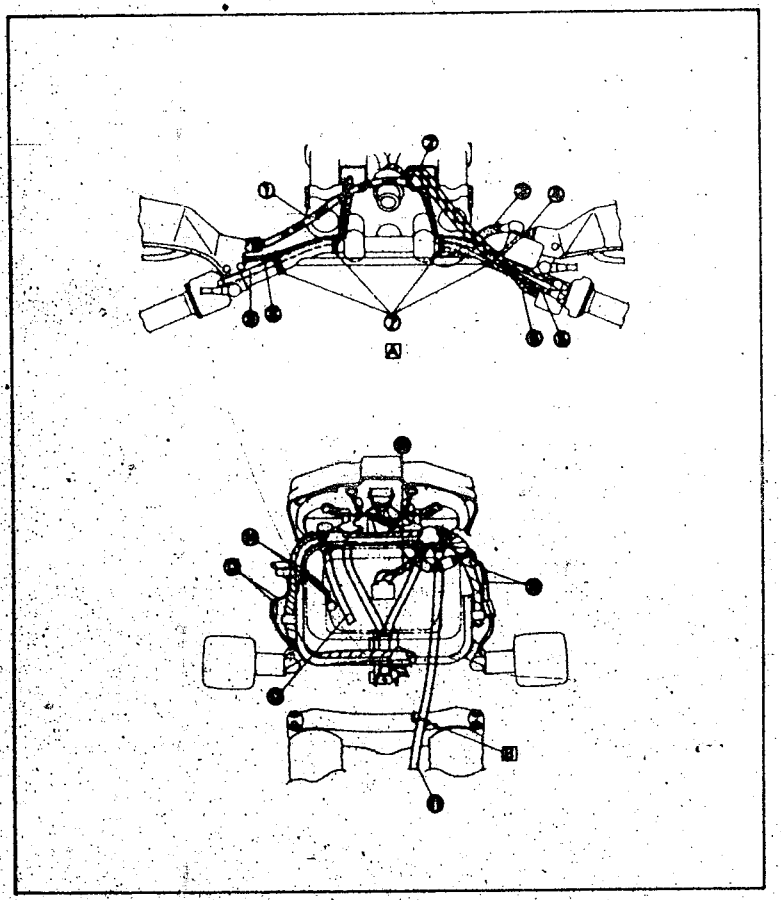


B-14

CABLE ROUTING

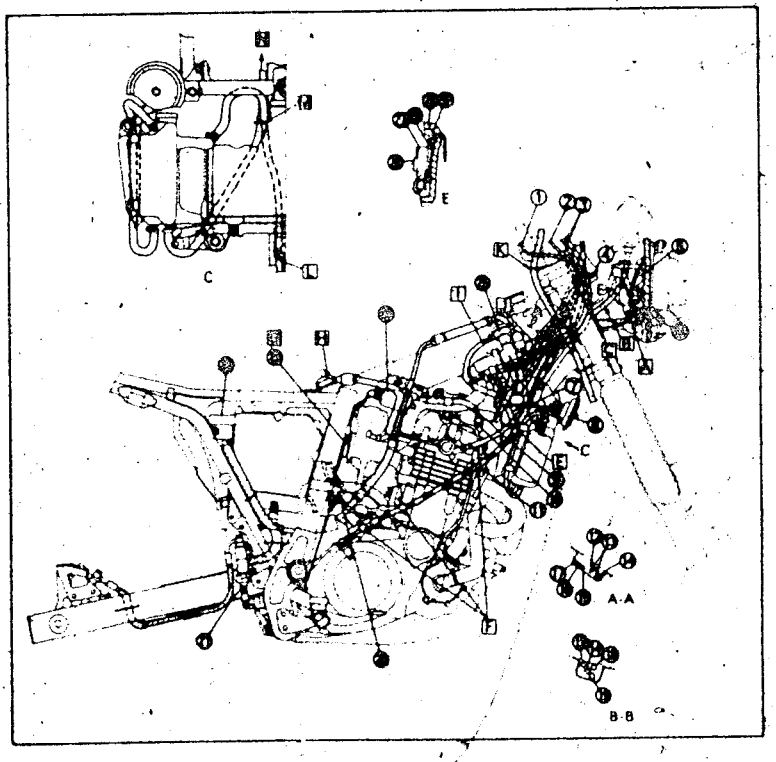
1. Clutch cable
2. Cable guide
3. Brake hose
4. Front brake switch lead
5. Throttle cable
6. Handlebar switch lead
7. Band
8. Clutch switch lead
9. Handlebar switch lead
10. Flasher light lead (Left)
11. Speedometer cable
12. Tachometer cable
13. Flasher light lead (Right)
14. Headlight lead (Auxiliary light)
15. Headlight lead

A. Do not clamp the lead tightly when turning the handlebars.
B. Pass the speedometer cable through the cable guide.



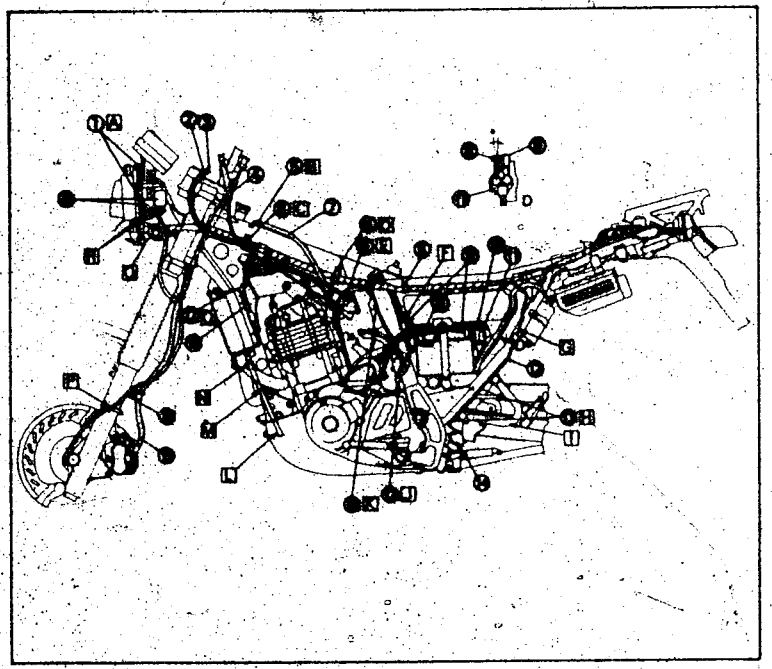
1. Handlebar switch lead (Right)
2. Front brake switch lead
3. Throttle cable
4. Main switch lead
5. Plate
6. Rectifier/regulator
7. Band
8. Horn
9. High tension cord
10. Spark plug cap
11. Cable holder
12. Tachometer cable
13. Throttle cable
14. Clutch cable
15. Front brake switch lead
16. Main switch lead
17. Handlebar switch lead (Right)
18. Recovery tank breather hose
19. Recovery tank conduction hose
20. Rear brake switch
21. Master cylinder
22. Reservoir tank
23. Clamp
24. Ignition coil
25. Conduction
26. Earth lead
27. Rectifier/regulator
28. Plate
29. Main harness
30. Cowling stay

A. Connect to the rectifier/regulator
B. Pass the tachometer cable inside of all the cables and harnesses. (Side of head pipe)
C. Pass the tachometer cable through the cable guide.
D. Pass the throttle cable through the cable guide.
E. Pass through the cable guide (View B-B).
F. Clamp the clutch cable to the holder.
G. Clamp the rear brake swith lead.
H. Insert the end of the air vent hose into the frame.
I. Clip (Insert the recovery tank hose and clamp securely.)
J. Cable guide (Pass all the cables and harnesses inside of it.)
K. Cable guide (Pass the brake hose.)
L. Pass the recovery tank breather hose through the frame bracket.
M. Pass through the cable guide (View B-B)
N. To conduction



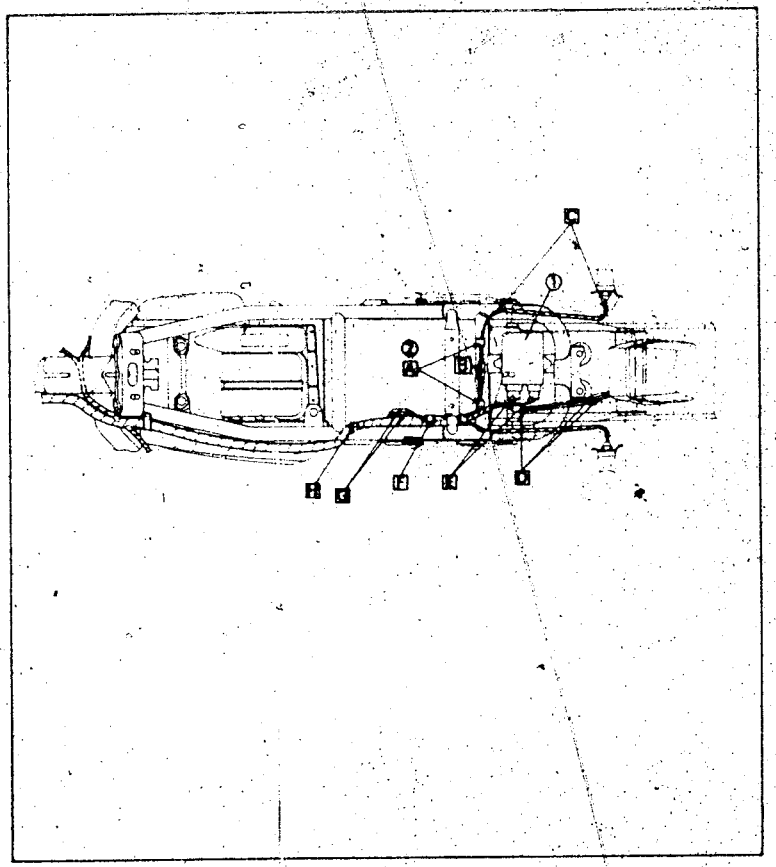
① Clamp
② Clutch switch lead
③ Handlebar switch lead (Left)
④ Starter cable
⑤ Clip
⑥ Clamp
⑦ Oil tank breather hose
⑧ Battery ⊕ lead
⑨ Battery ⊖ lead
⑩ Starter lead
⑪ Starter relay assembly
⑫ Sidestand switch lead
⑬ Clamp
⑭ Sidestand switch
⑮ Cable guide
⑯ Fan motor lead (Radiator)
⑰ Clamp
⑱ Speedometer cable
⑲ Brake hose
⑳ Relay

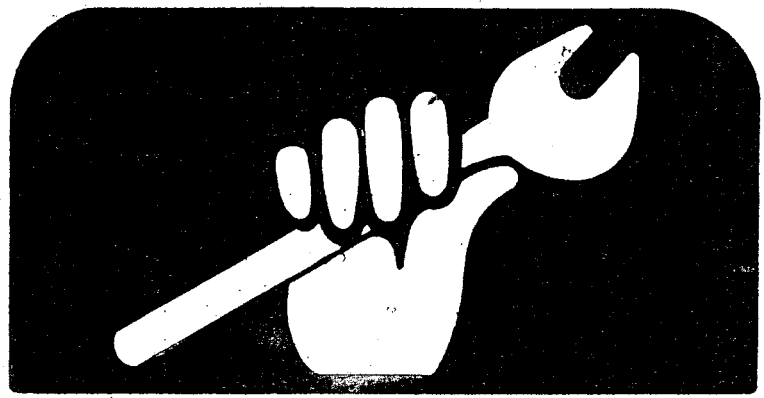
[A] Clamp the main harness (Left and right).
[B] Insert the hose until stops and clamp securely.
[C] Clamp the main harness and the starter cable.
[D] Clamp the main harness.
[E] Pass the oil tank breather hose.
[F] Connect the AC magneto lead and the wireharness.
[G] Clamp the sidestand switch lead.
[H] Clamp the sidestand switch lead securely.
[I] Do not pinch the sidestand switch lead when installing the rear footrest.
[J] Clamp the flywheel magneto lead and the overflow pipe.
[K] Clamp the vacuum pipe.
[L] Insert the radiator breather hose inside of the engine protector.
[M] Pass the radiator breather hose.
[N] Pass the radiator breather hose to the right side of the radiator bracket.
[O] Clamp the fan motor lead.
[P] Fit the locating hole of the band to the projection inside of the front fork.
[Q] Clamp the main harness.
[R] Connect to the relay.



① Ignitor unit
② Clamp

[A] Clamp the rear flasher light lead (Right).
[B] Connect the rearflasher light lead (Right) and the wireharness.
[C] Pass through the rear fender hole (Left and right).
[D] Connect the taillight lead and the wireharnesss.
[E] Connect to the ignitor unit.
[F] Pass the rear flasher light lead (Left) under the wire harness and clamp.
[G] Connect the rear flasher light lead (Left) and the wireharness.
[H] Clamp the main harness.





INSP ADJ 3

CHAPTER 3.
PERIODIC INSPECTION AND ADJUSTMENT

INTRODUCTION C-3

PERIODIC MAINTENANCE/LUBRICATION INTERVALS C-3

SEAT, FUEL TANK AND COVER C-4
- REMOVAL C-4
- INSTALLATION C-5

COWLING C-6
- REMOVAL C-6
- INSTALLATION C-6

ENGINE C-7
- VALVE CLEARANCE ADJUSTMENT C-7
- CAM CHAIN ADJUSTMENT C-8
- IDLING SPEED ADJUSTMENT C-8
- THROTTLE CABLE FREE PLAY ADJUSTMENT C-9
- SPARK PLUG INSPECTION C-10
- IGNITION TIMING CHECK C-10
- COMPRESSION PRESSURE MEASUREMENT C-11
- ENGINE OIL LEVEL INSPECTION C-12
- ENGINE OIL REPLACEMENT C-13
- OIL PRESSURE INSPECTION C-15
- CLUTCH ADJUSTMENT C-15
- AIR FILTER CLEANING C-16
- CARBURETOR JOINT INSPECTION C-16
- FUEL LINE INSPECTION D-1
- CRANKCASE VENTILATION HOSE INSPECTION D-1
- EXHAUST SYSTEM INSPECTION D-1
- COOLANT LEVEL INSPECTION D-1
- COOLANT REPLACEMENT D-2
- COOLING SYSTEM INSPECTION D-4

CHASSIS D-4
- FRONT BRAKE ADJUSTMENT D-4
- REAR BRAKE ADJUSTMENT D-5
- BRAKE FLUID LEVEL INSPECTION D-5
- BRAKE PAD INSPECTION D-6
- BRAKE LIGHT SWITCH ADJUSTMENT D-6
- BRAKE HOSE INSPECTION D-6
- AIR BLEEDING (HYDRAULIC BRAKE SYSTEM) D-7
- DRIVE CHAIN SLACK ADJUSTMENT D-7
- DRIVE CHAIN LUBRICATION D-8
- STEERING HEAD ADJUSTMENT D-9
- FRONT FORK INSPECTION D-10
- REAR SHOCK ABSORBER ADJUSTMENT D-10
- TIRE INSPECTION D-11
- WHEEL INSPECTION D-13
- SPOKES INSPECTION AND TIGHTENING D-13
- CABLE INSPECTION AND LUBRICATION D-13
- LEVER AND PEDAL LUBRICATION D-13
- SIDESTAND LUBRICATION D-13
- REAR SUSPENSION LUBRICATION D-14

ELECTRICAL D-14
- BATTERY INSPECTION D-14
- FUSE INSPECTION E-1
- HEADLIGHT BEAM ADJUSTMENT E-2
- HEADLIGHT BULB REPLACEMENT E-2

PERIODIC INSPECTION AND ADJUSTMENT

INTRODUCTION

This chapter includes all information necessary to perform recommended inspections and adjustments. These preventive maintenance procedures, if followed, will ensure more reliable vehicle operation and a longer service life. The need for costly overhaul work will be greatly reduced. This information applies to vehicles already in service as well as new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

PERIODIC MAINTENANCE/LUBRICATION INTERVALS

Unit (miles)

ITEM	REMARKS	BREAK-IN 1,000 (600)	EVERY 6,000 (4,000) or 6 months	EVERY 12,000 (8,000) or 12 months
Valve(s)*	Check valve clearance. Adjust if necessary.	O	O	O
Spark plug(s)	Check condition. Clean or replace if necessary.	O	O	O
Air filter	Clean. Replace if necessary.		O	O
Carburetor*	Check idle speed/starter operation. Adjust if necessary.	O	O	O
Fuel line*	Check fuel hose for cracks or damage. Replace if necessary.		O	O
Engine oil	Replace (Warm engine before draining).	O	O	O
Engine oil filter*	Replace.	O	O	O
Engine oil strainer*	Clean.	O	O	O
Brake*	Check operation/fluid leakage/See NOTE. Correct if necessary.		O	O
Clutch	Check operation. Adjust if necessary.		O	O
Rear arm pivot*	Check rear arm assembly for looseness. Correct if necessary. Moderately repack.***	O	O	O
Rear suspention link pivot*	Check operation. Moderately repack***	O	O	O
Wheels*	Check bearings/damage/runout/Spoke tightness. Repair if necessary.		O	O
Wheel bearings*	Check bearings assembly for looseness/damage. Replace if damaged.	O		O
Steering bearings*	Check bearings assembly for looseness. Correct if necessary. Moderately repack every 24,000 (16,000) or 24 months.**	O		O
Front forks*	Check operation/oil leakage. Repair if necessary.		O	O
Rear shock absorber*	Check operation/oil leakage. Repair if necessary.		O	O
Cooling system	Check coolant leakage. Repair if necessary. Replace coolant every 24,000 (16,000) or 24 months.		O	O

Unit: km (miles)

ITEM	REMARKS	BREAK-IN 1,000 (600)	EVERY 6,000 (4,000) or 6 months	EVERY 12,000 (8,000) or 12 months
Drive chain	Check chain slack/alignment. Adjust if necessary. Chain and lube.		EVERY 500 (300)	
Fittings/Fasteners*	Check all chassis fitting and fasterners. Correct if necessary.	O	O	O
Sidestand*	Check operation. Repair if necessary.	O	O	O
Sidestand switch*	Check operation. Clean or replace if necessary.	O	O	O

* It is recommended that these items be serviced by a Yamaha dealer.
** Medium weight wheel bearing grease.
***: Molybdenum disulfide grease.

NOTE:

Brake system:

1. When disassembling the master cylinder or caliper cylinder, replace the brake fluid. Normally check the brake fluid level and add the fluid as required.
2. We recommended that, on the inner parts of the master cylinder and caliper cylinder, replace the oil seals every two years.
3. We recommended that replace the brake hoses every four years, or if cracked or damaged.











SEAT, FUEL TANK AND COVER

REMOVAL

⚠ WARNING

Securely support the motorcycle so there is no danger of it falling over.

1. Remove:
   - Seat
2. Remove:
   - Side cover (left) ①

NOTE:

When removing the side cover (left), remove the bolt ②. Then pull the front and rear portion of the side cover outward to remove the projection ③ from the grommet.

3. Remove:
   - Side cover (right) ①

NOTE:

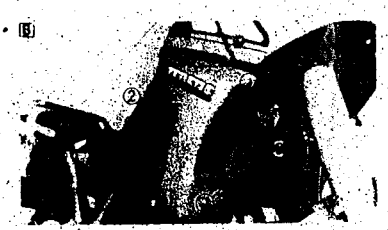
When removing the side cover (right), remove the bolt ②. Then pull the front portion of the side cover outward to remove the projection ③ from the grommet. Then remove the side cover by pulling the rear portion ④ upward.

Ⓐ





Ⓑ





4. Remove:
   - Air scoop (left) ①
   - Air scoop (right) ②

NOTE:

When removing the air scoops, remove the bolt ③. Then pull the rear portion ④ of the air scoop forward to remove the air scoop from the fuel tank.

Ⓐ Air scoop (left)
Ⓑ Air scoop (right)



5. Remove:
   - Bolt ① (cowling and fuel tank)
   - Bolt ② (cowling and fuel tank)



6. Remove:
   - Bolt ① (fuel tank)
   - Bolt ② (fuel tank)



7. Turn the fuel cock to "OFF".



8. Disconnect:
   - Fuel hose ①

NOTE:

Place a rag on the engine to absorb a spilt fuel.

⚠ WARNING

Gasoline is highly flammable.
Avoid spilling fuel on the hot engine.



9. Remove:
   - Fuel tank ①

INSTALLATION

Reverse the "REMOVAL" procedure. Note the following points.

1. Install:
   - Fuel tank
   - Bolts (cowling and fuel tank)
   - Air scoops

Bolts (fuel tank):
7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolts (cowling and fuel tank):
7 Nm (0.7 m·kg, 5.1 ft·lb)

2. Install:
   - Side covers
   - Seat

Bolt (side cover):
7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (seat):
10 Nm (1.0 m·kg, 7.2 ft·lb)

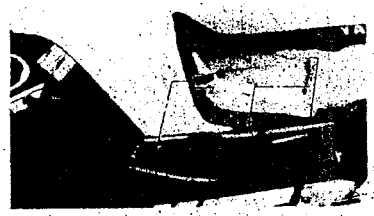
COWLING

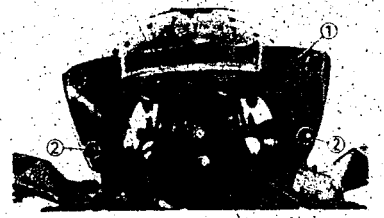
REMOVAL

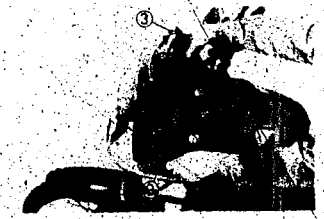
1. Remove:
   - Inner panel ①

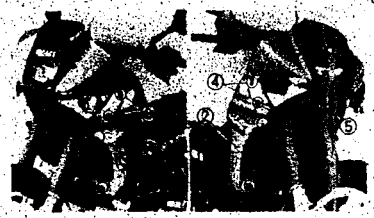
NOTE:

When removing the inner panel ①, remove the bolts ②. Then pull the projections ③ from the grommets.









2. Remove:
   - Air scoop (left) ①
   - Air scoop (right) ②
   - Bolt ③ (cowling and fuel tank)
   - Bolt ④ (cowling and fuel tank)
     Refer to the "SEAT, FUEL TANK AND COVER" section.
   - Bolt ⑤ (cowling and cowling stay)



3. Disconnect:
   - Front flasher light leads ①
   - Rubber covers ②



4. Remove:
   - Rubber dampers ①



5. Remove:
   - Front flasher light (left) ①
   - Front flasher light (right) ②



6. Remove:
   - Bolt ① (cowling and cowling stay)



7. Remove:
   - Cowling ①



INSTALLATION

Reverse the "REMOVAL" procedure.
Note the following points.

1. Install:
   - Cowling ①

2. Install:
   - Bolts (cowling and cowling stay)
   - Front flasher lights
   - Rubber damper

3. Connect:
   - Rubber covers (front flasher light)
   - Front flasher light leads

4. Install:
   - Air scoops
   - Bolts (cowling and fuel tank)
   - Inner panel

Bolts (cowling and cowling stay):
7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolts (cowling and fuel tank):
7 Nm (0.7 m·kg, 5.1 ft·lb)

ENGINE

VALVE CLEARANCE ADJUSTMENT

NOTE:

- The valve clearance must be adjusted when the engine is cool to the touch.
- Adjust the valve clearance when the piston is at the Top Dead Center (T.D.C.) on compression stroke.

⚠ WARNING

Securely support the motorcycle so there is no danger of it falling over.

1. Remove:
   - Seat
   - Side covers
   - Air scoops
   - Fuel tank

   Refer to the "SEAT, FUEL TANK AND COVER" section.



2. Remove:
   - Bolt ① (radiator stay)
   - Bolt ② (radiator)

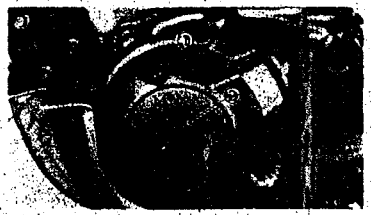


3. Disconnect:
   - Leads (ignition coil) ①
   - Plug cap ②

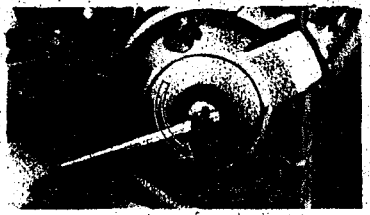
4. Remove:
   - Ignition coil ③



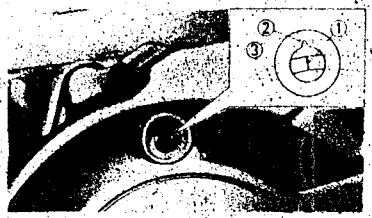
5. Remove:
   - Tappet cover ① (intake)
   - Tappet cover ② (exhaust)



6. Remove:
   - Plug ①
   - Plug ②



7. Turn the crankshaft counterclockwise with a wrench.



8. Align:
   - "T" mark ①

   With stationary pointer ②.

NOTE:

Make sure the piston is at the T.D.C. on compression stroke.

③ Ignition timing mark



9. Check:
   - Valve clearance

   Measure the valve clearance by using a feeler gauge ①.

   Out of specification → Adjust.

Valve clearance (cold):
Intake:
0.10 ~ 0.15 mm (0.004 ~ 0.006 in)
Exhaust:
0.15 ~ 0.20 mm (0.006 ~ 0.008 in)





10. Adjust:
    - Valve clearance

Adjustment steps:
- Loosen the locknut (1).
- Insert a Feeler Gauge (2) between the adjuster end and the valve end.
- Turn the adjuster (3) clockwise or counterclockwise with the valve adjusting tool (4) until proper clearance is obtained.

Valve adjusting tool:
P/N. YM-08035
P/N. 90890-01311

- Hold the adjuster to prevent it from moving and thoroughly tighten the locknut.

Locknut:
14 Nm (1.4 m·kg, 10 ft·lb)

- Measure the valve clearance.
- If the clearance is incorrect, repeat above steps until the proper clearance is obtained.

11. Install:
    Reverse removal steps.
    - Plugs
    - Tappet cover (intake)
    - Tappet cover (exhaust)

Tappet cover (exhaust):
12 Nm (1.2 m·kg, 8.7 ft·lb)
Bolt (tappet cover-intake):
10 Nm (1.0 m·kg, 7.2 ft·lb)

12. Install:
    - Ignition coil

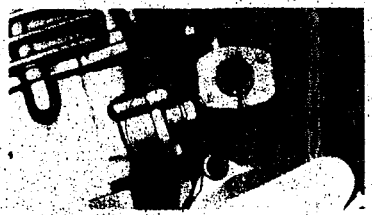
13. Connect:
    - Leads (ignition coil)
    - Spark plug cap

14. Install:
    - Bolts (radiator)
    - Bolt (radiator stay)

15. Install:
    - Fuel tank
    - Air scoops
    - Side covers
    - Seat

    Refer to the "SEAT, FUEL TANK AND COVER" section.

Bolts (fuel tank, cowling and fuel tank, side cover):
7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (seat):
10 Nm (1.0 m·kg, 7.2 ft·lb)





CAM CHAIN ADJUSTMENT
Adjustment free.

IDLING SPEED ADJUSTMENT
1. Start the engine and let it warm up for several minutes.
2. Attach:
    - Inductive tachometer

    to the spark plug lead.

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

3. Check:
    - Engine idling speed

    Out of specification → Adjust.

Engine idling speed:
1,250 – 1,350 r/min



4. Adjust:
   • Engine idling speed

Adjustment steps:
- Turn in the pilot screw (1) until it is lightly seated.
- Turn out the pilot screw for the specified number of turns.

Pilot screw:
2 and 1/2 turns out

- Turn the throttle stop screw (2) in or out until specified idling speed is obtained.

Turn in → Idling speed becomes higher.
Turn out → Idling speed becomes lower.

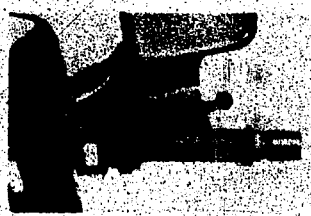
5. Remove:
   • Inductive tachometer

6. Adjust:
   • Throttle cable free play
   Refer to the "THROTTLE CABLE FREE PLAY ADJUSTMENT" section.

Free play:
3 ~ 5 mm (0.12 ~ 0.20 in)

THROTTLE CABLE FREE PLAY ADJUSTMENT

NOTE:
Before adjusting the throttle cable free play, the engine idle speed should be adjusted.



1. Check:
   • Throttle cable free play (a)
   Out of specification → Adjust.

Throttle cable free play:
3 ~ 5 mm (0.12 ~ 0.20 in)

2. Remove:
   • Seat
   • Side covers
   • Air scoops
   • Fuel tank
   Refer to the "SEAT, FUEL TANK AND COVER" section.

3. Adjust:
   • Throttle cable free play



Adjustment steps:
- Loosen the locknuts (1) on the throttle cable 1 (2).
- Turn the adjuster (3) clockwise or counterclockwise until proper free play is obtained.
- If the play is still incorrect after the adjuster is loosened 5 mm (0.2 in), make an adjustment with the adjuster (4) on the throttle cable 2 (5).
- Tighten the locknuts.

①, ⑥ Locknuts

4. Install:
   • Fuel tank
   • Air scoops
   • Side covers
   • Seat

Bolts (fuel tank, cowling and fuel tank, side cover):
7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (seat):
10 Nm (1.0 m·kg, 7.2 ft·lb)



SPARK PLUG INSPECTION

1. Disconnect:
   - Spark plug cap ①
   - Rubber cover ②

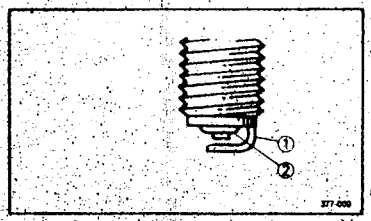
2. Remove:
   - Spark plug

CAUTION:

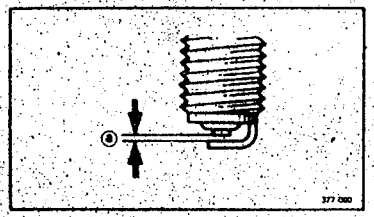
When removing the spark plug, use caution to prevent an object from falling into the engine.

3. Inspect:
   - Spark plug type
   Incorrect → Replace.

Standard spark plug:
DPR8EA-9 (N.G.K.), DPR9EA-9 (N.G.K.)



4. Inspect:
   - Electrode ①
   Wear/Damage → Replace.
   - Insulator ②
   Abnormal color → Replace.
   Normal color is a medium-to-light tan color.



5. Clean the spark plug with a spark plug cleaner or wire brush.
6. Measure:
   - Plug gap ⓐ
   Use a wire gauge or feeler gauge.
   Out of specification → Regap.

Spark plug gap:
0.8 ~ 0.9 mm (0.031 ~ 0.035 in)

7. Tighten:
   - Spark plug(s)

Spark plug:
17.5 Nm (1.75 m-kg, 12.5 ft-lb)

NOTE:
- Before installing a spark plug, clean the gasket surface and plug surface.
- If a torque wrench is not available when you are installing a spark plug, a good estimate of the correct torque is 1/4 to 1/2 turns past finger tight. Have the spark plug torqued to the correct value as soon as possible with a torque wrench.

8. Connect:
   - Spark plug cap
   - Rubber cover

IGNITION TIMING CHECK

NOTE:

Engine idling speed and throttle cable free play should be adjusted properly before checking the ignition timing.

1. Start the engine and let it warm up for several minutes.
2. Attach:
   - Inductive tachometer
   - Timing light
   to spark plug lead.

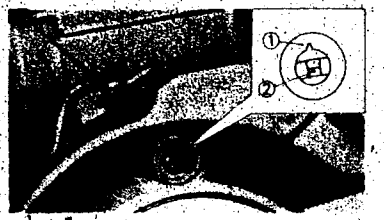
Inductive tachometer:
P/N. YU-08036-A
P/N. 90890-03113
Timing light:
P/N. YM-33277-A
P/N. 90890-03109



3. Remove:
   - Plug ①

CAUTION:

Under extreme conditions, the oil may spurt out when removing the plug. Therefore care should be used when removing.



4. Check:
   • Ignition timing

Checking steps:

● Warm up the engine and let it run at the specified speed.

Engine speed:
1,300 r/min

● Visually check the stationary pointer (1) to verify it is within the required firing range (2) indicated on the flywheel.
Incorrect firing range → Check pickup assembly.

NOTE:

Ignition timing is not adjustable.

5. Install:
   • Plug
6. Detach:
   • Timing light
   • Inductive tachometer

COMPRESSION PRESSURE MEASUREMENT

NOTE:

Insufficient compression pressure will result in performance loss.

1. Remove:
   • Seat
   • Side covers
   • Air scoops
   • Fuel tank
   Refer to the "SEAT, FUEL TANK AND COVER" section.

2. Check:
   • Valve clearance
   Out of specification → Adjust.
   Refer to the "VALVE CLEARANCE ADJUSTMENT" section.

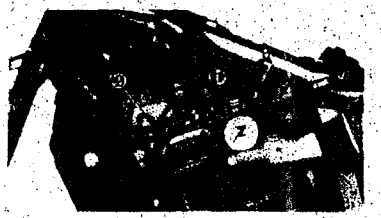
3. Install:
   • Sub tank (fuel)

4. Start the engine and let it warm up for several minutes.

5. Stop the engine.

6. Disconnect:
   • Spark plug cap
   • Rubber cover

7. Remove:
   • Spark plug
   Refer to the "SPARK PLUG INSPECTION" section.



8. Attach:
   • Compression gauge (1)
   • Adapter (2)

Compression gauge:
P/N. YU-33223
P/N. 90890-03081
Adapter:
P/N. YU-33223-3
P/N. 90890-04082

9. Check:
   • Compression pressure

Checking steps:

● Crank over the engine with the electric starter (be sure the battery is fully charged) with the throttle wide-open until the compression reading on the gauge stabilizes.

⚠ WARNING

When cranking the engine, ground the spark plug lead to prevent sparking.

● Check reading with specified levels (see chart).

Compression pressure (at sea level):
Standard:
1,100 kPa (11 kg/cm², 156 psi)
Minimum:
900 kPa (9 kg/cm², 128 psi)
Maximum:
1,200 kPa (12 kg/cm², 171 psi)

- If pressure falls below the minimum level:
1) Squirt a few drops of oil into the affected cylinder.
2) Measure the compression again.

Compression pressure (with oil introduced into cylinder)	
Reading	Diagnosis
Higher than without oil	Worn or damaged pistons
Same as without oil	Defective ring(s), valves, cylinder head gasket or piston is possible.
Above maximum level	Inspect cylinder head, valve surfaces, or piston crown for carbon deposits.

10. Remove:
- Sub tank (fuel)
- Compression gauge (with an adapter)

11. Install:
- Spark plug

Spark plug:
17.5 Nm (1.75 m·kg, 12.5 ft·lb)

Refer to the "SPARK PLUG INSPECTION" section.

12. Connect:
- Spark plug cap
- Rubber cover

13. Install:
- Fuel tank
- Air scoops
- Side covers
- Seat

Bolts (fuel tank, cowling and fuel tank, side cover):
7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (seat):
10 Nm (1.0 m·kg, 7.2 ft·lb)

ENGINE OIL LEVEL INSPECTION

CAUTION:
Do not add any chemical additives. Engine oil also lubricates the clutch and additives could cause clutch slippage.

⚠ WARNING
Never remove the oil tank cap just after high speed operation. The heated oil could spurt out, causing danger. Wait until the oil cools down to approximately 70°C (158°F).





1. Place the motorcycle on a level place.

2. Remove:
- Oil tank cap 1

3. Inspect:
- Oil level

Oil level should be between the maximum level 1 and minimum level 2.

NOTE:
- Be sure the motorcycle is positioned straight up when checking the oil level.
- When inspecting the oil level, do not screw the oil level gauge into the oil tank. Insert the gauge lightly.

Oil level is incorrect → Add the oil up to the minimum level.

Recommended oil:
SAE 20W40 type SE motor oil or SAE 10W30 type SE motor oil

4. Install:
   •Oil tank cap
5. Start the engine and warm up until the oil temperature rises to approximately 70°C (158°F).

CAUTION:

When the oil tank is empty, never start the engine.

6. Idle the engine more than 10 seconds while keeping the motorcycle upright. Then stop the engine and add the oil to the maximum level.
7. Install:
   •Oil tank cap

Oil quantity:
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)

ENGINE OIL REPLACEMENT

CAUTION:

Do not add any chemical additives. Engine oil also lubricates the clutch and additives could cause clutch slippage.

⚠ WARNING

Never remove the oil tank cap just after high speed operation. The heated oil could spurt out, causing danger. Wait until the oil cools down to approximately 70°C (158°F).





Engine oil replacement (without oil filter)
1. Place the motorcycle on a level place.
2. Remove:
   •Engine guard 1
3. Warm up the engine for several minutes, then stop the engine. Then place a receptacle under the drain bolt.
4. Remove:
   •Oil tank cap
   •Drain bolt (oil tank) 1
   •Drain bolt (crankcase) 2
5. Drain:
   •Engine oil

NOTE:

When the drain bolt 1 is removed, the oil will not drain directly downward. Therefore a receptacle should be placed slightly in front of the drain bolt.

6. Remove:
   •Air bleed screw 1
   •Bolt 2 (oil filter cover)

NOTE:

The oil filter cover is secured by three screws. The lower one should be removed so that the filter cavity will drain.

7. Inspect:
   •Gasket (each)
   Damage → Replace.
8. Install:
   •Bolt (oil filter cover)
   •Drain bolt (oil tank)
   •Drain bolt (crankcase)

Bolt (oil filter cover):
10 Nm (1.0 m·kg, 7.2 ft·lb)
Drain bolt (oil tank):
18 Nm (1.8 m·kg, 13 ft·lb)
Drain bolt (crankcase):
30 Nm (3.0 m·kg, 22 ft·lb)

9. Fill:
- Oil tank (to frame)
- Oil filter chamber

Recommended oil:
SAE 20W40 type SE motor oil or
SAE 10W30 type SE motor oil
Oil quantity:
Oil tank
2.8 L (2.3 Imp qt, 2.7 US qt)
Oil filter chamber
0.06 L (0.05 Imp qt, 0.06 US qt)

[illegible]:

- Do not allow foreign material to enter the crankcase.
- Do not add any chemical additives. Engine oil also lubricates the clutch and additives could cause clutch slippage

10. Install:
- Air bleed screw

Air bleed screw:
5 Nm (0.5 m·kg, 3.6 ft·lb)

11. Inspect:
- Oil level
  Refer to the "ENGINE OIL LEVEL INSPECTION" section.
- Oil pressure
  Refer to the "OIL PRESSURE INSPECTION" section.
- Oil leaks

12. Install:
- Oil tank cap
- Engine guard

Nut (engine guard):
7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (engine guard):
7 Nm (0.7 m·kg, 5.1 ft·lb)

Engine oil replacement (with oil filter)

1. Place the motorcycle on a level place.
2. Remove:
   - Engine guard
   Refer to the "ENGINE OIL REPLACEMENT (without oil filter)" section.
3. Warm up the engine for several minutes, then stop the engine. Then place a receptacle under the drain bolts.



4. Remove:
   - Oil tank cap
   - Drain bolt 1 (oil tank)
   - Drain bolt 2 (crankcase)
5. Drain:
   - Engine oil

NOTE

When the drain bolt 1 is removed, the oil will not drain directly downward. Therefore a receptacle should be placed slightly in front of the drain bolt.



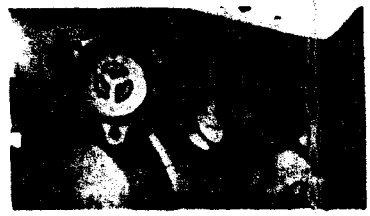
6. Remove:
   - Air bleed screw 1
   - Bolt 2

NOTE

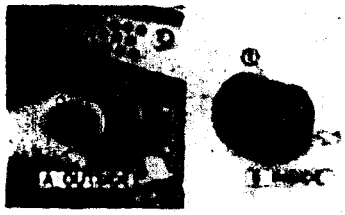
The oil filter cover is secured by three screws. The lower one should be removed so that the filter cavity will drain.



7. Remove:
   - Oil filter cover 1
   - Oil filter 2



8. Inspect:
   - Gasket (each)
   - O-ring 1
   Damage → Replace



9. Install
- Oil filter cover 1

CAUTION

Install the oil filter as shown

- Oil filter cover
- Drain bolt (crankcase)
- Drain bolt (oil tank)

Bolt (oil filter cover)
10 Nm (1.0 m-kg, 7.2 ft-lb)
Drain bolt (oil tank)
18 Nm (1.8 m-kg, 13 ft-lb)
Drain bolt (crankcase)
30 Nm (3.0 m-kg, 22 ft-lb)

10. Fill
- Oil tank (to frame)
- Oil filter chamber

Recommended oil
SAE 20W40 type SE motor oil or
SAE 10W30 type SE motor oil
Oil quantity
Oil tank
2.7 L (2.4 Imp qt, 2.9 US qt)
Oil filter chamber
0.05 L (0.05 Imp qt, 0.05 US qt)

CAUTION

- Do not allow foreign material to enter the crankcase.
- Do not add any chemical additives. Engine oil also lubricates the clutch and additives could cause clutch slippage.

11. Install
- Air bleed screw

Air bleed screw
5 Nm (0.5 m-kg, 3.6 ft-lb)

12. Inspect
- Oil level
Refer to the "ENGINE OIL LEVEL INSPECTION" section.
- Oil pressure
Refer to the "OIL PRESSURE INSPECTION" section.
- Oil leaks

13. Install
- Oil tank cap
- Engine guard

Nut (engine guard)
7 Nm (0.7 m-kg, 5.1 ft-lb)
Bolt (engine guard)
7 Nm (0.7 m-kg, 5.1 ft-lb)



OIL PRESSURE INSPECTION

1. Remove
- Air bleed screw 1
2. Start the engine and keep it idling for several minutes.
3. Inspect
- Oil condition of the bleed hole
Oil flows out - Oil pressure is good
No oil comes out - Oil pressure is bad

CAUTION

If no oil comes out after a lapse of one minute, turn off the engine immediately so it will not seize.

4. Tighten
- Air bleed screw

Air bleed screw
5 Nm (0.5 m-kg, 3.6 ft-lb)



CLUTCH ADJUSTMENT

1. Check
- Clutch cable free play a
Out of specification - Adjust

Free play
10 - 15 mm (0.4 - 0.6 in)
at clutch lever end

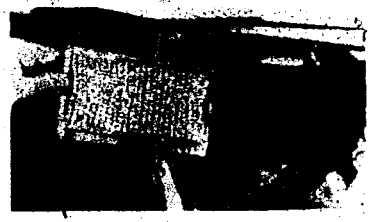


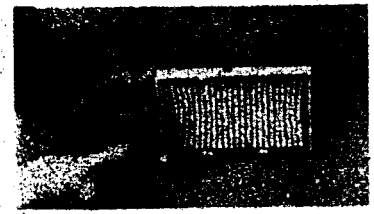
2. Adjust
- Clutch cable free play

Adjustment steps
- Loosen the locknut 1.
- Turn the adjuster 2 in or out until the specified free play is obtained.











Turning in → Free play is increased.
Turning out → Free play is decreased.

● Tighten the locknut(s).

AIR FILTER CLEANING

1. Remove:
   • Seat
   • Side cover (right)
   Refer to the "SEAT, FUEL TANK AND COVER" section.
   • Air filter case cover ①

2. Remove:
   • Air filter element ①

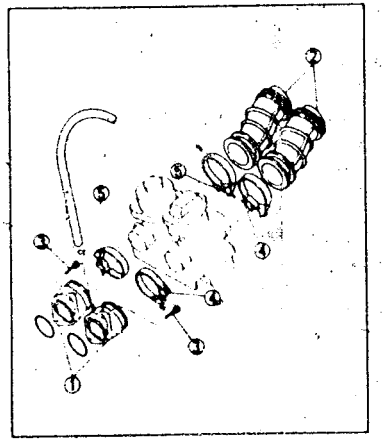
Never operate the engine with the air filter element removed. This will allow unfiltered air to enter, causing rapid wear and possible engine damage. Additionally, operation without the filter element will affect carburetor tuning with subsequent poor performance and possible engine overheating.

3. Inspect:
   • Air filter element
   Damage → Replace.

4. Clean.
   • Air filter element
   Blow out dust in the element from the outer surface using compressed air.

5. Install:
   • Air filter element

NOTE:
- Install the air filter element with the arrow mark on the top pointing inward.
- When installing the air filter element in its case, fit section ① into the slot ② of air filter case.



6. Install:
   • Air filter case cover
   • Side cover (right)
   • Seat

Bolt (side cover): 7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (seat): 10 Nm (1.0 m·kg, 7.2 ft·lb)

CARBURETOR JOINT INSPECTION

1. Remove:
   • Seat
   • Side covers
   • Air scoops
   • Fuel tank
   Refer to the "SEAT, FUEL TANK AND COVER" section.

2. Inspect:
   • Carburetor joint ①, ②
   Crack/Damage → Replace.

Bolt ③ (carburetor joint): 10 Nm (1.0 m·kg, 7.2 ft·lb)
Screw ④ (left): 2 Nm (0.2 m·kg, 1.4 ft·lb)
Screw ⑤ (right): 5 Nm (0.5 m·kg, 3.6 ft·lb)

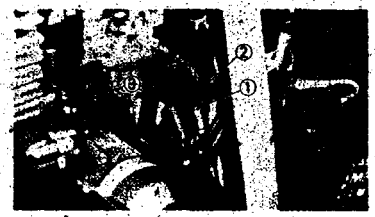
3. Install:
   • Fuel tank
   • Air scoops
   • Side cover
   • Seat

Bolts (fuel tank, cowling and fuel tank, side cover): 7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (seat): 10 Nm (1.0 m·kg, 7.2 ft·lb)

FUEL LINE INSPECTION

1. Remove:
   - Seat
   - Side covers
   - Air scoops
   - Fuel tank

   Refer to the "SEAT, FUEL TANK AND COVER" section.



2. Inspect:
   - Fuel hose ①
   - Vacuum hose ②
   - Delivery hose ③

   Crack/Damage → Replace.

3. Install:
   - Air scoops
   - Side covers
   - Seat

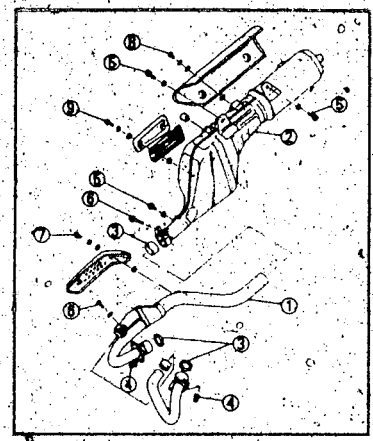
Bolts (fuel tank, cowling and fuel tank, side cover):	7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (seat):	10 Nm (1.0 m·kg, 7.2 ft·lb)



CRANKCASE VENTILATION HOSE INSPECTION

1. Inspect:
   - Crankcase ventilation hose ①

   Crack/Damage → Replace.



EXHAUST SYSTEM INSPECTION

1. Inspect:
   - Exhaust pipe ①
   - Muffler ②

   Crack/Damage → Replace.
   - Gasket ③

   Exhaust gas leaks → Replace.

Nut ④ (exhaust pipe):	10 Nm (1.0 m·kg, 7.2 ft·lb)
Bolt ⑤ (muffler):	40 Nm (4.0 m·kg, 29 ft·lb)
Bolt ⑥ (clamp):	20 Nm (2.0 m·kg, 14 ft·lb)
Screw ⑦ (protector):	7 Nm (0.7 m·kg, 5.1 ft·lb) Use LOCTITE®
Screw ⑧ (protector):	7 Nm (0.7 m·kg, 5.1 ft·lb) Use LOCTITE®
Screw ⑨ (protector):	7 Nm (0.7 m·kg, 5.1 ft·lb) Use LOCTITE®

YB2ADX00

COOLANT LEVEL INSPECTION

1. Place the motorcycle on a level place.

NOTE:
Position the motorcycle straight up when inspecting the coolant level.

2. Remove:
   - Air scoop (right)

3. Inspect:
   - Coolant level

   Coolant level should be between maximum ① and minimum ② marks.

   Coolant level low → Add soft water (tap water) to proper level.



CAUTION:

Hard water or salt water is harmful to the engine parts; use boiled or distilled water if you can't get soft water.

4. Start the engine and let it warm up for several minutes.
5. Stop the engine and inspect the coolant level once again.

NOTE:

Wait a few minutes until level settles before inspecting the coolant level.

6. Install:
   - Air scoop (right)

YA2AD001

COOLANT REPLACEMENT

1. Remove:
   - Seat
   - Side covers
   - Air scoops
   - Fuel tank

   Refer to the "SEAT, FUEL TANK AND COVER" section.

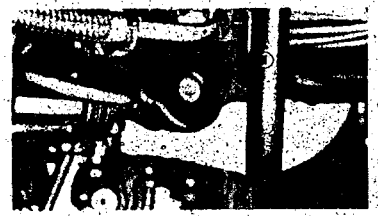


2. Remove:
   - Engine guard ①



3. Place a drain pan under the reservoir tank and drain bolts.
4. Disconnect:
   - Hose ① (reservoir tank)

   Drain the reservoir tank of its coolant.



5. Remove:
   - Radiator cap ①

⚠ WARNING

Do not remove the radiator cap when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. When the engine has cooled, open the radiator cap by the following procedure:
Place a thick rag, like a towel, over the radiator cap, slowly rotate the cap counterclockwise to the detente. This procedure allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning counterclockwise and remove it.



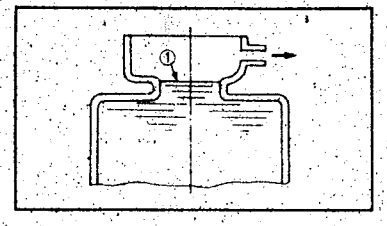
6. Remove:
   - Drain bolt ① (water pump)
   - Gasket (drain bolt)

   Drain the radiator and engine of its coolant.
7. Inspect:
   - Gasket (drain bolt)

   Damage → Replace.
8. Install:
   - Gasket (drain bolt)
   - Drain bolt (water pump)
   - Engine guard

Drain bolt (water pump):	10 Nm (1.0 m·kg, 7.2 ft·lb)
Nut (engine guard):	7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (engine guard):	7 Nm (0.7 m·kg, 5.1 ft·lb)

9. Connect:
   - Hose (reservoir tank)



10. Fill:
- Radiator
- Engine

(to specified level ①)

Recommended coolant:
High quality ethylene glycol anti-freeze containing anti-corrosion for aluminum engine inhibitors

Coolant and water (soft water)
Mixed ratio: 50%/50%
Total amount:
1.2 L (1.1 Imp qt, 1.3 US qt)
Reservoir tank capacity:
0.29 L (0.26 Imp qt, 0.31 US qt)

Handling notes of coolant:
- The coolant is harmful so it should be handled with special care.

⚠ WARNING

- When coolant splashes in your eye. Thoroughly wash your eye with water and see your doctor.
- When coolant splashes on your clothes. Quickly wash it away with water and then with soap.
- When coolant is swallowed. Quickly make him vomit and take him to a doctor.

CAUTION:

- Hard water or salt water is harmful to the engine parts; use boiled or distilled water if you can't get soft water.
- Do not use water containing impurities or oil.
- Take care so that coolant does not splash on painted surfaces. If it splashes, wash it away with water.
- Do not mix more than one type of ethylene glycol anti-freeze containing corrosion inhibitors for aluminum engines.

11. Install:
- Radiator cap



12. Fill:
- Reservoir tank

(to maximum level ①)

13. Start the engine and let it warm up for several minutes.

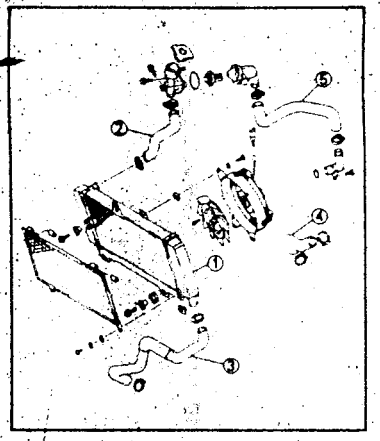
14. Stop the engine and inspect the level. Refer to the "COOLANT LEVEL INSPECTION" section.

NOTE:
Wait a few minutes until level settles before inspecting the coolant level.

15. Install:
- Fuel tank
- Air scoops
- Side covers
- Seat

Bolt (fuel tank, cowling and fuel tank, side cover):
7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (seat):
10 Nm (1.0 m·kg, 7.2 ft·lb)

COOLING SYSTEM INSPECTION



YB2A0002

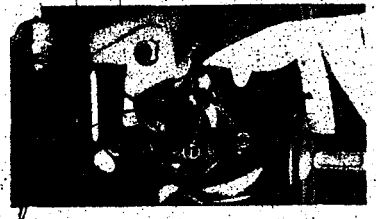
COOLING SYSTEM INSPECTION

1. Inspect:
   - Radiator ①
   - Hose ② (thermostat – radiator)
   - Hose ③ (radiator – water pump)
   - Pipe ④ (water pump – cylinder)
   - Hose ⑤ (cylinder head – thermostat housing)

   Cracks/Damage → Replace.
   Refer to the "COOLING SYSTEM" section in the CHAPTER 5.

FRONT BRAKE ADJUSTMENT





CHASSIS

FRONT BRAKE ADJUSTMENT

1. Check:
   - Brake lever free play ⓐ

   Out of specification → Adjust.

Free play: 2 – 5 mm (0.08 – 0.20 in)

2. Adjust:
   - Brake lever free play

Adjustment steps:

- Loosen the locknut ①.
- Turn the adjuster ② in or out until the specified free play is obtained.

Turn in → Free play is decreased.
Turn out → Free play is increased.

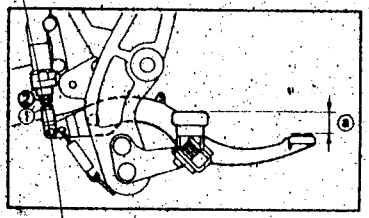
- Tighten the locknut.

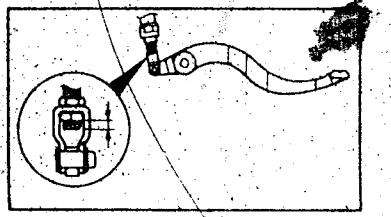
CAUTION:

Proper lever free play is essential to avoid excessive brake drag.

⚠ WARNING

A soft or spongy feeling in the brake lever can indicate the presence of air in the brake system. This air must be removed by bleeding the brake system before the motorcycle is operated. Air in the system will cause greatly diminished braking capability and can result in loss of control and an accident. Inspect and bleed the system if necessary.





V82A3004

REAR BRAKE ADJUSTMENT

1. Check:
   - Brake pedal height (B)
   Out of specification → Adjust.

	Brake pedal height: 25 mm (0.98 in) below top of footrest

2. Adjust:
   - Brake pedal height

Adjustment steps:
- Loosen the locknut (1).
- Turn the adjuster (2) in or out until the specified pedal height is obtained.

Turning in → Pedal height is increased.
Turning out → Pedal height is decreased.

WARNING

After adjusting the brake pedal height, visually check the adjuster end. The adjuster end must appear within 4.0 mm (0.16 in).

- Tighten the locknut.

	Locknut: 18 Nm (1.8 m·kg, 13 ft·lb)

CAUTION:

Make sure that the brake does not drag after adjusting it.

WARNING

A soft or spongy feeling in the brake pedal can indicate the presence of air in the brake system. This air must be removed by bleeding the brake system before the motorcycle is operated. Air in the system will cause greatly diminished braking capability and can result in loss of control and an accident. Inspect and bleed the system if necessary.

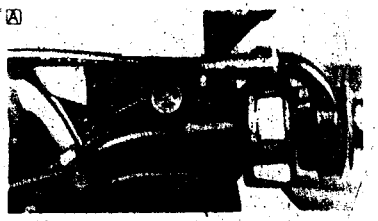
3. Adjust:
   - Brake light switch
   Refer to the "BRAKE LIGHT SWITCH ADJUSTMENT" section.

BRAKE FLUID LEVEL INSPECTION

1. Place the motorcycle on a level place.

NOTE:
- Position the motorcycle straight up when inspecting the brake fluid level.
- When inspecting the front brake fluid level, make sure the master cylinder top is horizontal by turning the handlebars.

2. Remove:
   - Seat
   - Side cover (right)
   Refer to the "SEAT, FUEL TANK AND COVER" section.





3. Inspect:
   - Brake fluid level
   Fluid level is under "LOWER" level line (1) → Fill up.

	Recommended brake fluid: Front: DOT No. 4 Rear: DOT No. 4

(A) Front
(B) Rear

CAUTION:

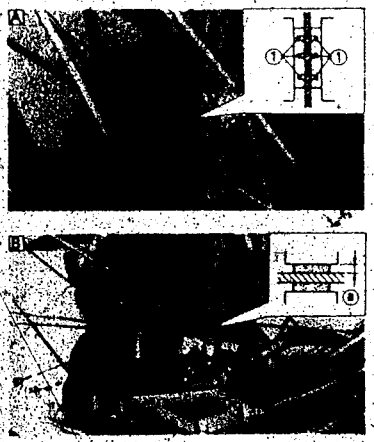
Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

WARNING

- **Use only the designated quality brake fluid: otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid: mixing fluids may result in a harmful chemical reaction and lead to poor performance.**
- **Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.**

4. Install:
   - Side cover (right)
   - Seat

Bolt (side cover (right)):
7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (seat):
10 Nm (1.0 m·kg, 7.2 ft·lb)



BRAKE PAD INSPECTION

1. Activate the brake lever or brake pedal.
2. Inspect:
   - Brake pad (front)
   Wear indicator ① almost contacts brake disc → Replace brake pad as a set.
3. Check:
   - Pad thickness (rear)
   Out of specification → Replace.

Wear limit:
Front: 1.0 mm (0.04 in)
Rear ②: 0.8 mm (0.03 in)

Refer to the "BRAKE PAD REPLACEMENT" section in the CHAPTER 7.

A Front brake
B Rear brake

BRAKE LIGHT SWITCH ADJUSTMENT

NOTE:

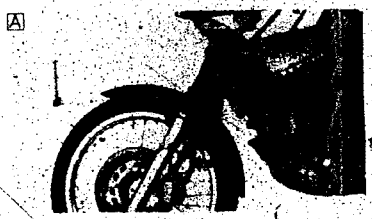
The brake light switch is operated by movement of the brake pedal.
Proper adjustment is achieved when the brake light comes on just before the brake begins to take effect.

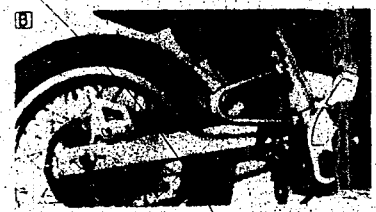
1. Check:
   - Brake light operating timing
   Incorrect → Adjust.
2. Adjust:
   - Brake light operating timing

Adjustment steps:

Hold the switch body ① with your hand so that it does not rotate and turn the adjusting nut ②.







BRAKE HOSE INSPECTION

1. Inspect:
   - Brake hose
   Crack/Damage → Replace.
   Refer to the "FRONT AND REAR BRAKE" section in the CHAPTER 7.

A Front
B Rear

AIR BLEEDING

INSP ADJ

D-7

AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

⚠ WARNING

Bleed the brake system if:
- **The system has been disassembled.**
- **A brake hose has been loosened or removed.**
- **The brake fluid is very low.**
- **The brake operation is faulty.**

A dangerous loss of braking performance may occur if the brake system is not properly bled.



1. Bleed:
   - Brake system

Air bleeding steps:

a. Add proper brake fluid to the reservoir.
b. Install the diaphragm. Be careful not to spill any fluid or allow the reservoir to overflow.
c. Connect the clear plastic tube (1) tightly to the caliper bleed screw.

(A) Front
(B) Rear

d. Place the other end of the tube into a container.
e. Slowly apply the brake lever or pedal several times.
f. Pull the lever in or push down on the pedal. Hold the lever or pedal in position.
g. Loosen the bleed screw and allow the lever or pedal to travel towards its limit.
h. Tighten the bleed screw when the lever or pedal limit has been reached; then release the lever or pedal.

	Bleed screw: **6 Nm (0.6 m·kg, 4.3 ft·lb)**

i. Repeat steps (e) to (h) until all of the air bubbles have been removed from the system.

DRIVE CHAIN SLACK ADJUSTMENT

INSP ADJ

NOTE:

If the bleeding is difficult, it may be necessary to let the brake fluid system stabilize for a few hours. Repeat the bleeding procedure when the tiny bubbles in the system have disappeared.

j. Add brake fluid to proper level.

⚠ WARNING

Check the operation of the brake after bleeding brake system.

YEA-41001

DRIVE CHAIN SLACK ADJUSTMENT

NOTE:

Before checking and/or adjusting, rotate the rear wheel several revolutions and check slack at several points to find the tightest point. Check and/or adjust the chain slack with the rear wheel in this "tightest" position.

CAUTION:

Too little of chain slack will overload the engine and other vital parts; keep the slack within the specified limits.

⚠ WARNING

Securely support the motorcycle so there is no danger of it falling over.

1. Place the motorcycle on a level place, and hold it in an upright position.

NOTE:

Both wheels should be on the ground without the rider on it.

DRIVE CHAIN SLACK ADJUSTMENT

INSP ADJ





2. Check:
   - Drive chain slack (a)
   Out of specification → Adjust.

Drive chain slack:
20 – 45 mm (0.79 – 1.77 in)
at both wheels on ground without rider

3. Adjust:
   - Drive chain slack

Adjustment steps:
- Remove the cotter pin (1) and loosen the axle nut (2).
- Loosen the locknut (3).
- Turn the adjuster (4) in or out until the specified slack is obtained.

Turning in → Slack is increased.
Turning out → Slack is decreased.

NOTE:
Turn each adjuster exactly the same amount to maintain correct axle alignment. (There are marks on each side of swingarm and on each chain puller; use them to check for proper alignment.)

- Tighten the axle nut to specification, while pushing up or down on the chain to zero slack.

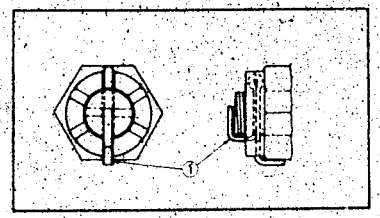
Axle nut:
100 Nm (10.0 m·kg, 72 ft·lb)

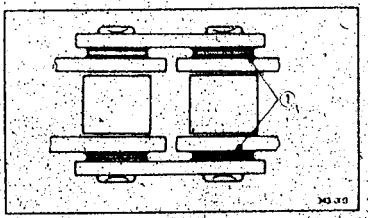
- Tighten the locknut.

Locknut:
16 Nm (1.6 m·kg, 11 ft·lb)

DRIVE CHAIN LUBRICATION

INSP ADJ





4. Install:
   - Cotter pin (1)

CAUTION:
Do not loosen the axle nut after torque tightening. If the axle nut groove is not aligned with the cotter pin hole, align groove with the hole by tightening up on the axle nut.

⚠ WARNING
Always use a new cotter pin.

1B2-4605

DRIVE CHAIN LUBRICATION

The chain consists of many parts which work against each other. If the chain is not maintained properly, it will wear out rapidly, therefore, form the habit of periodically servicing the chain. This service is especially necessary when riding in dusty conditions.

This motorcycle has a drive chain with small rubber O-rings between the chain plates.

Steam cleaning, high-pressure washes, and certain solvents can damage these O-rings. Use only kerosene to clean the drive chain. Wipe it dry, and thoroughly lubricate it with SAE 30 – 50W motor oil. Do not use any other lubricants on the drive chain. They may contain solvents that could damage the O-rings (1).

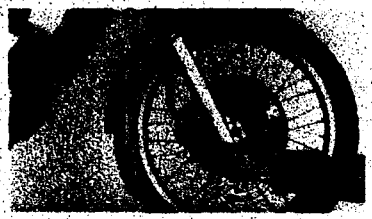
Recommended lubricant:
SAE 30 – 50W Motor Oil

YSJA1000
STEERING HEAD ADJUSTMENT

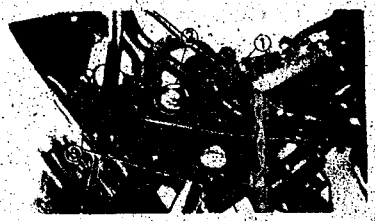
⚠ WARNING

Securely support the motorcycle so there is no danger of it falling over.

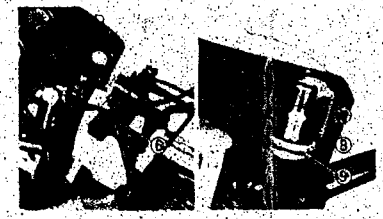
1. Place the motorcycle on a level place.
2. Elevate the front wheel by placing a suitable stand under the frame and engine.

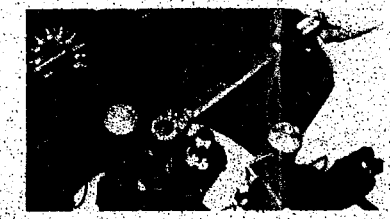


3. Check:
   - Steering assembly bearings
     Grasp the bottom of the forks and gently rock the fork assembly back and forth.
     Looseness → Adjust steering head.
4. Remove:
   - Seat
   - Side covers
   - Air scoops
   - Fuel tank
5. Adjust:
   - Steering head









Adjustment steps:

- Remove the bolt ① ("CHOKE" knob assembly).
- Remove the nut ② (steering shaft) and loosen the bolt ③ (handlebar crown).
- Remove the fuel tank stay ④ and bolt (brake hose guide) ⑤.
- Put the rag around on the oil tank cap.
- Remove the handlebar crown ⑥ (with the handlebar) on the rug.
- Remove the stopper washer ⑦, second ring nut ⑧ and rubber washer ⑨.
- Tighten the ring nut (lower) using the ring nut wrench.

NOTE:

Set the torque wrench to the ring nut wrench so that they form a right angle.

Ring nut wrench:
P/N. YU-33975
P/N. 90890-01403

Ring nut (lower) (initial tightening):
43 Nm (4.3 m·kg, 31 ft·lb)

- Reset the handlebar crown (with the handlebar) on the front fork.
- Turn the handlebar to the left and right making sure there is no binding and then fully loosen the ring nut.
- Retighten the ring nut using the ring nut wrench.

⚠ WARNING

Avoid over-tightening.

Ring nut (final tightening):	7 Nm (0.7 m·kg, 5.1 ft·lb)

NOTE:

Recheck the steering head by turning the steering from lock to lock, after adjusting steering head.
If steering is binded, loosen the ring nut but not to the extent of free play in bearing.
If steering is loosened, repeat the adjustment steps.

- Install the rubber washer on the ring nut (lower), then finger tighten the ring nut (upper) until it contacts the rubber washer. Align the grooves of the lower and upper nuts and install the stopper washer.
- Tighten the nut (steering shaft) and bolt (handlebar crown).

Nut (steering shaft):	110 Nm (11 m·kg, 80 ft·lb)
Bolt (handlebar crown):	23 Nm (2.3 m·kg, 17 ft·lb)

- Tighten the bolt (brake hose guide), temporary tighten the bolt (fuel tank stay) and tighten the bolt ("CHOKE" knob assembly).

Bolt (brake hose guide):	7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt ("CHOKE" knob assembly):	23 Nm (2.3 m·kg, 17 ft·lb)

6. Install:
   - Fuel tank
7. Tighten:
   - Bolt (fuel tank stay)
   - Air scoops
   - Side covers
   - Seat

Bolt (fuel tank, cowling and fuel tank, side cover):	7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (fuel tank stay):	15 Nm (1.5 m·kg, 11 ft·lb)
Bolt (seat):	10 Nm (0.7 m·kg, 7.2 ft·lb)



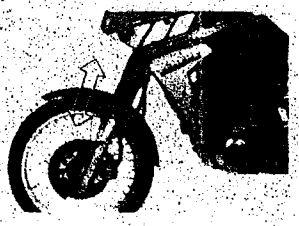
YB2A1001

FRONT FORK INSPECTION

⚠ WARNING

Securely support the motorcycle so there is no danger of it falling over.

1. Place the motorcycle on a level place.
2. Check:
   - Inner tube
     Scratch/Damage → Replace.
   - Oil seal
     Excessive oil leakage → Replace.
3. Hold the motorcycle on upright position and apply the front brake.



4. Check
   - Operation
     Pump the front fork up and down for several times.
     Unsmooth operation → Repair.
     Refer to the "FRONT FORK" section in the CHAPTER 7.

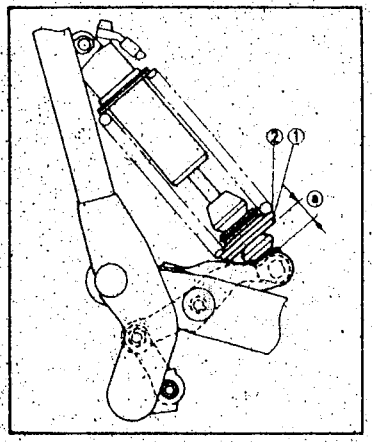
YB2A2002

REAR SHOCK ABSORBER ADJUSTMENT

⚠ WARNING

Securely support the motorcycle so there is no danger of it falling over.

1. Adjust:
   - Spring preload
   - Damping



Adjustment steps:

Spring preload

- Loosen the locknut ① using the ring nut wrench.

Ring nut wrench:
P/N. YM-38520
P/N. 90890-01443

- Turn the adjuster ② in or out.

Turning in→Spring preload is increased.
Turning out→Spring preload is decreased.

NOTE:

The length of the spring (installed) changes 1.0 mm (0.04 in) per turn of the adjuster.

Measurement length ⓐ:
Standard:
25.5 mm (1.0 in)
Minimum:
22.5 mm (0.89 in)
Maximum:
32.5 mm (1.28 in)

CAUTION:

Never attempt to turn the adjuster beyond the maximum or minimum setting.

- Tighten the locknut.

Locknut:
42 Nm (4.2 m·kg, 30 ft·lb)

CAUTION:

Always tighten the locknut against the spring adjuster and torque the locknut to specification.



Adjustment steps:

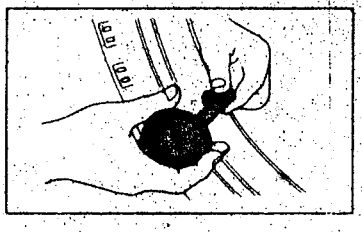
Damping

- Adjust the damping with the damping adjuster ①.

	Hard			S.T.D.	Soft
Adjuster position	5	4	3	2	1

CAUTION:

Never attempt to turn the adjuster beyond the maximum or minimum setting.



YSA30H

TIRE INSPECTION

1. Measure:
   - Tire pressure

   Out of specification→Adjust.

⚠ WARNING

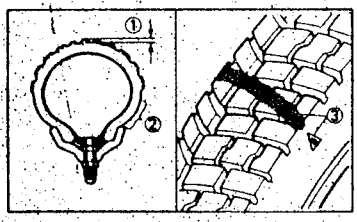
- Tire inflation pressure should be checked and adjusted when the temperature of the tire equals the ambient air temperature. Tire inflation pressure must be adjusted according to total weight of cargo, rider, passenger, and accessories (fairing, saddlebags, etc. if approved for this model), and vehicle speed.
- Proper loading of your motorcycle is important for the handling, braking, and other performance and safety characteristics of your motorcycle. Do not carry loosely packed items that can shift. Securely pack your heaviest items close to the center of the motorcycle, and distribute the weight evenly from side to side. Properly adjust the suspension for your load, and check the condition and pressure of your tires. NEVER OVERLOAD YOUR MOTORCYCLE. Make sure the total weight of the cargo, rider, passenger, and accessories (fairing, saddlebags, etc. if approved for this model) does

not exceed the maximum load of the motorcycle. Operation of an overloaded motorcycle could cause tire damage, an accident, or even injury.

Basic weight: With oil and full fuel tank	195 kg (430 lb)
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 the total weight of cargo, rider, passenger, and accessories.



2. Inspect:
   • Tire surfaces
   Wear/Damage → Replace.

Minimum tire tread depth (front and rear):
0.8 mm (0.03 in)

① Tread depth
② Side wall
③ Wear indicator

⚠ WARNING

- It is dangerous to ride with a wornout tire. When a tire tread begins to show lines, replace the tire immediately.
- Patching a punctured tube is not recommended. If it is absolutely necessary to do so, use great care and replace the tube as soon as possible with a good quality replacement.
- Do not attempt to use tubeless tires on a wheel designed for tube type tires only. Tire failure and personal injury may result from sudden deflation.

Tube type wheel → Tube type tire only
Tubeless type wheel → Tube type or tubeless tire

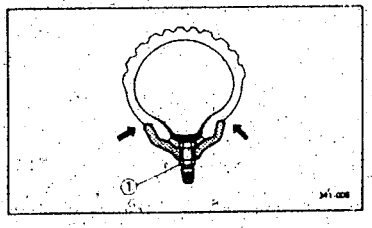
- Be sure to install the correct tube when using tube type tires.
- After extensive tests, the tires mentioned below have been approved by Yamaha motor Co., Ltd. for this model. No guarantee for handling characteristics can be given if tire combinations other than what is approved are used on this motorcycle. The front and rear tires should be of the same manufacture and design.

Front:

Manufacture	Size	Type
BRIDGESTONE	90/90-21 54S	TW41
DUNLOP	90/90-21 54S	TRAIL MAX G

Rear:

Manufacture	Size	Type
BRIDGESTONE	120/90-17 64S	TW42B
DUNLOP	120/90-17 64S	TRAIL MAX G



⚠ WARNING

- After mounting a tire, ride conservatively to allow proper tire to rim seating. Failure to do so may cause an accident resulting in motorcycle damage and possible operator injury.
- After a tire repair or replacement, be sure to torque tighten the valve stem locknut ① to specification.

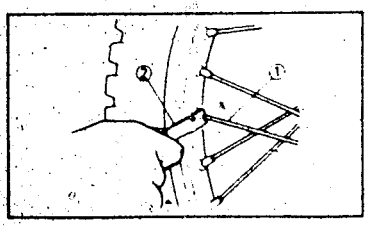
Valve stem locknut:
1.5 Nm (0.15 m·kg, 1.1 ft·lb)

WHEEL INSPECTION

1. Inspect:
   • Wheels
   Damage/Bends → Replace.

NOTE:
Always balance the wheel when a tire or wheel has been changed or replaced.

WARNING
Never attempt even small repairs to the wheel.



SPOKES INSPECTION AND TIGHTENING

1. Inspect:
   • Spokes ①
   Bend/Damage → Replace.
   Loose spoke → Retighten.

2. Tighten:
   • Spokes

② Spoke wrench

NOTE:
Be sure to retighten these spokes before and after Break-in.

Nipple:	1.5 Nm (0.15 m·kg, 1.1 ft·lb)

CABLE INSPECTION AND LUBRICATION

CAUTION
Damaged cable sheath may cause corrosion and interfere with the cable movement. An unsafe condition may result so replace such cable as soon as possible.

1. Inspect
   • Cable sheath
   Damage → Replace

2. Check
   • Cable operation
   Unsmooth operation → Lubricate

Recommended lubricant:	SAE 10W30 motor oil

NOTE:
Hold cable end high and apply several drops of lubricant to cable

LEVER AND PEDAL LUBRICATION

Lubricate the lever and pedal at their pivoting points

Recommended lubricant:	SAE 10W30 motor oil

SIDESTAND LUBRICATION

Lubricate the sidestand at pivoting points

Recommended lubricant:	SAE 10W30 motor oil



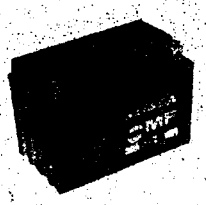


YB2A2806
REAR SUSPENSION LUBRICATION

Lubricate the swingarm and relay arms at their pivoting points.

Recommended lubricant:
Lithium soap base grease

① Grease nipple



ELECTRICAL

BATTERY INSPECTION

NOTE:

Since the MF battery is of a sealed-type construction, it is impossible to measure the specific gravity of the electrolyte in order to check the state of charge in the battery. Therefore, to check the state of charge in the battery, voltage must be measured at the battery terminals.

CAUTION:

CHARGING METHOD

- This battery is sealed type. Never remove sealing caps even when charging. With the sealing cap removed, this balancing will not be maintained, and battery performance will lower gradually.
- Never add water. If distilled water is added, chemical reaction in the battery will not proceed in the normal way, thus making it impossible for the battery to operate regularly.
- The charging time, charging current and charging voltage for the MF battery is different than general type batteries. The MF battery should be charged as instructed in the "Charging method". Should the battery be overcharged, the electrolyte level will lower extremely. Therefore, use special care when charging the battery.
- Avoid using any electrolyte other than specified. The specific gravity of the MF battery electrolyte is 1.32 at 20°C (68°F). (The specific gravity of the general type battery electrolyte is 1.28.) If the electrolyte whose specific gravity is less than 1.32, the sulfuric acid will decrease and thus low battery performance will result. Should any electrolyte, whose specific gravity is 1.32 or more, be used, the battery plates will corrode and battery life will shorten.



⚠ WARNING

Battery electrolyte is dangerous; it contains sulfuric acid and therefore is poisonous and highly caustic.
Always follow these preventive measures:
•Avoid bodily contact with electrolyte as it can cause severe burns or permanent eye injury.
•Wear protective eye gear when handling or working near batteries.
Antidote (EXTERNAL):
•SKIN-Flush with water.
•EYES-Flush with water for 15 minutes and get immediate medical attention.
Antidote (INTERNAL):
•Drink large quantities of water or milk follow with milk of magnesia, beaten egg, or vegetable oil. Get immediate medical attention.
Batteries also generate explosive hydrogen gas, therefore you should always follow these preventive measures:
•Charge batteries in a well-ventilated area.
•Keep batteries away from fire, sparks, or open flames (e.g., welding equipment, lighted cigarettes, etc.)
•DO NOT SMOKE when charging or handling batteries.
KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.





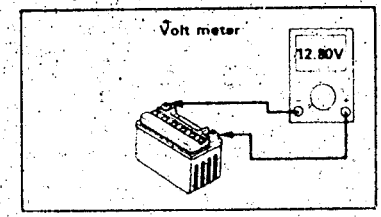
1. Remove:
   •Seat ①
   •Side cover ② (left)
   Refer to the "SEAT, FUEL TANK AND COVER" section.

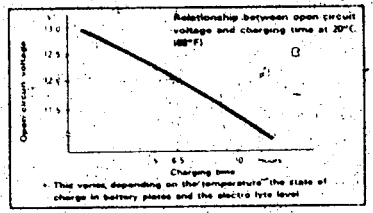
2. Disconnect:
   •Battery leads

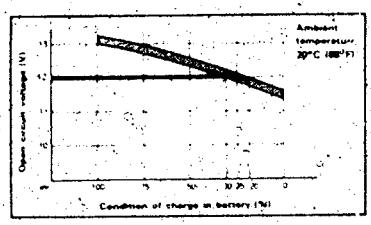
CAUTION:

Disconnect the negative lead first and then disconnect the positive lead.

3. Remove:
   •Battery







4. Check:
   •Battery condition

Battery condition checking steps:

● Connect a digital volt meter to the battery terminals.

Tester (+) lead → Battery (+) terminal. **Tester (−) lead → Battery (−) terminal.**

NOTE:

The state of a discharged MF battery can be checked by measuring open circuit voltage (the voltage measured with the positive terminals being disconnected).

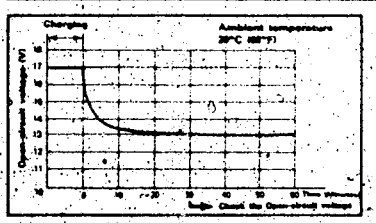
Open-circuit voltage	Charging time
12.8V or more	No charging is necessary.

● Check the battery condition using figure.
Example:
Open circuit voltage = 12.0V
Charging time = 6.5 hours
Condition of charge in battery = 20 ~ 30%

5. Charging method of MF battery.

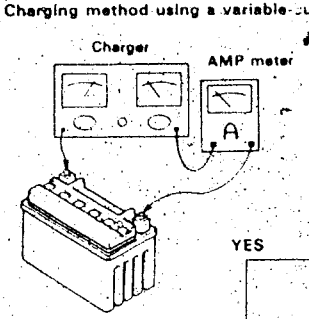
CAUTION:

•If it is impossible to set the standard charging current, this type of battery charger cannot charge the MF battery.
•When charging the battery, be sure to remove it from the machine. (If charging has to be done with the battery mounted on the machine for some reason, be sure to disconnect the wire at the negative terminal.)
•Never remove the sealing plug from the MF battery.



- Use special care so that charging clips are in a full contact with the terminal and that they are not shorted. (A corroded clip of the charger may cause the battery to generate heat at the contact area. A weak clip spring may cause sparks.)
- Before removing the clips from the battery terminals, be sure to turn off the power switch of the charger.
- Change in the open-circuit voltage of the MF battery after being charged is shown below. As shown in the figure, the open-circuit voltage is stabilized 30 minutes after charging has been completed. Therefore, to check the condition of the battery, measure the open-circuit voltage 30 minutes after charging has been completed.

Charging method using a variable-current (voltage) type charger



Measure the open-circuit voltage prior to charging.

NOTE
Voltage should be measured 30 minutes after the machine is stopped.

Connect a charger and AMP meter to the battery and start charging.

NOTE
Set the charging voltage at 16 ~ 17V. If the setting is lower, charging will be insufficient. If too high, the battery will be over charged.

Make sure the current is higher than the standard charging current written on the battery.

YES

NO

By turning the charging voltage adjust dial, set the charging voltage at 20 ~ 25V.

Monitor the amperage for 3 ~ 5 minutes to check if the standard charging current is reached.

YES

Adjust the voltage so that current is at standard charging level.

NO

If current does not exceed standard charging current after 5 minutes, replace the battery.

Set the timer according to the charging time suitable for the open-circuit voltage. Refer to the "Battery condition checking steps" section.

In case that charging requires more than 5 hours, it is advisable to check the charging current after a lapse of 5 hours. If there is any change in the amperage, readjust the voltage to obtain the standard charging current.

Measure the battery open-circuit voltage after having left the battery unused for more than 30 minutes.
12.8V or more – Charging is complete.
12.7V or less – Recharging is required.
Under 12.0V – Replace the battery.

Charging method using a constant-voltage type charger

Measure the open-circuit voltage prior to charging.

NOTE:
Voltage should be measured 30 minutes after the machine is stopped.

Connect a charger and AMP meter to the battery, and start charging.

Make sure the current is higher than the standard charging current written on the battery.

YES

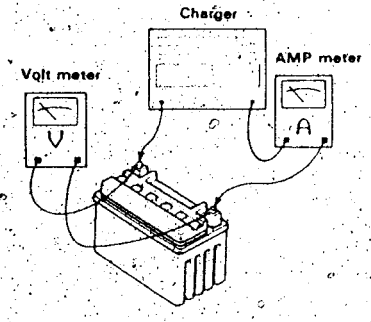
Charge the battery until the battery's charging voltage is 15 volts.

NOTE:
Set the charging time at 20 hours (maximum).

Check the open-circuit voltage after having left the battery for 30 minutes after charging.
12.8V or more – Charging is complete.
12.7V or less – Recharging is necessary.
Under 12V – Replace the battery.

NO

This type of battery charger cannot charge the MF battery. A variable voltage charger is recommended.



Charging method using a constant current type charger.
This type charger cannot charge the MF battery.

6. Inspect:
   • Battery terminal
   Dirty terminal → Clean with wire brush.
   Poor connection → Correct.

NOTE:
After cleaning the terminals, apply grease lightly to the terminals.

7. Install:
   • Battery
8. Connect:
   • Battery leads

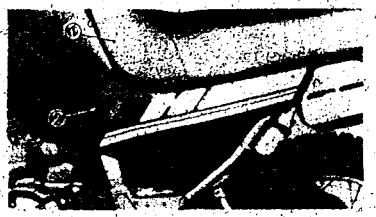
CAUTION:
Connect the positive lead first and then connect the negative lead.

9. Install:
   • Side cover (left)
   • Seat

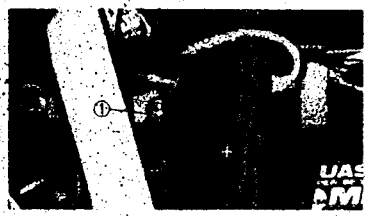
Bolt (side cover):
7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (seat):
10 Nm (1.0 m·kg, 7.2 ft·lb)

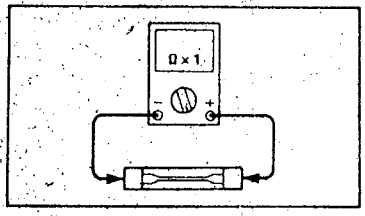
FUSE INSPECTION

CAUTION:
Don't forget to turn off the main switch when checking or replacing the fuse. Otherwise, it may cause accidental short-circuiting.



1. Remove:
   • Seat ①
   • Side cover ② (left)
   Refer to the "SEAT, FUEL TANK AND COVER" section.





2. Remove:
   • Fuse (1)

3. Inspect:
   • Fuse

Inspection steps:
- Connect the Pocket Tester to the fuse and check it for continuity.

NOTE:
Set the tester selector to "Ω x 1" position.

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

- If the tester is indicated at ∞. The fuse is blown, replace it.

4. Replace:
   • Blown fuse

Blown fuse replacement steps:
- Turn off ignition and the circuit.
- Install a new fuse of proper amperage.

Fuse:
20 amps x 1 pc.

- Turn on switches to verify operation of electrical device.
- If fuse blows immediately again, check circuit in question.

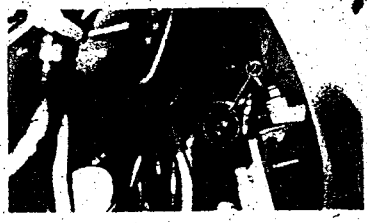
⚠ WARNING

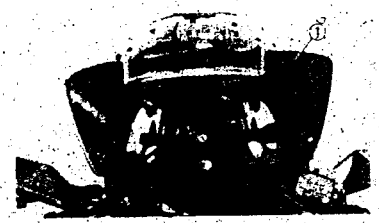
Never use a fuse with a rating other then specified, or other, material in place of a fuse. An improper fuse may cause damage to the electrical system and possible cause a fire, or the lighting and/or ignition may cease to function.

5. Install:
   • Side cover (left)
   • Seat

Bolt (side cover):
7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (seat):
10 Nm (1.0 m·kg, 7.2 ft·lb)









HEADLIGHT BEAM ADJUSTMENT

1. Adjust:
   • Headlight beam (vertical)
   Turn the adjuster (1) in or out.

Turning in	Headlight beam moves to lower.
Turning out	Headlight beam moves to raise.

2. Adjust:
   • Headlight beam (horizontal)
   Turn the adjuster (2) in or out.

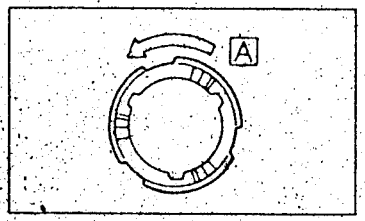
Turning in	Headlight beam moves to right.
Turning out	Headlight beam moves to left.

HEADLIGHT BULB REPLACEMENT

1. Remove:
   • Inner panel (1)
   Refer to the "COWLING" section.

2. Disconnect:
   • Headlight leads (1)

3. Remove:
   • Bulb cover (2)



4. Remove:
   • Bulb
   Unhook the bulb.

⚠ WARNING

Keep flammable products and your hands away from the bulb while it is on. It will be hot. Do not touch the bulb until it cools down.

A Turn

5. Install:
   • Bulb (new)
   Secure the new bulb with the bulb holder.

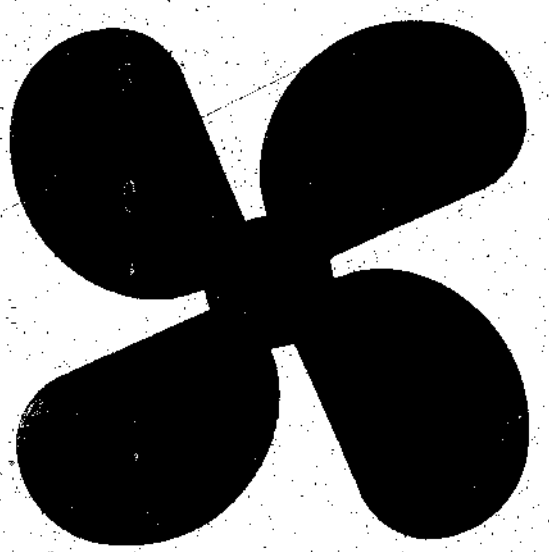
CAUTION:

Avoid touching glass part of bulb. Also keep it free from oil otherwise, transparency of glass, bulb life and illuminous flux will be adversely affected. If oil gets on bulb, clean it with a cloth moistened thoroughly with alcohol or lacquer thinner.

6. Install:
   • Bulb cover

7. Connect:
   • Headlight leads

8. Install:
   • Inner panel



COOL 5

CHAPTER 5.
COOLING SYSTEM

RADIATOR, WATER PUMP AND THERMOSTAT H-13
RADIATOR H-13
- REMOVAL H-13
- INSPECTION H-14
- ASSEMBLY H-14

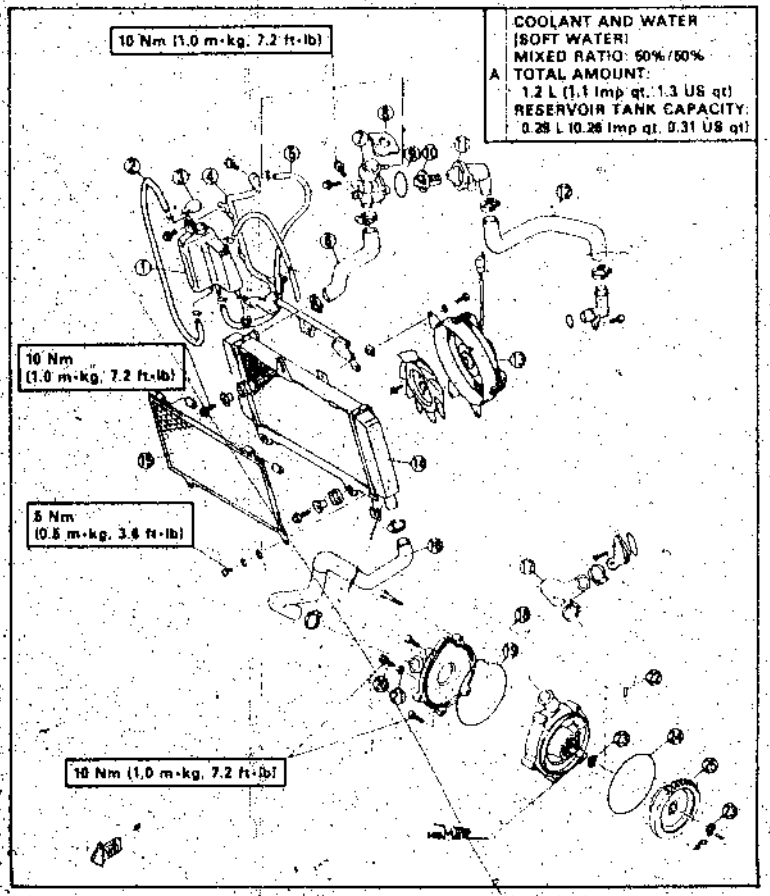
WATER PUMP H-15
- DISASSEMBLY H-15
- INSPECTION H-16
- ASSEMBLY H-16

THERMOSTAT H-16
- REMOVAL H-16
- INSPECTION I-1
- ASSEMBLY I-1

COOLING SYSTEM

RADIATOR, WATER PUMP AND THERMOSTAT

① Recovery tank
② Hose
③ Recovery tank cap
④ Radiator stay
⑤ Recovery tank hose
⑥ Radiator hose (from conduction)
⑦ Conduction
⑧ Radiator cap
⑨ O-ring
⑩ Thermostat
⑪ Thermostat housing
⑫ Radiator hose (from cylinder head)
⑬ Fan motor
⑭ Radiator
⑮ Radiator protector
⑯ Radiator hose (to water pump)
⑰ Radiator hose (to cylinder)
⑱ Water pump assembly
⑲ O-ring
⑳ Drain bolt
㉑ Gasket
㉒ Pin
㉓ Circlip
㉔ O-ring
㉕ Water pump gear



RADIATOR

⚠ WARNING

Do not remove the radiator cap when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. When the engine has cooled, open the radiator cap by the following procedure:
Place a thick rag, like a towel, over the radiator cap, slowly rotated the cap counterclockwise to the detent. This procedure allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning counterclockwise and remove it.

REMOVAL

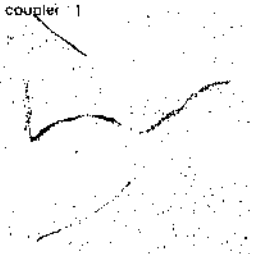
1. Remove:
   - Seat
   - Side covers
   - Air scoops
   - Fuel tank
   - Engine guard

   Refer to the "COOLANT REPLACEMENT" section in the CHAPTER 3.
2. Drain:
   - Coolant

   Refer to the "COOLANT REPLACEMENT" section in the CHAPTER 3.



3. Disconnect:
   - Fan motor coupler (1)



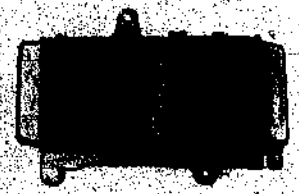


4. Disconnect:
   - Radiator hose 1 (from conduction)
   - Radiator hose 2 (to water pump)

5. Remove:
   - Radiator assembly 3



6. Remove:
   - Fan motor assembly 1
   - Radiator protector 2



INSPECTION

1. Inspect:
   - Radiator
     Obstruction → Blow out with compressed air through rear of radiator.
     Flattened fins → Repair.
   - Coolant hoses
     Cracks/Damage → Replace.



2. Inspect:
   - Radiator cap
   - Vacuum valve

Inspection steps:

- Measure radiator cap pressure using the radiator cap tester.
- Check vacuum valve for spring tension and seating condition.

Radiator cap tester:
P/N. YU-24460-1, 90890-01325
Adapter:
P/N. YU-33984, 90890-01352

- Valve opens at pressure below specified value or defective → Replace.

Valve opening pressure:
95 – 125 kPa
(0.95 – 1.25 kg/cm², 13.51 – 17.77 psi)

ASSEMBLY

1. Install:
   - Protector
   - Fan motor assembly
   - Radiator assembly

Bolt (protector):
5 Nm (0.5 m·kg, 3.6 ft·lb)
Bolt (radiator):
10 Nm (1.0 m·kg, 7.2 ft·lb)

2. Connect:
   - Radiator hose (to water pump)
   - Radiator hose (from conduction)
   - Fan motor coupler

3. Tighten:
   - Drain bolts

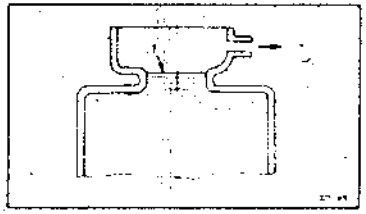
Drain bolt:
10 Nm (1.0 m·kg, 7.2 ft·lb)

NOTE:
Replace with new copper gaskets.

4. Install.
   - Engine guard

Nut (engine guard):
7 Nm (0.7 m·kg, 5.1 ft·lb)
Bolt (engine guard):
7 Nm (0.7 m·kg, 5.1 ft·lb)

H-15



5. Fill:
   • Cooling system

Coolant filling steps:
- Fill the coolant into the radiator until the radiator is full.
- Start the engine (coolant level decreases).

CAUTION:

Always check coolant level, and check for coolant leakage before starting engine.

- Add the coolant while engine is running.
- Stop the engine when coolant level stabilizes.
- Add the coolant again to specified level.
- Install the radiator cap.

Recommended coolant:
High quality ethylene glycol anti-freeze containing anti-corrosion for aluminum engine inhibitors

Coolant and water mixed ratio:
50%:50%
Total amount:
1.2 L (1.1 Imp qt, 1.3 US qt)
Recovery tank capacity:
0.28 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)

CAUTION:

• Hard water or salt water is harmful to the engine. You may use distilled water if you can not get soft water.
• Do not mix more than one type of ethylene glycol anti-freeze containing corrosion for aluminum engine inhibitors.



6. Inspect
   • Cooling system

Inspection steps:
- Connect radiator cap tester.
- Apply 1.0 kg/cm² (14 lb/in²) pressure.
- Measure pressure with gauge.
  Decrease of pressure (leaks) → Repair as required.

Radiator cap tester:
P/N. YU-24460-1, 90890-01325
Adapter:
P/N. YU-33984, 90890-01352

WATER PUMP

DISASSEMBLY

1. Remove:
   • Seat
   • Side covers
   • Air scoops
   • Fuel tank
   • Engine guard
   Refer to the "COOLANT REPLACEMENT" section in the CHAPTER 3.

NOTE:

Be sure to drain the coolant before disassembly of the cooling system components.



2. Disconnect:
   • Radiator hose 1 (from radiator)
   • Radiator hose 2 (to cylinder)



3. Remove:
   - Cover (water pump) 1



4. Remove:
   - O-ring 1



5. Remove:
   - Water pump housing 1



6. Remove:
   - Circlip 1
   - Water pump gear 2
   - Pin 3
   - Circlip 4
   - Water pump housing 5
   - Impeller 6



7. Eliminate:
   - Deposits
     From the impeller 1 and water pump housing 2



INSPECTION

1. Inspect
   - O-ring 1
   - Water pump housing 2
   - Water pump gear 3
     Cracks / Wear / Damage → Replace.



ASSEMBLY

Reverse the "DISASSEMBLY" procedure.

1. Apply
   - Molybdenum disulfide grease
     (onto impeller shaft end)
2. Fill
   - Cooling system
     Refer to the "COOLANT REPLACEMENT" section in the CHAPTER 3.

THERMOSTAT

REMOVAL

1. Remove
   - Seat
   - Side covers
   - Air scoops
   - Fuel tank
   - Engine guard
     Refer to the "COOLANT REPLACEMENT" section in the CHAPTER 3.

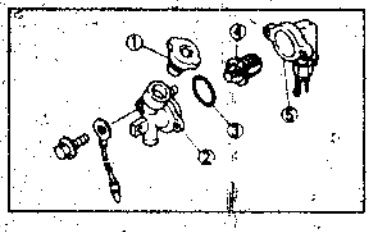
NOTE:

Be sure to drain the coolant before disassembly of the cooling system components

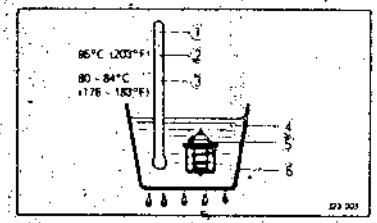


2. Disconnect:
   - Recovery tank hose 1
   - Radiator hose 2 (from radiator)
   - Radiator hose 3 (to cylinder head)
   - Thermo switch lead 4
   - Thermo unit lead 5
   - Earth lead 6

3. Remove:
   - Bolt (conduction) 7



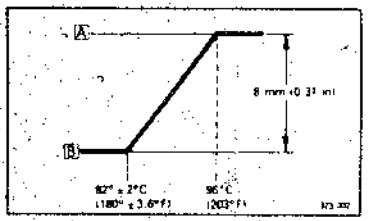
4. Remove:
   - Radiator cap 1
   - Conduction 2
   - O-ring 3
   - Thermostat 4
   - Thermostat housing 5



INSPECTION

1. Inspect:
   - Thermostat 5

   Valve does not open at 80 – 84°C (176 – 183°F) → Replace



Inspection steps:

- Suspend thermostat in a vessel.
- Place reliable thermometer in a water.
- Heat water slowly.
- Observe thermometer, while stirring water continually.

① Thermometer
② Full open
③ Opening sequence begins
④ Water
⑤ Thermostat
⑥ Vessel
Ⓐ OPEN
Ⓑ CLOSE

NOTE:

Thermostat is sealed and its setting is specialized work. If its accuracy is in doubt, replace it. A faulty unit could cause serious overheating or overcooling.

2. Inspect:
   - O-ring

   Wear/Damage → Replace.

ASSEMBLY

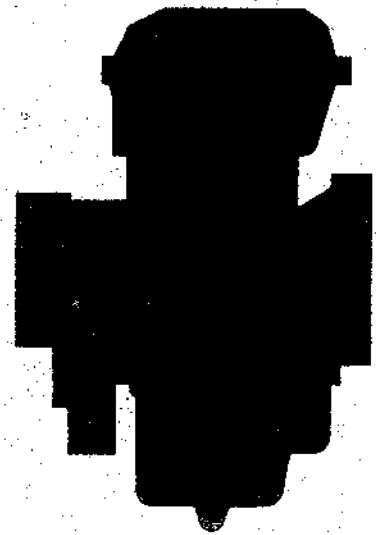
Reverse the "REMOVAL" procedure.

1. Install:
   - Thermostat
   - Conduction

	Bolt (conduction): 10 Nm (1.0 m·kg, 7.2 ft·lb)

2. Fill:
   - Cooling system

   Refer to the "COOLANT REPLACEMENT" section in the CHAPTER 3.



CARB 6

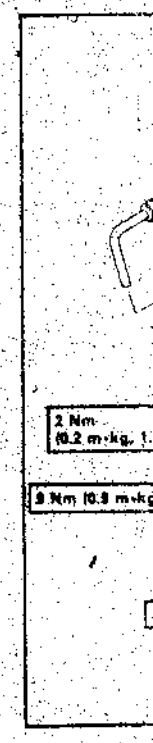
CHAPTER 6. CARBURETION

CARBURETOR I-5
SECTIONAL VIEW I-5
REMOVAL I-6
DISASSEMBLY I-6
INSPECTION I-8
ASSEMBLY I-9
INSTALLATION I-12
FUEL LEVEL ADJUSTMENT I-12

FUEL PUMP I-13
PUMP OPERATION INSPECTION I-13
REMOVAL I-13
INSPECTION I-14
ASSEMBLY I-14

CARB

CARBURETO
1 Connecting arm
2 Jet needle set
3 Throttle valve
4 Coasting enrich
5 Valve seat asse
6 Needle jet
7 O-ring
8 Main jet
9 Pilot jet
10 Pilot screw set
11 Throttle stop s
12 Float
13 Starter plunger
14 Drain screw
15 Main jet
16 Needle jet
17 Piston valve
18 Jet needle set



2 Nm (0.2 m·kg, 1.

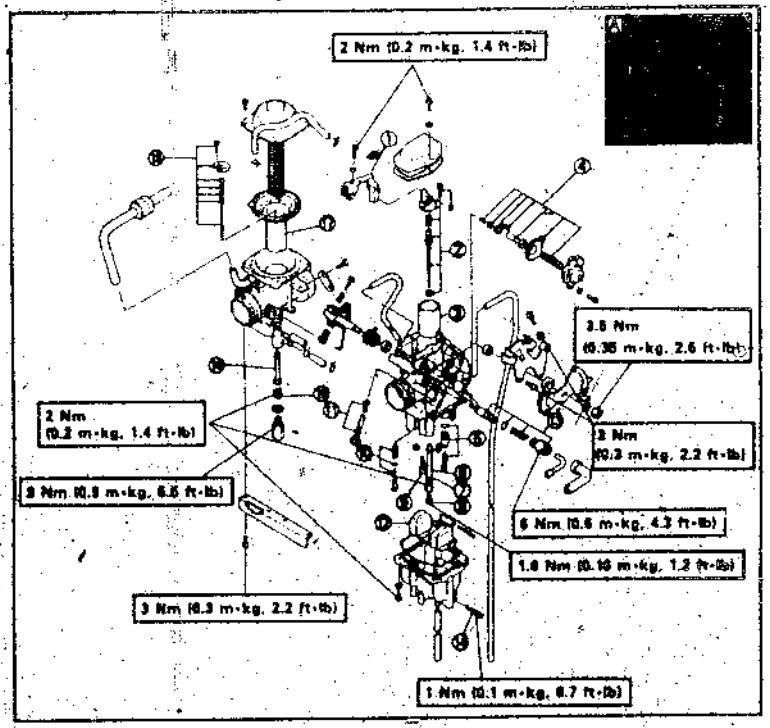
9 Nm (0.9 m·kg

CARBURETION

CARBURETOR

① Connecting arm
② Jet needle set
③ Throttle valve
④ Coasting enricher
⑤ Valve seat assembly
⑥ Needle jet
⑦ O-ring
⑧ Main jet
⑨ Pilot jet
⑩ Pilot screw set
⑪ Throttle stop screw
⑫ Float
⑬ Starter plunger set
⑭ Drain screw
⑮ Main jet
⑯ Needle jet
⑰ Piston valve
⑱ Jet needle set

SPECIFICATIONS		
ID MARK	3YF-00, 4BW00 (A) (CH)	
	PRIMARY	SECONDARY
MAIN JET (M.J.)	#130	#165
PILOT JET (P.J.)	#48	–
JET NEEDLE (J.N.)	5D98-3/5 5D97-3/5 (A) (CH)	5X7C-3/5
NEEDLE JET (N.J.)	V00	φ2.7
PILOT SCREW (P.S.)	2 and 1/2 turns out	–
FLOAT HEIGHT (F.H.)	25 – 27 mm (0.98 – 1.06 in)	
FUEL LEVEL Ⓐ (F.L.)	6.0 – 8.0 mm (0.24 – 0.31 in) Below from the float chamber mating surface	
ENGINE IDLING SPEED	1,250 – 1,350 r/min	

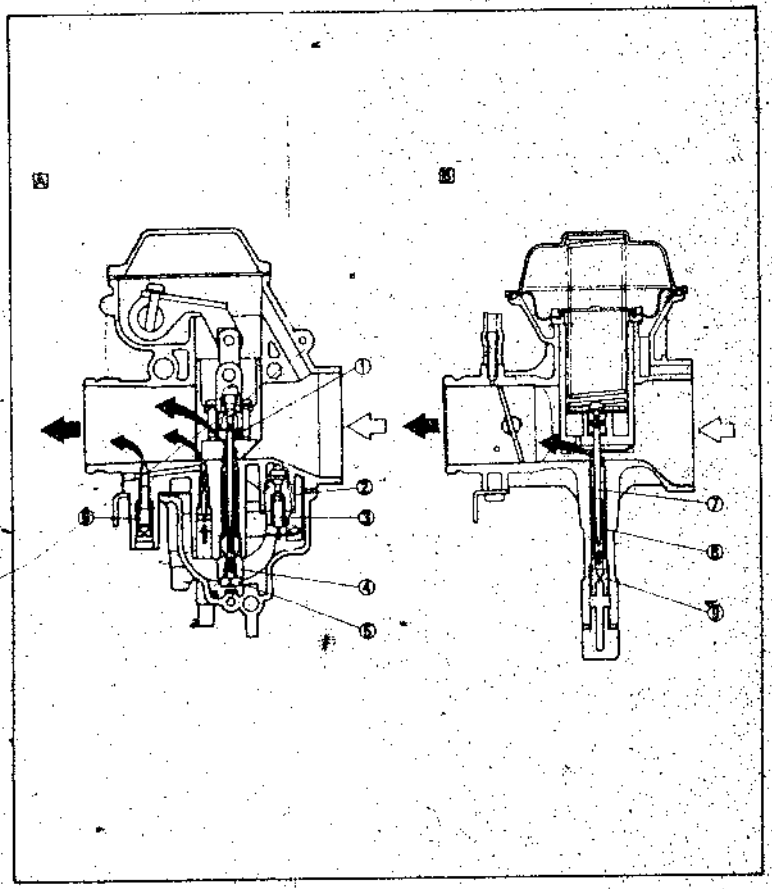


SECTIONAL VIEW

① Jet needle (primary)
② Valve seat
③ Needle valve
④ Needle jet (primary)
⑤ Main jet (primary)
⑥ Pilot screw
⑦ Jet needle (secondary)
⑧ Needle jet (secondary)
⑨ Main jet (secondary)

Ⓐ Primary carburetor
Ⓑ Secondary carburetor

Air
Fuel
Mixture



REMOVAL

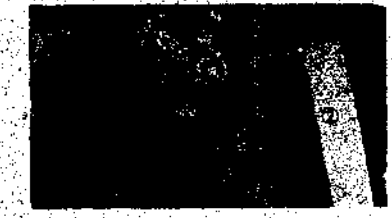
1. Remove:
   - Seat
   - Side covers
   - Air scoops
   - Fuel tank

   Refer to the "SEAT, FUEL TANK AND COVER" section in the CHAPTER 3.



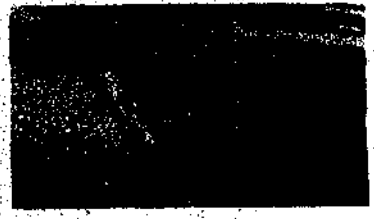
2. Loosen:
   - Locknut ①

3. Remove:
   - Throttle cables ②
   - Starter plunger ③



4. Loosen:
   - Screws (carburetor joints) ①

NOTE:
Move carburetor joint bands ② to the rear.



5. Remove:
   - Bolt ① (rear brake reservoir tank)



6. Remove:
   - Bolts ① (air filter case)

7. Loosen:
   - Bolt ② (air filter case)
   - Carburetor joint from carburetor by moving air filter case to the rear.

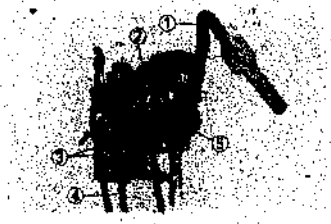


8. Disconnect:
   - Vacuum hose ①
   - Delivery hose ②
   - Carburetor assembly ③

   (from intake manifold)

DISASSEMBLY

NOTE:
The following parts can be cleaned and inspected without disassembly.
- Diaphragm (coasting enricher)
- Starter plunger
- Throttle stop screw



1. Disconnect:
   - Air vent hose ①
   - Vacuum hose ②
   - Air vent pipe ③
   - Over flow hose ④

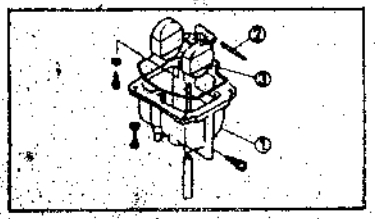
2. Remove:
   - Stay plate ⑤ (rear)
   - Stay plate ⑥ (front)





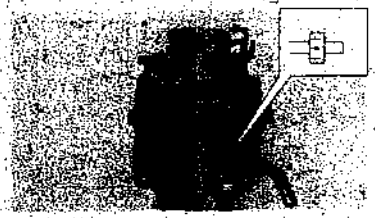
3. Disconnect:
   - Pipe ①
   - Pipe ②
   - Link rod ③

4. Separate:
   - Primary carburetor ④
   - Secondary carburetor ⑤



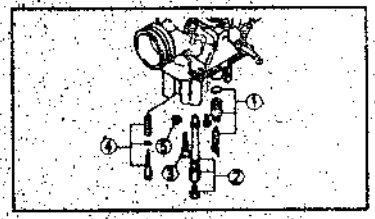
Primary carburetor

1. Remove:
   - Float chamber ①
   - Float pin ②
   - Float ③

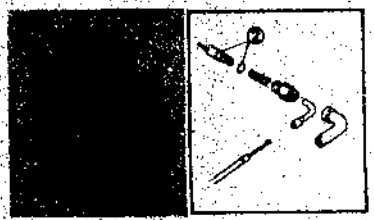


NOTE:

Remove the float pin in the arrow direction.

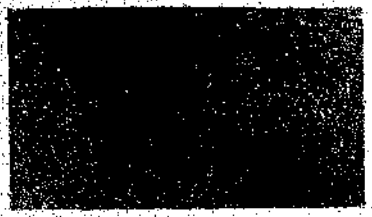


2. Remove:
   - Needle valve/Valve seat ①
   - Main jet/Needle jet ②
   - Pilot jet ③
   - Pilot screw ④
   - O-ring ⑤

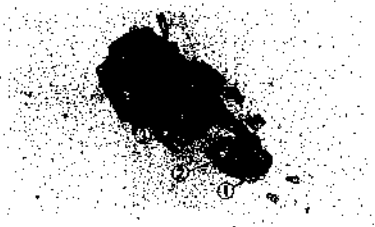


3. Disconnect:
   - Throttle stop screw ①

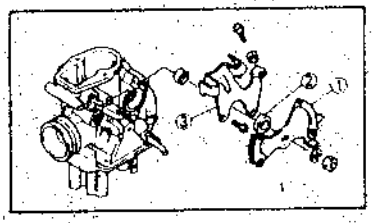
4. Remove:
   - Starter plunger ②
     (from the starter cable)



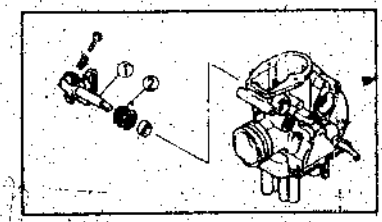
5. Remove:
   - Cover ① (coasting enricher)
   - Spring ②
   - Diaphragm ③



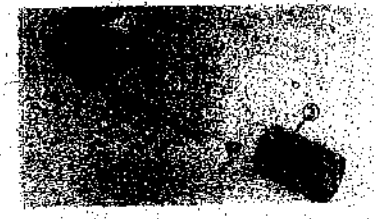
6. Remove:
   - Top cover ①
   - Gasket ②
   - Screw ③ (connecting arm)



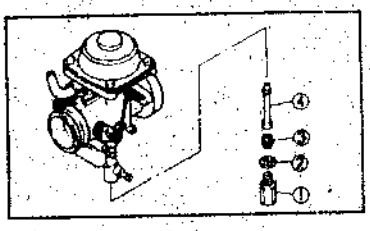
7. Remove:
   - Throttle lever ①
   - Collar ②
   - Cable holder ③



8. Remove:
   - Throttle shaft ①
   - Spring ②
   - Throttle valve (with connecting arm)

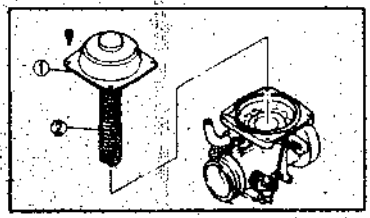


9. Remove:
   - Connecting arm ①
   - Jet needle ②
   - Throttle valve ③

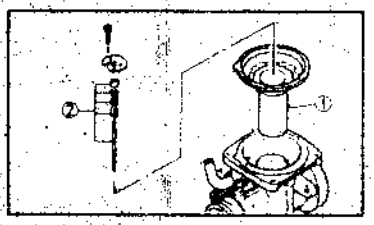


Secondary carburetor

1. Remove:
   - Plug ①
   - Gasket ②
   - Main jet ③
   - Needle jet ④



2. Remove:
   - Top cover ①
   - Spring ②



3. Remove:
   - Piston valve ①
   - Jet needle ②



INSPECTION

1. Inspect:
   - Carburetor body
   - Float chamber
     Cracks/Damage → Replace.
   - Fuel passage
     Contamination → Clean.

NOTE:

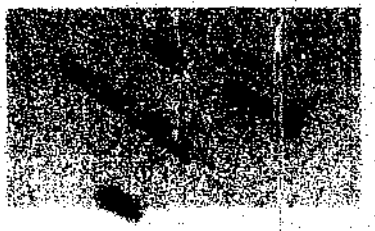
Use a petroleum based solvent for cleaning. (Do not use any caustic carburetor cleaning solution.) Blow out all passages and jets with compressed air.



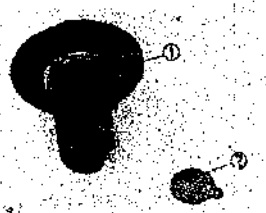
2. Inspect:
   - Valve seat ①
   - Needle valve ②
   - O-ring ③
     Damage/Wear/Contamination → Replace as a set.

NOTE:

Always replace the needle valve and valve seat as a set.



3. Inspect:
   - Starter plunger ①
     Wear/Damage → Replace.
   - Throttle stop screw ②
     Damage → Replace.



4. Inspect:
   - Rubber diaphragm ① (piston valve)
   - Rubber diaphragm ② (coasting enricher)
     Tears/Damage → Replace.



5. Inspect:
   - Jet needle ① (primary)
   - Jet needle ② (secondary)
     Bends/Wear/Damage → Replace.

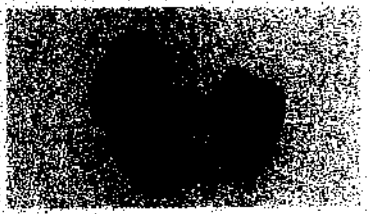


6. Inspect:
   - Throttle valve ① (primary)
   - Piston valve ② (secondary)
     Scratches/Wear/Damage → Replace.



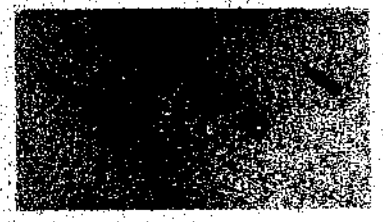
7. Check:
   - Free movement
     Stick → Replace.
     Insert the throttle valve and piston valve into the carburetor body, and check for free movement.

A Primary carburetor
B Secondary carburetor



8. Inspect:
   - Float ①
     Damage → Replace.





9. Inspect:
   - Main jet ① (primary)
   - Main jet ② (secondary)
   - Needle jet ③ (primary)
   - Needle jet ④ (secondary)
   - O-ring ⑤ (primary)
   - Pilot jet ⑥

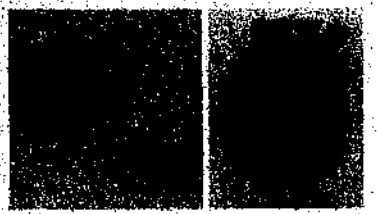
   Wear/Damage → Replace.
   Contamination → Blow out jets with compressed air.

ASSEMBLY

Reverse the "DISASSEMBLY" procedures. Note the following points.

NOTE:

- **Before reassembling, wash the all parts in clean petroleum based solvent.**
- **Always use a new gasket.**

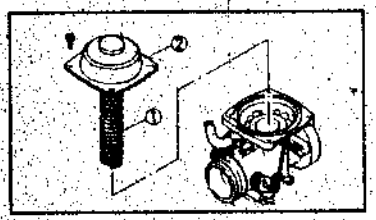


Secondary carburetor

1. Install:
   - Jet needle ①
   - Piston valve ②

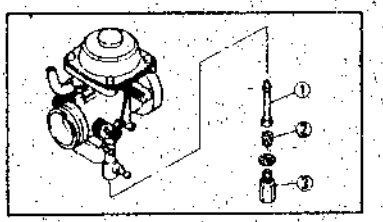
NOTE:

Match the tab on the rubber diaphragm to the matching recess in the secondary carburetor.



2. Install:
   - Spring ①
   - Top cover ②

Screw (top cover):	2 Nm (0.2 m·kg, 1.4 ft·lb)



3. Install:
   - Needle jet ①
   - Main jet ②
   - Plug ③

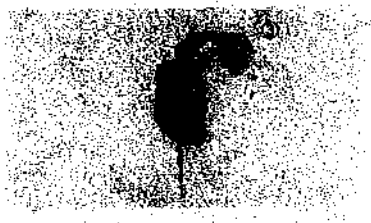
Main jet:	2 Nm (0.2 m·kg, 1.4 ft·lb)
Plug:	9 Nm (0.9 m·kg, 6.5 ft·lb)



Primary carburetor

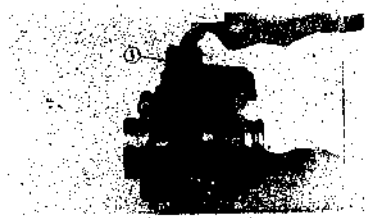
1. Install:
   - Jet needle ①
   - Connecting arm ②
     (to throttle valve)

Screw (connecting arm):	0.8 Nm (0.08 m·kg, 0.6 ft·lb)



NOTE:

Make sure that the connecting arm assembly ③ is at the illustrated position.



2. Install:
   - Throttle valve ①



3. Install:
   - Spring ①
   - Throttle shaft ②

NOTE:

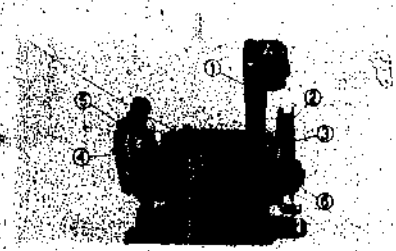
Set the spring as shown.



4. Install:
   - Screw ① (connecting arm)

NOTE:
Turn the throttle shaft 1/2 turn clockwise to give preload to the spring and hold it.
Then, install the screw (connecting arm).

Screw (connecting arm):
2 Nm (0.2 m·kg, 1.4 ft·lb)



5. Install:
   - Cable holder ①
   - Collar ②
   - Throttle lever ③

NOTE:
Be sure throttle shaft lever ④ and adjusting bolt ⑤ are aligned when tightening throttle shaft nut ⑥.

Screw (cable holder):
3 Nm (0.3 m·kg, 2.2 ft·lb)
Nut (throttle lever):
3.5 Nm (0.35 m·kg, 2.5 ft·lb)



6. Install:
   - Gasket ①
   - Top cover ②

Screw (top cover):
2 Nm (0.2 m·kg, 1.4 ft·lb)

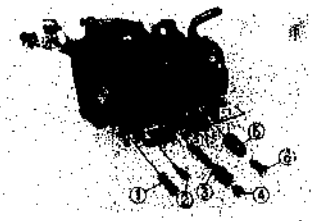


7. Install:
   - Rubber diaphragm ① (coasting enricher)

NOTE:
Match the tab on the rubber diaphragm to the matching recess in the coasting enricher.

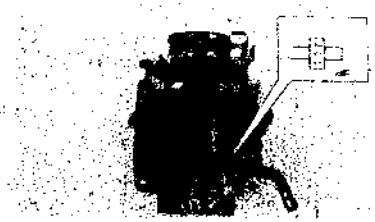
8. Connect:
   - Starter plunger (to the starter cable)

9. Install:
   - Throttle stop screw



10. Install:
    - Pilot screw ①
    - Pilot jet ②
    - Needle jet ③
    - Main jet ④
    - Valve seat ⑤
    - Needle valve ⑥ (with float)

Needle jet:
2 Nm (0.2 m·kg, 1.4 ft·lb)
Main jet:
1.6 Nm (0.16 m·kg, 1.2 ft·lb)
Screw (valve seat):
2 Nm (0.2 m·kg, 1.4 ft·lb)



11. Install:
    - Float pin ①

NOTE:
Install the float pin reverse to the arrow.



12. Measure:
- Float height (a)

Out of specification → Adjust.

Float height (F.H.):
25.0 – 27.0 mm (0.98 – 1.06 in)

Measurement and adjustment steps:
- Hold the carburetor in an upside down position.
- Measure the distance from the mating surface of the float chamber (gasket removed) to the top of the float.

NOTE:

The float arm should be resting on the needle valve, but not compressing the needle valve.

- If the float height is not within specification, inspect the valve seat and needle valve.
- If either is worn, replace them both.
- If both are fine, adjust the float height by bending the float tang (1) on the float.
- Recheck the float height.



13. Install:
- Float chamber

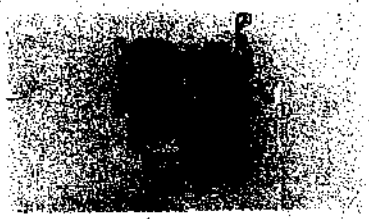
Screw (float chamber):
2 Nm (0.2 m·kg, 1.4 ft·lb)



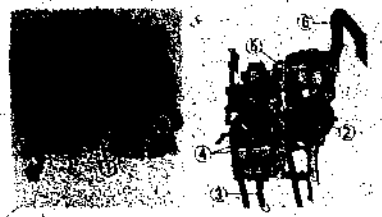
14. Adjust:
- Pilot screw (1)

Adjustment steps:
- Turn in the pilot screw until it is lightly seated.
- Back out by the specified number of turns.

Pilot screw (turn out):
2 and 1/2 turns out



15. Install:
- Primary carburetor 1
- Secondary carburetor 2



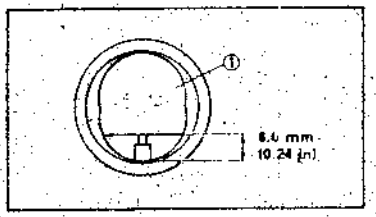
16. Install:
- Stay plate (front) (1)
- Stay plate (rear) (2)

Screw (stay plate):
3 Nm (0.3 m·kg, 2.2 ft·lb)

NOTE:

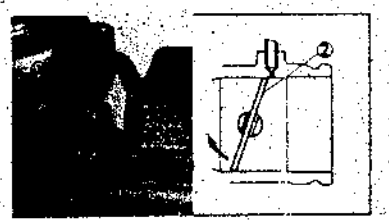
After tightening, check the throttle lever and throttle valve for smooth action.

17. Connect:
- Over flow hose (3)
- Air vent pipe (4)
- Vacuum hose (5)
- Air vent hose (6)

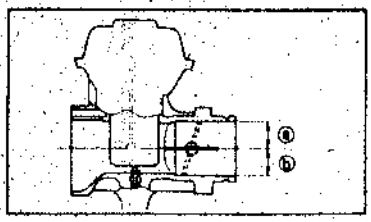


18. Adjust:
- Secondary carburetor synchronization

Adjustment steps:
- Raise the primary throttle valve (1) to a height of 6.0 mm (0.24 in) as indicated.



- Turn the synchronizing screw (1) in or out so that secondary throttle valve (2) is begun to open.



* Make sure that the secondary valve is opened horizontally (ⓐ = ⓑ) when the primary carburator valve is fully opened.

INSTALLATION

Reverse the "REMOVAL" procedure. Note the following points.

1. Install:
   - Carburetor assembly

Screw (joint band-left)	2 Nm (0.2 m·kg, 1.4 ft·lb)
Screw (joint band-right)	5 Nm (0.5 m·kg, 3.6 ft·lb)



2. Install:
   - Carburetor joint to carburetor by moving air filter case forward.
   - Bolts (air filter case) ①

Bolt (air filter case)	10 Nm (1.0 m·kg, 7.2 ft·lb)
Screw (joint band-left)	2 Nm (0.2 m·kg, 1.4 ft·lb)
Screw (joint band-right)	5 Nm (0.5 m·kg, 3.6 ft·lb)



3. Install:
   - Throttle cable ①
   - Starter plunger ②

Starter plunger	6 Nm (0.6 m·kg, 4.3 ft·lb)

4. Adjust:
   - Throttle cable free play.

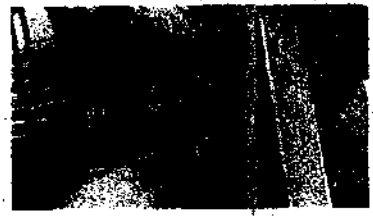
   Refer to the "THROTTLE CABLE FREE PLAY ADJUSTMENT" section in the CHAPTER 3.

Throttle cable free play	3 – 5 mm (0.12 – 0.20 in)

5. Adjust:
   - Idle speed

   Refer to the "IDLE SPEED ADJUSTMENT" section in the CHAPTER 3.

Engine idle speed	1,250 – 1,350 r/min



FUEL LEVEL ADJUSTMENT

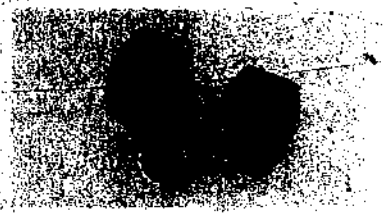
1. Place the motorcycle on a level place.
2. Use the suitable stand under the frame and engine to ensure that the carburator is positioned vertically.
3. Connect the Fuel Level Gauge ① to the float chamber drain pipe.

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

4. Loosen the drain screw ② and warm up the engine for several minutes.
5. Hold the gauge vertically next to the float chamber mating surface.
6. Measure:
   - Fuel level ⓐ

   Out of specification → Adjust.

Fuel level	6.0 – 8.0 mm (0.24 – 0.31 in) Below from the float chamber mating surface



7. Adjust:
   • Fuel level

Adjustment steps:
- Remove the carburetor.
- Inspect the valve seat and needle valve.
- If either is worn, replace them both.
- If both are fine, adjust the float height by bending the float tang ① on the float.
- Recheck the fuel level.

FUEL PUMP

PUMP OPERATION INSPECTION

1. Inspect:
   • Fuel pump operation



Operation inspection steps:
- Turn the fuel cock to "ON".
- Disconnect the delivery hose ① from the carburetor (fuel pump - carburetor).
- Place the receptacle under the delivery hose end.
- Turn the main switch to "ON".
- Push the starter switch.
- Check the fuel flow out from the delivery hose end.

  If fuel does not flow out, replace the fuel pump assembly or refer to "INSPECTION" section.

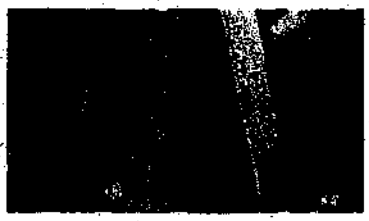
REMOVAL

1. Remove:
   • Seat
   • Side covers
   • Air scoops
   • Fuel tank

   Refer to the "SEAT, FUEL TANK AND COVER" section in the CHAPTER 3.



2. Disconnect:
   • Vacuum hose ① (from intake manifold)
   • Delivery hose ② (from carburetor)



3. Remove:
   • Fuel pump assembly (1)

INSPECTION

1. Inspect:
   • Fuel hose
   • Vacuum hose
   • Delivery hose
   Crack/Wear/Damage → Replace.



2. Inspect:
   • Fuel pump assembly (1)
   Crack/Damage → Replace.

ASSEMBLY

Reverse the "REMOVAL" procedure. Note the following points.

1. Connect:
   • Vacuum hose
   • Delivery hose
   • Fuel hose

NOTE:

Be sure to connect the hose correctly, when connecting.

2. Install:
   • Fuel tank
   • Air scoops
   • Side covers
   • Seat

	Bolts (fuel tank, cowling and fuel tank, side cover): 7 Nm (0.7 m-kg, 5.1 ft-lb) **Bolt (seat):** 10 Nm (1.0 m-kg, 7.2 ft-lb)