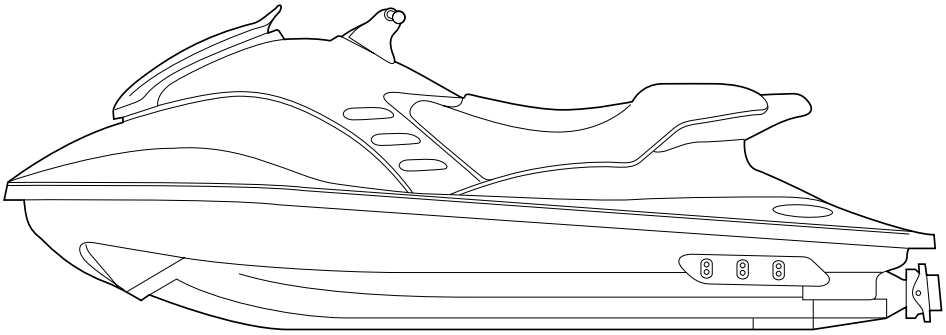
YAMAHA

WaveRunner GP1200R



SERVICE MANUAL

LIT-18616-02-15 F0X-28197-ZA-11

NOTICE

This manual has been prepared by the Yamaha Motor Company Ltd. primarily for use by Yamaha dealers and their trained mechanics when performing maintenance procedures and repairs to Yamaha equipment. It has been written to suit the needs of persons who have a basic understanding of the mechanical and electrical concepts and procedures inherent in the work, for without such knowledge attempted repairs or service to the equipment could render it unsafe or unfit for use.

Because the Yamaha Motor Company, Ltd. has a policy of continuously improving its products, models may differ in detail from the descriptions and illustrations given in this publication. Use only the latest edition of this manual. Authorized Yamaha dealers are notified periodically of modifications and significant changes in specifications and procedures, and these are incorporated in successive editions of this manual.

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WaveRunner GP1200R
SERVICE MANUAL

1st Edition, February 2000

Printed in USA
LIT-18616-02-15

HOW TO USE THIS MANUAL

MANUAL FORMAT

All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspection operations.

In this revised format, the condition of a faulty component will precede an arrow symbol and the course of action required will follow the symbol, e.g.,

- Bearings
  Pitting/scratches → Replace.

To assist you in finding your way through this manual, the section title and major heading is given at the top of every page.

ILLUSTRATIONS

The illustrations within this service manual represent all of the designated models.

CROSS REFERENCES

The cross references have been kept to a minimum. Cross references will direct you to the appropriate section or chapter.

IMPORTANT INFORMATION

In this Service Manual particularly important information is distinguished in the following ways.

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

⚠ WARNING

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

CAUTION:

A CAUTION indicates special precautions that must be taken to avoid damage to the water vehicle.

NOTE:

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

IMPORTANT:

This part has been subjected to change of specification during production.

HOW TO USE THIS MANUAL

① To help identify parts and clarify procedure steps, there are exploded diagrams at the start of each removal and disassembly section.

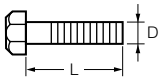
② Numbers are given in the order of the jobs in the exploded diagram.

③ Symbols indicate parts to be lubricated or replaced (see "SYMBOLS").

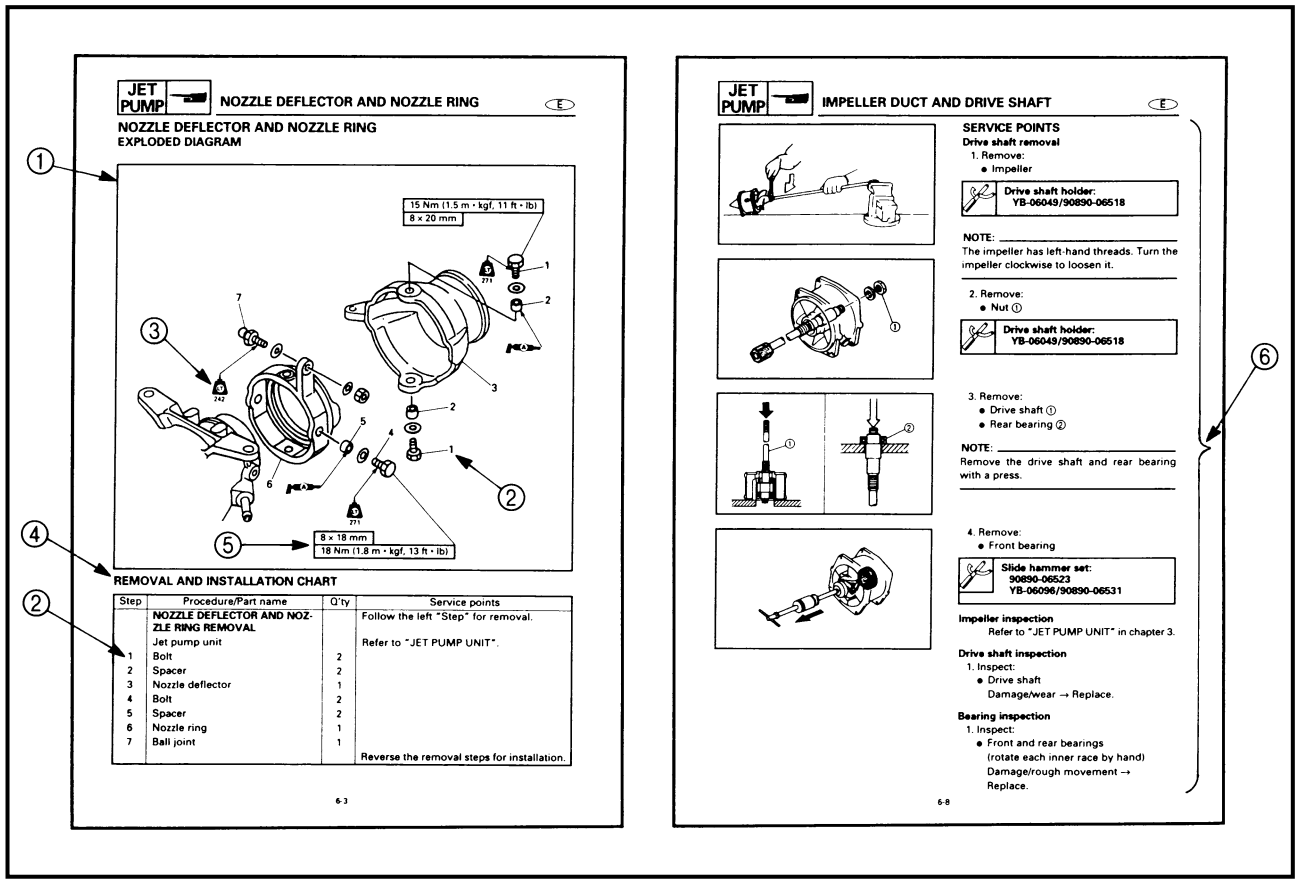
④ A job instruction chart accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.

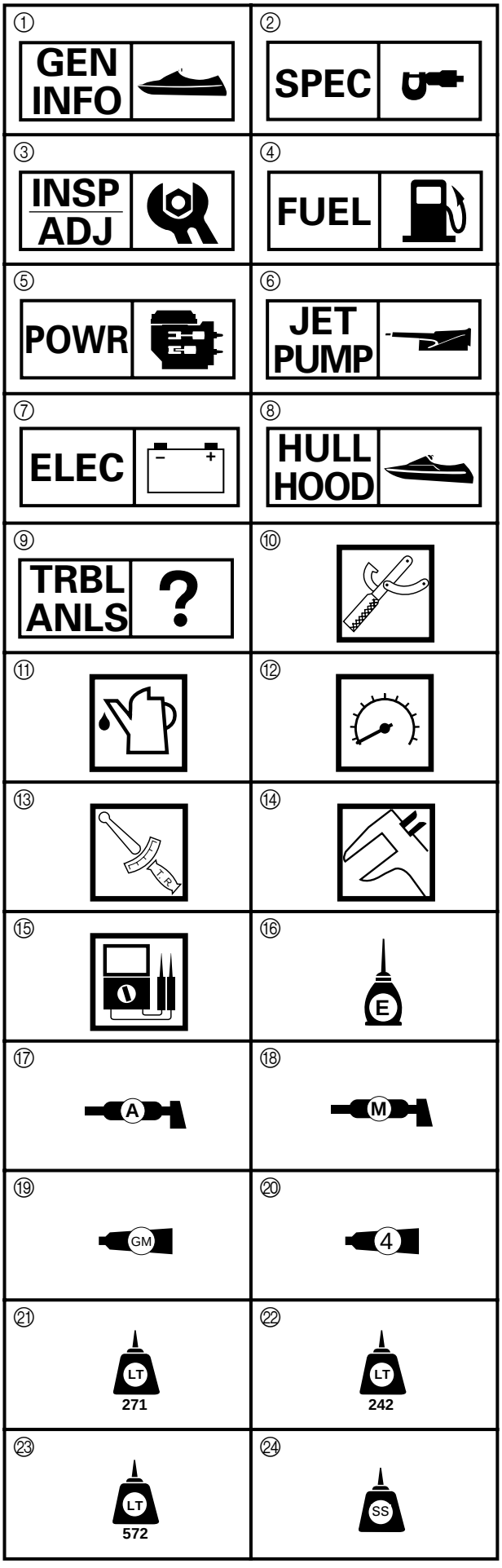
⑤ Dimension figures and the number of parts, are provided for fasteners that require a tightening torque.

Example:
Bolt or screw size 10 × 25 mm : M10 (D) × 25 mm (L)



⑥ Jobs requiring more information (such as special tools and technical data) are described sequentially.





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SYMBOLS

Symbols ① to ⑨ are designed as thumb-tabs to indicate the content of a chapter.

① General Information
② Specifications
③ Periodic Inspection and Adjustment
④ Fuel System
⑤ Power Unit
⑥ Jet Pump Unit
⑦ Electrical System
⑧ Hull and Hood
⑨ Trouble analysis

Symbols ⑩ to ⑮ indicate specific data:

⑩ Special tool
⑪ Specified liquid
⑫ Specified engine speed
⑬ Specified torque
⑭ Specified measurement
⑮ Specified electrical value
[Resistance (Ω), Voltage (V), Electric current (A)]

Symbol ⑯ to ⑱ in an exploded diagram indicate the grade of lubricant and the location of lubrication point:

⑯ Apply YAMALUBE 2-W oil
⑰ Apply water resistant grease
(Yamaha grease A, Yamaha marine grease)
⑱ Apply molybdenum disulfide grease

Symbols ⑲ to ㉔ in an exploded diagram indicate the grade of the sealing or locking agent, and the location of the application point:

⑲ Apply Gasket Maker®
⑳ Apply Yamabond #4
(Yamaha bond number 4)
㉑ Apply LOCTITE® No. 271 (Red LOCTITE)
㉒ Apply LOCTITE® No. 242 (Blue LOCTITE)
㉓ Apply LOCTITE® No. 572
㉔ Apply silicone sealant

NOTE:

In this manual, the above symbols may not be used in every case.

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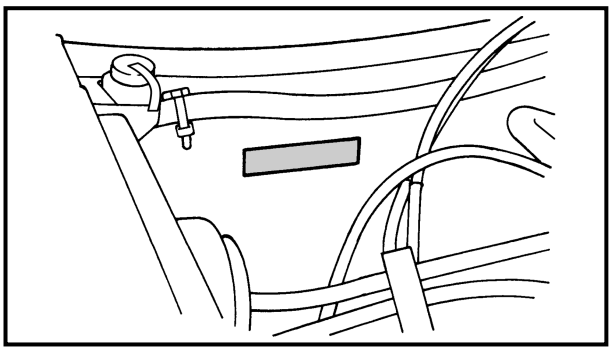
CHAPTER 1
GENERAL INFORMATION

1



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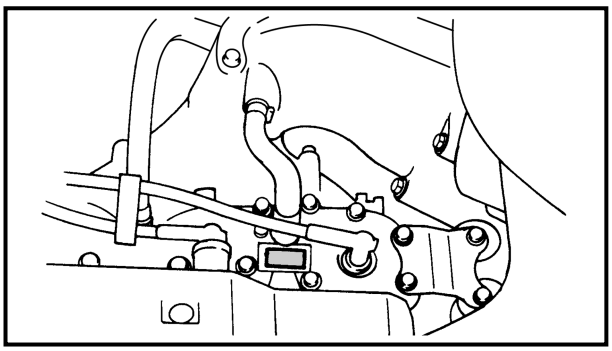
IDENTIFICATION NUMBERS

PRIMARY I.D. NUMBER

The primary I.D. number is stamped on a label attached to the inside of the engine compartment.

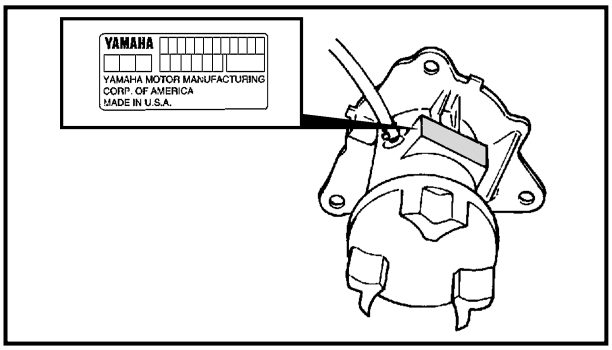
Starting primary I.D. number:
F0X: 800101 ~



ENGINE SERIAL NUMBER

The engine serial number is stamped on a label attached to the cylinder head.

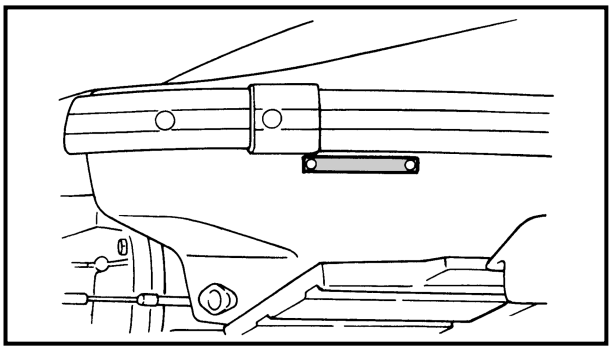
Starting serial number:
67X: 000101 ~



JET PUMP UNIT SERIAL NUMBER

The jet pump unit serial number is stamped on a label attached to the intermediate housing.

Starting serial number:
67X: 800101 ~

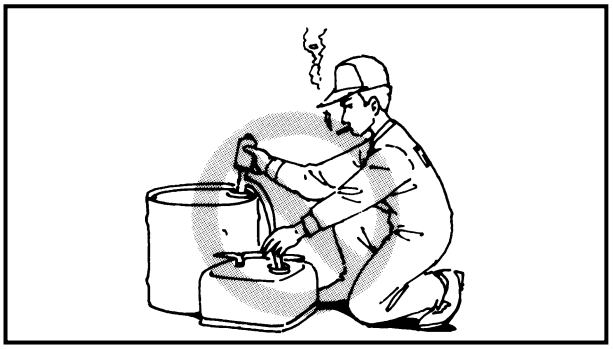


HULL IDENTIFICATION NUMBER (H.I.N.)

The H.I.N. is stamped on a plate attached to the aft deck.

⚠ SAFETY WHILE WORKING

The procedures given in this manual are those recommended by Yamaha to be followed by Yamaha dealers and their mechanics.

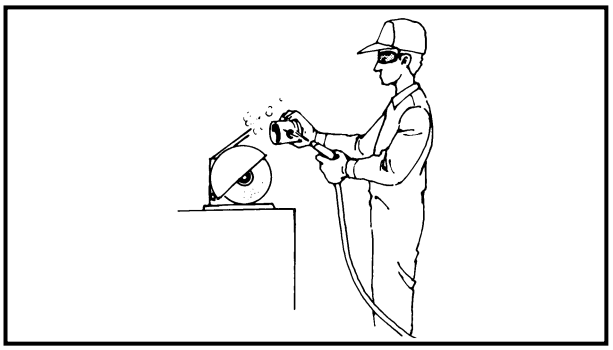


FIRE PREVENTION

Gasoline (petrol) is highly flammable.
Petroleum vapor is explosive if ignited.
Do not smoke while handling gasoline (petrol) and keep it away from heat, sparks, and open flames.

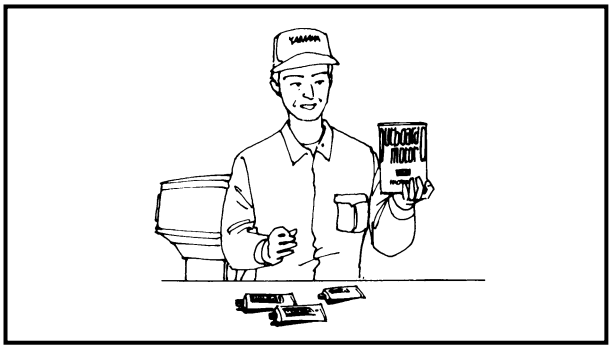
VENTILATION

Petroleum vapor is heavier than air and is deadly if inhaled in large quantities. Engine exhaust gases are harmful to breathe. When test-running an engine indoors, maintain good ventilation.



SELF-PROTECTION

Protect your eyes with suitable safety spectacles or safety goggles when grinding or doing any operation which may cause particles to fly off.
Protect hands and feet by wearing safety gloves or protective shoes if appropriate to the work you are doing.

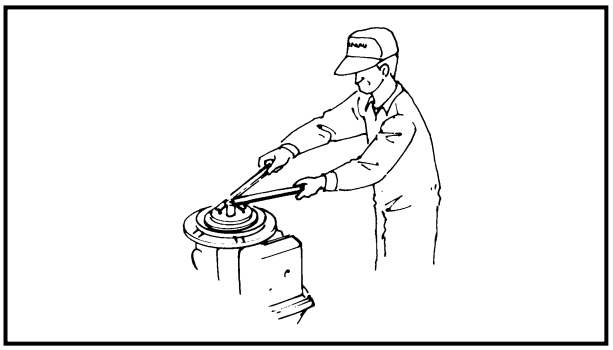


OILS, GREASES AND SEALING FLUIDS

Use only genuine Yamaha oils, greases, and sealing fluids or those recommended by Yamaha.

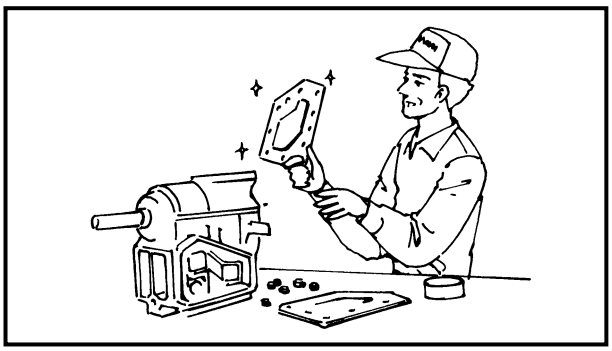
Under normal conditions of use there should be no hazards from the use of the lubricants mentioned in this manual, but safety is all-important, and by adopting good safety practises any risk is minimized. A summary of the most important precautions is as follows:

1. While working, maintain good standards of personal and industrial hygiene.
2. Clothing which has become contaminated with lubricants should be changed as soon as practicable and laundered before further use.
3. Avoid skin contact with lubricants (e.g., do not place a soiled rag in your pocket).
4. Hands and any other part of the body which have been in contact with lubricants or lubricant-contaminated clothing should be thoroughly washed with hot water and soap as soon as practicable.
5. To protect the skin, the application of a suitable barrier cream to the hands before working is recommended.
6. A supply of clean lint-free cloths should be available for wiping purposes.

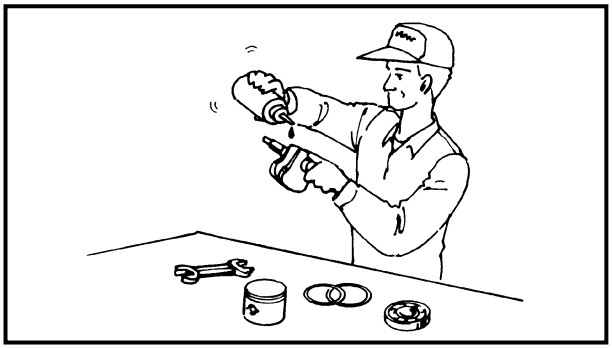


GOOD WORKING PRACTICES

1. **The right tools**
   Use the recommended special tools to protect parts from damage. Use the right tool in the right manner – do not improvise.
2. **Tightening torque**
   Follow the tightening torque instructions. When tightening bolts, nuts and screws, tighten the larger sizes first and tighten inner-positioned fixings before outer-positioned ones.

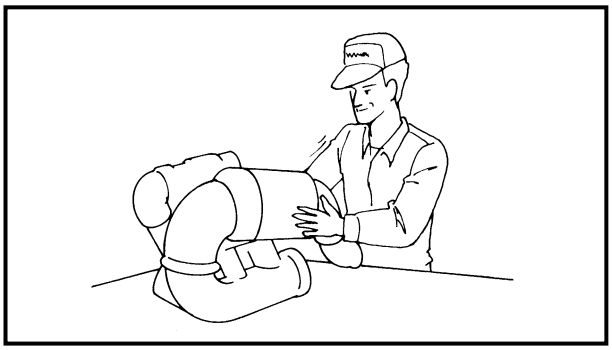


3. **Non-reusable items**
   Always use new gaskets, packings, O-rings, oil seals, split-pins, circlips, etc., on reassembly.



DISASSEMBLY AND ASSEMBLY

1. Clean parts with compressed air when disassembling.
2. Oil the contact surfaces of moving parts during assembly.



3. After assembly, check that moving parts operate normally.

4. Install bearings with the manufacturer's markings on the side exposed to view and liberally oil the bearings.

CAUTION:

Do not spin bearings with compressed air because this will damage their surfaces.

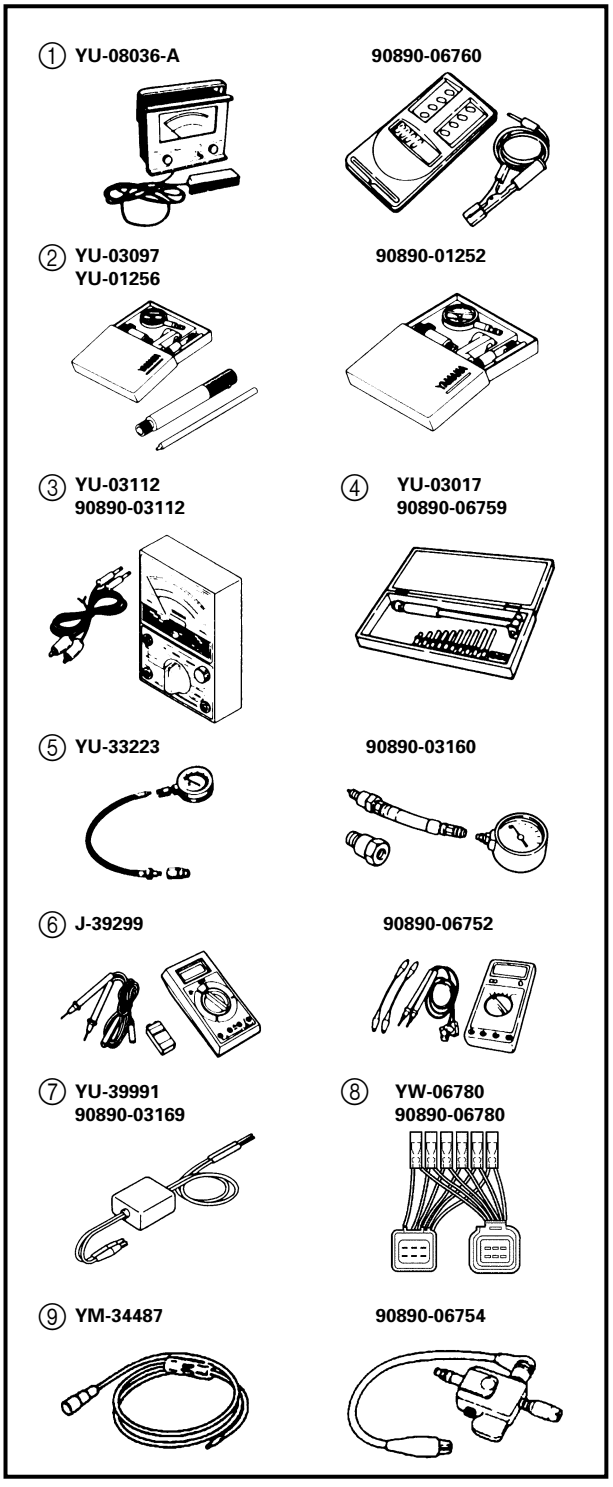
5. When installing oil seals, apply a light coat of water-resistant grease to the outside diameter.

SPECIAL TOOLS

Using the correct special tools recommended by Yamaha, will aid the work and enable accurate assembly and tune-up. Improvisations and using improper tools can damage the equipment.

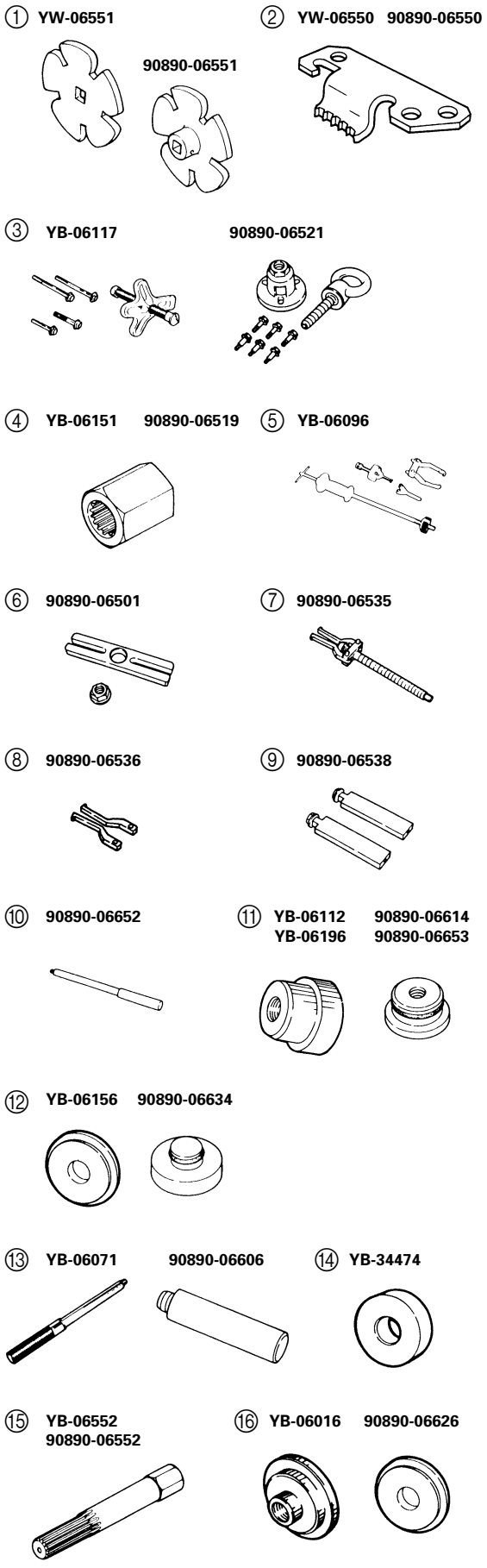
NOTE:

- For U.S.A. and Canada, use part numbers starting with "J-", "YB-", "YM-", "YU-" or "YW-".
- For other countries, use part numbers starting with "90890-".



MEASURING

1. Engine tachometer
   P/N. YU-08036-A
   90890-06760
2. Dial gauge and stand
   P/N. YU-03097, YU-01256
   90890-01252
3. Pocket tester
   P/N. YU-03112
   90890-03112
4. Cylinder gauge set
   P/N. YU-03017
   90890-06759
5. Compression gauge
   P/N. YU-33223
   90890-03160
6. Digital multimeter
   P/N. J-39299
   90890-06752
7. Peak voltage adapter
   P/N. YU-39991
   90890-03169
8. Peak voltage test harness
   P/N. YW-06780
   90890-06780
9. Spark gap tester
   P/N. YM-34487
   90890-06754



REMOVAL AND INSTALLATION

1. Coupler wrench
   P/N. YW-06551
   90890-06551
2. Flywheel holder
   P/N. YW-06550
   90890-06550
3. Flywheel puller
   P/N. YB-06117
   90890-06521
4. Drive shaft holder (impeller)
   P/N. YB-06151
   90890-06519
5. Slide hammer set (jet pump bearing)
   P/N. YB-06096
6. Stopper guide plate (jet pump bearing)
   P/N. 90890-06501
7. Bearing puller (jet pump bearing)
   P/N. 90890-06535
8. Bearing puller claw 1 (jet pump bearing)
   P/N. 90890-06536
9. Stopper guide stand (jet pump bearing)
   P/N. 90890-06538
10. Drive rod L3 (jet pump bearing)
    P/N. 90890-06652
11. Needle bearing attachment
    (jet pump bearing and oil seal)
    P/N. YB-06112, YB-06196
    90890-06614, 90890-06653
12. Ball bearing attachment
    (jet pump oil seal)
    P/N. YB-06156
    90890-06634
13. Driver rod
    (intermediate shaft and jet pump)
    P/N. YB-06071
    90890-06606
14. Bearing inner/outer race attachment
    (jet pump bearing)
    P/N. YB-34474
15. Shaft holder (intermediate shaft)
    P/N. YB-06552
    90890-06552
16. Bearing outer race attachment
    (intermediate shaft)
    P/N. YB-06016
    90890-06626

CHAPTER 2
SPECIFICATIONS

GENERAL SPECIFICATIONS

Item	Unit	Model
		GP1200R
MODEL CODE		
Hull		F0X
Engine		67X
DIMENSIONS		
Length	mm (in)	2,930 (115.4)
Width	mm (in)	1,150 (45.3)
Height	mm (in)	1,020 (40.2)
Dry weight	kg (lb)	306 (675)
Vehicle capacity		2
PERFORMANCE		
Maximum output	kW (PS) @ r/min	114.0 (155) @ 7,000
Maximum fuel consumption	ℓ /h (US gal/h, Imp gal/h)	64.0 (16.9, 14.1)
Cruising range	hr	1.1
ENGINE		
Engine type		2-stroke
Number of cylinders		3
Displacement	cm^3 (cu. in)	1,176 (71.74)
Bore × stroke	mm (in)	80.0 × 78.0 (3.15 × 3.07)
Compression ratio		5.9:1
Intake system		Reed valve
Carburetor model (manufacturer) × quantity		BN44 (MIKUNI) × 3
Enrichment control		Choke valve
Scavenging system		Loop charge
Lubrication system		Variable oil injection
Cooling system		Water cooled
Starting system		Electric starter
Ignition system		Digital CDI
Ignition timing	Degree	18 BTDC ~ 24 BTDC
Spark plug model (manufacturer)		BR8ES-11 (NGK)
Battery capacity	V-Ah (kC)	12 - 19 (68.4)
Lighting coil	A @ r/min	9 ~ 11 @ 6,000
DRIVE UNIT		
Propulsion system		Jet pump
Jet pump type		Axial flow, single stage
Impeller rotation (from rear)		Counterclockwise
Transmission		Direct drive from engine
Steering nozzle angle	Degree	23 + 23
Trim nozzle angle	Degree	–5, 0, 5, 10, 15
Trim system		Manual 5 positions
Reverse system		N.A.

Item	Unit	Model
		GP1200R
FUEL AND OIL		
Fuel		Regular unleaded gasoline
Minimum fuel rating	PON*	86
	RON*	90
Oil		YAMALUBE 2-W*
Fuel/oil mixing ratio (wide open throttle)		30:1
Fuel tank capacity	ℓ (US gal, Imp gal)	60 (15.9, 13.2)
Fuel tank reserve capacity	ℓ (US gal, Imp gal)	10 (2.6, 2.2)
Oil tank capacity	ℓ (US gal, Imp gal)	5.5 (1.45, 1.21)

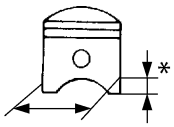
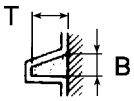
PON*: Pump Octane Number = (Motor Octane Number + Research Octane Number)/2
RON*: Research Octane Number
YAMALUBE 2-W*: YAMALUBE 2-W is developed for this water vehicles and available from a Yamaha water vehicle dealer.

CAUTION:

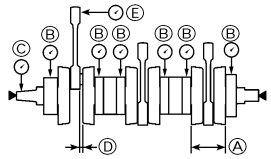
Use only YAMALUBE 2-W oil. Using another oil can seriously damage the catalytic converter and other engine components.

MAINTENANCE SPECIFICATIONS

ENGINE

Item	Unit	Model
		GP1200R
CYLINDER HEAD		
Warpage limit	mm (in)	0.1 (0.004)
Compression pressure*1	KPa (kg/cm^2)	500 (5.0)
CYLINDERS		
Bore size	mm (in)	80.000 ~ 80.018 (3.1496 ~ 3.1503)
Taper limit	mm (in)	0.08 (0.003)
Out-of-round limit	mm (in)	0.05 (0.002)
Wear limit	mm (in)	Original cylinder bore + 0.04 (0.0016)
PISTONS		
Diameter 	mm (in)	Red: 79.899 ~ 79.902 (3.1456 ~ 3.1457) Orange: 79.903 ~ 79.906 (3.1458 ~ 3.1459) Green: 79.907 ~ 79.910 (3.1459 ~ 3.1461) Purple: 79.911 ~ 79.914 (3.1461 ~ 3.1462)
Measuring point*	mm (in)	22 (0.87)
Piston-to-cylinder clearance	mm (in)	0.100 ~ 0.105 (0.0039 ~ 0.0041)
Wear limit	mm (in)	Cylinder bore – 0.105 (0.0041)
Piston pin bore inside diameter	mm (in)	22.004 ~ 22.025 (0.8663 ~ 0.8671)
PISTON RINGS 		
Top		
Type		Keystone
Dimensions (B)	mm (in)	1.47 ~ 1.49 (0.058 ~ 0.059)
Dimensions (T)	mm (in)	2.8 ~ 2.9 (0.110 ~ 0.114)
End gap	mm (in)	0.45 ~ 0.60 (0.018 ~ 0.024)
Ring groove clearance	mm (in)	0.03 ~ 0.05 (0.001 ~ 0.002)
2nd		
Type		Keystone
Dimensions (B)	mm (in)	1.47 ~ 1.49 (0.058 ~ 0.059)
Dimensions (T)	mm (in)	2.8 ~ 2.9 (0.110 ~ 0.114)
End gap	mm (in)	0.45 ~ 0.60 (0.018 ~ 0.024)
Ring groove clearance	mm (in)	0.03 ~ 0.05 (0.001 ~ 0.002)
PISTON PINS		
Diameter	mm (in)	21.995 ~ 22.000 (0.8659 ~ 0.8661)
Wear limit	mm (in)	21.990 (0.8657)

*1: At 760 mmHg and 20 ˚C (68 ˚F).

Item	Unit	Model
		GP1200R
CRANKSHAFT ASSEMBLY		
Crank width Ⓐ	mm (in)	72.95 ~ 73.00 (2.872 ~ 2.874)
Deflection limit Ⓑ	mm (in)	0.05 (0.002)
Deflection limit Ⓒ	mm (in)	0.15 (0.006)
Big end side clearance Ⓓ	mm (in)	0.25 ~ 0.75 (0.010 ~ 0.030)
Maximum small end axial play Ⓔ 	mm (in)	2.0 (0.08)
CARBURETORS		
Type		Floatless
Identification mark		#1: 67X-01, #2: 67X-02, #3: 67X-03
Main nozzle	mm (in)	3.2 (0.13)
Main jet		117.5
Pilot jet		95
Throttle valve		150
Valve seat size	mm (in)	1.2 (0.05)
Trolling speed	r/min	1,350 ± 50
REED VALVES		
Thickness	mm (in)	0.6 (0.024)
Reed valve stopper height	mm (in)	10.4 ~ 11.0 (0.41 ~ 0.43)
Reed valve warpage limit	mm (in)	0.2 (0.01)

JET PUMP UNIT

Item	Unit	Model
		GP1200R
JET PUMP		
Impeller material		Stainless steel
Number of impeller blades		3
Impeller pitch angle	Degree	13.5
Impeller clearance	mm (in)	0.35 ~ 0.45 (0.014 ~ 0.018)
Impeller clearance limit	mm (in)	0.6 (0.02)
Drive shaft runout limit	mm (in)	0.3 (0.012)
Nozzle diameter	mm (in)	86.8 (3.42)

HULL AND HOOD

Item	Unit	Model
		GP1200R
FREE PLAY		
YPVS cable slack	mm (in)	0.5 ~ 1.5 (0.02 ~ 0.06)
Throttle lever free play	mm (in)	4 ~ 7 (0.16 ~ 0.28)

ELECTRICAL

Item	Unit	Model
		GP1200R
BATTERY		
Type		Fluid
Capacity	V-Ah (kC)	12 - 19 (68.4)
CDI UNIT		
(B/O – B for cylinder #1)		
(B/W – B for cylinder #2)		
(B/Y – B for cylinder #3)		
Output peak voltage lower limit		
@cranking 1	V	200
@cranking 2	V	180
@2,000 r/min	V	190
@3,500 r/min	V	180
STATOR		
Pickup coil (W/R – B/O)		
Output peak voltage lower limit		
@cranking 1	V	5
@cranking 2	V	2.8
@2,000 r/min	V	7.9
@3,500 r/min	V	11
Lighting coil (G – G)		
Output peak voltage lower limit		
@cranking 1	V	9
@cranking 2	V	9
@2,000 r/min	V	14
@3,500 r/min	V	14
Pickup coil resistance	Ω (color)	445 ~ 545 (W/R – B/O)
Lighting coil resistance	Ω (color)	0.49 ~ 0.59 (G – G)
Minimum charging current	A @ r/min	9 @ 6,000
IGNITION COIL		
Minimum spark gap	mm (in)	10 (0.39)
Primary coil resistance	Ω (color)	0.26 ~ 0.36 (B/W – Body)
Secondary coil resistance	kΩ (color)	3.5 ~ 4.7 (B/W – Spark plug lead terminal)
Spark plug lead resistance		
#1	kΩ	6.1 ~ 14.3
#2	kΩ	4.6 ~ 11.1
#3	kΩ	3.3 ~ 8.2

Cranking 1: unloaded
Cranking 2: loaded

Item	Unit	Model
		GP1200R
RECTIFIER/REGULATOR		
(R – B)		
Output peak voltage lower limit (unloaded)		
@cranking	V	7
@2,000 r/min	V	12.6
@3,500 r/min	V	12.6
STARTER MOTOR		
Brush length	mm (in)	12.5 (0.49)
Wear limit	mm (in)	6.5 (0.26)
Commutator undercut	mm (in)	0.7 (0.03)
Limit	mm (in)	0.2 (0.01)
Commutator diameter	mm (in)	28.0 (1.10)
Limit	mm (in)	27.0 (1.06)
FUSE		
Rating	V-A	12-10 12-20

TIGHTENING TORQUES

SPECIFIED TORQUES

Part to tightened		Part name	Thread size	Q'ty	Tightening torque			Remarks
					Nm	m•kgf	ft•lb	
ENGINE								
Muffler cover – muffler		Bolt	M6	3	12	1.2	8.7	242
Muffler stay – cylinder body		Bolt	M10	2	39	3.9	28	271
Muffler – muffler stay 2		Bolt	M10	1	39	3.9	28	271
Eye – cylinder head		Bolt	M10	4	39	3.9	28	271
Muffler – eye		Nut	M10	2	39	3.9	28	271
Muffler stay 2 – crankcase		Bolt	M10	2	39	3.9	28	271
Exhaust temperature sensor – muffler		—	—	1	39	3.9	28	572
Water temperature sensor – mixing joint		—	—	1	20	2.0	14	572
Muffler stay – catalyst housing	1st	Bolt	M10	2	15	1.5	11	271
	2nd				39	3.9	28	
Muffler – catalyst housing	1st	Bolt	M8	6	15	1.5	11	271
	2nd				33	3.3	24	
Muffler – mixing joint	1st	Bolt	M8	6	11	1.1	8.0	271
	2nd				22	2.2	16	
Exhaust chamber joint – exhaust manifold		Bolt	M10	4	39	3.9	28	271
Exhaust chamber/stay – bracket		Bolt	M10	2	39	3.9	28	271
Exhaust chamber stay/ cylinder head – cylinder	1st	Bolt	M8	2	15	1.5	11	
	2nd				35	3.5	25	
Exhaust chamber – exhaust chamber joint		Bolt	M10	6	39	3.9	28	271
Engine – engine mount		Bolt	M8	4	17	1.7	12	572
Exhaust manifold – cylinder	1st	Bolt	M10	10	22	2.2	16	271
	2nd				39	3.9	28	
	1st	Nut	M10	2	15	1.5	11	271
	2nd				39	3.9	28	
Water pipe – exhaust manifold		Bolt	M6	6	12	1.2	8.7	242
Reed valve plat/reed valve – crankcase		Bolt	M6	18	12	1.2	8.7	242
Reed valve – reed valve base		Screw	M4	24	1	0.1	0.7	242
YPVS cable holder/valve cover – cylinder		Bolt	M6	2	10	1.0	7.2	572
YPVS valve cover – cylinder		Bolt	M6	10	10	1.0	7.2	572
YPVS valve arm – shaft		Bolt	M4	3	3	0.3	2.2	242
YPVS valve assembly – cylinder		Bolt	M5	3	4	0.4	2.9	242
Spark plug – cylinder head		Bolt	M14	3	25	2.5	18	
Cylinder head cover/ cylinder head – cylinder	1st	Bolt	M8	22	22	2.2	16	
	2nd				22	2.2	16	
	3rd				35	3.5	25	

TIGHTENING TORQUES

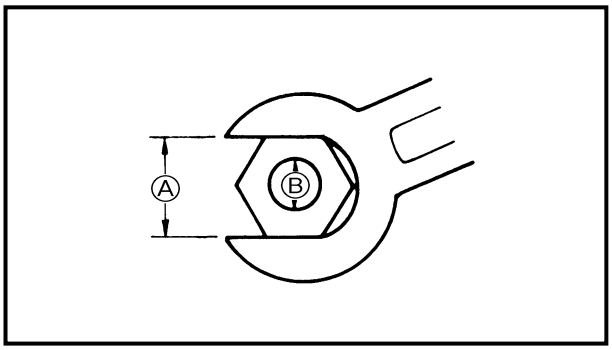
Part to tightened		Part name	Thread size	Q'ty	Tightening torque			Remarks
					Nm	m•kgf	ft•lb	
Cylinder – crankcase	1st	Bolt	M10	12	22	2.2	16	572
	2nd				39	3.9	28	
Generator cover – crankcase	1st	Bolt	M10	7	15	1.5	11	271
	2nd				50	5.0	36	
Generator cover/ground lead – crankcase	1st	Bolt	M10	1	15	1.5	11	
	2nd				50	5.0	36	
Bracket – crankcase		Bolt	M10	4	39	3.9	28	271
Pickup coil – generator cover		Bolt	M5	2	5	0.5	3.6	242
Stator coil – generator cover		Bolt	M6	3	15	1.5	11	242
Drive coupling – crankshaft		Coupling	M27	1	36	3.6	25	572
Flywheel magneto – crankshaft		Bolt	M10	1	75	7.5	54	W
Upper crankcase – lower crankcase	1st	Bolt	M8	17	15	1.5	11	
	2nd				27	2.7	19	
			M6	10	11	1.1	8.0	
Engine bracket – lower crankcase	1st	Bolt	M8	6	15	1.5	11	271
	2nd				27	2.7	19	
JET PUMP UNIT								
Steering cable joint – nozzle deflector		Nut	—	1	7	0.7	5.1	
Ride plate – hull		Bolt	M8	4	17	1.7	12	572
Intake duct – hull		Bolt	M8	4	17	1.7	12	572
Intake grate – hull		Bolt	M6	4	7	0.7	5.1	572
Nozzle ring – nozzle		Bolt	M8	2	15	1.5	11	271
Nozzle deflector – nozzle ring		Bolt	M8	2	15	1.5	11	271
Strainer cover – impeller duct		Bolt	M6	4	7	0.7	5.1	572
Drive shaft nut – drive shaft		Nut	—	1	74	7.4	53	
Impeller (left-hand threads) – drive shaft		Impeller	—	1	18	1.8	13	572
Transom plate – hull		Nut	—	4	26	2.6	19	
Intermediate housing – bulkhead		Bolt	M8	3	17	1.7	12	572
Driven coupling – shaft		Coupling	—	1	36	3.6	25	572
Speed sensor – jet pump cover		Screw	—	4	4	0.4	2.9	242
HULL AND HOOD								
Handlebar cover – handlebar cover stay		Screw	M6	4	1.1	0.11	0.8	
Handlebar cover stay – steering column		Screw	M6	4	2.9	0.29	2.1	
Upper handlebar holder/lower handle holder – steering column		Bolt	M8	4	16	1.6	11	
QSTS converter – hull		Nut	—	2	5	0.5	3.6	
Throttle lever assembly – handlebar		Screw	M5	2	3	0.3	2.2	
Handlebar switch assembly – handlebar		Screw	M5	2	3	0.3	2.2	
QSTS grip assembly – handlebar		Screw	M6	1	3	0.3	2.2	

TIGHTENING TORQUES

Part to tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kgf	ft•lb	
Grip end – handlebar	Bolt	M5	2	1	0.1	0.7	
Choke lever assembly – handlebar	Screw	M5	2	3	0.3	2.2	
QSTS cable housing – cover	Screw	M4	1	1	0.1	0.7	
Plate/steering column assembly – deck	Nut	—	2	16	1.6	11	
Steering column – deck	Nut	—	2	16	1.6	11	
Steering arm – steering column	Nut	M8	1	16	1.6	11	
QSTS cable locknut (nozzle ring side) – hull	Nut	—	1	3	0.3	2.2	
QSTS cable – hull	Nut	—	1	6	0.6	4.3	
QSTS cable – QSTS converter	Nut	—	1	4	0.4	2.9	
Steering cable locknut (nozzle deflector side) – hull	Nut	—	1	6	0.6	4.3	
Steering cable – hull	Nut	—	1	6	0.6	4.3	
Steering cable holder – bracket	Bolt	M6	1	5	0.5	3.6	
Speed sensor lead – hull	Nut	—	1	6	0.6	4.3	
Hinge assembly – front hood	Bolt	M6	2	6	0.6	4.3	
Wind shield – front hood	Screw	M5	8	1	0.1	0.7	
Hood lock – front hood	Bolt	M6	2	5	0.5	3.6	
Steering console cover assembly – deck	Nut	—	2	5	0.5	3.6	
	Bolt	M6	4	3	0.3	2.2	
	Screw	M5	2	2	0.2	1.4	
	Nut	M8	2	16	1.6	11	
Multifunction meter – holder	Nut	—	2	2	0.2	1.4	
Steering console cover – side cover	Screw	M6	4	3	0.3	2.2	
Steering console cover – glove compartment	Screw	M5	4	1	0.1	0.7	
Steering cable bracket – deck	Bolt	M6	3	5	0.5	3.6	
Hood lock assembly – deck	Nut	M6	2	5	0.5	3.6	
Seat lock assembly – seat	Bolt	M6	2	6	0.6	4.3	
Bracket/deck – notch	Nut	—	1	26	2.6	19	
Bracket/deck – hand grip	Bolt	M8	2	5	0.5	3.6	
Hand grip – deck	Bolt	M8	2	5	0.5	3.6	
Battery box/stay – holder	Bolt	M6	2	5	0.5	3.6	
Battery box – deck	Nut	—	2	13	1.3	9.4	
Battery box – electrical box	Nut	—	4	15	1.5	11	
Exhaust outlet – hull	Bolt	M6	3	5	0.5	3.6	
Sponson – hull	Bolt	M8	6	18	1.8	13	
Spout – hull	Nut	—	1	5	0.5	3.6	
Rope hole bolt	Nut	—	2	5	0.5	3.6	
Bow eye – hull	Bolt	M6	2	13	1.3	9.4	
Flap – hull	Bolt	M6	8	6	0.6	4.3	
Drain plug/packing – hull	Nut	—	4	2	0.2	1.4	

Part to tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kgf	ft•lb	
Engine mount – hull	Bolt	M8	6	17	1.7	12	572
Engine mount/plate – hull	Bolt	M8	2	17	1.7	12	572
Engine damper – hull	Bolt	M6	4	5	0.5	3.6	

Nut Ⓐ	Bolt Ⓑ	General torque specifications		
		Nm	m•kgf	ft•lb
8 mm	M5	5.0	0.5	3.6
10 mm	M6	8.0	0.8	5.8
12 mm	M8	18	1.8	13
14 mm	M10	36	3.6	25
17 mm	M12	43	4.3	31

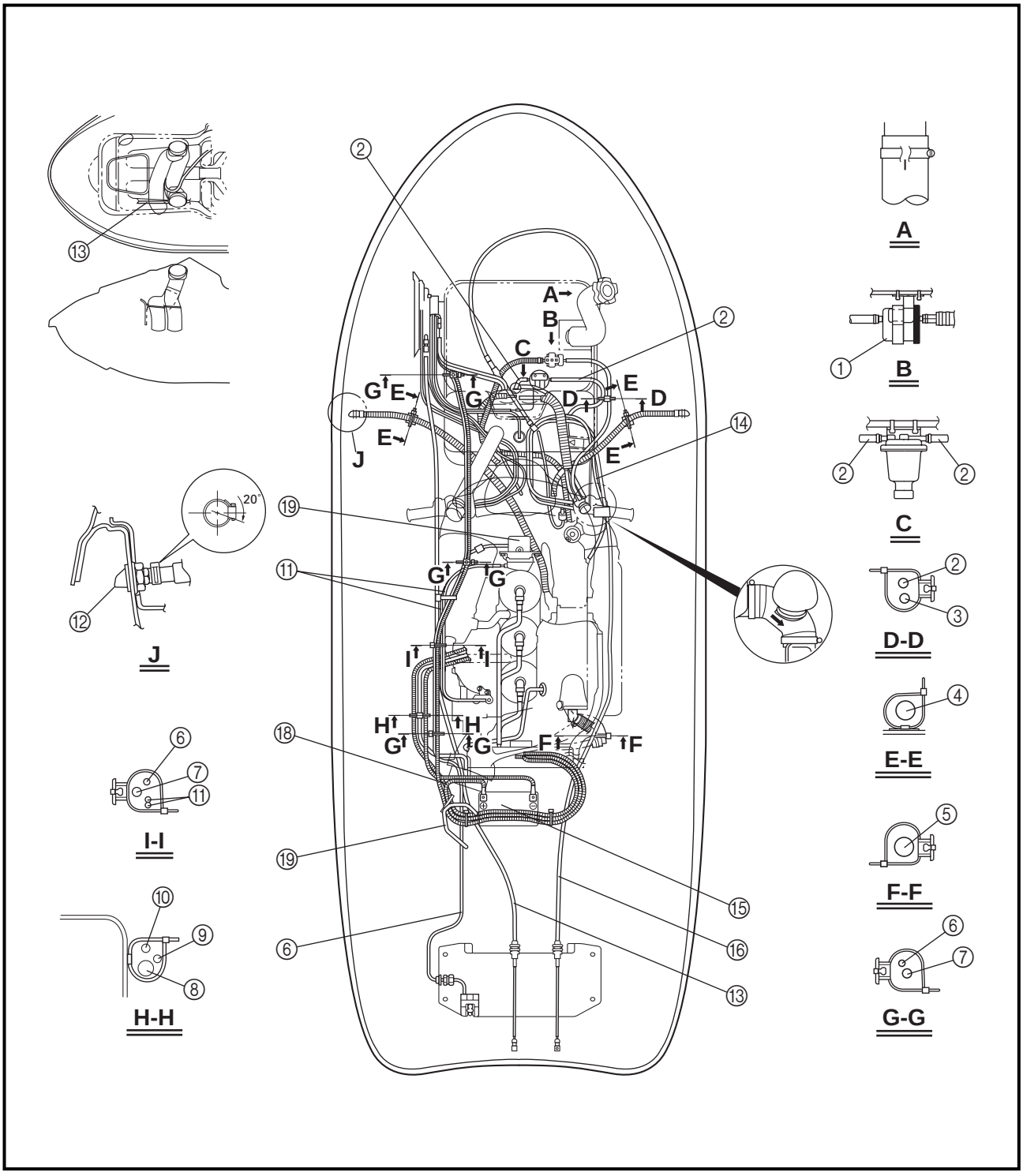


GENERAL TORQUE

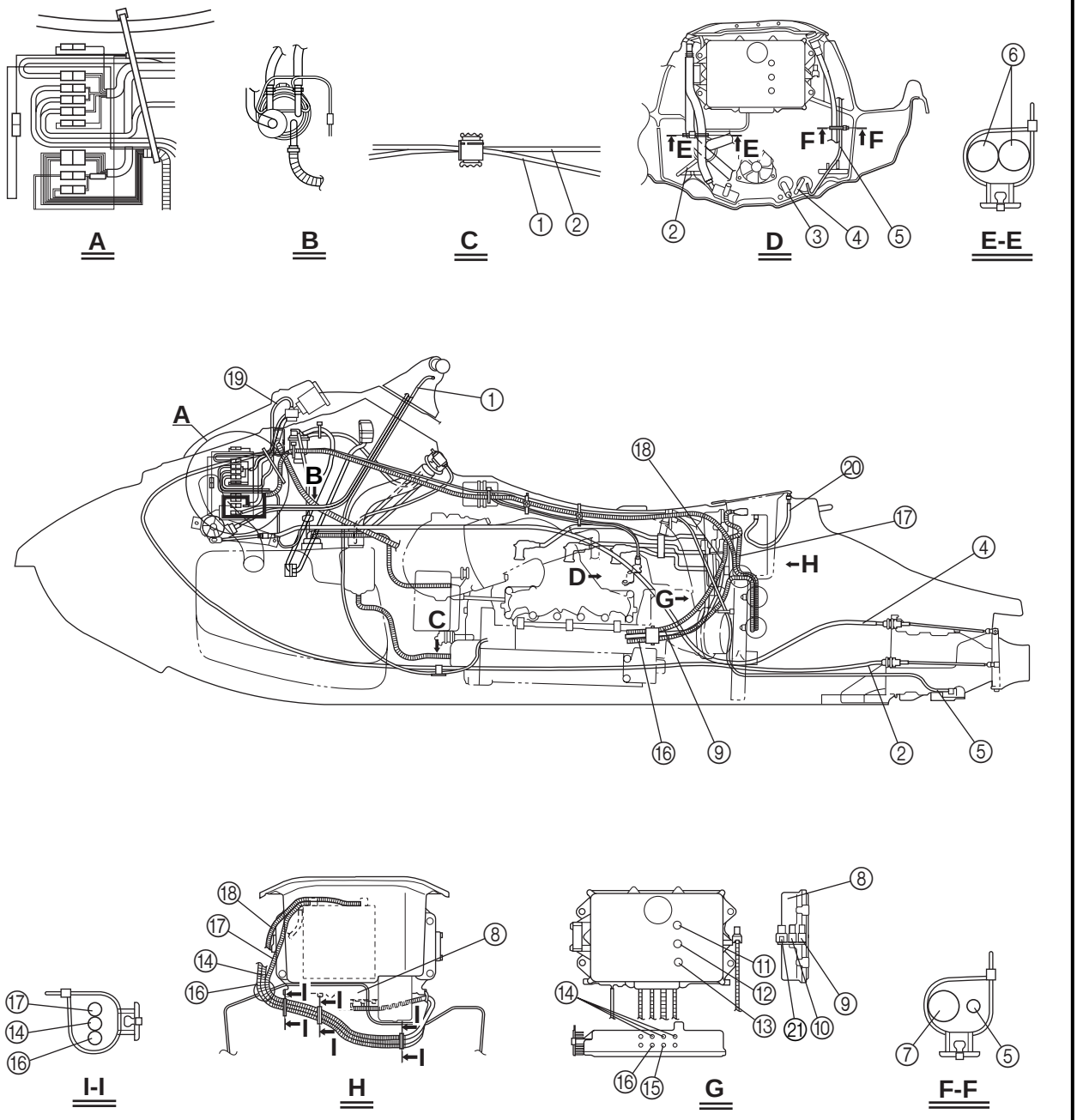
This chart specifies tightening torques for standard fasteners with a standard ISO thread pitch. Tightening torque specifications for special components or assemblies are provided in applicable sections of this manual. To avoid warpage, tighten multi-fastener assemblies in a crisscross fashion and progressive stages until the specified tightening torque is reached. Unless otherwise specified, tightening torque specifications require clean, dry threads.

Components should be at room temperature.

CABLE AND HOSE ROUTING



① Fuel filter
② Fuel breather hose
③ Fuel hose
④ Pilot water hose
⑤ Bilge hose
⑥ Speed sensor lead
⑦ Electrical box lead
⑧ Starter motor lead
⑨ Generator lead
⑩ Battery negative lead
⑪ YPVS cable
⑫ Pilot water outlet
⑬ QSTS cable
⑭ Choke cable
⑮ Battery
⑯ Steering cable
⑰ Battery breather hose
⑱ Battery positive lead
⑲ YPVS servomotor



① Choke cable
② Steering cable
③ Cooling water hose
④ QSTS cable
⑤ Speed sensor lead
⑥ Bilge hose
⑦ Flushing hose
⑧ Electrical box
⑨ To stator assembly
⑩ To water temperature sensor
⑪ To cylinder #1
⑫ To cylinder #2
⑬ To cylinder #3
⑭ To meter
⑮ To battery positive terminal
⑯ To starter motor positive terminal
⑰ Battery positive lead
⑱ Battery negative lead
⑲ Buzzer lead
⑳ Battery breather hose
㉑ Exhaust temperature sensor

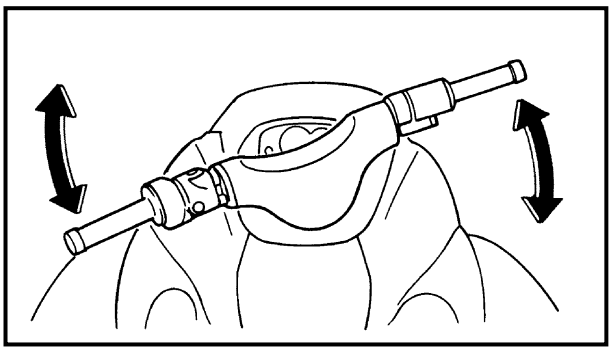
CHAPTER 3
PERIODIC INSPECTION AND ADJUSTMENT

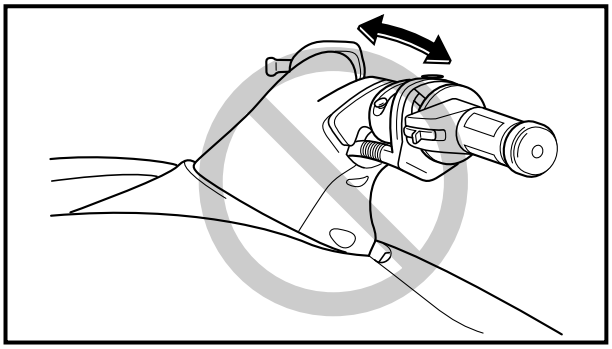
MAINTENANCE INTERVAL CHART

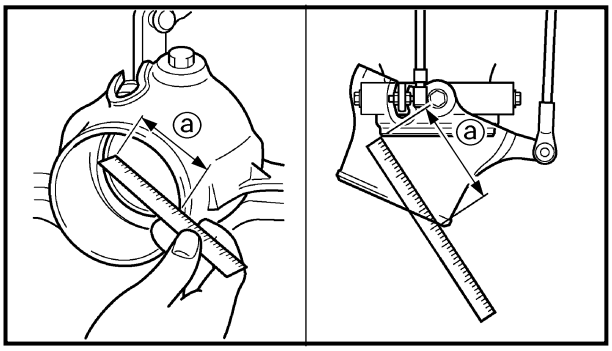
The following chart should be considered strictly as a guide to general maintenance intervals. Depending on operating conditions, the intervals of maintenance should be changed.

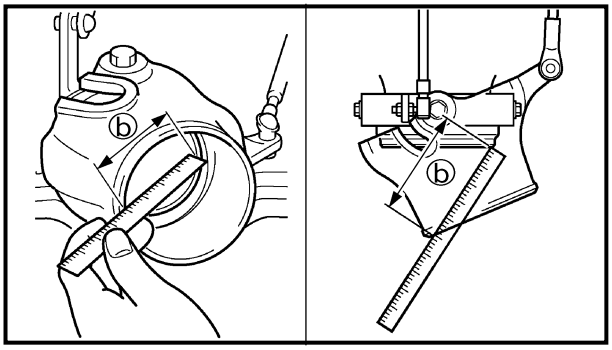
Item	Remarks	Initial		Every		Refer to page
		10 hours (Break-in)	50 hours (3 months)	100 hours (6 months)	200 hours (1 year)	
CONTROL SYSTEM						
Steering cable	Inspect/adjust			○		3-2
Steering column	Inspect	○		○		3-2
Throttle cable	Inspect/adjust			○		3-3
Carburetor throttle shaft	Inspect/adjust			○		—
Choke cable	Inspect/adjust			○		3-4
QSTS cable	Inspect/adjust			○		3-5
YPVS cable	Inspect/adjust				○	3-6
FUEL SYSTEM						
Fuel tank	Clean				○	4-9
Fuel filter	Clean/replace	○			○	3-7
Fuel line	Inspect			○		3-7
Trolling speed	Check/adjust			○		3-8
Carburetor setting	Inspect/adjust	○		○		4-16
OIL INJECTION SYSTEM						
Oil injection system	Check/clean	○			○	4-30
Oil pump cable	Inspect/adjust			○		4-29
POWER UNIT						
Spark plugs	Inspect/clean/adjust	○	○	○		3-9
Cooling-water passage	Inspect/clean	○ *1				—
Rubber coupling	Inspect				○	—
ELECTRICAL						
Battery	Inspect	○ *2				3-10
JET PUMP UNIT						
Impeller	Inspect		○	○		3-13
Water inlet strainer	Clean		○	○		3-14
Bilge strainer	Clean		○	○		3-14
GENERAL						
Bolts and nuts	Retighten	○		○		—
Drain plugs	Inspect/replace				○	3-14
Lubrication points	Grease			○		3-15
Intermediate housing	Grease	○ *3		○ *4		3-17

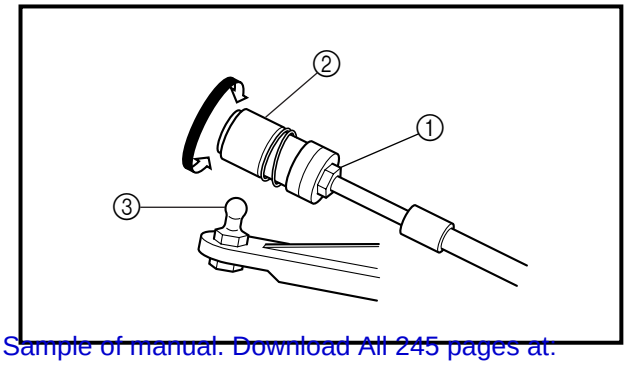
*1: After every ride
*2: Inspect fluid level before every ride
*3: Grease capacity 33.0 ~ 35.0 cm^3 (1.11 ~ 1.18 oz.)
*4: Grease capacity 6.0 ~ 8.0 cm^3 (0.20 ~ 0.27 oz.)











PERIODIC SERVICE

CONTROL SYSTEM

Steering column inspection

1. Inspect:
   - Steering column
     Excessive play → Replace the steering column.
     Refer to "STEERING COLUMN" in chapter 8.

Inspection steps:
- Move the handlebar up and down and back and forth.
- Check the excessive play of the handlebar.

Steering cable inspection and adjustment

1. Inspect:
   - Distance ⓐ, ⓑ
     Out of specification → Adjust.

Inspection steps:
- Turn the handlebar from lock to lock.
- Measure distances ⓐ and ⓑ.
- If the difference is not within specification, adjust the cable joint.

Difference of distances ⓐ and ⓑ:
Maximum 5 mm (0.2 in)

2. Adjust:
   - Steering cable joint
     (steering column side)

Adjustment steps:
- Loosen the locknut ①.
- Disconnect the steering cable joint ② from the ball joint ③.
- Turn the cable joint in or out for adjusting the distances ⓐ and ⓑ.

Turn in	**Distance ⓐ is increased.**
Turn out	**Distance ⓑ is increased.**