290 pgs

YAMAHA

SERVICE MANUAL

RA700S, T (’94~’95)
RA700AT (’95)
RA700BU, BV (’96~’97)
RA760U (’96)
RA1100T, U (’95~’96)

LIT-18616-RA-00 460019

PREFACE

This manual has been prepared by the Yamaha Motor Company 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.

RA700S,T/RA700AT/RA700BU,BV/RA760U/RA1100T,U
SERVICE MANUAL

Printed in USA
LIT-18616-RA-00

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 complied 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/Damage → Replace.

To assist you to find your way about this manual, the Section Title and Major Heading is given at the head of every page.

An Index to contents is provided on the first page of each Section.

MODEL INDICATION

Multiple models are shown in this manual. These indications are noted as follows.

	WaveRaider	WaveRaider-DX	WaveRaider-1100
Model Name	RA700	RA700A	RA1100
Indication	RA700	RA700A	RA1100

THE ILLUSTRATIONS

Some illustrations in this manual may differ from the model you have. This is because a procedure described may relate to several models, though only one may be illustrated. (The name of model described will be mentioned in the description).

REFERENCES

These have been kept to a minimum; however, when you are referred to another section of the manual, you are told the page number to go to.

WARNINGS, CAUTIONS AND NOTES

Attention is drawn to the various Warnings, Cautions and Notes which distinguish important information in this manual 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.

SPECIFICATIONS

These are given in bold type at each procedure. It is not necessary to leave the section dealing with the procedure in order to look up the specifications.

It is important to note the differences in specifications of models. When a procedure relates to more than one model, the main differences in specifications will be shown in a following table.

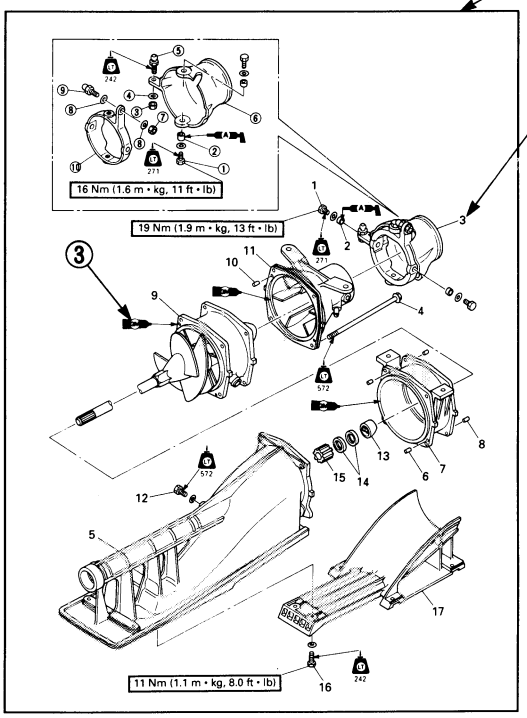
Model name	RA700	RA700A	RA1100
Number of cylinder	2	2	3
Speed meter	–	O	O

HOW TO READ DESCRIPTIONS

1. A disassembly installation job mainly consists of the exploded diagram ①.
2. The numerical figures represented by the number ② indicates the order of the job steps.
3. The symbols represented by the number ③ indicates the contents and notes of the job. For the meanings of the symbols, refer to the next page(s).
4. The REMOVAL AND INSTALLATION CHART ④ is attached to the exploded diagram and explains the job steps, part names, notes for the jobs, etc.
5. The SERVICE POINTS, other than the exploded diagram, explains in detail the items difficult to explain in the exploded diagram or REMOVAL AND INSTALLATION CHART, the Service points requiring the detailed description ⑤, etc.

JET PUMP NOZZLE, DUCT AND INTAKE

NOZZLE, DUCT AND INTAKE
EXPLODED DIAGRAM



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④

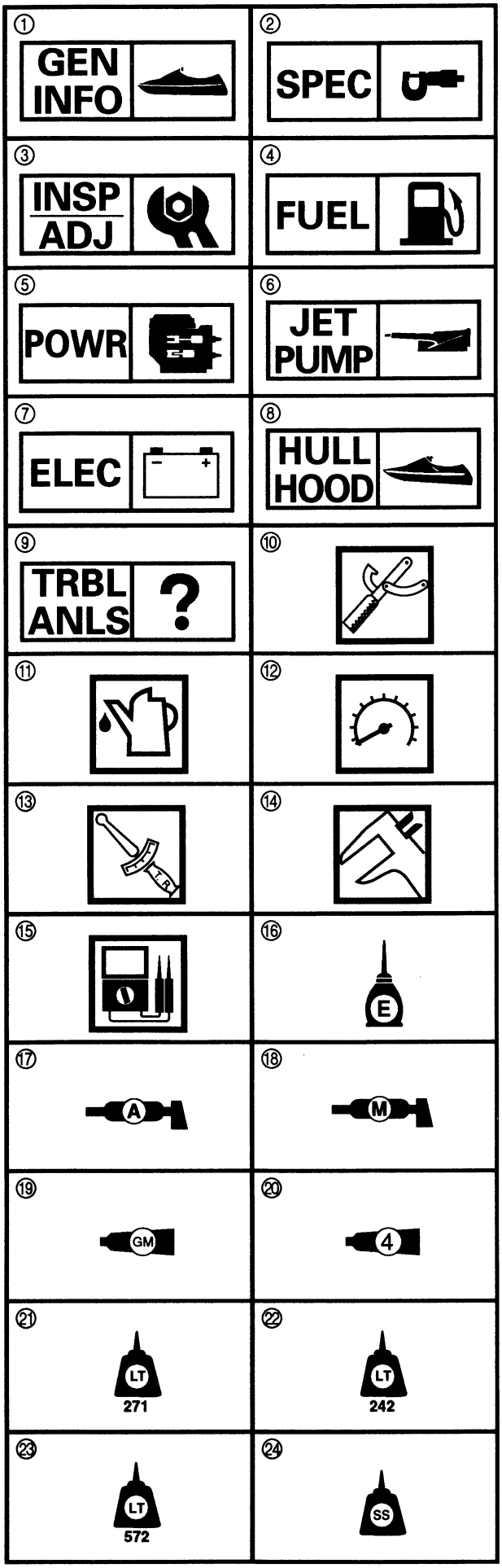
JET PUMP NOZZLE, DUCT AND INTAKE

REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	NOZZLE, DUCT AND INTAKE DISASSEMBLY		Follow the left "Step" for removal.
	Jet pump unit		Refer to the "JET PUMP UNIT REMOVAL" section.
1	Bolt (with washer)	2	
2	Collar	2	
3	Nozzle deflector assembly	1	
4	Bolt	4	
5	Intake duct	1	
6	Pin	2	
7	Housing	1	
8	Pin	2	
9	Impeller duct assembly	1	
10	Pin	2	
11	Nozzle	1	
12	Bolt (with washer)	1	
13	Spacer	1	
14	Oil seal	2	
15	Bushing	1	
16	Bolt (with washer)	6	
17	Intake screen	1	
	NOZZLE DEFLECTOR DISASSEMBLY		
①	Bolt (with washer)	2	6 x 20 mm
②	Collar	2	
③	Nut	1	M6
④	Plate washer	2	
⑤	Ball joint	1	M6
⑥	Nozzle deflector	1	
⑦	Nut	1	M8
⑧	Plate washer	2	
⑨	Ball joint	1	M8
⑩	Trim ring	1	
			Reverse the removal steps for installation.

⑤

6-4



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 valve
[Resistance (Ω), Voltage (V), Electric current (A)]

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

⑯ Apply Yamaha 2-stroke outboard motor 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 grade of sealing or locking agent, and location of application point:

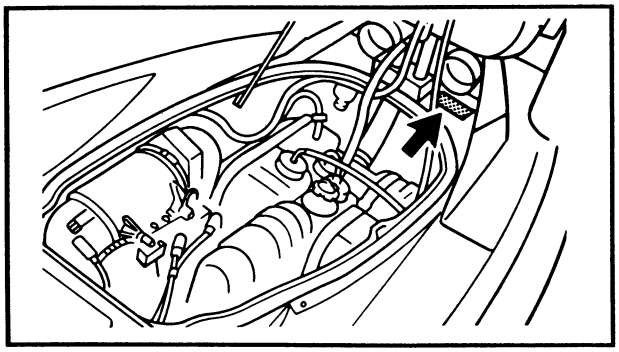
⑲ Apply Gasket maker®
⑳ Apply Yamahabond #4 (Yamaha bond No.4)
㉑ Apply LOCTITE® No. 271 (Red LOCTITE)
㉒ Apply LOCTITE® No. 242 (Blue LOCTITE)
㉓ Apply LOCTITE® No. 572
㉔ Apply Silicon sealant

NOTE:

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

INDEX

CHAPTER 1
GENERAL INFORMATION

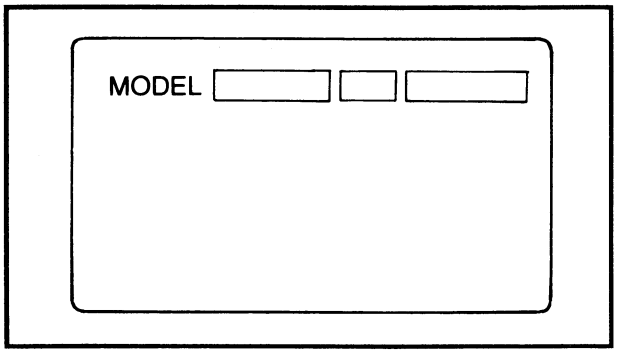


A60700-0*

IDENTIFICATION NUMBERS

PRIMARY I.D. NUMBER

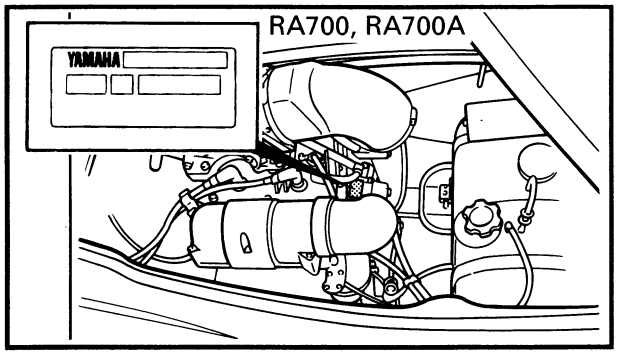
The primary I.D. number is stamped on a plate attached to the hull on the front of the engine hood.



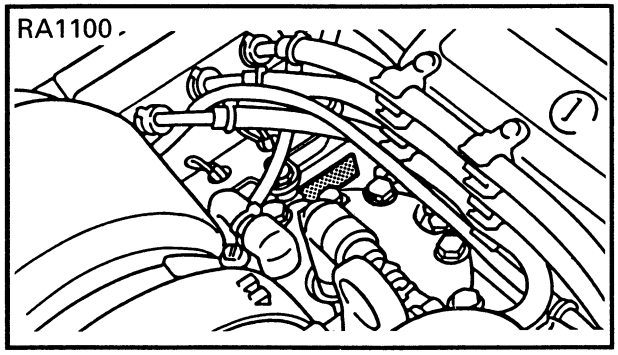
Starting primary I.D. number:
GH1: 900101 ~
GH6: 800101 ~, 600101 ~ (FRA)
GJ1: 800101 ~, 600101 ~ (FRA)

ENGINE SERIAL NUMBER

The engine serial number is stamped on a plate attached to the crankcase.



Starting serial number:
62T: 000101 ~

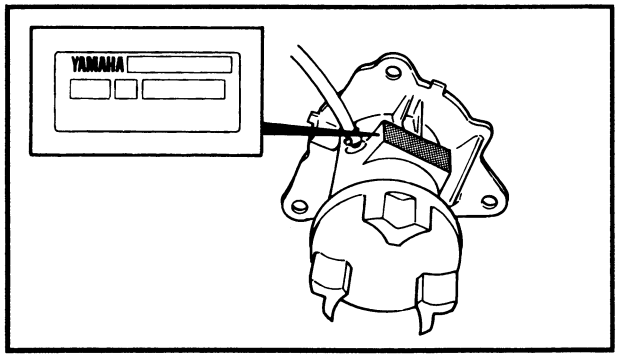


The engine serial number is stamped on a label attached on the back side of the electrical box.

Starting serial number:
63M: 000101 ~

PUMP SERIAL NUMBER

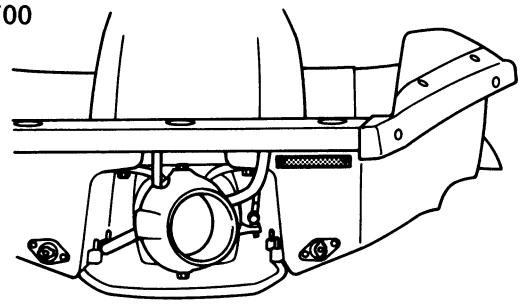
The jet pump unit serial number is stamped on a plate attached to the intermediate housing.



Starting serial number:
62T: 500101 ~
63M: 500101 ~

IDENTIFICATION NUMBERS

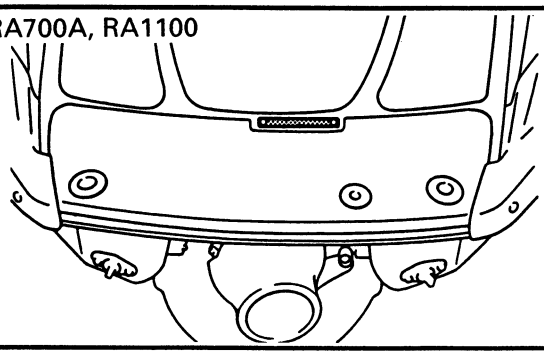
RA700



HULL IDENTIFICATION NUMBER (H.I.N.)

The H.I.N. is stamped on a plate attached to the hull beside the jet nozzle.

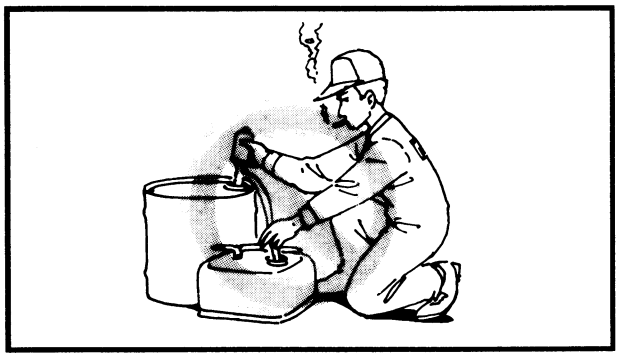
RA700A, RA1100



The H.I.N. is stamped on a plate attached to the rear end of the footrest floor.

SAFETY WHILE WORKING

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

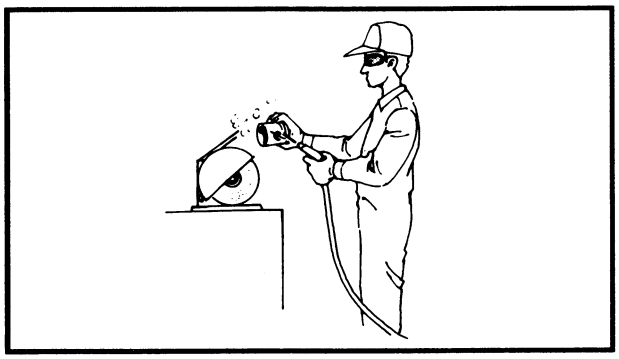


FIRE PREVENTION

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 if inhaled in large quantities will not support life. 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 using compressed air, when grinding or when 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.

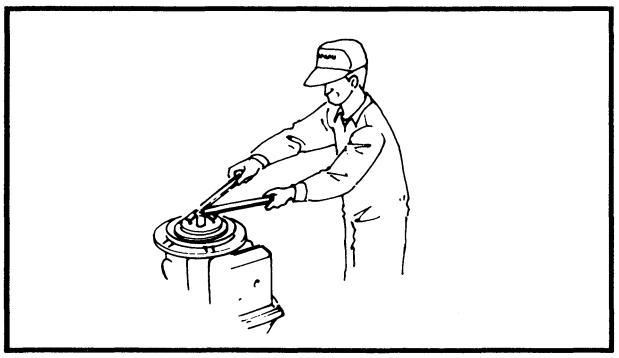
OILS, GREASES AND SEALING FLUIDS

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

SAFETY WHILE WORKING

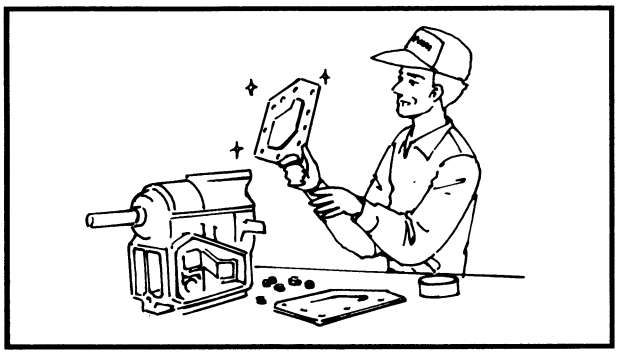
Under normal conditions of use, there should be no hazards from the use of the lubricants mentioned in this manual, but safety is all-important, and by adopting good safety practises, any risk is minimized. A summary of the most important precautions is as follows

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; do not, for example, place a soiled wiping-rag in one's 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.

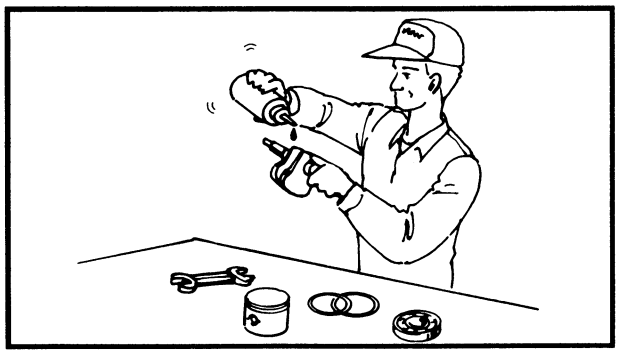


GOOD WORKING PRACTICES

1. The right tools
   Use the special tools that are designed to protect parts from damage. Use the right tool in the right manner — don't improvise.
2. Tightening torque
   Follow the torque tightening instructions. When tightening bolts, nuts and screws, tighten the larger sizes first, and tighten inner-positioned fixings before outer-positioned ones.

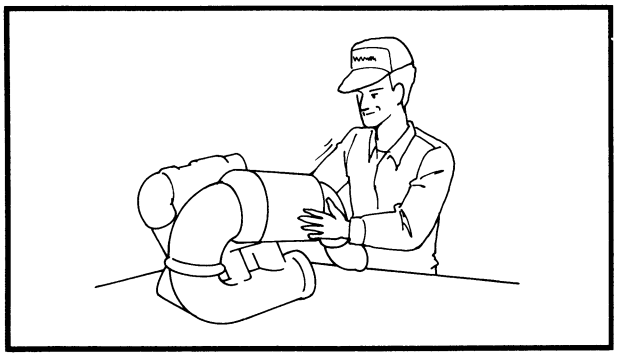


3. Non-reusable items
   Always use new gaskets, packings, O-rings, oil seals, split-pins and circlips etc. on reassembly.



DISASSEMBLY AND ASSEMBLY

1. Clean parts with compressed-air on disassembling them.
2. Oil the contact surfaces of moving parts on 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 use compressed air to spin the bearings dry. This causes damage to the bearing surfaces.

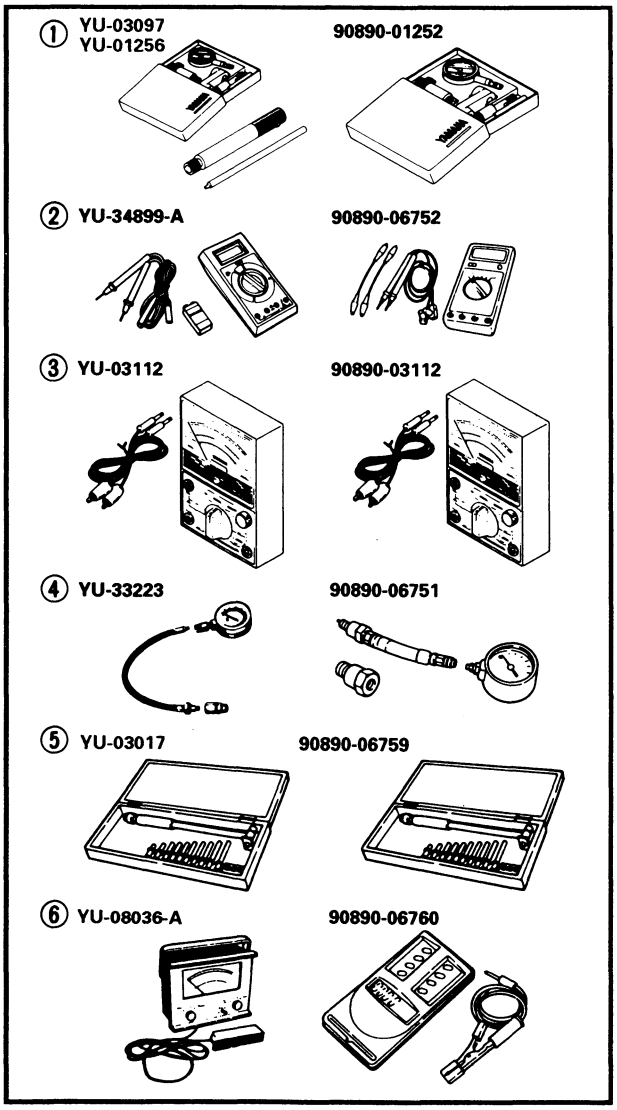
5. When installing oil seals, apply a light coating of water-resistant grease to the outside diameter.

SPECIAL TOOLS

Use of the correct special tools recommended by Yamaha will aid the work and enable accurate assembly and tune-up. Improvisations and use of improper tools can cause damage to the equipment.

NOTE:

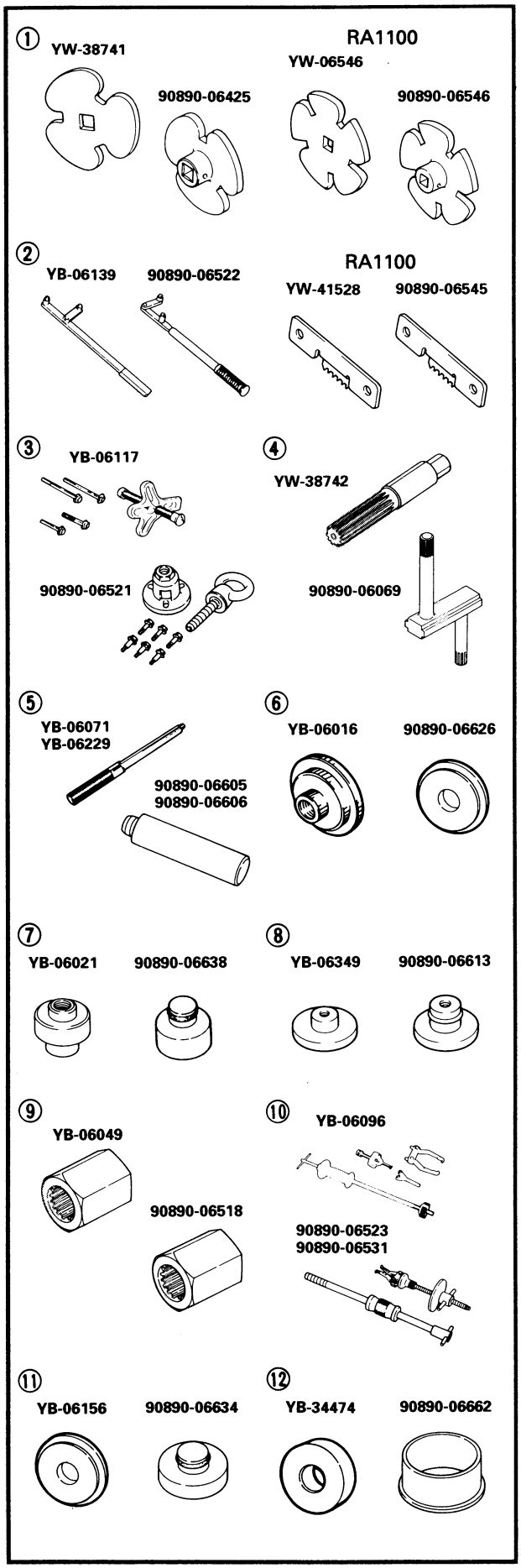
- For U.S.A. and Canada, use part numbers starting with "YB-", "YU-" or "YW-".
- For other countries, use part numbers starting with "90890-".



MEASURING

1. Dial gauge and stand
   P/N. YU-03097, YU-01256
   90890-01252
2. Digital multi meter
   P/N. YU-34899-A
   90890-06752
3. Pocket tester
   P/N. YU-03112
   90890-03112
4. Compression gauge
   P/N. YU-33223
   90890-06751
5. Cylinder gauge set
   P/N. YU-03017
   90890-06759
6. Engine tachometer
   P/N. YU-08036-A
   90890-06760

SPECIAL TOOLS



REMOVAL AND INSTALLATION

1. Coupler wrench
   P/N. YW-38741
   90890-06425
   RA1100
   P/N. YW-06546
   90890-06546
2. Flywheel holder
   P/N. YB-06139
   90890-06522
   RA1100
   P/N. YW-41528
   90890-06545
3. Flywheel puller
   P/N. YB-06117
   90890-06521
4. Shaft holder (Intermediate shaft)
   P/N. YW-38742
   90890-06069
5. Driver rod
   (Intermediate shaft and jet pump)
   P/N. YB-06071, YB-06229
   90890-06605
   90890-06606
6. Bearing outer race attachment
   (Intermediate shaft)
   P/N. YB-06016
   90890-06626
7. Bearing attachment
   (Jet pump bushing and oil seal)
   P/N. YB-06021
   90890-06638
8. Needle bearing attachment
   (Jet pump oil seal)
   P/N. YB-06349
   90890-06613
9. Drive shaft holder (Impeller)
   P/N. YB-06049
   90890-06518
10. Slide hammer set (Jet pump bearing)
    P/N. YB-06096
    90890-06523
    90890-06531
11. Ball bearing attachment
    (Jet pump oil seal)
    P/N. YB-06156
    90890-06634
12. Bearing inner race attachment
    (Jet pump bearing)
    P/N. YB-34474
    90890-06662

CHAPTER 2
SPECIFICATIONS

GENERAL SPECIFICATIONS

Item	Unit	Model		
		RA700	RA700A	RA1100
MODEL CODE:				
Hull		GH1	GH6	GJ1
Engine		62T		63M
DIMENSIONS:				
Length	mm (in)	2,860 (112.6)		
Width	mm (in)	1,120 (44.1)		
Height	mm (in)	970 (38.2)		
Dry weight	kg (lb)	176 (388)	219 (483)	245 (540)
PERFORMANCE:				
Maximum speed	km/h (mph)	83 (51.6)	81 (50.3)	91 (56.5)
Minimum turning radius	m (ft)	0		
Maximum output	kW (hp)/rpm	58.8 (80)/6,250		80.9 (110)/6,500
Maximum fuel consumption	l/h (US gal/h, Imp gal/h)	34 (9.0, 7.5)		46 (12.2, 10.1)
Cruising range (at full throttle)	hr.	1.2	1.5	1.1
ENGINE:				
Engine type		2-stroke		
Number of cylinders		2		3
Displacement	cm^3 (cu. in)	701 (42.78)		1,051 (64.14)
Bore and stroke	mm (in)	81 × 68 (3.19 × 2.68)		
Compression ratio		7.2 : 1		5.8 : 1
Intake system		Reed valve		
Carburetor type		Floatless type		
Number of carburetors		2		3
Carburetor starting system		Choke		
Scavenging system		Loop charged		
Lubrication system*		Oil Injection/Premix		
Cooling system		Water-cooled		
Starting system		Electric starter		
Ignition system		C.D.I.		
Ignition timing	Degrees	15 BTDC ~ 21 BTDC		15 BTDC ~ 19 BTDC
Spark plug (NGK)		BR8HS		
Battery capacity	V/kC (A•h)	12/68.4 (19)		
Lighting coil	A/rpm	3 ± 1/5,500		7 ± 1/6,500
DRIVE UNIT:				
Propulsion system		Jet pump		
Jet pump type		Axial flow, single stage		
Impeller rotation (rear view)		Counterclockwise		
Transmission		Direct drive from engine		
Steering (nozzle) angle	Degrees	23 ± 1		

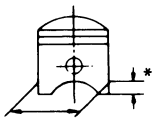
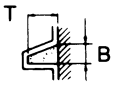
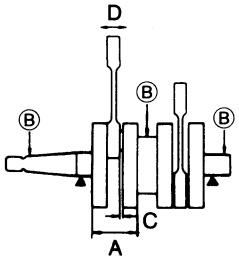
GENERAL SPECIFICATIONS

Item	Unit	Model		
		RA700	RA700A	RA1100
FUEL AND OIL:				
Fuel		Regular gasoline		
Oil		2 stroke outboard motor oil		
Fuel and oil mixing ratio*		50 : 1		
Fuel tank capacity	l (US gal, Imp gal)	40 (10.6, 8.8)	50 (13.2, 11.0)	
reserve		11.6 (3.1, 2.6)	8.8 (2.3, 1.9)	
Oil tank capacity (oil injection system model)*	l (US gal, Imp gal)	4.0 (1.1, 0.9)	3.8 (1.0, 0.8)	

*Differs according to specification.

MAINTENANCE SPECIFICATIONS

ENGINE

Item	Unit	Model		
		RA700	RA700A	RA1100
Cylinder head:				
Warpage limit	mm (in)	0.1 (0.004)		
Cylinder:				
Bore size	mm (in)	81.00 ~ 81.02 (3.189 ~ 3.190)		
Wear limit	mm (in)	81.10 (3.193)		
Taper limit	mm (in)	0.08 (0.003)		
Out of round limit	mm (in)	0.05 (0.002)		
Piston:				
Piston size	mm (in)	80.925 ~ 80.950 (3.186 ~ 3.187)		80.885 ~ 80.890 (3.184 ~ 3.185)
Measuring point* 	mm (in)	10 (0.4)		
Piston clearance	mm (in)	0.080 ~ 0.085 (0.0031 ~ 0.0033)		0.110 ~ 0.115 (0.0043 ~ 0.0045)
Limit	mm (in)	0.13 (0.005)		0.16 (0.006)
Offset (exhaust side)	mm (in)	0.5 (0.02)		1.5 (0.06)
Piston ring:				
Type		Keystone		
Sectional sketch (B × T) 	mm (in)	1.2 × 2.9 (0.047 × 0.114)		
Side clearance	mm (in)	0.02 ~ 0.06 (0.001 ~ 0.002)		
End gap (installed)	mm (in)	0.2 ~ 0.4 (0.008 ~ 0.016)		
Piston pin:				
Outside diameter	mm (in)	19.995 ~ 20.000 (0.7872 ~ 0.7874)		
Limit	mm (in)	19.98 (0.786)		
Crankshaft:				
Crank width "A"	mm (in)	61.95 ~ 62.00 (2.439 ~ 2.441)		
Runout limit "B"	mm (in)	0.05 (0.002)		
Connecting rod big end side clearance "C"	mm (in)	0.25 ~ 0.75 (0.010 ~ 0.030)		
Small end free play limit "D" 	mm (in)	2.0 (0.08)		

MAINTENANCE SPECIFICATIONS

Item	Unit	Model		
		RA700	RA700A	RA1100
Carburetor:				
Stamped mark		62T01F (#1) 62T01R (#2)		63M00F (#1) 63M00C (#2) 63M00R (#3)
Main nozzle	ø mm (in)	2.5 (0.10)		
Main jet 2 (M.J.2)		120(#1),130(#2)		107.5(#1,3), 95(#2)
Pilot jet (P.J.)		67.5		75
Low speed screw	Turns out	5/8 ± 1/4		1-1/8 ± 1/4
Throttle valve (Th.V.)		190		145
Valve seat (V.S.)	ø mm (in)	1.5 (0.06)		
High speed screw	Turns out	5/8(#1),1-1/8(#2) ± 1/4		7/8 ± 1/4
Trolling speed	rpm	1,250 ± 50		
Reed valve:				
Thickness	mm (in)	0.2 (0.008)		0.42 (0.017)
Valve lift	mm (in)	9.0 ± 0.2 (0.35 ± 0.01)		
Bending limit	mm (in)	0.2 (0.008)		
Jet pump:				
Impeller clearance	mm (in)	0.3 ~ 0.4 (0.01 ~ 0.02)		
Service limit	mm (in)	0.6 (0.024)		
Impeller shaft run out	mm (in)	0.3 (0.012)		

MAINTENANCE SPECIFICATIONS

ELECTRICAL

Item	Unit	Model		
		RA700	RA700A	RA1100
Ignition system:				
Type	Degrees	CDI magneto		
Ignition timing at 1,200 rpm	Degrees	BTDC 15		BTDC 15
at 5,500 rpm		BTDC 21		BTDC 19
Stator:				
Model/Manufacturer		F3T30572/MITSUBISHI		63M-00/ YAMAHA
Pulser coil resistance (color)	Ω	12.6 ~ 15.4 (W/R – B)		248 ~ 372 (W/R – B) (W/B – B) (W/G – B)
Charging coil resistance (color)	Ω	497.7 ~ 608.3 (B/W – B)		172 ~ 258 (Br/R – Br) 656 ~ 984 (Br/R – L)
CDI unit:				
Stamped mark		6M6-01		63M-00
Model/Manufacturer		F-6192X/MITSUBISHI		63M00/ YAMAHA
Over revolution limit	r/min	7,200 ± 200		7,100 ± 200
Overheat revolution control	r/min	3,400 ± 400		3,500 ± 200
Ignition coil:				
Model/Manufacturer		F6T53293/MITSUBISHI		63M-X0/ YAMAHA
Primary winding resistance	Ω	0.078 ~ 0.106 (O – B)		0.18 ~ 0.24 (B/W – B)
Secondary winding resistance	kΩ	14.3 ~ 30.5 (High tension cords)		2.7 ~ 4.1 (B/W – High tension cord)
Charging system:				
Type		Flywheel magneto		
Lighting coil resistance (color)	Ω	1.14 ~ 1.40 (G – G)		0.56 ~ 0.84 (G – G)
Rectifier regulator:				
Model/Manufacturer		SH589-12/SHINDENGEN		SH643A-12/ SHINDENGEN
Regulator voltage	V	14.3 ~ 15.3		14.2 ~ 15.2
Thermo sensor:				
ON	°C (°F)	66 ~ 74 (100.4 ~ 125.6)		93 (199.4)
OFF	°C (°F)	43 ~ 57 (78.8 ~ 93.2)		83 (181.4)
Starter motor:				
Model/Manufacturer		SM13237/MITSUBA		SM13453/ MITSUBA
Brush length limit	mm (in)	5.0 (0.20)		6.5 (0.26)
Commutator undercut limit	mm (in)	0.2 (0.01)		
Commutator diameter limit	mm (in)	27 (1.06)		
Fuse:	A	10		

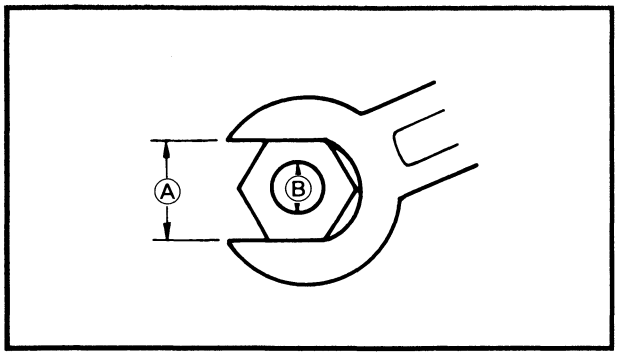
TIGHTENING TORQUE

SPECIFIED TORQUE

Part to be tightened		Part name	Size	Q'ty 700	Q'ty 1100	Tightening torque Nm	Tightening torque m•kg	Tightening torque ft•lb	Remarks
ENGINE:									
Electric box		Bolt	M8	3	–	16	1.6	11	
Mounting bolt		Bolt	M8	4		17	1.7	12	
Reed valve		Screw	M4	16	24	1	0.1	0.7	
Exhaust ring		Bolt	M8	4		30	3.0	22	
Exhaust chamber		Bolt	M10	2		40	4.0	29	
Muffler stay		Bolt	M10	4		40	4.0	29	
Exhaust chamber - Muffler stay	1st	Bolt	M10	2		2	0.2	1.4	
	2nd					47	4.7	34	
Exhaust outer cover	1st	Bolt	M8	–	6	15	1.5	11	
	2nd					30	3.0	22	
Muffler 1	1st	Bolt	M10	8	–	22	2.2	16	
	2nd					40	4.0	29	
	1st	Bolt	M10	–	12	15	1.5	11	
	2nd					30	3.0	22	
Cylinder body	1st	Bolt	M10	6	8	23	2.3	17	
	2nd					40	4.0	29	
Cylinder head cover	1st	Bolt	M8	–	13	15	1.5	11	
	2nd					30	3.0	22	
	1st	Bolt	M6	–	2	4	0.4	29	
	2nd					8	0.8	5.8	
Cylinder head	1st	Bolt	M8	10	14	15	1.5	11	
	2nd					36	3.6	25	
Spark plug		Bolt	M14	2	3	20	2.0	14	
Flywheel bolt		Bolt	M10	1		70	7.0	50	
Coupling		Nut	M27	1		37	3.7	27	
Crankcase	1st	Bolt	M8	8	12	15	1.5	11	
	2nd					28	2.8	20	
Mount bracket	1st	Bolt	M10	7	9	23	2.3	17	
	2nd					53	5.3	38	
Flame arrester cover		Bolt	M6	6	8	2	0.2	1.4	
Starter motor terminal nut		Nut	M6	1		5	0.5	3.6	
JET UNIT:									
Mounting bolt		Bolt	M10	4		34	3.4	24	
			M6	2		7	0.7	5.1	
Ride plate		Bolt	M8	4	6	17	1.7	12	
Speed sensor		Screw	M5	4		4	0.4	2.9	
Intake screen		Bolt	M6	6		11	1.1	8.0	
Impeller (left-hand threads)		Bolt	M20	1		18	1.8	13	
Coupling		Nut	M27	1		37	3.7	27	
Intermediate housing		Bolt	M8	3		17	1.7	12	

TIGHTENING TORQUE

Nut Ⓐ	Bolt Ⓑ	General torque specifications		
		Nm	m•kg	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 the torques for tightening standard fasteners with standard clean dry ISO threads at room temperature. Torque specifications for special components or assemblies are given in applicable sections of this manual. To avoid causing warpage, tighten multifastener assemblies in a criss-cross fashion, in progressive stages until the specified torque is reached.

CHAPTER 3
PERIODIC INSPECTION AND ADJUSTMENT

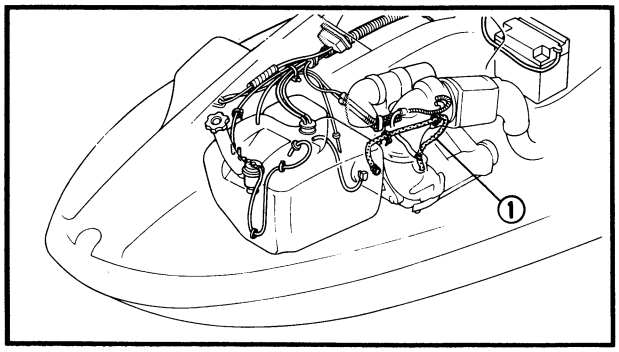
MAINTENANCE INTERVAL CHART

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

Item	Remarks	Initial		Every		Refer page
		10 hours (Break-in)	50 hours (3 months)	100 hours (6 months)	200 hours (1 year)	
CONTROL SYSTEM:						
Steering cable	Inspection/Adjustment			○		3-3
Throttle cable	Inspection/Adjustment			○		3-4
Carburetor throttle shaft	Inspection			○		—
Choke cable	Inspection/Adjustment			○		3-5
Quick shift trim cable	Inspection/Adjustment			○		3-5
Quick shift trim system	Inspection/Adjustment			○		3-5
FUEL SYSTEM:						
Fuel tank	Cleaning				○	4-7
Fuel filter	Cleaning/Replacement	○			○	3-8
Fuel line	Inspection			○		4-2
Trolling speed	Inspection/Adjustment			○		3-8
Carburetor setting	Inspection/Adjustment	○		○		3-9
OIL INJECTION SYSTEM:						
Oil injection system	Inspection/Cleaning	○			○	4-21
POWER UNIT:						
Spark plug	Inspection/Cleaning/ Adjustment	○	○	○		3-11
Cooling-water passage	Cleaning/Flashing		○			—
Coupling rubber	Inspection				○	5-48
ELECTRICAL:						
Battery	Inspection	○				3-12
JET PUMP UNIT:						
Impeller	Inspection		○	○		3-14
Bilge strainer	Cleaning		○	○		3-14
GENERAL:						
Bolt and nut	Retightening	○		○		—
Drain plug	Inspection/Replacement				○	3-15
Greasing point	Greasing			○		3-15
Bearing housing	Greasing	○ *1		○ *2		3-15
Starter motor idle gear	Greasing	○ *3		○ *4		3-15

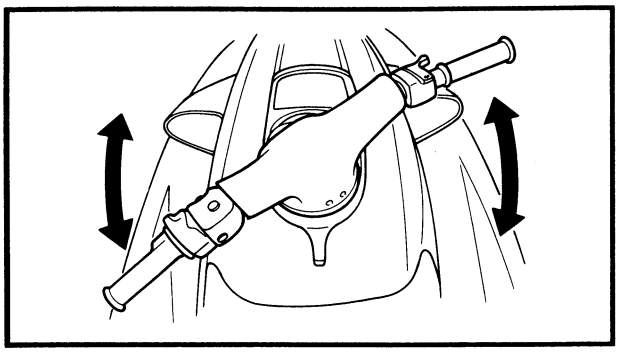
*1: Grease capacity 33.0 ~ 35.0 cm^3 (1.11 ~ 1.18 oz.)
*2: Grease capacity 6.0 ~ 8.0 cm^3 (0.20 ~ 0.27 oz.)
*3: Grease capacity for 1100 model: 8.0 cm^3 (0.27 oz.)
*4: Grease capacity for 1100 model: 2.0 cm^3 (0.07 oz.)

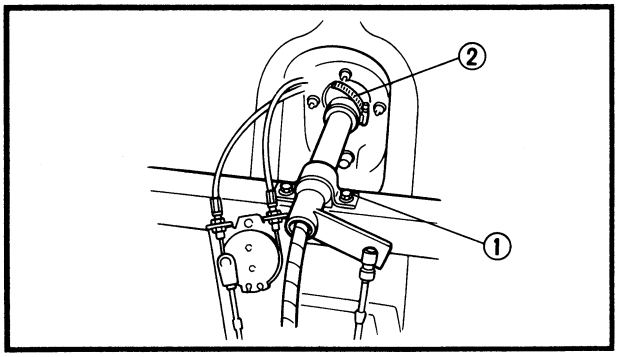
MAINTENANCE INTERVAL CHART

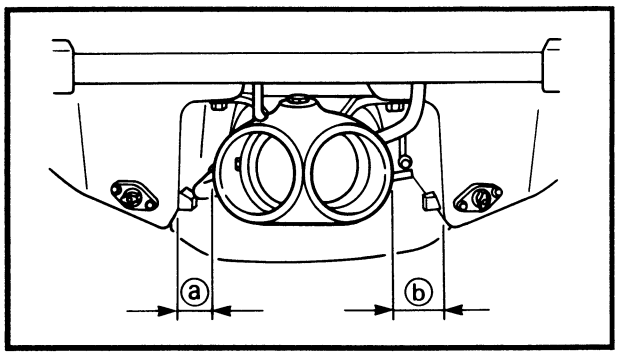


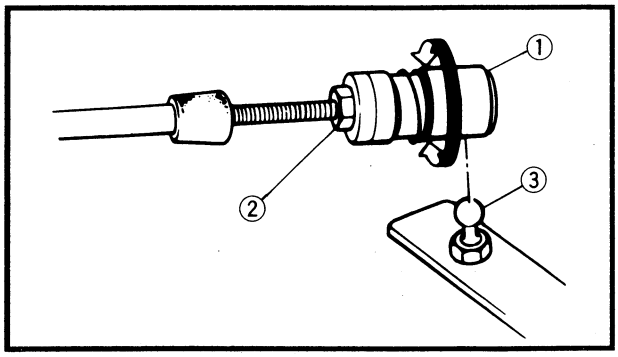
CAUTION:

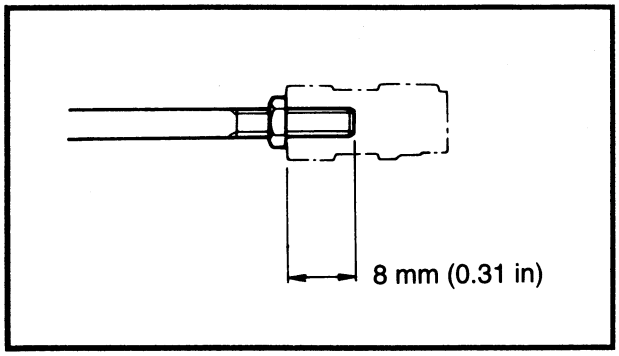
- **For the RA700, RA700A:**
  Kink the pilot hose ① when running the engine at full throttle for more than 15 seconds as the water vehicle is moored or is in a test tank.
- **For the RA1100:**
  Do not run the engine at full throttle when the water vehicle is moored or is in a test tank.











PERIODIC SERVICE

CONTROL SYSTEM

Pivot shaft bearing inspection

1. Inspect:
   - Pivot shaft bearing
     Excessive play → Replace bearings.
     Refer to the "STEERING SYSTEM" section in chapter 8.

Inspection steps:
- Move the handlebar up and down.
- Move the handlebar back and forth.

NOTE:
Check that the pivot shaft support bolt ① is secured first.

- If the pivot shaft becomes loose, retighten the clamp ② until a satisfactory feel is obtained.

Steering cable inspection and adjustment

1. Inspect:
   - Jet nozzle clearance ⓐ, ⓑ

Inspection steps:
- Turn the handlebar lock to lock.
- Measure the clearances ⓐ and ⓑ.
- If the ⓐ and ⓑ clearances are not even, adjust the clearances.

2. Adjust:
   - Cable joint (handle side) ①

Adjustment steps:
- Disconnect the cable joint from the ball joint ③.
- Loosen the lock nut ②.
- Turn the cable joint to adjust.

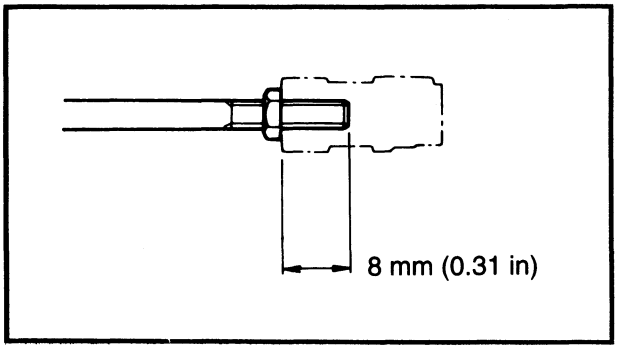
Turn in	**Clearance ⓐ is increased.**
Turn out	**Clearance ⓑ is increased.**

⚠ WARNING

The cable joint must be screwed in more than 8 mm (0.31 in).

- Tighten the lock nut and connect the cable joint.

Lock nut:
3 Nm (0.3 m • kg, 2.2 ft • lb)

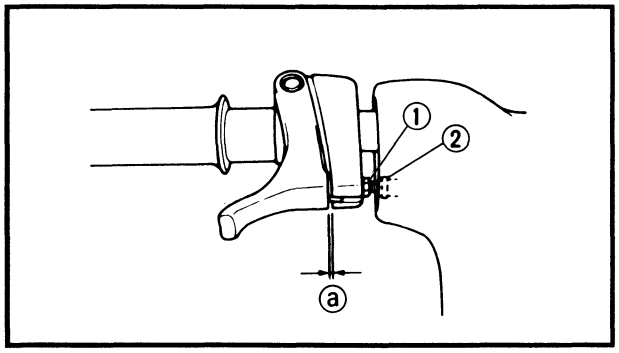


NOTE:
If correct adjustment cannot be obtained using the cable joint at the handlebar end adjust the cable joint at the steering nozzle end.

Throttle cable inspection and adjustment

NOTE:
Before adjusting the throttle lever free play, the trolling speed should be adjusted.

1. Measure:
   - Throttle lever free play ⓐ
     Out of specification → Adjust.



Throttle lever free play:
RA700, RA700A
7 ~ 10 mm (0.28 ~ 0.39 in)
RA1100
4 ~ 7 mm (0.16 ~ 0.28 in)

2. Adjust:
   - Throttle lever free play

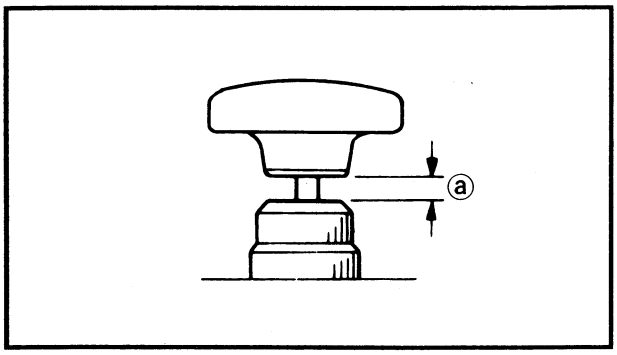
Adjustment steps:
- Loosen the lock nut ①.
- Turn the adjuster ② in/out until the specified free play is obtained.

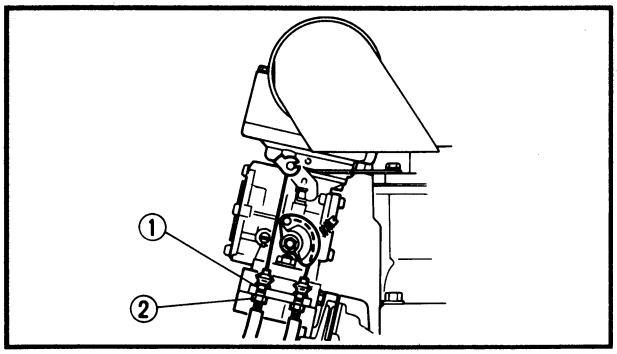
Turn in	**Free play is increased.**
Turn out	**Free play is decreased.**

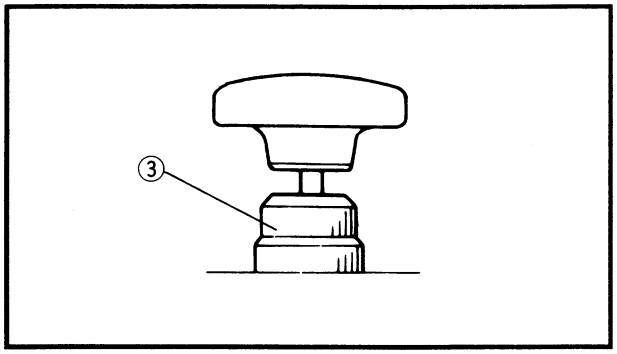
- Tighten the lock nut.

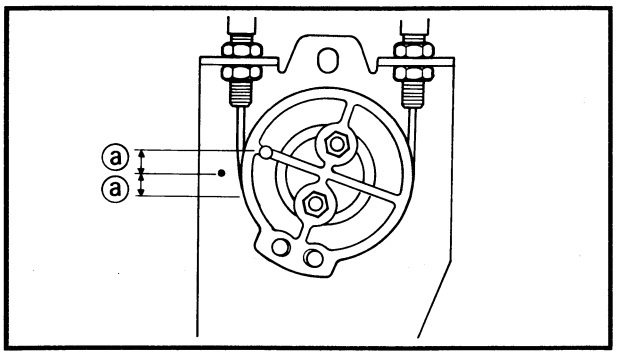
⚠ WARNING

After adjusting the free play, turn the handlebar to right and left, and make sure that the trolling speed does not increase.









Choke cable inspection and adjustment

1. Measure:
   - Choke cable free play ⓐ
     Out of specification → Adjust.

	Choke cable free play: **1 ~ 6 mm (0.04 ~ 0.24 in)**

2. Adjust:
   - Choke cable free play

Adjustment steps:
- Loosen the lock nut ①.
- Turn the adjuster ② in/out until the specified free play is obtained.

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

- Tighten the lock nut.

	Lock nut: **9 Nm (0.9 m • kg, 6.5 ft • lb)**

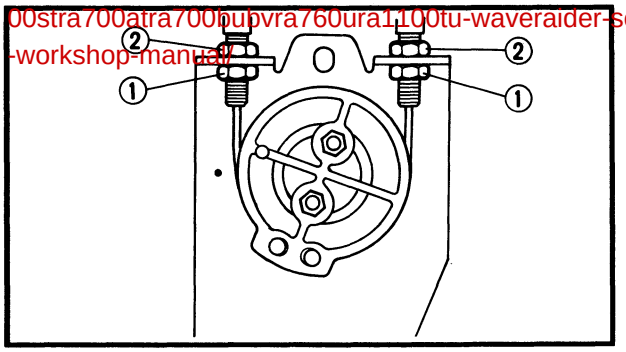
3. Inspect:
   - Pull knob farthest toward
     Knob automatically returns → Adjust.
4. Adjust:
   - Adjust nut ③
     Turn in to stop automatic return.

Trim control cable inspection and adjustment

1. Measure:
   - Wheel free play ⓐ
     Out of specification → Adjust.

	Wheel free play: **1.5 ~ 3.5 mm (0.06 ~ 0.14 in)**

NOTE:
- Set the grip handle in the neutral position.
- Disconnect the trim control cable.



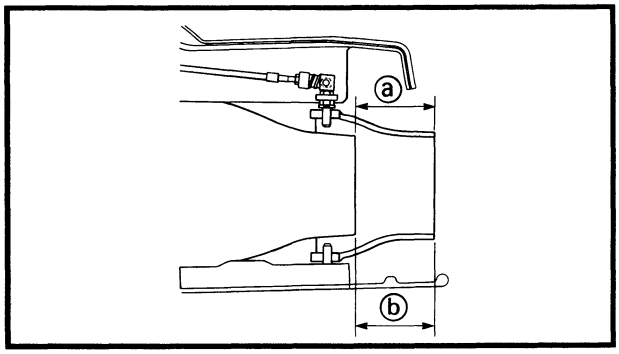
2. Adjust:
   - Pull cable

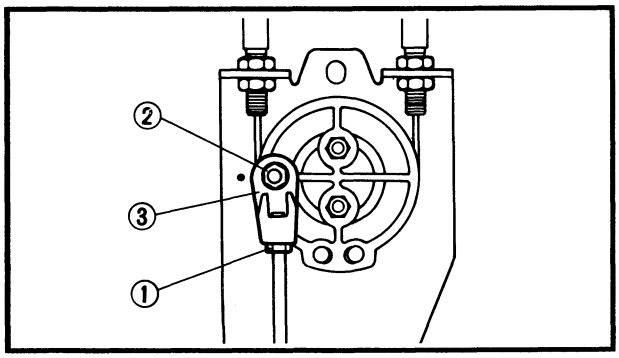
Adjustment steps:
- Loosen the lock nut ①.
- Turn the adjust nut ② in/out until the specified free play is obtained.

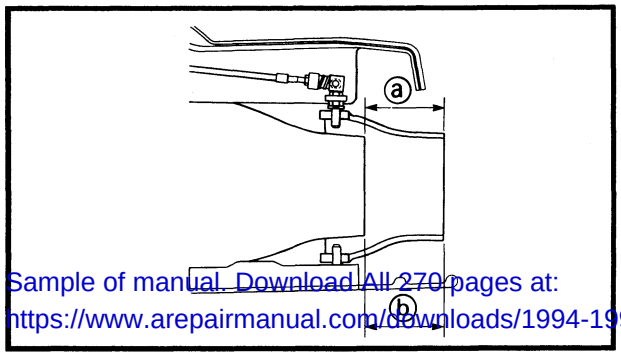
Turn in	**Free play is decreased.**
Turn out	**Free play is increased.**

- Tighten the lock nut.

Lock nut:
16 Nm (1.6 m • kg, 11 ft • lb)







3. Measure:
   - Nozzle deflector set length ⓐ, ⓑ
     Out of specification → Adjust.

Nozzle deflector set length ⓐ, ⓑ:
ⓐ = 68 ± 1 mm (2.68 ± 0.04 in)
ⓑ = 72 ± 1 mm (2.83 ± 0.04 in)

NOTE:
- Set the handle grip in the neutral position.
- Set the handlebar in the neutral position.

4. Adjust:
   - Trim control cable

Adjustment steps:
- Loosen the lock nut ①.
- Remove the lock nut ② and cable joint ③.
- Turn the cable joint to adjust.

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

⚠ WARNING

The cable joint must be screwed in more than 8 mm (0.31 in).