

# YAMAHA

290 pgs



**SERVICE MANUAL**

**RA700S, T ('94~'95)**







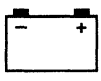


**RA700AT ('95)**

**RA700BU, BV ('96~'97)**

**RA760U ('96)**

**RA1100T, U ('95~'96)**

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# CHAPTER 1

## GENERAL INFORMATION

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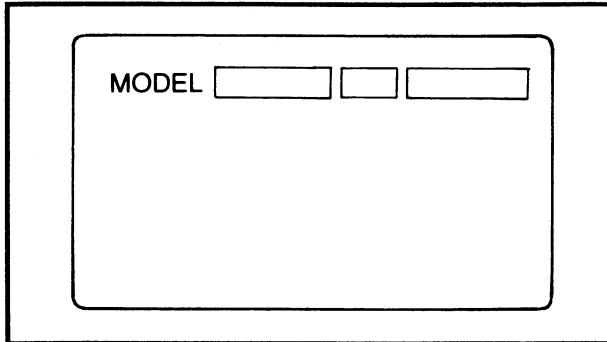
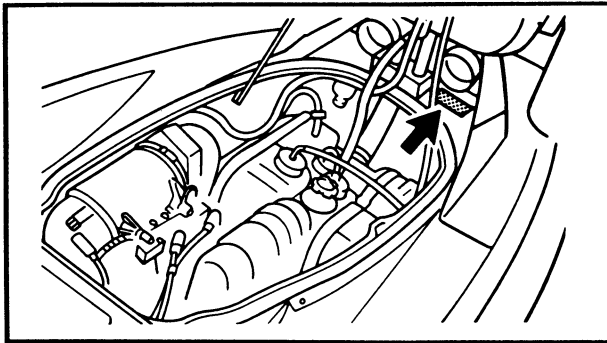
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A60700-0\*

**IDENTIFICATION NUMBERS  
PRIMARY I.D. NUMBER**

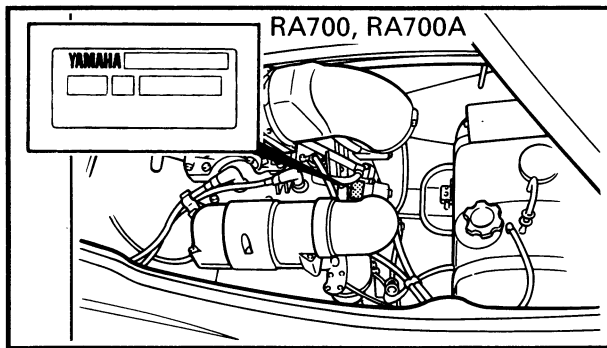
The primary I.D. number is stamped on a plate attached to the hull on the front of the engine hood.



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

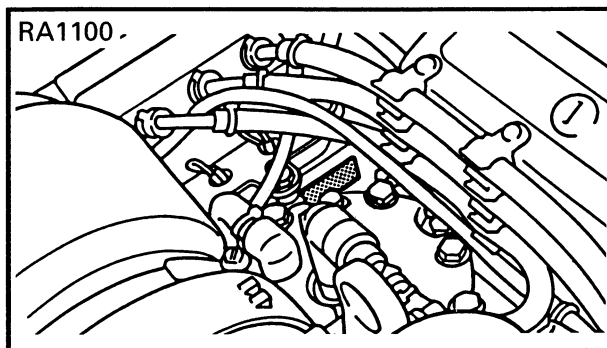
**ENGINE SERIAL NUMBER**

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



**Starting serial number:**  
 62T: 000101 ~

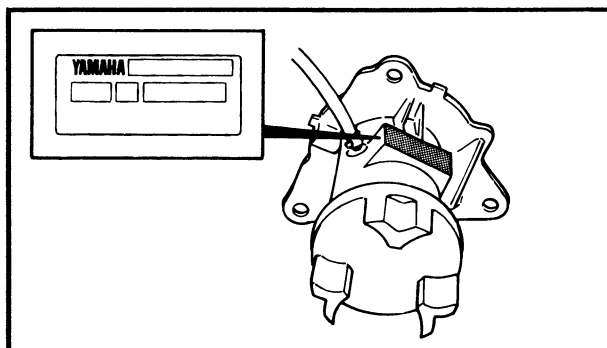
The engine serial number is stamped on a label attached on the back side of the electrical box.



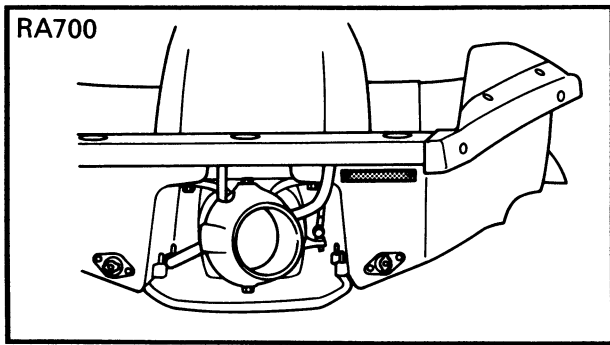
**Starting serial number:**  
 63M: 000101 ~

**PUMP SERIAL NUMBER**

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

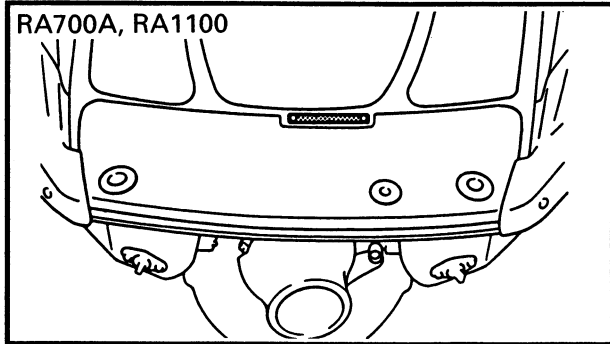


**Starting serial number:**  
 62T: 500101 ~  
 63M: 500101 ~



**HULL IDENTIFICATION NUMBER  
(H.I.N.)**

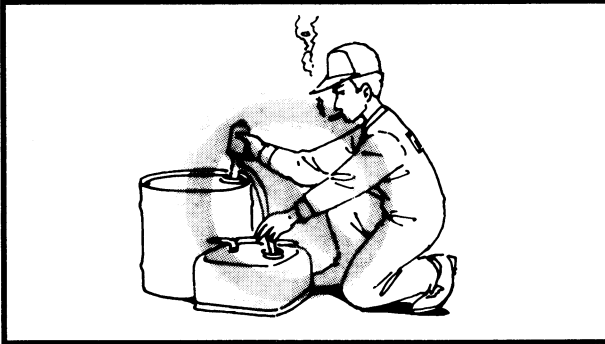
The H.I.N. is stamped on a plate attached to the hull beside the jet nozzle.



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.

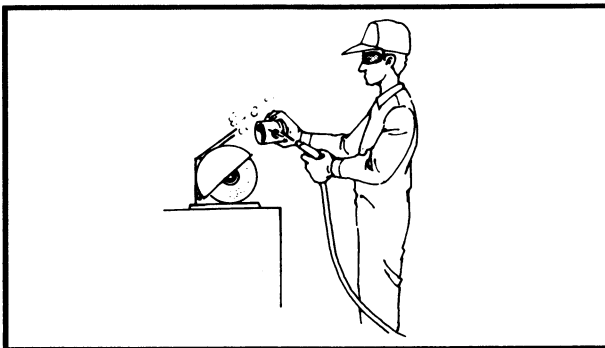


**FIRE PREVENTION**

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.

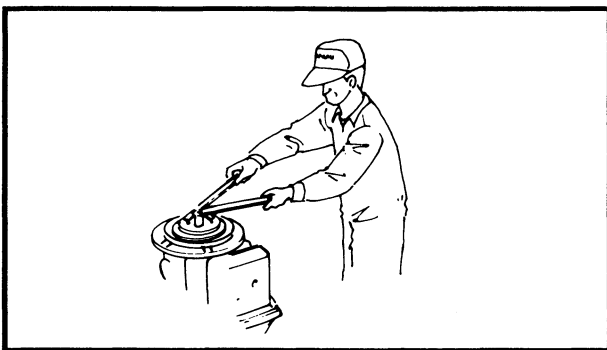


**OILS, GREASES AND SEALING FLUIDS**

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

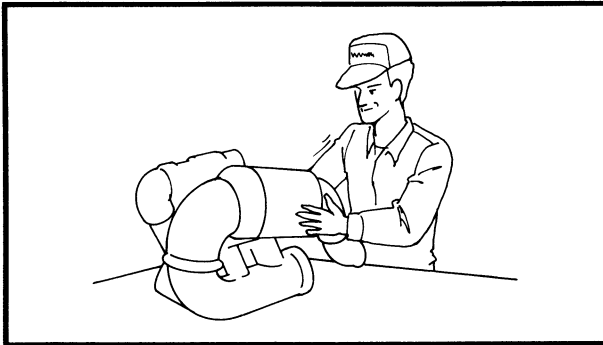
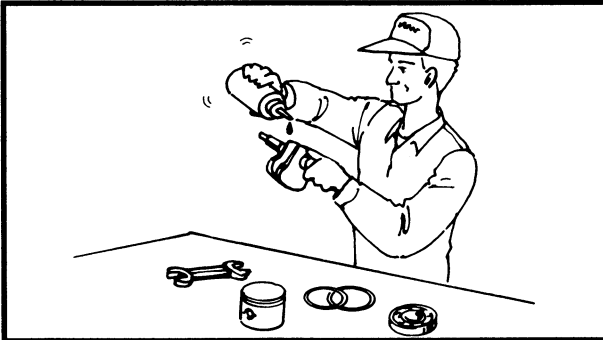
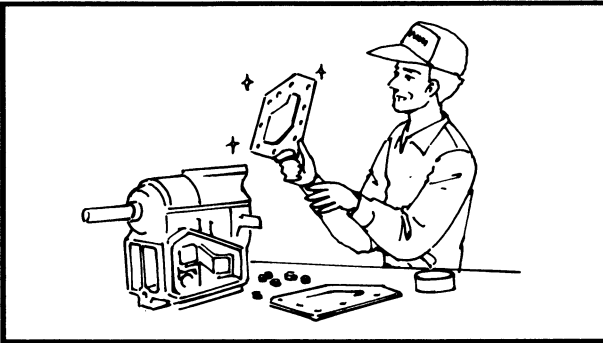
Under normal conditions of use, there should be no hazards from the use of the lubricants mentioned in this manual, but safety is all-important, and by adopting good safety practises, any risk is minimized. A summary of the most important precautions is as follows

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.

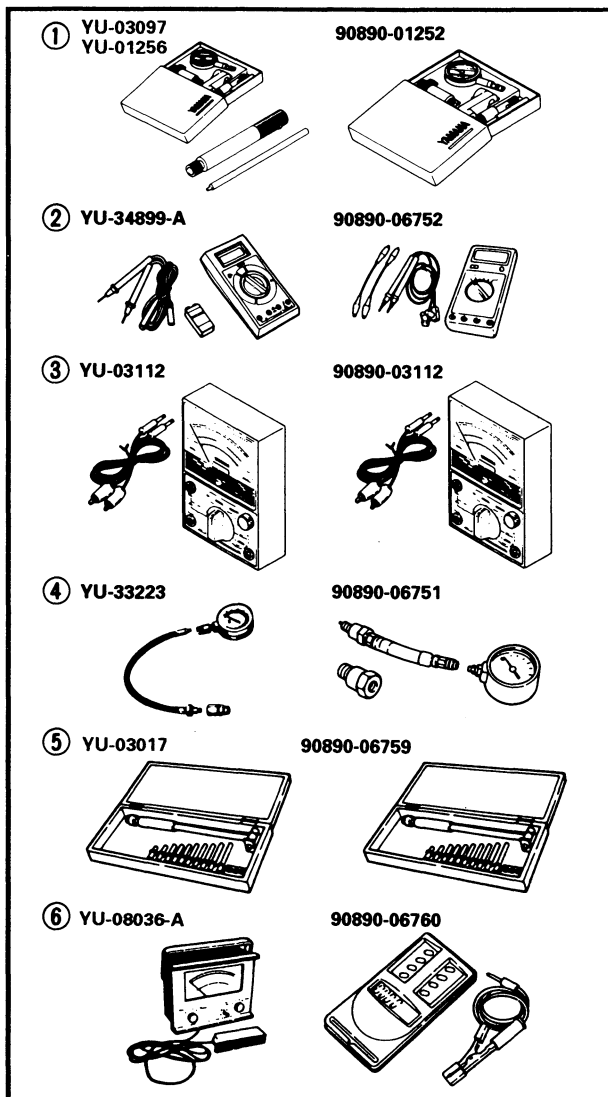


**SPECIAL TOOLS**

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.

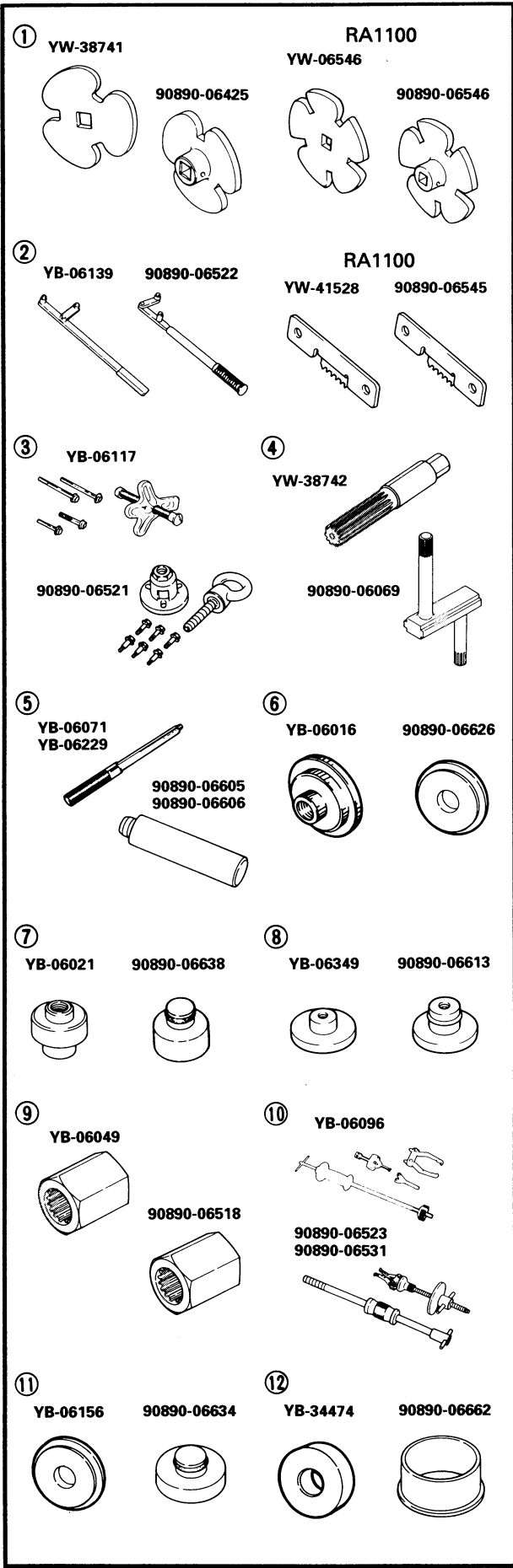
**NOTE:**

- 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



**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



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## CHAPTER 2 SPECIFICATIONS

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**GENERAL SPECIFICATIONS**

Item	Unit	Model		
		RA700	RA700A	RA1100
<b>MODEL CODE:</b>				
Hull		GH1	GH6	GJ1
Engine		62T		63M
<b>DIMENSIONS:</b>				
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)
<b>PERFORMANCE:</b>				
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
<b>ENGINE:</b>				
Engine type		2-stroke		
Number of cylinders		2	3	
Displacement	cm <sup>3</sup> (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
<b>DRIVE UNIT:</b>				
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		

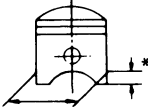
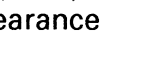

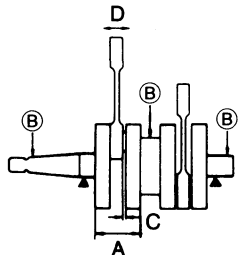


Item	Unit	Model		
		RA700	RA700A	RA1100
<b>FUEL AND OIL:</b>				
Fuel		Regular gasoline		
Oil		2 stroke outboard motor oil		
Fuel and oil mixing ratio*		50 : 1		
Fuel tank capacity reserve	l (US gal, Imp gal)	40 (10.6, 8.8) 11.6 (3.1, 2.6)	50 (13.2, 11.0) 8.8 (2.3, 1.9)	
Oil tank capacity (oil injection 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)		
				



Item	Unit	Model		
		RA700	RA700A	RA1100
Carburetor: Stamped mark		62T01F (#1) 62T01R (#2)		63M00F (#1) 63M00C (#2) 63M00R (#3)
Main nozzle	∅ 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.)	∅ 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)		



**ELECTRICAL**

Item	Unit	Model		
		RA700	RA700A	RA1100
Ignition system: Type	Degrees	CDI magneto		
Ignition timing at 1,200 rpm at 5,500 rpm	Degrees	BTDC 15 BTDC 21		BTDC 15 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**

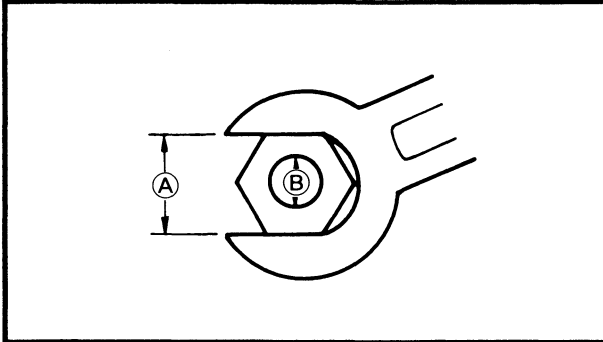
Part to be tightened		Part name	Size	Q'ty		Tightening torque			Remarks
				700	1100	Nm	m•kg	ft•lb	
<b>ENGINE:</b>									
Electric box		Bolt	M8	3	-	16	1.6	11	
Mounting bolt		Bolt	M8	4		17	1.7	12	
Reed valve		Screw	M4	16	24	1	0.1	0.7	
Exhaust ring		Bolt	M8	4		30	3.0	22	
Exhaust chamber		Bolt	M10	2		40	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	
<b>JET UNIT:</b>									
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	



Nut (A)	Bolt (B)	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

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# MAINTENANCE INTERVAL CHART

## 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.

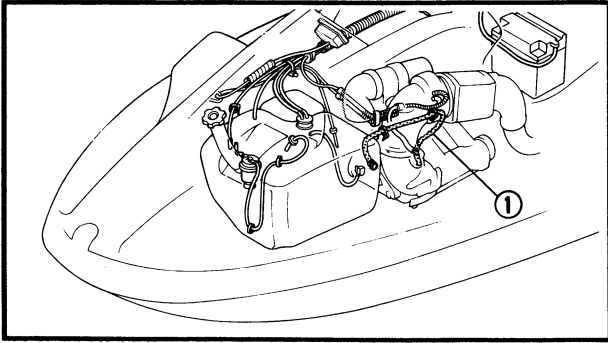
Item	Remarks	Initial		Every		Refer page
		10 hours (Break-in)	50 hours (3 months)	100 hours (6 months)	200 hours (1 year)	
<b>CONTROL SYSTEM:</b>						
Steering cable	Inspection/Adjustment			○		3-3
Throttle cable	Inspection/Adjustment			○		3-4
Carburetor throttle shaft	Inspection			○		—
Choke cable	Inspection/Adjustment			○		3-5
Quick shift trim cable	Inspection/Adjustment			○		3-5
Quick shift trim system	Inspection/Adjustment			○		3-5
<b>FUEL SYSTEM:</b>						
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
<b>OIL INJECTION SYSTEM:</b>						
Oil injection system	Inspection/Cleaning	○			○	4-21
<b>POWER UNIT:</b>						
Spark plug	Inspection/Cleaning/Adjustment	○	○	○		3-11
Cooling-water passage	Cleaning/Flashing		○			—
Coupling rubber	Inspection				○	5-48
<b>ELECTRICAL:</b>						
Battery	Inspection	○				3-12
<b>JET PUMP UNIT:</b>						
Impeller	Inspection		○	○		3-14
Bilge strainer	Cleaning		○	○		3-14
<b>GENERAL:</b>						
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<sup>3</sup> (1.11 ~ 1.18 oz.)

\*2: Grease capacity 6.0 ~ 8.0 cm<sup>3</sup> (0.20 ~ 0.27 oz.)

\*3: Grease capacity for 1100 model: 8.0 cm<sup>3</sup> (0.27 oz.)

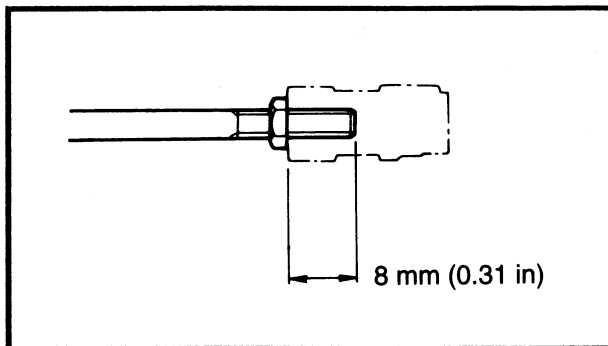
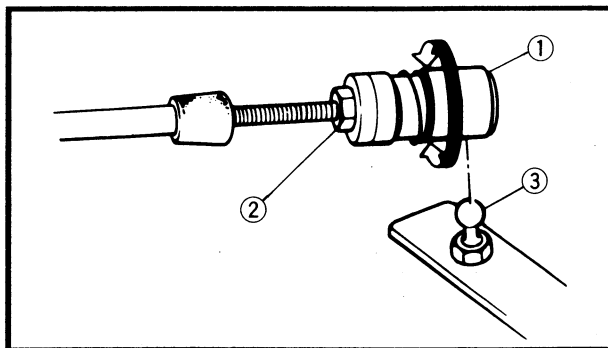
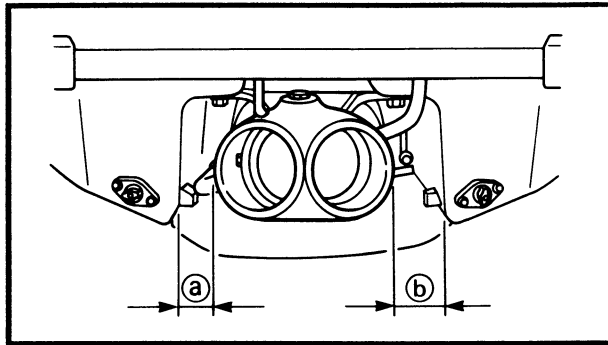
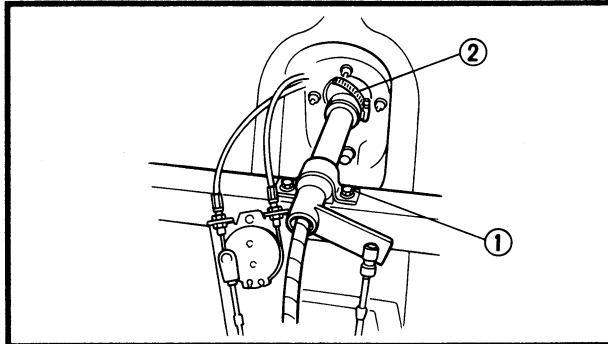
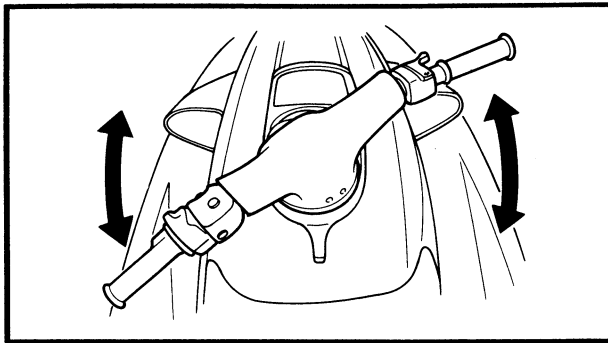
\*4: Grease capacity for 1100 model: 2.0 cm<sup>3</sup> (0.07 oz.)



**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 ①, ②

**Inspection steps:**

- Turn the handlebar lock to lock.
- Measure the clearances ① and ②.
- If the ① and ② 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 ① is increased.
Turn out	Clearance ② is increased.

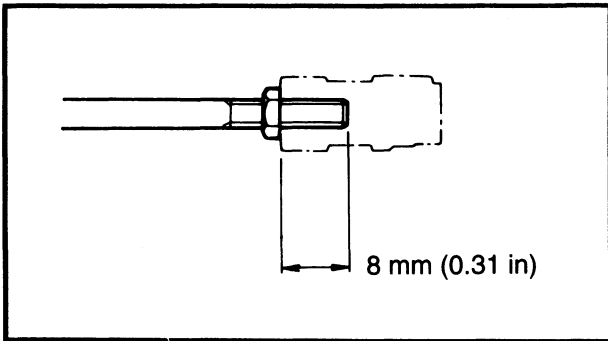
**⚠ WARNING**

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)**

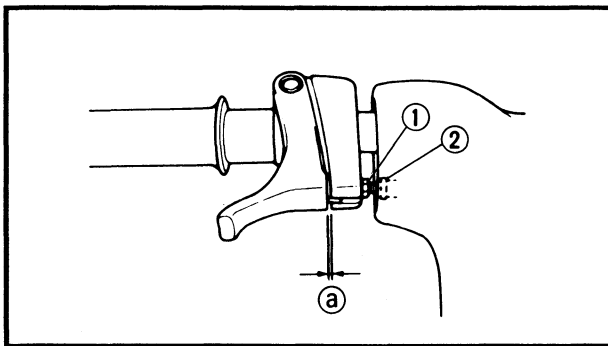


**NOTE:** \_\_\_\_\_  
If correct adjustment cannot be obtained using the cable joint at the handlebar end adjust the cable joint at the steering nozzle end.  
\_\_\_\_\_

**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 ③
- Out of specification → Adjust.

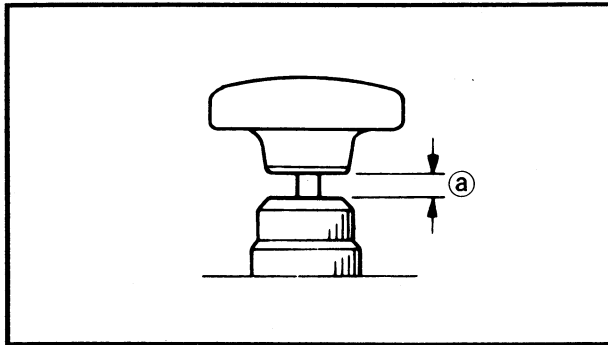


	<b>Throttle lever free play:</b>
	<b>RA700, RA700A</b> 7 ~ 10 mm (0.28 ~ 0.39 in)
	<b>RA1100</b> 4 ~ 7 mm (0.16 ~ 0.28 in)

2. Adjust:
- Throttle lever free play

<b>Adjustment steps:</b>	
● Loosen the lock nut ①.	
● Turn the adjuster ② in/out until the specified free play is obtained.	
<b>Turn in</b>	<b>Free play is increased.</b>
<b>Turn out</b>	<b>Free play is decreased.</b>
● 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.  
\_\_\_\_\_



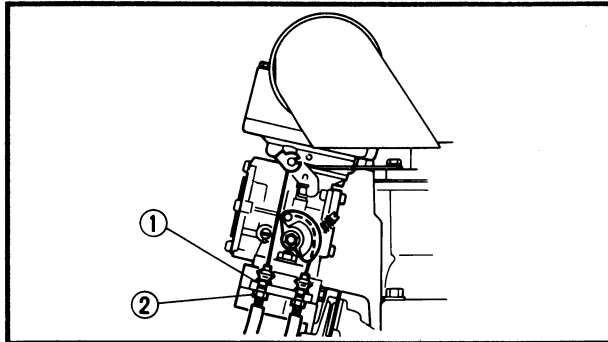
**Choke cable inspection and adjustment**

1. Measure:

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



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



2. Adjust:

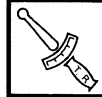
- Choke cable free play

**Adjustment steps:**

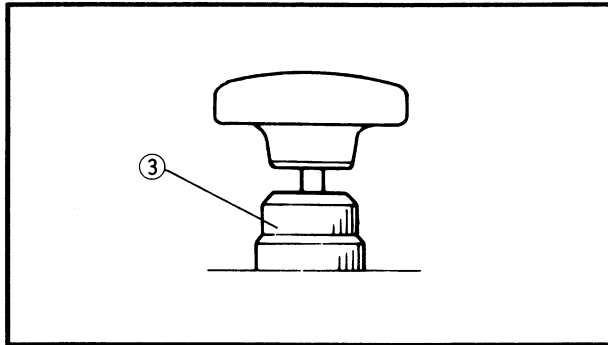
- Loosen the lock nut ①.
- Turn the adjuster ② in/out until the specified free play is obtained.

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)

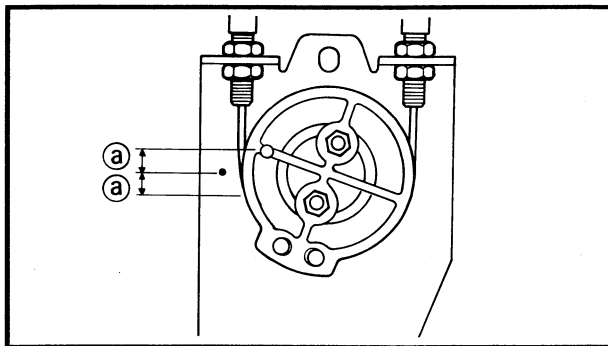


3. Inspect:

- 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 ①
- Out of specification → Adjust.

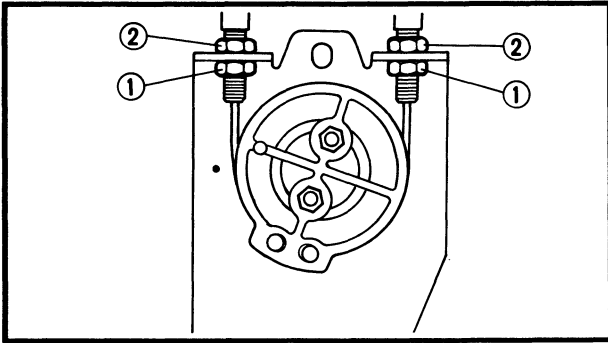


**Wheel free play:**  
1.5 ~ 3.5 mm (0.06 ~ 0.14 in)

**NOTE:**

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





**2. Adjust:**

- Pull cable

**Adjustment steps:**

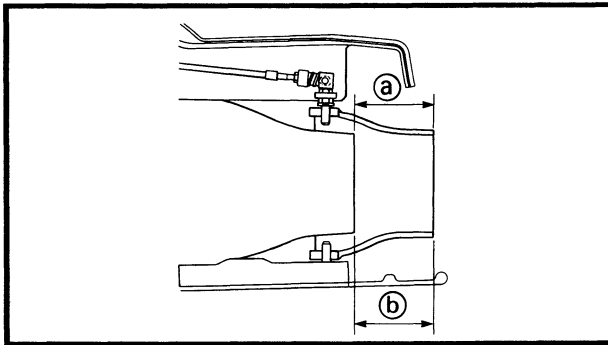
- Loosen the lock nut ①.
- Turn the adjust nut ② in/out until the specified free play is obtained.

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:**

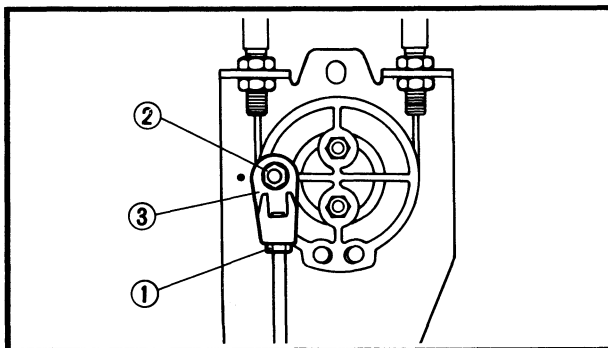
- Nozzle deflector set length ①, ②
- Out of specification → Adjust.



**Nozzle deflector set length ①, ②:**  
 ① = 68 ± 1 mm (2.68 ± 0.04 in)  
 ② = 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

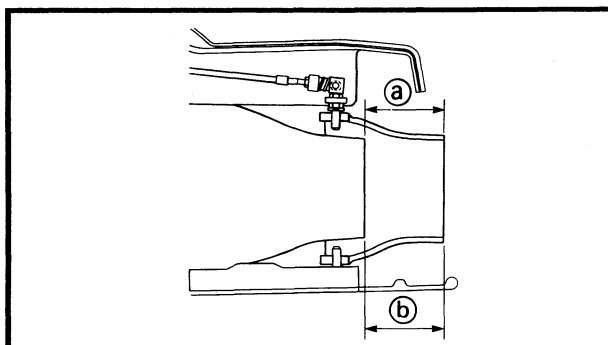
**Adjustment steps:**

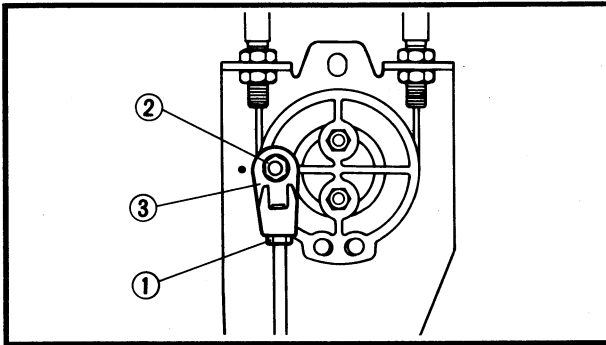
- Loosen the lock nut ①.
- Remove the lock nut ② and cable joint ③.
- Turn the cable joint to adjust.

Turn in	Length ② is increased.
Turn out	Length ① is increased.

**⚠ WARNING**

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





- Connect the cable joint and tighten the lock nut ②.
- Tighten the lock nut ①



**Lock nut:**  
**4 Nm (0.4 m • kg, 2.9 ft • lb)**

**NOTE:** \_\_\_\_\_  
If correct adjustment cannot be obtained using the cable joint at the wheel end adjust the cable joint at the trim nozzle end.



**FUEL SYSTEM**

**⚠ WARNING**

- Stop the engine, set the fuel cock to "OFF" and loosen the fuel filler cap before a fuel system service.
- When removing fuel system parts, hold them in a cloth and take care that no fuel spills into the engine compartment.

**Fuel filter inspection**

1. Inspect:
  - Filter element  
Contamination → Replace.
  - Filter body  
Cracks/Damage → Replace.
  - Filter assembly  
Water contamination → Replace and check the fuel tank.

**Trolling speed inspection and adjustment**

1. Check:
  - Trolling speed  
Out of specification → Adjust.



**Trolling speed:**  
**1,250 ± 50 r/min**

**Checking steps: (vehicle on water)**

- Start the engine and allow it to warm up for a few minutes.
- Attach the engine tachometer to the spark plug lead.



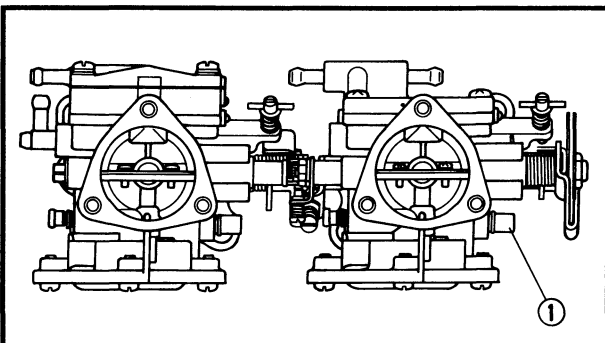
**Engine tachometer:**  
**YU-8036-A/90890-06760**

- Measure the engine trolling speed.

2. Adjust:
  - Trolling speed

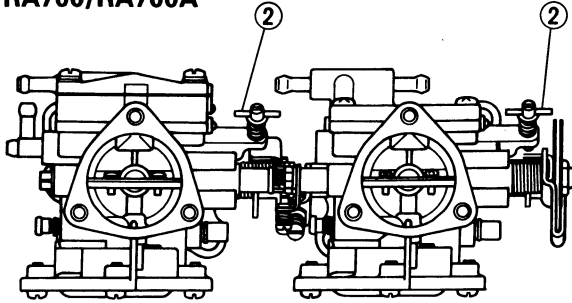
**Adjustment steps:**

- Screw in the low speed screws ① until they are lightly seated.

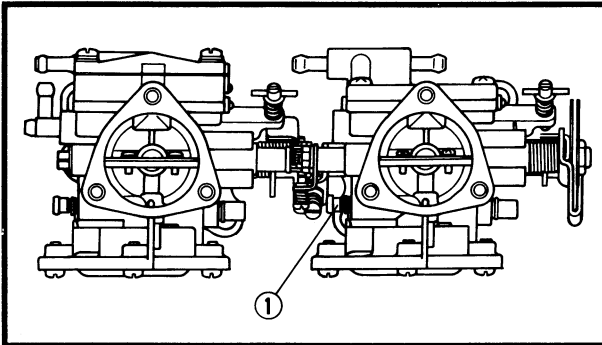
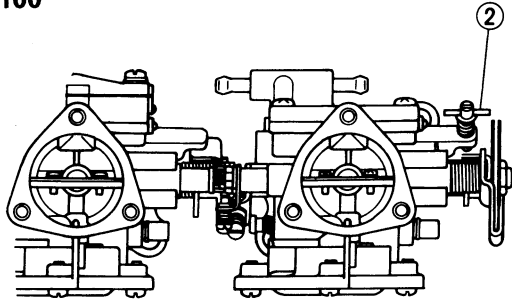




**RA700/RA700A**



**RA1100**



- Back the screws out by the specified number of turns.



**Low speed screw:**

**RA700, RA700A**

**5/8 ± 1/4 (turns out)**

**RA1100**

**1-1/8 ± 1/4 (turns out)**

- Start the engine and allow it to warm up for a few minutes.
- Turn the throttle stop screw(s) ② in or out until the specified speed is obtained.

**Turning in**

**Increase trolling speed.**

**Turning out**

**Decrease trolling speed.**

**Carburetor adjustment**

1. Adjust:

- High speed screw

**Adjustment steps:**

- Screw in the high speed screws ① until they are lightly seated.
- Back the screws out by the specified number of turns.



**High speed screw:**

**RA700, RA700A**

**5/8 (#1), 1-1/8 (#2) ± 1/4  
(turns out)**

**RA1100**

**7/8 ± 1/4 (turns out)**

**OIL INJECTION SYSTEM**

**Oil filter inspection**

1. Inspect:
  - Oil filter  
Fray/Tear → Replace.  
Muddy/Dirt → Clean.
  - Seal rubber  
Wear/Crack → Replace.

**Oil injection pump air bleeding**

**NOTE:** \_\_\_\_\_

Bleed the oil injection system if:

- The system has been disassembled.
- The oil has been completely used up during operation.

1. Bleed:

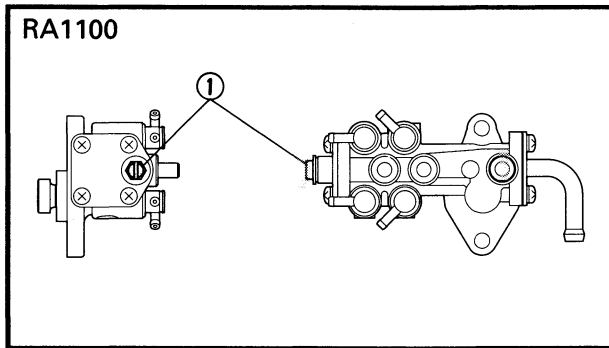
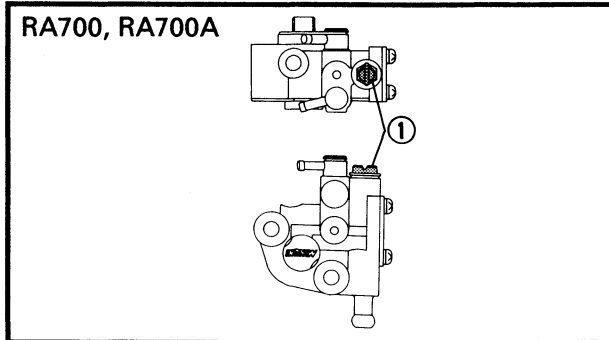
- Air

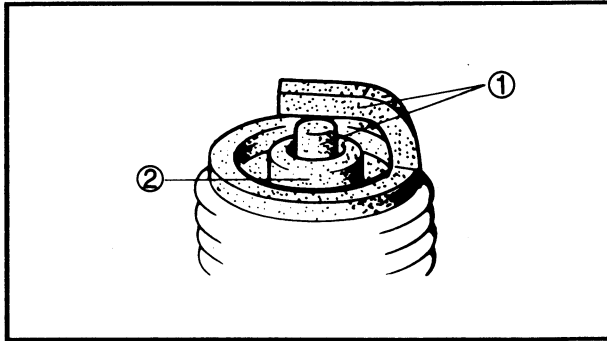
**Air bleeding steps:**

- a. Make sure the oil hose is connected.
- b. Refill the oil tank with oil.
- c. Hold a rag under the oil pump to catch any oil that spills out.
- d. To bleed, loosen the air bleeding screw ① on the oil injection pump. Oil will flow into the pump.
- e. Keep letting oil run out into the rag until there are no bubbles in the oil. If oil does not run out, squeeze the oil hose near the pump inlet several times.
- f. Tighten the screw firmly and wipe up any spilled oil.



**Screw:**  
5 Nm (0.5 m • kg, 3.6 ft • lb)





**POWER UNIT**

**Spark plug inspection**

1. Inspect:

- Electrode ①  
Wear/Damage → Replace.
- Insulator color ②  
Discolor → Check the engine condition.

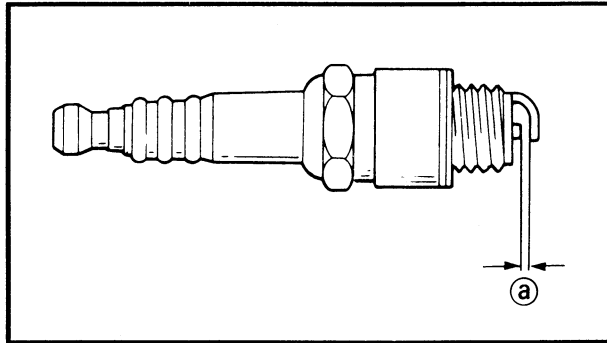


**Color guide:**

**Medium to light tan color:**  
Normal

**Whitish color:**  
Lean fuel mixture  
Plugged fuel mixture  
Air leak  
Incorrect settings

**Blackish color:**  
Overly rich mixture  
Electrical malfunction  
Excess oil used  
Defective spark plug



2. Clean:

- Spark plug  
Clean the spark plug with a spark plug cleaner or wire brush.

3. Measure:

- Spark plug gap ①  
Out of specification → Alter gap.  
Use a wire gauge.



**Spark plug gap:**

**0.6 ~ 0.7 mm (0.024 ~ 0.028 in)**

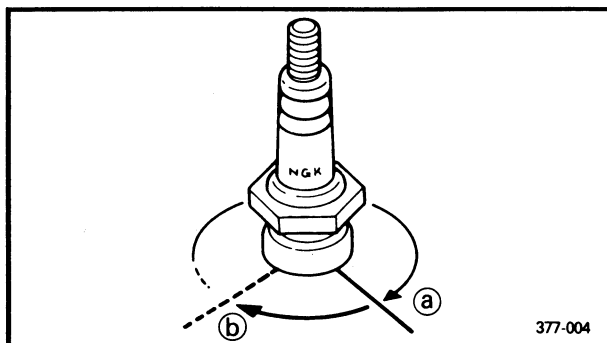
4. Tighten:

- Spark plug



**Spark plug:**

**20 Nm (2.0 m · kg, 14 ft · lb)**



**NOTE:**

- Before installing a spark plug, clean the gasket surface and plug surface. Also it is advisable to apply a thin film of Anti Seize Compound to the spark plug threads to prevent future thread seizure.
- If a torque wrench is not available, a good estimate of the correct torque for the spark plug is a further 1/4 to 1/2 turns ② on from finger tightness ①.



**ELECTRICAL**  
**Battery inspection**

**CAUTION:**

Be careful not to place the battery on its side. Before adding the battery fluid or recharging, be sure to remove it from the engine compartment. When checking the battery, make sure the breather hose is connected to the battery and is not pinched shut anywhere in the engine compartment.

**⚠ WARNING**

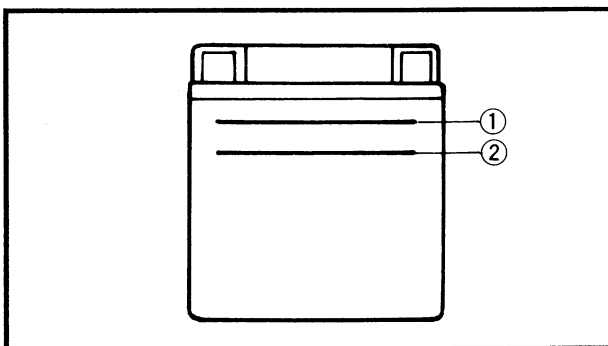
- Battery electrolyte is poisonous and dangerous, causing severe burns, etc. Contains sulfuric acid.
- Avoid contact with skin, eyes or clothing.
- Antidote: EXTERNAL-Flush with water.
- INTERNAL-Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg or vegetable oil. Call a physician immediately. Eyes: Flush with water for 15 minutes and get prompt medical attention. Batteries produce explosive gases.
- Keep sparks, flame, cigarettes, etc., away. Ventilate when charging or using in an enclosed space. Always shield your eyes when working near batteries.
- KEEP OUT OF REACH OF CHILDREN.

1. Remove:
  - Battery

**⚠ WARNING**

- When removing the battery, disconnect the negative lead first.
- Remove the battery to prevent acid loss during the impeller service.

2. Inspect:
  - Battery fluid level  
Battery fluid level low → Top up with distilled water.  
Fluid level should be between upper ① and lower ② level marks.





**Filling steps:**

- Remove each filler cap using pliers.
- Fill with distilled water using a jug.
- When the acid is up to the UPPER LEVEL, allow the cell to stand for 20 minutes. If the acid level has dropped, add more acid up to the UPPER LEVEL once again.

**CAUTION:**

**Water other than distilled water contains minerals which are harmful to a battery; top up only with distilled water.**

3. Inspect:

- Battery fluid specific gravity  
Out of specification → Charge.



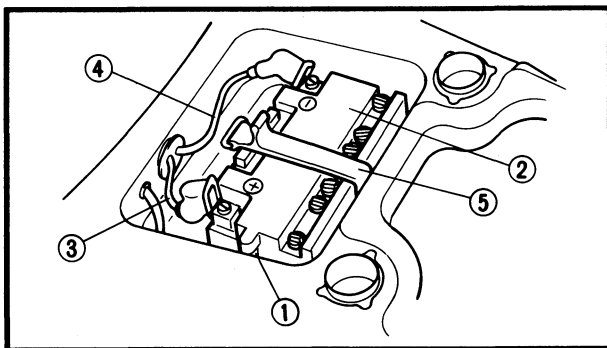
**Specific gravity at 20°C (68°F):  
1.28**  
**Charging current:  
68.4 kC (1.9 Amps × 10 Hrs)**

4. Install:

- Filler cap

**CAUTION:**

**Rinse off any acid from the battery case and wipe the battery dry prior to installation.**



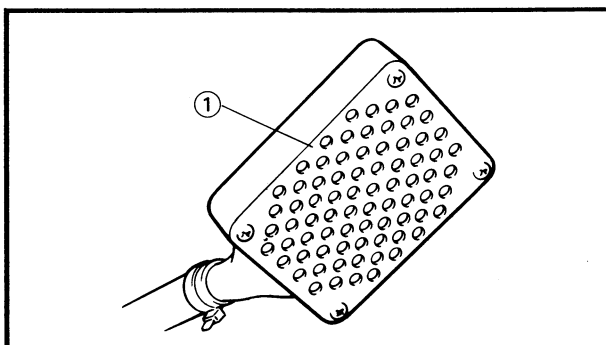
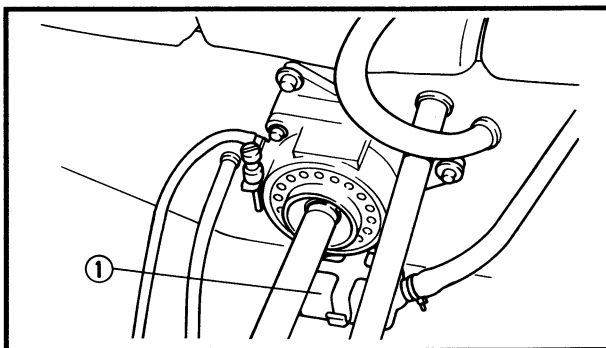
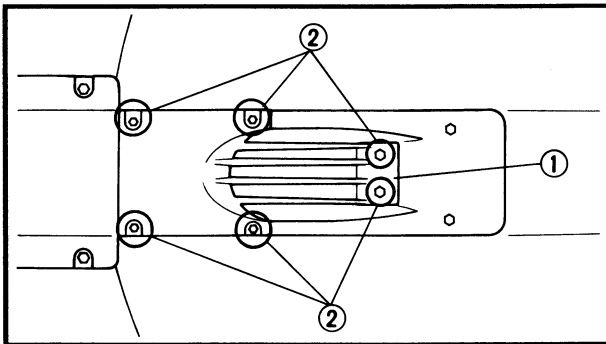
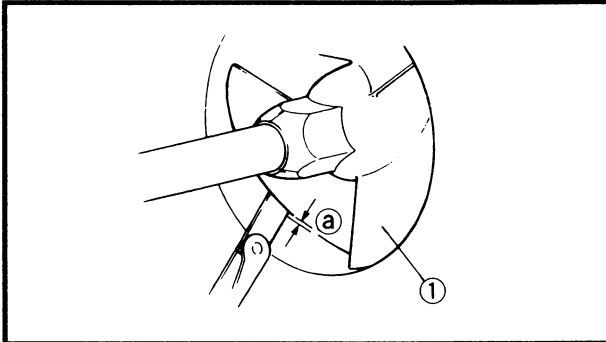
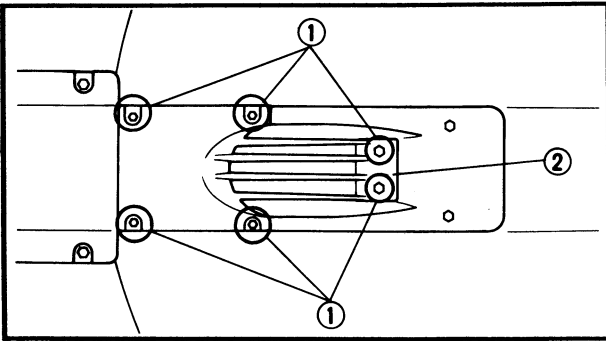
5. Install:

- Breather hose ①
- Battery ②
- Positive lead ③
- Negative lead ④
- Battery band ⑤

**CAUTION:**


- **Connect the positive red lead ⊕ to the battery terminal first.**
- **Make sure the battery leads are connected properly. Reversing the leads can seriously damage the electrical system.**
- **Make sure the breather hose is properly connected and is not obstructed.**
- **Coat the terminals with a water resistant grease to minimize terminal corrosion.**






**JET PUMP UNIT**  
**Impeller inspection**

1. Remove:
  - Battery  
Refer to "BATTERY" section.
2. Remove:
  - Bolt ①
  - Intake screen ②
3. Check:
  - Impeller ①  
Wear/Damage → Replace.  
Scratch/Nick → File/Grind.
4. Measure:
  - Impeller clearance ③  
Out of specification → Replace.



**Measure at all four points.**  
**Impeller clearance limit:**  
**0.6 mm (0.024 in)**

5. Install:
  - Intake screen ①
  - Bolt ②



**Bolt:**  
**11 Nm (1.1 m • kg, 8.0 ft • lb)**

6. Install:
  - Battery  
Refer to the "BATTERY" section.

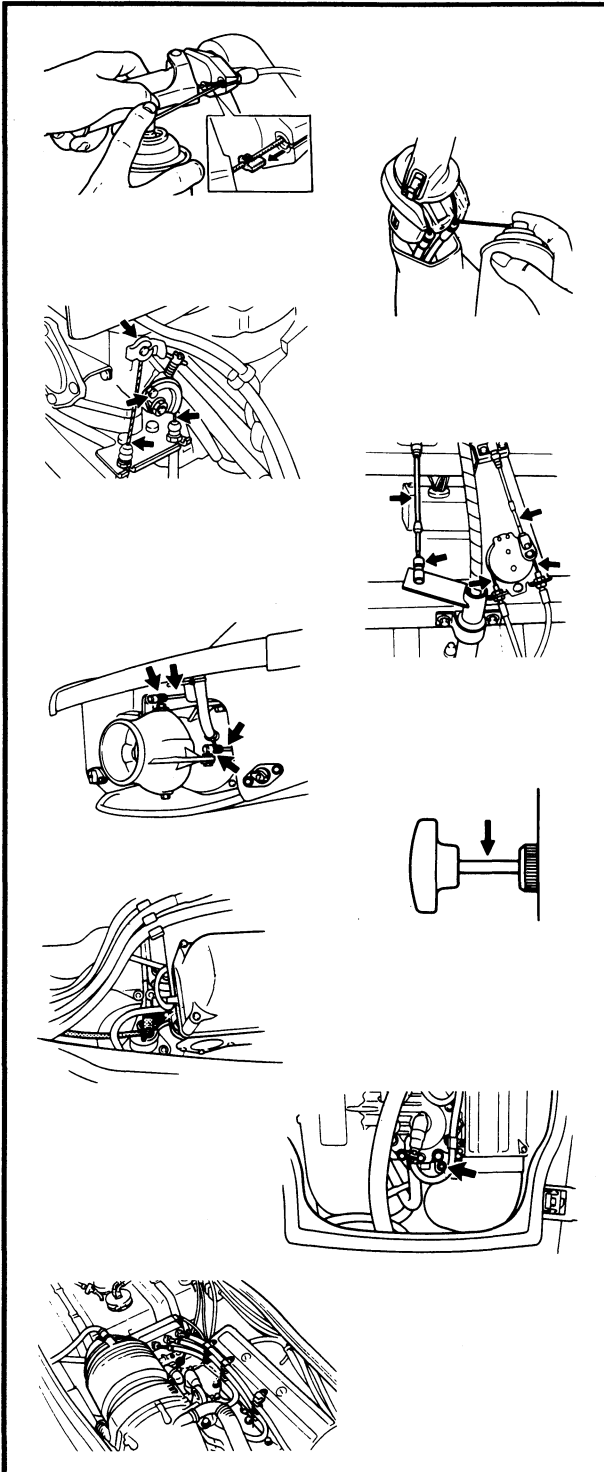
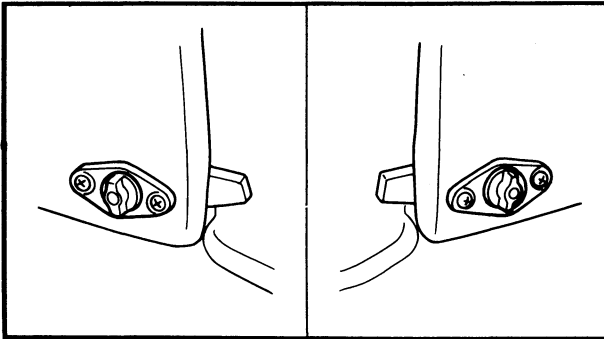
**Bilge strainer inspection**

1. Remove:
  - Bilge strainer ①  
(located under the coupling)

**Removal steps:**

- Remove the coupling cover.
- Disconnect the bilge strainer from the strainer holder.

2. Inspect:
  - Strainer ①  
Contamination → Clean.  
Crack/Damage → Replace.



**GENERAL**

**Drain plug inspection**

1. Inspect:
  - Drain plug  
Crack/Damage → Replace.
  - O-ring  
Crack/Wear → Replace.
  - Screw threads  
Dirt/Sandy → Clean.

**Greasing point**

1. Apply:
  - Throttle cable inner wire

**NOTE:** \_\_\_\_\_  
Squeeze the throttle lever and remove the seal. Spray a rust-inhibitor into the outer cable.


- Pull cable inner wire

	<b>Recommended fluid: Rust-inhibitor</b>
---	--

- Throttle cable inner wire
- Choke cable inner wire
- Trim control cable
- Cable joint
- Steering cable

**NOTE:** \_\_\_\_\_  
Remove the cable joint and apply a small amount of grease to the following parts.

- Nozzle pivot shaft collar
- Steering pivot shaft bearing
- Choke knob shaft
- Bearing housing
- Starter idle gear

	<b>Recommended grease: Water resistant grease</b>
---	---

**NOTE:** \_\_\_\_\_  
● Fill in the bearing housing with water resistant grease from a nipple.  
● Fill the grease slowly and carefully, as it can damage the hose and the joints.  
● Refer to the "MAINTENANCE INTERVAL CHART".

## CHAPTER 4

### FUEL SYSTEM

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