YAMAHA

Marine

Water Vehicles

WaveBlaster II
WB760

SERVICE MANUAL (E)

460040

PREFACE

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.

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/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.

Model name	WaveBlaster II
	WB760
Indication	WB760

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:

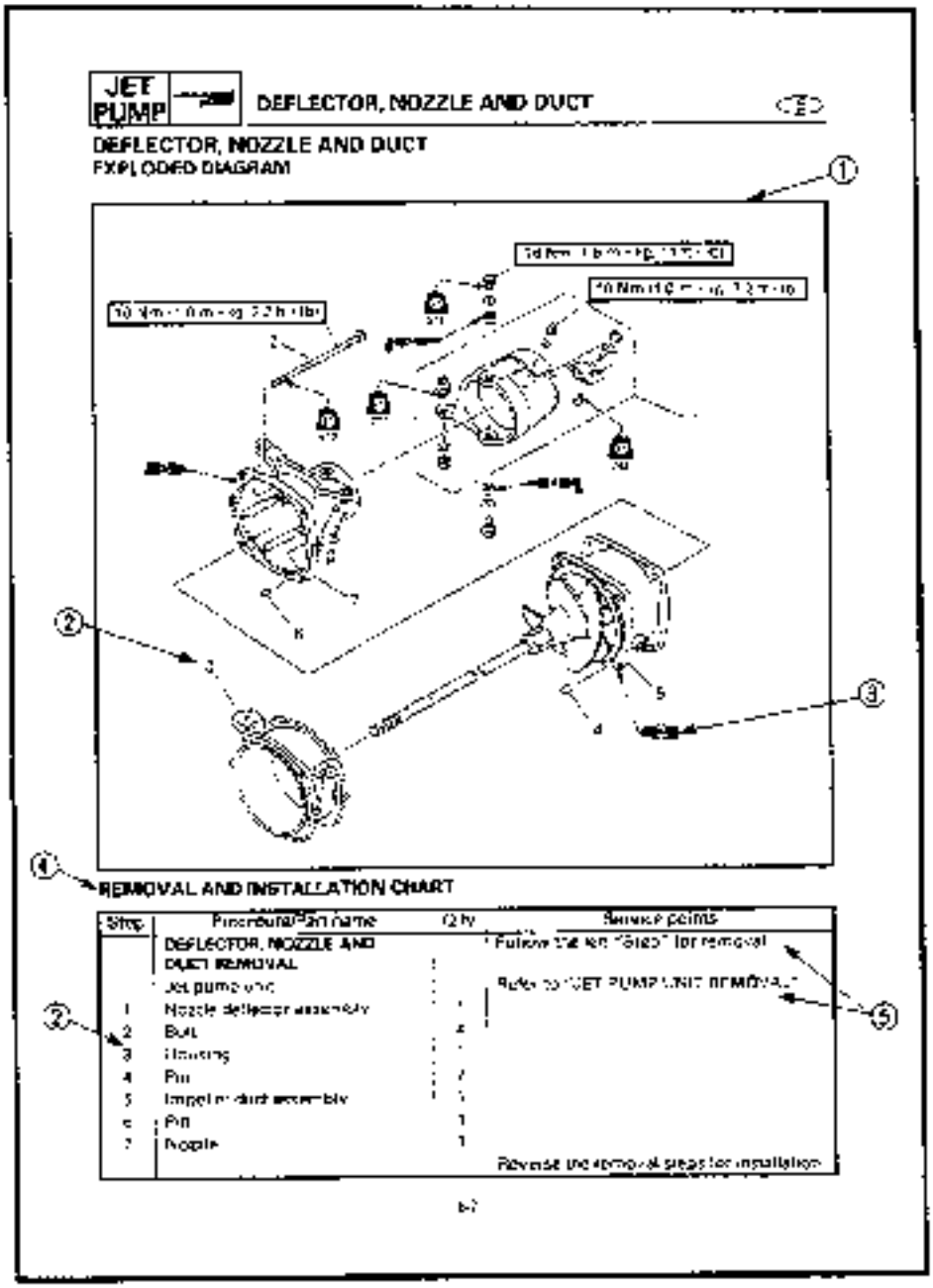
A CAUTION indicates special precautions that must be taken to avoid damage to the water vehicle.

NOTE:

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

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.



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GEN INFO

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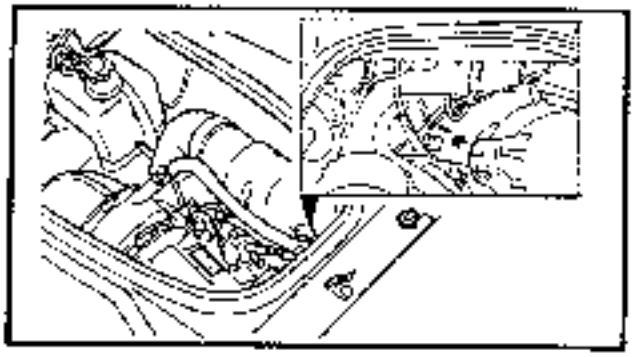
CHAPTER 1
GENERAL INFORMATION



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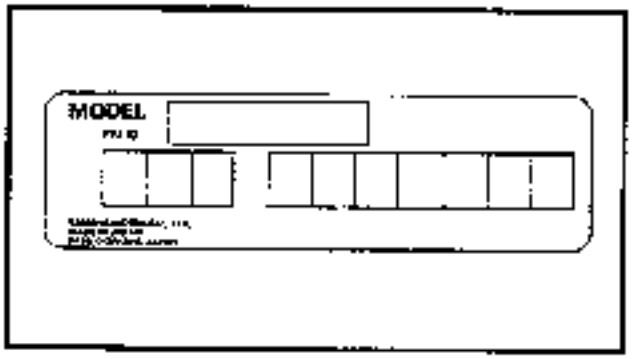
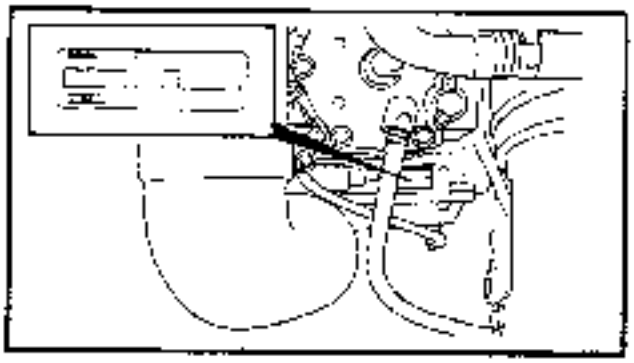
IDENTIFICATION NUMBERS

PRIMARY I.D. NUMBER

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



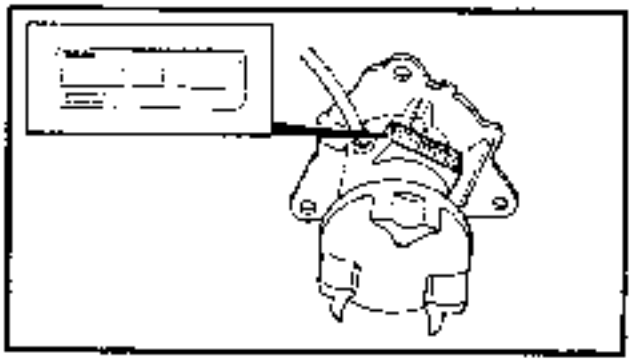
Starting primary I.D. number:
GK5: 907260 ~,
910501 (EUR)



ENGINE SERIAL NUMBER

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

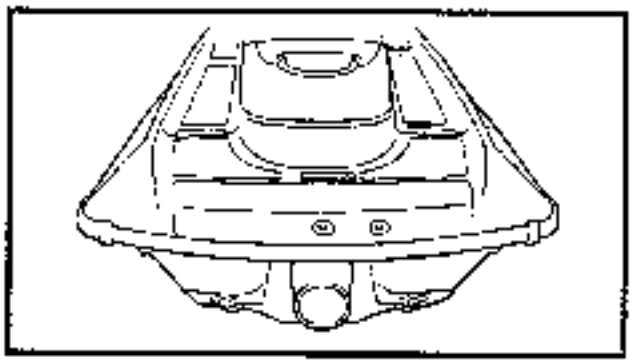
Starting serial number:
64Y: 005657 ~



PUMP SERIAL NUMBER

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

Starting serial number:
64Y: 600101 ~



HULL IDENTIFICATION NUMBER (H.I.N.)

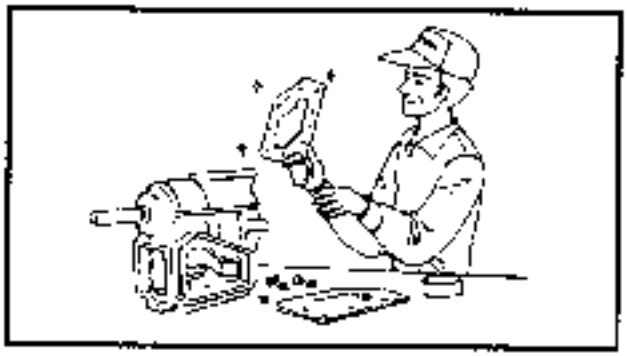
The H.I.N. is stamped on a plate attached to the hull beside the jet nozzle.

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

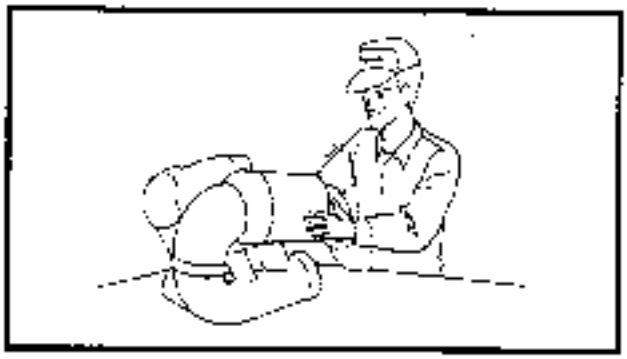
1. The right tools
   Use the special tools that are designed to protect parts from damage. Use the right tool in the right manner — don't improvise.
2. Tightening torque
   Follow the torque tightening instructions. When tightening bolts, nuts and screws, tighten the larger sizes first, and tighten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

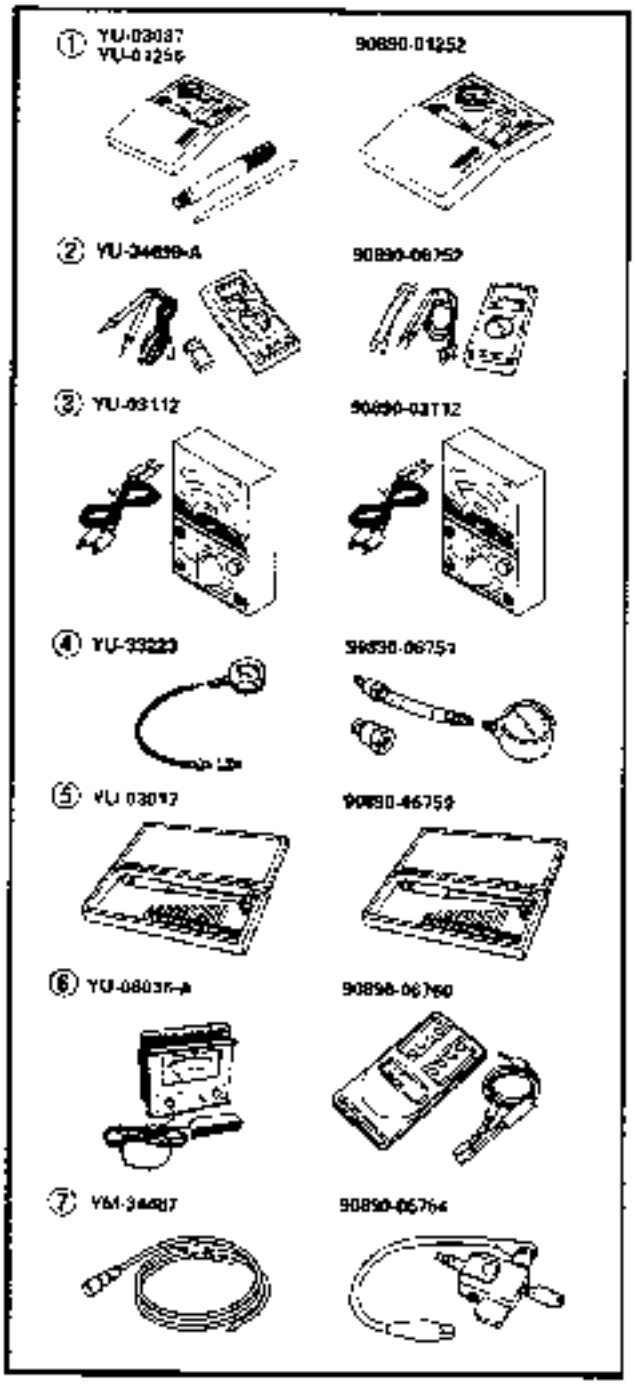
5. When installing oil seals, apply a light coating of water-resistant grease to the outside diameter.

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.

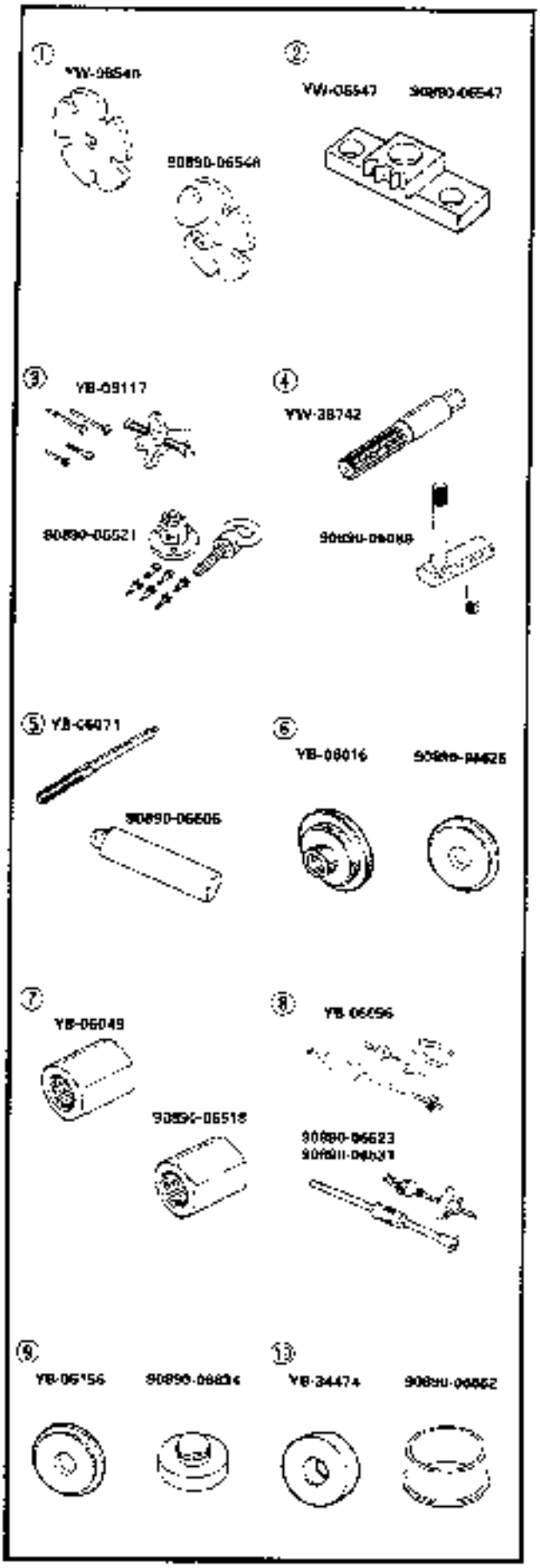
NOTE:

- 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-34699-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
7. Spark gap tester
   P/N. YM-34487
   90890-06754



REMOVAL AND INSTALLATION

1. Coupler wrench
   P/N. YW-06546
   90890-06546
2. Flywheel holder
   P/N. YW 06547
   90890-06547
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
   90890 06606
6. Bearing outer race attachment
   (Intermediate shaft)
   P/N. YB-06016
   90890-06626
7. Drive shaft holder (Impeller)
   P/N. YB-06049
   90890-06518
8. Slide hammer set (Jet pump bearing)
   P/N. YB-06096
   90890-06523
   90890-06531
9. Ball bearing attachment
   (Jet pump oil seal)
   P/N. YB 06156
   90890-06634
10. Bearing inner race attachment
    (Jet pump bearing)
    P/N. YB-34474
    90890-06662

CHAPTER 2
SPECIFICATIONS

GENERAL SPECIFICATIONS

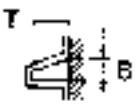
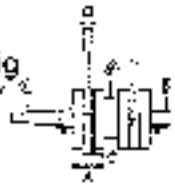
Item	Unit	Model WB760
MODEL CODE:		
Hull		GK5
Engine		64Y
DIMENSIONS:		
Length	mm (in)	2,720 (107.1)
Width	mm (in)	1,030 (40.6)
Height	mm (in)	970 (38.2)
Dry weight	kg (lb)	180 (397)
Vehicle capacity		2
PERFORMANCE:		
Maximum speed	km/h (mph)	75 (46.6)
Maximum output	kW (hp) @r/min	66.2 (90) @6,350
Maximum fuel consumption	ℓ/h (US gal/h, Imp gal/h)	38 (10.0, 8.4)
Cruising range (at full throttle)	hr.	1.0
ENGINE:		
Engine type		2-stroke
Number of cylinders		2
Displacement	cm^3 (cu. in)	754 (46.02)
Bore × stroke	mm (in)	84 × 68 (3.31 × 2.68)
Compression ratio		7.2 : 1 (F)/6.8 : 1 (R)
Intake system		Reed valve
Carburetor type		Floatless type
Number of carburetor		2
Carburetor starting system		Choke
Scavenging system		Loop charged
Lubrication system		Oil injection
Cooling system		Water-cooled
Starting system		Electric starter
Ignition system		Digital C.D.I.
Ignition timing	Degree	15 ~ 22 BTDC
Spark plug (NGK)		BR8HS
Battery capacity	V/kC (A•h)	12/68.4 (19)
Lighting coil	A @r/min	2 ~ 4 @5,500
DRIVE UNIT:		
Propulsion system		Jet pump
Jet pump type		Axial flow, single stage
Impeller rotation (rear view)		Counter clockwise
Transmission		Direct drive from engine
Nozzle angle (horizontal)	Degree	28
Nozzle angle (vertical)	Degree	5
Trim system		Manual 3 positions

Item	Unit	Model W8760
FUEL AND OIL:		
Fuel		Regular gasoline
Fuel rating	PON*1/RON*2	86/90
Engine oil type		2 stroke outboard motor oil
Engine oil grade		TC-W3
Fuel and oil mixing ratio (wide open throttle)		50 : 1
Fuel tank capacity	ℓ (US gal, Imp gal)	40 (10.6, 8.8)
reserve	ℓ (US gal, Imp gal)	11.6 (3.1, 2.6)
Oil tank capacity	ℓ (US gal, Imp gal)	4 (1.06, 0.88)

*1: Pump Octane Number
*2: Research Octane Number

MAINTENANCE SPECIFICATIONS

ENGINE

Item		Unit	Model WB760
Cylinder head:			
Warpage limit		mm (in)	0.1 (0.004)
Cylinder:			
Bore size		mm (in)	84.00 ~ 84.02 (3.307 ~ 3.308)
Wear limit		mm (in)	84.1 (3.31)
Taper limit		mm (in)	0.08 (0.003)
Out of round limit		mm (in)	0.05 (0.002)
Piston:			
Piston size		mm (in)	83.902 – 83.921 (3.3032 ~ 3.3040)
Measuring point*		mm (in)	10 (0.39)
Piston clearance		mm (in)	0.100 ~ 0.105 (0.0039 ~ 0.0041)
Wear limit		mm (in)	0.155 (0.0061)
Piston ring:			
Type			Keystone
Sectional sketch (B × T)		mm (in)	1.5 × 3.2 (0.06 × 0.13)
Side clearance		mm (in)	0.02 ~ 0.07 (0.001 ~ 0.003)
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)
Run out limit "B"		mm (in)	0.05 (0.002)
Connection rod big end clearance "C"		mm (in)	0.25 ~ 0.75 (0.010 ~ 0.030)
Small end free play limit "D"		mm (in)	2.0 (0.08)
Carburetor:			
Stamped mark			64Y01(F)/64Y02(R)
Main nozzle		ø mm (in)	3.2 (0.13)
Main jet 2	(M.J.2)		135(F)/137.5(R)
Pilot jet	(P.J.)		115
Low speed screw		Turns out	1 3/4 ± 1/4
Throttle valve	(Th. V.)		160
Valve seat	(V.S.)	ø mm (in)	1.5 (0.06)
High speed screw		Turns out	1/2 ± 1/4
Trolling speed		r/min	1,300 ± 50
Reed valve:			
Thickness		mm (in)	0.4 (0.02)
Valve lift		mm (in)	9.0 ± 0.2 (0.35 ± 0.01)
Bending limit		mm (in)	0.2 (0.01)

JET UNIT

Item	Unit	Model WB760
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

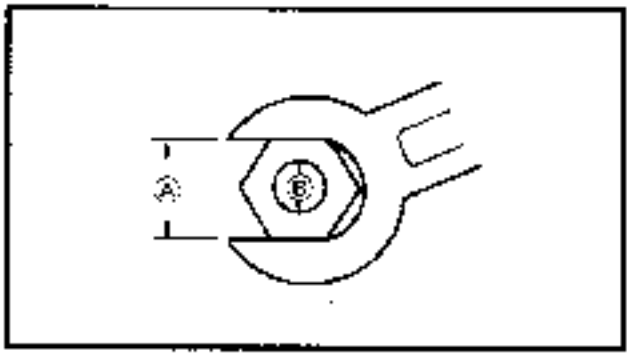
Item	Unit	Model WB760
Ignition system:		
Type		CDI magneto
Ignition timing at 1,200 rpm	Degree	15 BTDC
at 5,400 rpm	Degree	20 BTDC (F)/18 BTDC (R)
Stator:		
Model/Manufacturer		F4T32371/MITSUBISHI
Pulser coil resistance (color)	Ω	445.5 ~ 544.5 (W/R – W/B)
Charging coil resistance (color)	Ω	316.8 ~ 387.2 (Br – L)
CDI unit:		
Stamped mark		64X-00
Model/Manufacturer		F8T33671/MITSUBISHI
Over revolution limit	r/min	7,000 ~ 7,400
Overheat revolution control	r/min	3,000 ~ 3,800
Ignition coil:		
Stamped mark		64X-00
Model/Manufacturer		F6T54381/MITSUBISHI
Primary winding resistance	Ω	0.078 ~ 0.106 (O – B)
Secondary winding resistance	kΩ	14.3 ~ 30.5 (high tension cords)
Charging system:		
Type		Flywheel magneto
Lighting coil resistance (color)	Ω	1.14 ~ 1.40 (G – G)
Rectifier regulator:		
Model/Manufacturer		SH589-12/SHINDENGEN
Regulate voltage	V	14.3 ~ 15.3
Thermo sensor:		
ON	°C (°F)	90 ~ 96 (194 ~ 205)
OFF	°C (°F)	76 ~ 90 (169 ~ 194)
Starter motor:		
Model/Manufacturer		SM13466/MITSUBA
Brush length limit	mm (in)	6.5 (0.26)
Commutator undercut limit	mm (in)	0.2 (0.008)
diameter limit	mm (in)	27 (1.06)
Fuse:		
Rating	A	10

TIGHTENING TORQUE

SPECIFIED TORQUE

Part to tightened		Part name	Size	Q'ty	Tightening torque Nm	Tightening torque m•kg	Tightening torque ft•lb	Remarks
ENGINE:								
Electric box		Bolt	M8	2	17	1.7	12	
Mounting bolt		Bolt	M8	4	17	1.7	12	
Reed valve		Screw	M4	16	1	0.1	0.7	
Exhaust ring		Bolt	M8	4	30	3.0	22	
Exhaust ring stay	1st	Bolt	M10	3	22	2.2	16	
	2nd				40	4.0	29	
Muffler stay		Bolt	M10	4	40	4.0	29	
Muffler stay - Muffler 2	1st	Bolt	M10	2	2	0.2	1.4	
	2nd				47	4.7	34	
Muffler 2		Bolt	M10	2	40	4.0	29	
Muffler 1	1st	Bolt	M10	8	22	2.2	16	
	2nd				40	4.0	29	
Cylinder body	1st	Bolt	M10	6	23	2.3	17	
	2nd				40	4.0	29	
Cylinder head	1st	Bolt	M8	10	15	1.5	11	
	2nd				36	3.6	26	
Spark plug		Bolt	M14	2	25	2.5	18	
Flywheel bolt		Bolt	M10	1	70	7.0	50	
Crankcase	1st	Bolt	M8	8	15	1.5	11	
	2nd				28	2.8	20	
Mount bracket	1st	Bolt	M10	7	23	2.3	17	
	2nd				53	5.3	38	
Coupling		Nut	M27	1	37	3.7	27	
Frame arrestor cover		Bolt	M6	6	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	
Ride plate		Bolt	M8	4	18	1.8	13	
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

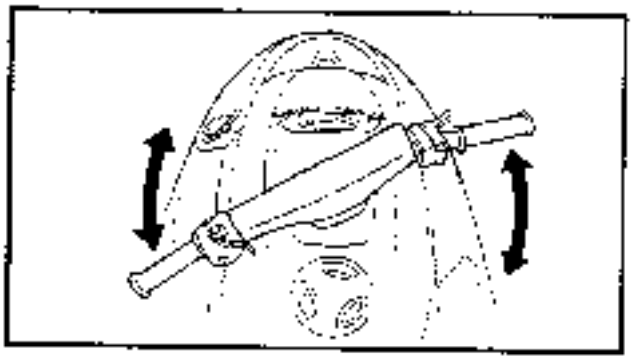
MAINTENANCE INTERVAL CHART

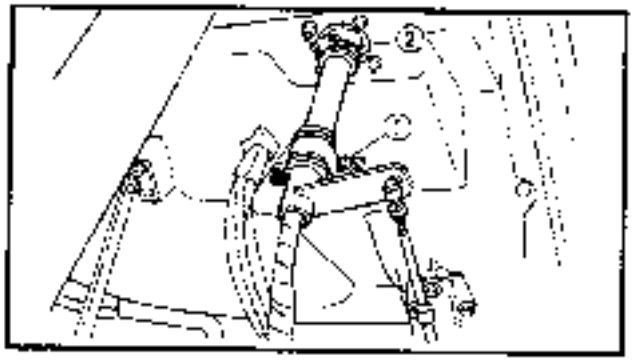
The following chart should be considered strictly as a guide to general maintenance intervals.

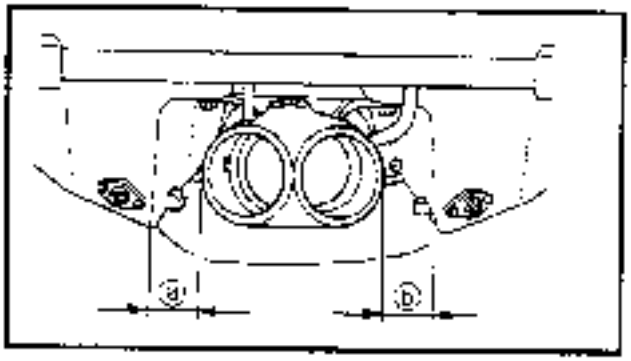
Depending on operating conditions, the intervals of maintenance should be changed.

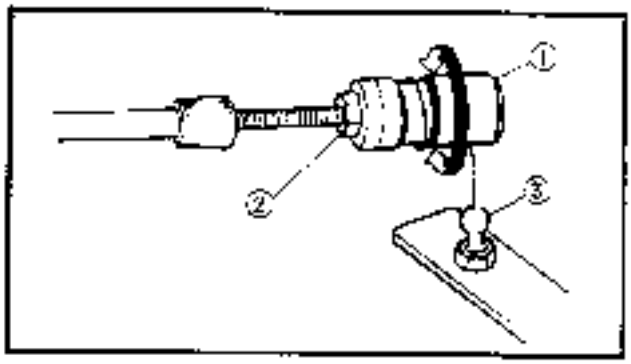
Item	Initial		Every		Refer to page
	10 hours (Break-in)	50 hours (3 months)	100 hours (6 months)	200 hours (1 year)	
CONTROL SYSTEM:					
Steering cable			○		3-2
Throttle cable			○		3-3
Carburetor throttle shaft			○		—
Choke cable			○		3-4
Trim cable			○		3-5
FUEL SYSTEM:					
Fuel tank				○	4-7
Fuel filter	○			○	3-7
Fuel line			○		4-1
Trolling speed			○		3-7
Carburetor setting	○		○		3-8
OIL INJECTION SYSTEM:					
Oil injection system	○			○	3-9
POWER UNIT:					
Spark plug	○	○	○		3-10
Cooling-water passage		○			—
Coupling rubber				○	—
ELECTRICAL:					
Battery	○				3-11
JET PUMP UNIT:					
Impeller		○	○		3-13
Bilge strainer		○	○		3-13
GENERAL:					
Bolt and nut	○		○		—
Drain plug				○	3-14
Greasing point			○		3-14
Bearing housing	○ *1		○ *2		3-15
Starter motor idle gear	○ *3		○ *4		3-15

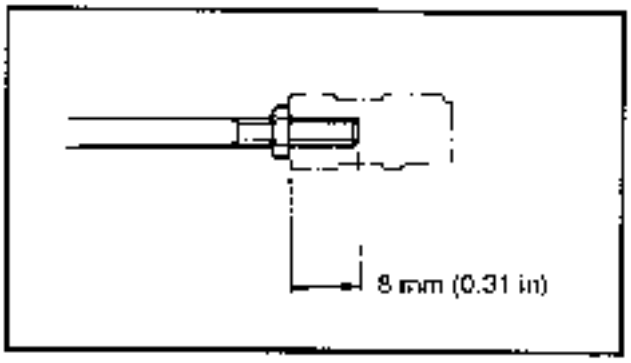
*1: Grease capacity 33.0 ~ 35.0 cm^3 (1.11 ~ 1.18 oz.)
*2: Grease capacity 6.0 ~ 8.0 cm^3 (0.20 ~ 0.27 oz.)
*3: Grease capacity 8.0 cm^3 (0.27 oz.)
*4: Grease capacity 2.0 cm^3 (0.07 oz.)











PERIODIC SERVICE

CONTROL SYSTEM

Pivot shaft bushing inspection

1. Inspect:
   - Bushing
     Excessive play → Replace bushing.
     Refer to "HANDLE COLUMN" 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

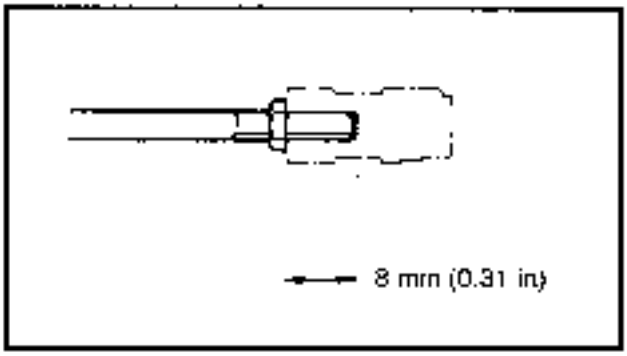
1. Inspect:
   - Jet nozzle clearance ⓐ, ⓑ

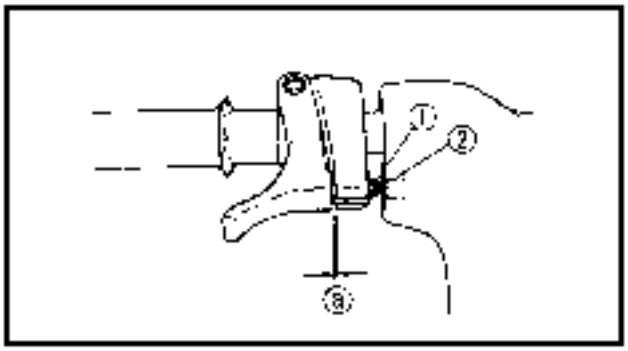
Inspection steps:
- Turn the handlebar lock to lock.
- Measure the clearances ⓐ and ⓑ.
- If the ⓐ and ⓑ clearances are not even, adjust the clearances.

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

Adjustment steps:
- Loosen the locknut ②.
- Disconnect the cable joint from the ball joint ③.
- 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).

- Connect the cable joint and tighten the locknut.

Locknut:
7 Nm (0.7 m • kg, 5.1 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. Refer to "STEERING CABLE" in chapter 8.

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:
7 ~ 10 mm (0.28 ~ 0.39 in)

2. Adjust:
   - Throttle lever free play

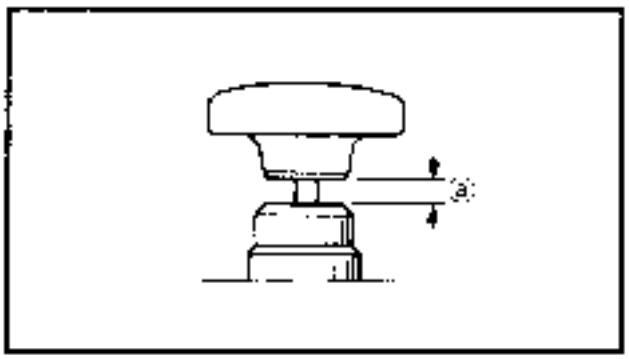
Adjustment steps:
- Loosen the locknut ①.
- Turn the adjuster ② in/out until the specified free play is obtained.

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

- Tighten the locknut.

⚠ WARNING

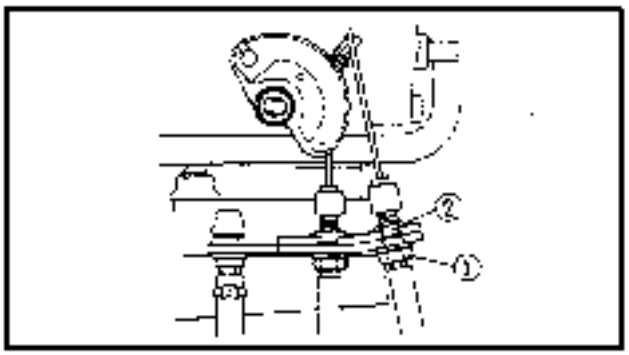
After adjusting the free play, turn the handlebar to right and left, and make sure that the trolling speed does not increase.



Choke cable inspection and adjustment

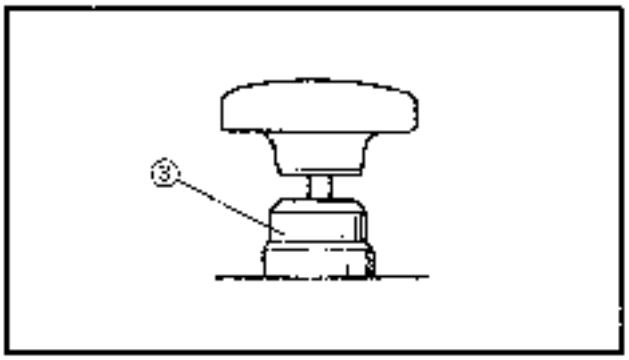
1. Measure:
   - Choke cable free play ⓐ
     Out of specification → Adjust.

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

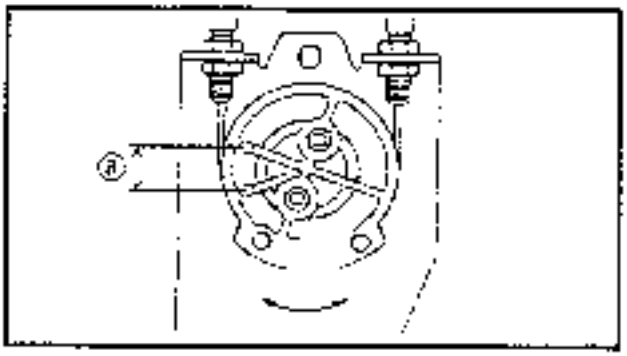


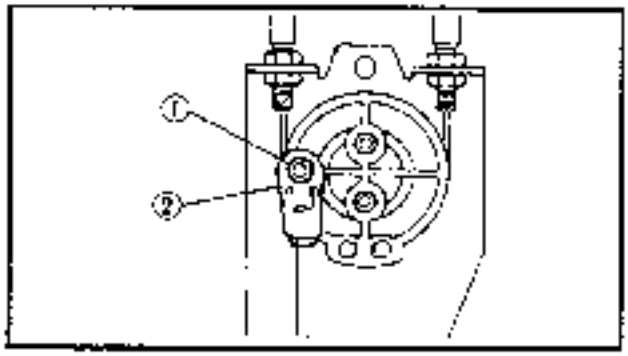
2. Adjust:
   - Choke cable free play

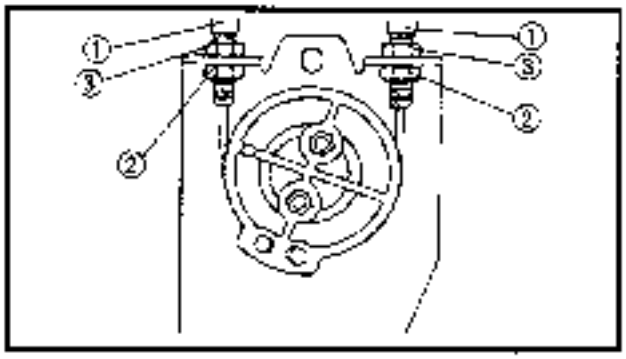
Adjustment steps:	
• Loosen the locknut ①.	
• Turn the adjuster ② in/out until the specified free play is obtained	
Turn in	**Free play is increased.**
Turn out	**Free play is decreased.**
• Tighten the locknut.	
	Locknut: 9 Nm (0.9 m · kg, 6.5 ft · lb)

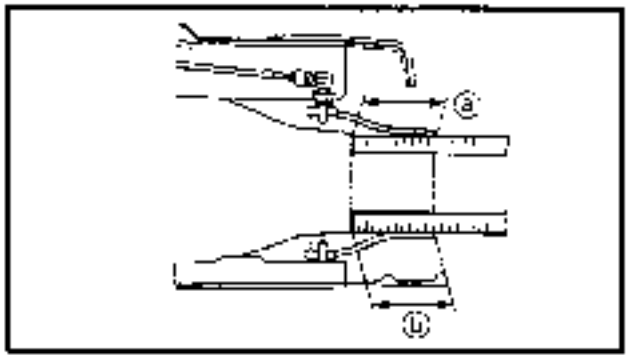


3. Inspect.
   - Pull knob farthest toward
     Knob automatically returns → Adjust.
4. Adjust:
   - Adjust nut ③
     Turn in to stop automatic return.









Trim cable inspection and adjustment

1. Measure:
   - Wheel free play ⓐ

   Out of specification → Adjust.

Wheel free play ⓐ:
3.0 ~ 7.0 mm (0.12 ~ 0.28 in)

Measurement steps:
- Set the trim grip in the neutral position.
- Remove the locknut ① and cable joint ②.
- Measure the free play.

2. Adjust:
   - Trim control cable 1, 2 ①

Adjustment steps:
- Set the trim grip in the neutral position.
- Loosen the locknut ②.
- Turn the adjust nut ③.

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

- Tighten the locknut ②.

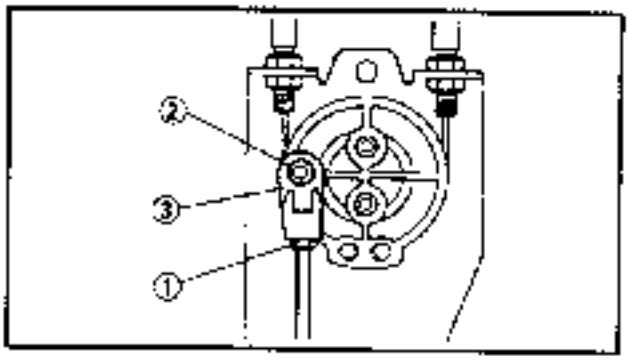
Locknut:
16 Nm (1.6 m • kg, 11 ft • lb)

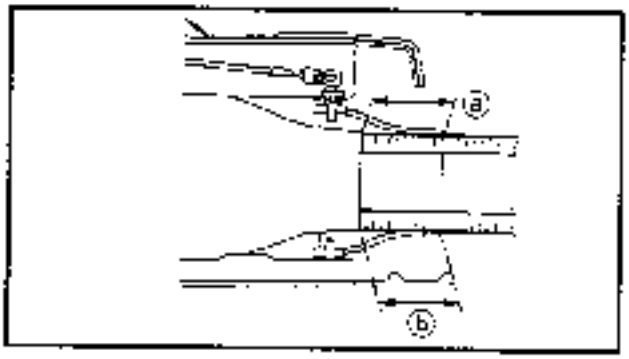
3. Measure:
   - Nozzle deflector set length ⓐ, ⓑ

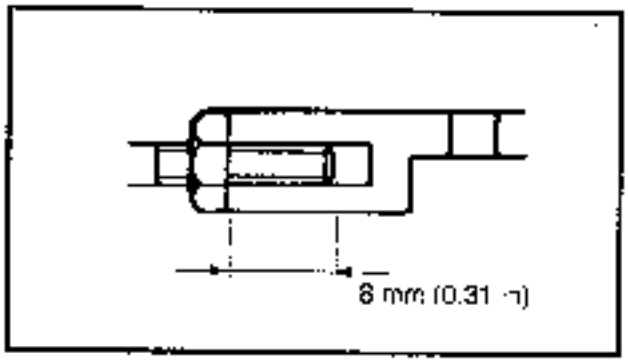
   Out of specification → Adjust.

Nozzle deflector set length ⓐ, ⓑ:
ⓐ = 97.4 ± 1 mm (3.83 ± 0.04 in)
ⓑ = 99.2 ± 2.8 mm (3.91 ± 0.11 in)

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







4. Adjust:
   - Trim cable

Adjustment steps:
- Set the trim grip in the neutral position
- Set the handlebar in the neutral position.
- Loosen the locknut ①.
- Remove the locknut ② and cable joint ③.
- Turn the cable joint ③ for adjusting.

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).

- Connect the cable joint and tighten the locknut ②.
- Tighten the locknut ①.

Locknut:
4 Nm (0.4 m · kg, 2.9 ft · lb)

NOTE:

If correct adjustment by using the cable joint at the wheel end is not obtained, adjust the cable joint on the trim nozzle end. Refer to "TRIM CABLE" in chapter 8.

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
     Crack/Damage → Replace.
   - Filter assembly
     Water contamination → Replace and check the fuel tank.

Trolling speed inspection and adjustment

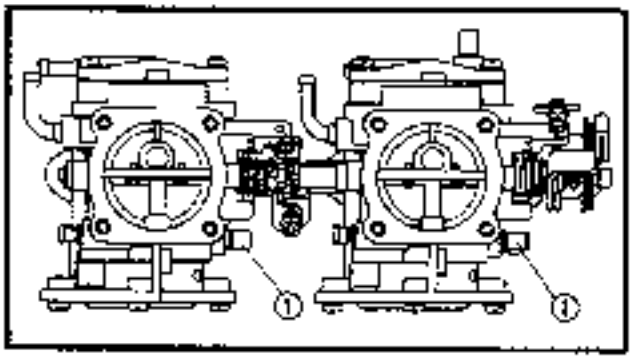
1. Check:
   - Trolling speed
     Out of specification → Adjust.

Trolling speed:
1,300 ± 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.

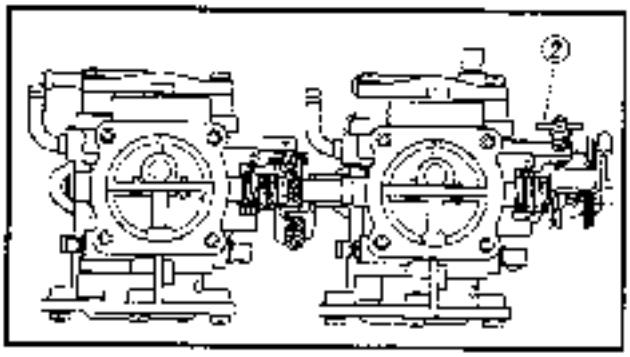
Engine tachometer:
YU-8036-A/90890-06760

- Measure the engine trolling speed.



2. Adjust:
   - Trolling speed

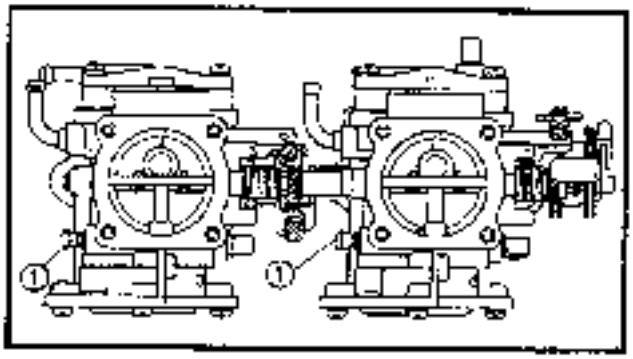
Adjustment steps:
- Screw in the low speed screws ① until they are lightly seated.
- Back the screws out by the specified number of turns.



Low speed screw:
1-3/4 ± 1/4 (turns out)

- Start the engine and allow it to warm up for a few minutes.
- Turn the throttle stop screw 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

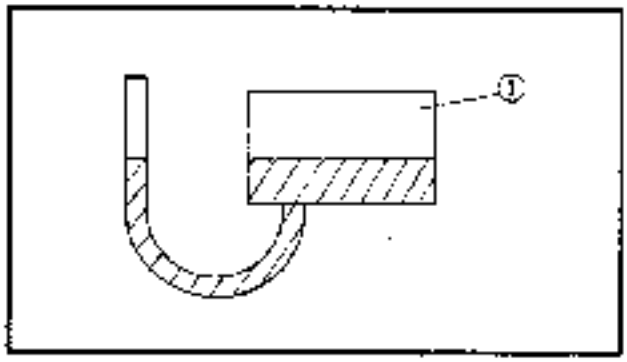
Adjustment steps:
- Screw in the high speed screws ① until they are lightly seated.
- Back the screws out by the specified number of turns.

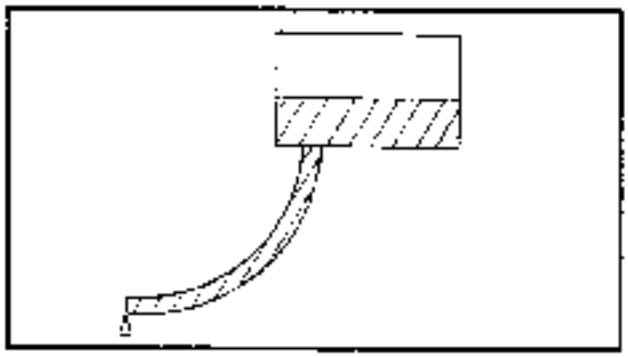
High speed screw:
1/2 ± 1/4 (turns out)

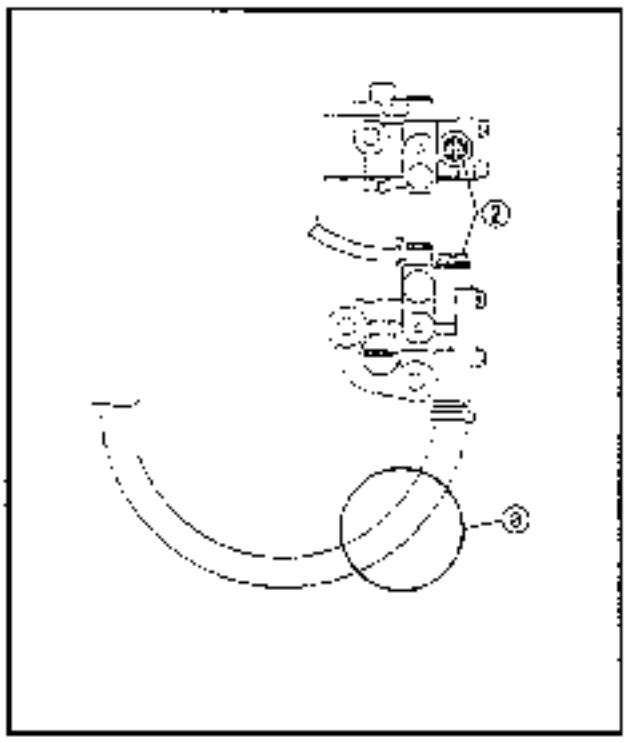
OIL INJECTION SYSTEM

Oil filter inspection

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







Oil injection pump air bleeding

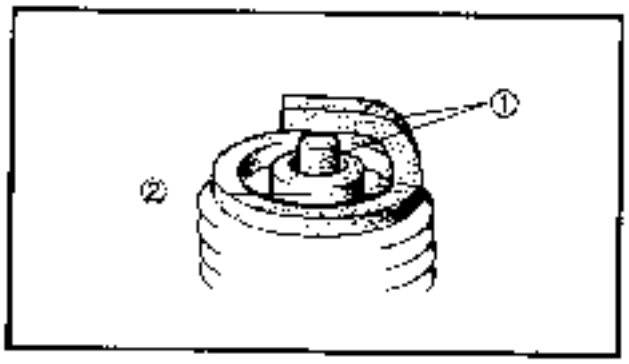
NOTE:

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:
- Place rags under the oil pump to catch any oil that spills out.
- Disconnect the oil hose from the oil pump.
- Position the oil hose end above the oil tank ①.
- Put 2 liters of oil or more in the oil tank and leave it for 2 minutes.
- Then, lower the oil hose end and make sure the oil flows out of the oil hose.
- Connect the oil hose to the oil pump.
- Clamp the oil hose with the hose tie.
- Loosen the air bleed screw ② 2 turns, and make sure both oil and air bubbles flow out.
- If oil does not come out, squeeze the oil hose ③ near the oil pump inlet a maximum 20 times.
- When no air bubbles remain, tighten the air bleed screw.
- Wipe out any spilled oil.

Screw:
5 Nm (0.5 m • kg, 3.6 ft • lb)

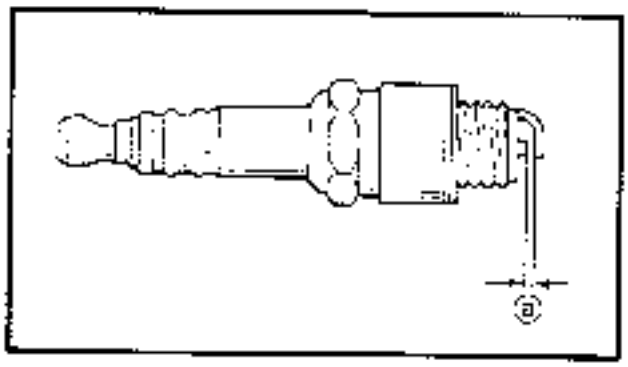


POWER UNIT

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

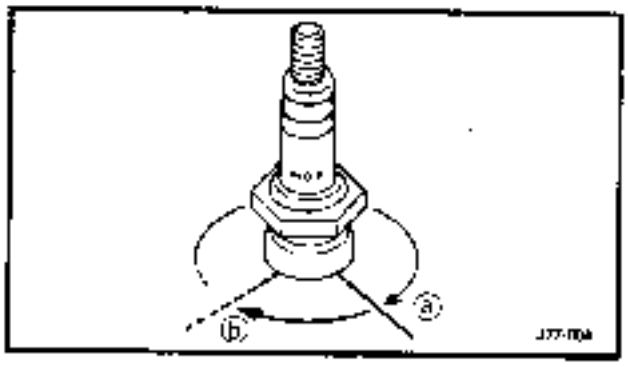


2. Clean:
   - Spark plug
     Clean the spark plug with a spark plug cleaner or wire brush.
3. Measure:
   - Spark plug gap ⓐ
     Out of specification → Alter gap.
     Use a wire gauge.

Spark plug gap:
0.6 ~ 0.7 mm (0.024 ~ 0.028 in)

4. Tighten:
   - Spark plug

Spark plug:
25 Nm (2.5 m • kg, 18 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 ⓑ on from finger tightness ⓐ.

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 battery 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.

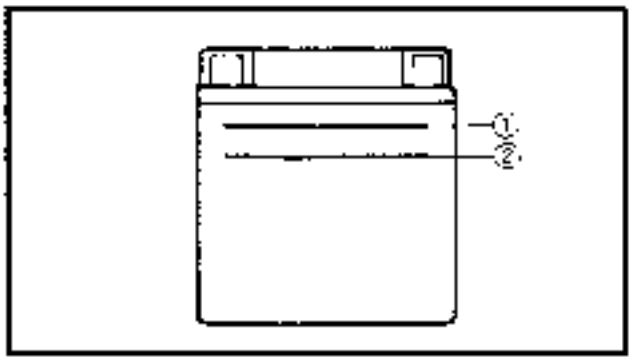
⚠ WARNING

- **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

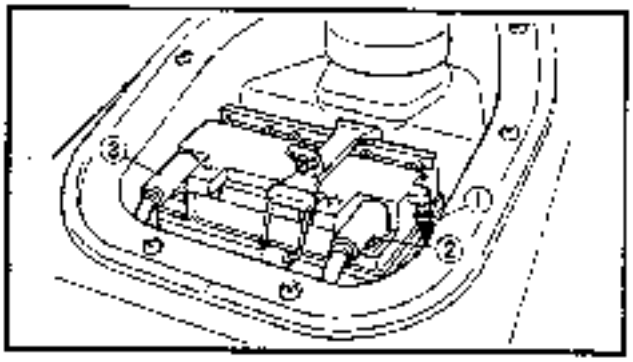
CAUTION:
Water other than distilled water contains minerals which are harmful to a battery; top up only with distilled water.

3. Inspect:
   - Battery fluid specific gravity
     Out of specification → Charge.

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

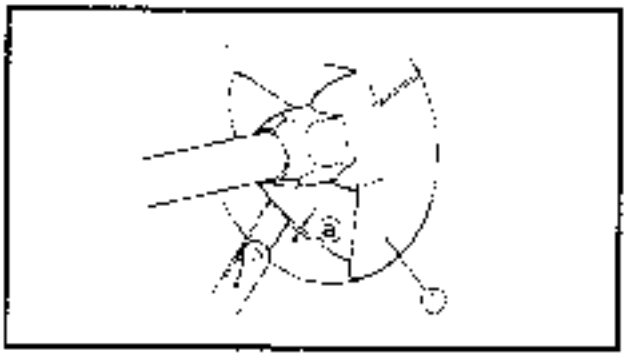
4. Install:
   - Filler cap

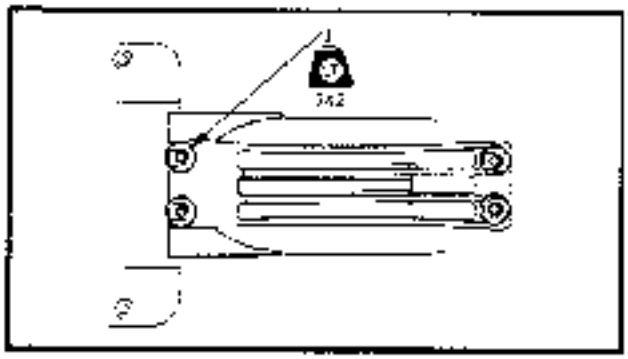
CAUTION:
Rinse off any acid from the battery case and wipe the battery dry prior to installation.



5. Install:
   - Breather hose ①
   - Battery
   - Positive lead ②
   - Negative lead ③
   - Battery band

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

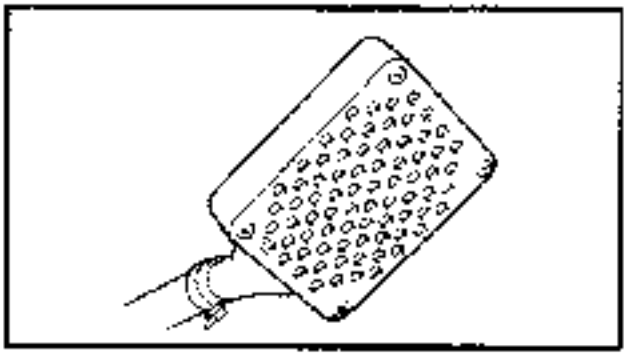
1. Check:
   - Impeller ①
     Wear/Damage → Replace.
     Scratch/Nick → File/Grind.
2. Measure:
   - Impeller clearance ②
     Out of specification → Replace.

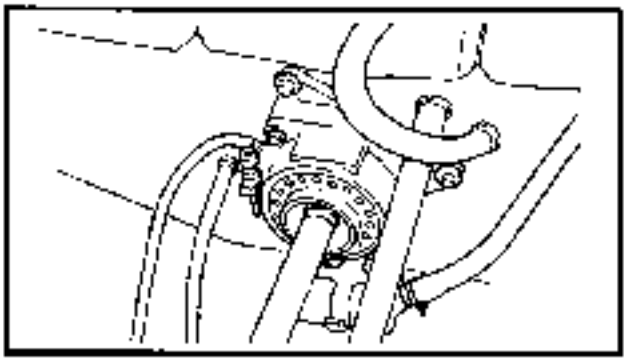
Impeller clearance limit:
0.6 mm (0.024 in)

Measurement steps:
- Remove the battery.
- Remove the intake screen.
- Measure the clearance at all four points.
- Install the intake screen.

Bolt:
5 Nm (0.5 m · kg, 3.6 ft · lb)

- Install the battery.

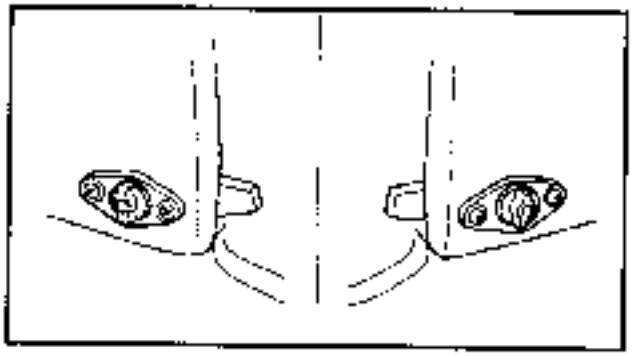




Bilge strainer inspection

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

Inspection steps:
- Remove the coupling cover.
- Disconnect the bilge strainer from the strainer holder.
- Inspect the bilge strainer.



GENERAL

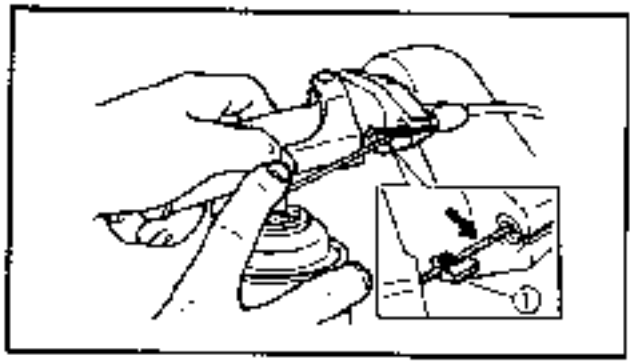
Drain plug inspection

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

Greasing point

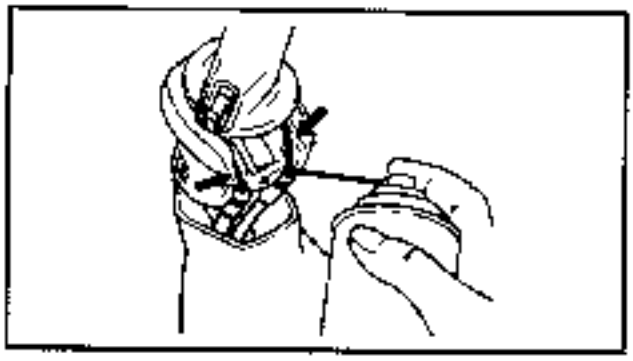
1. Apply:
   - Throttle inner cable
   - Trim control inner cable

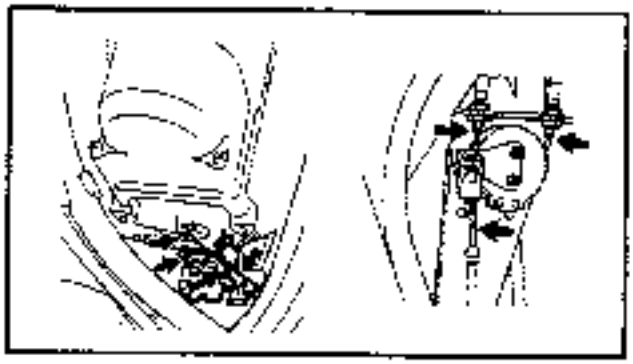
	Recommended fluid: **Rust-inhibitor**



NOTE:

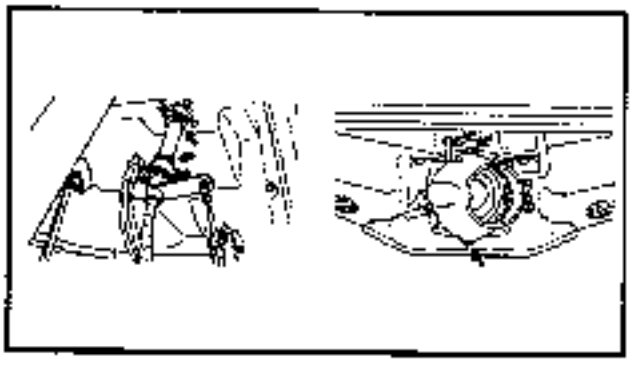
- Squeeze the throttle lever and remove the seal ①.
- Remove the plate. Refer to "TRIM GRIP AND CONTROL CABLE" in chapter 8.
- Spray a rust-inhibitor into the outer cable.





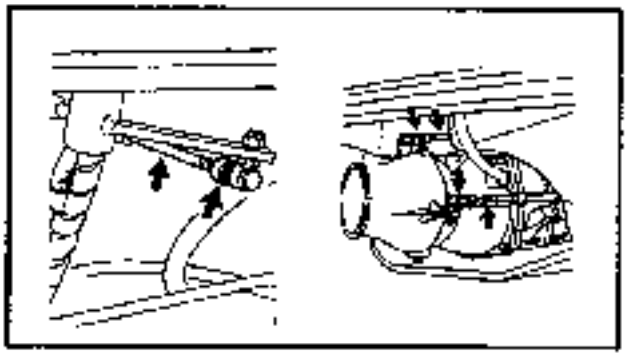
2. Apply:
   - Throttle inner cable
   - Choke inner cable
   - Trim control inner cable
   - Trim inner cable

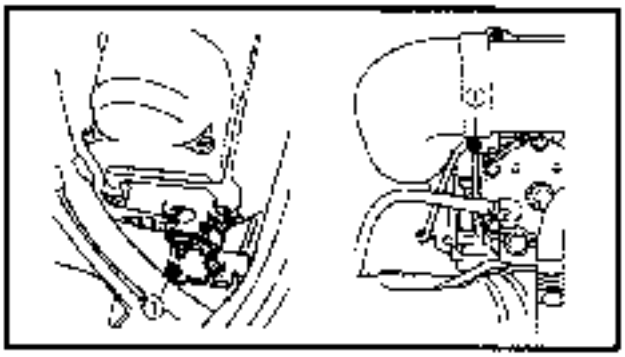
	Recommended grease: **Water resistant grease**



3. Apply:
   - Steering handle pivot shaft
   - Steering nozzle pivot shaft

	Recommended grease: **Water resistant grease**





4. Apply:
   - Steering cable
   - Trim cable shaft
   - Cable joint

	Recommended grease: **Water resistant grease**

NOTE:

Disconnect the cable joint and apply a small amount of grease to the ball joints.

5. Fill:
   - Bearing housing
   - Starter idle gear

	Recommended grease: **Water resistant grease**

NOTE:

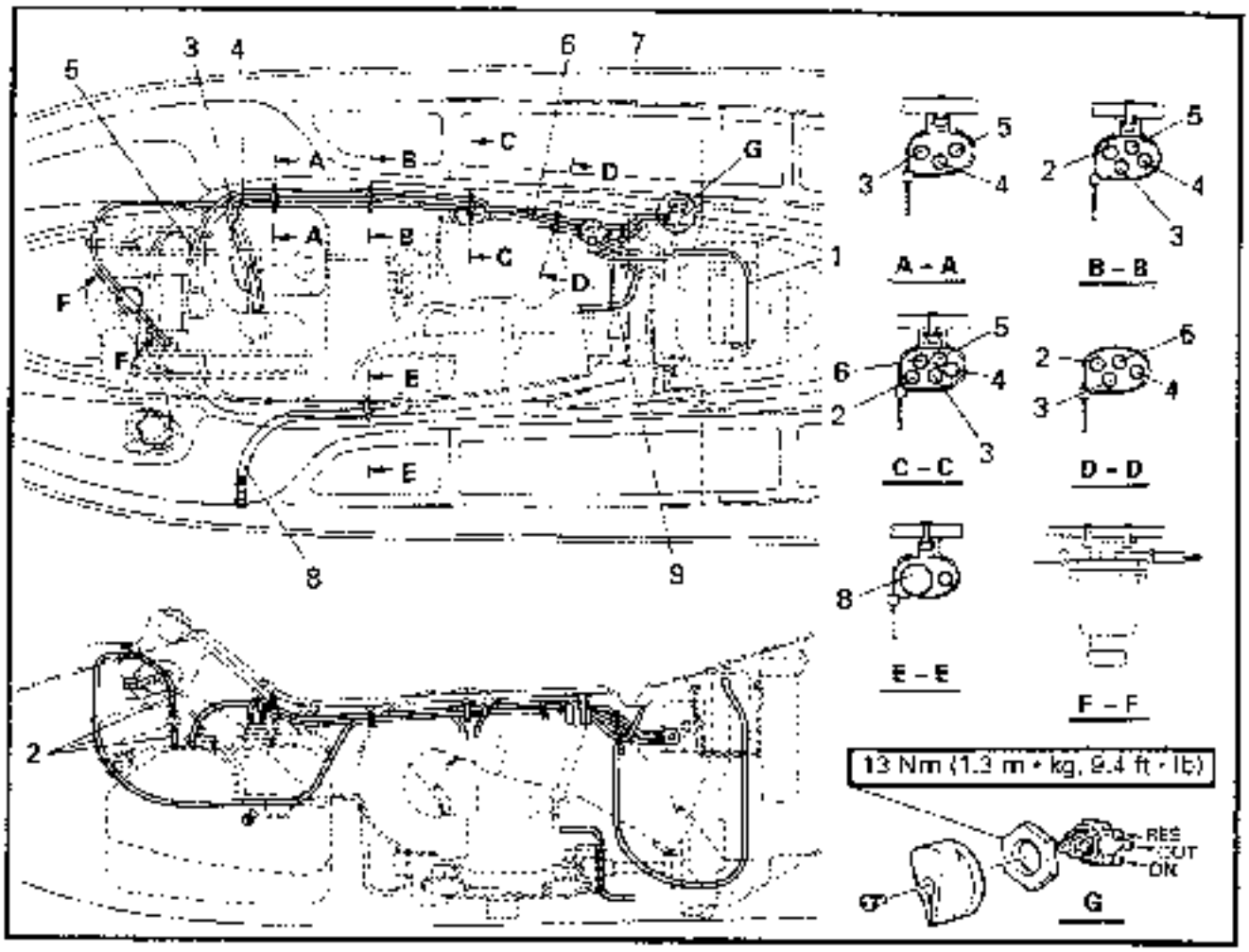
- Fill the water resistant grease in the bearing housing and the starter idle gear through the grease nipples ⓒ.
- Fill the grease slowly and carefully, as it can damage the hose and the joints.
- Refer to "MAINTENANCE INTERVAL CHART".

CHAPTER 4
FUEL SYSTEM

⚠ WARNING

Gasoline (Petrol) is highly flammable and explosive. Handle with special care.

FUEL LINE
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	FUEL HOSE REMOVAL		Follow the left "Step" for removal.
1	Battery breather hose	1	
2	Air ventilation hose	3	
3	Fuel hose (ON)	1	
4	Fuel hose (RES)	1	
5	Fuel hose (carburetor - fuel tank)	1	
6	Fuel hose (filter - carburetor)	1	
7	Fuel hose (OUT)	1	
8	Pilot water hose	1	
9	Cooling water hose	1	
			Reverse the removal steps for installation.

SERVICE POINTS

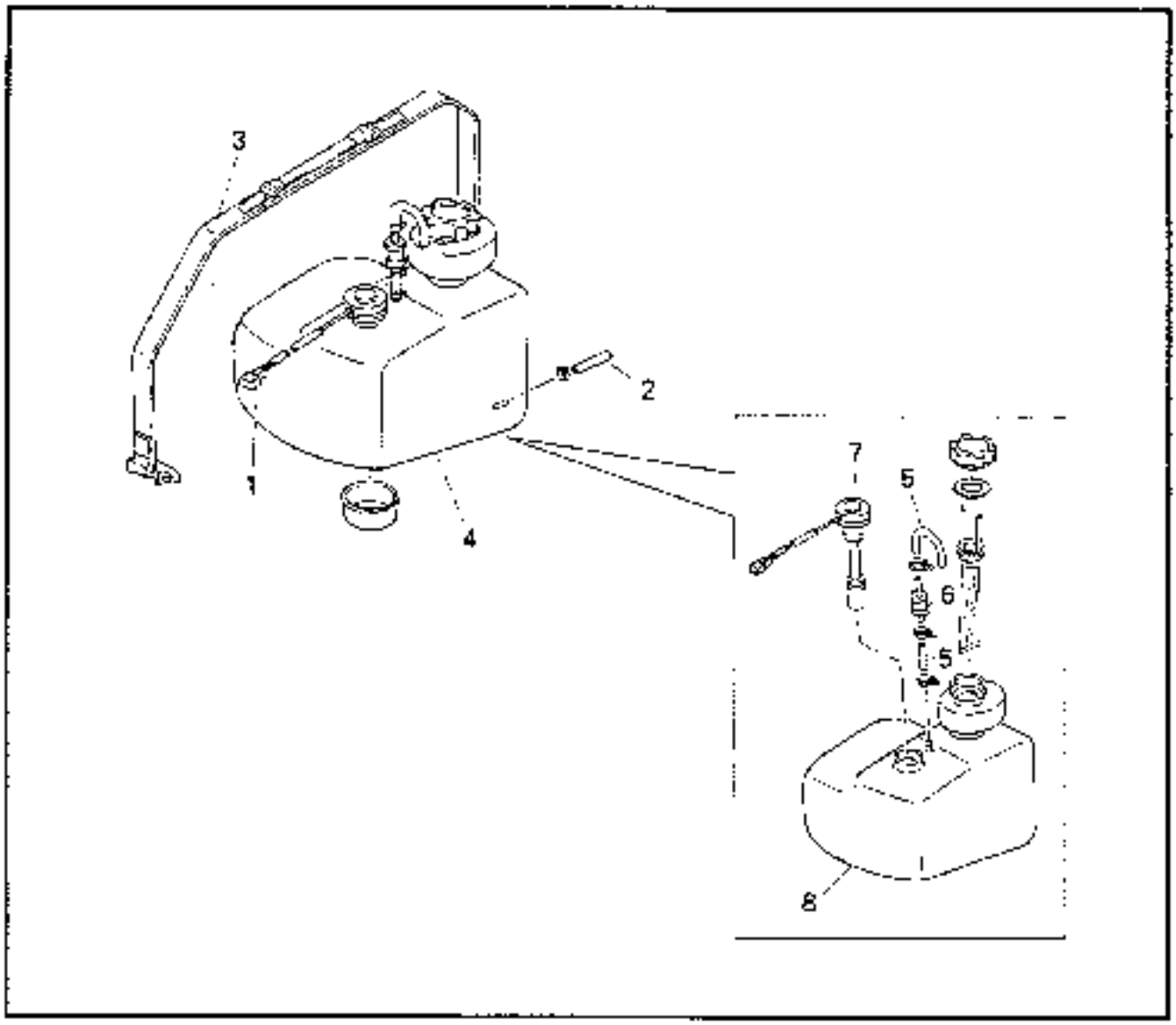
Fuel filter inspection

Refer to "FUEL SYSTEM" in chapter 3.

Fuel cock inspection

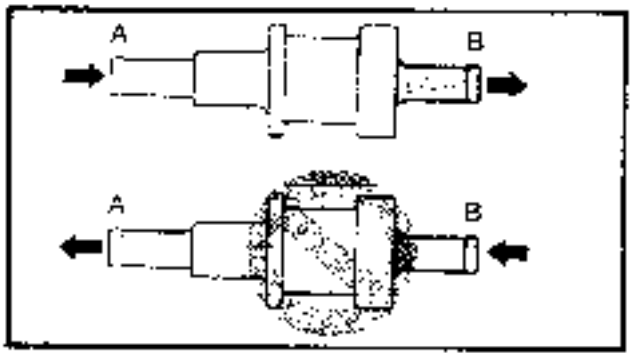
1. Check:
   - Fuel cock
     Unsmooth movement → Replace.
     Clog → Clean.

OIL TANK
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	OIL TANK REMOVAL		Follow the left "Step" for removal.
1	Oil level sensor lead coupler	1	
2	Oil hose	1	
3	Tank band	1	
4	Oil tank assembly	1	
5	Air ventilation hose	2	
6	Check valve	1	
7	Oil level sensor	1	
8	Oil tank	1	
			Reverse the removal steps for installation.



SERVICE POINTS

Check valve inspection

1. Check:
   - Check valve
     Out of specification → Replace.

	Flow from A to B

Oil level sensor inspection

Refer to "INDICATION SYSTEM" in chapter 7.

Oil tank inspection

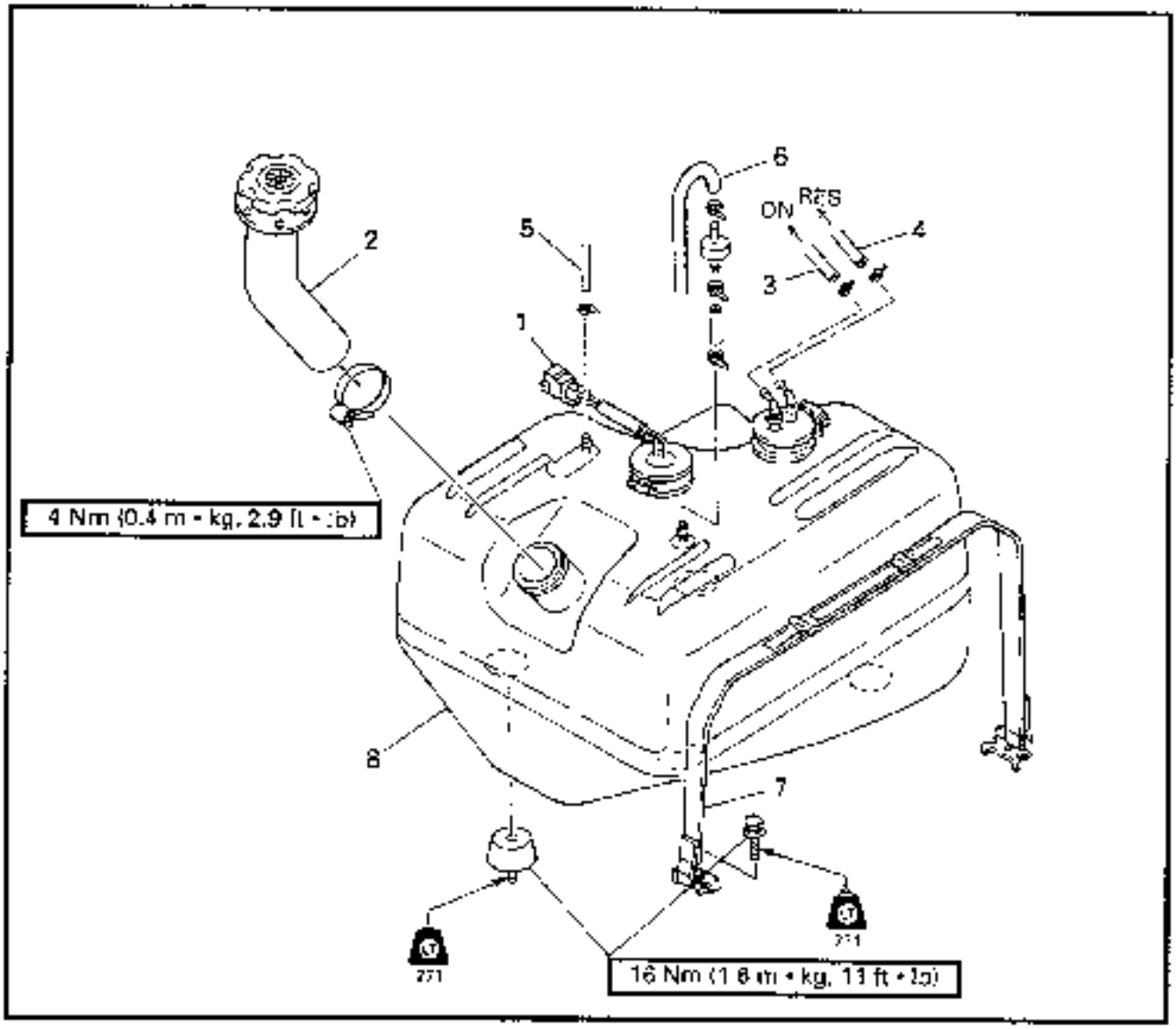
1. Inspect:
   - Oil tank
     Crack/Damage → Replace.

Oil filter inspection

Refer to "OIL INJECTION SYSTEM" in chapter 3.

FUEL TANK REMOVAL

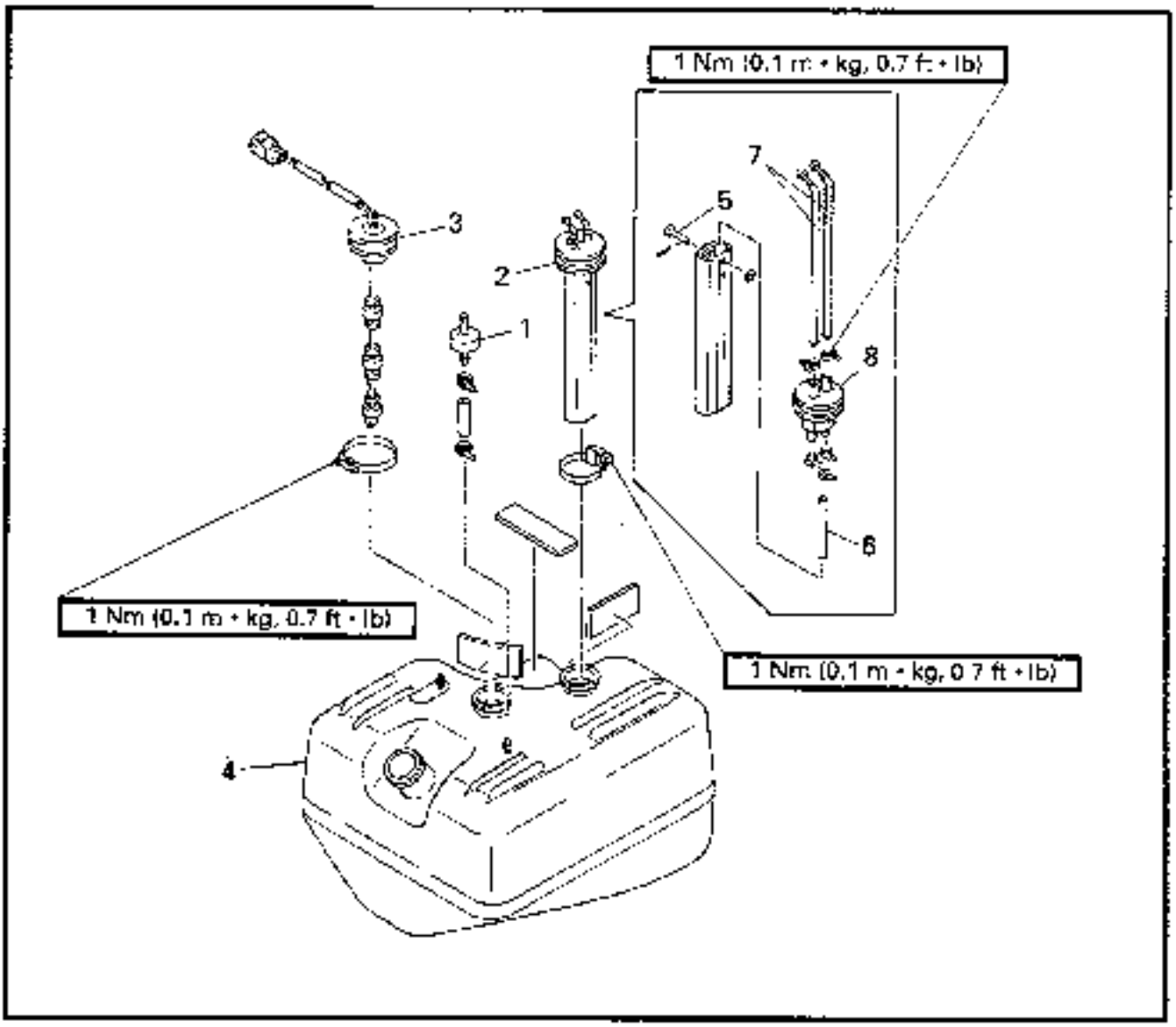
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

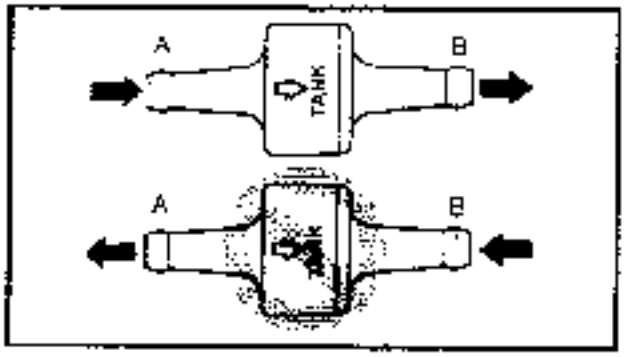
Step	Procedure/Part name	Q'ty	Service points
	FUEL TANK REMOVAL		Follow the left "Step" for removal.
	Oil tank assembly		Refer to "OIL TANK".
1	Fuel level sensor lead coupler	1	**NOTE:**
2	Fuel filler hose	1	Drain the fuel.
3	Fuel hose (ON)	1	
4	Fuel hose (RES)	1	
5	Fuel hose (return)	1	
6	Air ventilation hose	1	
7	Tank band	1	
8	Fuel tank assembly	1	
			Reverse the removal steps for installation.

FUEL TANK
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	FUEL TANK DISASSEMBLY		Follow the left "Step" for removal.
	Fuel tank		Refer to "FUEL TANK REMOVAL".
1	Check valve	1	
2	Pipe joint assembly	1	
3	Fuel level sensor	1	
4	Fuel tank	1	
5	Pin	1	
6	Hose	1	
7	Pipe	2	
8	Pipe joint	1	
			Reverse the removal steps for installation.



SERVICE POINTS

Check valve inspection

1. Check:
   - Check valve
     Out of specification → Replace.

Flow from A to B

Fuel level sensor inspection

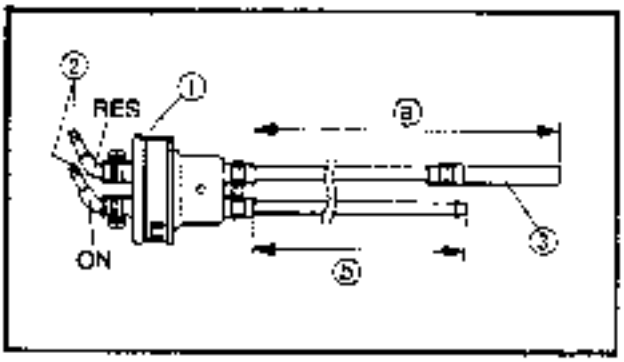
Refer to "INDICATION SYSTEM" in chapter 7.

Fuel tank inspection

1. Inspect:
   - Fuel tank
     Crack/Damage → Replace.

Pipe joint inspection

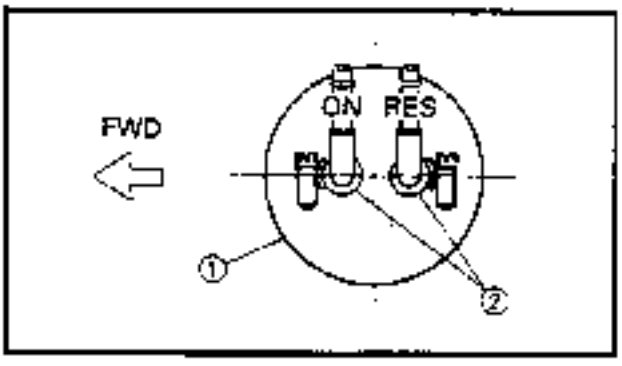
1. Inspect:
   - Pipe
     Bending/Damage → Replace.
     Contamination → Clean.
   - Pipe joint
     Wear/Crack → Replace.



Pipe joint installation

1. Install:
   - Pipe joint ①
   - Pipe ②
   - Hose ③
   - Clamp

Length ⓐ:
266 ± 2 mm (10.5 ± 0.08 in)
Length ⓑ:
180 ± 2 mm (7.1 ± 0.08 in)

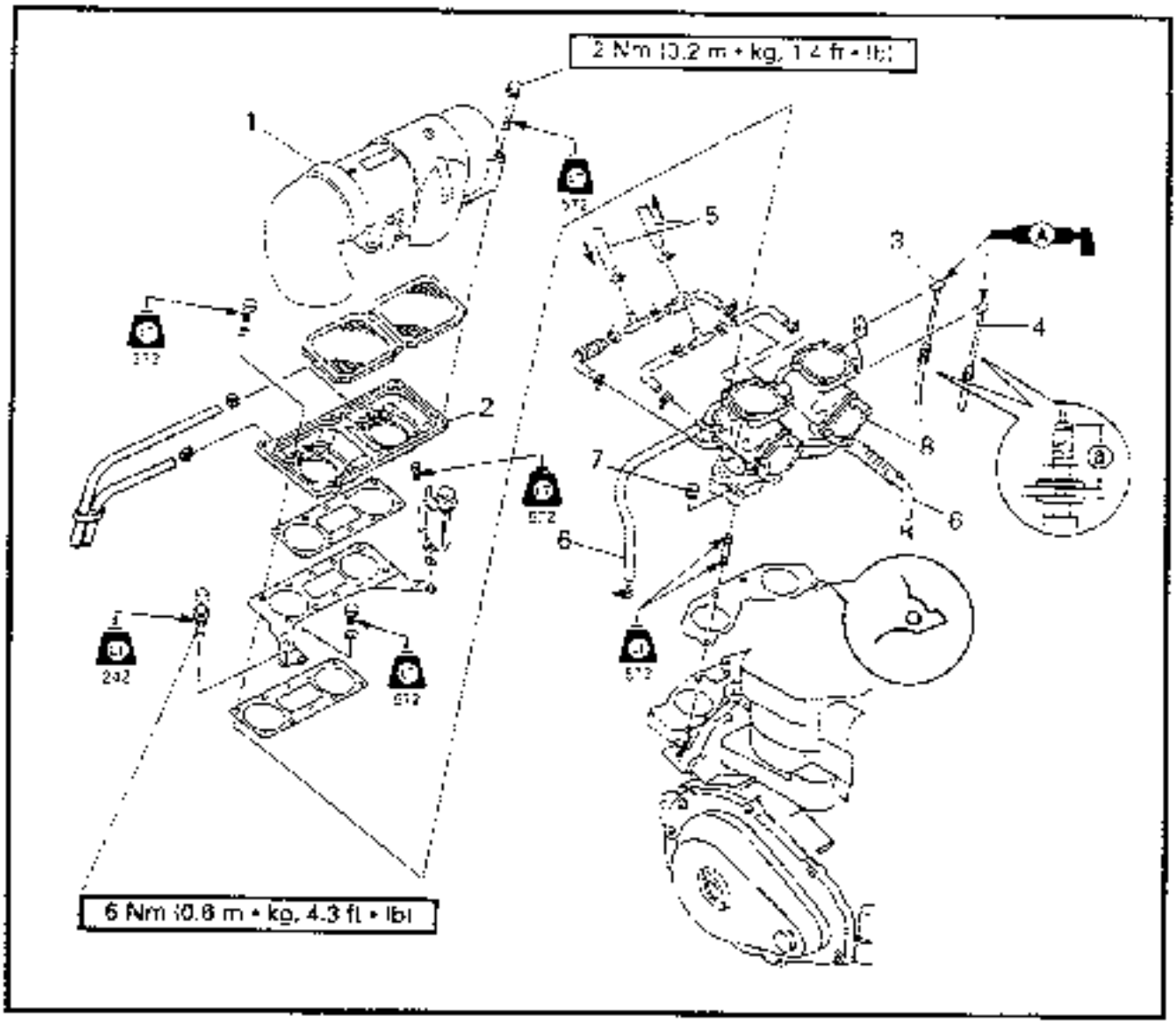


NOTE:

Connect the hose for "RES" on the pipe side.

CARBURETOR REMOVAL

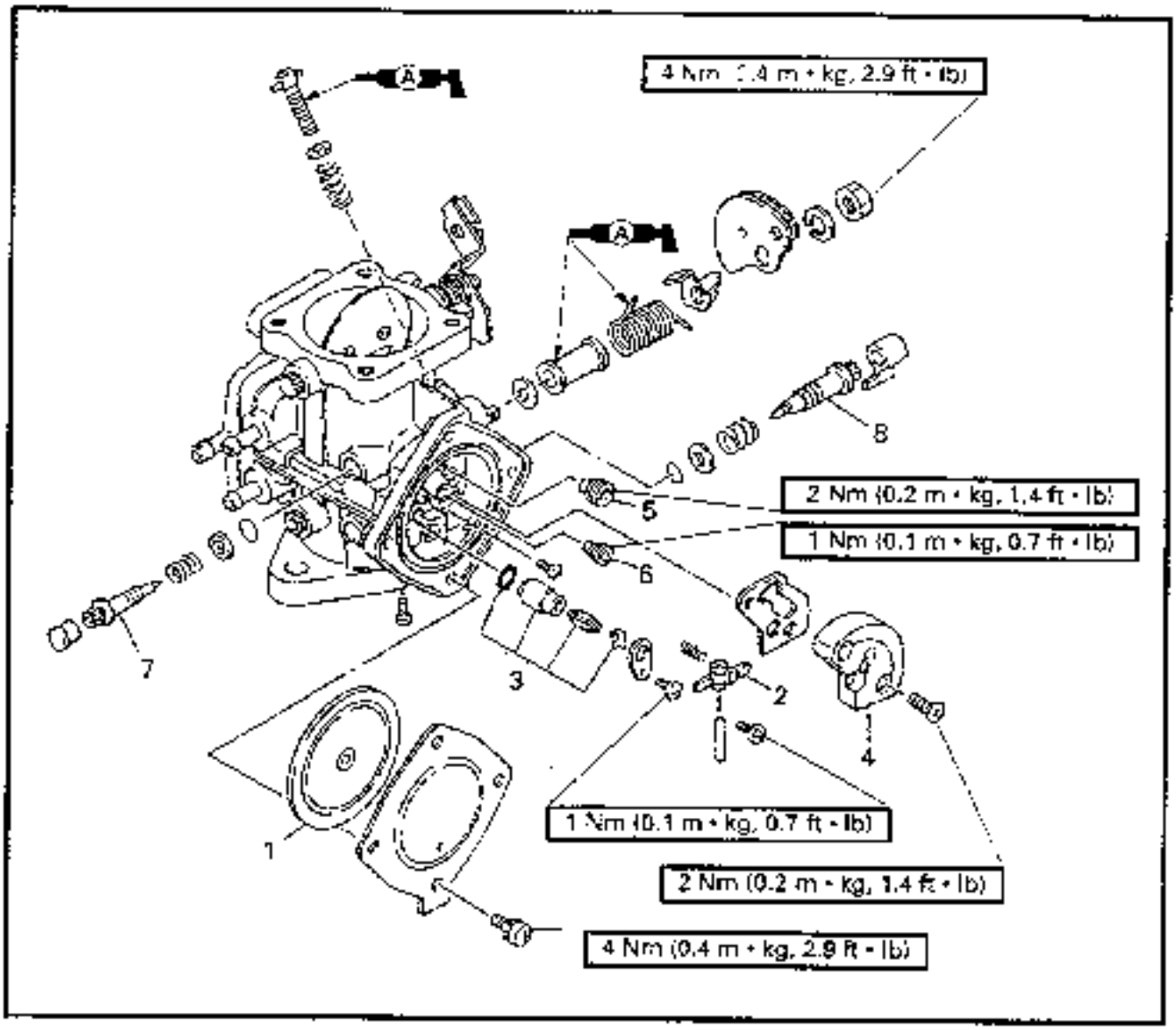
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CARBURETOR REMOVAL		Follow the left "Step" for removal.
1	Carburetor cover	1	
2	Carburetor cover	1	
3	Choke cable	1	**Cable guide set position ⓐ: 17 mm (0.67 in)**
4	Throttle cable	1	
5	Fuel hose	2	
6	Pulse hose	2	
7	Nut	4	
8	Carburetor assembly	1	
			Reverse the removal steps for installation.

CARBURETOR
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CARBURETOR DISASSEMBLY		Follow the left "Step" for removal.
	Carburetor assembly		Refer to "CARBURETOR REMOVAL".
1	Diaphragm assembly	1	
2	Float arm	1	
3	Needle valve assembly	1	
4	Body assembly	1	
5	Main jet	1	
6	Pilot jet	1	
7	High speed screw	1	
8	Low speed screw	1	
			Reverse the removal steps for installation.

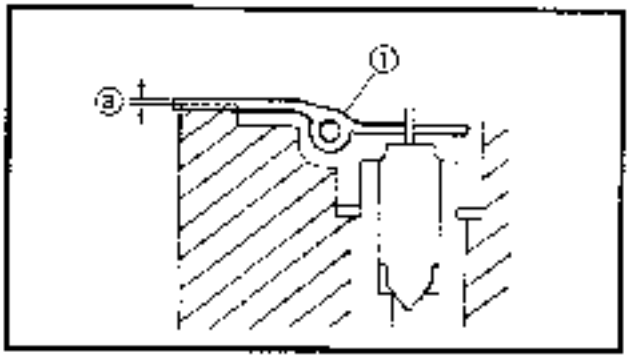
SERVICE POINTS

CAUTION

Do not use steel wire for cleaning the jets as this may enlarge the jet diameters and seriously affect performance.

Diaphragm inspection

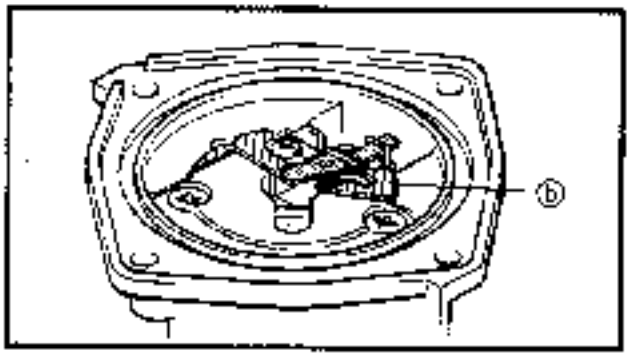
1 Inspect:
- Diaphragm assembly
  Damage → Replace.



Float arm inspection

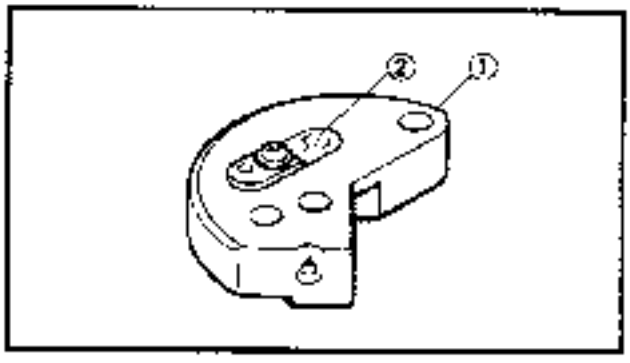
1. Inspect:
   - Float arm ①
     Bend/Damage → Repair or replace.
2. Measure:
   - Float arm height ⓐ

Float arm height:
0 ~ 0.2 mm (0 ~ 0.008 in)



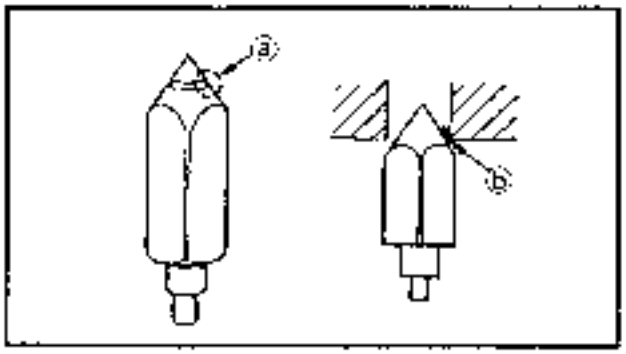
NOTE:

- Measure the distance between the surface ⓑ of the carburetor body and the top surface of the float arm.
- The float arm should be resting on the needle valve, but not compressing the needle valve.



Body assembly inspection

1. Inspect:
   - Body assembly ⓒ
     Contamination → Clean.
   - Valve ②
     Damage → Replace.



Needle valve inspection

1. Inspect:
   - Needle valve
   - Valve seat

   Grooved wear ⓐ → Replace.
   Dust ⓑ → Clean.

NOTE:

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

Jet and carburetor body inspection

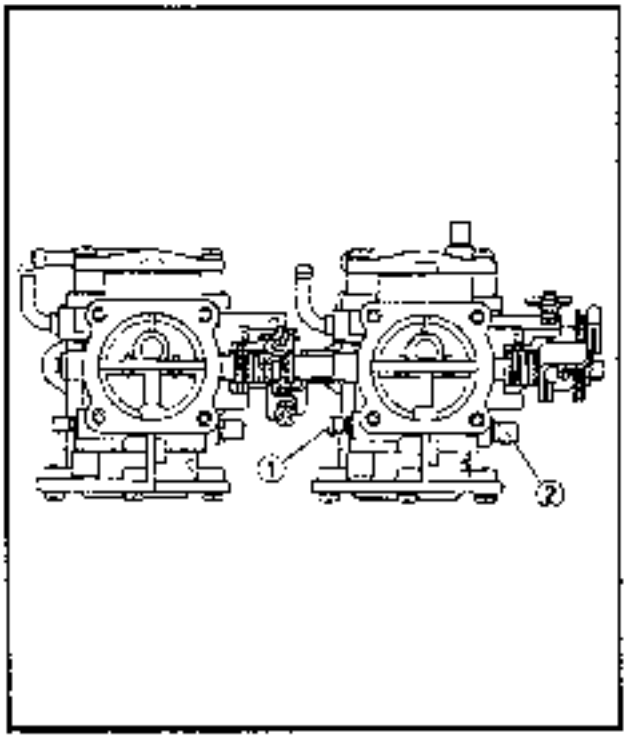
1. Inspect:
   - Main jet
   - Pilot jet
   - Carburetor body

   Contamination → Clean.

High and low speed screws inspection

1. Inspect:
   - High speed screw
   - Low speed screw

   Bend/Wear → Replace.



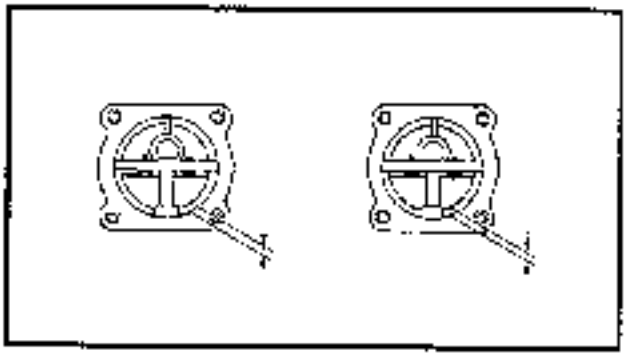
High and low speed screws adjustment

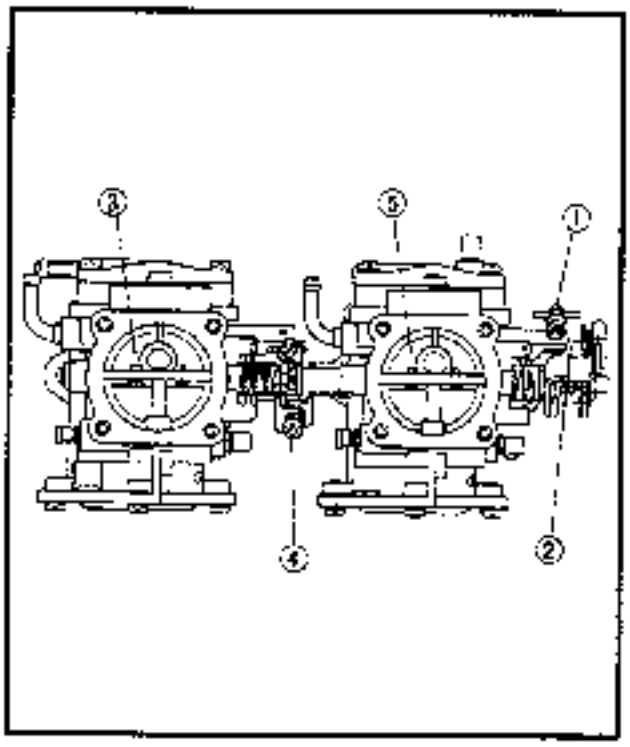
1. Adjust:
   - High speed screw
   - Low speed screw

Adjustment steps:

- Screw in the high speed screw ① or lower speed screw ② until it is lightly seated.
- Back out by the specified number of turns.

High speed screw:
1/2 – 1/4 turns out
Low speed screw:
1-3/4 – 1/4 turns out





Throttle valve synchronization inspection and adjustment

1. Check:
   - Throttle valve synchronization
     Out of specification → Adjust.

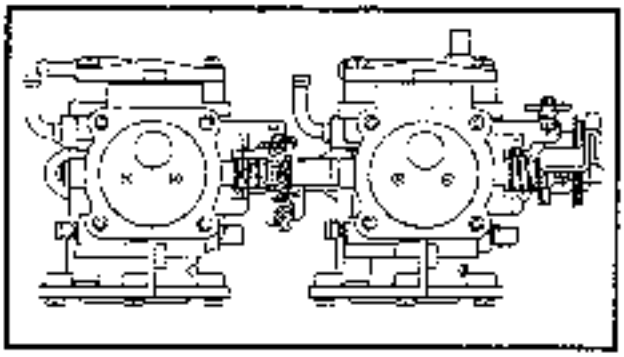
Checking steps:
- While turning the throttle lever, check the opening of all throttle valves.

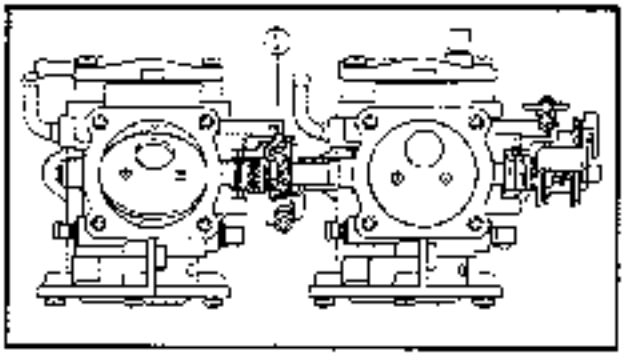
2. Adjust:
   - Throttle valve synchronization

Adjustment steps:
- Turn out the idle adjust screw ① until its tip is apart from the throttle lever ②.

NOTE:
Record the set position of the idle adjust screw.

- Check that the #1 throttle valve ③ is fully closed.
- Turn the synchronization screw ④ in or out until the #2 throttle valve ⑤ is fully closed.
- Turn in the idle adjust screw to the set position.





Choke valve synchronization inspection and adjustment

1. Check:
   - Choke valve synchronization
     Out of specification → Adjust.

Checking steps:
- While turning the choke lever, check the opening of all choke valves.

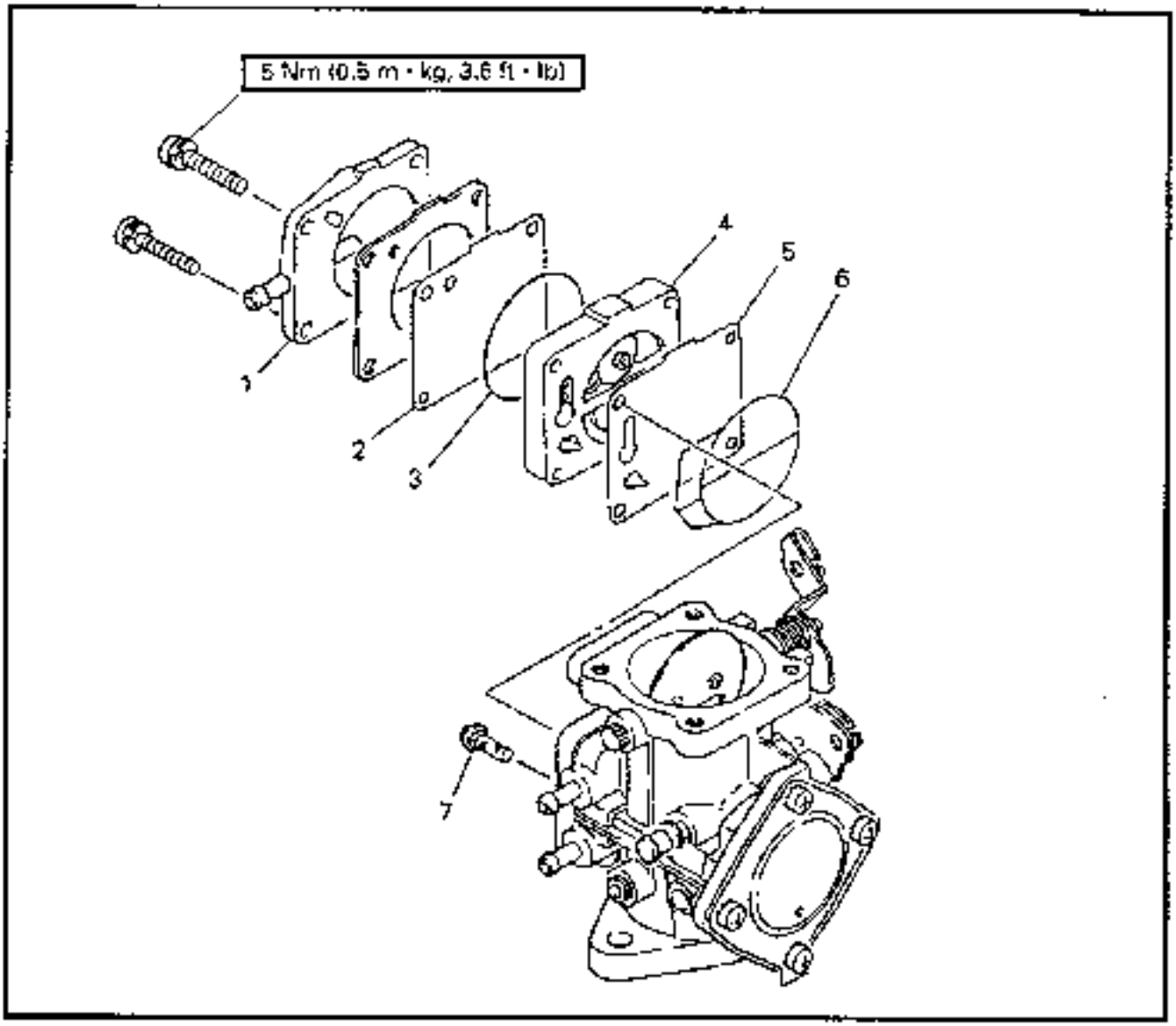
2. Adjust:
   - Choke valve synchronization

Adjustment steps:
- Turn in or out the synchronization screw ① to bring all the choke valves into a fully closed position when the choke lever is turned on the closed side.

Carburetor assembly

1. Adjust:
   - Trolling speed
     Refer to "FUEL SYSTEM" in chapter 3.

FUEL PUMP
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	FUEL PUMP DISASSEMBLY		Follow the left "Step" for removal.
	Carburetor assembly		Refer to "CARBURETOR REMOVAL".
1	Pump cover	1	
2	Diaphragm	1	
3	O-ring	1	
4	Diaphragm body assembly	1	
5	Diaphragm	1	
6	O-ring	1	
7	Filter	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Fuel pump inspection

1. Inspect:
   - Diaphragm
   - Diaphragm body assembly

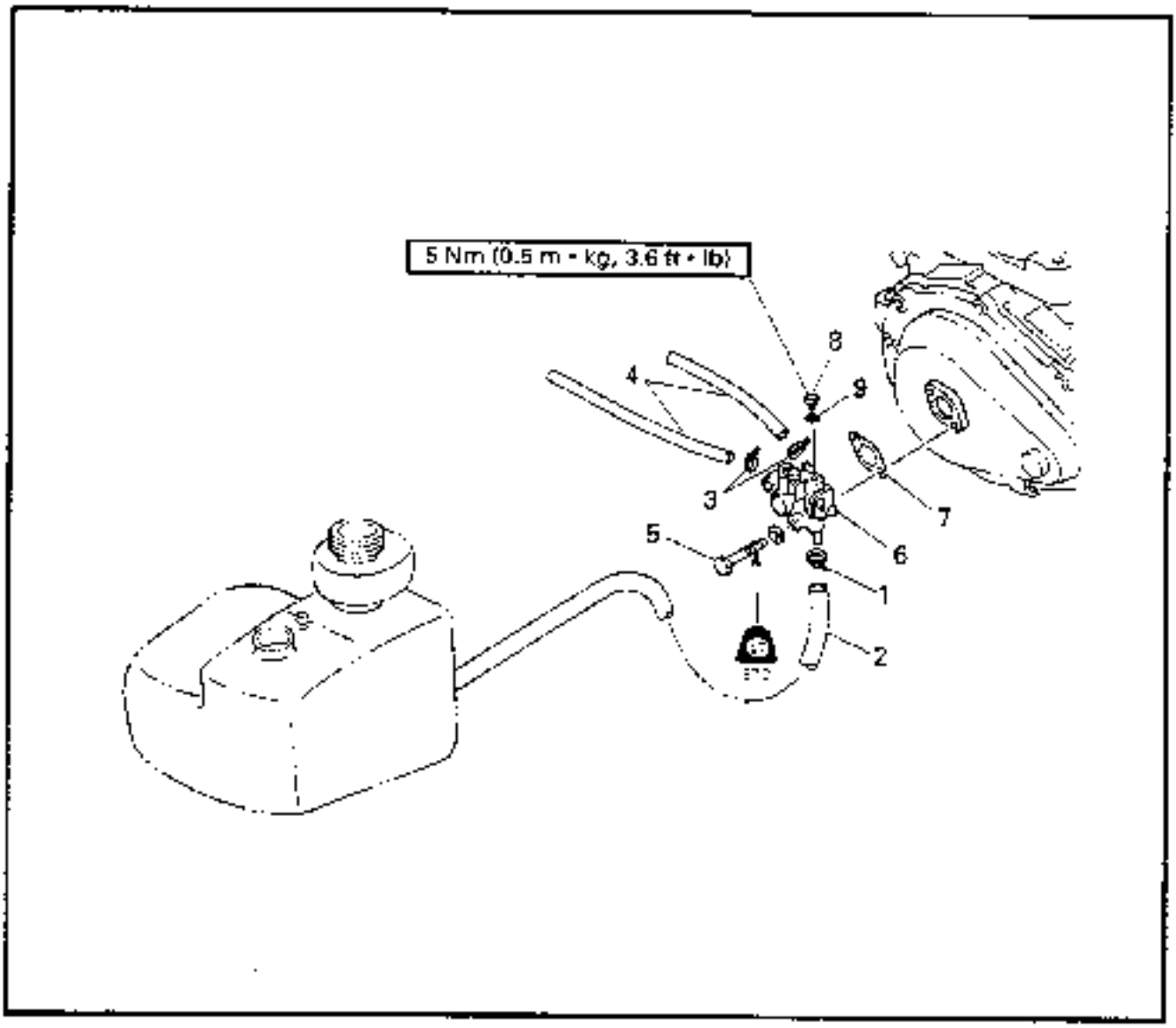
   Damage → Replace.

Filter inspection

1. Inspect:
   - Filter

   Contamination → Clean.
   Damage → Replace.

OIL PUMP
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	OIL PUMP REMOVAL		Follow the left "Step" for removal.
1	Hose tie	1	
2	Oil hose	1	
3	Hose tie	2	
4	Oil delivery hose	2	
5	Bolt (with washer)	2	
6	Oil pump	1	
7	Oil pump gasket	1	
8	Air bleeding screw	1	
9	Gasket	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Oil pump inspection

1. Inspect:
   - Oil pump
     Clog → Clean.
   - Driving tooth
     Wear/Damage → Replace.

Oil hose inspection

1. Inspect:
   - Oil hose
     Wear/Crack → Replace.

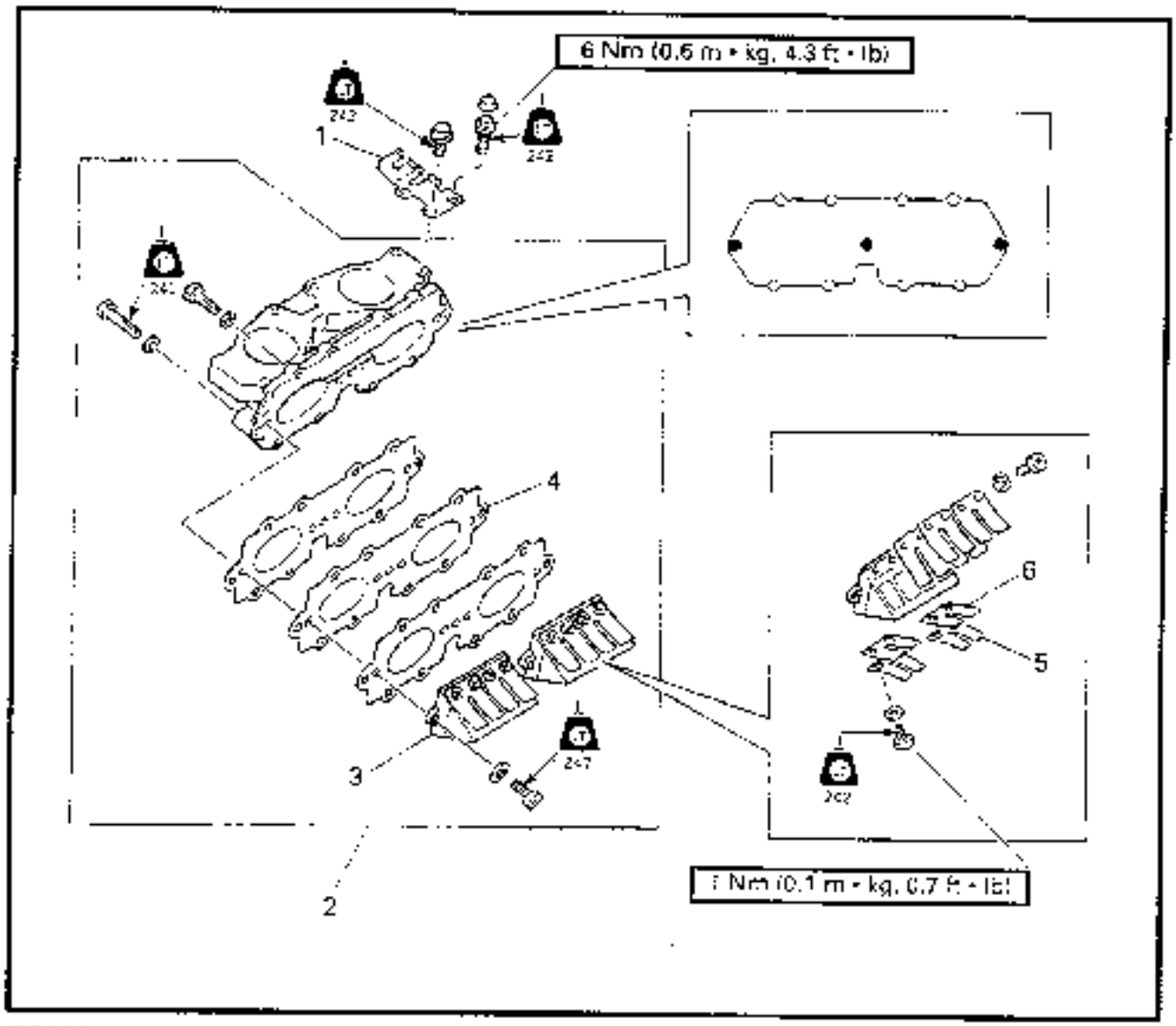
CAUTION:

After installing the oil injection system, bleed the system of air. Refer to "OIL INJECTION SYSTEM" in chapter 3.

CHAPTER 5
POWER UNIT

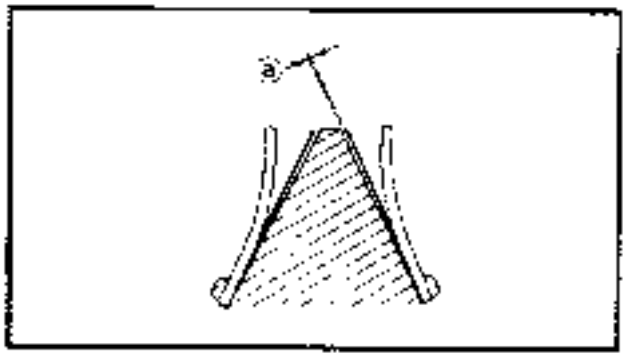
REED VALVE

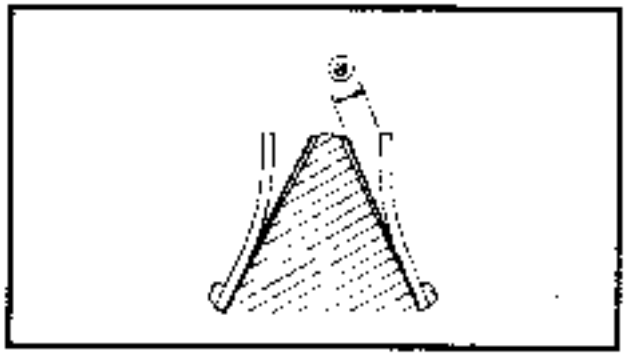
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	REED VALVE REMOVAL		Follow the left "Step" for removal.
	Carburetor assembly		Refer to "CARBURETOR REMOVAL" in chapter 4.
1	Plate	1	
2	Intake manifold assembly	1	
3	Reed valve assembly	2	
4	Plate	1	
5	Valve stopper	4	
6	Reed valve	4	
			Reverse the removal steps for installation.





SERVICE POINTS

Reed valve inspection

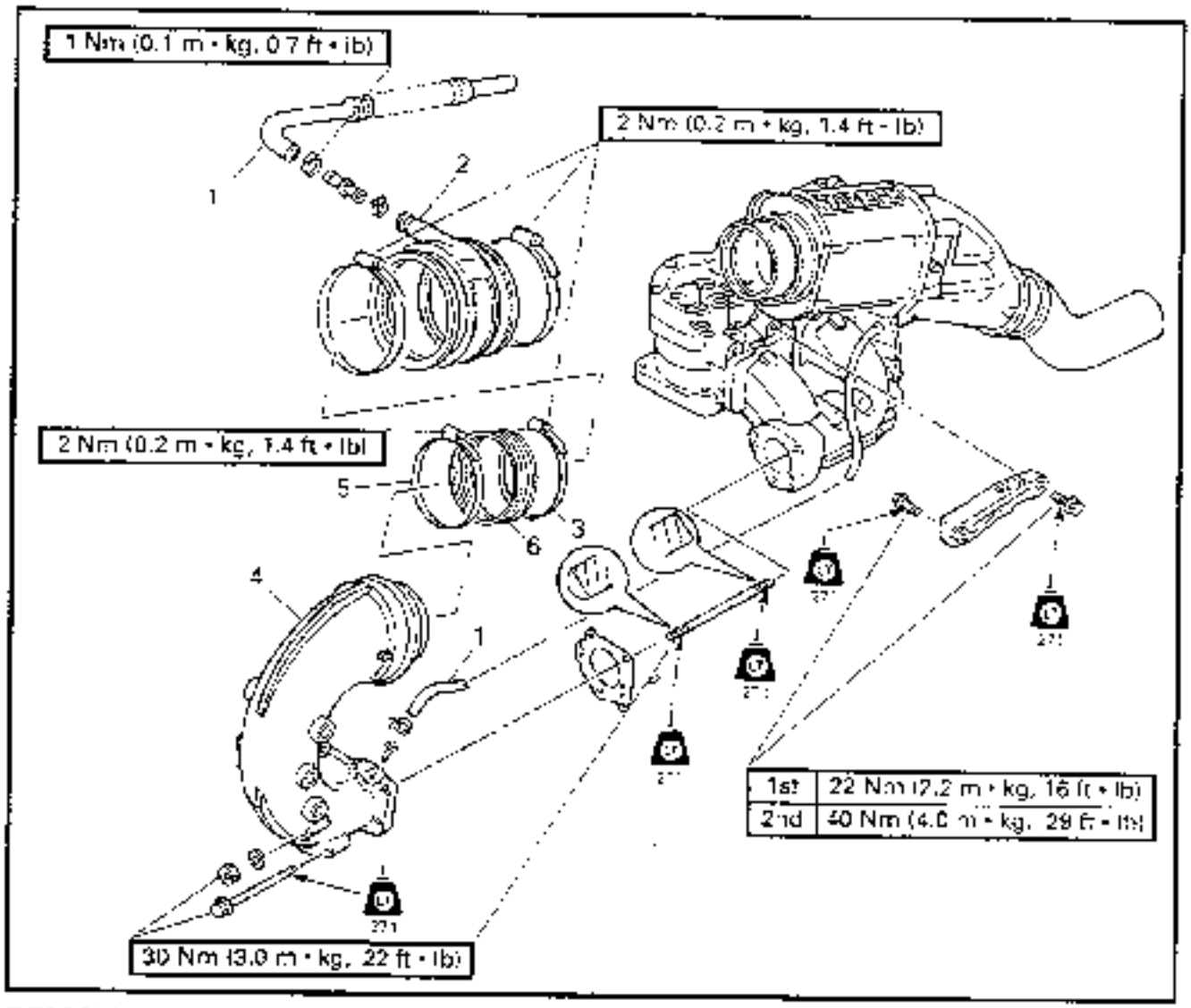
1. Inspect:
   - Reed valve
     Crack/Damage → Replace.
2. Measure:
   - Valve bending ⓐ
     Out of specification → Replace.

Valve bending limit:
0.2 mm (0.01 in)

3. Measure:
   - Valve stopper height ⓐ
     Out of specification → Adjust or replace.

Valve stopper height:
9.0 ± 0.2 mm (0.35 ± 0.01 in)

EXHAUST RING
EXPLODED DIAGRAM

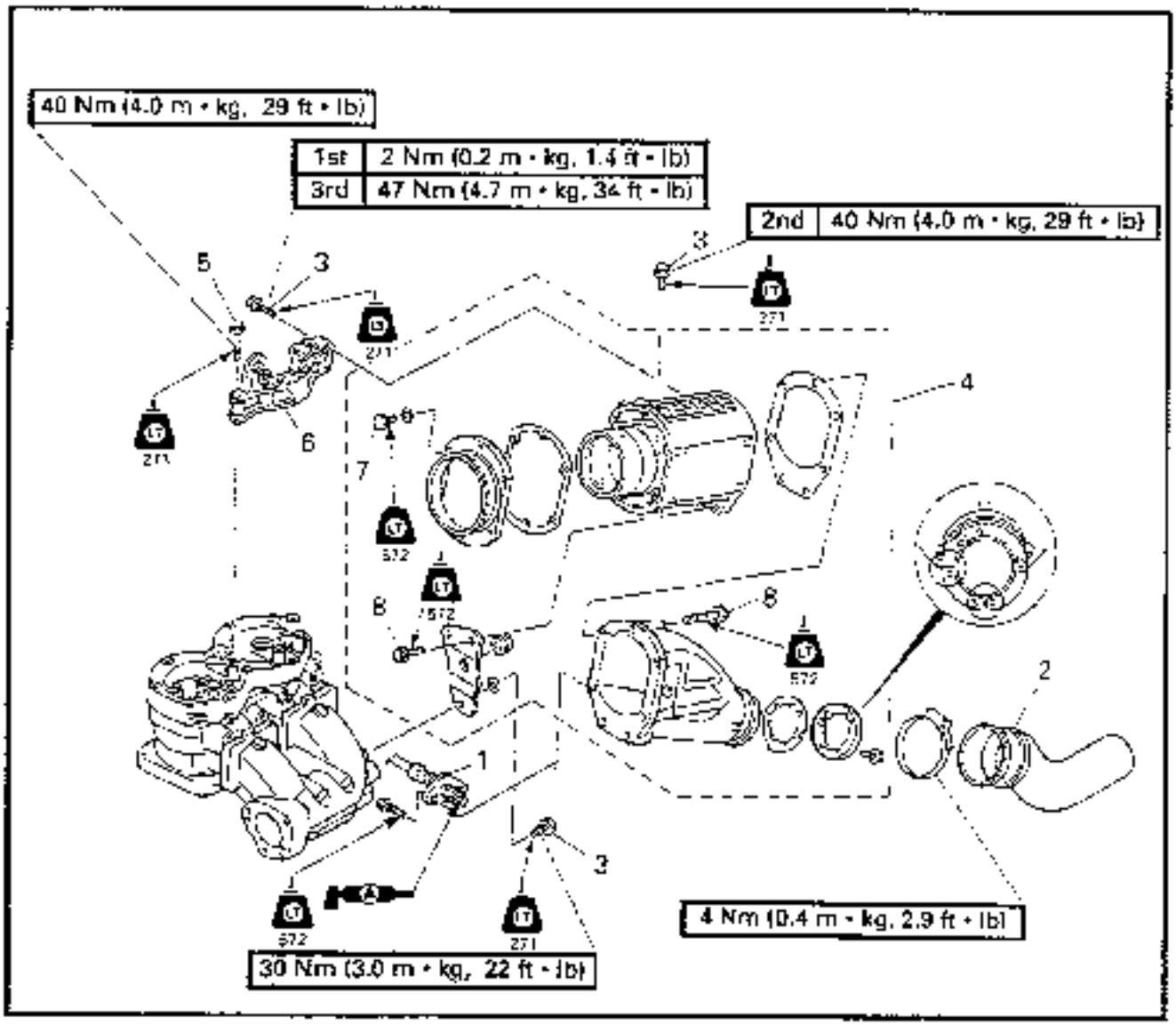


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	EXHAUST RING REMOVAL		Follow the left "Step" for removal.
	Engine unit		Refer to "ENGINE UNIT REMOVAL".
1	Water hose	2	
2	Exhaust joint	1	**NOTE:**
3	Clamp	1	• Loosen the clamp at the muffler side.
4	Ring	1	• Pull and slide the exhaust joint.
5	Clamp	1	**CAUTION:** **Tighten the clamp, before installing the ring on the muffler.**
6	Joint	1	
			Reverse the removal steps for installation.

EXHAUST CHAMBER

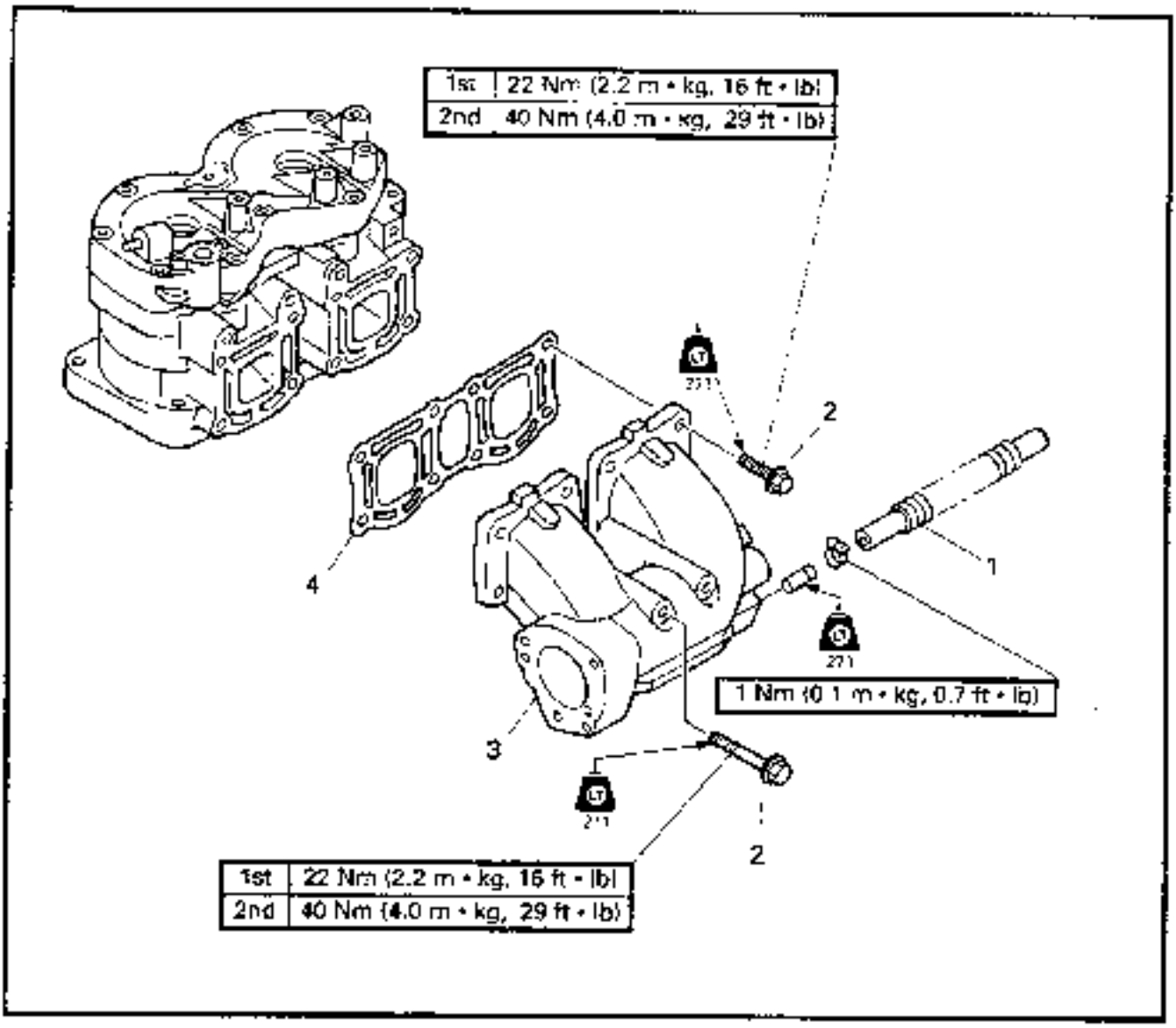
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	EXHAUST CHAMBER REMOVAL		Follow the left "Step" for removal.
	Ring		Refer to "EXHAUST RING".
1	Thermo switch	1	
2	Exhaust hose	1	
3	Bolt (muffler)	5	**CAUTION:**
4	Chamber assembly	1	**Tighten the bolts in sequence.**
5	Bolt (muffler stay)	4	
6	Muffler stay	1	
7	Bolt (with washer)	6	
8	Bolt (with washer)	7	
			Reverse the removal steps for installation.

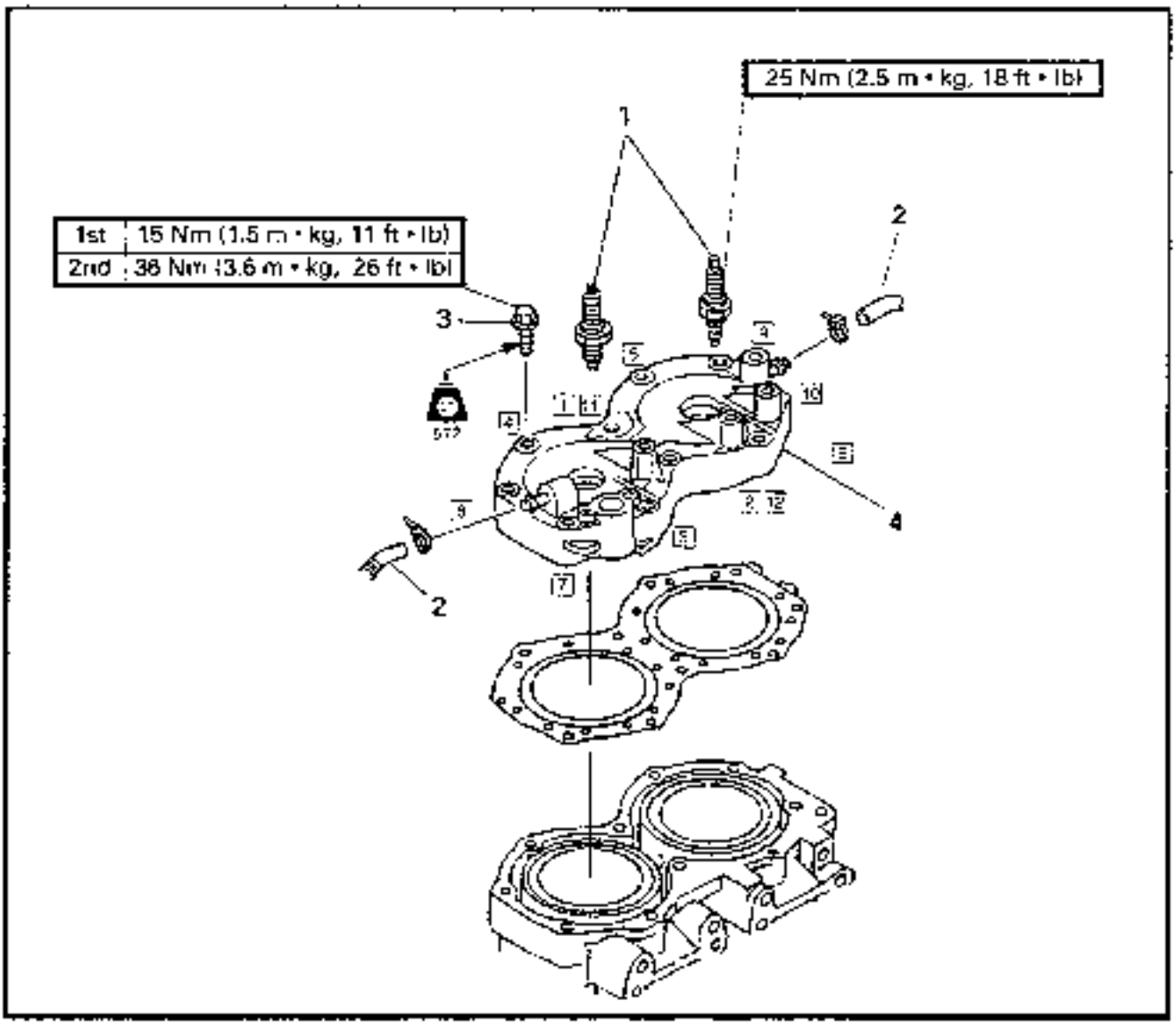
MUFFLER
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

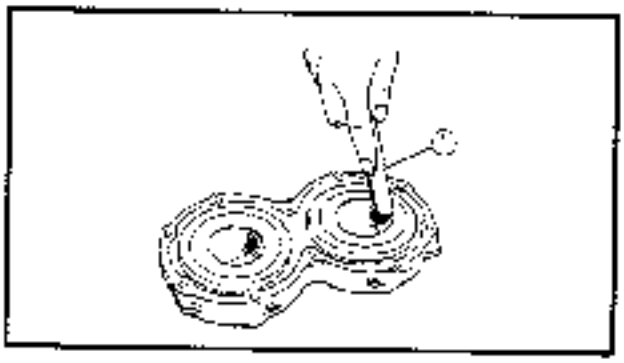
Step	Procedure/Part name	Q'ty	Service points
	MUFFLER REMOVAL		Follow the left "Step" for removal.
	Exhaust chamber		Refer to "EXHAUST CHAMBER".
1	Water inlet hose	1	
2	Bolt (with washer)	8	
3	Muffler	1	
4	Gasket	1	
			Reverse the removal steps for installation.

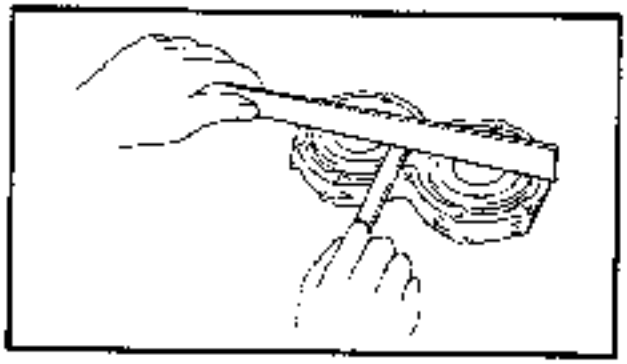
CYLINDER HEAD
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CYLINDER HEAD REMOVAL		Follow the left "Step" for removal.
	Muffler		Refer to "MUFFLER".
1	Spark plug	2	
2	Water hose	2	
3	Bolt (with washer)	10	**CAUTION:** **Tighten the bolts in sequence and in two steps of torque.**
4	Cylinder head	1	
			Reverse the removal steps for installation.





SERVICE POINTS

Cylinder head inspection

1. Eliminate:
   - Carbon deposits
     Use a rounded scraper ①.

NOTE:

Take care to avoid damaging the spark plug threads. Do not use a sharp instrument. Avoid scratching the aluminum.

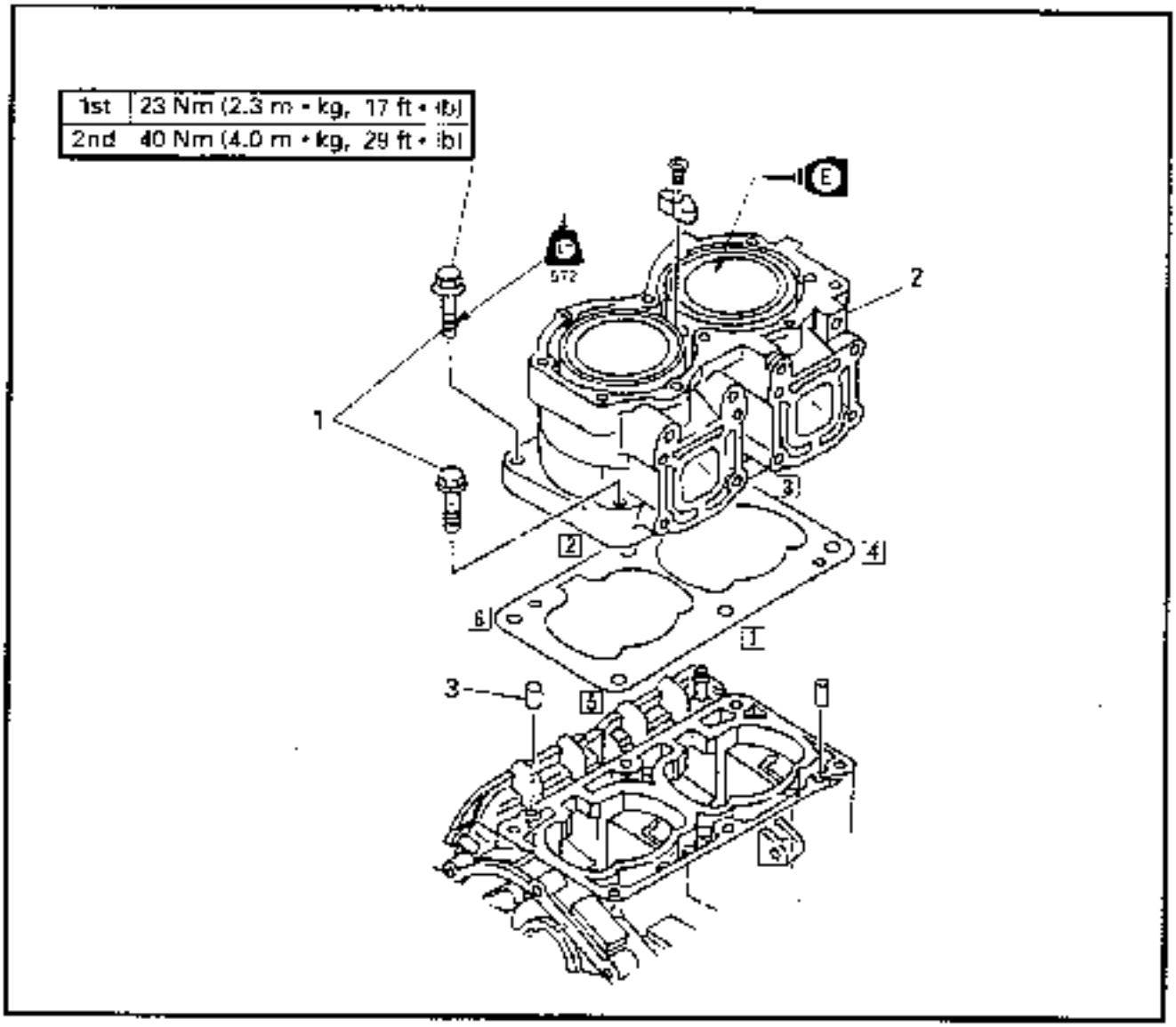
2. Inspect:
   - Cylinder head water jacket
     Mineral deposits/Corrosion → Clean.
3. Measure:
   - Cylinder head warpage
     Out of specification → Resurface.

Warpage limit:
0.1 mm (0.004 in)

Warpage measurement and resurfacing steps:

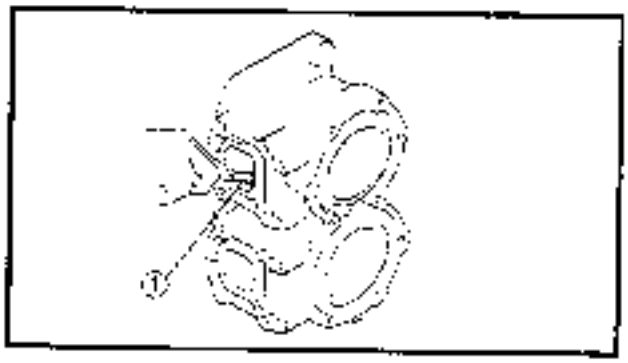
- Attach a straight edge and a thickness gauge on the cylinder head.
- Measure the warpage.

CYLINDER
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CYLINDER REMOVAL		Follow the left "Step" for removal.
	Cylinder head		Refer to "CYLINDER HEAD".
1	Bolt (with washer)	6	**CAUTION:** **Tighten the bolts in sequence and in two steps of torque.**
2	Cylinder	1	**CAUTION:** **After installing, check the smooth movement of the piston.**
3	Pin	2	Reverse the removal steps for installation.

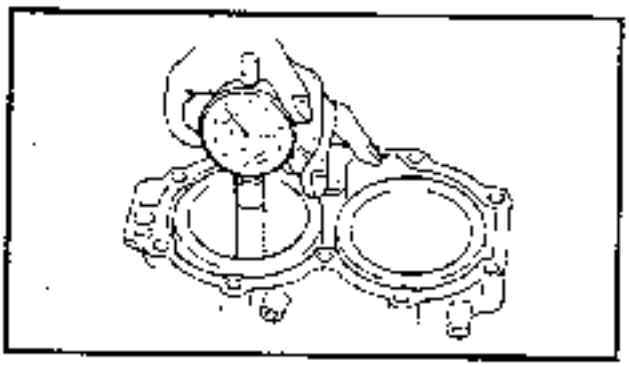


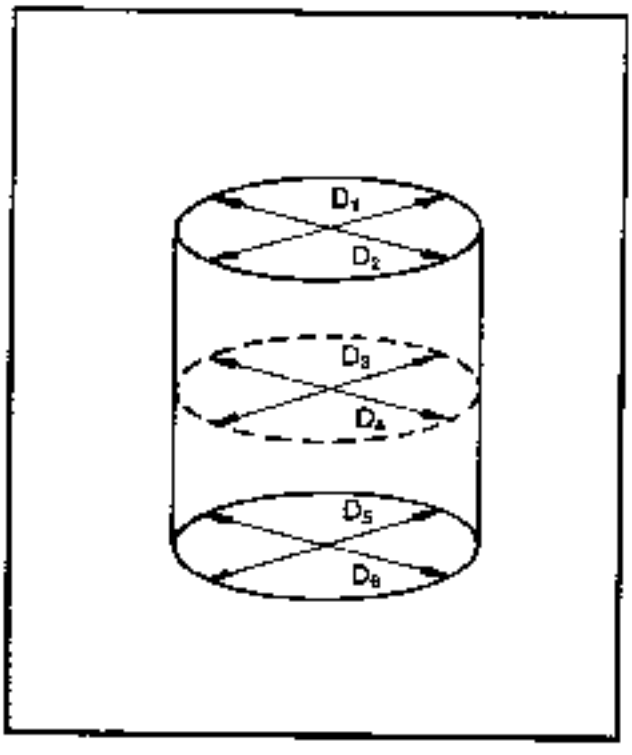
SERVICE POINTS

Cylinder inspection

1. Eliminate:
   - Carbon deposits
     Use a rounded scraper ①.

2. Inspect:
   - Cylinder water jacket
     Mineral deposits/Corrosion → Clean.
   - Cylinder inner surface
     Score marks → Repair or replace.
     Use #600 ~ 800 grit wet sandpaper.





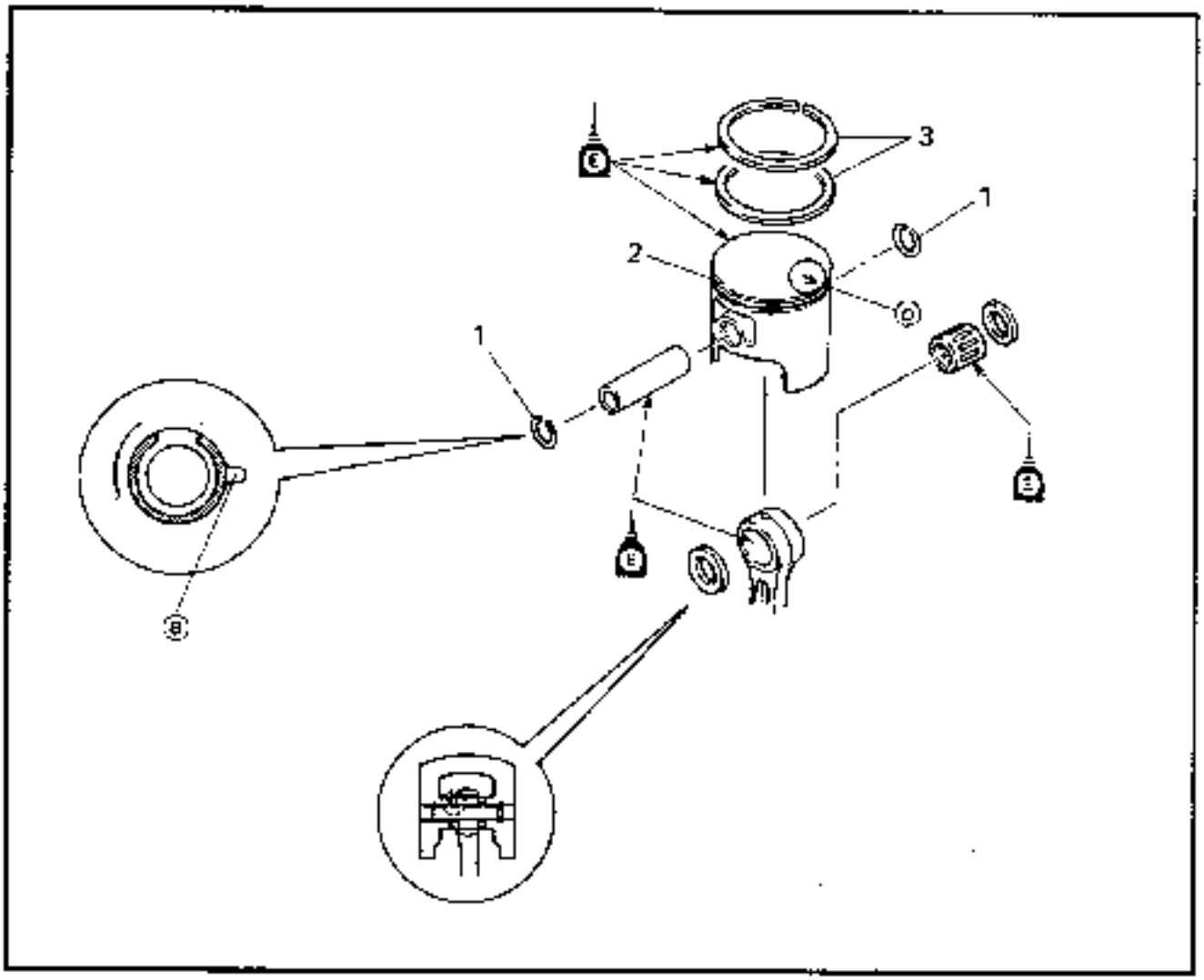
3. Measure:
   - Cylinder bore "D"
     Use cylinder gauge.
     Out of limit → Replace.

NOTE:
Measure the cylinder bore "D" in parallel. Then, find the average of the measurement

	Standard	Limit
Cylinder bore "D"	84.00 ~ 84.02 mm (3.307 ~ 3.308 in)	84.1 mm (3.31 in)
Taper "T"	—	0.08 mm (0.003 in)
Out of round "R"	—	0.05 mm (0.002 in)
D = Maximum (D_1 ~ D_6) T = (Maximum D_1 or D_2) − (Maximum D_5 or D_6) R = (Maximum D_1, D_3 or D_5) − (Minimum D_2, D_4 or D_6)		

PISTON

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	PISTON REMOVAL		Follow the left "Step" for removal.
	Cylinder		Refer to "CYLINDER".
1	Piston pin clip	4	**CAUTION:** **Do not allow the clip open ends to meet the piston pin slot ⓐ.**
2	Piston	2	**NOTE:** Be sure the arrow ⓑ side is positioned exhaust side.
3	Piston ring	4	**CAUTION:** **Align each end gap with the locating pin.**
			Reverse the removal steps for installation.

SERVICE POINTS

Piston pin clip removal and installation

1. Remove and install:
   - Piston pin clip

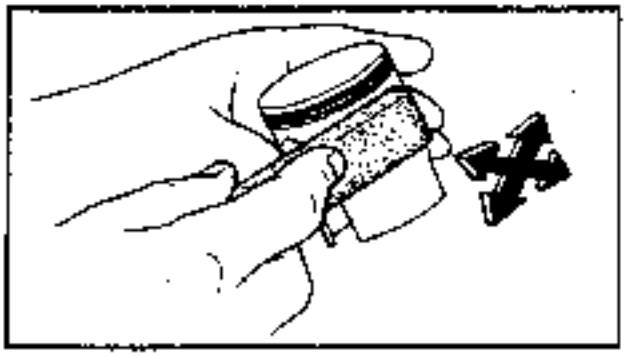
NOTE:

Before removing and installing piston pin clip, cover crankcase with a clean rag to prevent piston pin clip from falling into crankcase cavity.

Piston inspection

1. Eliminate:
   - Carbon deposits

   From the piston crown and ring groove.

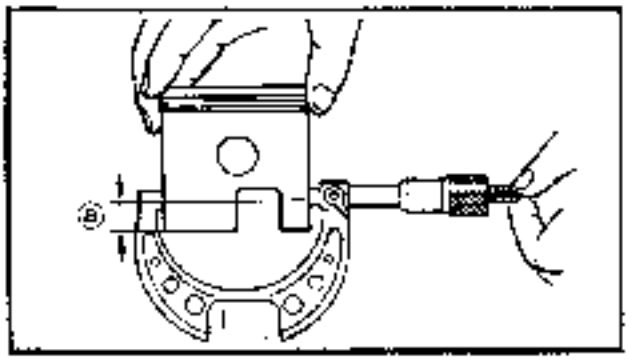


2. Inspect:
   - Piston wall

   Score marks → Repair or replace.
   Use #600 ~ 800 grit wet sandpaper.

NOTE:

Sand in a criss-cross pattern. Do not sand excessively.



3. Measure:
   - Piston skirt diameter

   Use micrometer.
   Out of specification → Replace.

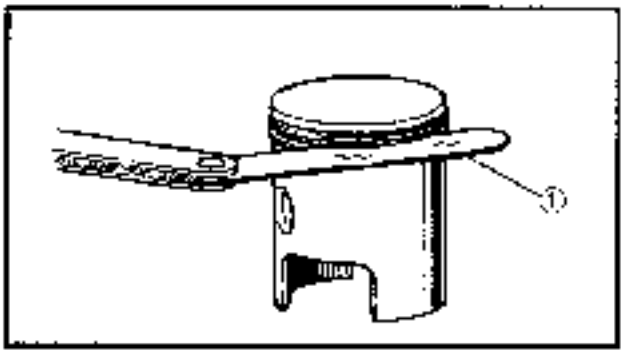
Piston diameter	Distance ⓐ
83.902 ~ 83.921 mm (3.3032 ~ 3.3040 in)	10 mm (0.39 in)

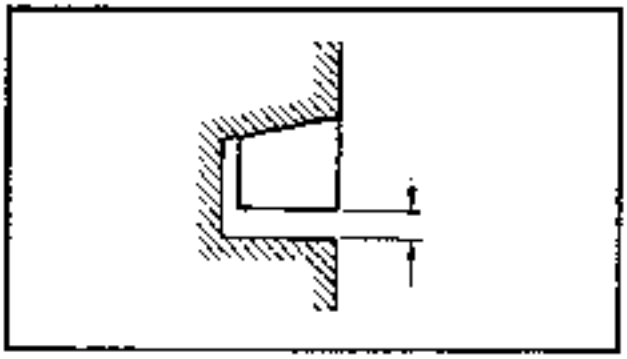
4. Calculate:
   - Piston clearance

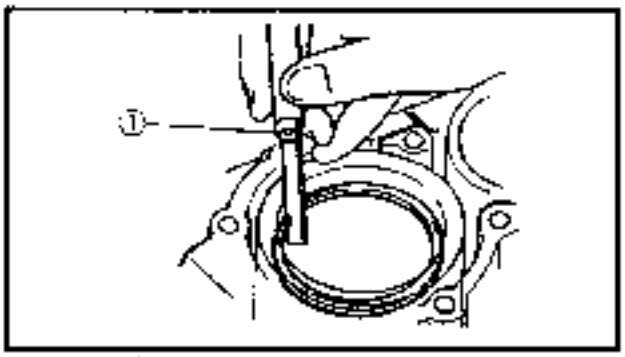
   Out of limit → Replace piston, piston rings as a set.

PISTON CLEARANCE = CYLINDER BORE − PISTON DIAMETER

Piston clearance:
0.100 ~ 0.105 mm
(0.0039 ~ 0.0041 in)







Piston ring inspection

1. Measure:
   - Side clearance

   Out of specification → Replace piston and/or ring.

   Use a thickness gauge ①.

Side clearance:
Top
2nd
0.02 ~ 0.07 mm (0.001 ~ 0.003 in)

2. Measure:
   - End gap

   Out of specification → Replace rings as a set.

   Use a thickness gauge ①.

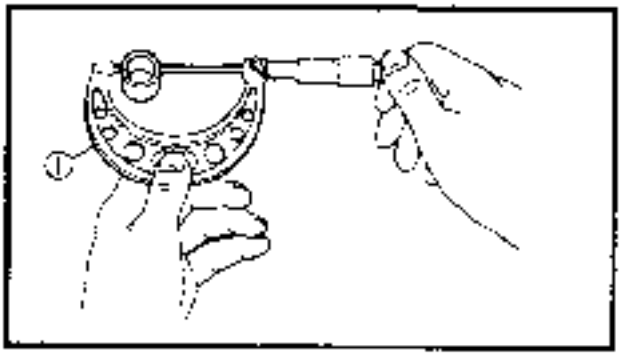
End gap:
Top
2nd
0.2 ~ 0.4 mm (0.008 ~ 0.016 in)

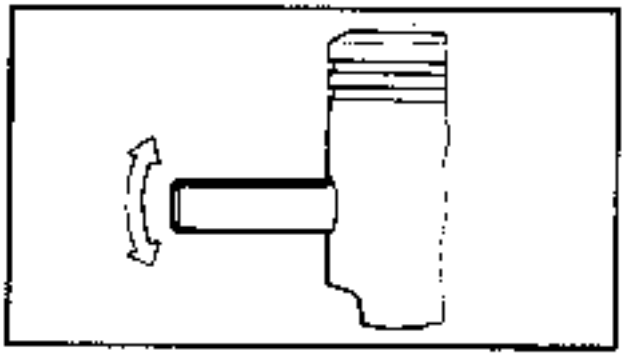
NOTE:
- Install the piston ring into the cylinder.
- Push the ring with the piston crown.

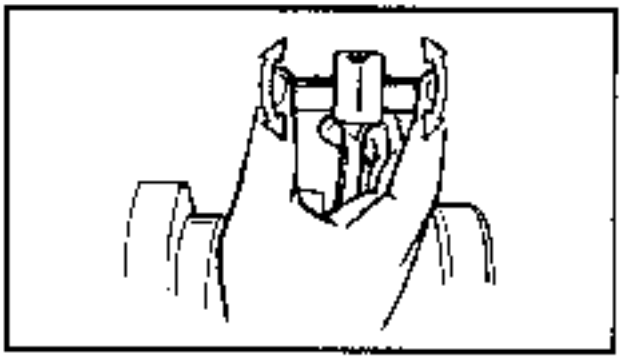
Piston pin and bearing inspection

1. Inspect:
   - Piston pin
   - Bearing

   Signs of heat discoloration → Replace.







2. Measure:
   - Piston pin outside diameter
     Use micrometer ①.
     Out of limit → Replace.

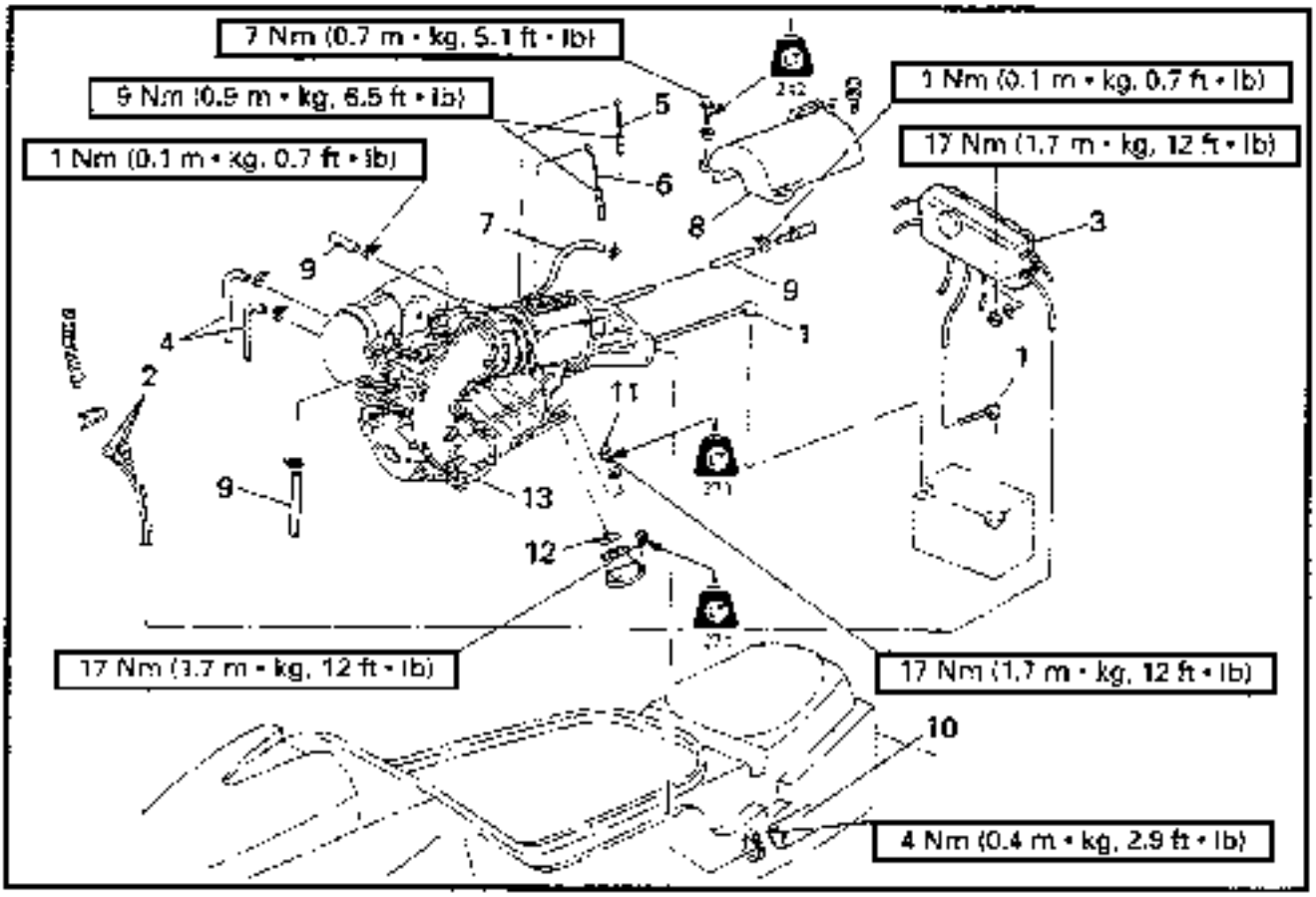
Piston pin outside diameter:
Standard
19.995 ~ 20.000 mm
(0.7872 ~ 0.7874 in)
Limit
19.98 mm (0.786 in)

3. Check:
   - Free play (when the piston pin is in place in the piston)
     There should be no noticeable free play.
     Free play exist → Replace piston pin and/or piston.

4. Check:
   - Free play
     There should be no noticeable free play.
     Free play exist → Inspect the connecting rod for wear/Replace the pin and/or connecting rod as required.

ENGINE UNIT REMOVAL

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	ENGINE UNIT REMOVAL		Follow the left "Step" for removal.
	Fuel tank		Refer to "FUEL TANK REMOVAL" in chapter 4.
1	Battery lead	2	
2	Lead coupler	3	
3	Electrical box	1	
4	Fuel hose	2	
5	Throttle cable	1	
6	Choke cable	1	
7	Grease hose	1	
8	Coupling cover	1	
9	Water hose	3	
10	Exhaust hose	1	
11	Engine mounting bolt	4	
12	Shim	*	
13	Engine unit	1	
			Reverse the removal steps for installation.

*: As required

SERVICE POINTS

Shim removal

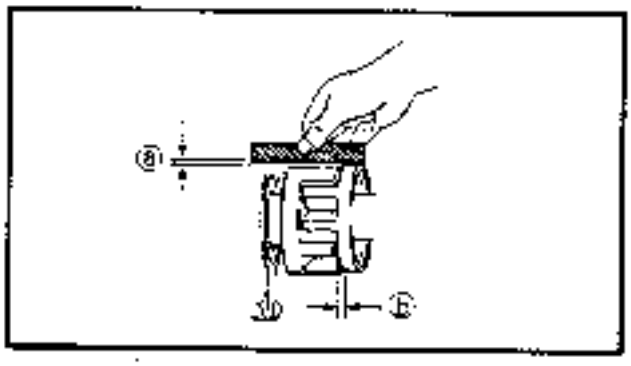
1. Remove:
   - Shim

NOTE:

Make the engine mounting shim packs prior to the mounting bolt removal for ease of reassembly and coupling alignment.

Mount bracket inspection

1. Inspect:
   - Mount bracket
     Crack/Damage → Replace.



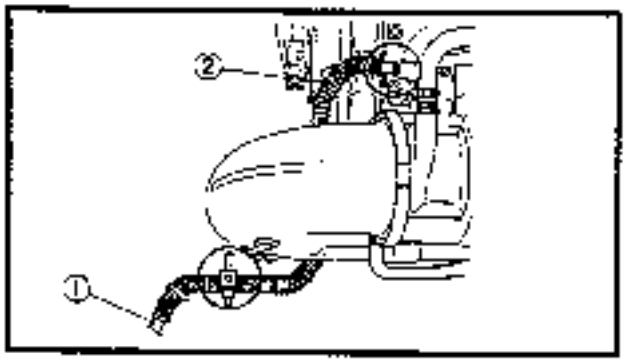
Coupling clearance inspection

1. Measure:
   - Clearance ⓐ
   - Clearance ⓑ
     Out of specification → Adjust using shim.

NOTE:

- Before measuring the clearance, remove the coupling rubber.
- Attach a straight edge and a thickness gauge.

Clearance ⓐ:
0 ~ 1.0 mm (0 ~ 0.039 in)
Clearance ⓑ:
2 ~ 4 mm (0.079 ~ 0.157 in)



Pilot water hose installation

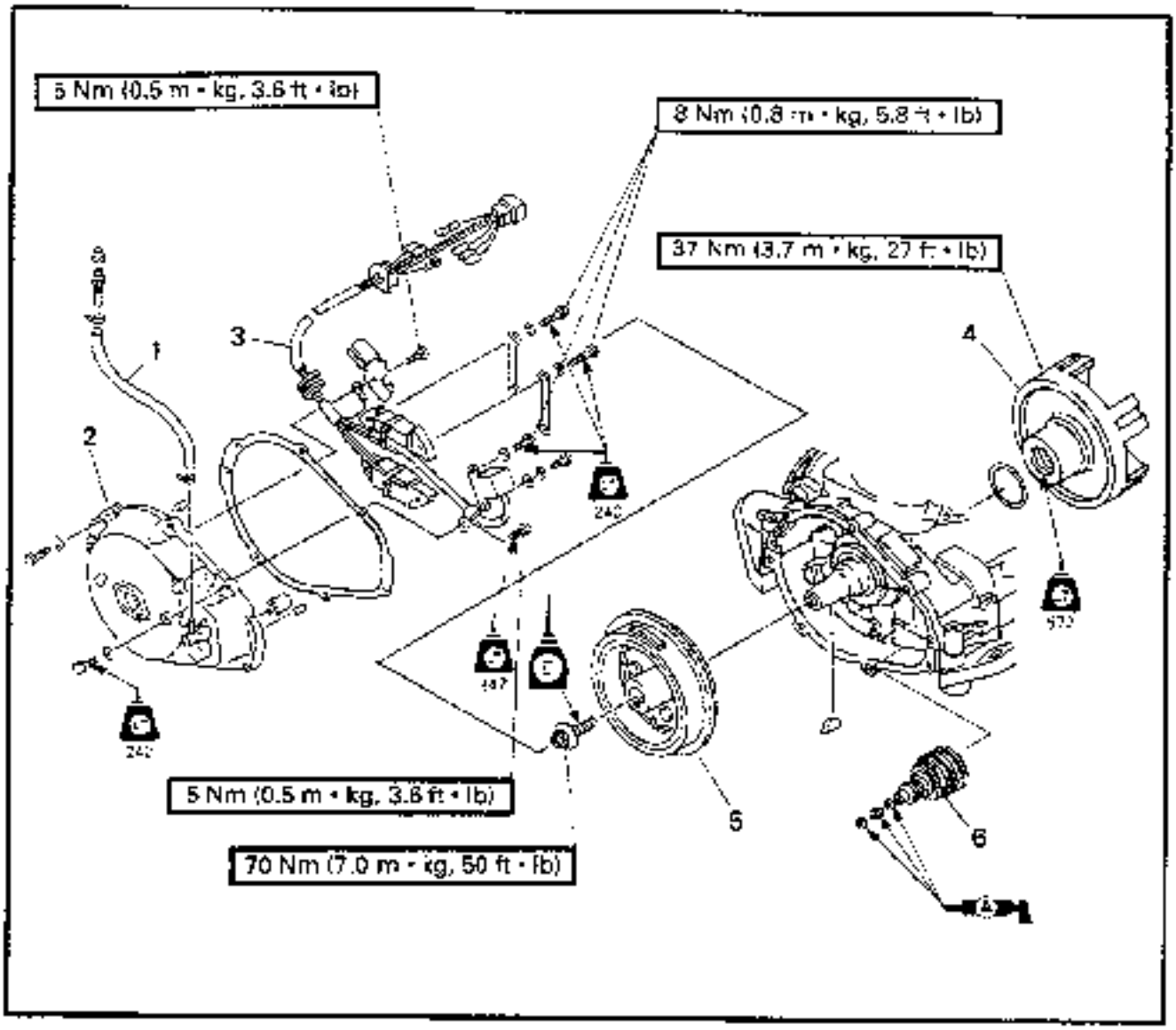
1. Install:
   - Pilot water hose ①

NOTE:

Clamp the water pilot hose with its cover tube ② contacting the cylinder head.

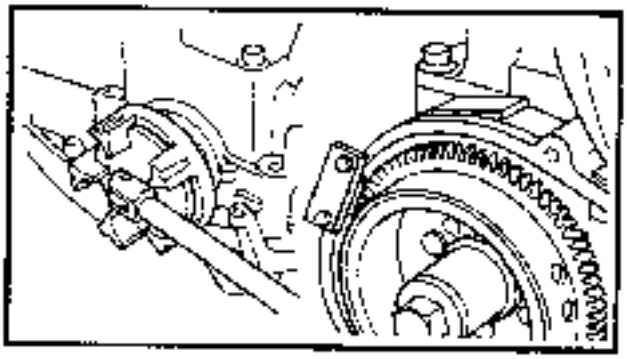
FLYWHEEL MAGNETO AND BASE

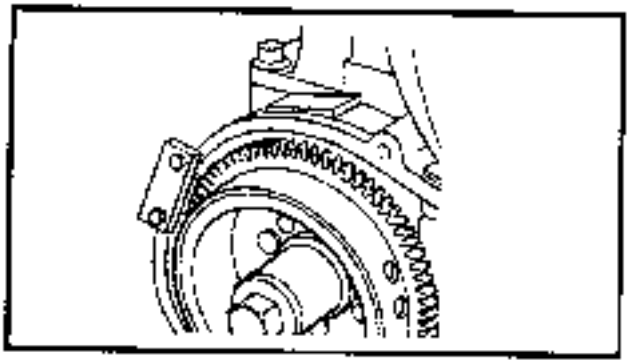
EXPLODED DIAGRAM

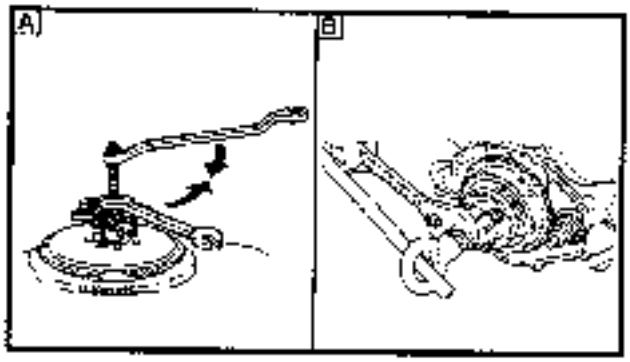


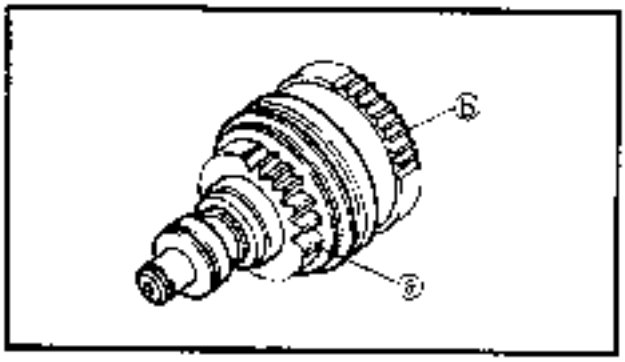
REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	FLYWHEEL MAGNETO AND BASE DISASSEMBLY		Follow the left "Step" for removal.
	Fuel tank		Refer to "FUEL TANK REMOVAL" in chapter 4.
	Oil pump		Refer to "OIL PUMP" in chapter 4.
1	Grease hose	1	
2	Flywheel cover	1	
3	Base assembly	1	
4	Coupling flange	1	
5	Flywheel magneto	1	
6	Idle gear assembly	1	
			Reverse the removal steps for installation.









SERVICE POINTS

Coupling flange removal and installation

1. Remove and install:
   - Coupling flange

	Coupler wrench: YW-06546/90890-06546 **Flywheel holder:** YW-06547/90890-06547

Flywheel magneto removal and installation

1. Remove and install:
   - Bolt

	Flywheel holder: YW-06547/90890-06547

2. Remove:
   - Flywheel magneto

	Flywheel puller: YB-06117/90890-06521

A For USA and CANADA
B Except for USA and CANADA

CAUTION:

To prevent damage to the engine or tools, screw in the flywheel puller set- bolts evenly and completely so that the puller plate is parallel to the flywheel.

Coupling flange inspection

1. Inspect:
   - Coupling flange
     Wear/Damage → Replace.

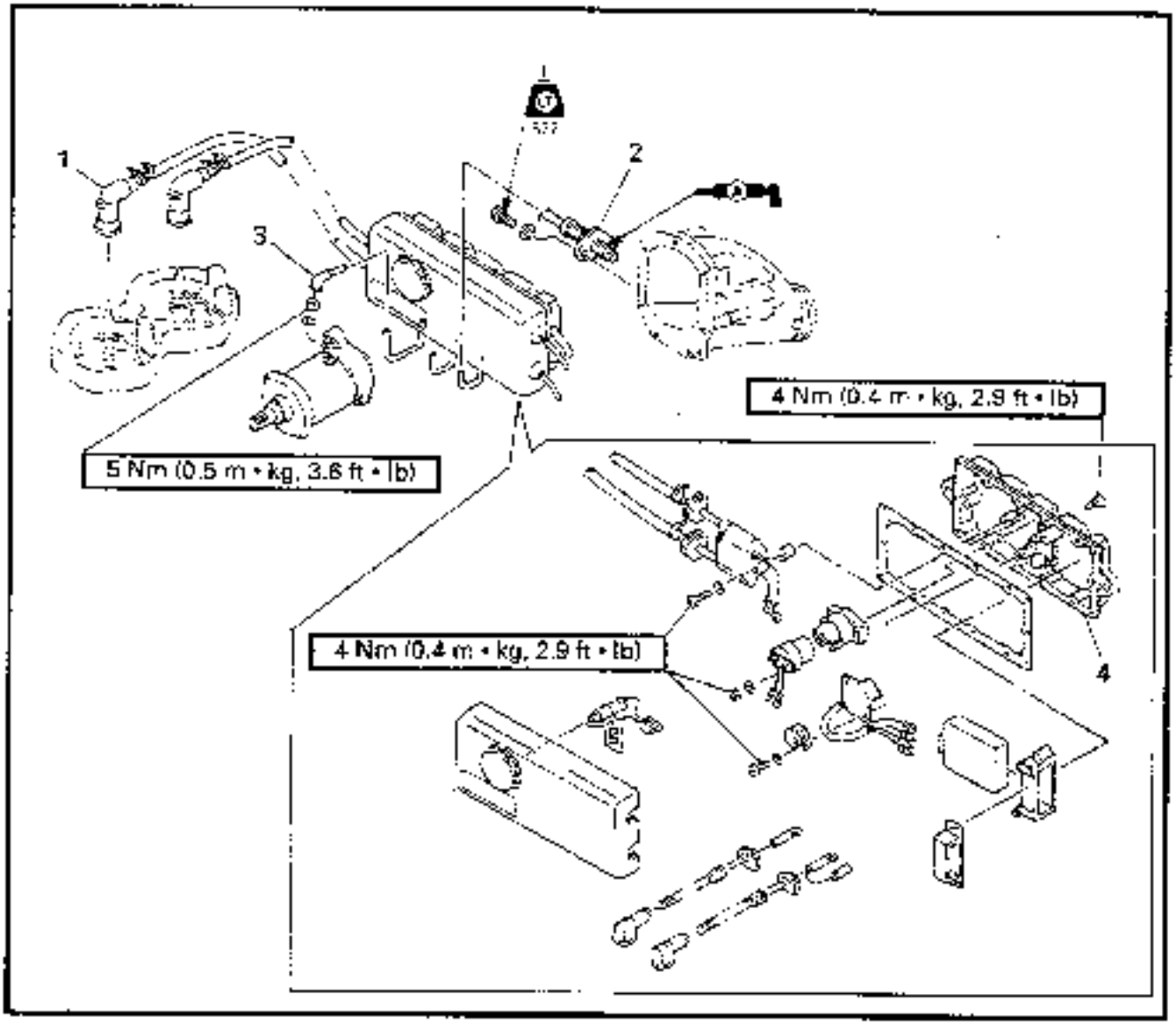
Flywheel magneto inspection

1. Inspect:
   - Flywheel gear
     Wear/Damage → Replace.

Idle gear assembly inspection

1. Inspect:
   - Pinion gear ⓐ
   - Inner gear ⓑ
     Wear/Damage → Replace.
2. Check:
   - Clutch movement
     Unsmooth movement → Replace.

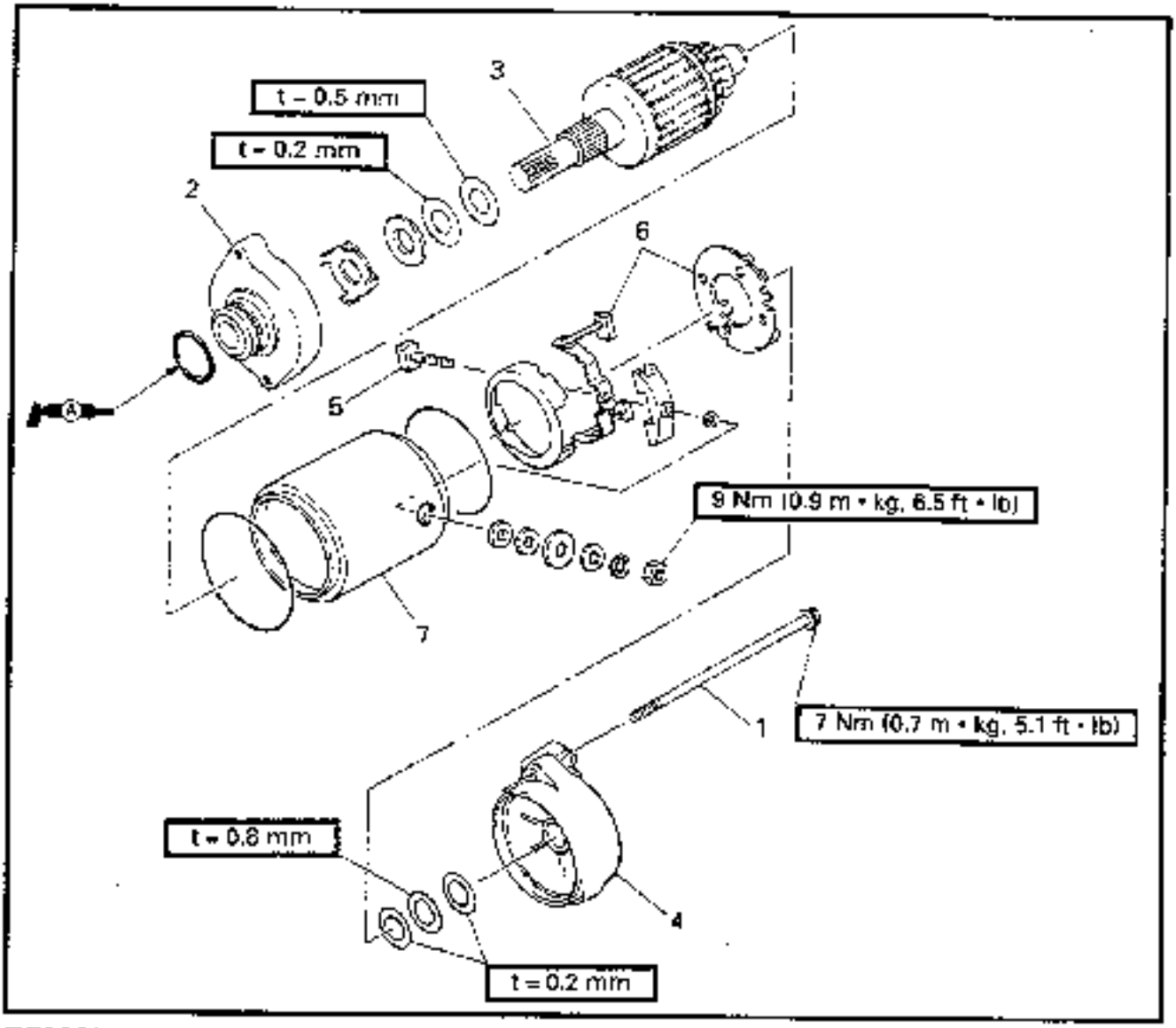
ELECTRICAL UNIT
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

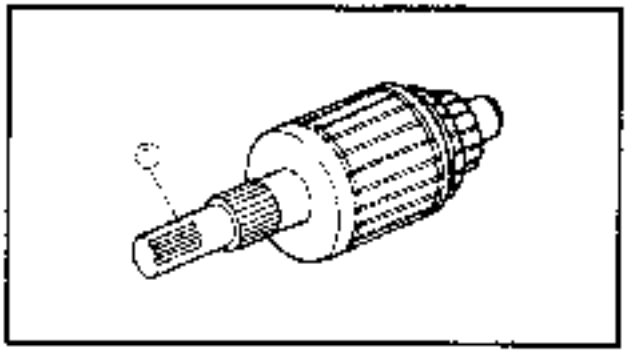
Step	Procedure/Part name	Q'ty	Service points
	ELECTRICAL UNIT REMOVAL		Follow the left "Step" for removal.
	Electrical box		Refer to "ENGINE UNIT REMOVAL".
	Base assembly		Refer to "FLYWHEEL MAGNETO AND BASE".
1	Spark plug cap	2	
2	Thermo switch	1	
3	Starter motor negative lead	1	
4	Housing	1	
			Reverse the removal steps for installation.

STARTER MOTOR
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

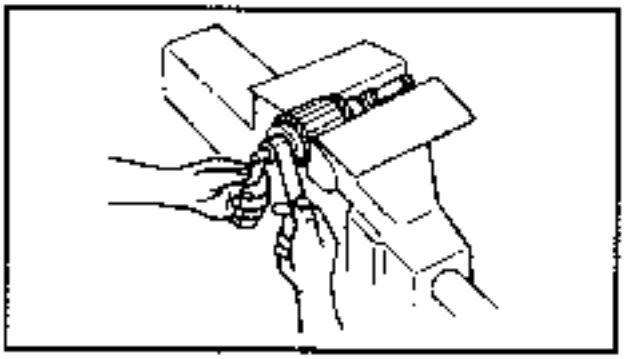
Step	Procedure/Part name	Q'ty	Service points
	STARTER MOTOR DISASSEMBLY		Follow the left "Step" for removal.
	Starter motor assembly		Refer to "CRANKCASE".
1	Through bolt	2	
2	Front bracket	1	
3	Armature assembly	1	
4	Rear bracket	1	
5	Bolt	1	
6	Brush holder	1	
7	York assembly	1	
			Reverse the removal steps for installation.



SERVICE POINTS

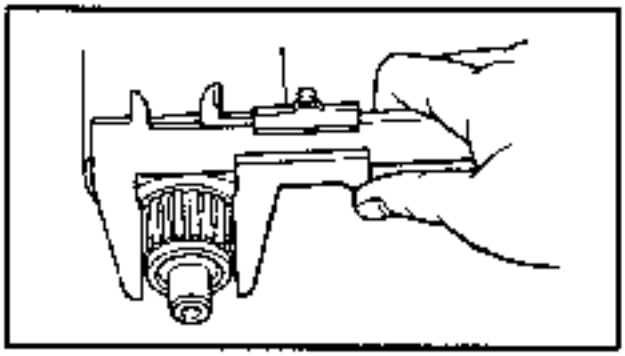
Pinion Inspection

1. Inspect:
   - Pinion teeth ○
     Wear/Damage → Replace.



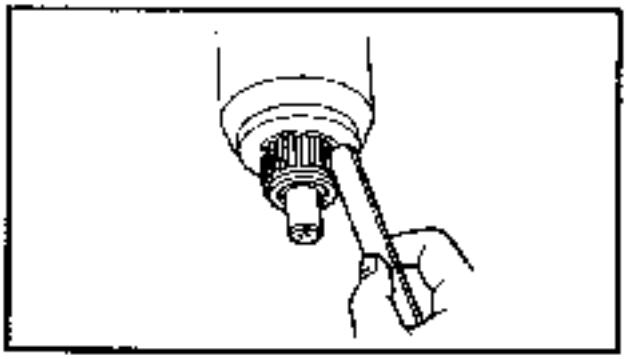
Armature Inspection

1. Inspect:
   - Commutator
     Dirty → Clean with #600 abrasive paper.



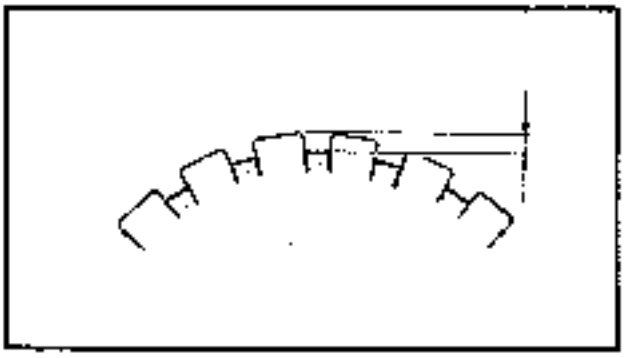
2. Measure:
   - Commutator diameter
     Out of specification → Replace.

Commutator diameter:
Limit 27 mm (1.06 in)



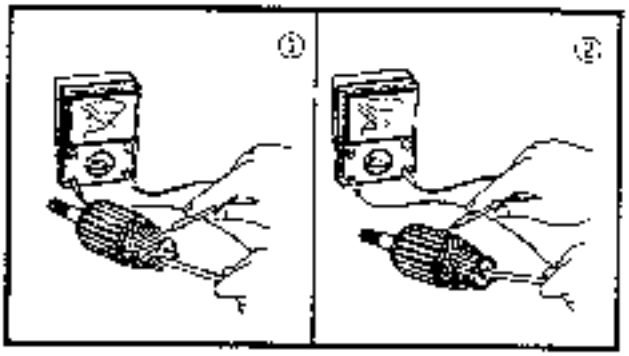
3. Check:
   - Commutator undercut
     Clog/Dirt → Clean.

NOTE:
Remove all particles of mica and metal using compressed air.



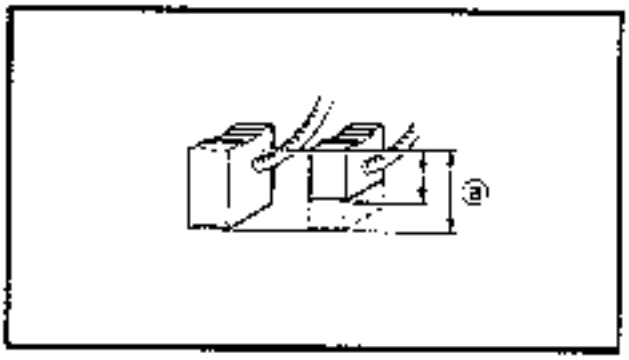
4. Measure:
   - Commutator undercut
     Out of specification → Replace.

Commutator undercut:
Limit 0.2 mm (0.008 in)



5. Inspect:
   - Armature coil continuity
     Out of specification → Replace.

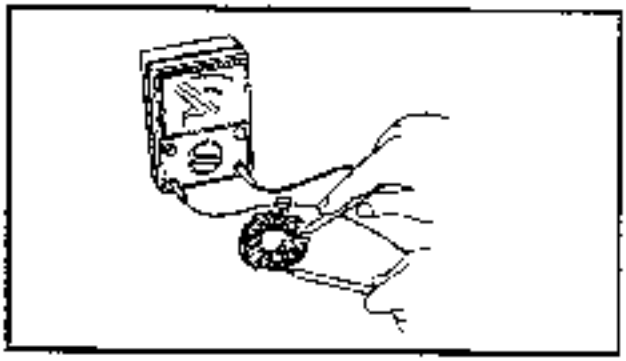
Armature coil continuity:	
Commutator segments ①	Continuity
Segment - Laminations ②	Discontinuity
Segment - Shaft	Discontinuity



Brush holder inspection

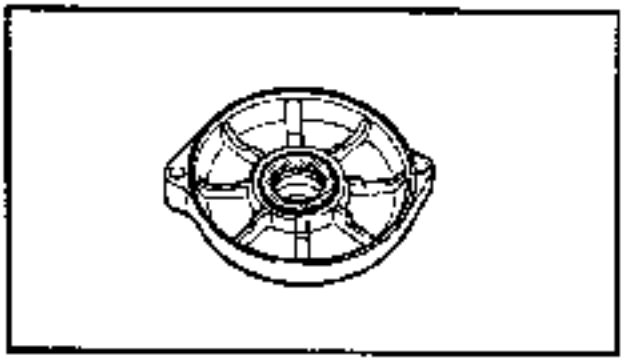
1. Measure:
   - Brush length ⓐ
     Out of specification → Replace.

Brush length: Limit 6.5 mm (0.26 in)



2. Check:
   - Brush holder continuity
     Out of specification → Replace.

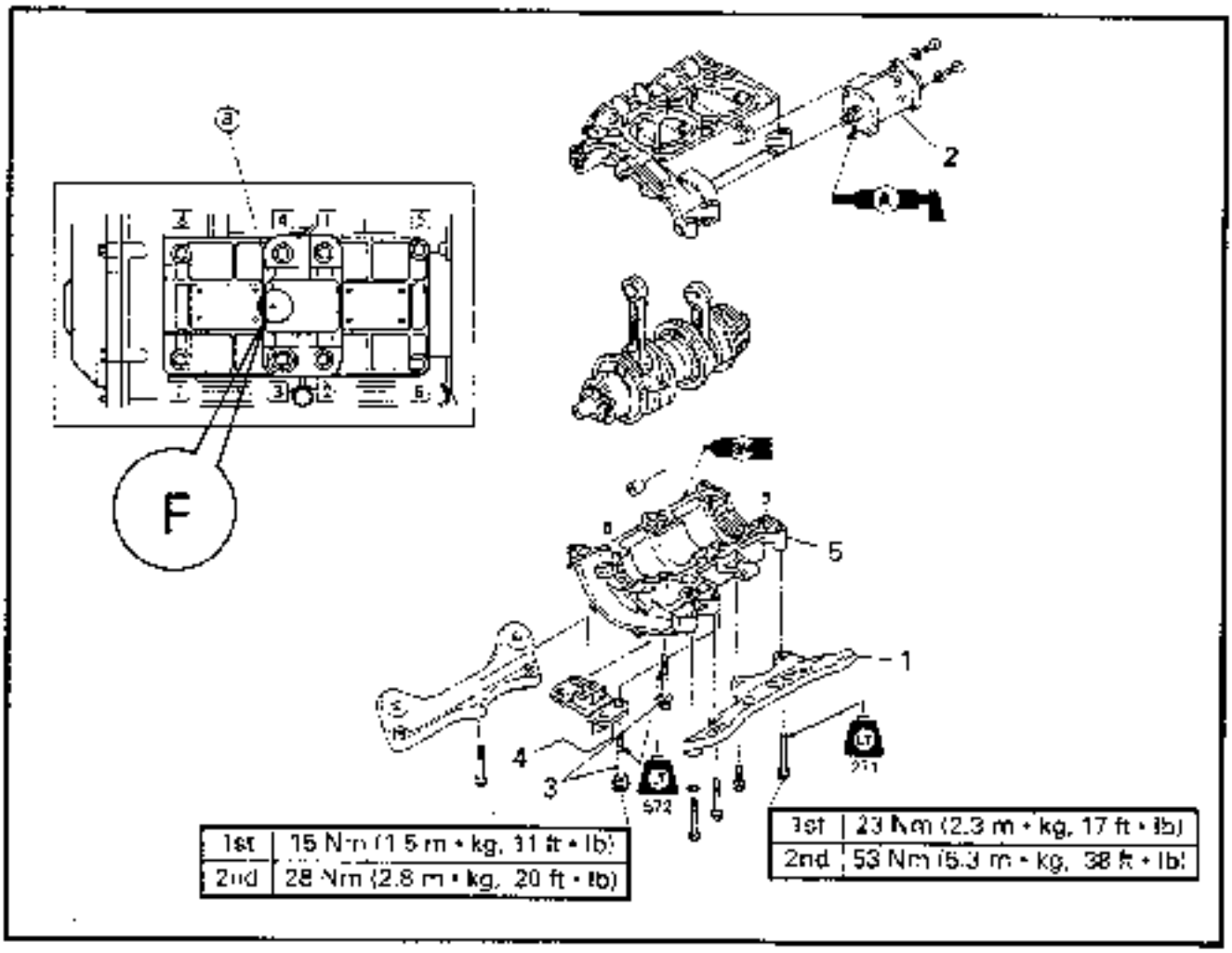
Brush holder continuity:	
Brush holder - Base	Discontinuity



Cover inspection

1. Inspect:
   - Cover bushing
     Wear/Damage → Replace the cover.

CRANKCASE
EXPLODED DIAGRAM



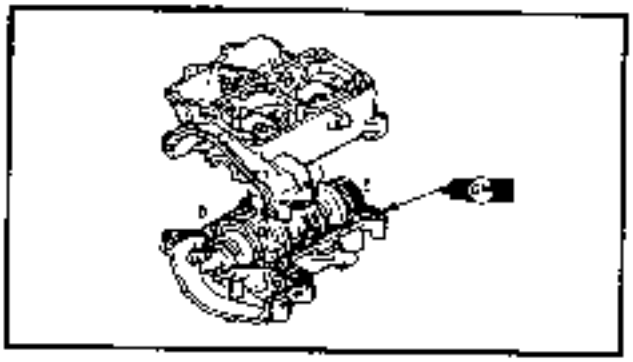
REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CRANKCASE DISASSEMBLY		Follow the left "Step" for removal.
	Base assembly		Refer to "FLYWHEEL MAGNETO AND BASE".
	Piston		Refer to "PISTON".
1	Engine mount bracket	2	
2	Starter motor	1	
3	Bolt (with washer)	8	**CAUTION:** **Tighten the bolts in sequence and in two steps of torque.**
4	Mount rubber	1	**NOTE:** Be sure that the "F" mark ⓐ is on the flywheel side.
5	Crankcase	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Crankcase inspection

1. Inspect:
   - Contacting surface
     Scratch → Replace.
   - Crankcase
     Crack/Damage → Replace.



Crankcase installation

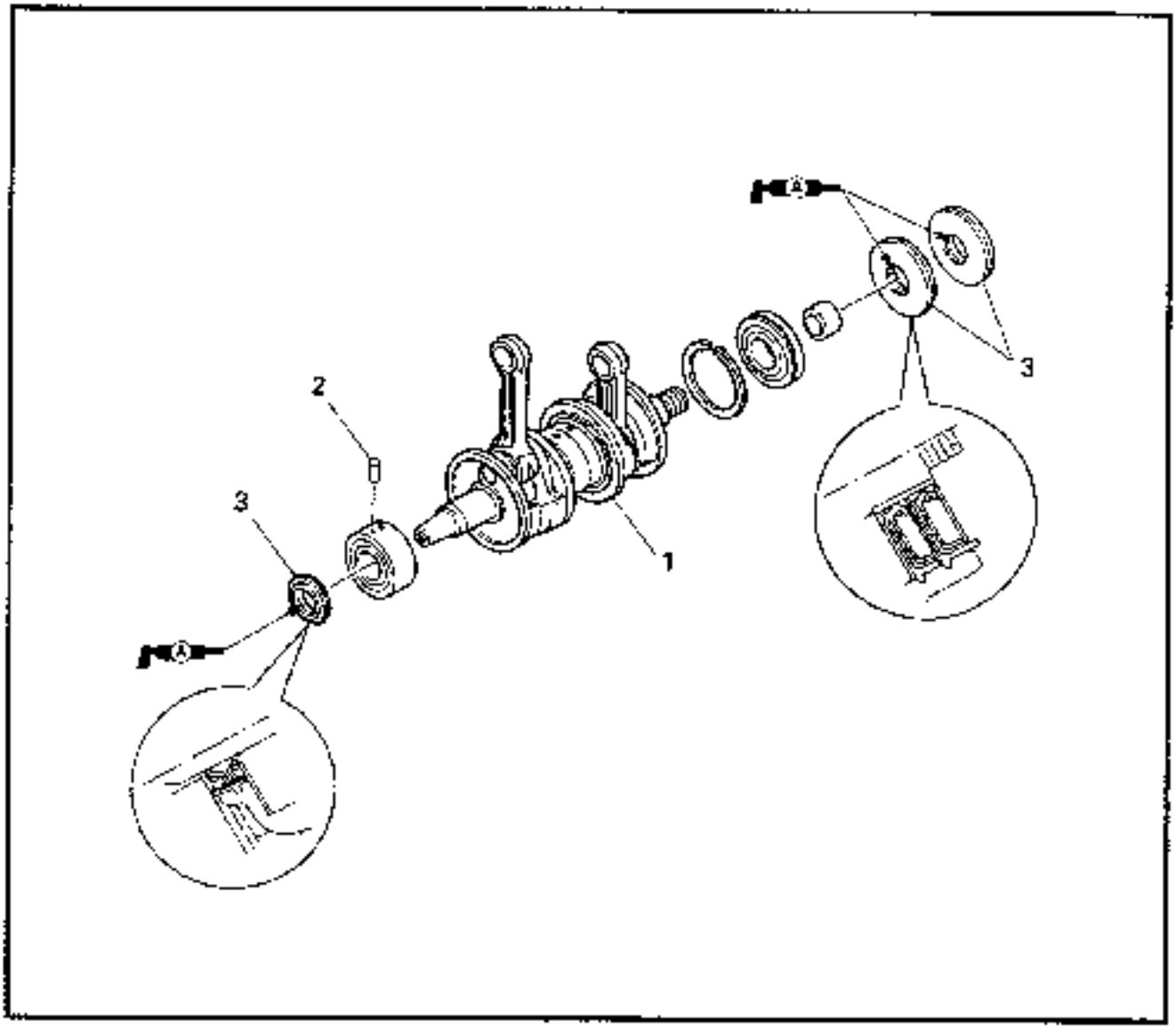
1. Apply:
   - Gasket Maker

NOTE:

Clean the contacting surface of crankcase before applying the Gasket Maker.

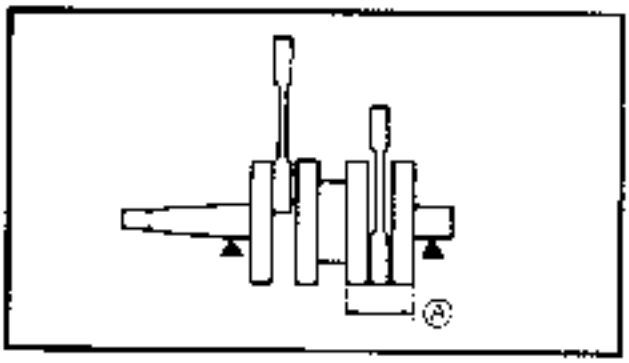
2. Check:
   - Crankshaft
     Rough action → Repair.

CRANKSHAFT
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CRANKSHAFT REMOVAL		Follow the left "Step" for removal.
	Crankcase		Refer to "CRANKCASE".
1	Crankshaft assembly	1	**CAUTION:** **• Do not allow the bearing clip open ends to meet the crankcase contacting surface.** **• Place the locating pins on the bearing into the crankcase body groove.**
2	Dowel pin	5	
3	Oil seal	3	
			Reverse the removal steps for installation.



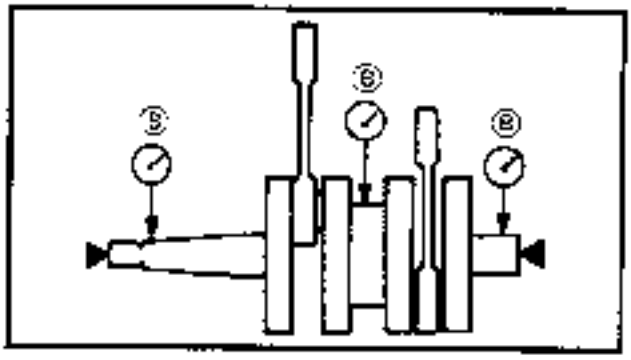
SERVICE POINTS

Crankshaft inspection

1. Measure:
   - Crank width Ⓐ

   Out of specification → Replace.

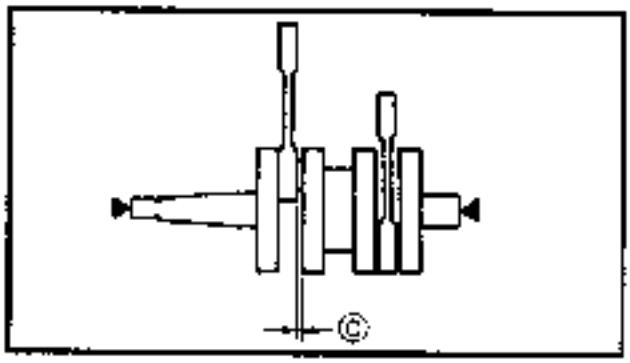
Crank width:
61.95 ~ 62.00 mm
(2.439 ~ 2.441 in)



2. Measure:
   - Deflection Ⓑ

   Use a dial gauge.
   Out of specification → Replace.

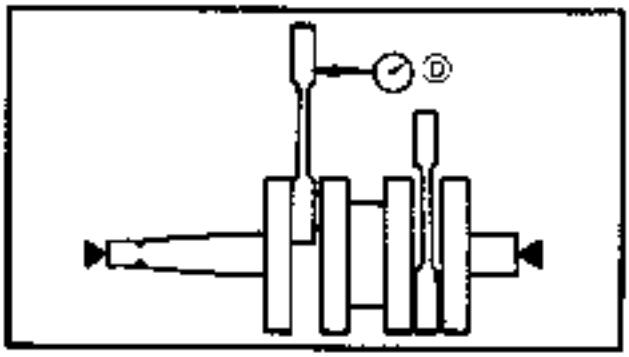
Maximum deflection:
0.05 mm (0.002 in)



3. Measure:
   - Big end side clearance Ⓒ

   Use a thickness gauge.
   Out of specification → Replace.

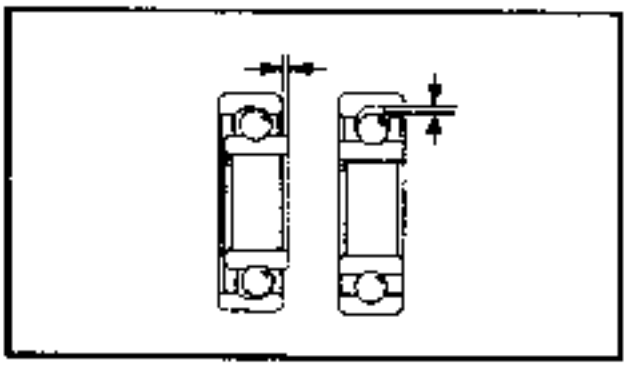
Big end side clearance:
0.25 ~ 0.75 mm
(0.010 ~ 0.030 in)



4. Measure:
   - Small end free play Ⓓ

   Use a dial gauge.
   Out of specification → Replace.

Small end free play:
2.0 mm (0.08 in)



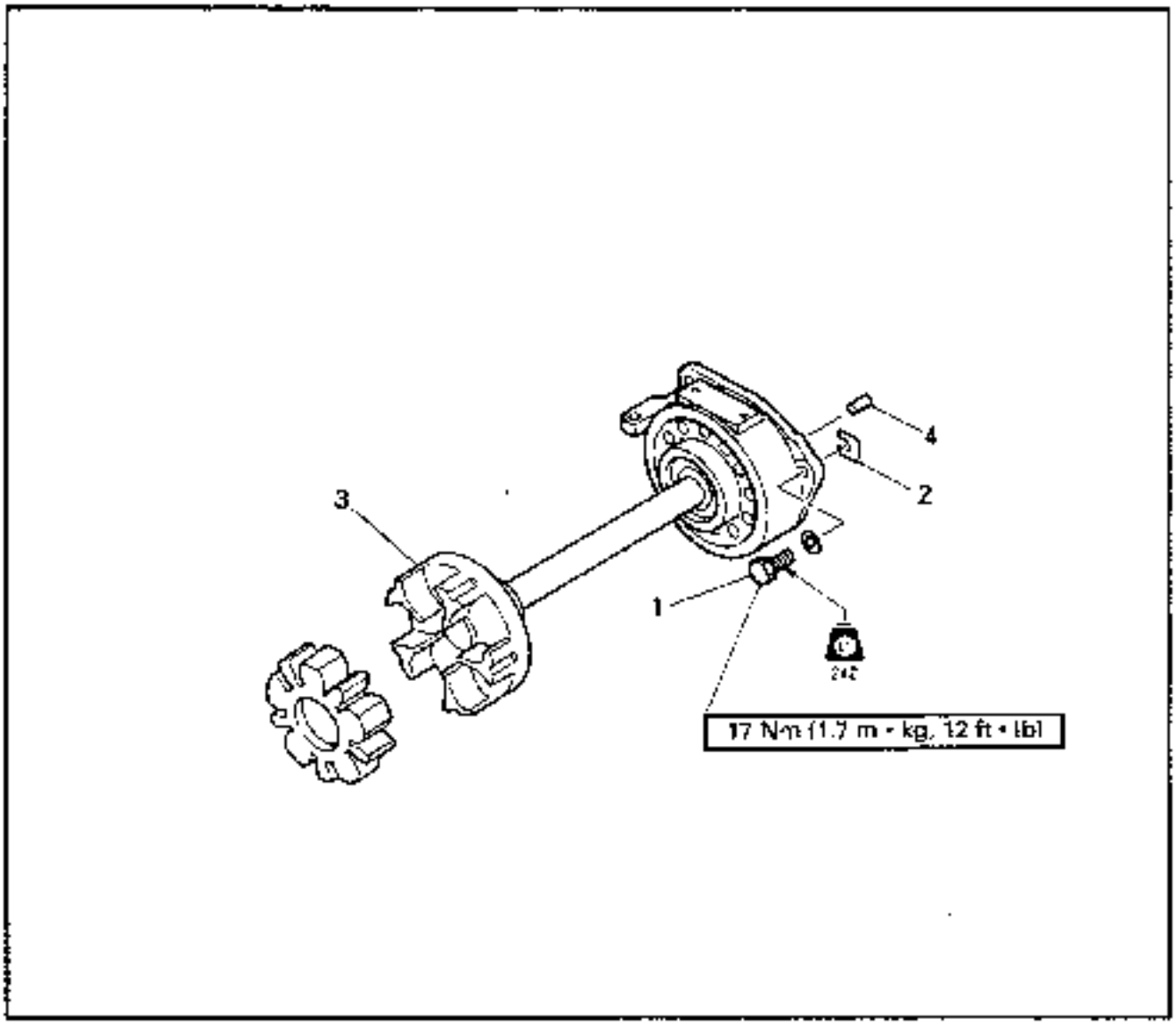
5. Inspect:
   - Crankshaft bearing

   Pitting/Damage → Replace.

NOTE:
Lubricate the bearings immediately after examining them to prevent rusting.

INTERMEDIATE HOUSING REMOVAL

EXPLODED DIAGRAM

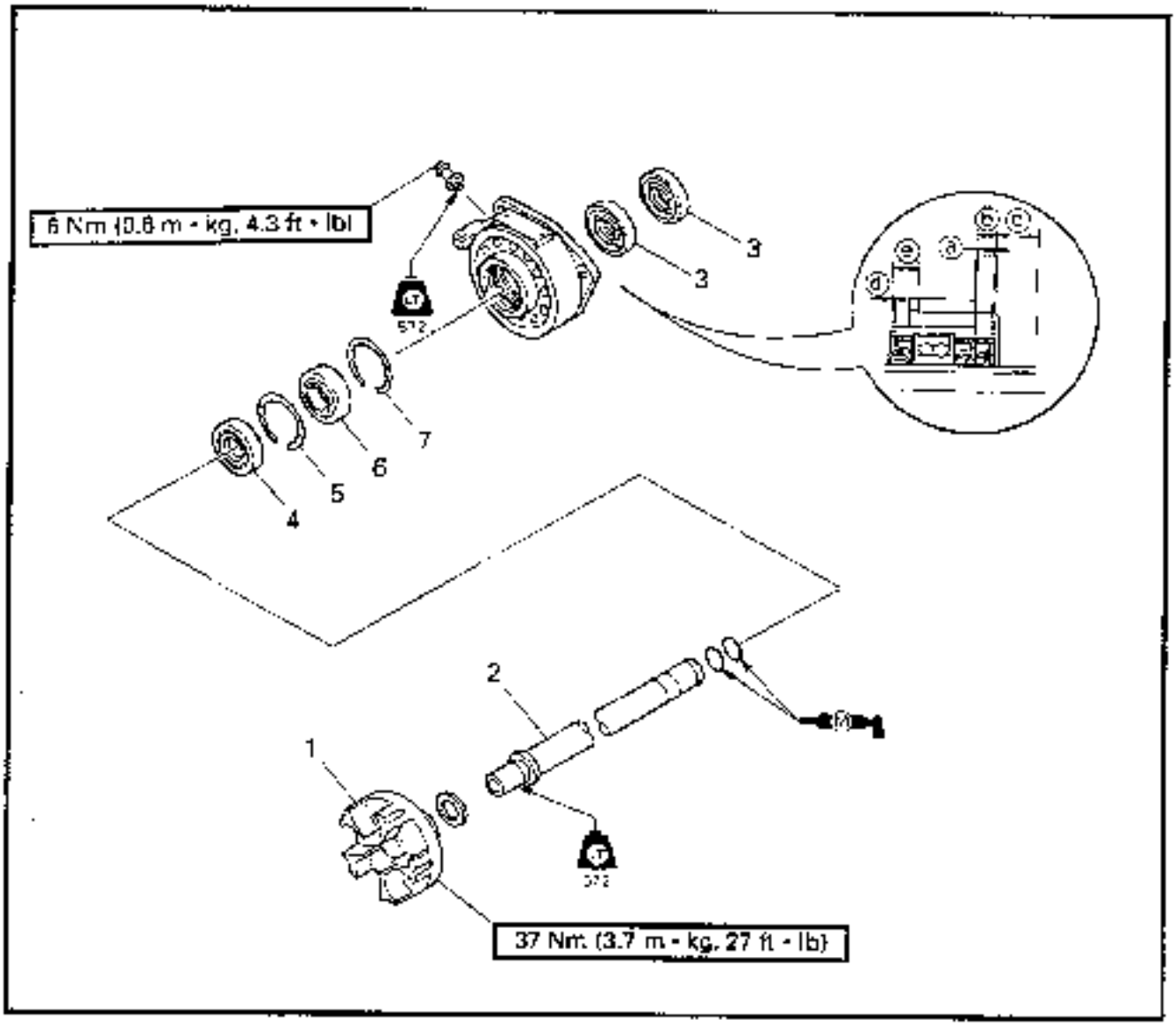


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	INTERMEDIATE HOUSING REMOVAL		Follow the left "Step" for removal.
	Engine unit		Refer to "ENGINE UNIT REMOVAL".
1	Bolt (with washer)	3	
2	Shim	*	**NOTE:** Install the previously marked shims back into their original location.
3	Bearing housing assembly	1	
4	Pin	2	
			Reverse the removal steps for installation.

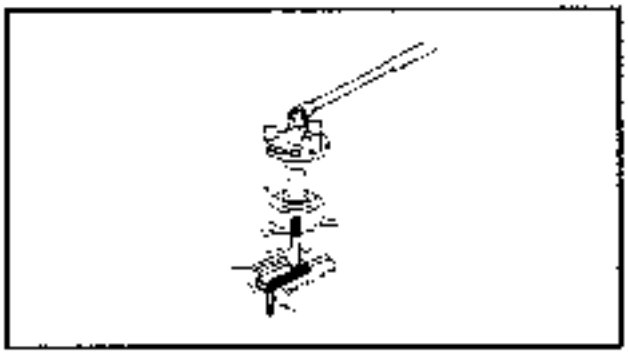
*: As required

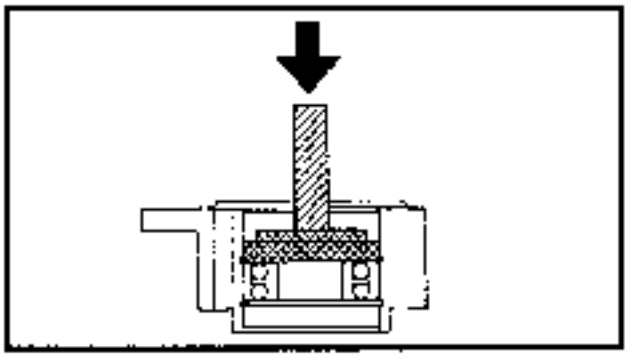
INTERMEDIATE HOUSING
EXPLODED DIAGRAM

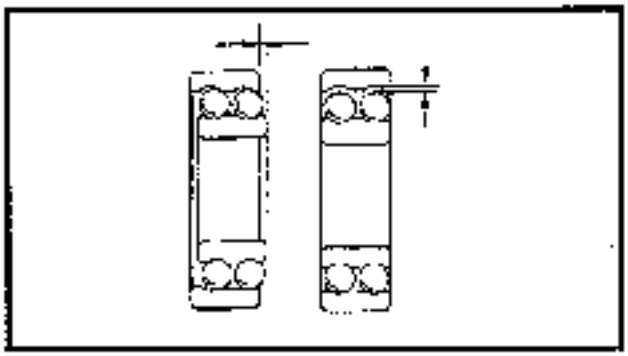


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	INTERMEDIATE HOUSING DISASSEMBLY		Follow the left "Step" for removal.
	Bearing housing assembly		Refer to "INTERMEDIATE HOUSING REMOVAL".
1	Coupling	1	
2	Shaft	1	**Distance:** ⓐ: 1.6 ~ 2.0 mm (0.06 ~ 0.08 in) ⓑ: 10.3 ~ 10.7 mm (0.41 ~ 0.42 in) ⓒ: 19.5 ~ 20.5 mm (0.77 ~ 0.81 in) ⓓ: 0.5 ~ 0.9 mm (0.02 ~ 0.04 in) ⓔ: 11.4 ~ 11.8 mm (0.45 ~ 0.46 in)
3	Oil seal	2	
4	Oil seal	1	
5	Clip	1	
6	Bearing	1	
7	Clip	1	
			Reverse the removal steps for installation.







SERVICE POINTS

Coupling removal and installation

1. Remove and install:
   - Coupling

Coupler wrench:
YW-06546/90890-06546
Shaft holder:
YW-38742/90890-06069

Bearing removal and installation

1. Remove and install:
   - Bearing

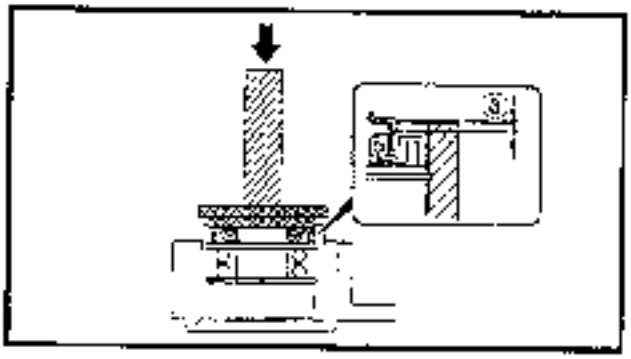
Driver rod:
YB-06071/90890-06606
Bearing outer race attachment:
YB-06018/90890-06626

Bearing inspection

1. Inspect:
   - Bearing
     Rotate inner race by hand.
     Rough spots/Seizure → Replace.
   - Shaft
     Pitting/Damage → Replace.
   - Hose
     Wear/Cracks → Replace.

Coupling inspection

1. Inspect:
   - Coupling flange
   - Coupling rubber
     Wear/Damage → Replace.



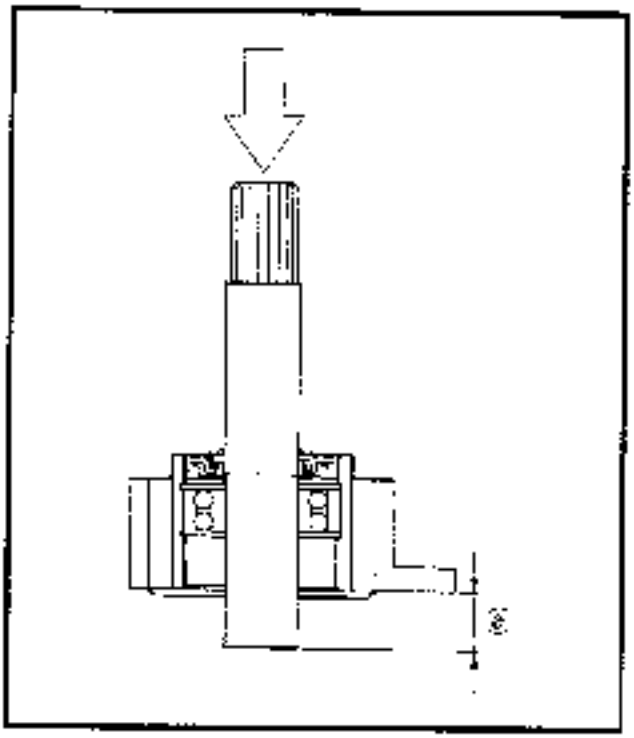
Oil seal installation

1. Install:
   - Oil seal [T = 8 mm (0.31 in)]

Distance ⓐ:
0.5 ~ 0.9 mm (0.02 ~ 0.04 in)

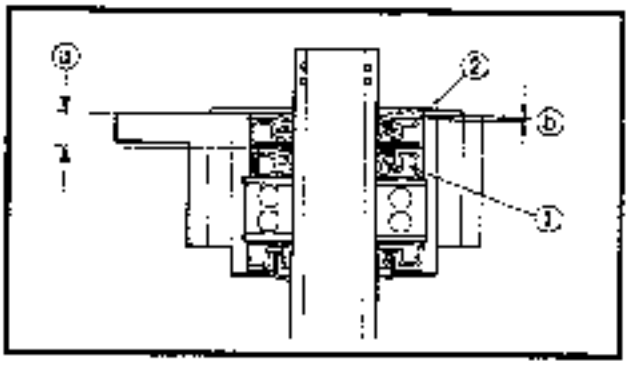
Driver rod:
YB-06071/90890-06606
Bearing outer race attachment:
YB-06016/90890-06626

NOTE:
Fill the with water resistant grease clip inner circumference before installing the oil seal.



2. Install:
   - Shaft

Distance ⓐ:
19.5 ~ 20.5 mm (0.77 ~ 0.81 in)



3. Install:
   - Oil seal [T = 8 mm (0.31 in)] ①
   - Oil seal [T = 10 mm (0.38 in)] ②

Distance ⓐ:
10.3 ~ 10.7 mm (0.41 ~ 0.42 in)
Distance ⓑ:
1.6 ~ 2.0 mm (0.06 ~ 0.08 in)

NOTE:
Fill the with water resistant grease clip inner circumference before installing the oil seal.

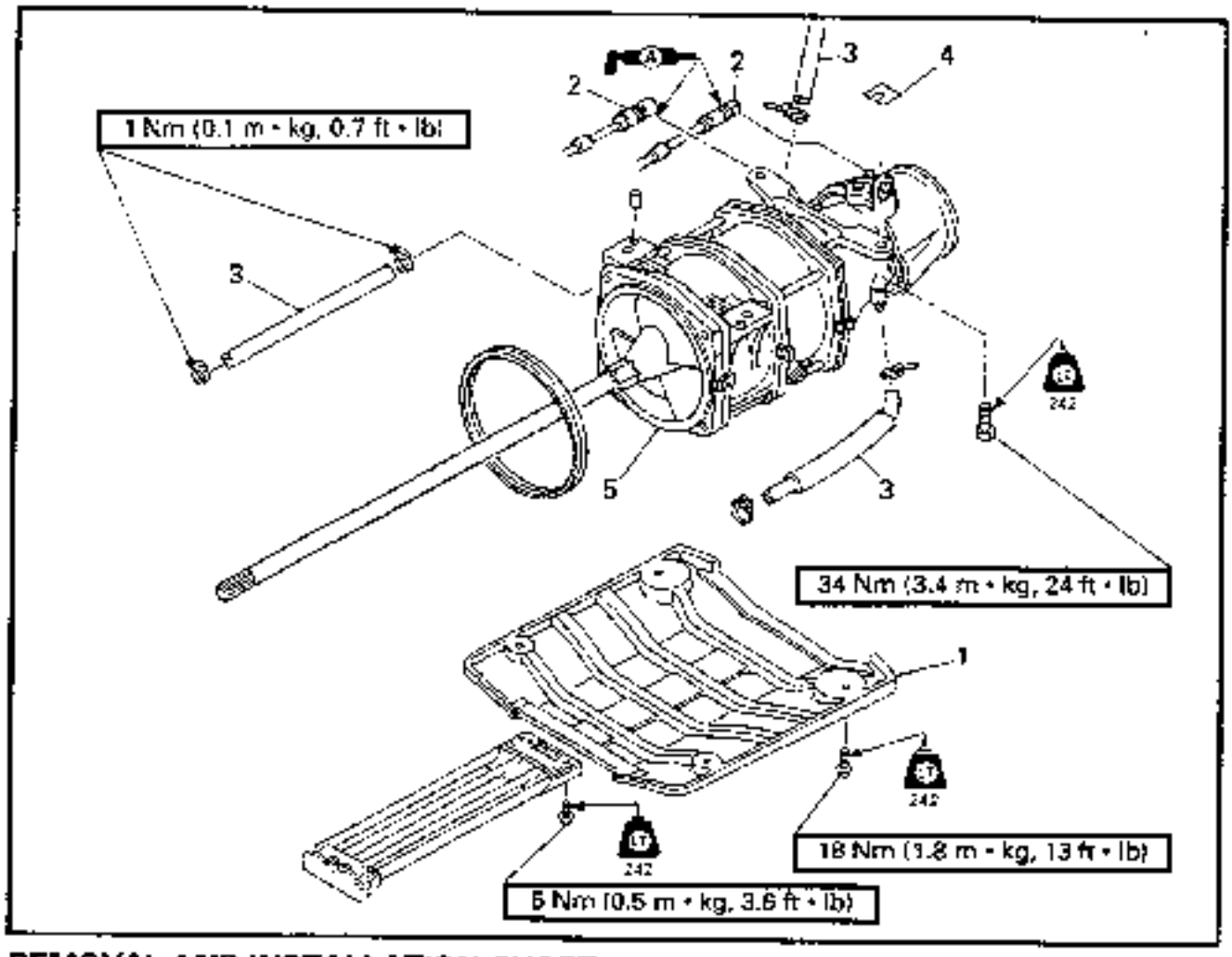
4. Fill:
   - Shaft

Water resistant grease:
13 cm³ (0.79 cu. in)

CHAPTER 6
JET PUMP UNIT

JET PUMP UNIT REMOVAL

EXPLODED DIAGRAM



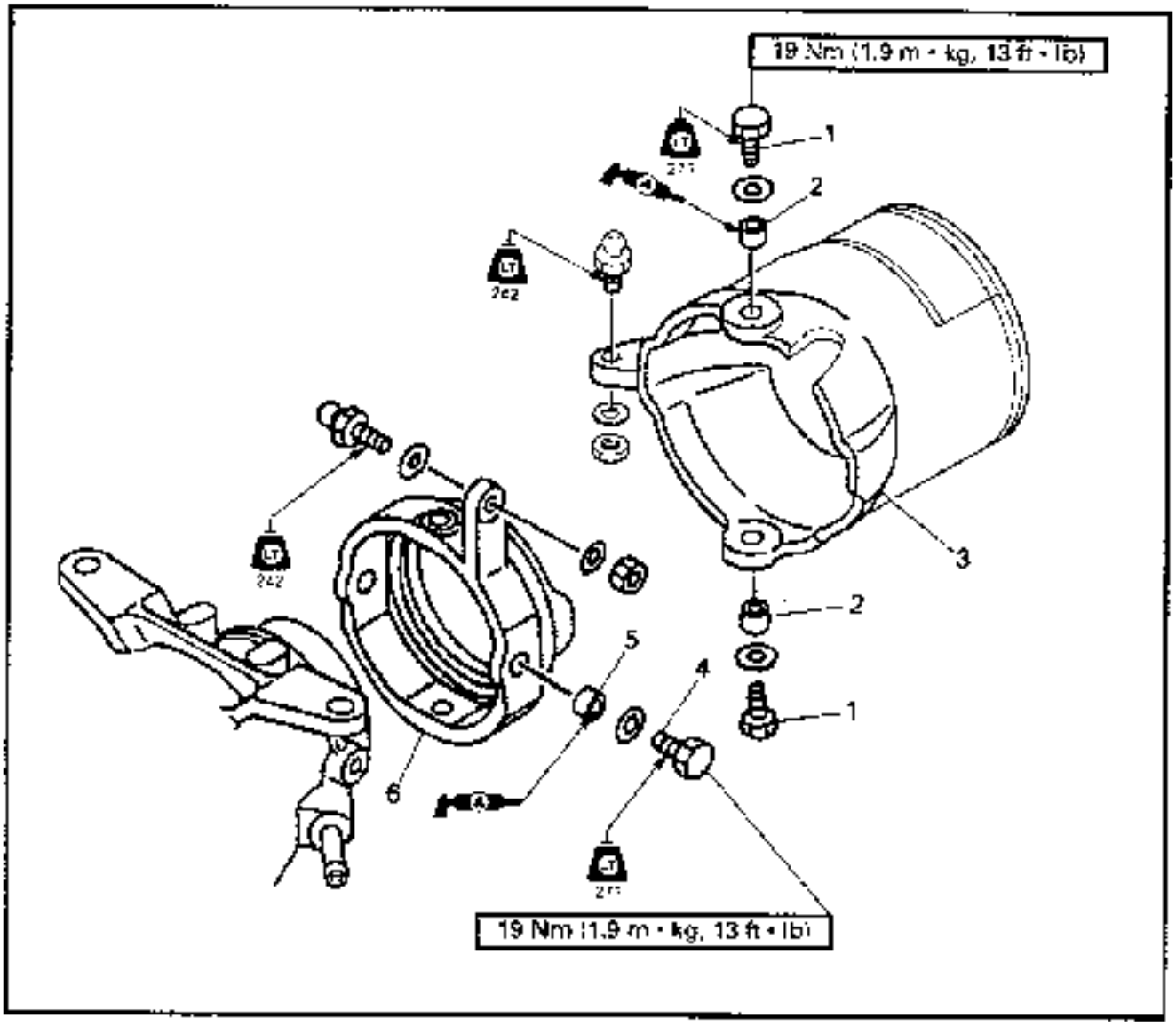
REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	JET PUMP UNIT REMOVAL		Follow the left "Step" for removal.
1	Ride plate	1	
2	Cable joint	2	
3	Water hose	3	
4	Shim	*	**NOTE:** Mark the jet pump mounting shim packs prior to the mounting bolt removal for ease of reassembly.
5	Jet pump unit	1	**NOTE:** Pull the jet pump unit until upward (if the hull is upside down) to release it from the knock pins and pull it straight backward.
			Reverse the removal steps for installation.

*: As required

DEFLECTOR AND TRIM RING

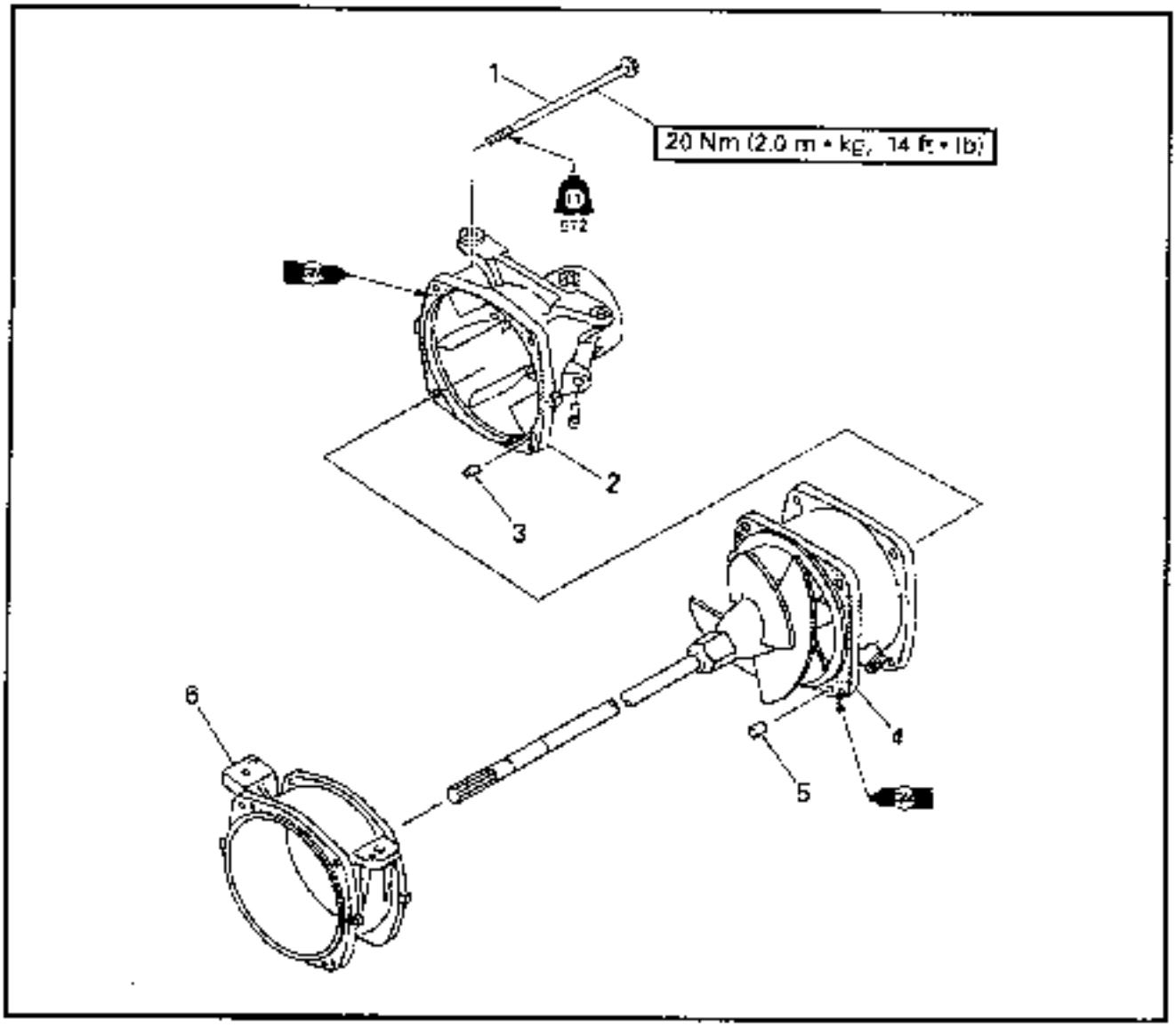
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	DEFLECTOR AND TRIM RING REMOVAL		Follow the left "Step" for removal.
	Jet pump unit		Refer to "JET PUMP UNIT REMOVAL".
1	Bolt (with washer)	2	8 × 20 mm
2	Collar	2	
3	Nozzle deflector	1	
4	Bolt (with washer)	2	8 × 20 mm
5	Collar	2	
6	Trim ring	1	
			Reverse the removal steps for installation.

NOZZLE AND DUCT
EXPLODED DIAGRAM

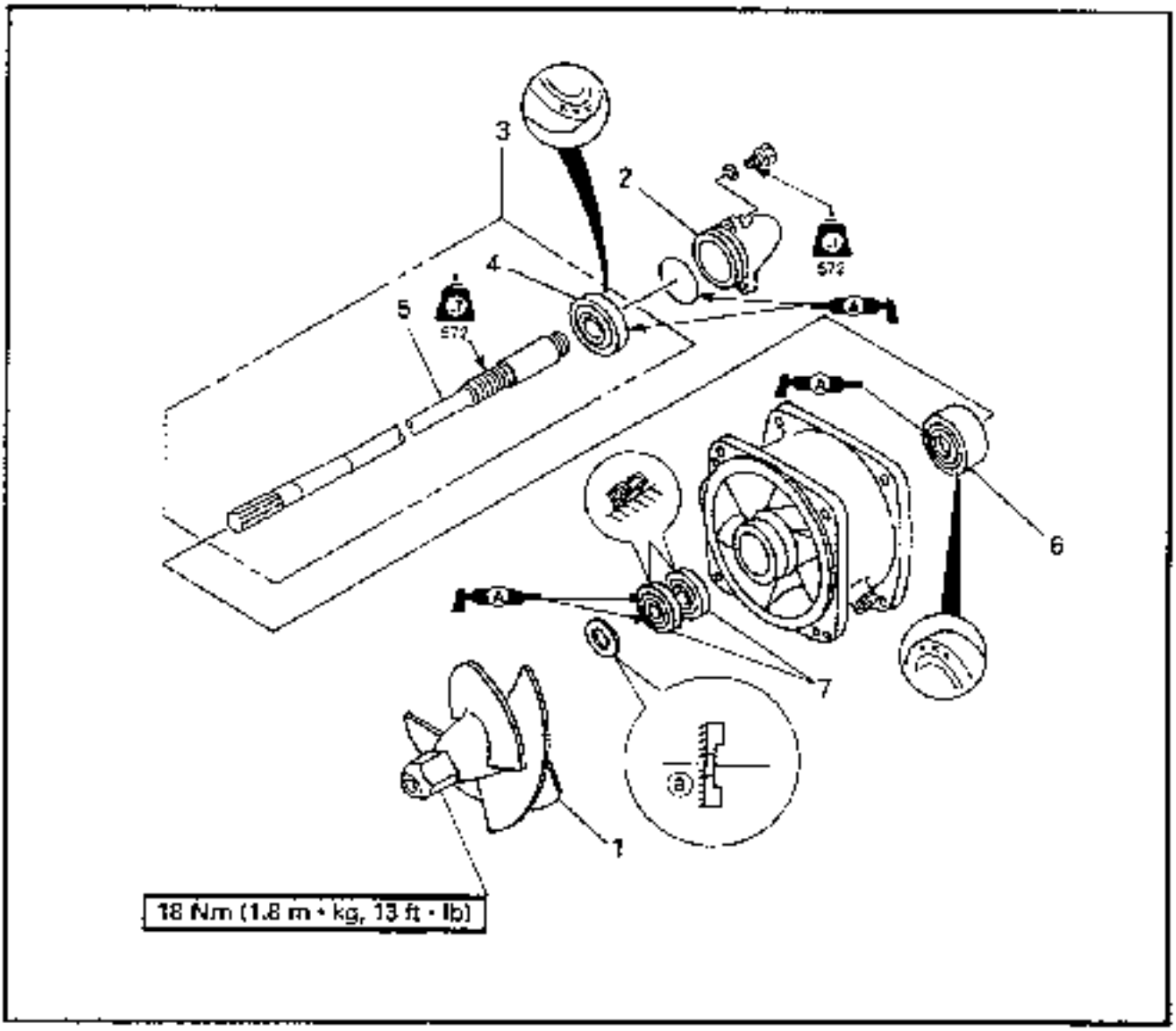


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	NOZZLE AND DUCT REMOVAL		Follow the left "Step" for removal.
	Jet pump unit		Refer to "JET PUMP UNIT REMOVAL".
	Nozzle deflector assembly		Refer to "DEFLECTOR AND TRIM RING".
1	Bolt	4	
2	Nozzle	1	
3	Pin	1	
4	Impeller duct assembly	1	
5	Pin	2	
6	Housing	1	
			Reverse the removal steps for installation.

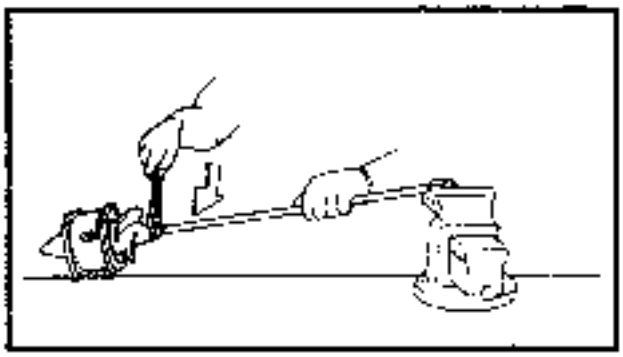
IMPELLER AND DRIVE SHAFT

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	IMPELLER AND DRIVE SHAFT DISASSEMBLY		Follow the left "Step" for removal.
	Impeller duct assembly		Refer to "NOZZLE AND DUCT".
1	Impeller	1	**NOTE:**
2	Cap	1	Plane face ⓐ of the washer should be positioned on the impeller side.
3	Drive shaft assembly	1	
4	Bearing (rear)	1	
5	Drive shaft	1	
6	Bearing (front)	1	
7	Oil seal	2	
			Reverse the removal steps for installation.



SERVICE POINTS

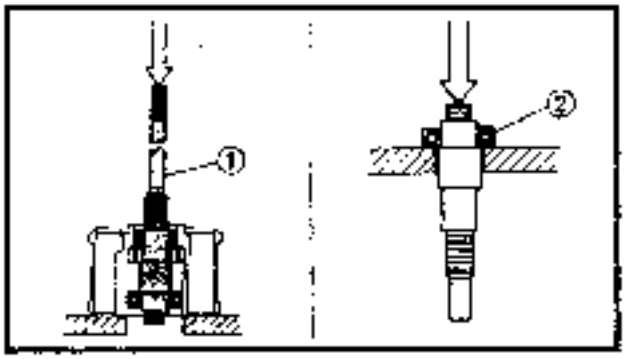
Impeller removal

1. Remove:
   - Impeller

	Drive shaft holder: **YB-06049/90890-06518**

NOTE:

The impeller has a left-hand thread. Turn the impeller clockwise to loosen it.

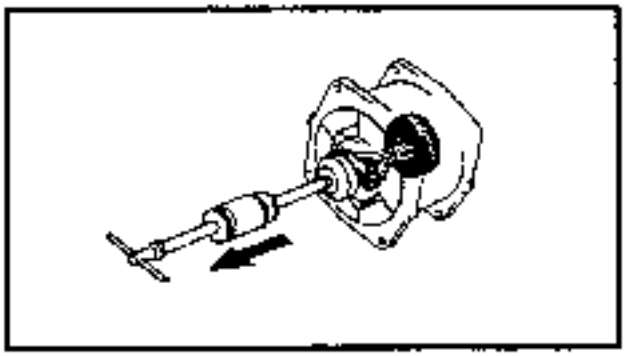


Drive shaft and bearing removal

1. Remove:
   - Drive shaft and bearing (rear) ①
   - Bearing (rear) ②

NOTE:

Use a press.



2. Remove:
   - Bearing (Front)

	Slide hammer set: **90890-06523** **YB-06096/90890-06531**

Impeller inspection

Refer to "JET PUMP UNIT" in chapter 3.

Drive shaft inspection

1. Inspect:
   - Drive shaft

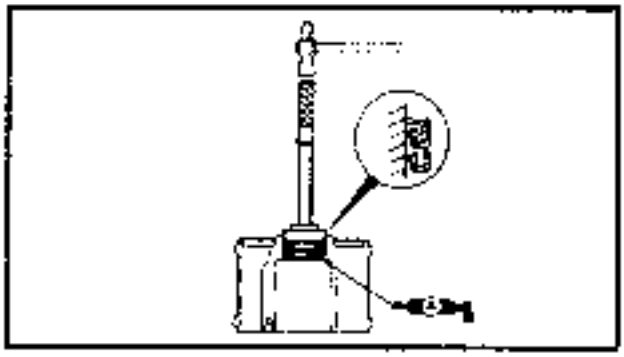
   Wear/Damage → Replace

Bearing inspection

1. Inspect:
   - Bearing (front and rear)

   Rotate inner race by hand.

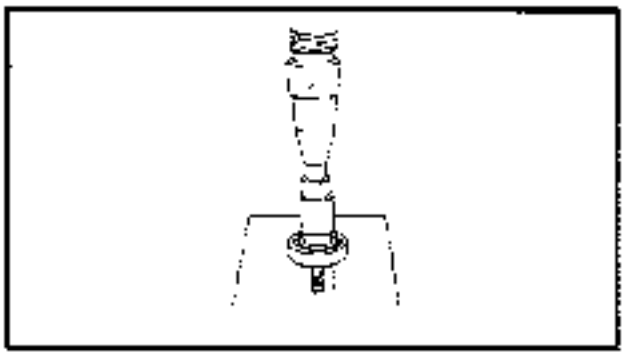
   Rough spot/Seizure → Replace.



Oil seal and bearing installation

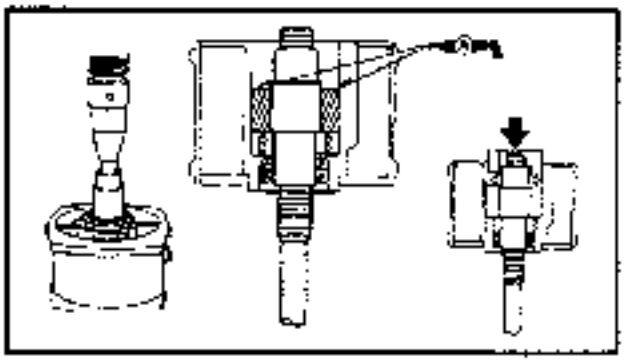
1. Install:
   - Oil seal

	Driver rod: **YB-06071/90890-06606** **Ball bearing attachment:** **YB-06156/90890-06634**



2. Install:
   - Bearing (front)
   - Drive shaft and bearing

NOTE:
Use a press.

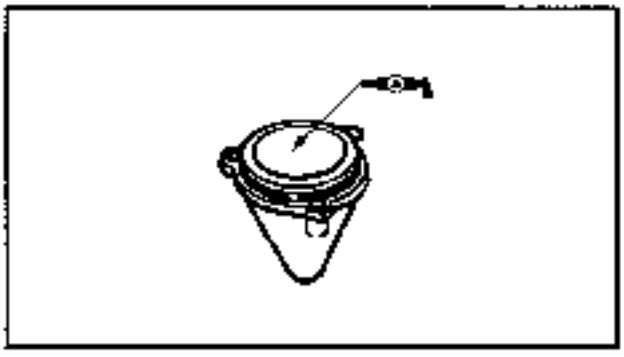


3. Fill:
   - Between the drive shaft and duct

	Water resistant grease: **21 cm³ (1.3 cu. in)**

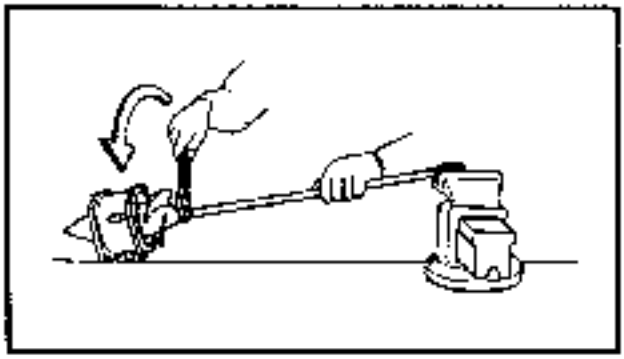
4. Install:
   - Bearing (rear)

	Bearing inner race attachment: **YB-34474/90890-06662**



5. Fill:
   - Into the cap

	Water resistant grease: **21 cm³ (1.3 cu. in)**



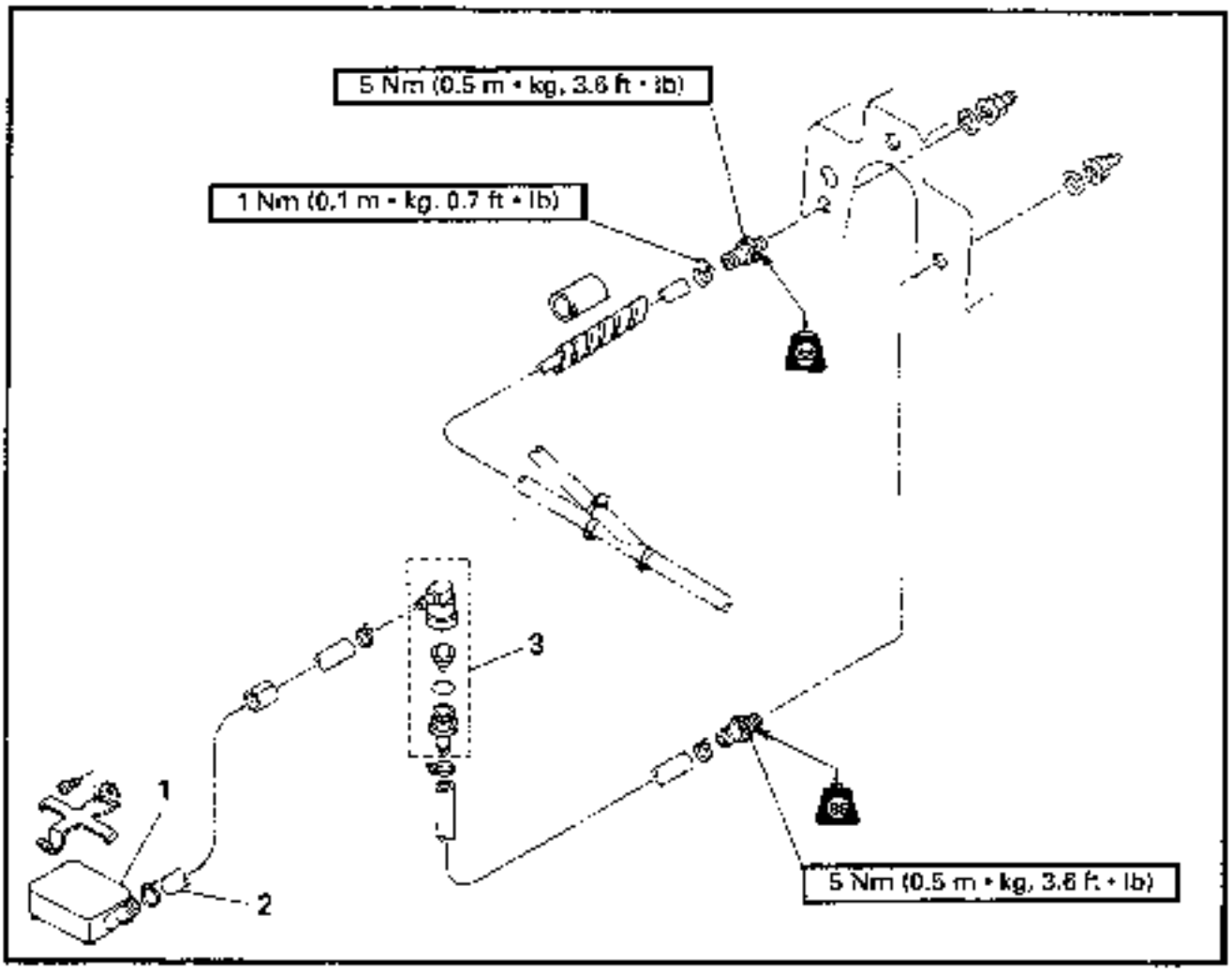
Impeller installation

1. Install:
   - Impeller

	Drive shaft holder: **YB-06049/90890-06518**

COOLING AND BILGE SYSTEM

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	COOLING AND BILGE SYSTEM REMOVAL		Follow the left "Step" for removal.
1	Bilge strainer	1	
2	Bilge hose	1	
3	Hose joint	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Bilge strainer inspection

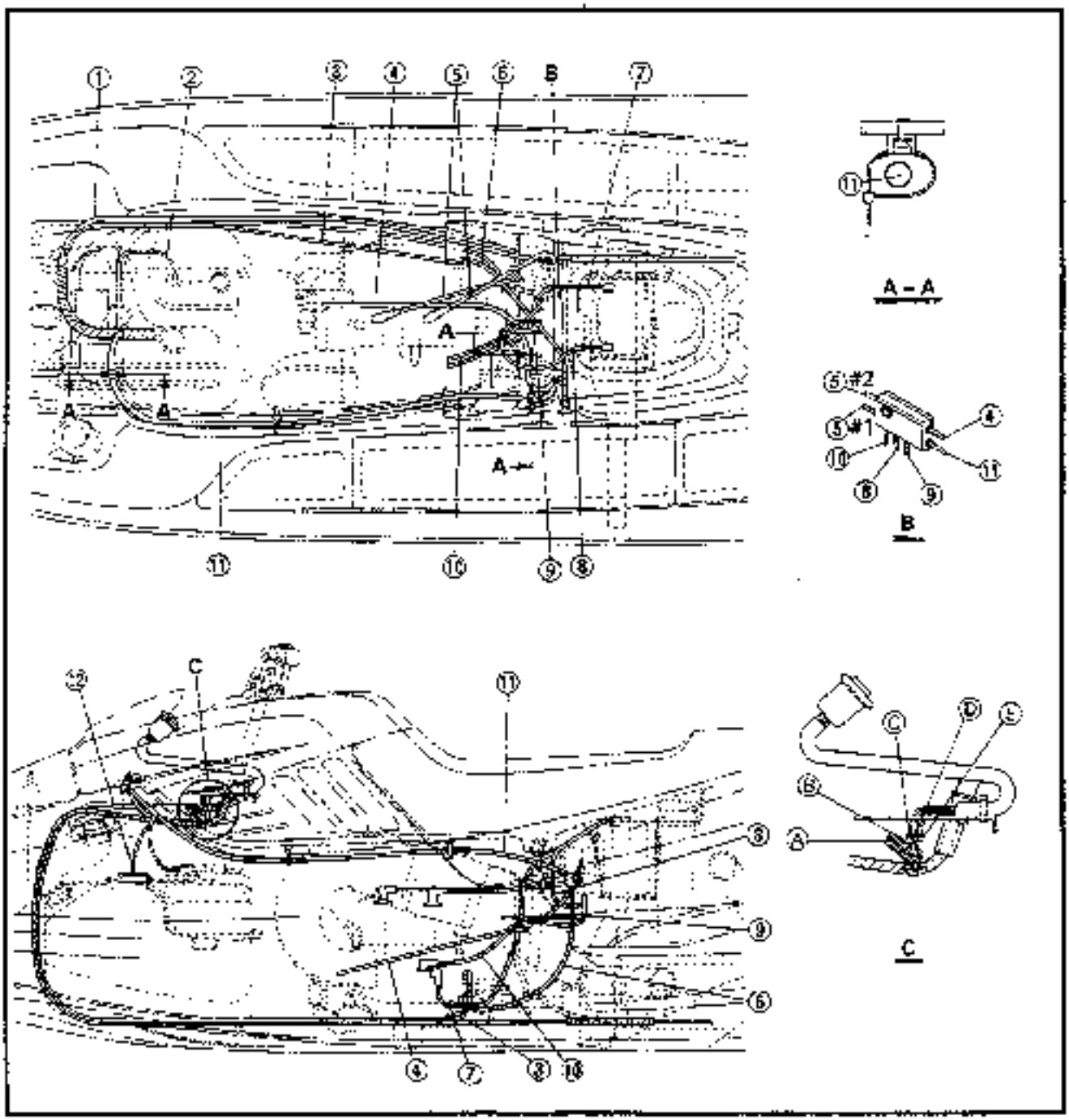
Refer to "JET PUMP UNIT" in chapter 3.

Hose inspection

1. Inspect:
   - Hose
     Crack/Wear/Damage → Replace.

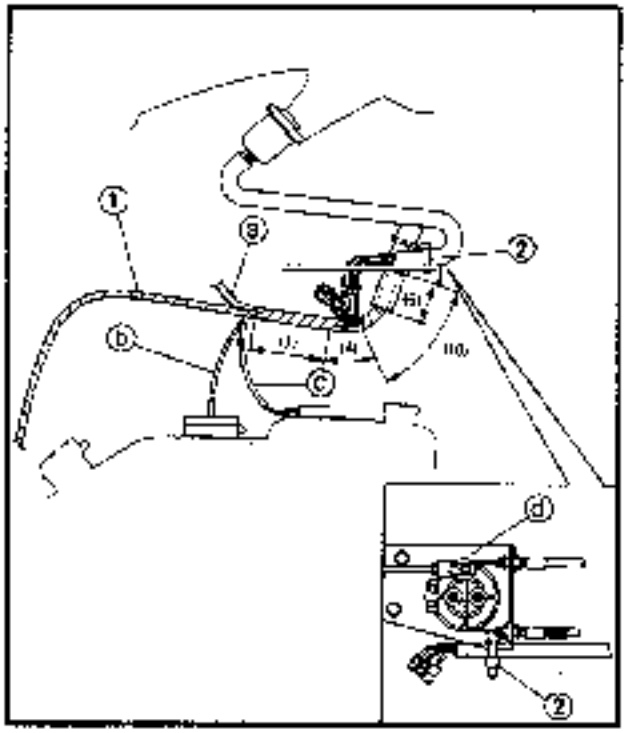
CHAPTER 7
ELECTRICAL SYSTEM

ELECTRICAL COMPONENTS



① Steering cable
② Oil level sensor lead
③ Throttle cable
④ Flywheel magneto base lead
⑤ High tension cord
⑥ Choke cable
⑦ Battery (negative) lead
⑧ Battery (positive) lead
⑨ Thermo sensor lead
⑩ Starter motor (positive) lead
⑪ Handle switch and meter extension lead
⑫ Fuel level sensor lead

Ⓐ: 2P connector (Black)
Ⓑ: 2P connector (White)
Ⓒ: 4P connector (White)
Ⓓ: 2P connector (Green)
Ⓔ: 2P connector (White)



SERVICE POINTS

Spiral tube installation

1. Install:
   - Spiral tube ①
   - Band ②

NOTE:

- Give (10) windings of the spiral tube to the throttle cable and handle switch leads and slide the spiral tube into the steering shaft by (5) windings.
- Secondly, give (4) windings only to the throttle cable.
- Thirdly, include all leads and give them (7) windings.
- Finally, excepting the handle switch extension lead ⓐ, fuel sensor lead ⓑ and oil sensor lead ⓒ, continue wrapping the remaining wires with the rest of the spiral tube.
- Clamp the meter leads to the base bracket ⓓ with the band.

ELECTRICAL ANALYSIS
INSPECTION

CAUTION:

All measuring instruments should be handled with special care, or correct measurement is impossible.
On an instrument powered by dry batteries, the batteries' voltage should be checked periodically and the batteries replaced, if necessary.

NOTE:

"○——○" indicates the terminals between which there is electrical continuity; i.e., a closed circuit in the given switch position.

Low resistance measurement

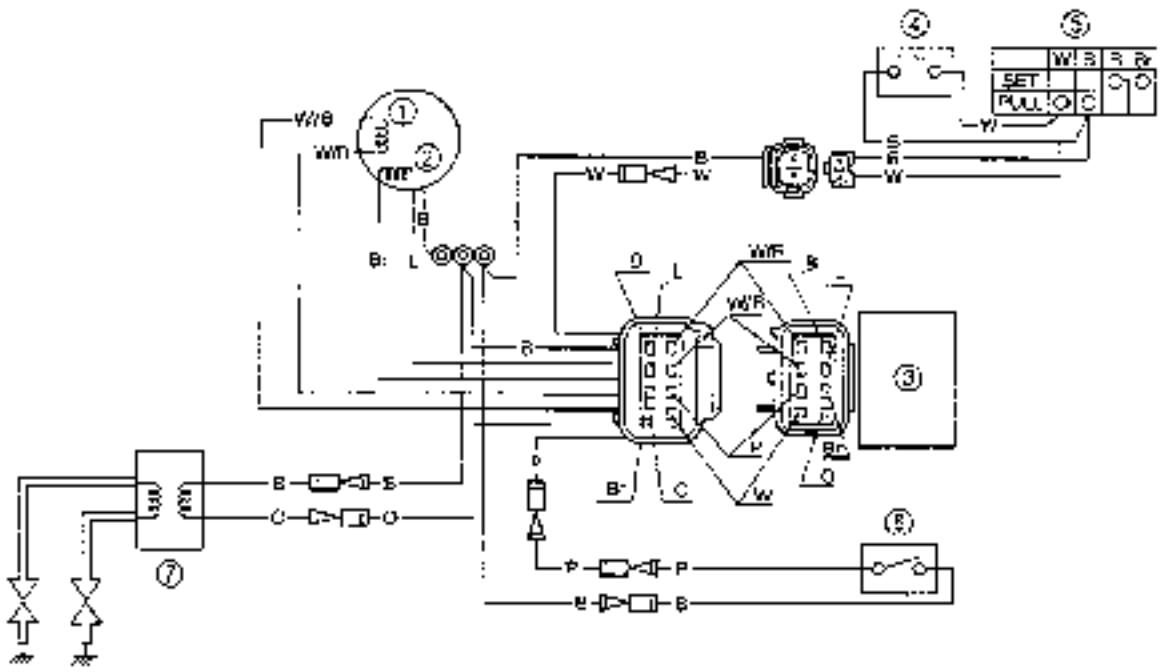
When measuring resistance of 10 Ω or less using the digital tester, the correct measurement cannot be obtained because of the tester's internal resistance.
To obtain the correct value, subtract this internal resistance from the displayed measurement.

Correct value =
Displayed measurement –
Internal resistance

NOTE:

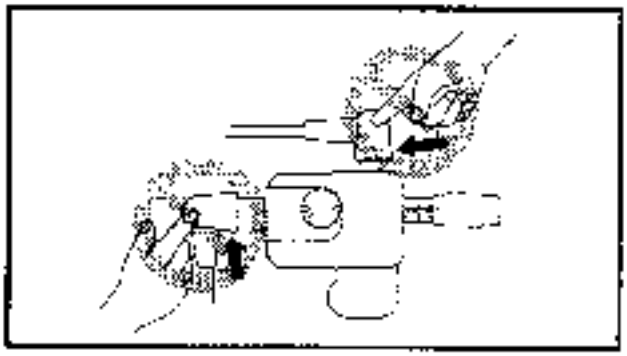
The internal resistance of the tester can be obtained by connecting both of its terminals.

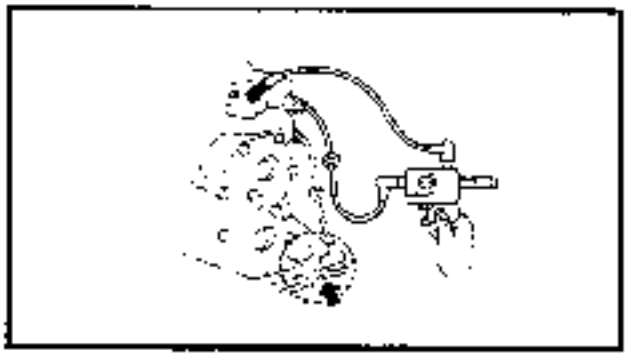
IGNITION SYSTEM
WIRING DIAGRAM

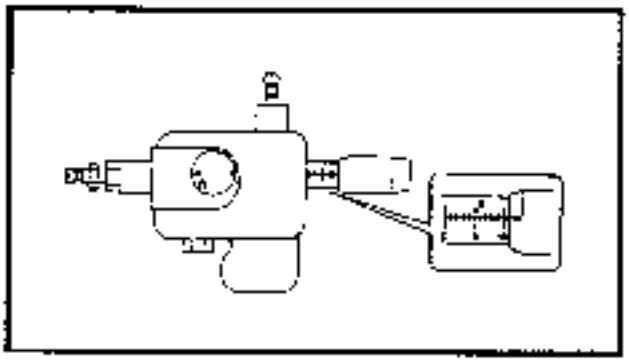


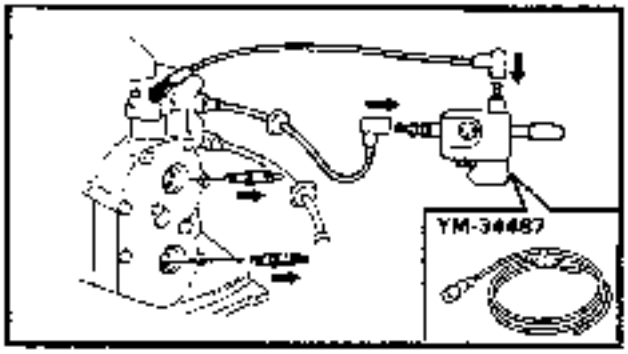
① Pulser coil
② Charge coil
③ CDI unit
④ Stop switch
⑤ Engine stop switch
⑥ Thermo switch
⑦ Ignition coil

B : Black
Br : Brown
L : Blue
O : Orange
P : Pink
W : White
W/B : White/Black
W/R : White/Red









IGNITION SPARK GAP

⚠ WARNING

- **While making a spark check be careful not to touch any of the "Ignition spark gap tester" lead wires.**
- **When doing the spark test, take special care not to allow leakage from the removed plug cap.**
- **This check is likely to produce sparks, so be sure that no flammable gas or fluid is in the vicinity.**

1. Check:
   - Ignition spark gap

   Out of specification → Replace.

Spark gap:
9 mm (0.35 in)

Checking steps:
- Adjust the spark gap to specification by turning the adjusting knob.

Spark gap tester:
YM-34487/90890-06754

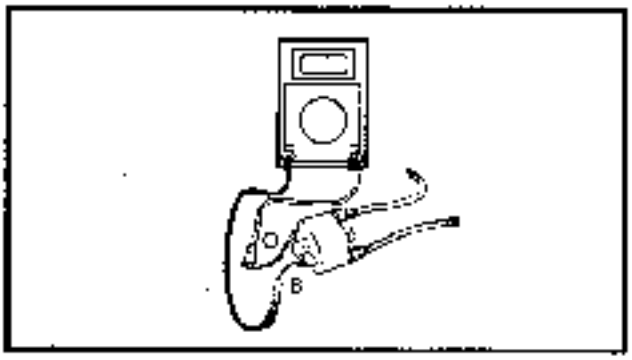
- Connect the spark plug cap to the spark gap tester.
- Remove the spark plugs from the engine.
- Crank the engine and check the sparks from the ignition system through the discharge window.

SPARK PLUG

Refer to "POWER UNIT" in chapter 3.

SPARK PLUG CAP

1. Inspect:
   - Spark plug cap
     Loosen → Tighten.
     Crack/Damage → Replace.



IGNITION COIL

1. Inspect:
   - High tension cord
     Cracks/Damage → Replace.
2. Measure:
   - Primary coil resistance
     Out of specification → Replace.

Primary coil resistance:
Orange (O) – Black (B)
0.078 – 0.106 Ω at 20°C (68°F)

NOTE:

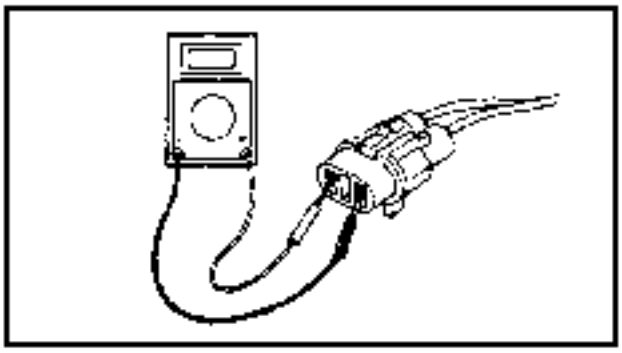
When measuring the resistance of 10 Ω or less using the digital tester, the correct measurement cannot be obtained. Refer to "Lower resistance measurement".

3. Measure:
   - Secondary coil resistance
     Out of specification → Replace.

Secondary coil resistance:
High tension cords
14.3 – 30.5 kΩ at 20°C (68°F)

NOTE:

Remove the spark plug cap from the high tension cord.



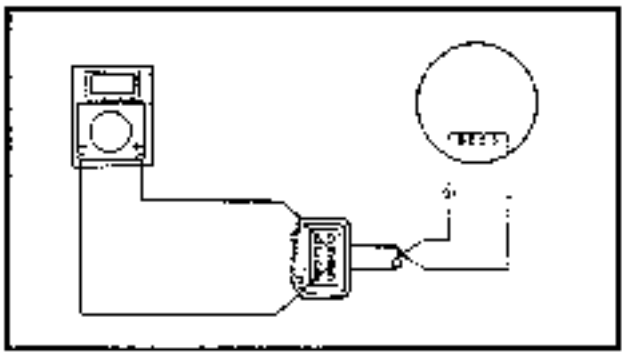
ENGINE STOP SWITCH

1. Check:
   - Continuity

   Out of specification → Replace.

Engine stop continuity:
(Black coupler)

Lock plate	Position	Leads	
		White	Black
Installed	Free		
	Push	○	○
Removed	Free	○	○
	Push	○	○

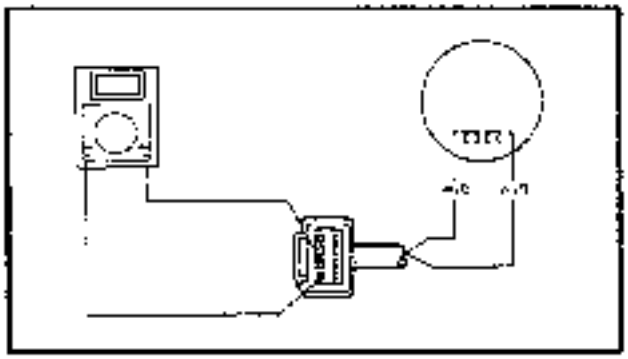


CHARGE COIL

1. Measure:
   - Charge coil resistance

   Out of specification → Replace.

Charge coil resistance:
Brown (Br) – Blue (L)
316.8 – 387.2 Ω at 20°C (68°F)

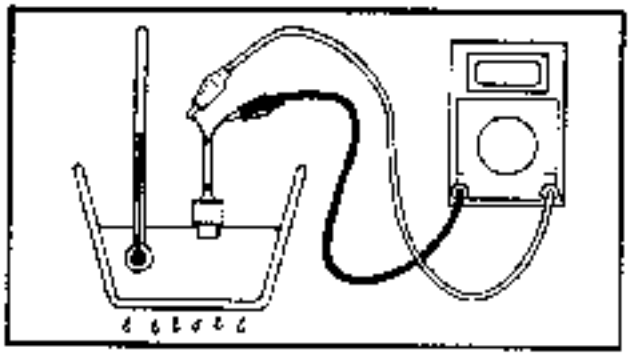


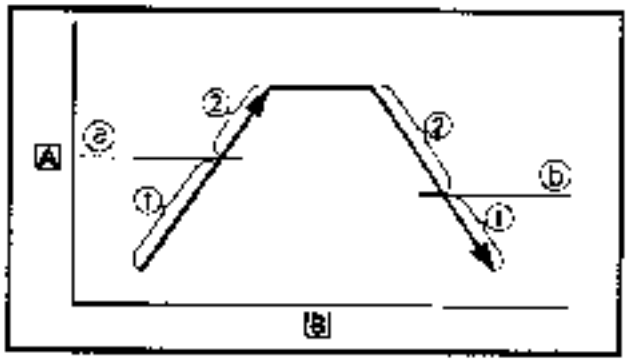
PULSER COIL

1. Measure:
   - Pulser coil resistance

   Out of specification → Replace.

Pulser coil resistance:
White/Red (W/R) –
White/Black (W/B)
445.5 – 544.5 Ω at 20°C (68°F)





THERMO SWITCH

1. Measure:
   - Thermo switch continuity
     Out of specification → Replace.

Thermo switch continuity temperature:
Pink (P) – Black (B)
ⓐ 90 ~ 96°C (194 ~ 205°F)
ⓑ 76 ~ 90°C (169 ~ 194°F)

① Discontinuity
② Continuity
A Temperature
B Time

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

CDI UNIT

1. Measure:
   - CDI unit resistance
     Out of specification → Replace.

Pocket tester:
YU-03112/90890-03112

NOTE:
- The resistance values will vary from meter to meter, especially with electronic digital meters. For some testers, the polarity of the leads is reversed.
- The needle swings once to the "∞" mark and then returns to the home position.
- The "∞" mark stands for discontinuity.

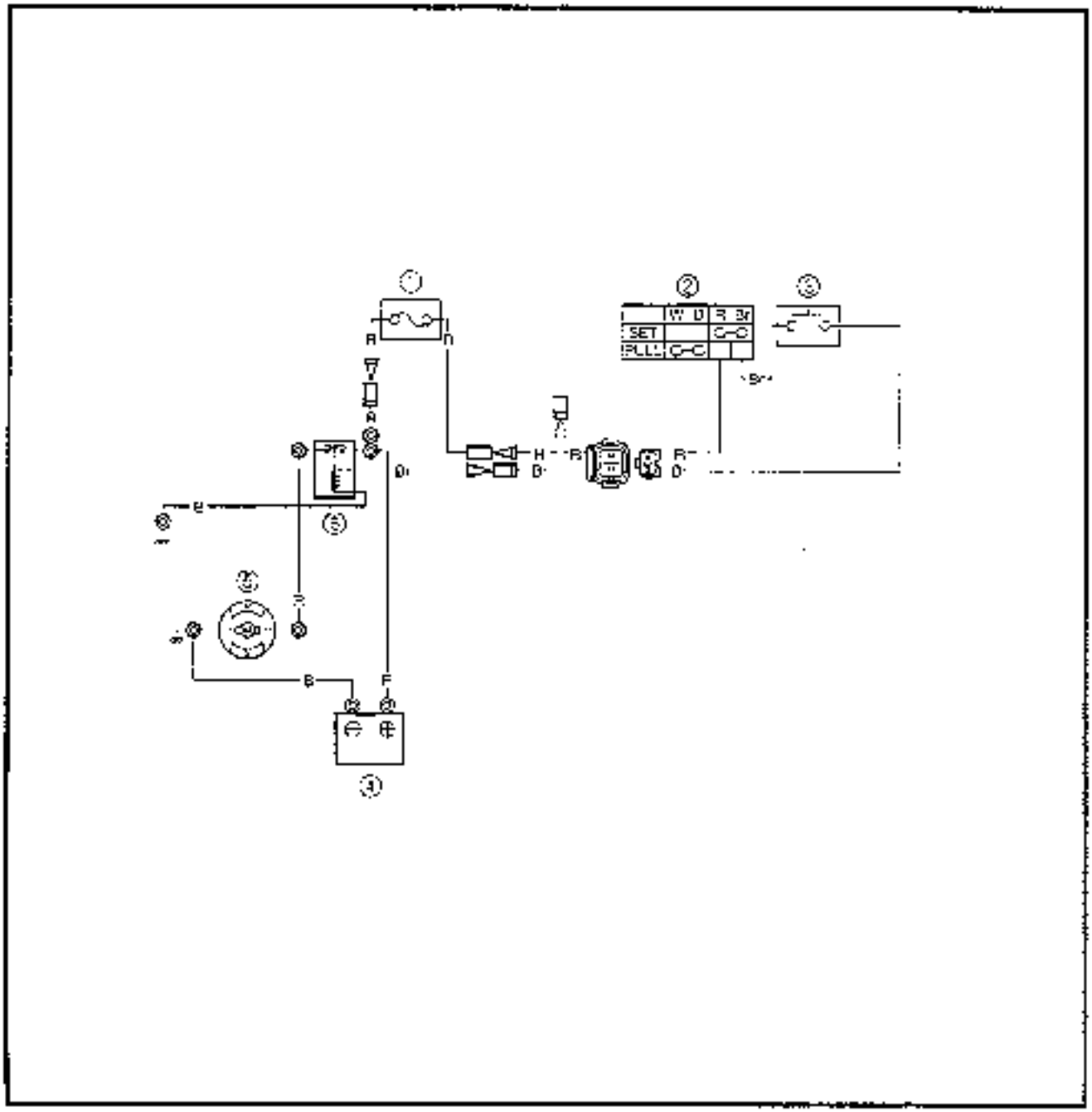
B : Black
Br : Brown
L : Blue
O : Orange
P : Pink
W : White
W/B : White/Black
W/R : White/Red

64X00

Unit: kΩ

⊕ ○	W	P	W/B	W/R	O	Br	L	B
W		∞	3.8 ~ 16	9.5 ~ 40	11 ~ 45	80 ~ 400	3.4 ~ 14	3.8 ~ 16
P	7.5 ~ 35		17 ~ 70	22 ~ 100	40 ~ 300	70 ~ 1,000	16 ~ 70	17 ~ 80
W/B	10 ~ 45	∞		4.4 ~ 18	2 ~ 9	70 ~ 400	6 ~ 26	0 ~ 0.6
W/R	16 ~ 70	∞	4 ~ 17		8 ~ 35	70 ~ 400	13 ~ 60	4 ~ 17
O	∞	∞	∞	∞		∞	∞	∞
Br	26 ~ 150	∞	2.4 ~ 11	9 ~ 40	7.5 ~ 35		16 ~ 70	2.4 ~ 11
L	26 ~ 150	∞	2.4 ~ 11	9 ~ 40	7.5 ~ 35	80 ~ 500		2.4 ~ 11
B	10 ~ 45	∞	0 ~ 0.6	4.4 ~ 19	2 ~ 6.5	70 ~ 400	6 ~ 26	

STARTING SYSTEM
WIRING DIAGRAM



① Fuse
② Engine stop switch
③ Starter switch
④ Battery
⑤ Starter motor
⑥ Starter relay

B : Black
Br : Brown
R : Red

BATTERY

Refer to "ELECTRICAL" in chapter 3.

STARTER MOTOR

Refer to "STARTER MOTOR" in chapter 5.

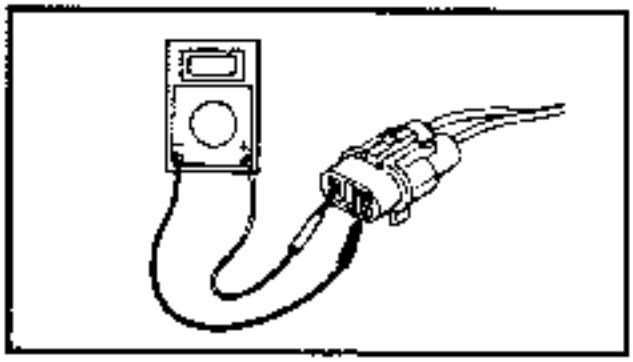
WIRING CONNECTION

1. Check:
   - Wiring connection
     Poor connection → Correct.

FUSE

1. Check:
   - Fuse
     Blown → Replace.

	Fuse rating: **12 V/10 A**



STARTER SWITCH

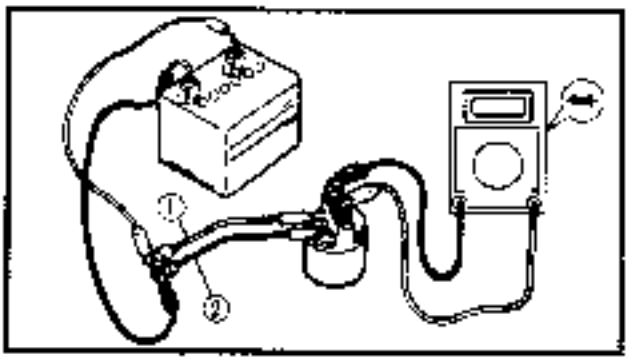
1. Check:
   - Continuity
     Out of specification → Replace.

Starter continuity:
(White coupler)

Lock plate	Position	Leads	
		Red	Brown
Installed	Free		
	Push	○	○
Removed	Free		
	Push		

STARTER RELAY

1. Inspect:
   - Brown lead terminal
   - Black lead terminal
   Loose → Tighten.



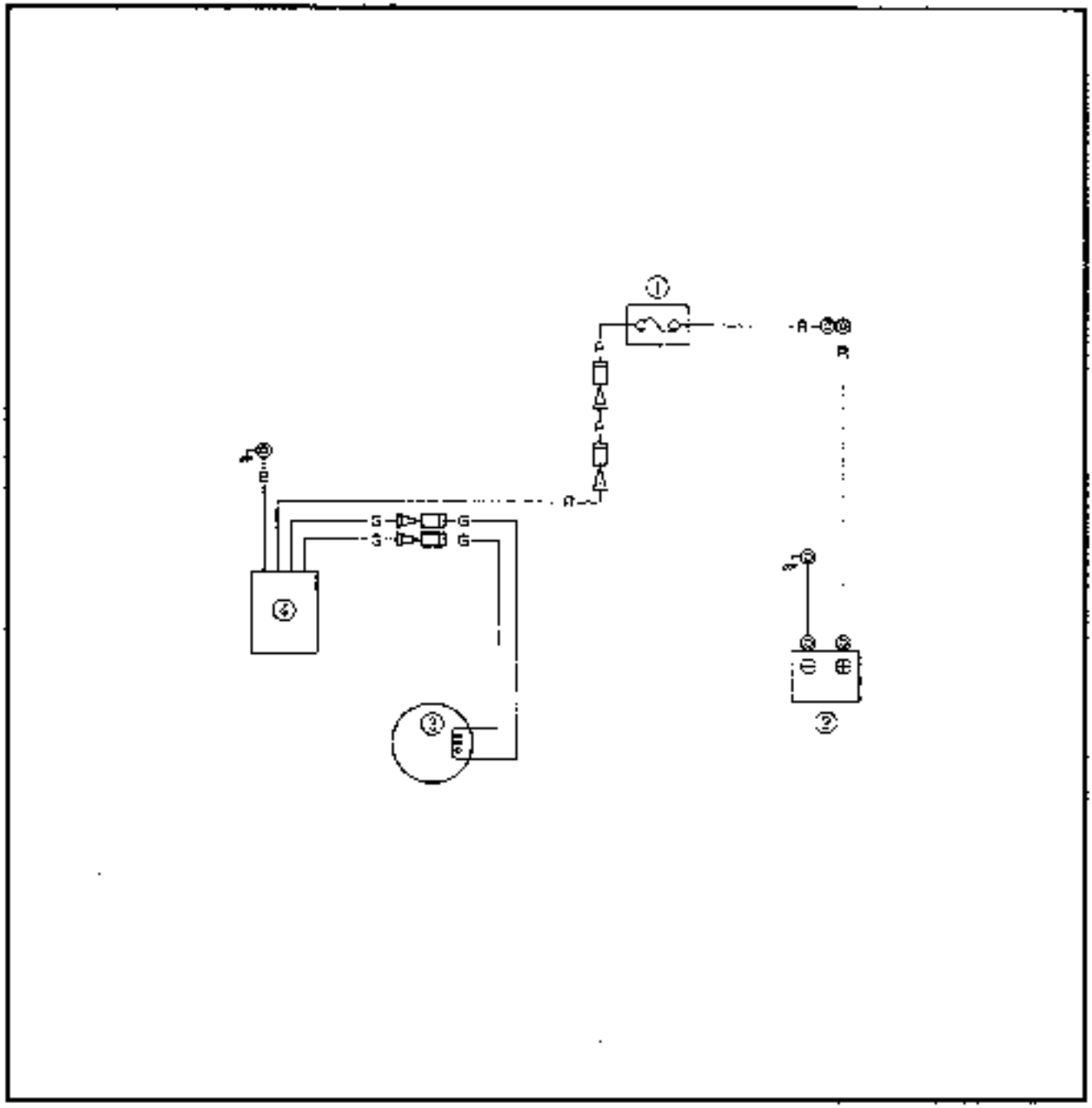
2. Check:
   - Relay operation
   Does not function → Replace.

Checking steps:
- Connect the tester between the terminals of the starter relay as shown.
- Connect a 12 V battery.

Brown lead ① → Positive terminal
Black lead ② → Negative terminal

- Check that there is continuity between the starter relay terminals.

CHARGING SYSTEM
WIRING DIAGRAM



① Fuse
② Battery
③ Lighting coil
④ Rectifier regulator

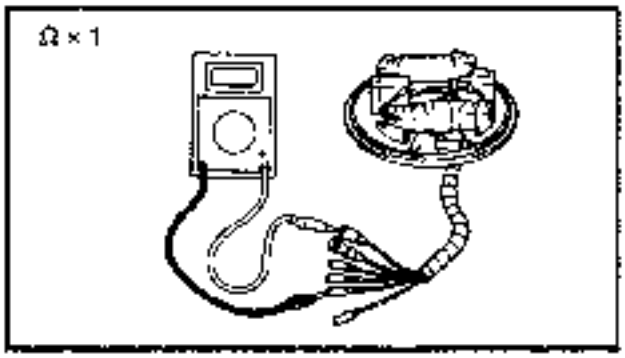
B : Black
G : Green
R : Red

FUSE

Refer to "STARTING SYSTEM".

BATTERY

Refer to "ELECTRICAL" in chapter 3.



LIGHTING COIL

1. Measure:
   - Lighting coil resistance
     Out of specification → Replace.

Lighting coil resistance:
Green (G) – Green (G)
1.14 – 1.40 Ω at 20°C (68°F)

NOTE:

When measuring the resistance of 10 Ω or less using the digital tester, the correct measurement cannot be obtained. Refer to "Lower resistance measurement".

RECTIFIER REGULATOR

1. Check:
   - Continuity
     Out of specification → Replace.

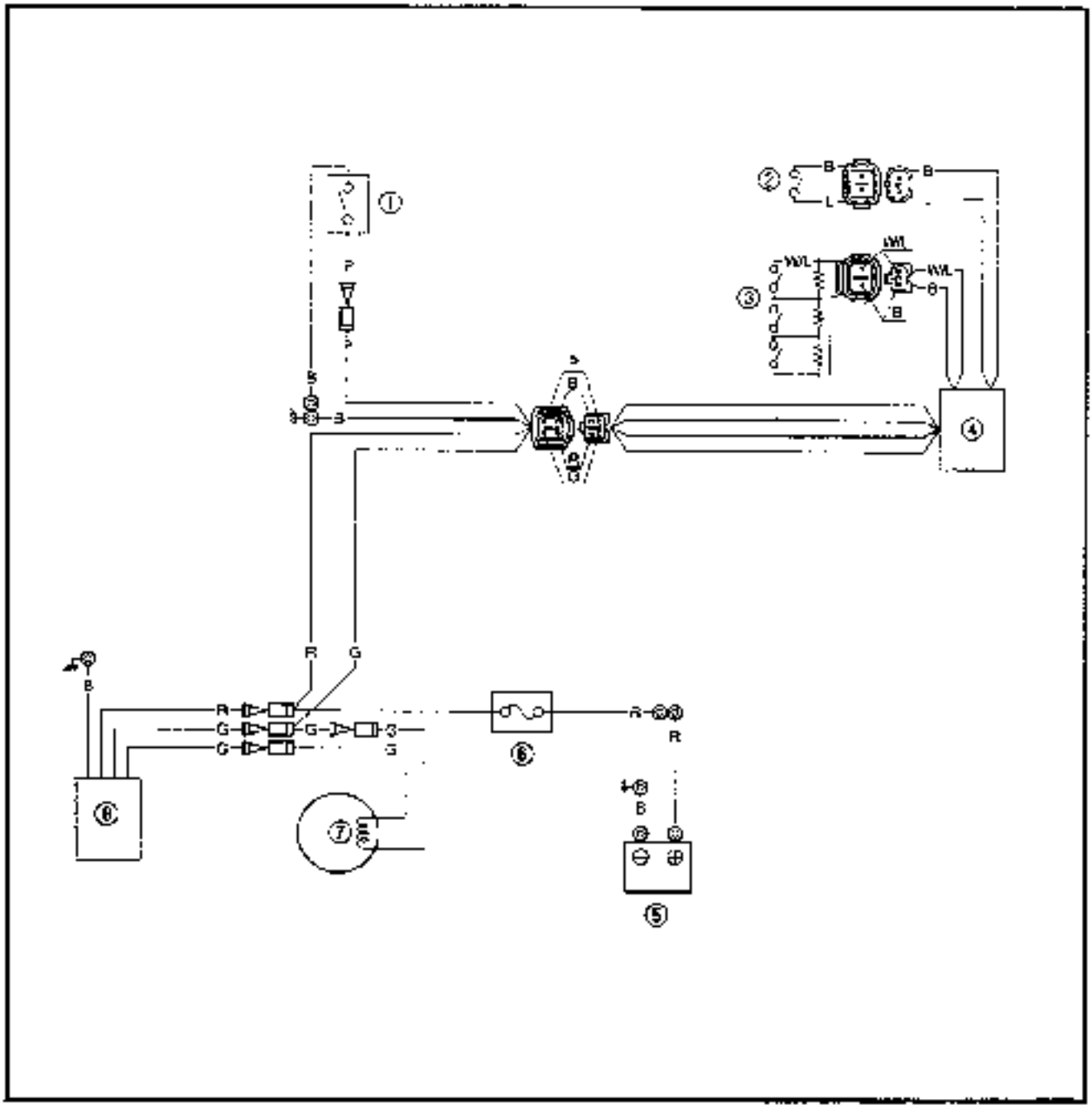
Pocket tester:
YU-03112/90890-03112

∞: Discontinuity

Unit: kΩ

⊕ ⊖	R	B	G	G
R		∞	∞	∞
B	2~20		1~10	1~10
G	1~10	2~15		3~30
G	1~10	2~15	3~30	

INDICATION SYSTEM
WIRING DIAGRAM



① Thermo switch
② Oil level sensor
③ Fuel level sensor
④ Multi function meter
⑤ Battery
⑥ Fuse
⑦ Lighting coil
⑧ Rectifier regulator

B : Black
G : Green
L : Blue
P : Pink
R : Red
R/W : Red/White
W/L : White/Blue
Y : Yellow

FUSE

Refer to "STARTING SYSTEM".

BATTERY

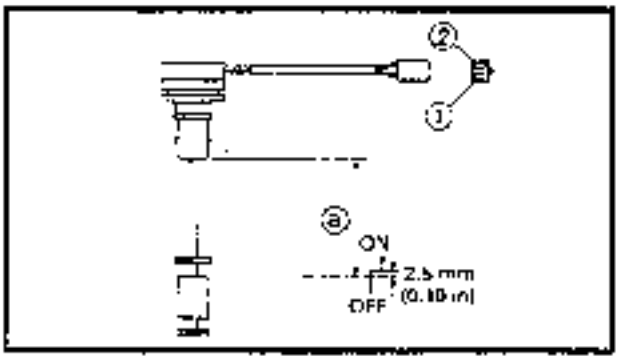
Refer to "ELECTRICAL" in chapter 3.

LIGHTING COIL

Refer to "CHARGING SYSTEM".

RECTIFIER REGULATOR

Refer to "CHARGING SYSTEM".

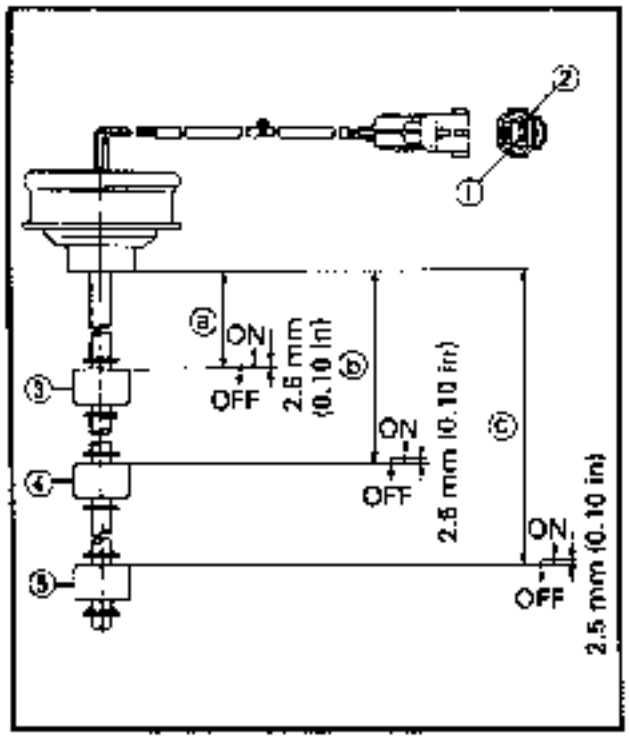


OIL LEVEL SENSOR

1. Measure:
   - Oil level sensor continuity

   Out of specification → Replace.

Float position	Leads	
	Blue ①	Black ②
OFF		
ON	○——	——○
Float length ⓐ: 56.8 ~ 58.8 mm (2.24 ~ 2.31 in)		



FUEL LEVEL SENSOR

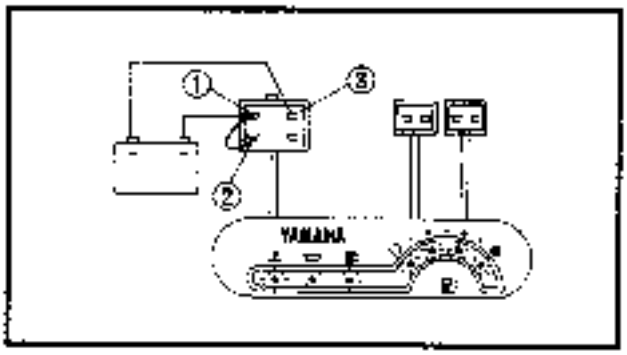
1. Measure:
   - Fuel level sensor resistance

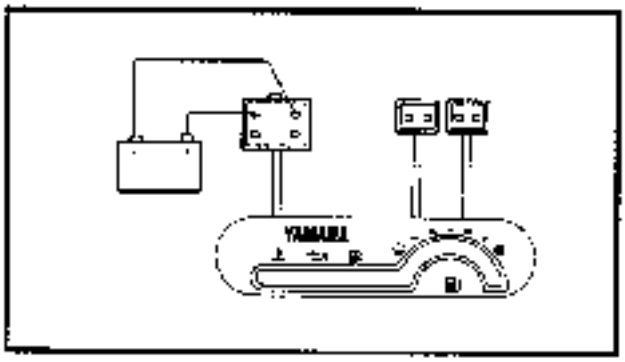
   Out of specification → Replace.

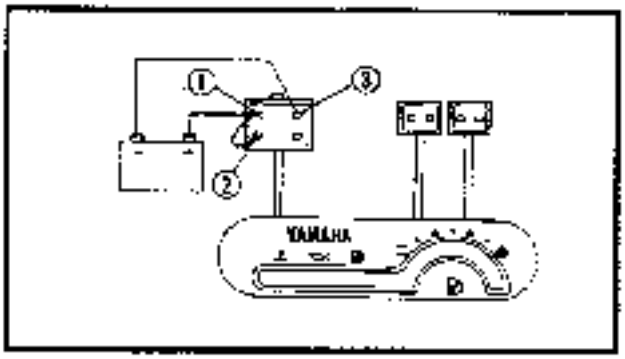
① White/Blue lead → Positive terminal.
② Black lead → Negative terminal.

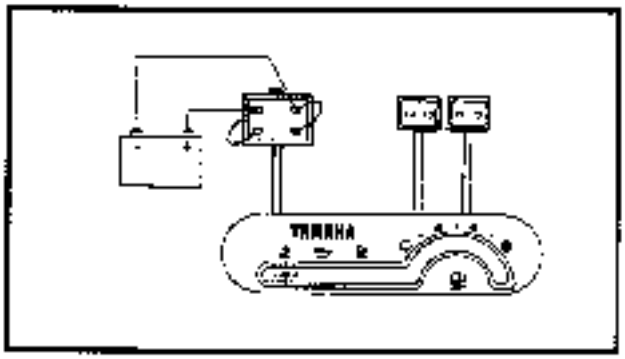
Float position	Resistance (Ω)
③, ④, ⑤ :ON	0 ~ 2
③ :OFF ④, ⑤ :ON	97 ~ 103
③, ④ :OFF ⑤ :ON	292 ~ 308
③, ④, ⑤ :OFF	667 ~ 713

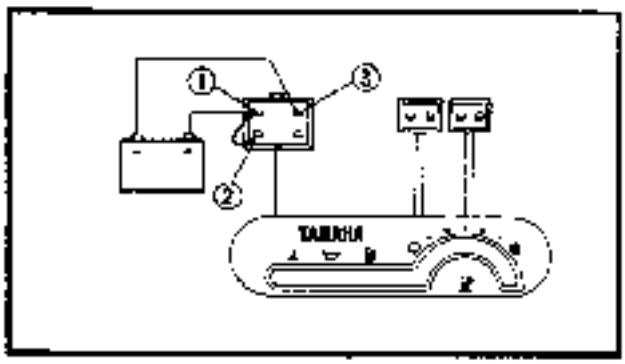
Float distance:
ⓐ: 74 ~ 79 mm (2.91 ~ 3.11 in)
ⓑ: 134 ~ 139 mm (5.28 ~ 5.47 in)
ⓒ: 195 ~ 198 mm (7.68 ~ 7.80 in)











MULTI FUNCTION METER

1. Check:
   - Display function
     Not working → Replace.

Checking steps:
- Connect the battery.

Voltage range:
10 ~ 16 V

① Red lead → Positive terminal.
② Green lead → Positive terminal.
③ Black lead → Negative terminal.

- After the battery is connected all segments light up for 2.5 to 4.5 seconds.
- Disconnect the green lead.
- After the lead is disconnected, all segments will disappear.

2. Check:
   - Overheat segment
     Not working → Replace.

Checking steps:
- Connect the battery.

① Red lead → Positive terminal.
② Green lead → Positive terminal.
③ Black lead → Negative terminal.

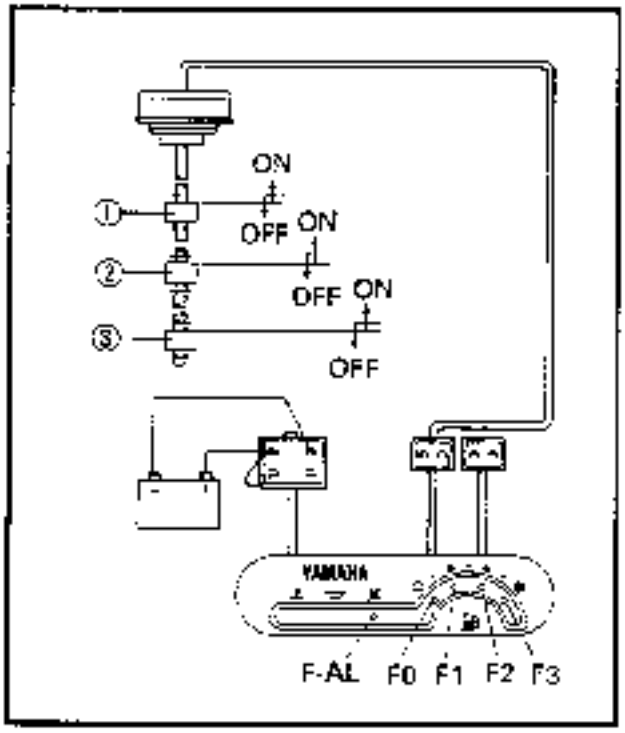
- Connect the pink and black terminals and check that the overheat segment starts blinking.

3. Check:
   - Fuel meter
     Not working → Replace.

Checking steps:
- Connect the battery.

① Red lead → Positive terminal.
② Green lead → Positive terminal.
③ Black lead → Negative terminal.

- Connect the fuel level sensor.

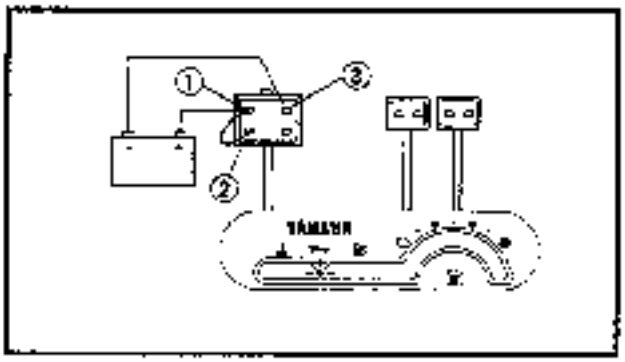


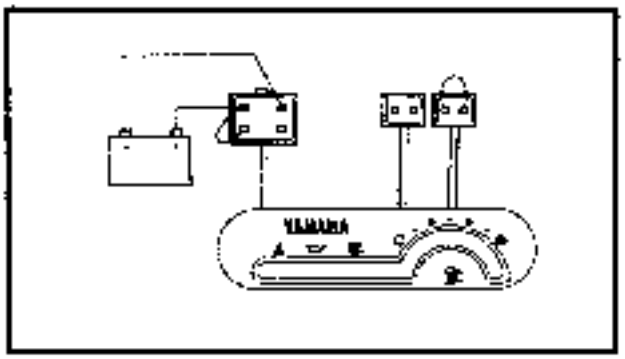
NOTE:
The fuel meter should be checked properly before checking the fuel level sensor resistance.

- Slide the float of fuel level sensor.
- Check the fuel meter and warning segments.

Float position	Display
①, ②, ③ :ON	F0, F1, F2, F3,: ON
① :OFF ②, ③ :ON	F0, F1, F2: ON
①, ② :OFF ③ :ON	F0, F1: ON
①, ②, ③ :OFF	F0, F-AL: Blinking

NOTE:
The fuel meter display remains unchanged for 15 to 30 seconds after the float is slid.





4. Check:
   - Oil warning segment
     Not working → Replace.

Checking steps:
- Connect the battery.

① Red lead → Positive terminal.
② Green lead → Positive terminal.
③ Black lead → Negative terminal.

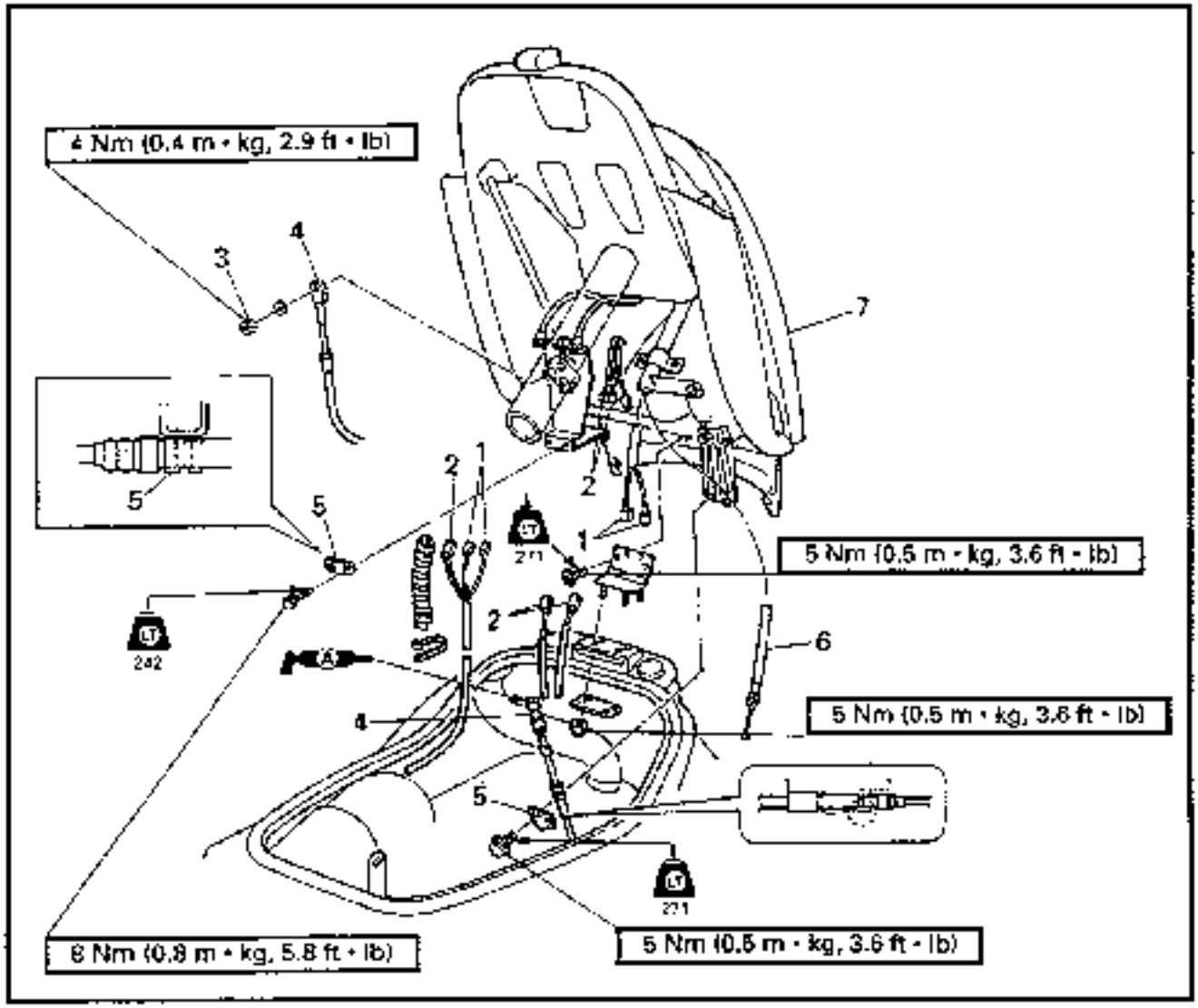
- Check that the oil warning segment blinks.
- Connect the blue and black terminals and check that the oil warning segment stops blinking.

NOTE:
The oil warning display remains unchanged for 15 to 30 seconds after contacting terminals.

CHAPTER 8
HULL AND HOOD

ENGINE HOOD REMOVAL

EXPLODED DIAGRAM

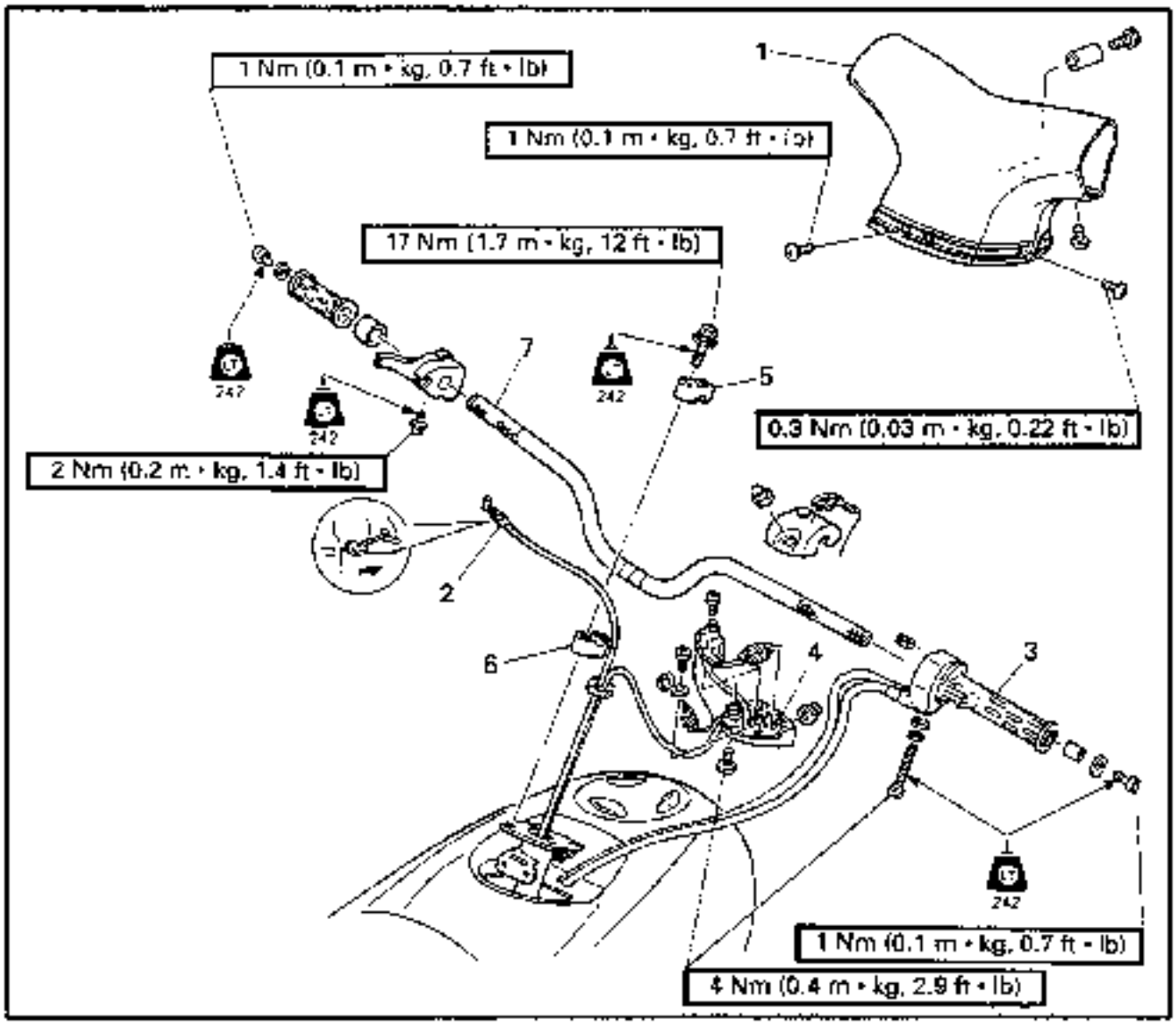


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	ENGINE HOOD REMOVAL		Follow the left "Step" for removal.
1	Handle switch lead coupler	2	
2	Meter lead coupler	3	
3	Nylon nut	1	
4	Cable joint	2	
5	Cable stopper	2	**⚠ WARNING** **Be sure to fit the projection on the cable stopper into the groove in the outer cable.**
6	Throttle cable	1	
7	Engine hood assembly	1	
			Reverse the removal steps for installation.

HANDLE

EXPLODED DIAGRAM



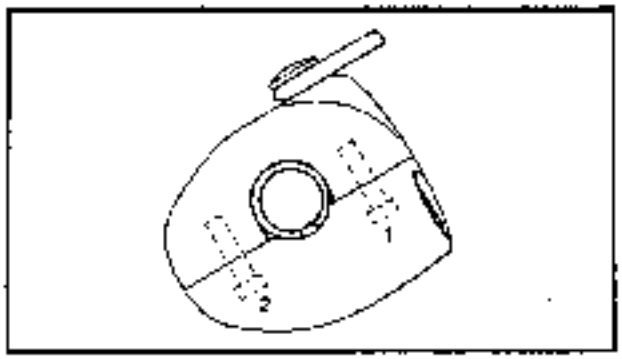
REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	HANDLE REMOVAL		Follow the left "Step" for removal.
1	Steering pad	1	
2	Throttle cable	1	**NOTE:** Disconnect the throttle cable from the throttle lever.
3	Trim grip assembly	1	
4	Handle switch assembly	1	
5	Handle holder (upper)	2	
6	Handle holder (lower)	2	
7	Handlebar	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Handle inspection

1. Inspect:
   - Handlebar
     Bend/Crack/Damage → Replace.

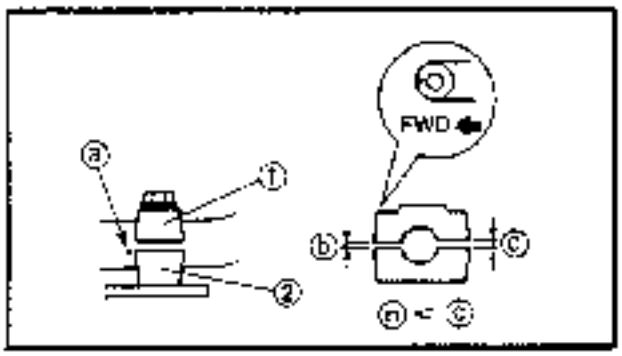


Handle switch installation

1. Install:
   - Handle switch

NOTE:

Tighten the screw at the stop button side first.



Handle holder installation

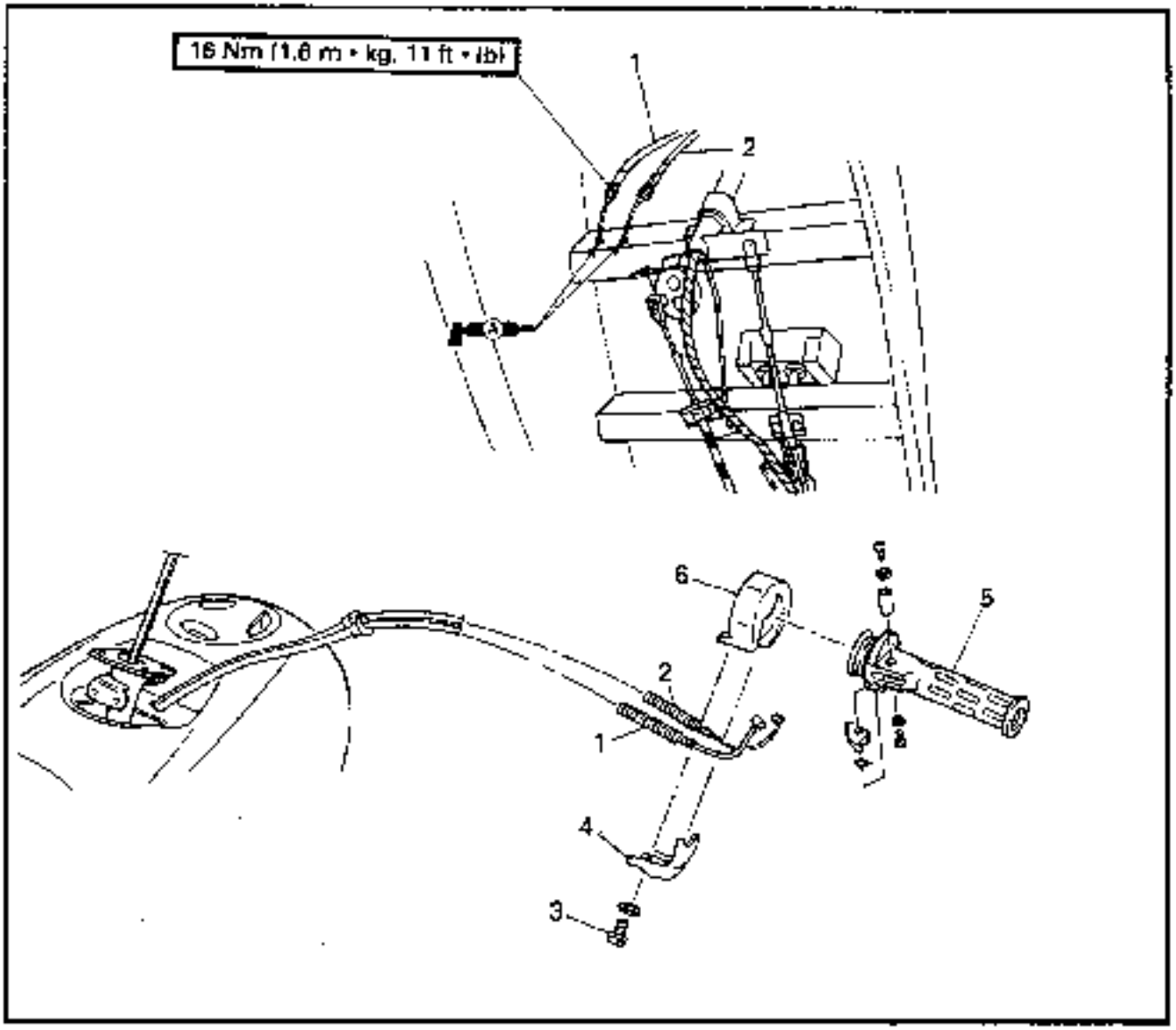
1. Install:
   - Handle holder (lower) ①
   - Handle holder (upper) ②

NOTE:

- Align the punched mark ⓐ on the handlebar with the top surface of the handlebar holder (lower).
- When tightening the bolt, clearance ⓑ should be narrower than clearance ⓒ.

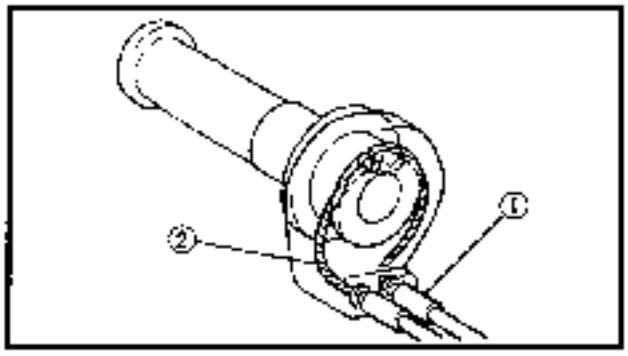
TRIM GRIP AND CONTROL CABLE

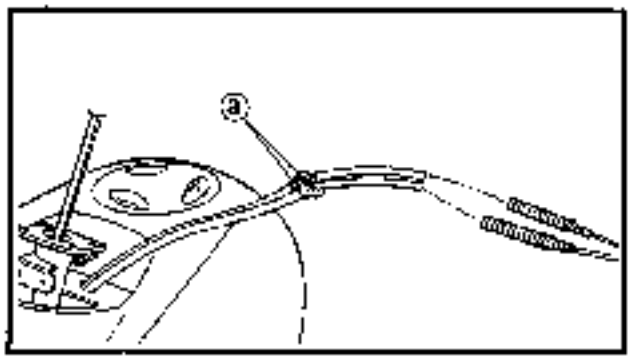
EXPLODED DIAGRAM

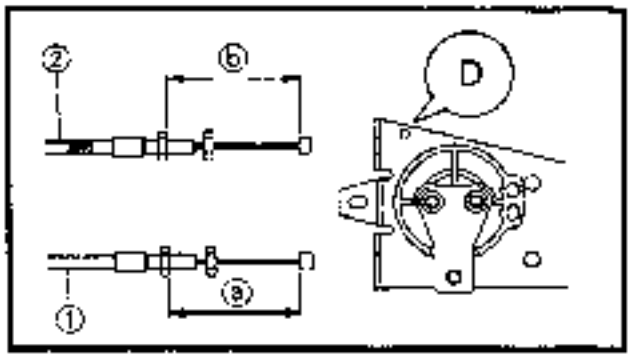


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	TRIM GRIP AND CONTROL CABLE REMOVAL		Follow the left "Step" for removal.
	Trim grip assembly		Refer to "HANDLE".
1	Trim control cable 1	1	
2	Trim control cable 2 (white taped)	1	
3	Screw	1	
4	Plate	1	
5	Grip	1	
6	Housing	1	
			Reverse the removal steps for installation.







SERVICE POINTS

Trim control cable inspection

1. Inspect:
   - Trim control cable
     Kink/Fray/Stick → Replace.

Housing inspection

1. Inspect:
   - Housing
     Wear/Damage → Replace.

Trim grip installation

1. Install:
   - Nozzle control cable 1 ①
   - Nozzle control cable 2 (white taped) ②

NOTE:

After inserting the cables into the engine hood cover, make sure the insertion opening is made water tight with the packing ⓔ.

2. Adjust:
   - Inner cable length ⓐ, ⓑ

Nozzle control cable length ⓐ, ⓑ:
77 ± 0.5 mm (3.03 ± 0.02 in)
Between adjust nut top and inner cable end.

NOTE:

- Before adjusting the nozzle control cables, set the trim grip in the neutral.
- Adjust inner cable lengths ⓐ and ⓑ to specification, so that all of the slack is removed.

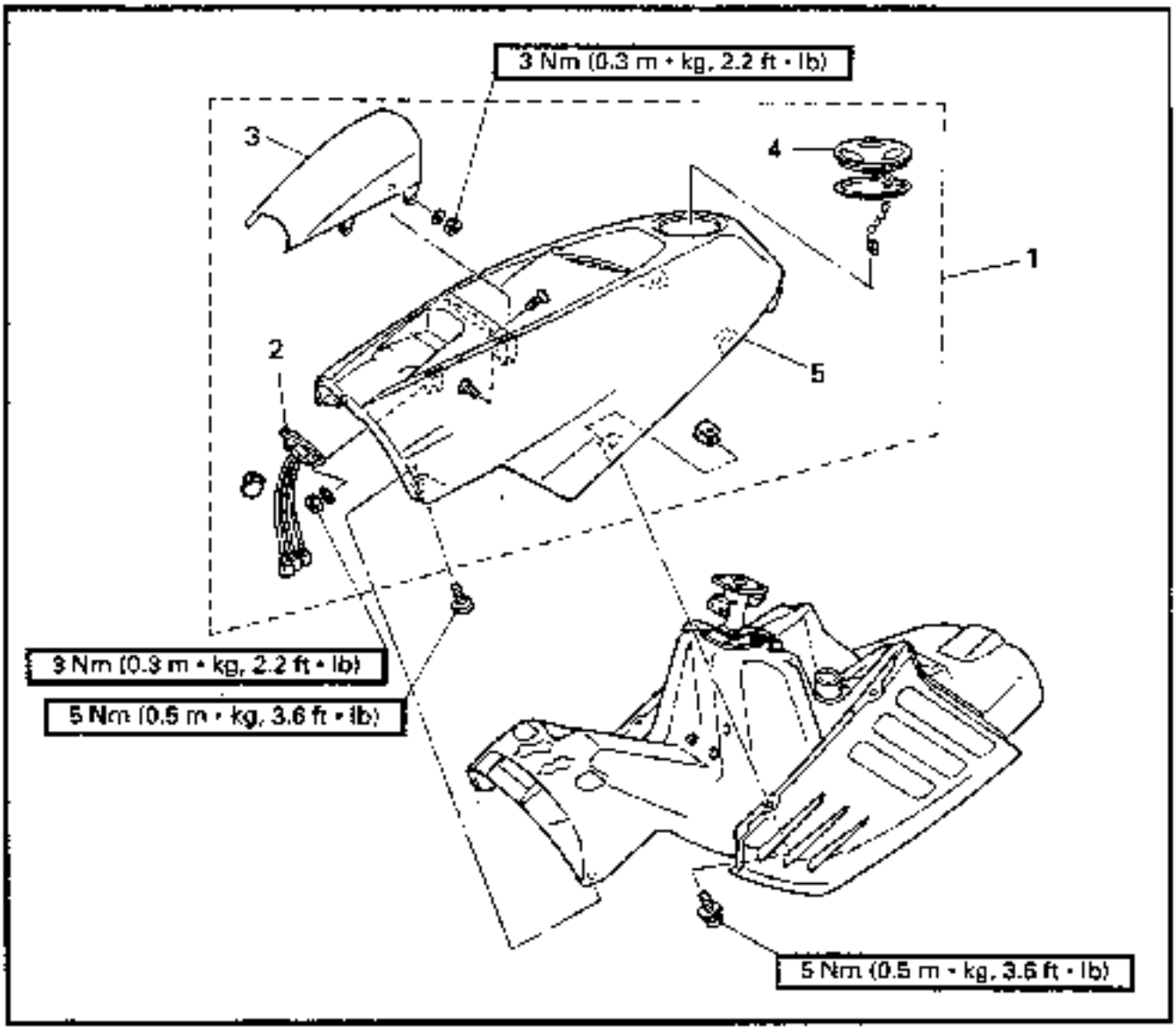
3. Install:
   - Nozzle control cable 1 ①
   - Nozzle control cable 2 (white taped) ②

Trim cable adjustment

Refer to "CONTROL SYSTEM" in chapter 3.

ENGINE HOOD COVER

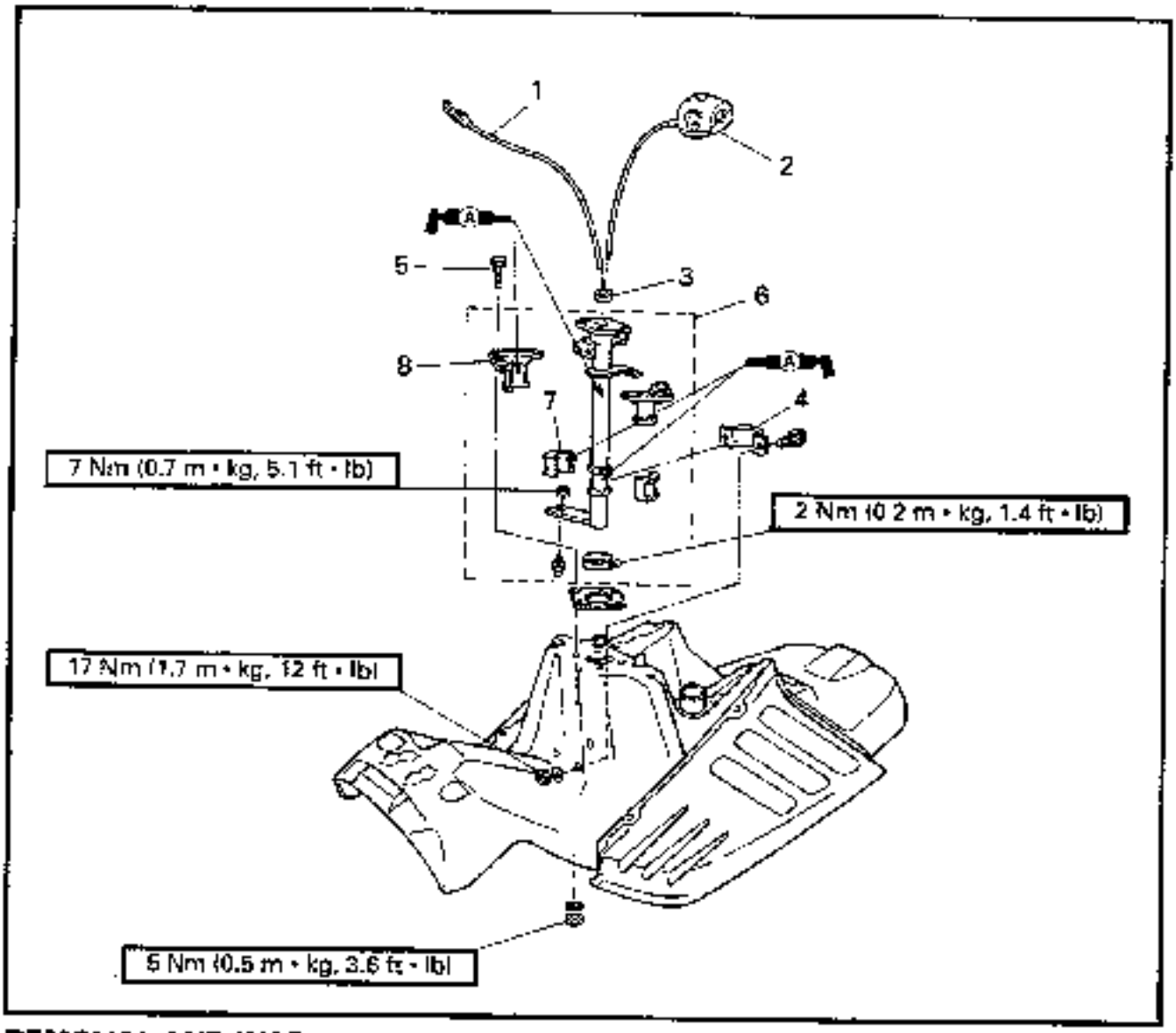
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	ENGINE HOOD COVER REMOVAL		Follow the left "Step" for removal.
	Engine hood assembly		Refer to "ENGINE HOOD REMOVAL".
	Handle assembly		Refer to "HANDLE".
	Trim grip assembly		Refer to "TRIM GRIP AND CONTROL CABLE".
1	Engine hood cover assembly	1	
2	Meter assembly	1	
3	Meter cover	1	
4	Cover	1	
5	Engine hood cover	1	
			Reverse the removal steps for installation.

HANDLE COLUMN
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	HANDLE COLUMN REMOVAL		Follow the left "Step" for removal.
	Engine hood cover assembly		Refer to "ENGINE HOOD COVER".
1	Throttle cable	1	
2	Handle switch	1	
3	Seal packing	1	
4	Bushing joint	1	
5	Bolt	4	
6	Handle column assembly	1	
7	Bushing	2	
8	Column bushing	2	
			Reverse the removal steps for installation.

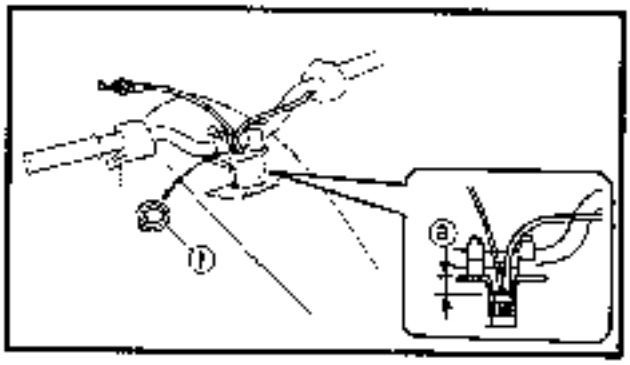
SERVICE POINTS

Handle column inspection

1. Inspect:
   - Handle column
     Bend/Crack/Damage → Replace.

Bearing inspection

1. Inspect:
   - Column bushing
   - Bushing
     Wear/Damage → Replace.

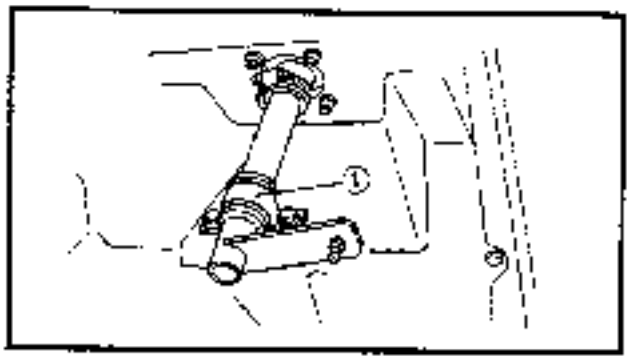


Seal packing installation

1. Install:
   - Seal packing ①

NOTE:

Seal the steering shaft with the seal packing at a point 20 mm (0.79 in) ② from the end of the steering column.



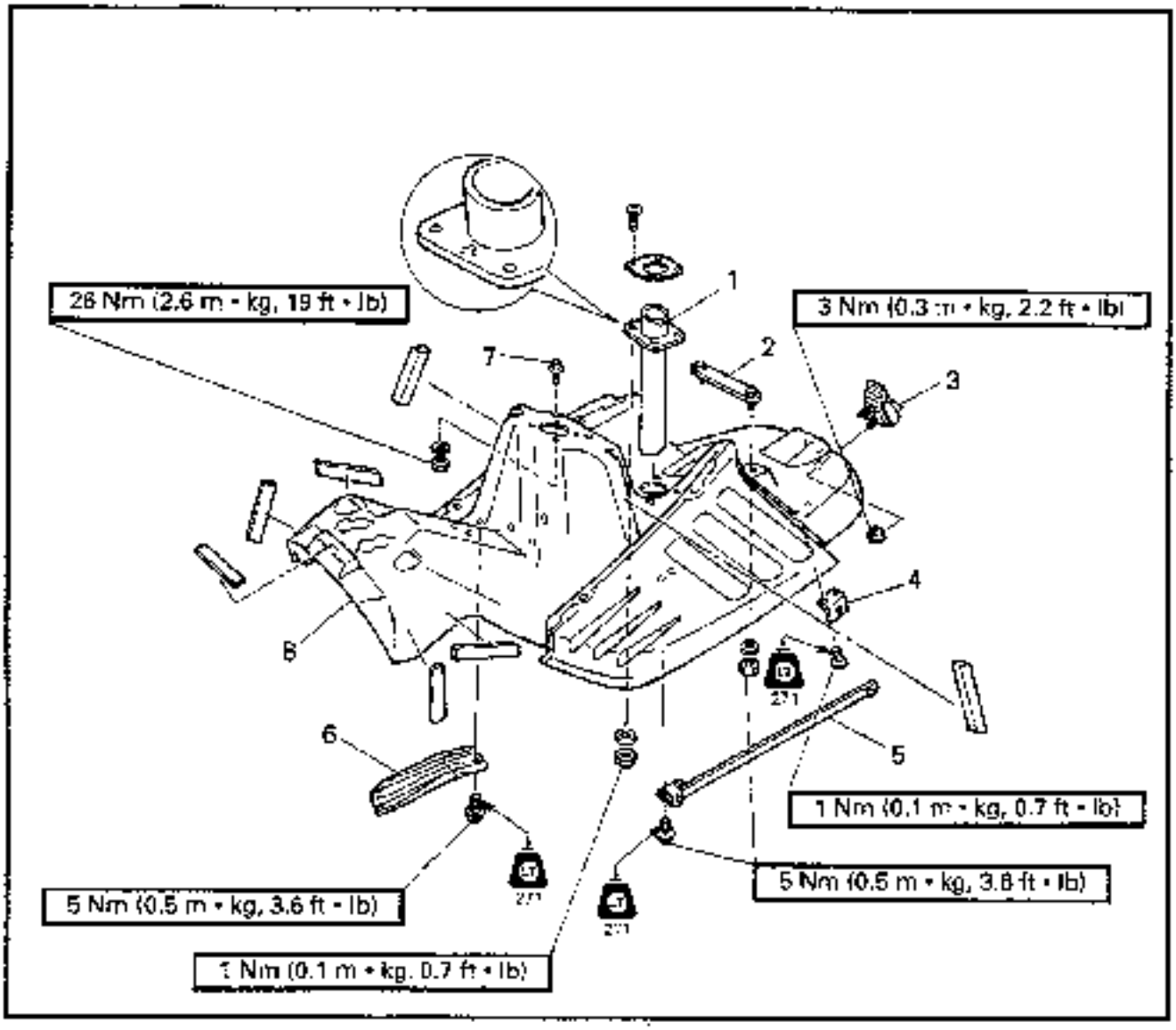
Bushing joint installation

1. Install:
   - Bushing joint ①

NOTE:

Check for smooth action of the handle column when tightening the bolt.

ENGINE HOOD
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	ENGINE HOOD DISASSEMBLY		Follow the left "Step" for removal.
	Handle column		Refer to "HANDLE COLUMN".
1	Ventilation hose	1	
2	Seat hook stay	1	
3	Hook lock	1	
4	Fix plate	1	
5	Hood support	1	
6	Steering cable bracket	1	
7	Stopper pin	2	
8	Engine hood	1	
			Reverse the removal steps for installation.

SERVICE POINTS

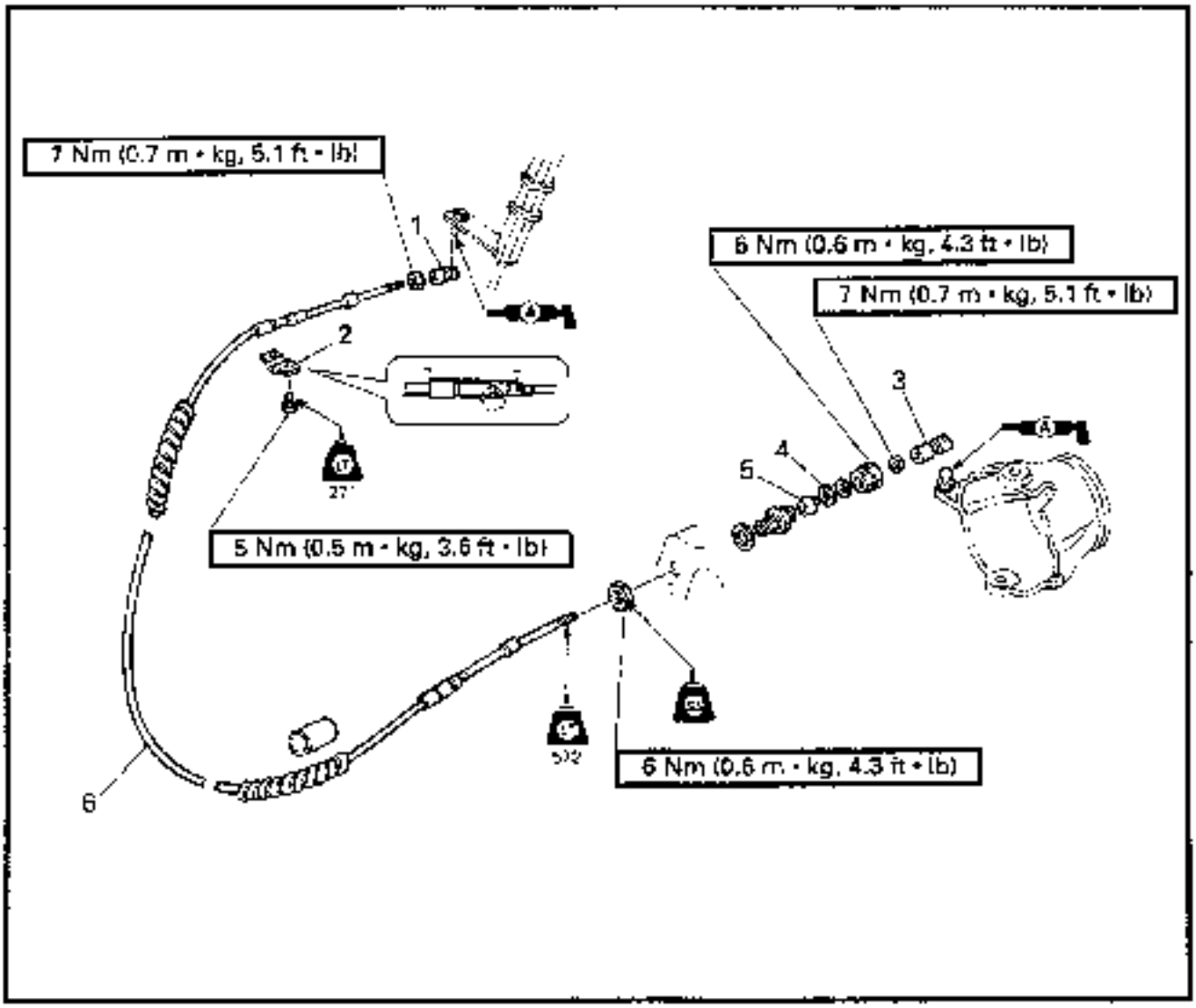
Hood support inspection

1. Inspect:
   - Hood support
     Bend/Damage → Replace.

Engine hood inspection

1. Inspect:
   - Engine hood
     Crack/Damage → Replace.

STEERING CABLE
EXPLODED DIAGRAM



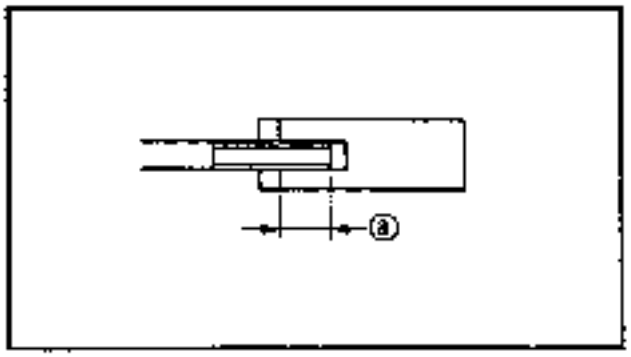
REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	STEERING CABLE REMOVAL		Follow the left "Step" for removal.
1	Cable joint	1	
2	Cable stopper	1	**⚠ WARNING** **Be sure to fit the projection on the cable stopper into the groove in the outer cable.**
	Ride plate		Refer to "JET PUMP UNIT REMOVAL".
3	Cable joint	1	
4	Stopper	1	
5	Seal	1	
6	Steering cable	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Cable inspection

1. Inspect:
   - Steering cable
     Kink/Fray/Stick → Replace.



Jet pump side cable joint installation

1. Install:
   - Cable joint

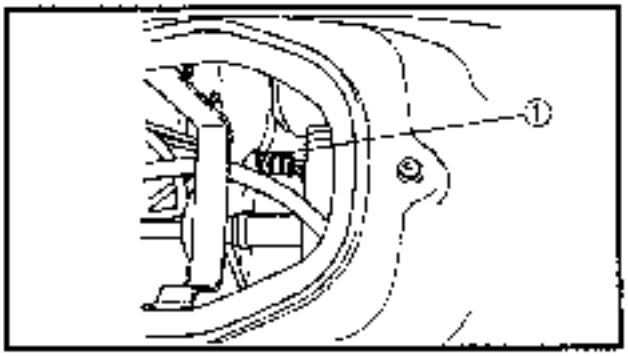
Cable joint set length ⓐ:
12.8 ~ 14.4 mm (0.50 ~ 0.57 in)

⚠ WARNING

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

Steering cable adjustment

Refer to "CONTROL SYSTEM" in chapter 3.



Spiral tube installation

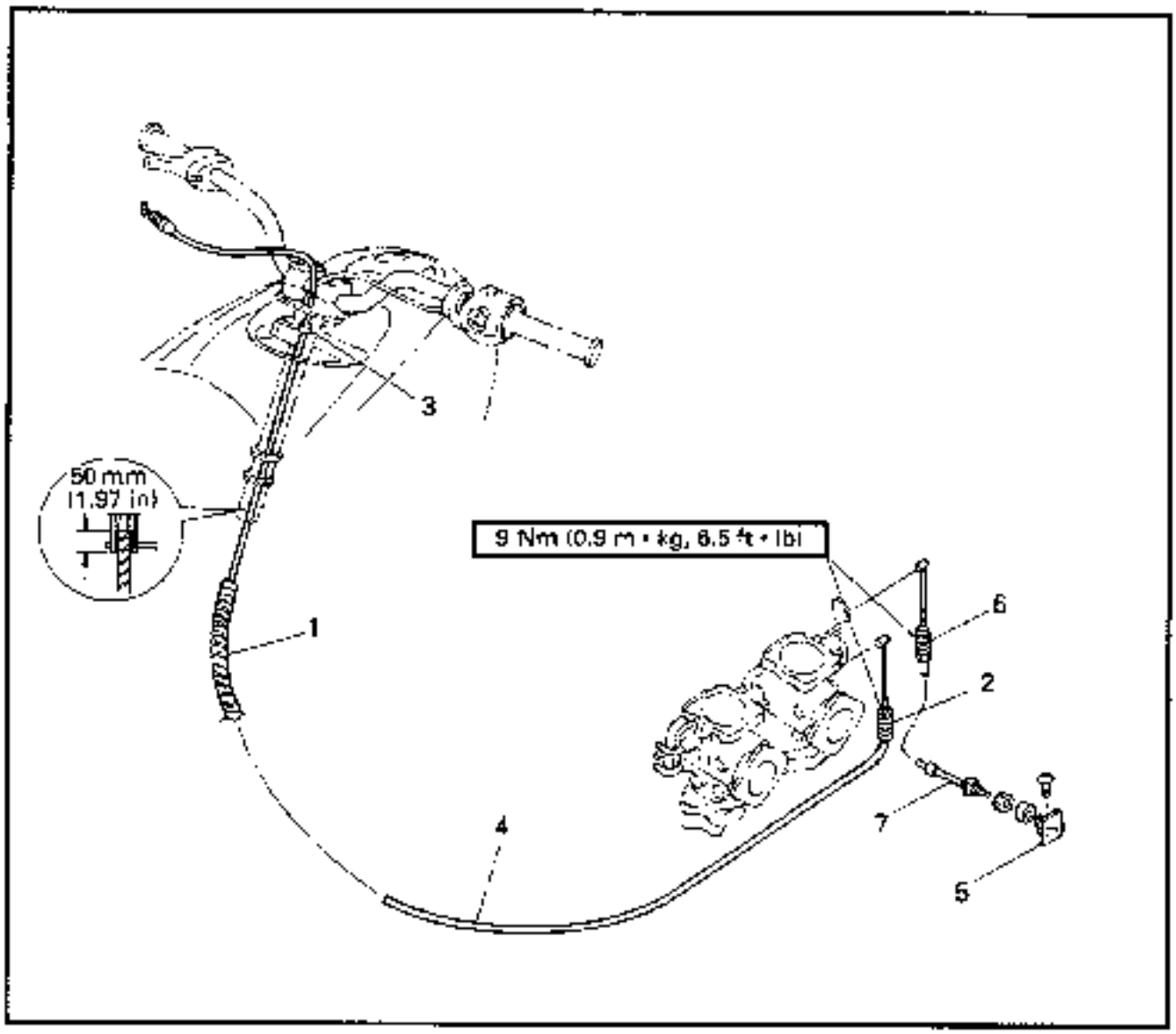
1. Install:
   - Spiral tube ①

NOTE:

Wind the spiral tube around the steering cable, water inlet hose and battery breather hose.

THROTTLE CABLE AND CHOKE CABLE

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

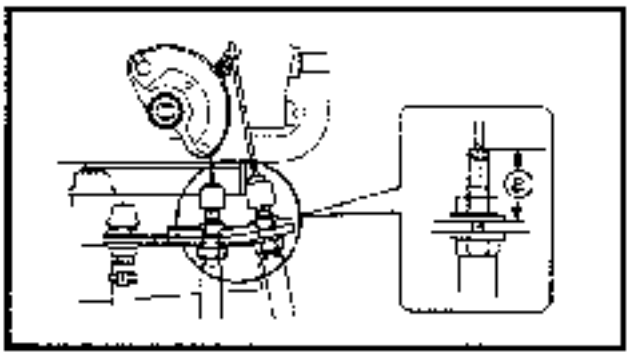
Step	Procedure/Part name	Q'ty	Service points
	THROTTLE CABLE REMOVAL		Follow the left "Step" for removal.
	Steering pad		Refer to "HANDLE".
1	Spiral tube	1	
2	Throttle cable lock nut	1	
3	Seal packing	1	
4	Throttle cable	1	
	CHOKE CABLE REMOVAL		
5	Choke knob	1	
6	Choke cable lock nut	1	
7	Choke cable	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Cable inspection

1. Inspect:
   - Throttle cable
   - Choke cable

   Kink/Fray/Stick → Replace.



Cable installation

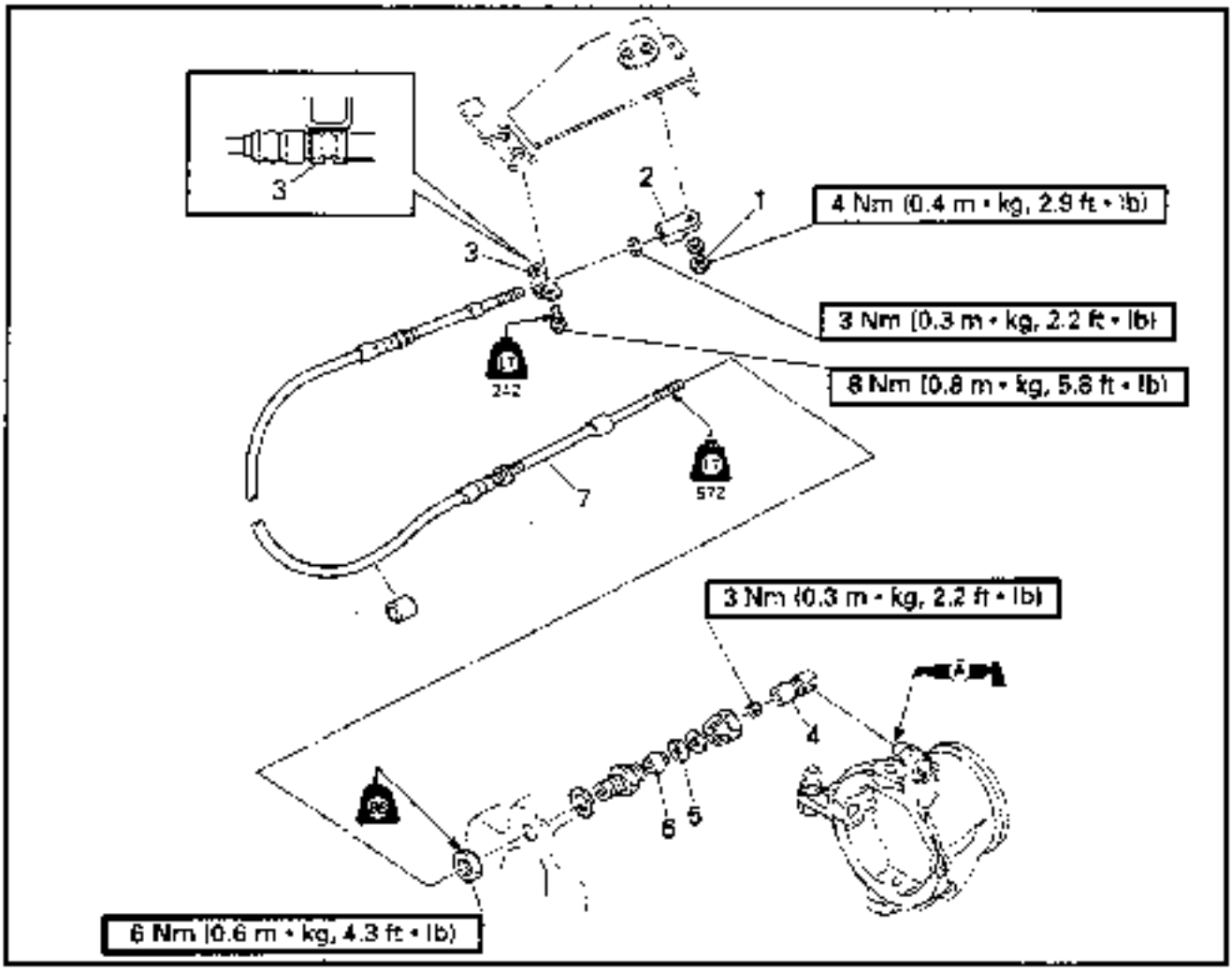
1. Install:
   - Cable guide

Cable guide set position ⓑ:
17 mm (0.67 in)

2. Check:
   - Throttle cable
   - Choke cable

   Free play → Repair.
   Refer to "CONTROL SYSTEM" in chapter 3.

TRIM CABLE
EXPLODED DIAGRAM



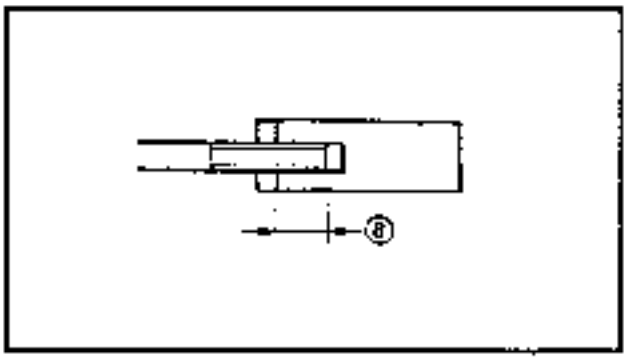
REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	TRIM CABLE REMOVAL		Follow the left "Step" for removal.
1	Nylon nut	1	
2	Cable joint	1	
3	Cable stopper	1	**⚠ WARNING** **Be sure to fit the projection on the cable stopper into the groove in the outer cable.**
	Ride plate		Refer to "JET PUMP UNIT REMOVAL" in chapter 6.
4	Cable joint	1	
5	Stopper	1	
6	Seal	2	
7	Trim cable	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Cable inspection

1. Inspect:
   - Trim cable
     Kink/Fray/Stick → Replace.



Jet pump side cable joint installation

1. Install:
   - Cable joint

Cable joint set length ⓐ:
12.8 ~ 14.4 mm (0.50 ~ 0.57 in)

⚠ WARNING

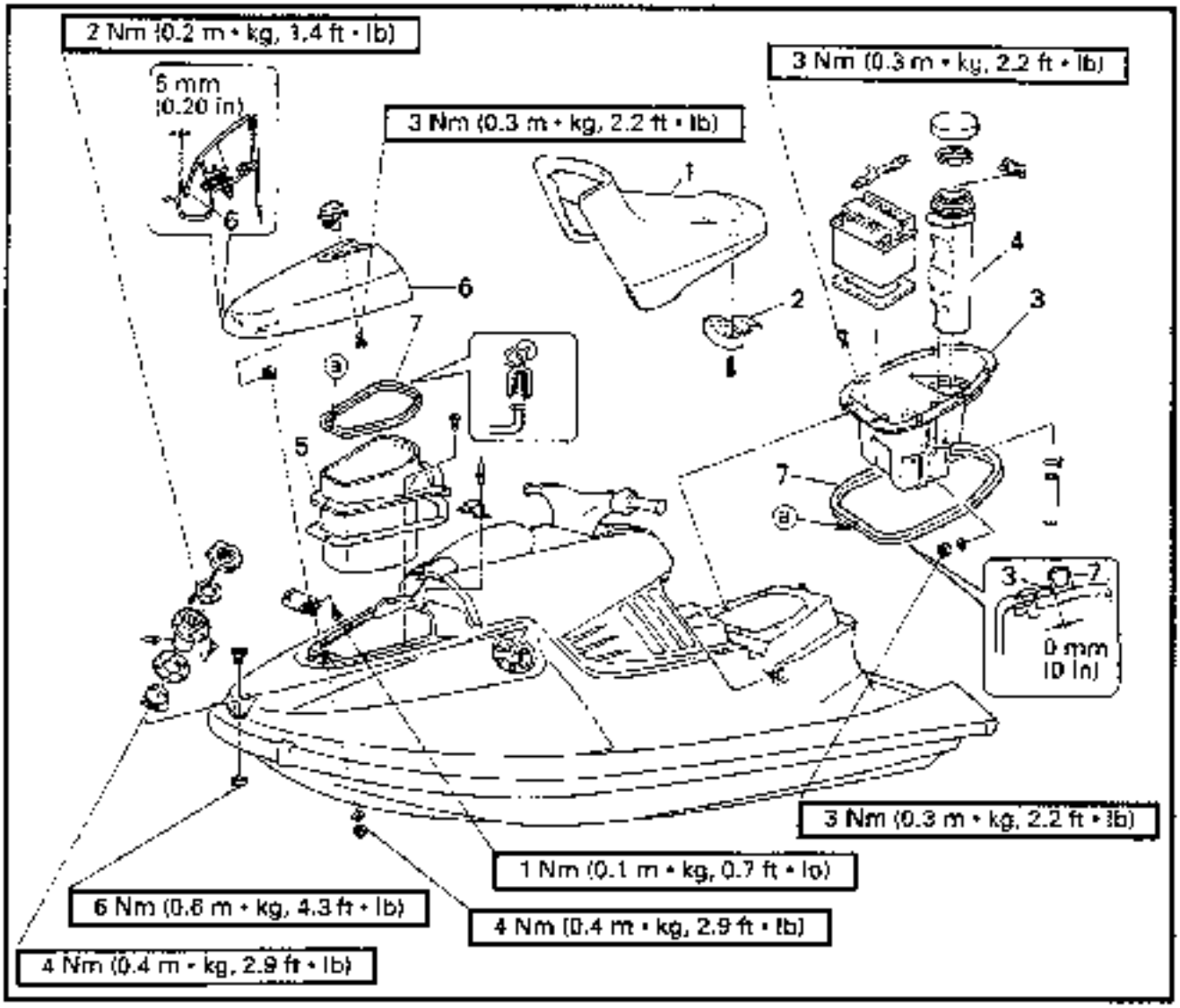
The cable joint must be screwed in more than 8 mm (0.31 in).

Trim cable adjustment

Refer to "CONTROL SYSTEM" in chapter 3.

SEAT, STORAGE BOX AND BATTERY CASE

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	SEAT, STORAGE BOX AND BATTERY CASE REMOVAL		Follow the left "Step" for removal.
1	Seat	1	
2	Seat lock	1	
3	Battery case	1	
4	Fire extinguisher box	1	
5	Storage box	1	
6	Storage box lid	1	
7	Packing	2	**NOTE:** Mate packing ends ⓐ at center line from and apply instantaneous adhesive.
			Reverse the removal steps for installation.

SERVICE POINTS

Seat inspection

1. Inspect.
   - Seat lock
     Wear/Damage → Replace.

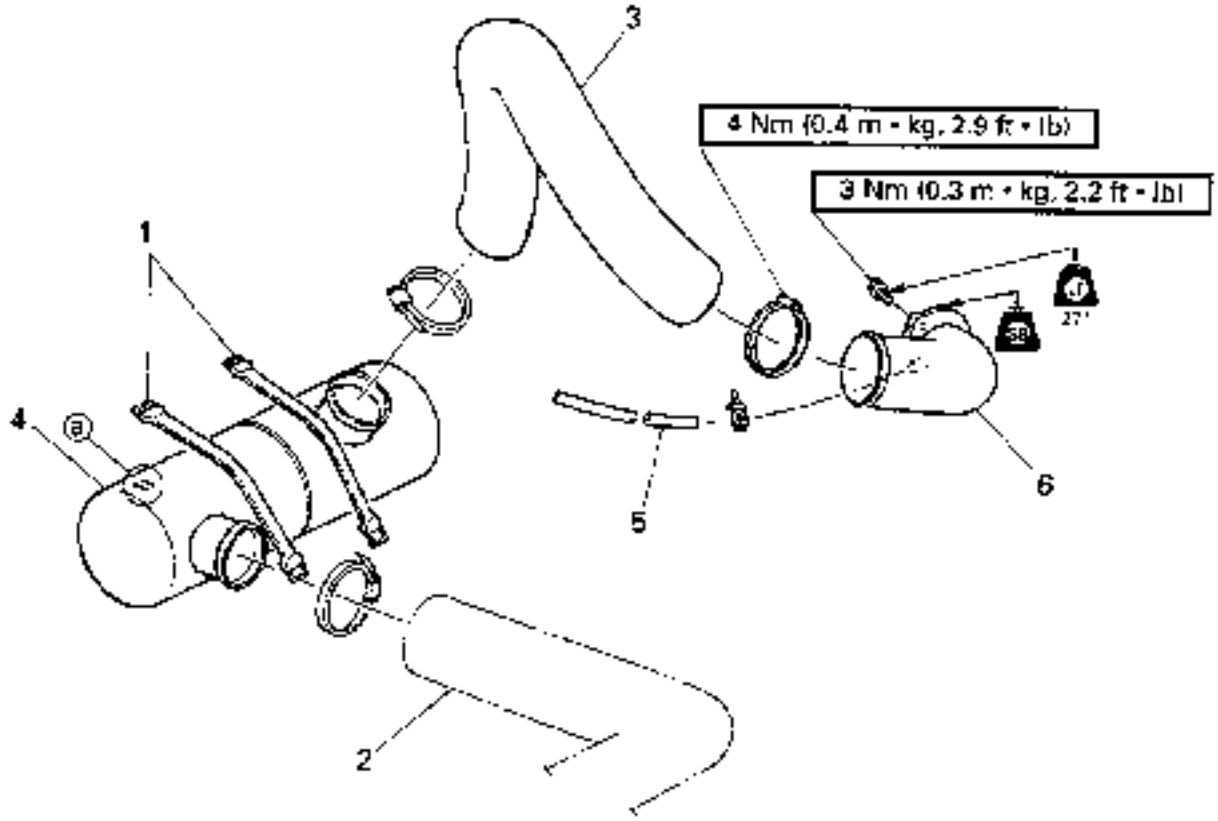
Battery case inspection

1. Inspect:
   - Battery case
     Crack/Damage → Replace.
   - Packing
     Flat/Damage → Replace.

Storage box inspection

1. Inspect:
   - Storage box
     Crack/Damage → Replace.
   - Packing
     Flat/Damage → Replace.

EXHAUST SYSTEM
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

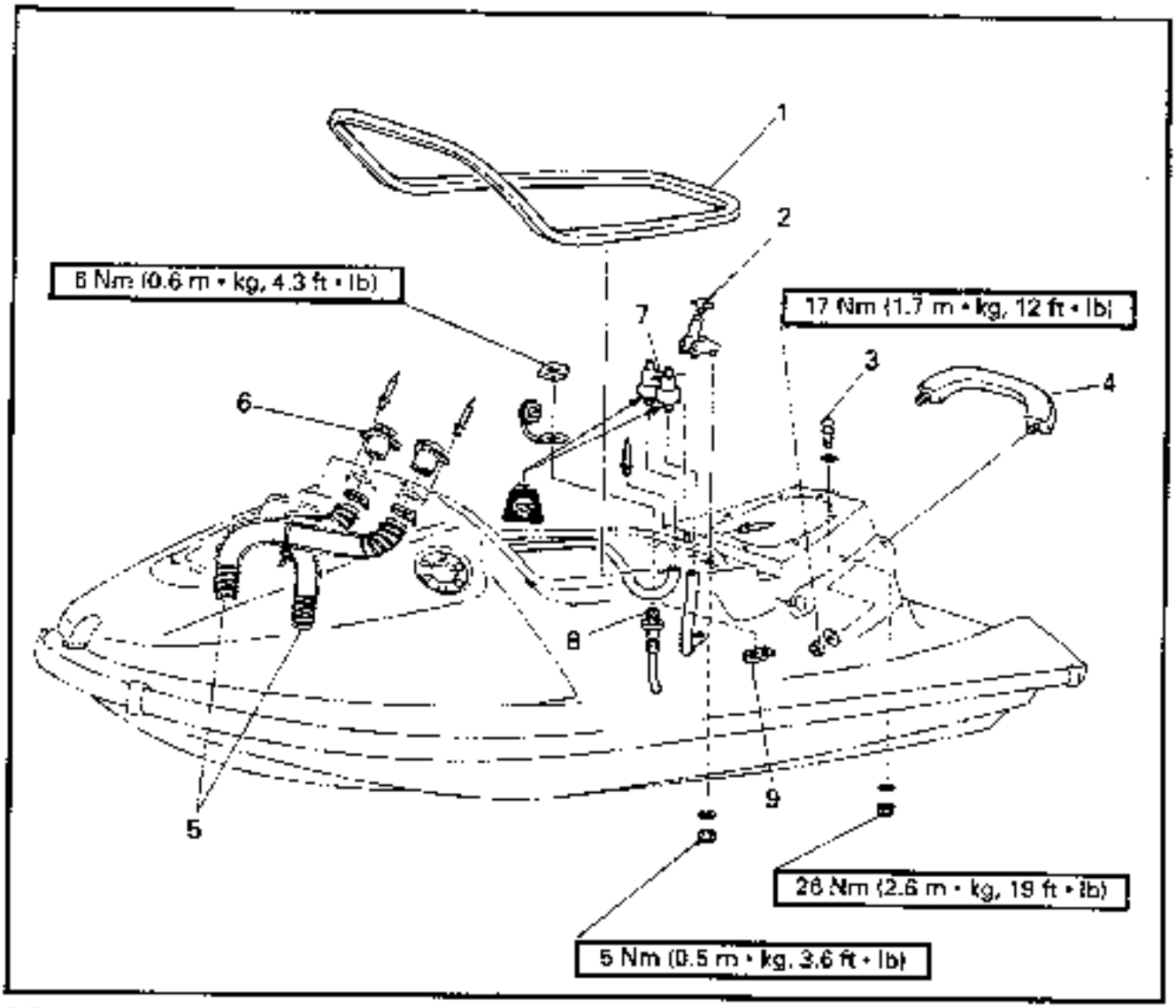
Step	Procedure/Part name	Q'ty	Service points
	EXHAUST SYSTEM REMOVAL		Follow the left "Step" for removal.
	Battery case		Refer to "SEAT, STORAGE BOX AND BATTERY CASE".
1	Band	2	
2	Exhaust hose	1	
3	Exhaust hose	1	
4	Water lock	1	**NOTE:**
5	Water outlet hose	1	Point the mark ⓐ on the water lock to the front.
6	Exhaust guide	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Exhaust system inspection

1. Inspect:
   - Band
     Crack → Replace.
2. Inspect:
   - Exhaust hose
     Crack/Wear/Burn → Replace.
3. Inspect:
   - Water lock
     Crack/Leak → Replace.
     Gathered water → Drain.

DECK
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	DECK DISASSEMBLY		Follow the left "Step" for removal.
	Battery case		Refer to "SEAT, STORAGE BOX AND BATTERY CASE".
1	Hood packing	1	
2	Hood lock hook	1	
3	Seat lock pin	1	
4	Grip handle	1	
5	Ventilation hose	2	
6	Ventilation joint	2	
7	Ventilation socket assembly	1	
8	Flushing hose	1	
9	Hood support bracket	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Ventilation system inspection

1. Inspect:
   - Ventilation hose
     Wear/Crack → Replace.
   - Ventilation hose joint
     Crack/Damage → Replace.

Hood packing inspection

1. Inspect:
   - Hood packing
     Wear/Damage → Replace.

Hood lock hook inspection

1. Inspect:
   - Hook lock hook
     Damage → Replace.

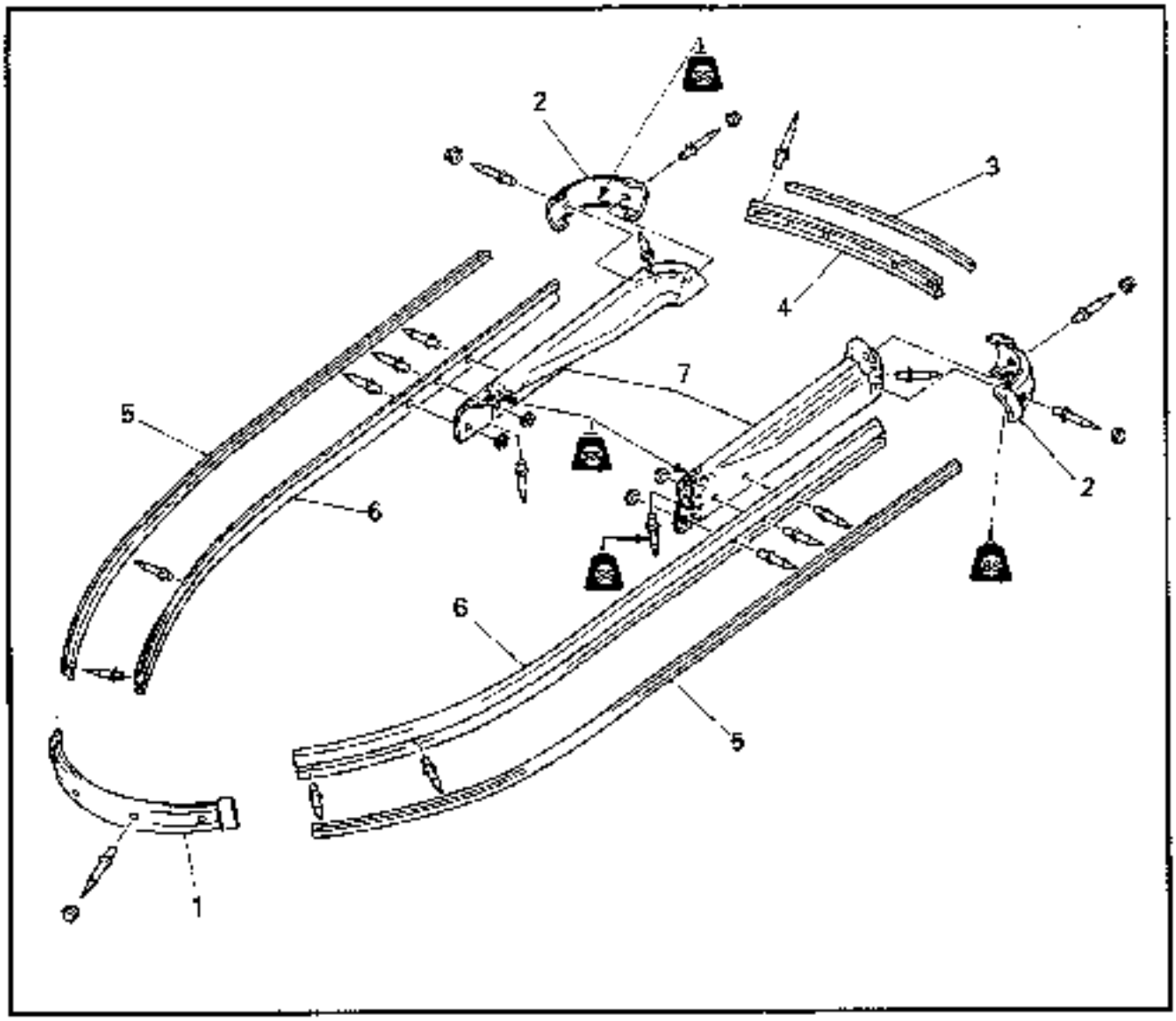
Hood packing installation

1. Install:
   - Hood packing

NOTE:

- Clean the hood packing groove in the deck.
- Apply cyano-acrylate adhesive to the hood packing.

GUNWALE
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	GUNWALE REMOVAL		Follow the left "Step" for removal.
1	Bow gunwale	1	
2	Stern gunwale	2	
3	Inner gunwale	1	
4	Cover gunwale	1	
5	Inner gunwale	2	
6	Side gunwale	2	
7	Core gunwale	2	
			Reverse the removal steps for installation.

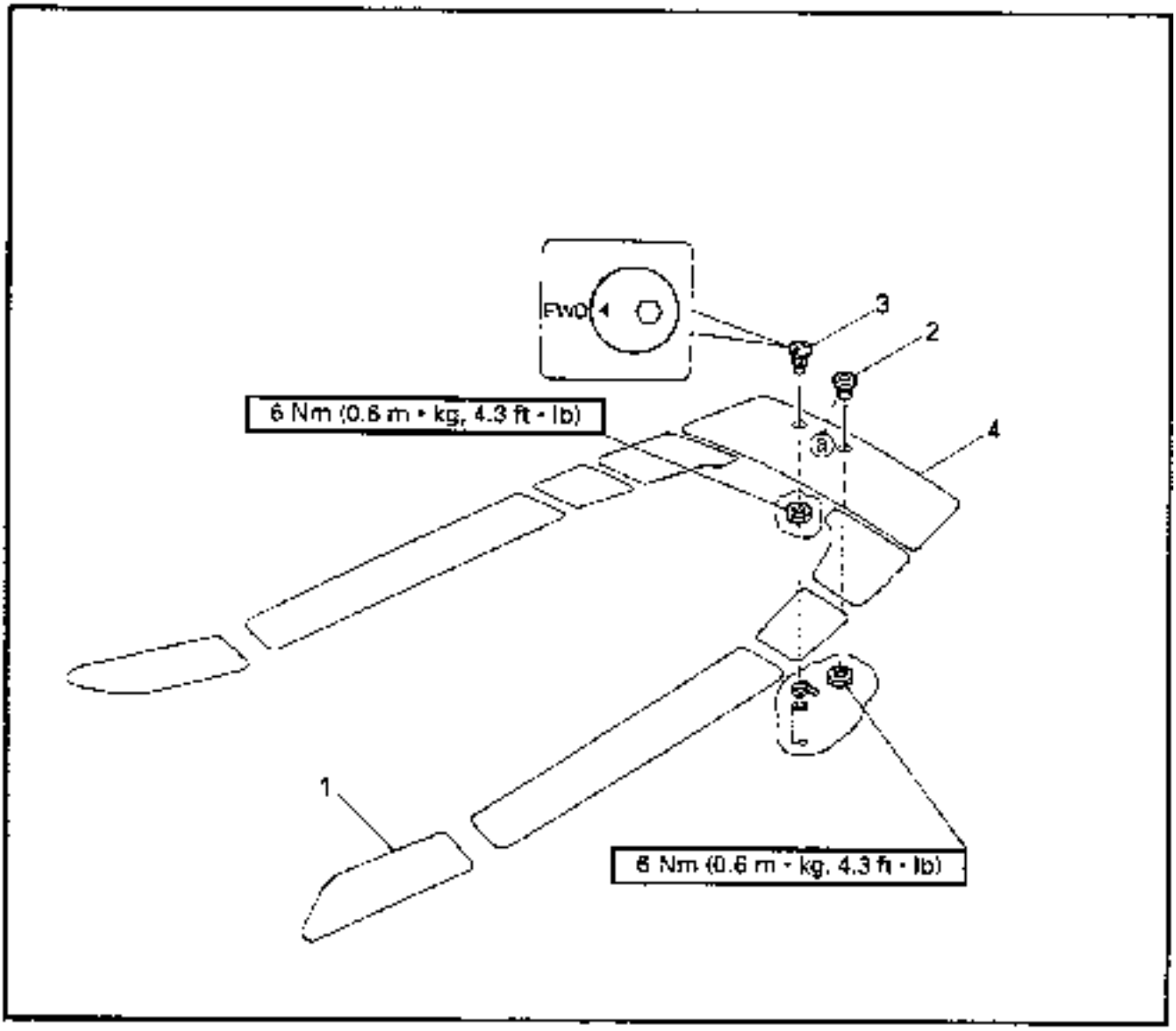
SERVICE POINTS

Gunwale inspection

1. Inspect:
   - Bow gunwale
   - Stern gunwale
   - Side gunwale
   - Cover gunwale
   - Core gunwale

   Wear/Damage → Replace.

MAT
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	MAT REMOVAL		Follow the left "Step" for removal.
1	Step mat	8	
2	Rope hole bolt	1	**NOTE:** The rope hole bolt should be installed with the projection ⓐ forward.
3	Spout	1	
4	Upper mat	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Mat inspection

1. Inspect:
   - Upper mat
   - Step mat

   Wear/Damage → Replace.

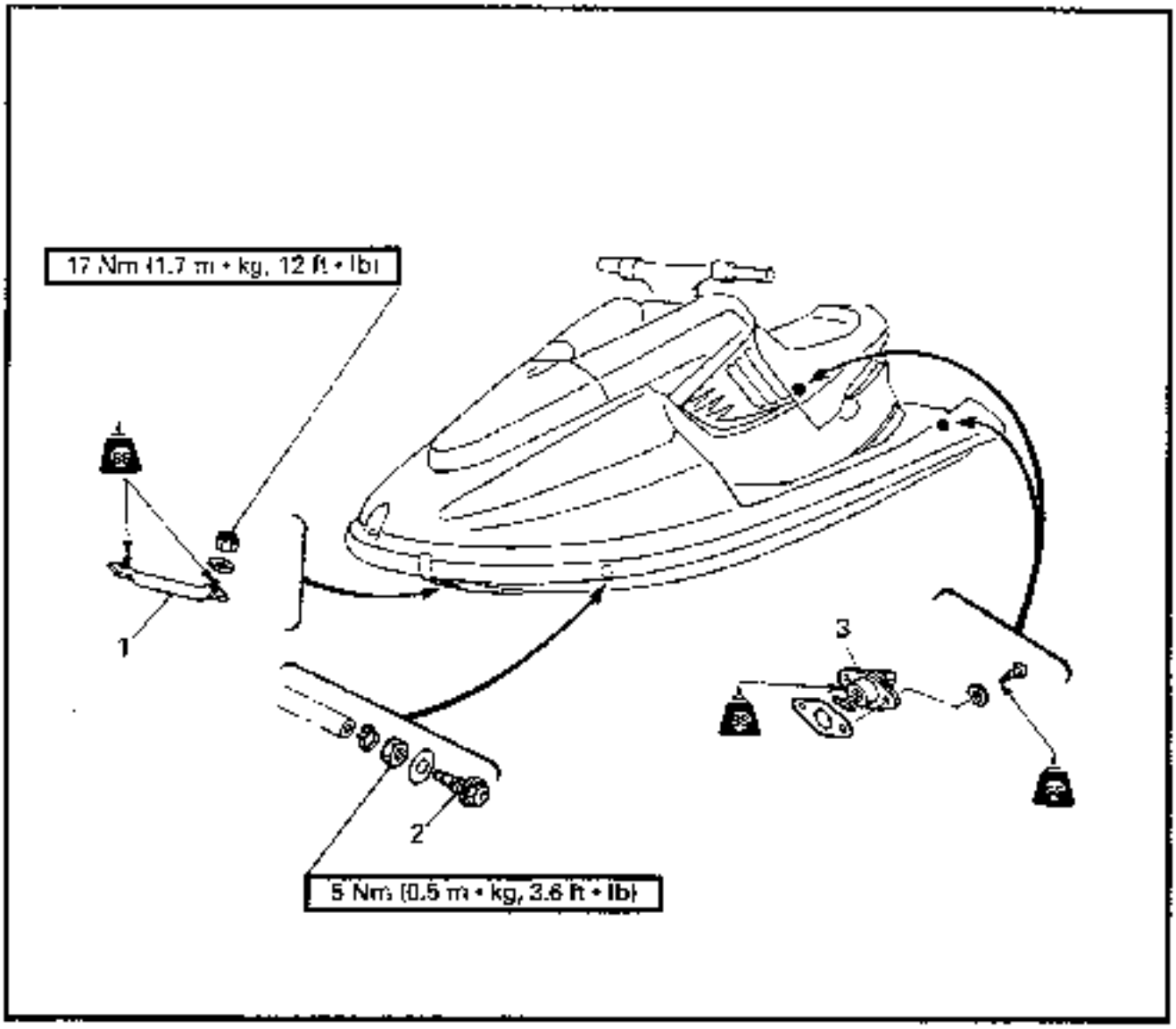
Mat installation

1. Install:
   - Mat

NOTE:

- Clean the step surface before installing the mat.
- Apply cyano-acrylate adhesive on the mat.

HULL
EXPLODED DIAGRAM



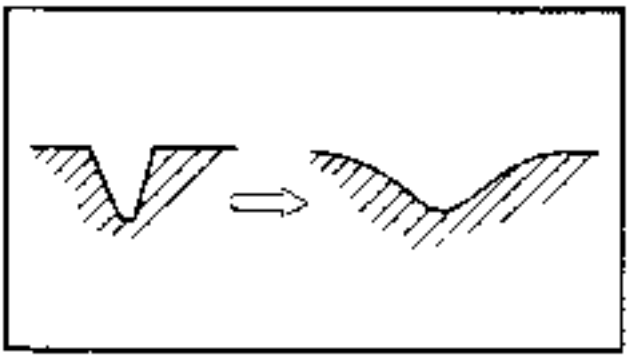
REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	HULL DISASSEMBLY		Follow the left "Step" for removal.
1	Bow eye	1	
2	Pilot water outlet	1	
3	Drain plug socket	2	
			Reverse the removal steps for installation.

HULL REPAIR

Light scratching

1. Sand the scratched area smooth with #400 grit wet or dry paper, and then with #600 grit wet or dry paper.
2. Polish the area with rubbing compound and buff to a high gloss using a wool pad and automotive wax.

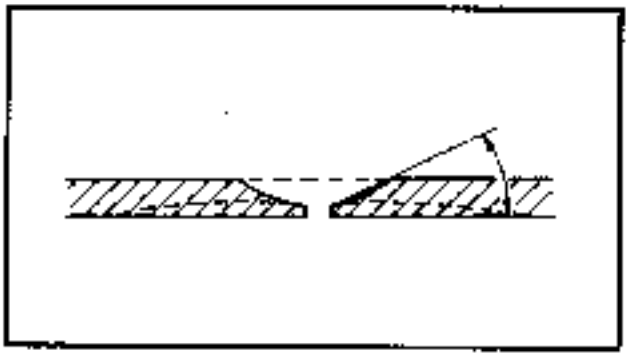


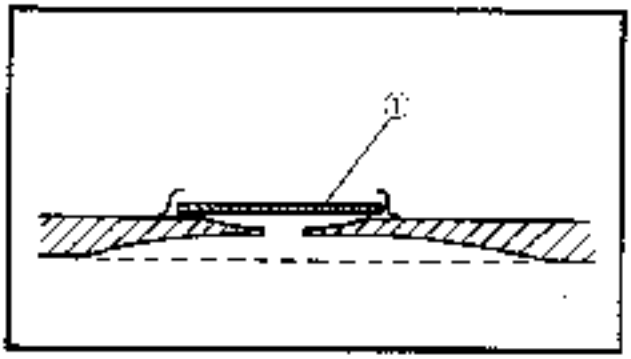
Deep scratching

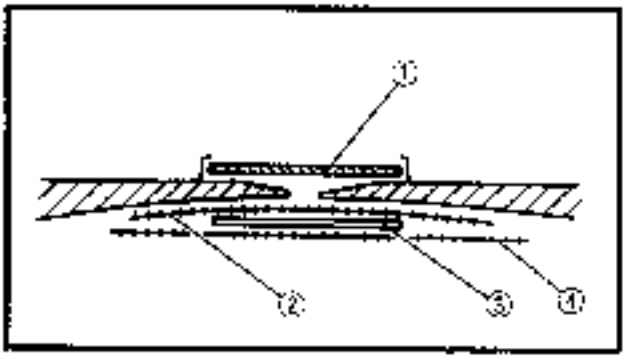
1. Remove any sharp/rough edges from the surface.
2. Sand the area smooth for about one inch all around the scratch with #80 grit wet or dry paper.
3. Clean the area with acetone and dry it.
4. Mix gel-coat with gel-coat thickener to make gel-coat putty and then add the catalyst to make.
5. Apply and spread the catalyzed putty with a squeegee, then cover the putty with a piece of waxed paper
6. When the putty has set, sand the area catalyzed putty. Smooth using #80 grit to #400 grit wet or dry paper and a sanding block.
7. Clean the area with a dry cloth and polish it.

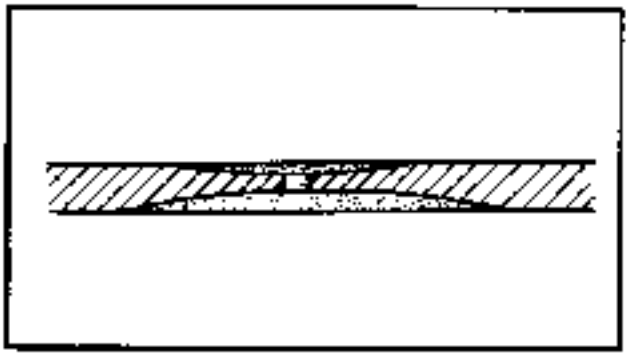
⚠ WARNING

Resin, catalyst and solvent are flammable and toxic. Use only in a well-ventilated area and keep away from open flames and sparks. Observe all warnings given by the manufacturer.







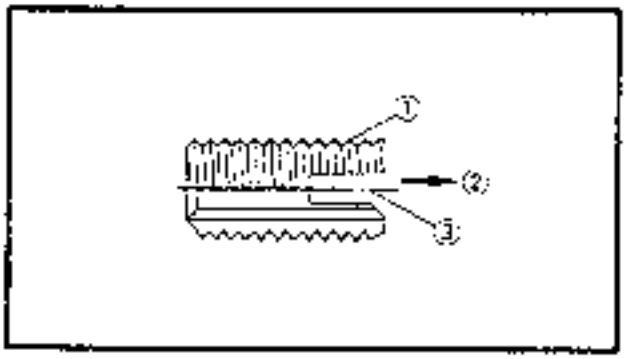


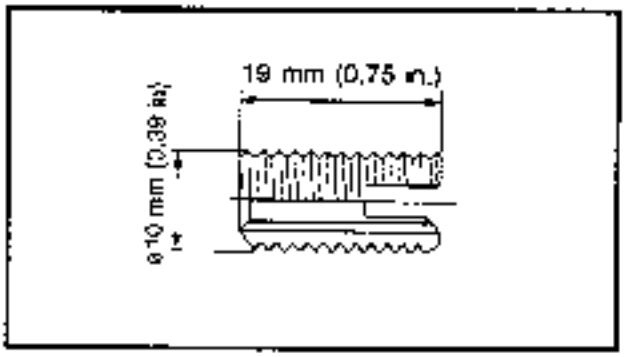
Hull damage (punctured)

1. Remove any damaged fiberglass.
2. Cut and open the crack approximately 1/4 inch.
3. Grind the opened edge less than 30° on the outside.
4. Grind the area from inside the hull approximately 4 inches beyond it.
5. Clean the area with acetone, apply BP-1 or an equivalent primer on both sides of the area and cure for 1/2 hour.
6. Tape a piece of cardboard covered with waxed paper ① over the damaged area.
7. Mix polyester resin and catalyst and apply it to the hull.
8. Apply a glass mat ② (2 inches smaller than the ground area).
9. Apply catalyzed resin.
10. Apply a 20 oz fiberglass cloth ③ (1 inch smaller than the glass mat).
11. Apply catalyzed resin.
12. Apply a final glass mat ④ (1 inch smaller than the ground area).
13. When the resin has hardened, remove the piece of cardboard.
14. Finish the outer surface using steps 3 - 7 in the "Deep scratching" section.

NOTE:

Refer to "WATER VEHICLE FRP REPAIR MANUAL".





Insert nut

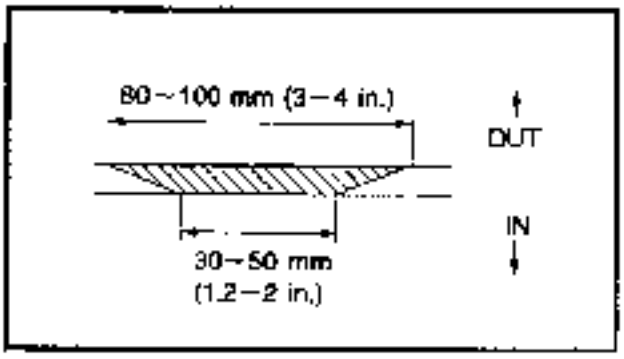
NOTE:
When a pop nut clinched to a hull slipped off or when a bolt fastened to an insert nut or pop nut was broken, use this insert nut.

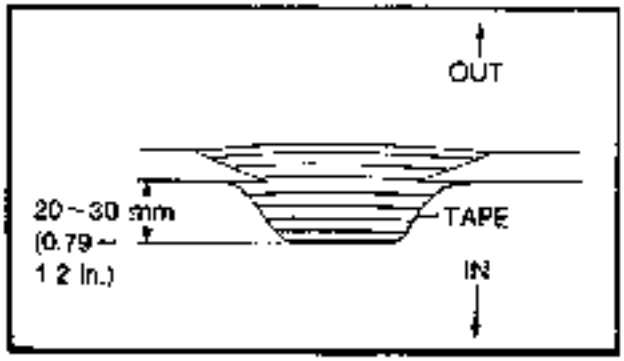
Part No.	Part name	Remarks
EW2-62733-09	Nut	Stainless steel, M6

- Nut ①
- Direction of thread ②
- Slot to be threaded ③

NOTE:
Drilling size

Material	Pilot hold diameter
FRP or SMC	9.1 ~ 9.2 mm (0.36 in)
Brass	9.4 mm (0.37 in)



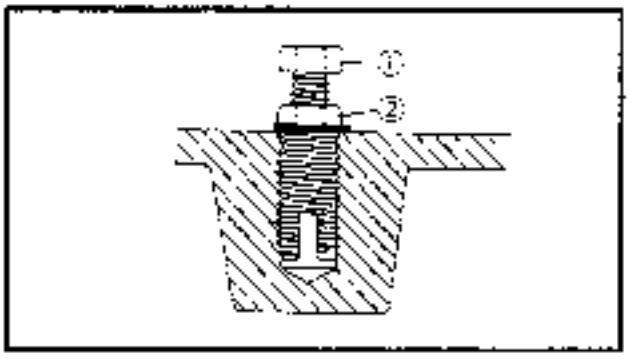


Example 1:
The nut is used to repair the pop nut designed for plate 2.
(by repairing the FRP portion, the new-type nut can be used for all models)
For details of repairs to the FRP portion, refer to the "Water Vehicle FRP Repair Manual".

1. Remove:
   - Pop nut
2. Scarf the shaded portion.
3. Clean the surface to be scarfed and the inside of the hull with acetone.
4. As shown, first tape up the inner surface of the hull and then laminate fiberglass mats over the tape using a resin.

NOTE:
When it is possible to work inside the hull, the mats should be laminated from the inside.

5. Smooth out the out surface by sanding it.
6. Install plate 2. Then, using a 9.2 mm (0.36 in) diameter drill, make a hole of depth 20 mm (0.79 in) in the center of the laminated fiberglass layers.
7. Pass the bolt ① through the insert nut, as shown, and lock the bolt with the nut ②. Screw in the insert nut so that the top is flush with the FRP surface. Loosen the lock nut and remove the bolt.



CAUTION:

- **The bolt should be made of steel and its strength should be 8T or more.**
- **If the bolt is inferior in strength, or is made of stainless steel, it may break.**

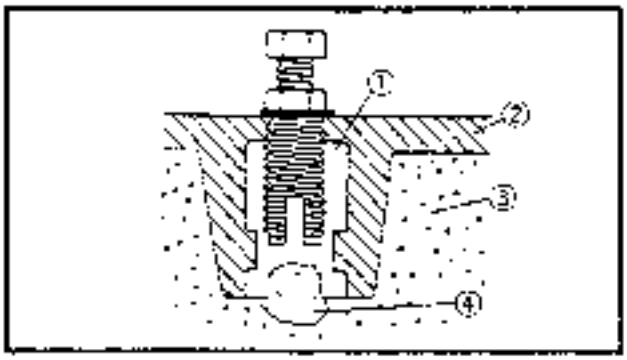
- Bolt ① <Strength is 8T or more>
- Lock nut ②

Example 2:
The brass insert nut designed for the Super Jet Plate 2 or the screen intake is used:

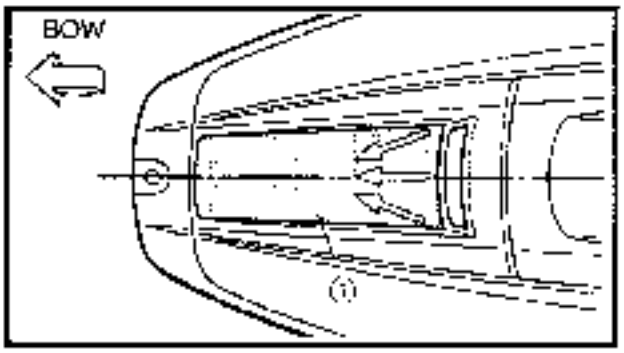
1 If the bolt is broken, remove it using drills.

NOTE:
Use a small-diameter drill first, followed by drills of gradually increasing diameter.

2. Use a 9.4 mm (0.37 in) drill for the final drilling.
3. Apply silicone sealant to the inside of the hole so that no water can enter the urethane foam.
4. As in Example 1 above, screw in the insert nut.



- Brass insert ①
- Hull ②
- Urethane foam ③
- Silicone sealant ④



Removing a graphic

1. Remove:
   - Graphic ①

NOTE:

- Using a hair dryer, start at one corner and blow heat the graphic, holding the heat source at least 1-1/2" above the graphic.
- Slowly peel off the heated part and continue working towards the other side.

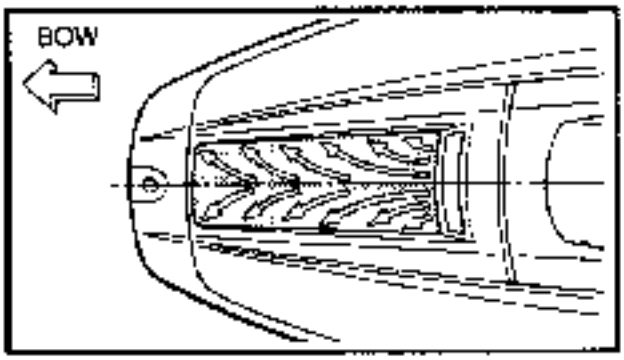
2. Clean:
   Once the graphic is removed, clean the entire bow area with isopropyl Alcohol to remove any residual adhesive.

Applying a graphic

1. Preparation:
   Mix 1 tablespoon of liquid washing-up detergent with water in a 1qt spray bottle. Remove the backing from the new graphic and spray both sides and the area of the hull to which it is to be fitted.

NOTE:

Spraying the front of the graphic will protect it from being scratched during application.



2. Apply:
   Align the graphic on the fitting area and smooth it into position with a small rubber squeegee, removing all air bubbles in the process. Begin at the top of the graphic and work down and outwards from the center line of the graphic area.
3. Dry:
   Let the graphic dry in place prior to waxing or using the vehicle.

CHAPTER 9
TROUBLE ANALYSIS

TROUBLE ANALYSIS

NOTE:

Following items should be obtained before "trouble analysis".
1. Battery is charged and its specified gravity is in specification.
2. There is no incorrect wiring connection.
3. Wiring connections are surely engaged and without any rust.
4. Lanyard is installed to the engine stop switch.
5 Fuel is coming to the carburetor.

TROUBLE ANALYSIS CHART

Trouble mode											Check elements	
ENGINE WILL NOT START	ROUGH IDLING	ENGINE STALLS	ENGINE WILL NOT STOP	POOR PERFORMANCE	OVERHEATING	LOOSE STEERING	BILGE INCREASE	IRREGULAR WARNING INDICATION	POOR BATTERY CHARGING		Relative part	Reference Chapter
											FUEL SYSTEM	
○	○	○		○							Fuel tank	4
○	○	○		○							Air vent hose	4
○		○		○							Fuel hose	4
○	○	○		○							Fuel filter	4
○		○		○							Fuel pump	4
○	○	○		○							Carburetor	4
	○	○		○							Low speed screw setting	4
		○		○							High speed screw setting	4
		○		○							Carburetor synchronization	4
		○		○							Trolling speed	3
											POWER UNIT	
○	○			○							Compression	5
○	○			○							Reed valve	5
○	○										Cylinder head gasket	5
○				○							Piston ring	5
○				○							Cylinder block	5
○				○							Seal	5
○				○							Crank case	5
○				○							Piston	5
○				○							Bearing	5
○				○							Intermediate housing	5
				○							Coupling	5
				○							Coupling rubber	5