YAMAHA

Marine

Water Vehicles

WaveVenture

WVT700

WVT1100

SERVICE MANUAL (E)

460031

PREFACE

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

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

HOW TO USE THIS MANUAL

MANUAL FORMAT

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

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

- Bearings
  Pitting/Damage → Replace.

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

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

MODEL INDICATION

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

Model name	WaveVenture	
	WVT700	WVT1100
Indication	WVT700	WVT1100

THE ILLUSTRATIONS

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

REFERENCES

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

WARNINGS, CAUTIONS AND NOTES

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

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

⚠ WARNING

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

CAUTION:

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

NOTE:

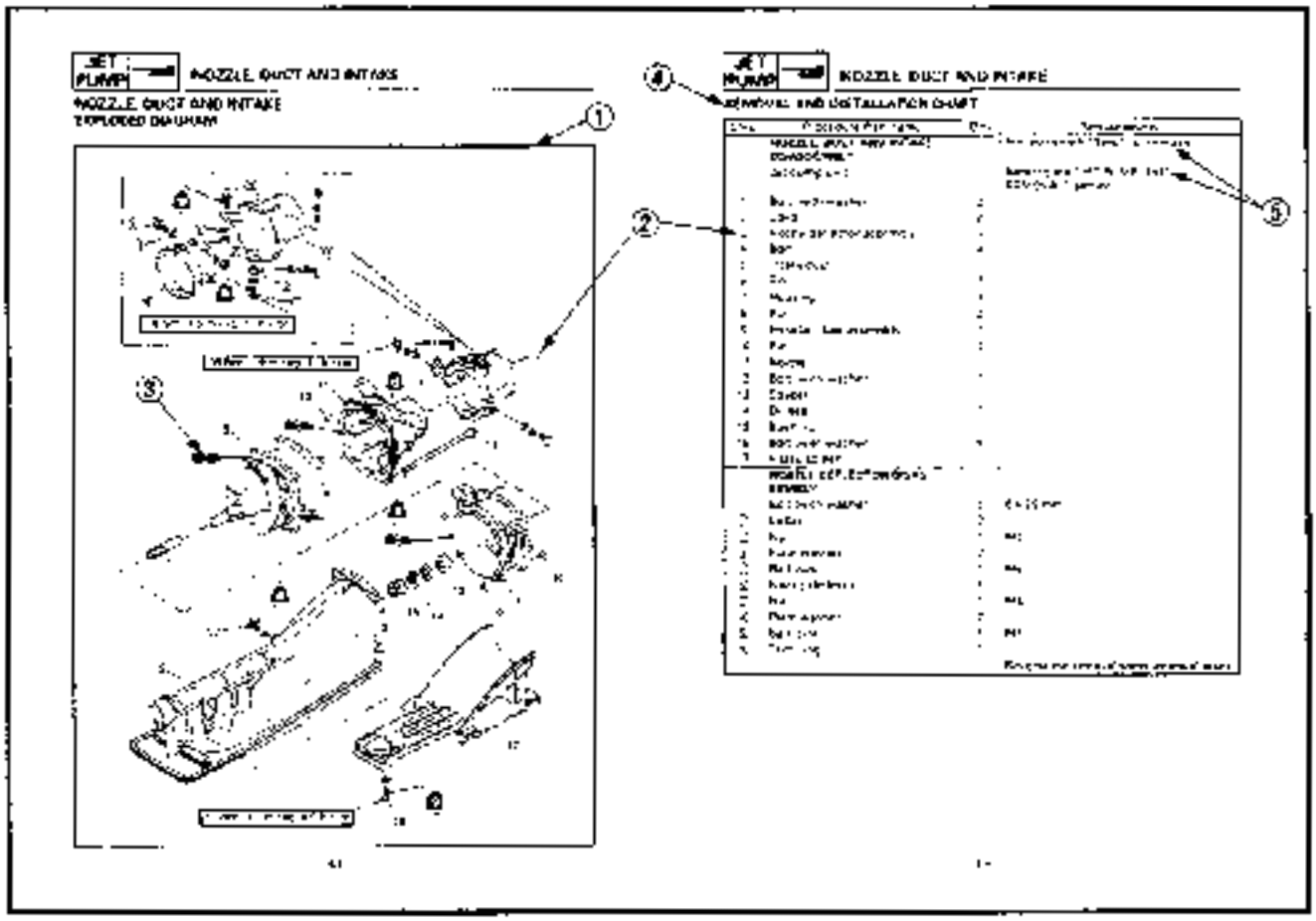
A NOTE provides key information to make procedures easier or clearer.

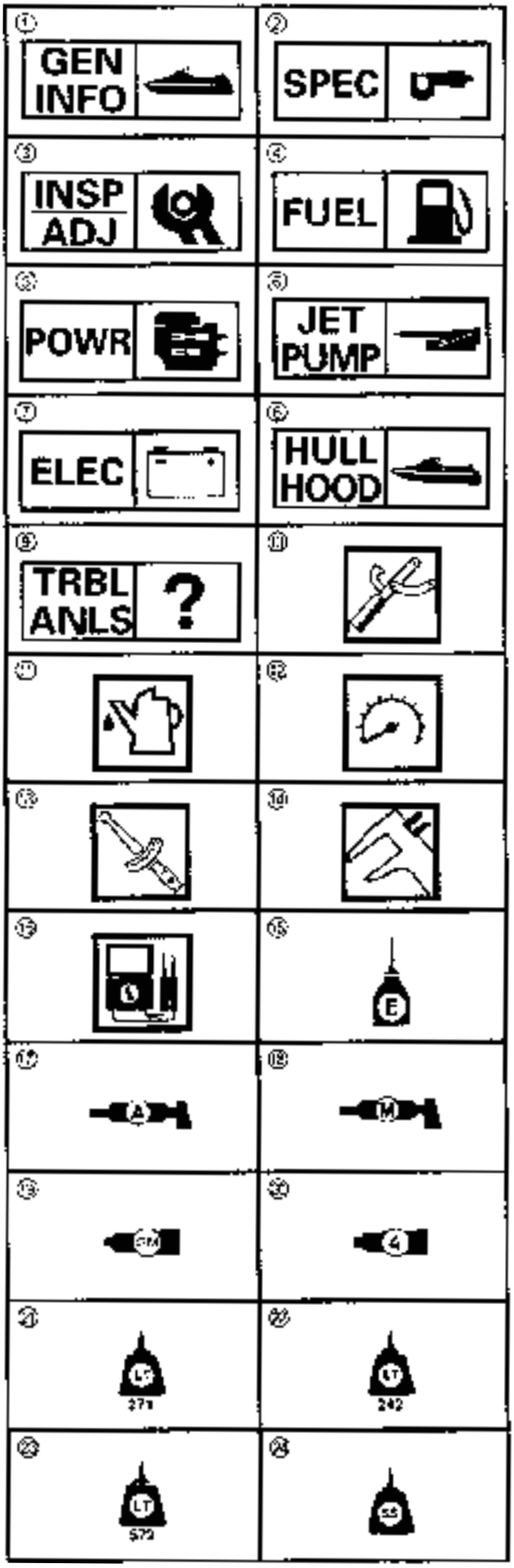
IMPORTANT:

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

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





SYMBOLS

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

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

Symbols ⑩ to ⑮ indicate specific data:

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

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

⑯ Apply Yamaha 2-stroke outboard motor oil
⑰ Apply water resistant grease (Yamaha grease A, Yamaha marine grease)
⑱ Apply molybdenum disulfide grease

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

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

NOTE:

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

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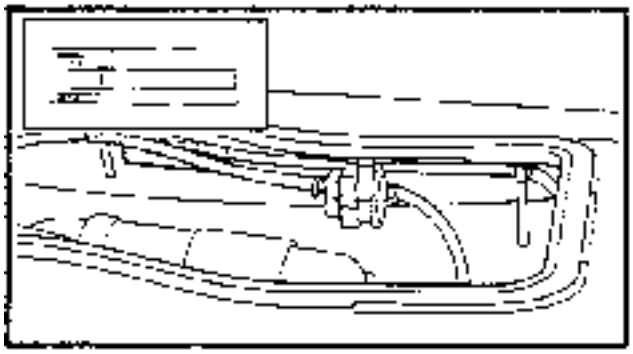
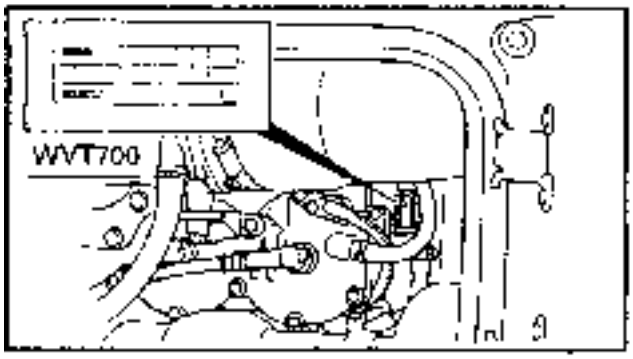
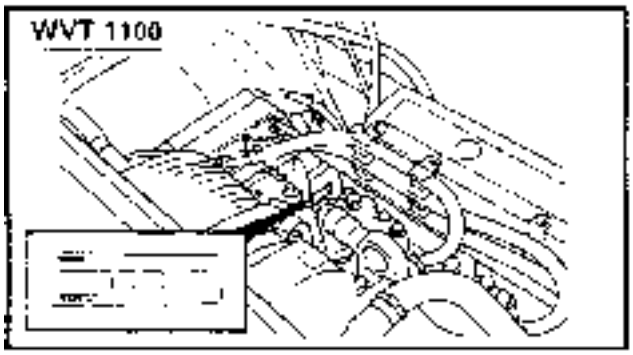
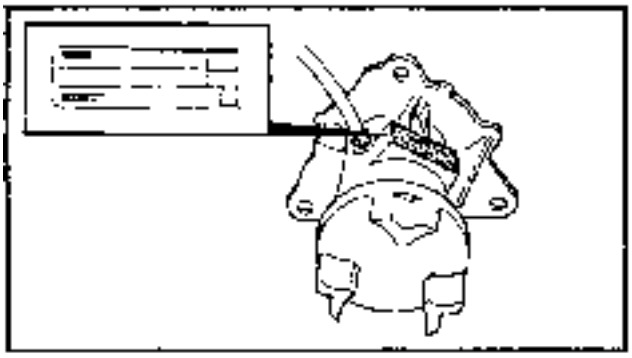
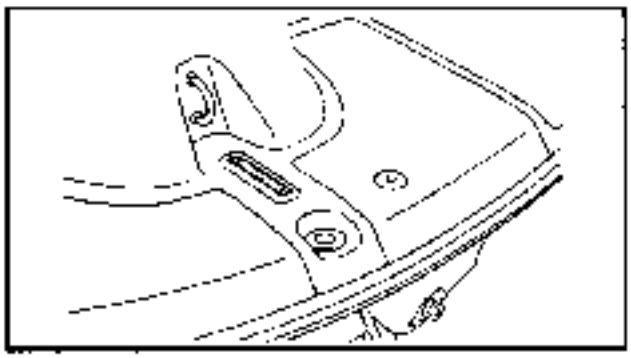
CHAPTER 1
GENERAL INFORMATION











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:
GJ3: 800101 ~, 600101 ~ (FRA)
GL3: 900101 ~
GH3: 800101 ~, 600101 (FRA)
GR1: 900101 ~

ENGINE SERIAL NUMBER

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

Starting serial number:
63N: 000101 ~
64T: 000101 ~

PUMP SERIAL NUMBER

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

Starting serial number:
63N: 500101 ~
64T: 500101 ~

HULL IDENTIFICATION NUMBER (H.I.N.)

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

SAFETY WHILE WORKING

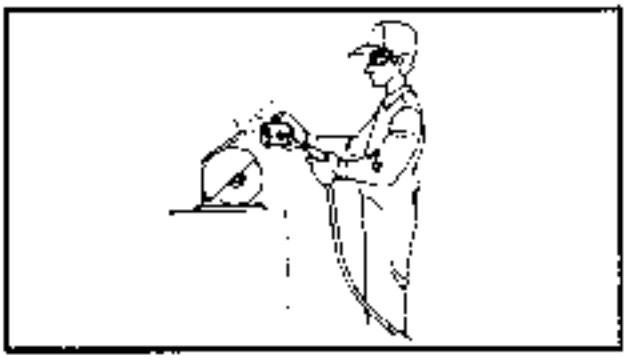
The procedures given in this manual are those recommended by Yamaha to be followed by Yamaha dealers and their mechanics.

FIRE PREVENTION

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

VENTILATION

Petroleum vapor is heavier than air and if inhaled in large quantities will not support life. Engine exhaust gases are harmful to breathe. When test-running an engine indoors, maintain good ventilation.



SELF-PROTECTION

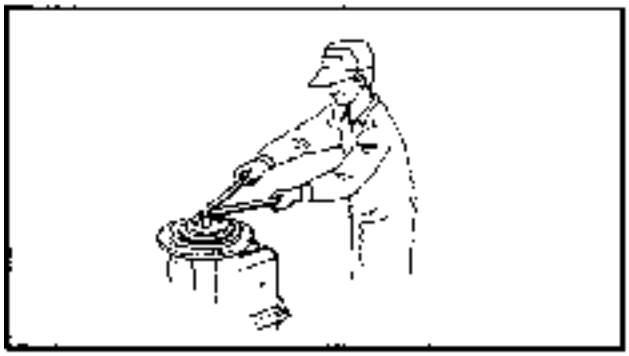
Protect your eyes with suitable safety spectacles or safety goggles when using compressed air, when grinding or when doing any operation which may cause particles to fly off.
Protect hands and feet by wearing safety gloves or protective shoes if appropriate to the work you are doing.

OILS, GREASES AND SEALING FLUIDS

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

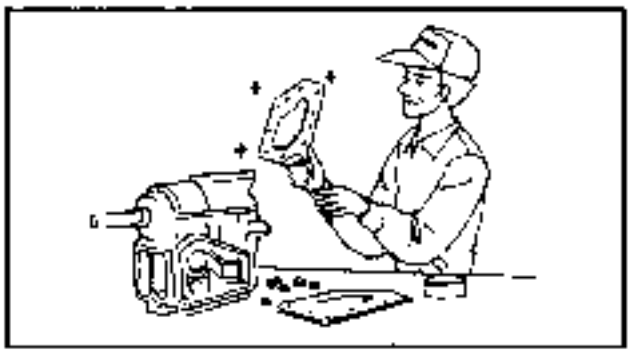
Under normal conditions of use, there should be no hazards from the use of the lubricants mentioned in this manual, but safety is all-important, and by adopting good safety practises, any risk is minimized. A summary of the most important precautions is as follows

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

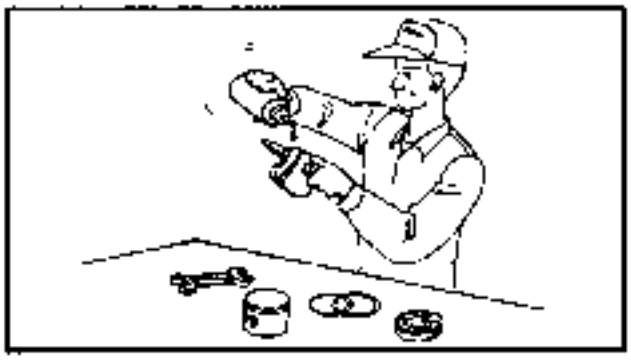


GOOD WORKING PRACTICES

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

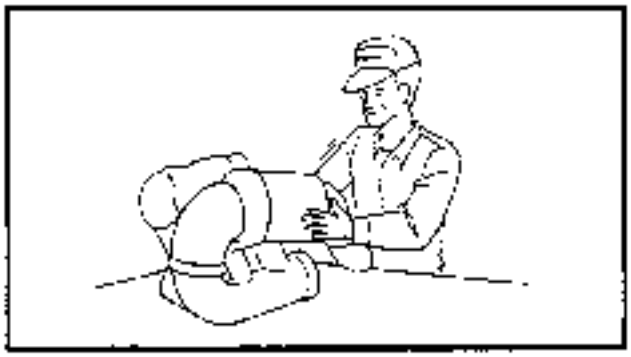


3. Non-reusable items
   Always use new gaskets, packings, O-rings, oil seals, split-pins and circlips etc. on reassembly.



DISASSEMBLY AND ASSEMBLY

1. Clean parts with compressed-air on disassembling them.
2. Oil the contact surfaces of moving parts on assembly.



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

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

CAUTION:

Do not use compressed air to spin the bearings dry. This causes damage to the bearing surfaces.

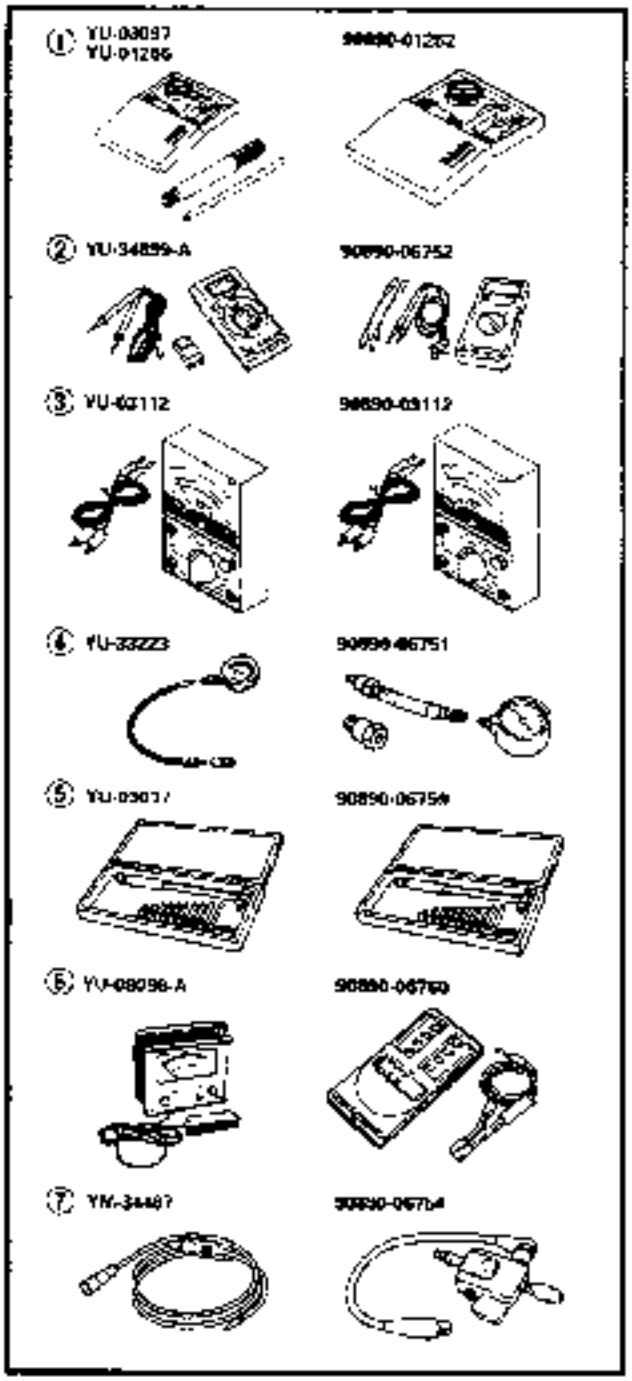
5. When installing oil seals, apply a light coating of water-resistant grease to the outside diameter.

SPECIAL TOOLS

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

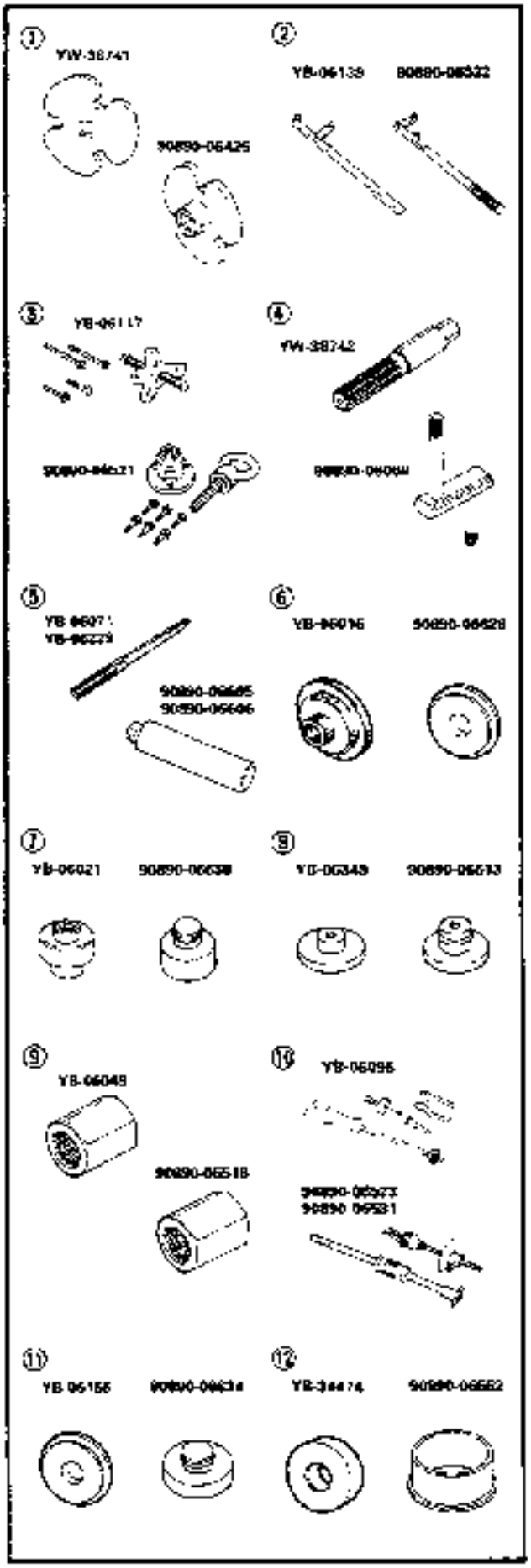
NOTE:

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



MEASURING

1. Dial gauge and stand
   P/N. YU-03097, YU-01256
   90890-01252
2. Digital multi meter
   P/N. YU-34899-A
   90890-06752
3. Pocket tester
   P/N. YU-03112
   90890-03112
4. Compression gauge
   P/N. YU-33223
   90890-06751
5. Cylinder gauge set
   P/N. YU-03017
   90890-06759
6. Engine tachometer
   P/N. YU-08036-A
   90890-06760
7. Spark gap tester
   P/N. YM-34487
   90890-06754



REMOVAL AND INSTALLATION

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

CHAPTER 2
SPECIFICATIONS

GENERAL SPECIFICATIONS

Item	Unit	Model	
		WVT700	WVT1100
MODEL CODE:			
Hull		GJ3	GH3
Engine		63N	64T
DIMENSIONS:			
Length	mm (in)	3,150 (124.0)	
Width	mm (in)	1,250 (49.2)	
Height	mm (in)	1,050 (41.3)	
Dry weight	kg (lb)	245 (540)	271 (597)
PERFORMANCE:			
Maximum speed	km/h (mph)	73.0 (45.4)	83.0 (51.6)
Minimum turning radius	m (ft)	0	
Maximum output	kW (hp)@ r/min	58.8 (80)@6,250	80.9 (110)@6,500
Maximum fuel consumption	L (US gal, Imp gal/h)	34 (9.0, 7.5)	46 (12.2, 10.1)
Cruising range	hr.	1.5	1.1
ENGINE:			
Type		2 stroke · L	
Number of cylinder		2	3
Displacement	cm^3 (cu. in)	701 (42.78)	1,051 (64.14)
Bore × Stroke	mm (in)	81.0 × 68.0 (3.19 × 2.68)	
Compression ratio		7.2	5.8
Carburetor type		Floatless	
Number of carburetor		2	3
Starting enrichment		Choke valve	
Intake system		Reed valve	
Induction system		Loop charge	
Lubrication system		Oil injection	
Starting system		Electric	
Spark plug (NGK)		BR8HS	
Battery capacity	V/kc. (Ah)	12/68.4 (19)	
JET PUMP:			
Jet pump type		Axial flow, single stage	
Impeller rotating direction		Counterclockwise	
Nozzle angle	Degree	28	
FUEL AND OIL:			
Fuel		Reguler gasoline	
Fuel tank capacity	L (US qt, Imp qt)	50 (13.2, 11.0)	
reserve	L (US qt, Imp qt)	8.8 (2.3, 1.9)	12 (3.2, 2.6)
Oil tank capacity	L (US qt, Imp qt)	3.8 (1.0, 0.8)	

MAINTENANCE SPECIFICATIONS
ENGINE

Item	Unit	Model	
		WVT700	WVT1100
CYLINDER HEAD:			
Warpage limit	mm (in)	0.1 (0.004)	
CYLINDER:			
Bore size	mm (in)	81.00 ~ 81.02 (3.189 ~ 3.190)	
Wear limit	mm (in)	81.10 (3.193)	
Taper limit	mm (in)	0.08 (0.003)	
Out of round limit	mm (in)	0.05 (0.002)	
PISTON:			
Piston clearance	mm (in)	0.080 ~ 0.085 (0.0031 ~ 0.0033)	0.110 ~ 0.115 (0.0043 ~ 0.0045)
Limit	mm (in)	0.13 (0.005)	0.16 (0.006)
Diameter	mm (in)	80.925 ~ 80.950 (3.186 ~ 3.187)	80.885 ~ 80.890 (3.184 ~ 3.185)
Offset	mm (in)	0.5 (0.02)	1.5 (0.06)
Measuring point H	mm (in)	10 (0.4)	
PISTON PIN:			
Diameter	mm (in)	19.995 ~ 20.000 (0.7872 ~ 0.7874)	
PISTON RING:			
Type		Keystone	
Dimensions (B × T)	mm (in)	1.2 × 2.9 (0.047 × 0.114)	
End gap (installed)	mm (in)	0.2 ~ 0.4 (0.008 ~ 0.016)	
Ring side clearance	mm (in)	0.02 ~ 0.06 (0.001 ~ 0.002)	
CRANK SHAFT:			
Crank width "A"	mm (in)	61.95 ~ 62.00 (2.439 ~ 2.441)	
Runout limit "B"	mm (in)	0.05 (0.002)	
Big end side clearance "C"	mm (in)	0.25 ~ 0.75 (0.010 ~ 0.030)	
Small end free play limit "D"	mm (in)	2.0 (0.08)	
REED VALVE:			
Valve stopper height	mm (in)	9.0 ± 0.2 (0.35 ± 0.01)	
Valve warpage limit	mm (in)	0.2 (0.01)	

MAINTENANCE SPECIFICATIONS

Item		Unit	Model	
			WVT700	WVT1100
CARBURETOR:				
Identification mark	No.1		62T01F	64T00F
	No.2		62T01R	64T00C
	No.3		—	64T00R
Main jet 2 (M.J.2)	No.1	#	120	107.5
	No.2	#	130	95
	No.3	#	—	107.5
Pilot jet (P.J.)		#	67.5	75
Low speed screw		Turns out	5/8 ± 1/4	1-1/8 ± 1/4
High speed screw	No.1	Turns out	5/8 ± 1/4	7/8 ± 1/4
	No.2	Turns out	1-1/8 ± 1/4	7/8 ± 1/4
	No.3	Turns out	—	7/8 ± 1/4
Trolling speed		r/min	1250 ± 50	
JET PUMP:				
Impeller clearance		mm (in)	0.3 – 0.4 (0.01 – 0.02)	
Service limit		mm (in)	0.6 (0.024)	
Impeller shaft runout		mm (in)	0.3 (0.012)	

ELECTRICAL

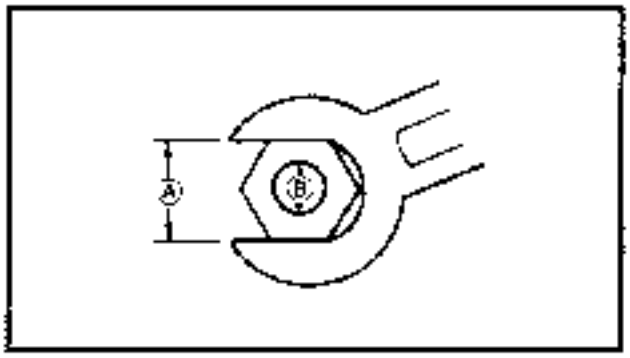
Item	Unit	Model	
		WVT700	WVT1100
IGNITION SYSTEM:			
Ignition timing			
1,200 r/min (BTDC)	Degree	15	
5,500 r/min (BTDC)	Degree	21	19
Charge coil resistance (B/W–B)	Ω	497.7 ~ 608.3	—
(Br/R–Br)	Ω	—	172 ~ 258
(Br/R–L)	Ω	—	656 ~ 984
Pulser coil resistance (W/R–B)	Ω	12.6 ~ 15.4	248 ~ 372
(W/B–B)	Ω	—	248 ~ 372
(W/G–B)	Ω	—	248 ~ 372
Ignition coil resistance	Ω		
Primary coil (O–B)	Ω	0.078 ~ 0.106	—
(B/W–B)	Ω	—	0.18 ~ 0.24
Secondary coil	kΩ	14.3 ~ 30.5	2.7 ~ 4.1
Spark plug gap	mm (in)	0.6 ~ 0.7 (0.024 ~ 0.027)	
IGNITION CONTROL SYSTEM:			
Thermo switch (OFF → ON)	°C (°F)	66 ~ 74 (150.8 ~ 165.2)	90 ~ 96 (194 ~ 204.8)
(ON → OFF)	°C (°F)	57 ~ 43 (134.6 ~ 109.4)	90 ~ 76 (194 ~ 168.8)
STARTING SYSTEM:			
Fuse 1	A	10	
STARTING MOTOR:			
Output	kW	0.8	
Rating	Sec.	30	
Brush length	mm (in)	0.49	
Wear limit	mm (in)	6.5 (0.26)	
Commutator diameter	mm (in)	28.0 (1.10)	
Limit	mm (in)	27.0 (1.06)	
Commutator under cut	mm (in)	0.7 (0.03)	
Limit	mm (in)	0.15 (0.006)	
CHARGING SYSTEM:			
Lighting coil Resistance (G–G)	Ω	1.14 ~ 1.40	0.56 ~ 0.84
Charging current	A @ r/min	3 ± 1 @5,500	7 ± 1 @6,500

TIGHTENING TORQUE

SPECIFIED TORQUE

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

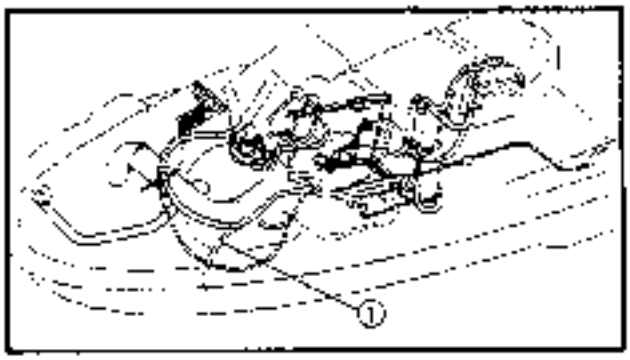
The following chart should be considered strictly as a guide to general maintenance intervals.

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

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

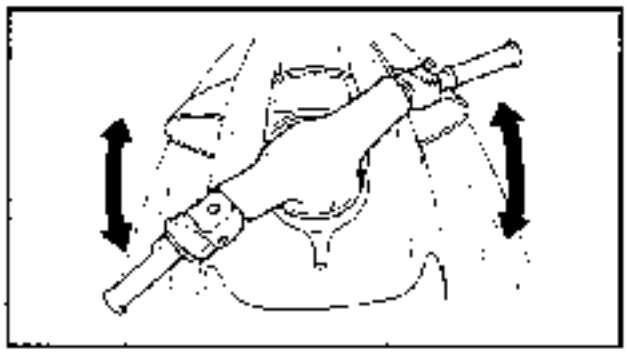
*1: Grease capacity 33.0 ~ 35.0 cm^3 (1.11 ~ 1.18 oz.)

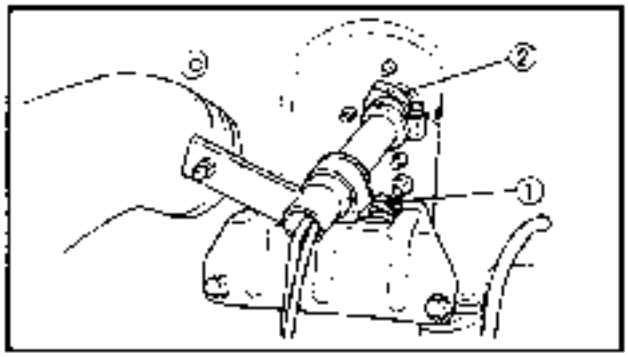
*2: Grease capacity 6.0 ~ 8.0 cm^3 (0.20 ~ 0.27 oz.)

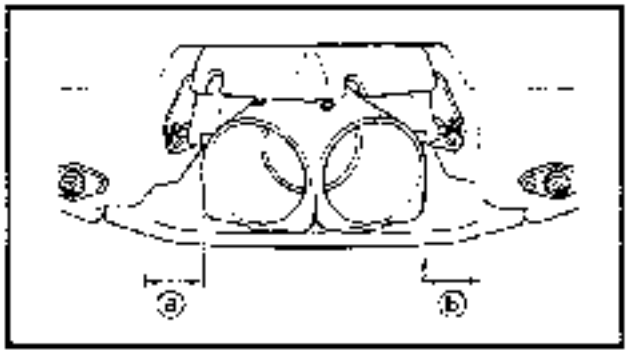


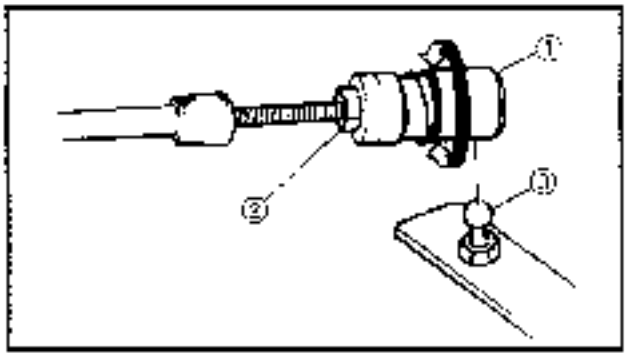
CAUTION:

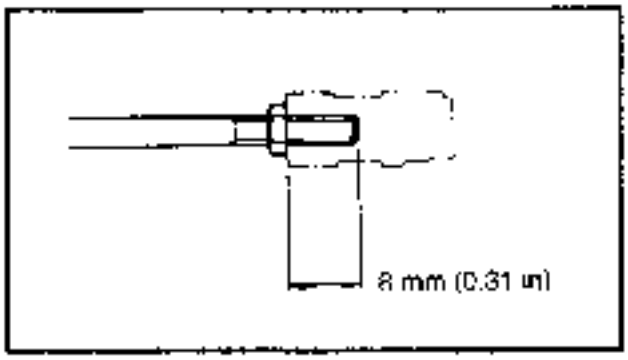
Kink the pilot hose ① when running the engine at full throttle for more than 15 seconds as the water vehicle is moored or is in a test tank.











PERIODIC SERVICE

CONTROL SYSTEM

Pivot shaft bearing inspection

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

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

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

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

Steering cable inspection and adjustment

1 Inspect:
- Jet nozzle clearance ⓐ, ⓑ

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

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

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

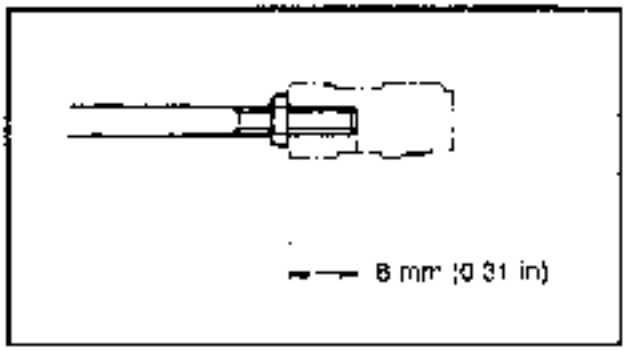
Turn in	**Clearance ⓐ is increased.**
Turn out	**Clearance ⓑ is increased.**

⚠ WARNING

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

- Connect the cable joint and tighten the lock nut.

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



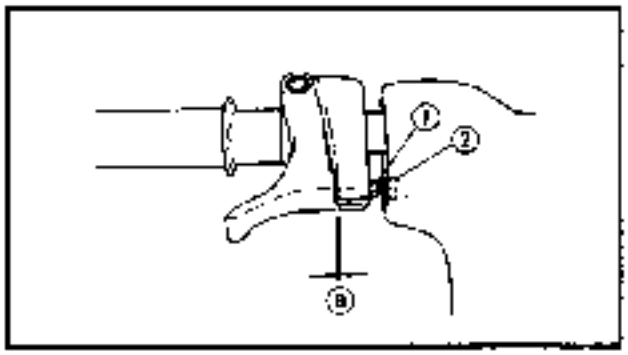
NOTE:
If correct adjustment cannot be obtained using the cable joint at the handlebar end adjust the cable joint at the steering nozzle end

Throttle cable inspection and adjustment

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

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

	Throttle lever free play: **7 ~ 10 mm (0.28 ~ 0.39 in)**

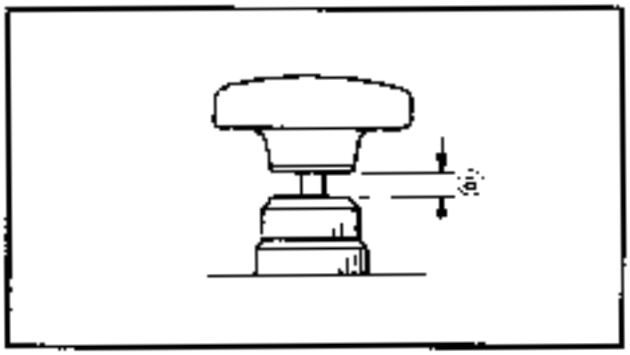


2. Adjust:
   - Throttle lever free play

Adjustment steps:	
• Loosen the lock nut ①.	
• Turn the adjuster ② in/out until the specified free play is obtained.	
Turn in	**Free play is increased.**
Turn out	**Free play is decreased.**
• Tighten the lock nut.	

⚠ WARNING

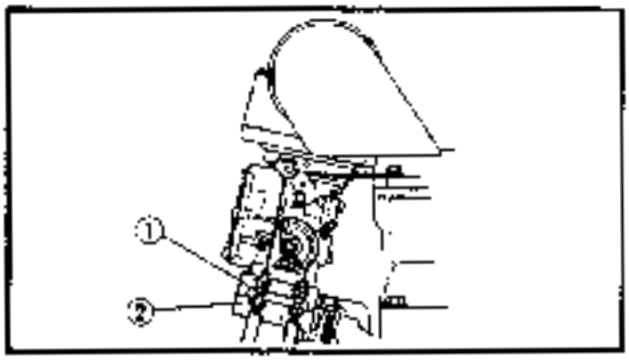
After adjusting the free play, turn the handlebar to right and left, and make sure that the trolling speed does not increase.



Choke cable inspection and adjustment

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

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



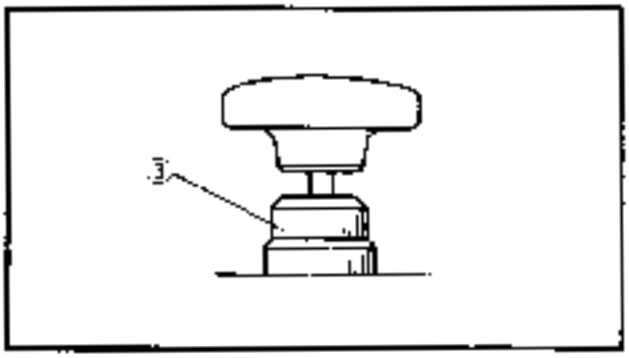
2. Adjust:
   - Choke cable free play

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

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

- Tighten the lock nut.

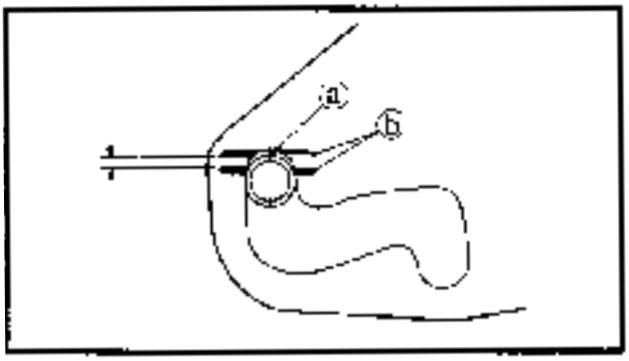
	Lock nut: **8 Nm (0.8 m · kg, 6.0 ft · lb)**



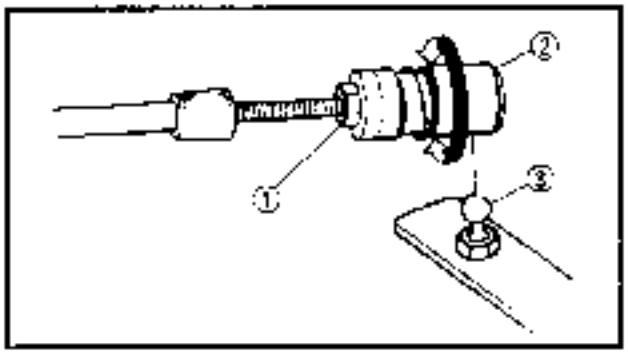
3. Inspect:
   - Pull knob farthest toward
     Knob automatically returns → Adjust.
4. Adjust:
   - Adjust nut ③
     Turn in to stop automatic return.

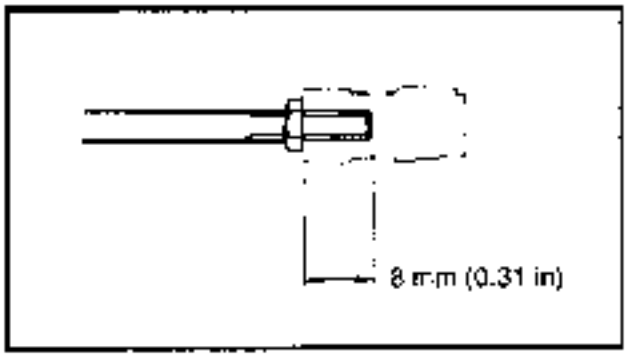
Shift cable inspection and adjustment

1. Check:
   - Reverse gate collar head ⓐ position
     Out of specification → Adjust.



Checking steps:
- Set the shift lever to the reverse position.
- Turn the steering fully to the right or left.
- Check to make sure that the collar head position should be inside of two marking lines ⓑ of the shift rod lever.





2. Adjust:
   - Shift cable joint

Adjustment steps:
- Loosen the lock nut ①.
- Disconnect the cable joint ② from the ball joint ③.
- Turn the cable joint for adjusting.

Turn in	**Clearance is increased.**
Turn out	**Clearance is decreased.**

⚠ WARNING

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

- Connect the cable joint and tighten the lock nut.

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

FUEL SYSTEM

⚠ WARNING

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

Fuel filter inspection

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

Trolling speed inspection and adjustment

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

Trolling speed:
1,250 ± 50 r/min

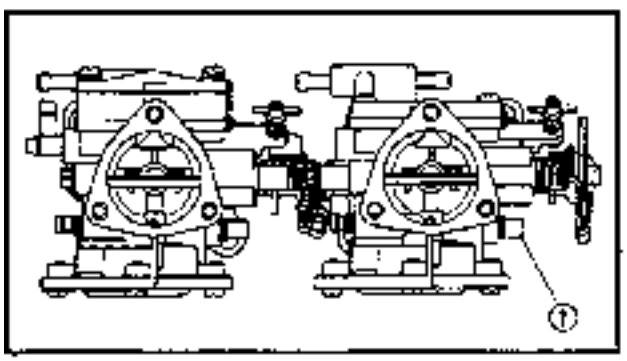
Checking steps: (vehicle on water)

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

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

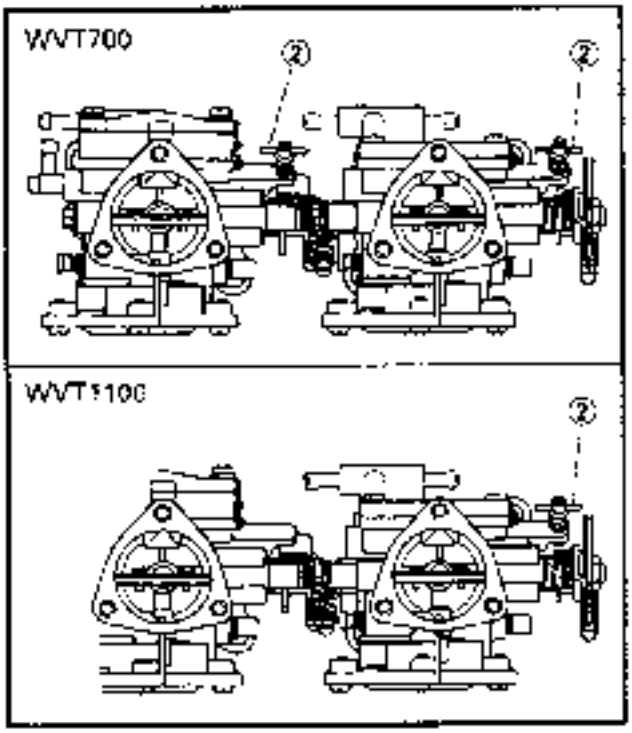
- Measure the engine trolling speed.

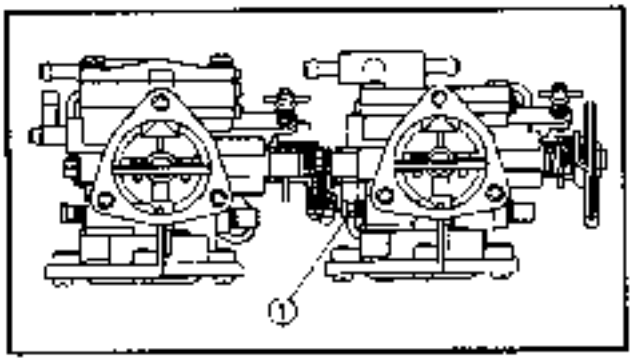
2. Adjust:
   - Trolling speed



Adjustment steps:

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





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

Low speed screw:
WVT700
5/8 ± 1/4 (turns out)
WVT1100
1-1/8 ± 1/4 (turns out)

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

Turning in	**Increase trolling speed.**
Turning out	**Decrease trolling speed.**

Carburetor adjustment

1. Adjust:
   - High speed screw

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

High speed screw:
WVT700
5/8 (#1), 1-1/8 (#2) ± 1/4 (turns out)
WVT1100
7/8 ± 1/4 (turns out)

OIL INJECTION SYSTEM

Oil filter inspection

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

WVT700

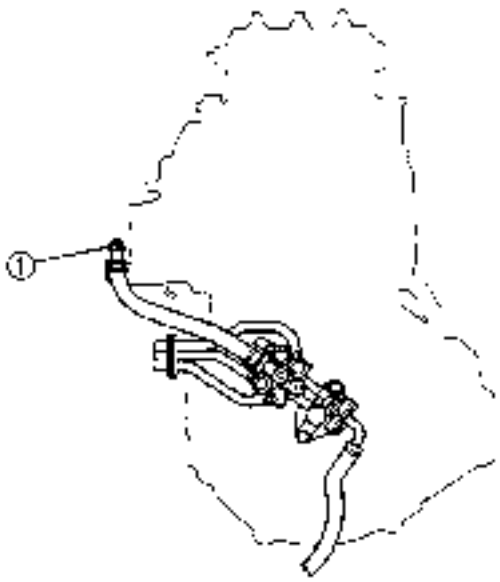
Oil injection pump air bleeding

NOTE:

Bleed the oil injection system if:
- The system has been disassembled.
- The oil has been completely used up during operation.

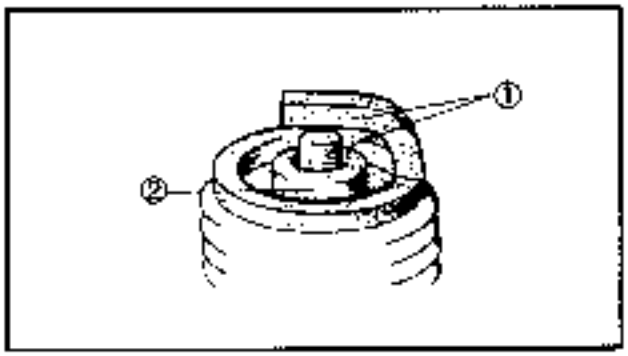
1. Bleed:
   - Air

WVT1100



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

Screw:
5 Nm (0.5 m • kg, 3.6 ft • lb)

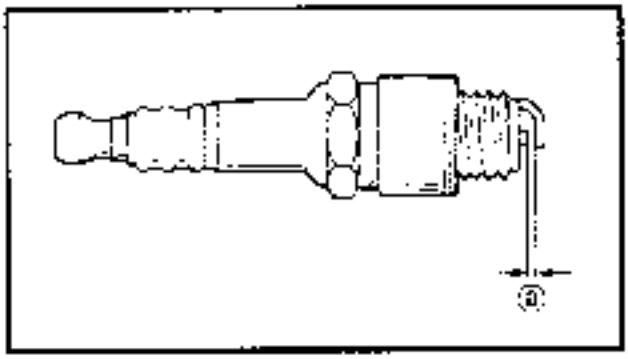


POWER UNIT

Spark plug inspection

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

Color guide:
Medium to light tan color:
Normal
Whitish color:
Lean fuel mixture
Plugged fuel mixture
Air leak
Incorrect settings
Blackish color:
Overly rich mixture
Electrical malfunction
Excess oil used
Defective spark plug

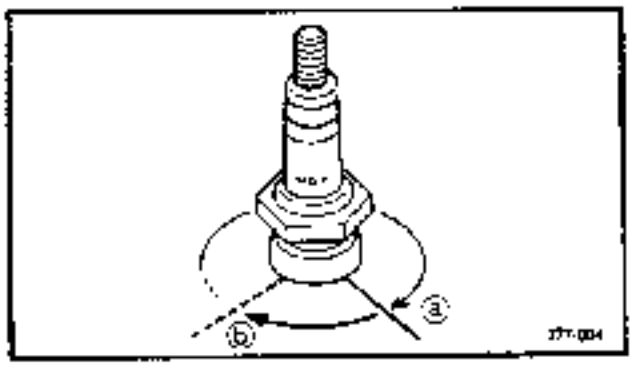


2. Clean:
   - Spark plug
     Clean the spark plug with a spark plug cleaner or wire brush.
3. Measure:
   - Spark plug gap ⓐ
     Out of specification → Alter gap.
     Use a wire gauge.

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 engine compartment. When checking the battery, make sure the breather hose is connected to the battery and is not pinched shut anywhere in the engine compartment.

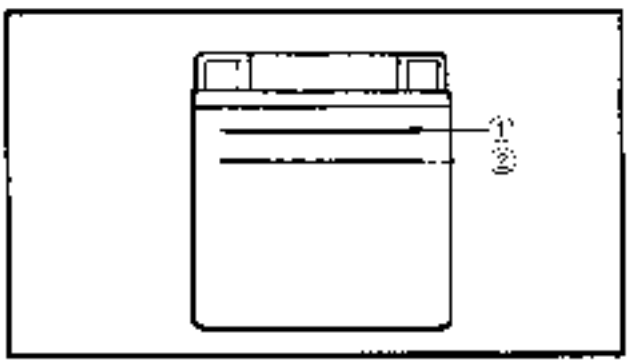
⚠ WARNING

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

1. Remove:
   - Battery

⚠ WARNING

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



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

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

CAUTION:

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

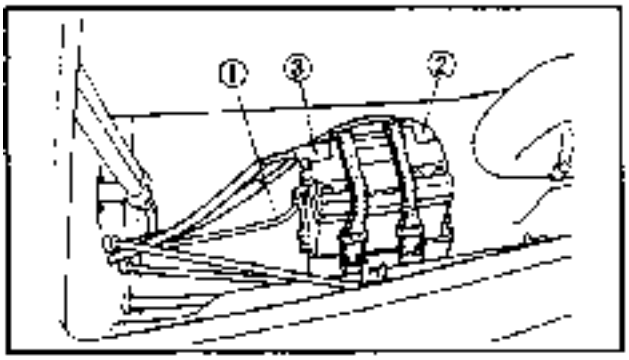
3. Inspect:
   - Battery fluid specific gravity
     Out of specification → Charge.

Specific gravity at 20°C (68°F):
1.28
Charging current:
68.4 kc.(1.9 Amps × 10 hrs)

4. Install:
   - Filler cap

CAUTION:

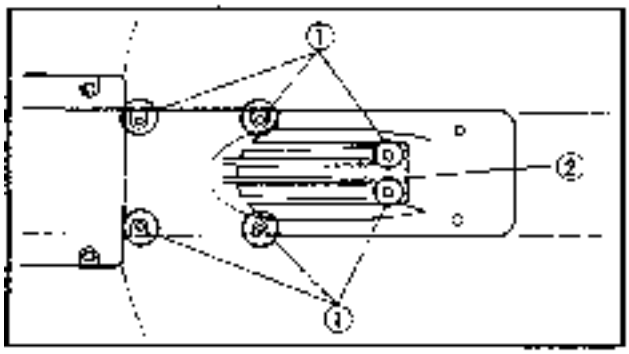
Rinse off any acid from the battery case and wipe the battery dry prior to installation.

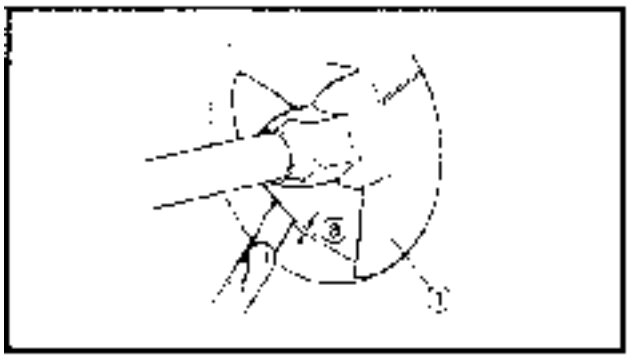


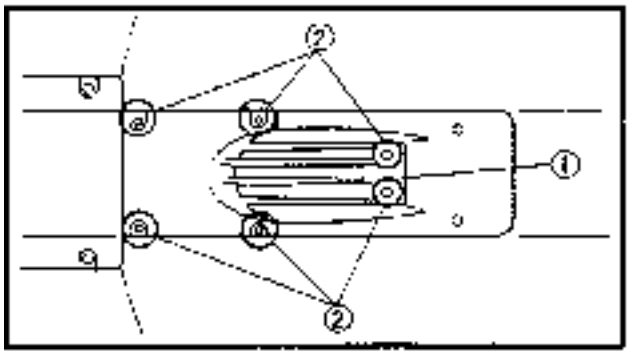
5. Install:
   - Breather hose ①
   - Battery
   - Positive lead ②
   - Negative lead ③
   - Battery band

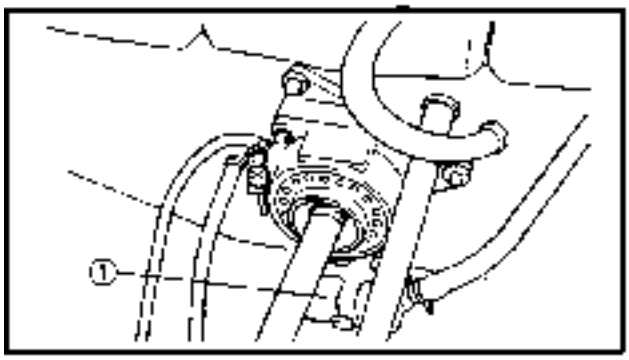
CAUTION:

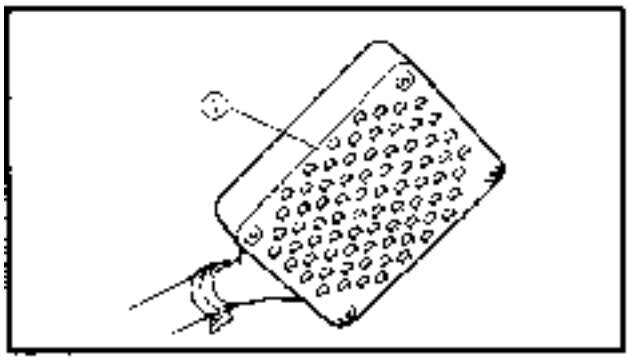
- **Connect the positive red lead ⊕ to the battery terminal first.**
- **Make sure the battery leads are connected properly. Reversing the leads can seriously damage the electrical system.**
- **Make sure the breather hose is properly connected and is not obstructed.**
- **Coat the terminals with a water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











JET PUMP UNIT

Impeller inspection

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

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

5. Install:
   - Intake screen ①
   - Bolt ②

Bolt:
11 Nm (1.1 m • kg, 8.0 ft • lb)

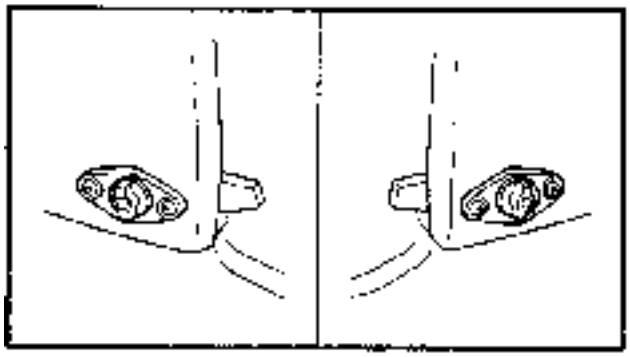
6. Install:
   - Battery
     Refer to the "BATTERY" section.

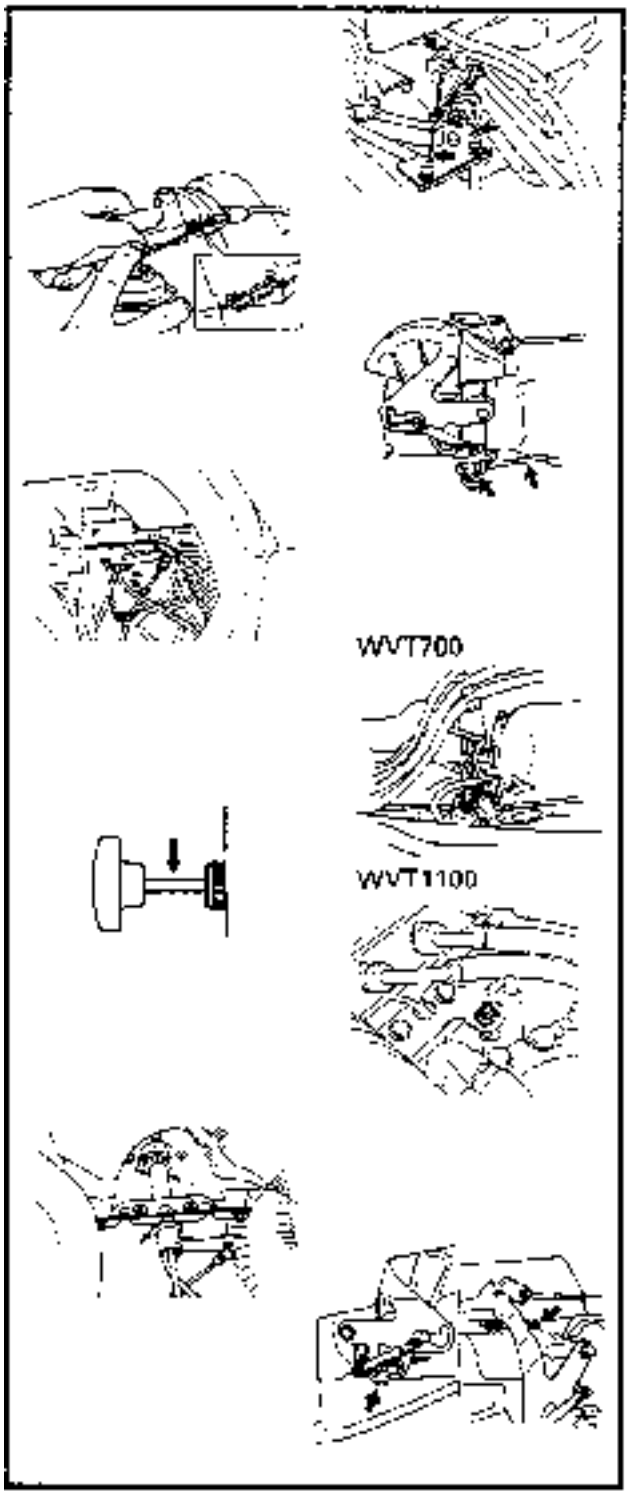
Bilge strainer inspection

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

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

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





GENERAL

Drain plug inspection

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

Greasing point

1. Apply:
   - Throttle cable inner wire

NOTE:

Squeeze the throttle lever and remove the seal. Spray a rust-inhibitor into the outer cable.

Recommended fluid:
Rust-inhibitor

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

NOTE:

Remove the cable joint and apply a small amount of grease to the following parts.

- Steering pivot shaft bearing
- Choke knob shaft
- Bearing housing

Recommended grease:
Water resistant grease

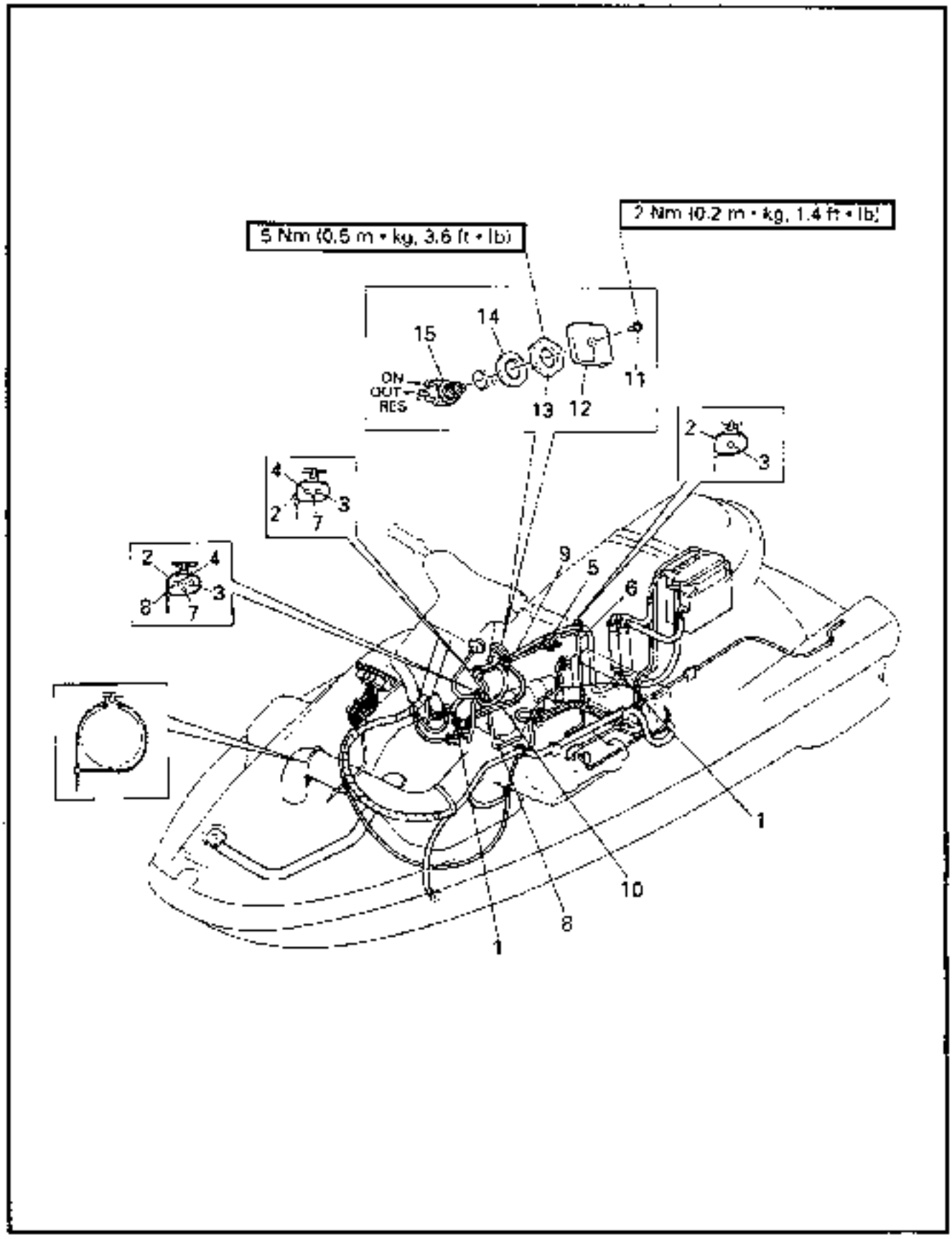
NOTE:

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

CHAPTER 4
FUEL SYSTEM

AIR VENTILATION HOSE, FUEL COCK AND FUEL FILTER

EXPLODED DIAGRAM (WVT700)



AIR VENTILATION HOSE, FUEL COCK AND FUEL FILTER

REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	AIR VENTILATION HOSE, FUEL COCK AND FUEL FILTER REMOVAL		Follow the left "Step" for removal.
1	Hose tie	2	
2	Clamp	3	
3	Air ventilation hose	1	
4	Fuel hose (OUT)	1	
5	Fuel filter	1	
6	Fuel hose	1	
7	Choke cable	1	
8	Fuel hose (return)	1	
9	Fuel hose (ON)	1	
10	Fuel hose (RES)	1	
11	Screw	2	
12	Cock lever	1	
13	Nut	1	
14	Plane washer	1	
15	Fuel cock body	1	
			. Reverse the removal steps for installation.

SERVICE POINTS

Fuel filter inspection

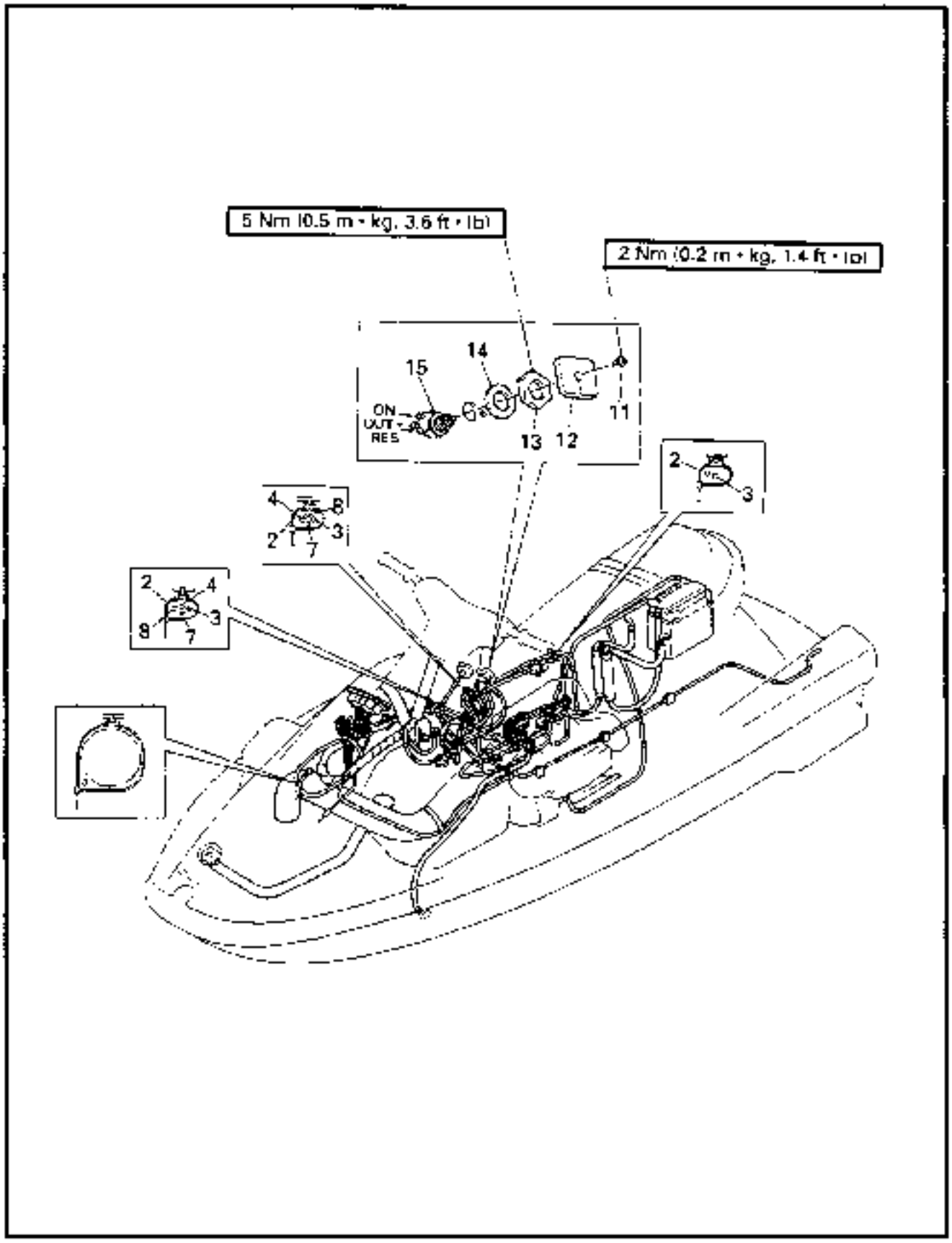
Refer to the "FUEL SYSTEM" section in chapter 3.

Fuel cock inspection

1. Check:
   - Fuel cock

   Unsmooth movement → Replace.
   Clog → Clean.

EXPLODED DIAGRAM (WVT1100)



AIR VENTILATION HOSE, FUEL COCK AND FUEL FILTER

REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	AIR VENTILATION HOSE, FUEL COCK AND FUEL FILTER REMOVAL		Follow the left "Step" for removal.
1	Hose tie	2	
2	Clamp	3	
3	Air ventilation hose	1	
4	Fuel hose (OUT)	1	
5	Fuel filter	1	
6	Fuel hose	1	
7	Choke cable	1	
8	Fuel hose (return)	1	
9	Fuel hose (ON)	1	
10	Fuel hose (RES)	1	
11	Screw	1	
12	Cock lever	1	
13	Nut	1	
14	Plane washer	1	
15	Fuel cock body	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Fuel filter inspection

Refer to the "FUEL SYSTEM" section in chapter 3.

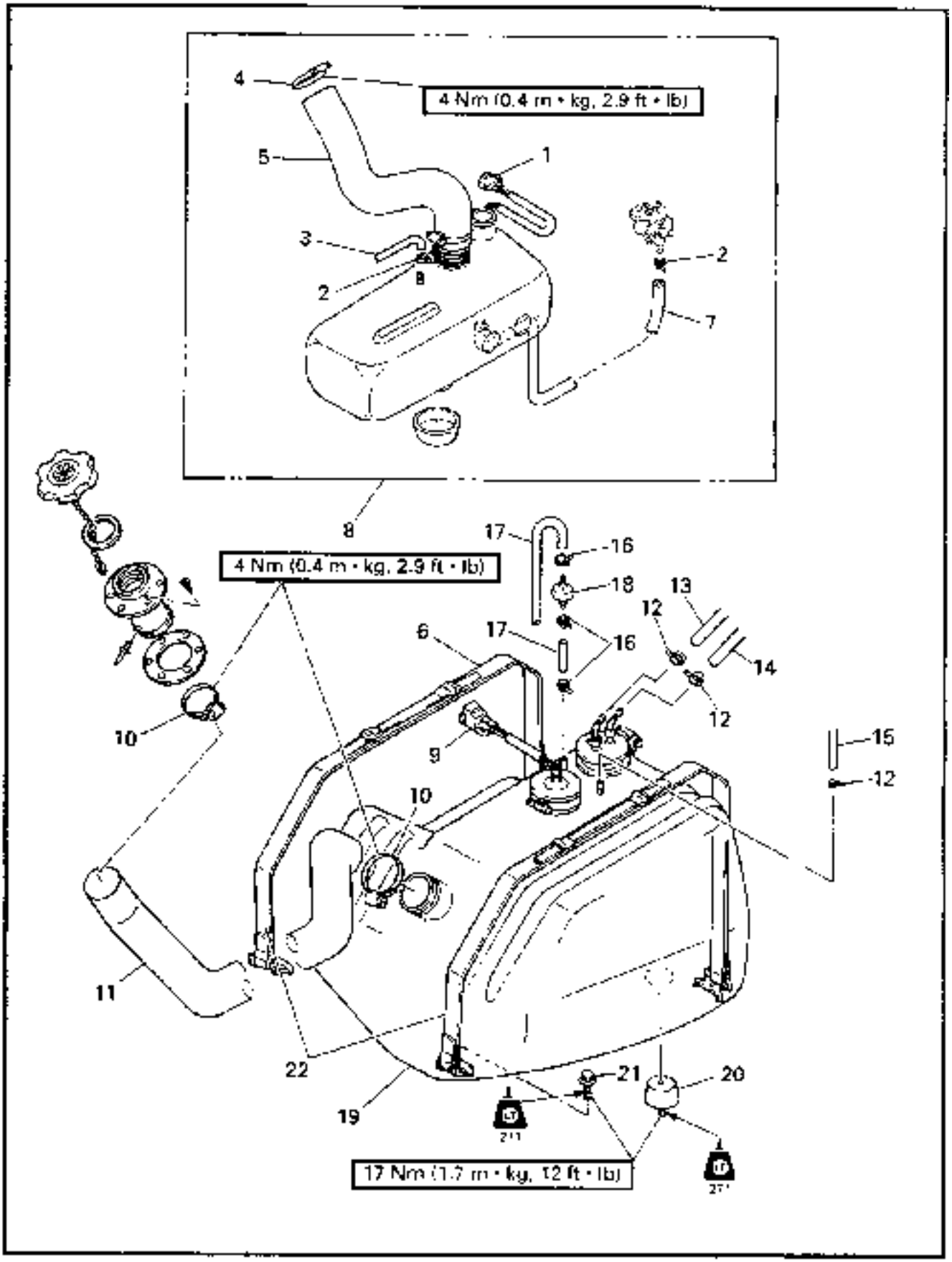
Fuel cock inspection

1. Check:
   - Fuel cock

   Unsmooth movement → Replace.
   Clog → Clean.

OIL TANK AND FUEL TANK REMOVAL

EXPLODED DIAGRAM

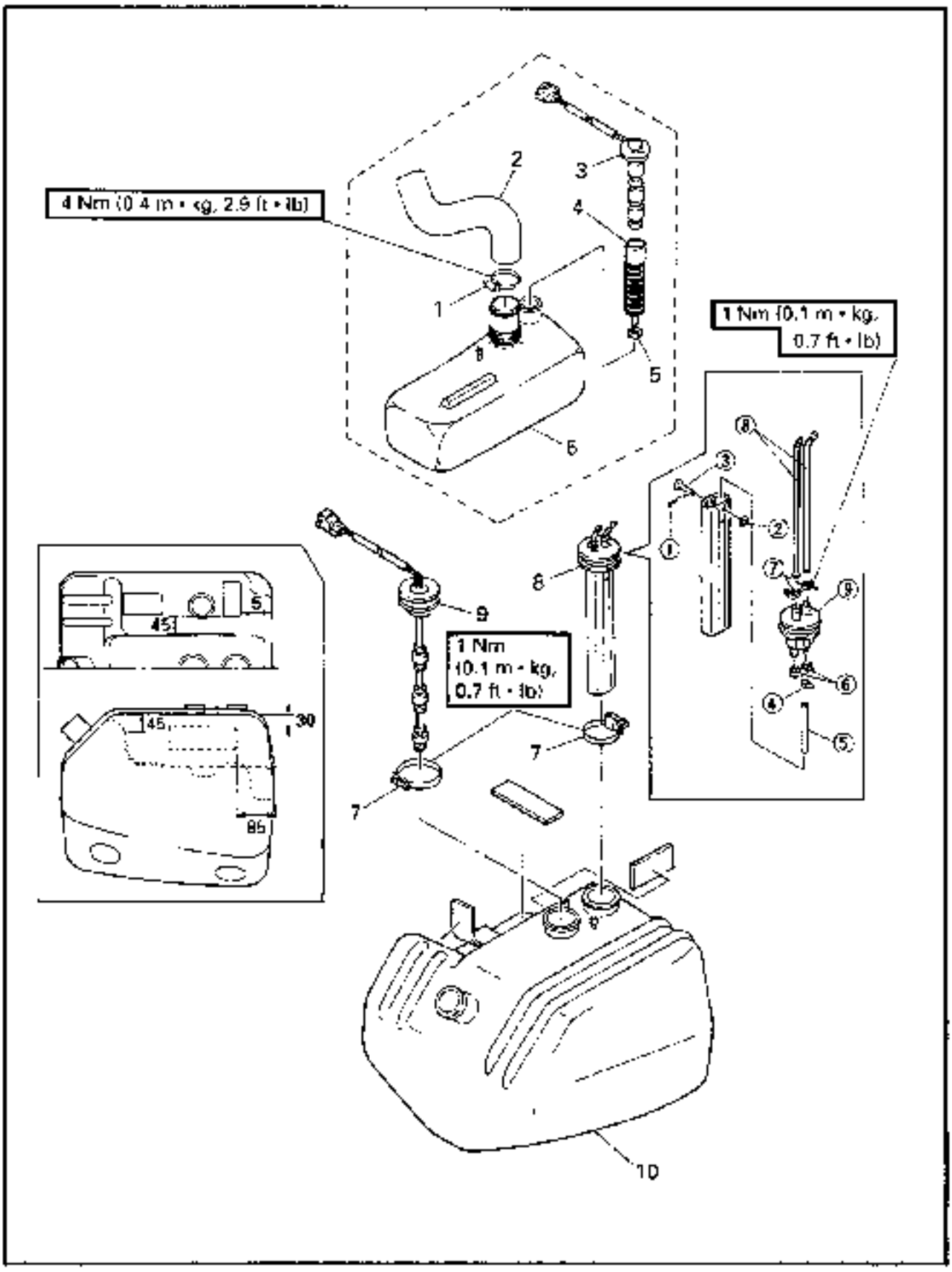


OIL TANK AND FUEL TANK REMOVAL

REMOVAL AND INSTALLATION CHART

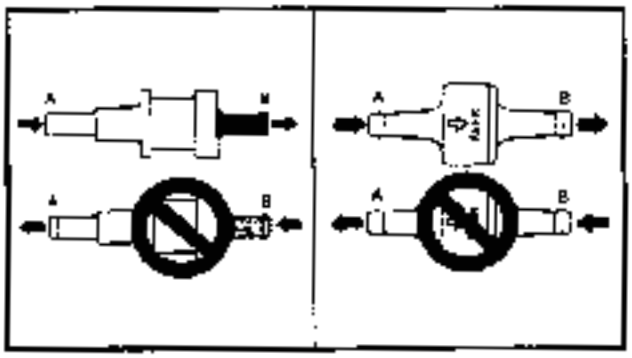
Step	Procedure/Part name	Q'ty	Service points
	OIL TANK AND FUEL TANK REMOVAL		Follow the left "Step" for removal. **⚠ WARNING** **Gasoline (Petrol) is highly flammable and explosive. Handle with special care.**
1	Oil sensor lead coupler	1	
2	Hose tie	2	
3	Air ventilation hose	1	
4	Clamp	1	
5	Oil filler hose	1	
6	Tank band	2	
7	Oil hose	1	
8	Oil tank assembly	1	
9	Fuel level sensor lead coupler	1	
10	Clamp	2	
11	Fuel filler hose	1	
12	Hose tie	3	
13	Fuel hose (ON)	1	
14	Fuel hose (RES)	1	
15	Fuel hose (return)	1	
16	Hose tie	3	
17	Air ventilation hose	2	
18	Check valve	1	
19	Fuel tank assembly	1	
20	Fuel tank damper	4	
21	Bolt (with washer)	4	
22	Tank band	2	
			Reverse the removal steps for installation.

OIL TANK AND FUEL TANK
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name		Service points
	OIL TANK DISASSEMBLY		Follow the left "Step" for removal.
1	Clamp	1	
2	Oil filler hose	1	
3	Oil level sensor	1	
4	Oil filter	1	
5	Packing	1	
6	Oil tank	1	
	FUEL TANK DISASSEMBLY		
7	Clamp	2	
8	Pipe joint assembly	1	
9	Fuel level sensor	1	
10	Fuel tank	1	
	PIPE JOINT DISASSEMBLY		
①	Circlip	1	
②	Plate washer	1	
③	Pin	1	
④	Clip	1	
⑤	Hose	1	
⑥	Clip	2	
⑦	Clamp	2	
⑧	Pipe	2	
⑨	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

Oil level sensor and fuel level sensor inspection

Refer to the "INDICATION SYSTEM" section in chapter 7.

Oil tank and fuel tank inspection

1. Inspect.
   - Oil tank
   - Fuel tank

   Crack/Damage → Replace.

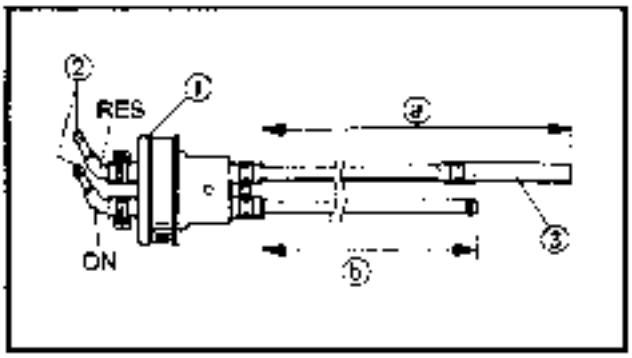
Pipe joint inspection

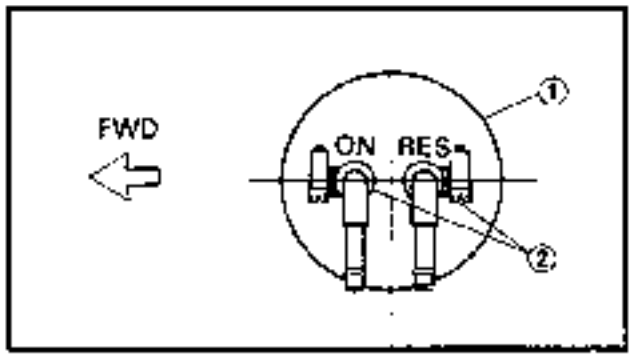
1. Inspect.
   - Pipe

     Bending/Damage → Replace.

     Contamination → Clean.
   - Pipe joint

     Wear/Crack → Replace.





Pipe joint installation

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

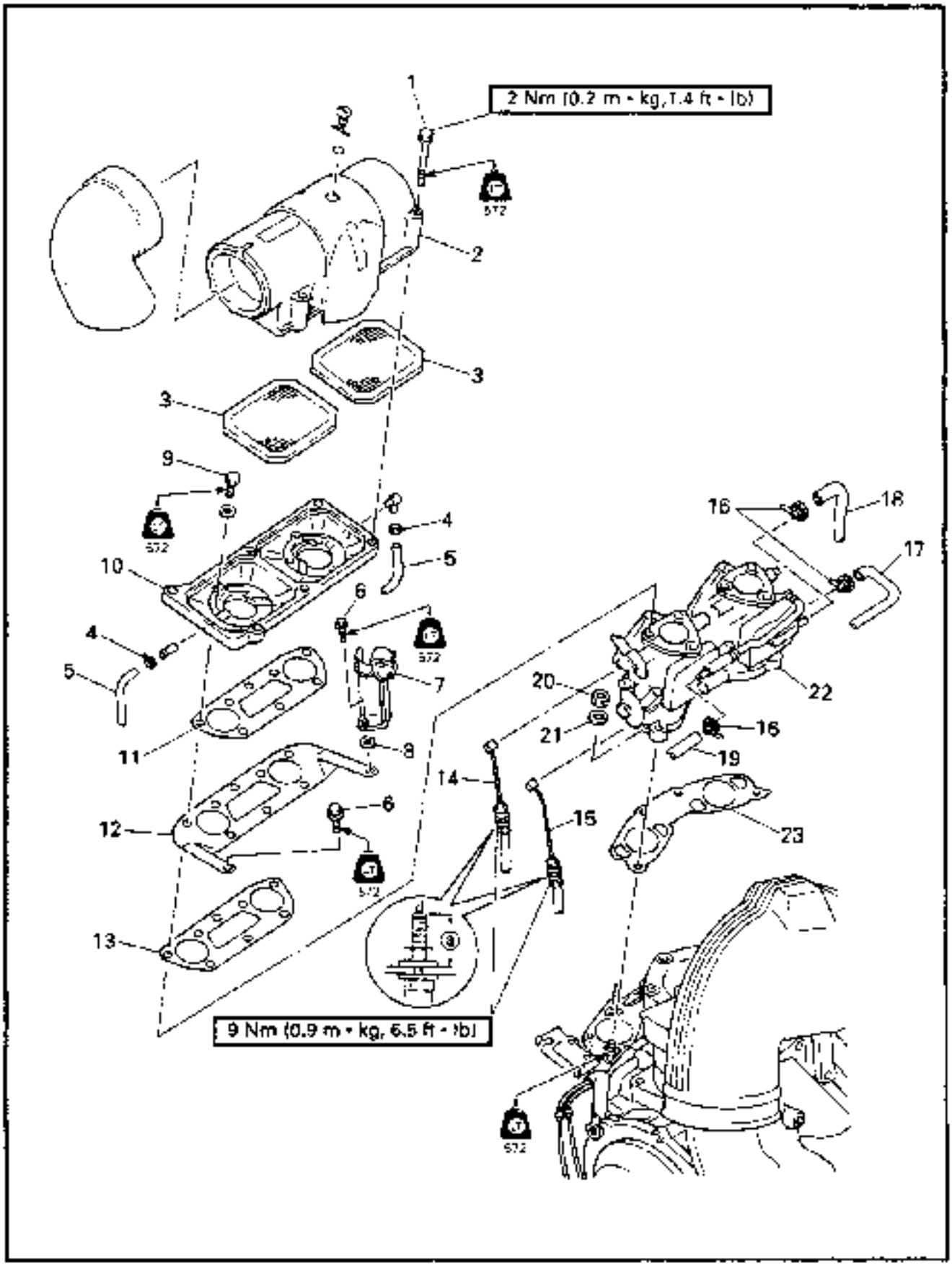
Length ⓐ:
320 ± 2 mm (12.6 ± 0.08 in)
Length ⓑ:
245 ± 2 mm (9.7 ± 0.08 in)

NOTE:

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

CARBURETOR REMOVAL

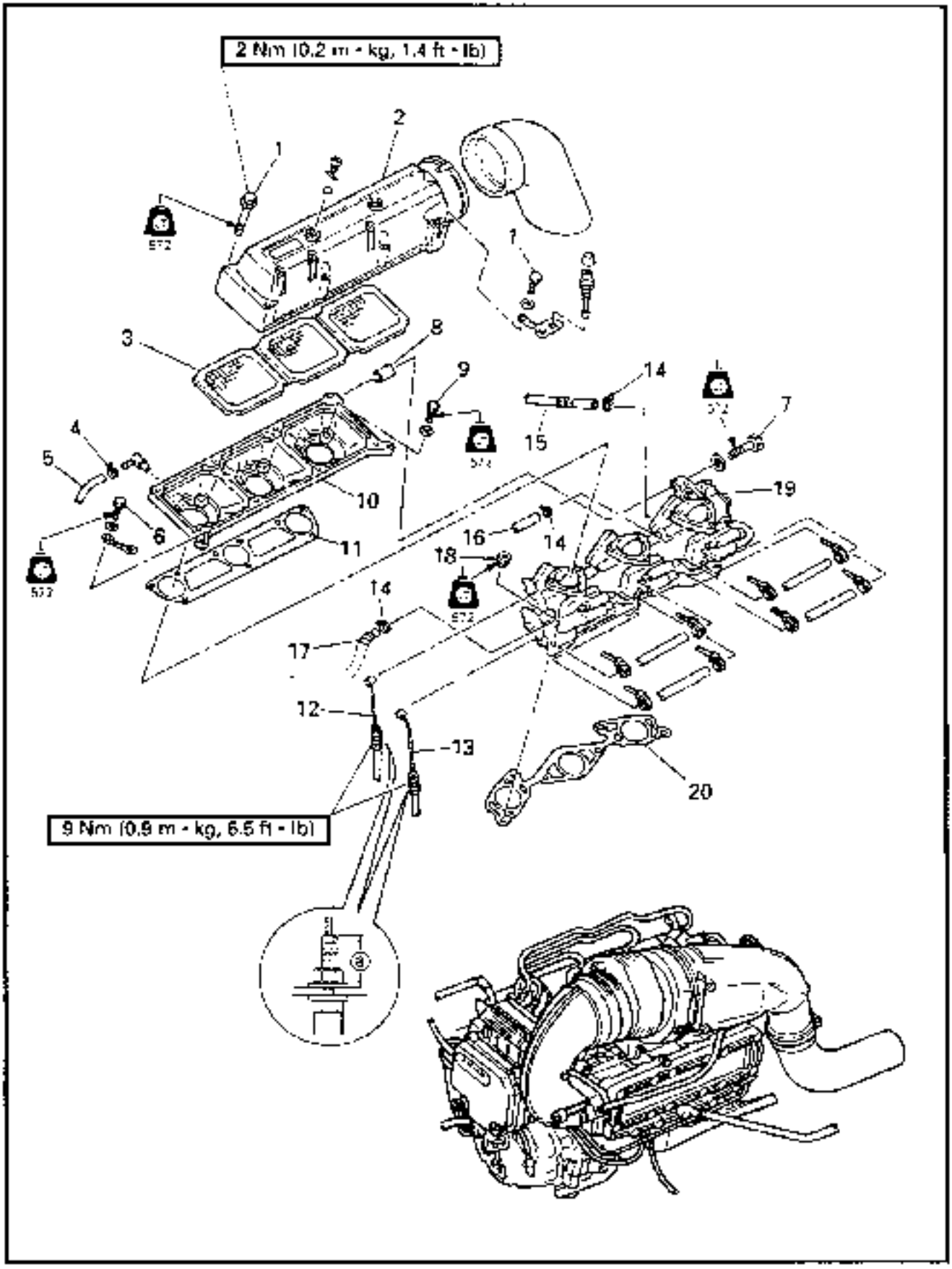
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CARBURETOR REMOVAL		Follow the left "Step" for removal
	Fuel cock		**NOTE:** Turn the fuel cock to "OFF".
	High tension cord		
1	Bolt	6	
2	Cover 1	1	
3	Flame arrester	2	
4	Hose tie	2	
5	Oil delivery hose	2	
6	Bolt (with washer)	2	
7	Cord clamp	1	
8	Plate washer	1	
9	Bolt (with washer)	6	
10	Cover 2	1	
11	Cover gasket	1	
12	Plate	1	
13	Cover gasket	1	
14	Choke cable	1	 **Cable guide set position ⓐ: 17 mm (0.67 in) Between cable guide top and plate top.**
15	Throttle cable	1	
16	Hose tie	3	
17	Fuel hose (fuel filter - fuel pump)	1	
18	Pulse hose (fuel pump - crank case)	1	
19	Fuel hose (carburetor - fuel tank)	1	
20	Nut	4	
21	Plate washer	4	
22	Carburetor assembly	1	
23	Gasket	1	
			Reverse the removal steps for installation.

EXPLODED DIAGRAM (WVT1100)

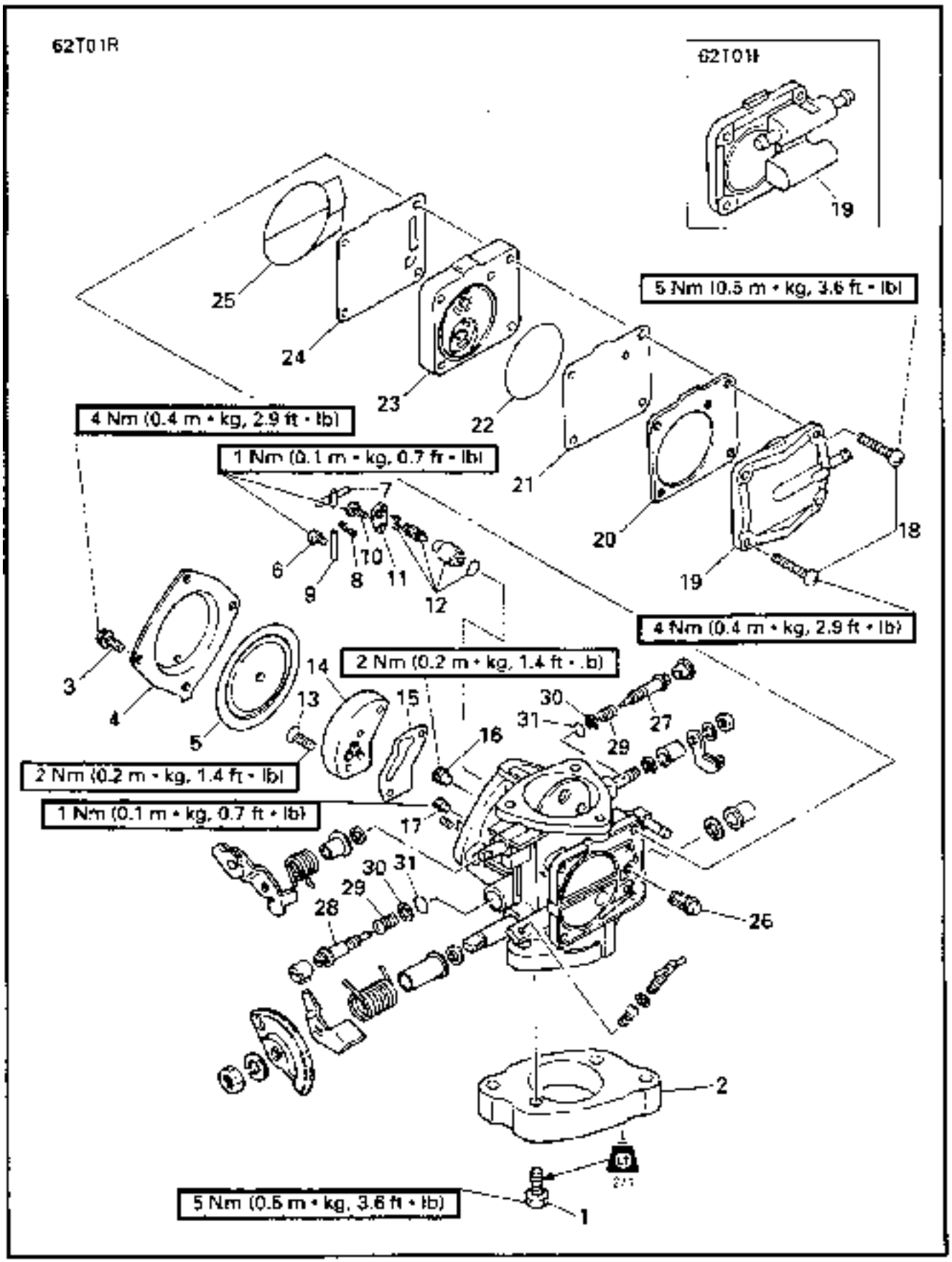


CARBURETOR REMOVAL

REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CARBURETOR REMOVAL		Follow the left "Step" for removal.
	Fuel cock		**NOTE:** Turn the fuel cock to "OFF".
	High tension cord		
1	Bolt (with washer)	8	
2	Cover 1	1	
3	Flame arrester	3	
4	Hose tie	3	
5	Oil delivery hose	3	
6	Bolt (with washer)	1	
7	Bolt (with washer)	1	
8	Collar	1	
9	Bolt (with washer)	9	
10	Cover 2	1	
11	Cover gasket	1	
12	Choke cable	1	 **Choke cable guide set position ⓐ: 17 mm (0.67 in) Throttle cable guide set position ⓐ: 14 mm (0.55 in)**
13	Throttle cable	1	
14	Hose tie	3	
15	Fuel hose (fuel filter - fuel pump)	1	
16	Pulse hose (fuel pump - crank case)	1	
17	Fuel hose (carburetor - fuel tank)	1	
18	Nut	6	
19	Carburetor assembly	1	
20	Gasket	1	
			Reverse the removal steps for installation.

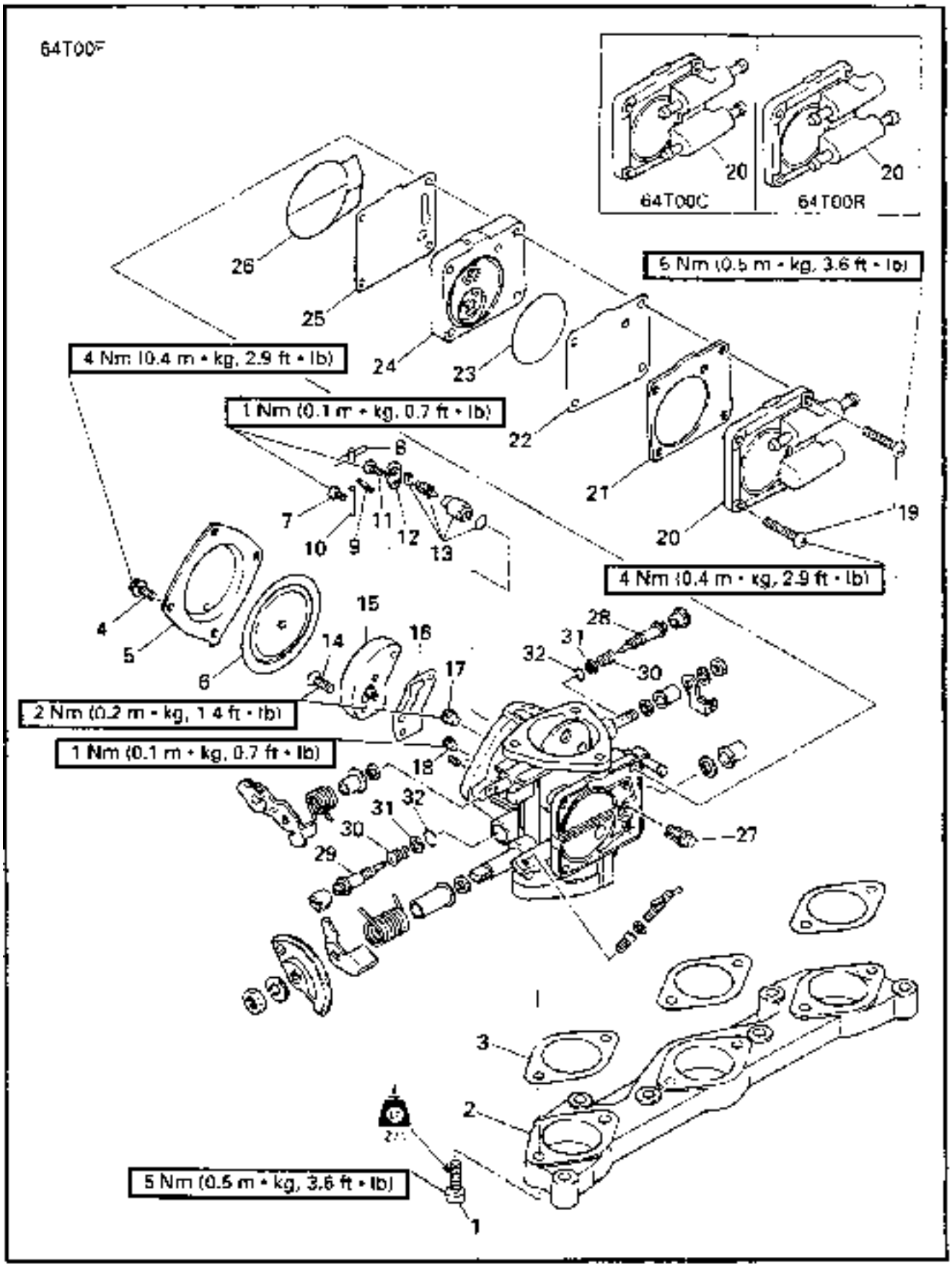
CARBURETOR
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

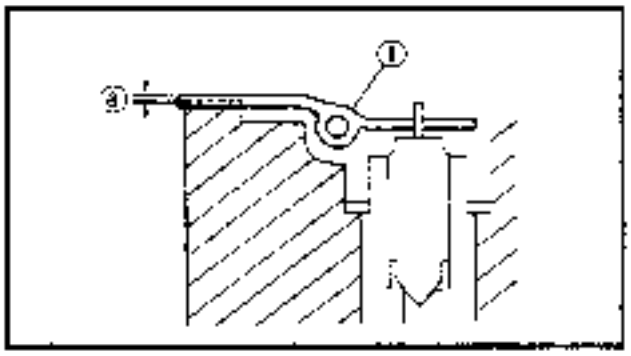
Step	Procedure/Part name	Q'ty	Service points
	CARBURETOR DISASSEMBLY		Follow the left "Step" for removal.
	Carburetor assembly		Refer to "CARBURETOR REMOVAL".
1	Bolt	4	
2	Collar	2	
3	Screw	8	
4	Cover 3	2	
5	Diaphragm assembly	2	
6	Screw	2	
7	Float arm	2	
8	Spring	2	
9	Pin	2	
10	Screw	2	
11	Plate	2	
12	Needle valve assembly	2	
13	Screw	4	
14	Body assembly	2	
15	Packing	2	
16	Main jet	2	
17	Pilot jet	2	
18	Screw	8	
19	Pump cover	2	
20	Pump cover gasket	1	
21	Diaphragm	1	
22	O-ring	1	
23	Diaphragm body assembly	1	
24	Diaphragm	1	
25	O-ring	2	
26	Filter	2	
27	High speed screw	2	
28	Low speed screw	2	
29	Spring	4	
30	Plate washer	4	
31	O-ring	4	
			Reverse the removal steps for installation.

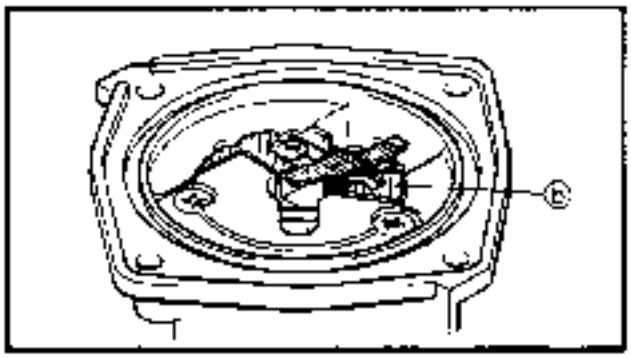
EXPLODED DIAGRAM (WVT1100)

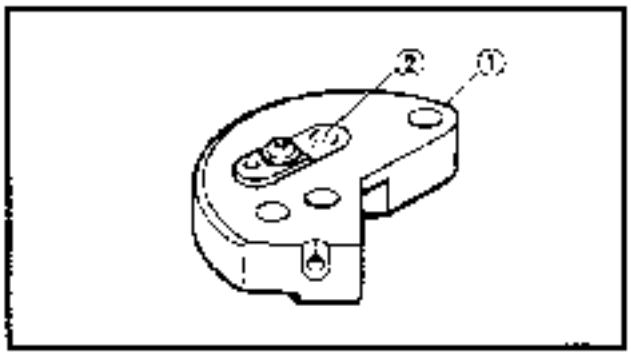


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CARBURETOR DISASSEMBLY		Follow the left "Step" for removal.
	Carburetor assembly		Refer to "CARBURETOR REMOVAL".
1	Bolt	6	
2	Collar	1	
3	Cover gasket	3	
4	Screw	12	
5	Cover 3	3	
6	Diaphragm assembly	3	
7	Screw	3	
8	Float arm	3	
9	Spring	3	
10	Pin	3	
11	Screw	3	
12	Plate	3	
13	Needle valve assembly	3	
14	Screw	6	
15	Body assembly	3	
16	Packing	3	
17	Main jet	3	
18	Pilot jet	3	
19	Screw	12	
20	Pump cover	3	
21	Pump cover gasket	1	
22	Diaphragm	1	
23	O-ring	1	
24	Diaphragm body assembly	1	
25	Diaphragm	1	
26	O-ring	3	
27	Filter	3	
28	High speed screw	3	
29	Low speed screw	3	
30	Spring	6	
31	Plate washer	6	
32	O-ring	6	
			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

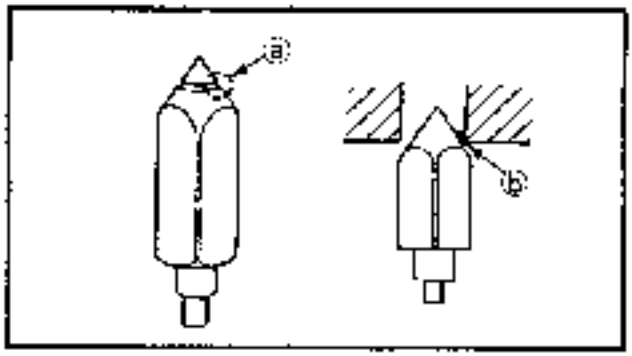
1. Inspect:
   - Body assembly ①
     Contamination → Clean.
   - Valve ②
     Damage → Replace.

Fuel pump inspection (WVT700)

1. Inspect:
   - Diaphragm
   - Diaphragm body assembly
     Damage → Replace.

Filter inspection

1. Inspect:
   - Filter
     Contamination → Clean.
     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

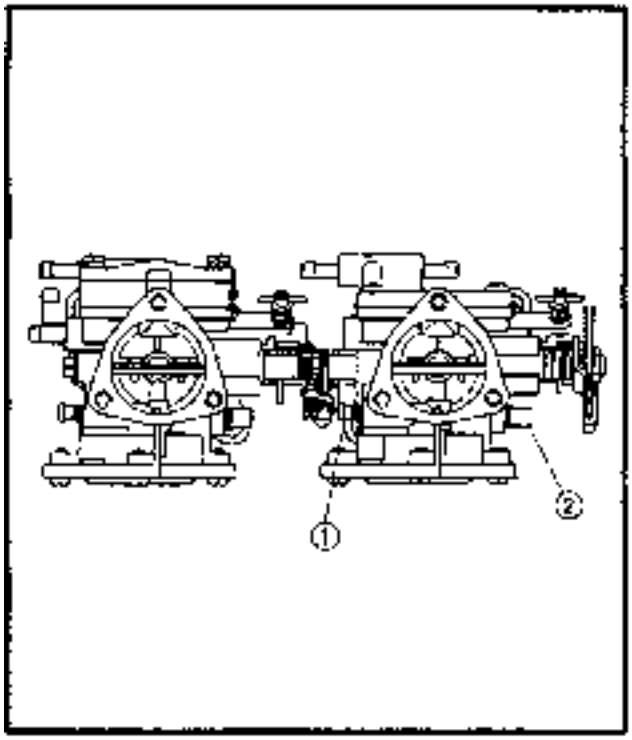
1. Inspect:
   - Main jet
   - Pilot jet
   - Carburetor body

   Contamination → Clean.

High and low speed screws inspection

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

   Bend/Wear → Replace.



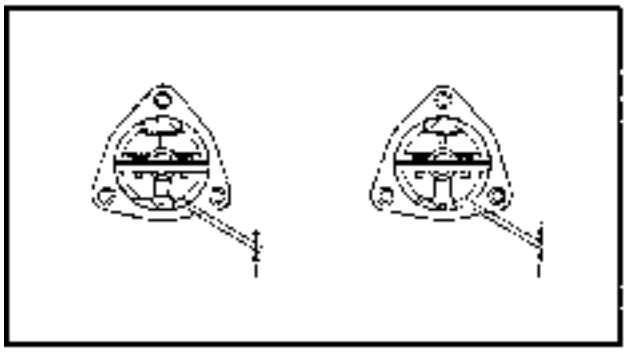
High and low speed screws adjustment

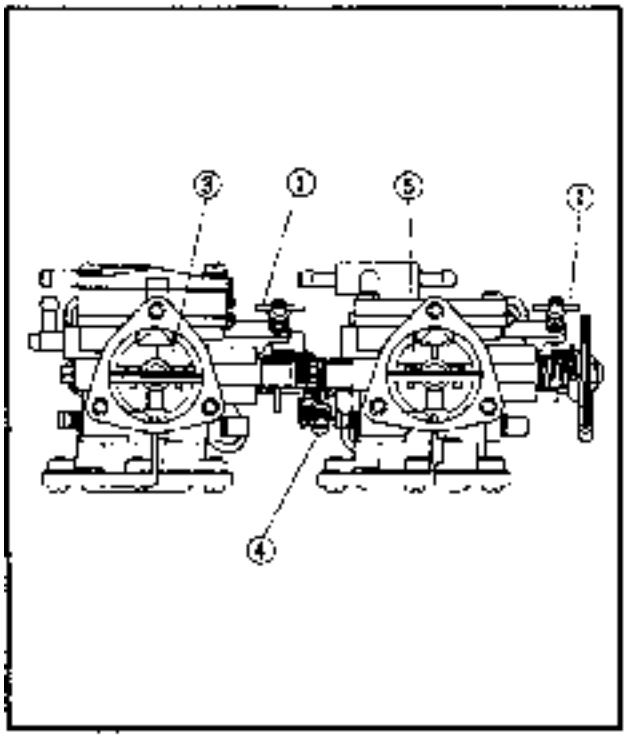
1. Adjust:
   - High speed screw
   - Low speed screw

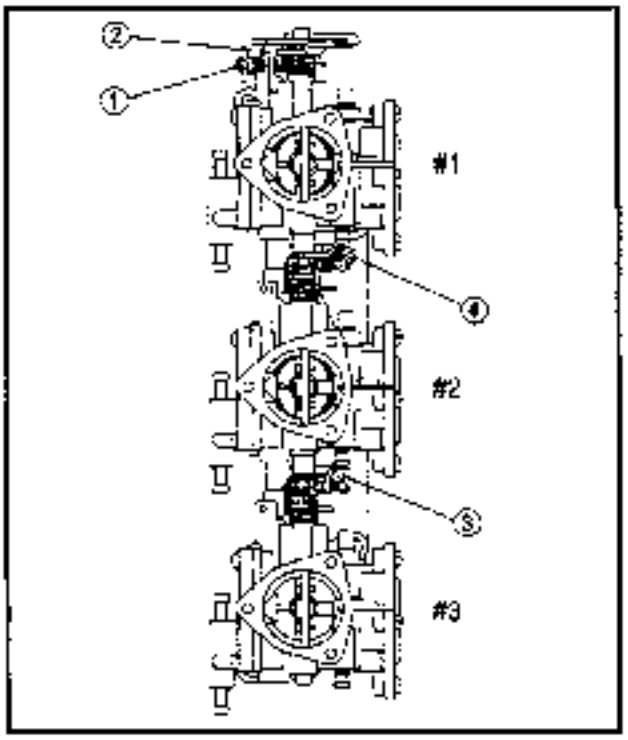
Adjustment steps:

- 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:
WVT700
5/8 (#1), 1-1/8 (#2) ± 1/4 turns out
WVT1100
7/8 (#1) ± 1/4 turns out
Low speed screw:
WVT700
5/8 (#1) ± 1/4 turns out
WVT1100
1-1/8 (#1) ± 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: WVT700
- Turn out the idle adjust screws ① until their tips are apart from the throttle lever ②.

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

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

Adjustment steps: WVT1100

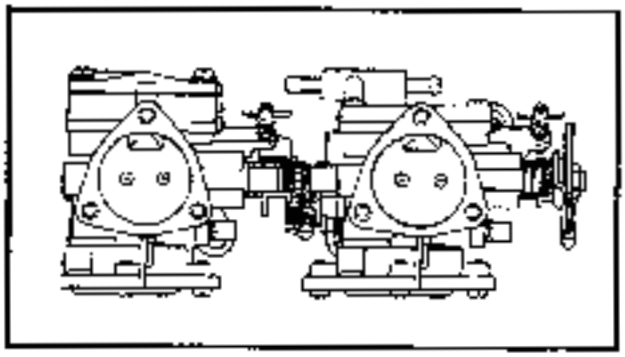
a. Turn out the idle adjust screws ① until its tip is apart from the throttle lever ②.

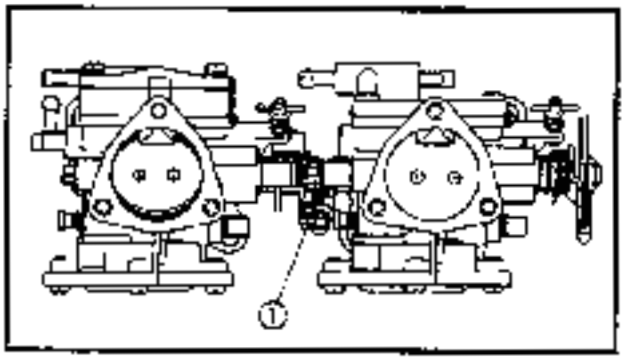
NOTE:
Record the set position of the idle adjust screw.

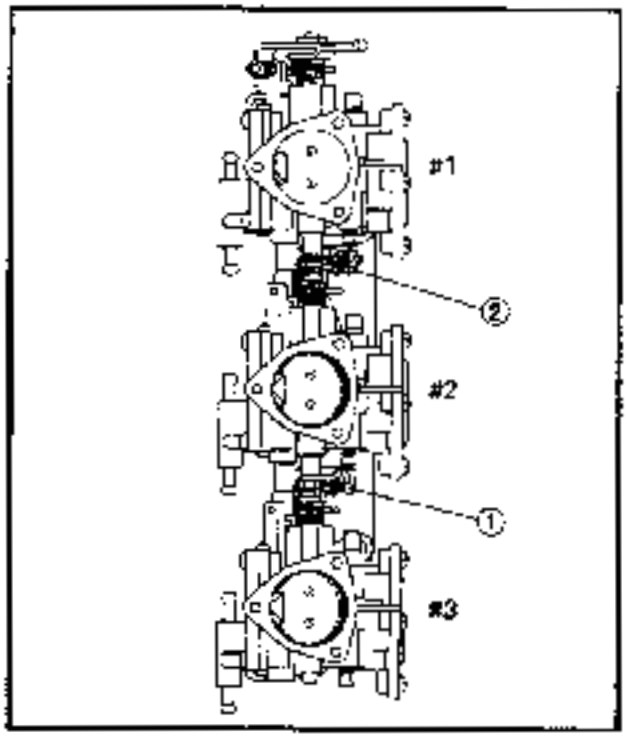
b. Turn out the synchronization screws ③ and ④ until their tips are apart from the connecting lever.
c. Turn in the synchronization screw ③ until the #2 and #3 throttle valves are fully closed.

NOTE:
Turning in the screw ③ further causes the #3 throttle valve to open again.

d. Turn in the synchronization screw ④ until the #1 throttle valve is fully closed.
e. Check that the all throttle valves are fully closed. If not, do step a through e again.
f. 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: WVT700

a. 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.

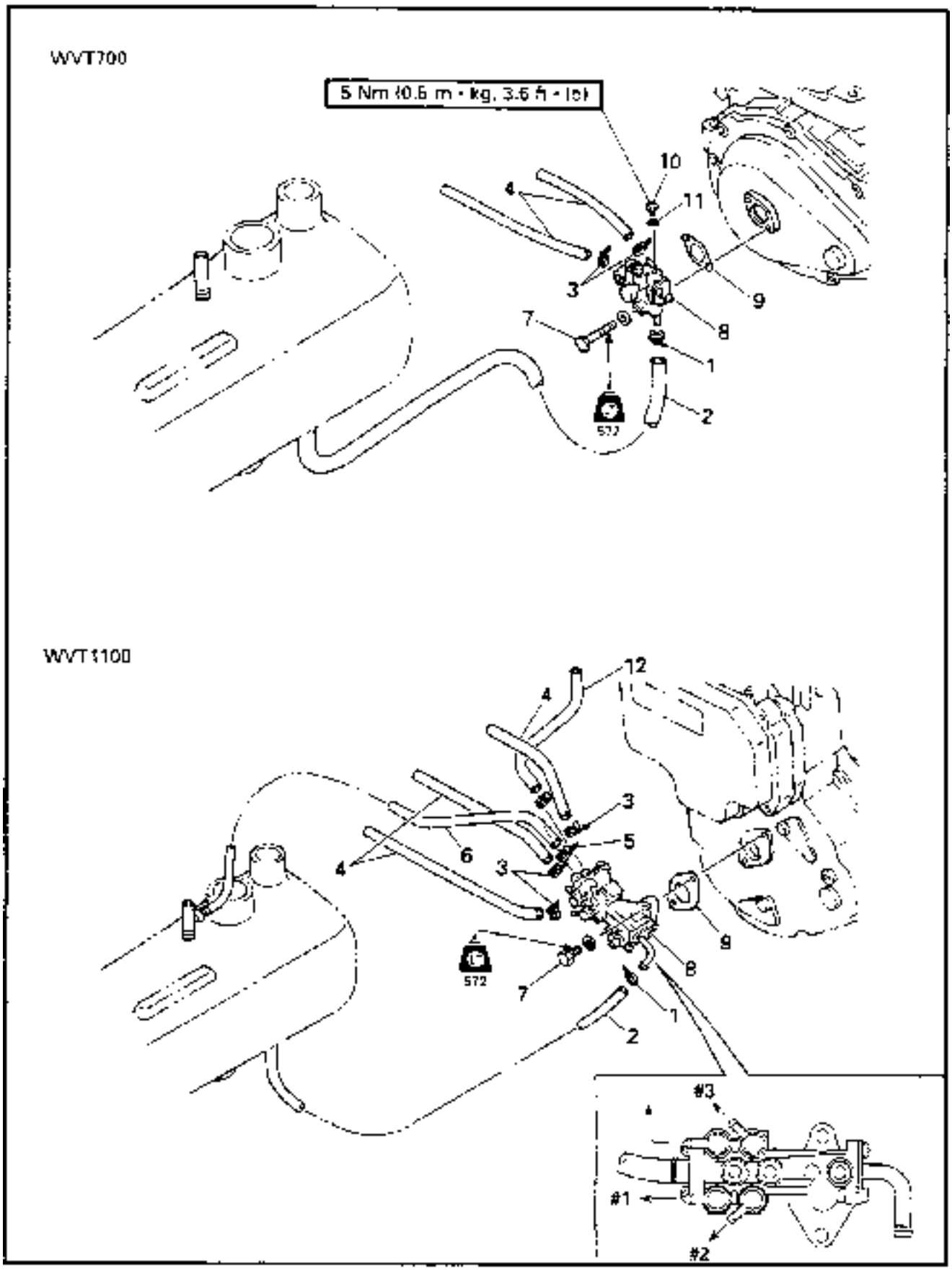
Adjustment steps: WVT1100

a. Turn out the synchronization screws ① and ② until their tips are apart from the synchronization lever.
b. Turn in the synchronization screw ① to bring #3 and #2 choke valves into a fully closed position when the choke lever is turned on the closed side.
c. Turn in the synchronization screw ② to bring #1 choke valve into a fully closed position when the choke lever is turned on the closed side.
d. Check that the all choke valves are fully closed. If not, do step a through d again.

Carburetor assembly

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

OIL PUMP
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

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

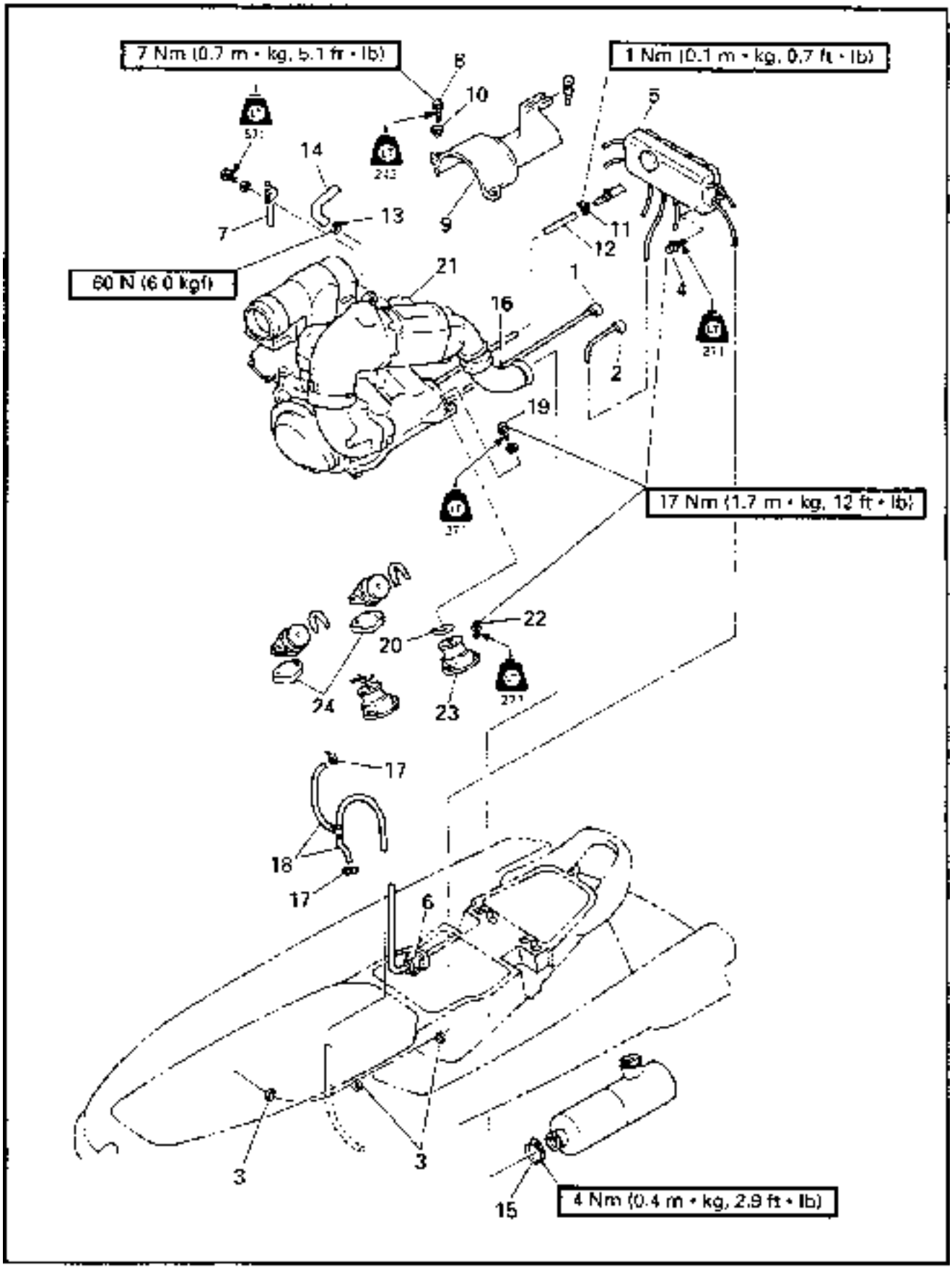
CAUTION:

After installing the oil injection system, bleed the system of air.

CHAPTER 5
POWER UNIT

ENGINE UNIT REMOVAL

EXPLODED DIAGRAM (WVT700)

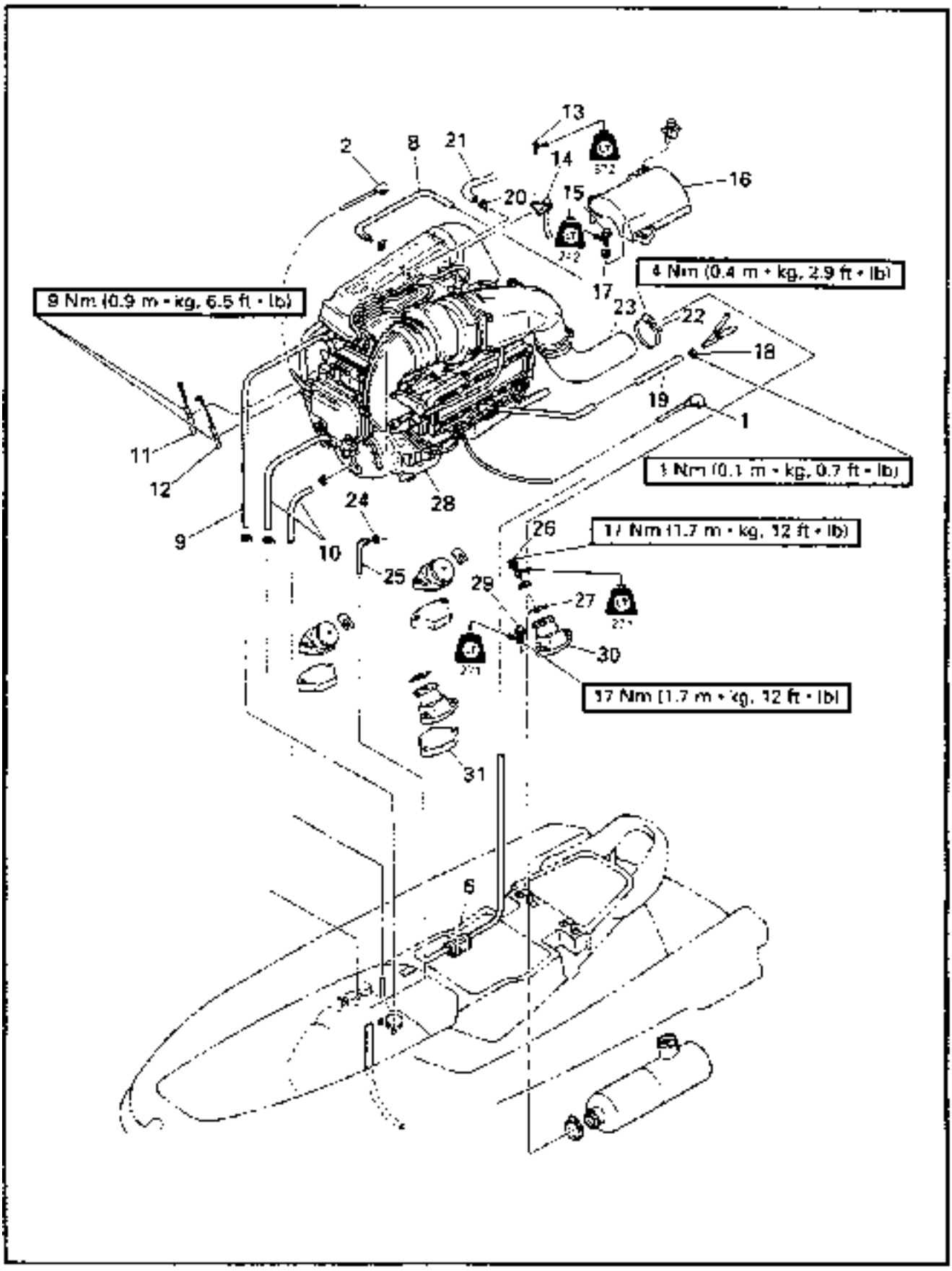


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	ENGINE UNIT REMOVAL		Follow the left "Step" for removal.
	Engine hood assembly		Refer to the "ENGINE HOOD REMOVAL" section in chapter 8.
	Oil tank assembly		Refer to the "OIL TANK AND FUEL TANK REMOVAL" section in chapter 4.
	Fuel tank assembly		
	Ventilation hose		Refer to the "DECK" section in chapter 8.
1	Battery negative lead	1	
2	Battery positive lead	1	
3	Wire clamp	4	
4	Bolt (with washer)	2	
5	Electrical box	1	
6	Fuel filter	1	
7	Housing grease nipple plate	1	
8	Bolt (with washer)	2	
9	Coupling cover	1	
10	Collar	2	
11	Clamp	1	
12	Water inlet hose	1	
13	Hose tie	1	
14	Water outlet hose	1	
15	Clamp	1	
16	Exhaust hose	1	
17	Hose tie	2	
18	Water hose	1	
19	Engine mounting bolt	4	
20	Shim	*	**NOTE:** Before removing the mounting bolt, mark the engine mounting shim packs for ease of reassembly and coupling alignment.
21	Engine unit	1	
22	Bolt (with washer)	8	
23	Mount bracket	4	
24	Mount bracket spacer	2	
			Reverse the removal steps for installation.

*: As required

EXPLODED DIAGRAM (WVT1100)



REMOVAL AND INSTALLATION CHART

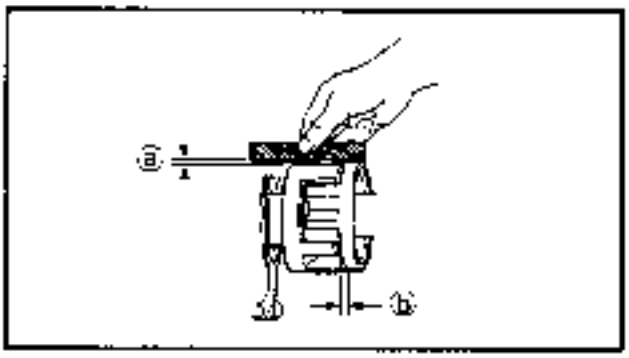
Step	Procedure/Part name	Q'ty	Service points
	ENGINE UNIT REMOVAL		Follow the left "Step" for removal.
1	Negative lead	1	
2	Positive lead	1	
3	Spiral tube	1	
4	Band	1	**NOTE:** Clamp the handle switch leads and meter leads with the band.
5	Wire clamp	1	
6	Handle switch lead coupler	2	
7	Meter lead coupler	1	
8	Fuel hose	1	
9	Fuel hose (return)	1	
10	Oil hose	2	
11	Choke cable	1	
12	Throttle cable	1	
13	Bolt (with washer)	2	
14	Plate	1	
15	Bolt (with washer)	2	
16	Coupling cover	1	
17	Collar	2	
18	Clamp	1	
19	Water inlet hose	1	
20	Hose tie	1	
21	Water outlet hose	1	
22	Clamp	1	
23	Exhaust hose	1	
24	Hose tie	1	
25	Pilot water hose	1	
26	Engine mounting bolt	4	**NOTE:** Before removing the mounting bolt, mark the engine mounting shim packs for ease of reassembly and coupling alignment.
27	Shim	*	
28	Engine unit	1	
29	Bolt (with washer)	8	
30	Mount bracket	4	
31	Mount bracket spacer	3	
			Reverse the removal steps for installation.

*: As required

SERVICE POINTS

Mount bracket inspection

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



Coupling clearance inspection

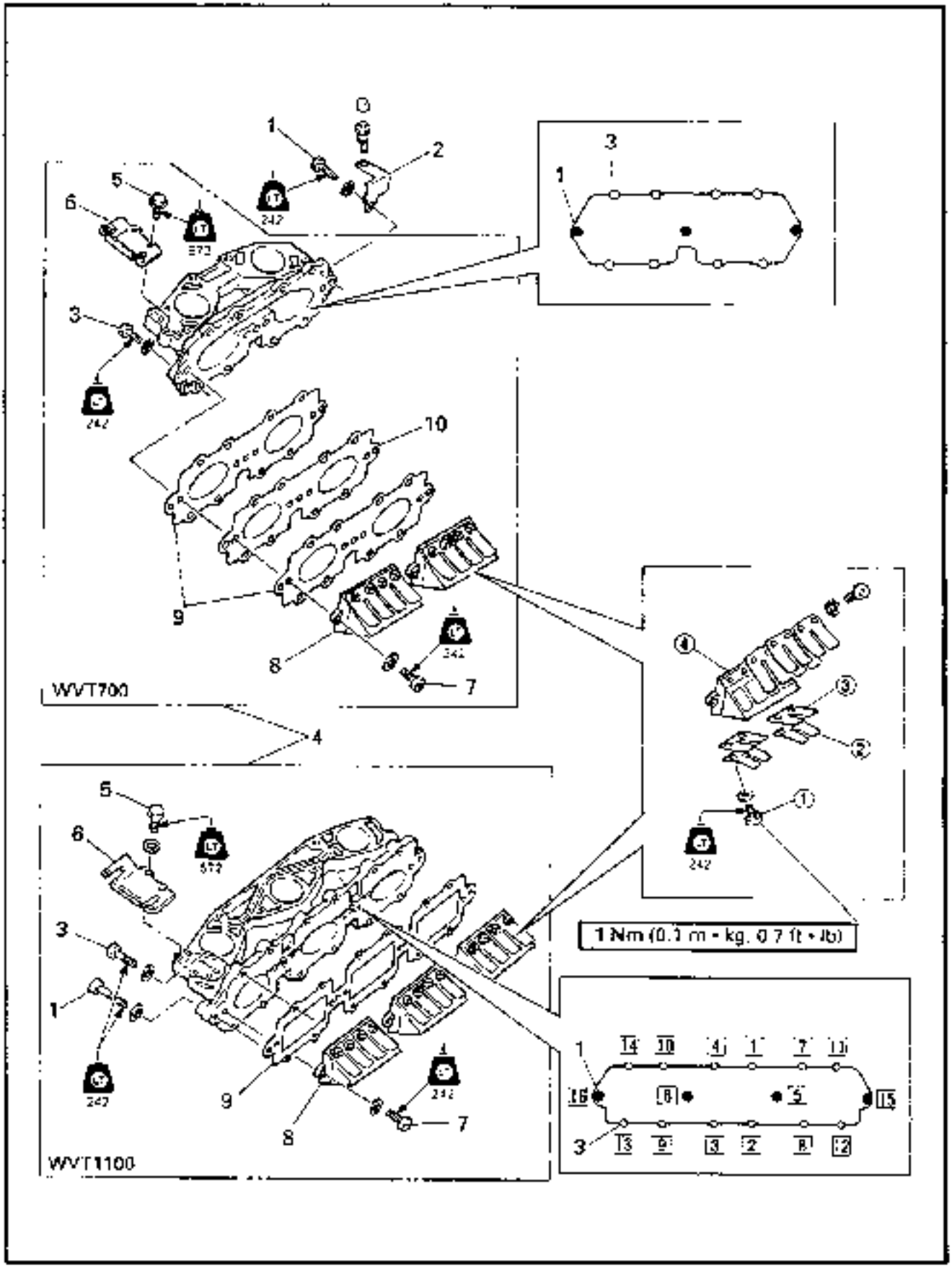
1. Measure:
   - Clearance ⓐ
   - Clearance ⓑ
     Out of specification → Adjust using shim.

NOTE:

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

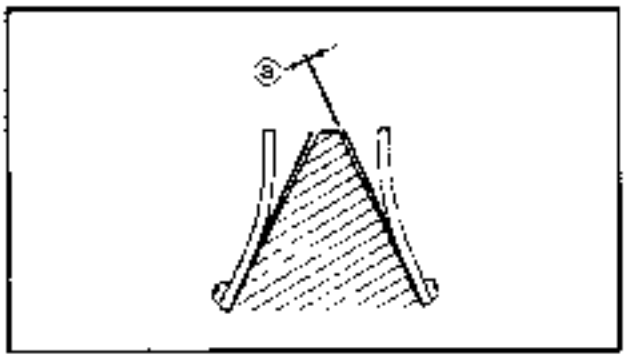
Clearance ⓐ:
0 ~ 0.5 mm (0 ~ 0.020 in)
Clearance ⓑ:
2 ~ 4 mm (0.079 ~ 0.157 in)

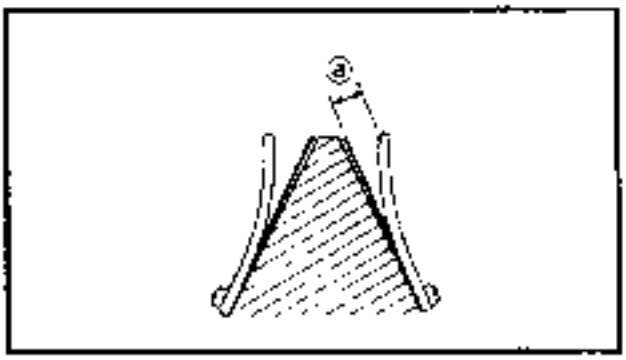
REED VALVE
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty		Service points
	REED VALVE REMOVAL	/20	1000	Follow the left "Step" for removal.
	Carburetor assembly			Refer to the "CARBURETOR REMOVAL" section in chapter 4.
1	Bolt (with washer)	3	4	6 × 35 mm
2	Plate	1	–	
3	Bolt (with washer)	8	12	6 × 25 mm
				CAUTION: **Tighten the bolts in sequence.**
4	Intake manifold assembly	1	1	
5	Bolt (with washer)	2	2	6 × 16 mm
6	Cable bracket	1	1	
7	Screw	4	6	5 × 16 mm
8	Reed valve assembly	2	3	
9	Gasket	2	1	
10	Plate	1	-	
	REED VALVE DISASSEMBLY			
①	Screw	8		
②	Valve stopper	4		
③	Reed valve	4		
④	Reed valve body	1		
				Reverse the removal steps for installation.





SERVICE POINTS

Reed valve inspection

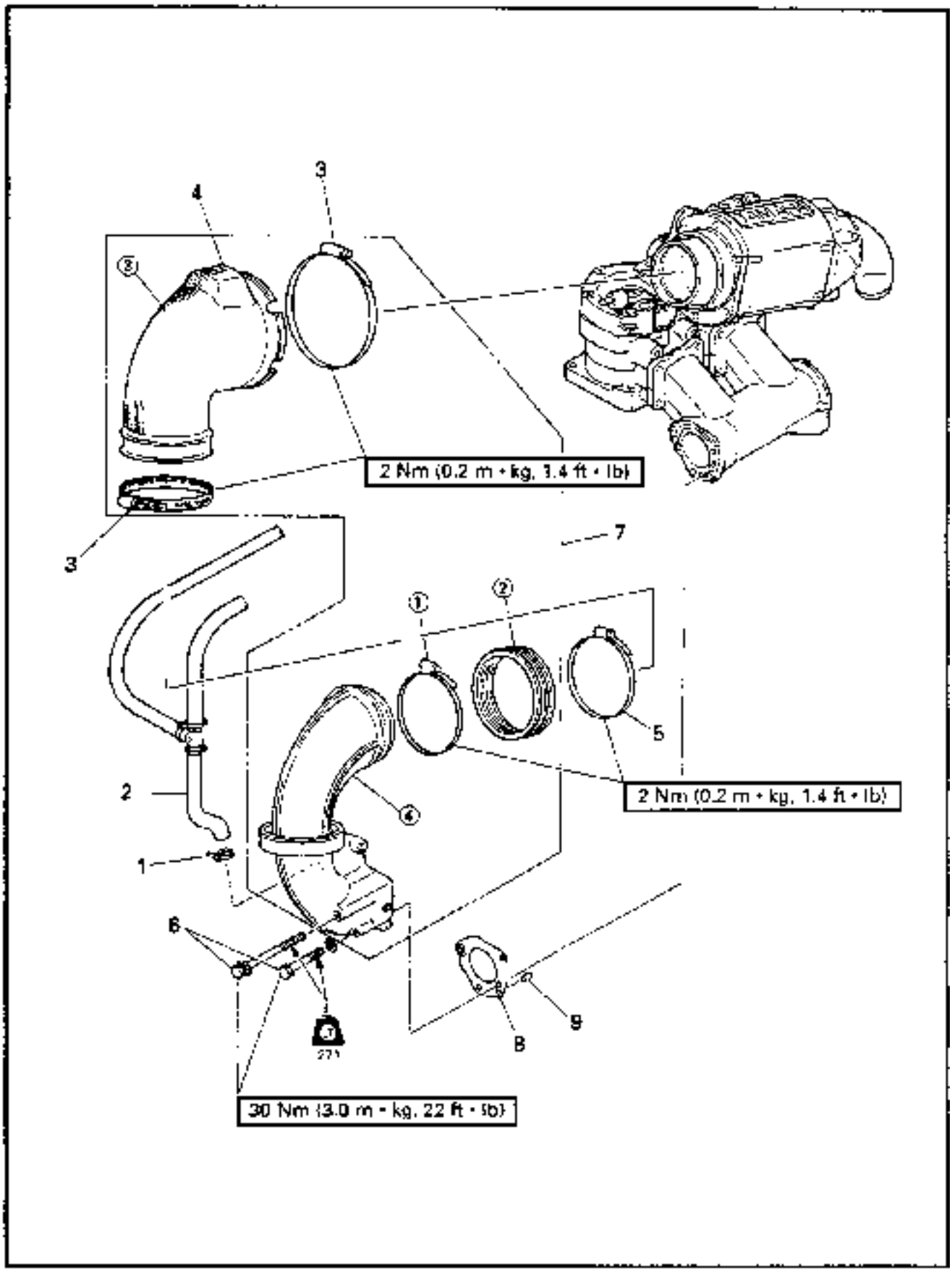
1. Inspect:
   - Reed valve
     Crack/Damage → Replace.
2. Measure:
   - Valve bending ⓐ
     Out of specification → Replace.

Valve bending limit:
0.2 mm (0.008 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)

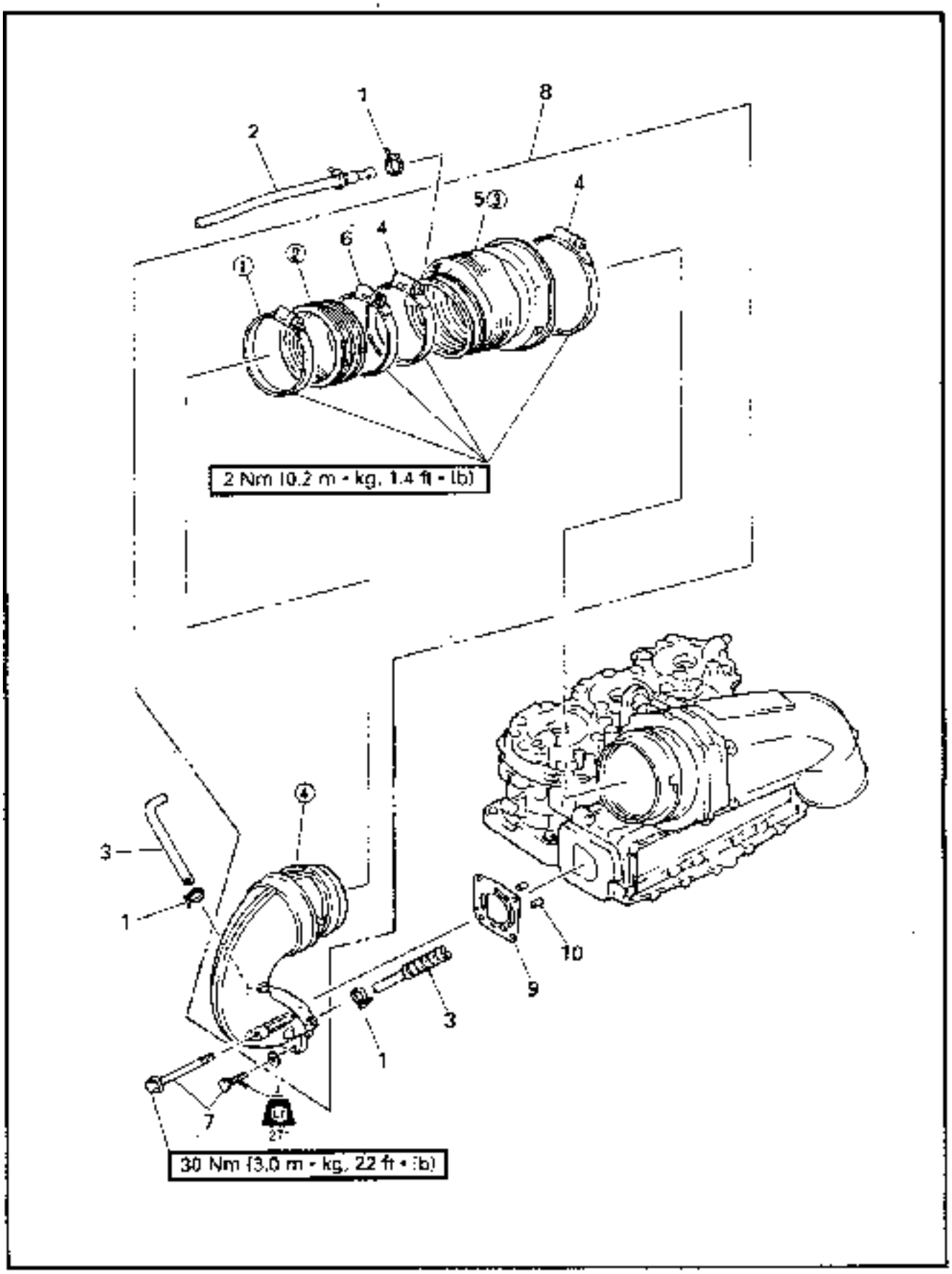
EXHAUST RING
EXPLODED DIAGRAM (WVT700)



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	EXHAUST RING REMOVAL		Follow the left "Step" for removal.
1	Hose tie	1	
2	Pilot water hose	1	
3	Clamp	2	
4	Exhaust joint	1	**NOTE:** ● Pull and side the exhaust joint. ● Loosen the clamp on the chamber side.
5	Clamp	1	
6	Bolt (with washer)	4	
7	Ring assembly	1	
8	Gasket	1	
9	Pin dowel	2	
	RING DISASSEMBLY		
①	Clamp	1	**CAUTION:** **Tighten the clamp before installing the ring on the muffler.**
②	Joint	1	
③	Exhaust joint	1	
④	Ring	1	
			Reverse the removal steps for installation.

EXPLODED DIAGRAM (WVT1100)

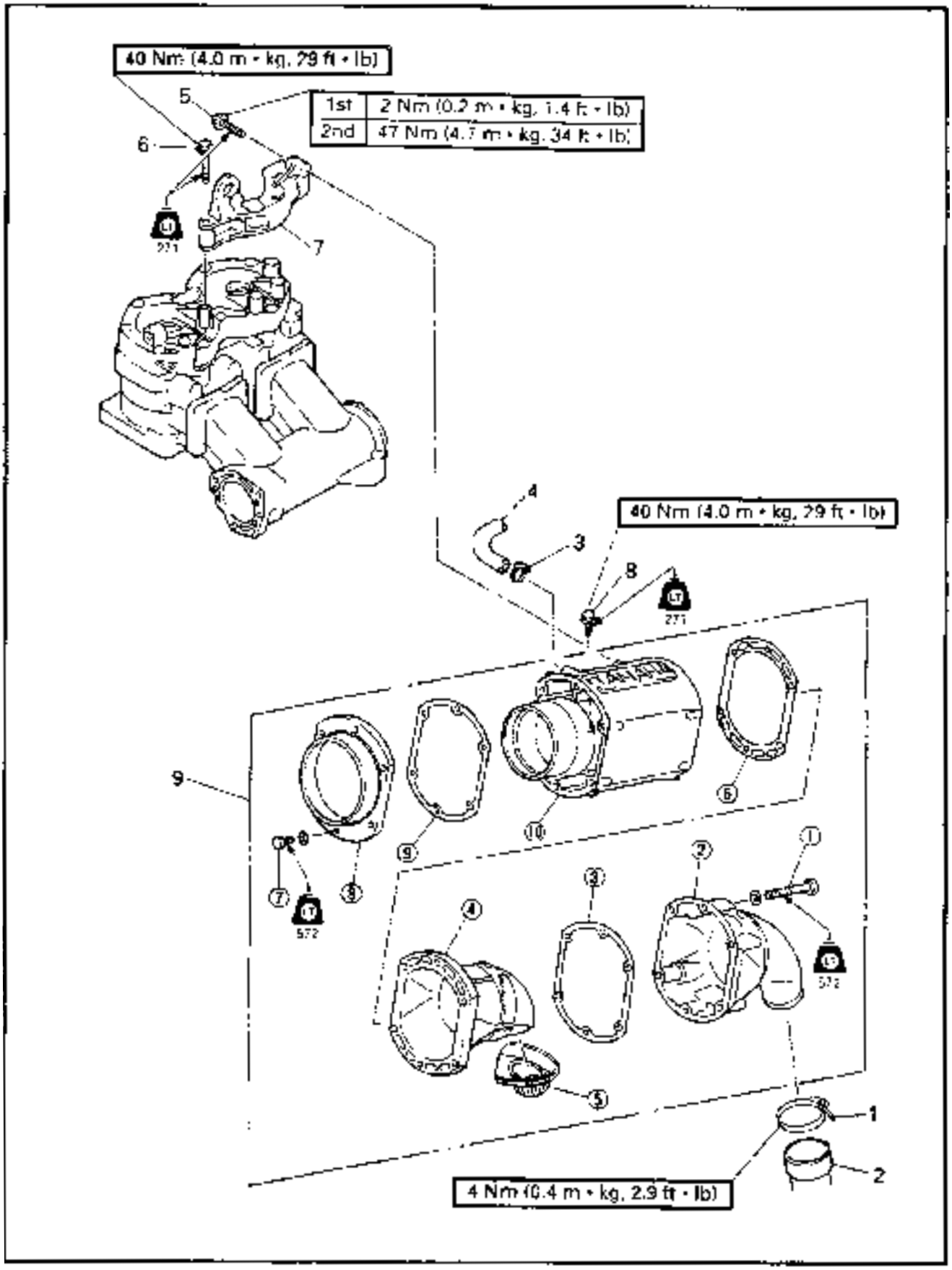


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	EXHAUST RING REMOVAL		Follow the left "Step" for removal.
1	Hose tie	3	
2	Pilot water hose	1	
3	Water hose	2	
4	Clamp	2	
5	Exhaust joint	1	**NOTE:** ● Pull and side the exhaust joint. ● Loosen the clamp on the chamber side.
6	Clamp	1	
7	Bolt (with washer)	4	
8	Ring assembly	1	
9	Gasket	1	
10	Pin dowel	2	
	RING DISASSEMBLY		
①	Clamp	1	**CAUTION:** **Tighten the clamp before installing the ring on the muffler.**
②	Joint	1	
③	Exhaust joint	1	
④	Ring	1	
			Reverse the removal steps for installation.

EXHAUST CHAMBER

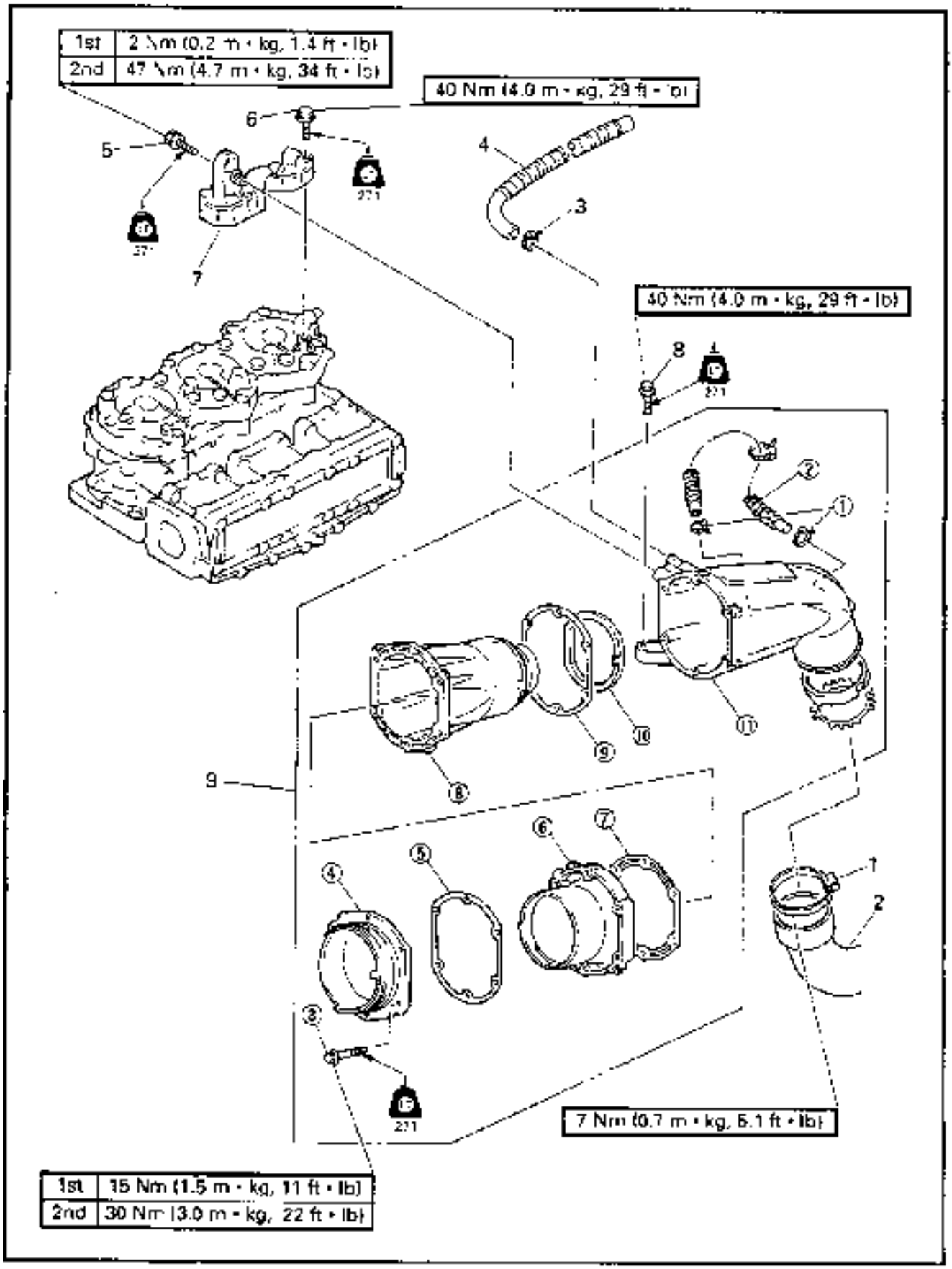
EXPLODED DIAGRAM (WVT700)



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	EXHAUST CHAMBER REMOVAL		Follow the left "Step" for removal.
	Ring assembly		Refer to the "EXHAUST RING" section.
1	Clamp	1	
2	Exhaust hose	1	
3	Hose tie	1	
4	Water outlet hose	1	
5	Bolt (exhaust chamber)	2	
6	Bolt (muffler stay)	4	
7	Muffler stay	1	
8	Bolt	2	
9	Exhaust chamber assembly	1	
	CHAMBER DISASSEMBLY		
①	Bolt (with washer)	6	
②	Exhaust outer cover 1	1	
③	Gasket	1	
④	Exhaust inner cover	1	
⑤	Seal	1	
⑥	Gasket	1	
⑦	Bolt (with washer)	6	
⑧	Exhaust outer cover 2	1	
⑨	Gasket	1	
⑩	Exhaust chamber	1	
			Reverse the removal steps for installation.

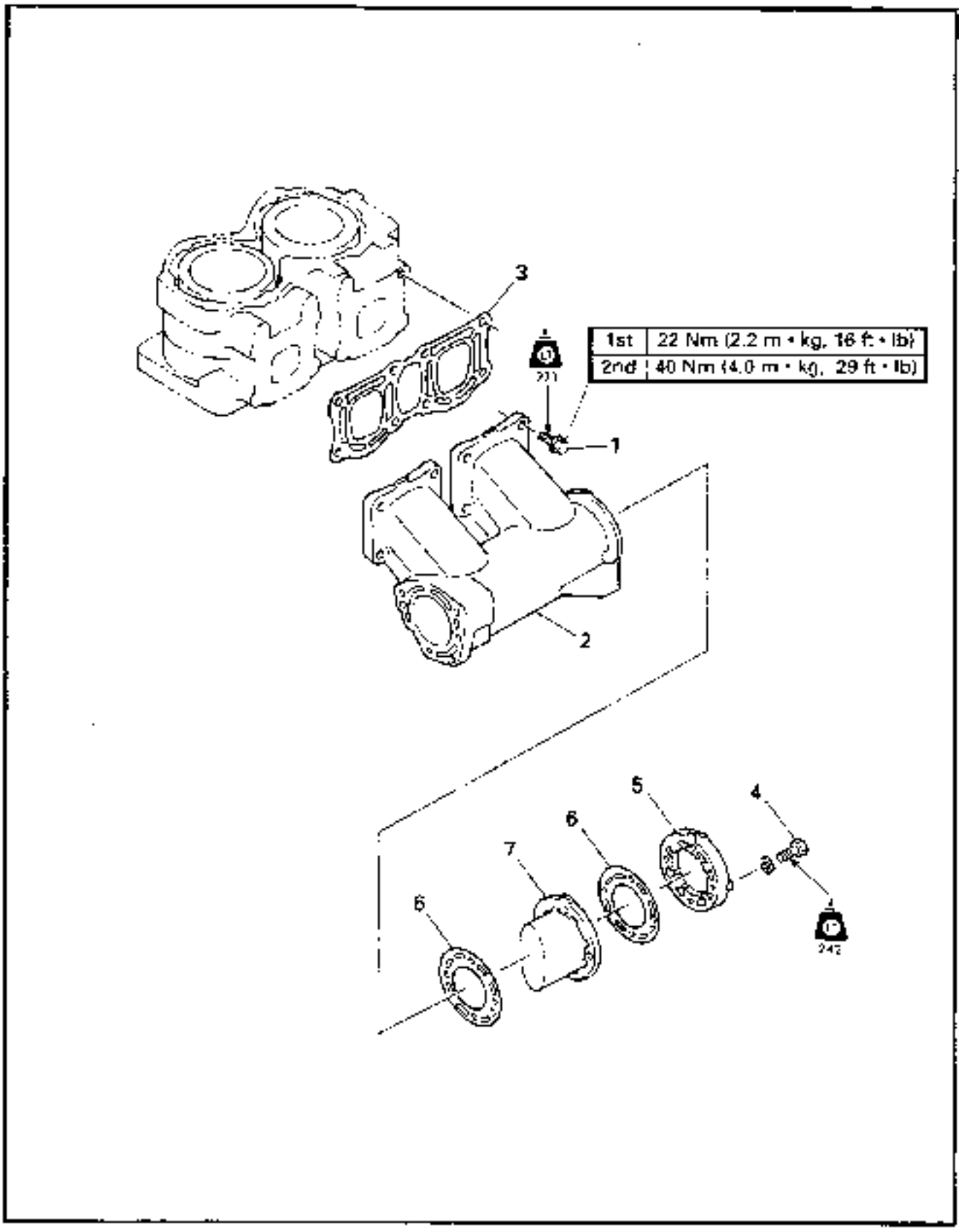
EXPLODED DIAGRAM (WVT1100)



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	EXHAUST CHAMBER REMOVAL		Follow the left "Step" for removal.
	Ring assembly		Refer to the "EXHAUST RING" section.
1	Clamp	1	
2	Exhaust hose	1	
3	Hose tie	1	
4	Water outlet hose	1	
5	Bolt (exhaust chamber)	2	
6	Bolt (muffler stay)	4	
7	Muffler stay	1	
8	Bolt	2	
9	Exhaust chamber assembly	1	
	CHAMBER DISASSEMBLY		
①	Hose tie	2	
②	Water hose	1	
③	Bolt (with washer)	6	
④	Exhaust outer cover 1	1	
⑤	Gasket	1	
⑥	Muffler 2	1	
⑦	Gasket	1	
⑧	Exhaust inner cover	1	
⑨	Gasket	1	
⑩	Seal	1	
⑪	Exhaust chamber	1	
			Reverse the removal steps for installation.

MUFFLER
EXPLODED DIAGRAM (WVT700)
SILENCIEUX
VUE EN ECLATE (WVT700)



REMOVAL AND INSTALLATION CHART

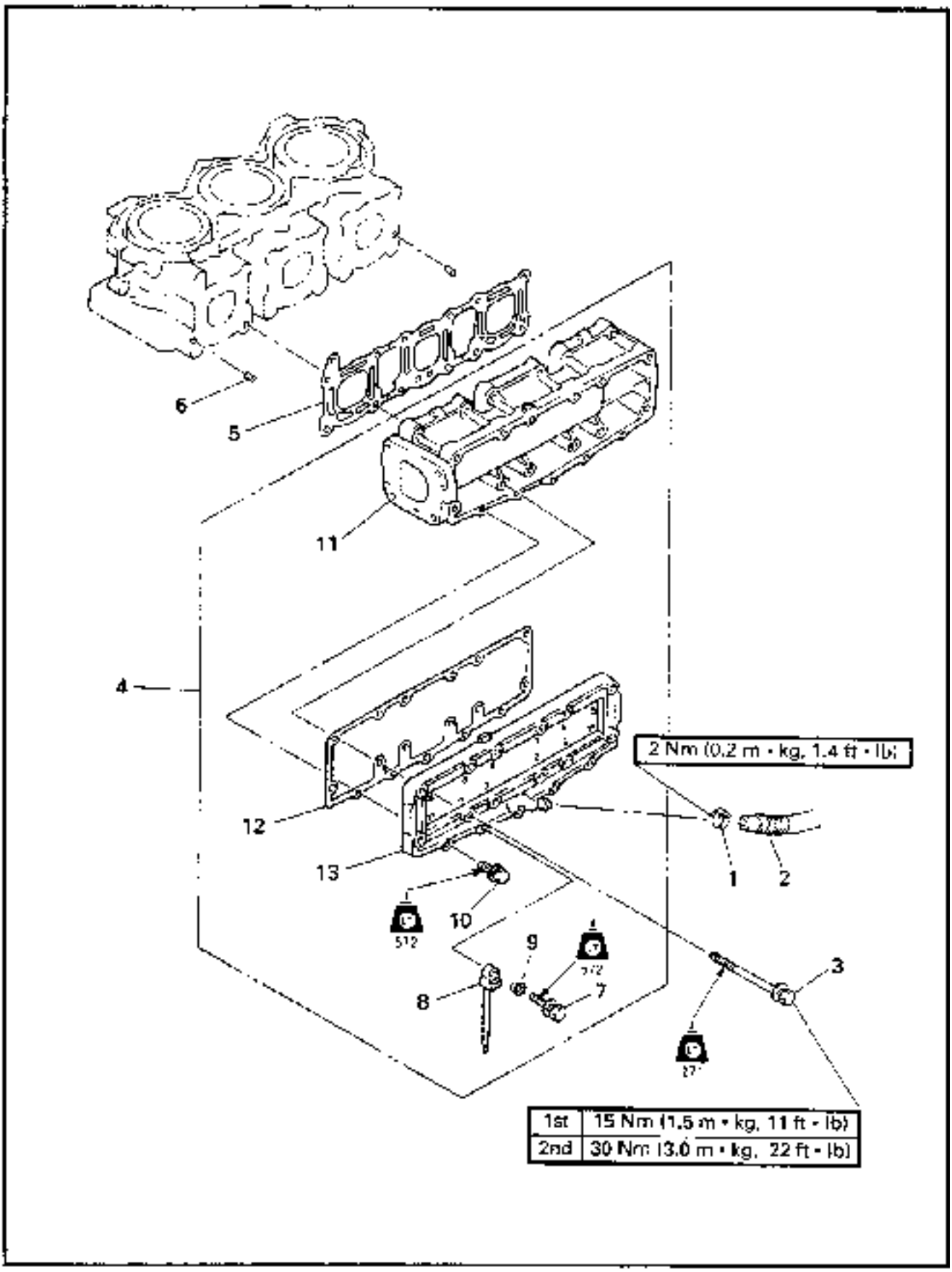
Step	Procedure/Part name	Q'ty	Service points
	MUFFLER REMOVAL		Follow the left "Step" for removal.
	Exhaust chamber		Refer to the "EXHAUST CHAMBER" section.
1	Bolt (with washer)	8	
2	Muffler	1	
3	Gasket	1	
4	Bolt (with washer)	4	
5	Protector	1	
6	Gasket	2	
7	Inner cover	1	
			Reverse the removal steps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

TABLEAU DE DEPOSE ET D'INSTALLATION

Etape	Procédé/nom de pièce	Q'té	Remarques particulières d'entretien
	DEPOSE DU SILENCIEUX		Suivre "l'étape" de gauche pour la dépose.
	Chambre d'échappement		Voir la section "CHAMBRE D'ECHAPPEMENT".
1	Boulon (avec rondelle)	8	
2	Silencieux	1	
3	Joint	1	
4	Boulon (avec rondelle)	4	
5	Protection	1	
6	Joint	2	
7	Cache intérieur	1	
			Pour l'installation, inverser les étapes de la dépose.

EXPLODED DIAGRAM (WVT1100)

VUE EN ECLATE (WVT1100)



REMOVAL AND INSTALLATION CHART

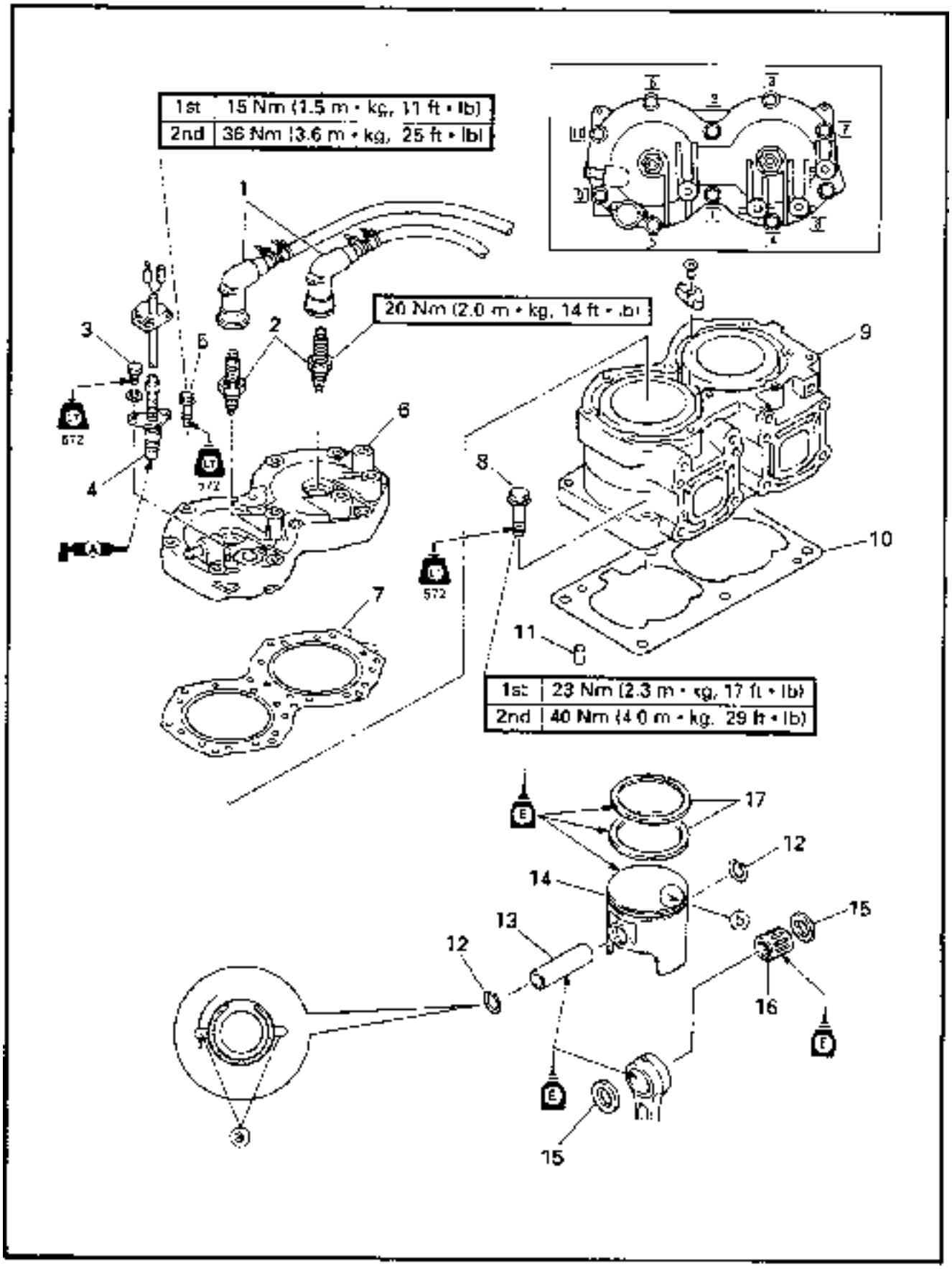
Step	Procedure/Part name	Q'ty	Service points
	MUFFLER REMOVAL		Follow the left "Step" for removal.
	Exhaust chamber		Refer to the "EXHAUST CHAMBER" section.
1	Clamp	1	
2	Water inlet hose	1	
3	Bolt (with washer)	12	**CAUTION:** **Tighten the bolts in sequence and in two steps of torque.**
4	Muffler assembly	1	
5	Gasket	1	
6	Pin	2	
7	Bolt (with washer)	1	
8	Clamp	1	
9	Collar	1	
10	Bolt (with washer)	4	
11	Muffler 1	1	
12	Gasket	1	
13	Muffler cover	1	
			Reverse the removal steps for installation.

TABLEAU DE DEPOSE ET D'INSTALLATION

Etape	Procédé/nom de pièce	Q'té	Remarques particulières d'entretien
	DEPOSE DU SILENCIEUX		Suivre "l'étape" de gauche pour la dépose.
	Chambre d'échappement		Voir la section "CHAMBRE D'ECHAPPEMENT".
1	Bride	1	
2	Flexible d'admission d'eau	1	
3	Boulon (avec rondelle)	12	**ATTENTION:** **Serrer les boulons dans l'ordre et en deux étapes de couple.**
4	Ensemble de silencieux	1	
5	Joint	1	
6	Goujon	2	
7	Boulon (avec rondelle)	1	
8	Bride	1	
9	Collier	1	
10	Boulon (avec rondelle)	4	
11	Silencieux 1	1	
12	Joint	1	
13	Capuchon de silencieux	1	
			Pour l'installation, inverser les étapes de la dépose.

CYLINDER HEAD, CYLINDER AND PISTON

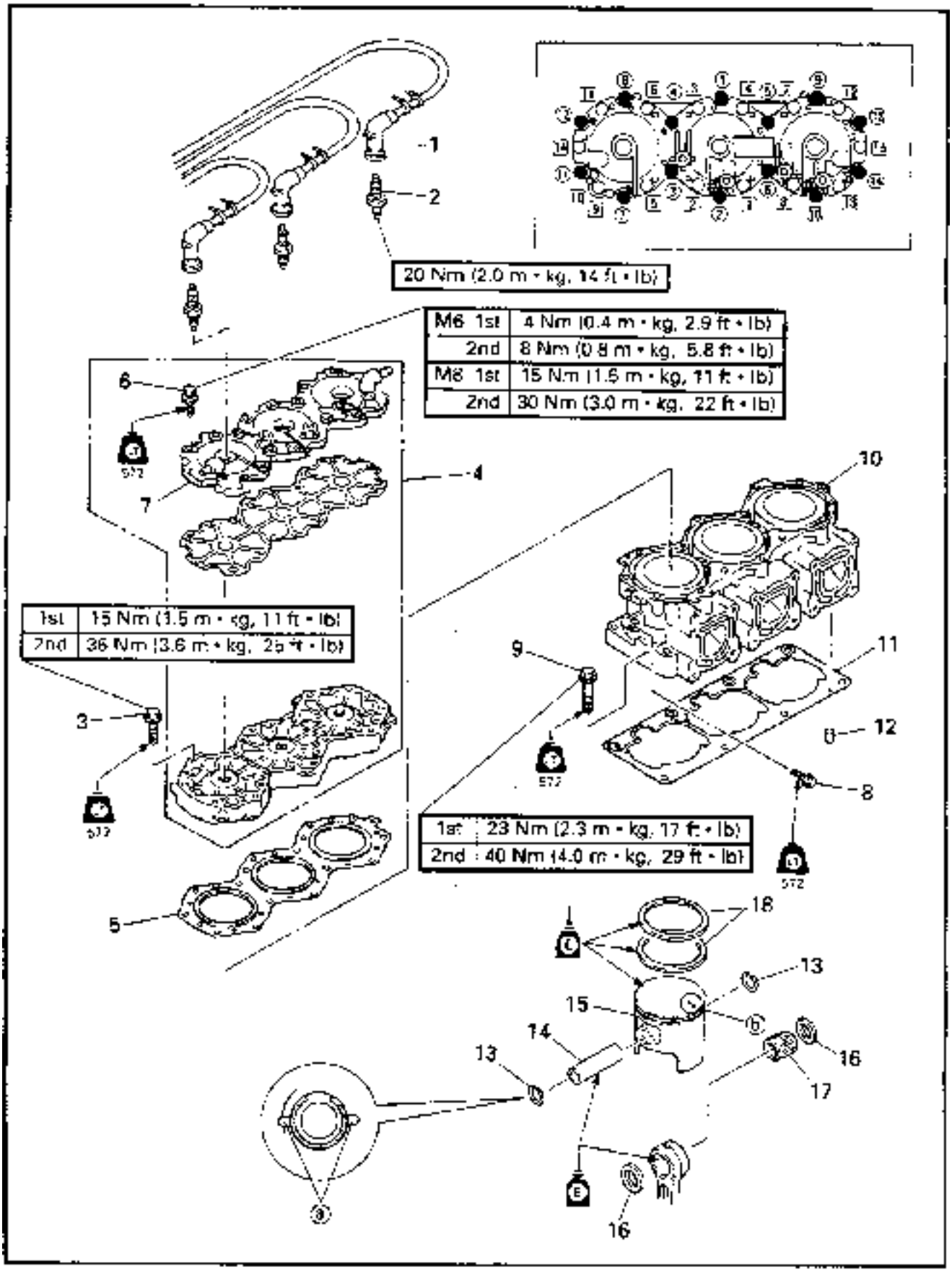
EXPLODED DIAGRAM (WVT700)



REMOVAL AND INSTALLATION CHART

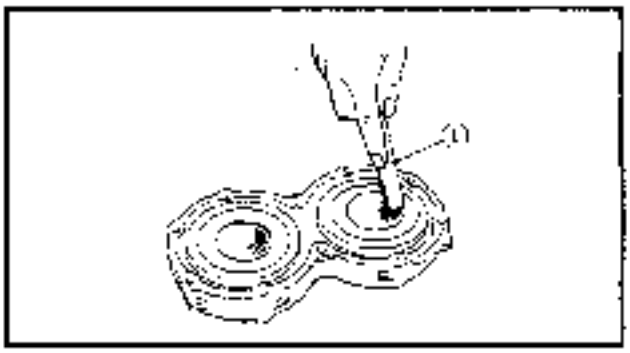
Step	Procedure/Part name	Q'ty	Service points
	CYLINDER HEAD, CYLINDER AND PISTON REMOVAL		Follow the left "Step" for removal.
	Muffler		Refer to the "MUFFLER" section.
1	Spark plug cap	2	
2	Spark plug	2	
3	Bolt (with washer)	2	
4	Thermo switch assembly	1	
5	Bolt (with washer)	10	**CAUTION:** **Tighten the bolts in sequence and in two steps of torque.**
6	Cylinder head	1	
7	Cylinder head gasket	1	
8	Bolt (with washer)	6	**CAUTION:** **Tighten the bolts in two steps of torque.**
9	Cylinder	1	**CAUTION:** **After installing, check that the piston moves smoothly.**
10	Cylinder gasket	1	
11	Pin	2	
12	Piston pin clip	4	**NOTE:** Before installing the piston pin clip, cover the crankcase with a clean rag to prevent the piston pin clip from falling into the crankcase cavity.
			CAUTION: **Do not allow the open ends of the clip to touch the piston pin slot ⓐ.**
13	Piston pin	2	
14	Piston	2	**NOTE:** Be sure that the arrow Ⓑ is positioned on the exhaust side.
15	Washer	4	
16	Bearing	2	
17	Piston ring	4	**CAUTION:** **Align each end gap with the locating pin.**
			Reverse the removal steps for installation.

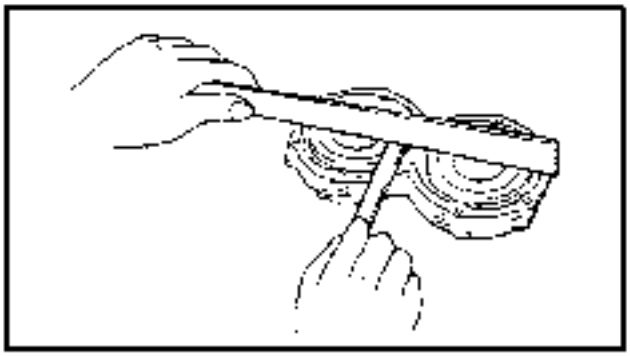
EXPLODED DIAGRAM (WVT1100)

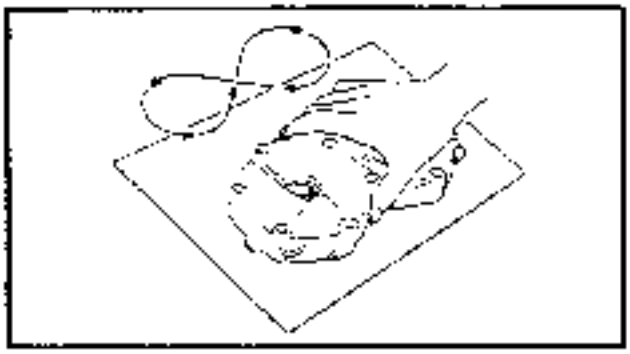


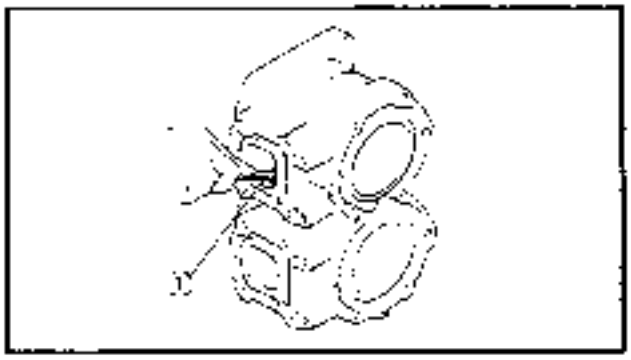
REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CYLINDER HEAD, CYLINDER AND PISTON REMOVAL		Follow the left "Step" for removal.
	Muffler		Refer to the "MUFFLER" section
1	Spark plug cap	3	
2	Spark plug	3	
3	Bolt (with washer)	14	**CAUTION:** **Tighten the bolts in sequence and in two steps of torque.**
4	Cylinder head cover	1	
5	Cylinder head gasket	1	
6	Bolt (with washer)	15	**CAUTION:** **Tighten the bolts in sequence and in two steps of torque.**
7	Cylinder head cover	1	
8	Bolt (with washer)	1	
9	Bolt (with washer)	8	**CAUTION:** **Tighten the bolts in two steps of torque.**
10	Cylinder	1	**CAUTION:** **After installing, check that the piston moves smoothly.**
11	Cylinder gasket	1	
12	Pin	2	
13	Piston pin clip	6	**NOTE:** Before installing the piston pin clip, cover the crankcase with a clean rag to prevent the piston pin clip from falling into the crankcase cavity. **CAUTION:** **Do not allow the open ends to of the clip to touch the piston pin slot ⓐ.**
14	Piston pin	3	
15	Piston	3	**NOTE:** Be sure that the arrow ⓑ is positioned on the exhaust side.
16	Washer	6	
17	Bearing	3	
18	Piston ring	6	**CAUTION:** **Align each end gap with the locating pin.**
			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)

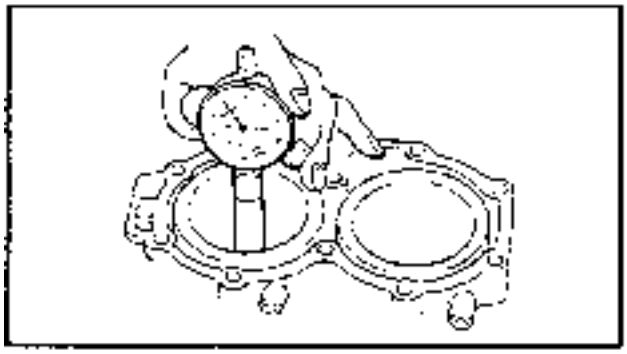
Warpage measurement and resurfacing steps:

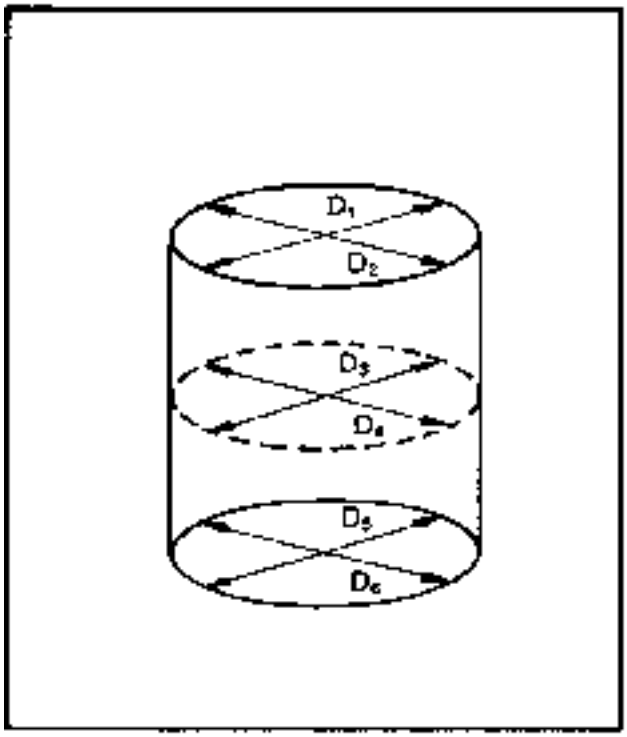
- Attach a straight edge and a thickness gauge to the cylinder head.
- Measure the warpage.
- If the warpage is out of specification, resurface the cylinder head.
- Place a piece of 400 ~ 600 grit wet sandpaper on the surface plate, and resurface the head using a figure-eight sanding pattern.

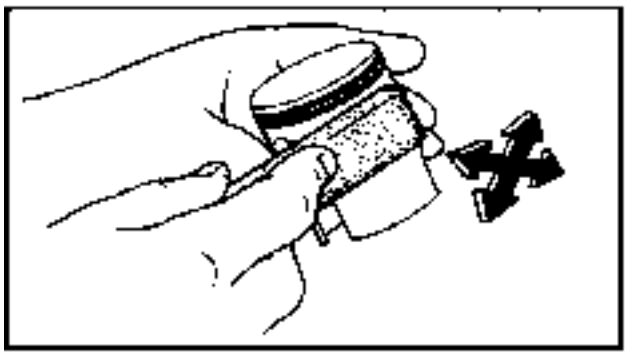
Cylinder inspection

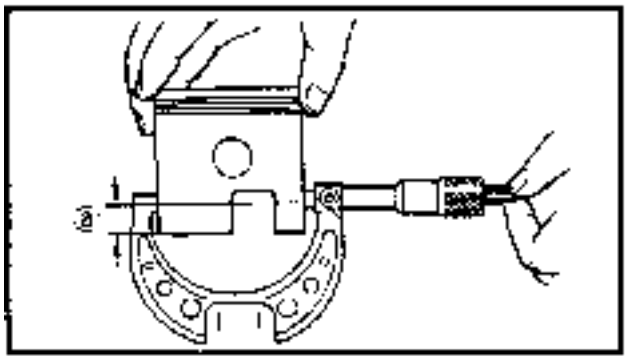
1. Eliminate:
   - Carbon deposits
     Use a rounded scraper ①.

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 specification → Replace.

NOTE:
Measure the cylinder bore "D" in several different directions. Then find the average of the measurements.

	Standard	Limit
Cylinder bore "D"	81.00 ~ 81.02 mm (3.189 ~ 3.190 in)	81.10 mm (3.193 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 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.

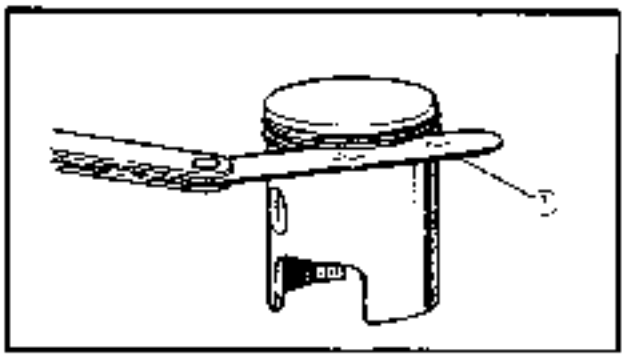
3. Measure:
   - Piston skirt diameter
     Use micrometer.
     Out of specification → Replace.

Piston diameter	Distance ⓔ
80.925 ~ 80.950 mm (3.186 ~ 3.187 in) WVT1100: 80.885 ~ 80.890 mm (3.184 ~ 3.185 in)	10 mm (0.39 in)

4. Calculate:
   - Piston clearance
     Out of specification → Replace piston, piston rings as a set.

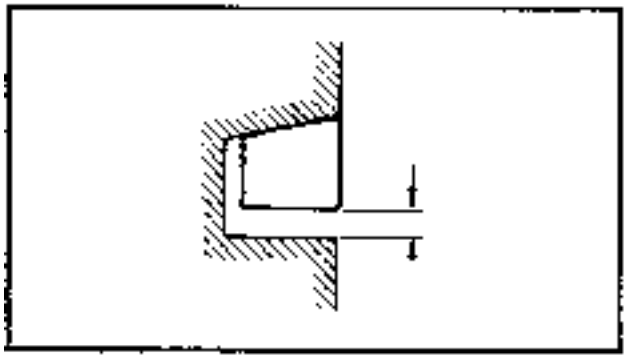
PISTON CLEARANCE	=	CYLINDER BORE	−	PISTON DIAMETER

Piston clearance:
0.080 ~ 0.085 mm
(0.0031 ~ 0.0033 in)
WVT1100:
0.110 ~ 0.115 mm
(0.0043 ~ 0.0045 in)

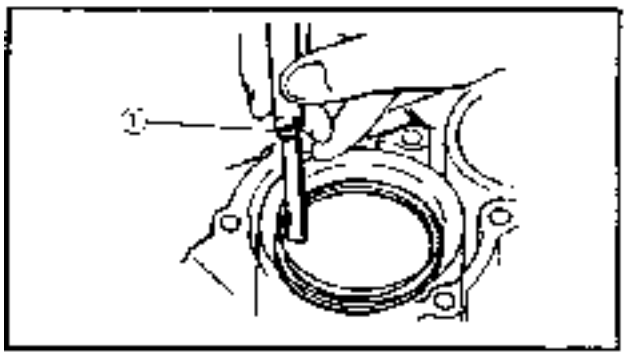


Piston ring inspection

1. Measure:
   - Side clearance
     Out of specification → Replace piston and/or ring.
     Use a thickness gauge ①.



Side clearance:
Top
2nd
0.02 ~ 0.06 mm
(0.0008 ~ 0.0024 in)



2. Measure:
   - End gap
     Out of specification → Replace rings as a set.
     Use a thickness gauge ①.

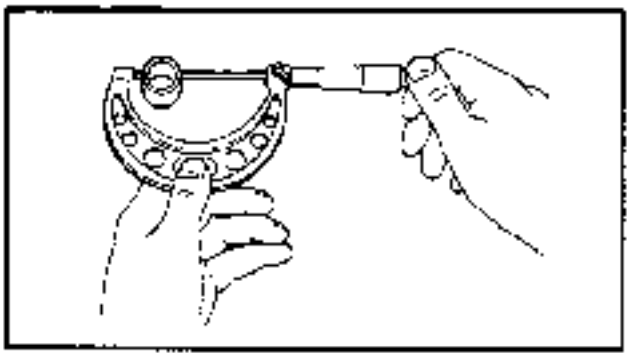
End gap:
Top
2nd
0.2 ~ 0.4 mm (0.008 ~ 0.016 in)

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

Piston pin and bearing inspection

1. Inspect:
   - Piston pin
   - Bearing

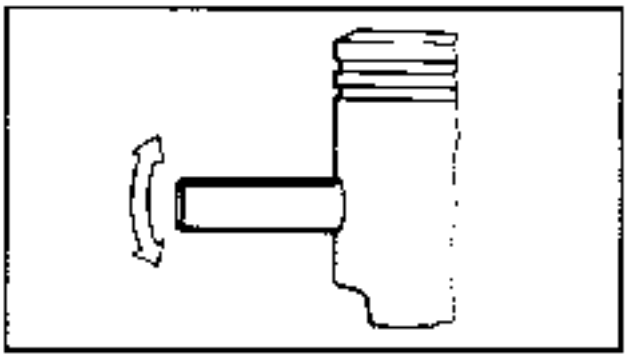
   Signs of heat discoloration → Replace.



2. Measure:
   - Piston pin outside diameter

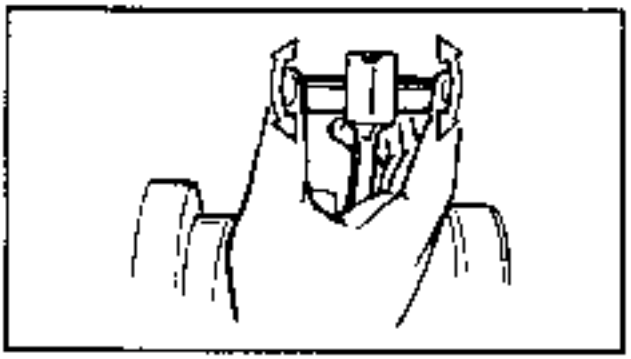
   Use micrometer.
   Out of limit → Replace.

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 is noticeable → Replace piston pin and/or piston.

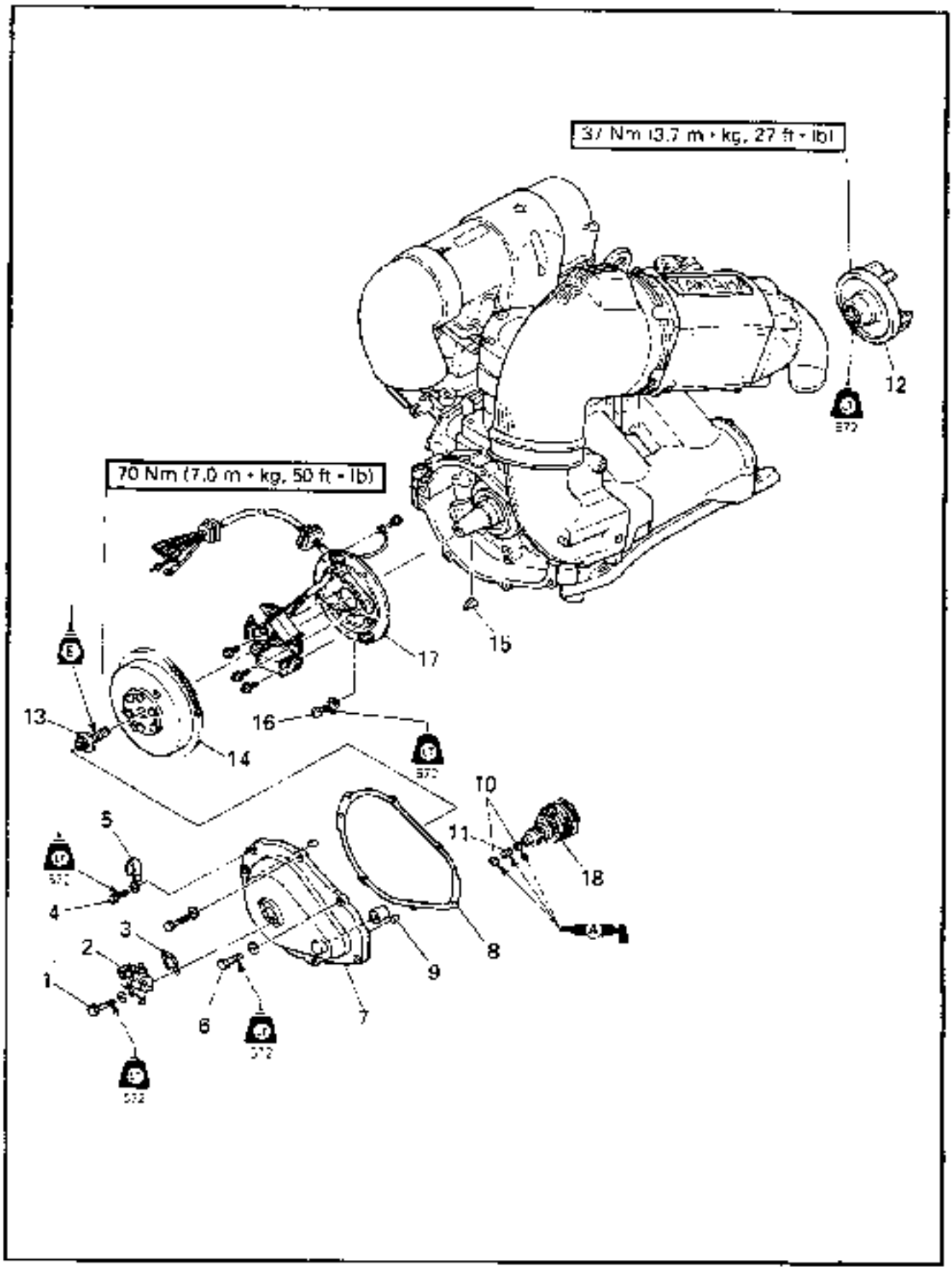


4. Check:
   - Free play

   There should be no noticeable free play.
   Free play is noticeable → Inspect the connecting rod for wear/Replace the pin and/or connecting rod as required.

FLYWHEEL MAGNETO AND BASE (WVT700)

EXPLODED DIAGRAM

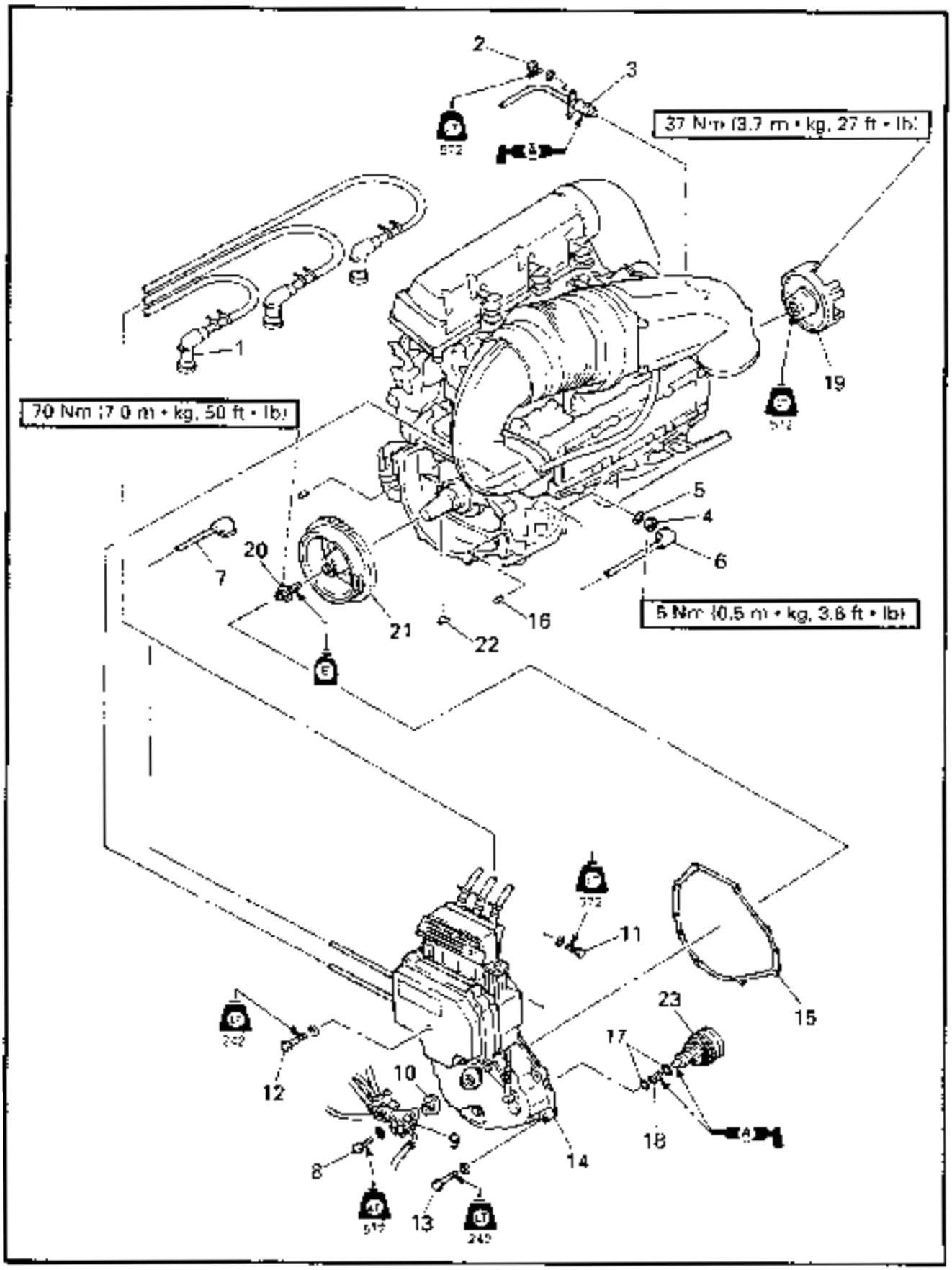


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	FLYWHEEL MAGNETO AND BASE REMOVAL		Follow the left "Step" for removal.
	Engine unit		Refer to the "ENGINE UNIT REMOVAL" section.
1	Bolt (with washer)	2	
2	Oil pump	1	
3	Gasket	1	
4	Bolt (with washer)	1	
5	Clamp	1	
6	Bolt (with washer)	6	
7	Flywheel cover	1	
8	Flywheel cover gasket	1	
9	Pin	1	
10	Plate washer	2	**NOTE:**
11	Spring	1	Fill the flywheel cover groove with water resistant grease.
12	Coupling flange	1	
13	Flange bolt	1	
14	Flywheel magneto	1	**NOTE:** When installing the flywheel magneto make sure that the woodruff key is properly seated in the keyway of the crankshaft.
15	Woodruff key	1	
16	Screw	2	
17	Base assembly	1	**NOTE:** Align the punch mark on the crankcase with the punch mark on the base assembly.
18	Idle gear assembly	1	Reverse the removal steps for installation.

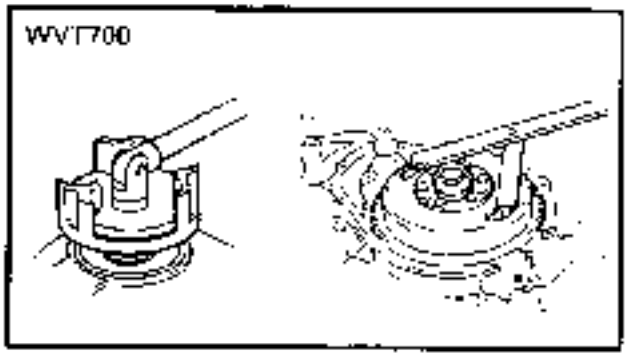
FLYWHEEL COVER AND FLYWHEEL MAGNETO (WVT1100)

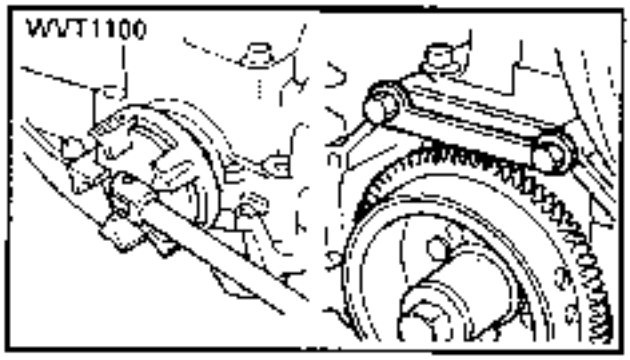
EXPLODED DIAGRAM

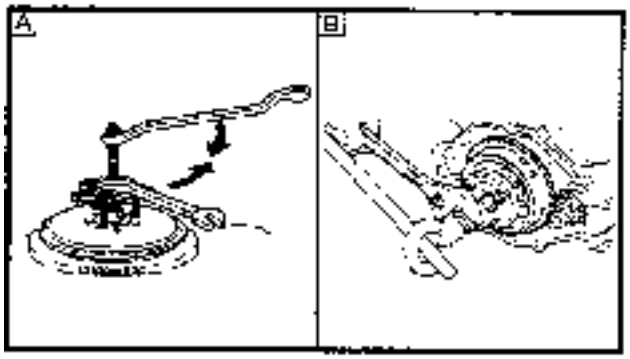


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	FLYWHEEL COVER AND FLYWHEEL MAGNETO REMOVAL		Follow the left "Step" for removal.
	Engine unit		Refer to the "ENGINE UNIT REMOVAL" section
1	Spark plug cap	3	
2	Bolt (with washer)	2	
3	Thermo switch	1	
4	Nut	1	
5	Spring washer	1	
6	Starter motor positive lead	1	
7	Battery positive lead	1	
8	Bolt (with washer)	2	
9	Oil pump	1	
10	Gasket	1	
11	Bolt (with washer)	1	8 × 25 mm
12	Bolt (with washer)	1	8 × 55 mm
13	Bolt (with washer)	7	8 × 30 mm
14	Flywheel cover assembly	1	
15	Flywheel cover gasket	1	
16	Pin	2	
17	Plate washer	2	**NOTE:** Fill the flywheel cover groove with water resistant grease.
18	Spring	1	
19	Coupling flange	1	
20	Flange bolt	1	
21	Flywheel magneto	1	**NOTE:** When installing the flywheel magneto make sure that the woodruff key is properly seated in the keyway of the crankshaft.
22	Woodruff key	1	
23	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:
WVT700
YW-38741/90890-06425
WVT1100
YW-06545/90890-06546
Flywheel holder:
WVT700
YB-06139/90890-06522
WVT1100
YW-41528/90890-06545

Flywheel magneto removal and installation

1. Remove and install:
   - Bolt

Flywheel holder:
YB-06139/90890-06522
WVT1100:
YW-41528/90890-06545

2. Remove:
   - Flywheel magneto

Flywheel puller:
YB-06117/90890-06521
Bolt:
M8 × 80 mm

A. For USA and CANADA
B. Except for USA and CANADA

CAUTION:

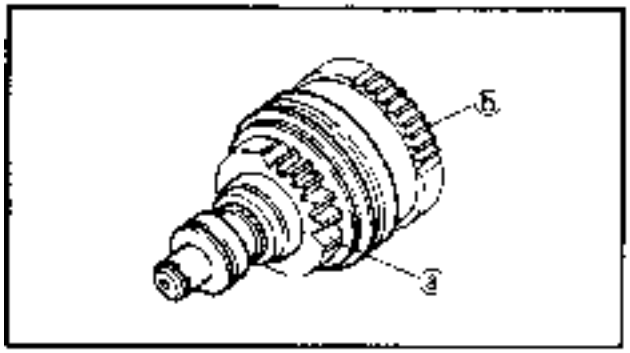
To prevent damage to the engine or tools, screw in the flywheel puller set- bolts evenly and completely so that the puller plate is parallel to the flywheel.

Coupling flange inspection

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

Flywheel magneto inspection

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



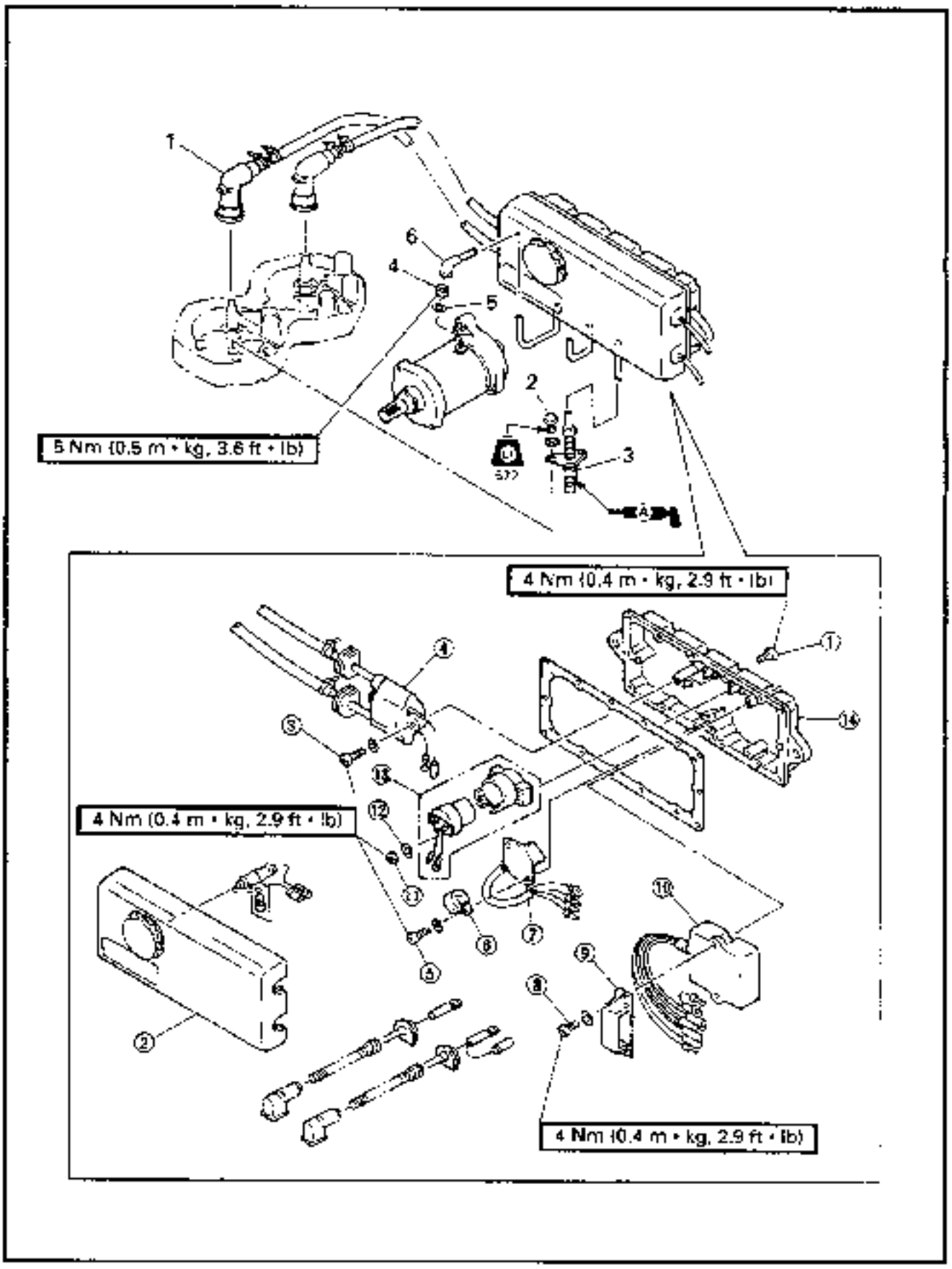
Idle gear assembly inspection

1. Inspect:
   - Pinion gear ⓐ
   - Inner gear ⓑ

   Wear/Damage → Replace.
2. Check:
   - Clutch movement

   Unsmooth movement → Replace.

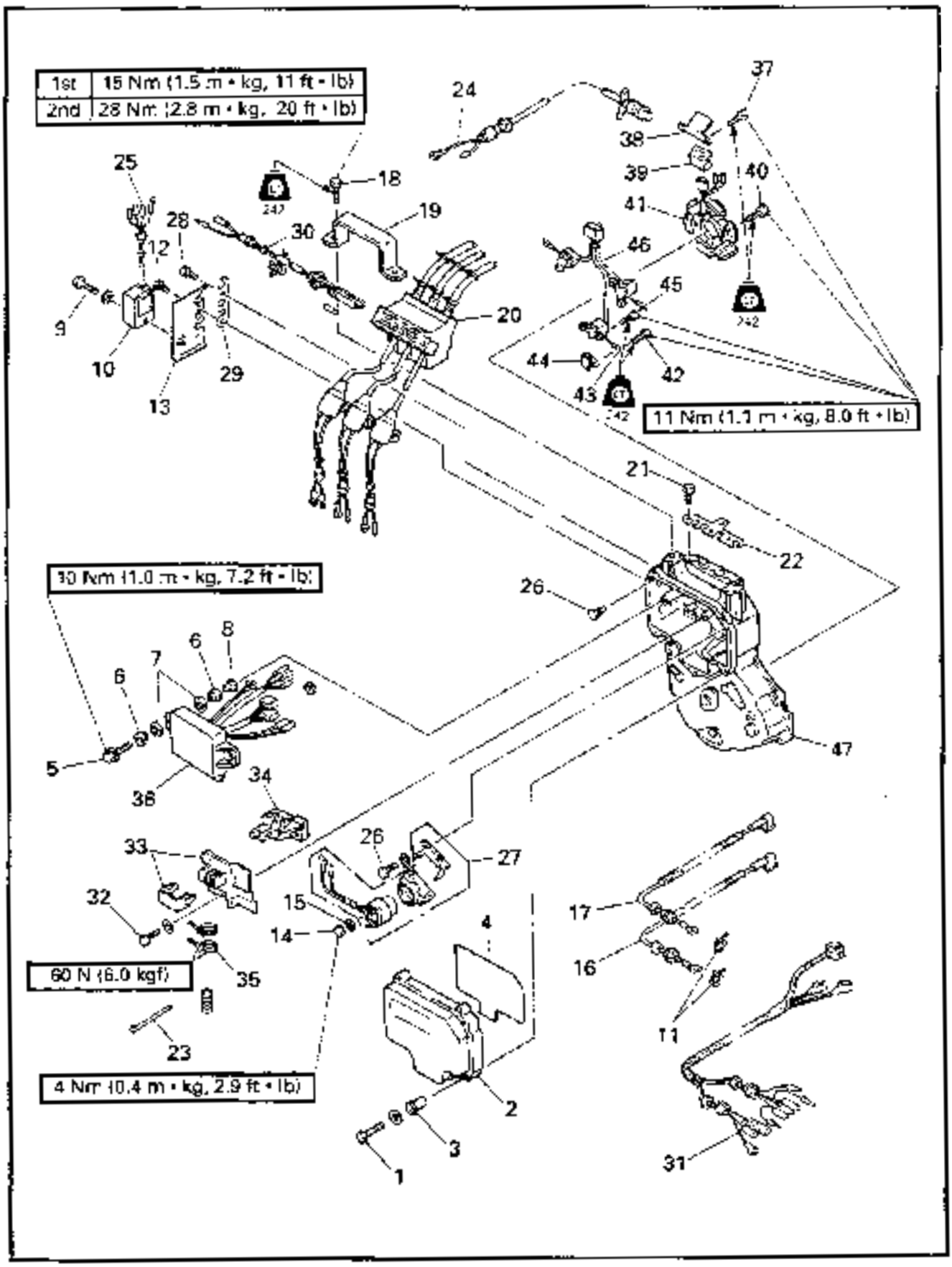
ELECTRICAL UNIT
EXPLODED DIAGRAM (WVT700)



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 the "ENGINE UNIT REMOVAL" section.
	Base assembly		Refer to the "FLYWHEEL MAGNETO AND BASE" section.
1	Spark plug cap	2	
2	Bolt (with washer)	2	
3	Thermo switch	1	
4	Nut	1	
5	Spring washer	1	
6	Starter motor negative lead	1	
	ELECTRICAL UNIT DISASSEMBLY		
①	Screw	14	
②	Case cover	1	
③	Screw	2	
④	Ignition coil	1	
⑤	Screw	3	
⑥	Clamp	1	
⑦	Rectifier-regulator	1	
⑧	Screw	3	
⑨	Clamp bracket	1	
⑩	CDI unit	1	
⑪	Nut	2	
⑫	Spring washer	2	
⑬	Starter relay	1	
⑭	Housing	1	
			Reverse the removal steps for installation.

EXPLODED DIAGRAM (WVT1100)

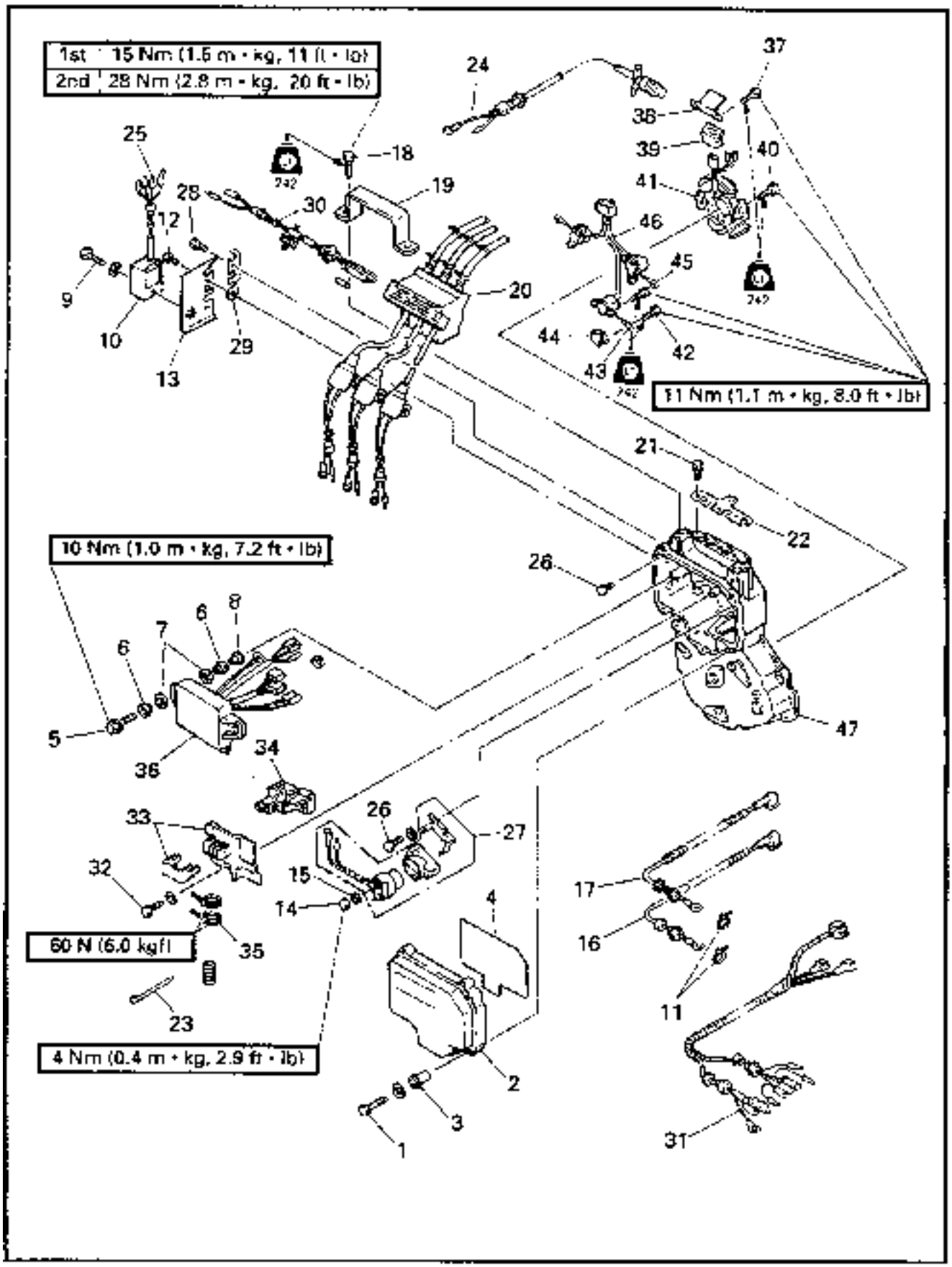


EMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	ELECTRICAL UNIT DISASSEMBLY		Follow the left "Step" for removal.
	Flywheel cover assembly		Refer to the "FLYWHEEL COVER AND FLYWHEEL MAGNETO" section.
1	Bolt (with washer)	5	
2	Ignition coil cover	1	
3	Collar	5	
4	Packing	1	
5	Bolt (with washer)	3	
6	Grommet	6	
7	Washer	6	
8	Collar	3	
9	Bolt (with washer)	1	6 × 12 mm
10	Rectifier-regulator	1	
11	Lead tie	2	
12	Bolt	2	6 × 12 mm
13	Plate	1	
14	Nut	2	
15	Spring washer	2	
16	Starter motor positive lead	1	
17	Battery positive lead	1	
18	Bolt (with washer)	2	
19	Bracket	1	
20	Damper (ignition coil)	1	
21	Bolt	3	6 × 12 mm
22	Plate (ignition coil and thermo switch)	1	
23	Lead tie	3	
24	Thermo switch	1	
25	Rectifier-regulator	1	
26	Bolt (with washer)	2	6 × 16 mm
27	Starter relay assembly	1	
28	Bolt	2	6 × 12 mm
29	Plate (extension wire and fuse holder lead)	1	
30	Fuse holder lead	1	
31	Extension wire	1	
32	Bolt (with washer)	2	6 × 14 mm

EXPLODED DIAGRAM (WVT1100)

VUE EN ECLATE (WVT1100)



REMOVAL AND INSTALLATION CHART

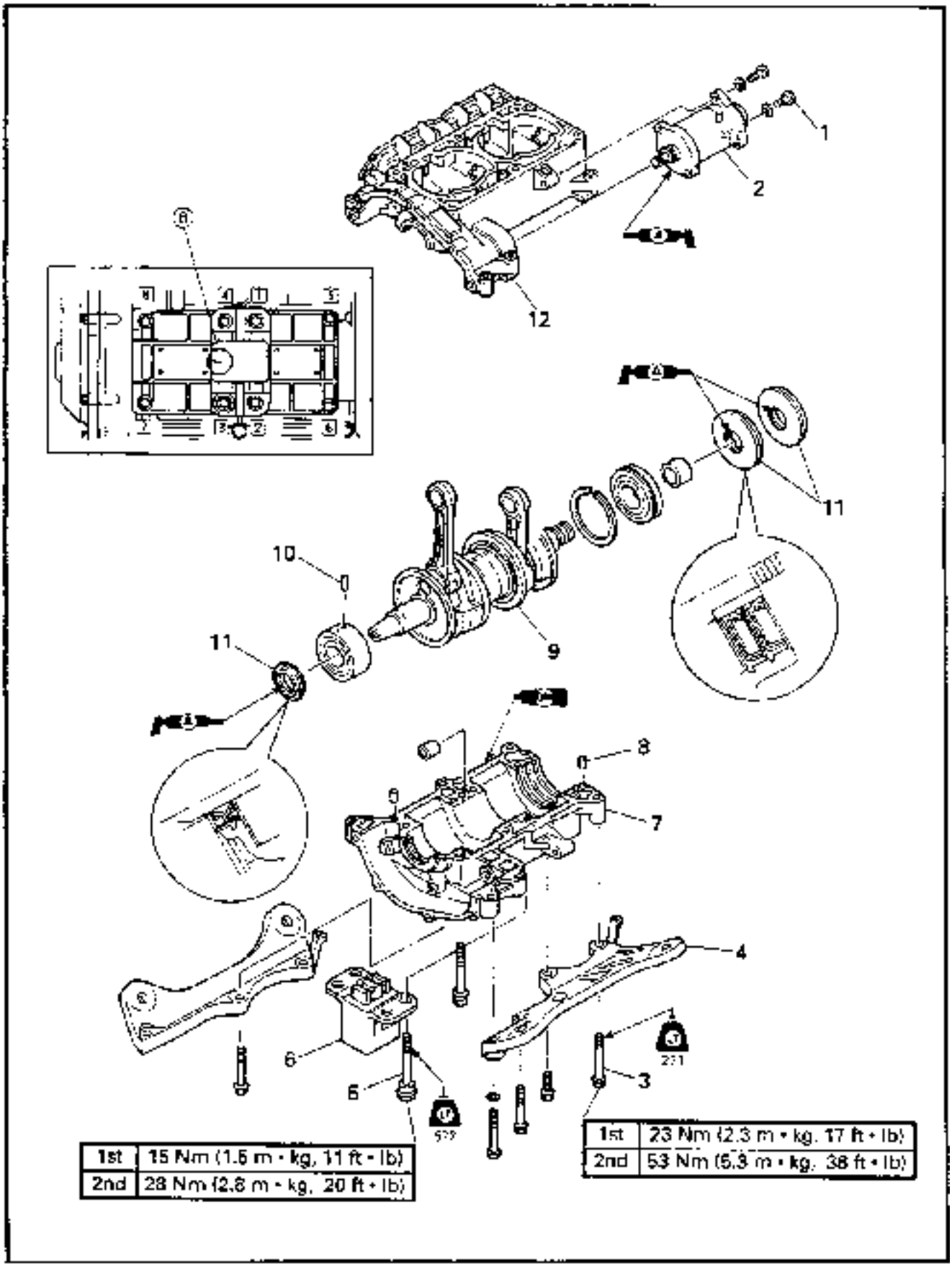
Step	Procedure/Part name	Q'ty	Service points
33	Wire holder	1	
34	Grommet	1	
35	Clamp	2	
36	CDI unit	1	
37	Socket bolt	2	
38	Clamp	1	
39	Grommet	1	
40	Socket bolt	3	
41	Base assembly	1	
42	Socket bolt	3	
43	Pulser coil ground lead	3	
44	Clamp	3	
45	Socket bolt	6	
46	Pulser coil assembly	1	
47	Flywheel cover	1	
			Reverse the removal steps for installation.

TABLEAU DE DEPOSE ET D'INSTALLATION

Etape	Procédé/nom de pièce	Q'té	Remarques particulières d'entretien
33	Serre-fil	1	
34	Oeillet	1	
35	Bride	2	
36	Unité C.D.I.	1	
37	Boulon de douille	2	
38	Bride	1	
39	Oeillet	1	
40	Boulon de douille	3	
41	Ensemble de base	1	
42	Boulon de douille	3	
43	Fil de terre de la bobine d'impulsion	3	
44	Bride	3	
45	Boulon de douille	6	
46	Ensemble de bobine d'impulsion	1	
47	Capuchon de volant magnétique	1	
			Pour l'installation, inverser les étapes de la dépose.

CRANKCASE AND CRANKSHAFT

EXPLODED DIAGRAM (WVT700)



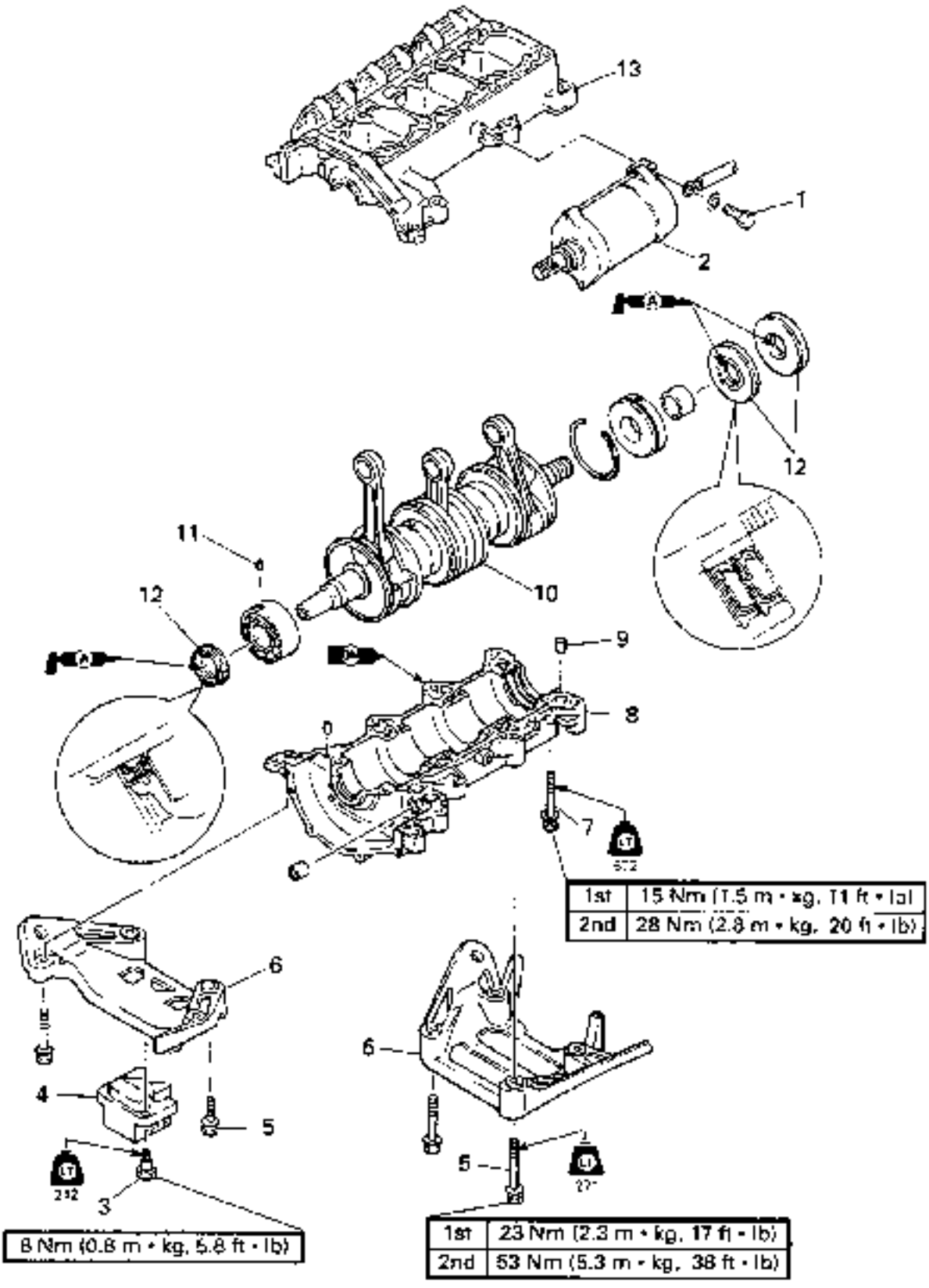
1st	15 Nm (1.5 m • kg, 11 ft • lb)
2nd	28 Nm (2.8 m • kg, 20 ft • lb)

1st	23 Nm (2.3 m • kg, 17 ft • lb)
2nd	53 Nm (5.3 m • kg, 38 ft • lb)

REMOVAL AND INSTALLATION CHART

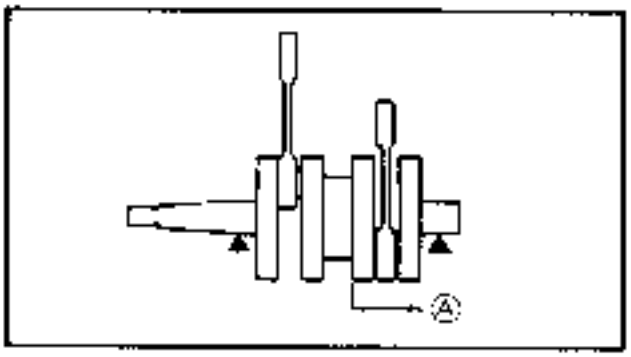
Step	Procedure/Part name	Q'ty	Service points
	CRANKCASE AND CRANKSHAFT DISASSEMBLY		Follow the left "Step" for removal.
	Base assembly		Refer to the "FLYWHEEL MAGNETO AND BASE" section.
	Carburetor assembly		Refer to the "CARBURETOR REMOVAL" section in chapter 4.
	Reed valve assembly		Refer to the "REED VALVE" section.
	Piston		Refer to the "CYLINDER HEAD, CYLINDER AND PISTON" section.
1	Bolt (with washer)	2	
2	Starter motor	1	
3	Bolt (with washer)	7	**NOTE:** Tighten the bolts in two steps of torque.
4	Engine mount bracket	2	
5	Bolt (with washer)	8	**NOTE:** Tighten the bolts in sequence and in two steps of torque.
6	Mount rubber	1	**NOTE:** Be sure that the "F" mark ⓐ is on the flywheel side.
7	Crankcase	1	
8	Pin	2	
9	Crankshaft assembly	1	**NOTE:** After installing, check the smooth movement of the crankshaft. **CAUTION:** **• Do not allow the open ends of the bearing clip to meet the crankcase contacting surface. • Place the locating pins on the bearing in the crankcase body groove.**
10	Dowel pin	4	
11	Oil seal	3	
12	Case body	1	Reverse the removal steps for installation.

EXPLODED DIAGRAM (WVT1100)



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CRANKCASE AND CRANKSHAFT DISASSEMBLY		Follow the left "Step" for removal.
	Base assembly		Refer to the "FLYWHEEL MAGNETO AND BASE" section.
	Carburetor assembly		Refer to the "CARBURETOR REMOVAL" section in chapter 4.
	Reed valve assembly		Refer to the "REED VALVE" section.
	Piston		Refer to the "CYLINDER HEAD, CYLINDER AND PISTON" section.
1	Bolt (with washer)	2	
2	Starter motor	1	
3	Bolt (with washer)	2	
4	Mount rubber	1	**NOTE:** Be sure that the "F" mark Ⓕ is on the flywheel side.
5	Bolt (with washer)	9	
6	Engine mount bracket	2	
7	Bolt (with washer)	12	**NOTE:** Tighten the bolts in sequence and in two steps of torque.
8	Crankcase	1	
9	Pin	2	
10	Crankshaft assembly	1	**NOTE:** After installing, check the smooth movement of the crankshaft. **CAUTION:** • **Do not allow the open ends of the bearing clip to meet the crankcase contacting surface.** • **Place the locating pins on the bearing in the crankcase body groove.**
11	Dowel pin	8	
12	Oil seal	3	
13	Case body	1	Reverse the removal steps for installation.



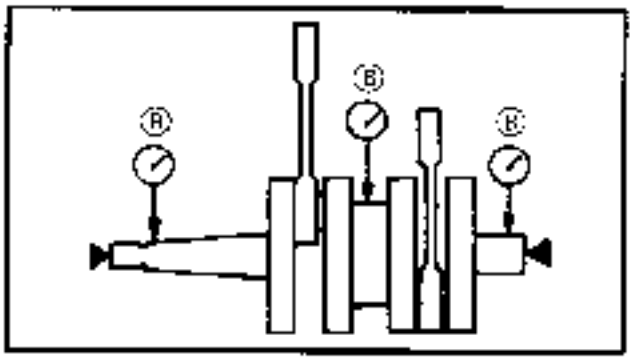
SERVICE POINTS

Crankshaft inspection

1. Measure:
   - Crank width Ⓐ

   Out of specification → Replace.

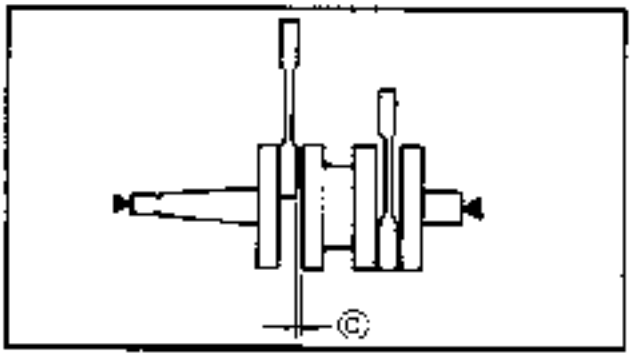
Crank width:
61.95 ~ 62.00 mm
(2.439 ~ 2.441 in)



2. Measure:
   - Deflection Ⓑ

   Use a dial gauge.
   Out of specification → Replace.

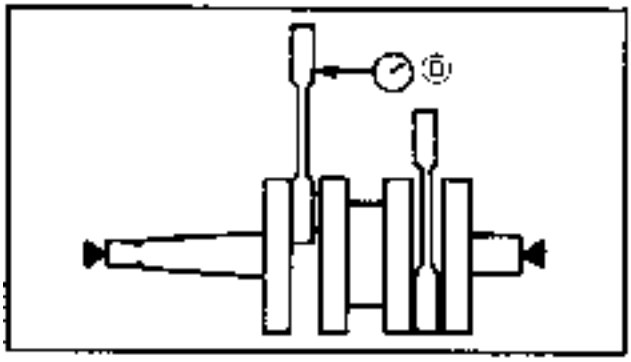
Maximum deflection:
0.05 mm (0.002 in)



3. Measure:
   - Big end side clearance Ⓒ

   Use a thickness gauge.
   Out of specification → Replace.

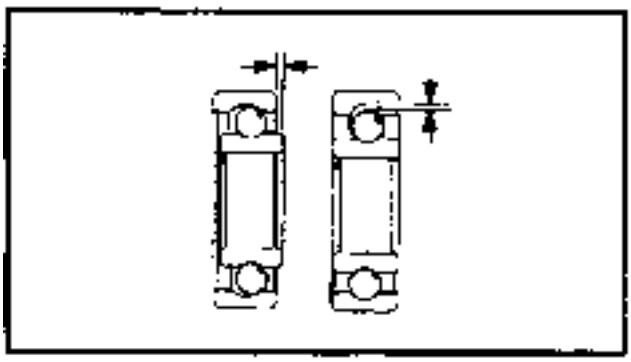
Big end side clearance:
0.25 ~ 0.75 mm
(0.010 ~ 0.030 in)



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.

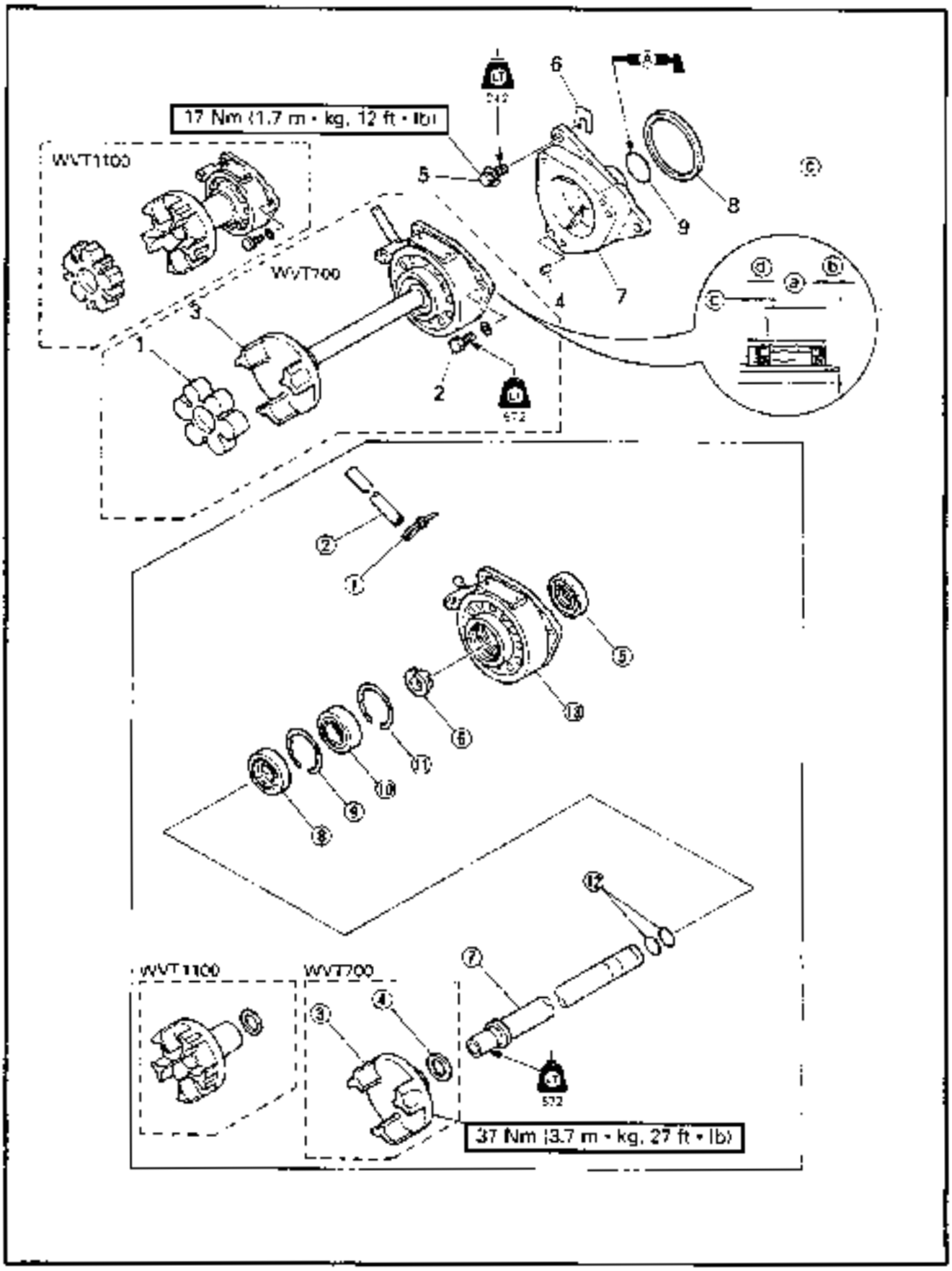
NOTE:
Lubricate the bearings immediately after examining them to prevent rusting.

6. Inspect:
   - Crankshaft oil seal
     Wear/Damage → Replace.

Crankcase inspection

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

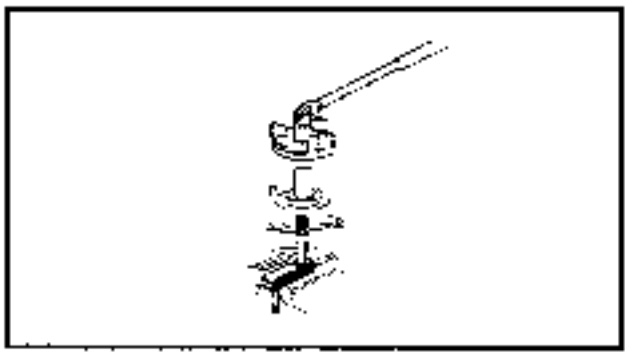
INTERMEDIATE SHAFT AND HOUSING
EXPLODED DIAGRAM

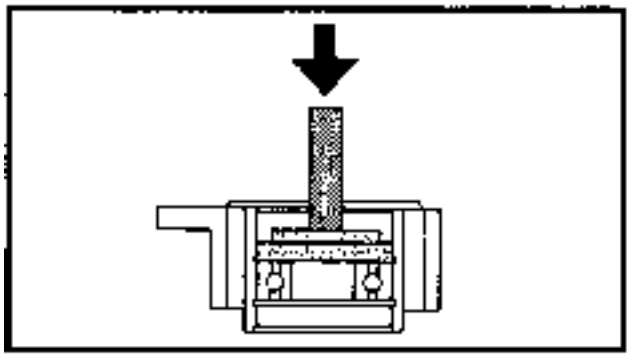


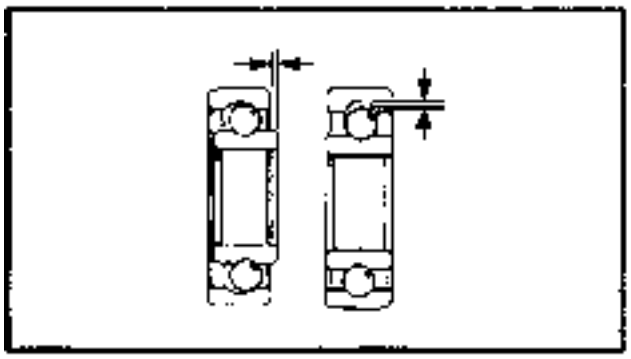
REMOVAL AND INSTALLATION CHART

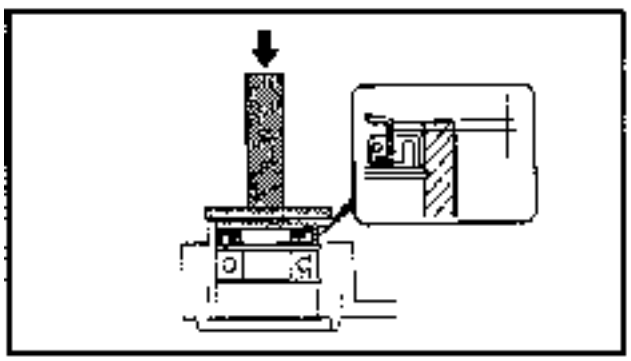
Step	Procedure/Part name	Q'ty	Service points
	INTERMEDIATE SHAFT AND HOUSING REMOVAL		Follow the left "Step" for removal.
	Engine unit		Refer to the "ENGINE UNIT REMOVAL" section.
1	Coupling rubber	1	
2	Bolt (with washer)	3	
3	Bearing housing assembly	1	
4	Pin	2	
5	Bolt (with washer)	3	
6	Shim	*	
7	Housing	1	
8	Rubber seal	1	
9	O-ring	1	
	HOUSING DISASSEMBLY		
①	Hose tie	1	
②	Grease hose	1	
③	Coupling	1	
④	Washer	1	
⑤	Oil seal	1	**NOTE:** Fill the with water resistant grease clip inner circumference before installing the oil seal.  **Distance ⓐ: 1.6 ~ 2.0 mm (0.06 ~ 0.08 in)**
⑥	Spacer	1	
⑦	Shaft	1	 **Distance ⓑ:** **WVT700** **14.5 ~ 15.5 mm (0.57 ~ 0.61 in)** **WVT1100** **9.5 ~ 10.5 mm (0.37 ~ 0.41 in)**
⑧	Oil seal	1	**NOTE:** Fill the with water resistant grease clip inner circumference before installing the oil seal.  **Distance ⓒ: 6.8 ~ 7.2 mm (0.27 ~ 0.28 in)**
⑨	Clip	1	
⑩	Bearing	1	 **Distance ⓓ: 17.6 ~ 17.7 mm (0.69 ~ 0.70 in)**
⑪	Clip	1	
⑫	O-ring	2	
⑬	Housing	1	Reverse the removal steps for installation.

*: As required









SERVICE POINTS

Coupling removal and installation

1. Remove and install:
   - Coupling

Coupler wrench:
YW-38741/90890-06425
WVT1100.
YW-06546/90890-06546
Shaft holder:
YW-38742/90890-06089

Bearing removal and installation

1. Remove and install.
   - Bearing

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

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 = 10 mm (0.39 in)]

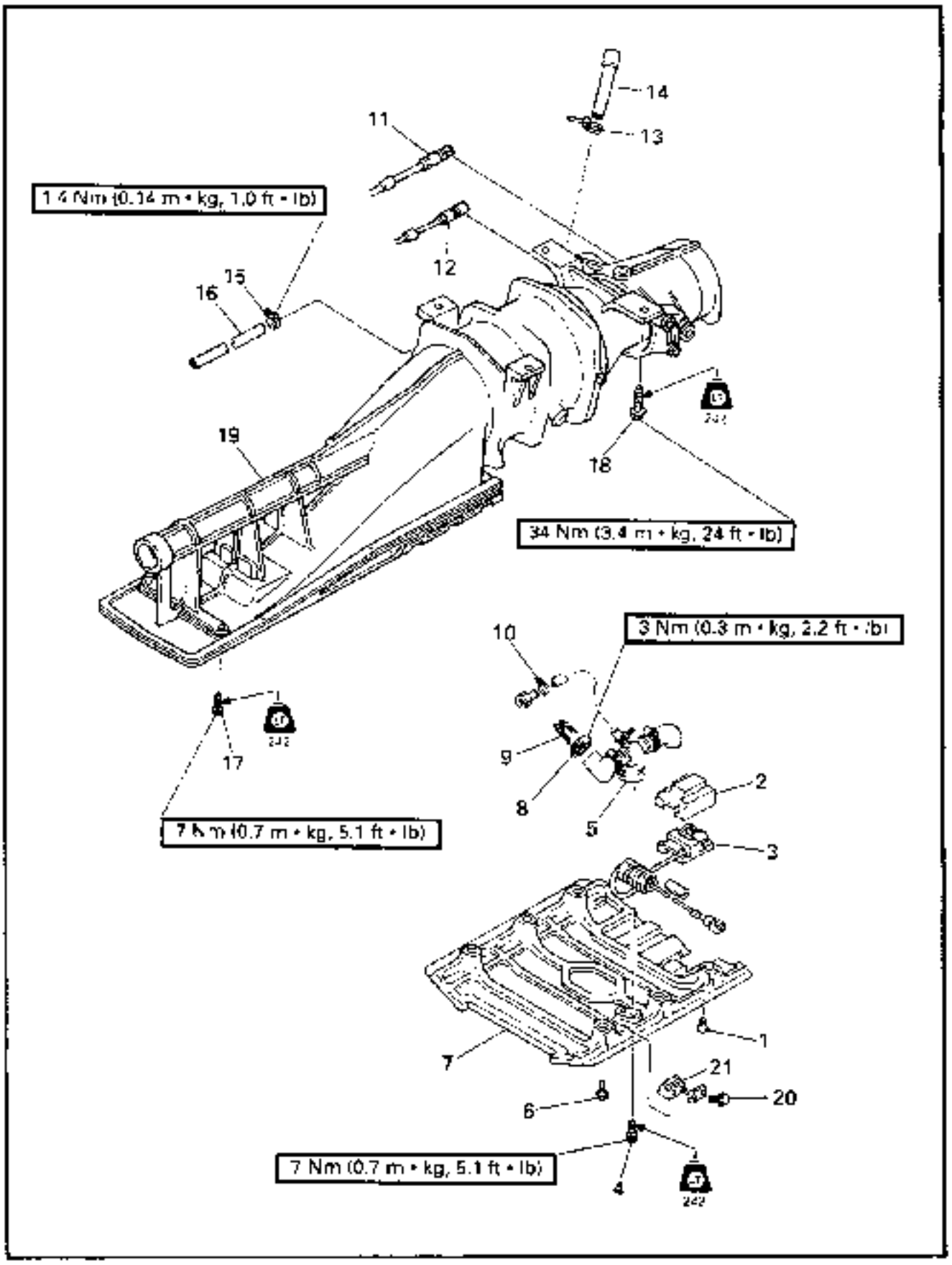
Driver rod:
YB-06071/90890-06606
Bearing outer race attachment:
YB-06016/90890-06626

NOTE:
Install the oil seal with the manufacturer's numbers facing outward.

CHAPTER 6
JET PUMP UNIT

JET PUMP UNIT REMOVAL

EXPLODED DIAGRAM

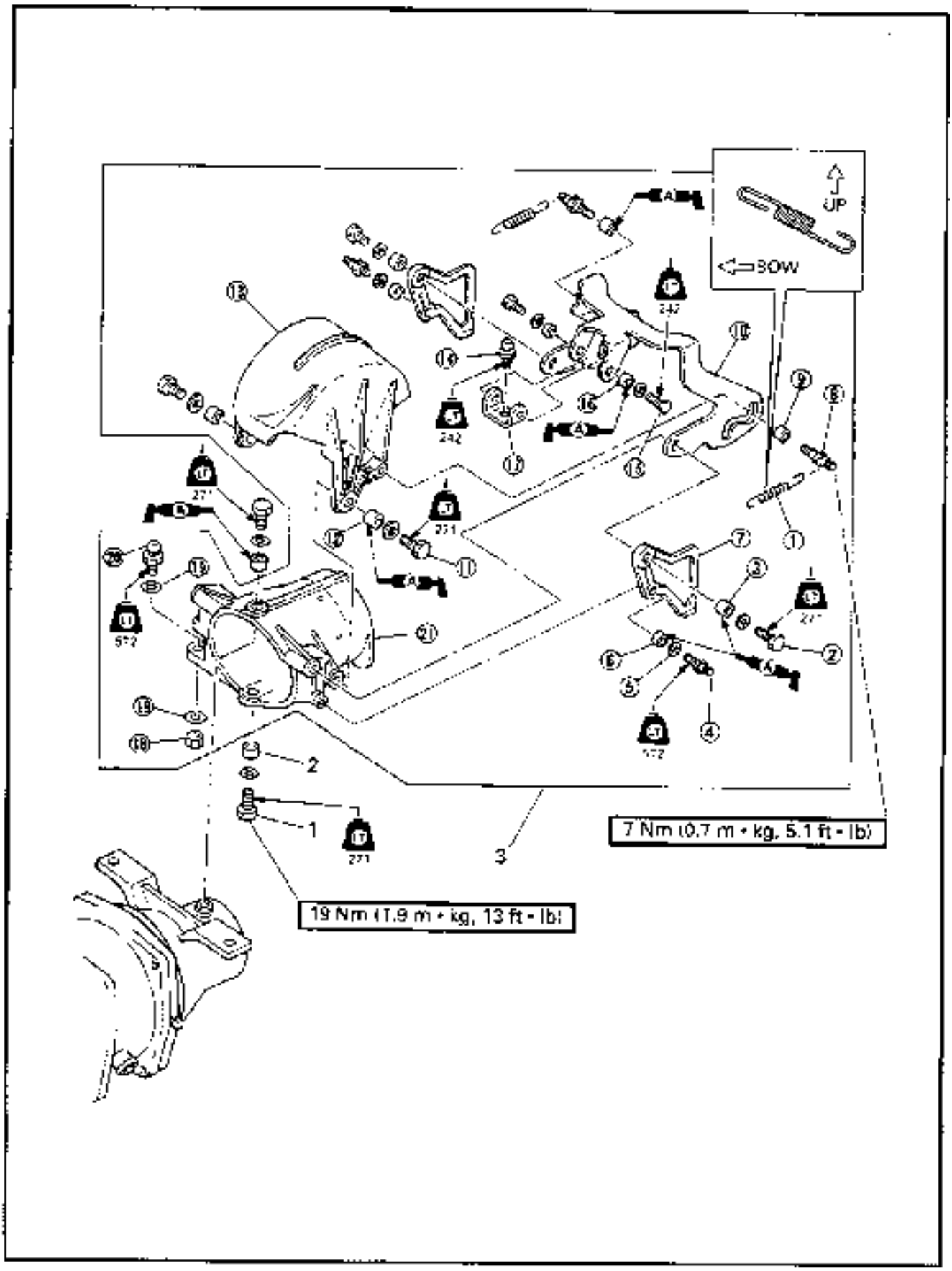


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	JET PUMP UNIT REMOVAL		Follow the left "Step" for removal.
1	Screw	4	
2	Speed sensor cover	1	
3	Speed sensor	1	
4	Bolt (with washer)	2	
5	Valve body assembly	1	
6	Bolt (with washer)	6	
7	Ride plate	1	
8	Clamp	1	
9	Strainer	1	
10	Hose tie	1	
11	Shift cable joint	1	
12	Steering cable joint	1	
13	Hose tie	1	
14	Spout hose	1	
15	Clamp	1	
16	Engine cooling hose	1	
17	Bolt (with washer)	2	
18	Bolt (with washer)	4	
19	Jet pump unit	1	**NOTE:** ● Pull the jet pump unit straight backward. ● When installing the jet pump unit, align the drive shaft spline (male) with the intermediate shaft spline (female).
20	Bolt (with washer)	12	
21	Ride plate nut	6	
			Reverse the removal steps for installation.

*: As required

NOZZLE DEFLECTOR AND REVERSE GATE
EXPLODED DIAGRAM

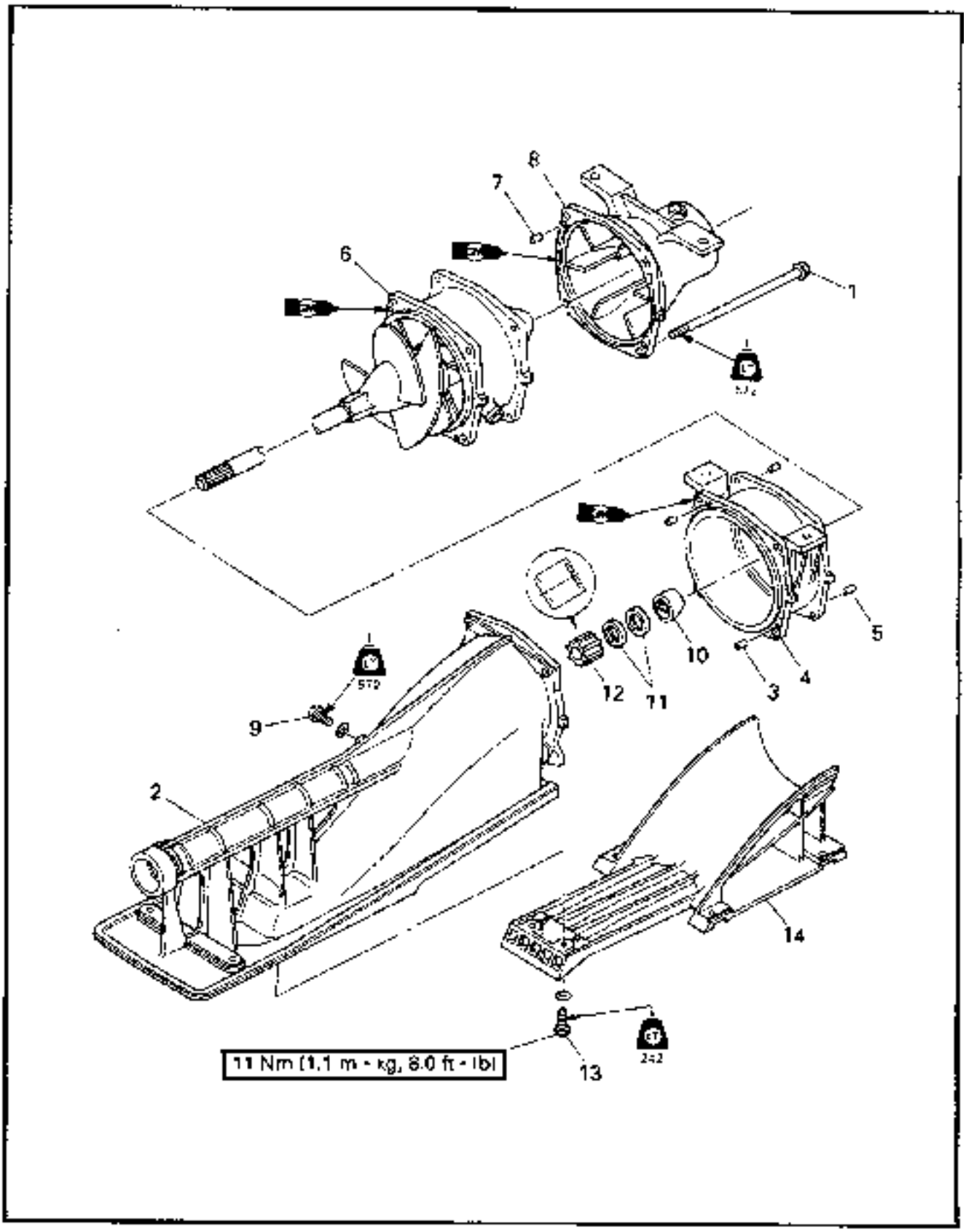


NOZZLE DEFLECTOR AND REVERSE GATE

REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	NOZZLE DEFLECTOR AND REVERSE GATE REMOVAL		Follow the left "Step" for removal.
	Jet pump unit		Refer to the "JET PUMP UNIT REMOVAL" section.
1	Bolt (with washer)	2	
2	Collar	2	
3	Nozzle deflector assembly	1	
	NOZZLE DEFLECTOR DISASSEMBLY		
①	Spring	2	
②	Bolt (with washer)	2	8 × 25 mm
③	Collar	2	
④	Pin bolt	2	
⑤	Plane washer	2	
⑥	Collar	2	
⑦	Plate	2	
⑧	Pin bolt	2	
⑨	Collar	2	
⑩	Shift lever	1	
⑪	Bolt (with washer)	2	8 × 25 mm
⑫	Collar	2	
⑬	Reverse gate	1	
⑭	Ball joint	1	
⑮	Bolt (with washer)	2	6 × 12 mm
⑯	Collar	2	
⑰	Lever	1	
⑱	Nut	1	M6
⑲	Plane washer	2	
⑳	Ball joint	1	M6
㉑	Nozzle deflector	1	
			Reverse the removal steps for installation.

NOZZLE, DUCT AND INTAKE
EXPLODED DIAGRAM
TUYERE, CONDUITE ET ADMISSION
VUE EN ECLATE

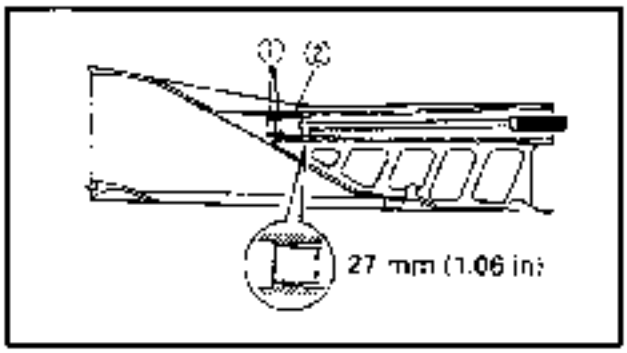


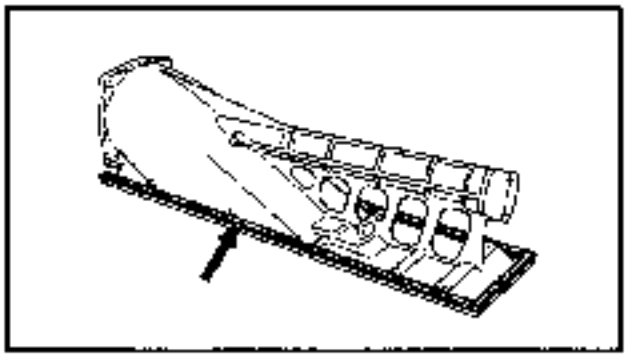
REMOVAL AND INSTALLATION CHART

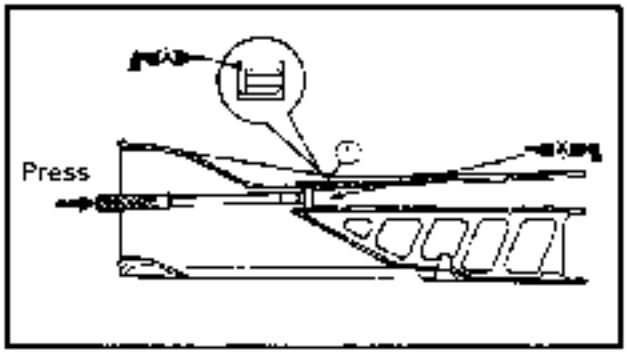
Step	Procedure/Part name	Q'ty	Service points
	NOZZLE, DUCT AND INTAKE DISASSEMBLY		Follow the left "Step" for removal.
	Jet pump unit		Refer to the "JET PUMP UNIT REMOVAL" section.
	Reverse gate assembly		Refer to the "REVERSE GATE" section.
1	Bolt	4	
2	Intake duct	1	
3	Pin	2	
4	Housing	1	
5	Pin	2	
6	Impeller duct assembly	1	
7	Pin	2	
8	Nozzle	1	
9	Bolt (with washer)	1	
10	Spacer	1	
11	Oil seal	2	
12	Bushing	1	
13	Bolt (with washer)	6	
14	Intake screen	1	
			Reverse the removal steps for installation.

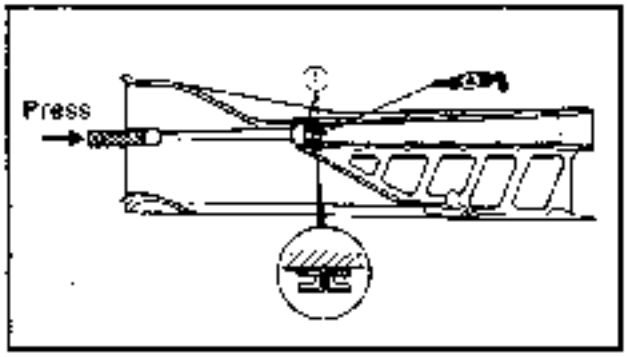
TABLEAU DE DEPOSE ET D'INSTALLATION

Etape	Procédé/nom de pièce	Q'té	Remarques particulières d'entretien
	DEMONTAGE DE LA TUYERE, DE LA CONDUITE ET DE L'ADMISSION		Suivre l'"étape" de gauche pour la dépose.
	Pompe de propulsion		Voir la section "DEPOSE DE LA POMPE DE PROPULSION"
	Ensemble d'effecteur d'eau de marche arrière		Se reporter à la section "DEFLECTEUR D'EAU DE MARCHE ARRIERE".
1	Conduite d'admission	4	
2	Tuyère d'admission	1	
3	Goupille	2	
4	Logement	1	
5	Goupille	2	
6	Ensemble de tuyère de turbine	1	
7	Goupille	2	
8	Tuyère	1	
9	Boulon (avec rondelle)	1	
10	Rondelle	1	
11	Bague d'étanchéité	2	
12	Douille	1	
13	Boulon (avec rondelle)	6	
14	Crible d'admission	1	
			Pour l'installation, inverser les étapes de la dépose.









SERVICE POINTS

Oil seal and bushing removal

1. Remove:
   - Oil seal ①
   - Bushing ②

Driver rod:
YB-06229/90890-06605
Ball bearing attachment:
YB-06021/90890-06638

Housing inspection

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

Seal rubber inspection

1. Inspect:
   - Seat rubber
     Crack/Wear → Replace.

Bushing and oil seal installation

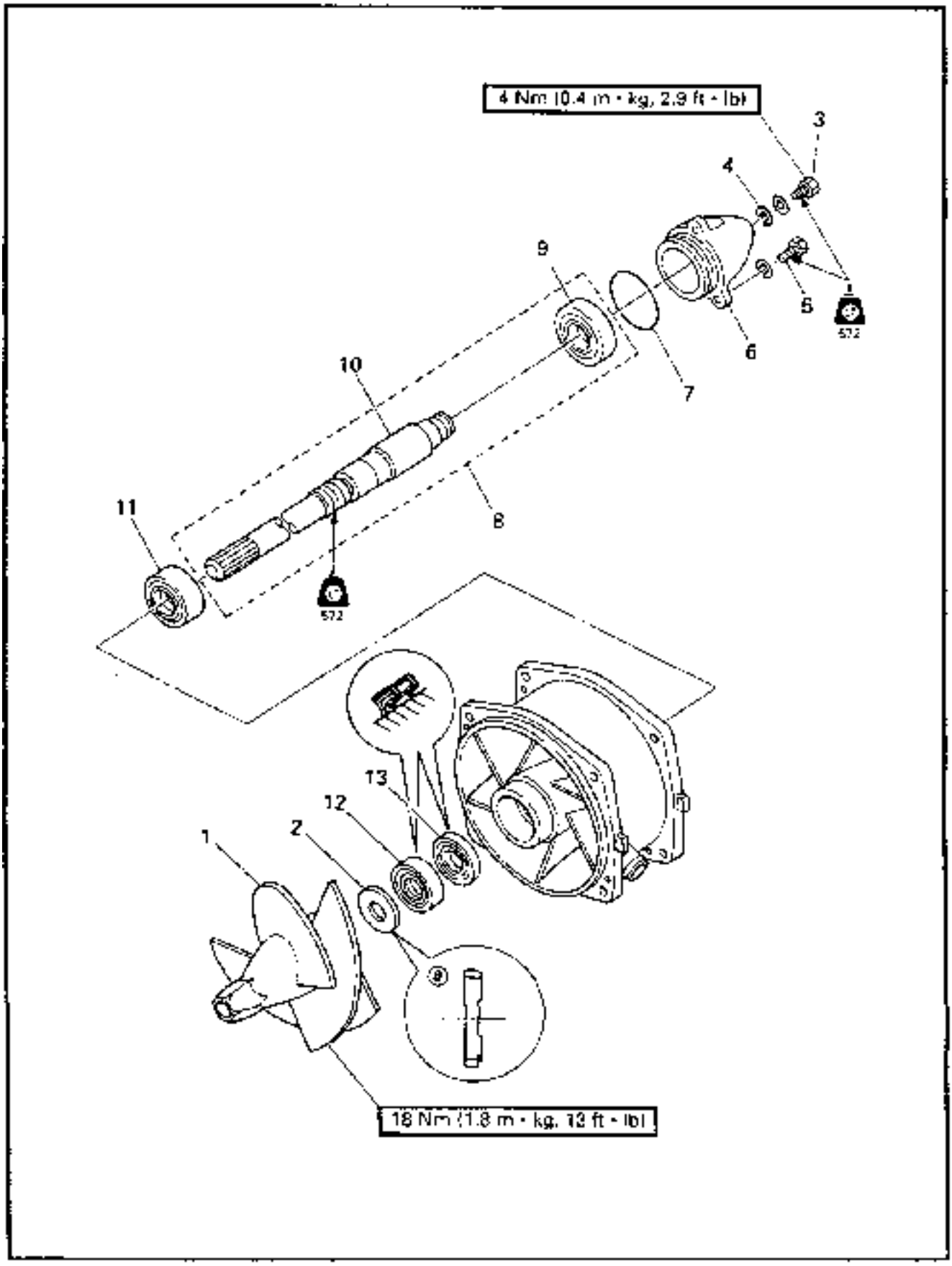
1. Install:
   - Bushing

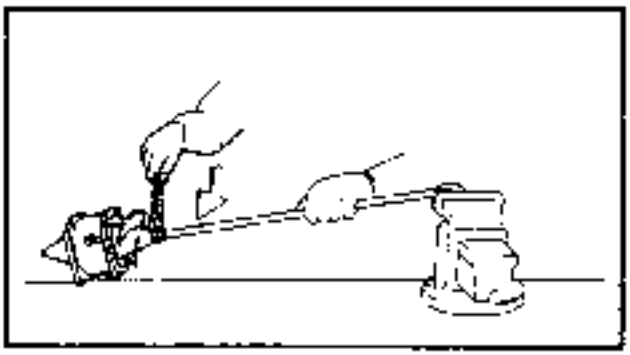
Driver rod:
YB-06229/90890-06605
Needle bearing attachment:
YB-06349/90890-06613

2. Install:
   - Oil seal

Driver rod:
YB-06229/90890-06605
Needle bearing attachment:
YB-06349/90890-06613

IMPELLER AND DRIVE SHAFT
EXPLODED DIAGRAM



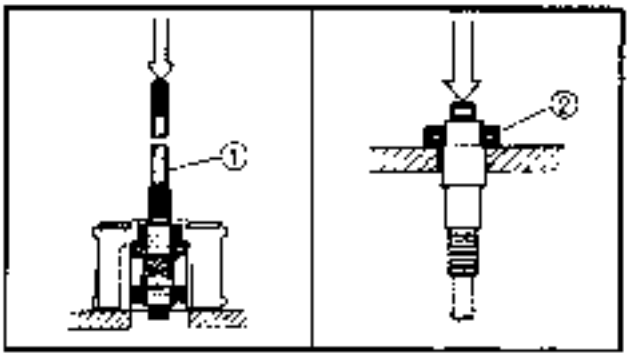


SERVICE POINTS

Impeller removal

1. Remove:
   - Impeller

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

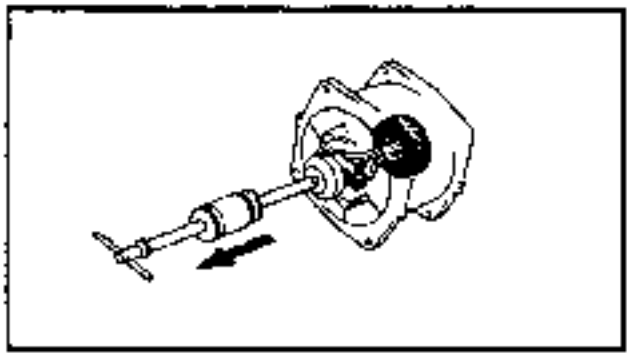


Drive shaft and bearing removal

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 the "JET PUMP UNIT" section in chapter 3.

Drive shaft Inspection

1. Inspect:
   - Drive shaft

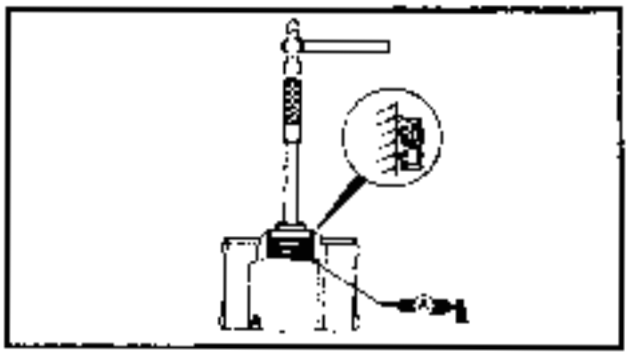
   Wear/Damage → Replace.

Bearing Inspection

1. Inspect:
   - Bearing (front and rear)

   Rotate inner race by hand.

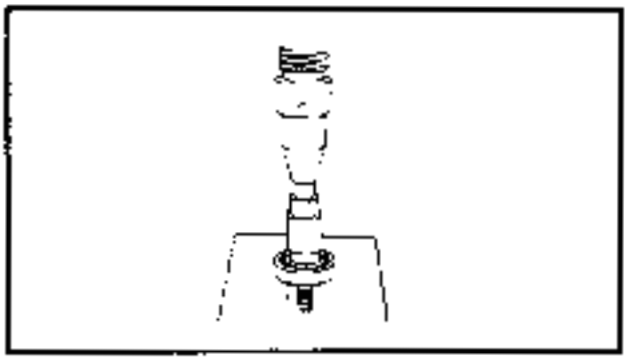
   Rough spot/Seizure → Replace.



Oil seal and bearing installation

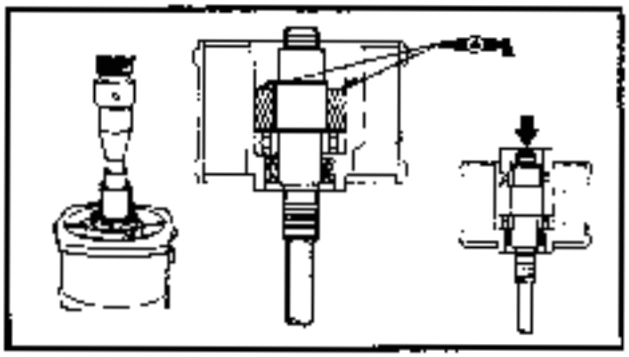
1. Install:
   - Oil seal

	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.

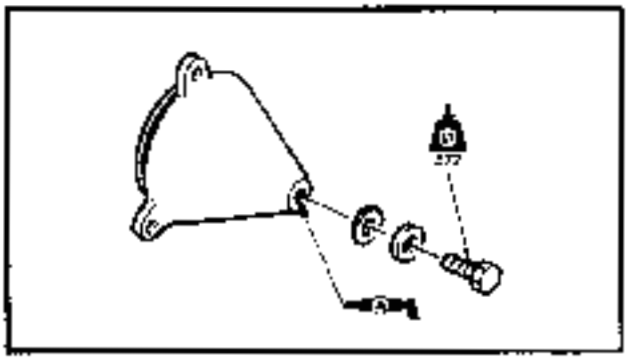


3. Fill:
   - Between the drive shaft and duct

	Water resistant grease: **24 cm³ (1.45 cu. in)**

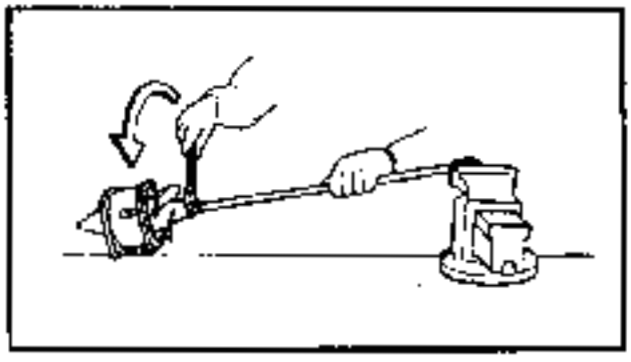
4. Install:
   - Bearing (rear)

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



5. Fill:
   - Into the cap

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

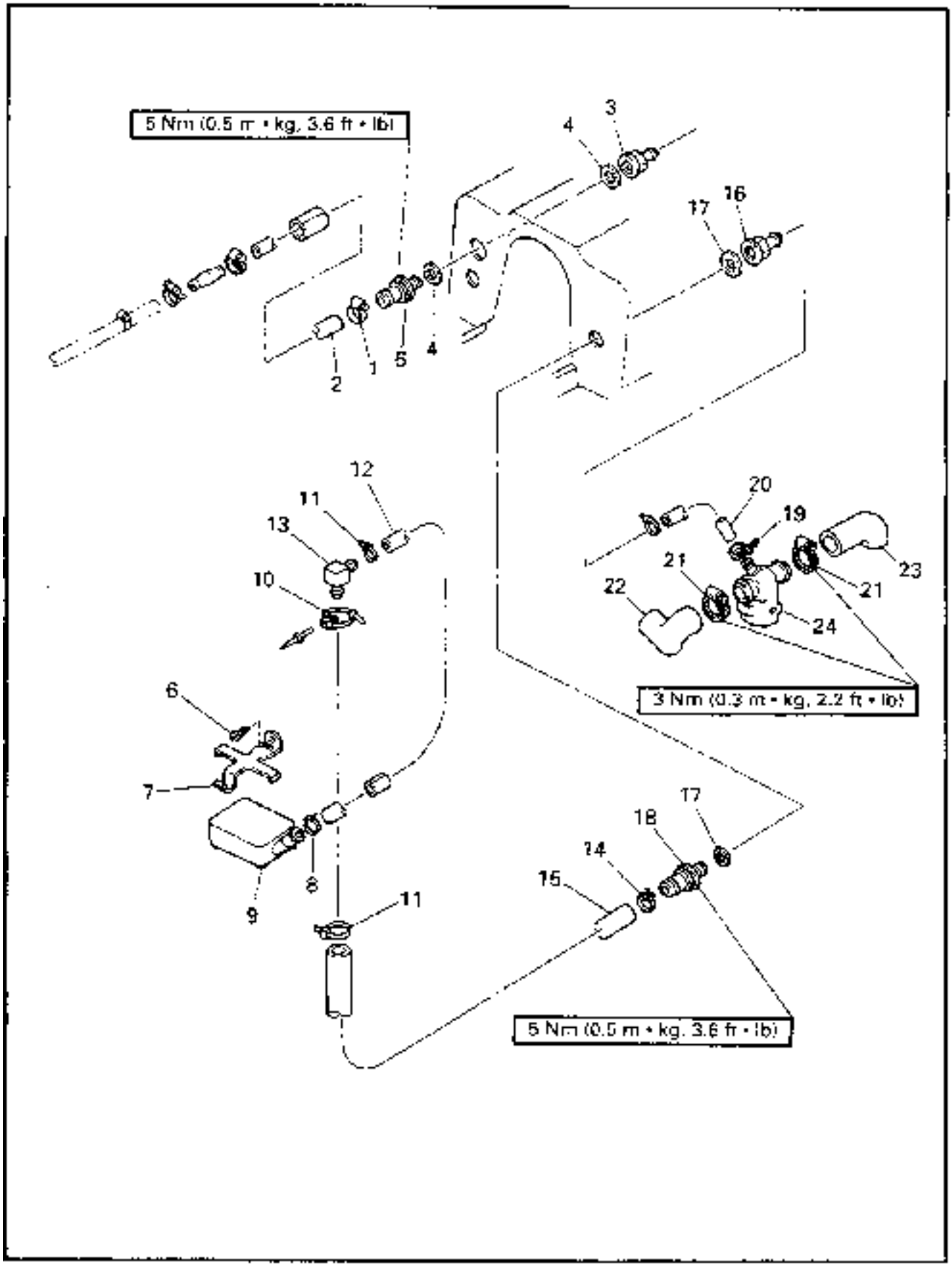


Impeller installation

1. Install:
   - Impeller

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

COOLING AND BILGE SYSTEM
EXPLODED DIAGRAM (WVT700)



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	COOLING AND BILGE SYSTEM REMOVAL		Follow the left "Step" for removal.
	Jet pump unit		Refer to the "JET PUMP UNIT REMOVAL" section.
1	Clamp	1	
2	Water inlet hose	1	
3	Connection nut	1	
4	Packing	2	
5	Connection bolt	1	
6	Tapping screw	1	
7	Strainer bracket	1	
8	Hose tie	1	
9	Bilge strainer	1	
10	Clamp	1	
11	Hose tie	2	
12	Bilge hose	1	
13	Hose joint	1	
14	Hose tie	1	
15	Bilge hose	1	
16	Connection nut	1	
17	Packing	2	
18	Connection bolt	1	
19	Hose tie	1	
20	Hose	1	
21	Clamp	2	
22	Presser hose	1	
23	Selection hose	1	
24	Valve body	1	
			Reverse the removal steps for installation.

SERVICE POINTS

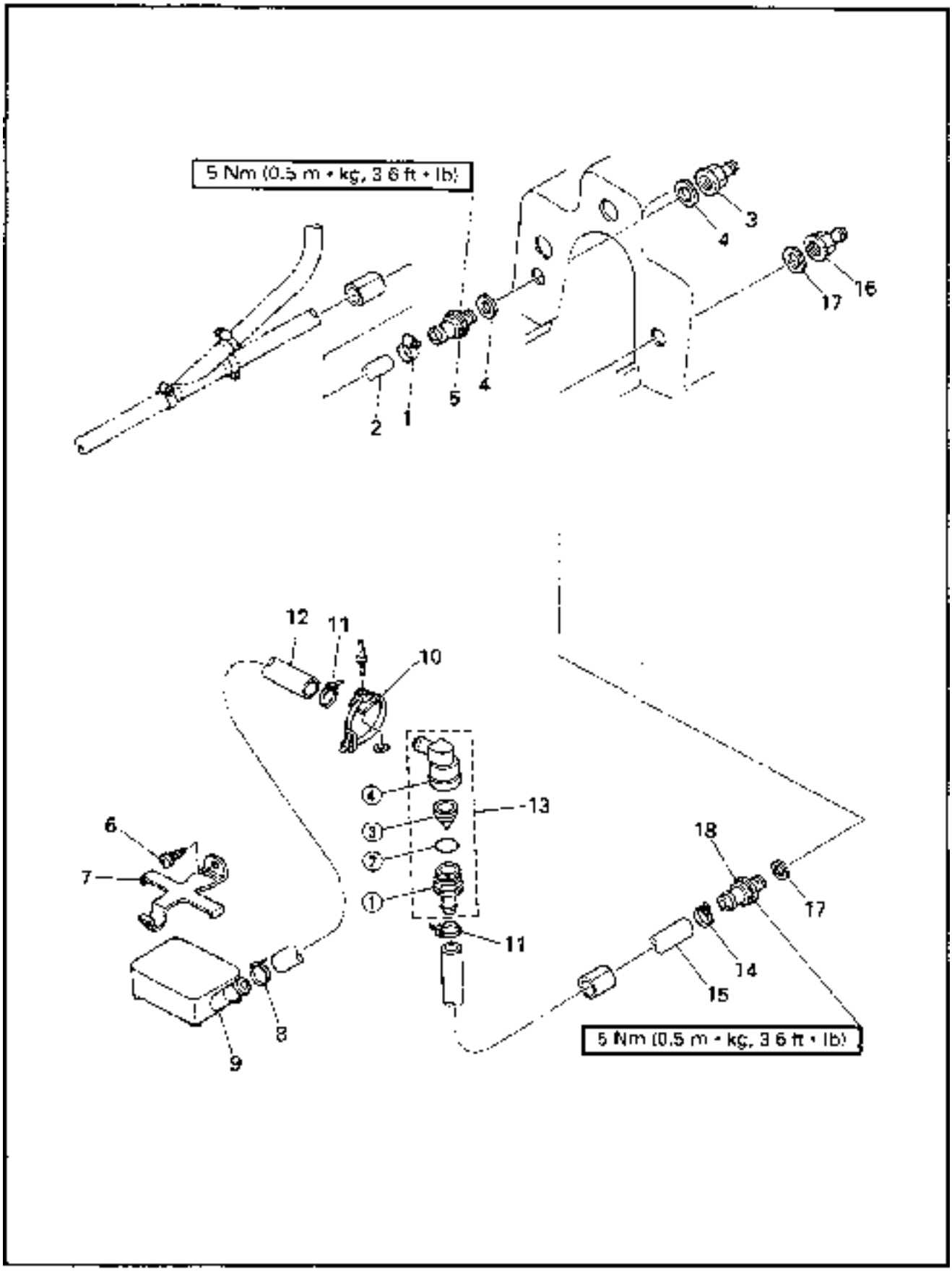
Bilge strainer inspection

Refer to the "BILGE SYSTEM" section in chapter 3.

Hose inspection

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

EXPLODED DIAGRAM (WVT1100)



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	COOLING AND BILGE SYSTEM REMOVAL		Follow the left "Step" for removal.
	Jet pump unit		Refer to the "JET PUMP UNIT REMOVAL" section.
1	Clamp	1	
2	Water inlet hose	1	
3	Connection nut	1	
4	Packing	2	
5	Connection bolt	1	
6	Tapping screw	1	
7	Strainer bracket	1	
8	Hose tie	1	
9	Bilge strainer	1	
10	Clamp	1	
11	Hose tie	2	
12	Bilge hose	1	
13	Hose joint	1	
14	Hose tie	1	
15	Bilge hose	1	
16	Connection nut	1	
17	Packing	2	
18	Connection bolt	1	
	HOSE JOINT DISASSEMBLY		WVT1100
①	Joint bolt	1	
②	O-ring	1	
③	Valve	1	
④	Joint body	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Bilge strainer inspection

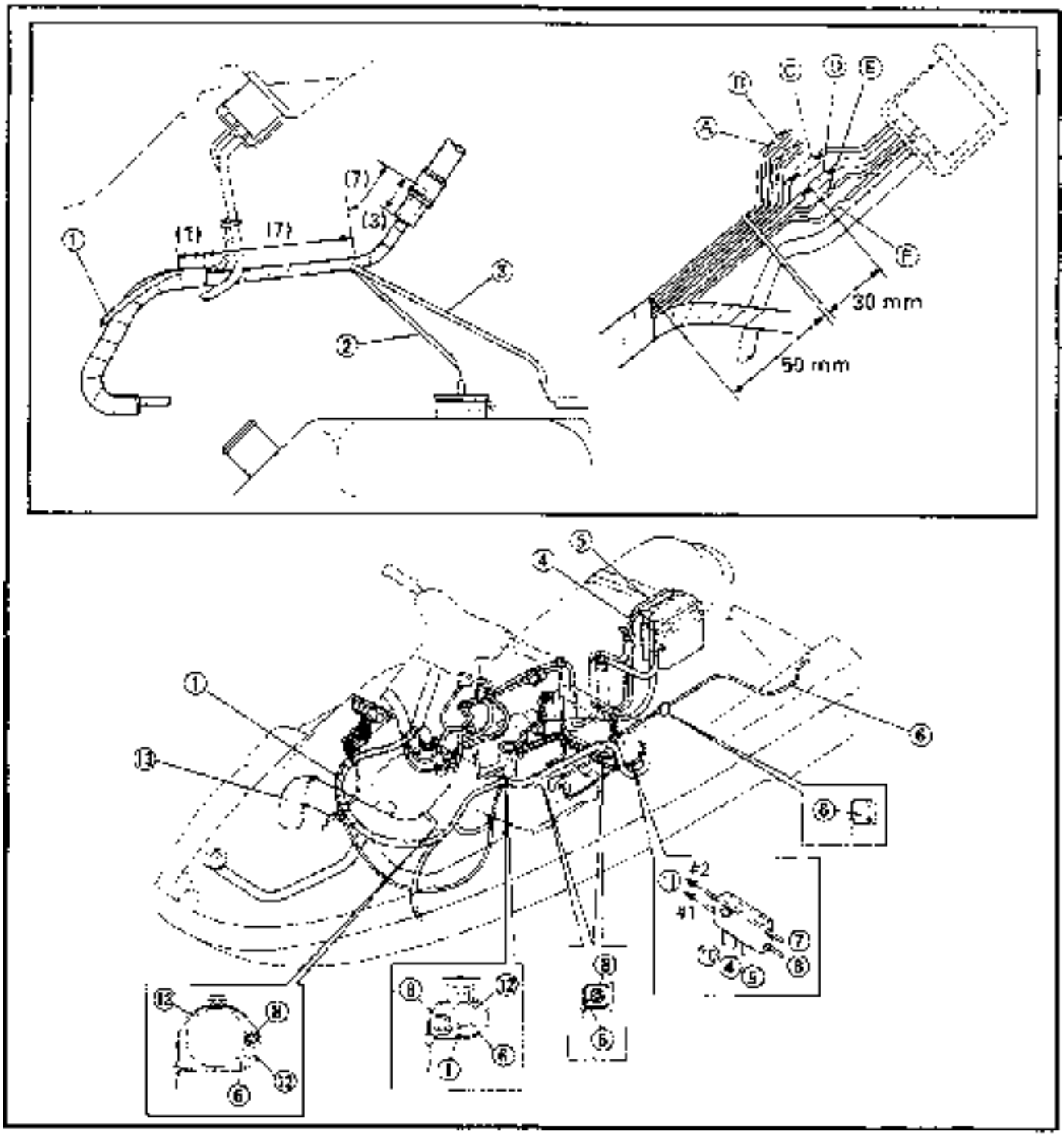
Refer to the "BILGE SYSTEM" section in chapter 3.

Hose inspection

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

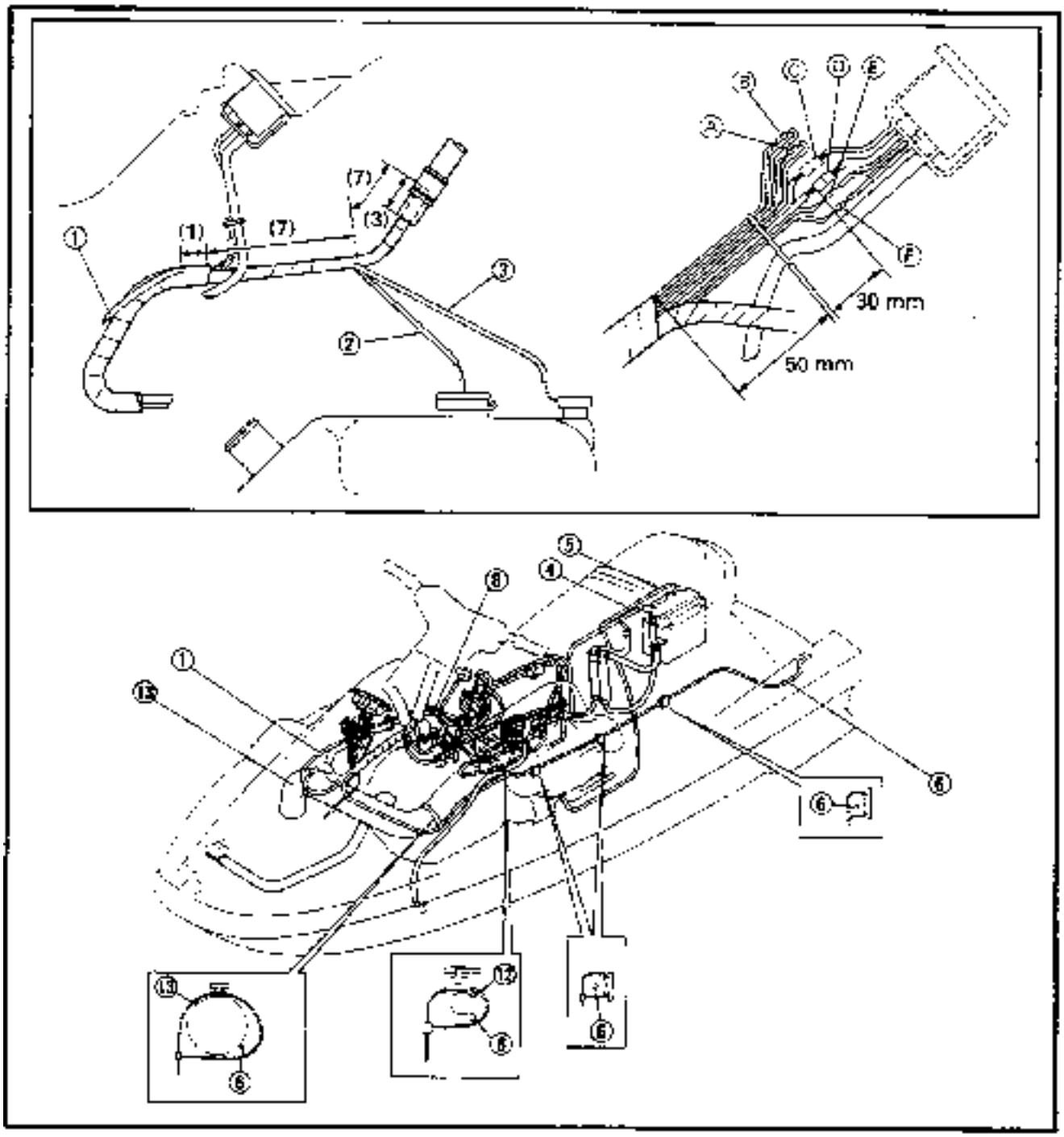
CHAPTER 7
ELECTRICAL SYSTEM

ELECTRICAL COMPONENTS
WVT700



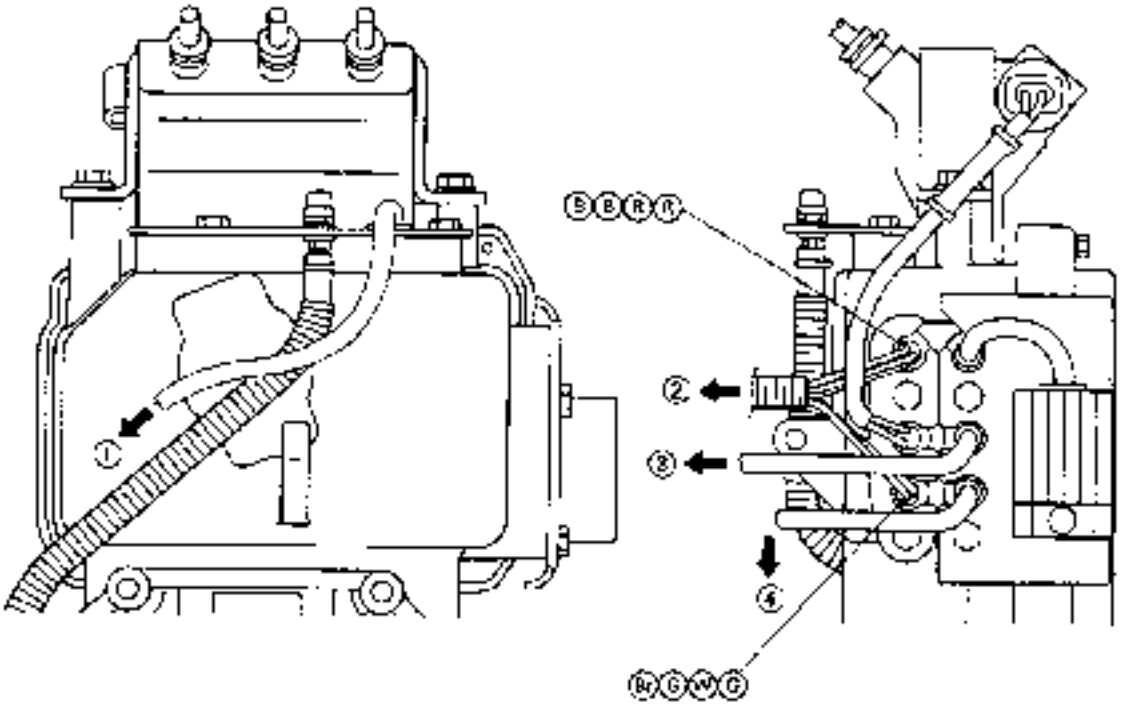
① Throttle cable
② Fuel level sensor lead
③ Oil level sensor lead
④ Battery (positive) lead
⑤ Battery (negative) lead
⑥ Speed sensor lead
⑦ Flywheel magneto base lead
⑧ Handle switch lead
⑨ Thermo sensor lead
⑩ Starter motor (positive) lead
Ⓒ High tension cord
Ⓓ Pilot water hose
Ⓔ Ventilation hose
Ⓐ: 2P connector (Black)
Ⓑ: 2P connector (White)
Ⓒ: 3P connector (White)
Ⓓ: 4P connector (White)
Ⓔ: 2P connector (Green)
Ⓕ: 2P connector (White)

WVT1100



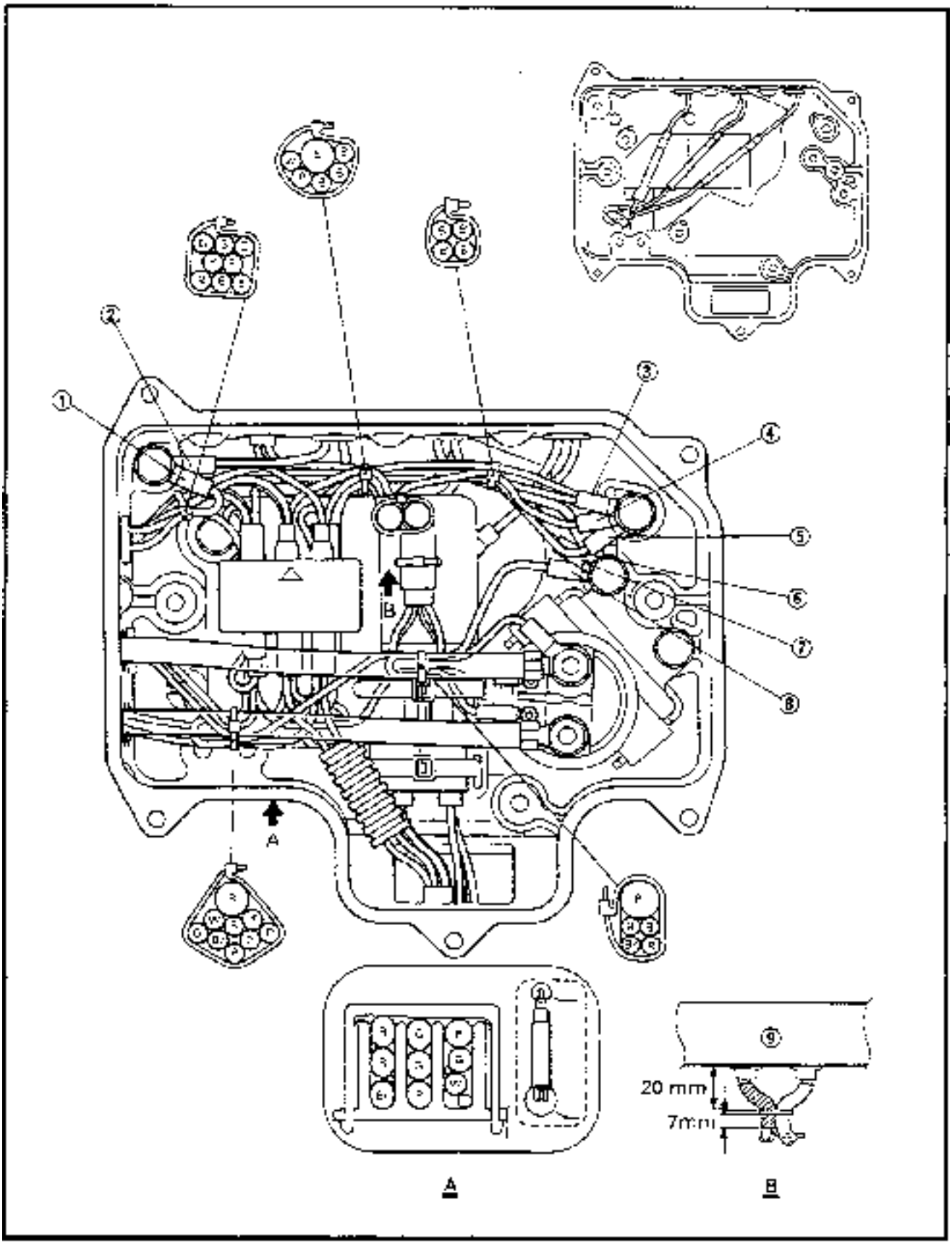
① Throttle cable
② Fuel level sensor lead
③ Oil level sensor lead
④ Battery (positive) lead
⑤ Battery (negative) lead
⑥ Speed sensor lead
⑦ Flywheel magneto base lead
⑧ Handle switch lead
⑨ Thermo sensor lead
⑩ Starter motor (positive) lead
⑪ High tension cord
⑫ Pilot water hose
⑬ Ventilation hose
Ⓐ: 2P connector (Black)
Ⓑ: 2P connector (White)
Ⓒ: 3P connector (White)
Ⓓ: 4P connector (White)
Ⓔ: 2P connector (Green)
Ⓕ: 2P connector (White)

ELECTRICAL UNIT
WVT1100



① Thermo switch
② Handle switch and meter
③ Battery (positive)
④ Starter motor (positive)

B: Black
Br: Brown
G: Green
P: Pink
R: Red
W: White



① Rectifier-regulator ground
② Ignition coil #3 ground
③ Handle switch and meter ground
④ CDI ground
⑤ Thermo switch ground
⑥ Ignition coil #2 ground
⑦ Ignition coil #1 ground
⑧ Starter relay ground
⑨ CDI unit

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

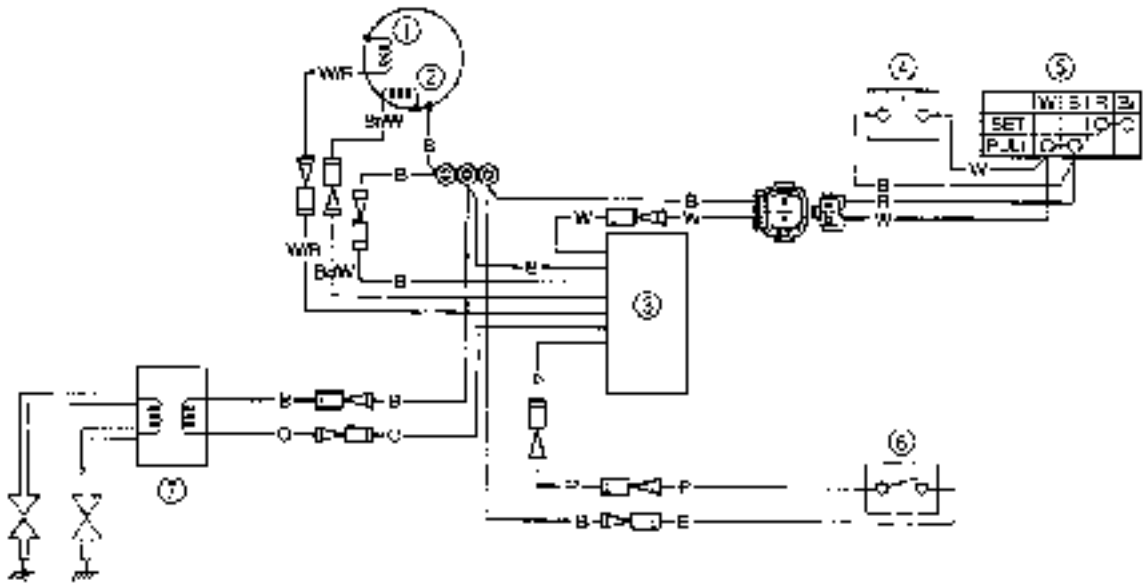
NOTE:

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

IGNITION SYSTEM

WIRING DIAGRAM

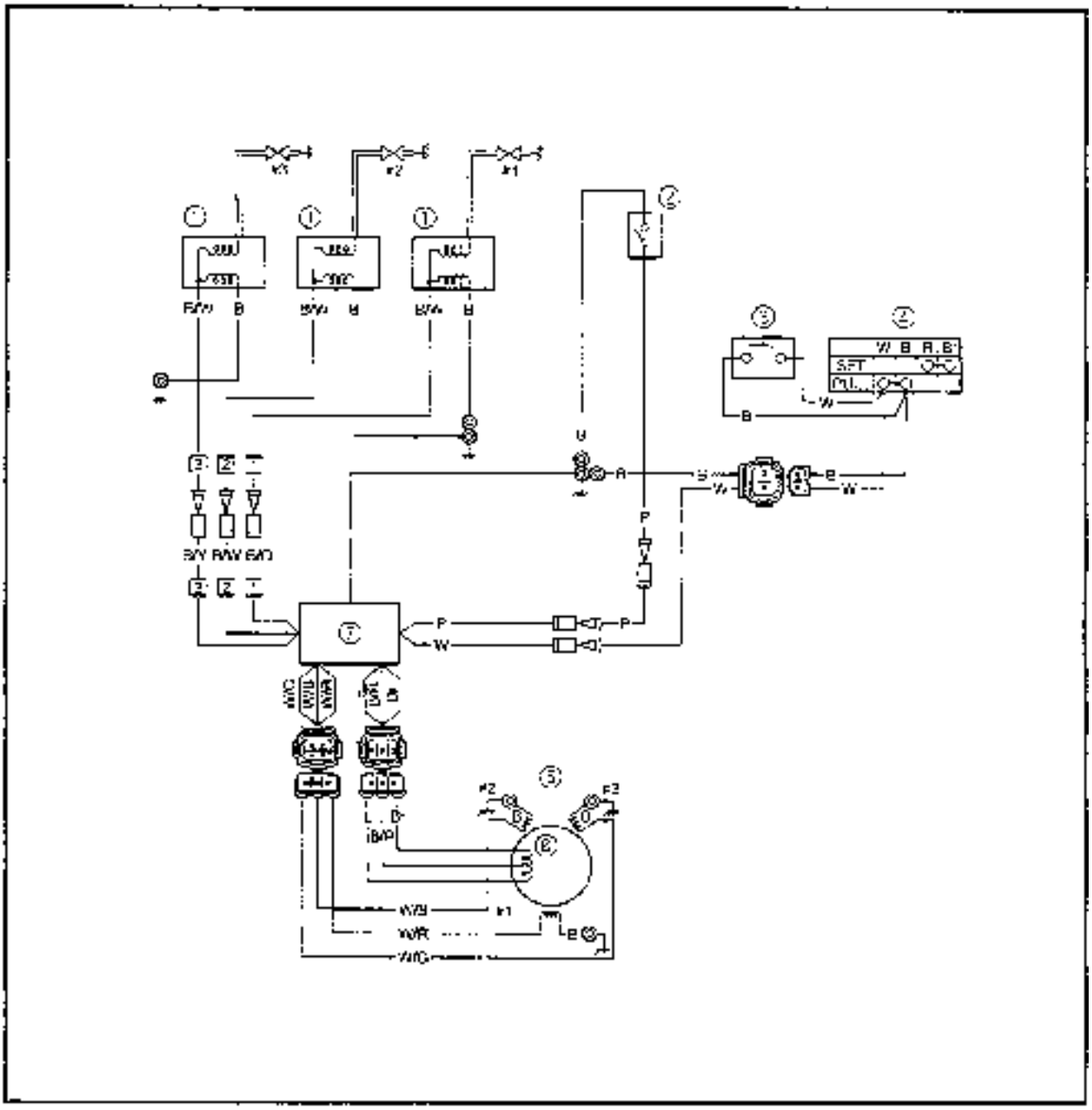
WVT700



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

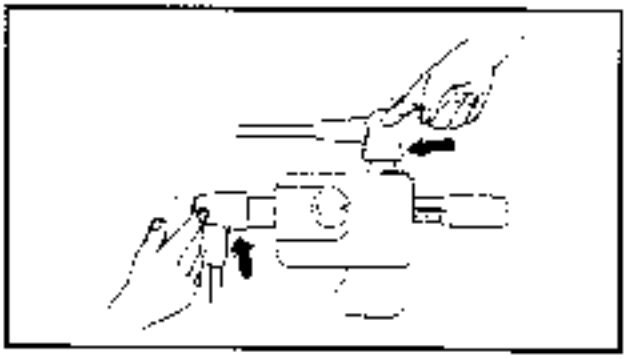
B : Black
Br/W : Brown/White
O : Orange
P : Pink
W : White
W/R : White/Red

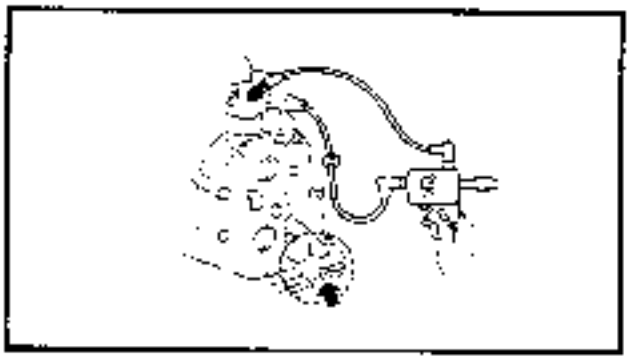
WVT1100

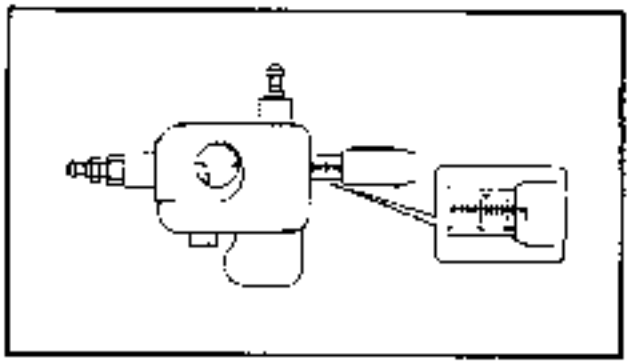


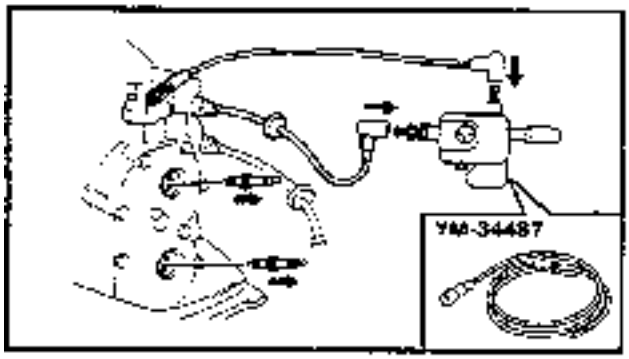
① Ignition coil
② Thermo switch
③ Stop switch
④ Engine stop switch
⑤ Pulser coil
⑥ Charge coil
⑦ CDI unit

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

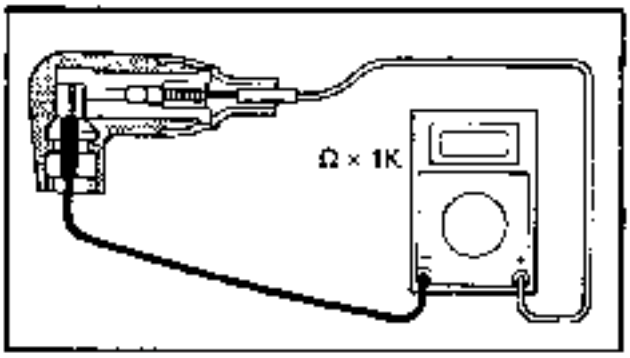
Refer to the "GENERAL" section in CHAPTER 3

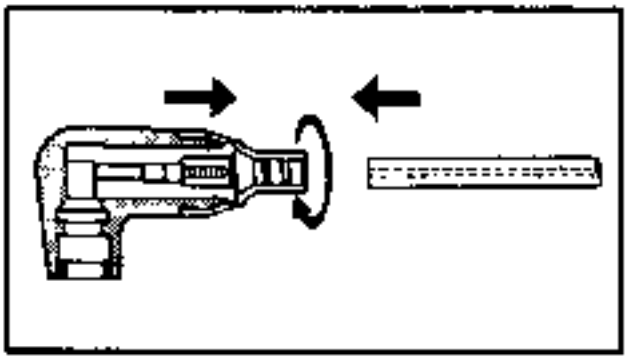
SPARK PLUG CAP

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

2. Measure: (For WVT1100)
   - Spark plug cap resistance
     Out of specification → Replace.

Spark plug cap resistance:
4.0 ~ 6.0 kΩ



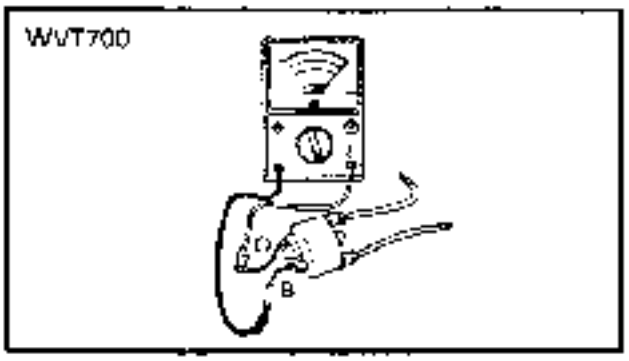


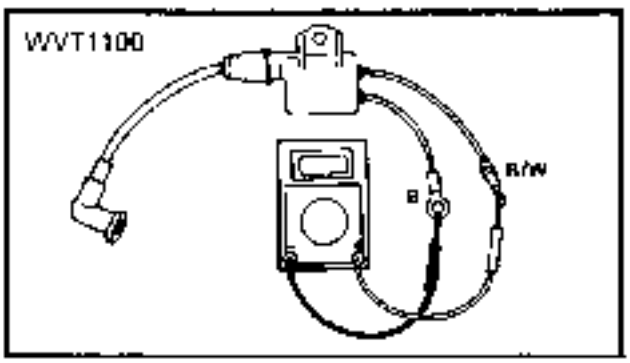
Replacement steps: (For WVT1100)
- Remove the spark plug cap by turning the cap counterclockwise.
- Install the spark plug cap by turning the cap clockwise until it stops.

IGNITION COIL

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

Primary coil resistance:
WVT700
Orange (O) – Black (B)
0.078 ~ 0.106 Ω at 20°C (68°F)
WVT1100
Black/White (B/W) – Black (B)
0.18 ~ 0.24 Ω at 20°C (68°F)



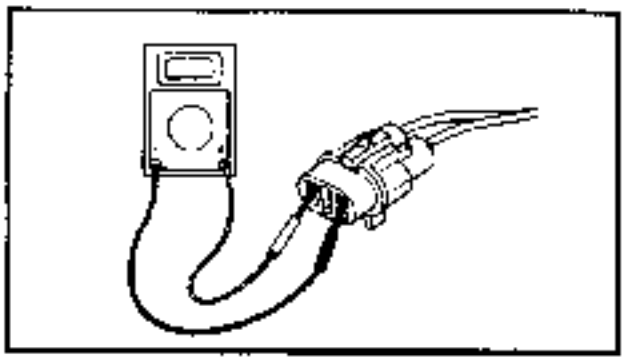


NOTE:
When measuring the resistance of 10 Ω or less using the digital tester, the correct measurement cannot be obtained. Refer to "Lower resistance measurement".

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

	Secondary coil resistance: **WVT700** **High tension cords** **14.3 ~ 30.5 kΩ at 20°C (68°F)** **WVT1100** **Black/White (B/W) – High tension cord** **2.7 ~ 4.1 kΩ at 20°C (68°F)**

NOTE:
Remove the spark plug cap from the high tension cord.



ENGINE STOP SWITCH

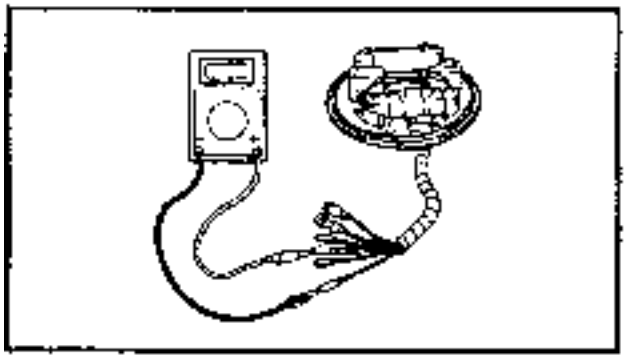
1. Check:
   - Continuity
     Out of specification → Replace.

Engine stop continuity:
(Black coupler)

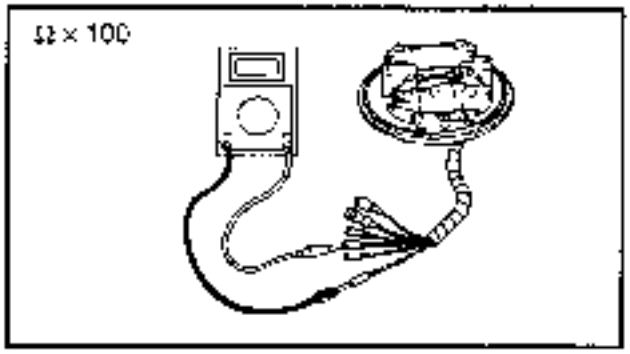
Lock plate	Position	Leads	
		White	Black
Installed	Free		
	Push	○	○
Removed	Free	○	○
	Push	○	○

CHARGE COIL

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



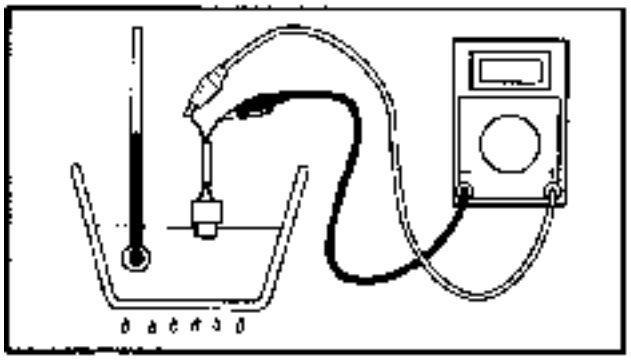
Charge coil resistance:
WVT700
Brown/White (Br/W) – Black (B)
497.7 ~ 608.3 Ω at 20°C (68°F)
WVT1100
Black/Red (B/R) – Brown (Br)
172 ~ 258 Ω at 20°C (68°F)
Blue (L) – Black/Red (B/R)
656 ~ 984 Ω at 20°C (68°F)

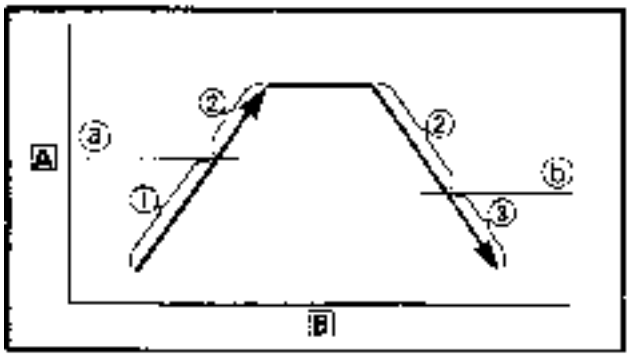


PULSER COIL

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

Pulser coil resistance:
WVT700
White/Red (W/R) – Black (B)
12.6 ~ 15.4 Ω at 20°C (68°F)
WVT1100
White/Red (W/R) – Black (B)
White/Black (W/B) – Black (B)
White/Green (W/G) – Black (B)
248 ~ 372 Ω at 20°C (68°F)





THERMO SWITCH

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

Thermo switch continuity temperature:
WVT700
Pink (P) – Black (B)
ⓐ 66 ~ 74°C (100.4 ~ 125.6°F)
ⓑ 57 ~ 43°C (93.2 ~ 78.8°F)
WVT1100
Pink (P) – Black (B)
ⓐ 90 ~ 96°C (194 ~ 204.8°F)
ⓑ 90 ~ 76°C (194 ~ 168.8°F)

① Discontinuity
② Continuity
③ Discontinuity
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.

62T00 WVT700 Unit: kΩ

⊕ \ ⊖	B	Br/W	O	P	W	W/R
B		2~6	∞	3~11	10~40	150~600
Br/W	20~80		∞	50~200	15~60	500
O	∞	∞		∞	∞	∞
P	∞	∞	∞		∞	∞
W	∞	∞	∞	∞		∞
W/R	9~36	17~70	∞	10~40	50~200	

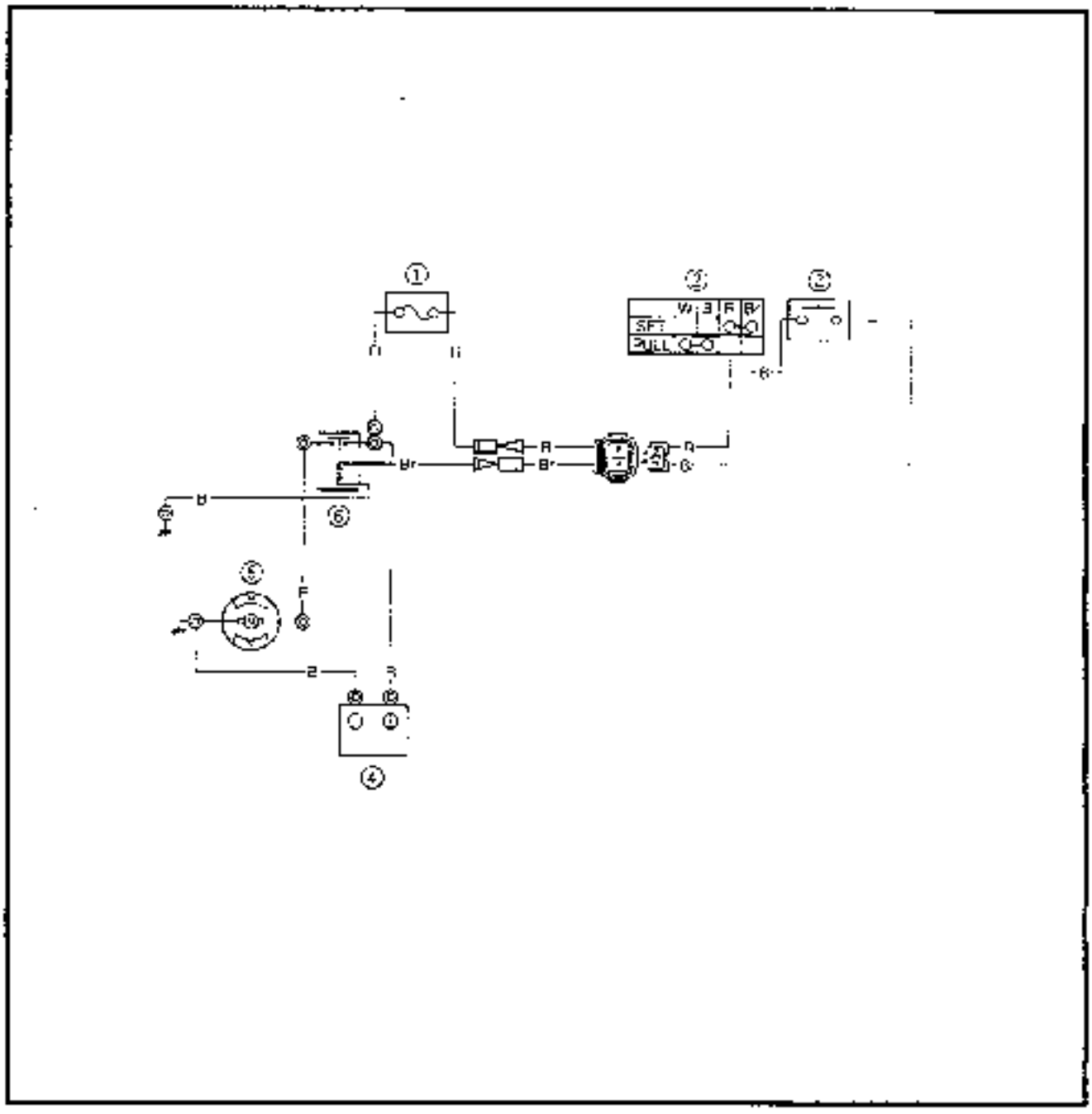
63M00 WVT1100 Unit: kΩ

⊕ \ ⊖	B	B/O	B/R	B/W	B/Y	Br	L	P	W	W/B	W/G	W/R
B		280~420	14.4~21.6	280~420	280~420	∞	2.9~4.3	280~420	280~470	60~90	60~90	60~90
B/O	∞		∞	∞	∞	∞	∞	∞	∞	∞	∞	∞
B/R	∞	∞		∞	∞	∞	∞	∞	∞	∞	∞	∞
B/W	∞	∞	∞		∞	∞	∞	∞	∞	∞	∞	∞
B/Y	∞	∞	∞	∞		∞	∞	∞	∞	∞	∞	∞
Br	76~114	120~180	200~300	120~180	120~180		144~216	120~180	120~180	184~276	184~276	184~276
L	19.2~28.8	48~72	240~360	48~72	48~72	∞		56.0~84.0	45.6~68.4	168~252	168~252	168~252
P	∞	∞	∞	∞	∞	∞	∞		∞	∞	∞	∞
W	∞	∞	∞	∞	∞	∞	∞	∞		∞	∞	∞
W/B	200~300	280~420	400~600	280~420	280~420	∞	280~420	280~420	280~420		320~480	320~480
W/G	200~300	280~420	400~600	280~420	280~420	∞	280~420	280~420	280~470	320~480		320~480
W/R	200~300	280~420	400~600	280~420	280~420	∞	280~420	280~420	280~470	320~480	320~480	

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

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 the "GENERAL" section in chapter 3.

WIRING CONNECTION

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

FUSE

1. Check:
   - Fuse

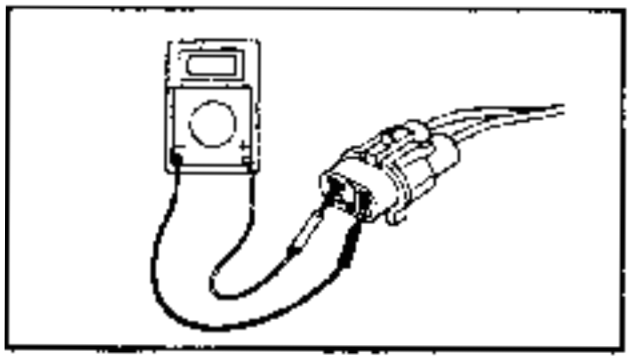
   Blown → Replace.

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

STARTER SWITCH

1. Check:
   - Continuity

   Out of specification → Replace.



Starter continuity:
(White coupler)

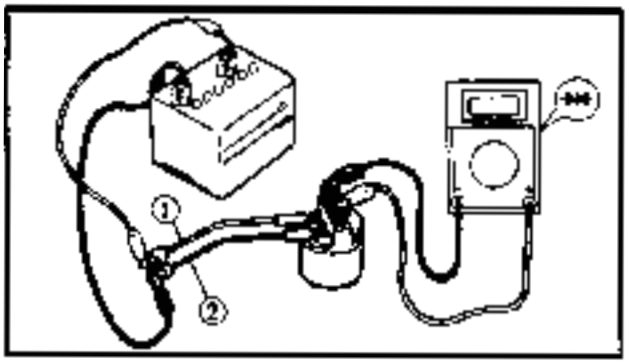
Lock plate	Position	Leads	
		Red	Brown
Installed	Free		
	Push	○	○
Removed	Free		
	Push		

STARTER RELAY

1. Inspect:
   - Brown lead terminal
   - Black lead terminal

   Loose → Tighten
2. Check:
   - Relay operation

   Does not function → Replace

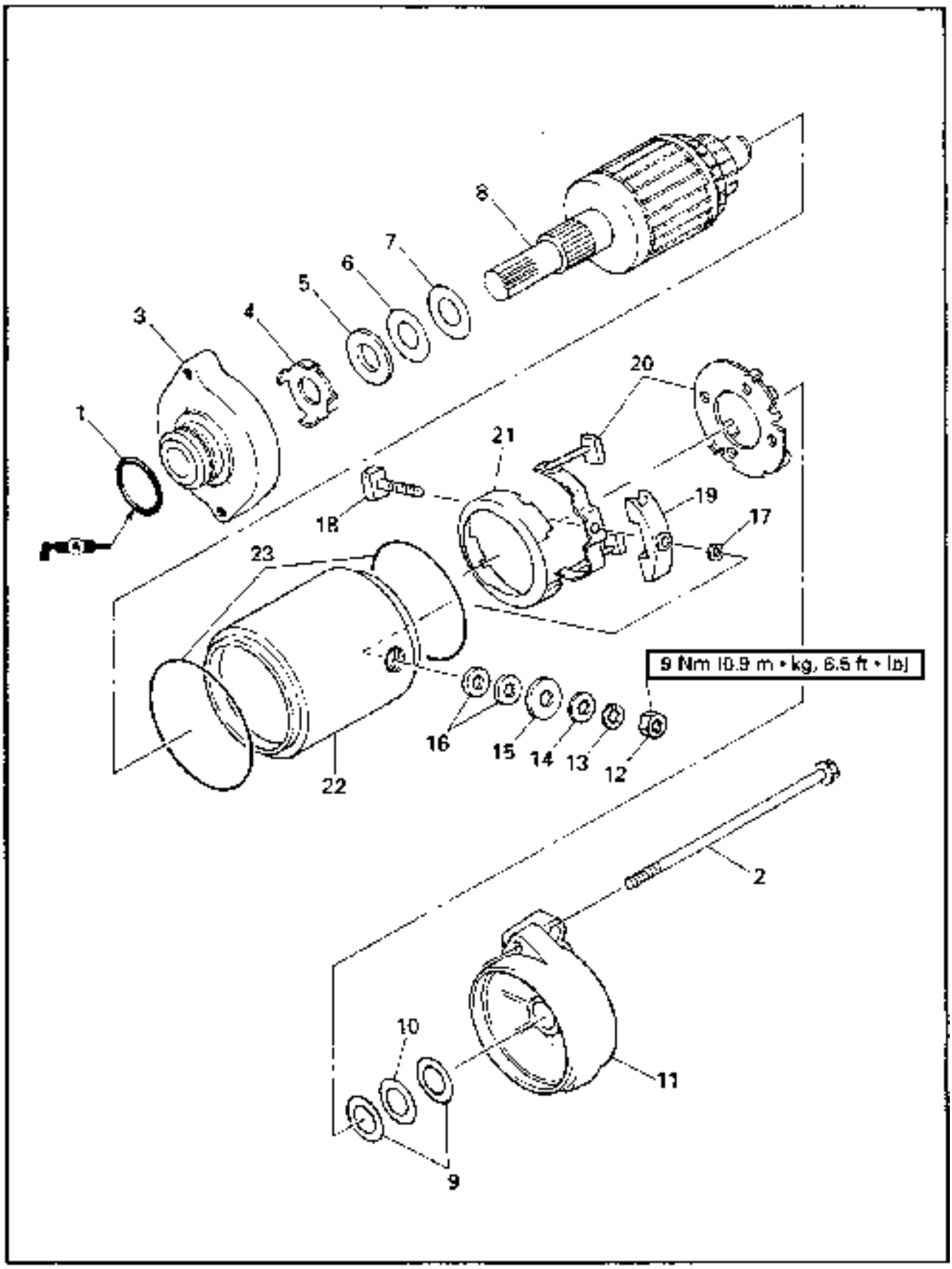


Checking steps:
- Connect the tester between the terminals of the starter relay as shown.
- Connect a 12 V battery.

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

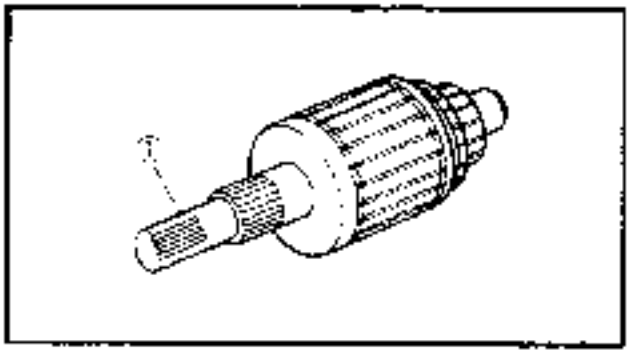
- Check that there is continuity between the starter relay terminals.

STARTER MOTOR
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

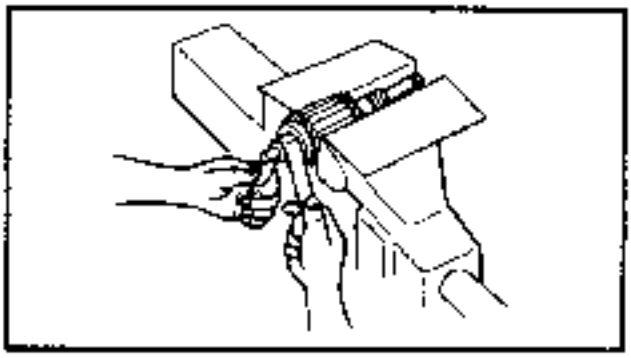
Step	Procedure/Part name	Q'ty	Service points
	STARTER MOTOR DISASSEMBLY		Follow the left "Step" for removal.
	Starter motor assembly		Refer to the "CRACKCASE AND CRANK-SHAFT" section in chapter 5.
1	O-ring	1	
2	Through bolt	2	
3	Front bracket	1	
4	Thrust supporter	1	
5	Insulator washer	1	
6	Washer	1	0.2 mm
7	Washer	1	0.5 mm
8	Armature assembly	1	
9	Washer	2	0.2 mm
10	Washer	1	0.8 mm
11	Rear bracket	1	
12	Nut	1	
13	Spring washer	1	
14	Plate washer	1	
15	Insulator washer	1	
16	Insulator washer	2	
17	O-ring	1	
18	Bolt	1	
19	Terminal insulator	1	
20	Brush holder	1	
21	Plate cover	1	
22	York assembly	1	
23	Packing	2	
			Reverse the removal steps for installation.



SERVICE POINTS

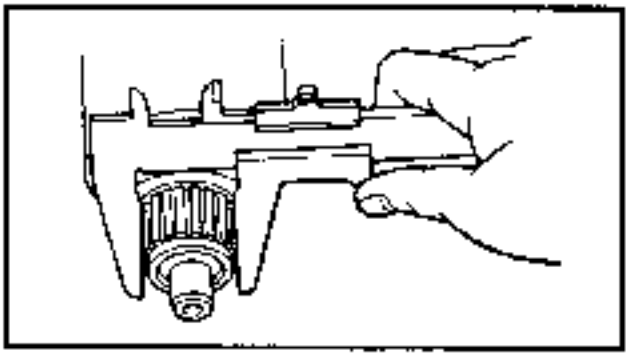
Pinion inspection

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



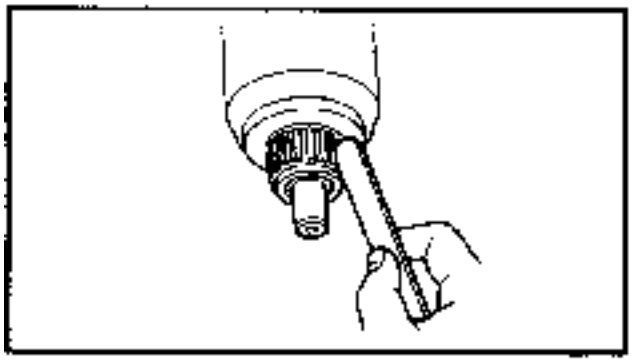
Armature inspection

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



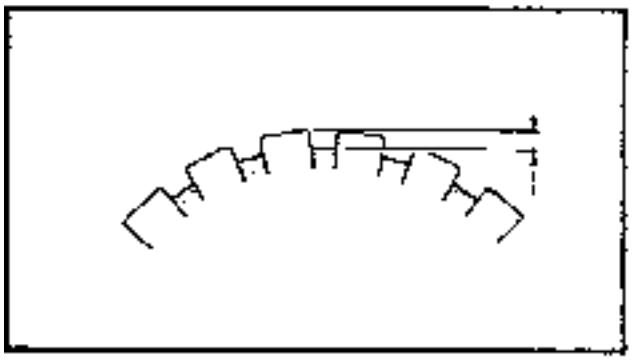
2. Measure:
   - Commutator diameter
     Out of specification → Replace.

Commutator diameter:
Limit 27 mm (1.06 in)



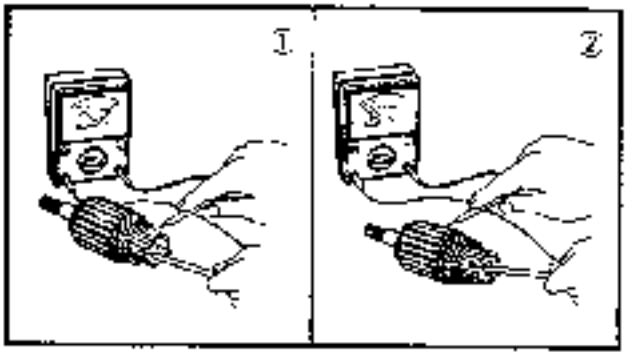
3. Check:
   - Commutator undercut
     Clog/Dirt → Clean

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



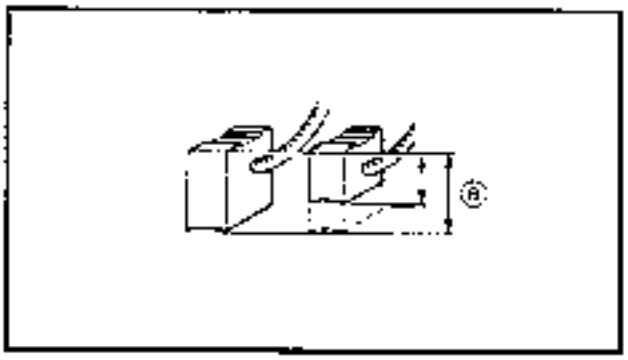
4. Measure:
   - Commutator undercut
     Out of specification → Replace.

Commutator undercut:
Limit 0.2 mm (0.01 in)



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

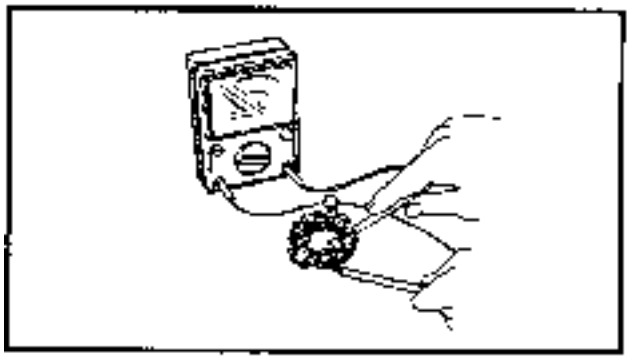
Armature coil continuity:	
Commutator segments ①	Continuity
Segment - Laminations ②	Discontinuity
Segment - Shaft	Discontinuity



Brush holder inspection

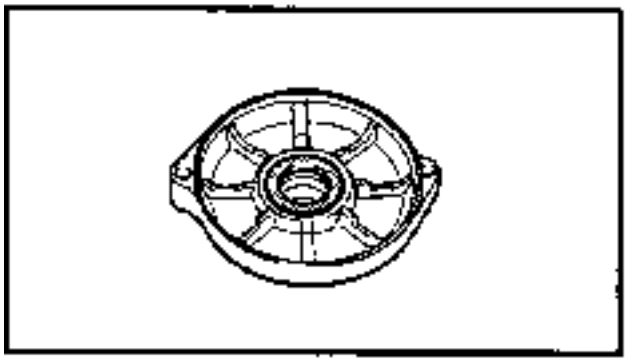
1. Measure:
   - Brush length ⓐ
     Out of specification → Replace.

Brush length:
Limit 5.0 mm (0.20 in)
WVT1100:
Limit 6.5 mm (0.26 in)



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

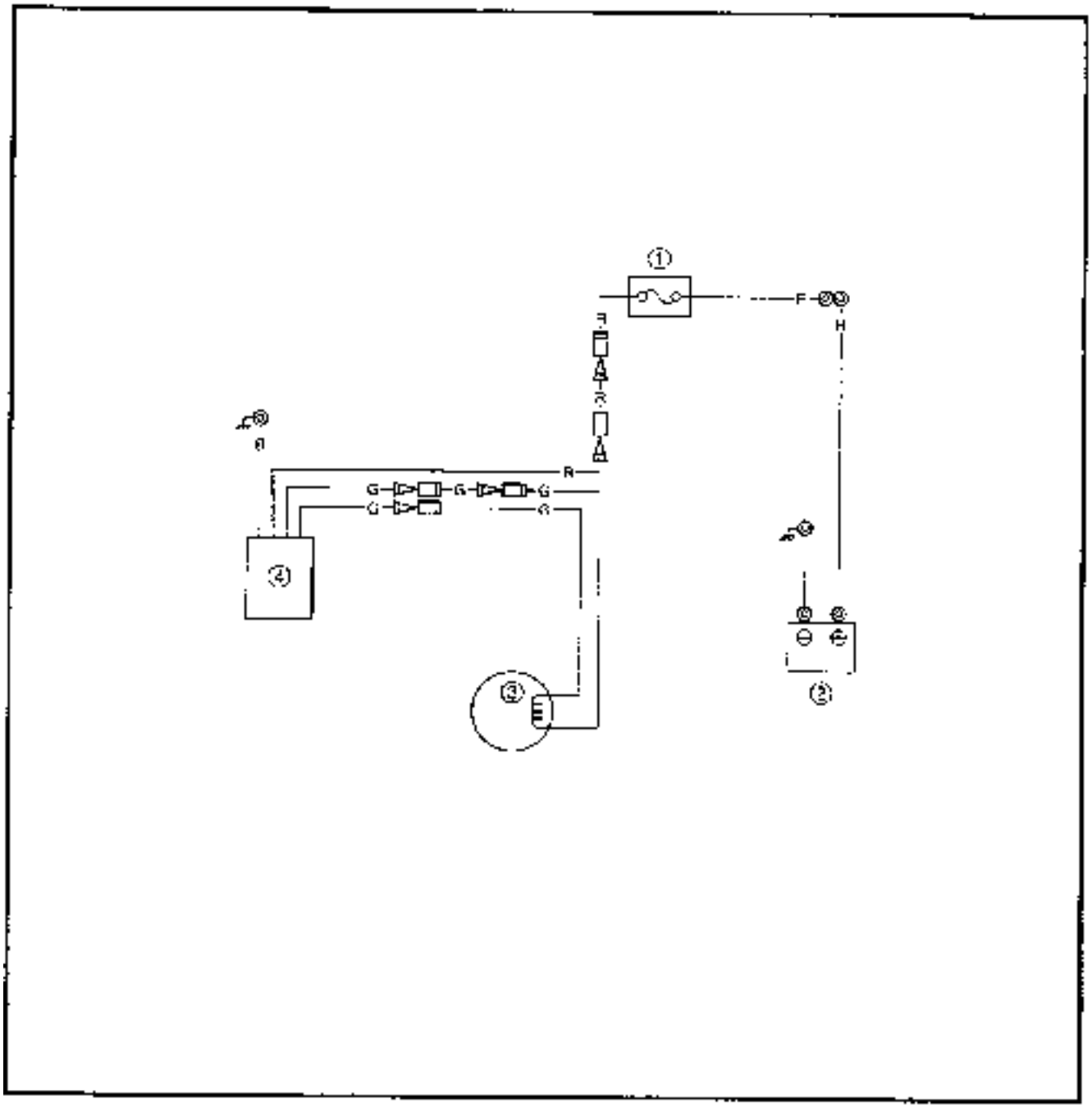
Brush holder continuity:	
Brush holder - Base	Discontinuity



Cover inspection

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

CHARGING SYSTEM
WIRING DIAGRAM



① Fuse
② Battery
③ Lighting coil
④ Rectifier regulator

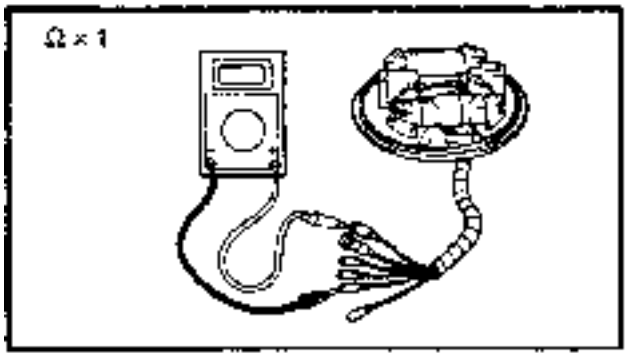
B : Black
G : Green
R : Red

FUSE

Refer to the "STARTING SYSTEM" section.

BATTERY

Refer to the "ELECTRICAL" section in chapter 3.



LIGHTING COIL

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

Lighting coil resistance:
WVT700
Green (G) – Green (G)
1.14 ~ 1.40 Ω at 20°C (68°F)
WVT1100
Green (G) – Green (G)
0.56 ~ 0.84 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

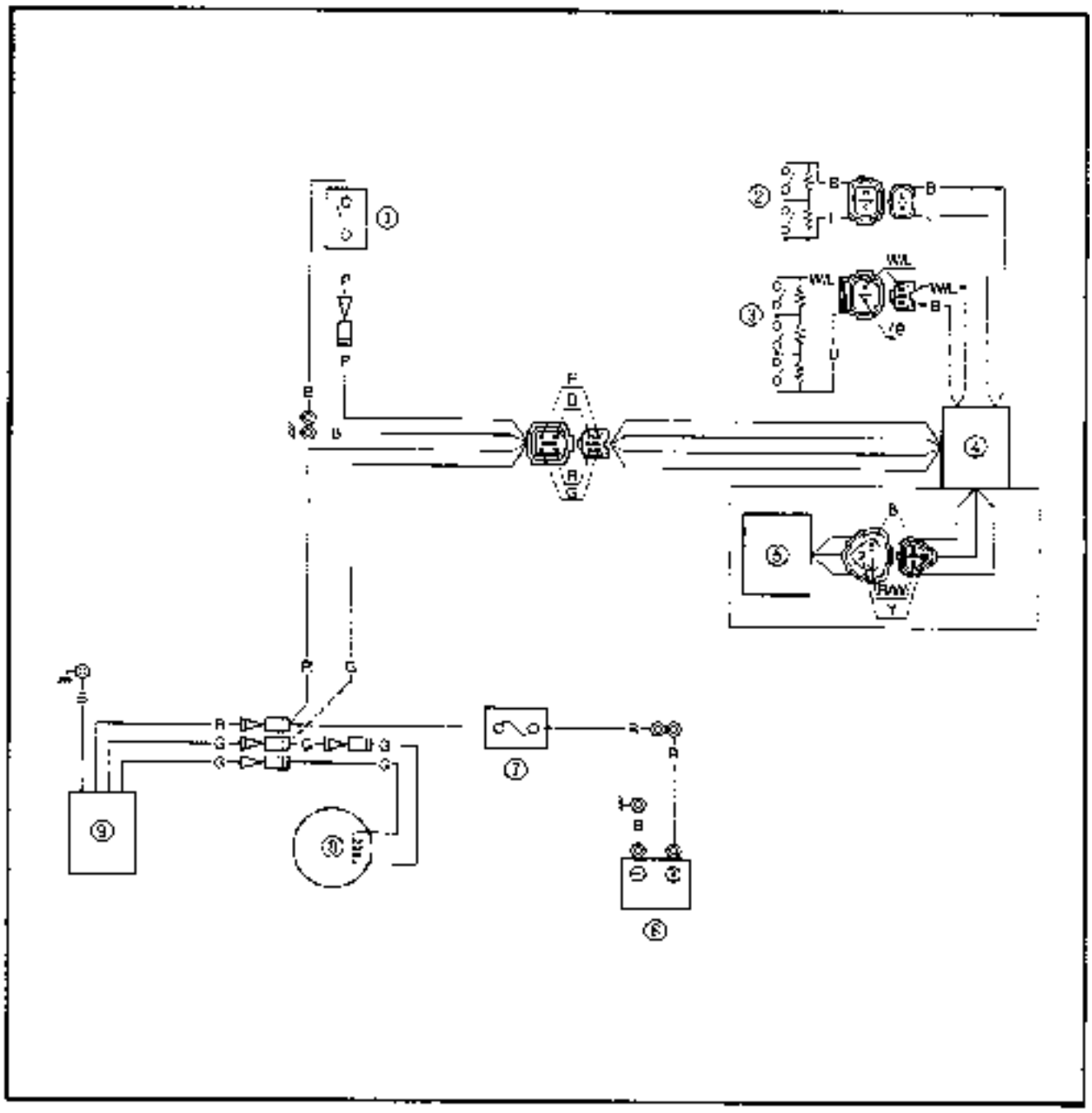
∞: Discontinuity

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	

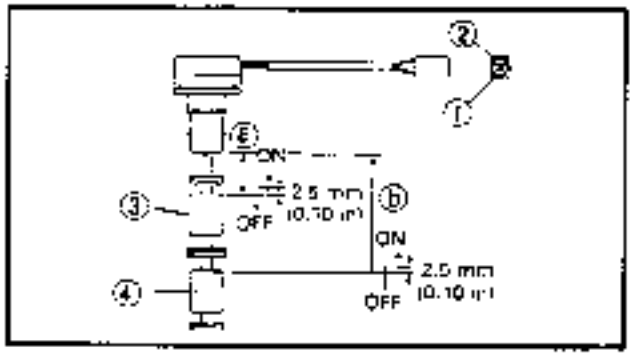
INDICATION SYSTEM

WIRING DIAGRAM



① Thermo switch
② Oil level sensor
③ Fuel level sensor
④ Multi function meter
⑤ Speed sensor (Except for WVT700)
⑥ Battery
⑦ Fuse
⑧ Lighting coil
⑨ Rectifier regulator

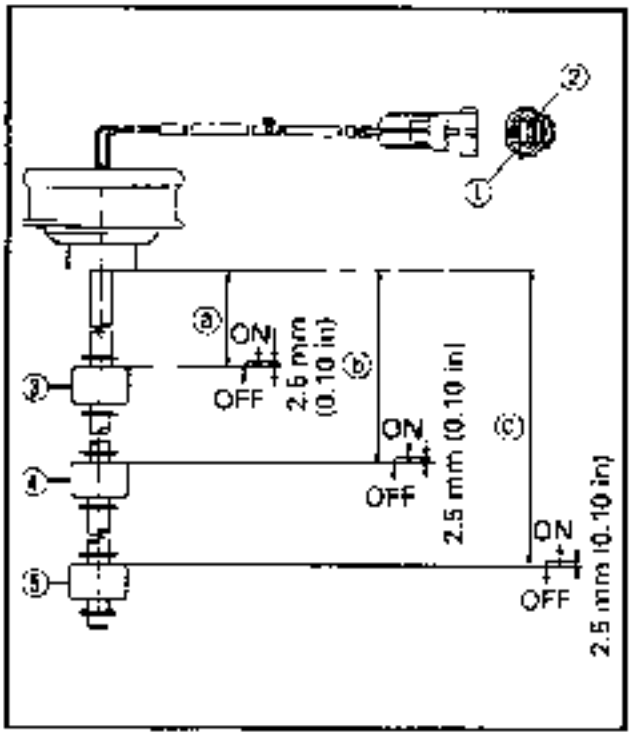
B : Black
G : Green
L : Blue
P : Pink
R : Red
R/W : Red/White
W/L : White/Blue
Y : Yellow



OIL LEVEL SENSOR

1. Measure:
   - Oil level sensor resistance
     Out of specification → Replace.

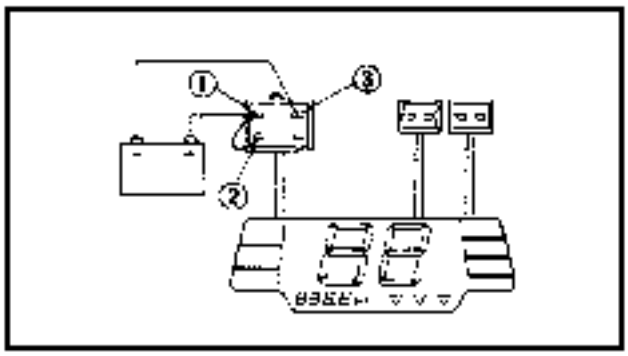
① Blue lead → Positive terminal. ② Black lead → Negative terminal.	
Float position	**Resistance (Ω)**
③, ④ :ON	0 ~ 2
③ :OFF ④ :ON	97 ~ 103
③, ④ :OFF	292 ~ 308
Float distance: ⓐ: 2 ~ 6 mm (0.08 ~ 0.24 in) ⓑ: 37 ~ 41 mm (1.46 ~ 1.61 in)	

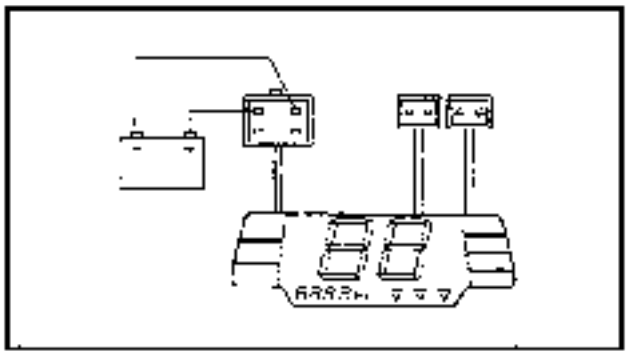


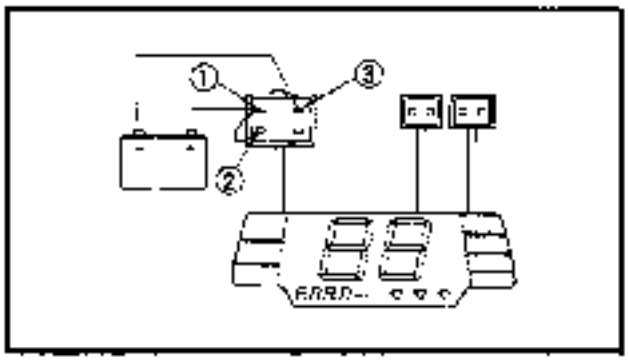
FUEL LEVEL SENSOR

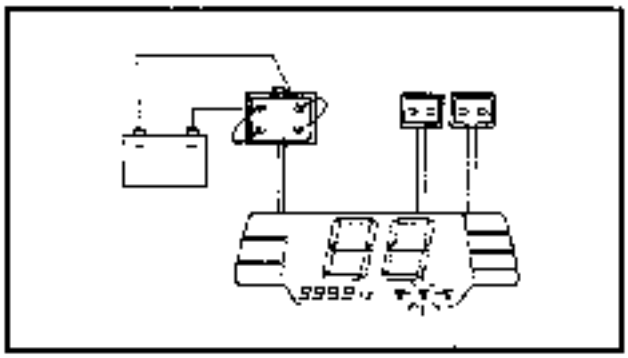
1. Measure:
   - Fuel level sensor resistance
     Out of specification → Replace.

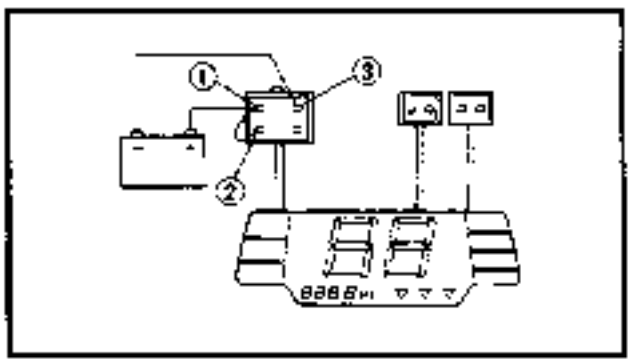
① White/Blue lead → Positive terminal. ② Black lead → Negative terminal.	
Float position	**Resistance (Ω)**
③, ④, ⑤ :ON	0 ~ 2
③ :OFF ④, ⑤ :ON	97 ~ 103
③, ④ :OFF ⑤ :ON	292 ~ 308
③, ④, ⑤ :OFF	667 ~ 713
Float distance: ⓐ: 91 ~ 96 mm (3.58 ~ 3.78 in) ⓑ: 175 ~ 180 mm (6.89 ~ 7.09 in) ⓒ: 260 ~ 263 mm (10.24 ~ 10.35 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 seconds.
- Disconnect the green lead.
- After the lead is disconnected, the fuel meter only will continue to operate for 30 seconds, and all the other 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.

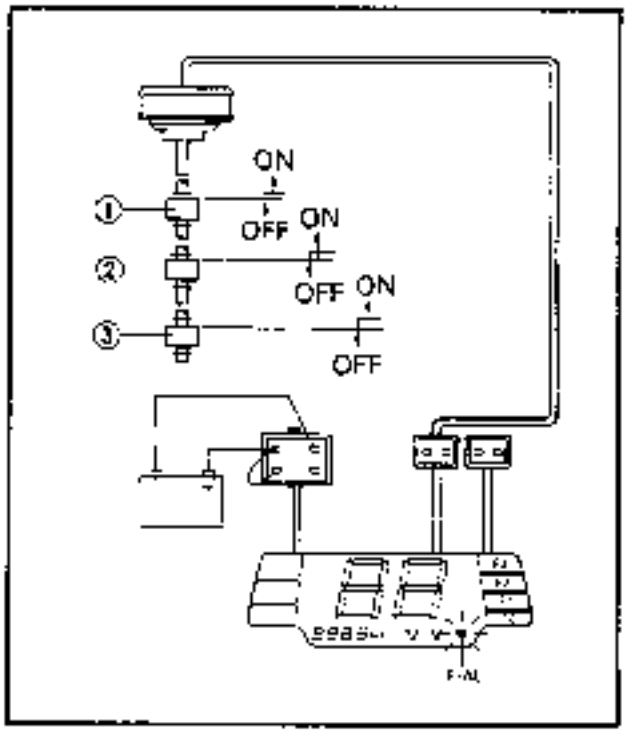
- Connect the pink and black terminals and check that the overheat segment starts blinking.

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.

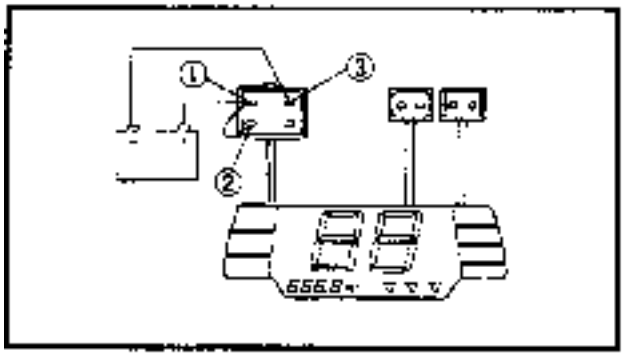


NOTE:
The fuel meter should be checked properly before checking the fuel level sensor resistance.

- 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 20 seconds after the float is slid.



4. Check:
   - Oil meter
     Not working → Replace.

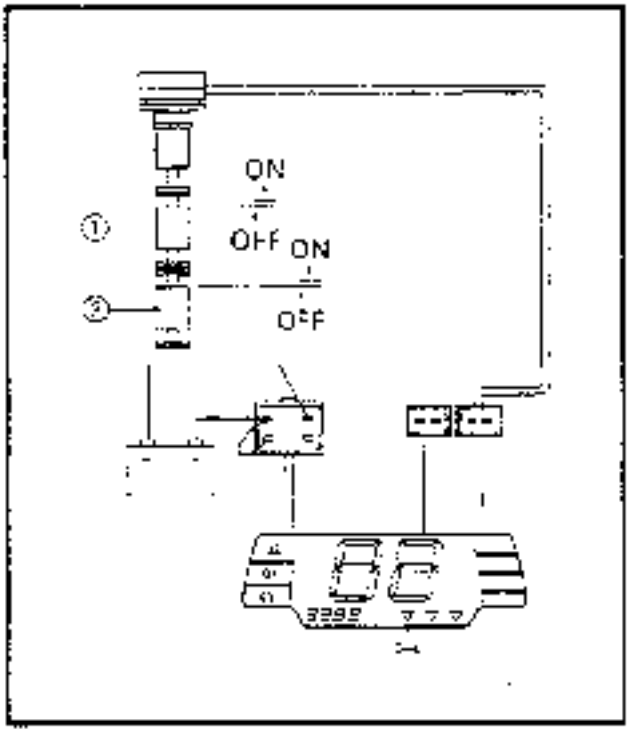
Checking steps:
- Connect the battery.

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

- Connect the oil sensor.

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

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



Float position		Display
①, ②	:ON	O0, O1, O2: ON
① ②	:OFF :ON	O0, O1: ON
①, ②	:OFF	O0, O-AL: Blinking

NOTE:
The oil meter display remains unchanged for 20 seconds after the float is slid.

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

FUSE

Refer to the "STARTING SYSTEM" section.

BATTERY

Refer to the "CHARGING SYSTEM" section.

LIGHTING COIL

Refer to the "CHARGING SYSTEM" section.

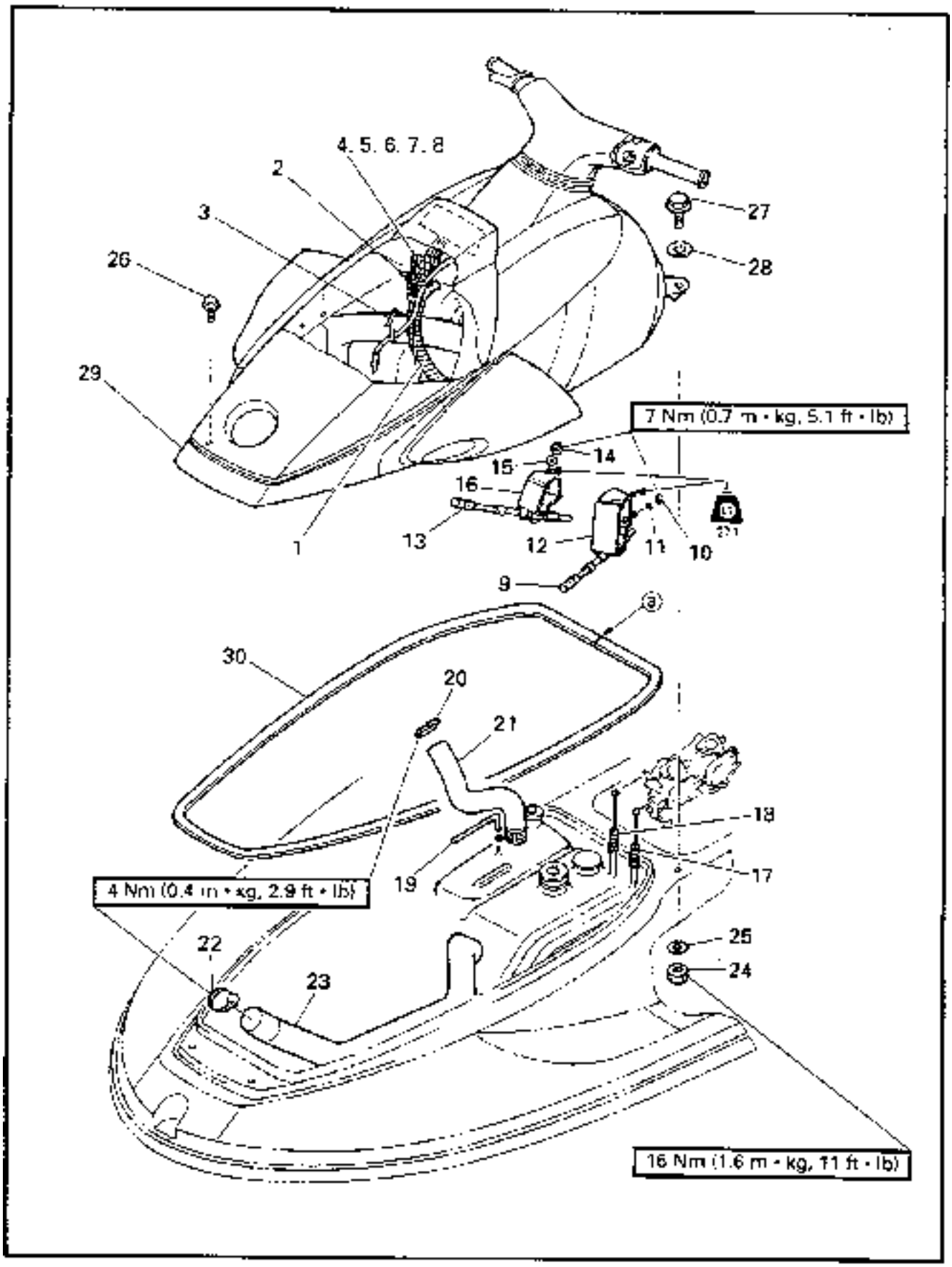
RECTIFIER REGULATOR

Refer to the "CHARGING SYSTEM" section.

CHAPTER 8
HULL AND HOOD

ENGINE HOOD REMOVAL

EXPLODED DIAGRAM

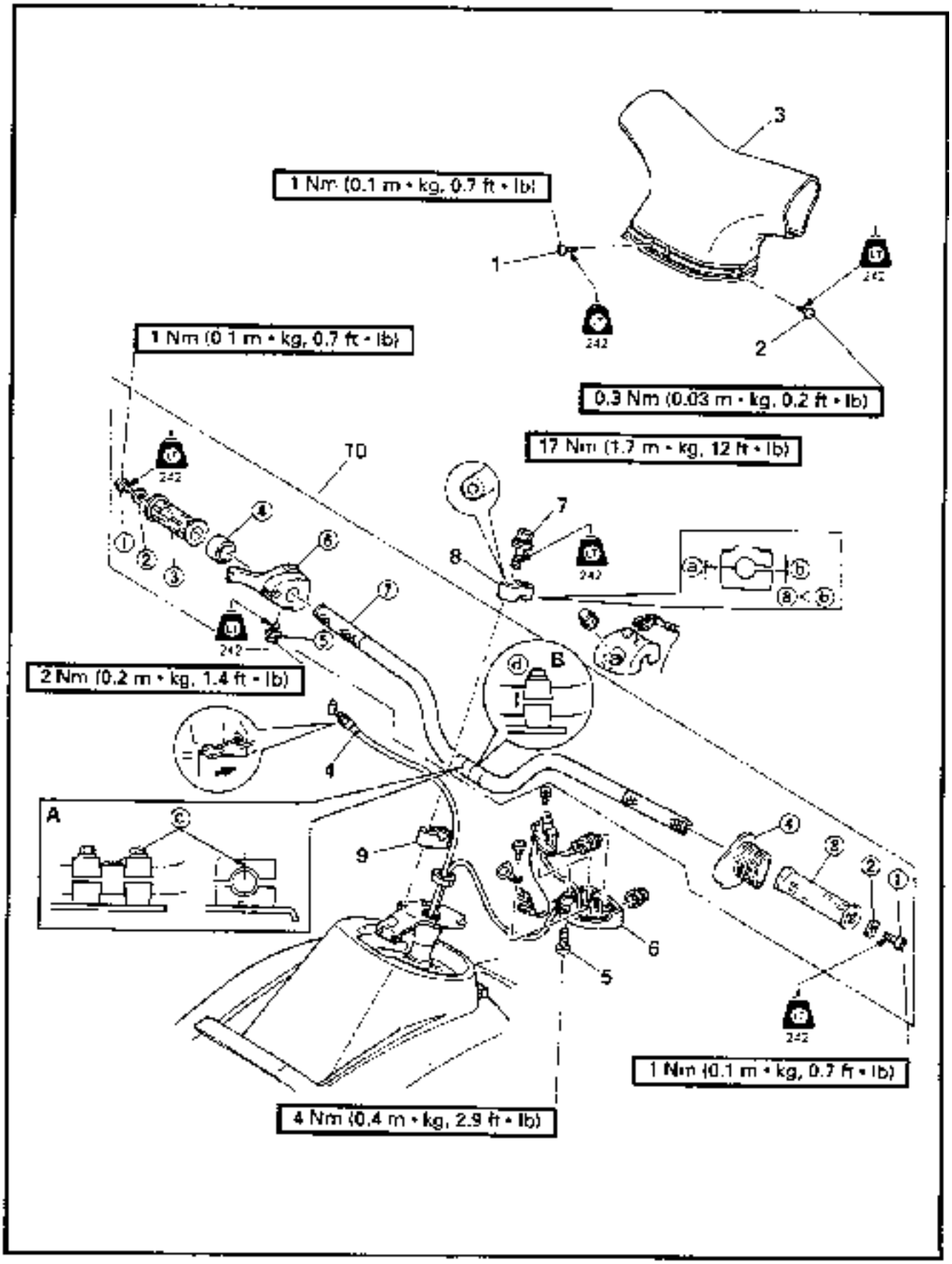


ENGINE HOOD REMOVAL

REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	ENGINE HOOD REMOVAL		Follow the left "Step" for removal.
	Fuel cock assembly		Refer to the "FUEL COCK AND FUEL FILTER" section in chapter 4.
1	Spiral tube	1	
2	Band	1	**NOTE:** Clamp the handle switch leads and meter leads with the band.
3	Band	1	**NOTE:** Clamp the meter breather hose and ventilation hose with the band.
4	Handle switch lead coupler	2	
5	Speed sensor lead coupler	1	
6	Oil sensor lead coupler	1	
7	Fuel sender lead coupler	1	
8	Meter lead coupler	1	
9	Cable joint (steering cable)	1	
10	Nylon nut	3	
11	Plane washer	3	
12	Steering cable bracket	1	
13	Cable joint (shift cable)	1	
14	Nylon nut	2	
15	Plane washer	2	
16	Shift cable bracket	1	
17	Throttle cable	1	**NOTE:** Disconnect the cables from the carburetor.
18	Choke cable	1	
19	Oil breather hose	1	
20	Clamp	1	
21	Oil filler hose	1	
22	Clamp	1	
23	Fuel filler hose	1	
24	Nylon nut	4	
25	Plane washer	4	
26	Bolt (with washer)	2	8 × 30 mm
27	Bolt (with washer)	2	
28	Plane washer	2	3.4 × 25 mm
29	Engine hood assembly	1	
30	Packing	1	**NOTE:** Mate packing ends ⓐ at center line rear and apply instantaneous adhesive.
			Reverse the removal steps for installation.

HANDLE
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

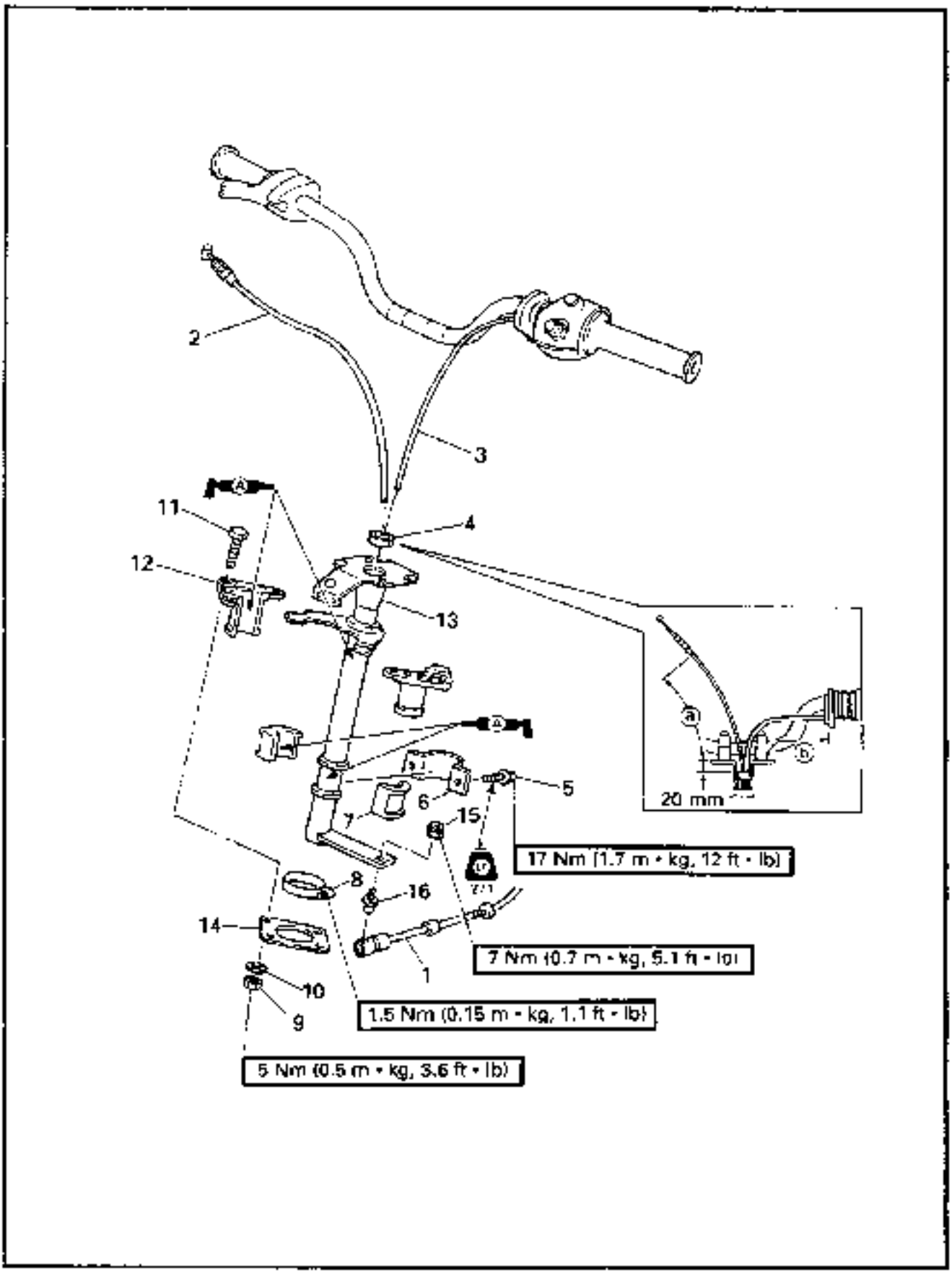
Step	Procedure/Part name	Q'ty	Service points
	HANDLE REMOVAL		Follow the left "Step" for removal.
1	Screw	4	5 × 16 mm
2	Screw	4	4 × 8 mm
3	Steering pad	1	
4	Throttle cable	1	**NOTE:** Disconnect the throttle cable from the throttle lever.
5	Screw	2	**NOTE:** Tighten the screw at the stop button side first.
6	Handle switch assembly	1	
7	Bolt (with washer)	4	8 × 55 mm **NOTE:** When tightening the bolt, clearance ⓐ should be narrower than clearance ⓑ.
8	Handlebar holder (upper)	2	**NOTE:**
9	Handlebar holder (lower)	2	A-type ● Position the punched mark ⓒ just between the upper holders and vertically from the steering column. B-type ■ Align the punched mark ⓓ on the handlebar with the top surface of the handlebar holder (lower).
10	Handlebar assembly	1	
	HANDLEBAR DISASSEMBLY		
①	Screw	2	
②	Plane washer	2	
③	Handle grip	2	**NOTE:** Apply adhesive to the handlebar and the inner surface of the grip.
④	Spacer	2	
⑤	Screw	1	
⑥	Throttle lever assembly	1	
⑦	Handlebar	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Handle inspection

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

HANDLE COLUMN
EXPLODED DIAGRAM



HANDLE COLUMN

REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	HANDLE COLUMN REMOVAL		Follow the left "Step" for removal.
	Handlebar assembly		Refer to the "HANDLE" section.
1	Steering cable	1	
2	Throttle cable	1	
3	Handle switch lead	2	
4	Seal packing	1	**NOTE:** ● Adjust the throttle cable length ⓐ and handle switch lead length ⓑ to 200 mm (7.9 in). ● Seal the steering shaft with the seal packing at a point 20 mm (0.79 in) from the end of the steering column.
5	Bolt (with washer)	2	**NOTE:** Check for smooth action of the handle column when tightening the bolt.
6	Bushing joint	1	
7	Bushing	2	
8	Clamp	1	
9	Nut	4	
10	Plane washer	4	
11	Bolt	4	
12	Column bushing	2	
13	Handle column	1	
14	Seal rubber	1	
15	Nut	1	
16	Ball joint	1	
			Reverse the removal steps for installation

SERVICE POINTS

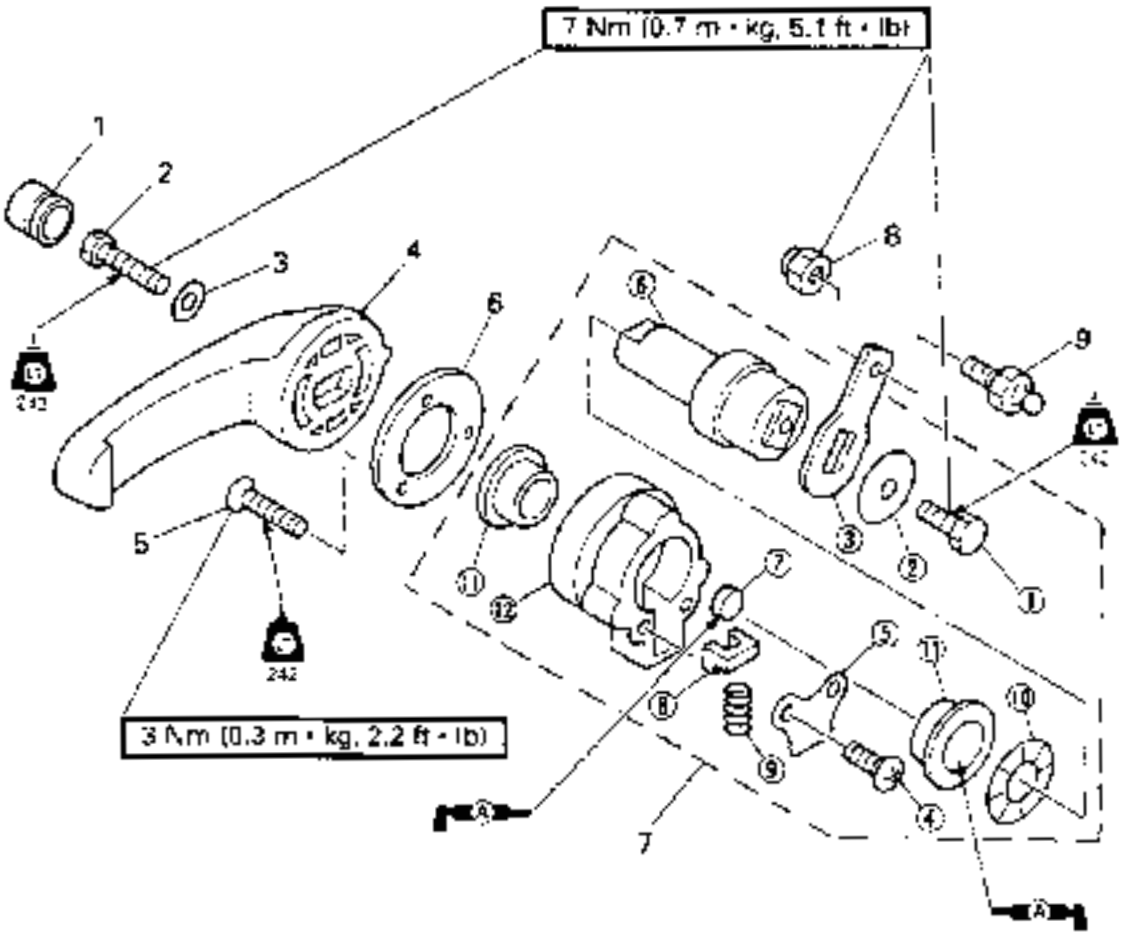
Handle column inspection

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

Bearing inspection

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

SHIFT LEVER
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

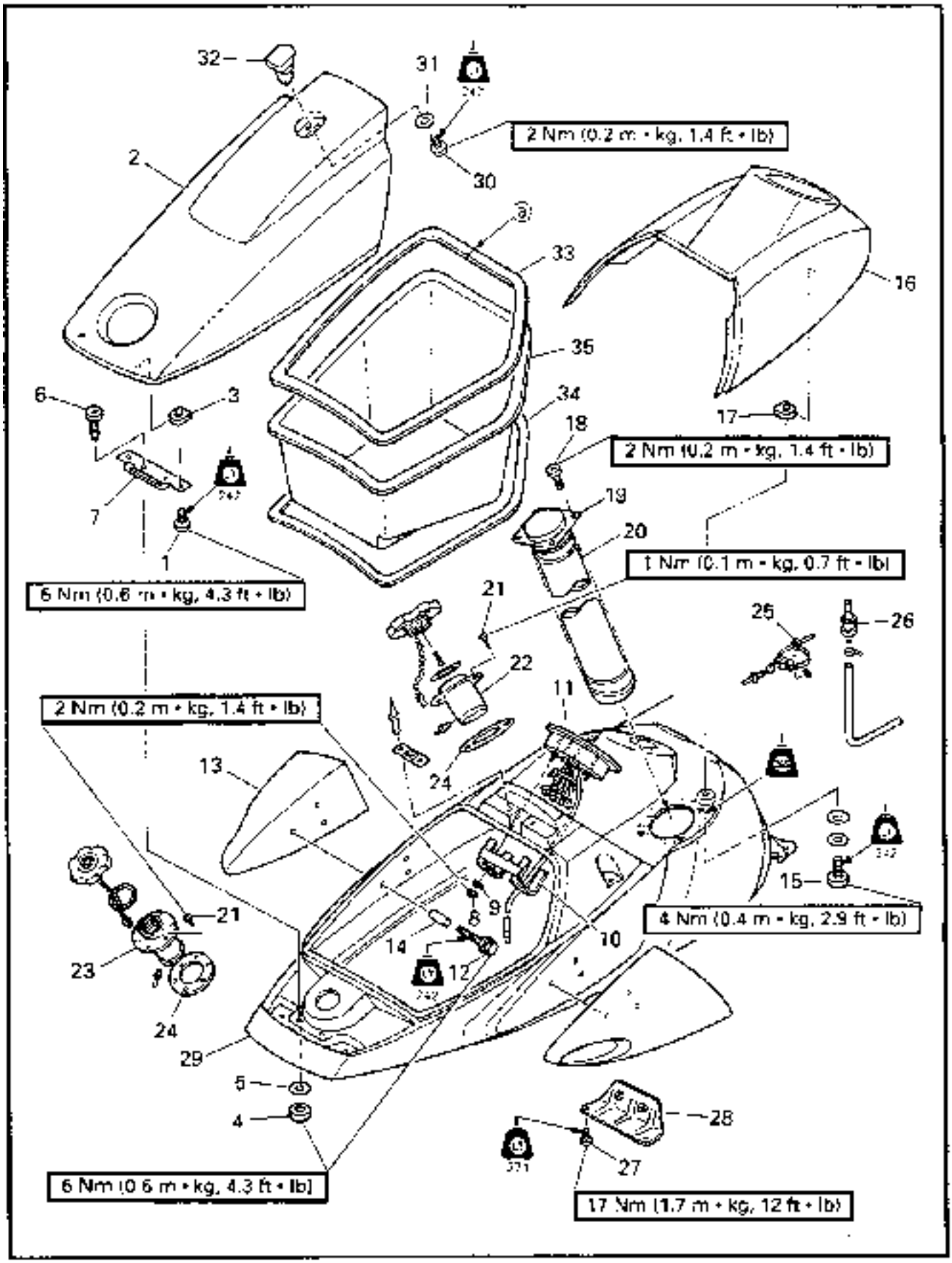
Step	Procedure/Part name	Q'ty	Service points
	SHIFT LEVER REMOVAL		Follow the left "Step" for removal.
	Shift cable		**NOTE:** Disconnect the shift cable at the shift lever.
1	Cap	1	
2	Bolt	1	6 × 35 mm
3	Plane washer	1	
4	Shift lever	1	
5	Screw	3	5 × 25 mm
6	Washer	1	
7	Base assembly	1	
8	Nylon nut	1	
9	Ball joint	1	
	BASE DISASSEMBLY		
①	Bolt	1	6 × 18 mm
②	Plane washer	1	
③	Lever	1	
④	Screw	2	5 × 12 mm
⑤	Plate	1	
⑥	Shaft	1	
⑦	Roller	1	
⑧	Actuator	1	
⑨	Spring	1	
⑩	Wave washer	1	
⑪	Bushing	2	
⑫	Base	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Bushing Inspection

1. Inspect:
   - Bushing
     Wear/Crack/Damage → **Replace.**

ENGINE HOOD
EXPLODED DIAGRAM

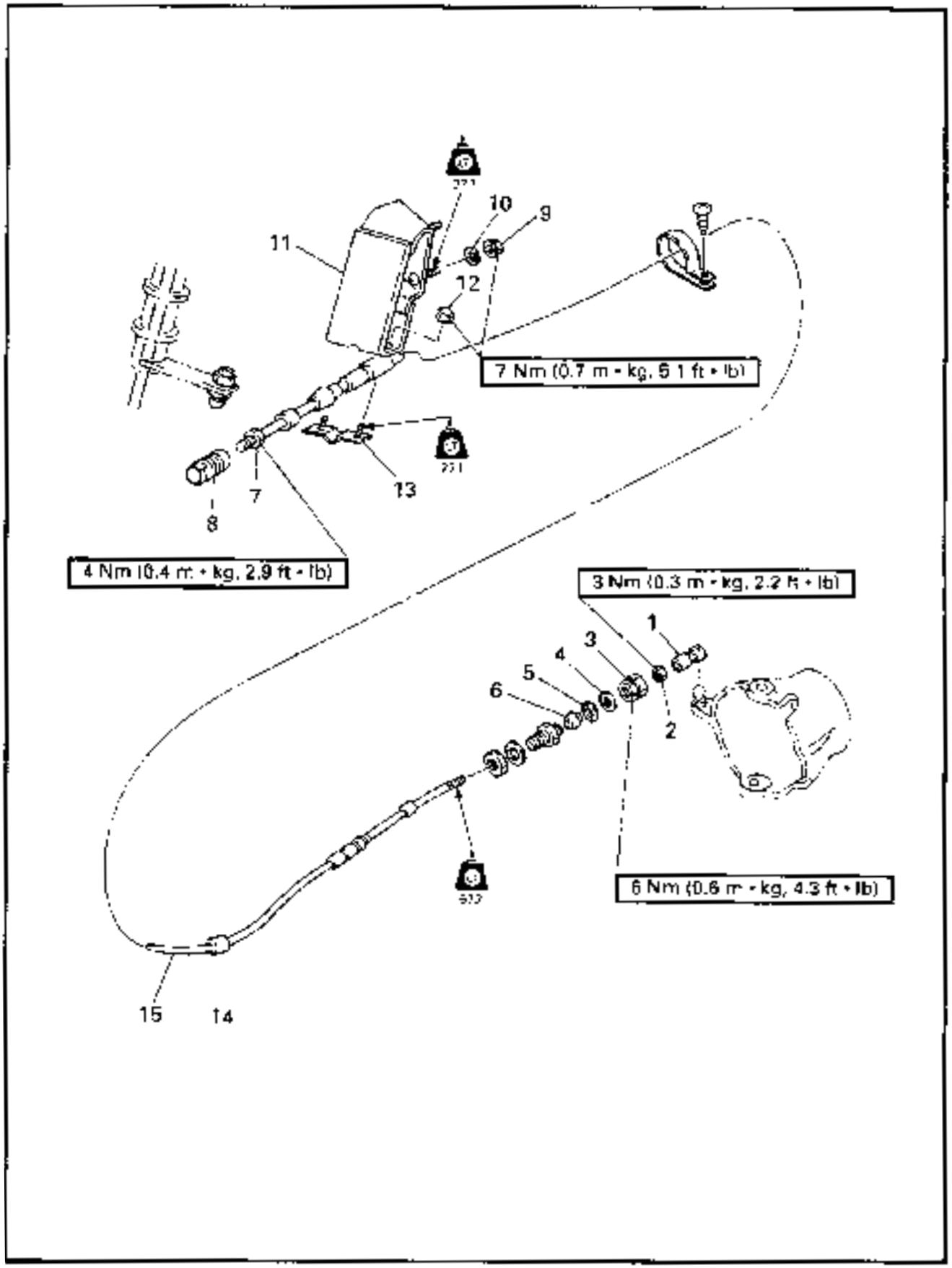


ENGINE HOOD

REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	ENGINE HOOD DISASSEMBLY		Follow the left "Step" for removal.
	Engine hood assembly		Refer to the "ENGINE HOOD REMOVAL" section.
	Handle column		Refer to the "HANDLE COLUMN" section.
1	Screw	2	6 × 14 mm
2	Engine hatch	1	
3	Spring nut	2	
4	Nylon nut	2	
5	Plane washer	2	
6	Screw	2	
7	Hinge	1	
8	Nylon nut	2	
9	Plane washer	2	
10	Meter bracket	1	
11	Meter assembly	1	
12	Bolt (with washer)	6	
13	Adjustable mirror assembly	2	
14	Collar	6	
15	Screw (with washer)	4	
16	Hood cover	1	
17	Spring nut	4	
18	Tapping screw	4	
19	Ventilation hose joint	1	
20	Ventilation hose	1	
21	Tapping screw	12	
22	Oil filler	1	
23	Fuel filler	1	
24	Filler packing	2	
25	Band	1	
26	Check valve	1	
27	Bolt (with washer)	2	
28	Steering shaft bracket	1	
29	Engine hood	1	
30	Screw	2	5 × 16 mm
31	Plane washer	2	
32	Lock	1	
33	Packing	1	**NOTE:**
34	Packing	1	Mate packing ends ⓐ at center line rear and apply instantaneous adhesive.
35	Storage box	1	
			Reverse the removal steps for installation.

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.
	Ride plate		Refer to the "JET PUMP UNIT REMOVAL" section in chapter 6.
1	Cable joint	1	**NOTE:** Screw the steering cable end 13.8 mm (0.54 in) into the cable joint and tighten the lock nut.
2	Lock nut	1	
3	Cap	1	
4	Washer	1	
5	Stopper	1	
6	Seal	1	
7	Lock nut	1	
8	Cable joint	1	**⚠ WARNING** **The cable joint must be screwed in more than 8 mm (0.31 in).**
9	Nut	3	
10	Plane washer	3	
11	Steering cable bracket	1	
12	Nut	2	
13	Cable stopper	1	**⚠ WARNING** **Be sure to fit the projection on the cable stopper into the slit in the outer cable.**
14	Packing	1	
15	Steering cable	1	**NOTE:** Insert the cable into the clamp.
			Reverse the removal steps for installation.

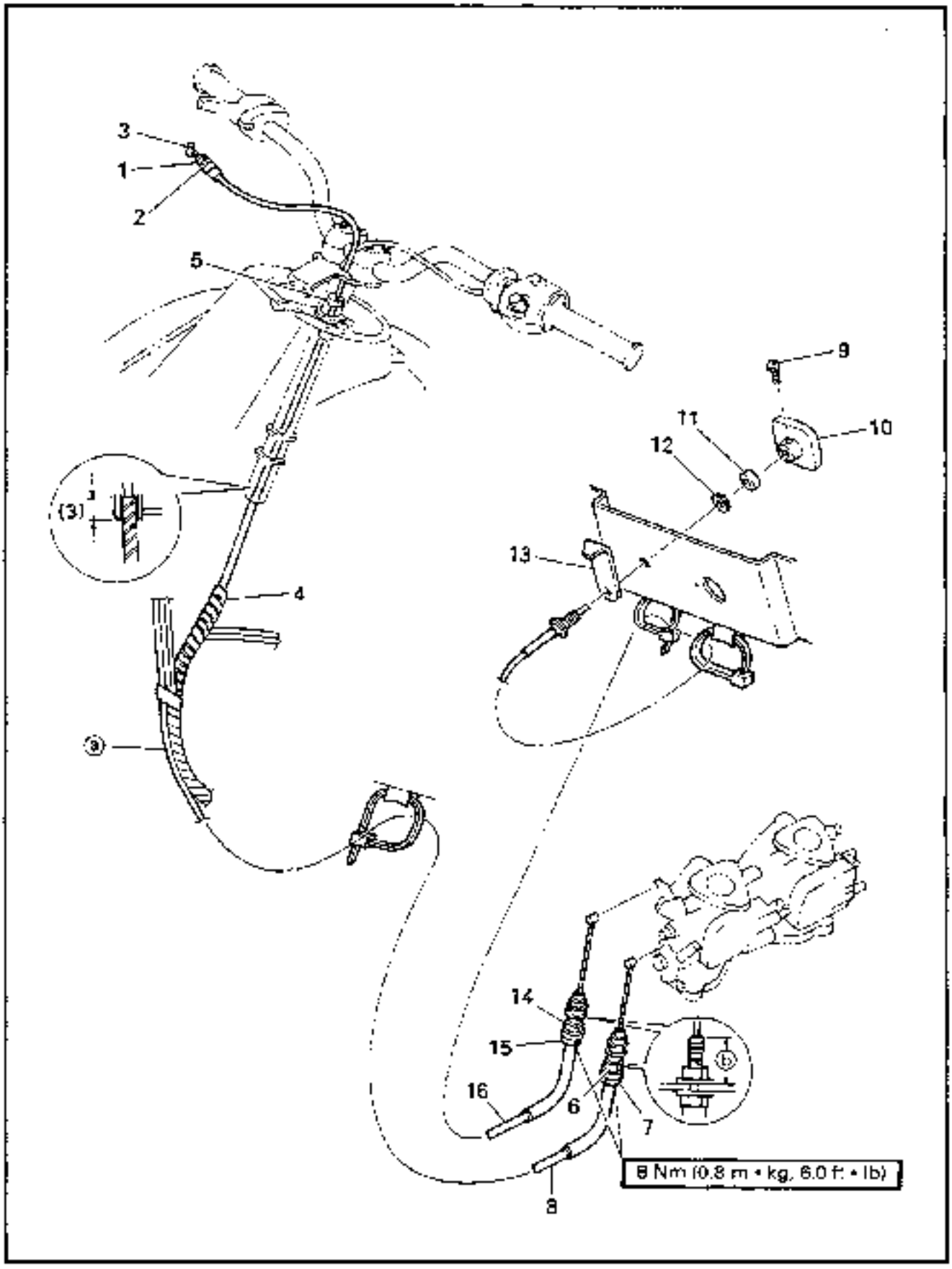
SERVICE POINTS

Cable inspection

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

THROTTLE CABLE AND CHOKE CABLE

EXPLODED DIAGRAM



THROTTLE CABLE AND CHOKE CABLE

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 the "HANDLE" section.
1	Throttle cable lock nut	1	
2	Throttle cable adjusting bolt	1	
3	Throttle cable barrel	1	
4	Spiral tube	1	NOTE: ● Give 7 windings of the spiral tube to the throttle cable and handle switch leads and insert them into the steering shaft by 3 windings. ● Secondly, include the fuel sensor lead and oil sensor lead. Give another 7 windings to them. ● Thirdly, further include all leads except the meter breather hose. Give them one winding. ● Finally, excepting the throttle cable ⓐ, continue wiring all through the rest of the spiral tube.
5	Packing	1	
6	Throttle cable lock nut	1	 **Cable guide set position ⓑ: 17 mm (0.67 in)**
7	Throttle cable adjusting nut	1	
8	Throttle cable	1	
	CHOKE CABLE REMOVAL		
9	Screw	1	
10	Choke knob	1	
11	Adjuster	1	
12	Lock nut	1	
13	Plate	1	
14	Choke cable lock nut	1	 **Cable guide set position ⓑ: 17 mm (0.67 in)**
15	Choke cable adjusting nut	1	
16	Choke cable	1	
			Reverse the removal steps for installation.

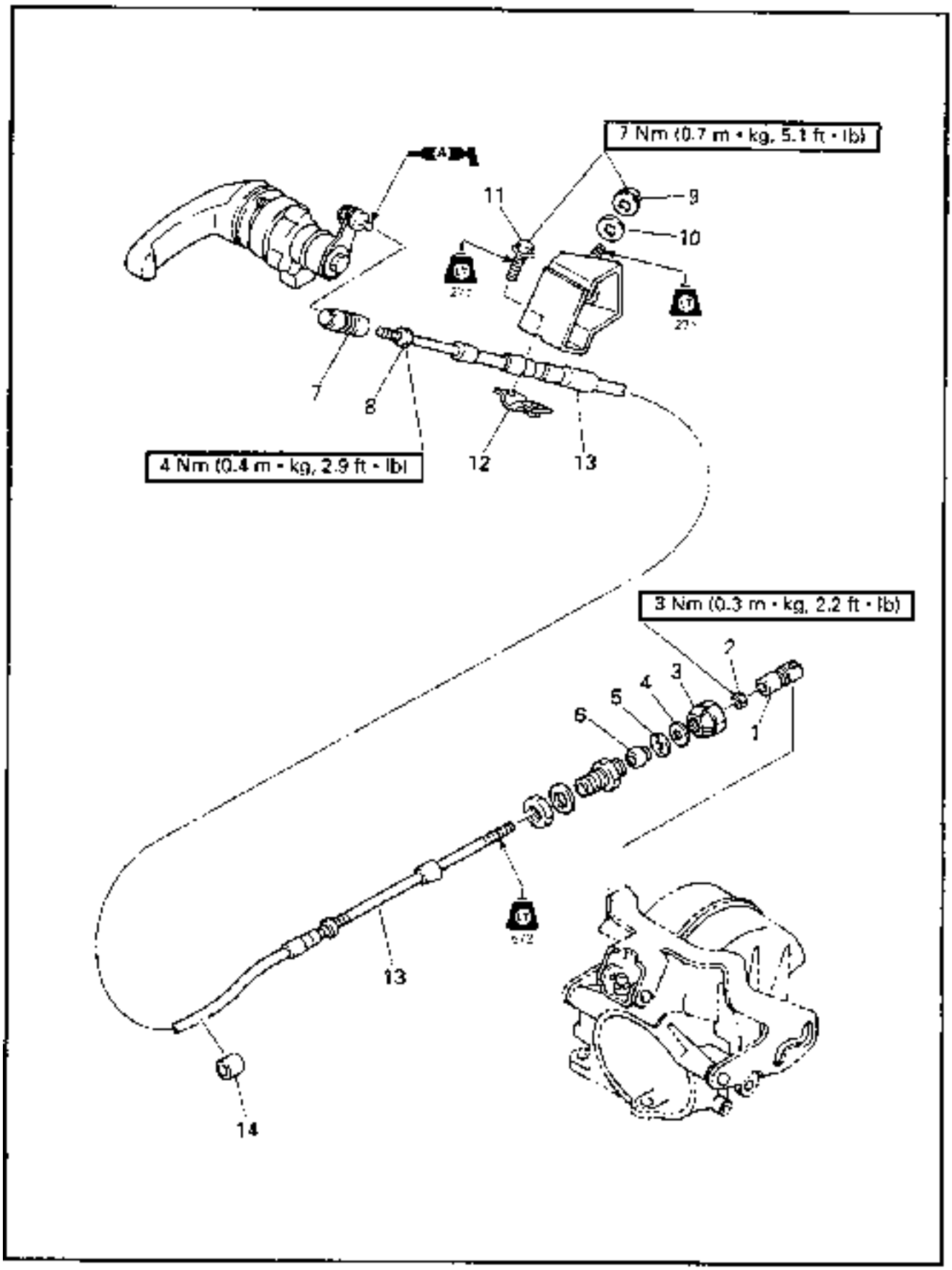
SERVICE POINTS

Cable inspection

1. Inspect:
   - Throttle cable
   - Choke cable

   Kink/Fray/Stick → Replace.

SHIFT CABLE
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

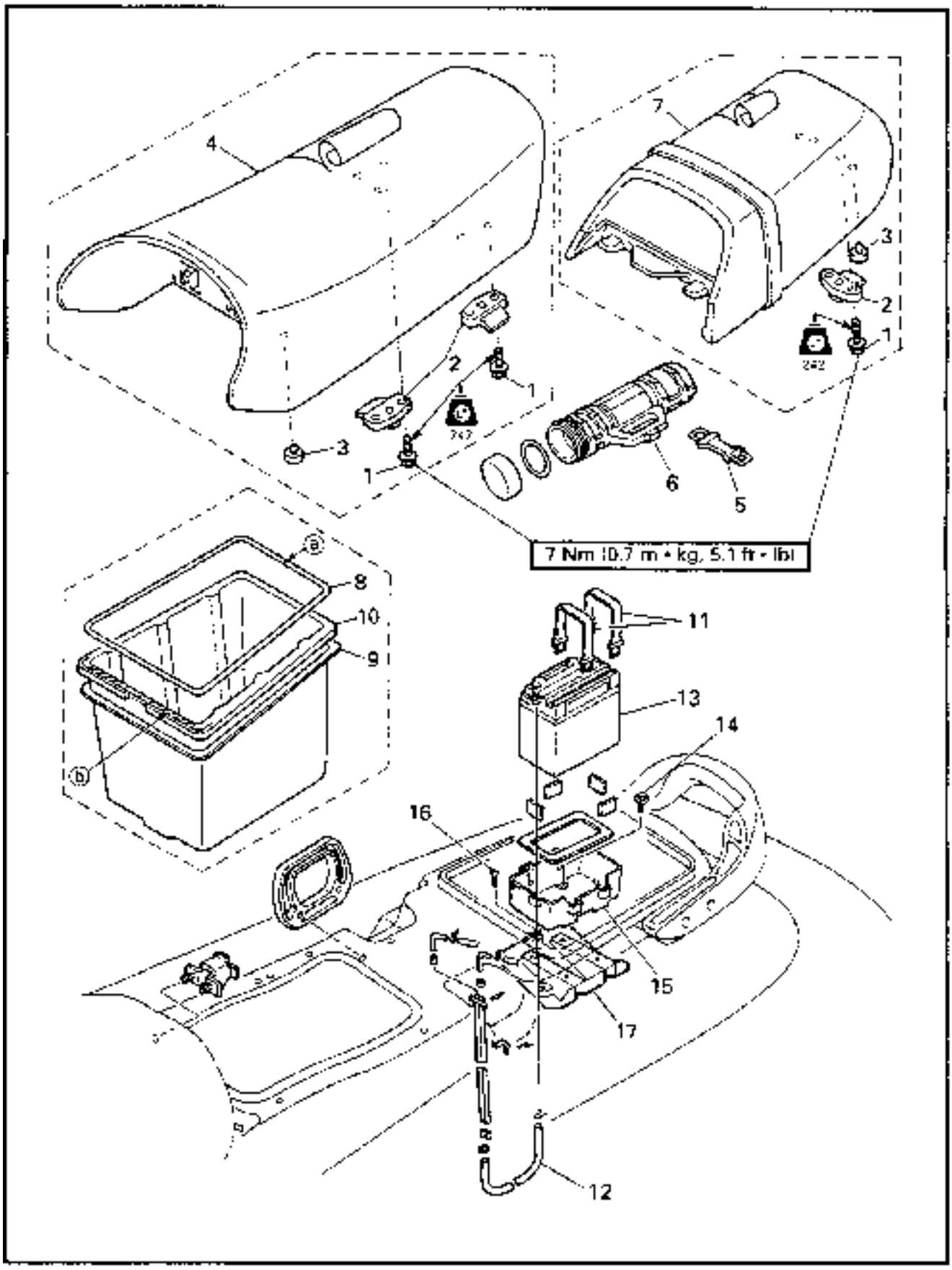
Step	Procedure/Part name	Q'ty	Service points
	SHIFT CABLE REMOVAL		Follow the left "Step" for removal.
	Ride plate		Refer to the "JET PUMP UNIT REMOVAL" section in chapter 6.
1	Cable joint	1	**NOTE:** Screw the steering cable end 13.8 mm (0.54 in) into the cable joint and tighten the lock nut.
2	Lock nut	1	
3	Cap	1	
4	Washer	1	
5	Stopper	1	
6	Seal	1	
7	Cable joint	1	**⚠ WARNING** **The cable joint must be screwed in more than 8 mm (0.31 in).**
8	Lock nut	1	
9	Cap nut	2	
10	Plane washer	2	
11	Bolt	2	
12	Cable stopper	1	**⚠ WARNING** **Be sure to fit the projection on the cable stopper into the slit in the outer cable.**
13	Shift cable	1	**NOTE:** Insert the cable into the clamp.
14	Packing	1	Reverse the removal steps for installation.

SERVICE POINTS

Cable inspection

1. Inspect.
   - Shift cable
     Kink/Fray/Stick › Replace.

SEAT, STORAGE BOX AND BATTERY CASE
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	SEAT DISASSEMBLY		Follow the left "Step" for removal.
1	Bolt (with washer)	6	
2	Seat lock	3	
3	Seat stopper	6	
4	Double seat	1	
5	Band	1	
6	Case	1	
7	Single seat	1	
	STORAGE BOX DISASSEMBLY		
8	Packing	1	**NOTE:**
9	Packing	1	Mate packing ends Ⓐ at center line rear and apply instantaneous adhesive.
10	Storage box	1	**NOTE:** Apply instantaneous adhesive to shaded area Ⓑ.
	BATTERY CASE REMOVAL		
11	Band	2	
12	Breather hose	1	
13	Battery	1	
14	Bolt (with washer)	4	6 × 20 mm
15	Battery case	1	
16	Tapping screw	3	
17	Case base	1	
			Reverse the removal steps for installation.

SERVICE POINTS

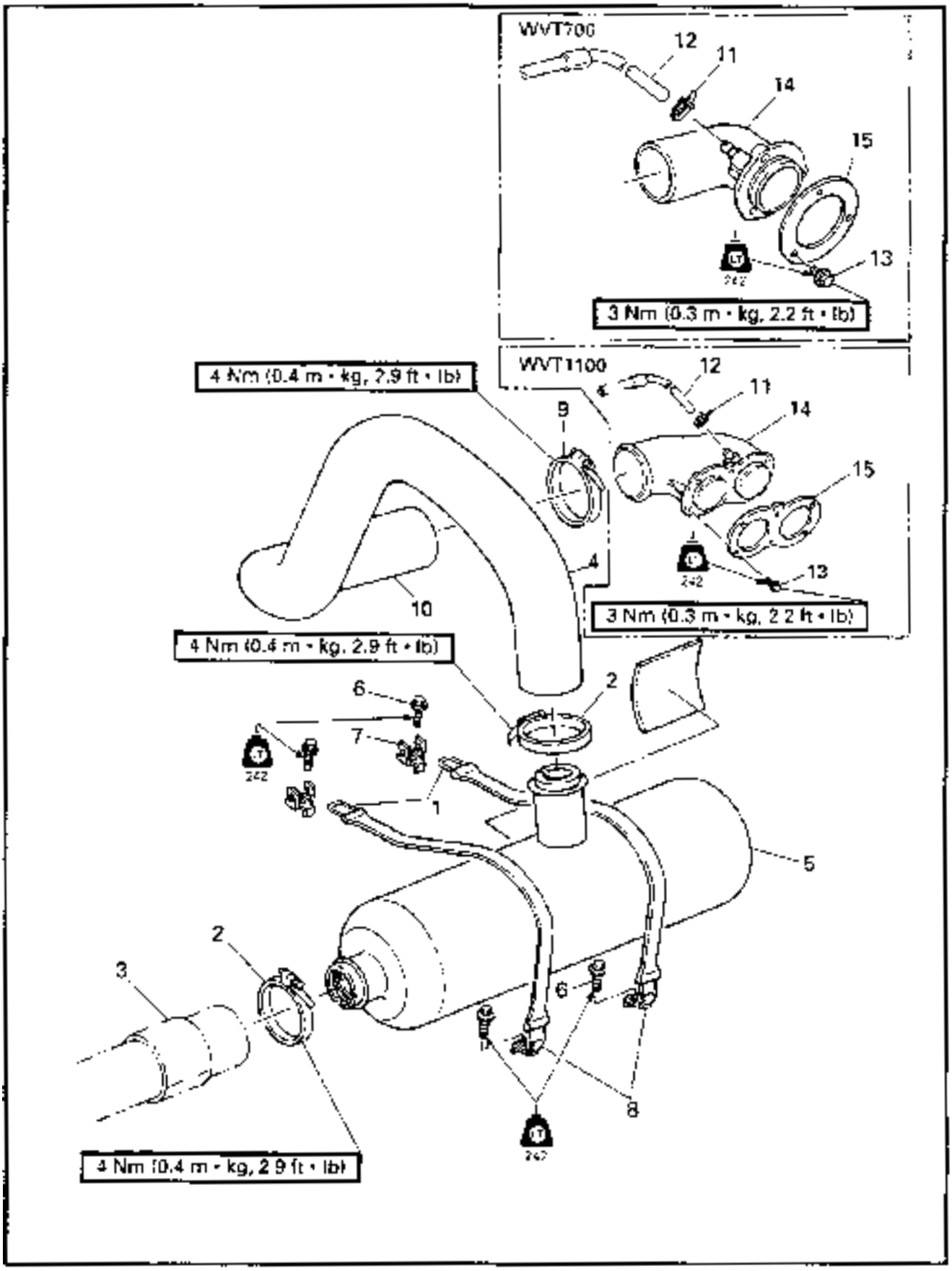
Seat inspection

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

Storage box inspection

1. Inspect:
   - Packing
     Flat/Damage → Replace.
   - Storage box
     Crack/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.
	Storage box		
1	Band	2	
2	Clamp	2	
3	Exhaust hose	1	
4	Exhaust hose	1	
5	Water lock	1	
6	Flange bolt	4	
7	Hook	2	
8	Hook assembly	2	
9	Clamp	2	
10	Exhaust hose	1	
11	Hose tie	1	
12	Water outlet hose	1	
13	Bolt (with washer)	3	
14	Exhaust guide	1	
15	Packing	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Exhaust system inspection

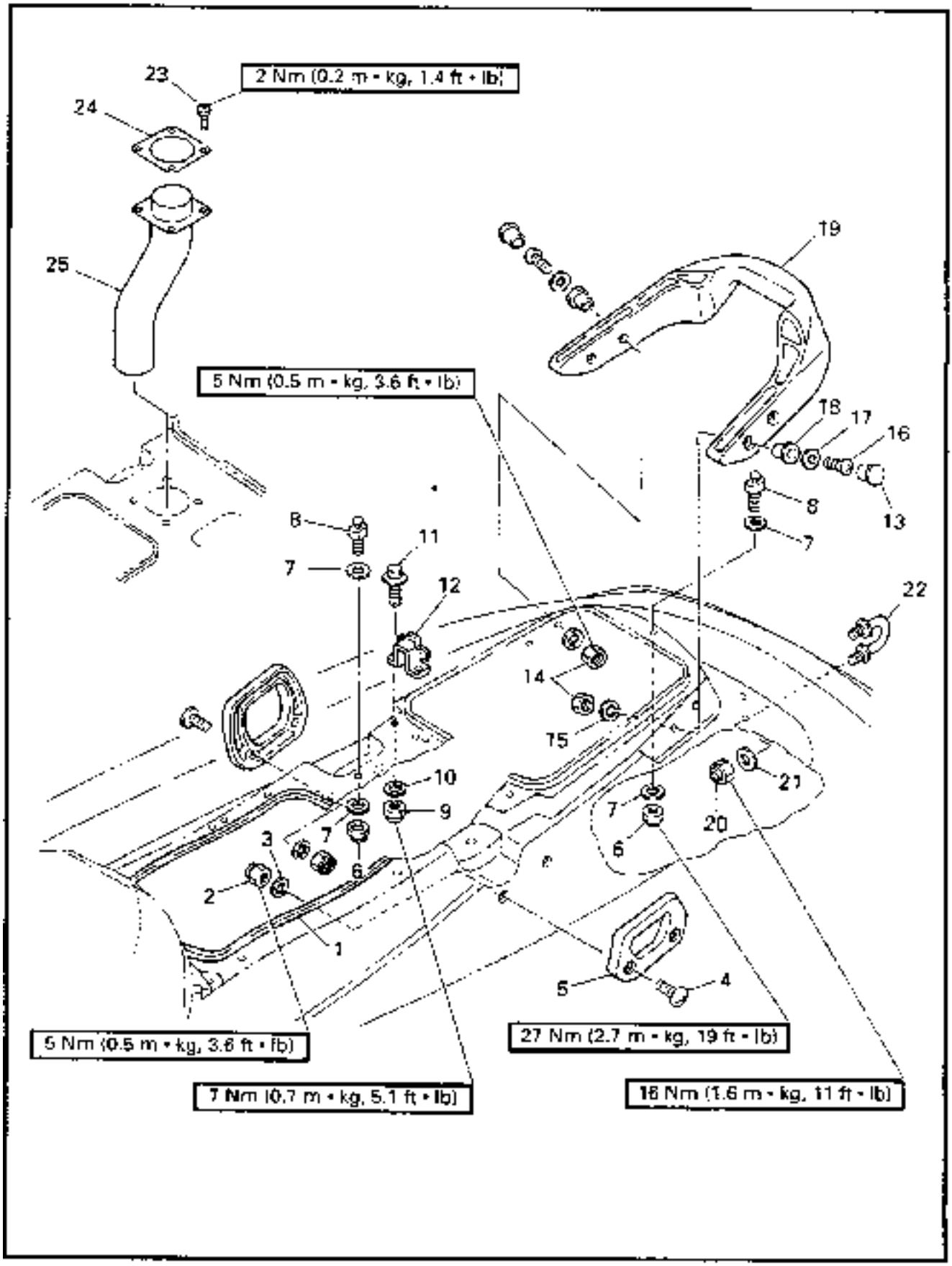
1. Inspect:
   - Band

   Crack → Replace.
2. Inspect:
   - Exhaust hose

   Crack/Wear/Burn → Replace.
3. Inspect:
   - Water lock
   - Muffler

   Crack/Leak → Replace.
   Collected water → Drain.

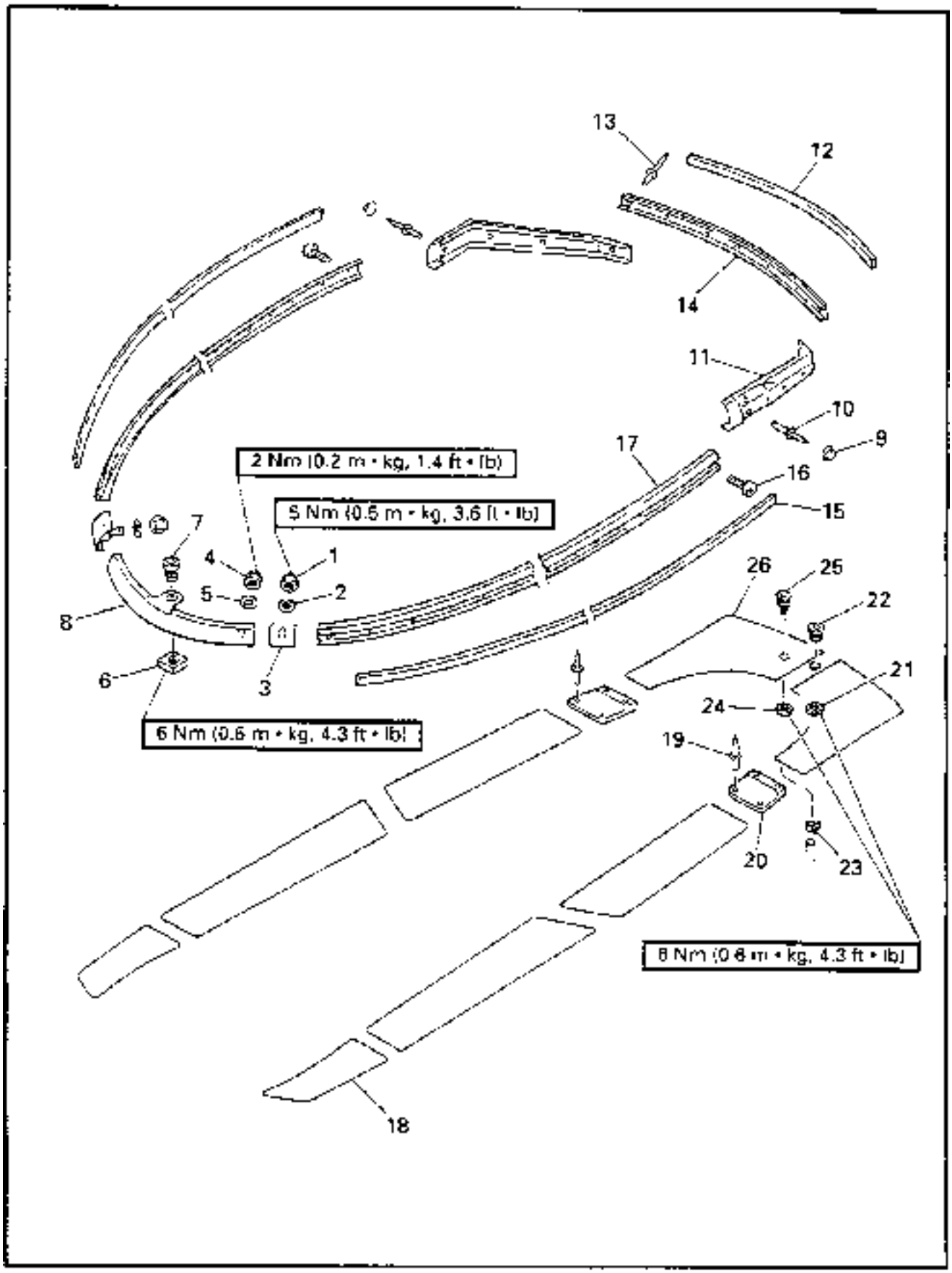
DECK
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	DECK DISASSEMBLY		Follow the left "Step" for removal.
	Seat storage box		
1	Seat packing	1	**NOTE:** ● Clean the seat packing groove in the deck. ● Apply cyano-acrylate adhesive to the seat packing.
2	Nylon nut	4	
3	Plane washer	4	
4	Screw	4	
5	Grip	2	
6	Nylon nut	3	
7	Plane washer	6	
8	Seat lock pin	3	
9	Nylon nut	4	
10	Plane washer	4	
11	Bolt (with washer)	4	
12	Seat hook	2	
13	Grip handle cover	4	
14	Nylon nut	4	
15	Plane washer	4	
16	Screw	4	
17	Plane washer	4	
18	Collar	4	
19	Grip handle	1	
20	Nylon nut	2	
21	Plane washer	2	
22	Cleat	1	
23	Tapping screw	4	
24	Plate	1	
25	Ventilation hose	1	
			Reverse the removal steps for installation.

GUNWALE AND MAT
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	GUNWALE REMOVAL		Follow the left "Step" for removal.
1	Nylon nut	2	
2	Plane washer	2	
3	Gunwale joint	2	
4	Nylon nut	4	
5	Plane washer	4	
6	Nut	1	
7	Rope hole bolt	1	
8	Bow gunwale	1	
9	Cap	10	
10	Rivet	10	
11	Stern gunwale	2	
12	Inner gunwale	1	
13	Rivet	9	
14	Cover gunwale	1	
15	Inner gunwale	2	
16	Tapping screw	28	
17	Side gunwale	2	
	MAT REMOVAL		
18	Upper mat	1	
19	Rivet	8	
20	Mat rubber	2	
21	Nut	1	
22	Rope hole bolt	1	
23	Clamp	1	
24	Nut	1	
25	Spout	1	
26	Step mat	1	**NOTE:** • Clean the step surface before installing the mat. • Apply cyano-acrylate adhesive to the mat.
			Reverse the removal steps for installation.

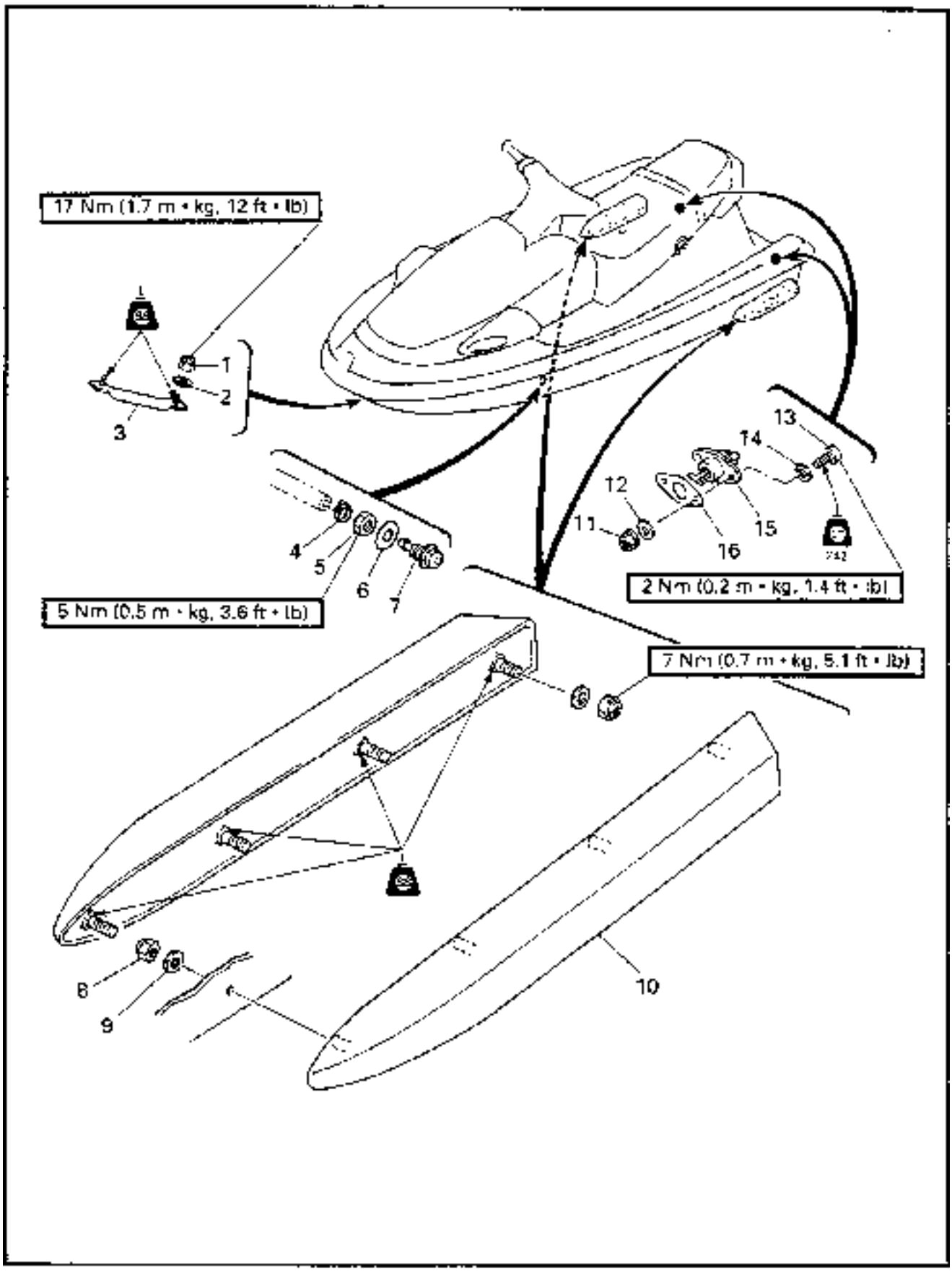
SERVICE POINTS

Gunwale and mat inspection

1. Inspect:
   - Bow gunwale
   - Stern gunwale
   - Side gunwale
   - Cover gunwale
   - Upper mat
   - Step mat

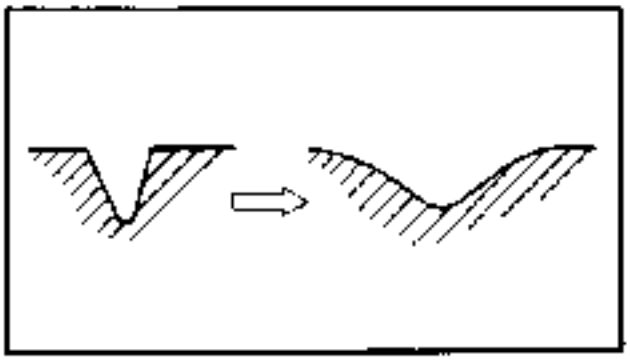
   Wear/Damage → Replace.

HULL
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	HULL DISASSEMBLY		Follow the left "Step" for removal.
1	Nylon nut	2	
2	Plane washer	2	
3	Bow eye	1	
4	Hose tie	1	
5	Nut	1	
6	Plane washer	1	
7	Pilot water outlet	1	
8	Nylon nut	8	
9	Plane washer	8	
10	Stabilizer	2	
11	Nylon nut	4	
12	Plane washer	4	
13	Screw	4	
14	Plane washer	4	
15	Drain plug socket	2	
16	Socket packing	2	
			Reverse the removal steps for installation.



HULL REPAIR

Light scratching

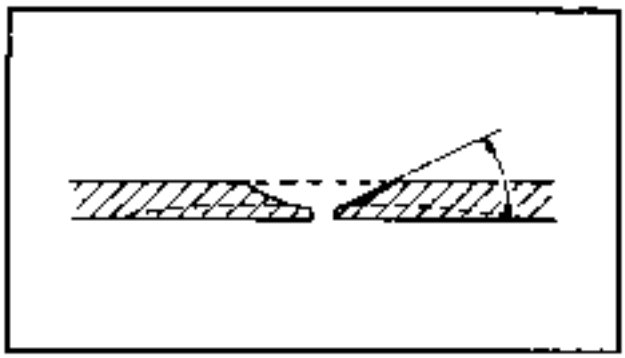
1. Sand the scratched area smooth with #400 grit wet or dry paper, and then with #600 grit wet or dry paper.
2. Polish the area with rubbing compound and buff to a high gloss using a wool pad and automotive wax.

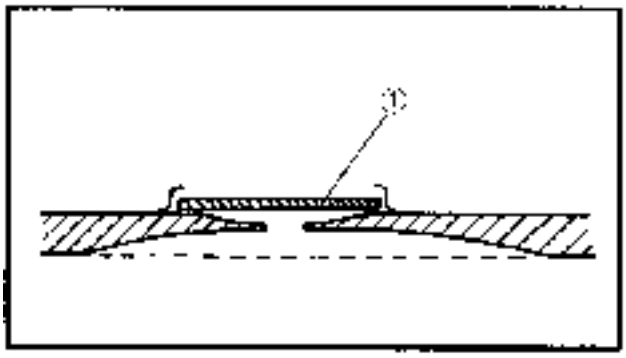
Deep scratching

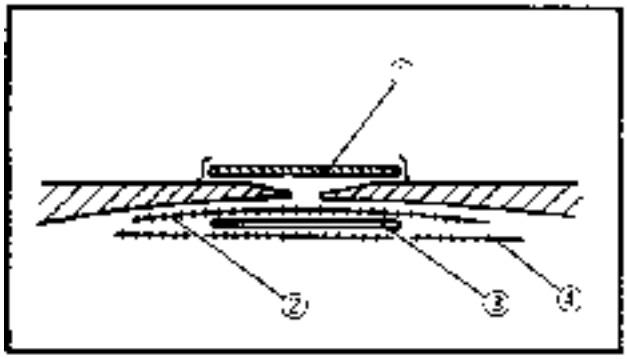
1. Remove any sharp/rough edges from the surface.
2. Sand the area smooth for about one inch all around the scratch with #80 grit wet or dry paper.
3. Clean the area with acetone and dry it.
4. Mix gel-coat with gel-coat thickener to make gel-coat putty and then add the catalyst to make.
5. Apply and 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.

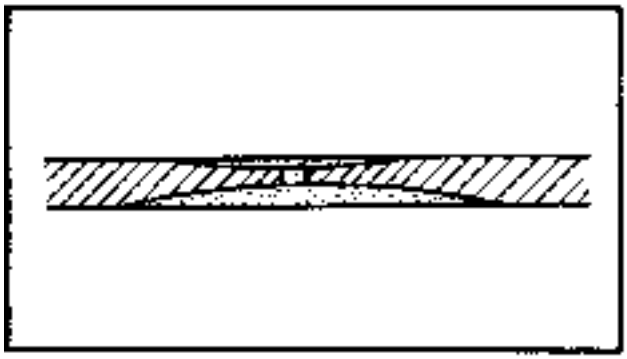
⚠ WARNING

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.







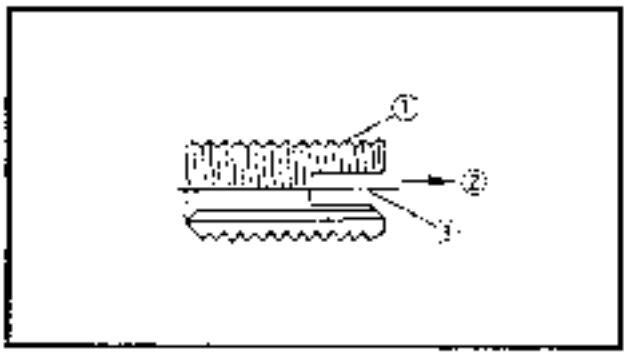


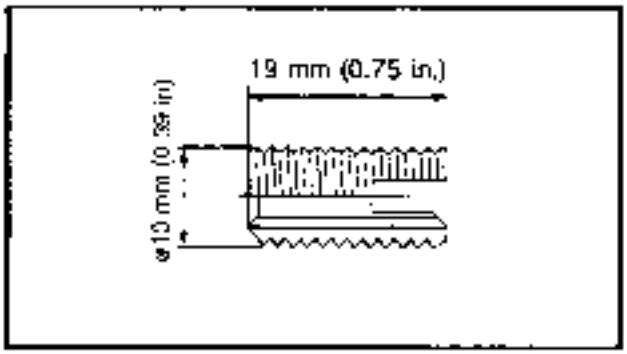
Hull damage (punctured)

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 the "WATER VEHICLE FRP REPAIR MANUAL".





Insert nut

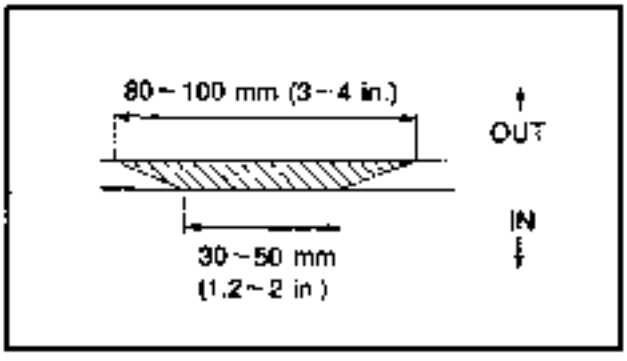
NOTE:
When a pop nut clinched to a hull slipped off or when a bolt fastened to an insert nut or pop nut was broken, use this insert nut.

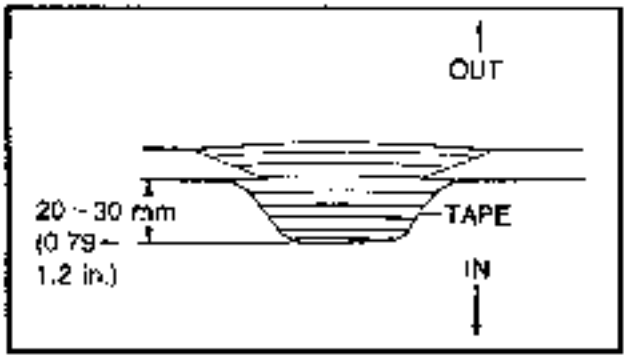
Part No.	Part Name	Remarks
EW2-62733-09	Nut	Stainless steel, M6

- 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)



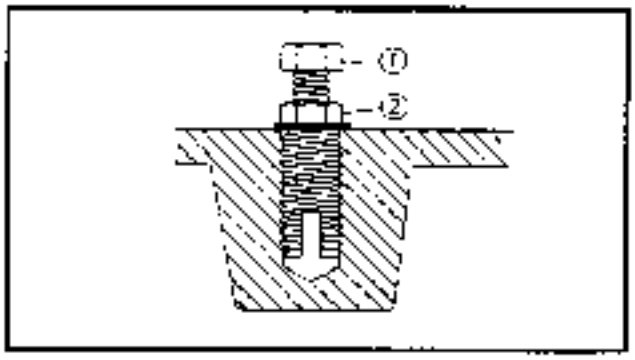


Example 1:
The nut is used to repair the pop nut designed for plate 2.
(by repairing the FRP portion, the new-type nut can be used for all models)
For details of repairs to the FRP portion, refer to the "Water Vehicle FRP Repair Manual".

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 fiber glass 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.



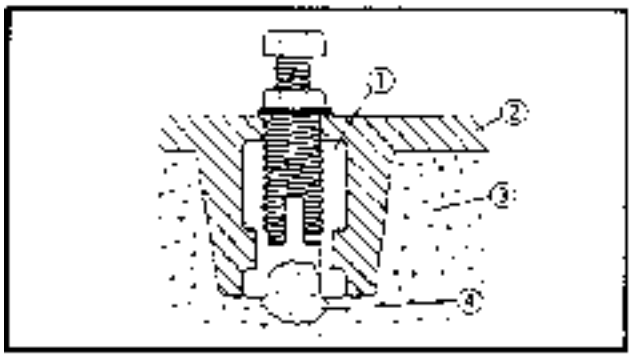
CAUTION:

- **The bolt should be made of steel and its strength should be 8T or more.**
- **If the bolt is interior 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:

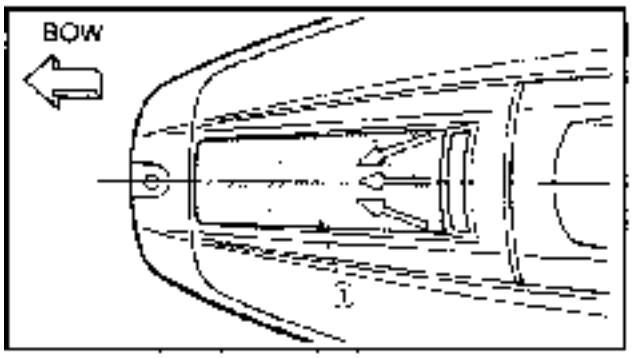
1. If the bolt is broken, remove it using drills.



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.

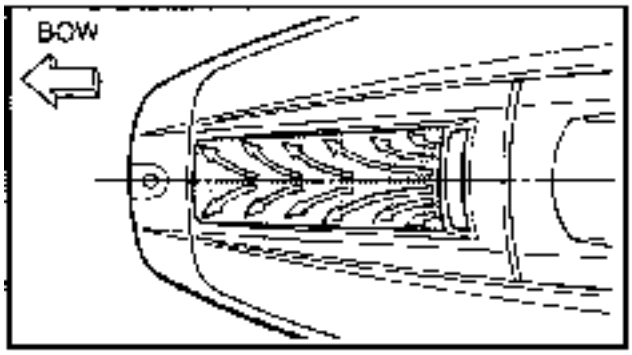
2. Clean:
   Once the graphic is removed, clean the entire bow area with Isopropyl Alcohol to remove any residual adhesive.

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

TROUBLE ANALYSIS

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
					○		○				Pilot water hose	5
					○		○				Water hose	5
					○		○				Water passage	5
											JET PUMP UNIT	
				○	○		○				Duct	6
				○							Impeller	6
				○							Intake screen	6
				○							Bearing	6
				○							Duct intake	6
					○		○				Water inlet hose	6
							○				Bilge hose	6
							○				Bilge strainer	6
							○				Bilge hose joint	6
							○				Valve body	6
											ELECTRICAL	
○	○	○	○	○	○						Ignition system	7
○											Starting system	7
								○			Indication system	7
									○		Charging system	7
											HULL AND HOOD	
						○					Column bearing	8
				○			○				Water lock	8
				○			○			○	Exhaust hose	8
				○			○				Muffler	8
							○				Drain plug	8