YAMAHA

Marine

Water Vehicles

WaveRunner
XL760
XL1200

SERVICE MANUAL

LIT-18616-01-88

460043

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.

XL760, XL1200
SERVICE MANUAL

1st Edition, October 1997

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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	WaveRunner XL760	WaveRunner XL1200
	XL760	XL1200
Indication	XL760	XL1200

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:

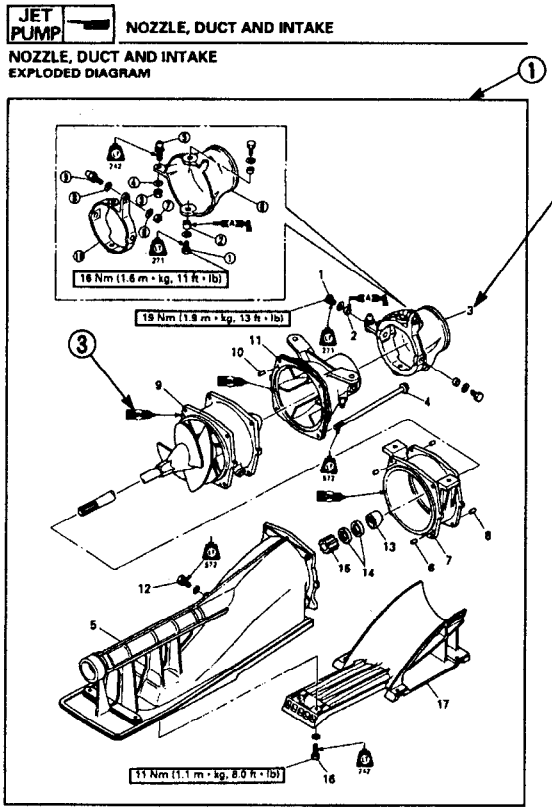
A NOTE provides key information to make procedures easier or clearer.

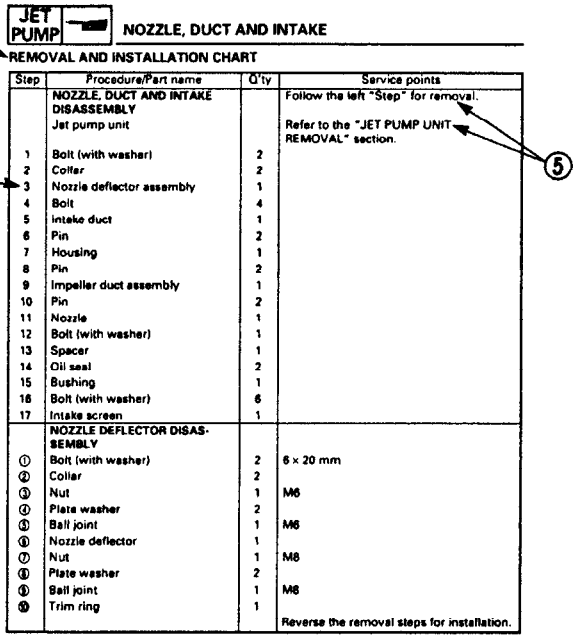
IMPORTANT:

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

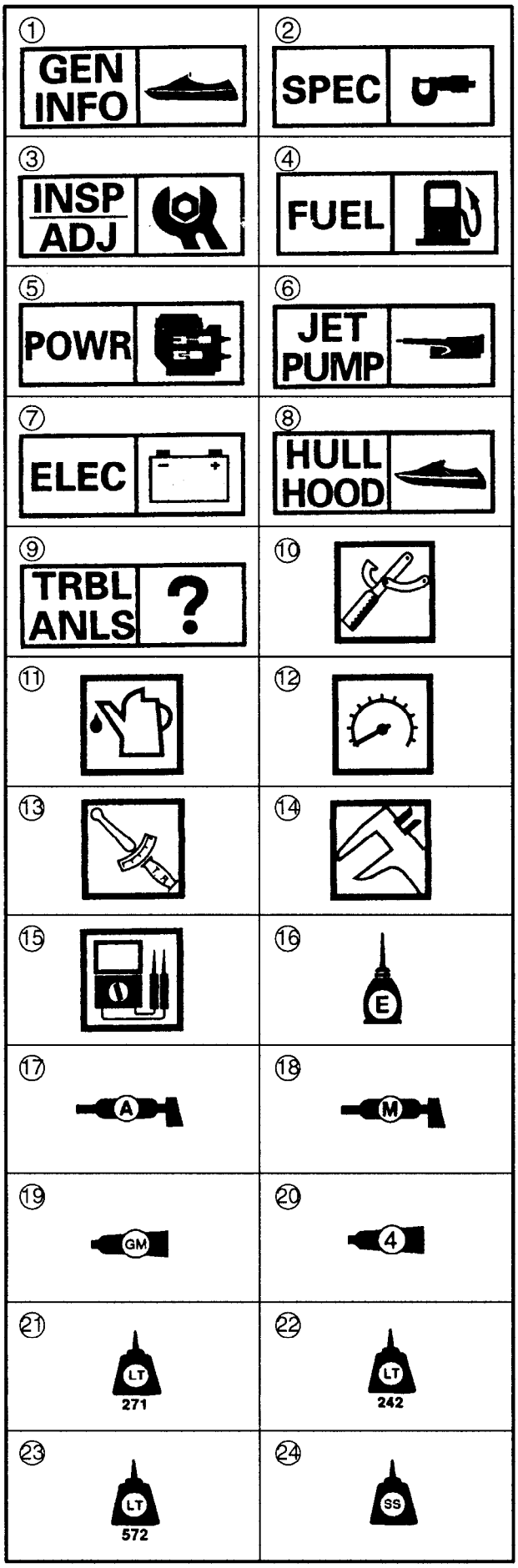
HOW TO READ DESCRIPTIONS

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.





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



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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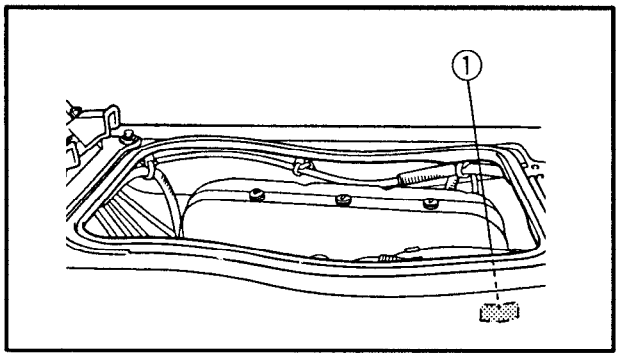
CHAPTER 1
GENERAL INFORMATION

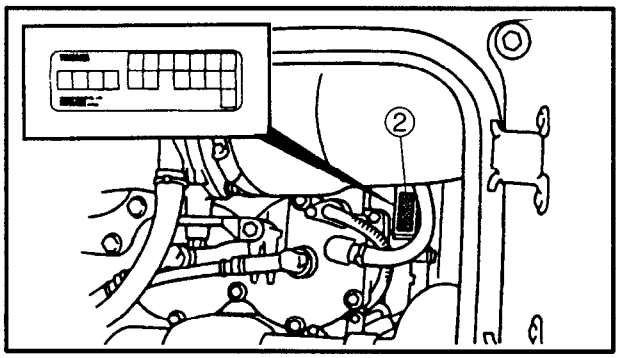


IDENTIFICATION NUMBERS

PRIMARY I.D. NUMBER

The primary I.D. number is stamped on a label ① attached to the inside of the engine compartment.

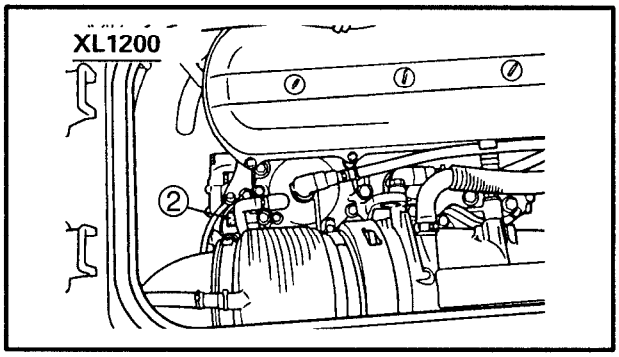
Starting primary I.D. number:
GU2: 800101 ~, 600101 ~ (EUR)
GU3: 800101 ~, 600101 ~ (EUR)

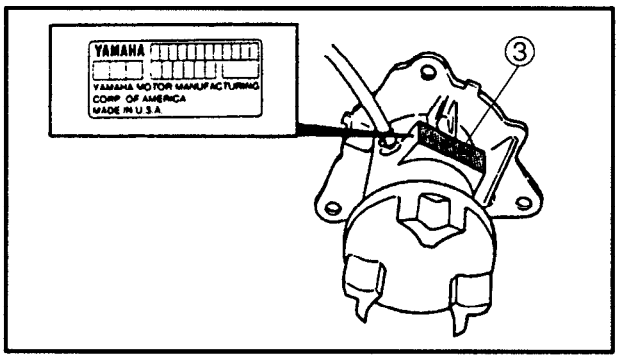


ENGINE SERIAL NUMBER

The engine serial number is stamped on a label ② attached to the crankcase.

Starting serial number:
66D: 000101 ~
66F: 000101 ~

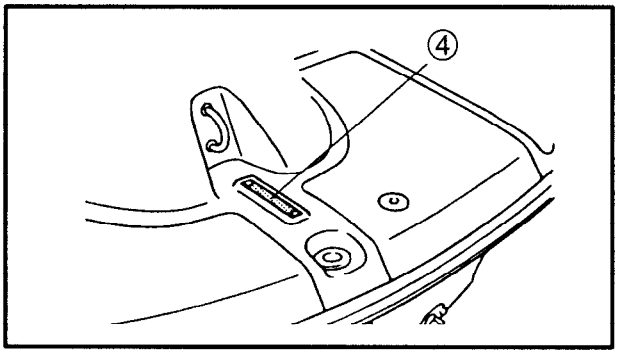




PUMP SERIAL NUMBER

The jet pump unit serial number is stamped on a label ③ attached on the intermediate housing.

Starting serial number:
500101 ~

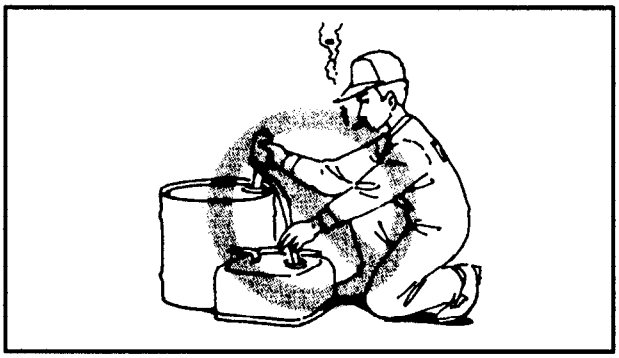


HULL IDENTIFICATION NUMBER (H.I.N.)

The H.I.N. is stamped on a plate ④ 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.

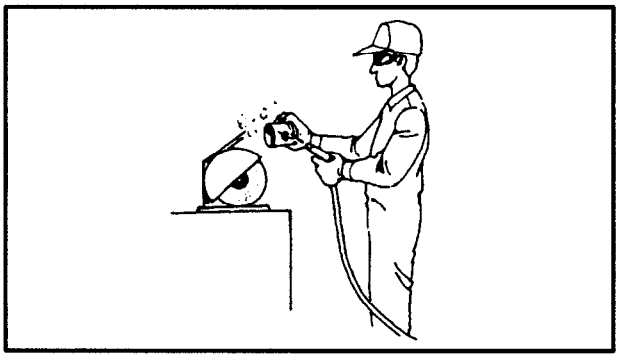


FIRE PREVENTION

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.

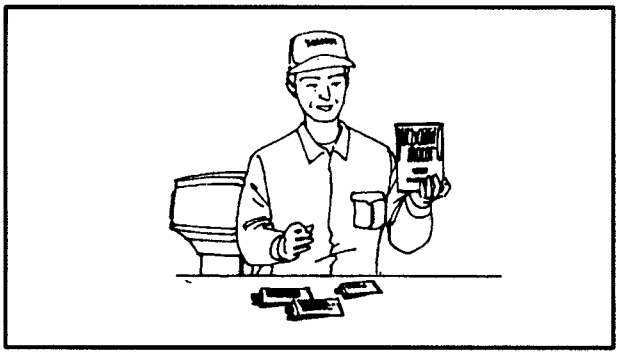
VENTILATION

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.

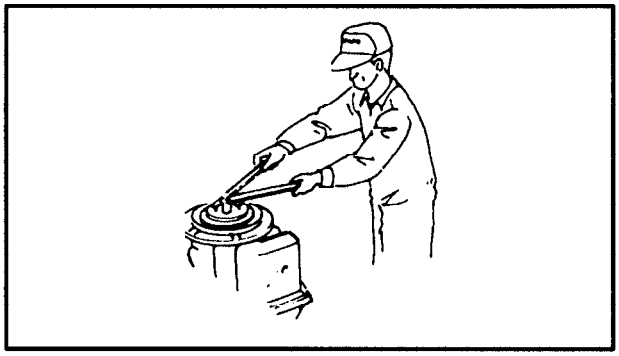


OILS, GREASES AND SEALING FLUIDS

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

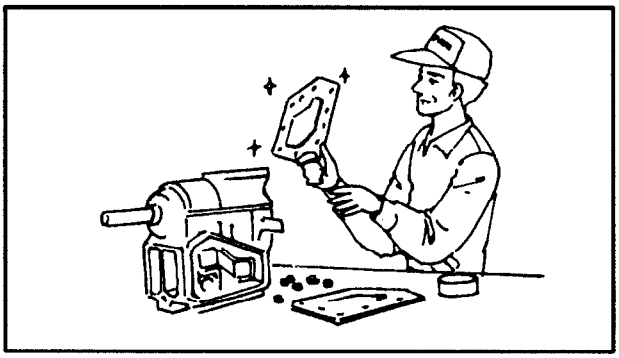
Under normal conditions of use, there should be no hazards from the use of the lubricants mentioned in this manual, but safety is all-important, and by adopting good safety practises, any risk is minimized. A summary of the most important precautions is as follows

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.

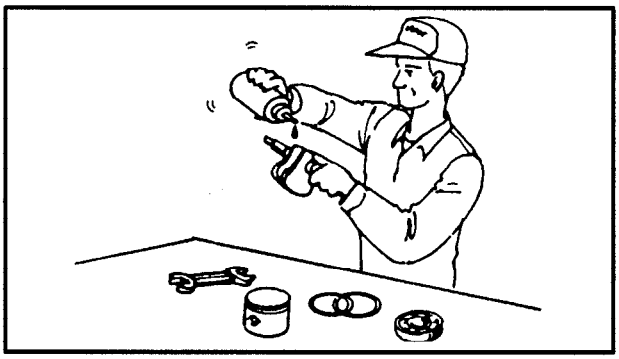


GOOD WORKING PRACTICES

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.

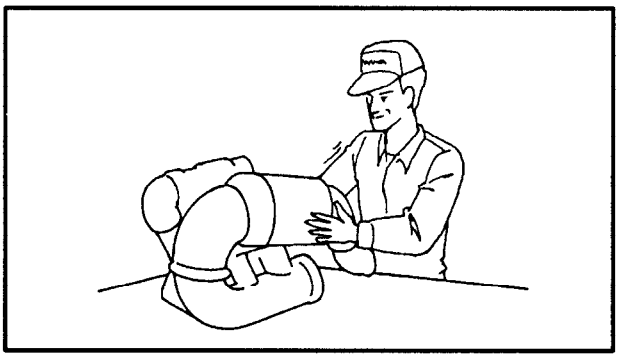


3. Non-reusable items
   Always use new gaskets, packings, O-rings, oil seals, split-pins and circlips etc. on reassembly.



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.

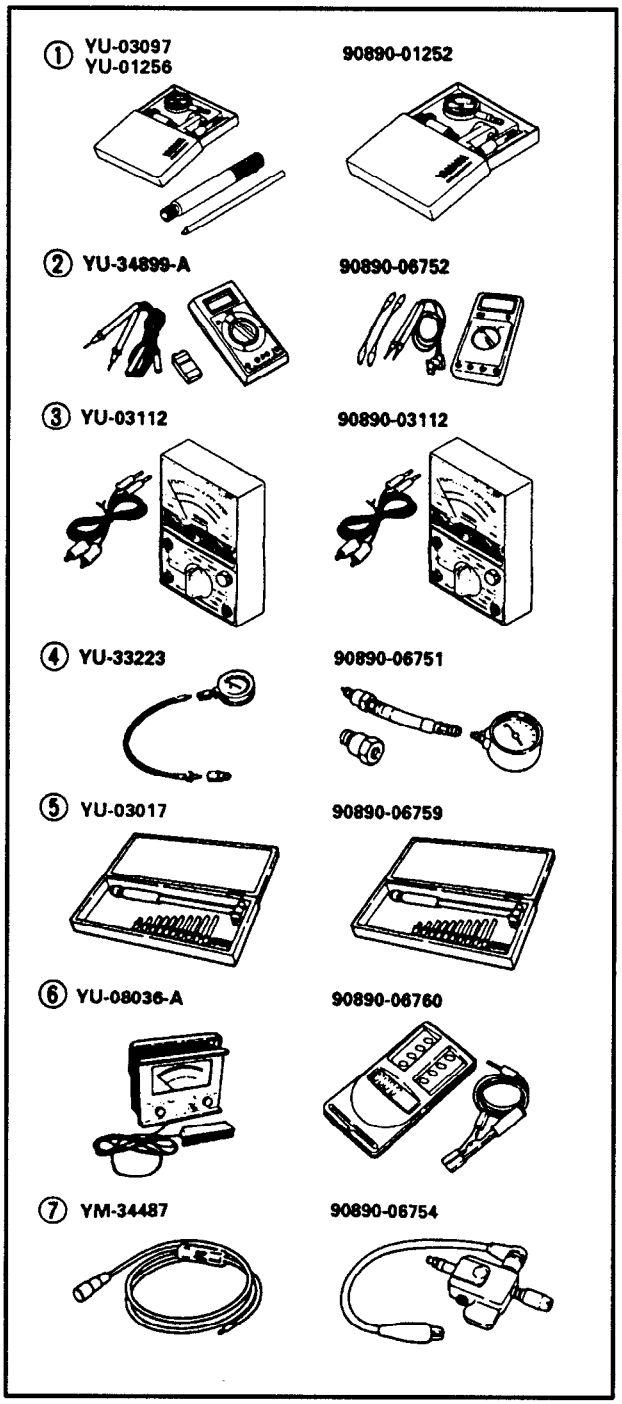
5. When installing oil seals, apply a light coating of water-resistant grease to the outside diameter.

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.

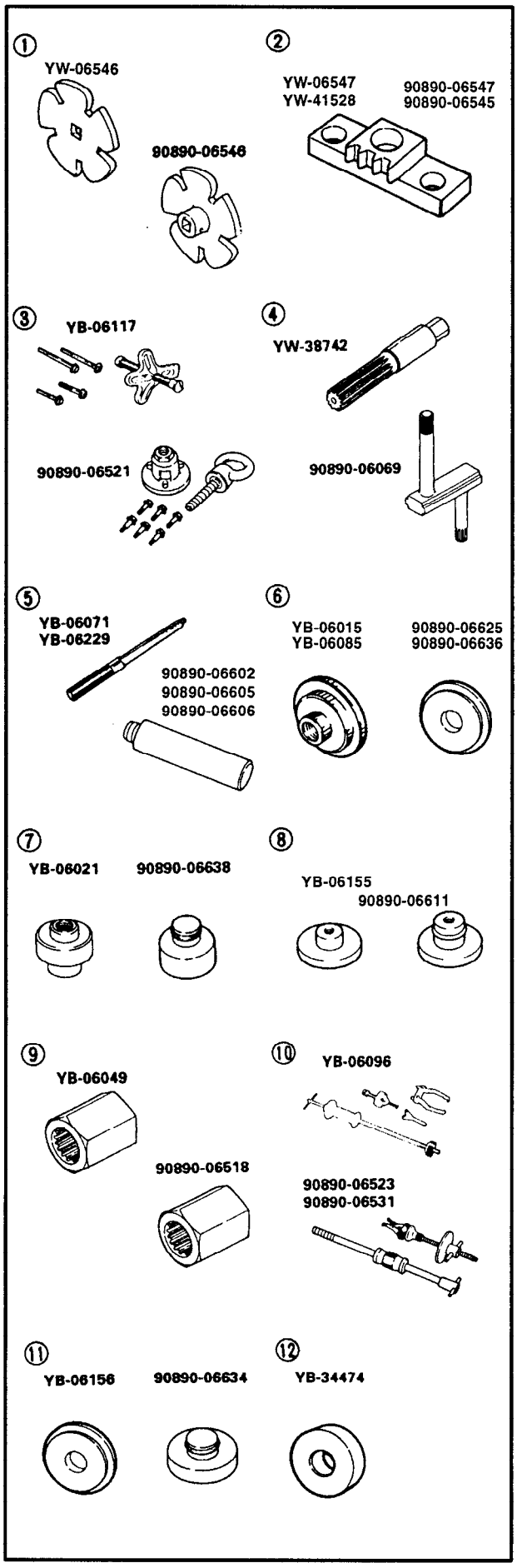
NOTE:

- 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-06546
   90890-06546
2. Flywheel holder
   P/N. YW-06547 (XL760)
   YW-41528 (XL1200)
   90890-06547 (XL760)
   90890-06545 (XL1200)
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
   90890-06602
   90890-06605
   90890-06606
6. Bearing outer race attachment
   (Intermediate shaft)
   P/N. YB-06015, YB-06085
   90890-06636, 90890-06625
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-06155
   90890-06611
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

CHAPTER 2
SPECIFICATIONS

GENERAL SPECIFICATIONS

Item	Unit	Model	
		XL760	XL1200
MODEL CODE:			
Hull		GU2	GU3
Engine		66D	66F
DIMENSIONS:			
Length	mm (in)	3,150 (124.0)	3,150 (124.0)
Width	mm (in)	1,250 (49.2)	1,250 (49.2)
Height	mm (in)	1,100 (43.3)	1,100 (43.3)
Dry weight	kg (lb)	250 (551)	277 (611)
Vehicle capacity		3	3
PERFORMANCE:			
Maximum output	kW (HP)/r/min	66.2 (90)/6,350	99.3 (135)/6,750
Maximum fuel consumption	l/h (US gal/h, Imp (gal/h)	38 (10.04, 8.36)	53 (14.0, 11.7)
Crusing range	hr.	1.5	0.9
ENGINE:			
Engine type		2-stroke	2-stroke
Number of cylinders		2	3
Displacement	cm^3 (cu. in)	754 (46.0)	1,131 (69.0)
Bore × stroke	mm (in)	84.0×68.0 (3.31×2.68)	84.0×68.0 (3.31×2.68)
Compression ratio		F: 7.2, R: 6.8 : 1	6 : 1
Intake system		Reed valve	Reed valve
Carburetor type		Mikuni BN44	Mikuni BN44
Number of carburetors		2	3
Enrichment control		Choke valve	Choke valve
Scavenging system		Loop charge	Loop charge
Lubrication system		Oil injection	Oil injection
Cooling system		Water	Water
Starting system		Electric	Electric
Ignition system		Digital CDI	Digital CDI
Ignition timing	Degree	15 BTDC ~ 22 BTDC	15 BTDC ~ 20 BTDC
Spark plug (NGK)		BR8HS	BR8HS
Battery capacity	V/kC (A·h)	12 – 68.4 (19)	12 – 68.4 (19)
Lighting coil	A/rpm	2 ~ 4/5500	6 ~ 8/6500
Propulsion system		Jet pump	Jet pump
DRIVE UNIT:			
Jet pump type		Axial flow single stage	Axial flow single stage
Impeller rotation		Counter clockwise	Counter clockwise
Transmission		Direct drive from engine	Direct drive from engine
Nozzle angle (horizontal)	Degree	24 ± 1	24 ± 1
Trim angle	Degree	5	5
Trim system		N/A	N/A
Reverse system		Reverse gate	Reverse gate

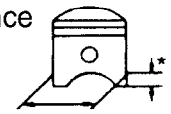
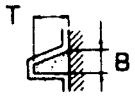
GENERAL SPECIFICATIONS

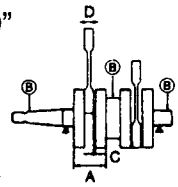
Item	Unit	Model	
		XL760	XL1200
FUEL AND OIL:			
Fuel		Regular unleaded gasoline	Regular unleaded gasoline
Fuel rating	PON*1/RON*2	86/90	86/90
Oil		2-stroke outboard motor oil	2-stroke outboard motor oil
Fuel and oil mixing ratio (wide open throttle)		50 : 1	45 : 1
Fuel tank capacity	l (US gal, Imp gal)	50 (13.2, 11.0)	50 (13.2, 11.0)
Reserve capacity	l (US gal, Imp gal)	12 (3.17, 2.64)	12 (3.17, 2.64)
Oil tank capacity	l (US gal, Imp gal)	3.8 (1.00, 0,84)	3.8 (1.00, 0.84)

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

MAINTENANCE SPECIFICATIONS

ENGINE

Item	Unit	Model	
		XL760	XL1200
Cylinder head:			
Warpage limit	mm (in)	0.1 (0.004)	0.1 (0.004)
Compression pressure	kPa (kg/cm^2)	–	–
Cylinder:			
Bore size	mm (in)	84.00 ~ 84.02 (3.307 ~ 3.308)	84.00 ~ 84.02 (3.307 ~ 3.308)
Taper limit	mm (in)	0.08 (0.003)	0.08 (0.003)
Out of round limit	mm (in)	0.05 (0.002)	0.05 (0.002)
Wear limit	mm (in)	84.10 (3.31)	84.10 (3.31)
Piston:			
Diameter	mm (in)	83.902 ~ 83.921 (3.3032 ~ 3.3040)	83.902 ~ 83.921 (3.3032 ~ 3.3040)
Measuring point*	mm (in)	10 (0.39)	10 (0.39)
piston clearance 	mm (in)	0.100 ~ 0.105 (0.0039 ~ 0.0041)	0.100 ~ 0.105 (0.0039 ~ 0.0041)
Wear limit	mm (in)	0.155 (0.0061)	0.155 (0.0061)
Piston pin bore inside diameter	mm (in)	20.004 ~ 20.025 (0.7876 ~ 0.7884)	20.004 ~ 20.025 (0.7876 ~ 0.7884)
Piston ring:			
Top			
Type		Keystone	Keystone
Dimensions (B × T)	mm (in)	1.5×3.2 (0.06×0.13)	1.5×3.0 (0.06×0.12)
End gap (installed) 	mm (in)	0.20 ~ 0.40 (0.008 ~ 0.016)	0.20 ~ 0.40 (0.008 ~ 0.016)
Ring groove clearance (installed)	mm (in)	0.02 ~ 0.07 (0.001 ~ 0.003)	0.02 ~ 0.07 (0.001 ~ 0.003)
2nd			
Type		Keystone	Keystone
Dimensions (B × T)	mm (in)	1.5×3.2 (0.06×0.13)	1.5×3.0 (0.06×0.12)
End gap (installed)	mm (in)	0.20 ~ 0.40 (0.008 ~ 0.016)	0.20 ~ 0.40 (0.008 ~ 0.016)
Ring groove clearance (installed)	mm (in)	0.02 ~ 0.07 (0.0008 ~ 0.0028)	0.02 ~ 0.07 (0.0008 ~ 0.0028)
Piston pin:			
Diameter	mm (in)	19.995 ~ 20.000 (0.7872 ~ 0.7874)	19.995 ~ 20.000 (0.7872 ~ 0.7874)
Wear limit	mm (in)	–	–

Item	Unit	Model	
		XL760	XL1200
Crankshaft assembly:			
Crank width "A"	mm (in)	61.95 ~ 62.00 (2.439 ~ 2.441)	61.95 ~ 62.00 (2.439 ~ 2.441)
Deflection limit "B"	mm (in)	0.05 (0.002)	0.05 (0.002)
Big end side clearance "C"	mm (in)	0.25 ~ 0.75 (0.010 ~ 0.030)	0.25 ~ 0.75 (0.010 ~ 0.030)
Maximum small end axial play "D" 	mm (in)	2.0 (0.08)	2.0 (0.08)
Carburetor:			
Type		Floatless	Floatless
Manufacturer		Mikuni	Mikuni
Number of carburetours		2	3
Identification mark		64X01/02	65U01/02/03
Main nozzle (M.N.)	mm (in)	3.2 (0.13)	3.2 (0.13)
Main jet (M.J.)		135 (01), 137.5 (02)	135
Pilot jet (P.J.)		115	100 (01)/95 (02)/ 97.5 (03)
Low speed screw	turns out	1-3/4 ± 1/4	1 ± 1/4
Throttle valve		160	130
Valve seat	mm (in)	1.5 (0.06)	1.2 (0.05)
High speed screw	turns out	1/2 ± 1/4	3/4 ± 1/4 (01, 03) 1 ± 1/4 (02)
Trolling speed	r/min.	1,300 ± 50	1,300 ± 50
Reed valve:			
Thickness	mm (in)	0.4 (0.02)	0.5 (0.02)
Valve stopper height	mm (in)	9.0 ± 0.2 (0.35 ± 0.01)	12.5 ± 0.2 (0.49 ± 0.01)
Valve warpage limit	mm (in)	0.2 (0.01)	0.2 (0.01)

JET UNIT

Item	Unit	Model	
		XL760	XL1200
Jet pump:			
Impeller material		SUS	SUS
Number of impeller blades		3	3
Impeller pitch	degree	13.4	15.8
Impeller clearance	mm (in)	0.25 ~ 0.35 (0.010 ~ 0.014)	0.25 ~ 0.35 (0.010 ~ 0.014)
Impeller clearance limit	mm (in)	0.6 (0.024)	0.6 (0.024)
Impeller sharf runout limit	mm (in)	0.3 (0.012)	0.3 (0.012)
Nozzle diameter	mm (in)	86.0 (3.39)	86.0 (3.39)

HULL AND HOOD

Item	Unit	Model	
		XL760	XL1200
Free play:			
Throttle lever free play	mm (in)	4 ~ 7 (0.16 ~ 0.28)	4 ~ 7 (0.16 ~ 0.28)
Choke cable free play	mm (in)	1 ~ 6 (0.04 ~ 0.24)	1 ~ 6 (0.04 ~ 0.24)
Trim control wheel free play	mm (in)	–	–

ELECTRICAL

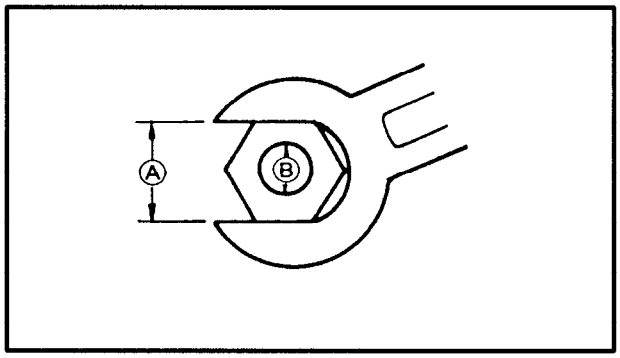
Item	Unit	Model	
		XL760	XL1200
Battery:			
Type		Fluid	Fluid
Capacity	V/kC (A·h)	12/68.4 (19)	12/68.4 (19)
Ignition timing:			
Ignition timing (at 1,200 r/min)	degree	15 BTDC	15 BTDC
Ignition timing (at 5,500 r/min)	degree	F: 20, R: 18 BTDC	21 BTDC
Stator assembly:			
Pulser coil resistance	Ω (color)	445.5 ~ 544.5 (W/R – W/B)	248.0 ~ 372.0 (B-W/R, W/B, W/G)
Charge coil resistance 1	Ω (color)	316.8~387.2 (Br–L)	172.0~258.0 (B/R–Br)
Charge coil resistance 2	Ω (color)	–	656.0~984.0 (L–B/R)
Lighting coil resistance	Ω (color)	1.14 ~ 1.40 (G – G)	0.56 ~ 0.84 (G – G)
Charging current (minimum)	A/r/min.	2 ~ 4/5,500	5.8 ~ 7.8/5,500
Ignition coil:			
Minimum spark gap	mm (in)	–	–
Primary coil resistance	Ω (color)	0.078~0.106 (Or–B)	0.048~0.072 (B/W–B)
Secondary coil resistance	kΩ (color)	14.3 ~ 30.5 (High tension cords)	2.7 ~ 4.1 (High tension cord-B)
Rectifier-regulator:			
Regulated voltage	V	14.3 ~ 15.3	14.5 ~ 15.5
Thermo switch:			
On temperature	°C (°F)	90 ~ 96 (194 ~ 205)	90 ~ 96 (194 ~ 205)
Off temperature	°C (°F)	76 ~ 90 (169 ~ 194)	76 ~ 90 (169 ~ 194)
Starter motor:			
Brush length	mm (in)	12.5 (0.49)	12.5 (0.49)
Wear limit	mm (in)	6.5 (0.26)	6.5 (0.26)
Comutator undercut	mm (in)	0.7 (0.028)	0.7 (0.028)
Limit	mm (in)	0.2 (0.008)	0.2 (0.008)
Comutator diameter	mm (in)	28.0 (1.10)	28.0 (1.10)
Limit	mm (in)	27 (1.06)	27 (1.06)
Fuse:			
Rating	V – A	12-10	12 – 10
SPARK PLUG:			
Spark plug gap	mm (in)	0.6~0.7 (0.024~0.028)	0.6~0.7 (0.024~0.028)

TIGHTENING TORQUE

SPECIFIED TORQUE

Part to tightened		Part name	Size	Q'ty		Tightening torque			Remarks
				760	1200	Nm	kgf·m	ft·lb	
ENGINE:									
Electric box		Bolt	M8	2	3	17	1.7	12	
Mounting bolt		Bolt	M8	4	4	17	1.7	12	
Reed valve		Screw	M4	16	24	1	0.1	0.7	
Exhaust ring		Bolt	M8	4	4	30	3.0	22	
Exhaust ring stay	1st	Bolt	M10	3	–	22	2.2	16	
	2nd					40	4.0	29	
Muffler stay		Bolt	M10	4	4	40	4.0	29	
Muffler stay – Muffler stay 2	1st	Bolt	M10	2	2	2	0.2	1.4	
	2nd					47	4.7	34	
Muffler 2		Bolt	M10	2	2	40	4.0	29	
Muffler 1	1st	Bolt	M10	8	–	22	2.2	16	
	2nd					40	4.0	29	
	1st	Bolt	M8	–	12	15	1.5	11	
	2nd					30	3.0	22	
Cylinder body	1st	Bolt	M10	6	6	23	2.3	17	
	2nd					40	4.0	29	
Cylinder head	1st	Bolt	M8	10	–	15	1.5	11	
	2nd					36	3.6	26	
	1st	Bolt	M8	–	14	15	1.5	11	
	2nd					30	3.0	22	
Cylinder head cover	1st	Bolt	M8	–	15	15	1.5	11	
	2nd					30	3.0	22	
	1st	Bolt	M6	–	2	4	0.4	2.9	
	2nd					8	0.8	5.8	
Spark plug		Bolt	M14	2	3	25	2.5	18	
Flywheel bolt		Nut	M10	1	1	70	7.0	51	
Crankcase	1st	Bolt	M8	8	12	15	1.5	11	
	2nd					28	2.8	20	
Mount bracket	1st	Bolt	M10	7	7	23	2.3	17	
	2nd					53	5.3	38	
Coupling		Nut	M27	1	1	37	3.7	27	
Frame arrestor cover		Bolt	M6	6	–	2	0.2	1.4	
				–	8	5	0.5	3.6	
Starter motor terminal nut		Nut	M6	1	1	5	0.5	3.6	
JET UNIT:									
Mounting bolt		Bolt	M10	4	4	34	3.4	25	
			M6	2	2	12	1.2	8.7	
Ride plate		Bolt	M8	4	4	17	1.7	12	
Impeller (left-hand threads)		Bolt	M20	1	1	18	1.8	13	
Coupling		Nut	M27	1	1	37	3.7	27	
Intermediate housing		Bolt	M8	3	3	17	1.7	12	

Nut Ⓐ	Bolt Ⓑ	General torque specifications		
		Nm	kgf•m	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



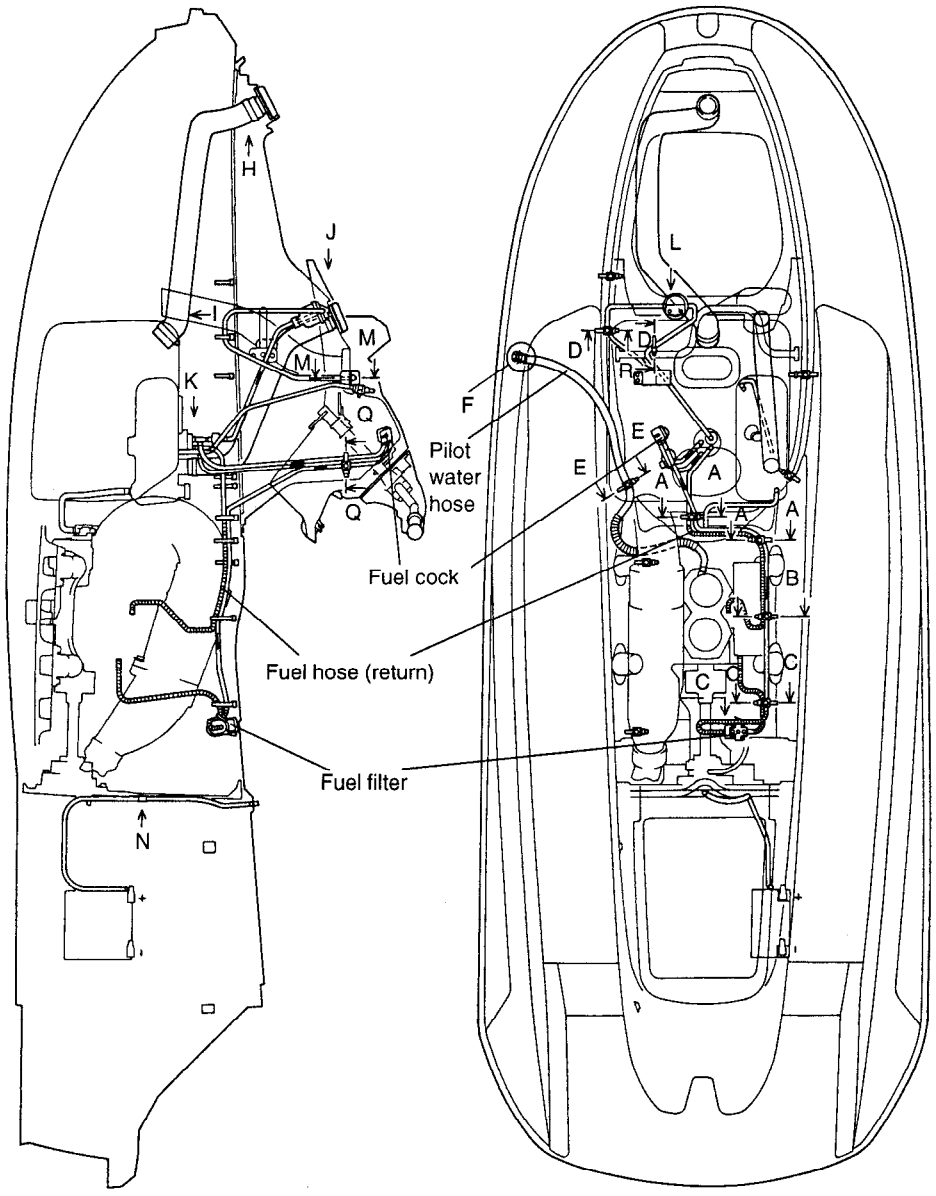
TIGHTENING TORQUE

GENERAL TORQUE

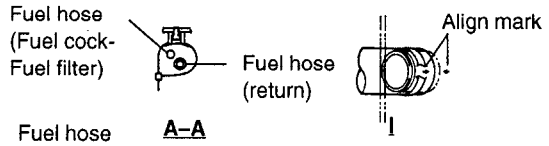
This chart specifies the torque for tightening standard fasteners with standard clean dry ISO threads at room temperature. Torque specifications for special components or assemblies are given in applicable sections of this manual. To avoid causing warpage, tighten multifastener assemblies in a criss-cross fashion, in progressive stages until the specified torque is reached.

FUEL LINE ROUTING

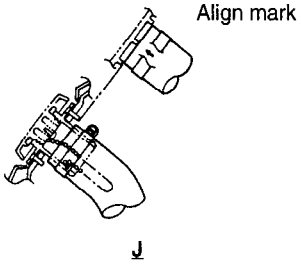
XL760

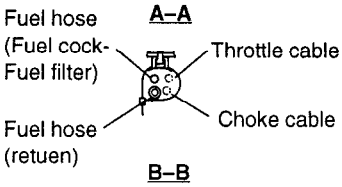


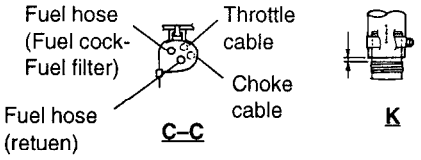
Pass the oil hose out side of belt


Fuel hose (Fuel cock-Fuel filter)
Fuel hose (return)
A–A

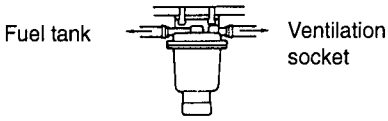
Align mark
I

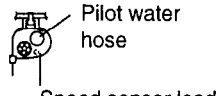

Align mark
J

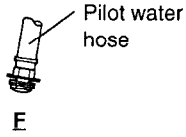

Fuel hose (Fuel cock-Fuel filter)
Throttle cable
Choke cable
Fuel hose (retuen)
B–B

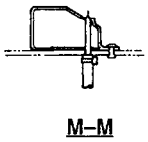

Fuel hose (Fuel cock-Fuel filter)
Throttle cable
Choke cable
Fuel hose (retuen)
C–C

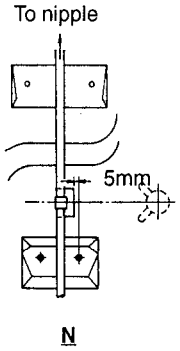
K

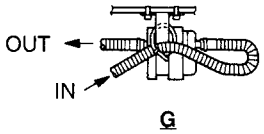

Fuel tank
Ventilation socket
L

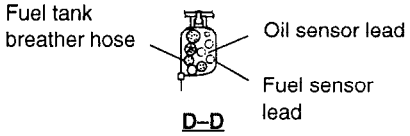

Pilot water hose
Speed sensor lead
E–E

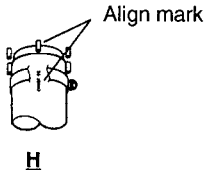

Pilot water hose
F

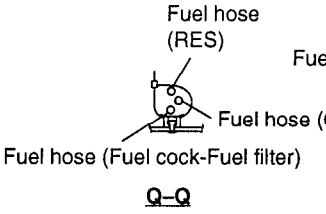

M–M

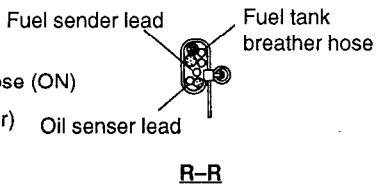

To nipple
5mm
N

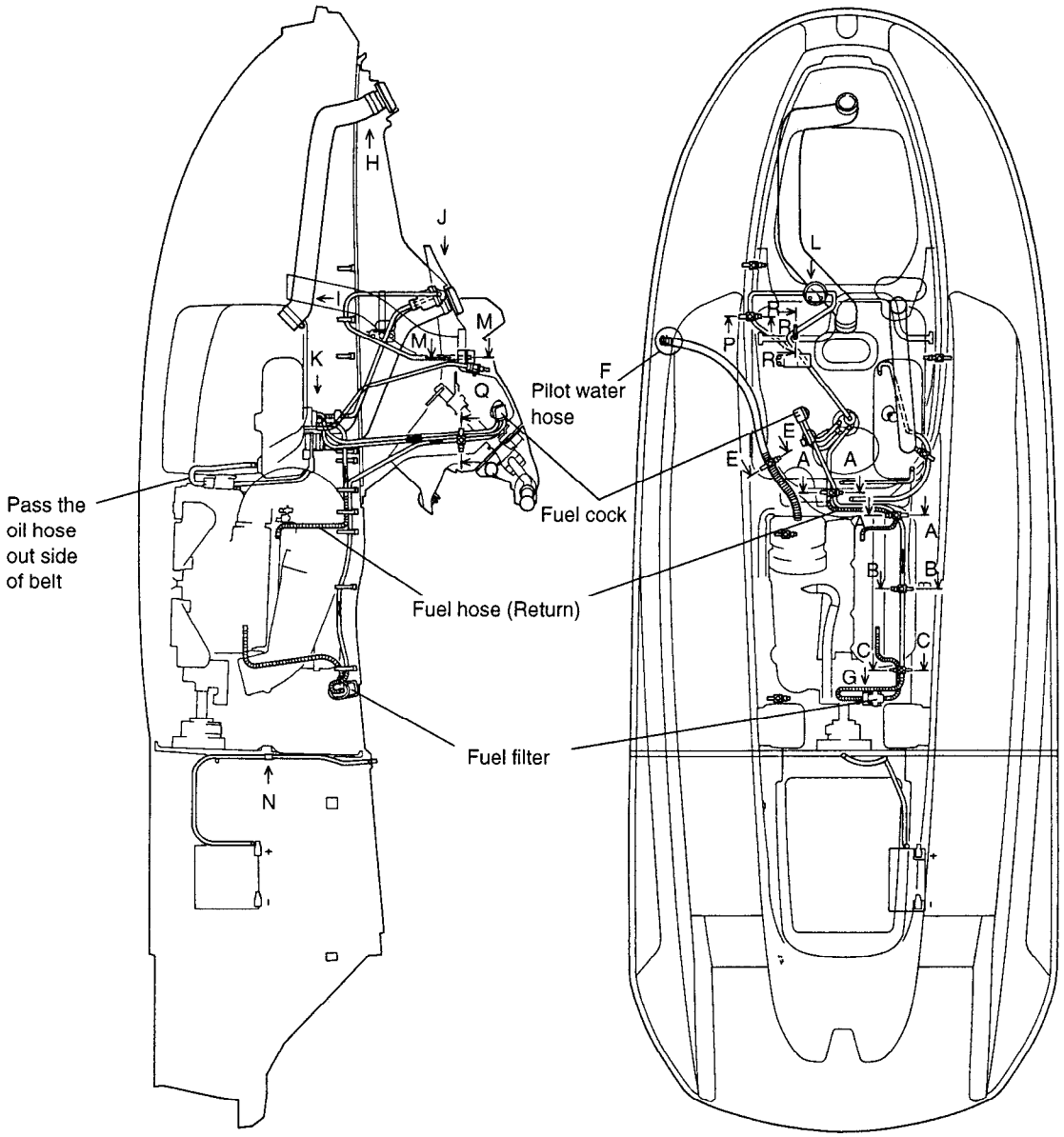

OUT
IN
G

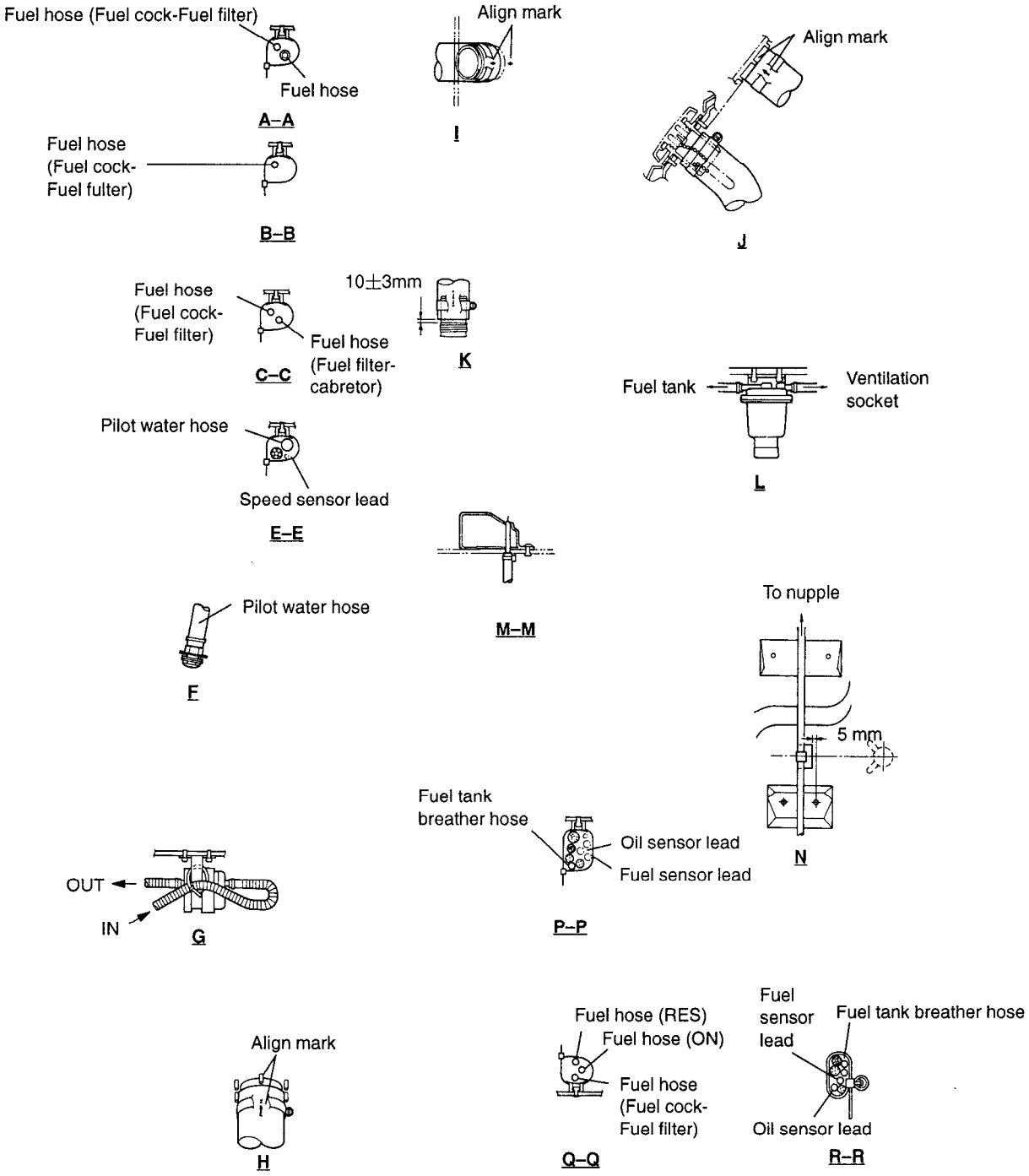

Fuel tank breather hose
Oil sensor lead
Fuel sensor lead
D–D


Align mark
H


Fuel hose (RES)
Fuel hose (ON)
Fuel hose (Fuel cock-Fuel filter)
Q–Q

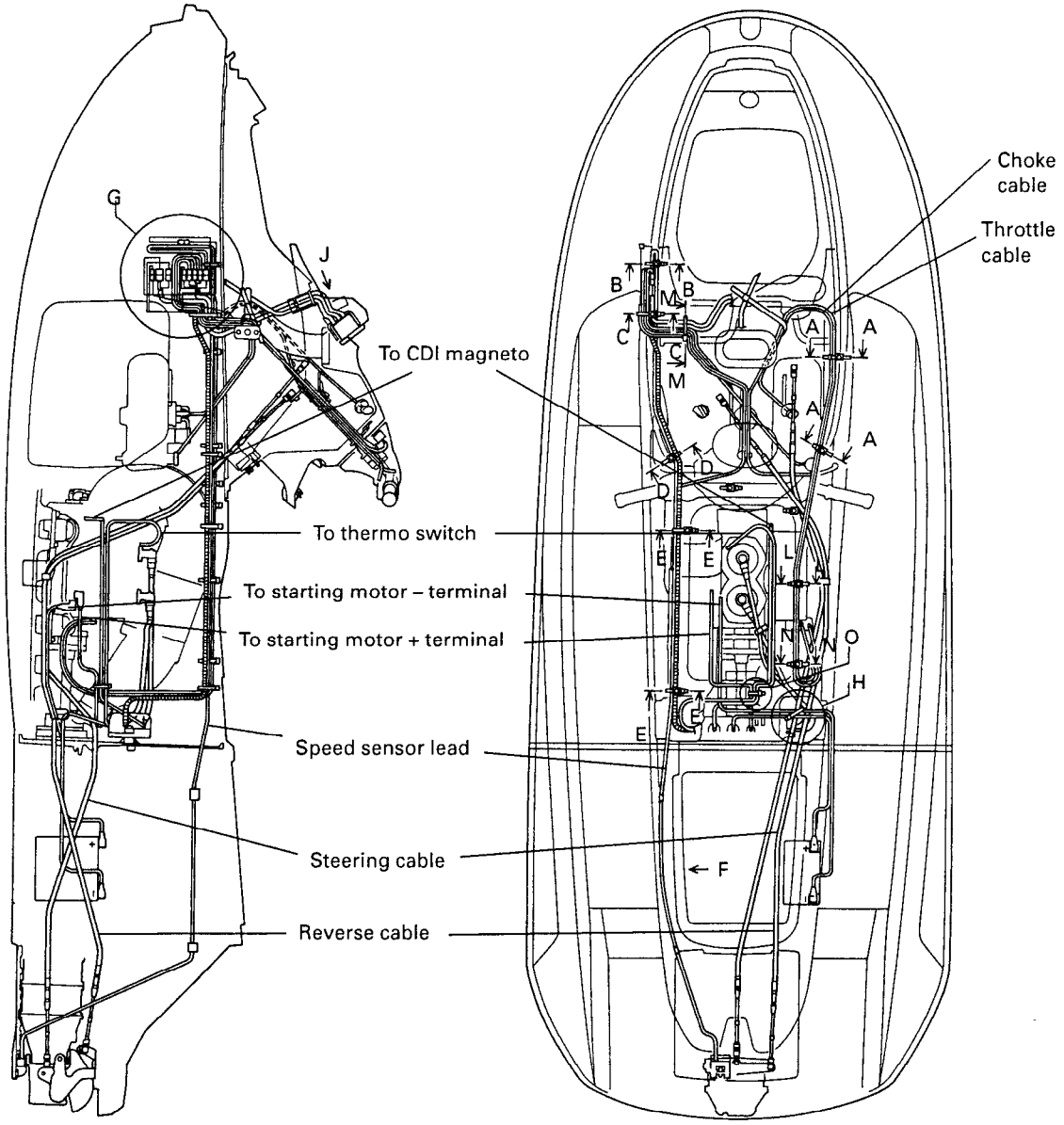

Fuel sender lead
Fuel tank breather hose
Oil senser lead
R–R

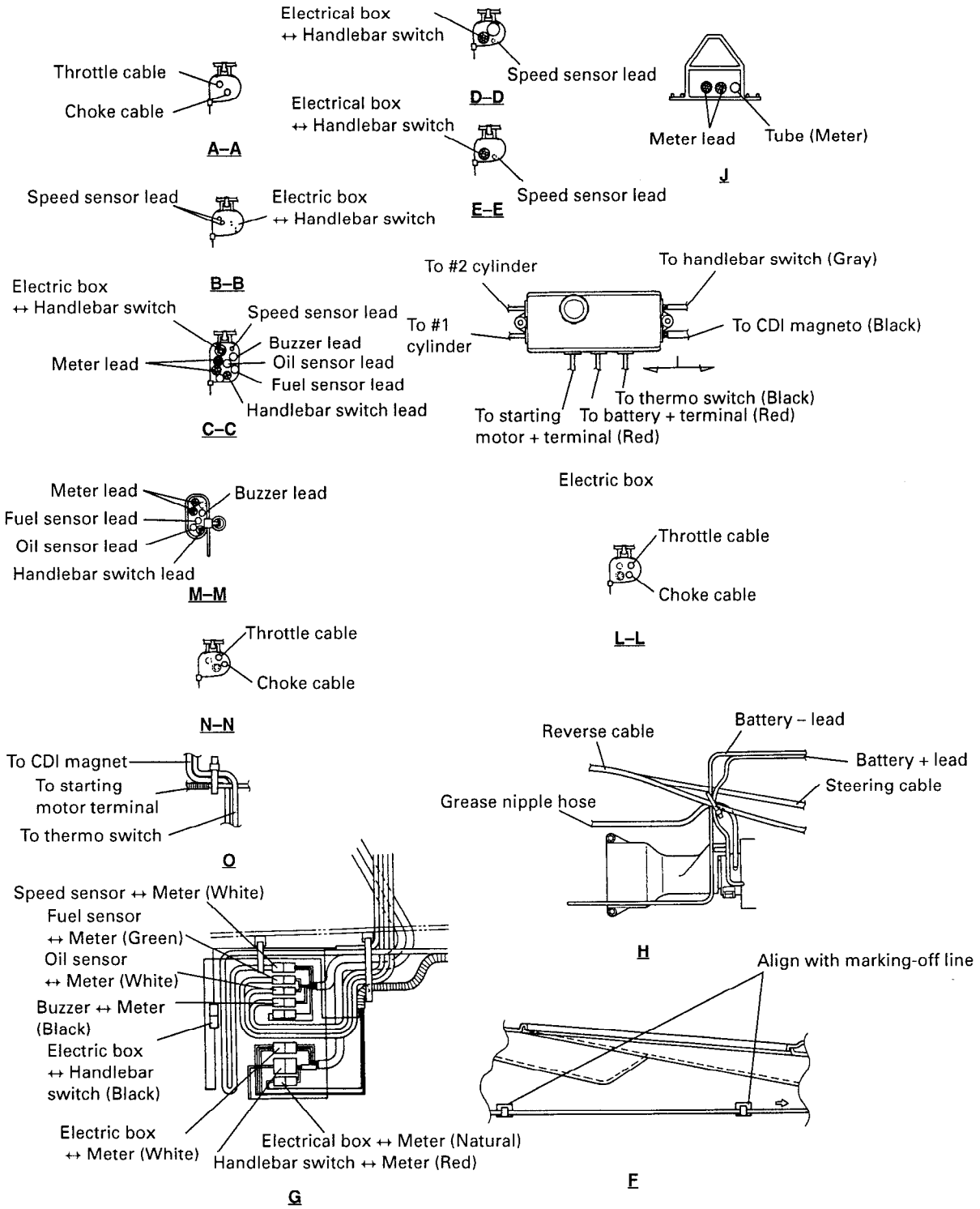

H
J
K
M
M
Q
F
Pilot water hose
Fuel cock
Pass the oil hose out side of belt
Fuel hose (Return)
Fuel filter
N
L
P
R
R
R
E
E
A
A
A
B
B
C
C
G

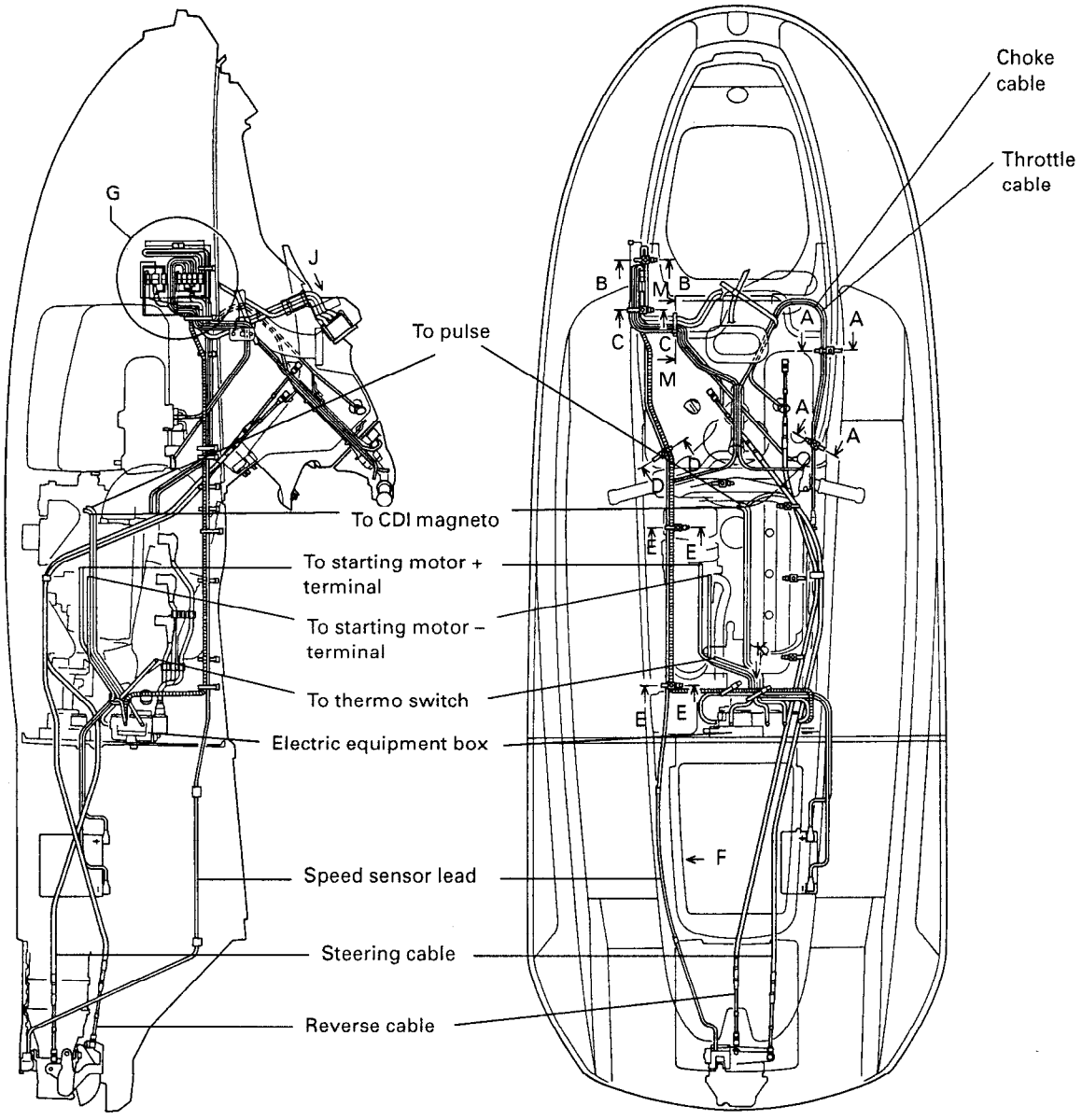

Fuel hose (Fuel cock-Fuel filter)
Fuel hose
A–A
Fuel hose
(Fuel cock-
Fuel fulter)
B–B
Fuel hose
(Fuel cock-
Fuel filter)
Fuel hose
(Fuel filter-
cabretor)
C–C
Pilot water hose
Speed sensor lead
E–E
Pilot water hose
F
OUT
IN
G
Align mark
H
Align mark
I
10±3mm
K
M–M
Align mark
J
Fuel tank
Ventilation
socket
L
To nupple
5 mm
N
Fuel tank
breather hose
Oil sensor lead
Fuel sensor lead
P–P
Fuel hose (RES)
Fuel hose (ON)
Fuel hose
(Fuel cock-
Fuel filter)
Q–Q
Fuel
sensor
lead
Fuel tank breather hose
Oil sensor lead
R–R

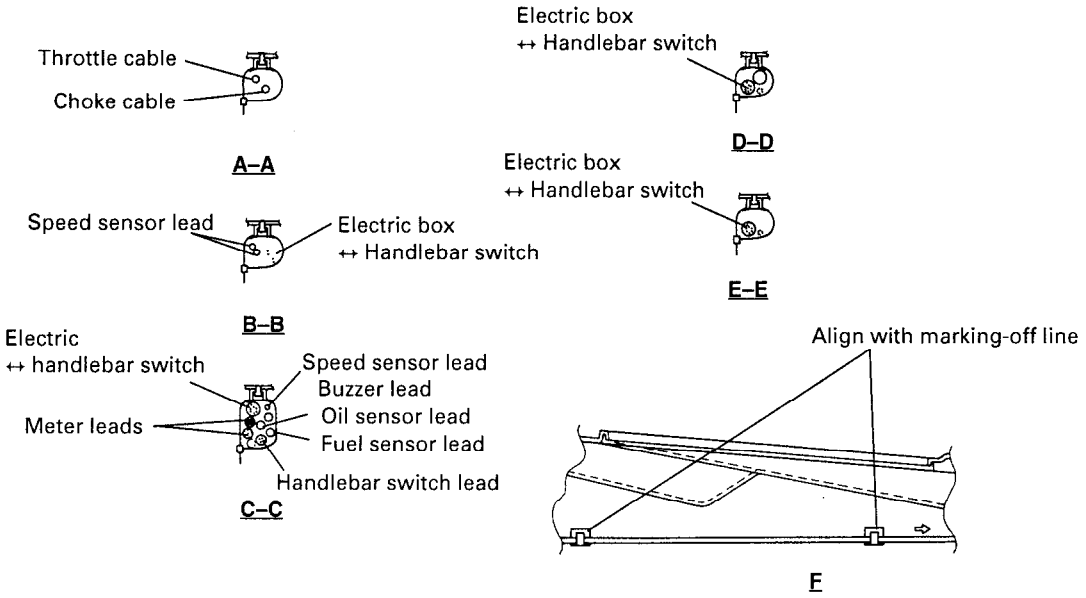
CABLE LINE ROUTING

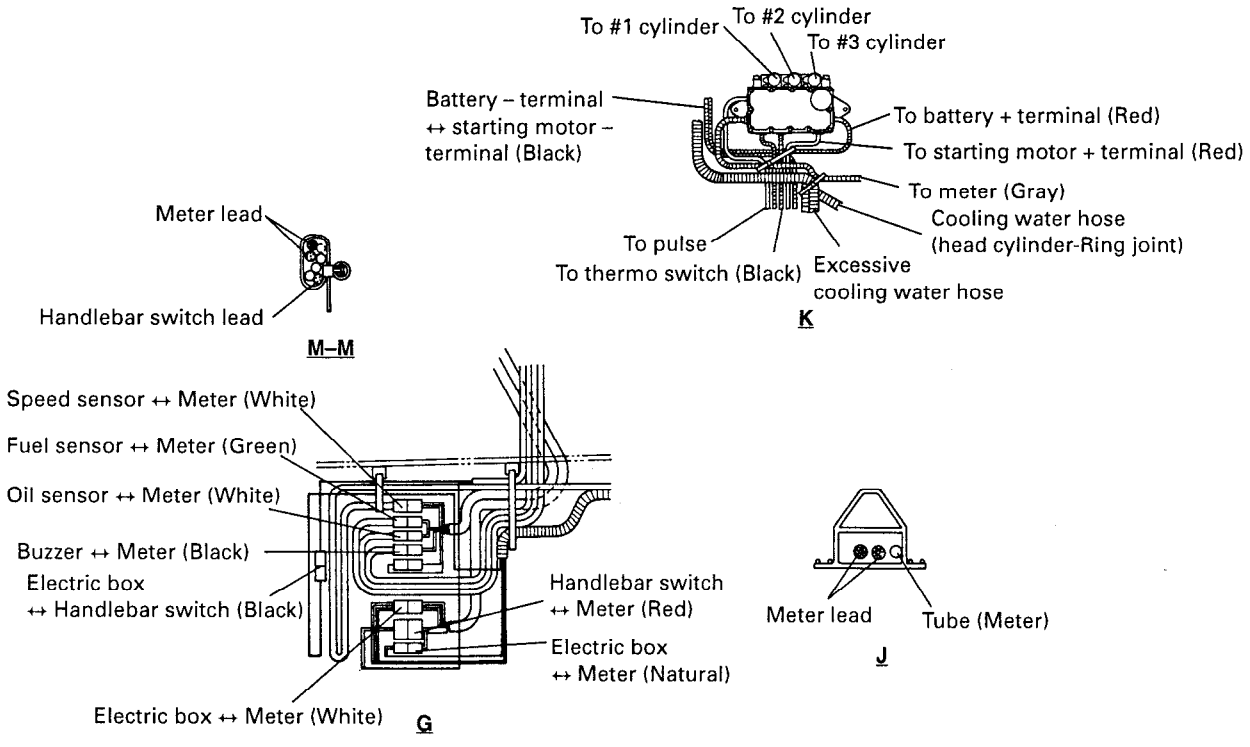
XL760




Throttle cable
Choke cable
A–A
Electrical box
↔ Handlebar switch
Speed sensor lead
D–D
Electrical box
↔ Handlebar switch
Speed sensor lead
E–E
Meter lead
Tube (Meter)
J
Speed sensor lead
Electric box
↔ Handlebar switch
B–B
Electric box
↔ Handlebar switch
Speed sensor lead
Buzzer lead
Meter lead
Oil sensor lead
Fuel sensor lead
Handlebar switch lead
C–C
To #2 cylinder
To handlebar switch (Gray)
To #1
cylinder
To CDI magneto (Black)
To thermo switch (Black)
To starting
motor + terminal (Red)
To battery + terminal (Red)
Electric box
Meter lead
Buzzer lead
Fuel sensor lead
Oil sensor lead
Handlebar switch lead
M–M
Throttle cable
Choke cable
L–L
Throttle cable
Choke cable
N–N
To CDI magnet
To starting
motor terminal
To thermo switch
O
Reverse cable
Battery – lead
Battery + lead
Steering cable
Grease nipple hose
H
Speed sensor ↔ Meter (White)
Fuel sensor
↔ Meter (Green)
Oil sensor
↔ Meter (White)
Buzzer ↔ Meter
(Black)
Electric box
↔ Handlebar
switch (Black)
Electric box
↔ Meter (White)
Electrical box ↔ Meter (Natural)
Handlebar switch ↔ Meter (Red)
G
Align with marking-off line
F


Choke cable
Throttle cable
G
J
To pulse
To CDI magneto
To starting motor + terminal
To starting motor – terminal
To thermo switch
Electric equipment box
Speed sensor lead
Steering cable
Reverse cable
B
M
C
A
D
E
F


Throttle cable
Choke cable
A–A
Electric box
↔ Handlebar switch
D–D
Electric box
↔ Handlebar switch
E–E
Speed sensor lead
Electric box
↔ Handlebar switch
B–B
Electric
↔ handlebar switch
Meter leads
Speed sensor lead
Buzzer lead
Oil sensor lead
Fuel sensor lead
Handlebar switch lead
C–C
Align with marking-off line
F


To #1 cylinder
To #2 cylinder
To #3 cylinder
Battery – terminal
↔ starting motor –
terminal (Black)
To battery + terminal (Red)
To starting motor + terminal (Red)
To meter (Gray)
Cooling water hose
(head cylinder-Ring joint)
To pulse
To thermo switch (Black)
Excessive
cooling water hose
K
Meter lead
Handlebar switch lead
M–M
Speed sensor ↔ Meter (White)
Fuel sensor ↔ Meter (Green)
Oil sensor ↔ Meter (White)
Buzzer ↔ Meter (Black)
Electric box
↔ Handlebar switch (Black)
Handlebar switch
↔ Meter (Red)
Electric box
↔ Meter (Natural)
Electric box ↔ Meter (White)
G
Meter lead
Tube (Meter)
J

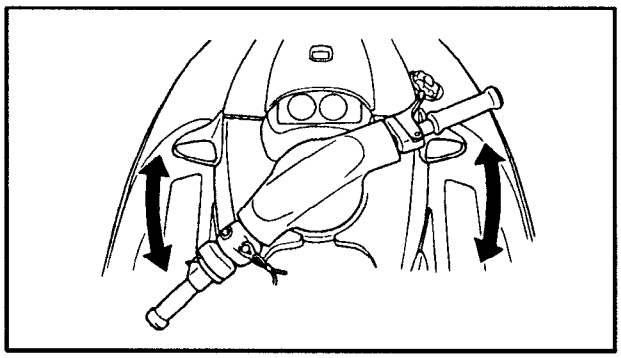
CHAPTER 3
PERIODIC INSPECTION AND ADJUSTMENT

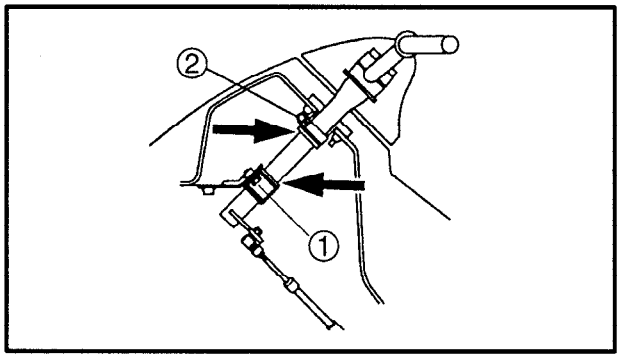
MAINTANCE INTERVAL CAHRT

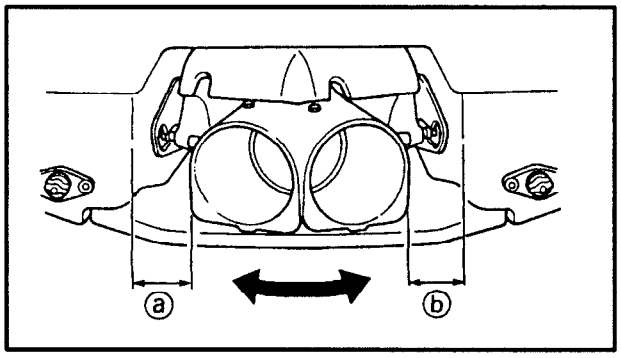
The following chart should be considered strictly as a guide to general maintenance intervals. Depending on operating conditions, the intervals of maintenance should be changed.

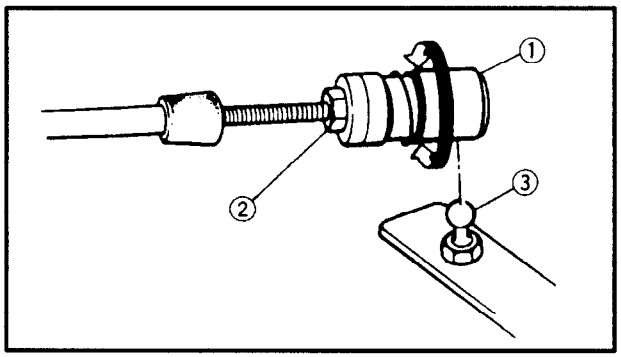
Item	Remarks	Initial		Every		Refer to page
		10 hours (Break-in)	50 hours (3 months)	100 hours (6 months)	200 hours (1 year)	
CONTROL SYSTEM:						
Steering cable	Inspection/Adjustment			○		3-2
Throttle cable	Inspection/Adjustment			○		3-3
Carburetor throttle shaft	Inspection			○		–
Choke cable	Inspection/Adjustment			○		3-4
Shift cable	Inspection/Adjustment			○		3-5
FUEL SYSTEM:						
Fuel tank	Cleaning				○	4-7
Fuel filter	Cleaning/Replacement	○			○	3-6
Fuel line	Inspection			○		4-1
Trolling speed	Inspection/Adjustment			○		3-6
Carburetor setting	Inspection/Adjustment	○		○		3-7
OIL INJECTION SYSTEM:						
Oil injection system	Inspection/Cleaning	○			○	3-8
POWER UNIT:						
Spark plug	Inspection/Cleaning/ Adjustment	○	○	○		3-10
Cooling-water passage	Cleaning/Flashing		○			–
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		3-15
Starter motor idle gear	Greasing	○*3		○*4		3-15

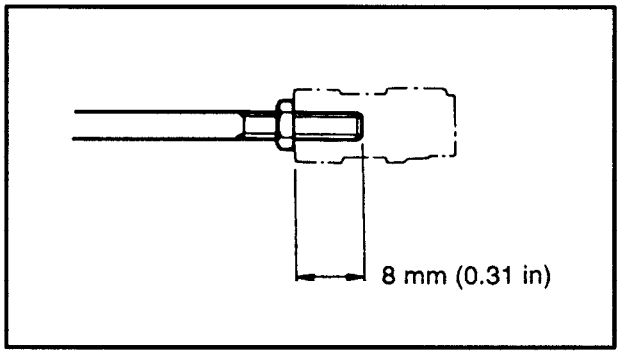
*1: Grease capacity 33.0 ~ 35.0 cm^3 (1.11 ~ 1.18 oz.)
*2: Grease capacity 6.0 ~ 8.0 cm^3 (0.20 ~ 0.27 oz.)
*3: Grease capacity 8.0 cm^3 (0.27 oz.)
*4: Grease capacity 2.0 cm^3 (0.07 oz.)











PERIODIC SERVICE

CONTROL SYSTEM

Pivot shaft bearing inspection

1. Inspect:
   - Pivot shaft bearing
     Excessive play → Replace bushing.
     Refer to the "STEERING SYSTEM" 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 feed 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.

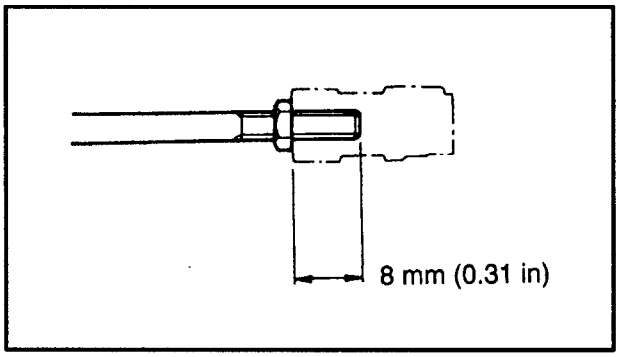
Turn in	**Clearance ⓐ is increased.**
Turn out	**Clearance ⓑ is increased.**

⚠ 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:
7 Nm (0.7 m•kg, 5.1 ft•lb)



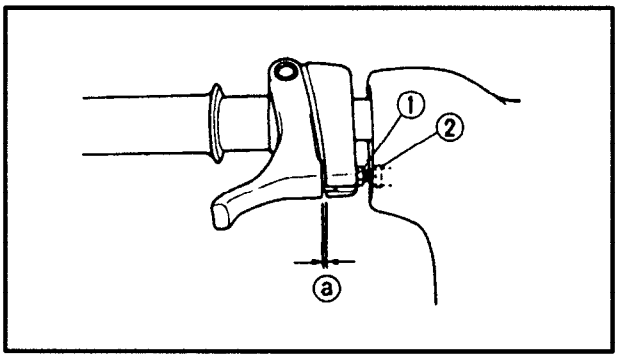
NOTE:

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

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.

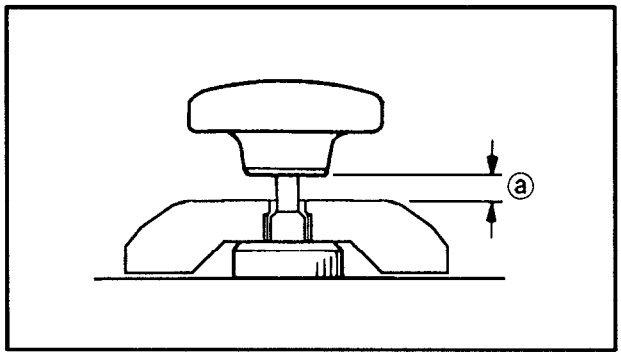
	Throttle lever free play: 4 ~ 7 mm (0.16 ~ 0.28 in)

2. Adjust:
   - Throttle lever free play

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

⚠ WARNING

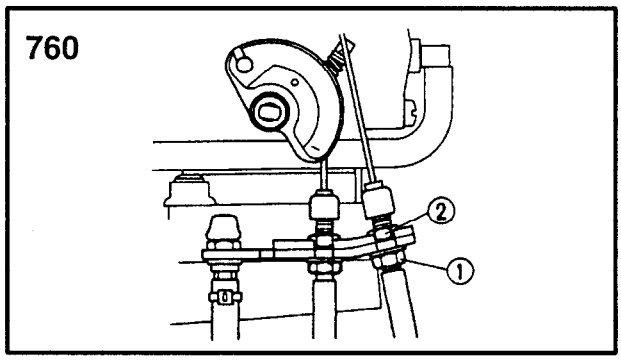
After adjusting the free play, turn the handlebar to right and left, and make sure that the trolling speed does not increase.



Choke cable inspection and adjustment

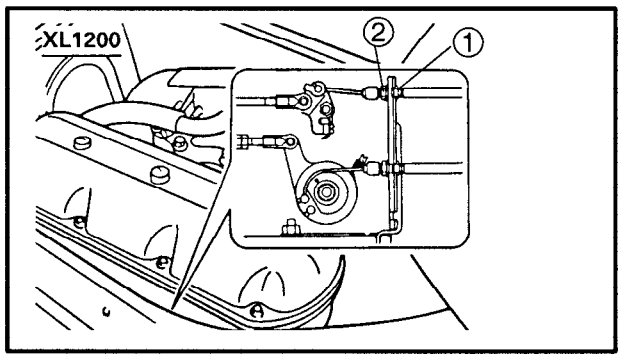
1. Measure:
   - Choke cable free play ⓐ
     Out of specification → Adjust.

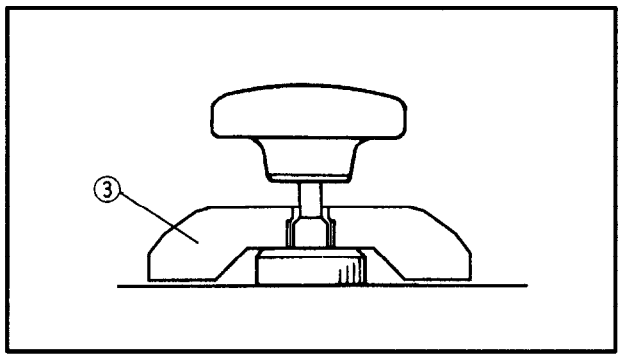
	Choke cable free play: **1 ~ 6 mm (0.04 ~ 0.24 in)**



2. Adjust:
   - Choke cable free play

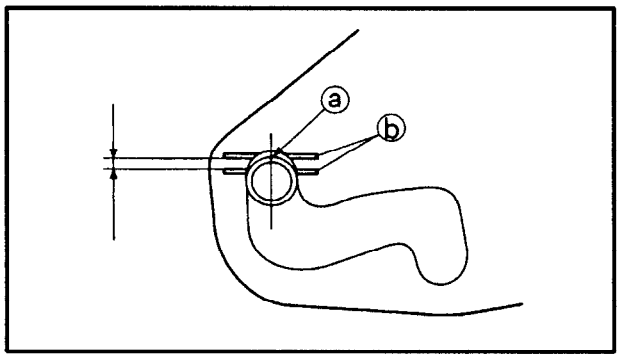
Adustment steps:	
● Loosen the lock nut ①.	
● Turn the adjuster ② in/out until the specified free play is obtained.	
Turn in	**Free play is increased.**
Turn out	**Free play is decreased.**
● Tighten the lock nut.	
	Lock nut: **9 Nm (0.9 m·kg, 6.5 ft·lb)**

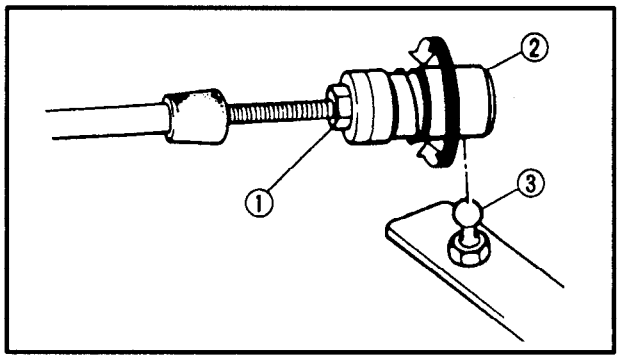


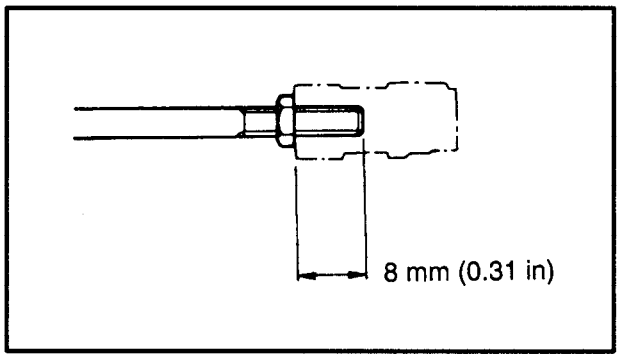


3. Inspect:
   - Pull knob farthest toward
     Knob automatically retuns → Adjust.

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 (shift lever side)

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

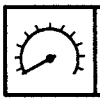
- **Stop the engine, set the fuel cock to "OFF" and loosen the fuel filler cap before a fuel system service.**
- **When removing fuel system parts, hold them in a cloth and take care that no fuel spills into the engine compartment.**

Fuel filter inspection

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

Trolling speed inspection and adjustment

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



Trolling speed:
1,300 ± 50 r/min

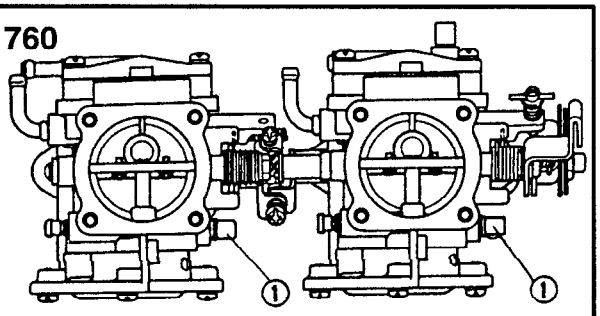
Checking steps: (vehicle on water)

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

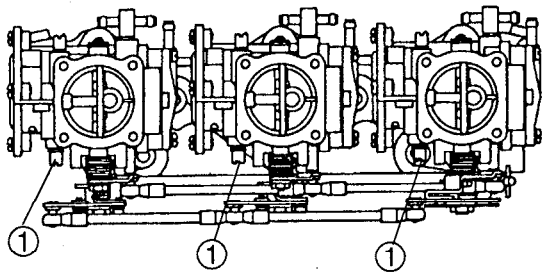
Engine tachometer:
YU-08036-A/90890-06760

- Measure the engine trolling speed.

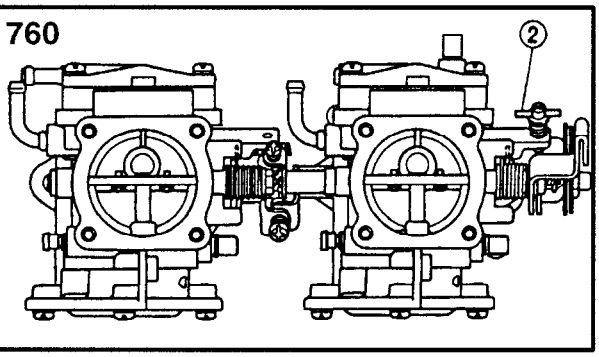
760



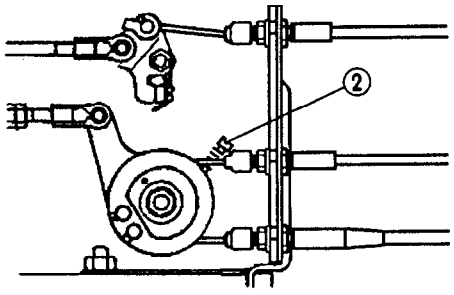
1200



760



1200



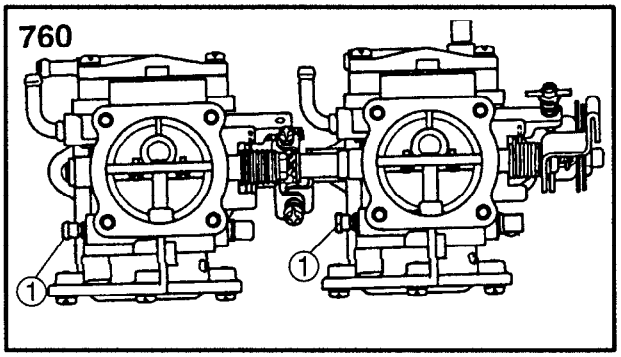
2. Adjust:
   - Trolling speed

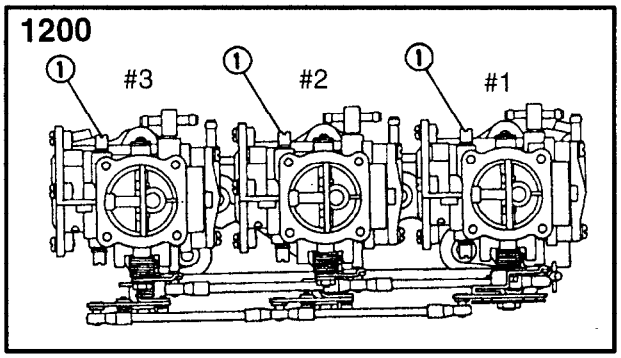
Adjustment steps:
- Screw in the low speed screws ① until they are lightly seated.
- Back the screws out by the specified number of turns.

Low speed screw:
XL760
1-3/4 ± 1/4 turns out
XL1200
1 ± 1/4 turns out

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

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





Carburetor adjustment

1. Adjust:
   - High speed screw

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

High speed screw:
XL760
1/2 ± 1/4 turns out
XL1200
3/4 ± 1/4 (#1, #3)
1 ± 1/4 (#2) turns out

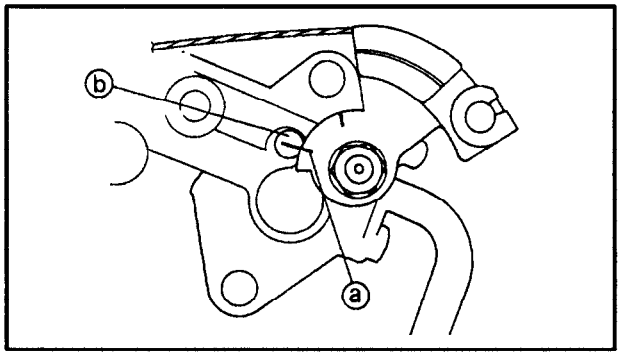
OIL INJECTION SYSTEM

Oil filter inspection

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

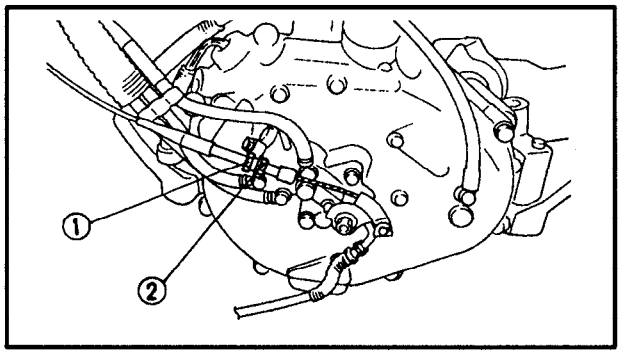
Oil pump calbe inspection and adjustment (XL1200)

1. Inspect:
   - Oil pump lever position
     Incorrect → Adjust.

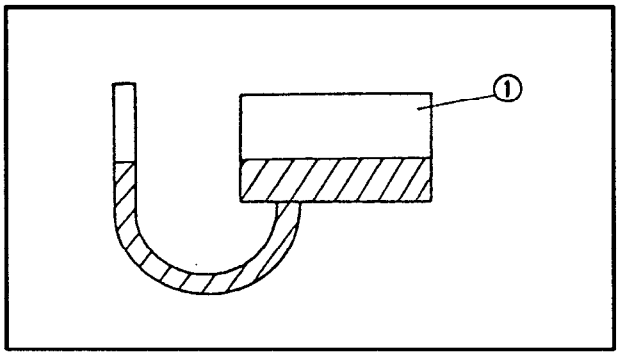


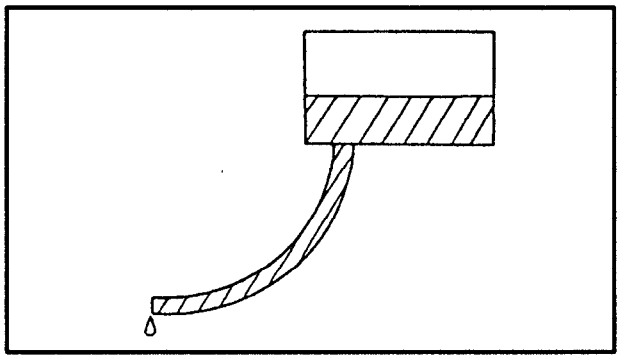
Checking steps:
- Fully close the carburetor throttle valve.
- Check that the mark ⓐ on the pump lever is aligened the mark ⓑ on the pump body.

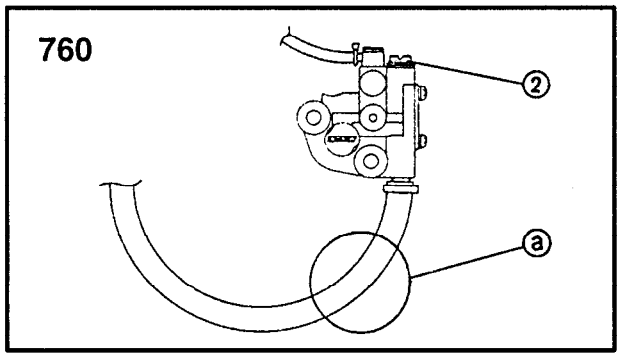
2. Adjust
   - Oil pump cable

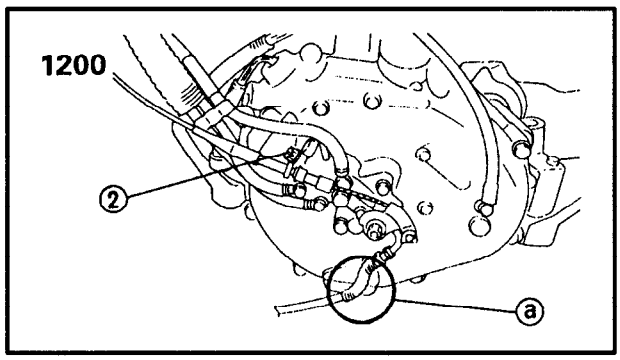


Adjustment steps:
- Loosen the lock nut ① and adjust nut ②.
- Fully close the carburetor throttle valve.
- Adjust the oil pump cable so that mark ⓐ on the pump lever aligns the mark ⓑ on the pump body.
- Tighten the lock nut.









Oil injection pump air bleeding

NOTE:

Bleed the oil injection system if:

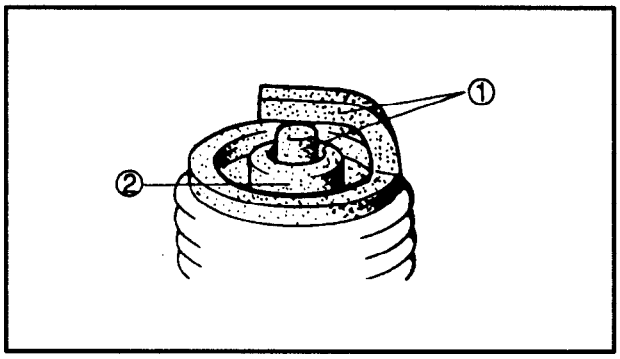
- The system has been disassembled.
- The oil has been completely used up during operation.

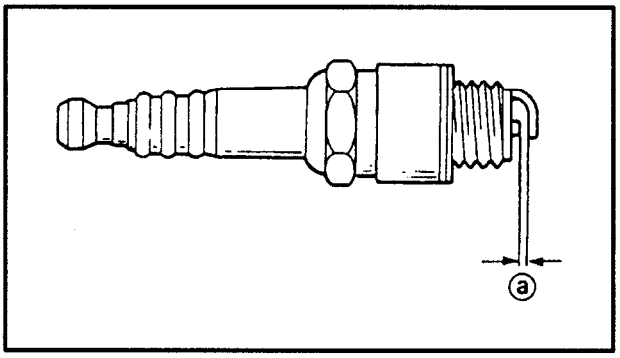
1. Bleed:
   - Air

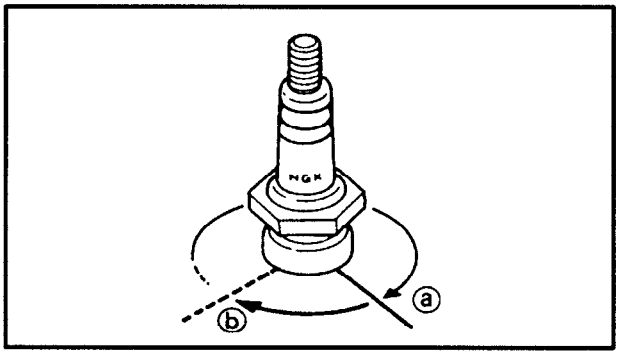
Air bleeding steps:

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

Screw:
5 Nm (0.5 m•kg, 3.6 ft•lb)







POWER UNIT

Spark plug inspection

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

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

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

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

4. Tighten:
   - Spark plug

Spark plug:
25 Nm (2.5 m•kg, 18 ft•lb)

NOTE:

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

ELECTRICAL

Battery inspection

CAUTION:

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

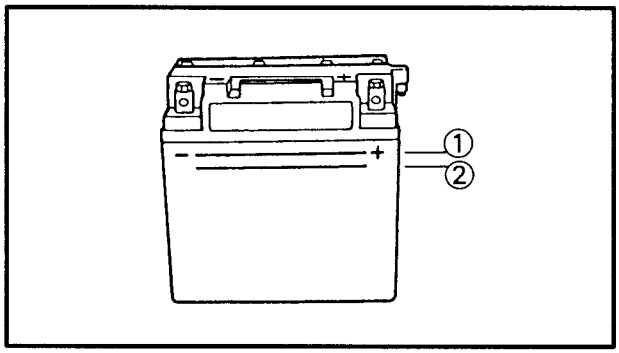
WARNING

- **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.
- 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.

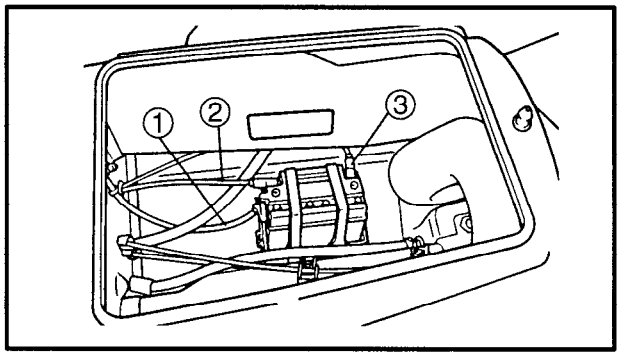
3. Inspect:
   - Battery fluid specific gravity
     Out of specification → Charge.

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

4. Install:
   - Filler cap

CAUTION:

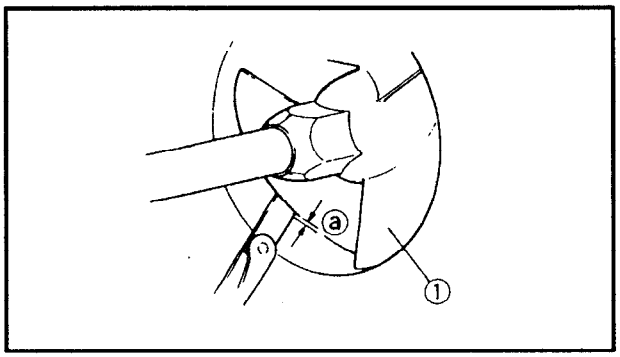
Rinse off any acid from the battery case and wipe the battery dry prior to installation.

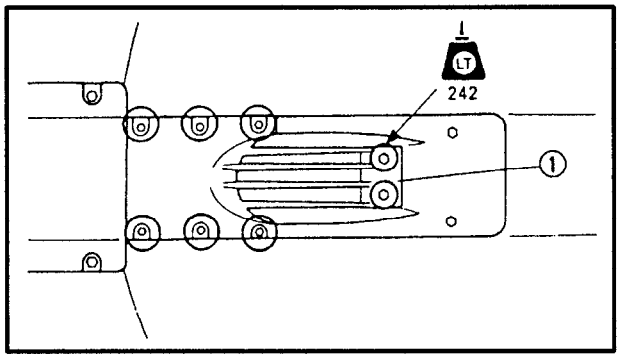


5. Install:
   - Breather hose ①
   - Battery
   - Positive lead ②
   - Negative lead ③
   - Battery babd

CAUTION:

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





JET PUMP UNIT

Impeller inspection

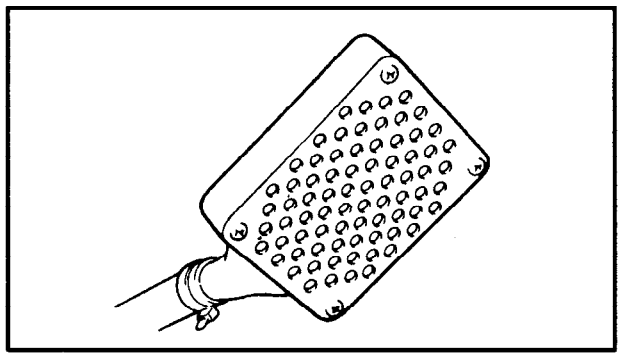
1. Check:
   - Impeller ①
     Wear/Damage → Replace.
     Scratch/Nick → File/Grind.
2. Measure:
   - Impeller clearance ⓐ
     Out of specification → Replace.

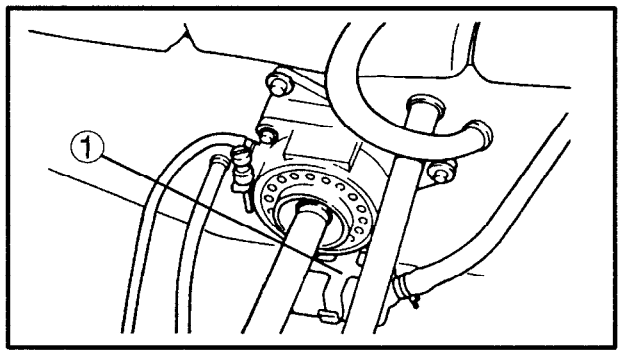
Impeller clearance limit:
0.6 mm (0.024 in)

Measurement steps:
- Remove the battery.
- Remove the intake screen ①.
- Measure the clearance at all four points.
- Install the intake screen.

Bolt:
11 Nm (1.1 m•kg, 8.0 ft•lb)

- Install the battery.

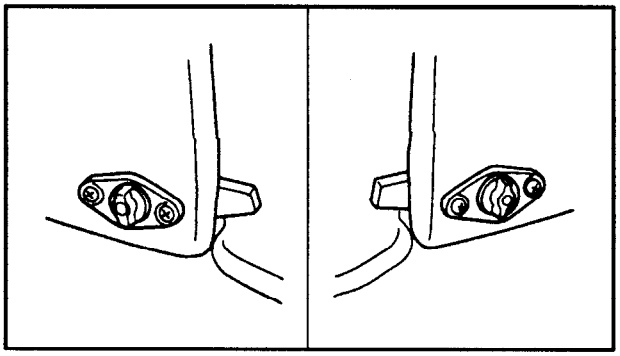




Bilge strainer inspection

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

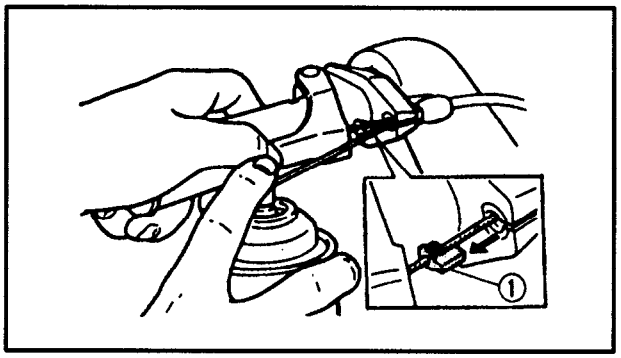
Inspection steps:
- Remove the coupling cover.
- Disconnect the bilge strainer ① from the strainer holder.
- Inspect the bilge strainer.



GENERAL

Drain plug inspection

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



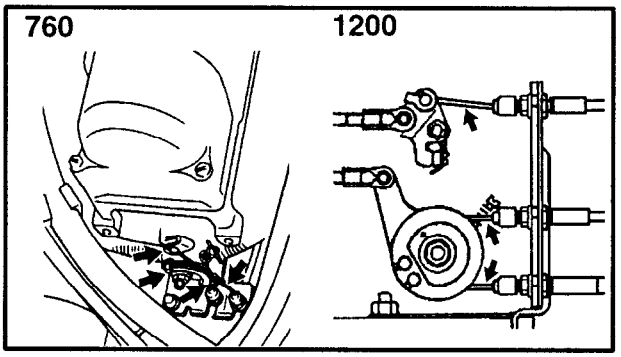
Greasing point

1. Apply:
   - Throttle cable inner wire

	Recommended fluid: **Rust-inhibitor**

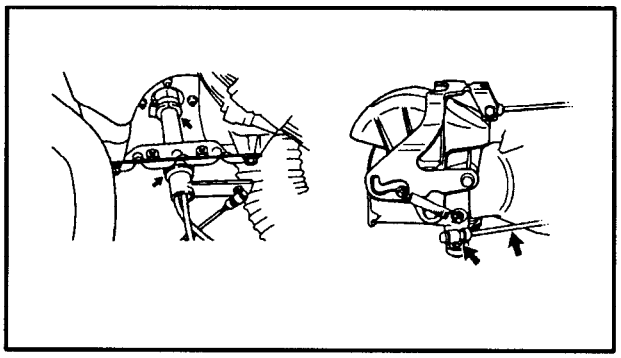
NOTE:

- Squeeze the throttle lever and remove the seal ①.
- Spray a rust-inhibitor into the outer cable.



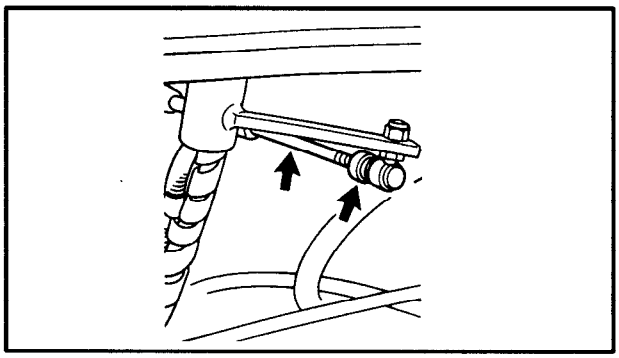
2. Apply:
   - Throttle cable inner wire
   - Choke cable inner wire
   - Oil pump cable inner wire

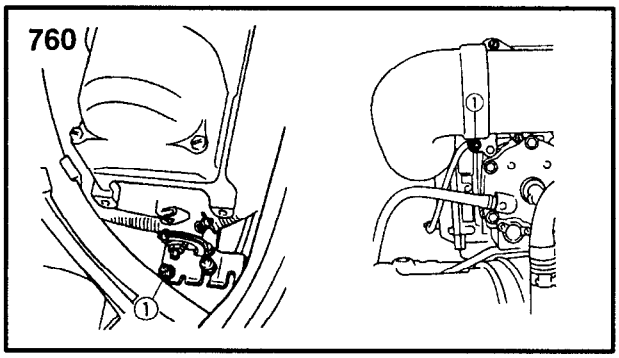
	Recommended grease: **Water resistant grease**

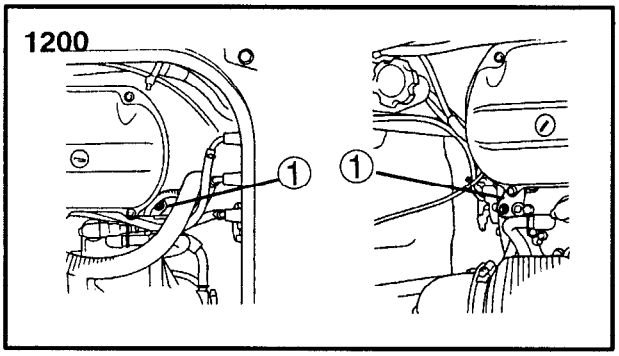


3. Apply:
   - Steering pivot shaft bushing
   - Nozzle pivot shaft collar

	Recommended grease: **Water resistant grease**







4. Apply:
   - Steering cable
   - Cable joint

Recommended grease:
Water resistant grease

NOTE:

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

5. Fill:
   - Bearing housing
   - Starter idle gear

Recommended grease:
Water resistant grease

NOTE:

- Fill in the bearing housing and the starter idle gearwith water resistant grease througt the grease nipples ①.
- Fill the grease slowly and carefully, as it can damage the hose and the joints.
- Refer to the "MAINTENANCE INTERVAL CHART".

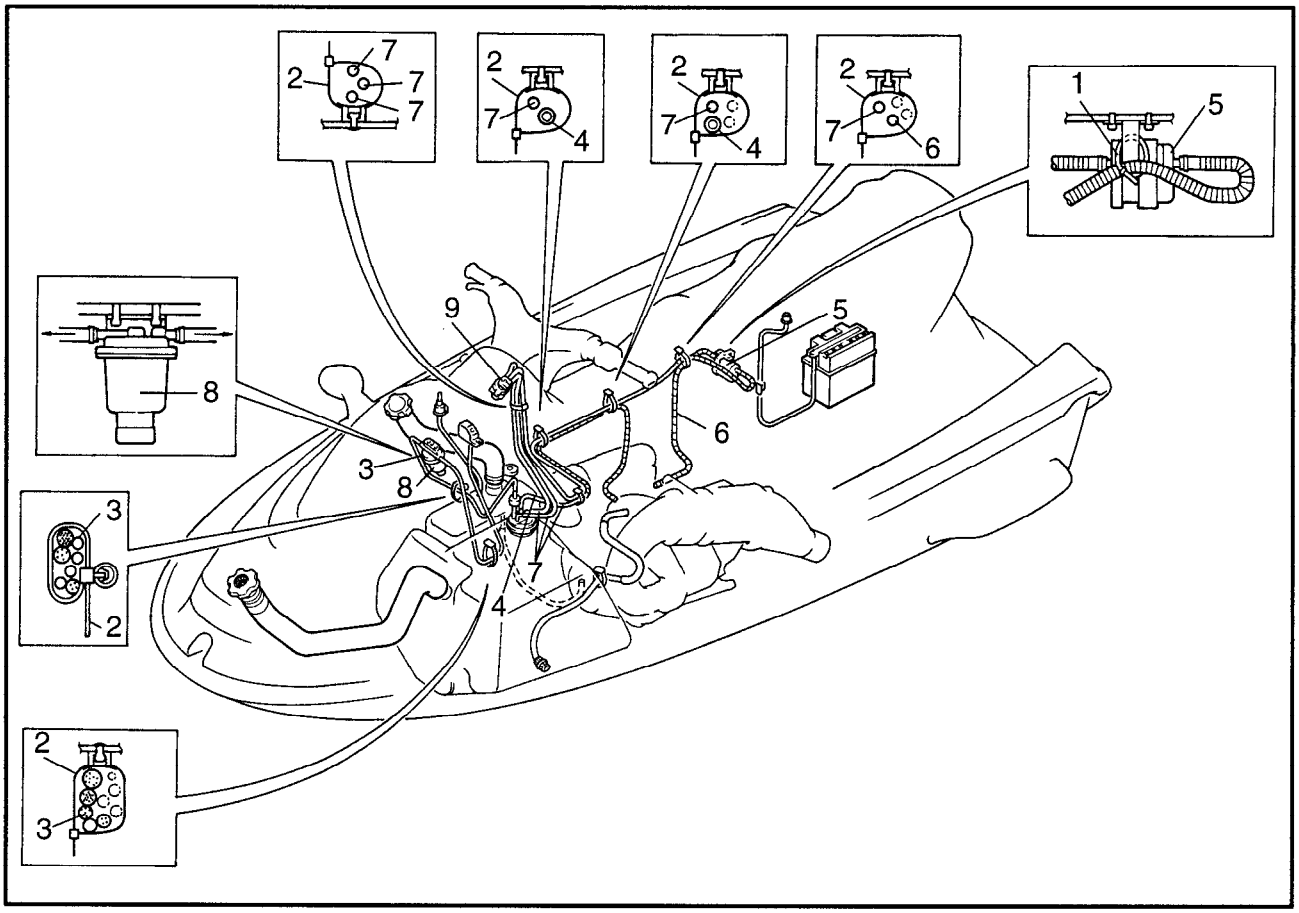
CHAPTER 4
FUEL SYSTEM

FUEL LINE

⚠ WARNING

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

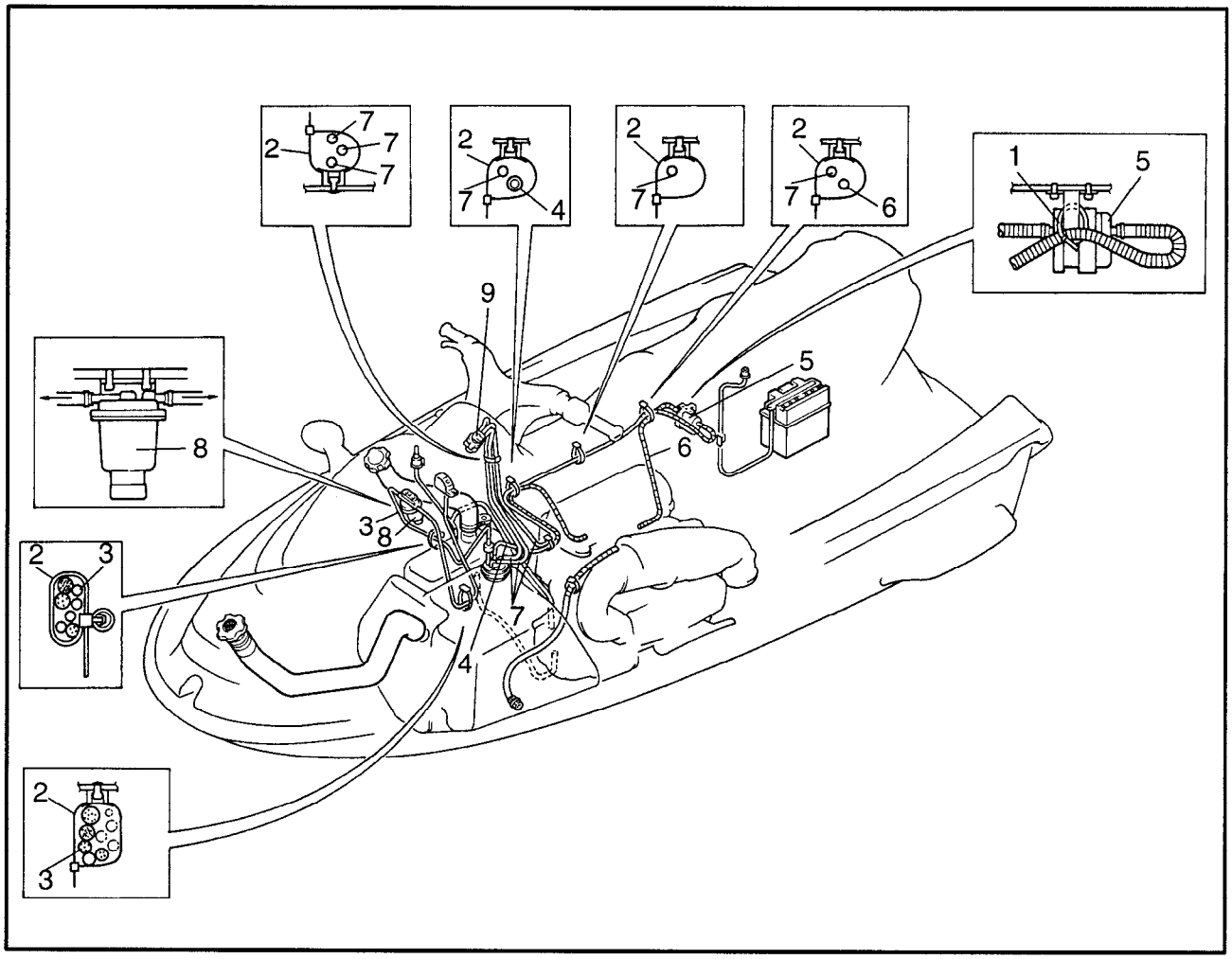
EXPLODED DIAGRAM (XL760)



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	1	
2	Clamp	6	
3	Air ventilation hose	1	
4	Fuel hose (OUT)	1	
5	Fuel filter	1	
6	Fuel hose	1	
7	Fuel hose	3	
8	Check valve	1	
9	Fuel cock body	1	
			Reverse the removal steps for installation.

EXPLODED DIAGRAM (XL1200)



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	1	
2	Clamp	6	
3	Air ventilation hose	1	
4	Fuel hose (OUT)	1	
5	Fuel filter	1	
6	Fuel hose	1	
7	Fuel hose	3	
8	Check valve	1	
9	Fuel cock body	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Fuel filter inspection

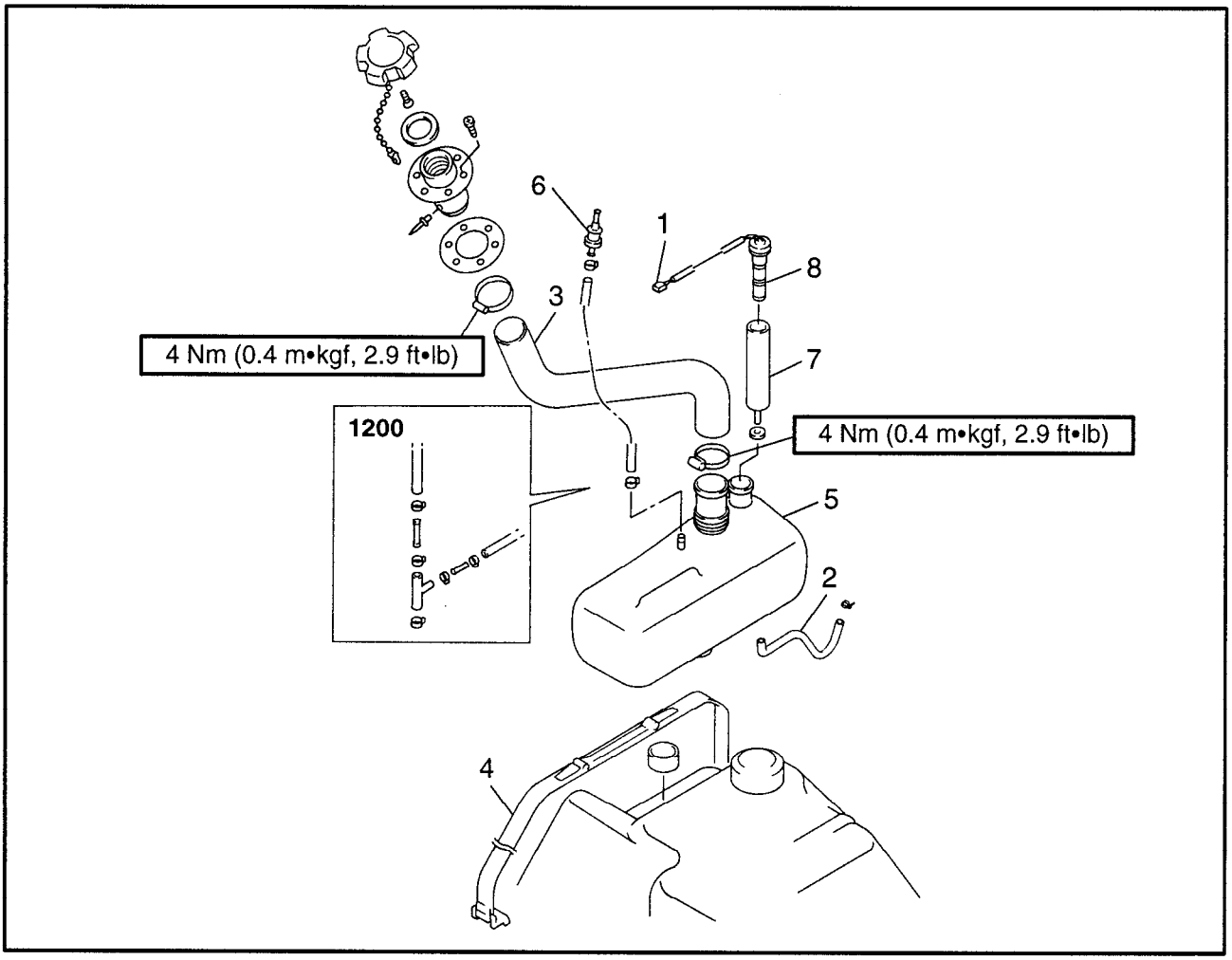
Refer to the "FUEL SYSTEM" in chapter 3.

Fuel cock inspection

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

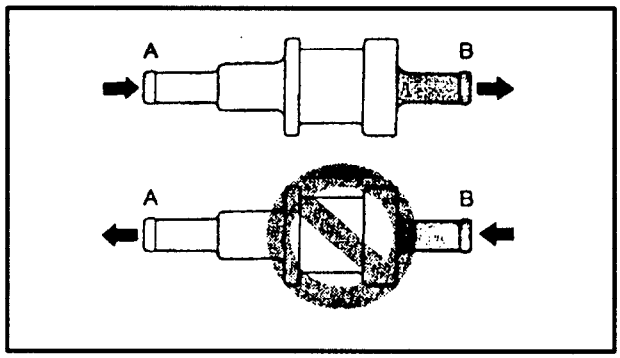
OIL TANK

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

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

Refer to "OIL INJECTION SYSTEM" in chapter 3.

Oil level sensor inspection

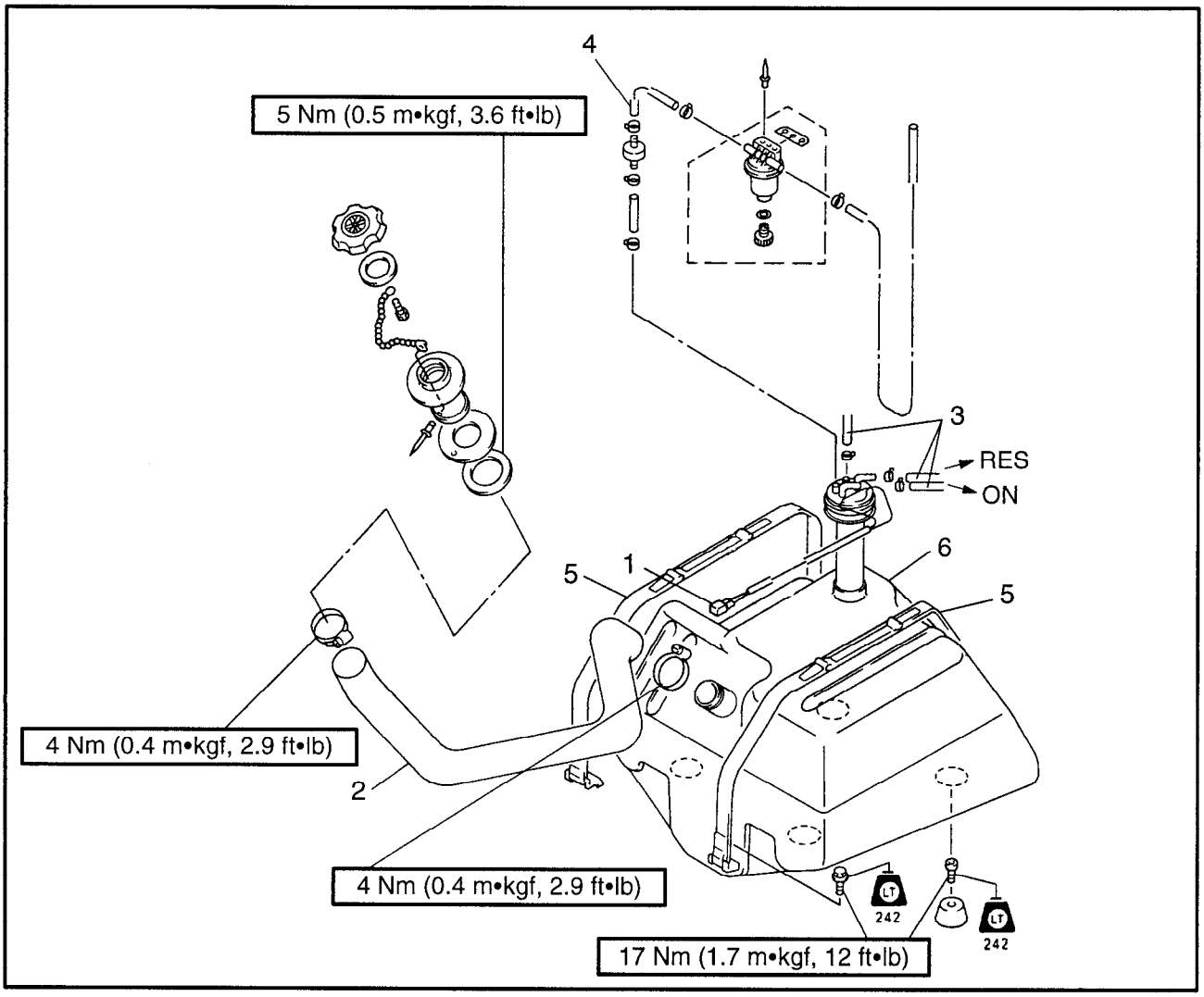
Refer to "INDICATION SYSTEM" in chapter 7.

Oil tank inspection

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

FUEL TANK REMOVAL

EXPLODED DIAGRAM

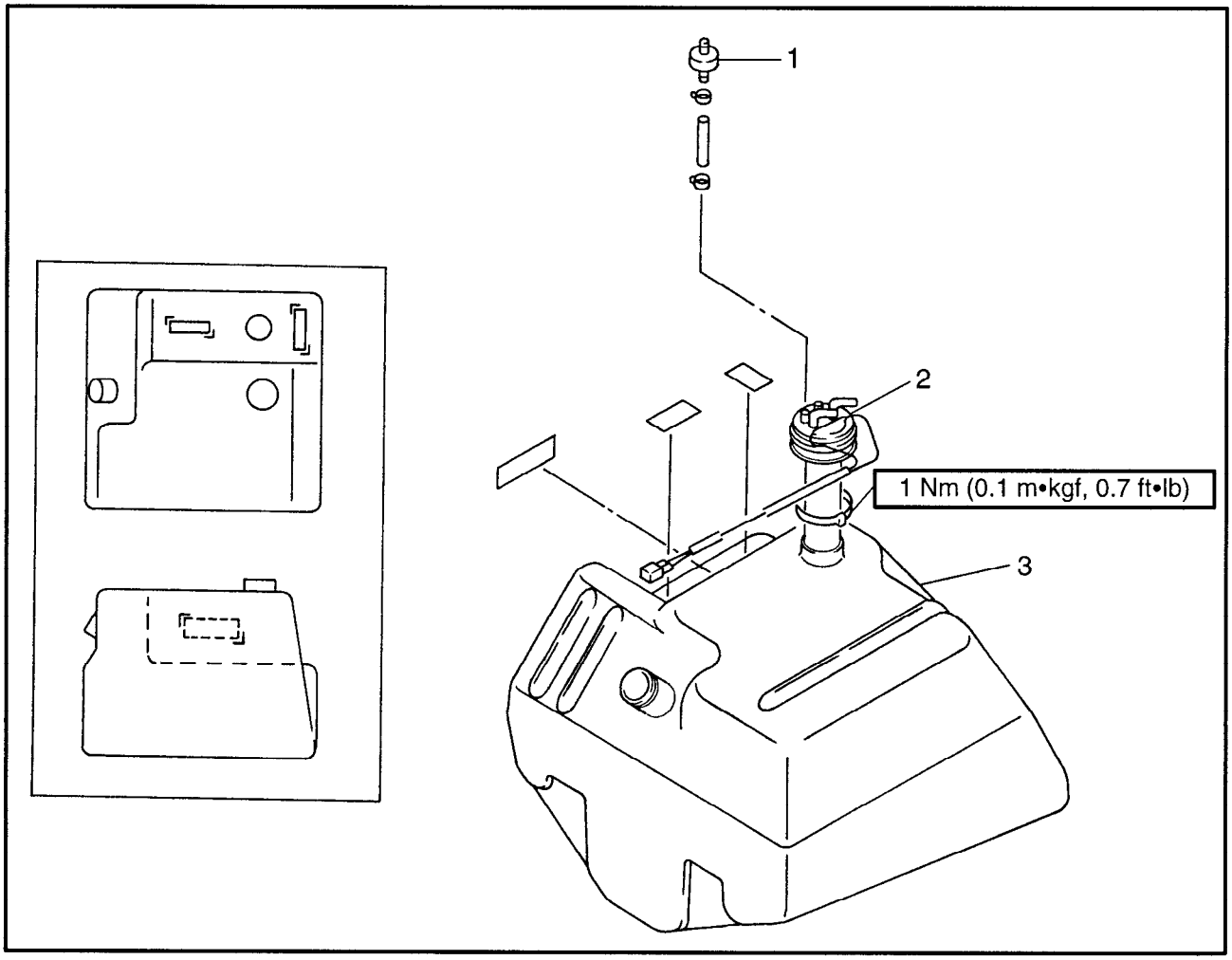


REMOVAL AND INSTALLATION CHART

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

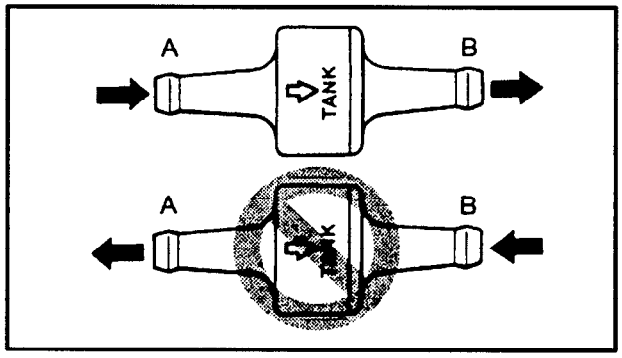
FUEL TANK

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	FUEL TANK DISASSEMBLY		Follow the left "Step" for removal.
	Fuel tank disassembly		Refer to "FUEL TANK REMOVAL"
1	Check valve	1	
2	Pipe joint assembly	1	
3	Fuel tank	1	
			Reverse the removal steps for installation.



SERVICE POINTS

Check valve inspection

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

Flow from A to B

Fuel level sensor inspection

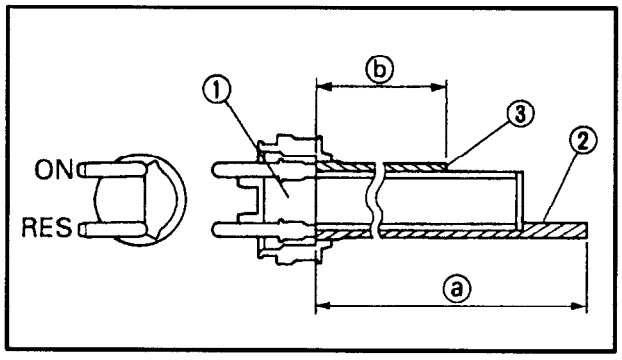
Refer to the "INDICATION SYSTEM" section in chapter 7.

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.



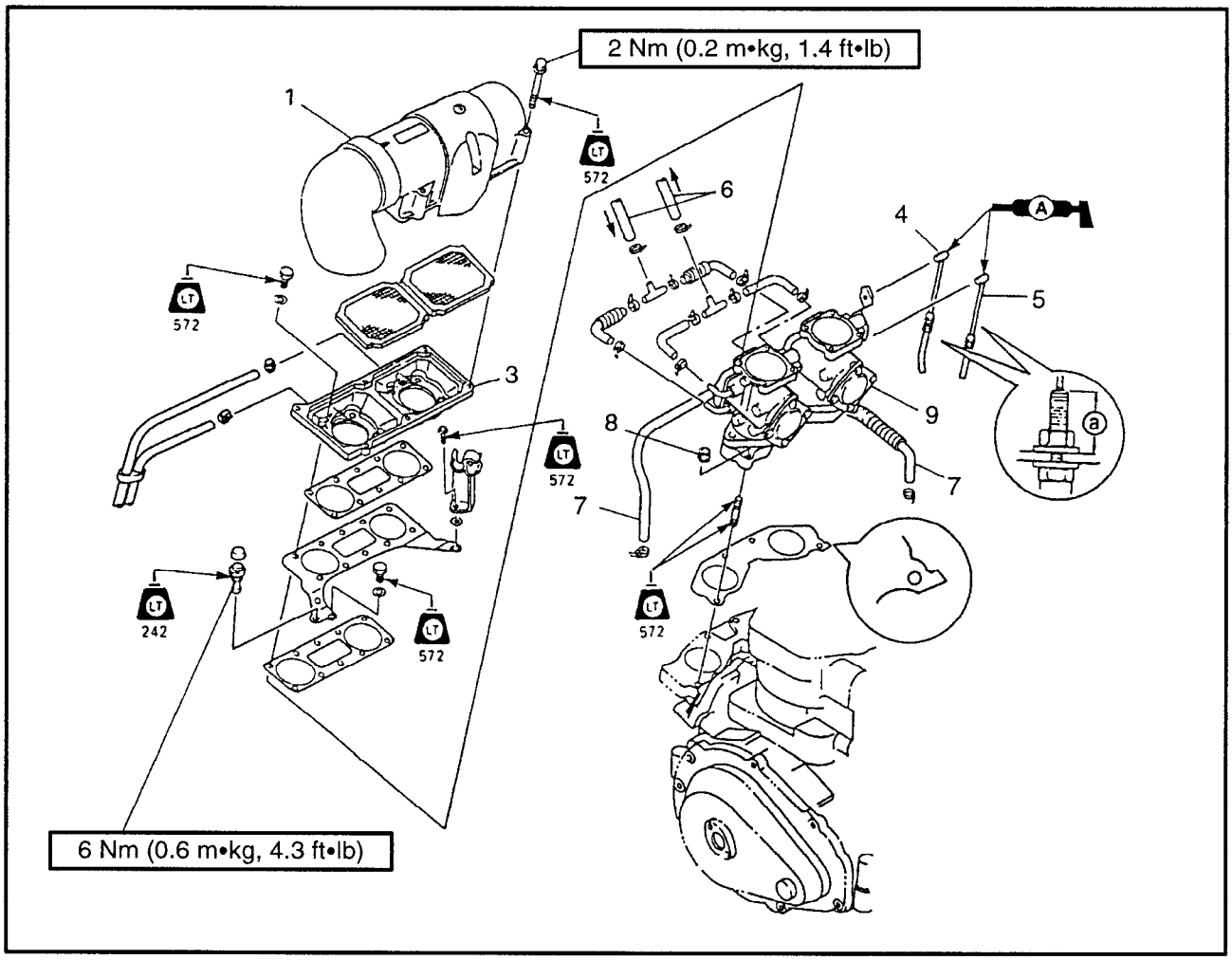
Pipe joint installation

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

Length ⓐ:
372.5 ± 2 mm (14.7 ± 0.08 in)
Length ⓑ:
352.5 ± 2 mm (13.8 ± 0.08 in)

CARBURETOR UNIT REMOVAL

EXPLODED DIAGRAM (XL760)

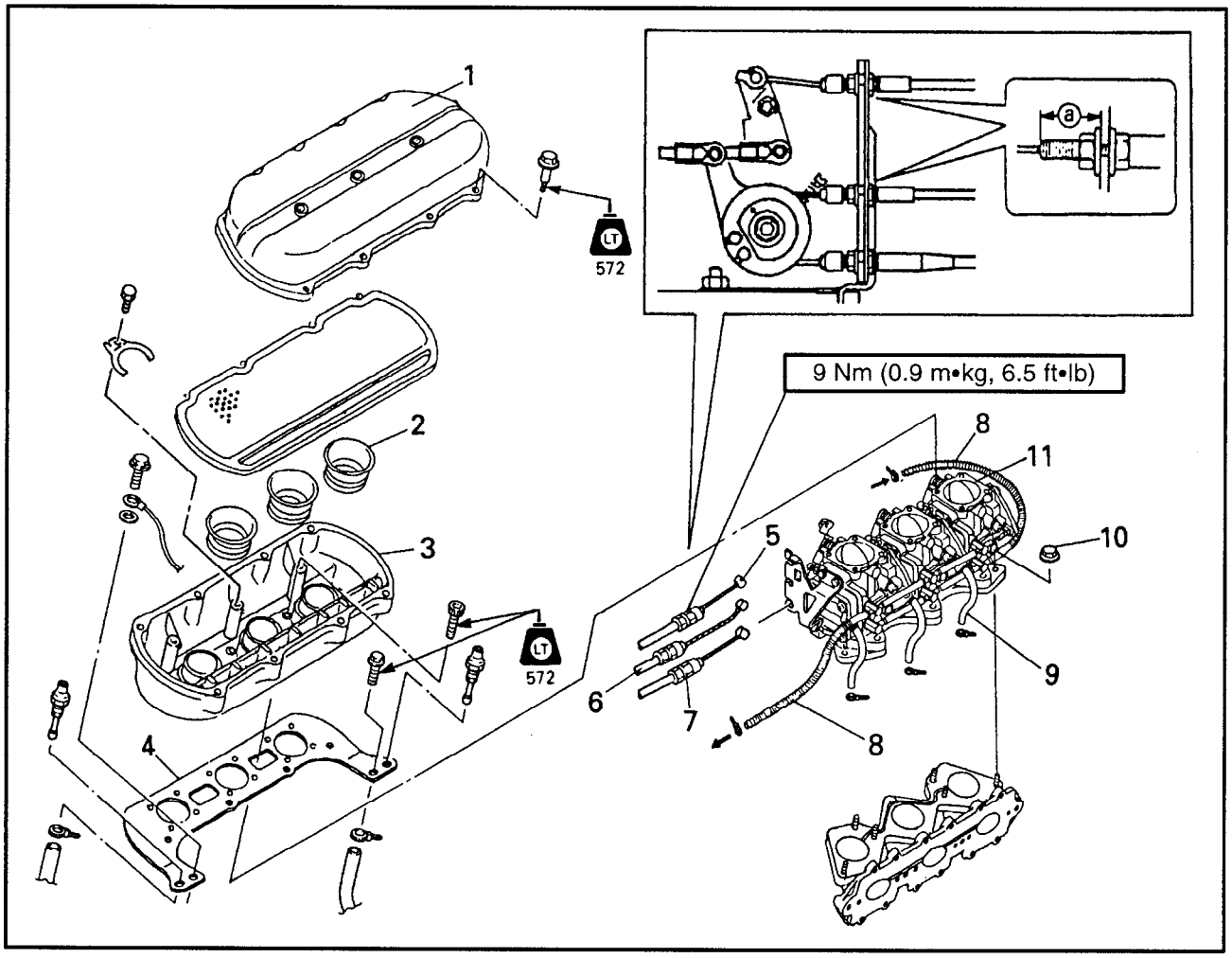


REMOVAL AND INSTALLATION CHART

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

CARBURETOR UNIT REMOVAL

EXPLODED DIAGRAM (XL1200)

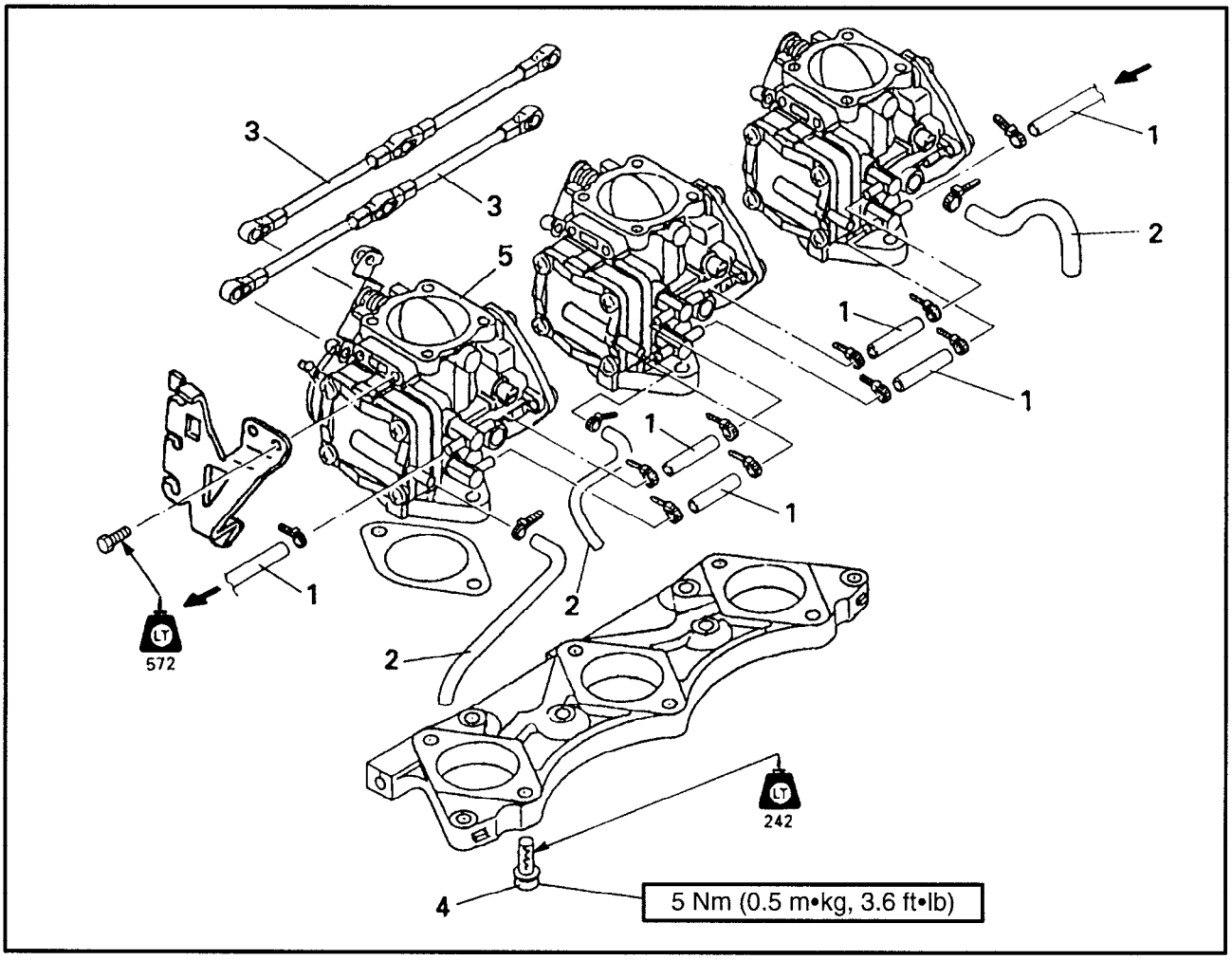


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CARBURETOR REMOVAL		Follow the left "Step" for removal.
1	Carburetor cover 1	1	
2	Funnel	3	
3	Carburetor cover 2	1	**Choke cable guide set position ⓐ: 14 mm (0.55 in)** **Throttle cable guide set position ⓐ: 17 mm (0.67 in)**
4	Plate	1	
5	Choke cable	1	
6	Throttle cable	1	
7	Oil pump calbe	1	
8	Fuel hose	2	
9	Pulse hose	3	
10	Nut	6	
11	Carburetor unit	1	
			Reverse the removal steps for installation.

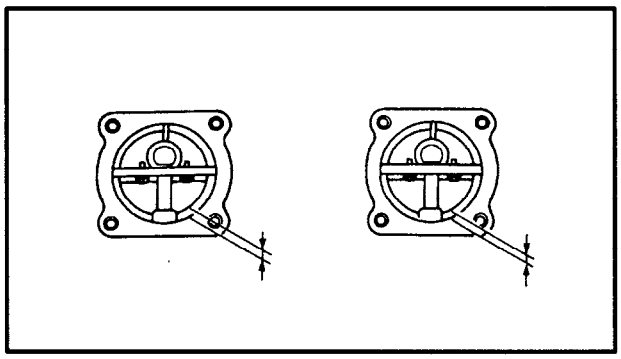
CARBURETOR REMOVAL

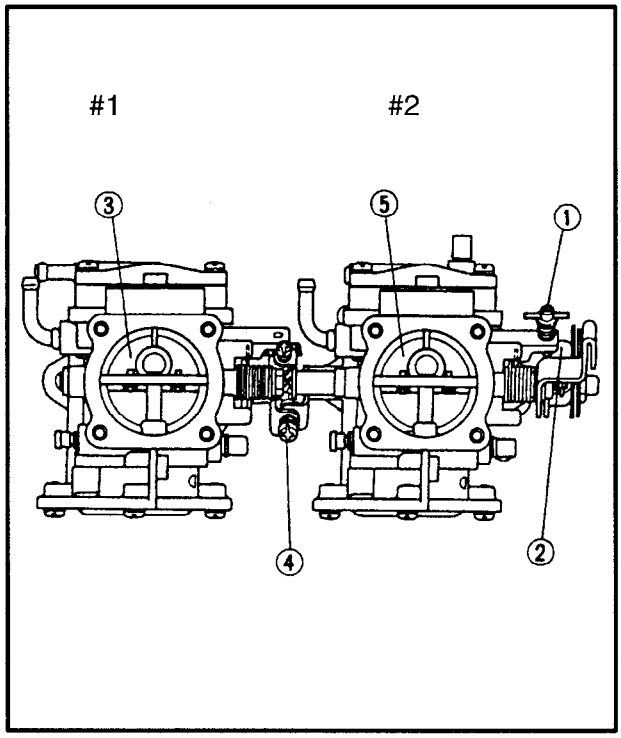
EXPLODED DIAGRAM

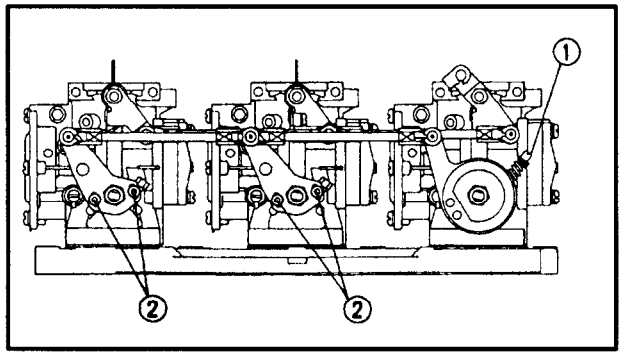


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CARBURETOR ASSEMBLY	760, 1200	Follow the left "Step" for removal.
	Carburetor unit		Refer to "CARBURETOR UNIT REMOVAL".
1	Fuel hose	4, 6	
2	Pulse hose	2, 3	
3	Link joint	-, 2	
4	Bolt	4, 6	
5	Carburetor assembly	2, 3	
			Reverse the removal steps for installation.







SERVICE POINTS

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: XL760
- Turn out the throttle stop screw ① until its tip is apart from the throttle lever ②.

NOTE:

Record the set position of the throttle stop screw.

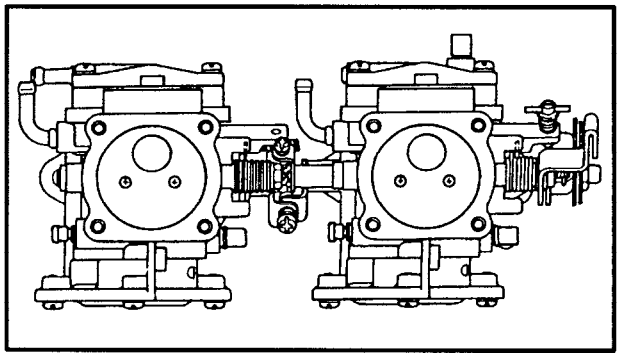
- Check that the #1 throttle valve ③ is fully closed.
- Turn the synchronization screw ④ in or out until the #2 throttle valve ⑤ is fully closed.
- Turn in the throttle stop screw to the set position.

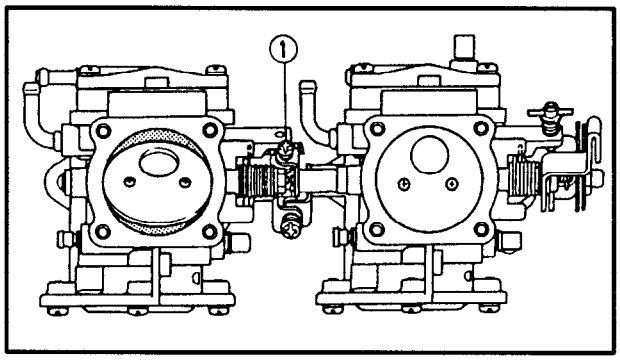
Adjustment steps: XL1200
- Turn out the throttle stop screw ① until its tip is apart from the throttle lever ②.

NOTE:

Record the set position of the throttle stop screw.

- Loosen the screws ②.
- Tighten the screws ②.
- Turn in the throttle stop screw to the set position.





Choke valve synchronization inspection and adjustment (XL760)

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

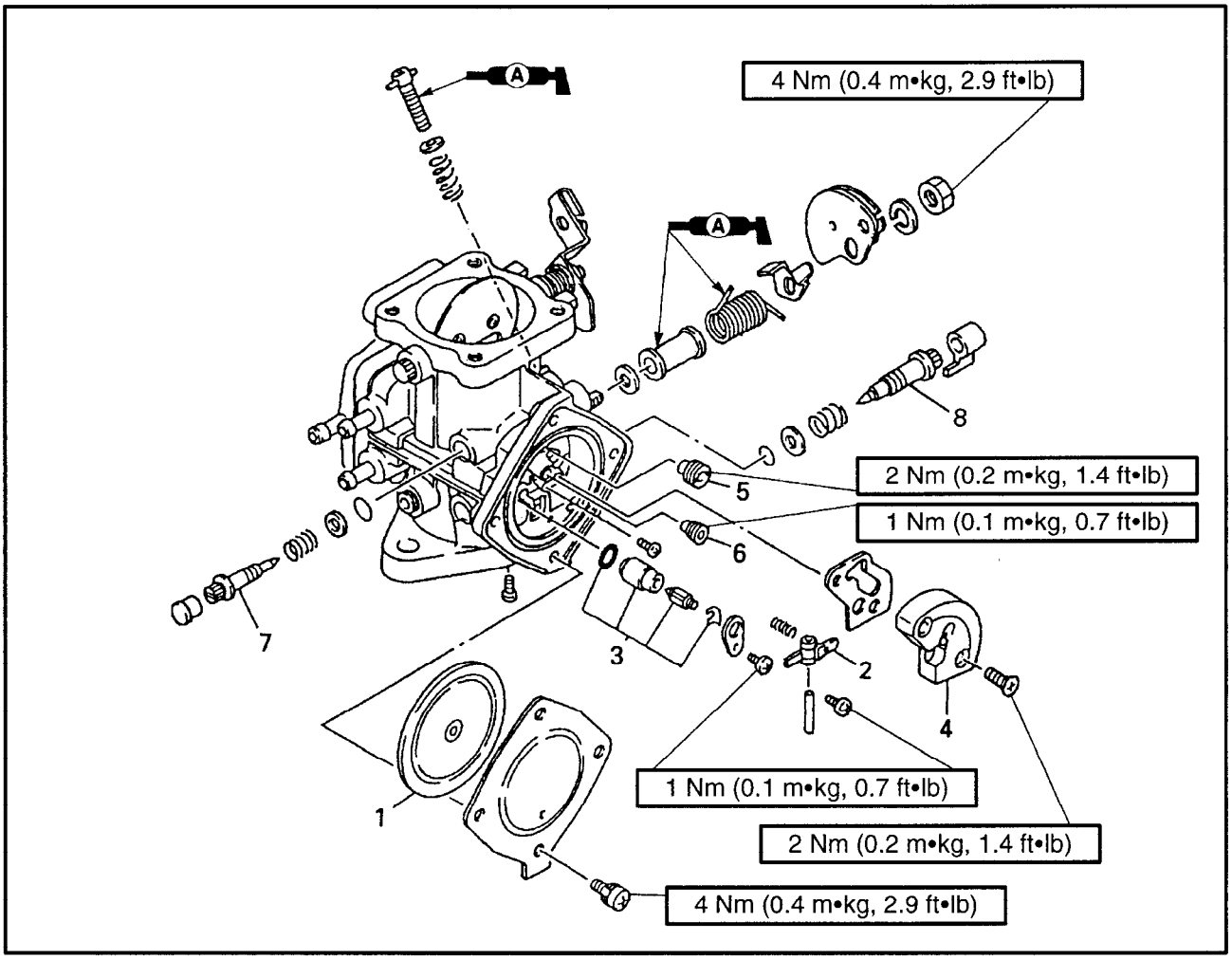
Checking steps:
- While pulling the choke knob, check the opening of all choke valves.

2. Adjust:
- Choke valve synchronization

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

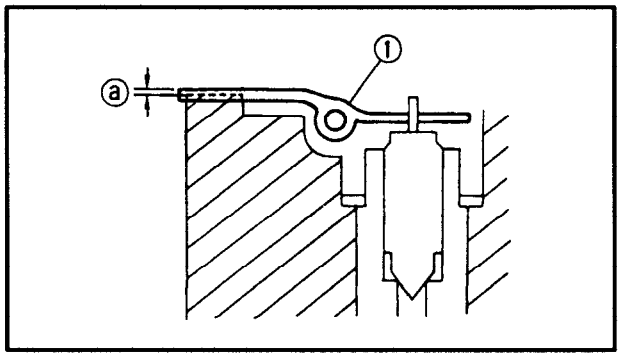
CARBURETOR

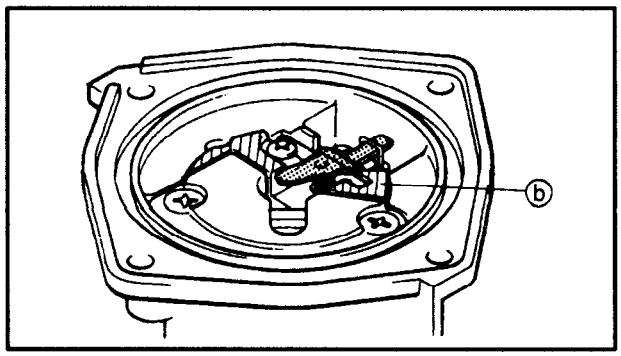
EXPLODED DIAGRAM

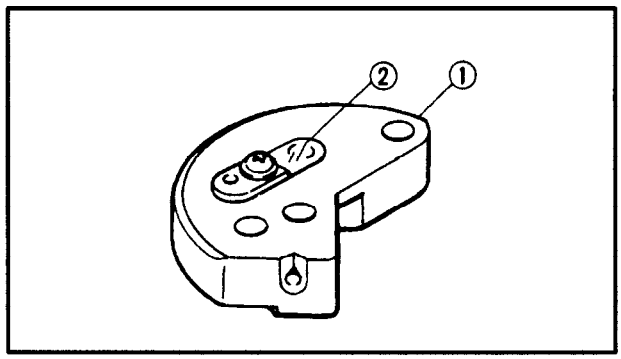


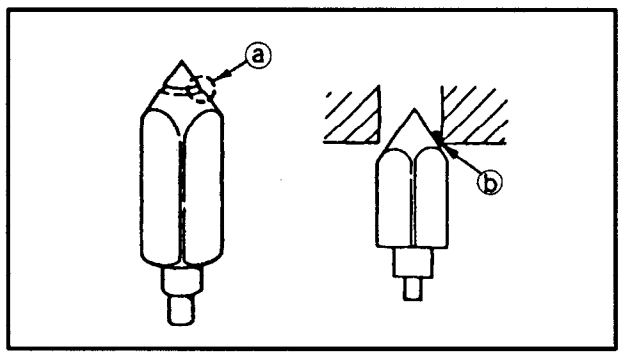
REMOVAL AND INSTALLATION CHART

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









SERVICE POINTS

CAUTION:

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

Diaphragm inspection

1. Inspect:
   - Diaphragm assembly
     Damage → Replace.

Float arm inspection

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

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

NOTE:

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

Body assembly inspection

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

Needle valve inspection

1. Inspect:
   - Needle valve
   - Valve seat
     Grooved wear ⓐ → Replace.
     Dust ⓑ → Clean.

NOTE:

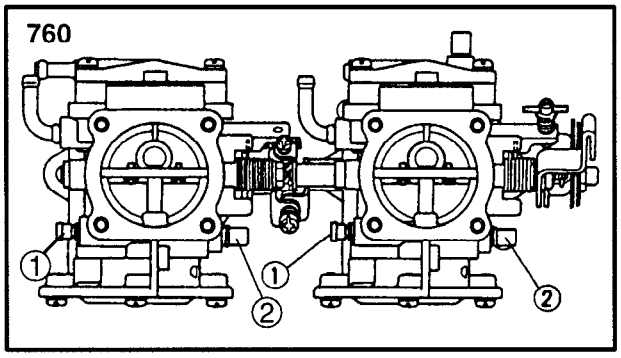
Always replace the needle valve and valve seat as a set.

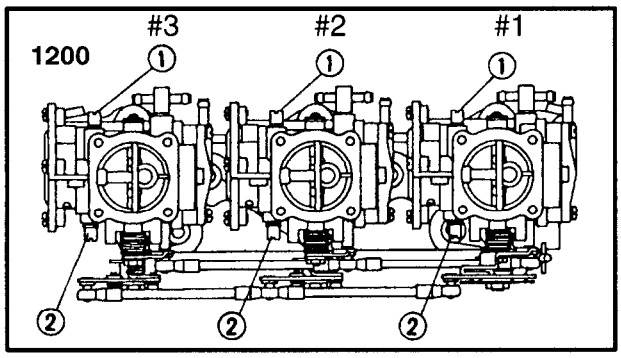
Jet and carburetor body inspection

1. Inspect:
   - Main jet
   - Pilot jet
   - Carburetor body
     Contamination → Clean.

High and low speed screws inspection

1. Inspect:
   - High speed screw
   - Low speed screw
     Bend/Wear → Replace.





High and low speed screws adjustment

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

Adjustment steps:
- Screw in the high speed screws ① or lower speed screws ② until they are lightly seated.
- Back out by the specified number of turns.

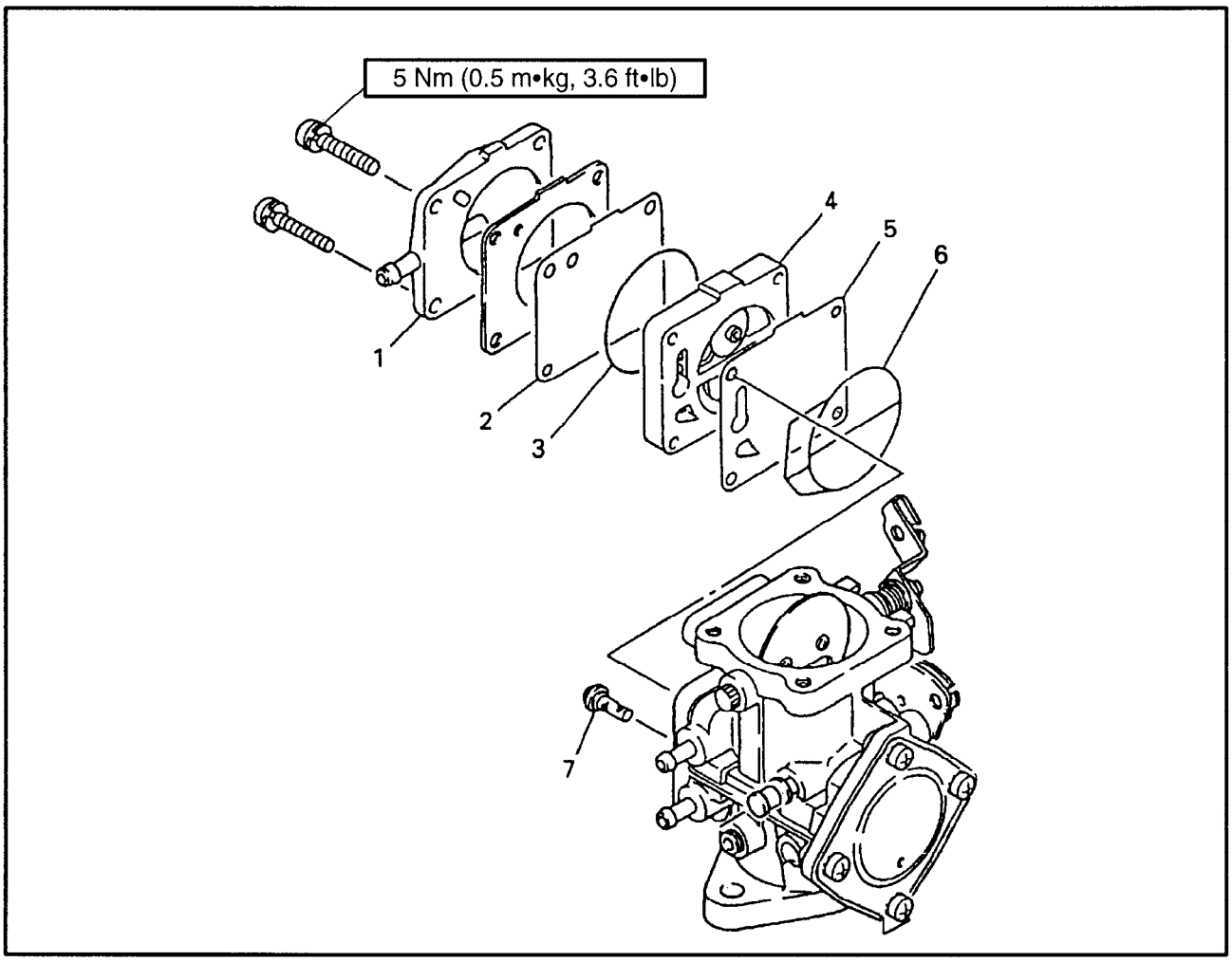
High speed screw:
XL760
1/2 ± 1/4 turns out
XL1200
3/4 ± 1/4 (#1, #3)
1 ± 1/4 (#2) turns out
Low speed screw:
XL760
1-3/4 ± 1/4 turns out
XL1200
1 ± 1/4 turns out

Carburetor assembly

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

FUEL PUMP

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

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

SERVICE POINTS

Fuel pump inspection

1. Inspect:
   - Diaphragm
   - Diaphragm body assembly

   Damage → Replace.

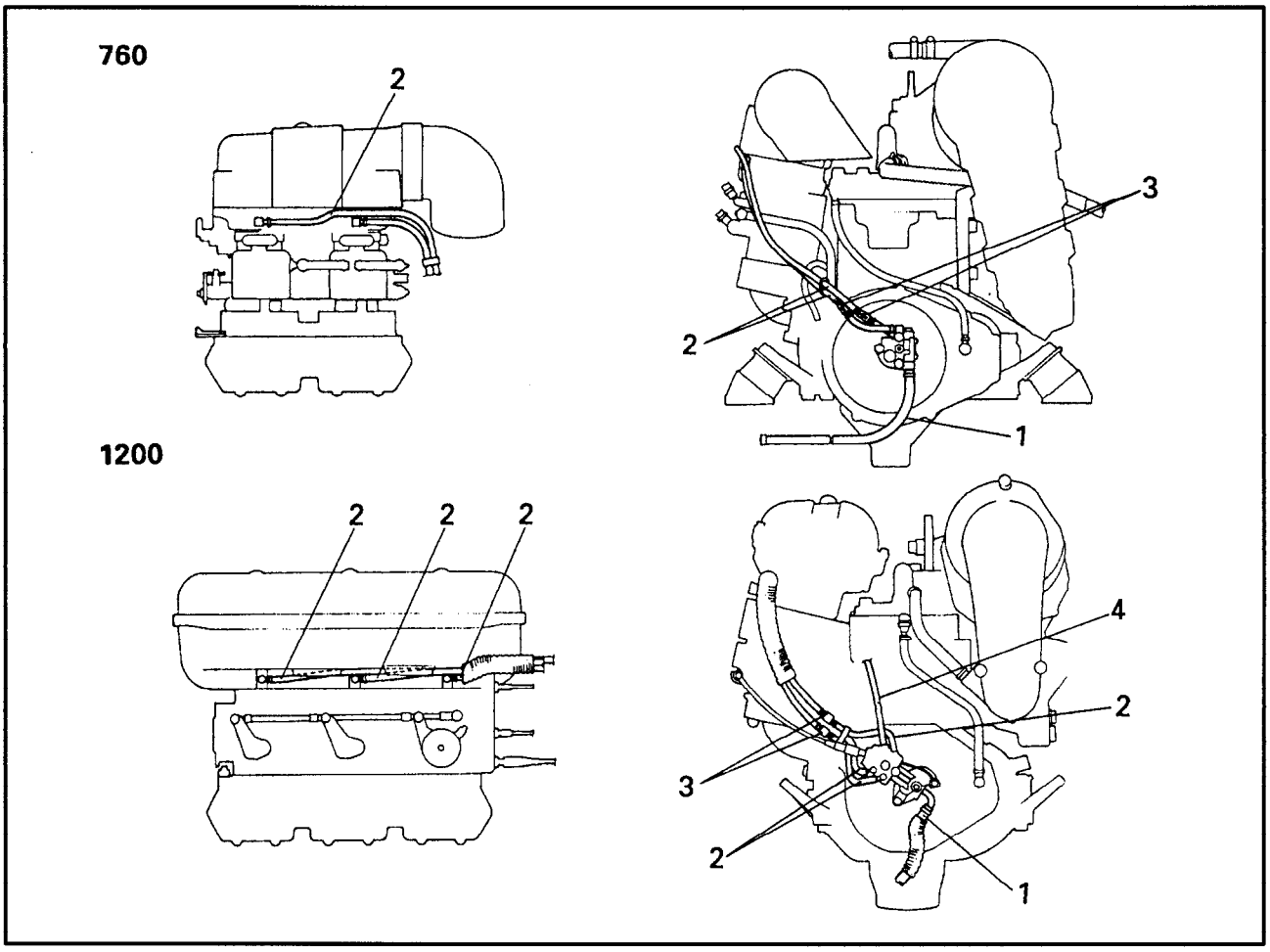
Filter inspection

1. Inspect:
   - Filter

   Contamination → Clean.
   Damage → Replace.

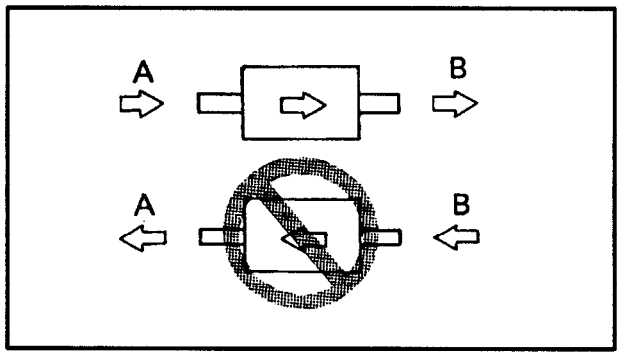
OIL LINE

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	OIL PUMP DISASSEMBLY	760, 1200	Follow the left "Step" for removal.
	Carburetor cover 2		Refer to "CARBURETOR UNIT REMOVAL".
1	Oil hose	1	
2	Derivaly hose	4, 6	
3	Check valve	2, 3	
4	Return hose	-, 1	
			Reverse the removal steps for installation.



SERVICE POINTS

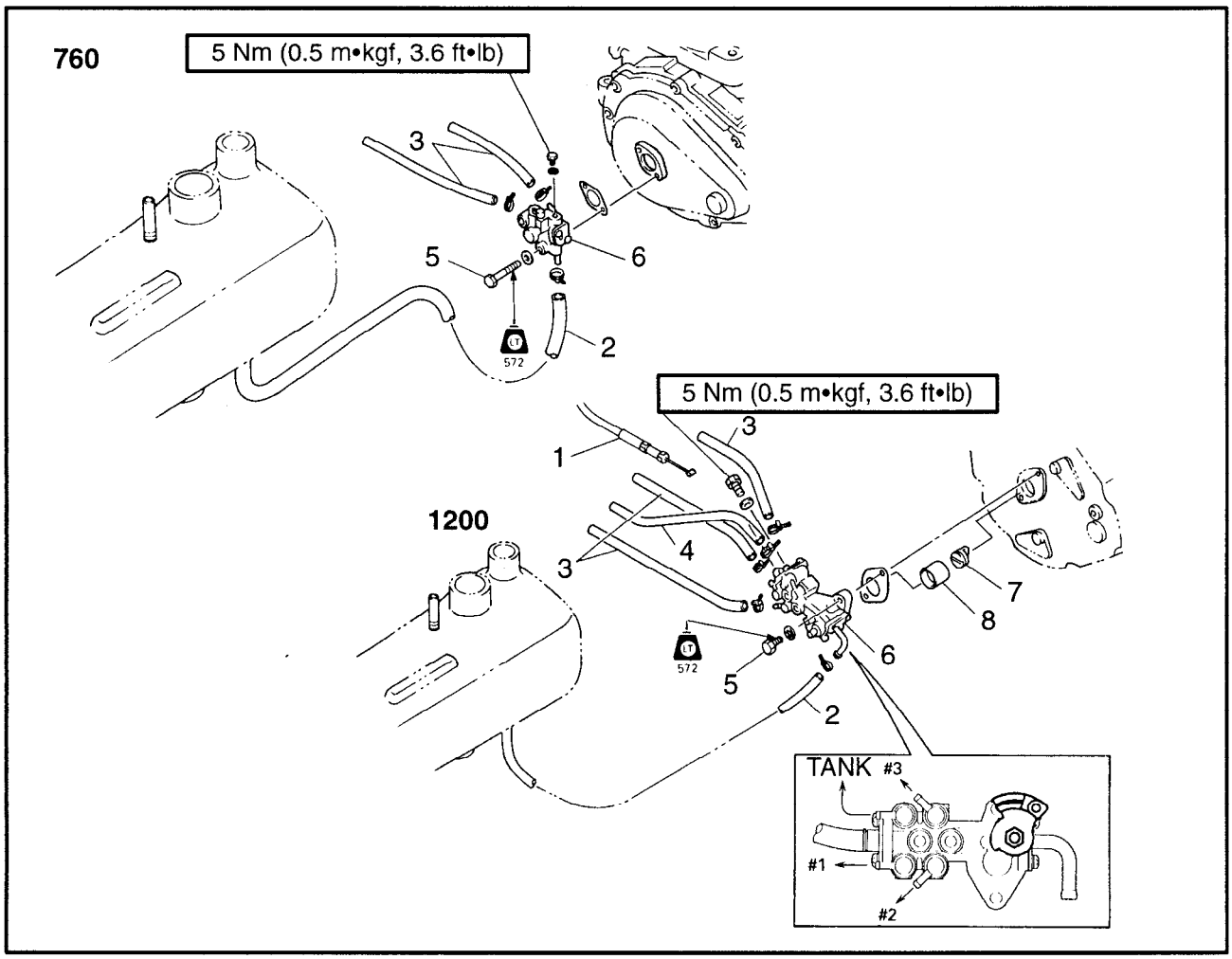
Check valve inspection

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

Flow from A to B

OIL PUMP

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	OIL PUMP REMOVAL	770, 1200	Follow the left "Step" for removal.
1	Oil pump cable	-, 1	
2	Oil hose	1	
3	Oil delivery hose	2, 3	
4	Oil return hose	-, 1	
5	Bolt (with washer)	2	
6	Oil pump	1	
7	Joint	-, 1	
8	Ring rubber	-, 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

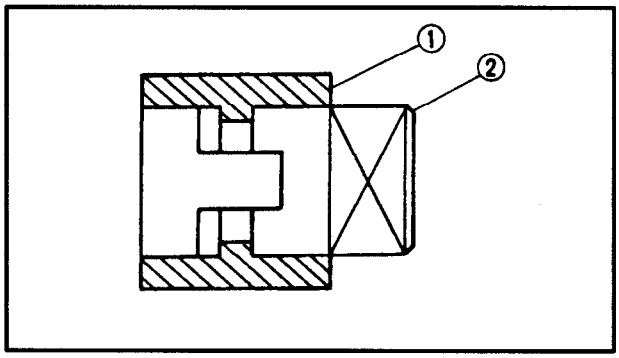
1. Inspect:
   - Oil hose
     Wear/Crack → Replace.

CAUTION:

- **If the delivery hoses are not full of oil, fill them up with oil.**
- **After installing the oil injection system, bleed the system of air. Refer to "OIL INJECTION SYSTEM" in chapter 3.**

Ring rubber inspection

1. Inspect:
   - Ring rubber
     Wear/Damage → Replace.
   - Joint
     Wear/Damage → Replace.



Ring rubber installation

1. Install:
   - Ring rubber ①
   - Joint ②

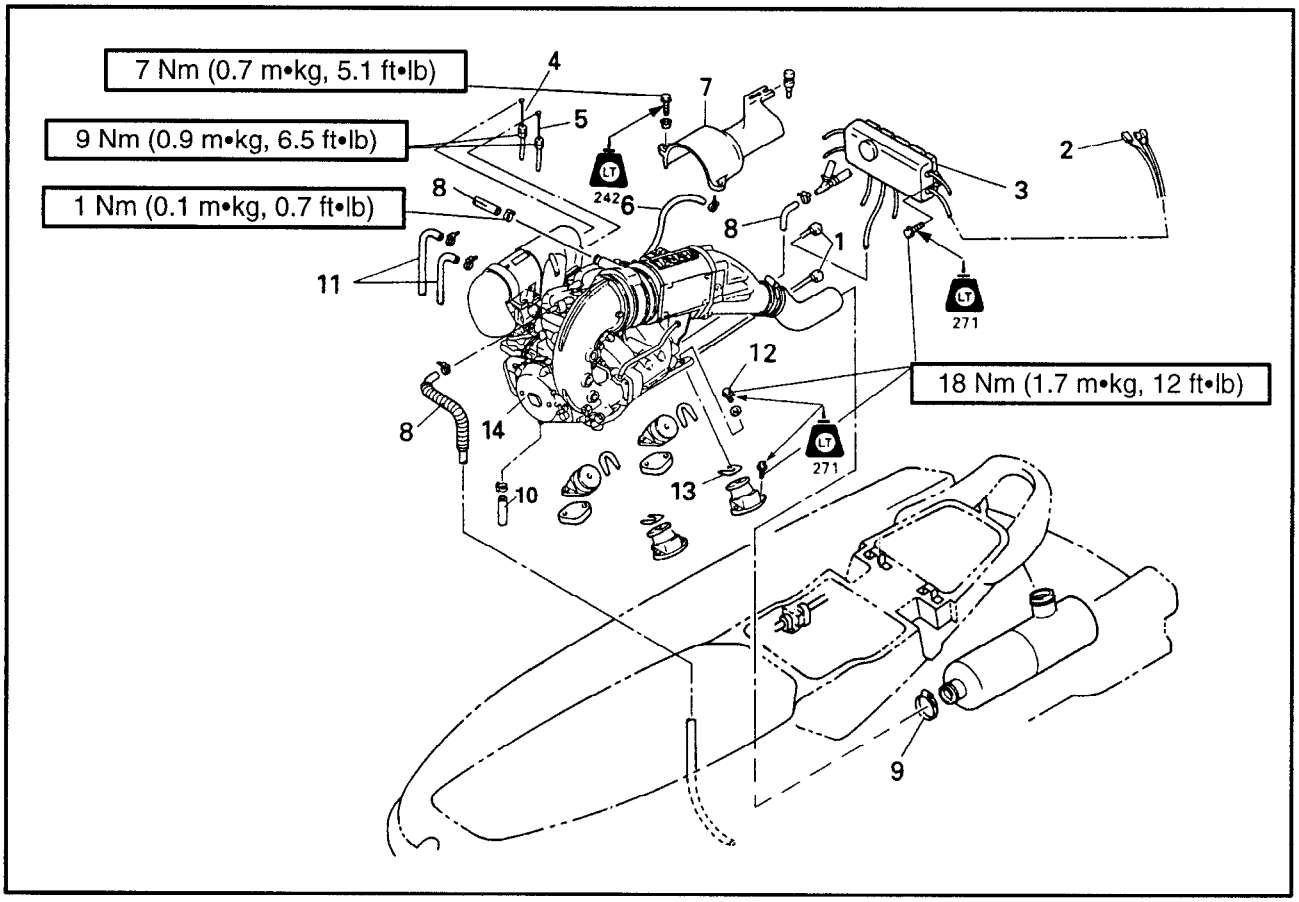
NOTE:

Install the joint into the joint rubber until the rubber stopper fits in the joint groove.

CHAPTER 5
POWER UNIT

ENGINE UNIT REMOVAL

EXPLODED DIAGRAM (XL760)

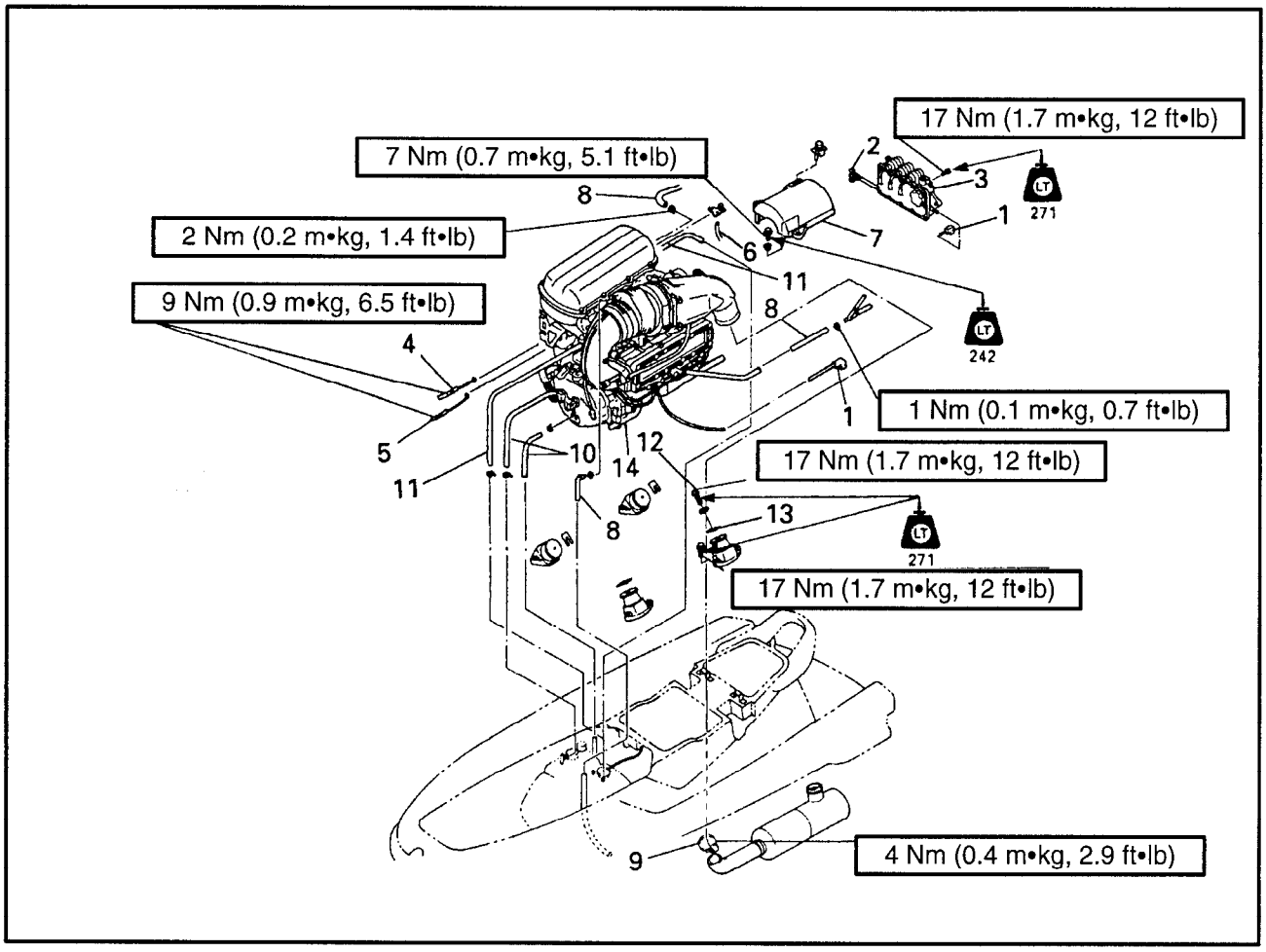


REMOVAL AND INSTALLATION CHART

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

*: As required

EXPLODED DIAGRAM (XL1200)



REMOVAL AND INSTALLATION CHART

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

*: As required

SERVICE POINTS

Shim removal

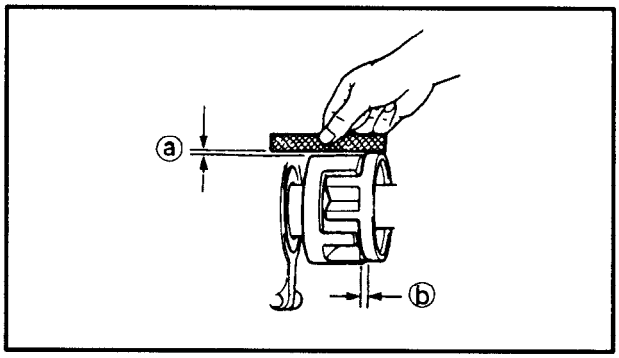
1. Remove:
   - Shim

NOTE:

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

Mount bracket inspection

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



Coupling clearance inspection

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

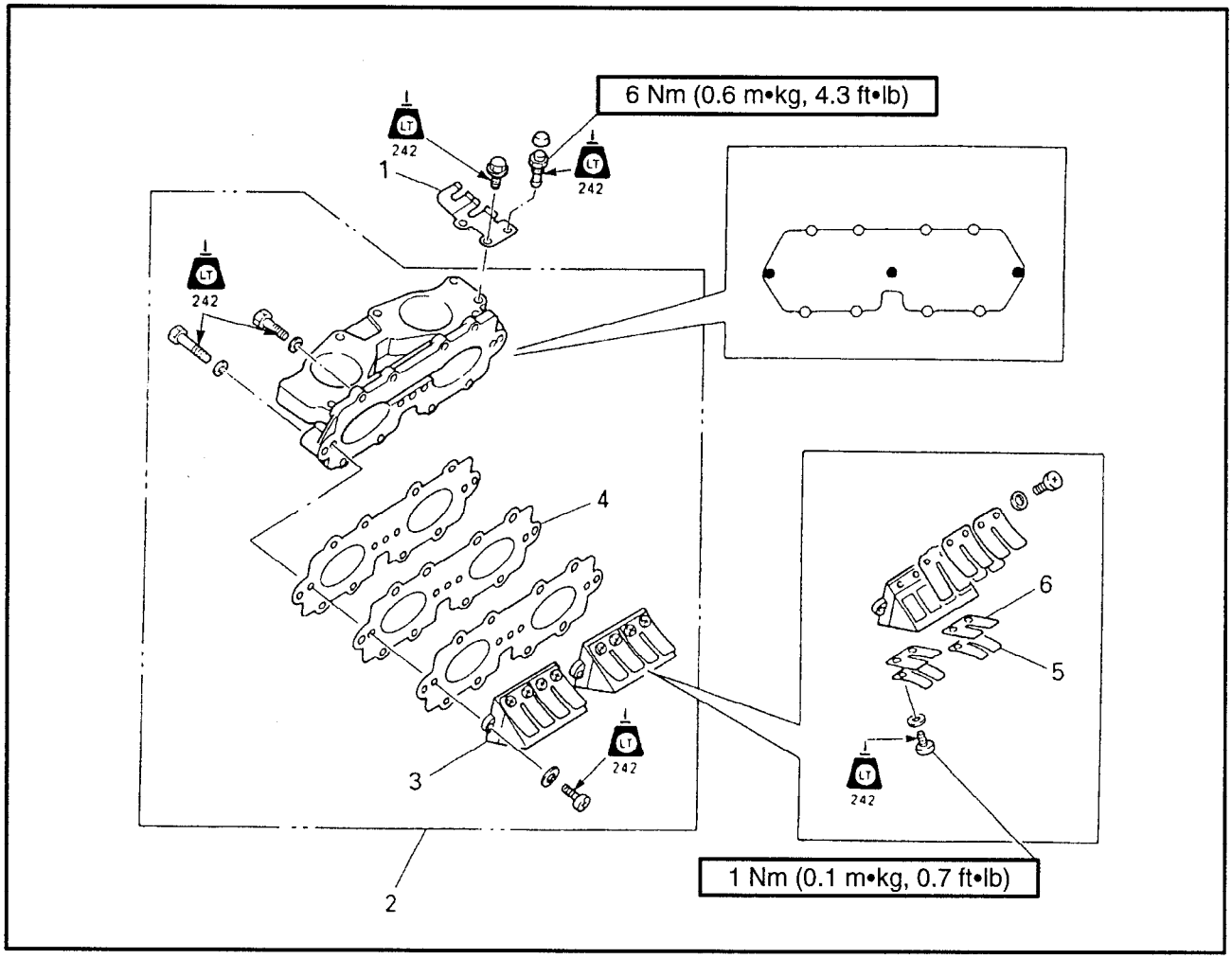
NOTE:

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

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

REED VALVE

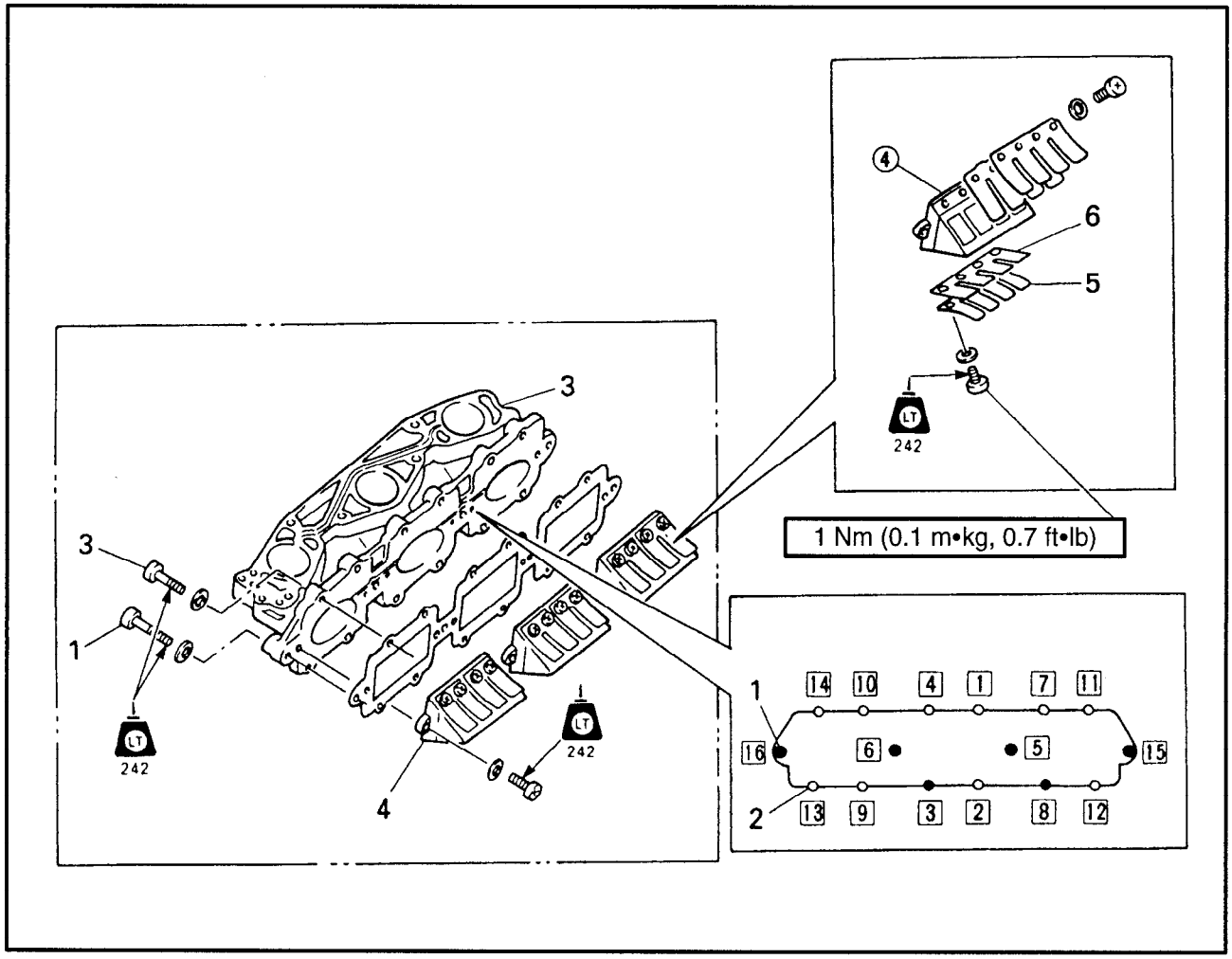
EXPLODED DIAGRAM (XL760)



REMOVAL AND INSTALLATION CHART

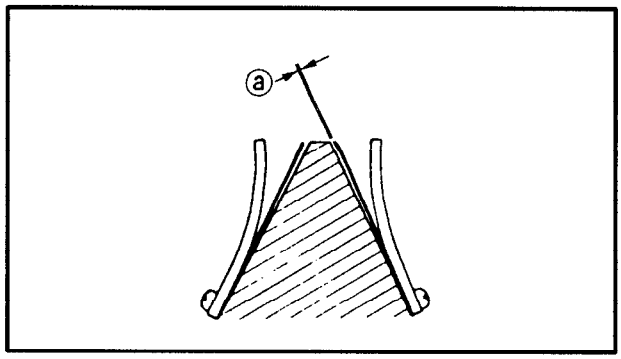
Step	Procedure/Part name	Q'ty	Service points
	REED VALVE REMOVAL Carburetor assembly		Follow the left "Step" for removal. Refer to "CARBURETOR REMOVAL" in chapter 4.
1	Plate	1	
2	Intake manifold assembly	1	
3	Reed valve assembly	2	
4	Plate	1	
5	Valve stopper	4	
6	Reed valve	4	
			Reverse the removal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

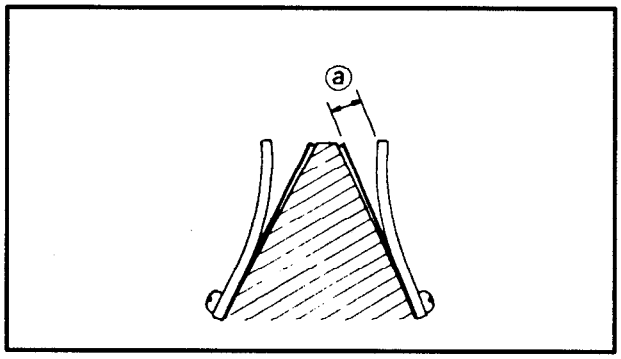
EXPLODED DIAGRAM (XL1200)



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	REED VALVE REMOVAL Carburetor assembly		Follow the left "Step" for removal. Refer to "CARBURETOR REMOVAL" in chapter 4.
1	Bolt (with washer)	6	6 × 35 mm
2	Bolt (with washer)	10	6 × 25 mm
3	Intake manifold assembly		**NOTE:**
4	Reed valve assembly	1	Tighten the bolts in sequence.
5	Valve stopper	3	
6	Reed valve	6	
		6	
			Reverse the removal steps for installation.





SERVICE POINTS

Reed valve inspection

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

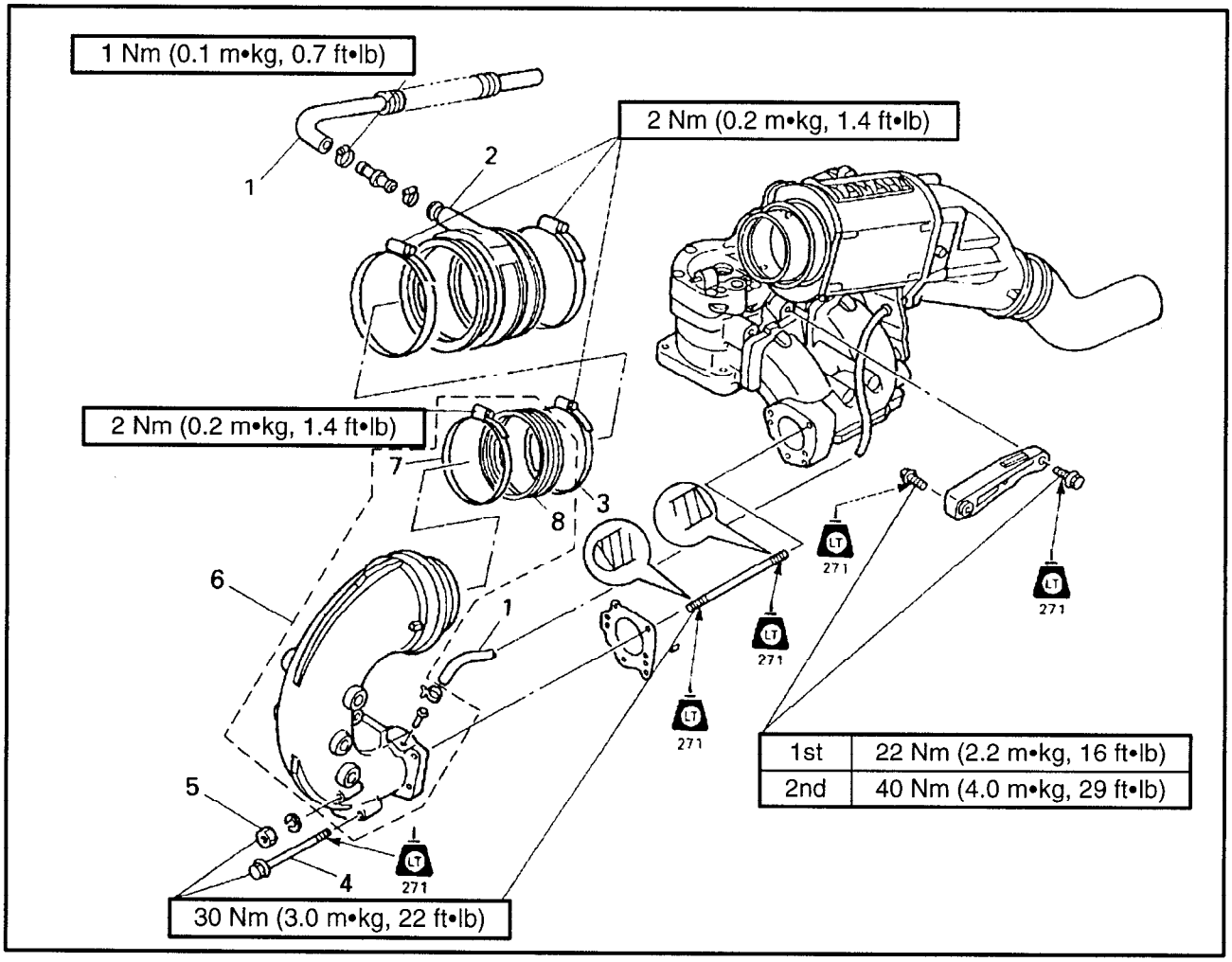
Valve bending limit:
0.2 mm (0.01 in)

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

Valve stopper height:
XL760:
9.0 ± 0.2 mm (0.35 ± 0.01 in)
XL1200
12.5 ± 0.2 mm (0.49 ± 0.01 in)

EXHAUST RING

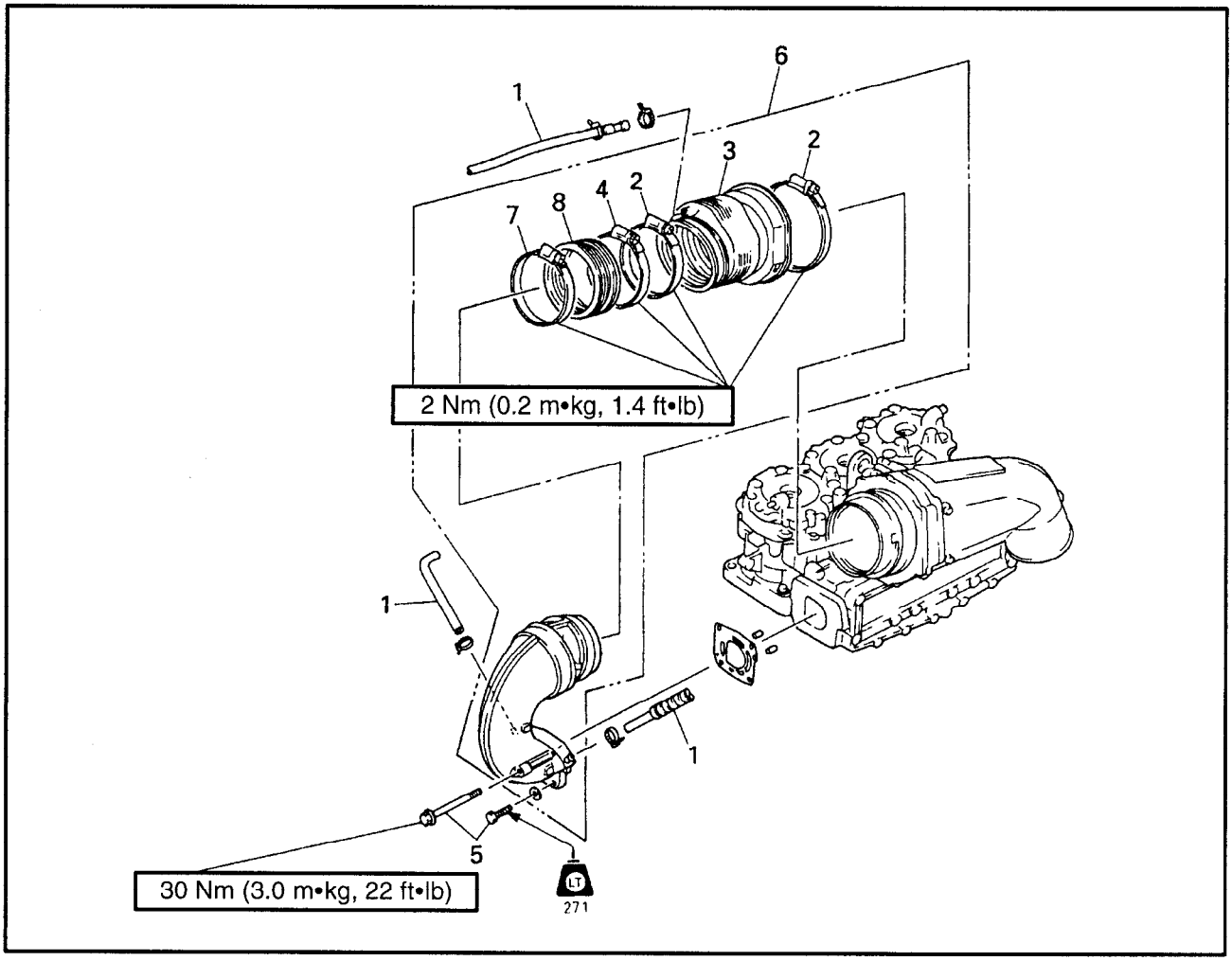
EXPLODED DIAGRAM (XL760)



REMOVAL AND INSTALLATION CHART

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

EXPLODED DIAGRAM (XL1200)

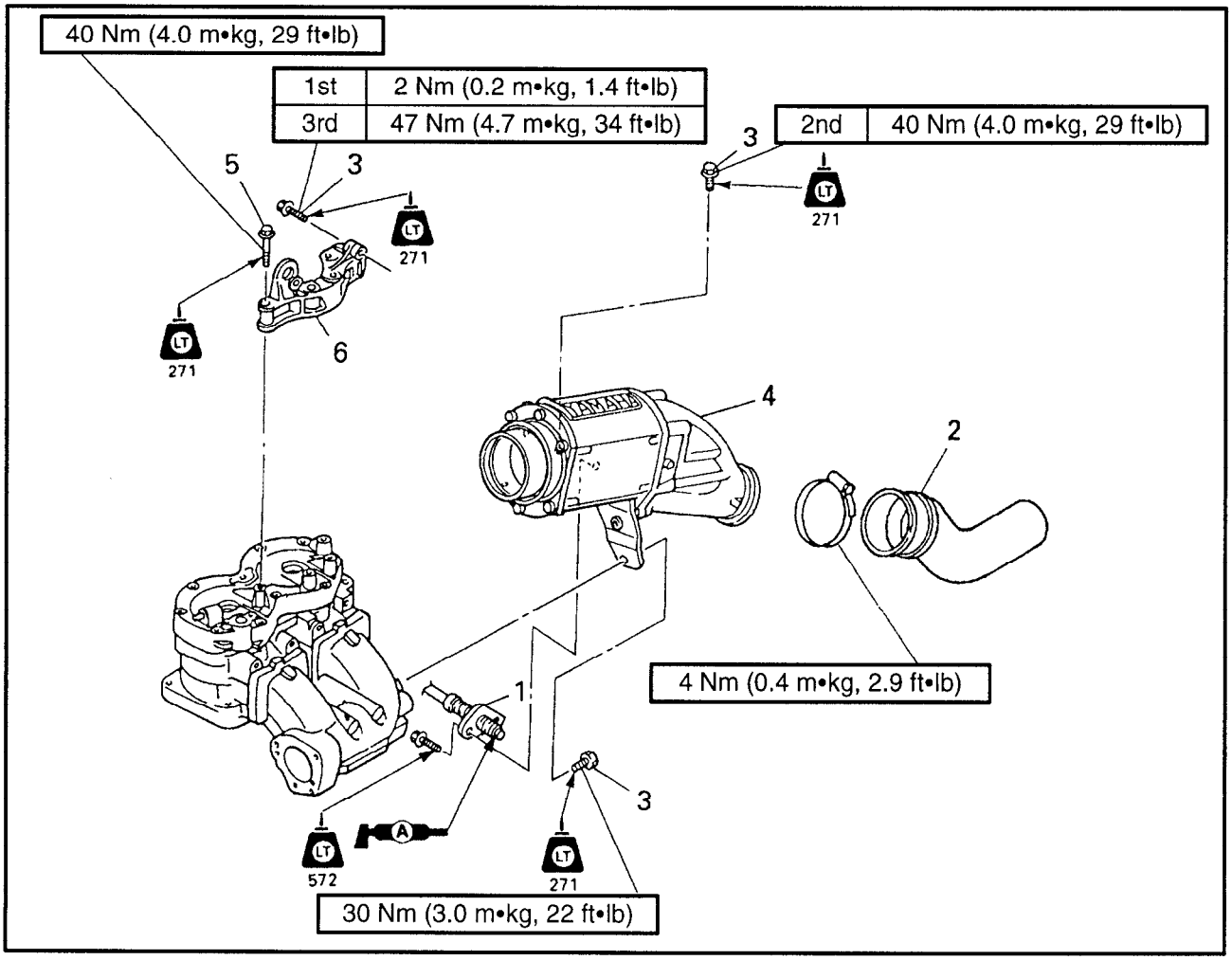


REMOVAL AND INSTALLATION CHART

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

EXHAUST CHAMBER REMOVAL

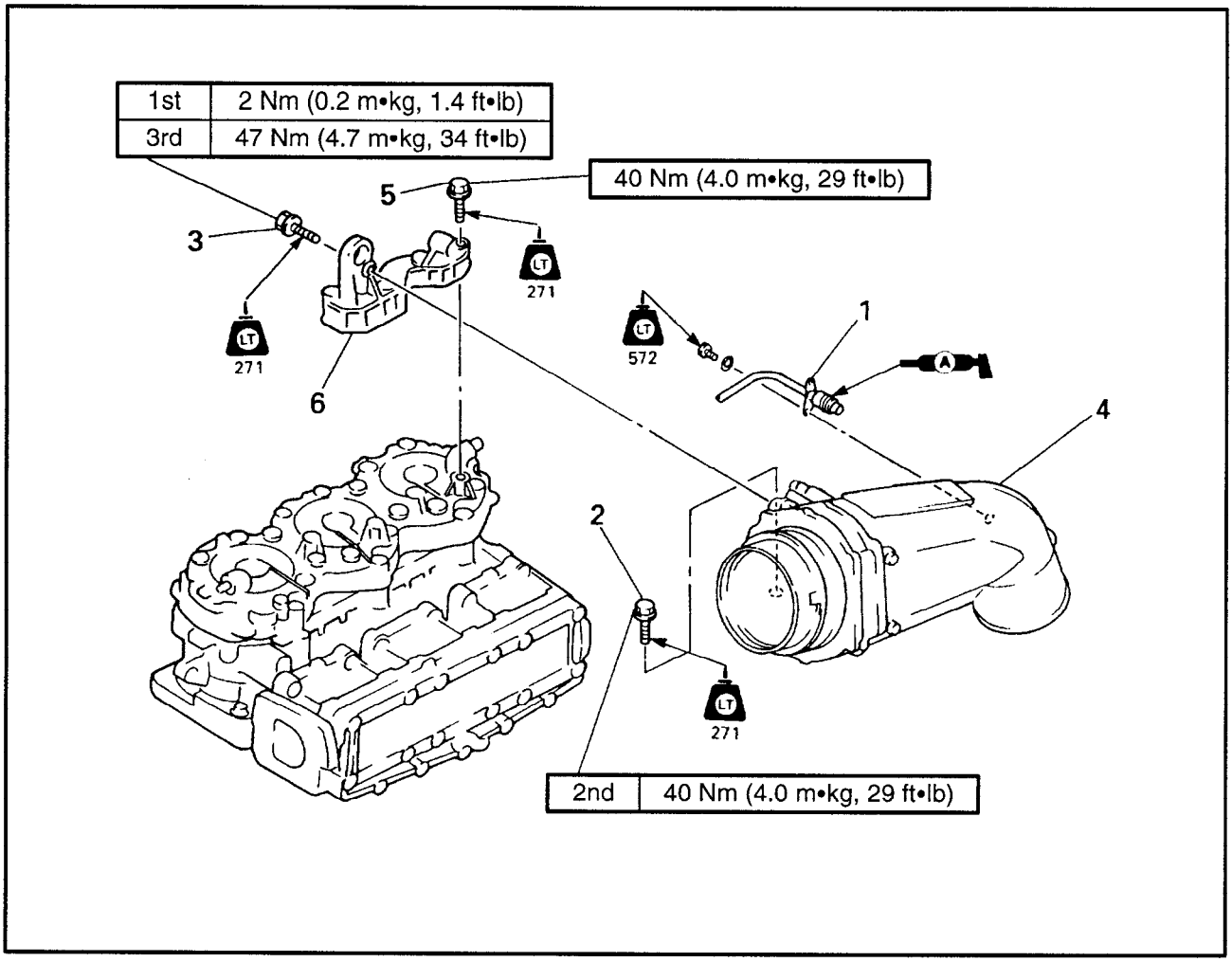
EXPLODED DIAGRAM (XL760)



REMOVAL AND INSTALLATION CHART

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

EXPLODED DIAGRAM (XL1200)

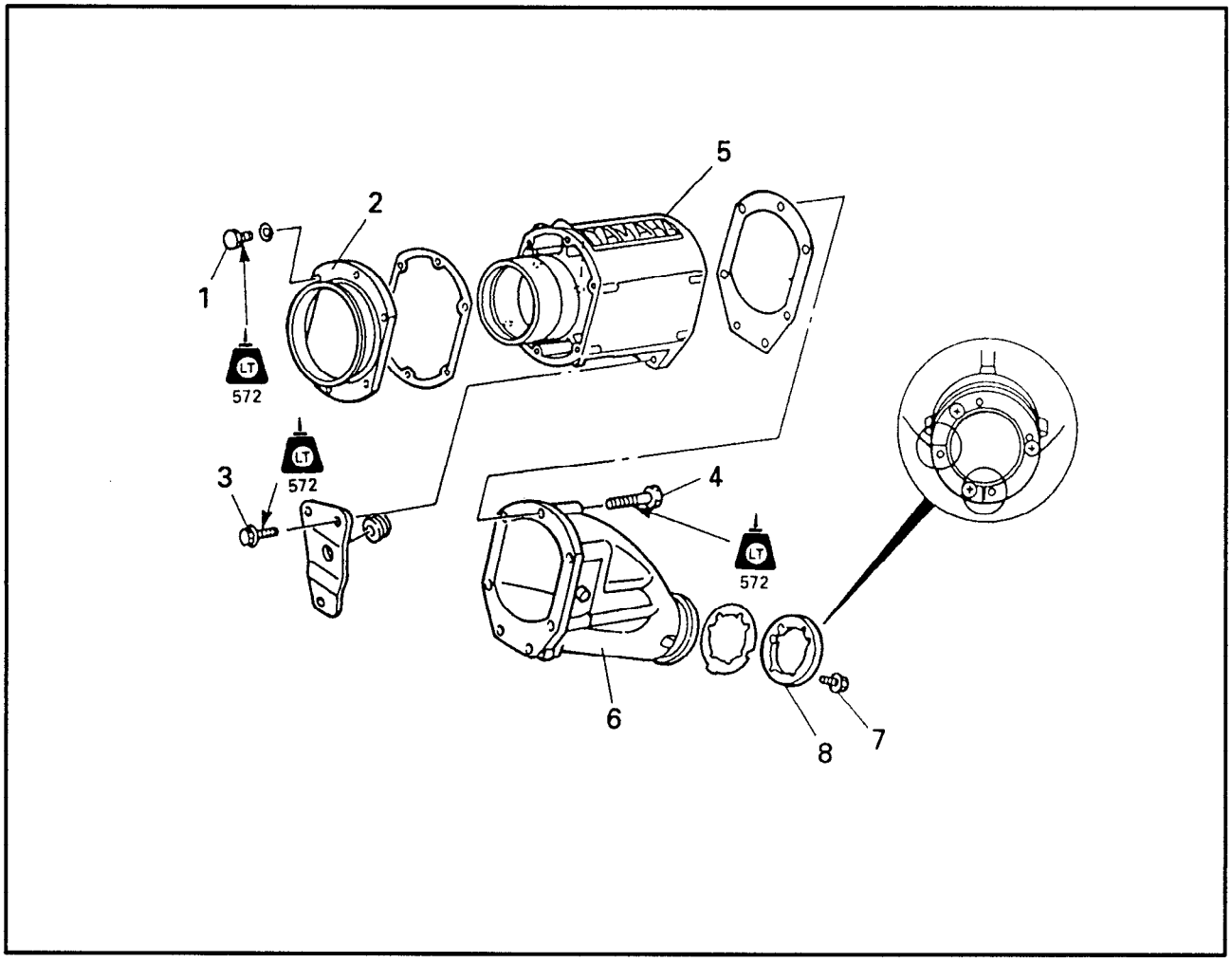


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	EXHAUST CHAMBER REMOVAL		Follow the left "Step" for removal.
	Ring assembly		Refer to "EXHAUST RING".
1	Thermo switch	1	
2	Bolt (with washer)	2	M8 × 35 mm ⬢12
3	Bolt (with washer)	2	M8 × 35 mm ⬢14
4	Exhaust chamber assembly	1	**NOTE:** Tighten the bolts sequence.
5	Bolt (muffler stay)	4	M10 × 45 mm
6	Muffler stay	1	
			Reverse the removal steps for installation.

EXHAUST CHAMBER

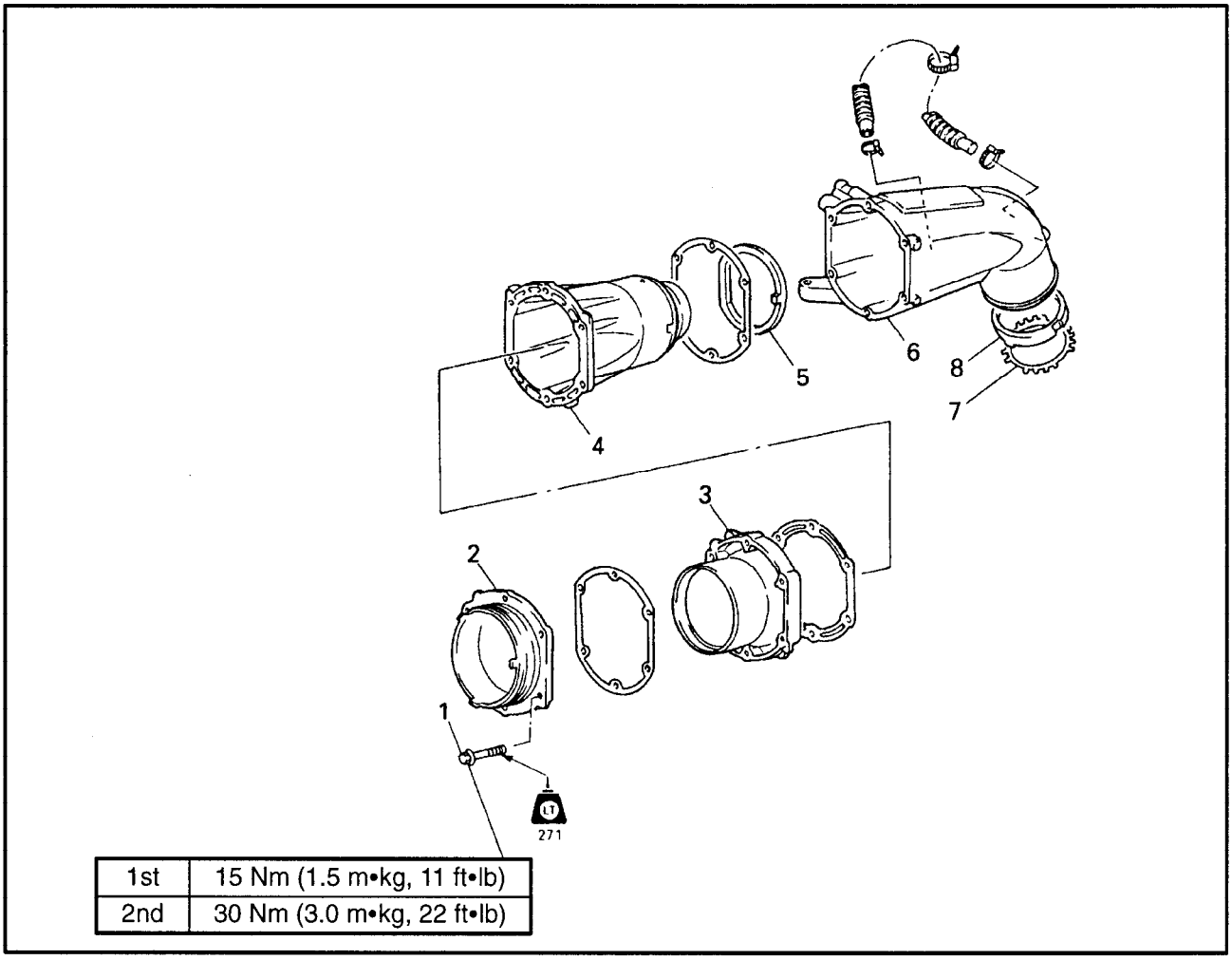
EXPLODED DIAGRAM (XL760)



REMOVAL AND INSTALLATION CHART

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

EXPLODED DIAGRAM (XL1200)



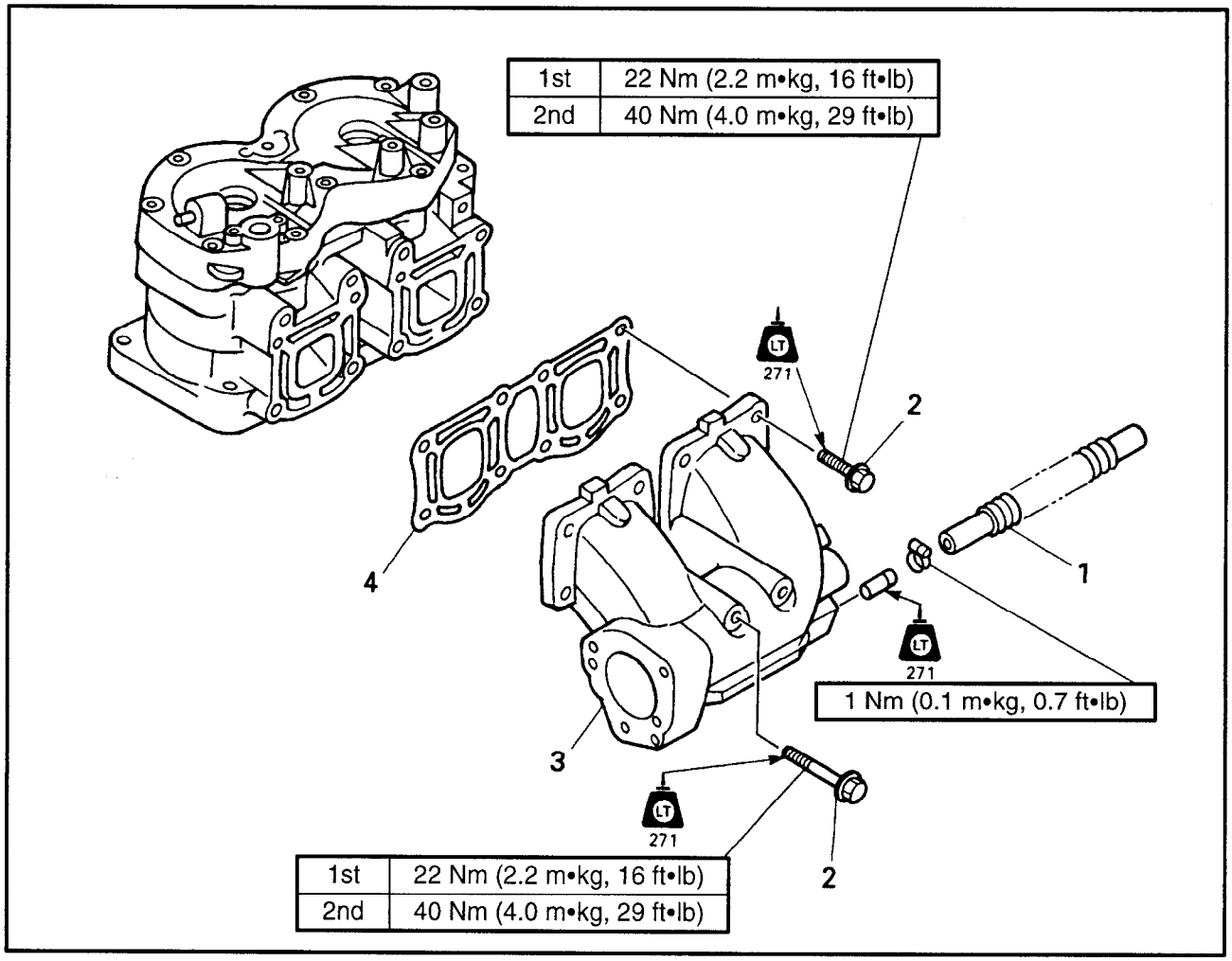
1st	15 Nm (1.5 m•kg, 11 ft•lb)
2nd	30 Nm (3.0 m•kg, 22 ft•lb)

REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CHAMBER DISASSEMBLY		Follow te left "Step" for removal.
	Exhaust chamber assembly		Refer to "EXHAUST CHAMBER REMOVAL".
1	Bolt (with washer)	6	M8 × 60 mm
2	Exhaust outer cover 1	1	**NOTE:**
3	Muffler 2	1	Tighten the bolts in sequence.
4	Exhaust inner cover	1	
5	Seal	1	
6	Exhaust outer cover 2	1	
7	Stopper	1	
8	Seal	1	
			Reverse the removal steps for installation.

MUFFLER

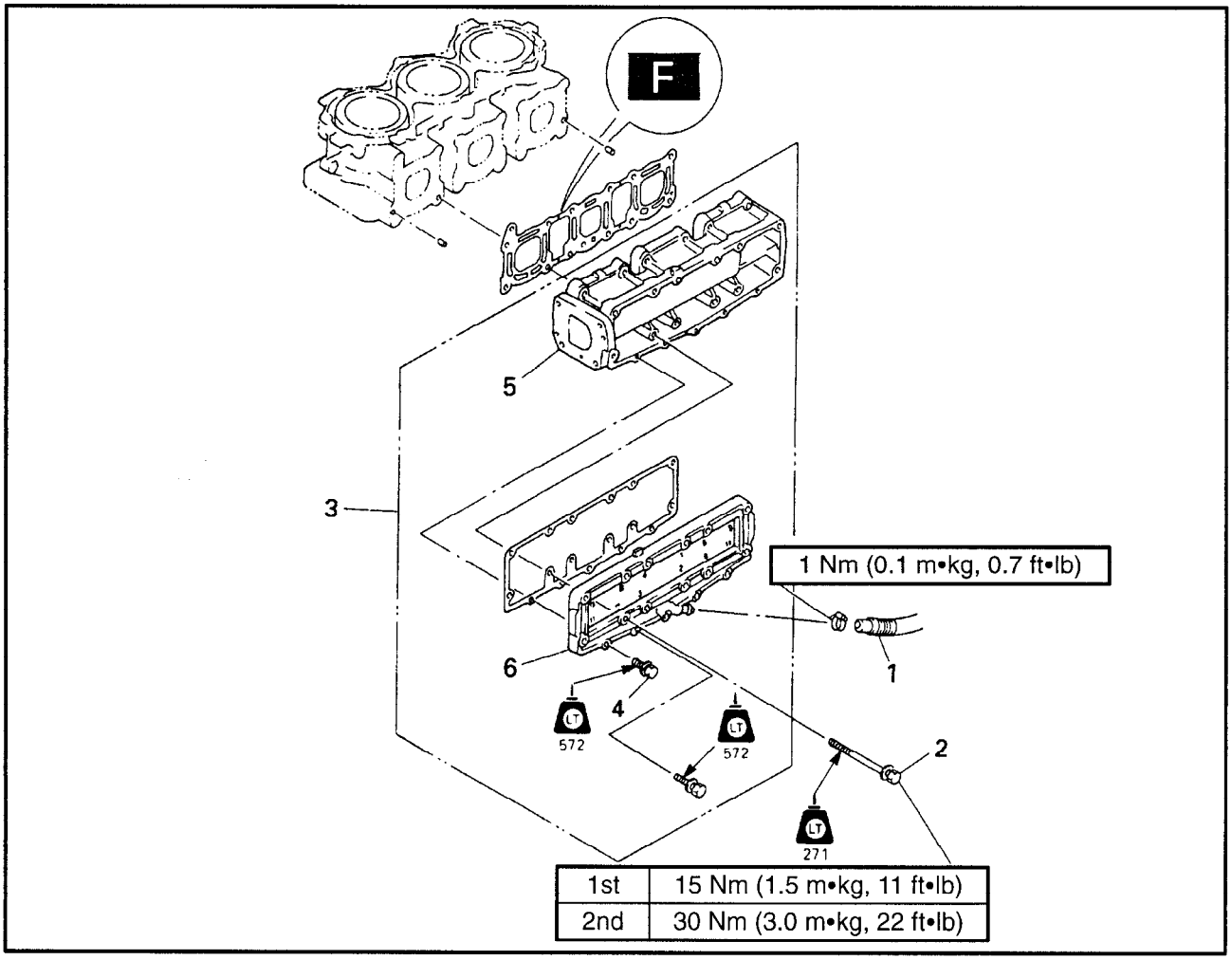
EXPLODED DIAGRAM (XL760)



REMOVAL AND INSTALLATION CHART

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

EXPLODED DIAGRAM (XL1200)

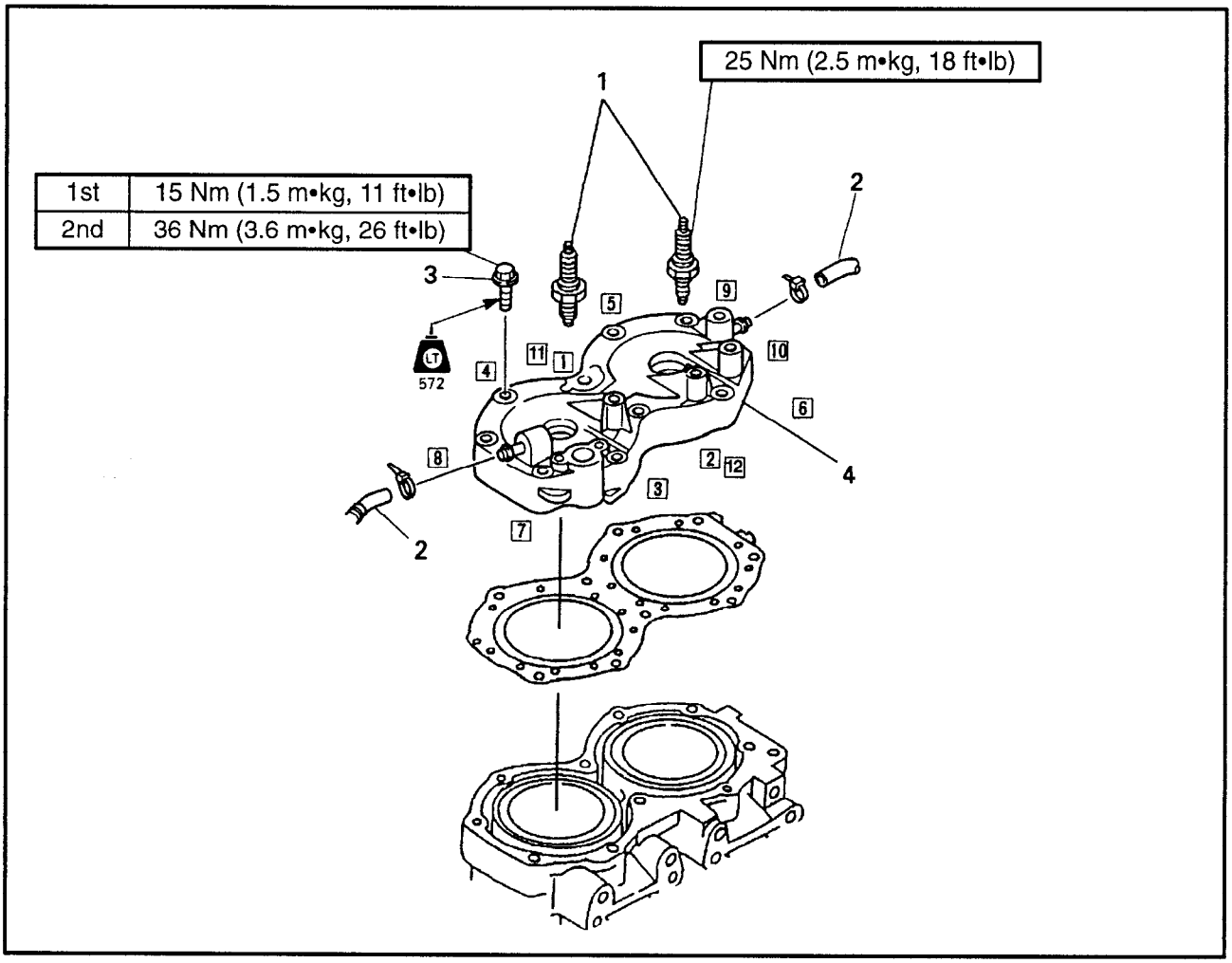


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	MUFFLER REMOVAL		Follow the left "Step" for removal.
	Exhaust chamber assembly		Refer to "EXHAUST CHAMBER REMOVAL".
1	Water inlet hose	1	
2	Bolt (with washer)	12	M8 × 120 mm
3	Muffler assembly	1	**NOTE:**
4	Bolt (with washer)	5	Tighten the bolts in sequence and two steps of torque.
5	Muffler 1	1	
6	Muffler cover	1	
			Reverse the removal steps for installation.

CYLINDER HEAD

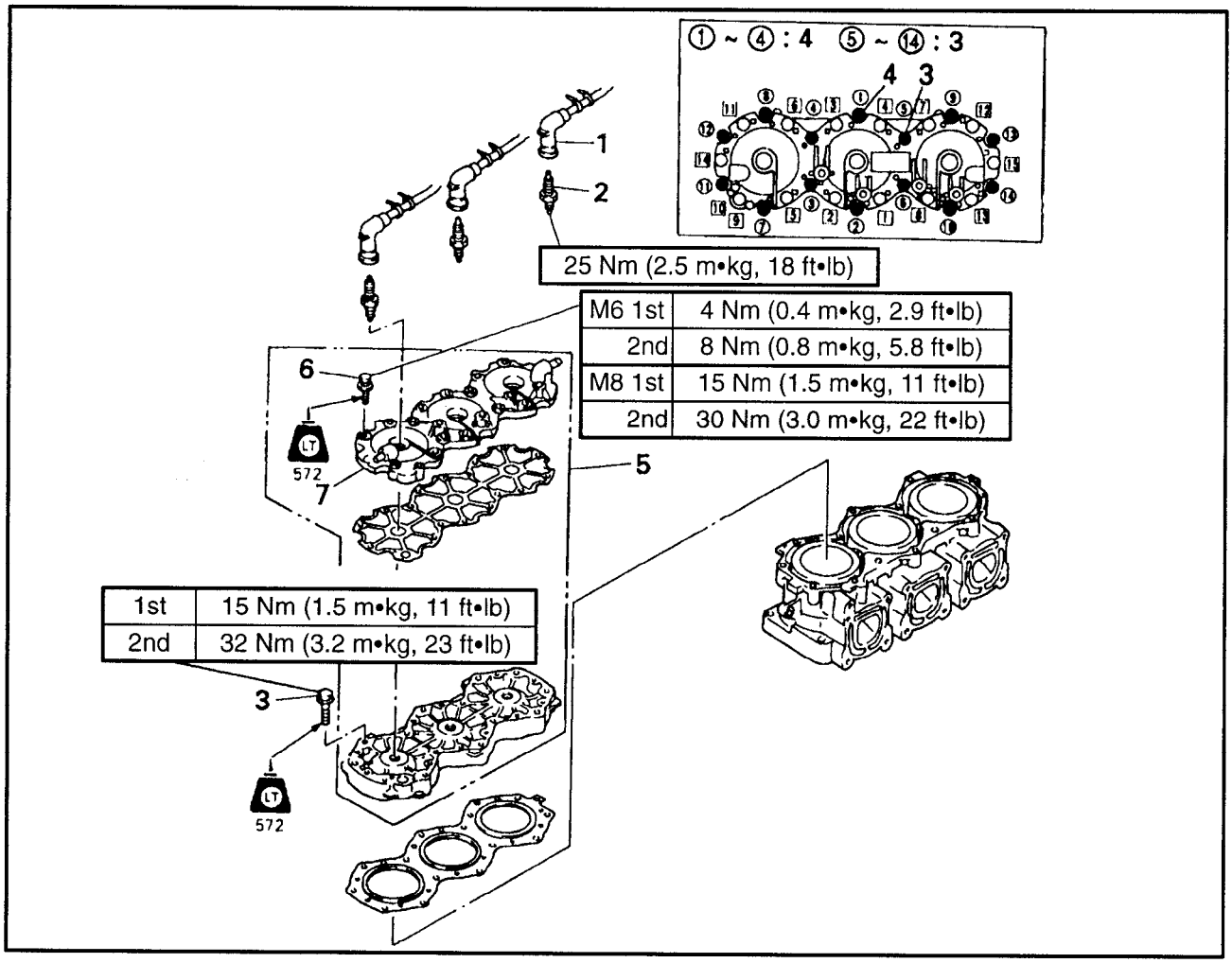
EXPLODED DIAGRAM (XL760)



REMOVAL AND INSTALLATION CHART

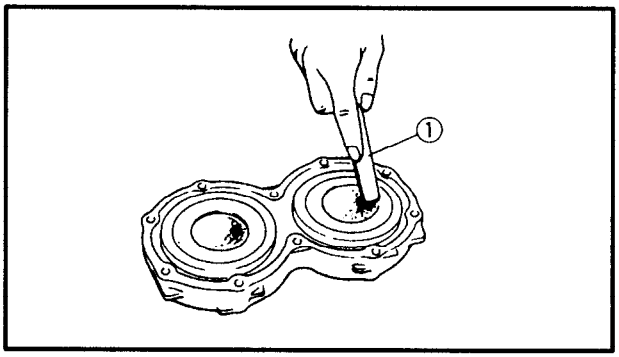
Step	Procedure/Part name	Q'ty	Service points
	CYLINDER HEAD REMOVAL		Follow the left "Step" for removal.
	Muffler		Refer to "MUFFLER".
1	Spark plug	2	
2	Water hose	2	
3	Bolt (with washer)	10	**NOTE:** Tighten the bolts in sequence and two steps of torque.
4	Cylinder head	1	Reverse the removal steps for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

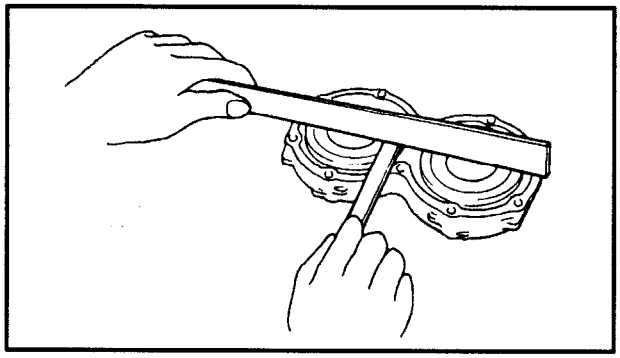
EXPLODED DIAGRAM (XL1200)

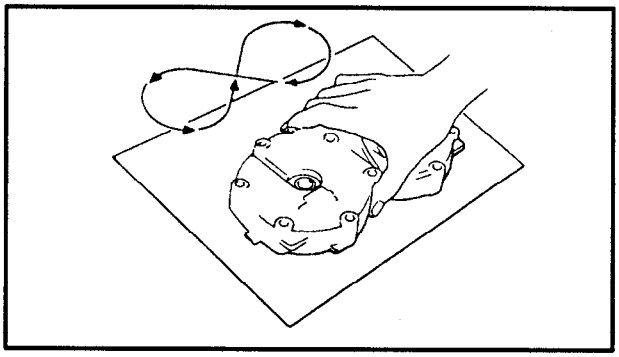


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CYLINDER HEAD REMOVAL		Follow the left "Step" for removal.
	Muffler stay		Refer to "EXHAUST CHAMBER".
1	Spark plug cap	3	
2	Spark plug	3	
3	Bolt (with washer)	11	M8 × 50 mm
4	Bolt (with washer)	4	M8 × 65 mm
5	Cylinder head	1	**NOTE:**
6	Bolt (with washer)	15	Tighten the bolts in sequence and two steps of
7	Cylinder head cover	1	torque.
			Reverse the removal steps for installation.







SERVICE POINTS

Cylinder head inspection

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

NOTE:

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

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

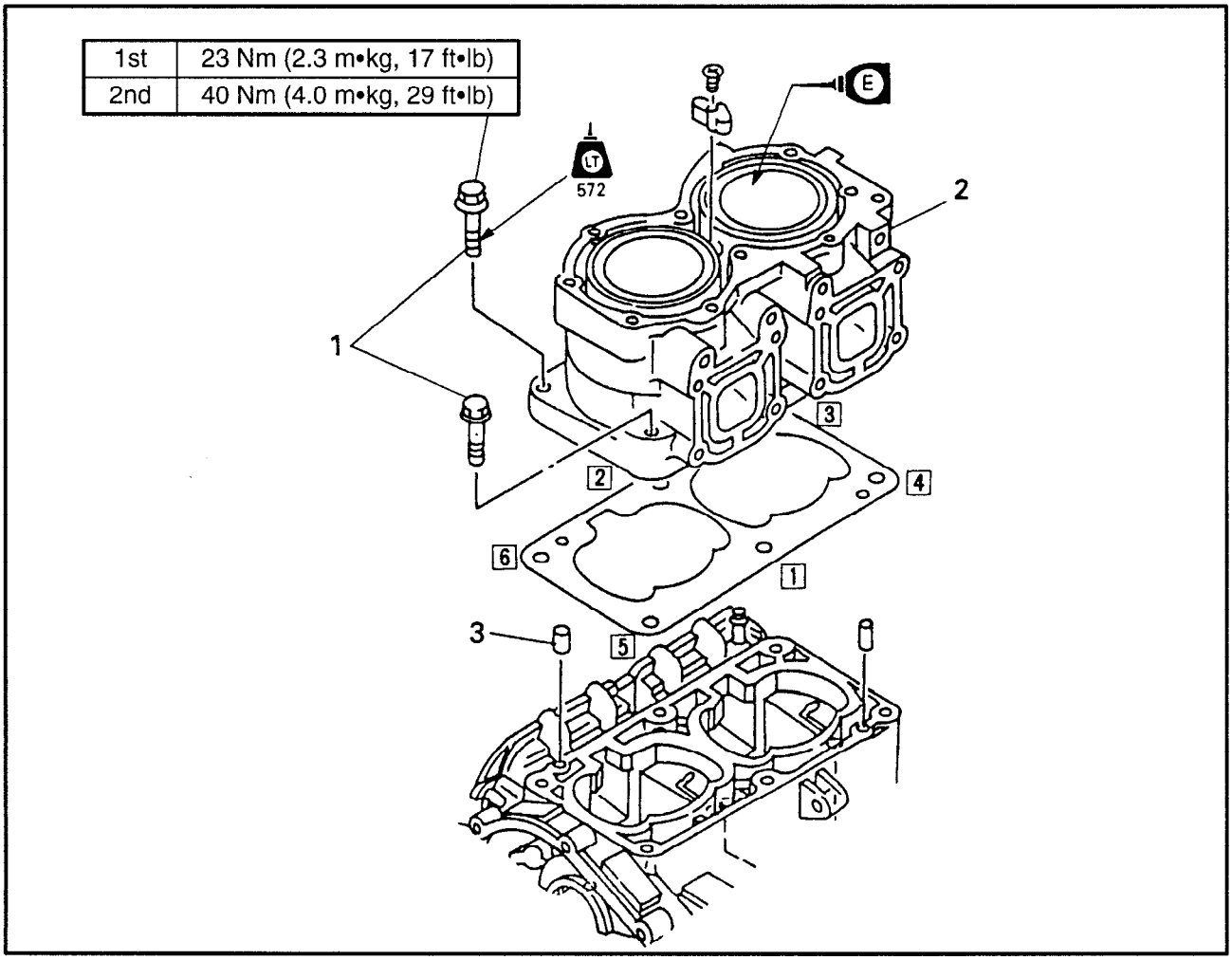
Warpage limit:
0.1 mm (0.004 in)

Warpage measurement and resurfacing steps:

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

CYLINDER

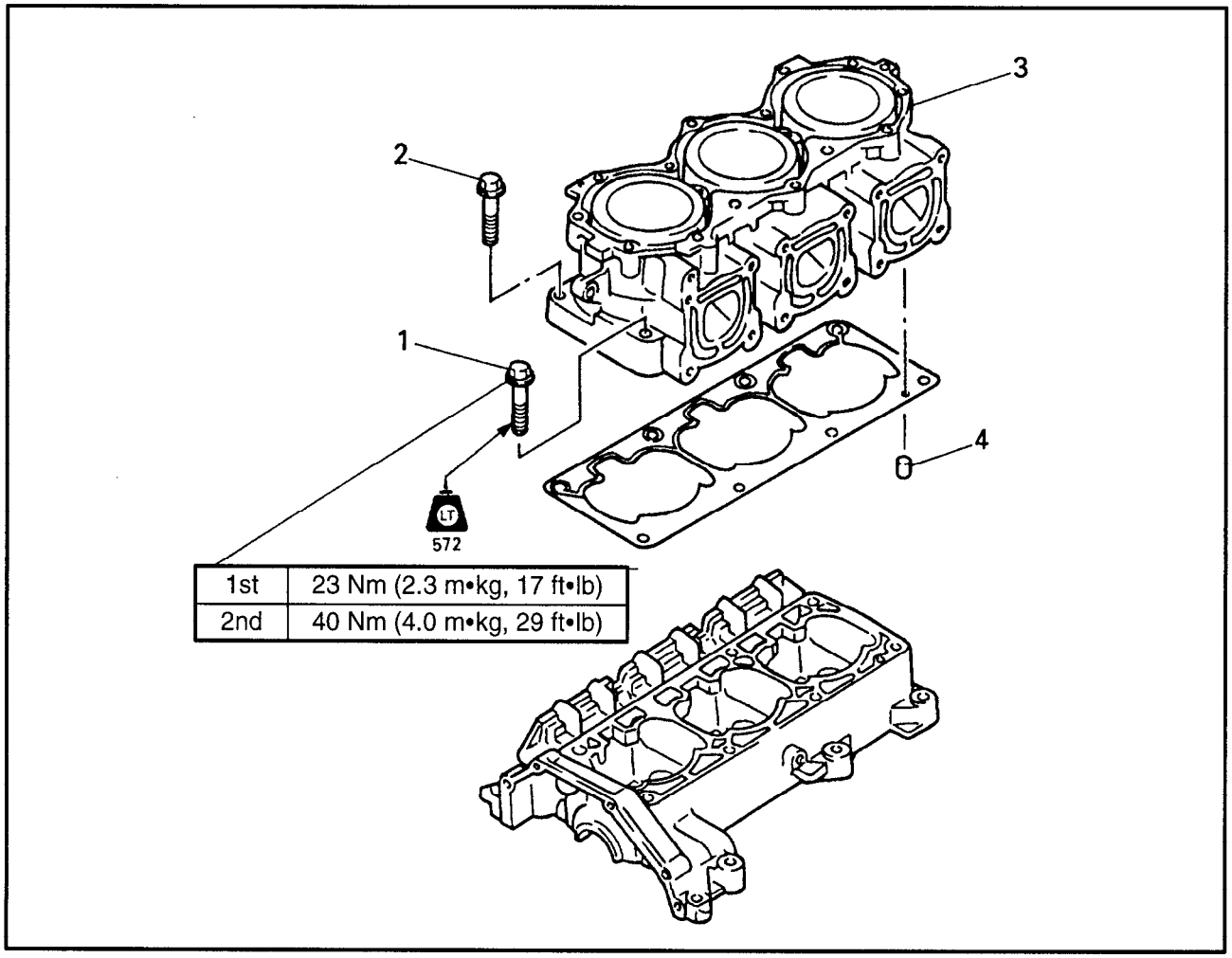
EXPLODED DIAGRAM (XL760)



REMOVAL AND INSTALLATION CHART

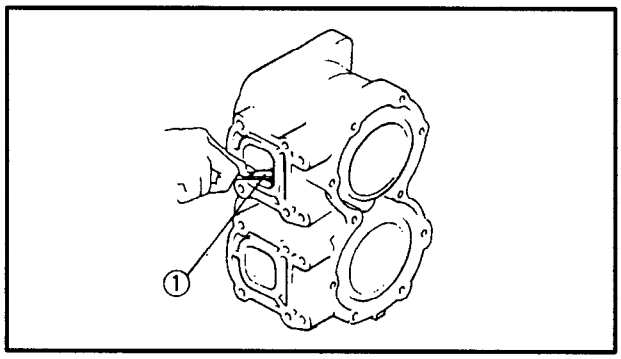
Step	Procedure/Part name	Q'ty	Service points
	CYLINDER REMOVAL Cylinder head		Follow the left "Step" for removal. Refer to "CYLINDER HEAD".
1	Bolt (with washer)	6	**NOTE:** Tighten the bolts in sequence and in two steps of torque.
2	Cylinder	1	**NOTE:** After installing, check the smooth movement of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

EXPLODED DIAGRAM (XL1200)



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CYLINDER REMOVAL		Follow the left "Step" for removal.
	Cylinder head		Refer to "CYLINDER HEAD".
1	Bolt (with washer)	2	M10 × 55 mm
2	Bolt (with washer)	6	M10 × 40 mm
			NOTE: Tighten the bolts in sequence and in two steps of torque.
			NOTE:
3	Cylinder	1	After installing, check the smooth movement of
4	Pin	2	the piston.
			Reverse the removal steps for installation.

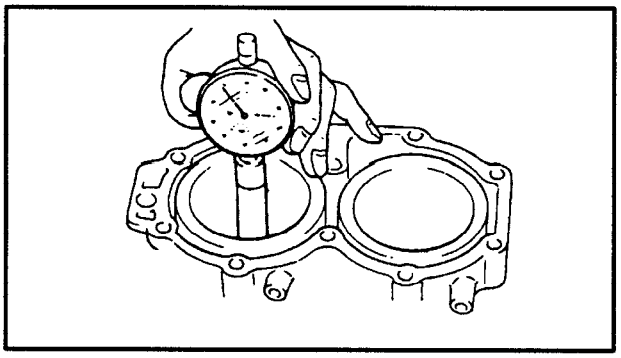


SERVICE POINTS

Cylinder inspection

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

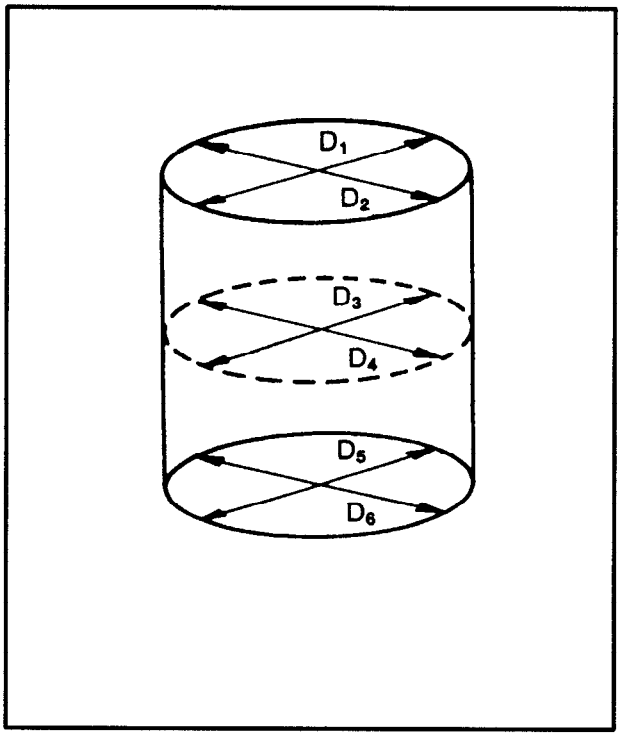
2. Inspect:
   - Cylinder water jacket
     Mineral deposits/Corrosion → Clean.
   - Cylinder inner surface
     Score marks → Repair or replace.
     Use #600 ~ 800 grit wet sandpaper.



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

NOTE:

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

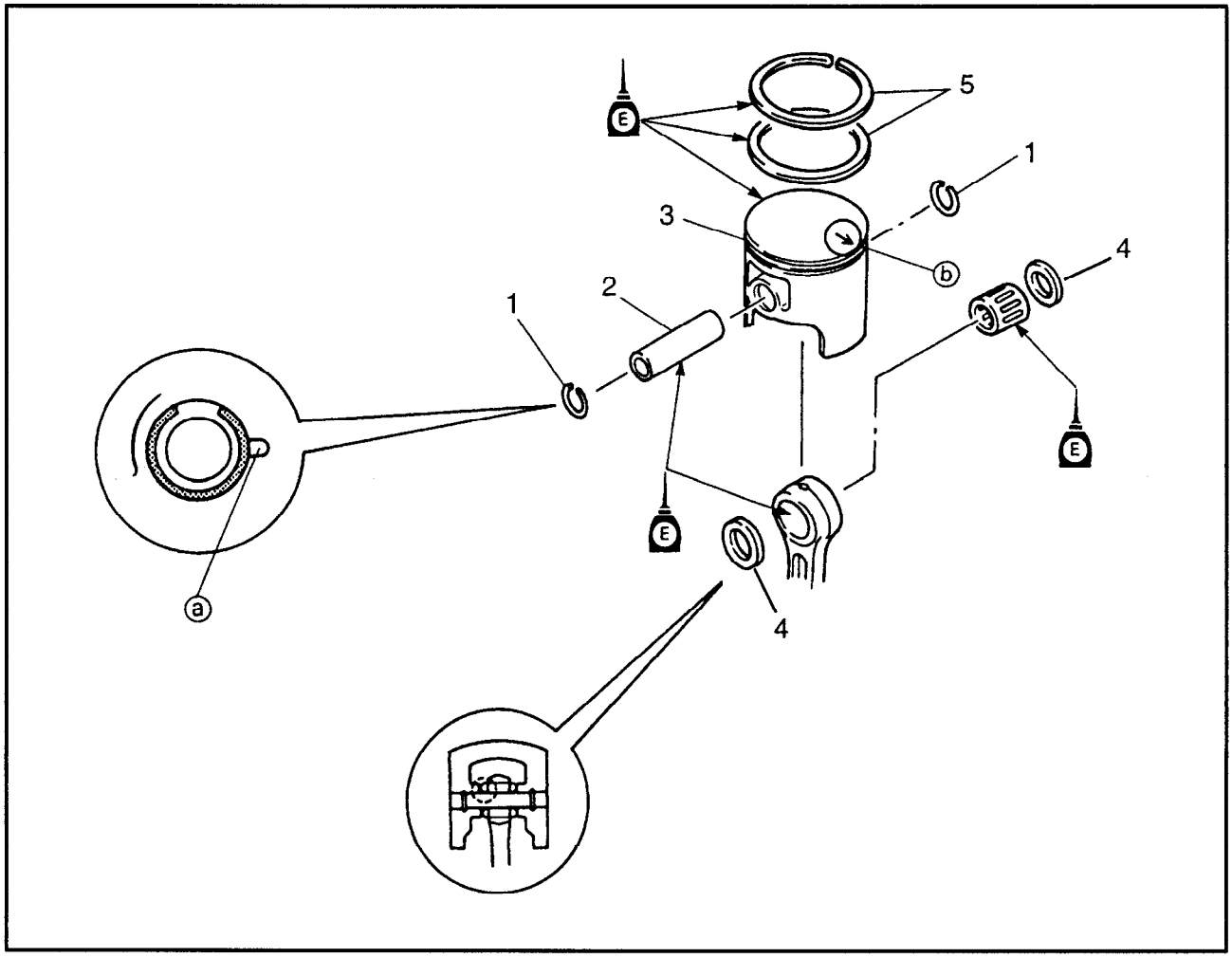


	Standard	Limit
Cylinder bore "D"	84.00 ~ 84.02 mm (3.307 ~ 3.308 in)	84.1 mm (3.31 in)
Taper "T"	–	0.08 mm (0.003 in)
Out of round "R"	–	0.05 mm (0.002 in)

D = Maximum (D_1 ~ D_6)
T = (Maximum D_1 or D_2) – (Maximum D_5 or D_6)
R = (Maximum D_1, D_3 or D_5) – (Minimum D_2, D_4 or D_6)

PISTON

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	PISTON REMOVAL Cylinder	760, 1200	Follow the left "Step" for removal. Refer to "CYLINDER".
1	Piston pin clip	4, 6	**CAUTION:**
2	Piston pin	2, 3	**Do not allow the clip open ends to meet the piston pin slot ⓐ.**
			NOTE:
3	Piston	2, 3	Be sure the arrow ⓑ side is positioned ex-
4	Washer	4, 6	haust pipe.
			CAUTION:
5	Piston ring	4, 6	**Align each end gap with the locating pin.**
			Reverse the removal steps for installation.

SERVICE POINTS

Piston pin clip removal and installation

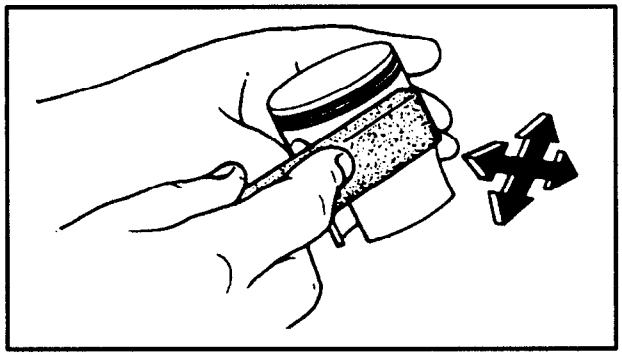
1. Remove and install:
   - Piston pin clip

NOTE:

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

Piston inspection

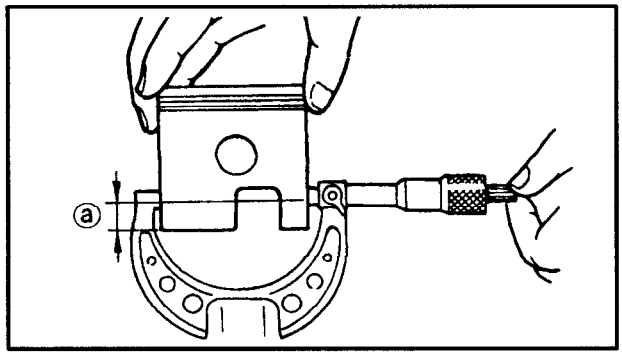
1. Eliminate:
   - Carbon deposits
     From the piston crown and ring groove.



2. Inspect:
   - Piston wall
     Score marks → Repair or replace.
     Use #600 ~ 800 grit wet sandpaper.

NOTE:

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



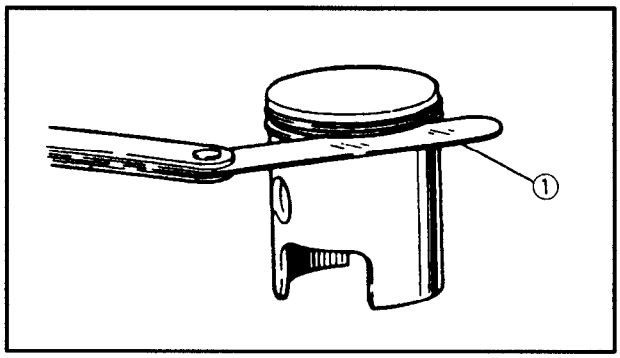
3. Measure:
   - Piston skirt diameter
     Use micrometer.
     Out of specification → Replace.

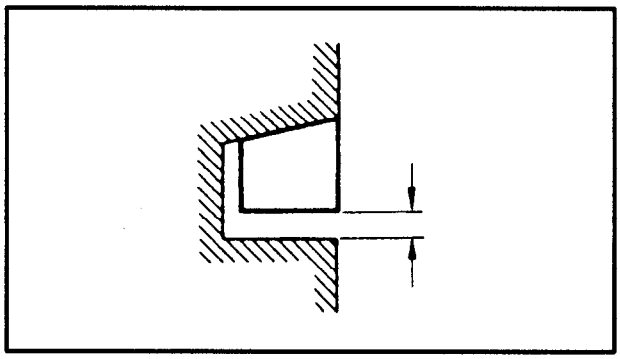
Piston diameter	Distance ⓐ
83.902 ~ 83.921 mm (3.3032 ~ 3.3040 in)	10 mm (0.39 in)

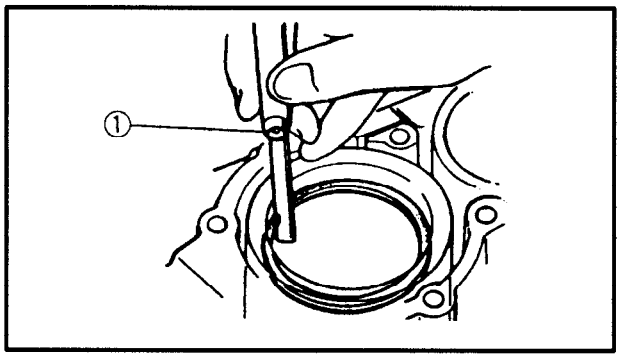
4. Calculate:
   - Piston clearance
     Out of limit → Replace piston, piston rings as a set.

PISTON CLEARANCE	=	CYLINDER BORE	−	PISTON DIAMETER

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







Piston ring inspection

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

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

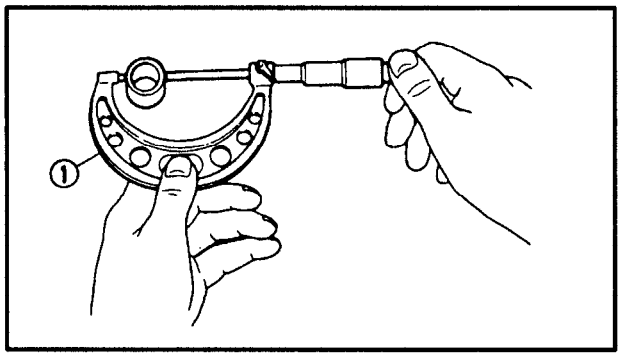
2. Measure:
   - End gap
     Out of specification → Replace rings as a set.
     Use a thickness gauge ①.

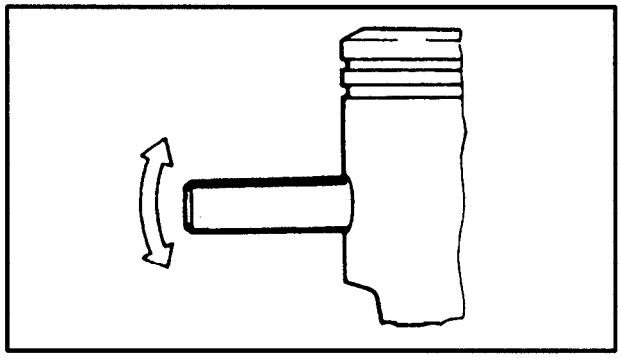
End gap:
Top
2nd
0.2 ~ 0.4 mm
(0.008 ~ 0.016 in)

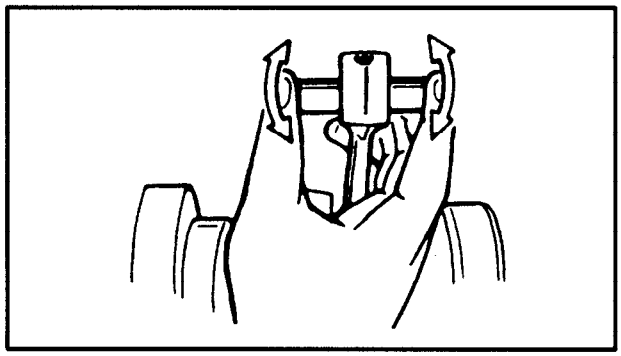
NOTE:
- Install the piston ring into the cylinder.
- Push the ring with the piston crown.

Piston pin and bearing inspection

1. Inspect:
   - Piston pin
   - Bearing
     Signs of heat discoloration → Replace.







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

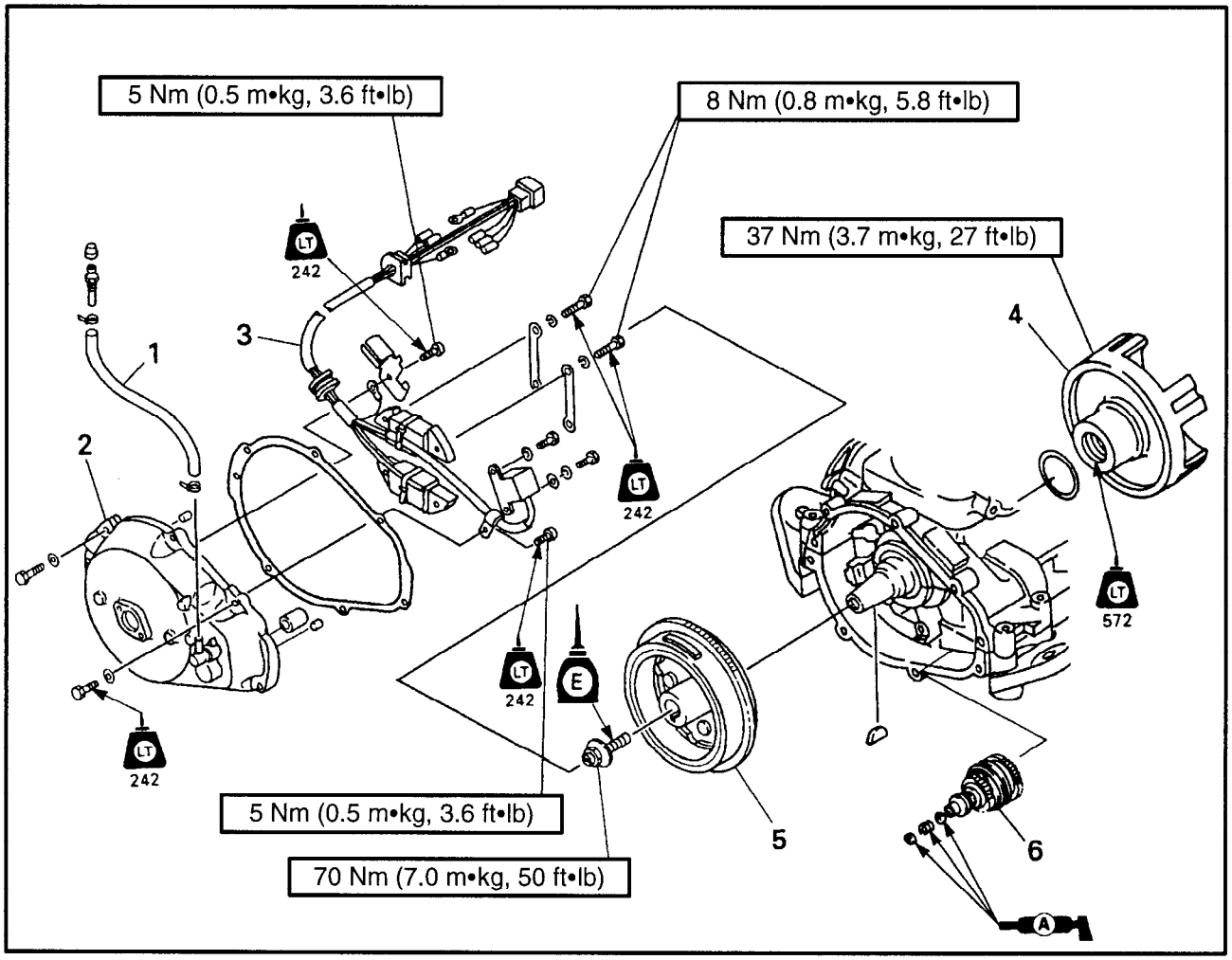
Piston pin outside diameter:
Standard
19.995 ~ 20.000 mm
(0.7872 ~ 0.7874 in)
Limit
19.98 mm (0.786 in)

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

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

FLYWHEEL MAGNETO AND BASE

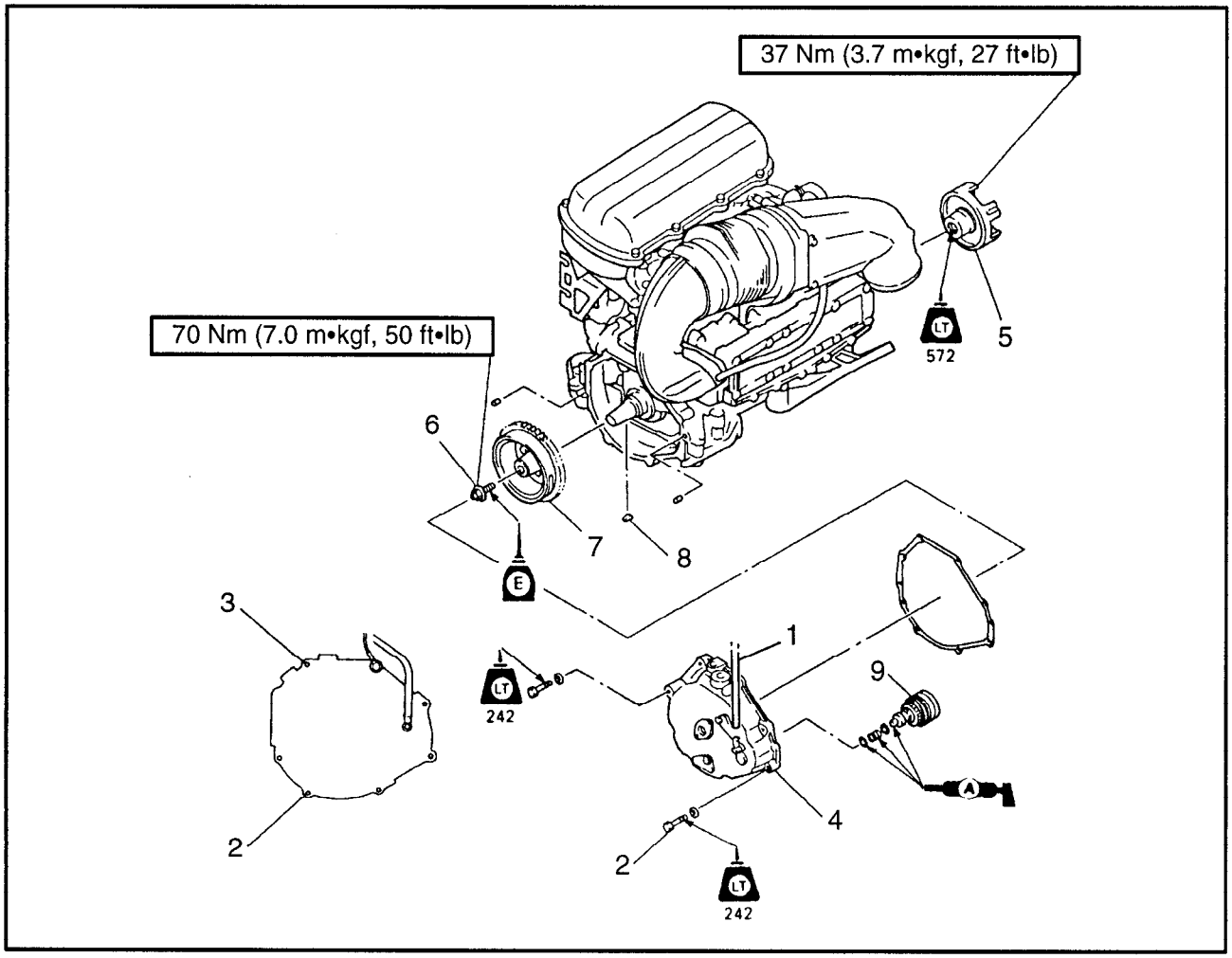
EXPLODED DIAGRAM (XL760)



REMOVAL AND INSTALLATION CHART

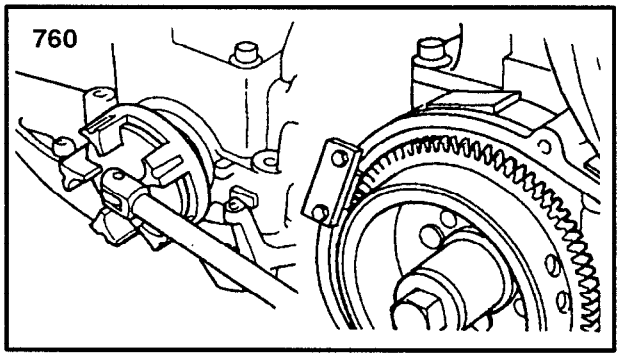
Step	Procedure/Part name	Q'ty	Service points
	FLYWHEEL MAGNETO AND BASE DISASSEMBLY		Follow the left "Step" for removal.
	Engine unit		Refer to "ENGINE UNIT REMOVAL".
	Oil pump		Refer to "OIL PUMP" in chapter 4.
1	Grease hose	1	
2	Flywheel cover	1	
3	Base assembly	1	
4	Coupling flange	1	**NOTE:**
5	Flywheel magneto	1	Fill the water resistant grease into the flywheel cover groove.
6	Idle gear assembly	1	
			Reverse the removal steps for installation.

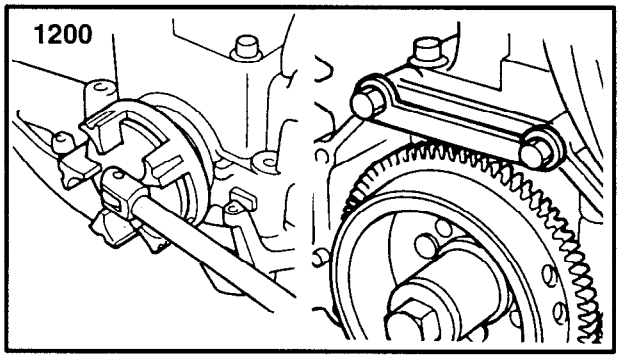
EXPLODED DIAGRAM (XL1200)

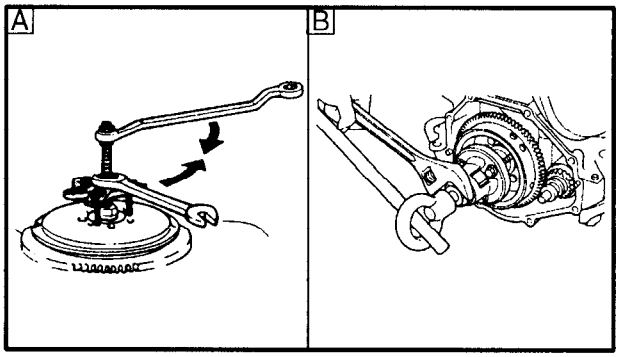


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	FLYWHEEL MAGNETO AND BASE DISASSEMBLY		Follow the left "Step" for removal.
	Engine unit		Refer to "ENGINE UNIT REMOVAL".
	Oil pump		Refer to "OIL PUMP" in chapter 4.
1	Grease hose	1	
2	Bolt (with washer)	8	M8 × 30 mm
3	Bolt (with washer)	1	M8 × 55 mm
4	Flywheel cover assembly	1	
5	Coupling flange	1	
6	Flange bolt	1	
7	Flywheel magneto	1	
8	Woodruff key	1	**NOTE:**
9	Idle gear assembly	1	Fill the water resistant grease into the flywheel cover groove.
			Reverse the removal steps for installation.







SERVICE POINTS

Coupling flange removal and installation

1. Remove and install:
   - Coupling flange

Coupler wrench:
YW-06546/90890-06546
Flywheel holder:
XL760
YW-06547/90890-06547
XL1200
YW-41528/90890-06545

Flywheel magneto removal and installation

1. Remove and install:
   - Bolt

Flywheel holder:
XL760
YW-06547/90890-06547
XL1200
YW-41528/90890-06545

2. Remove:
   - Flywheel magneto

Flywheel puller:
YB-06117/90890-06521
Bolt:
M8 × 60 mm

A For USA and CANADA

B Except for USA and CANADA

CAUTION:

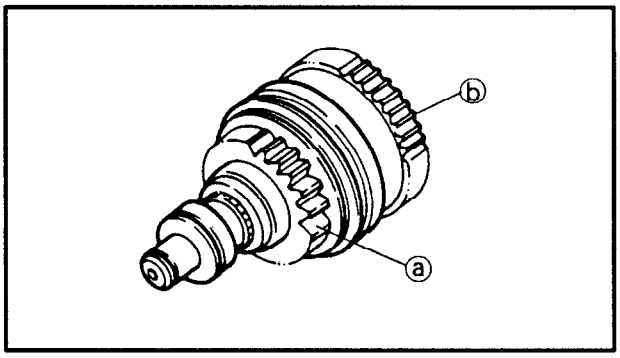
To prevent damage to the engine or tools, screw in the flywheel puller set-bolts evenly and completely so that the puller plate is parallel to the flywheel.

Coupling flange inspection

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

Flywheel magneto inspection

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

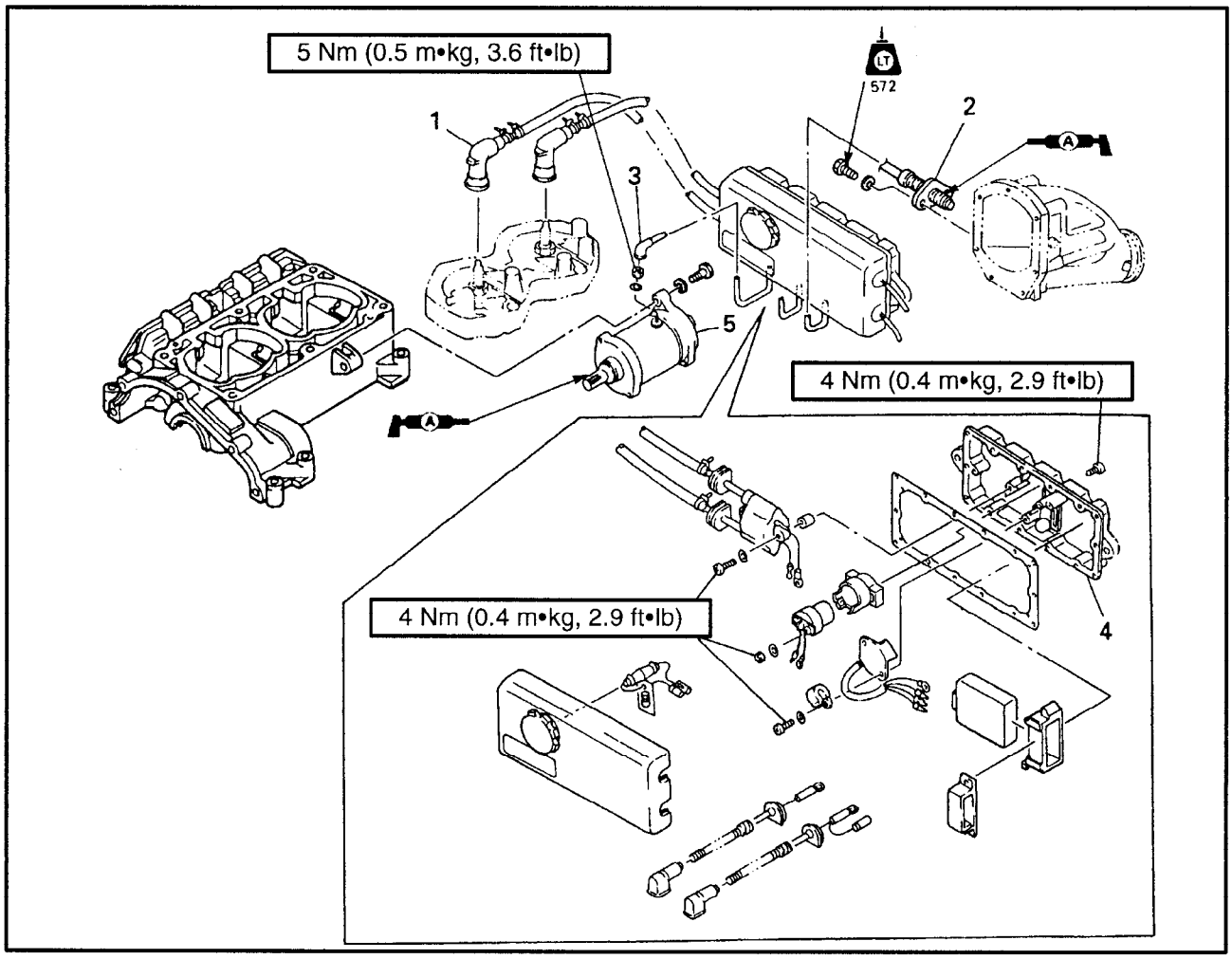


Idle gear assembly inspection

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

ELECTRICAL UNIT

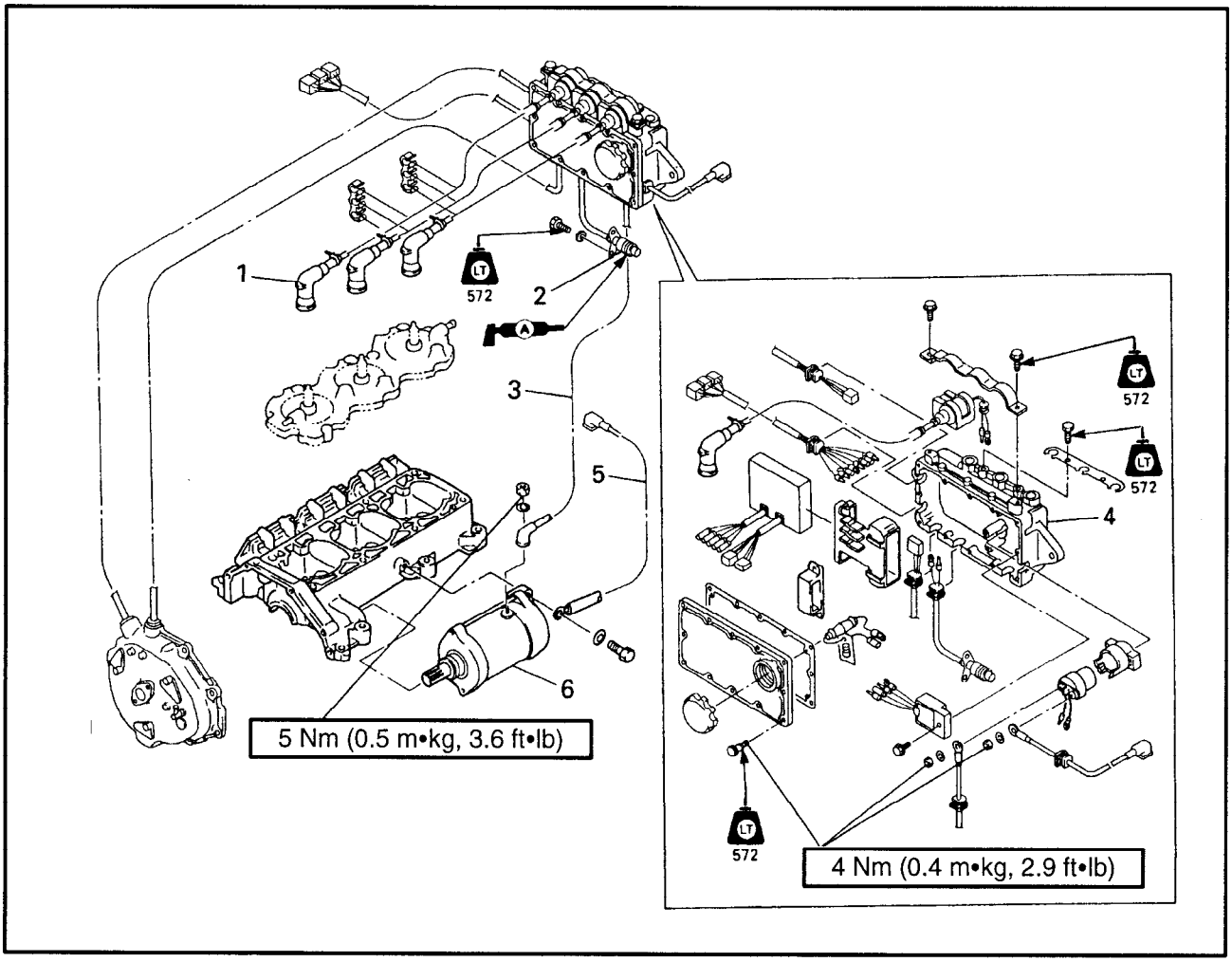
EXPLODED DIAGRAM (XL760)



REMOVAL AND INSTALLATION CHART

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

EXPLODED DIAGRAM (XL1200)

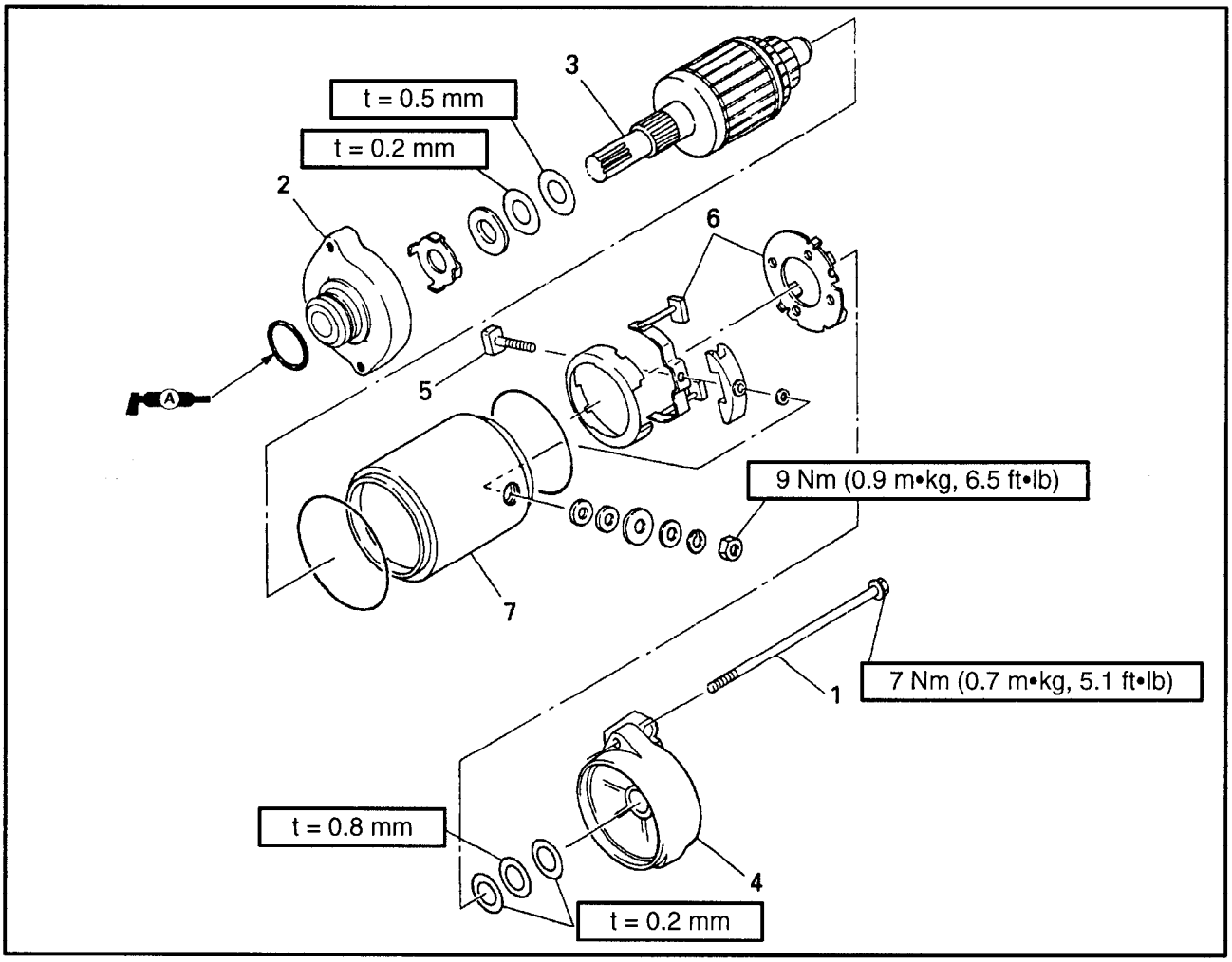


REMOVAL AND INSTALLATION CHART

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

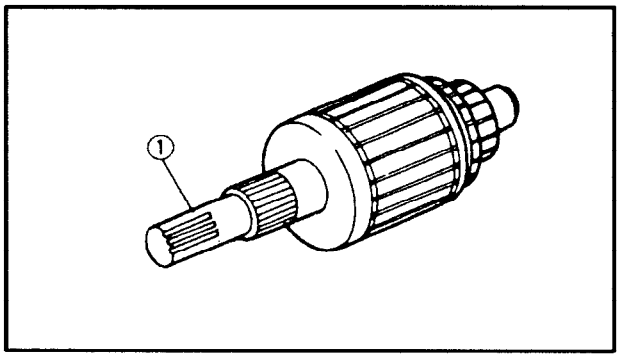
STARTER MOTOR

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

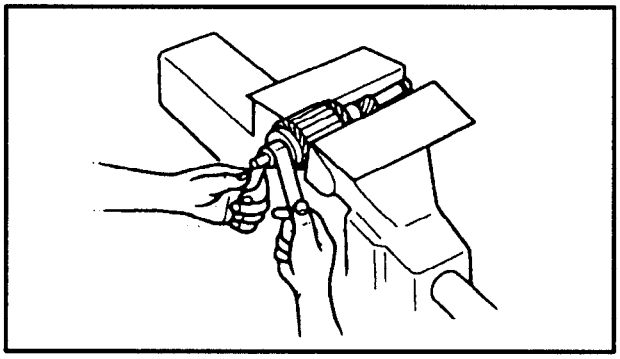
Step	Procedure/Part name	Q'ty	Service points
	STARTER MOTOR DISASSEMBLY		Follow the left "Step" for removal.
	Starter motor assembly		Refer to "ELECTRICAL UNIT".
1	Through bolt	2	
2	Front bracket	1	
3	Armature assembly	1	
4	Rear bracket	1	
5	Bolt	1	
6	Brush holder	1	
7	York assembly	1	
			Reverse the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



SERVICE POINTS

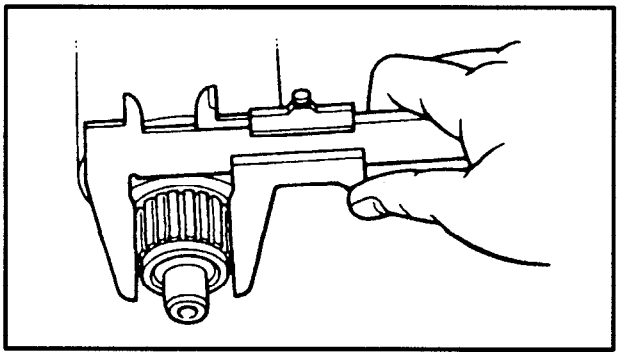
Pinion inspection

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



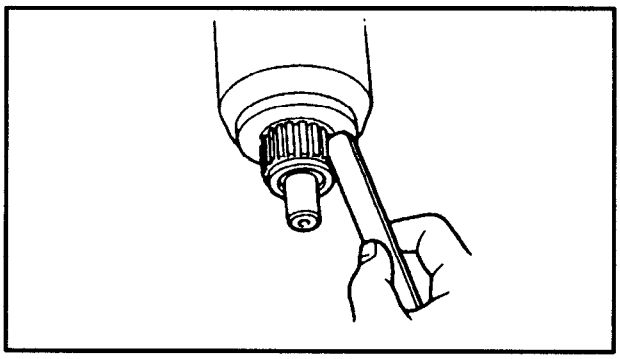
Armature inspection

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



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

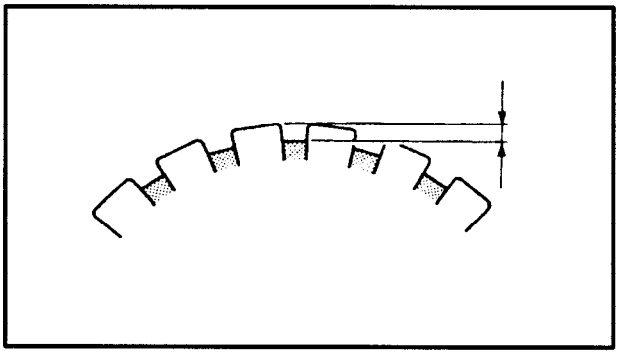
	Commutator diameter: **Limit 27 mm (1.06 in)**



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

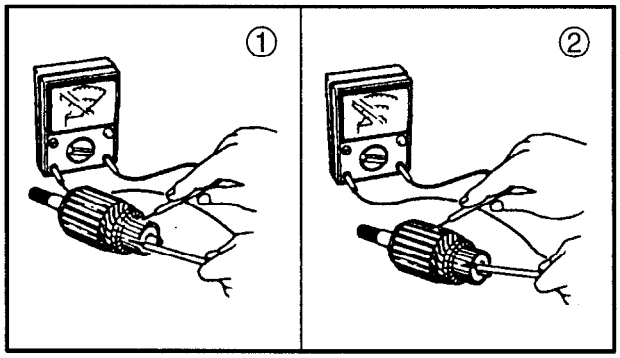
NOTE:

Remove all particles of mica and metal using compressed air.



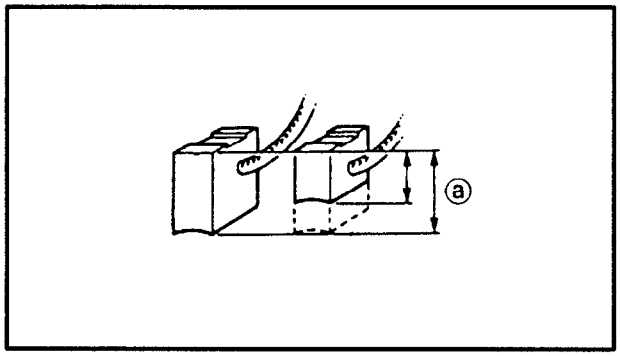
4. Measure:
   - Commutator undercut
     Out of specification → Replace.

	Commutator undercut: **Limit 0.2 mm (0.01 in)**



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

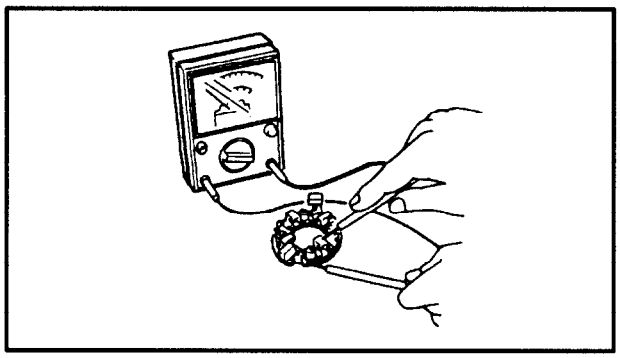
Armature coil continuity:	
Commutator segments ①	Continuity
Segment-Laminations ②	Discontinuity
Segment-Shaft	Discontinuity



Brush holder inspection

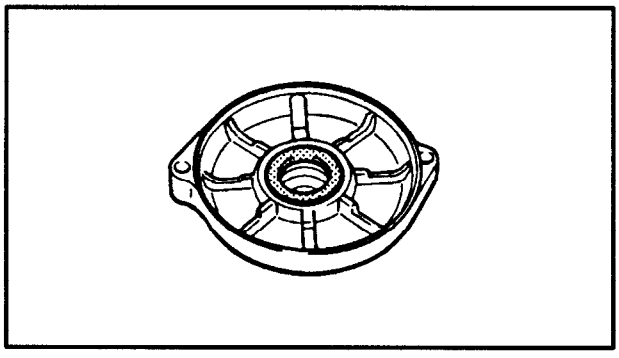
1. Measure:
   - Brush length ⓐ
     Out of specification → Replace.

Brush length: Limit 6.5 mm (0.26 in)



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

Brush holder continuity:	
Brush holder-Base	Discontinuity

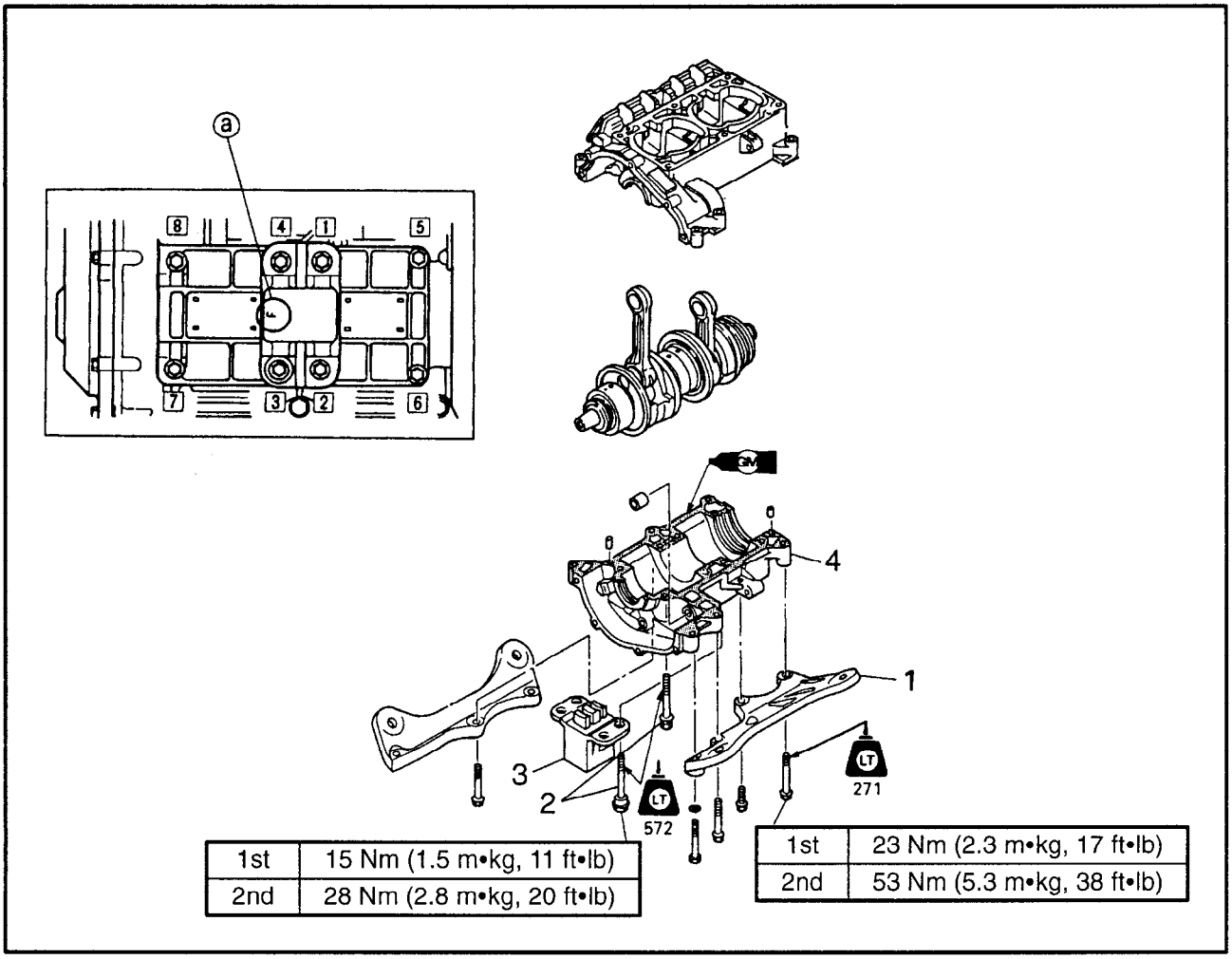


Cover inspection

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

CRANKCASE

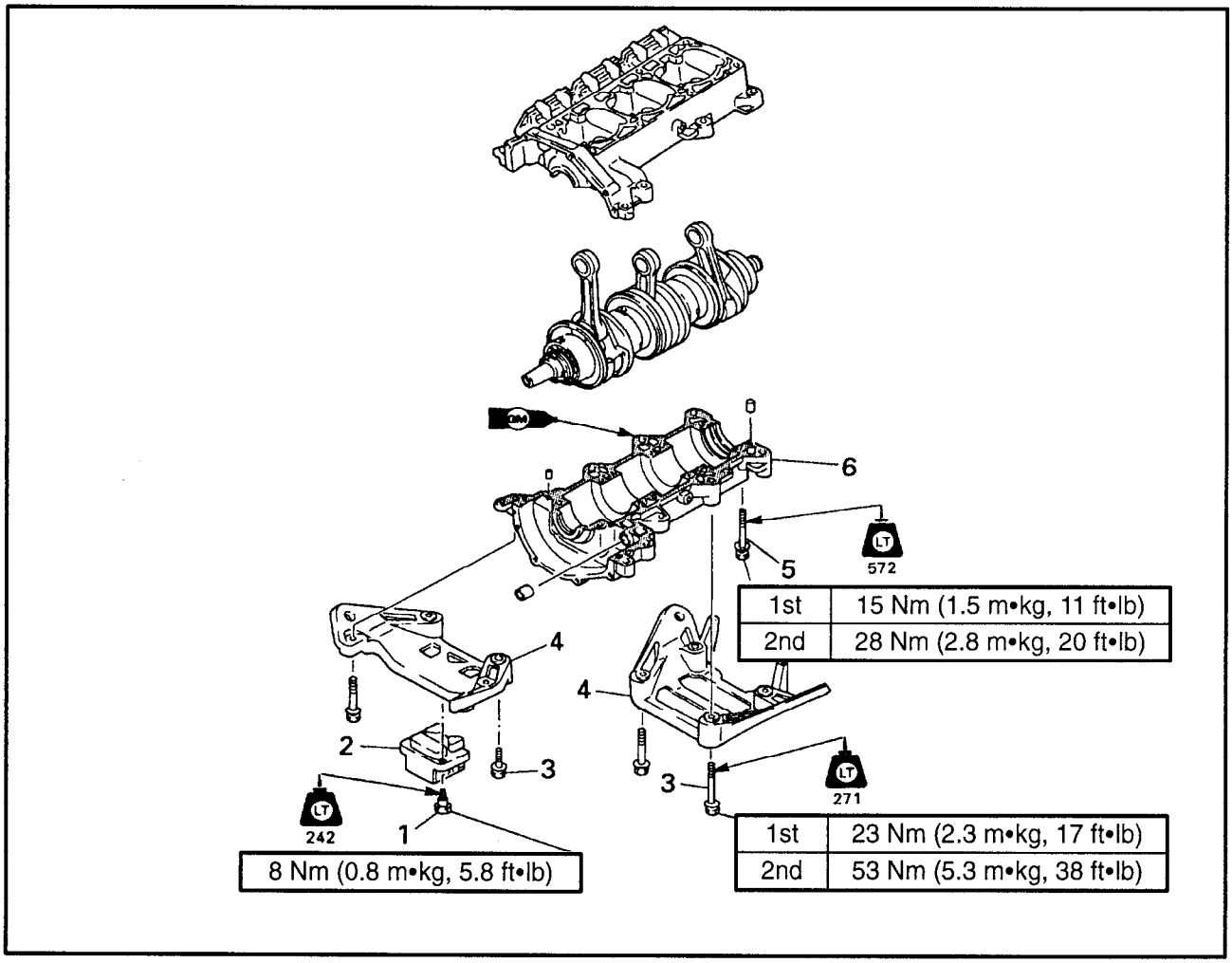
EXPLODED DIAGRAM (XL760)



REMOVAL AND INSTALLATION CHART

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

EXPLODED DIAGRAM (XL1200)



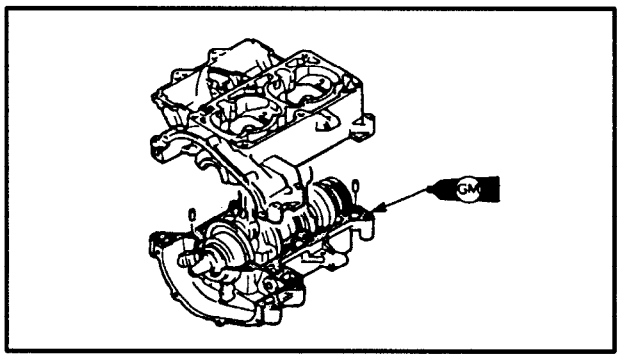
REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CRANKCASE DISASSEMBLY		Follow the left "Step" for removal.
	Base assembly		Refer to "FLYWHEEL MAGNETO AND BASE".
	Starter motor		Refer to "ELECTRICAL UNIT".
	Piston		Refer to "PISTON".
1	Bolt	2	
2	Mount rubber	1	
3	Bolt (with washer)	9	
4	Engine mount bracket	2	
5	Bolt (with washer)	8	
6	Crankcase	1	**NOTE:** Tighten the bolts in sequence and in two steps of torque.
			Reverse the removal steps for installation.

SERVICE POINTS

Crankcase inspection

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



Crankcase installation

1. Apply:
   - Gasket Maker

NOTE:

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

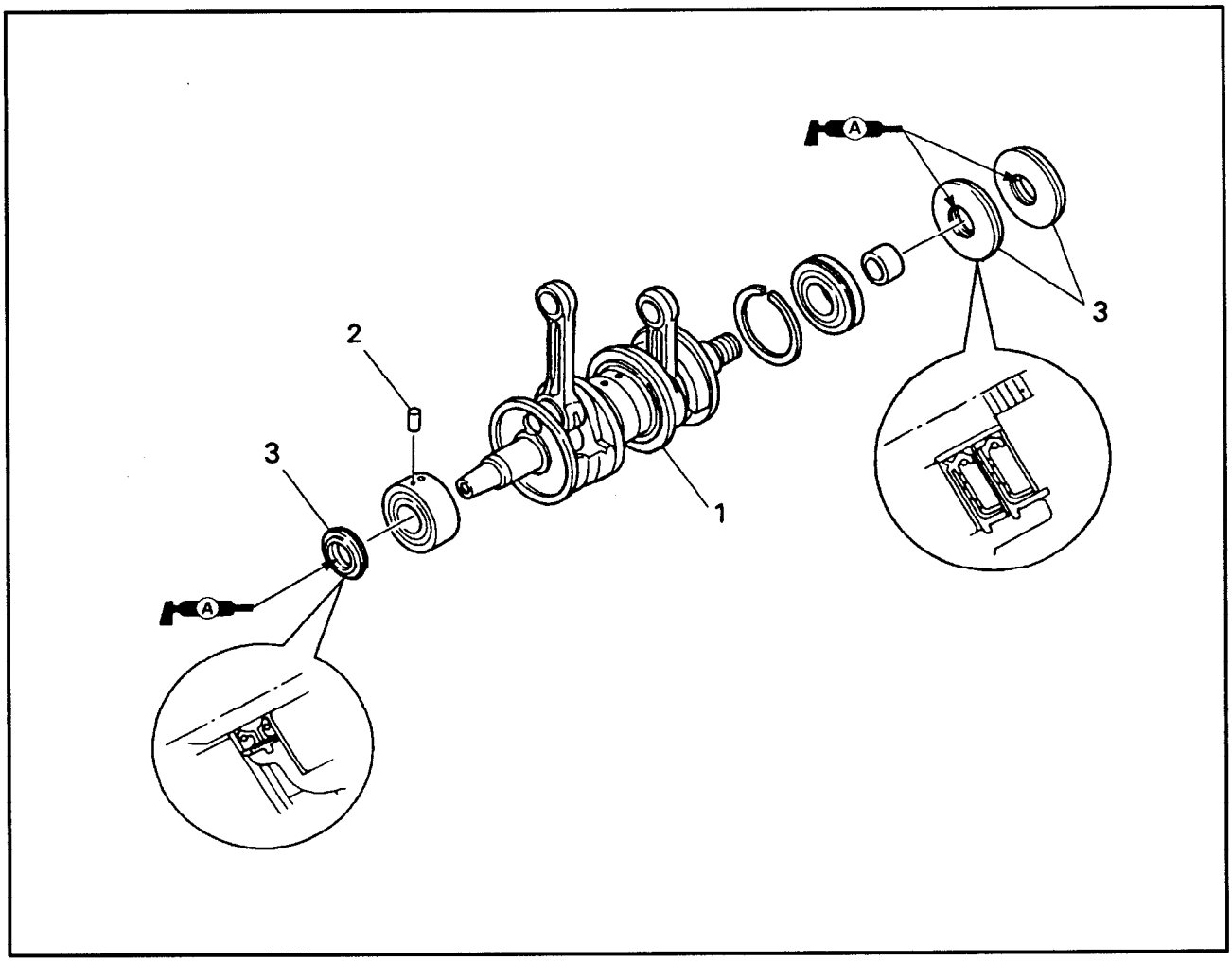
2. Check:
   - Crankshaft
     Rough action → Repair.

NOTE:

After installing, check the smooth movement of the crankshaft.

CRANKSHAFT

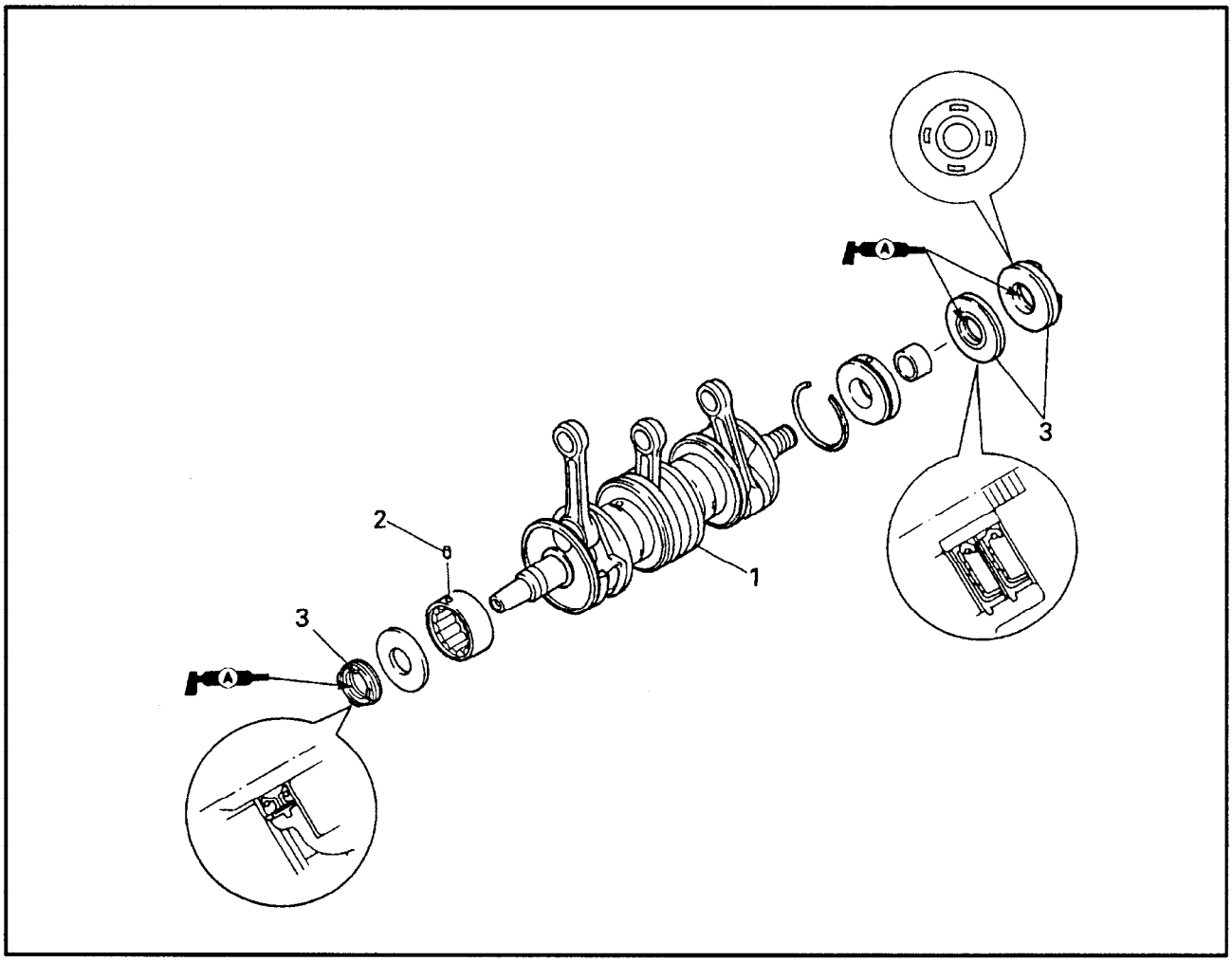
EXPLODED DIAGRAM (XL760)



REMOVAL AND INSTALLATION CHART

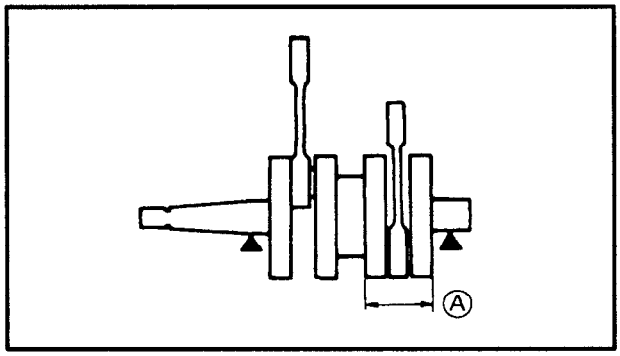
Step	Procedure/Part name	Q'ty	Service points
	CRANKSHAFT REMOVAL		Follow the left "Step" for removal.
	Crankcase		Refer to "CRANKCASE".
1	Crankshaft assembly	1	**CAUTION:** • **Do not allow the bearing clip open ends to meet the crankcase contacting surface.** • **Place the locating pins on the bearing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

EXPLODED DIAGRAM (XL1200)



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	CRANKSHAFT REMOVAL		Follow the left "Step" for removal.
	Crankcase		Refer to "CRANKCASE".
1	Crankshaft assembly	1	**CAUTION:** • **Do not allow the bearing clip open ends to meet the crankcase contacting surface.** • **Place the locating pins on the bearing into the crankcase body groove.**
2	Dowel pin	8	
3	Oil seal	3	
			Reverse the removal steps for installation.

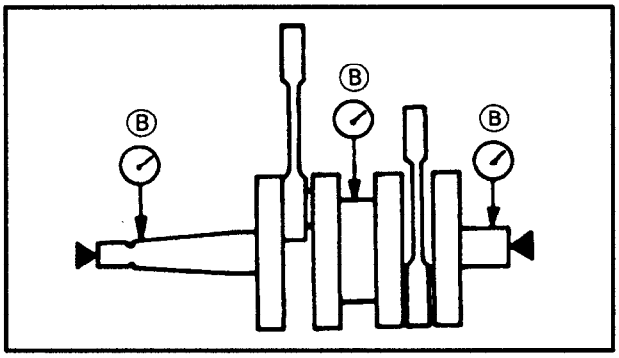


SERVICE POINTS

Crankshaft inspection

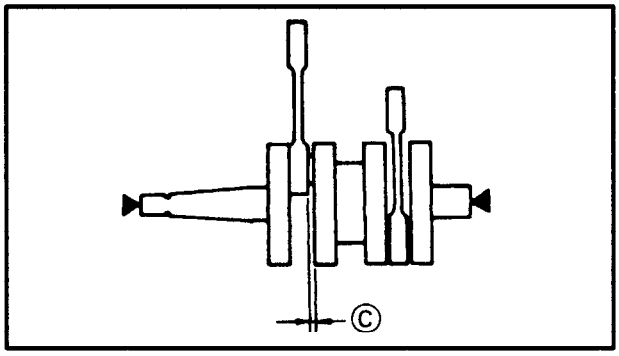
1. Measure:
   - Crank width Ⓐ
     Out of specification → Replace.

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



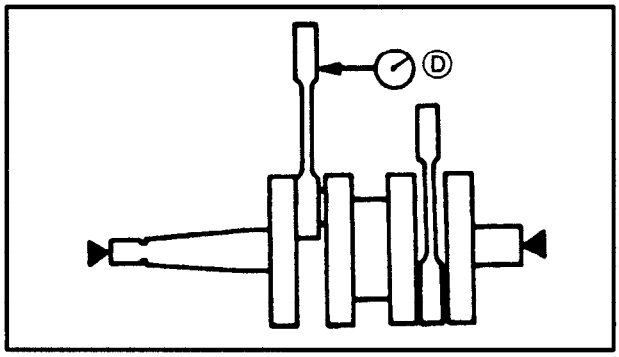
2. Measure:
   - Deflection Ⓑ
     Use a dial gauge.
     Out of specification → Replace.

Maximum deflection:
0.05 mm (0.002 in)



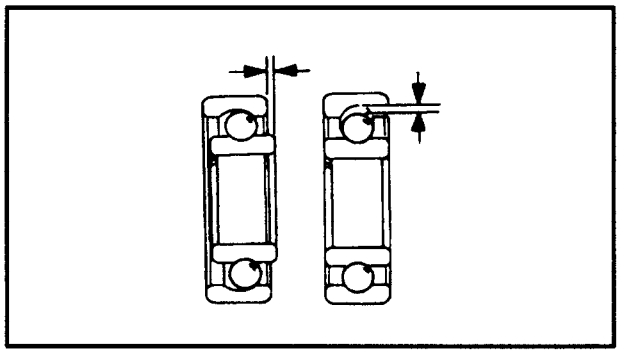
3. Measure:
   - Big end side clearance Ⓒ
     Use a thickness gauge.
     Out of specification → Replace.

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



4. Measure:
   - Small end free play Ⓓ
     Use a dial gauge.
     Out of specification → Replace.

Small end free play:
2.0 mm (0.08 in)



5. Inspect:
   - Crankshaft bearing
     Pitting/damage → Replace.

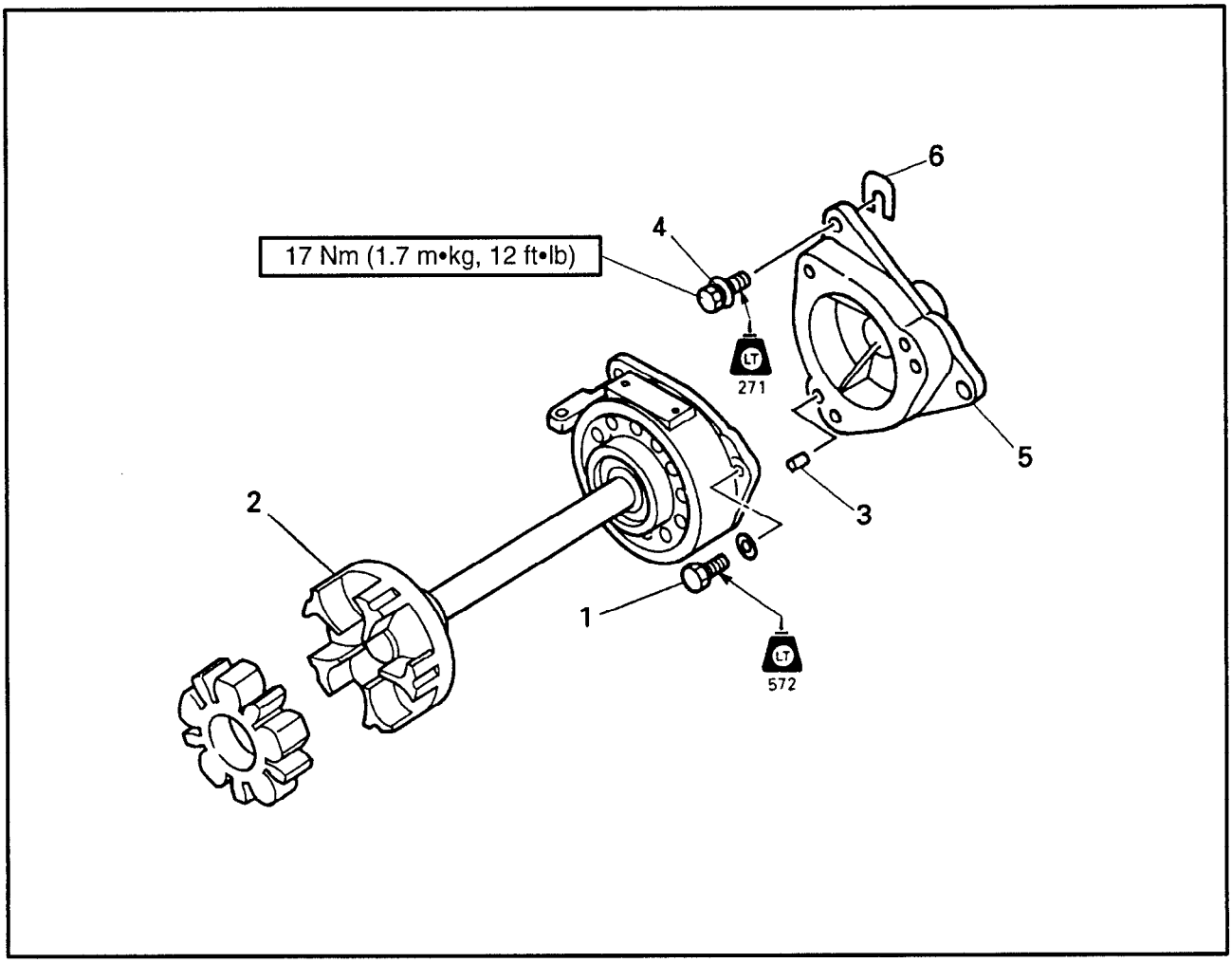
NOTE:

Lubricate the bearings immediately after examining them to prevent rusting.

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

INTERMEDIATE HOUSING REMOVAL

EXPLODED DIAGRAM



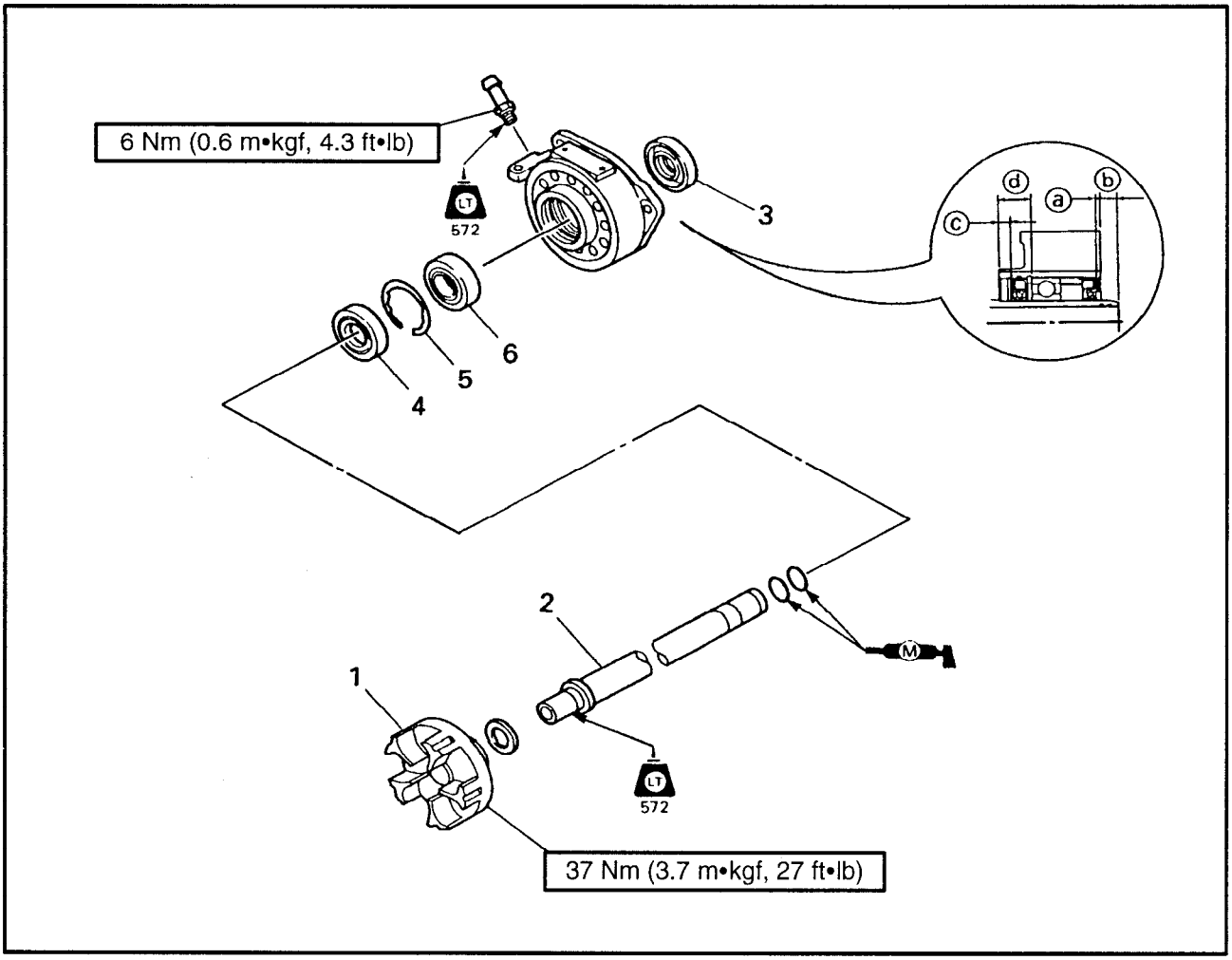
REMOVAL AND INSTALLATION CHART

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

*: As required

INTERMEDIATE HOUSING

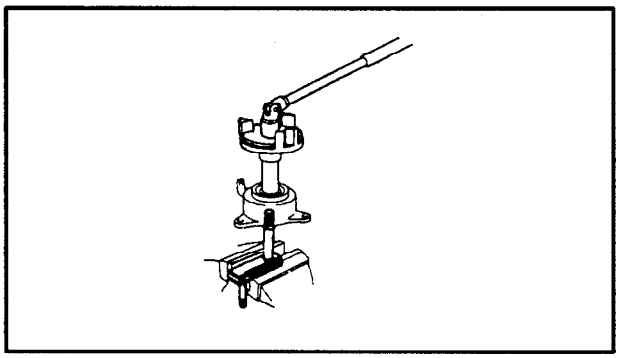
EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	INTERMEDIATE HOUSING DISASSEMBLY Bearing housing assembly		Follow the left "Step" for removal. Refer to "INTERMEDIATE HOUSING REMOVAL".
1	Coupling	1	
2	Shaft	1	**Distance:** **ⓐ: 1.6 ~ 2.0 mm (0.06 ~ 0.08 in)** **ⓑ: 14.5 ~ 15.5 mm*1** **(0.57 ~ 0.61 in)** **9.5 ~ 10.5 mm*2** **(0.37 ~ 0.41 in)** **ⓒ: 6.8 ~ 7.2 mm (0.27 ~ 0.28 in)** **ⓓ: 17.6 ~ 17.7 mm (0.69 ~ 0.70 in)**
3	Oil seal	1	
4	Oil seal	1	
5	Clip	1	
6	Bearing	1	
			Reverse the removal steps for installation.

*1: XL760 *2: XL1200

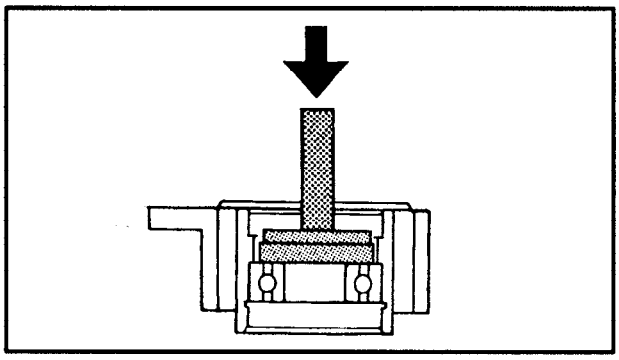


SERVICE POINTS

Coupling removal and installation

1. Remove and install:
   - Coupling

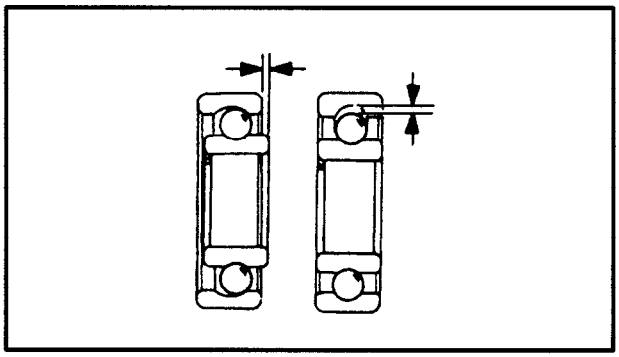
Coupler wrench:
YW-06546/90890-06546
Shaft holder:
YW-38742/90890-06069



Bearing removal

1. Remove
   - Bearing

Driver rod:
YB-06071/90890-06606
Bearing outer race attachment:
YB-06015/90890-06636

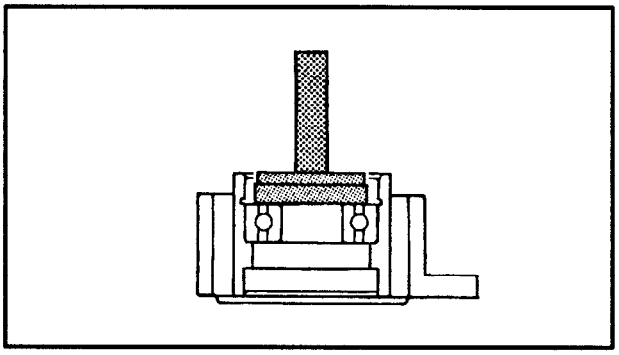


Bearing inspection

1. Inspect:
   - Bearing
     Rotate inner race by hand.
     Rough spots/seizure → Replace.
   - Shaft
     Pitting damage → Replace.
   - Hose
     Wear/cracks → Replace.

Coupling inspection

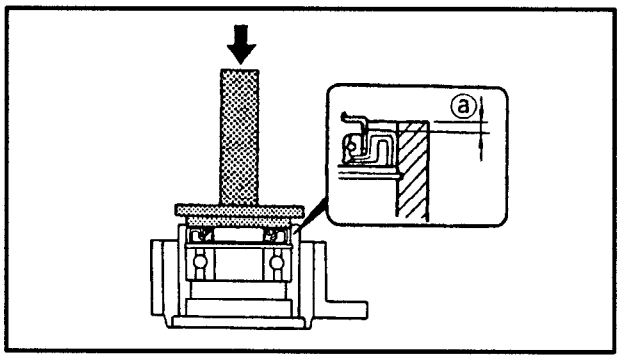
1. Inspect:
   - Coupling flange
   - Coupling rubber
     Wear/damage → Replace.



Bearing installation

1. Install:
   - Bearing

Driver rod:
YB-06071/90890-06606
Bearing outer race attachment:
YB-06085/90890-06625



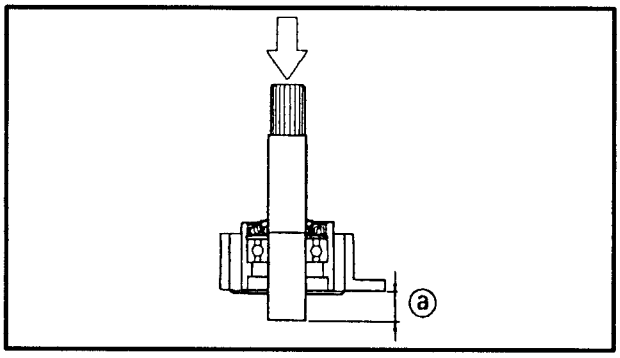
Oil seal installation

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

Distance ⓐ:
6.8 ~ 7.2 mm (0.27 ~ 0.28 in)

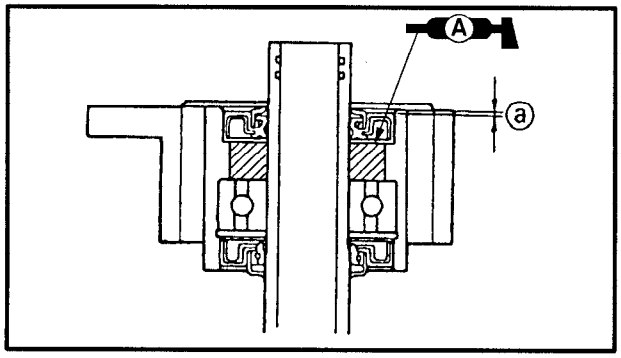
Driver rod:
YB-06071/90890-06606
Bearing outer race attachment:
YB-06085/90890-06625

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



2. Install:
   - Shaft

Distance ⓐ:
XL760
14.5 ~ 15.5 mm (0.57 ~ 0.61 in)
XL1200
9.5 ~ 10.5 mm (0.37 ~ 0.41 in)



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

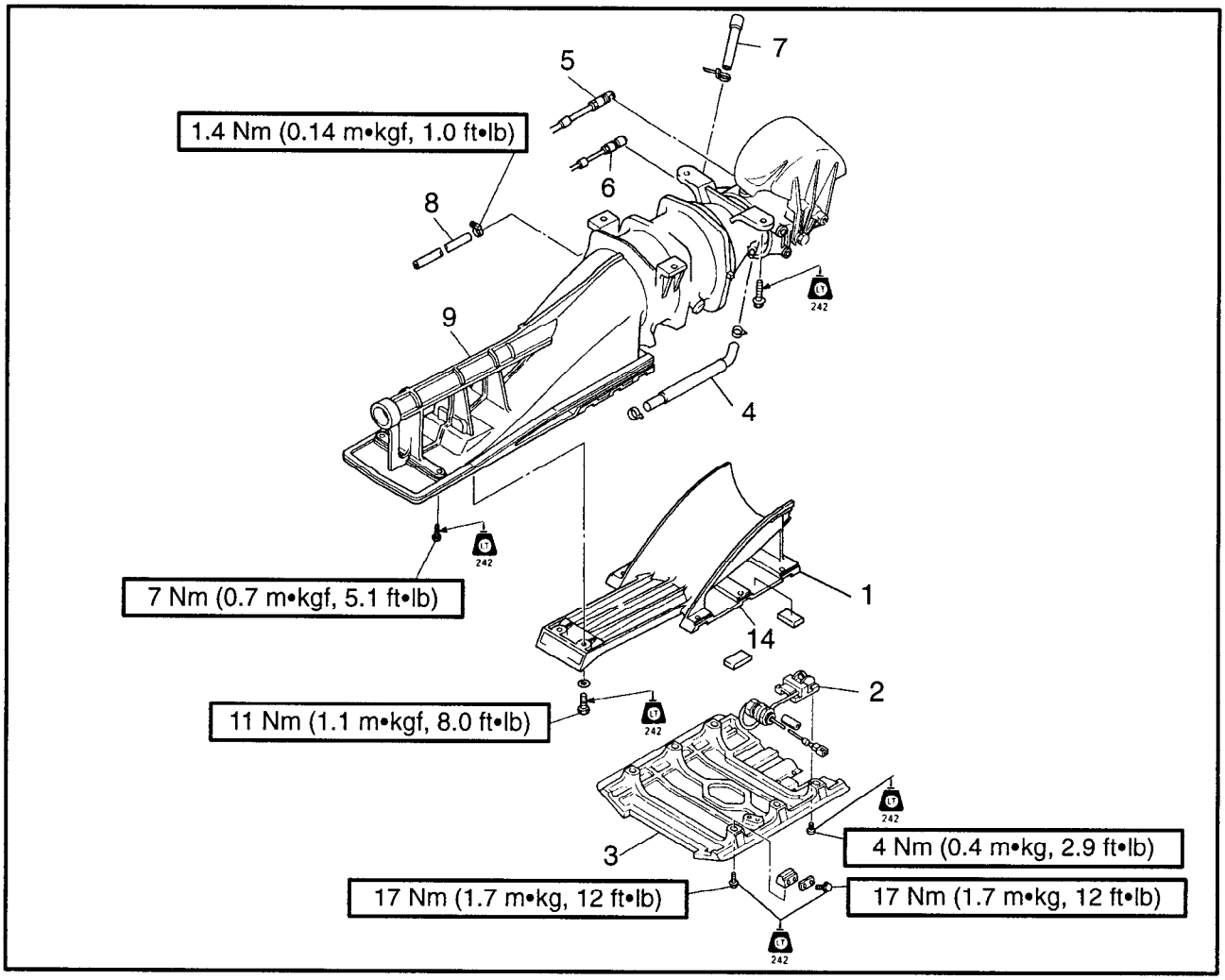
Distance ⓐ:
1.6 ~ 2.0 mm (0.06 ~ 0.08 in)

NOTE:
Fill the water resistant grease on the housing inner circumference before installing the oil seal.

CHAPTER 6
JET PUMP UNIT

JET PUMP UNIT REMOVAL

EXPLODED DIAGRAM

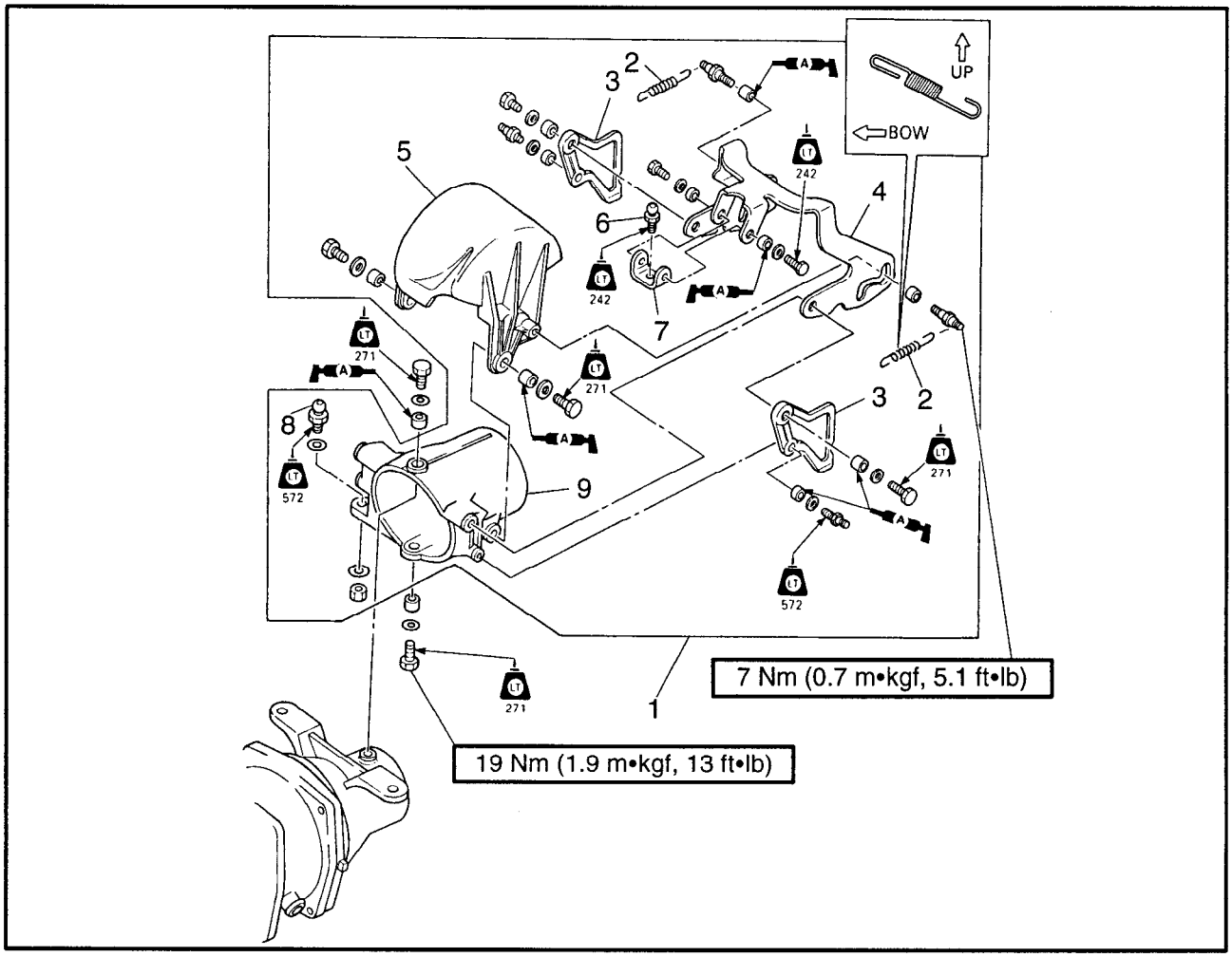


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	JET PUMP UNIT REMOVAL		Follow the left "Step" for removal.
1	Intake screen	1	
2	Speed sensor	1	
3	Ride plate	1	
4	Bilge hose	1	
5	Shift cable joint	1	
6	Steering cable joint	1	
7	Spout hose	1	
8	Engine cooling hose	1	
9	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).
			Reverse the removal steps for installation.

NOZZLE DEFLECTOR AND REVERSE GATE

EXPLODED DIAGRAM

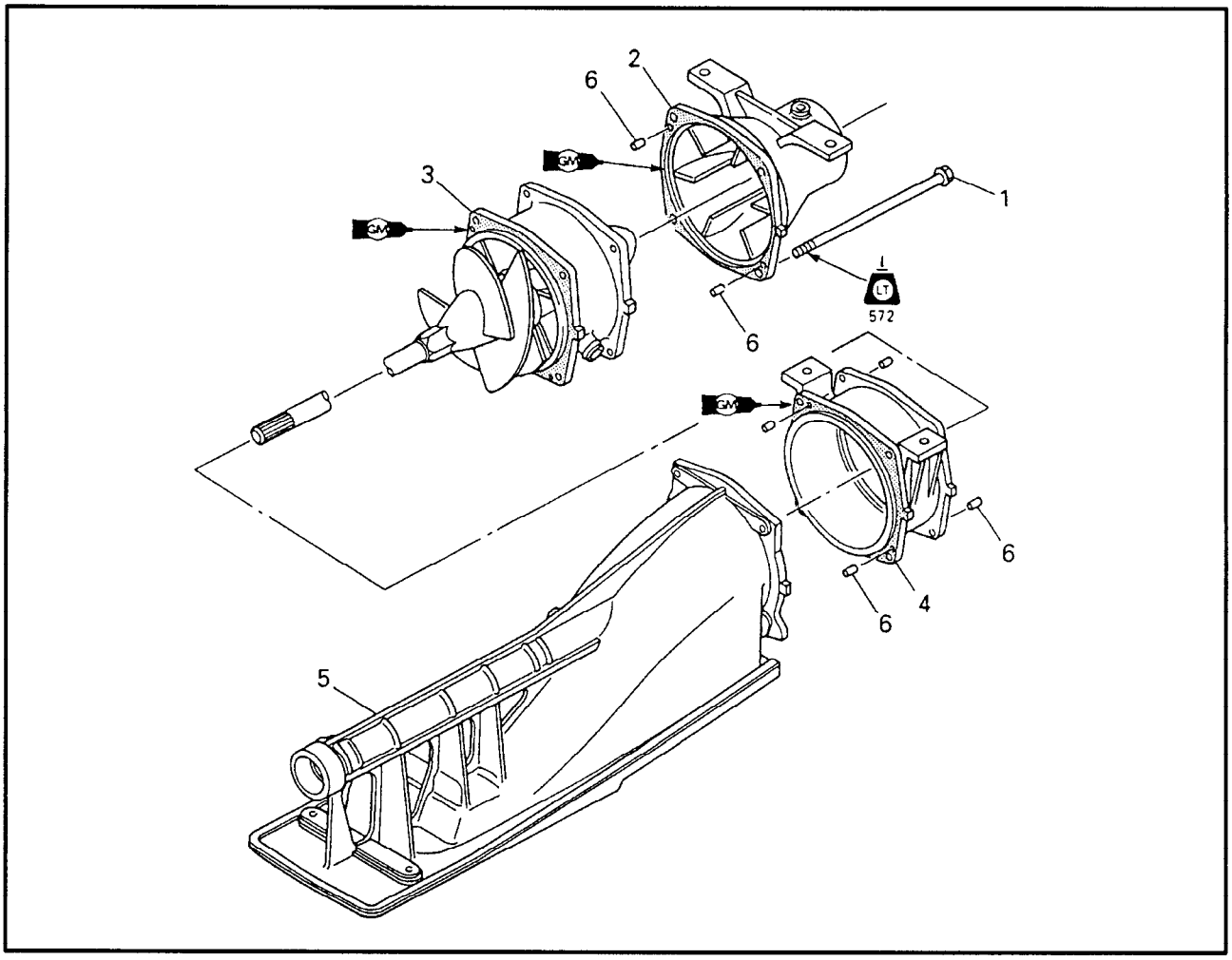


REMOVAL AND INSTALLATION CHART

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	Nozzle deflector assembly	1	
2	Spring	2	
3	Plate	2	
4	Shift lever	1	
5	Reverse gate	1	
6	Ball joint	1	
7	Lever	1	
8	Ball joint	1	M6
9	Nozzle deflector	1	
			Reverse the removal steps for installtion.

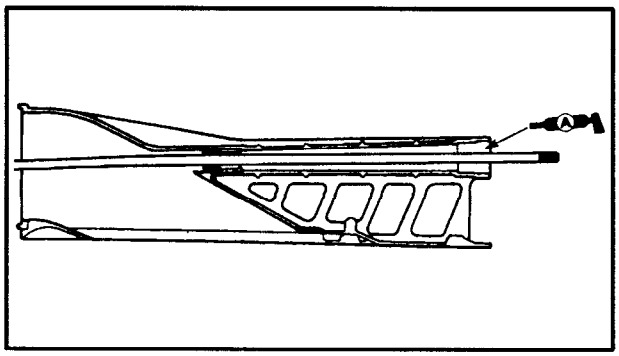
NOZZLE, DUCT AND INTAKE

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	NOZZLE, DUCT AND INTAKE REMOVAL		Follow the left "Step" for removal.
	Trim ring		Refer to "DEFLECTOR AND TRIM RING" section.
1	Bolt	4	
2	Nozzle	1	**NOTE:**
3	Impeller duct assembly	1	Clean the contacting surfacews before applying
4	Housing	1	the Gasket Marker.
5	Intake duct assembly	1	
6	Pin	6	
			Reverse the removal steps for installation.



SERVICE POINTS

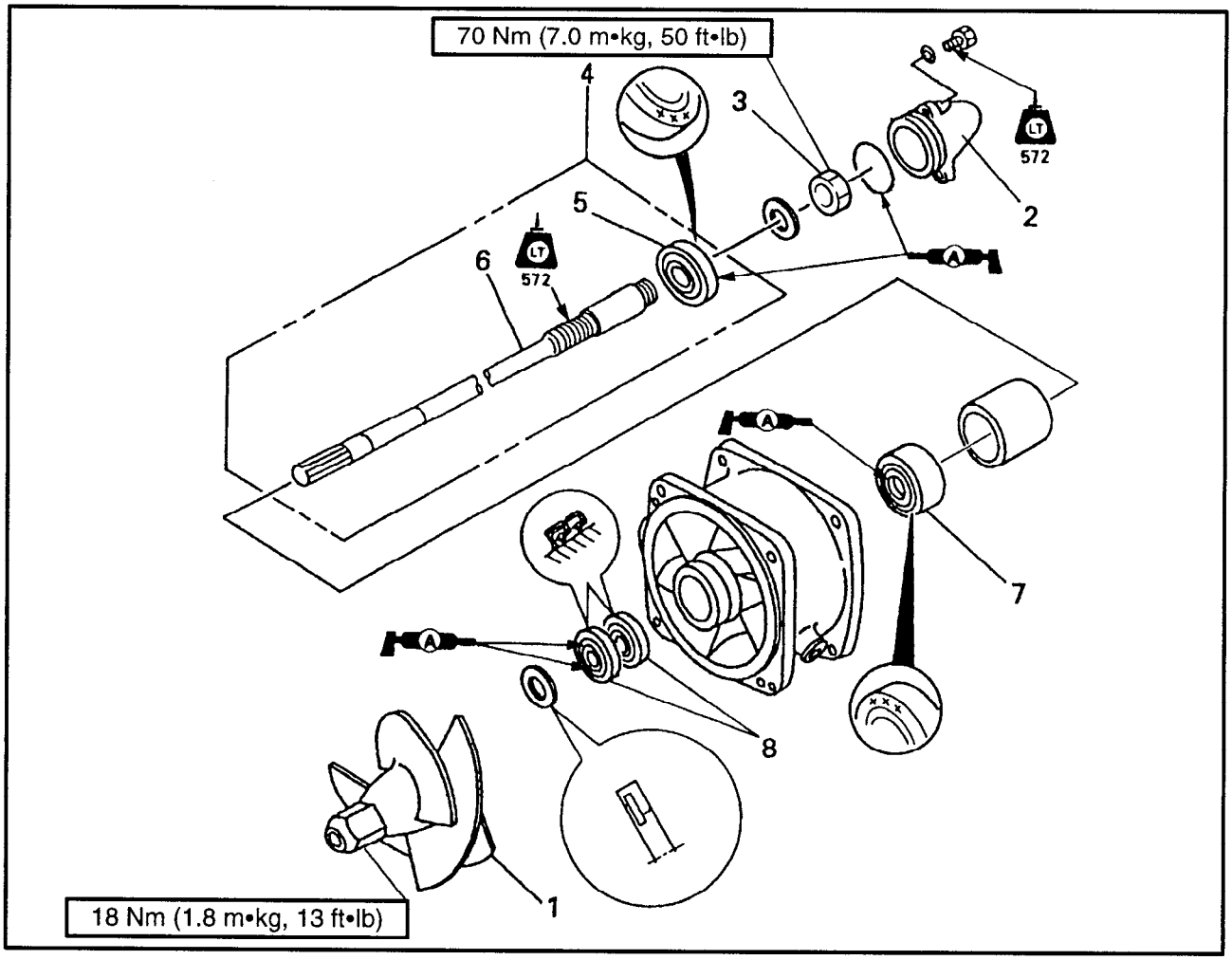
Housing installation

1. Fill:
   - Intake duct housing

	Water resistant grease: **130 ~ 170 cm³ (7.8 – 10.4 cu. in)**

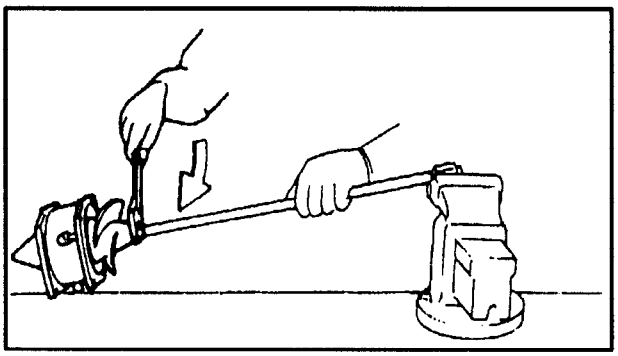
IMPELLER AND DRIVE SHAFT

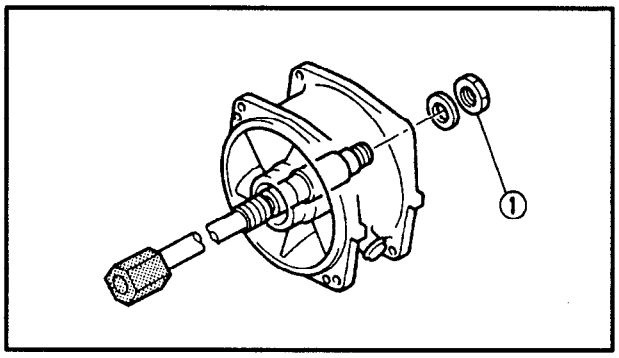
EXPLODED DIAGRAM

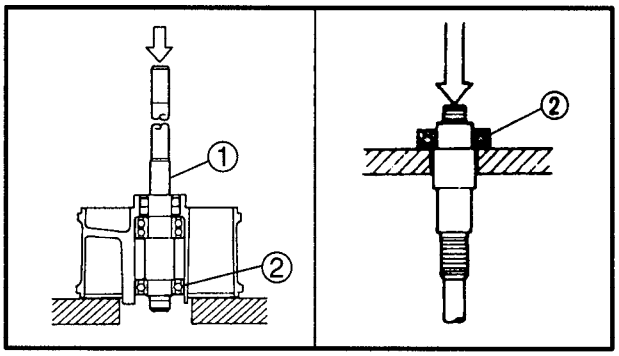


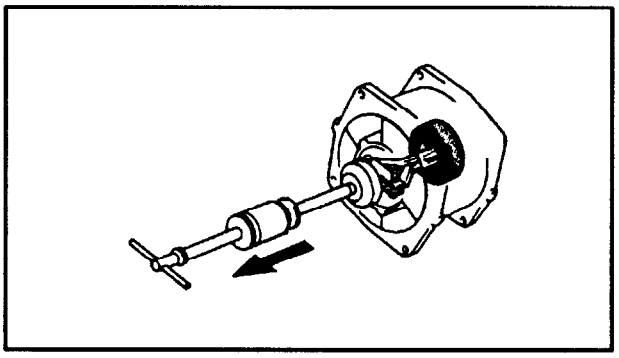
REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	IMPELLER AND DRIVE SHAFT DISASSEMBLY	760, 1200	Follow the left "Step" for removal
	Impeller duct assembly		Refer to "DEFLECTOR, NOZZLE AND DUCT".
1	Impeller	1	
2	Cap	1	
3	Nut	-, 1	
4	Drive shaft assembly	1	
5	Bearing (rear)	1	
6	Spacer	-, 1	
7	Bearing (front)	1	
8	Oil seal	2	Reverse the removal steps for installation.









SERVICE POINTS

Drive shaft removal

1. Remove:
   - Impeller

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

NOTE:

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

2. Remove: (XL1200)
   - Nut ①

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

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

NOTE:

Use a press.

4. Remove:
   - Bearing (front)

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

Impeller inspection

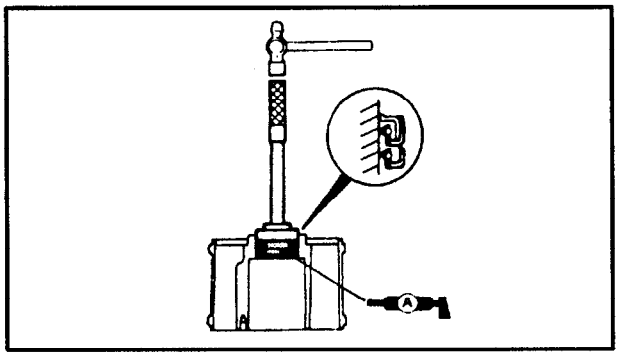
Refer to "JET PUMP UNIT" in chapter 3.

Drive shaft inpsection

1. Inpsect:
   - Drive shaft
     Damage → Replace.

Bearing inspection

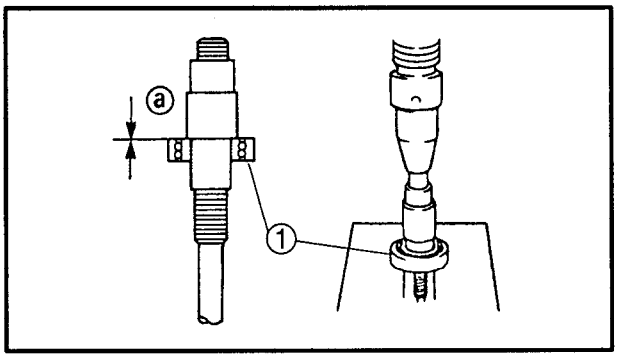
1. Inspect:
   - Bearing (front and rear)
     Rotate inner race by hand.
     Rough spot/seizure → Replace.



Drive shaft installation

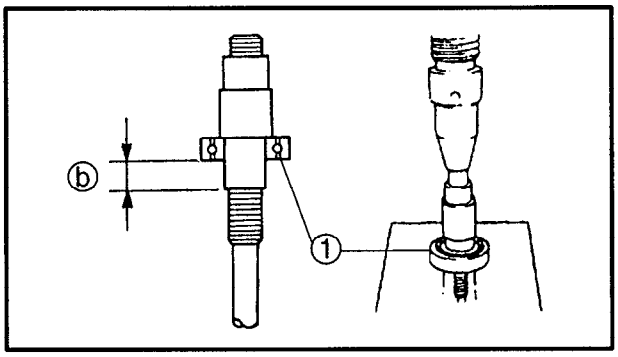
1. Install:
   - Oil seal

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



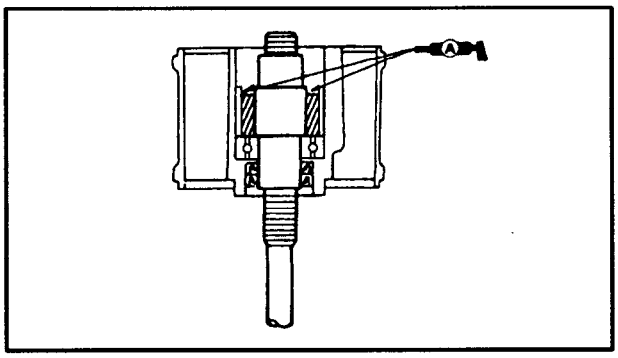
2. Install: (XL760)
   - Bearing (front) ①

	Distance ⓐ: **0 mm (0 in)**



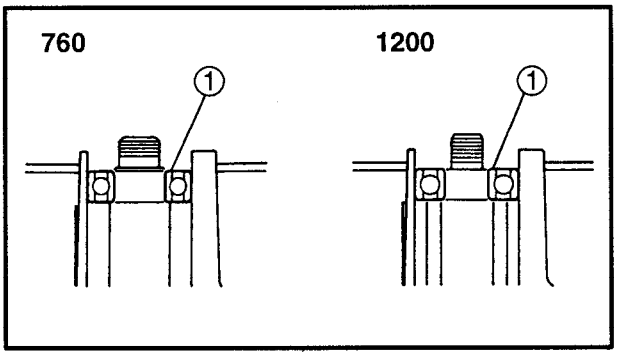
3. Install: (XL1200)
   - Bearing (front) ①
   - Drive shaft and bearing

	Distance ⓑ: **23 ± 0.1 mm (0.91 ± 0.004 in)**



4. Fill:
   - Between the drive shaft and spacer

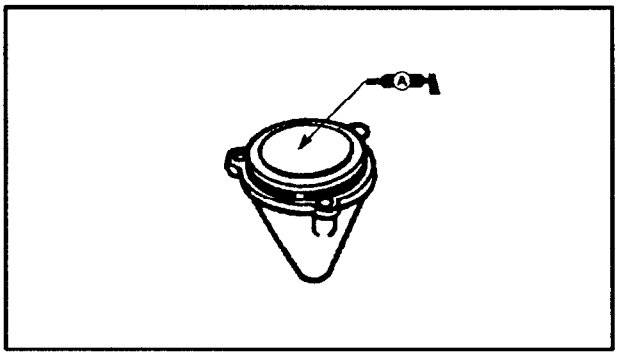
	Water resistant grease: **760: 21 cm³ (1.3 cu. in)** **1200: 13 cm³ (0.8 cu. in)**



5. Install:
   - Bearing (rear) ①

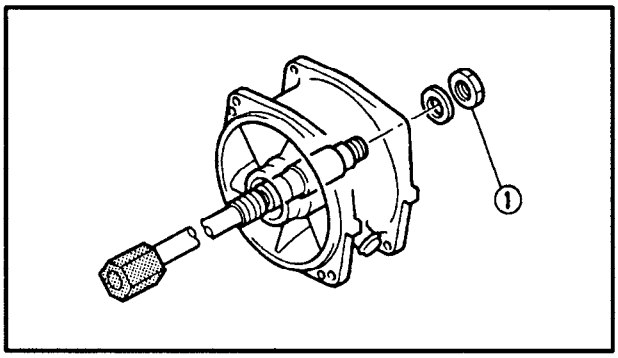
NOTE:

When install the bearing, press bearing inner race and outer race together.



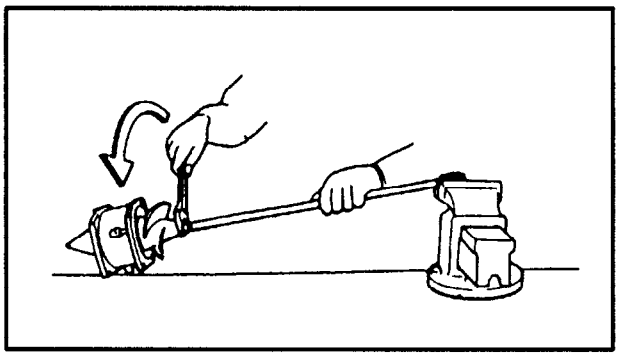
6. Fill:
   - Into the cap

	Water resistant grease: **18 cm³ (1.1 cu. in)**



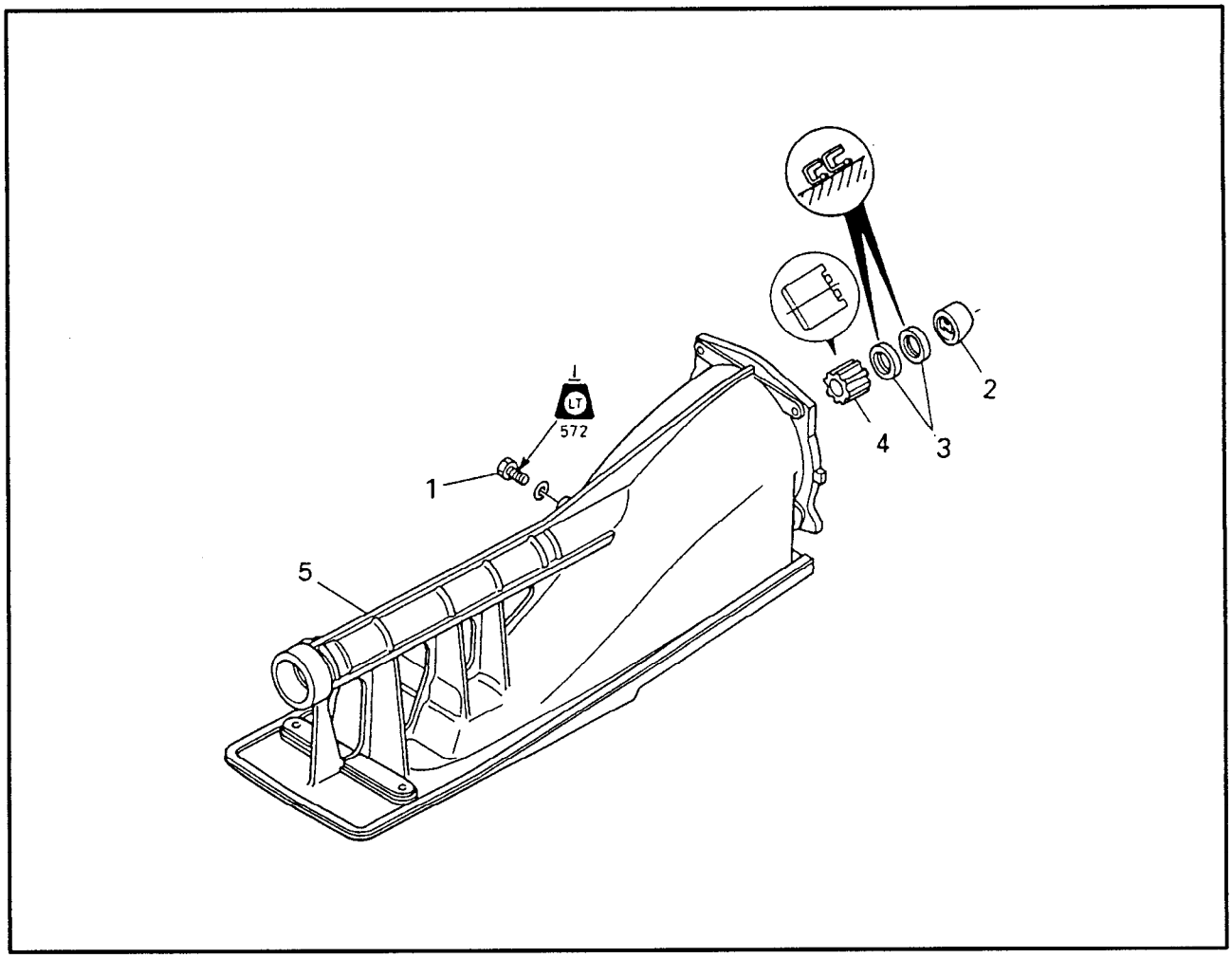
7. Install:
   - Nut ① (XL1200)
   - Impeller

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



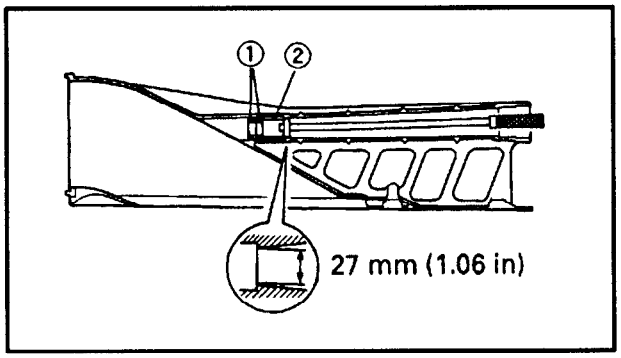
INTAKE DUCT

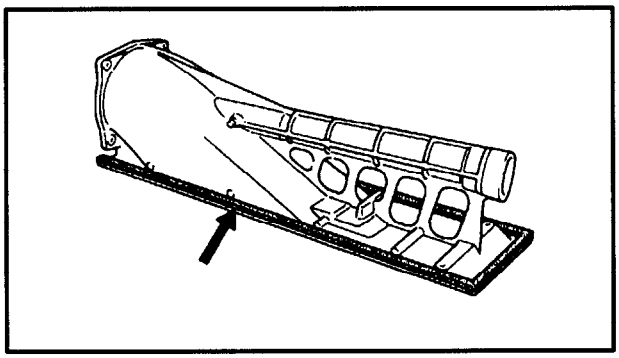
EXPLODED DIAGRAM

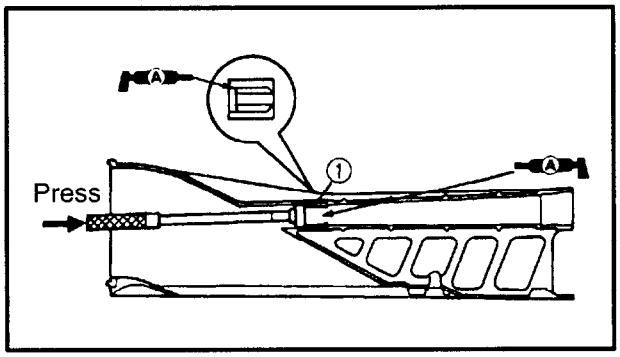


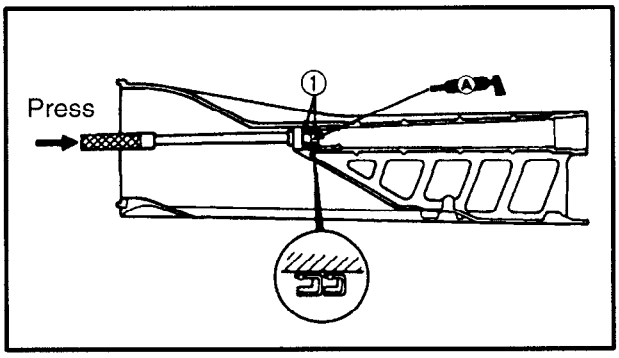
REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	INTAKE DUCT DISASSEMBLY		Follow the left "Step" for removal.
	Intake duct assembly		Refer to "NOZZLE, DUCT AND INTAKE".
1	Bolt (with washer)	1	
2	Spacer	1	
3	Oil seal	2	
4	Bushing	1	
5	Intake duct	1	
			Reverse the removal steps for installation.









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:
   - Seal rubber
     Crack/Wear → Replace.

Bushing and oil seal installation

1. Install:
   - Bushing ①

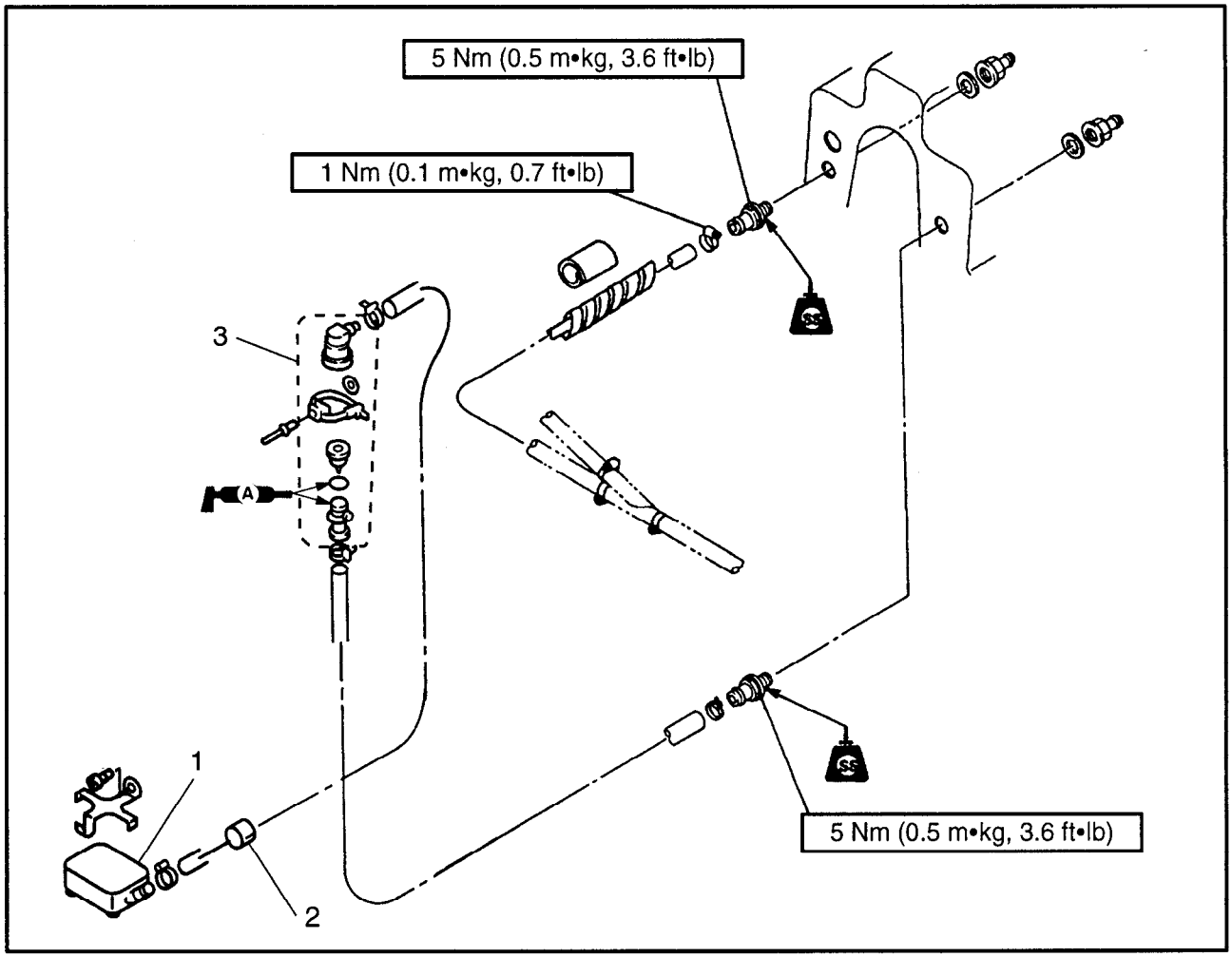
Driver rod:
YB-06071/90890-06602
Needle bearing attachment:
YB-06155/90890-06611

2. Install:
   - Oil seal ①

Driver rod:
YB-06071/90890-06602
Needle bearing attachment:
YB-06155/90890-06611

COOLING AND BILGE SYSTEM

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

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

SERVICE POINTS

Bilge strainer inspection

Refer to "JET PUMP UNIT" in chapter 3.

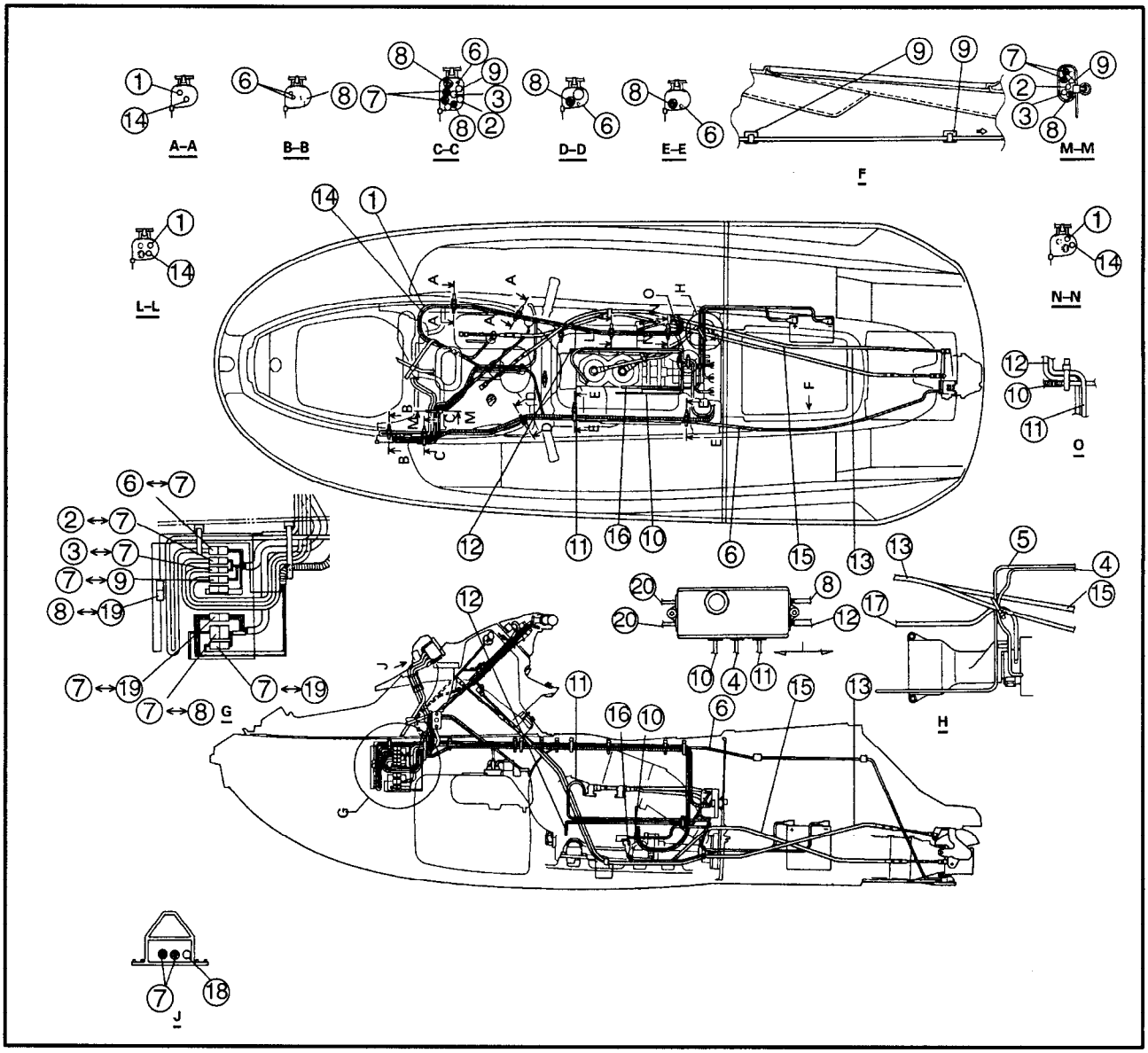
Hose inpsection

1. Inspect:
   - Hose
     Crack/wear/damage → Replace.

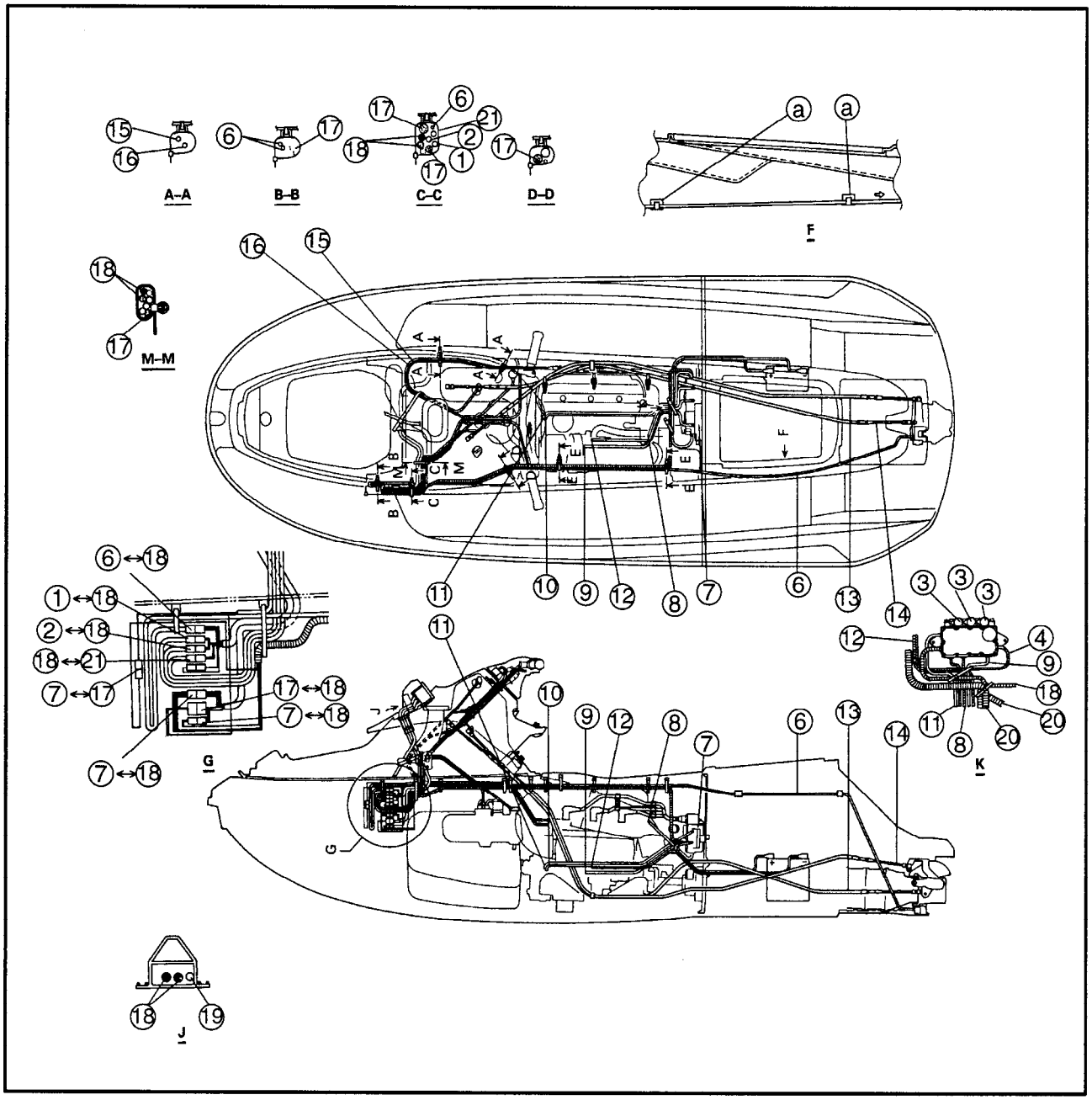
CHAPTER 7
ELECTRICAL SYSTEM

ELECTRICAL COMPONENTS

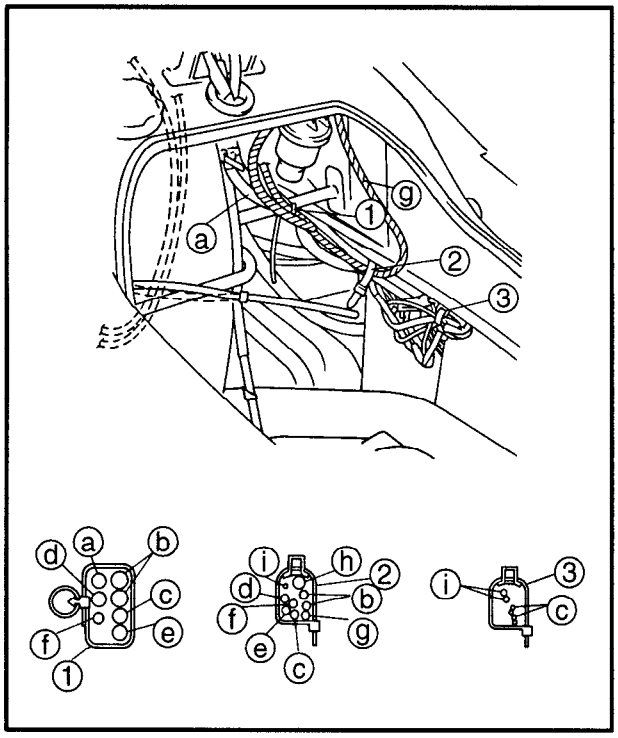
XL760



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 Meter lead
⑧ Handlebar switch lead
⑨ Buzzer lead
⑩ Starter motor (positive) lead
⑪ Thermo sensor lead
⑫ CDI magneto lead
⑬ Reverse cable
⑭ Choke cable
⑮ Steering cable
⑯ Starter motor (negative) lead
⑰ Grease nipple hose
⑱ Tube (meter)
⑲ Electrical box
⑳ High tension cord
ⓐ Aligh with marking-off line



① Fuel level sensor lead
② Oil level sensor lead
③ High tension cord
④ Battery (negative) lead
⑤ Battery (positive) lead
⑥ Speed sensor lead
⑦ Electrical box
⑧ Thermo sensor lead
⑨ Starter motor (positive) lead
⑩ CDI magneto lead
⑪ Flywheel magneto base lead
⑫ Starter motor (negative) lead
⑬ Steering cable
⑭ Reverse cable
⑮ Throttle cable
⑯ Choke cable
⑰ Handlebar switch lead
⑱ Meter lead
⑲ Tube (meter)
⑳ Cooling water hose
㉑ Buzzer lead
ⓐ Align with marking-off line



SERVICE POINTS

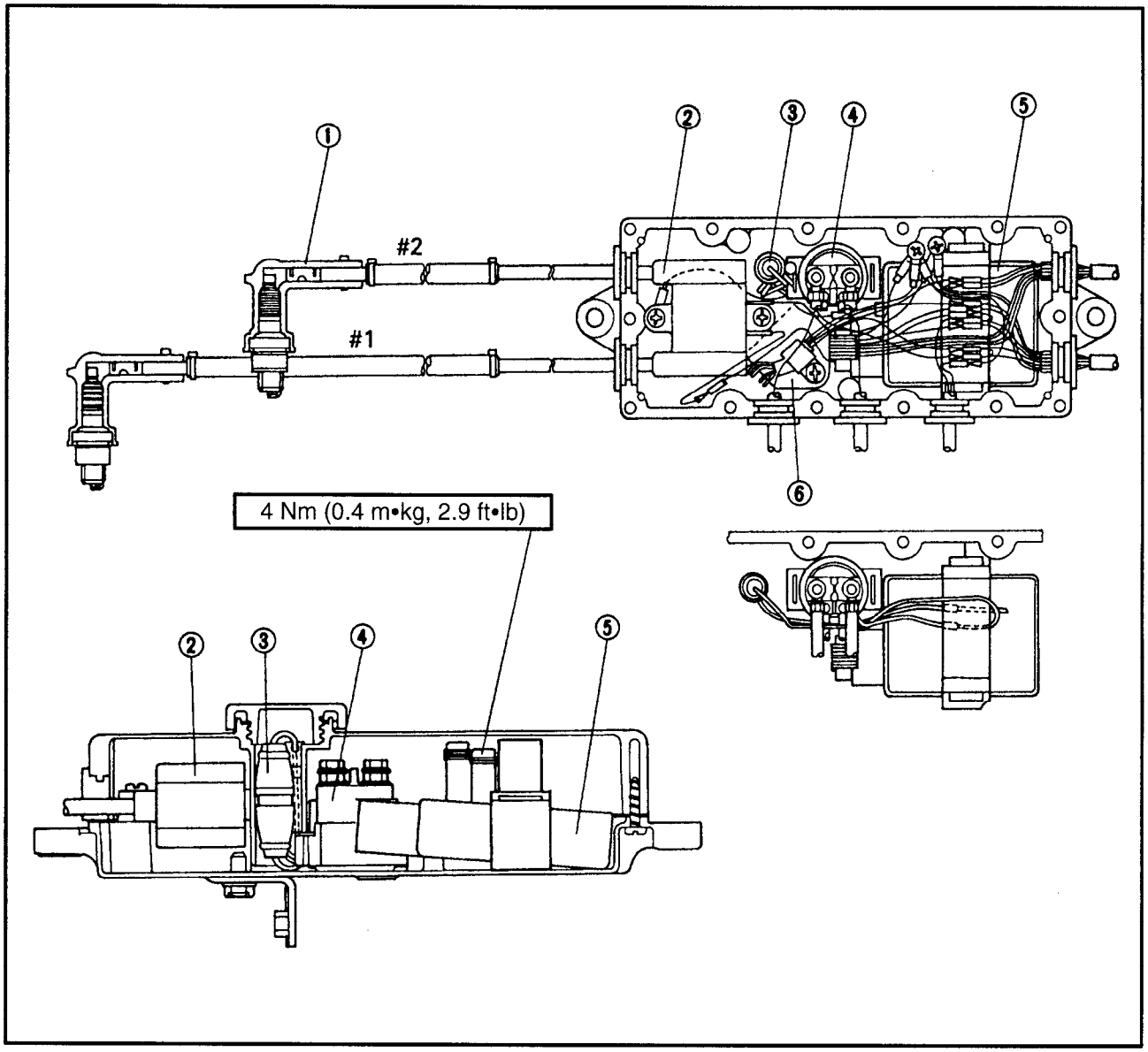
Harness installation

1. Install:
   - Clamp ①
   - Clamp ②
   - Clamp ③

ⓐFuel tank breather hose
ⓑMeter lead
ⓒHandlebar switch lead
ⓓBuzzer lead
ⓔFuel level sensor lead
ⓕOil level sensor lead
ⓖFuel tank breather hose
ⓗElectrical box lead
ⓘSpeed sensor lead

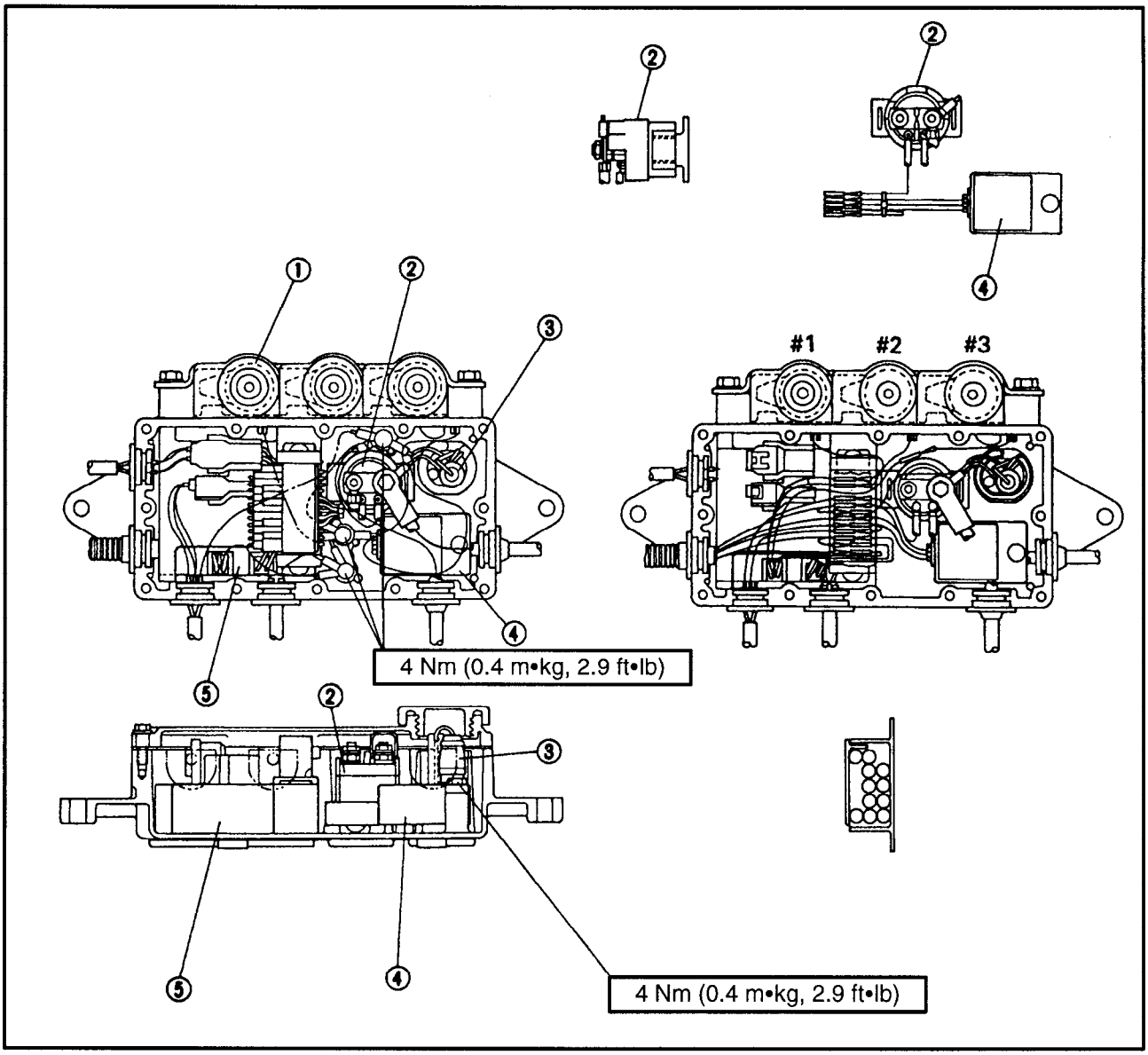
ELECTRICAL UNIT

XL760



① Spark plug cap
② Ignition coil
③ Fuse
④ Starter relay
⑤ CDI unit
⑥ Rectifier regulator

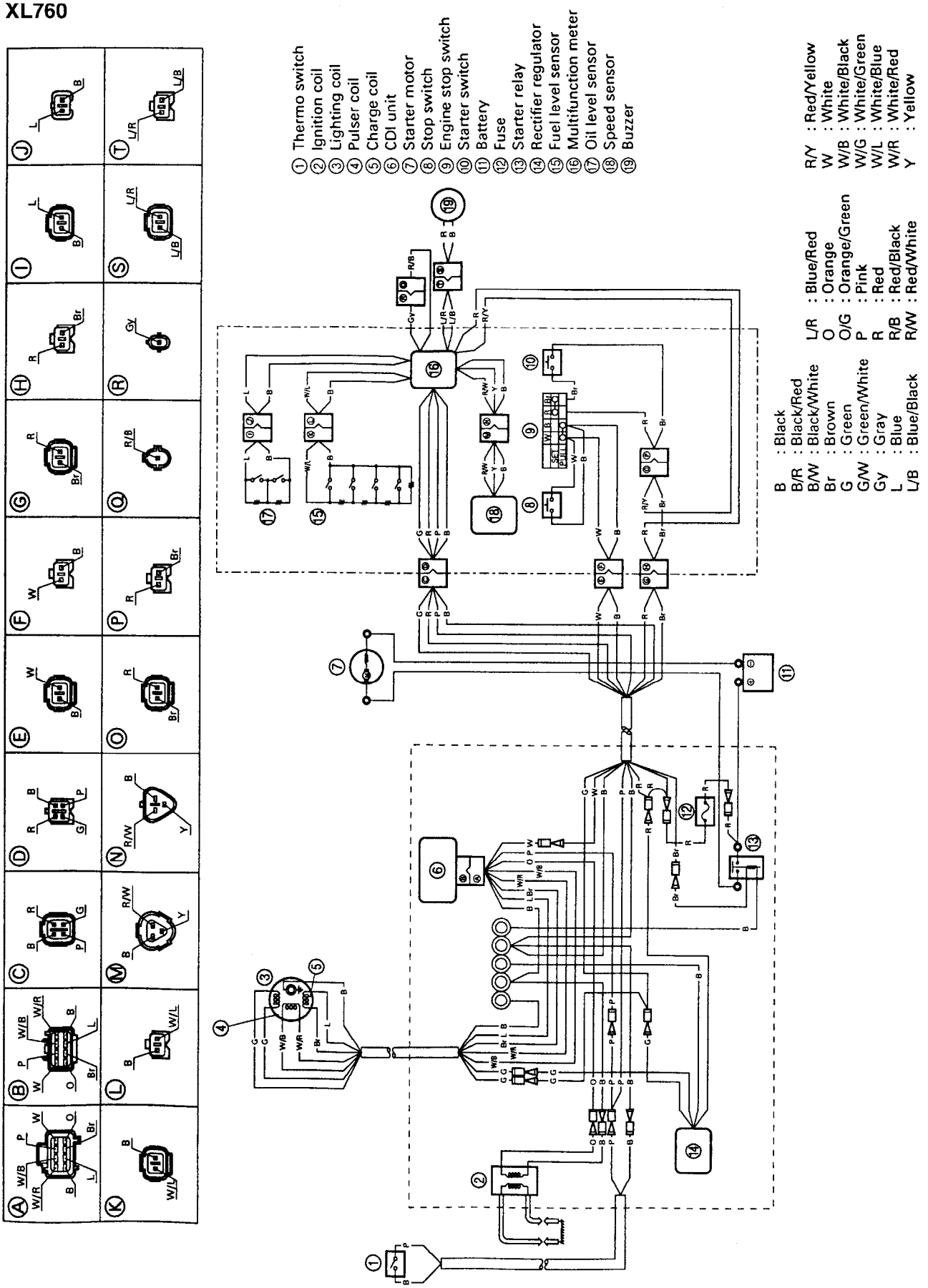
XL1200



① Ignition coil
② Starter relay
③ Fuse
④ Rectifier regulator
⑤ CDI unit

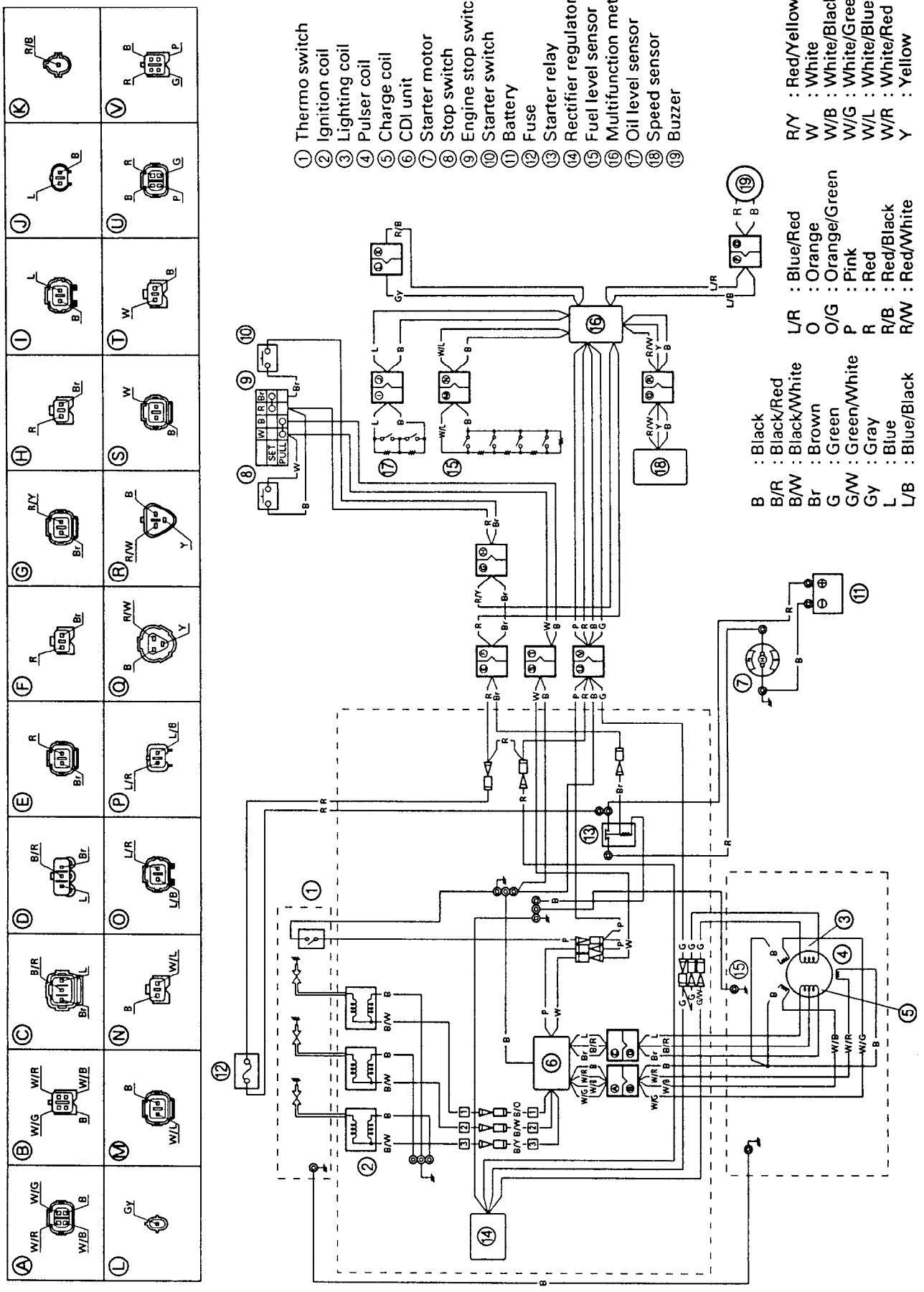
ELECTRICAL DIAGRAM

XL760



ELECTRICAL DIAGRAM

XL1200



ELECTRICAL ANALYSIS

INSPECTION

CAUTION:

All measuring instrument 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

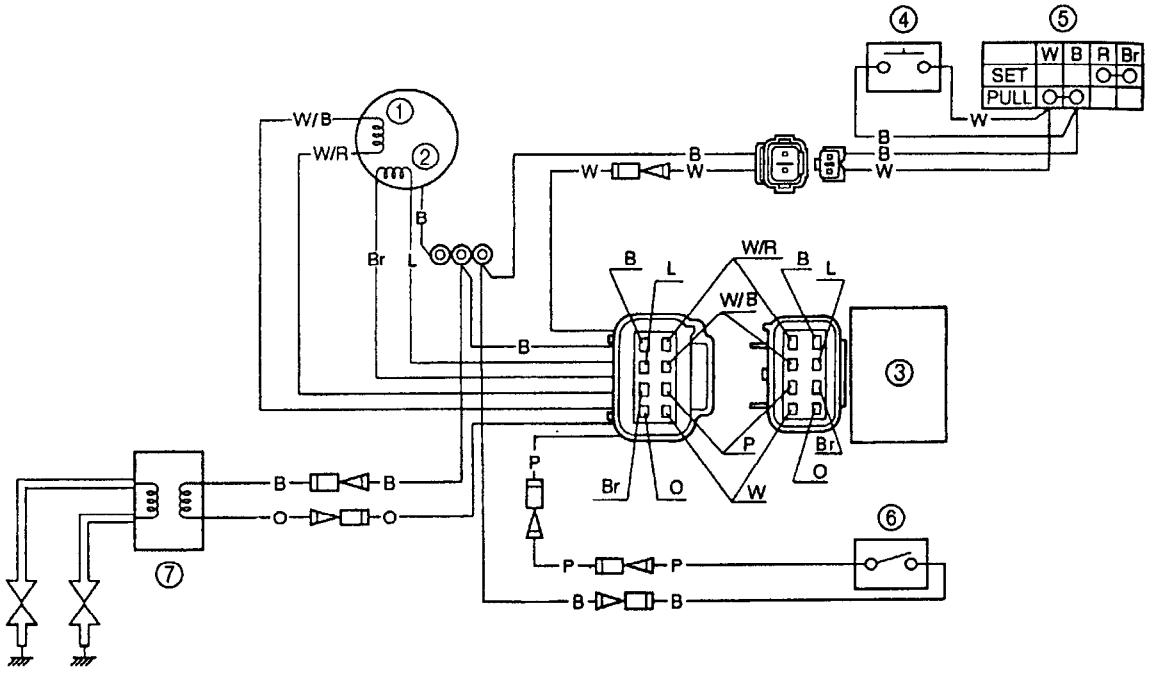
NOTE:

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

IGNITION SYSTEM

WIRING DIAGRAM

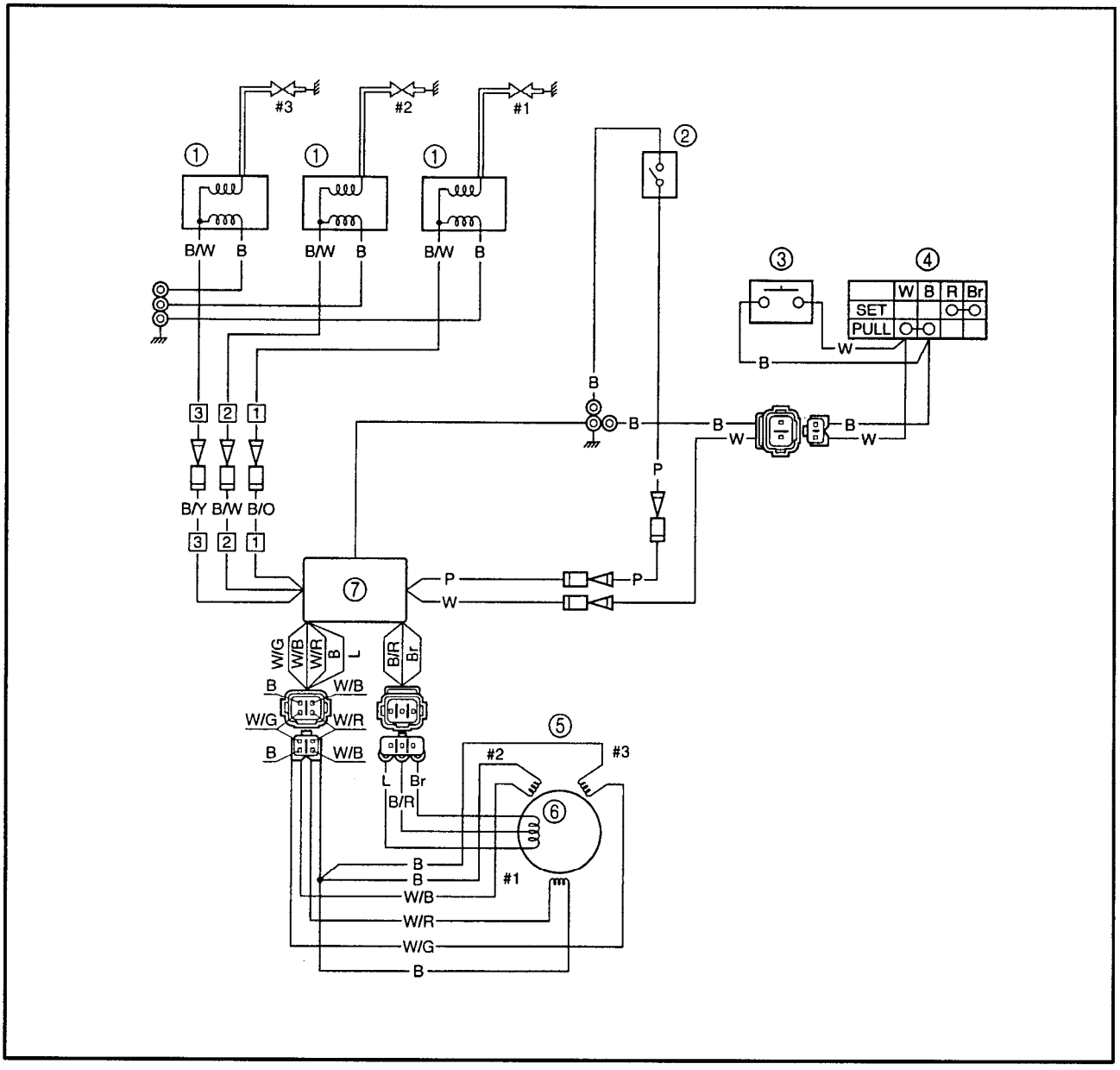
XL760



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

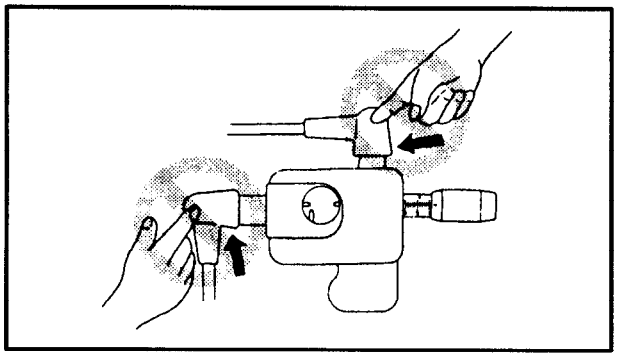
B : Black
Br : Brown
L : Blue
O : Orange
P : Pink
W : White
W/B : White/Black
W/R : White/Red

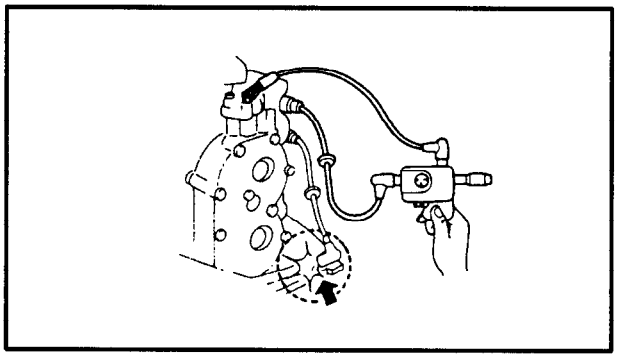
XL1200

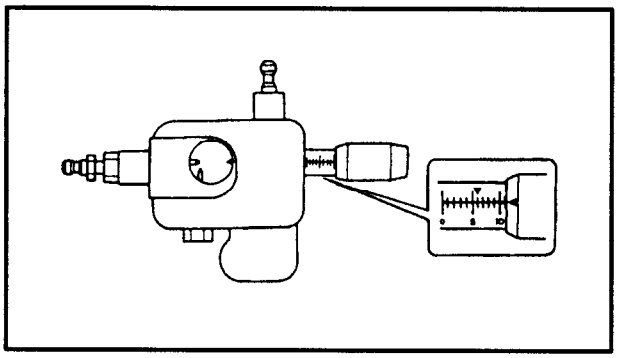


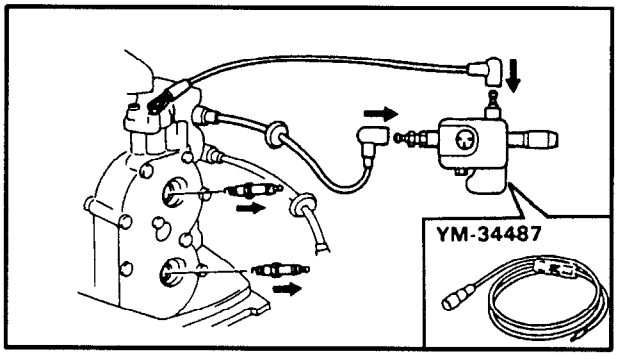
① Ignition coil
② Thermo switch
③ Stop switch
④ Engine stop switch
⑤ Pulser coil
⑥ Charge coil
⑦ CDI unit

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

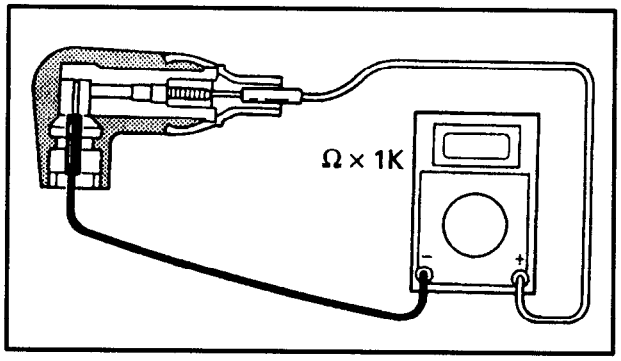
- Connect the spark plug cap to the spark gap tester.
- Remove the spark plugs from the engine.
- Crank the engine and check the sparks from the ignition system through the discharge window.

SPARK PLUG

Refer to "ELECTRICAL" in chapter 3.

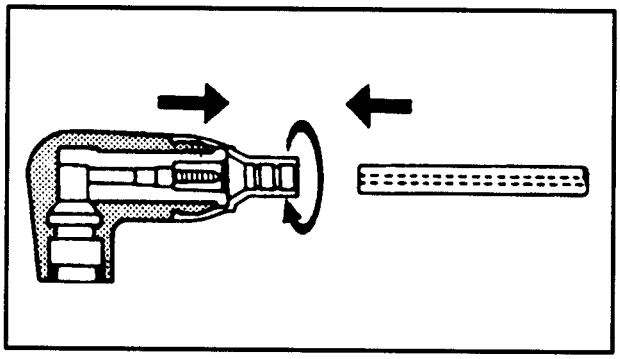
SPARK PLUG CAP

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



2. Measure:
   - Spark plug cap resistance
     Out of specification → Replace.

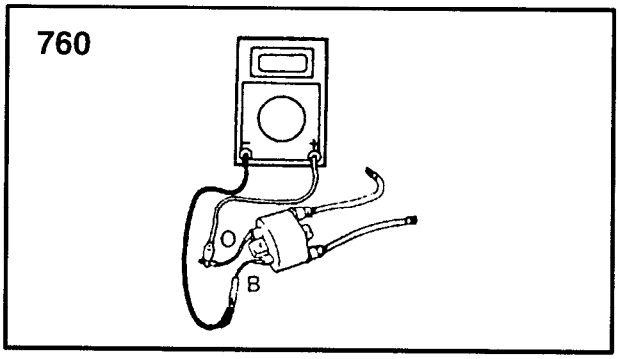
Spark plug cap resistance:
4.0 ~ 6.0 kΩ



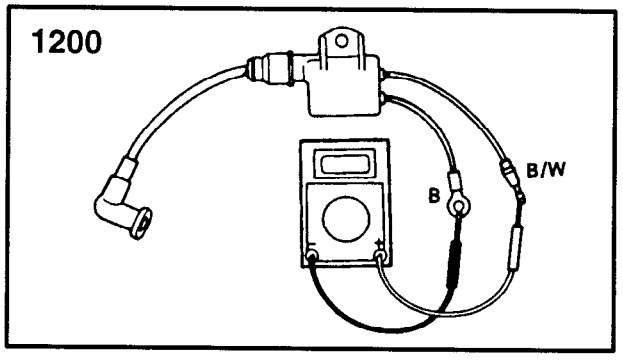
Replacement steps:
- Remove the spark plug cap by turning the cap counterclockwise.
- Install the spark plug cap by turning the cap clockwise until it stops.

IGNITION COIL

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

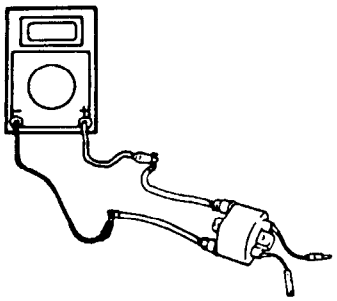


Primary coil resistance:
XL760
Orange (O) – Black (B)
0.078 ~ 0.106 Ω at 20°C (68°F)
XL1200
Black/White (B/W) – Black (B)
0.048 ~ 0.072 Ω at 20°C (68°F)

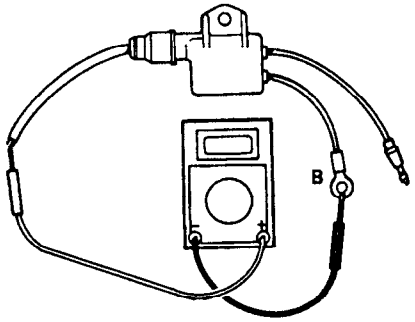


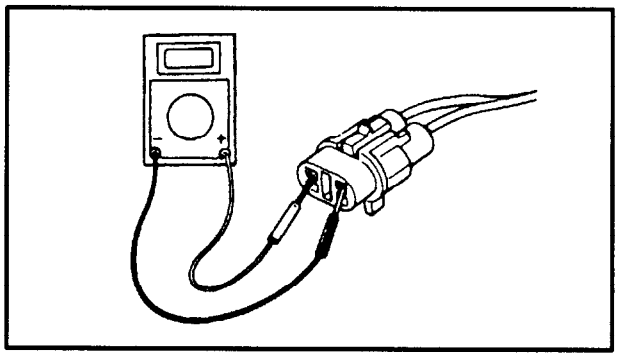
NOTE:
When measuring the resistance of 10 Ω or less using the digital tester, the correct measurement cannot be obtained. Refer to "Lower resistance measurement".

760

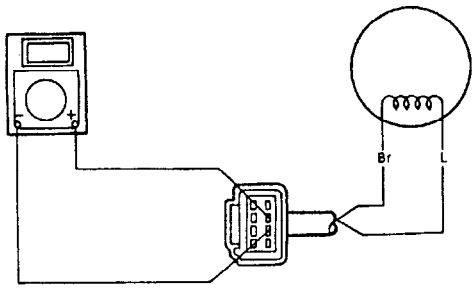


1200

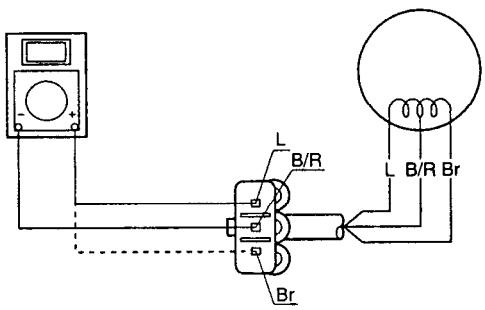




760



1200



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

Secondary coil resistance:
XL760
High tension cords
14.3 ~ 30.5 kΩ at 20°C (68°F)
XL1200
High tension cord - Black (B)
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.

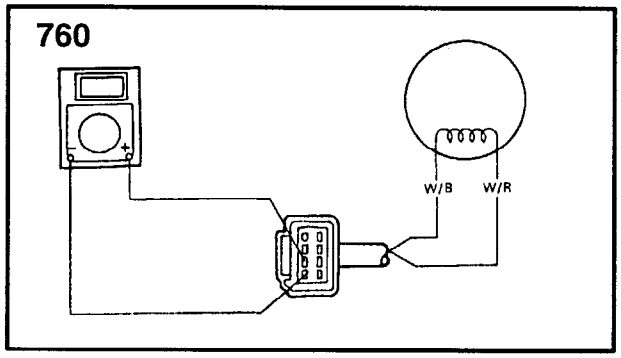
Engine stop continuity:
(Black coupler)

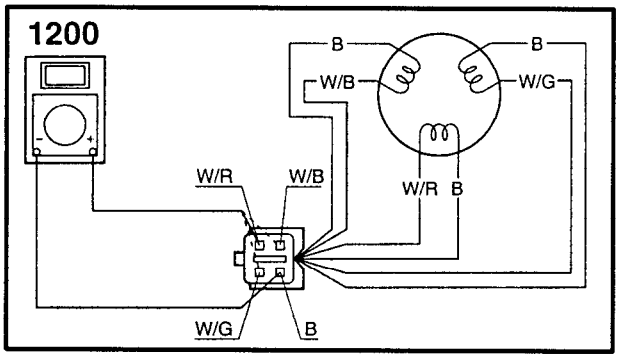
Lock plate	Position	Leads	
		White	Black
Installed	Free		
	Push	○	○
Removed	Free	○	○
	Push	○	○

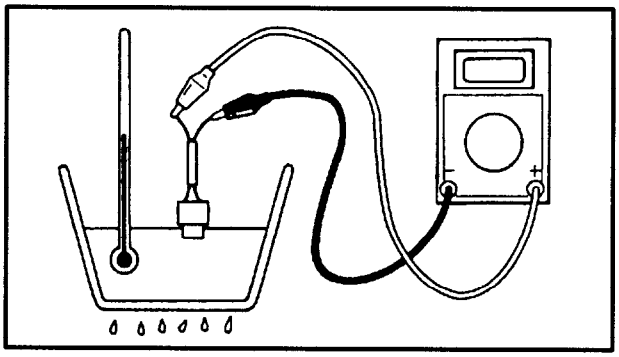
CHARGE COIL

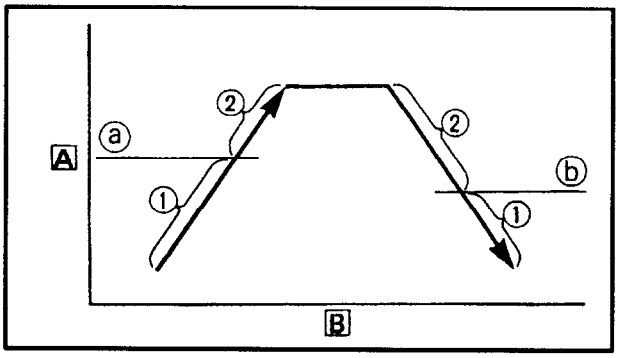
1. Measure:
   - Charge coil resistance
     Out of specification → Replace.

Charge coil resistance:
XL760
Brown (Br) – Blue (L)
316.8 ~ 387.2 Ω at 20°C (68°F)
XL1200
Black/Red (B/R) – Brown (Br)
172.0 ~ 258.0 Ω at 20°C (68°F)
Black/Red (B/R) – Blue (L)
656.0 ~ 984.0 Ω at 20°C (68°F)









PULSER COIL

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

Pulser coil resistance:
XL760
White/Red (W/R) – White/Black (W/B)
445.5 ~ 544.5 Ω at 20°C (68°F)
XL1200
White/Red (W/R) – Black (B)
White/Black (W/B) – Black (B)
White/Green (W/G) – Black (B)
248.0 ~ 372.0 Ω at 20°C (68°F)

THERMO SWITCH

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

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

① Discontinuity
② Continuity
A Temperature
B Time

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

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

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.

XL760

Unit: kΩ

⊕ \ ⊖	B	Br	L	O	P	W	W/B	W/R
B		70 ~ 400	6 ~ 26	2 ~ 8.5	∞	10 ~ 45	0 ~ 0.6	4.4 ~ 19
Br	2.4 ~ 11		16 ~ 70	7.5 ~ 35	∞	26 ~ 150	2.4 ~ 11	9 ~ 40
L	2.4 ~ 11	80 ~ 500		7.5 ~ 35	∞	26 ~ 150	2.4 ~ 11	9 ~ 40
O	∞	∞	∞		∞	∞	∞	∞
P	17 ~ 80	70 ~ 1,000	16 ~ 70	40 ~ 300		7.5 ~ 35	17 ~ 70	22 ~ 100
W	3.8 ~ 16	80 ~ 400	3.4 ~ 14	11 ~ 45	∞		3.8 ~ 16	9.5 ~ 4.0
W/B	0 ~ 0.6	70 ~ 400	6 ~ 26	2 ~ 9	∞	10 ~ 45		4.4 ~ 18
W/R	4 ~ 17	70 ~ 400	13 ~ 60	8 ~ 35	∞	16 ~ 70	4 ~ 17	

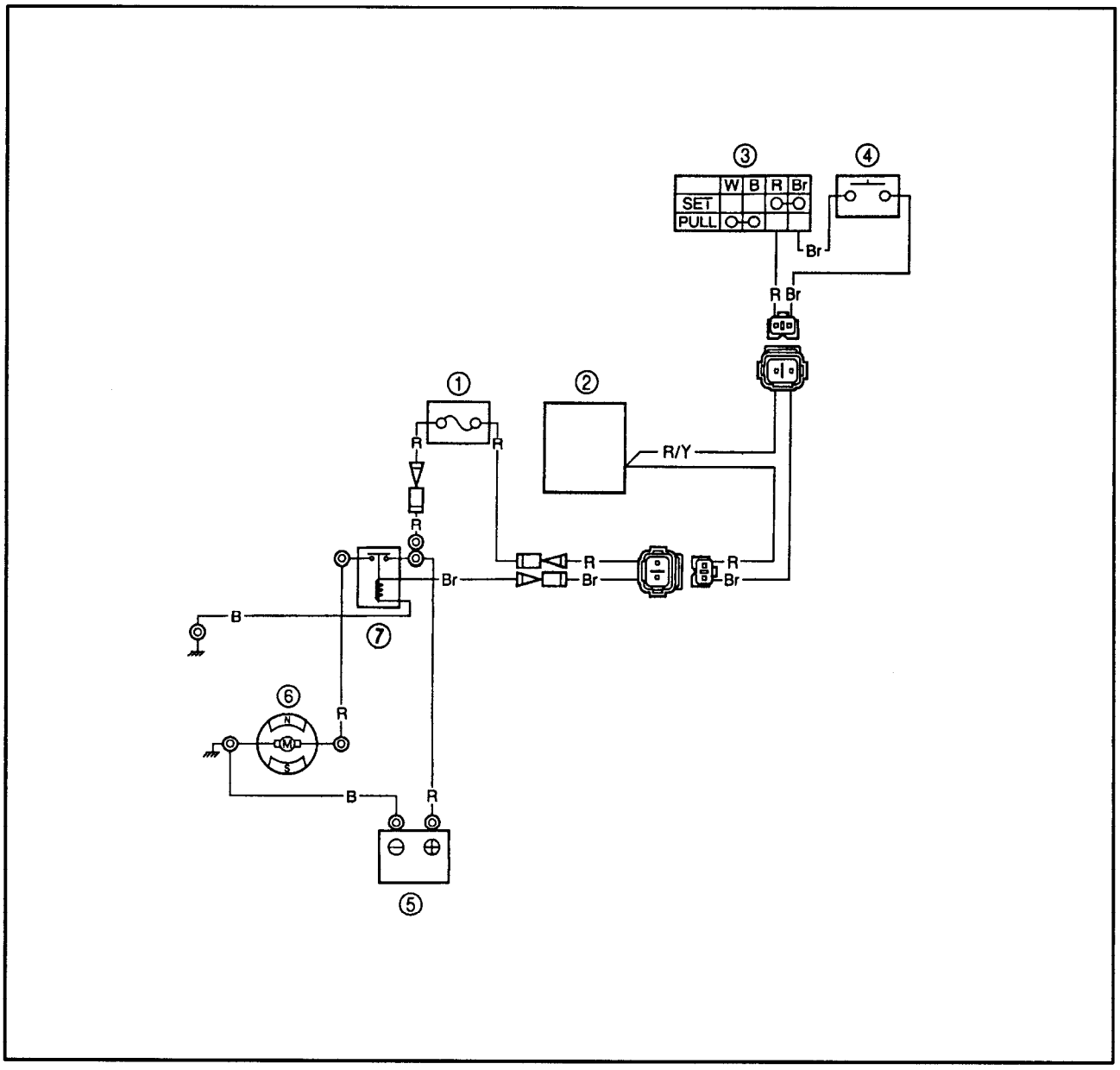
XL1200

Unit: kΩ

⊕ \ ⊖	B	B/O	B/R	B/W	B/Y	Br	L	P	W	W/B	W/G	W/R
B		3.5~5.3	3.3~4.9	3.4~5.1	3.5~5.3	∞	3.2~4.8	7.8~11.8	9.2~13.8	400~600	400~600	400~600
B/O	∞		∞	∞	∞	∞	∞	∞	∞	∞	∞	∞
B/R	∞	∞		∞	∞	∞	∞	∞	∞	∞	∞	∞
B/W	∞	∞	∞		∞	∞	∞	∞	∞	∞	∞	∞
B/Y	∞	∞	∞	∞		∞	∞	∞	∞	∞	∞	∞
Br	76~114	120~180	112~168	120~180	120~190		112~168	120~180	120~180	∞	∞	∞
L	22~34	50~74	56~84	50~74	50~74	∞		38~58	40~60	∞	∞	∞
P			∞	∞	∞	∞	∞		∞	∞	∞	∞
W	∞	∞	∞	∞	∞	∞	∞	∞		∞	∞	∞
W/B	112~168	168~252	160~240	168~252	168~252	∞	160~240	168~252	168~252		∞	∞
W/G	200~300	312~468	280~420	312~468	312~468	∞	280~420	312~468	312~468	∞		∞
W/R	112~168	168~252	160~240	168~252	168~252	∞	160~240	168~252	168~252	∞	∞	

STARTING SYSTEM

WIRING DIAGRAM



① Fuse
② Multifunction meter
③ Engine stop switch
④ Starter switch
⑤ Battery
⑥ Starter motor
⑦ Starter relay

B : Black
Br : Brown
R : Red
R/Y : Red/Yellow

BATTERY
Refer to "ELECTRICAL" in chapter 3.

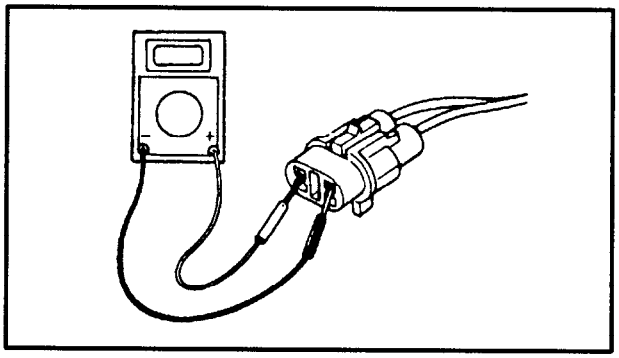
STARTER MOTOR
Refer to "STARTER MOTOR" in chapter 5.

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

FUSE
1. Check:
   - Fuse
     Blown → Replace.

Fuse rating:
12 V – 10 A

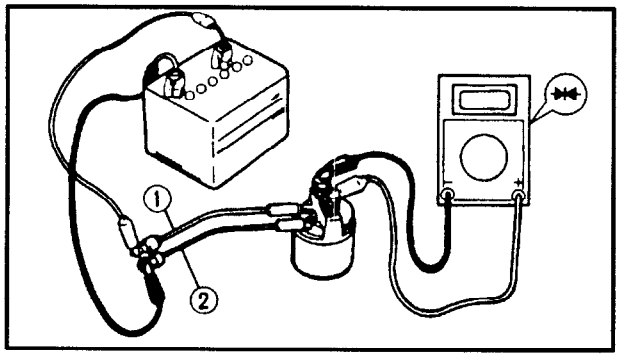
STARTER SWITCH
1. Check:
   - Continuity
     Out of specification → Replace.



Starter continuity:
(Red 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
     Not working → Replace.

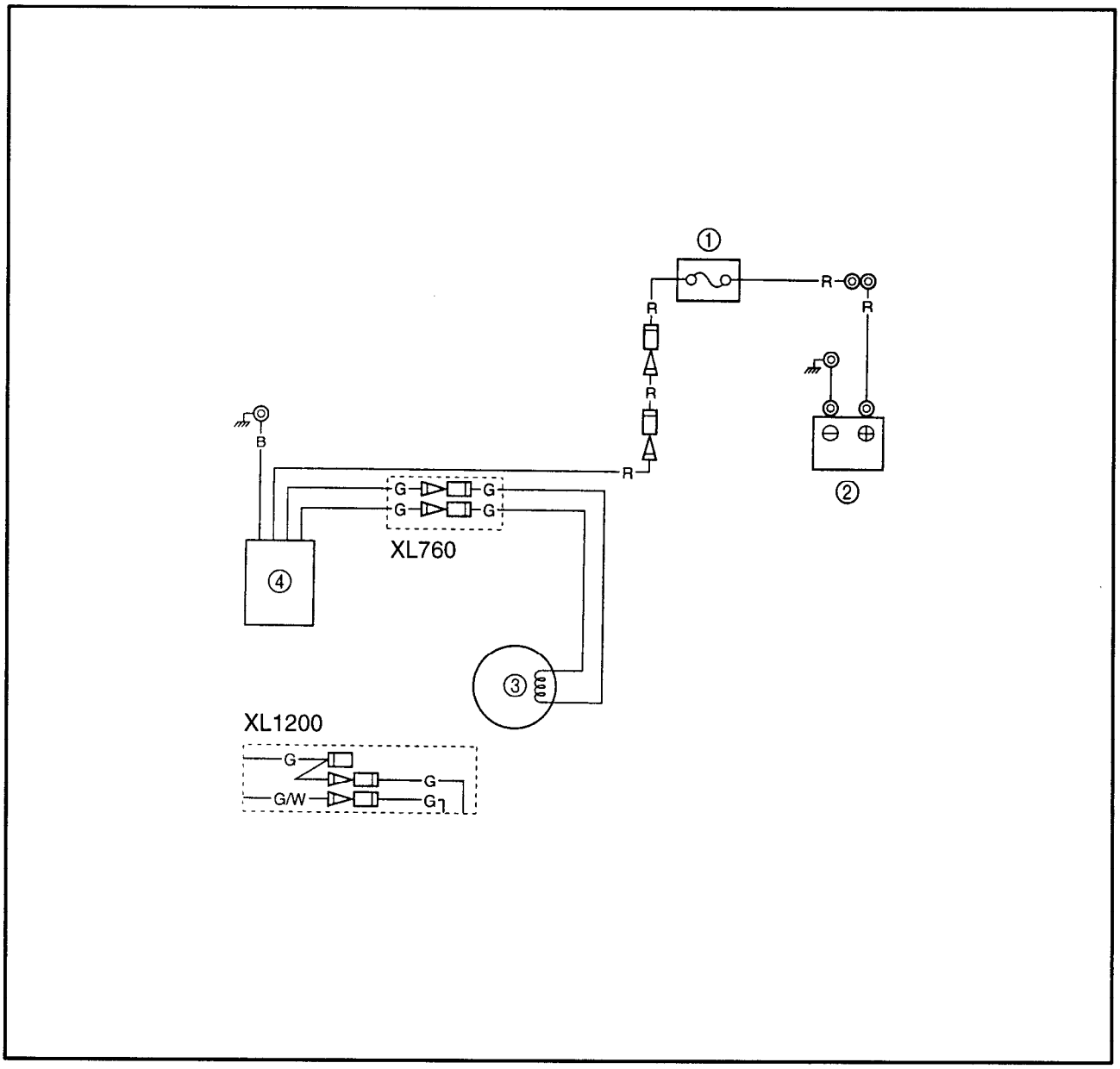
Checking steps:
- Connect the tester between the terminals of the starter relay as shown.
- Connect a 12 V battery.

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

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

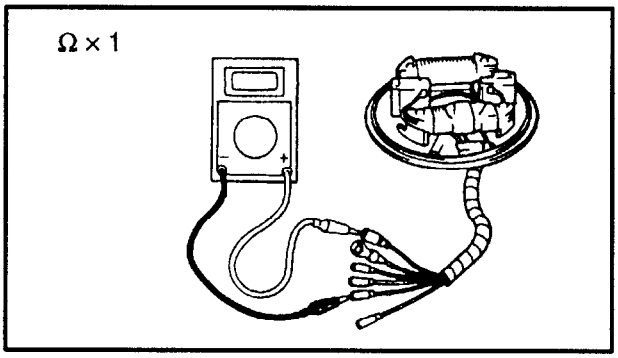
CHARGING SYSTEM

WIRING DIAGRAM



① Fuse
② Battery
③ Lighting coil
④ Rectifier regulator

B : Black
G : Green
G/W : Green/White
R : Red



FUSE

Refer to "STARTING SYSTEM".

BATTERY

Refer to "ELECTRICAL" in chapter 3.

LIGHTING COIL

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

Lighting coil resistance:
XL760
Green (G) – Green (G)
1.14 ~ 1.40 Ω at 20°C (68°F)
XL1200
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

○: Continuity
∞: Discontinuity

760 Unit: kΩ

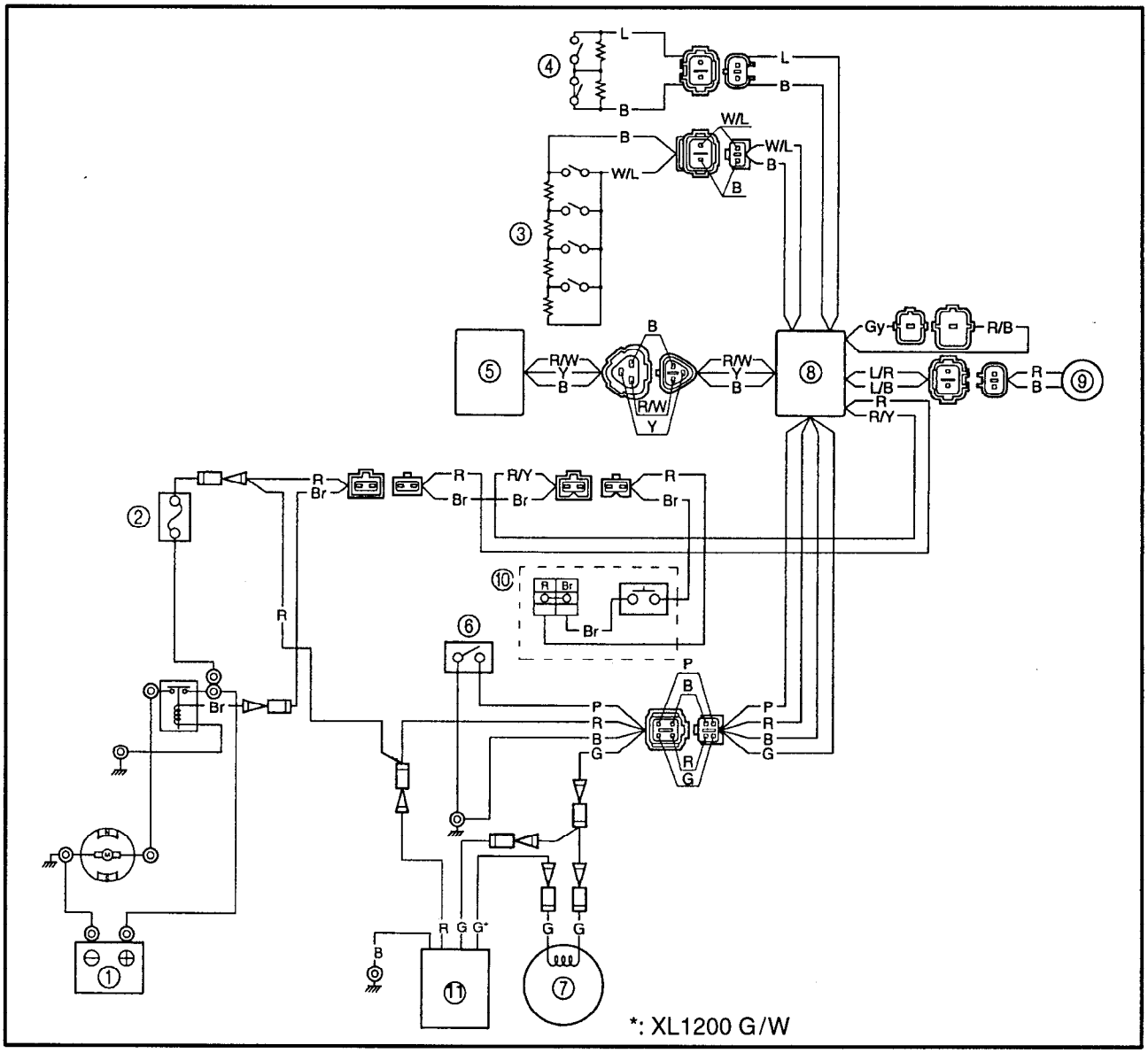
⊕ \ ⊖	R	B	G	G
R		∞	∞	∞
B	2~20		1~10	1~10
G	1~10	2~15		3~30
G	1~10	2~15	3~30	

1200 Unit: kΩ

⊕ \ ⊖	R	B	G	G/W
R		∞	∞	∞
B	○		○	○
G	○	∞		∞
G/W	○	○	○	

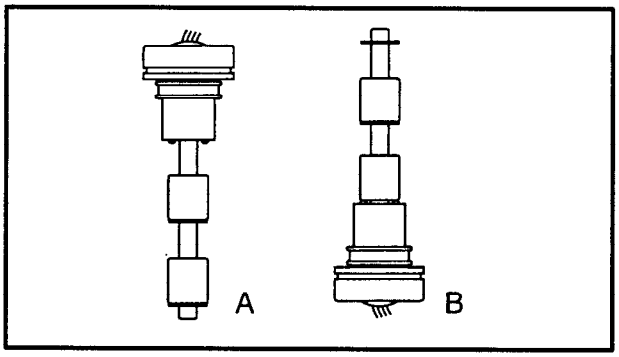
INDICATION SYSTEM

WIRING DIAGRAM



① Battery
① Fuse
② Fuel level sensor
③ Oil level sensor
④ Speed sensor
⑤ Thermo switch
⑥ Lighting coil
⑦ Multi-function meter
⑨ Buzzer
⑩ Handlebar switch (starting switch)
⑪ Rectifier regulator

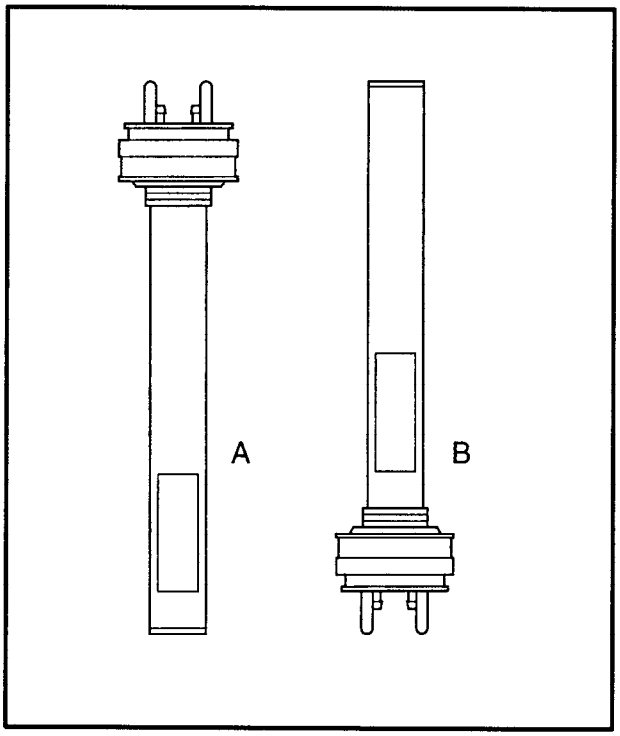
B : Black
G : Green
G/W : Green/White
L : Blue
L/B : Blue/Black
L/R : Blue/Red
P : Pink
R : Red
R/W : Red/White
W/L : White/Blue
Y : Yellow



OIL LEVEL SENSOR

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

Blue – Black	
Sensor position	Resistance (Ω)
A	292 ~ 308
B	0 ~ 3



FUEL LEVEL SENSOR

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

White/Blue – Black	
Sensor position	Resistance (Ω)
A	757 ~ 803
B	0 ~ 8

FUSE

Refer to "STARTING SYSTEM".

BATTERY

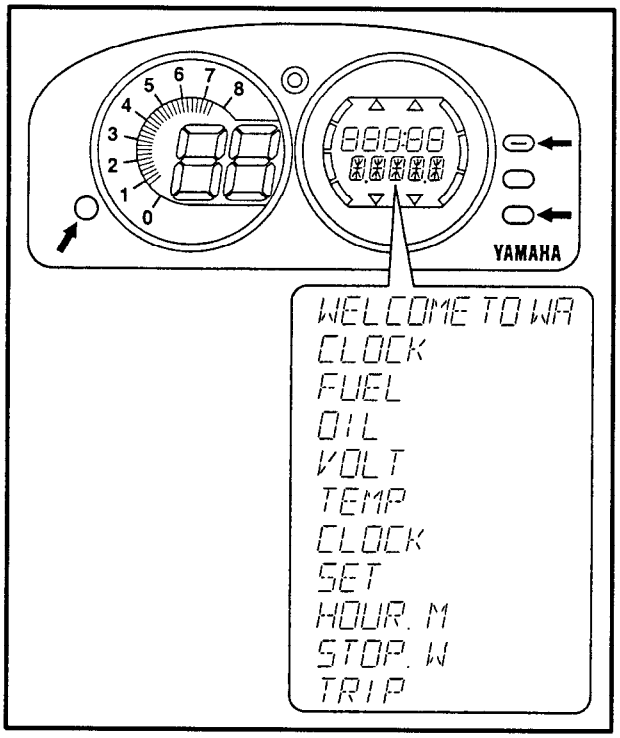
Refer to "ELECTRICAL" in chapter 3.

LIGHTING COIL

Refer to "CHARGING SYSTEM".

RECTIFIER REGULATOR

Refer to "CHARGING SYSTEM".



MULTI-FUNCTION METER

Instrument indicating function

1. Check:
   - Indicating function
     An indicating error is found → Replace the multi-function meter.

Sequential output (1 minute/cycle)	
1	Display begins operation
2	"WELCOME TO WAVERUNNERS"
3	All LCD readouts turn on
4	"CLOCK" is displayed
5	"FUEL" is displayed
6	"OIL" is displayed
7	"VOLT" is displayed
8	"TEMP" is displayed
9	"CLOCK" is displayed
10	"SET" is displayed
11	"HOUR. M" is displayed
12	"STOP. W" is displayed
13	"TRIP" is displayed

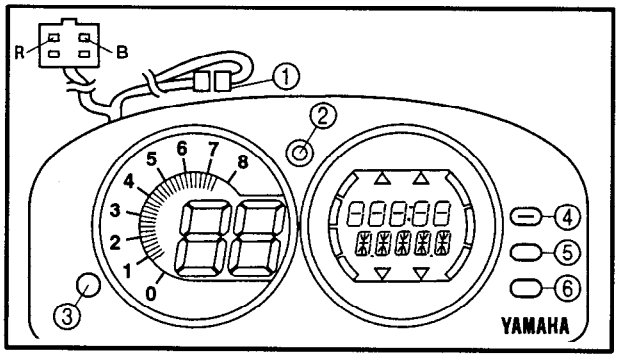
Checking steps:

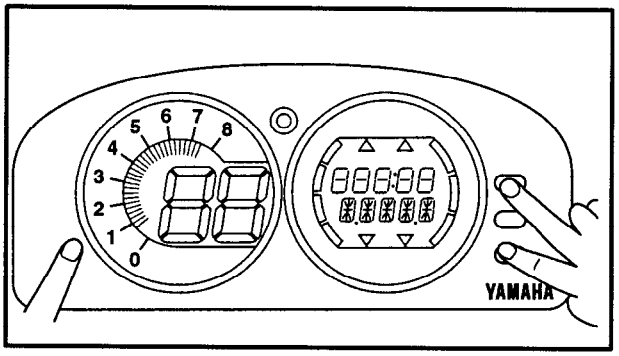
- Connect the battery terminals.

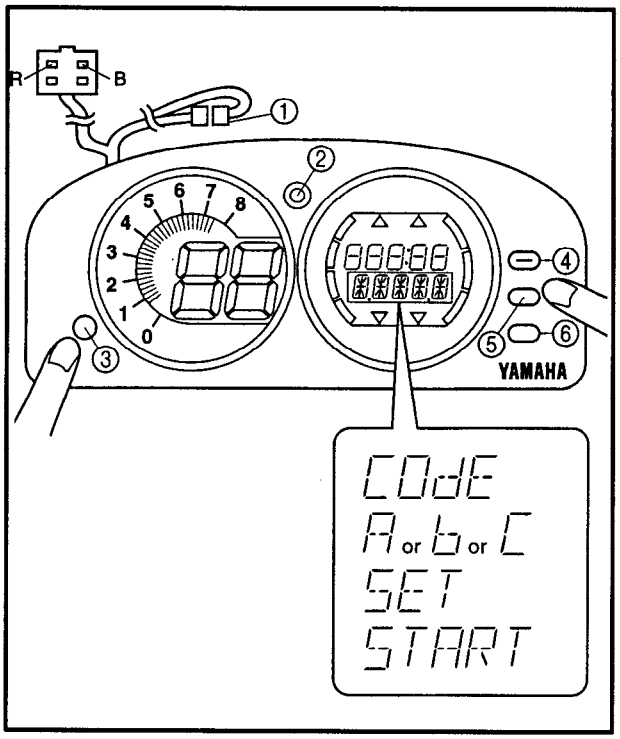
NOTE:

If the multi-function meter has been removed, supply battery power to the four-pin coupler (+: Red, –: Black).

- Remove the blue, one-pin couplers ①.
  → The warning lamp blinks ②.
- Press the "MODE" ③, "A/SET" ④, and "C" ⑥ buttons (all at once) for more than three seconds.
  → The self-indicating function is activated.
- Press either button ③, ④, ⑤, or ⑥.
  → Self-indication stops and the warning lamp ② blinks.
- Connect the blue, one-pin couplers.
  → The warning lamp ② turns off and all indications stop.







Security function

1. Check:
   - Sequential output
     An error is found → Replace the multi-function meter.

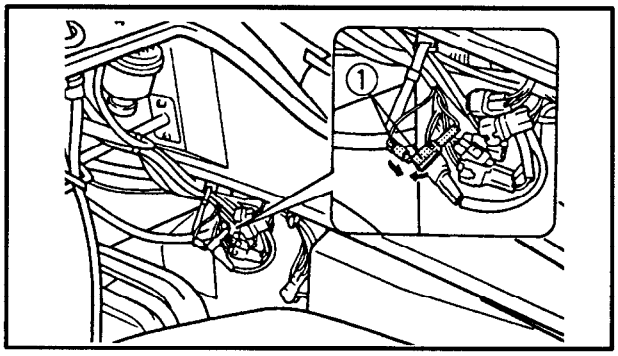
Checking steps:

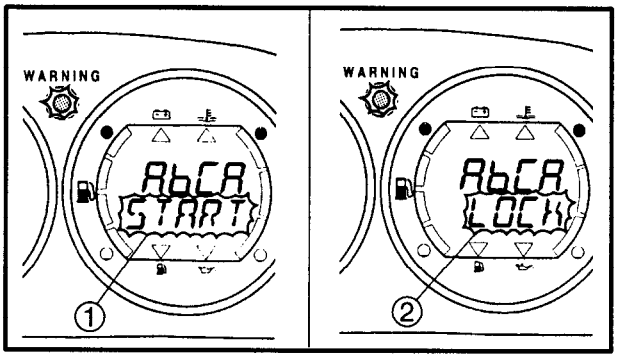
- Connect the battery terminals.

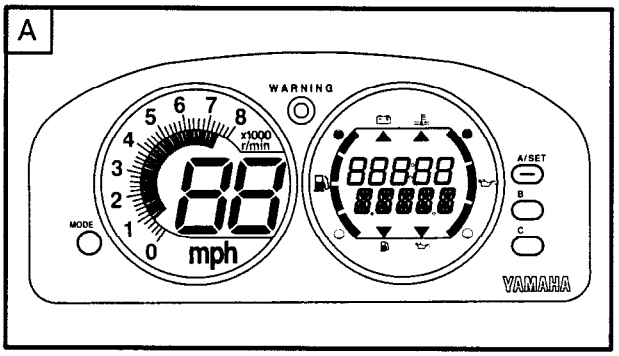
NOTE:

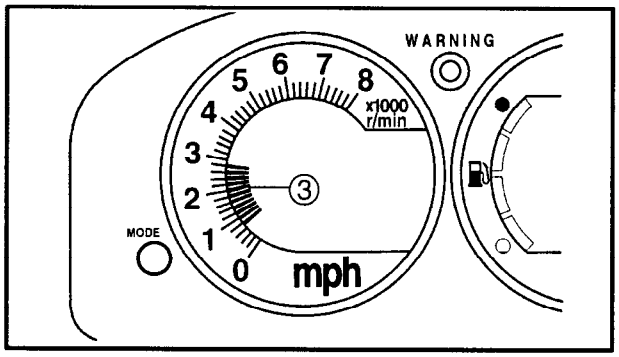
If the multi-function meter has been removed, supply battery power to the four-pin coupler (+: Red, –: Black).

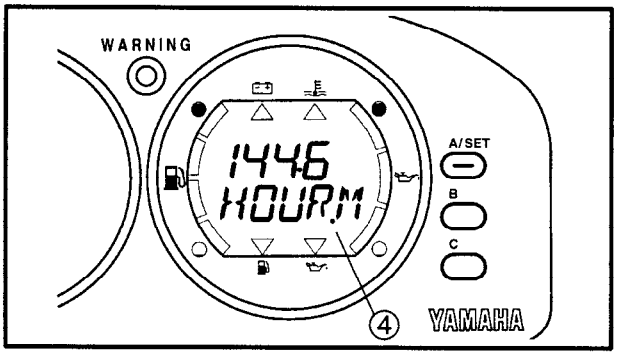
- Remove the blue, one-pin couplers ①.
  → The warning lamp blinks ②.
- Press the "MODE" ③ button for more than three seconds.
  → The warning lamp ② blinks.
  → "CODE" is displayed and blinks.
- Enter the four-digit code with either button ④, ⑤, or ⑥.
  1) The buzzer sounds when the button is pushed.
  2) When the warning lamp ② is lit, "A", "b" or "C" is displayed for code entry, then "SET" is displayed and blinks.
  3) The buzzer sounds three times and then "START" is displayed.
  4) The display then clears and the warning lamp ② blinks.
- Connect the blue, one-pin couplers ①.
  → The warning lamp ② turns off.











Display function

NOTE:

- Connect all couplers of the multifunction meter.
- If the blue 1-pin coupler ① is disconnected, the correct checking can not be done.

1. Check
   - Display function
     Not working → Replace.

Checking steps: (vehicle on water)

- Check the battery voltage.

Voltage range:
10 ~ 16 V

- a) Press the "MODE" button for more than three seconds.
  → The warning lamp blinks.
  → "COdE" is displayed and blinks.
- b) Enter the four-digit code.
  → "START" ① or "LOCK" ② is displayed.

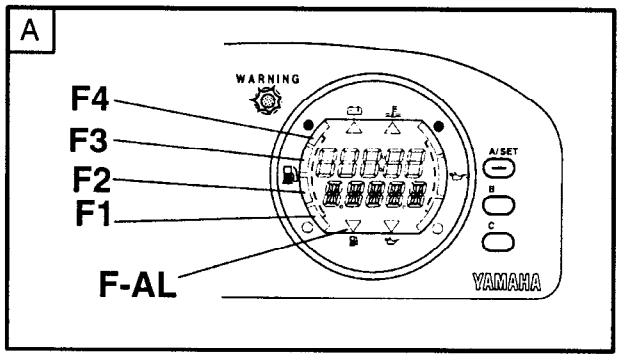
NOTE:

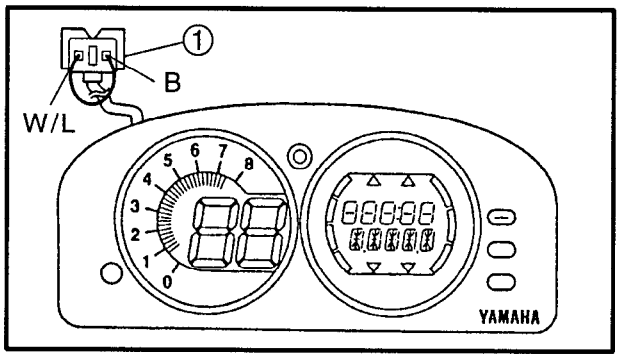
- Repeat a) and b) until "START" is displayed.
- Refer to "Security function".

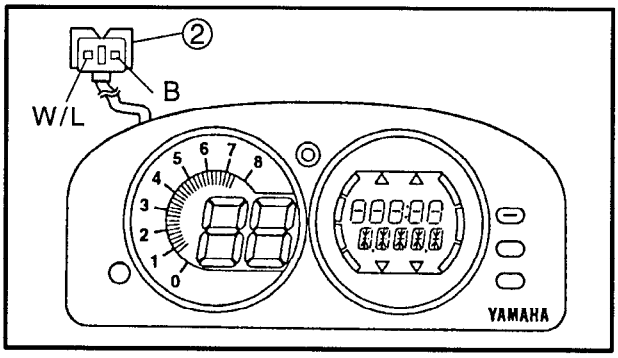
- Start the engine.
  → The buzzer sounds twice.
  → "WELCOME TO WAVERUNNERS" is displayed.
  → All segments light up [A] for 2 seconds.
  → The engine speed ③ is displayed.
- Start the engine.
  → The buzzer sounds twice.
  → "WELCOME TO WAVERUNNERS" is displayed.
  → All segments light up A for 2 seconds.
  → The engine speed 3 is displayed.
- Press the "MODE" button.
  → Each time the "MODE" button is pressed, the display changes as follows.

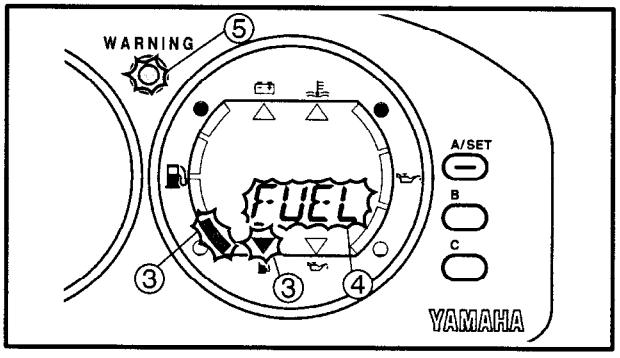
→CLOCK→HOUR.M④→STOP.M→TRIP→

- Check that the above dispay appears.
- Stop the engine.
  → Segments will continue to light up for 30 seconds for active functions.









2. Check:
   - Fuel level meter [A]
     Not working → Replace.

Checking steps: (vehicle on water)
- Disconnect the 2-pin green couplers (White/blue-Black leads).
- Connect the white/blue lead and black lead terminals ①.
- Check the battery voltage.

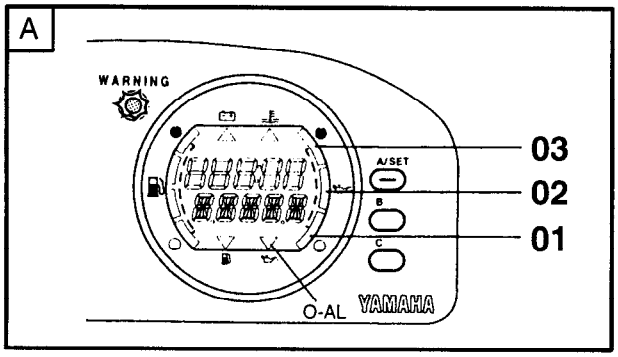
Voltage range:
10 ~ 16 V

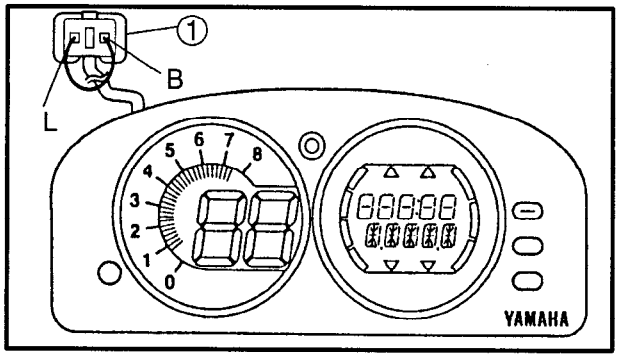
- a) Press the "MODE" button for more than three seconds.
  → The warning lamp blinks.
  → "COdE" is displayed and blinks.
- b) Enter the four-digit code.
  → "START" or "LOCK" is displayed.

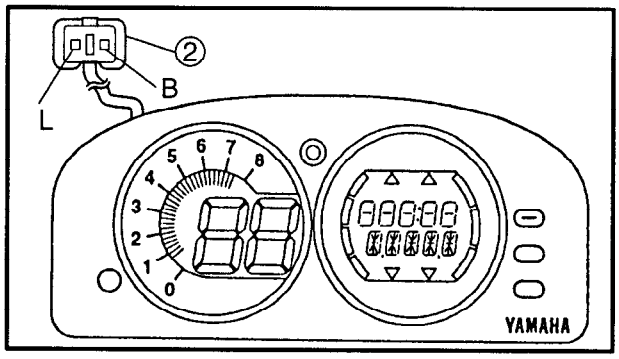
NOTE:
- Repeat a) and b) until "START" is displayed.
- Refer to "Security function".

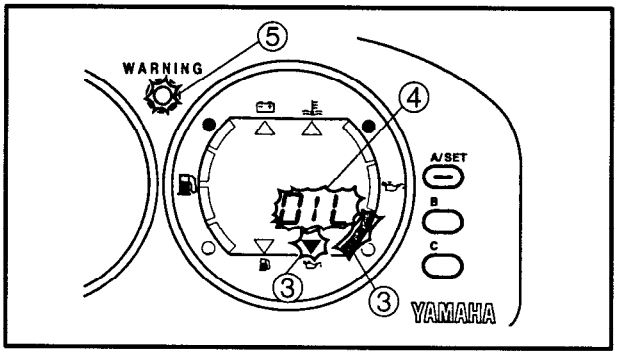
- Start the engine.
  → The buzzer sounds two times.
  → "WELCOME TO WAVERUNNERS" is displayed.
  → All segments light up for 2 seconds.
  → The engine speed is displayed.
  → All fuel level segments are displayed.
- Check that fuel level segments are displayed.
- Disconnect the white/blue lead and black lead terminals ②.
- Check that the fuel segments (F1..., F_AL) ③, "FUEL" ④ and WARNING indicator ⑤ operate properly and that the buzzer beeps intermittently.

Second	Display/Beep
~ 20	F1, F2, F3, F4: ON
20 ~ 40	F1, F2, F3: ON
40 ~ 60	F1, F2: ON
60 ~ 80	F1: ON
80 ~	F1, F-AL, "FUEL", WARNING indicator Blinking Buzzer: Beeping









3. Check:
   - Oil level meter [A]
     Not working → Replace.

Checking steps: (vehicle on water)
- Disconnect the 2-pin natural couplers (Blue-Black leads).
- Connect the blue lead and black lead terminals ①.
- Check the battery voltage.

Voltage range:
10 ~ 16 V

- a) Press the "MODE" button for more than three seconds.
  → The warning lamp blinks.
  → "COdE" is displayed and blinks.
- b) Enter the four-digit code.
  → "START" or "LOCK" is displayed.

NOTE:
- Repeat a) and b) until "START" is displayed.
- Refer to "Security function".

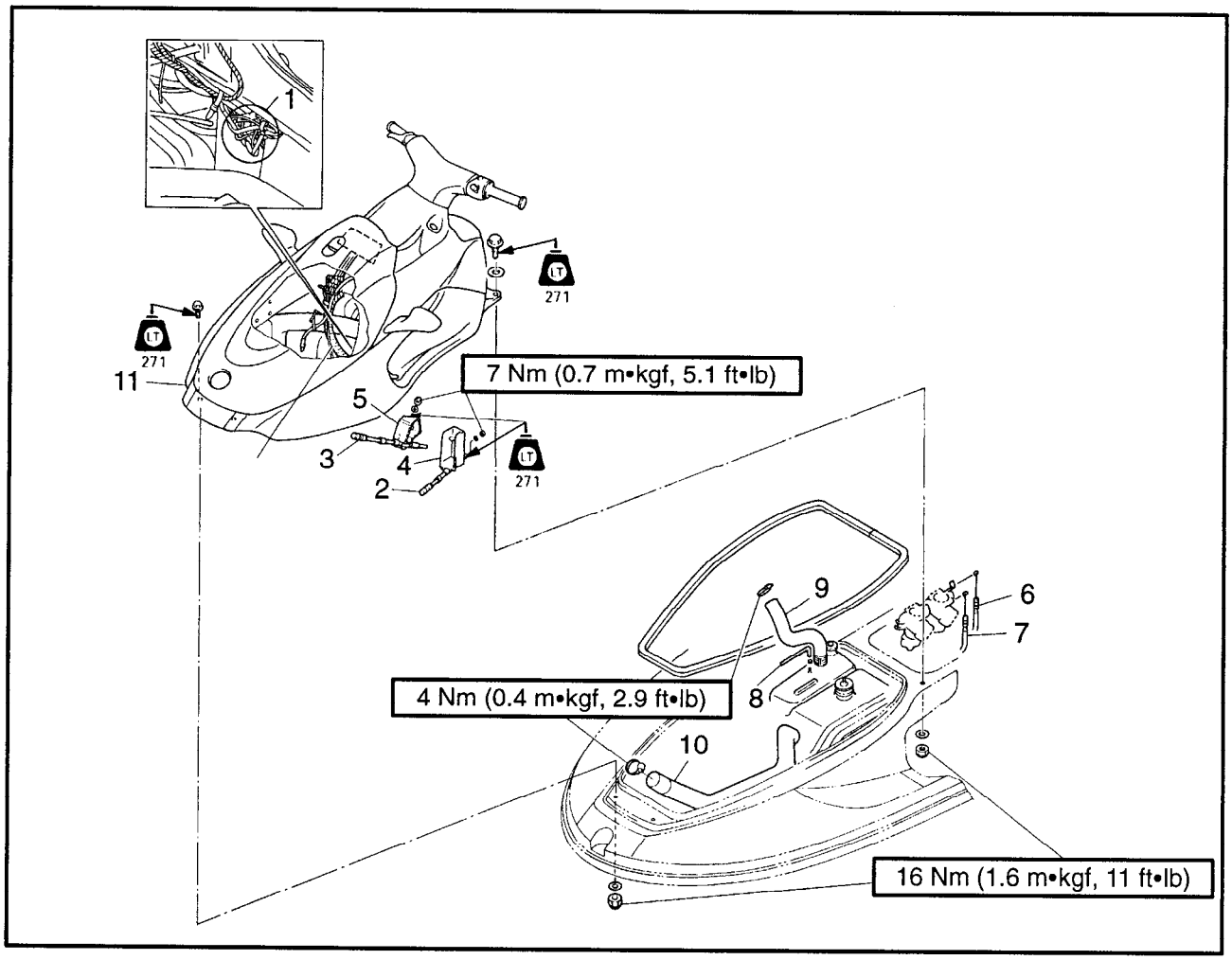
- Start the engine.
  → The buzzer sounds two times.
  → "WELCOME TO WAVERUNNERS" is displayed.
  → All segments light up for 2 seconds.
  → The engine speed is displayed.
  → All oil level segments are displayed.
- Check that oil level segments are displayed.
- Disconnect the blue lead and black lead terminals ②.
- Check that the oil segments (O1..., O_AL) ③, "OIL" ④ and WARNING indicator ⑤ operate properly and that the buzzer beeps intermittently.

Second	Display/Beep
~ 20	O1, O2, O3: ON
20 ~ 40	O1, O2: ON
40 ~	O1, O-AL, "OIL", WARNING indicator : Blinking Buzzer: Beeping

CHAPTER 8
HULL AND HOOD

ENGINE HOOD REMOVAL

EXPLODED DIAGRAM

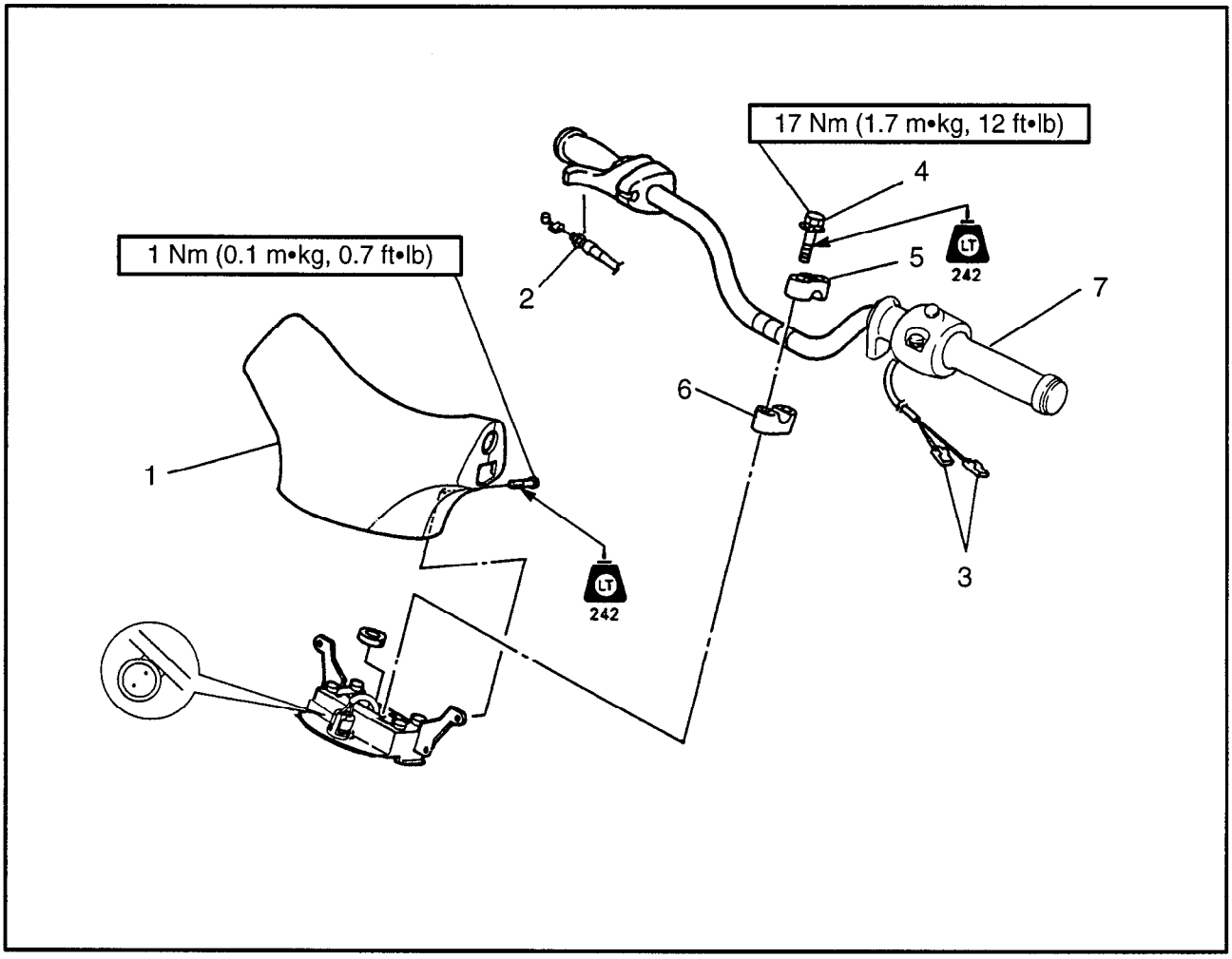


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	ENGINE HOOD REMOVAL		Follow the left "Step" for removal.
	Fuel cock assembly		Refer to the "FUEL LINE" in chapter 4.
1	Couplers	8	
2	Cable joint (steering cable)	1	**NOTE:**
3	Cable joint (shift cable)	1	Disconnect the throttle and choke cables from
4	Steering cable brakcet	1	the carburetor.
5	Shift cable brakcet	1	
6	Throttle cable	1	
7	Choke cable	1	
8	Oil breather hose	1	
9	Oil filler hose	1	
10	Fule filler hose	1	
11	Engine hood assembly	1	
			Reverse the removal steps for installation.

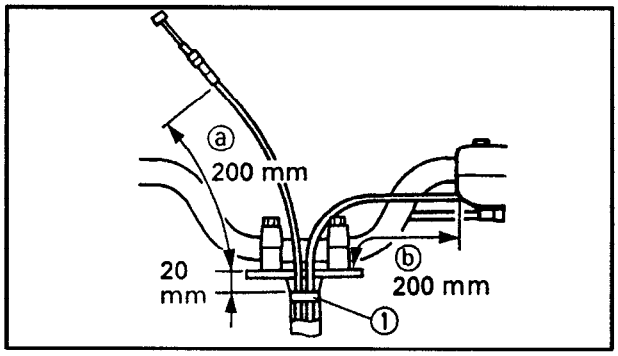
HANDLEBAR REMOVAL

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	HANDLEBAR REMOVAL		Follow the left "Step" for removal.
1	Steering pad	1	
2	Throttle cable	1	
3	Handle bar switch lead coupler	2	
4	Bolt (with washer)	4	8 × 55 mm
5	Handlebar holder (upper)	2	
6	Handlebar holder (lower)	2	
7	Handlebar assembly	1	
			Reverse the removal steps for installation.



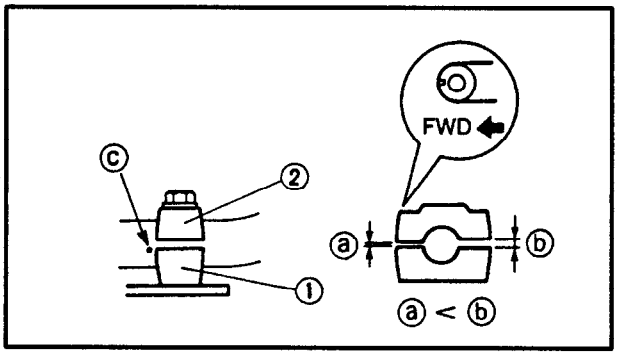
SERVICE POINTS

Handlebar assembly installation

1. Install:
   - Seal packing ①

NOTE:

- Pass the handlebar switch lead through the steering shaft.
- Adjust the throttle cable length ⓐ and handlebar switch lead length ⓑ to 200 mm (7.9 in).
- Seal the steering shaft with the seal packing at 20 mm (0.79 in) from the end of the steering column.



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

CAUTION:

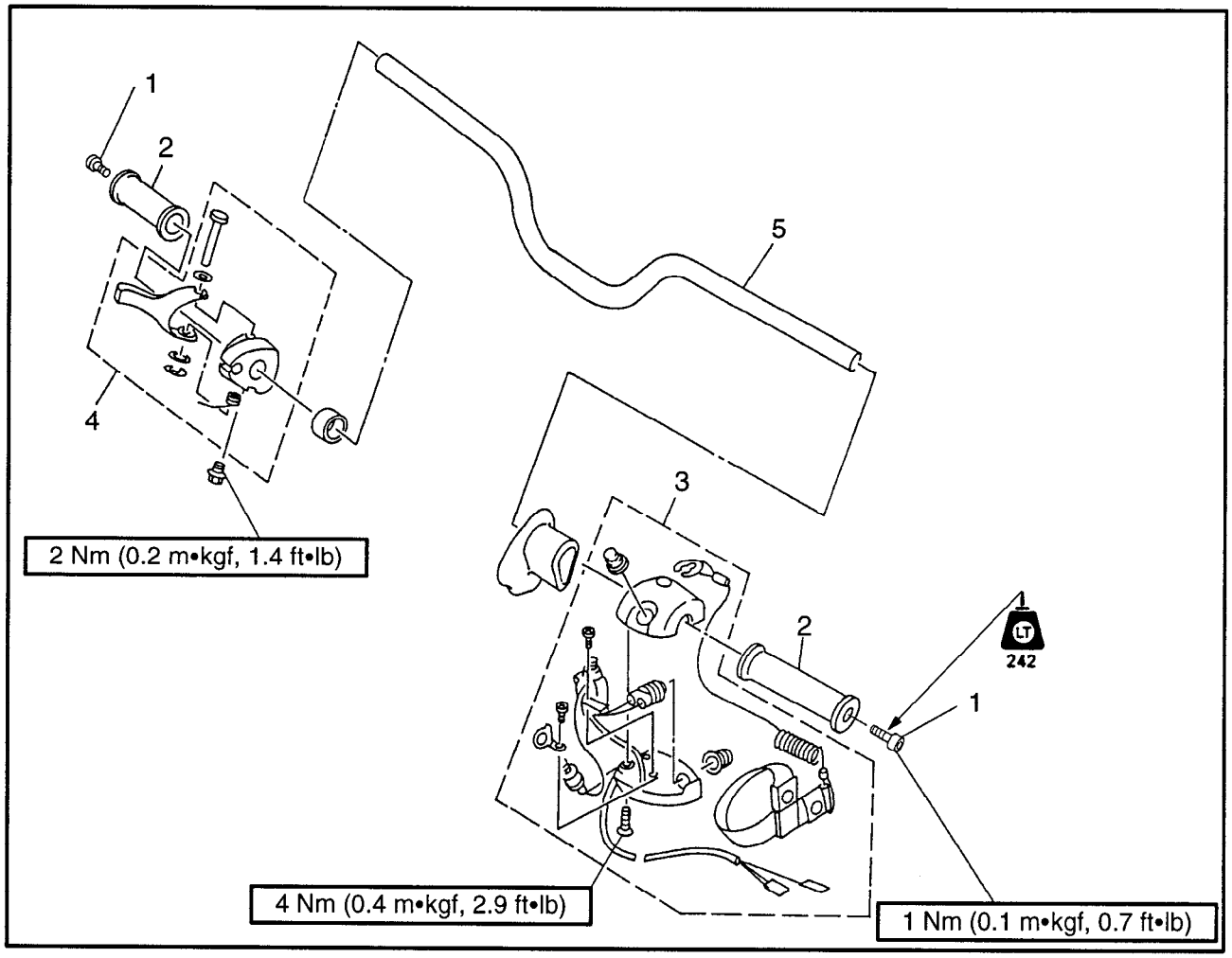
Clearance ⓐ should be narrower than clearance ⓑ.

NOTE:

- Align the punched mark ⓒ on the handlebar with the top surface of the handlebar holder (lower).
- The handlebar holder (upper) should be installed with the punched mark forward.

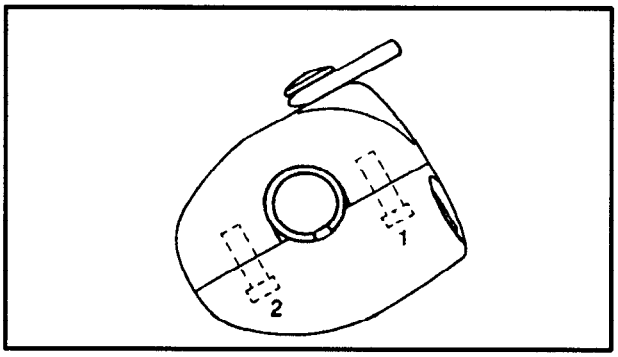
HANDLEBAR

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	HANDLEBAR DISASSEMBLY		Follow the left "Step" for removal.
	Handlebar assembly		Refer to "HANDLEBAR REMOVAL".
1	Screw	1	
2	Grip	2	**NOTE:** Apply adhesive to handlebar and inner surface of grip.
3	Handlebar switch assembly	1	
4	Throttle lever assembly	1	
5	Handlebar	1	
			Reverse the removal steps for installation.



SERVICE POINTS

Handlebar inspection

1. Inspect:
   - Handlebar
     Bend/crack/damage → Replace.

Handlebar switch inspection

Refer to "STARTING SYSTEM" in chapter 7.

Handlebar switch installation

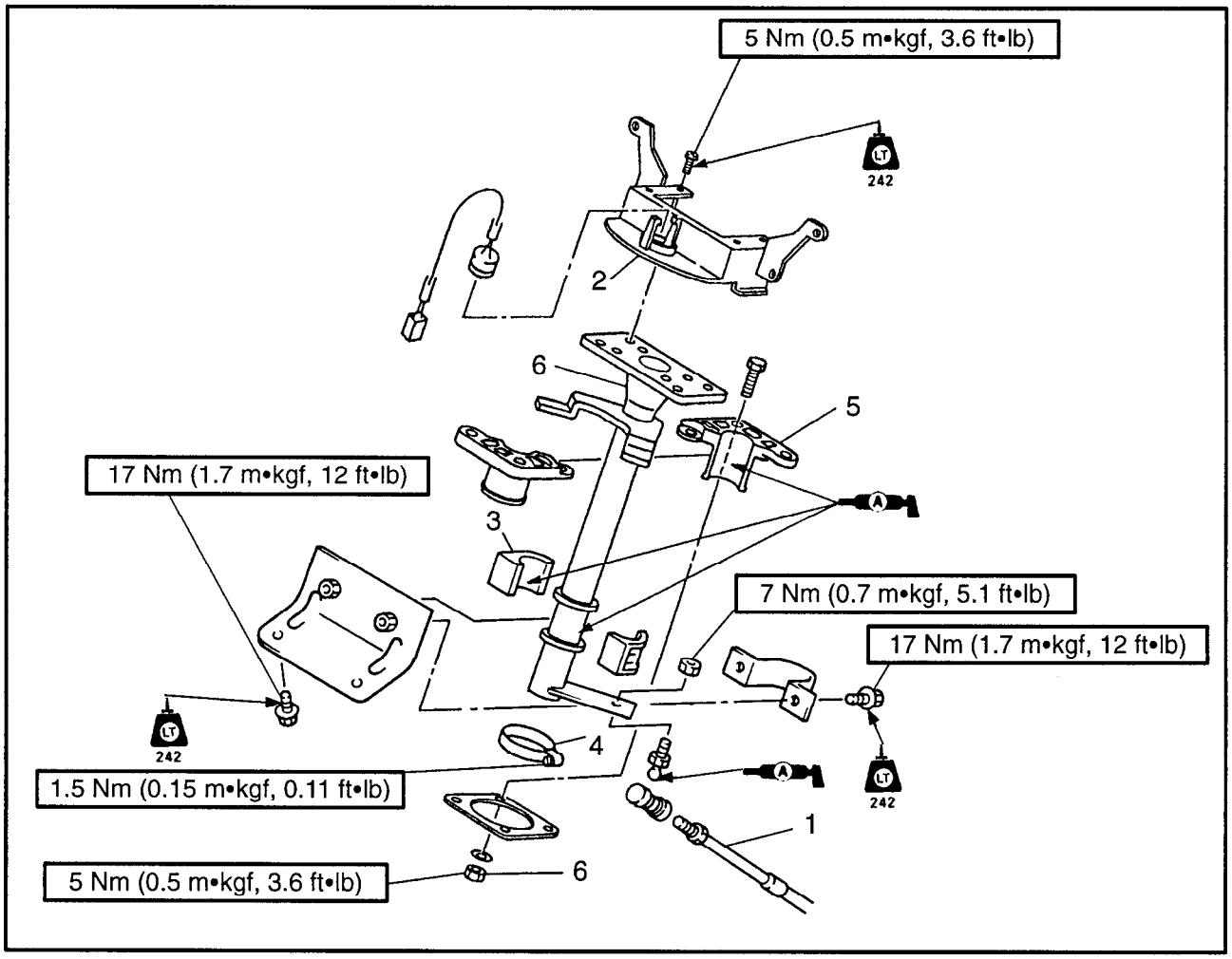
1. Install:
   - Handlebar switch

NOTE:

- Tighten the screw 1 on the stop button side first. Then, tighten the other screw 2.
- Align the pin on the left handle bar switch with the hole in the handle bar.

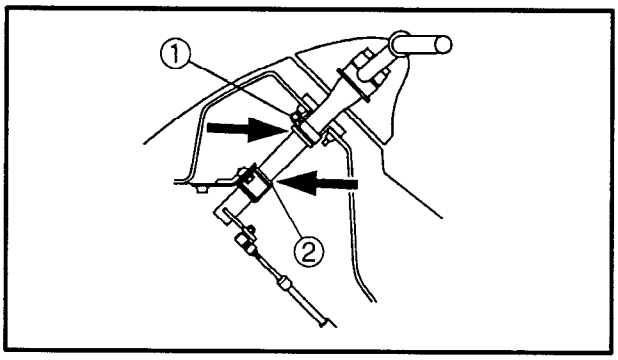
STEERING COLUMN

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	STEERING COLUMN REMOVAL		Follow the left "Step" for removal.
	Handlebar assembly		Refer to "HANDLEBAR REMOVAL".
	Engine hood cover assembly		Refer to "ENGINE HOOD COVER".
1	Steering cable	1	
2	Steering pad fixation	1	
3	Steering bushing	2	
4	Clamp	1	
5	Column bushing	2	
6	Steering column	1	
			Reverse the removal steps for installation.



SERVICE POINTS

Bushing inspection

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

Steering column inspection

1. Inspect:
   - Handle column
     Bend/crack/damage → Replace.

Bushing joint installation

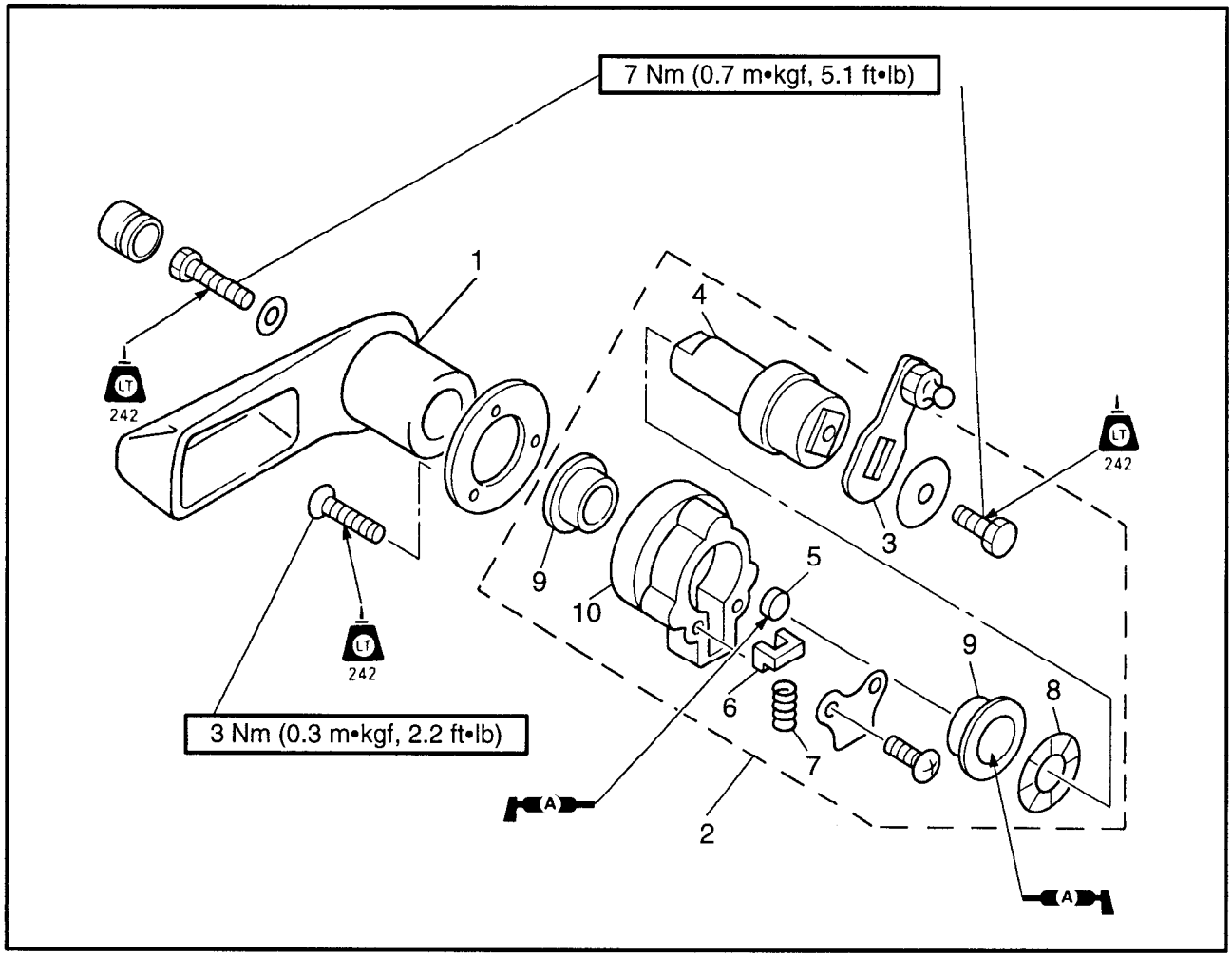
1. Install:
   - Clamp ①
   - Bushing joint ②

NOTE:

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

SHIFT LEVER

EXPLODED DIAGRAM

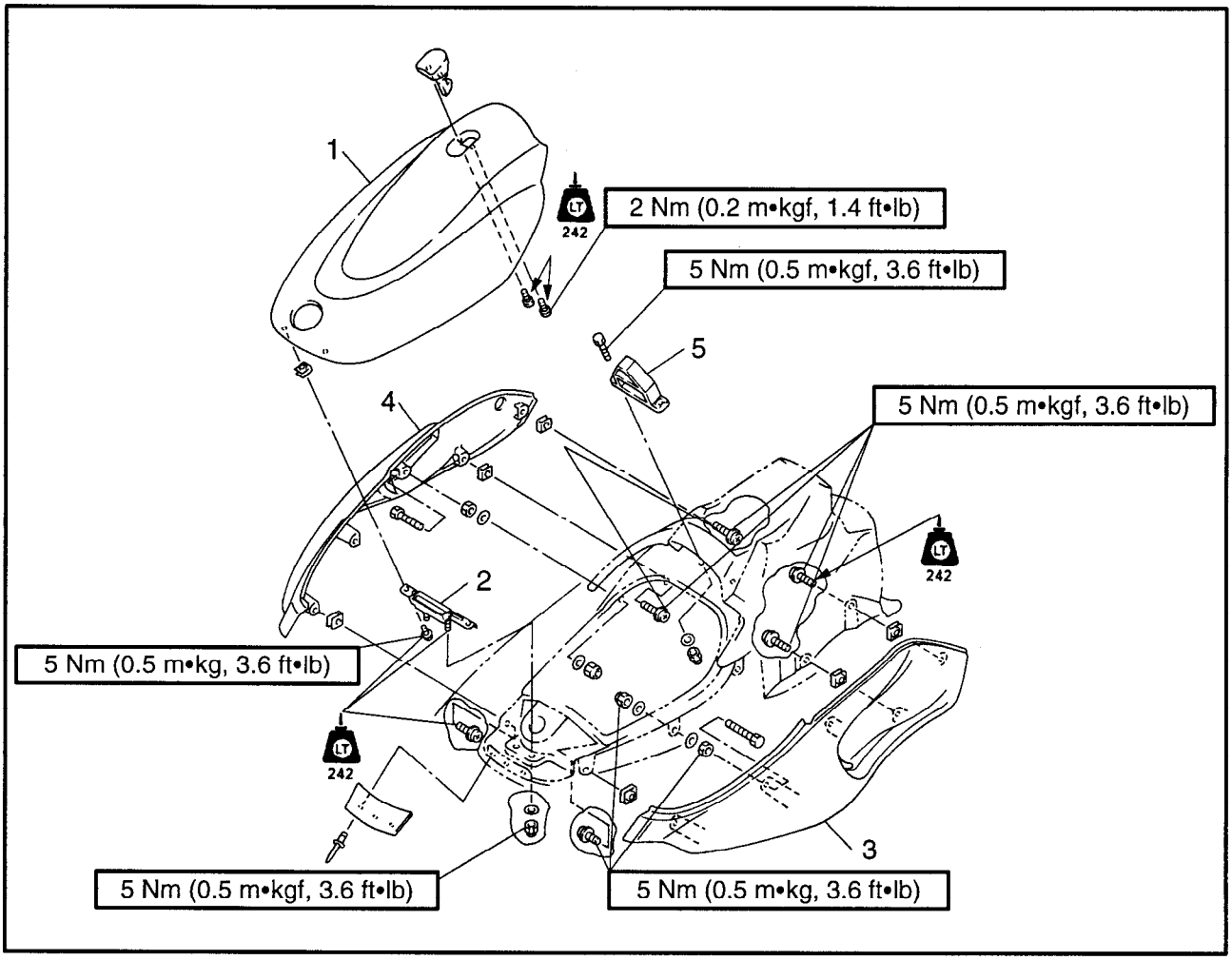


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	SHIFT LEVER REMOVAL Shift cable		Follow the left "Step" for removal. **NOTE:** Disconnect the shift cable at the shift lever.
1	Shift lever	1	
2	Base assembly	1	
3	Lever	1	
4	Shaft	1	
5	Roller	1	
6	Actuator	1	
7	Spring	1	
8	Wave washer	1	
9	Bushing	2	
10	Base	1	
			Reverse the removal steps for installation.

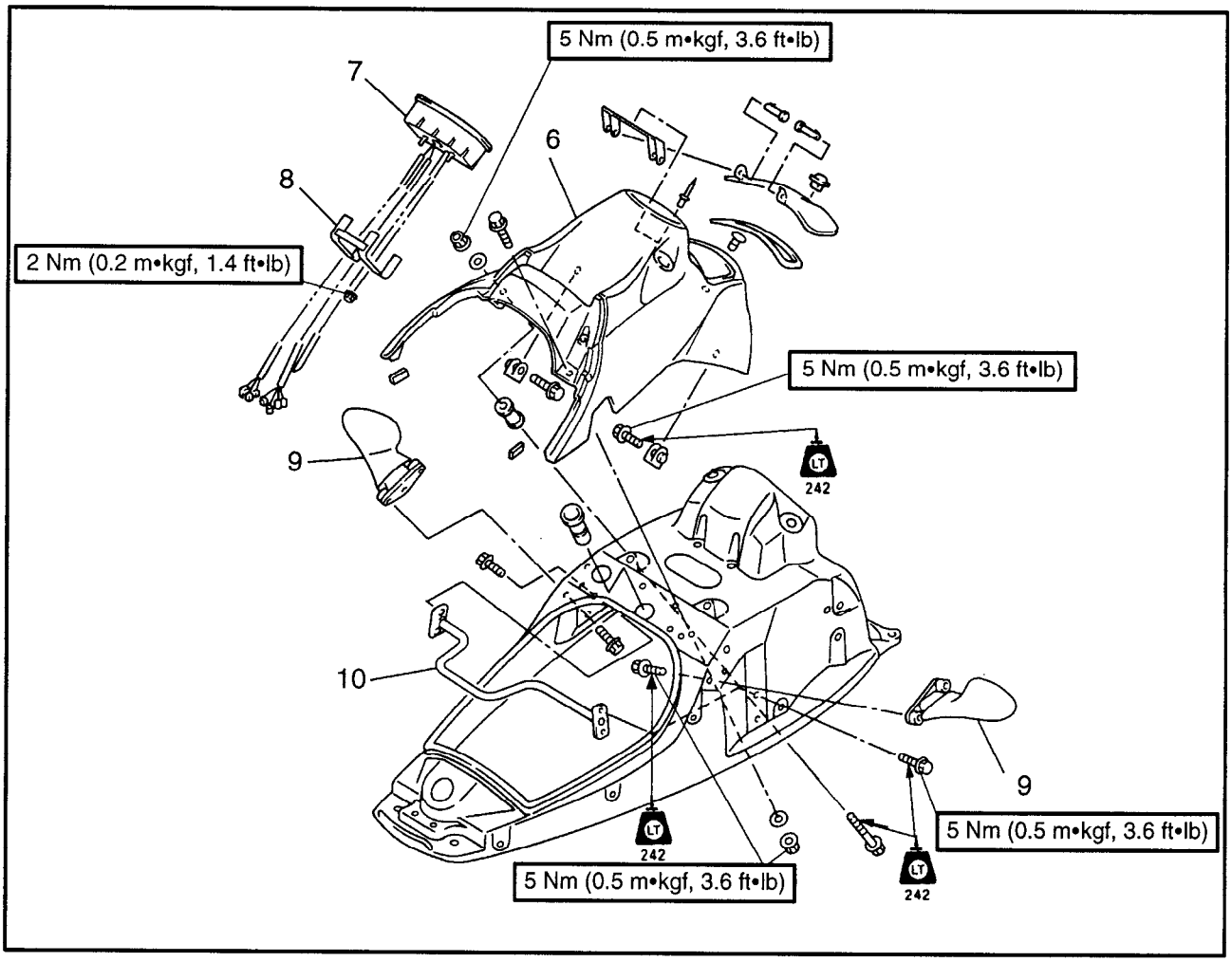
ENGINE HOOD

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	ENGINE HOOD DISASSEMBLY		Follow the left "Step" for removal.
	Engine hood assembly		Refer to "ENGINE HOOD REMOVAL".
1	Engine hatch	1	
2	Bracket	1	
3	Left side cover	1	
4	Right side cover	1	
5	Holder	1	

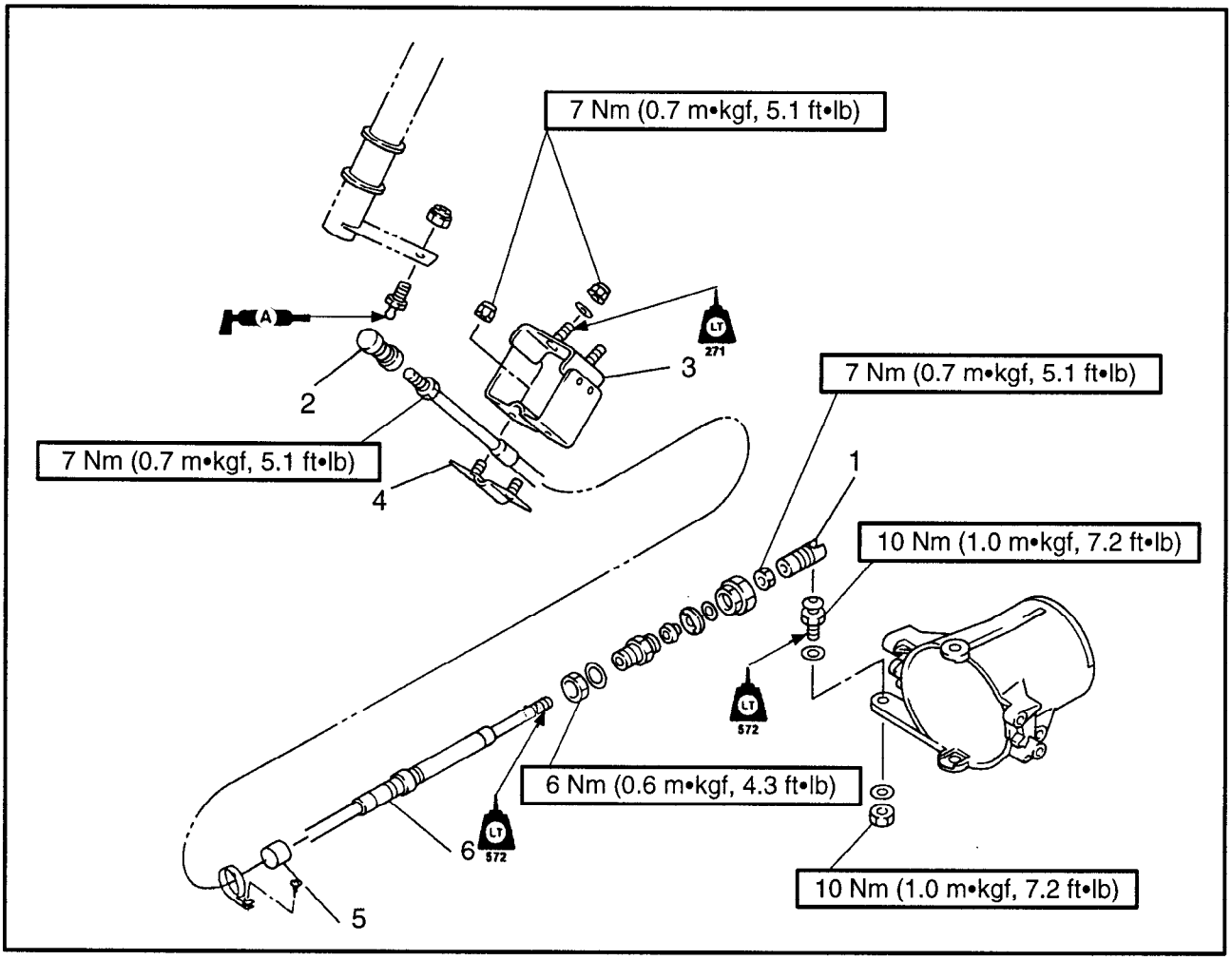


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
6	Engine hood cover	1	
7	Meter assembly	1	
8	Bracket	1	
9	Adjustable mirror assembly	2	
10	Stay	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 Ride plate		Follow the left "Step" for removal. Refer to the "JET PUMP UNIT REMOVAL" section in chapter 6.
1	Cable joint	1	Refer to "Jet pump side cable joint installation".
			⚠ WARNING **The cable joint must be screwed in more than 8 mm (0.31 in).**
2	Cable joint	1	
3	Steering cable bracket	1	
4	Cable stopper	1	**⚠ WARNING** **Be sure to fit the projection on the cable stopper into the groove in the outer cable.**
5	Packing	1	**NOTE:** Insert the cable into the clamp.
6	Steering cable	1	
			Reverse the removal steps for installation.

STEERING CABLE

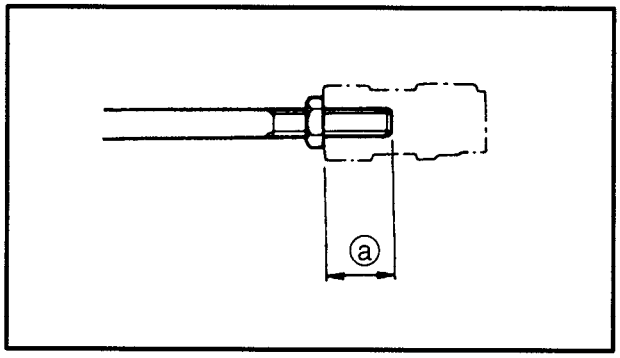
SERVICE POINTS

Cable inspection

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

Jet pump side cable joint installation

1. Install:
   - Cable joint



Cable joint set length ⓐ:
13.7 ~ 15.3 mm (0.53 ~ 0.60 in)

⚠ WARNING

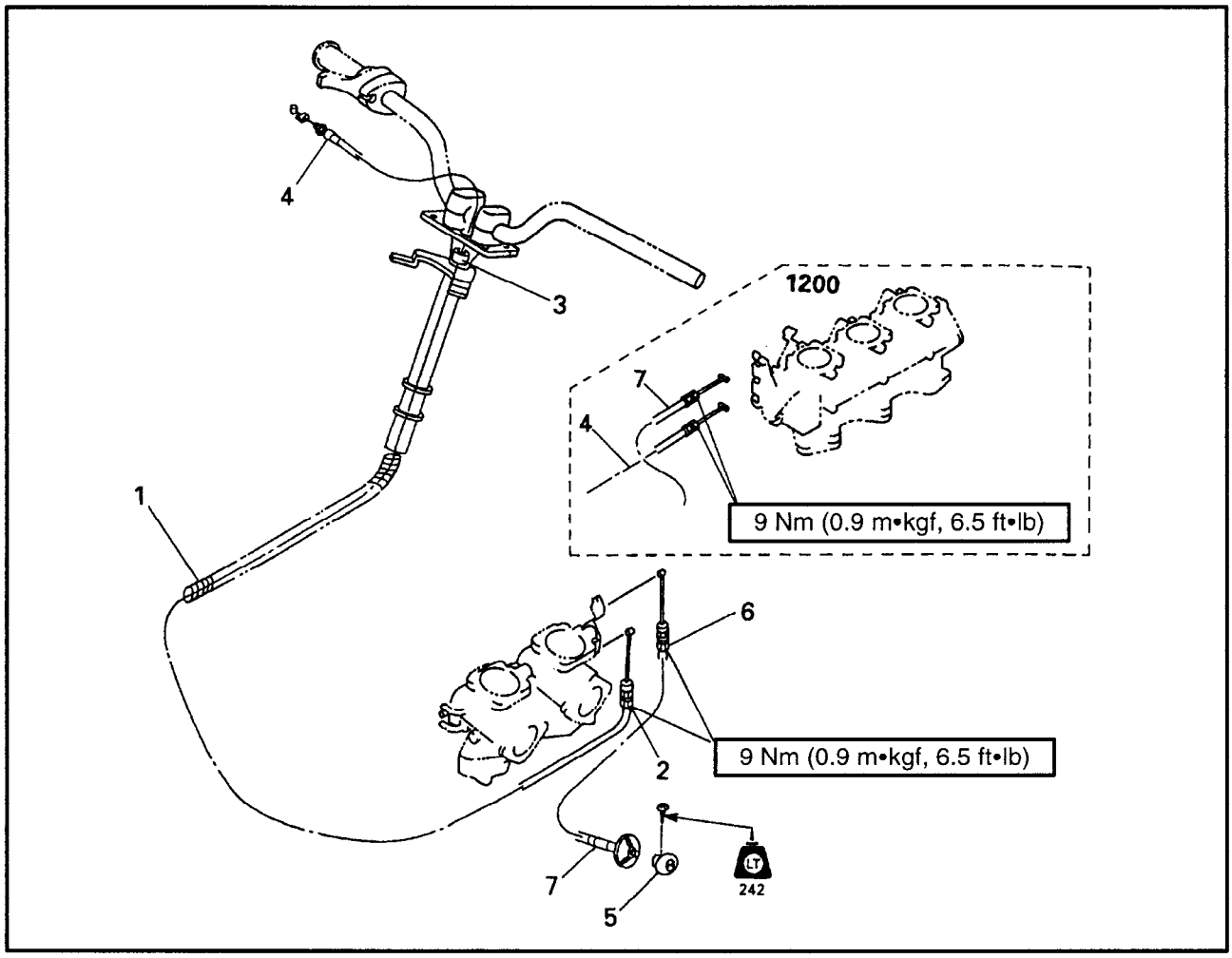
The cable joint must be screwed in more than 8 mm (0.31 in).

Steering cable adjustment

Refer to "CONTROL SYSTEM" in chapter 3.

THROTTLE CABLE AND CHOKE CABLE

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

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

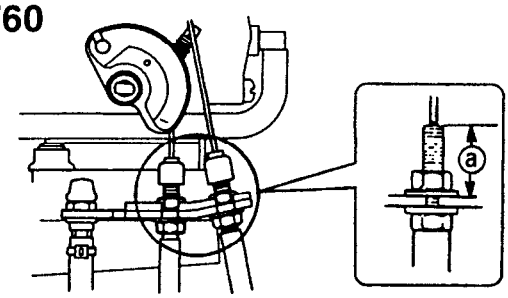
SERVICE POINTS

Cable inspection

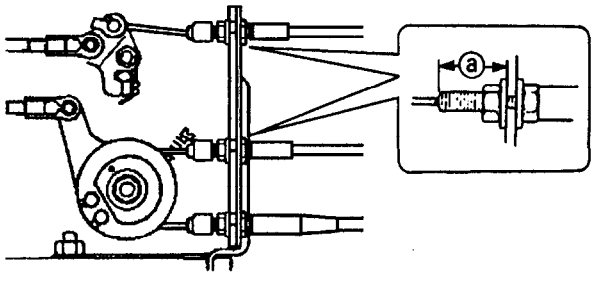
1. Inspect:
   - Throttle cable
   - Choke cable

   Kink/Fray/Stick → Replace.

760



1200



Cable installation

1. Install:
   - . Cable guide

Cable guide set position ⓐ:
XL760:
17 mm (0.67 in)
XL1200:
Throttle cable: 17 mm (0.67 in)
Choke cable: 14 mm (0.55 in)

2. Install:
   - Seal packing

   Refer to "HANDLE REMOVAL".

Throttle cable adjustment

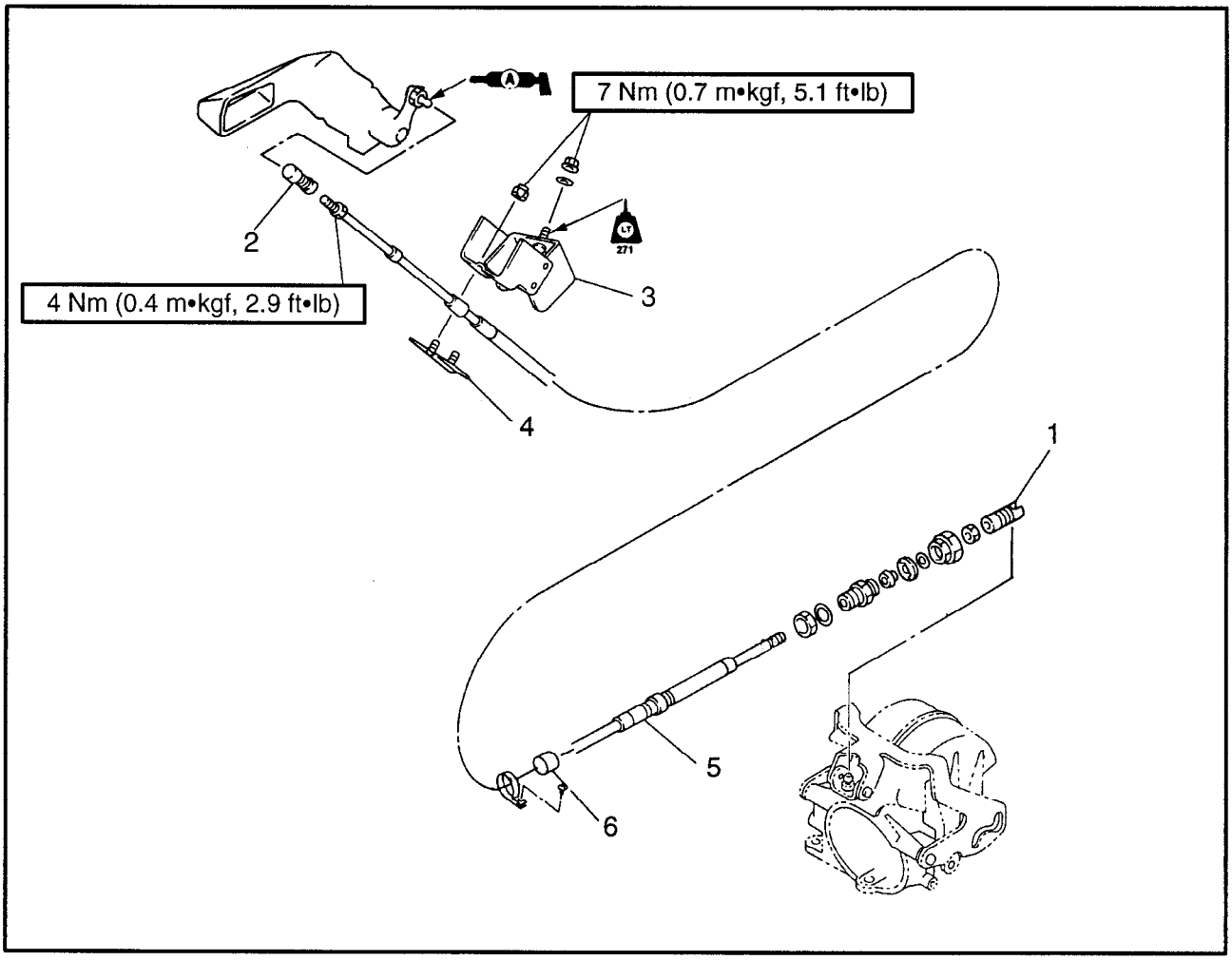
Refer to "CONTROL SYSTEM" in chapter 3.

Choke cable adjustment

Refer to "CONTROL SYSTEM" in chapter 3.

SHIFT CABLE

EXPLODED DIAGRAM



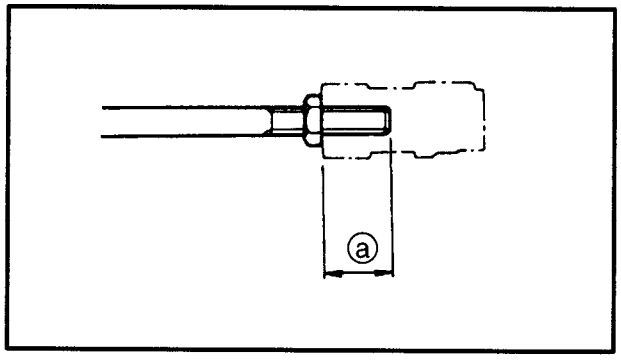
REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	SHIFT CABLE REMOVAL Ride plate		Follow the left "Step" for removal. Refer to the "JET PUMP UNIT REMOVAL" section in chapter 6.
1	Cable joint	1	Refer to "Jet pump side cable joint installation". **⚠ WARNING** **The cable joint must be screwed in more than 8 mm (0.31 in).**
2	Cable joint	1	
3	Shift cable braket	1	
4	Cable stopper	1	**⚠ WARNING** **Be sure to fit the projection on the cable stopper into the slit in the outer cable.**
5	Shift cable	1	**NOTE:** Insert the cable into the clamp.
6	Packing	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Cable inspection

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



Jet pump side cable joint installation

1. Install:
   - Cable joint

Cable guide set lenght ⓐ
12.8 ~ 14.4 mm (0.50 ~ 0.57 in)

⚠ WARNING

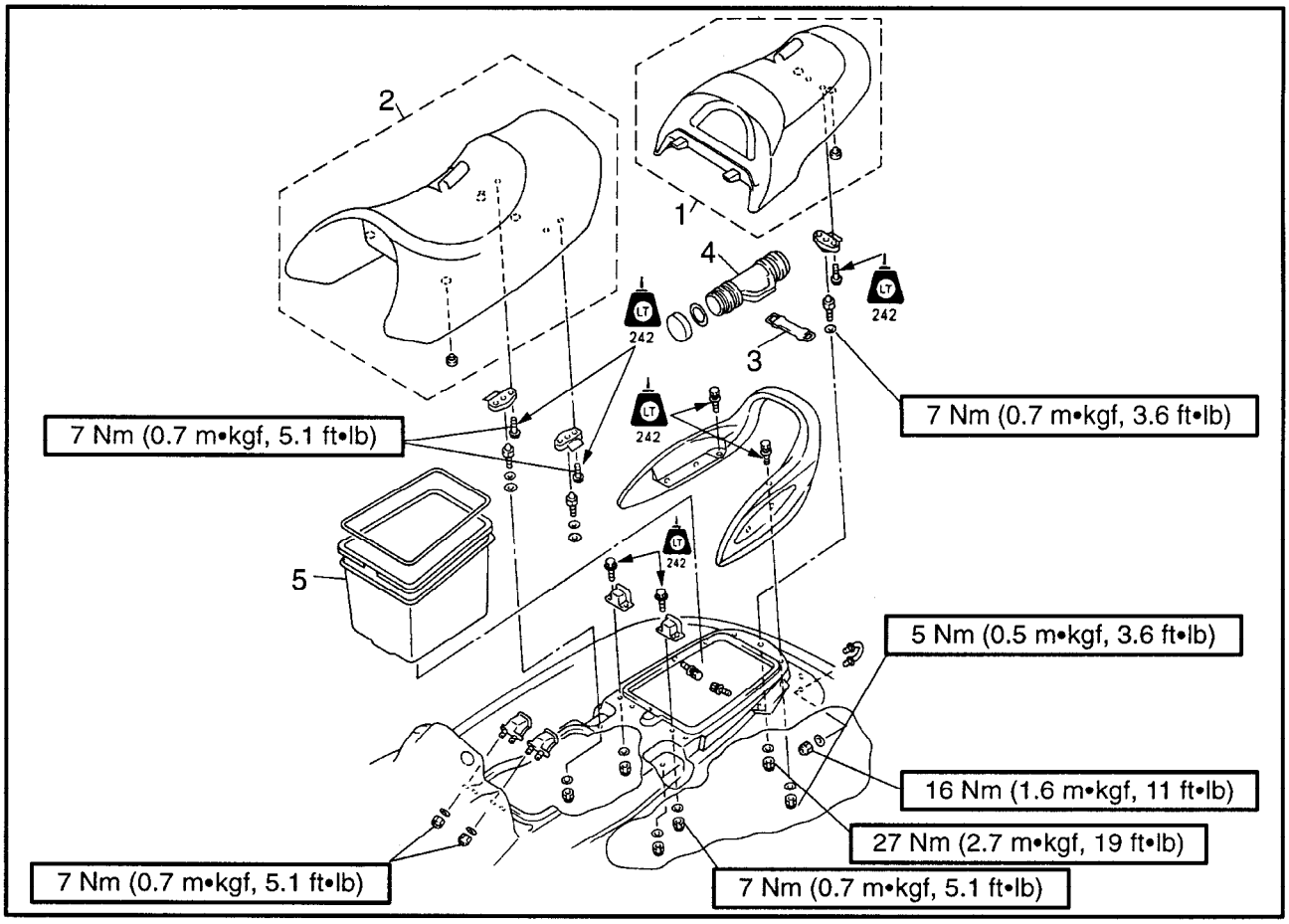
The cable joint must be screwed in more than 8 mm (0.31 in).

Shift cable adjustment

Refer to "CONTROL SYSTEM" in chapter 3.

SEAT AND STORAGE BOX

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	SEAT AND STORAGE BOX		Follow the left "Step" for removal.
1	Single seat	1	
2	Double seat	1	
3	Band	1	
4	Case	1	
5	Storage box	1	
			Reverse the removal steps for installation.

SERVICE POINTS

Seat inspection

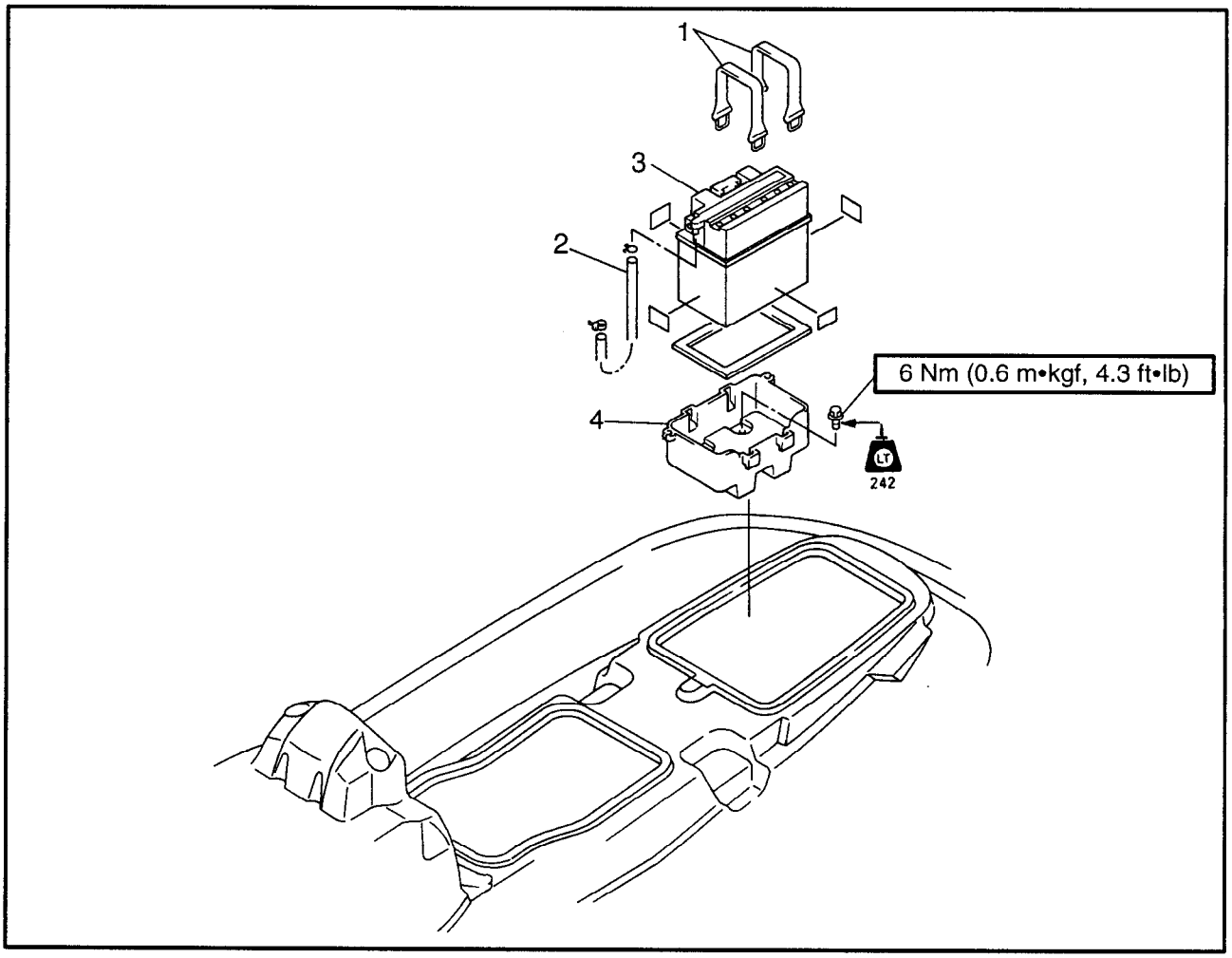
1. Inspect:
   - Seat lock
     Wear/damage → Replace.

Storage box inspection

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

BATTERY CASE

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

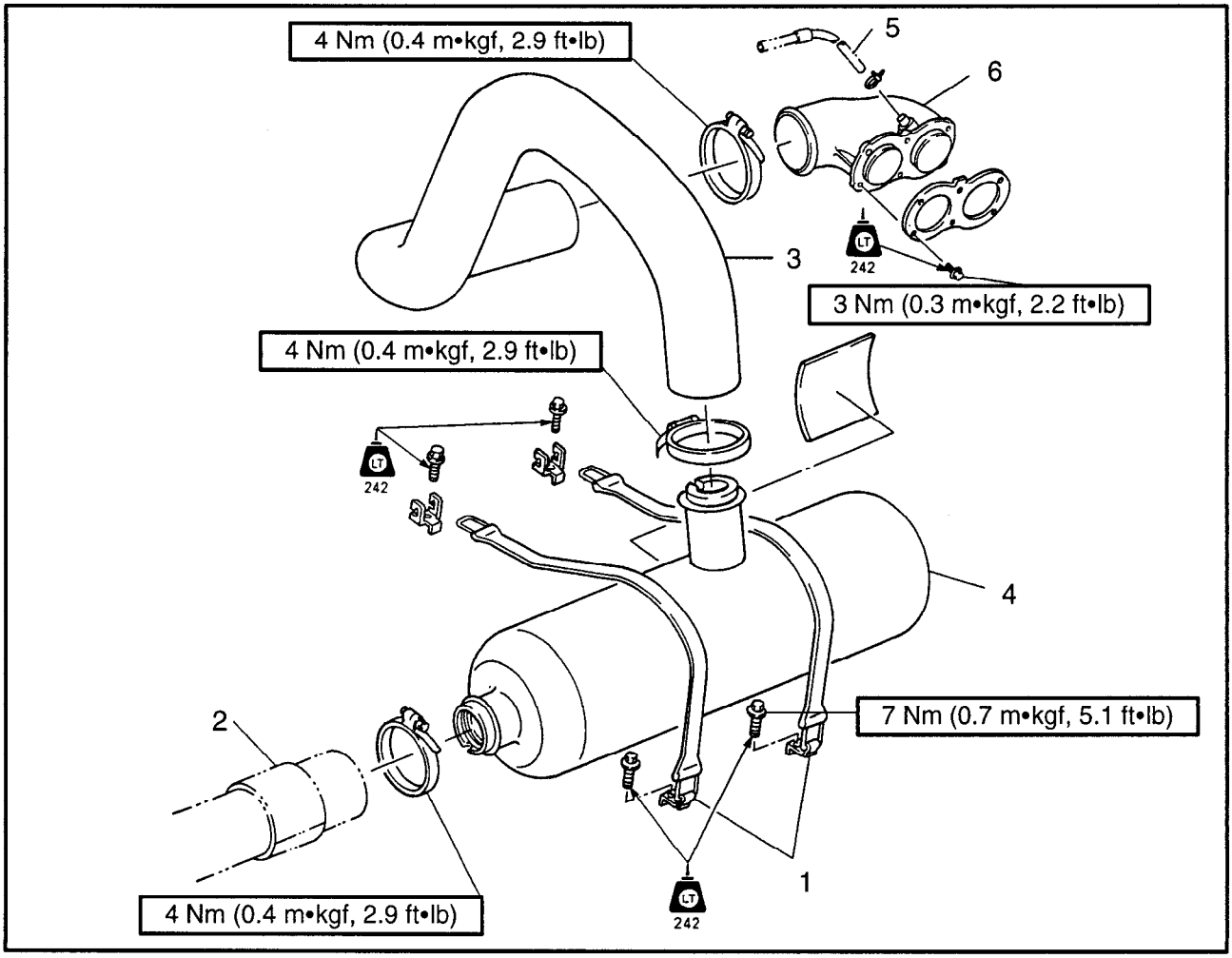
Step	Procedure/Part name	Q'ty	Service points
	BATTERY CASE REMOVAL		Follow the left "Step" for removal.
	Seat and storage box		Refer to "SEAT AND STORAGE BOX".
1	Band	2	
2	Breather hose	1	
3	Battery	1	
4	Battery case	1	
			Reverse the removal steps for installation.

Battery case inspection

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

EXHAUST SYSTEM

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	EXHAUST SYSTEM REMOVAL		Follow the left "Step" for removal.
	Storage box		
1	Band	2	
2	Exhaust hose	1	
3	Exhaust hose	1	
4	Water lock	1	
5	Water outlet hose	1	
6	Exhaust guide		Reverse the removal steps for installation.

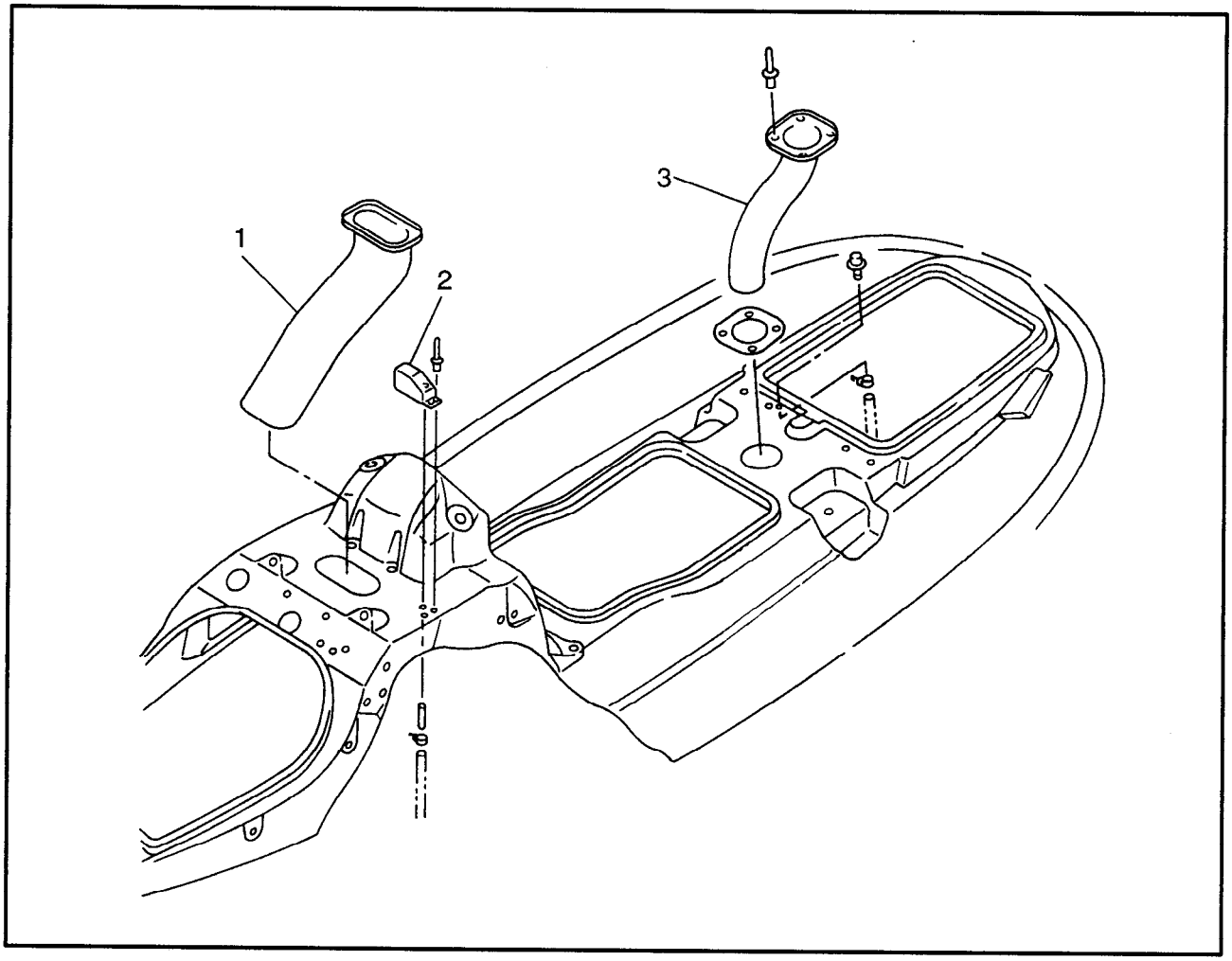
SERVICE POINTS

Exhaust system inspection

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

DECK

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	DECK DISASSEMBLY		Follow the left "Step" for removal.
	Engine hood cover	1	Refer to "ENGINE HOOD".
1	Ventilation hose	1	
2	Ventilation socket	1	
3	Ventilation hose	1	
			Reverse the removal steps for installation.

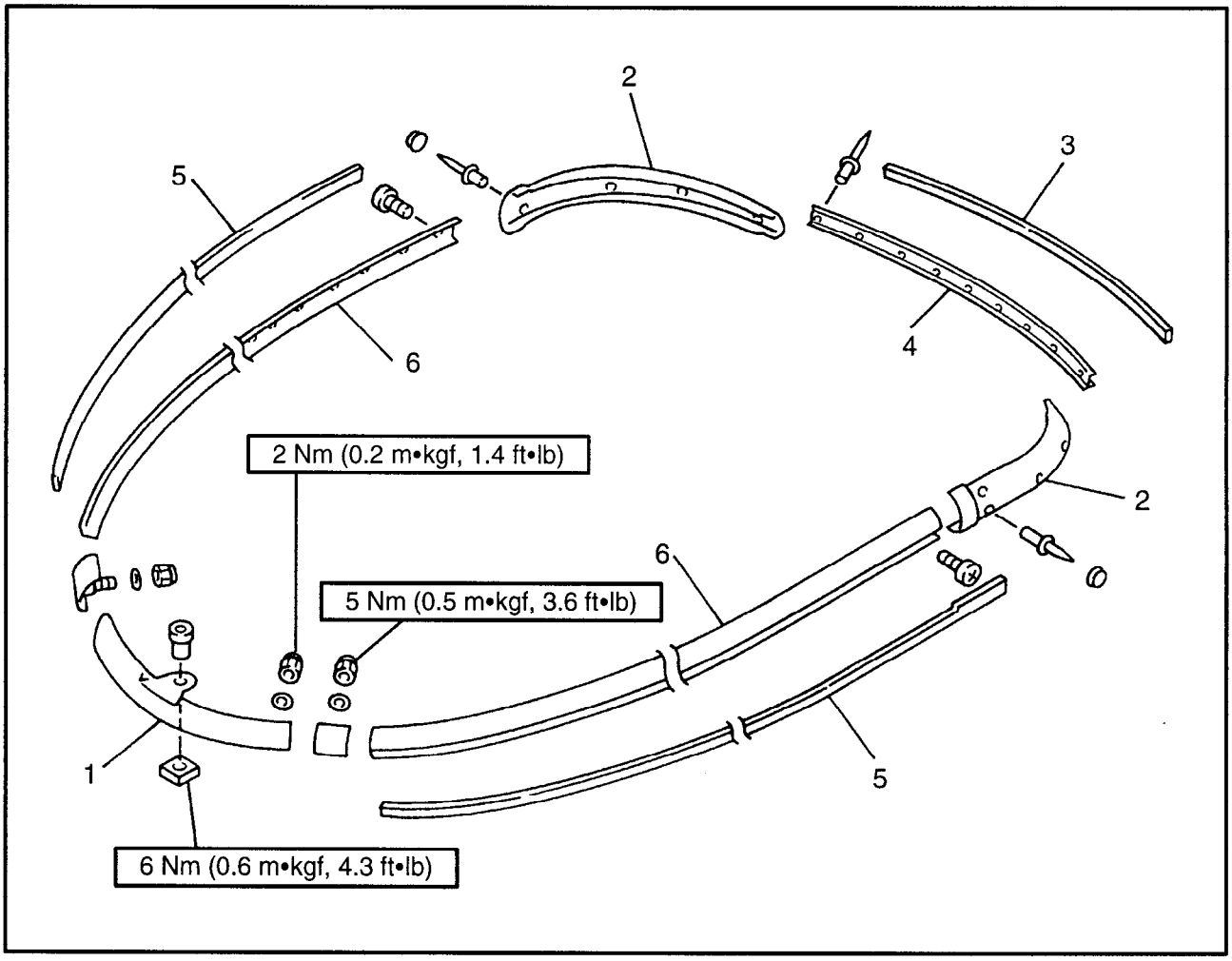
SERVICE POINTS

Ventilation system inspection

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

GUNWALE

EXPLODED DIAGRAM

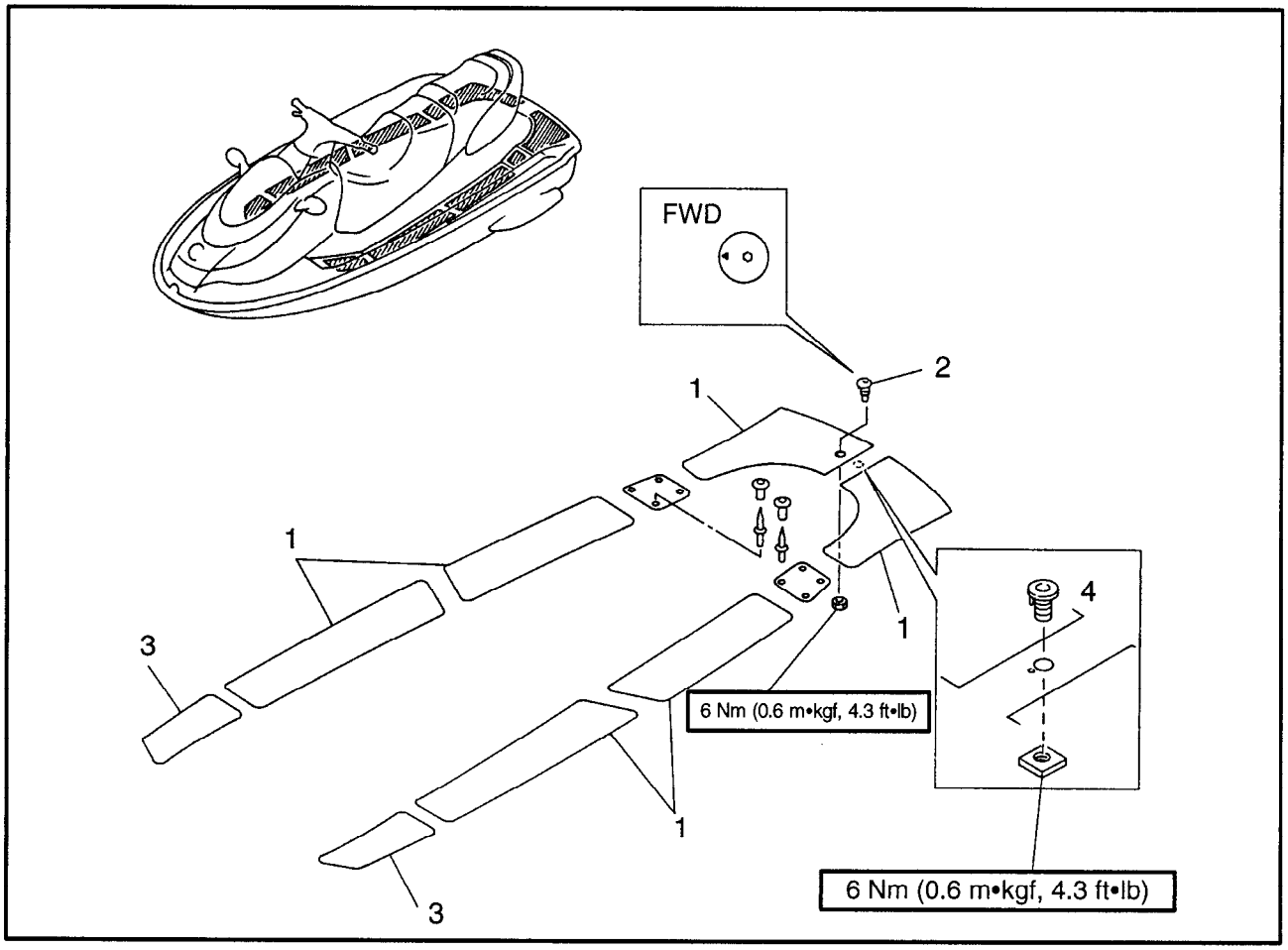


REMOVAL AND INSTALLATION CHART

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

MAT

EXPLODED DIAGRAM



REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	MAT REMOVAL		Follow the left "Step" for removal.
1	Step mat	6	
2	Spout	1	
3	Upper mat	2	**NOTE:** The rope hole bolts should be installed with the projections ⓐfacing each other.
4	Rope hole bolt		Reverse the removal steps for installation.

SERVICE POINTS

Mat installation

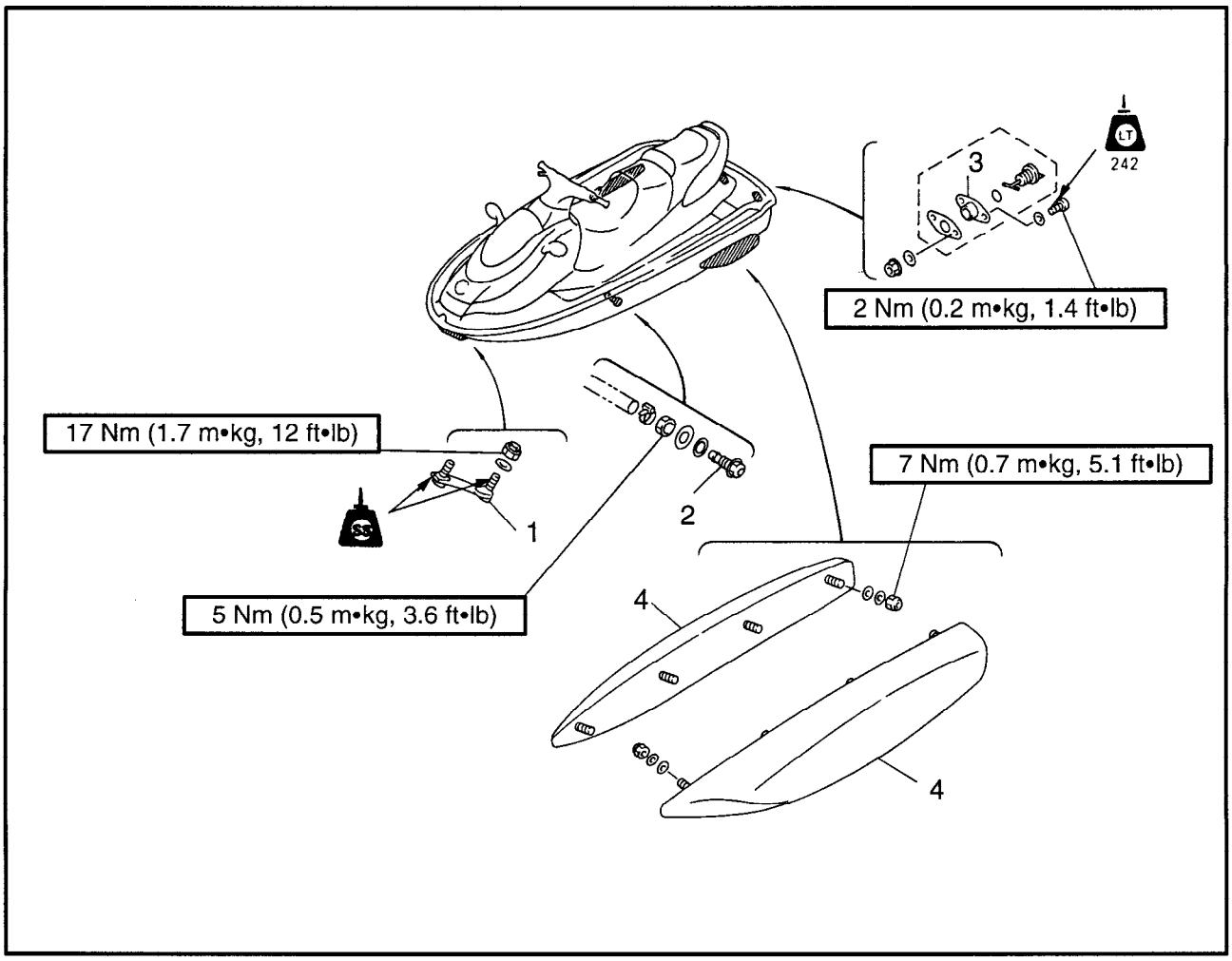
1. Install:
   - Mat

NOTE:

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

HULL

EXPLODED DIAGRAM



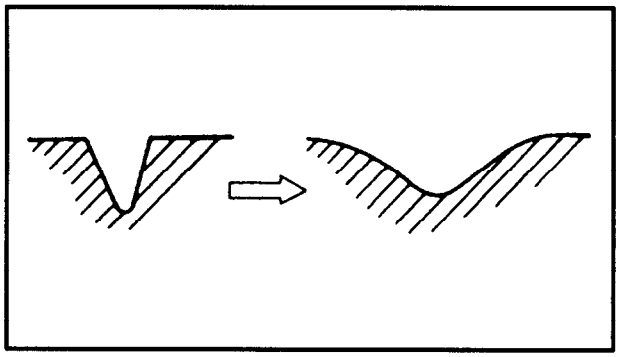
REMOVAL AND INSTALLATION CHART

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

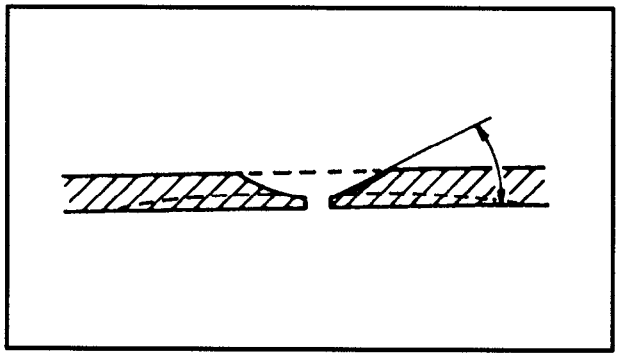


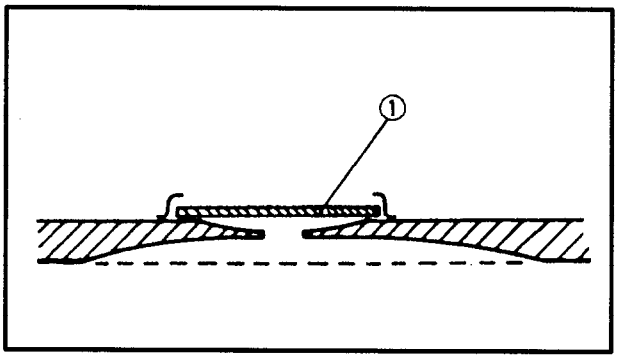
Deep scratching

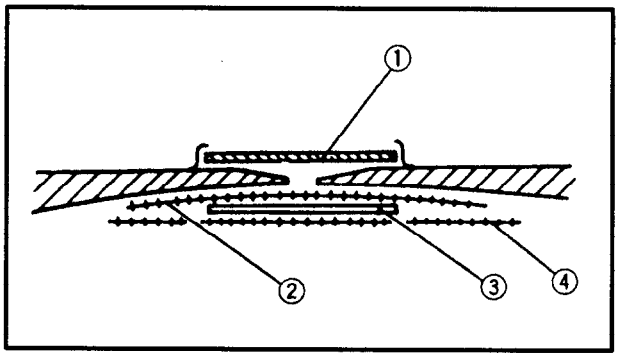
1. Remove any sharp/rough edges from the surface.
2. Sand the area smooth for about one inch all around the scratch with #80 grit wet or dry paper.
3. Clean the area with acetone and dry it.
4. Mix gel-coat with gel-coat thickener to make gel-coat putty and then add the catalyst to make.
5. Apply and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

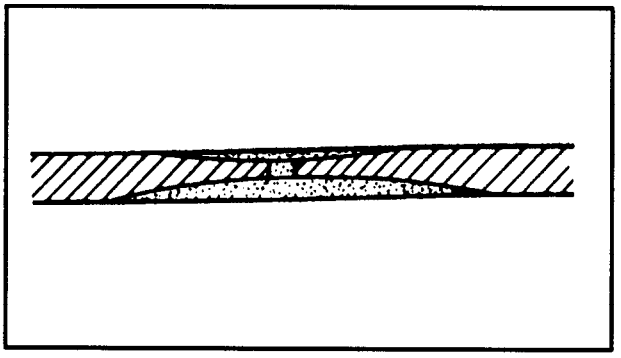
⚠ WARNING

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







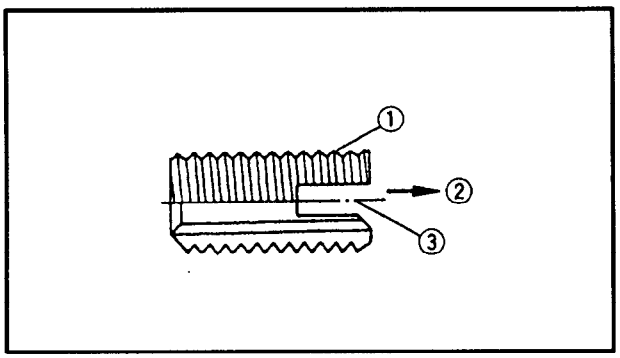


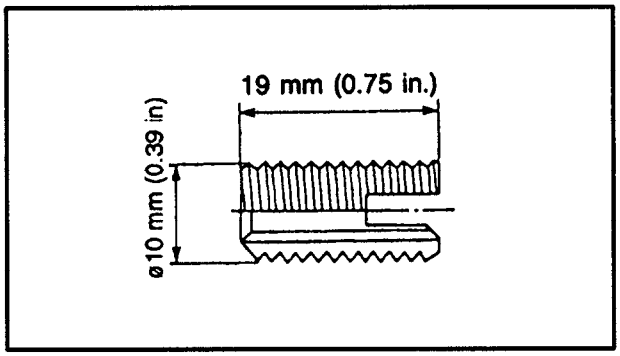
Hull damage (punctured)

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

NOTE:

Refer to "WATER VEHICLE FRP REPAIR MANUAL".





Insert nut

NOTE:

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

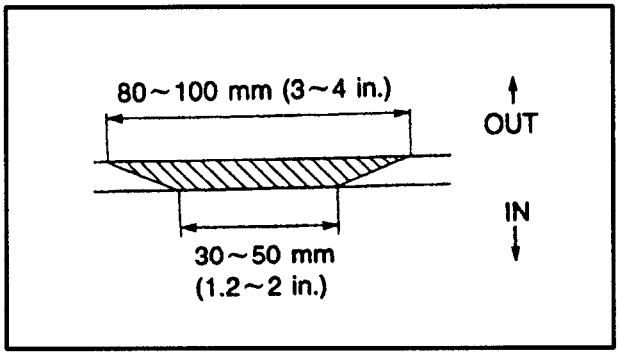
Part No.	Part Name	Remarks
EW2-62733-09	Nut	Stainless steel, M6

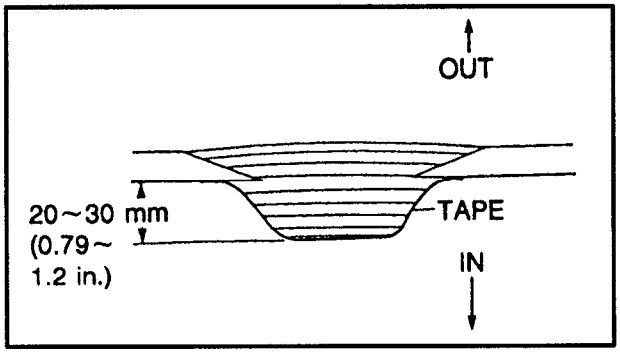
- Nut ①
- Direction of thread ②
- Slot be threaded ③

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.

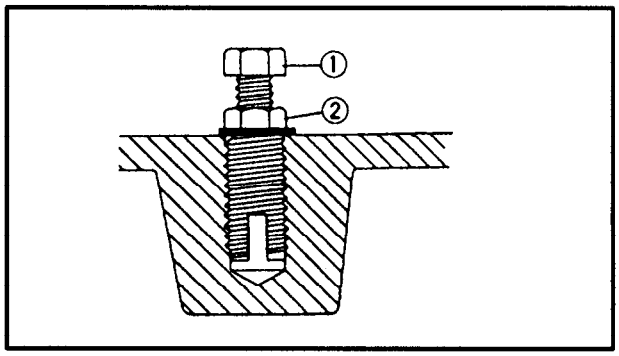
NOTE:

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 inferior in strength, or is made of stainless steel, it may break.**



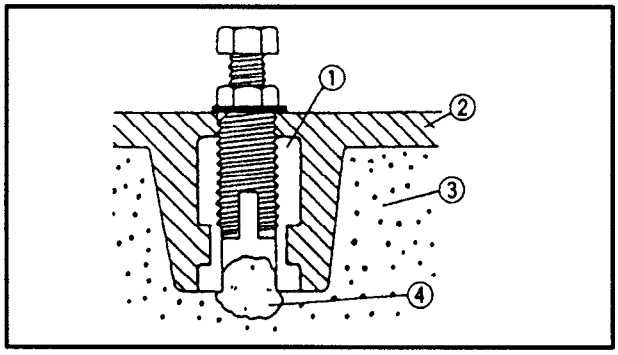
- Bolt ① <Strength is 8T or more>
- Lock nut ②

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

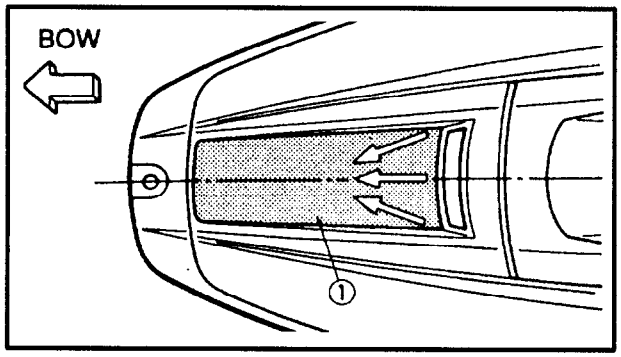
1. If the bolt is broken, remove it using drills.

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

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



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



Removing a graphic

1. Remove:
   - Graphic ①

NOTE:

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

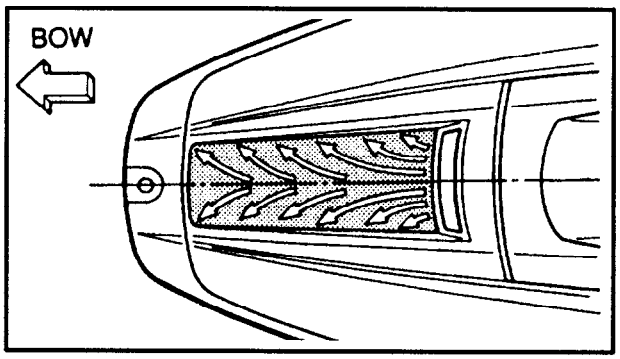
2. Clean:
   Once the graphic is removed, clean the entire bow area with Isopropyl Alcohol to remove any residual adhesive.

Applying a graphic

1. Preparation:
   Mix 1 tablespoon of liquid washing-up detergent with water in a 1qt spray bottle.
   Remove the backing from the new graphic and spray both sides and the area of the full 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 body	5
○				○								Seal	5
○				○								Crankcase	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 bushing	8
				○			○					Water lock	8
		○		○			○					Exhaust hose	8
				○			○					Muffler	8
							○					Drain plug	8