

# **YAMAHA**

**Outboards**

**C150W, 150W,  
S150W,  
L150W, P150W,  
D150W  
S175W, P175W  
200W, S200W,  
L200W, P200W**

**SERVICE  
MANUAL**



**LIT-18616-01-87**

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# CHAPTER 1

## GENERAL INFORMATION



<b>IDENTIFICATION</b> .....	1-1
SERIAL NUMBER.....	1-1
STARTING SERIAL NUMBERS .....	1-1
<b>SAFETY WHILE WORKING</b> .....	1-2
FIRE PREVENTION .....	1-2
VENTILATION.....	1-2
SELF-PROTECTION.....	1-2
OILS, GREASES AND SEALING FLUIDS.....	1-2
GOOD WORKING PRACTICES .....	1-3
DISASSEMBLY AND ASSEMBLY .....	1-4
<b>SPECIAL TOOLS</b> .....	1-5
MEASURING .....	1-5
REMOVAL AND INSTALLATION .....	1-6

**CHAPTER 2  
SPECIFICATIONS**

**GENERAL SPECIFICATIONS**..... 2-1

**MAINTENANCE SPECIFICATIONS**..... 2-7

ENGINE..... 2-7

LOWER..... 2-11

ELECTRICAL ..... 2-12

DIMENSION 1..... 2-14

DIMENSION 2..... 2-15

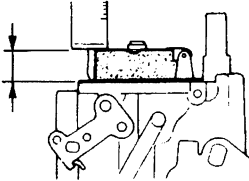
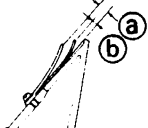
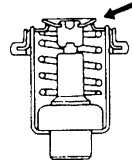
**TIGHTENING TORQUE**..... 2-16

SPECIFIED TORQUE ..... 2-16

GENERAL TIGHTENING TORQUE ..... 2-17





Item	Unit	Model							
		175 FETO	200FETO		L200FETO		200GETO	225DET	225DETO
		P175TR	200TR	S200TR	—	L200TR	P200TR	—	—
Worldwide									
USA, CANADA									
<b>CARBURETORS</b>									
ID mark		64L00	64E00	64ES0	64E00	64ES0	64F00		
Main jet	#	152, 154 (PU,PM)*, 158 (PL)*	150, 152 (SL)*, 154 (PU, PM)*, 158 (PL)*	146	150, 152 (SL)*, 154 (PU, PM)*, 158 (PL)*	146	150, 154 (PU, PM)*, 158 (PL)*		
Main air jet	#	280	270	310	270	310	260		
Main nozzle (inside diameter)	mm (in)	4.2(0.17)	4.5(0.18)	4.0(0.16)	4.5(0.18)	4.0(0.16)	4.5 (0.18)		
Pilot jet	#	80	84				80		
Pilot air jet	#	60							
Pilot screw	Turns out	1-5/8 ± 1/4 (S)* 1-1/8 ± 1/4 (P)*	1-1/8 ± 1/4	1-1/8 ± 1/4 (S)* 5/8 ± 1/4 (P)*	1-1/8 ± 1/4	1-1/8 ± 1/4 (S)* 5/8 ± 1/4 (P)*	1-1/4 ± 1/4 (S)* 3/4 ± 1/4 (P)*		
Float height	mm (in)	16.0 ± 0.5 (0.63 ± 0.02)							
									
Valve seat diameter	mm (in)	1.2 (0.05)							
Idle speed	r/min	700 ± 25							
Trolling speed	r/min	570 ± 25	575 ± 25			600 ± 25			
<b>OIL INJECTION PUMP</b>									
ID mark		6R400	6R510				—	6R510	
Oil discharge (for 3 min.)	cm <sup>3</sup> (US oz, Imp oz) @1,500 r/min	3.4 ± 0.7 (0.115 ± 0.024, 0.120 ± 0.025)	4.8 ± 1.1 (0.162 ± 0.037, 0.169 ± 0.039)				—	4.8 ± 1.1 (0.162 ± 0.037, 0.169 ± 0.039)	
Bleeding		Screw type					—	Screw type	
<b>REED VALVES</b>									
Stopper plate height <sup>Ⓐ</sup>	mm (in)	6.5 ± 0.3 (0.26 ± 0.01)							
									
Warpage limit <sup>Ⓑ</sup>	mm (in)	0.2 (0.008)							
<b>THERMOSTATS</b>									
Valve opening temperature	°C (°F)	48 - 52 (118 - 126)							
Full-open temperature	°C (°F)	60 (140)							
									
Valve lift		More than 3 mm (0.12 in)							

\*: (P) Port (PM) Port middle (S) Starboard  
(PL) Port lower (PU) Port upper 2-10 (SL) Starboard lower

## MAINTENANCE INTERVAL CHART

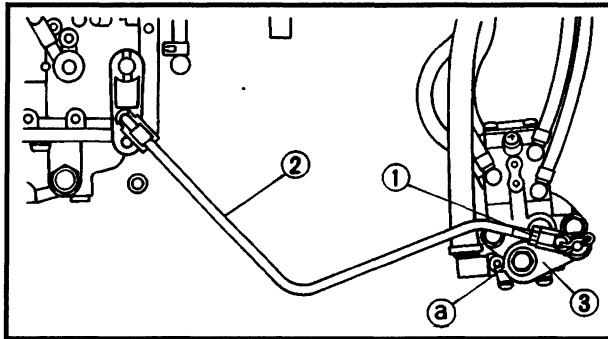
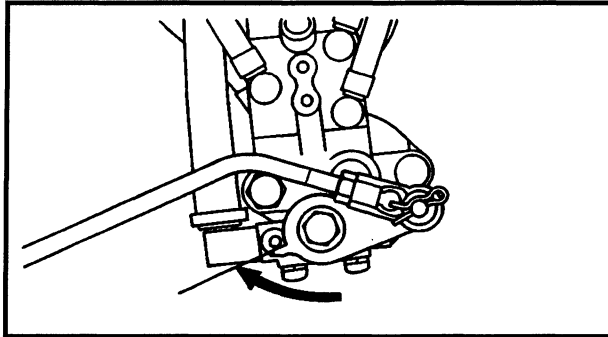
Use the following chart as a guide to general maintenance intervals.

Dependant on operating conditions, adjust the maintenance intervals accordingly.

Item	Remarks	Initial		Every		Refer to page
		10 hours (Break-in)	50 hours (3 months)	100 hours (6 months)	200 hours (1 year)	
<b>COWLING</b>						
Cowling hook	Inspect				○	3-2
<b>FUEL SYSTEM</b>						
Fuel line	Inspect	○		○	○	3-2
Fuel filter	Clean	○	○	○		3-2
Carburetor	Clean	○	○	○		4-16
<b>POWER UNIT</b>						
Water leakage	Inspect	○	○	○		—
Motor exterior	Inspect	○	○	○		—
Exhaust leakage	Inspect	○	○	○		—
Cooling water passage	Clean		○	○		—
<b>CONTROL SYSTEM</b>						
Carburetor link	Inspect/Adjust				○	3-5
Throttle cable	Inspect/Adjust				○	3-10
Shift cable	Inspect/Adjust				○	3-9
Idle speed	Inspect/Adjust	○		○		3-6
<b>OIL INJECTION SYSTEM</b>						
Oil tank water drain	Clean	○	○	○		—
Oil pump link	Inspect/Adjust	○				3-11
<b>POWER TRIM AND TILT SYSTEM</b>						
Power trim and tilt fluid	Inspect	○	○	○	○	3-13
<b>LOWER UNIT</b>						
Gear oil	Change	○		○		3-14
Lower unit leakage	Inspect				○	3-14
Propeller	Inspect	○	○	○		6-2
<b>GENERAL</b>						
Anode(s)	Inspect/Replace		○	○		3-15
Battery	Inspect	○ (every month)	○	○		3-15
Spark plug(s)	Clean/Adjust/Replace	○	○	○		3-17
Wiring and connectors	Adjust/Reconnect	○	○	○		—
Bolts and nuts	Tighten	○	○	○		—
Lubrication points	Grease			○		3-18

**Checking steps:**

- Place the lower unit in water.
- Start the engine.
- Check that water flows from the pilot water outlet.

**OIL INJECTION SYSTEM****Oil pump link adjustment**

## 1. Check:

- Oil pump lever position
- Incorrect → Adjust.

**Checking steps:**

- Fully open the carburetor throttle valve.
- Make sure that the oil pump lever is fully opened.

## 2. Adjust:

- Oil pump link joint length

**Adjustment steps:**

- Loosen the locknut ①.
- Remove the oil pump link joint ②.
- Fully open the carburetor throttle valve.
- Turn the oil pump lever ③ so that it contacts the stopper ④ at the fully opened position.
- Adjust the position of the link joint until its hole aligns with the oil pump set pin.
- Connect the link joint.
- Tighten the locknut.
- Install the washer and clip.

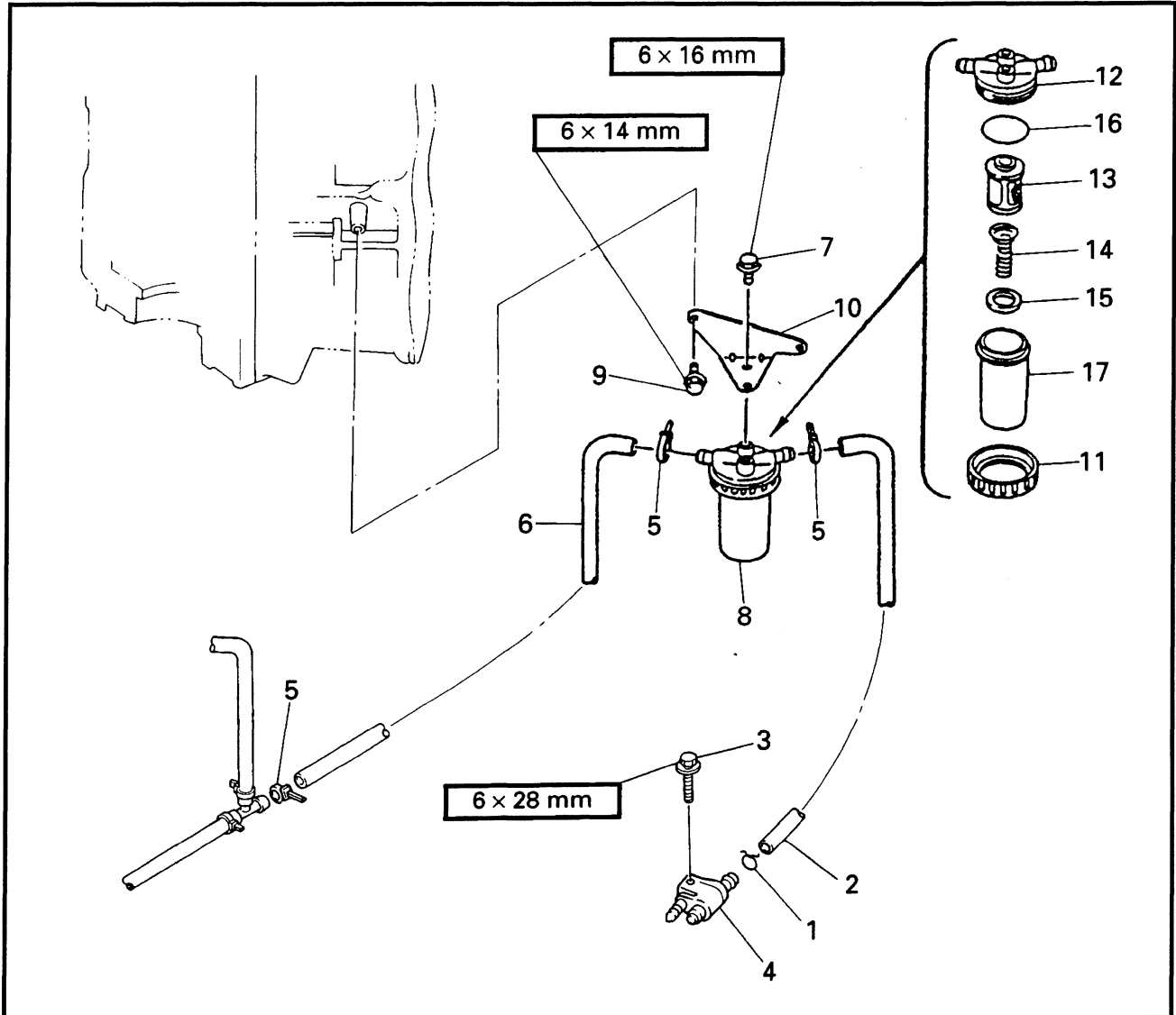
**CAUTION:**

After installation, make sure that the oil pump operates properly.



**FUEL JOINT AND FUEL FILTER**

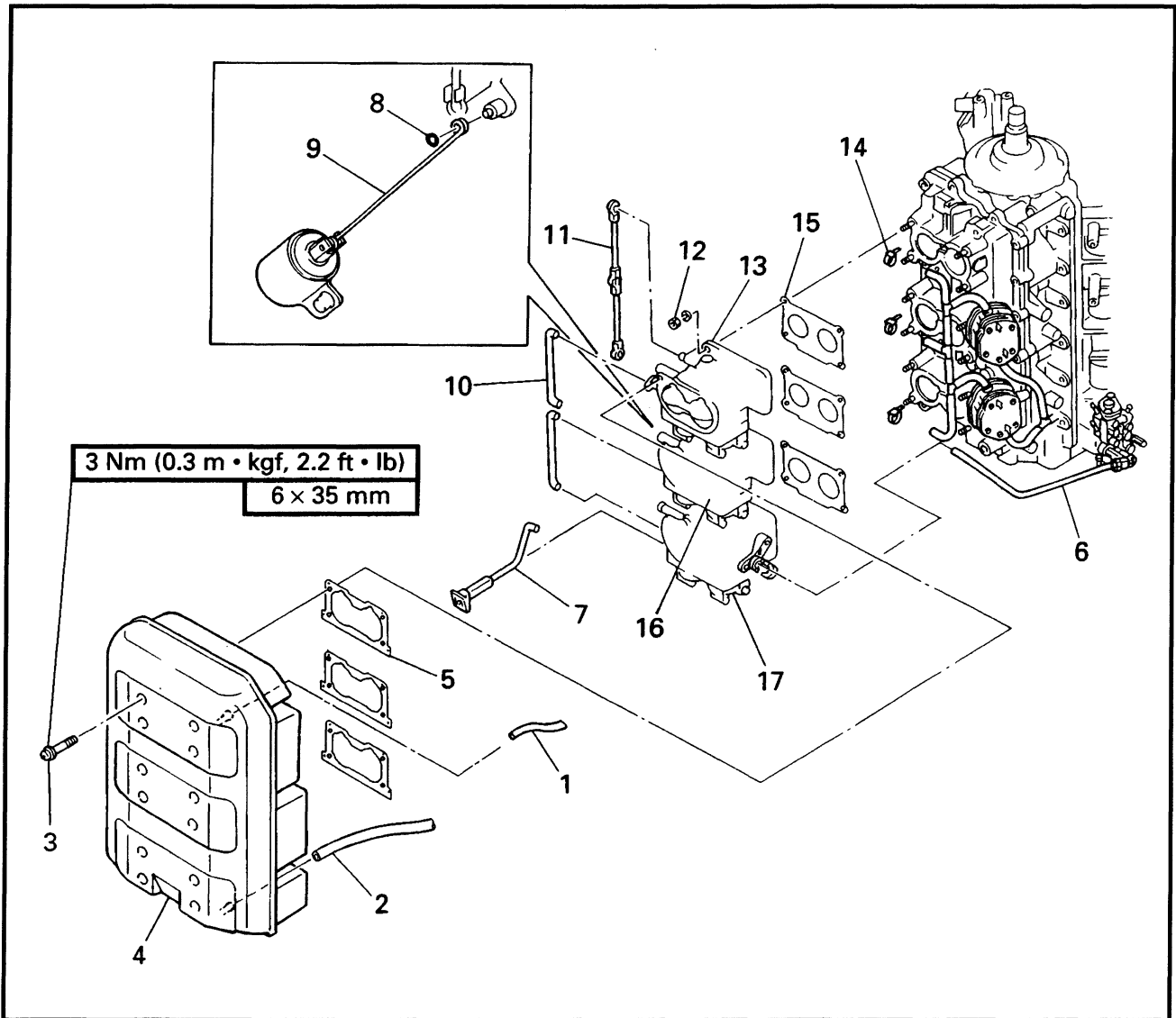
**EXPLODED DIAGRAM (For (L)150A, 175A and (L)200A models)**



**REMOVAL AND INSTALLATION CHART**

Step	Procedure/Part name	Q'ty	Service points
	<b>FUEL JOINT AND FUEL FILTER REMOVAL</b>		Follow the left "Step" for removal.
1	Clip	1	<b>Not reusable</b>
2	Fuel hose (fuel joint-to-fuel filter)	1	
3	Bolt	1	
4	Fuel joint	1	
5	Plastic locking tie	3	
6	Fuel hose (fuel filter-to-fuel hose joint)	1	
7	Bolt	1	

**CARBURETOR  
EXPLODED DIAGRAM**

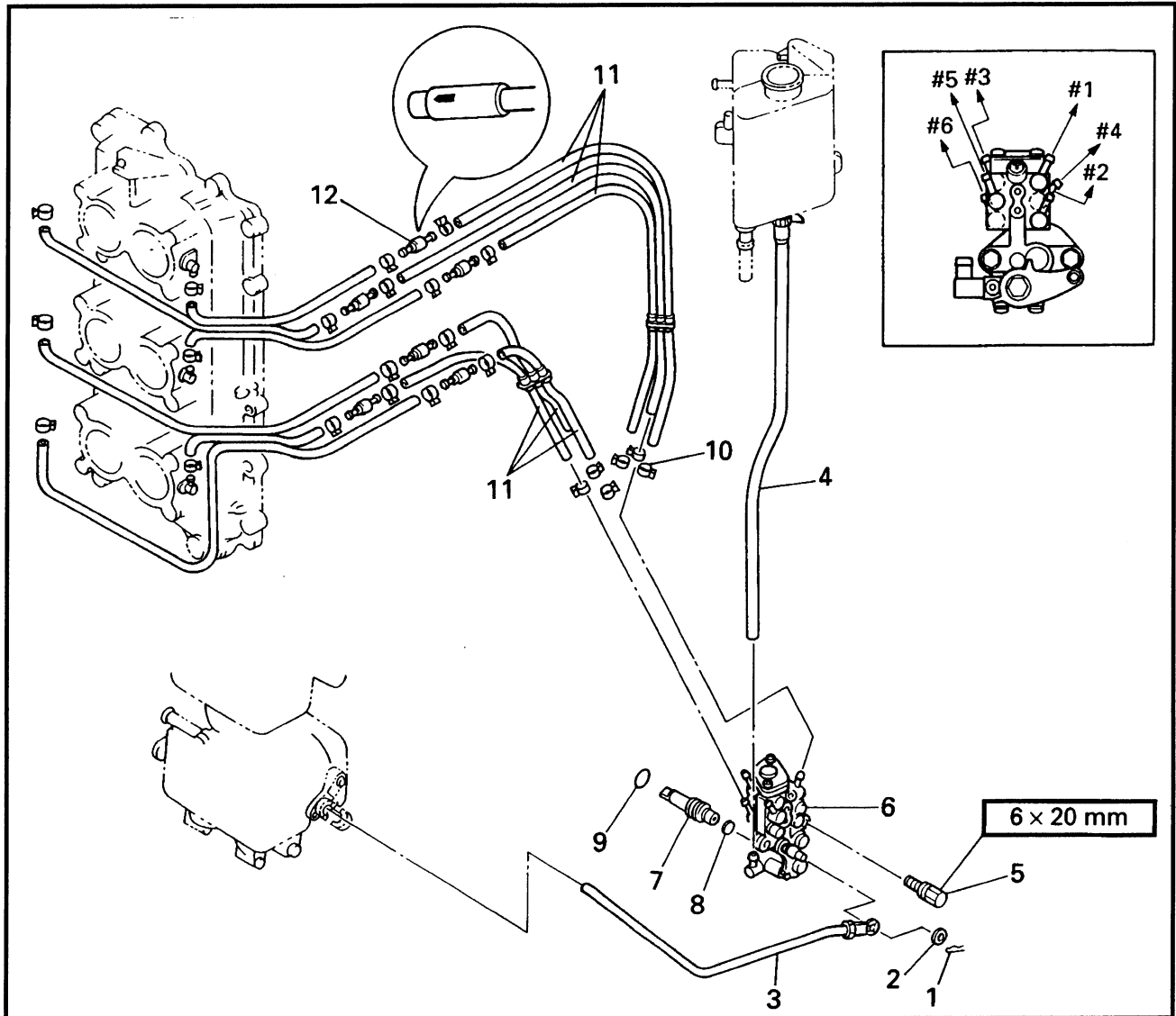


**REMOVAL AND INSTALLATION CHART**

Step	Procedure/Part name	Q'ty	Service points
	<b>CARBURETOR REMOVAL</b>		Follow the left "Step" for removal.
1	Oil tank air vent hose	1	Oil injection models
2	Intake manifold air vent hose	1	
3	Screw	12	
4	Intake silencer	1	
5	Rubber gasket	3	
6	Oil pump link rod	1	Oil injection models
7	Choke link rod	1	
8	O-ring	1	
9	Fuel enrichment valve rod	1	



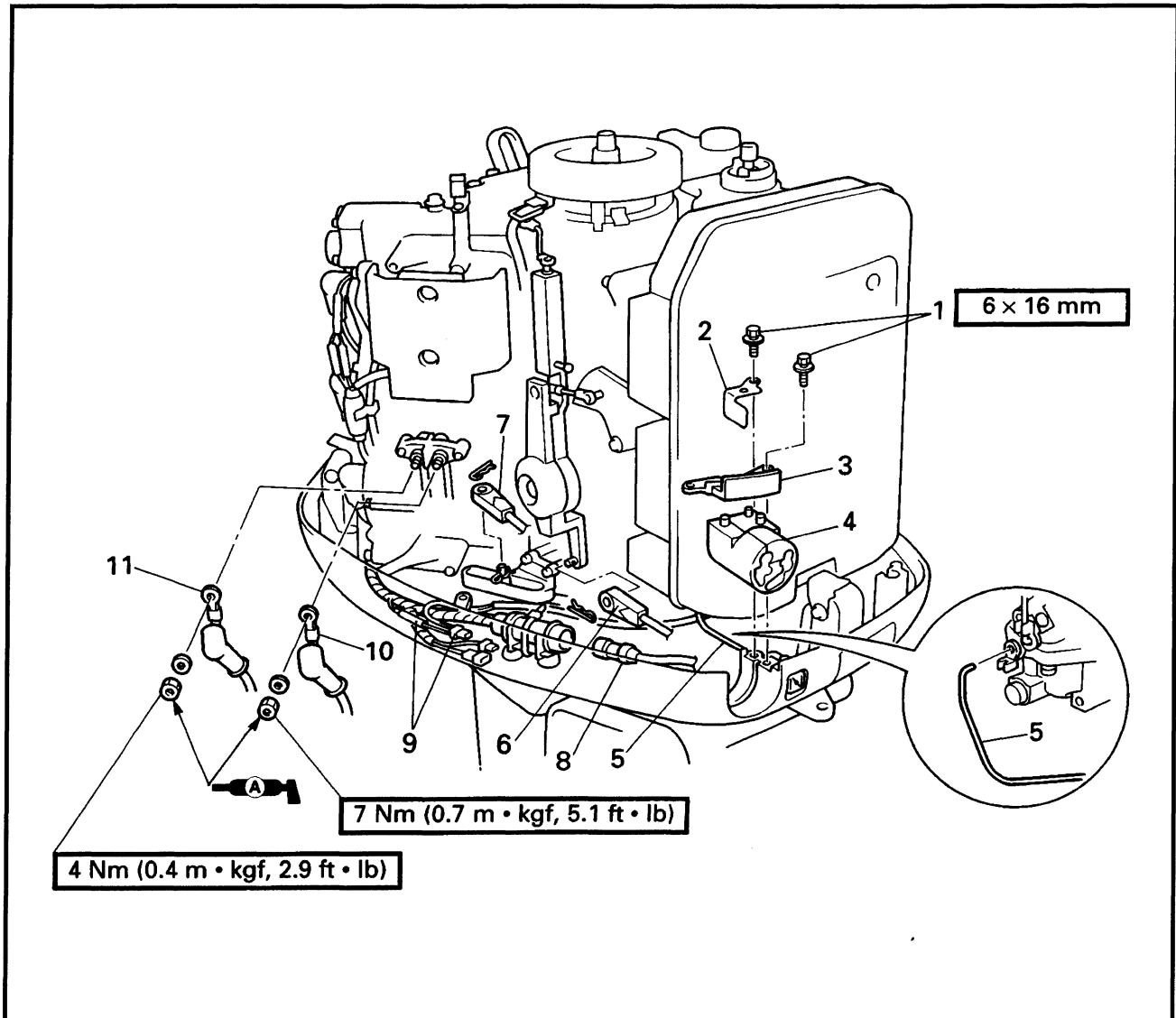
EXPLODED DIAGRAM



Step	Procedure/Part name	Q'ty	Service points
10	Clip	24	Reverse the removal steps for installation.
11	Oil delivery hose	12	
12	Check valve	6	



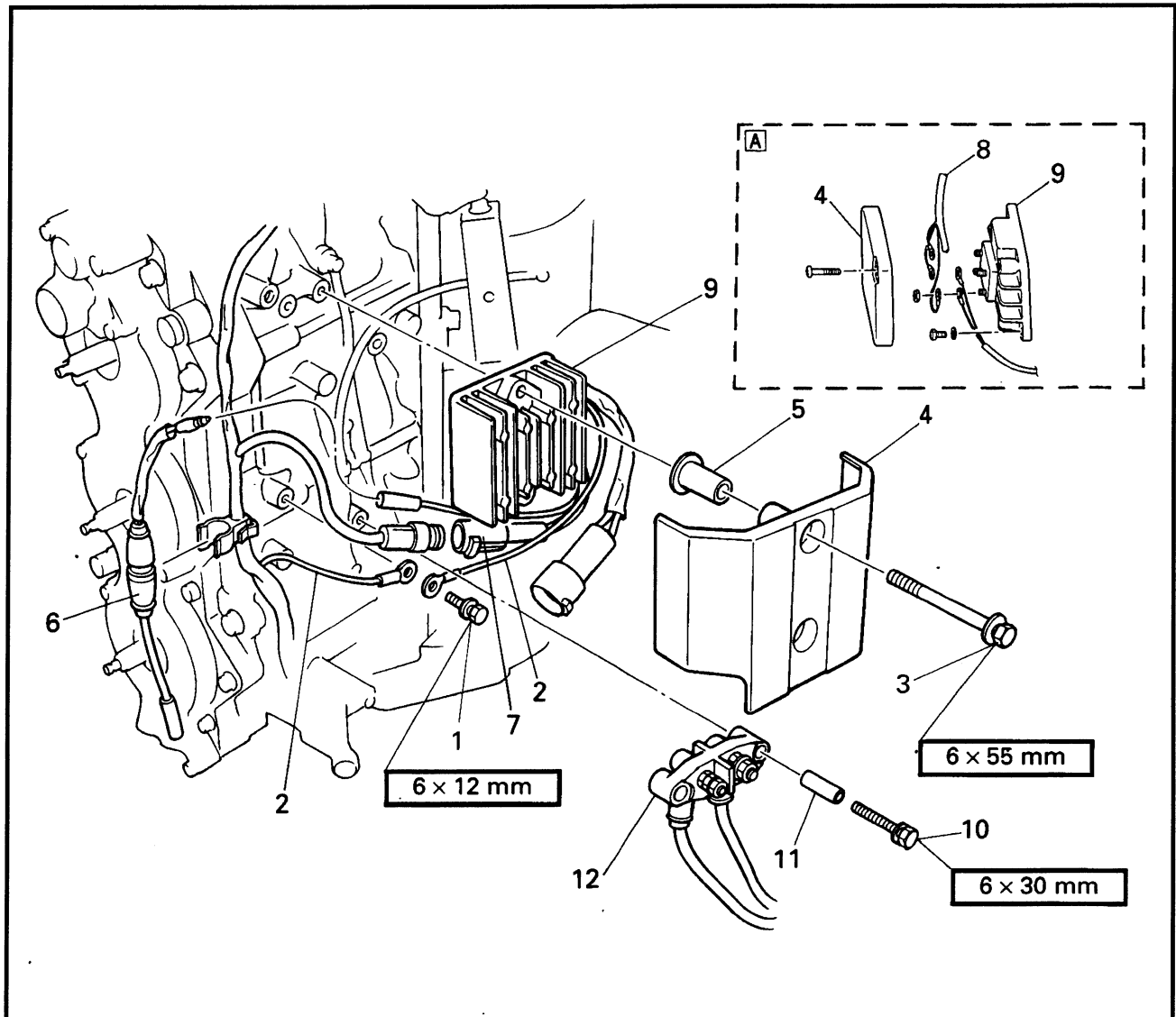
**EXPLODED DIAGRAM**



Step	Procedure/Part name	Q'ty	Service points
8	Wire harness coupler	1	
9	Trim sensor lead/coupler	1/1	
10	Battery negative lead	1	
11	Battery positive lead	1	



**EXPLODED DIAGRAM**



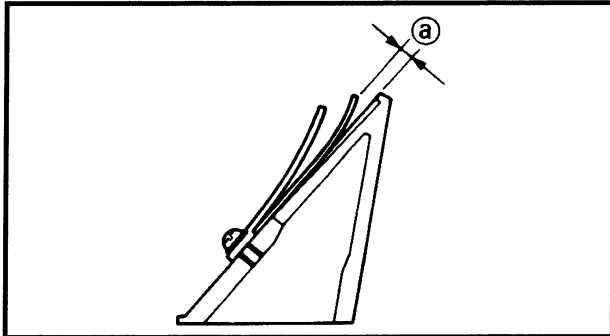
Step	Procedure/Part name	Q'ty	Service points
7	Wire harness coupler	1	Pre-mix models (except for 225D)
8	Wire harness lead	3	
9	Rectifier/regulator	1	
10	Bolt	2	
11	Spacer	2	
12	Battery cable terminal	1	
			Reverse the removal steps for installation.

**A** Pre-mix models (except for 225D)

**SERVICE POINTS****Reed valve inspection**

## 1. Inspect:

- Reed valve  
Cracks/damage → Replace.

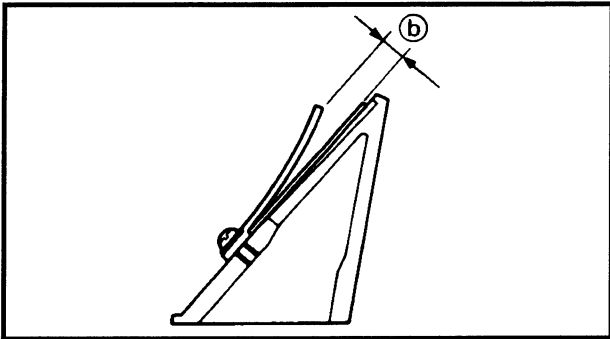


## 2. Measure:

- Reed valve bending (a)  
Out of specification → Replace.



**Reed valve bending limit:**  
**0.2 mm (0.01 in)**



## 3. Measure:

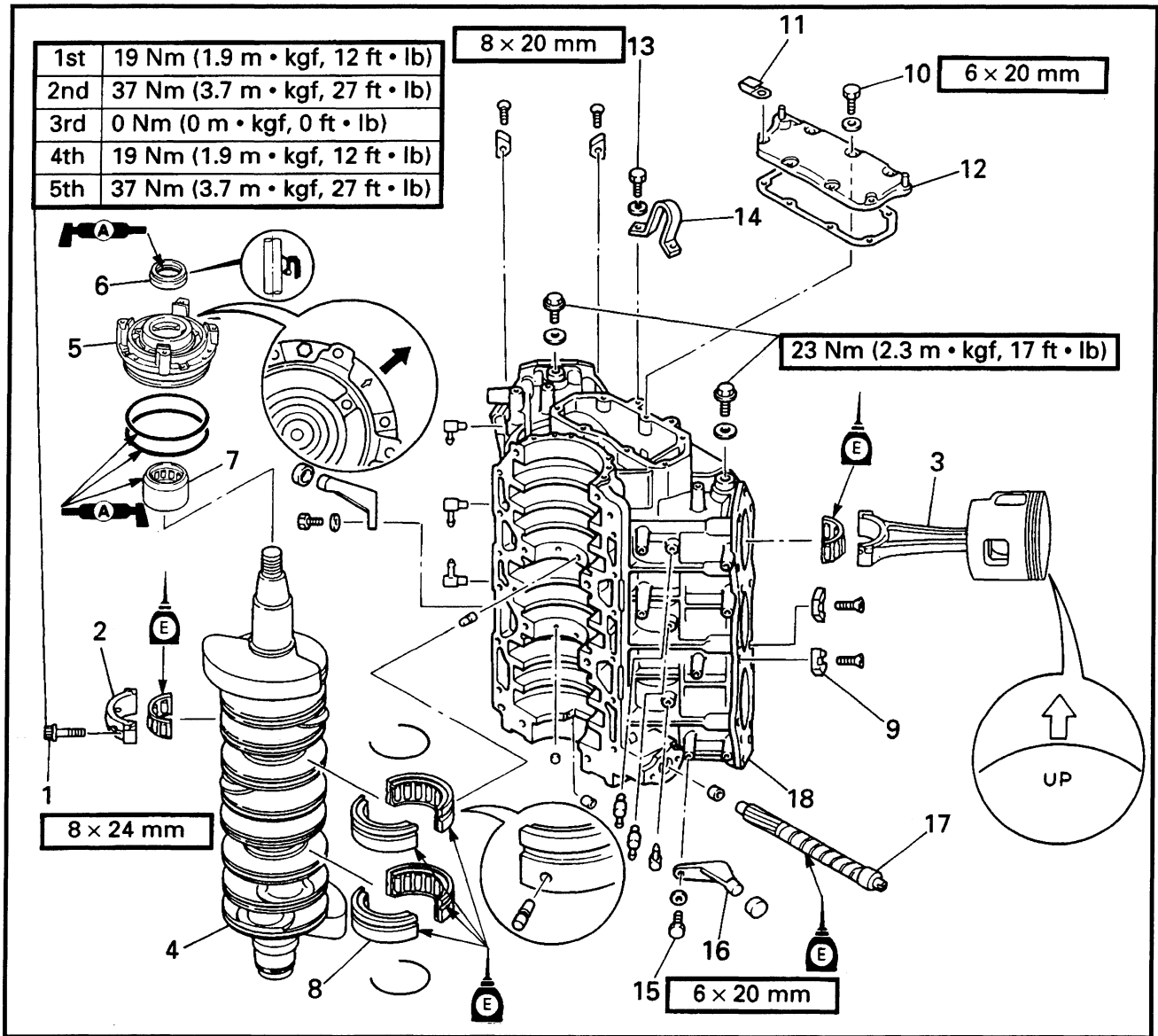
- Reed valve stopper height (b)  
Out of specification → Replace.



**Reed valve stopper height:**  
 **$6.5 \pm 0.3$  mm ( $0.26 \pm 0.01$  in)**



**BODY CYLINDER AND PISTON ASSY.  
EXPLODED DIAGRAM**

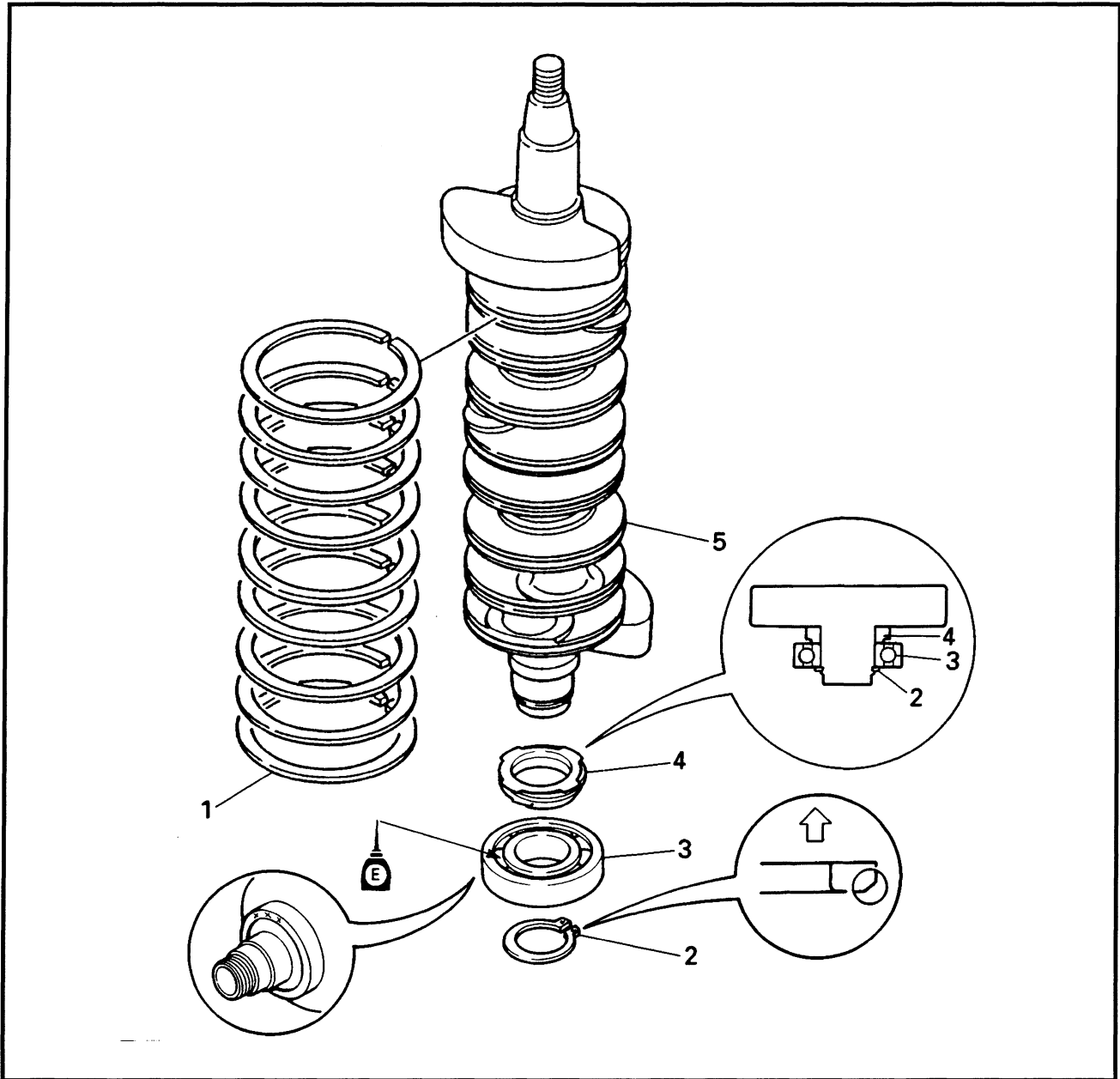


**REMOVAL AND INSTALLATION CHART**

Step	Procedure/Part name	Q'ty	Service points
	<b>BODY CYLINDER DISASSEMBLY</b>		Follow the left "Step" for removal. Refer to "OIL PUMP" in chapter 4. Refer to "CRANKCASE".
	Oil pump		Refer to "SERVICE POINT".
	Crankcase		
1	Connecting rod bolt	12	
2	Connecting rod cap	6	
3	Piston assy.	6	
4	Crankshaft	1	
5	Bearing housing	1	
6	Oil seal	1	
7	Needle bearing	1	
8	Main bearing	2	



**CRANKSHAFT  
EXPLODED DIAGRAM**



**REMOVAL AND INSTALLATION CHART**

Step	Procedure/Part name	Q'ty	Service points
	<b>CRANKSHAFT DISASSEMBLY</b>		
	Piston assy.		Follow the left "Step" for removal. Refer to "BODY CYLINDER AND PISTON ASSY".
1	Crankshaft seal ring	9	
2	Circlip	1	
3	Ball bearing	1	
4	Oil pump drive gear	1	Oil injection models
5	Crankshaft	1	
			Reverse the removal steps for installation.

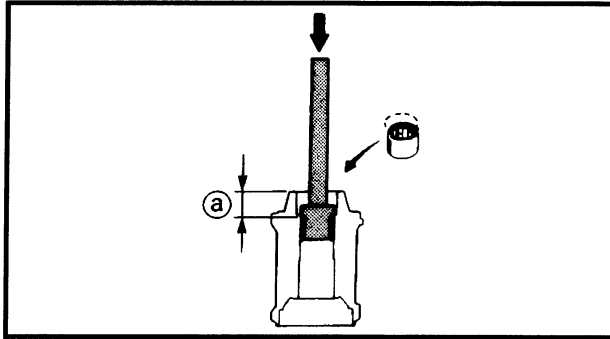


**LOWR**



# PROPELLER SHAFT HOUSING ASSY. (REGULAR ROTATION MODELS)

**E**



## Propeller shaft housing assy. assembly

### 1. Install:

- Needle bearing



**Position ①:**  
 24.75 ~ 25.25 mm  
 (0.974 ~ 0.994 in)



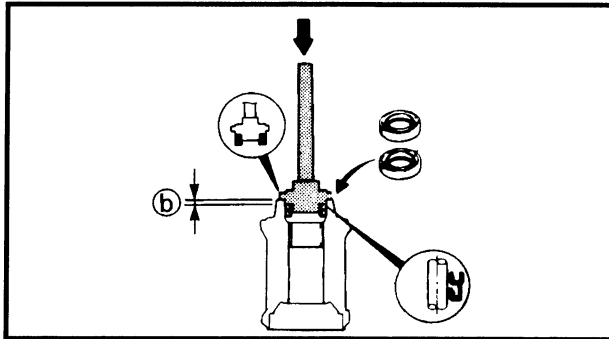
**Needle bearing attachment:**  
 YB-06196/90890-06610

**Driver rod:**  
 YB-06071/90890-06604

**Bearing depth plate:**  
 90890-06603

### 2. Install:

- Oil seal



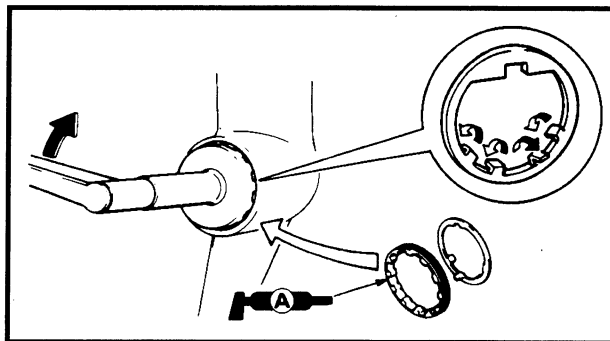
**Position ②:**  
 4.75 ~ 5.25 mm (0.187 ~ 0.207 in)



**Needle bearing attachment:**  
 YB-06195/90890-06633

**Driver rod:**  
 90890-06604

**Bearing depth plate:**  
 90890-06603



## Propeller shaft housing installation

### 1. Install:

- Straight key
- Propeller shaft housing assy.
- Claw washer
- Ring nut



**Ring nut wrench:**  
 YB-34447/90890-06512

**Extension:**  
 90890-06513

### NOTE:

To secure the ring nut, bend one tab into the slot in the ring nut and the other tabs toward the propeller shaft housing assy.

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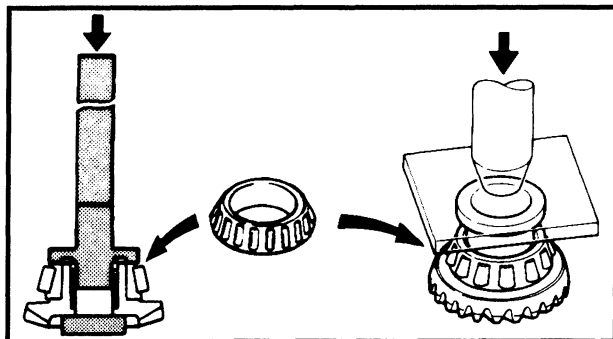
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**FORWARD GEAR ASSY.  
(REGULAR ROTATION MODELS)**

**E**



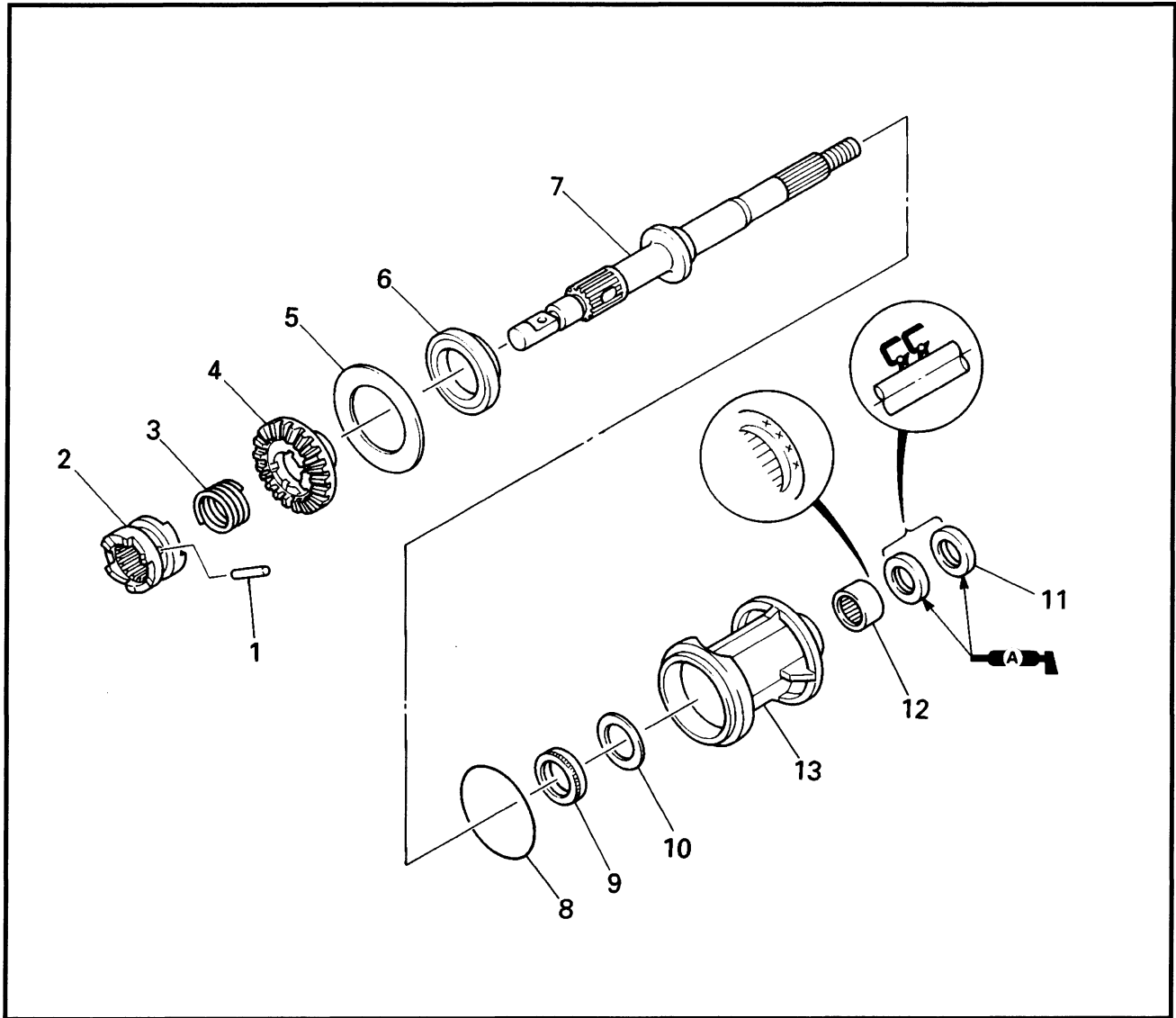
2. Install:

- Tapered roller bearing



**Bearing installer:  
90890-06659  
Driver rod:  
YB-06071**

**EXPLODED DIAGRAM**

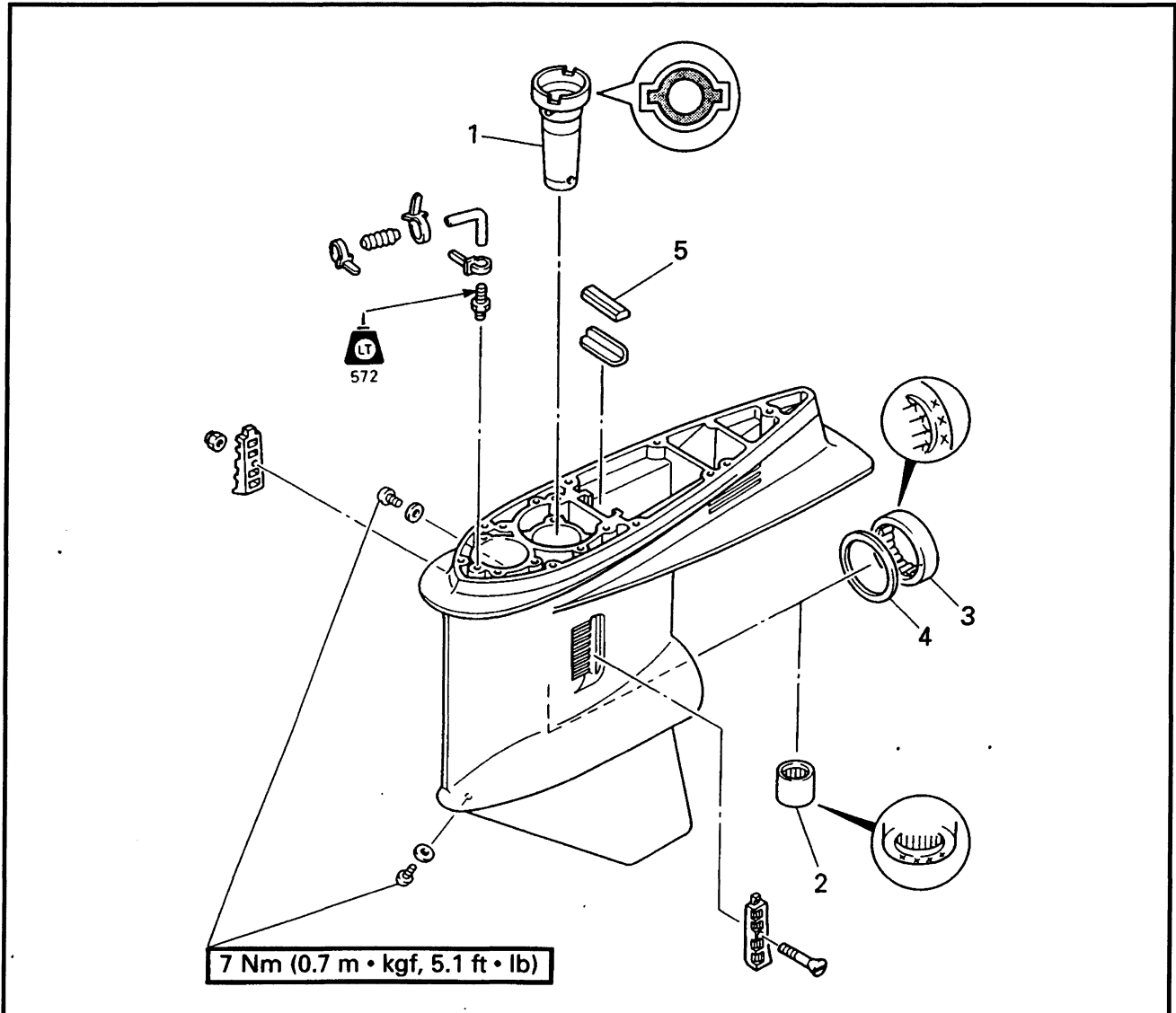


Step	Procedure/Part name	Q'ty	Service points
9	Thrust bearing	1	Reverse the disassembly steps for installation.
10	Propeller shaft shim	*	
11	Oil seal	2	
12	Needle bearing	1	
13	Propeller shaft housing	1	

\*: As required



**LOWER CASE (COUNTER ROTATION MODELS)  
EXPLODED DIAGRAM**



**REMOVAL AND INSTALLATION CHART**

Step	Procedure/Part name	Q'ty	Service points
	<b>LOWER CASE DISASSEMBLY</b>		Follow the left "Step" for removal.
	Reverse gear		
1	Drive shaft sleeve	1	
2	Needle bearing	1	
3	Roller bearing	1	
4	Reverse gear shim	*	
5	Water seal	1	
			Reverse the disassembly steps for installation.

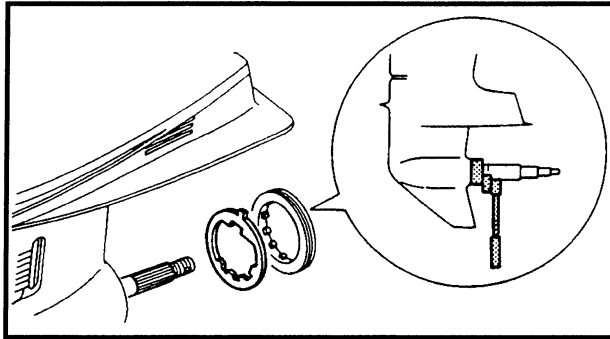
\*: As required

**LOWR**



# OUTER PROPELLER SHAFT HOUSING ASSY. (DUAL PROPELLER MODELS)

**E**



## SERVICE POINTS

### Outer propeller shaft housing assy. removal

1. Straighten:  
Claw washer tabs
2. Remove:
  - Ring nut
  - Claw washer



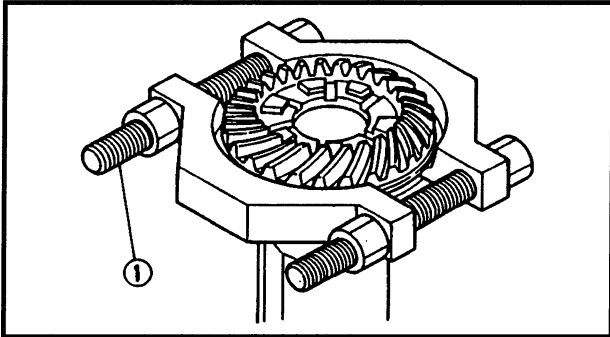
**Ring nut wrench:**  
**YB-42223**

### Outer propeller shaft removal

1. Install:
  - Bearing separator ①

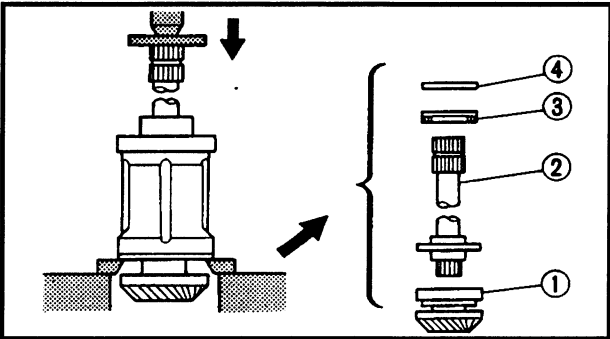


**Bearing separator:**  
**YB-06219/90890-06534**



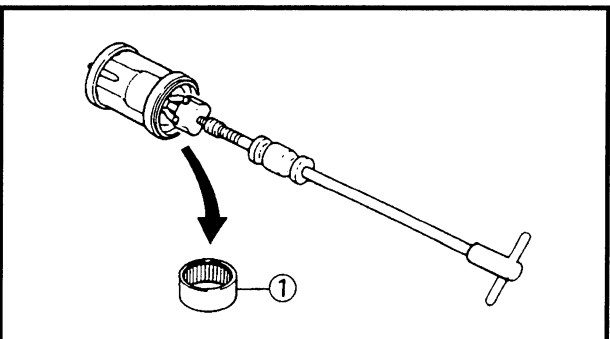
### 2. Remove:

- Rear gear assy. ①
- Outer propeller shaft ②
- Thrust bearing ③
- Outer propeller shaft shim ④



### Outer propeller shaft housing assy. disassembly

1. Remove:
  - Oil seal
  - Needle bearing ①



**Bearing puller:**  
**90890-06535**

**Claw:**  
**90890-06536**

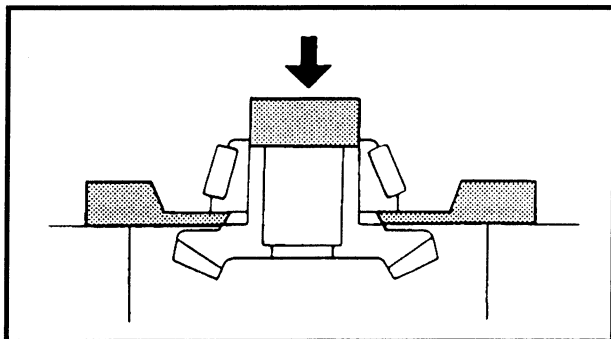
**Slide hammer:**  
**YB-06096**

**LOWR**



# FRONT AND REAR GEAR ASSYS. (DUAL PROPELLER MODELS)

E



## SERVICE POINTS

### Front and rear gear assys. disassembly

1. Remove:
  - Bearing inner race



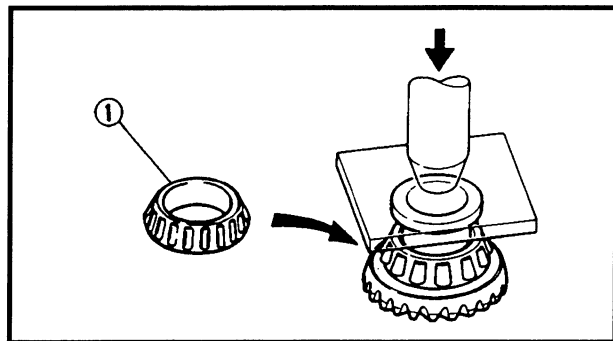
**Bearing separator:**  
YB-06219/90890-06534

### Bearing inspection

1. Inspect:
  - BearingPitting/rumbling → Replace.

### Front and rear gear inspection

1. Inspect:
  - Teeth
  - DogsDamage/wear → Replace.

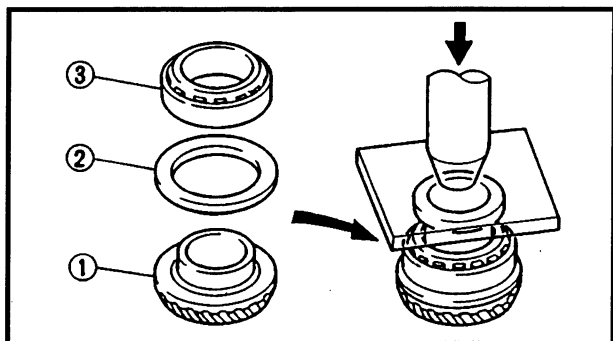


### Front gear assy. assembly

1. Install:
  - Bearing inner race ①



**Bearing installer:**  
YB-06276/90890-06659



### Rear gear assy. assembly

1. Install:
  - Rear gear ①
  - Thrust bearing ②
  - Tapered roller bearing ③



**Bearing installer:**  
YB-06276/90890-06659

**NOTE:**

- "R" is the deviation of the lower case dimension from standard. It is stamped on the trim tab mounting surface of the lower case in 0.01 mm units. If the "R" mark is missing or unreadable, assume an "R" value of "0", and check the backlash when the unit is assembled.
- If the "R" mark is negative (-), then add the "R" value to the measurement.

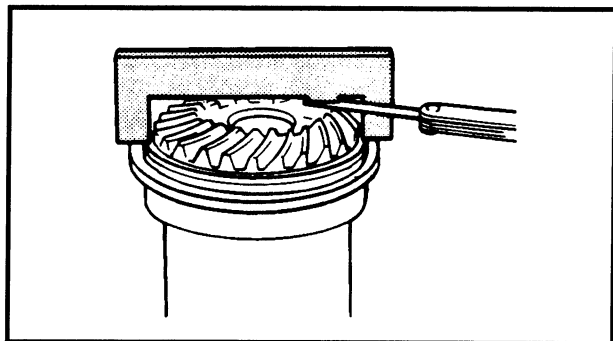
Example: (P150 models)

If "R" is "+5", then

$$\begin{aligned} M &= 1.30 - (+5)/100 \text{ mm} \\ &= 1.30 - 0.05 \text{ mm} \\ &= 1.25 \text{ mm} \end{aligned}$$

If "R" is "-3", then

$$\begin{aligned} M &= 1.30 - (-3)/100 \text{ mm} \\ &= 1.30 + 0.03 \text{ mm} \\ &= 1.33 \text{ mm} \end{aligned}$$

**2. Install:**

- Shimming gauge
- Bearing
- Reverse gear/forward gear
- Shim(s)

**Shimming gauge:**

YB-34468-1 (150 ~ 225 models)

YB-34468-6 (P150 models)

YB-34468-2

(counter rotation models)

**NOTE:**

If the original shim(s) is unavailable, start with a 0.50 mm shim.

**3. Check:**

- Specified measurement (M)
- Out of specification → Adjust.


**Feeler gauge:**

YU-26900-9



2. Adjust:


- Forward gear shim
- Reverse gear shim  
(counter rotation models)

	Gear backlash	Shim thickness
	<b>Forward gear</b> Less than (150 ~ 225 models): 0.25 mm (0.010 in) (P150 models): 0.71 mm (0.028 in) (L150, L200 models): 0.21 mm (0.008 in) <b>Reverse gear</b> Less than (L150, L200 models): 0.97 mm (0.038 in)	<b>Forward gear</b> To be decreased by (150 ~ 225 models): $(0.36 - M) \times 0.54$ (P150 models): $(0.86 - M) \times 0.54$ To be increased by (L150, L200 models): $(0.32 - M) \times 0.54$ <b>Reverse gear</b> To be decreased by (L150, L200 models): $(1.13 - M) \times 0.54$
	<b>Forward gear</b> More than (150 ~ 225 models): 0.46 mm (0.018 in) (P150 models): 1.01 mm (0.040 in) (L150, L200 models): 0.43 mm (0.017 in) <b>Reverse gear</b> More than (L150, L200 models): 1.29 mm (0.051 in)	<b>Forward gear</b> To be increased by (150 ~ 225 models): $(M - 0.36) \times 0.54$ (P150 models): $(M - 0.86) \times 0.54$ To be decreased by (L150, L200 models): $(M - 0.32) \times 0.54$ <b>Reverse gear</b> To be increased by (L150, L200 models): $(M - 1.13) \times 0.54$

**Reverse gear**

1. Measure:

- Reverse gear backlash  
(regular rotation models)

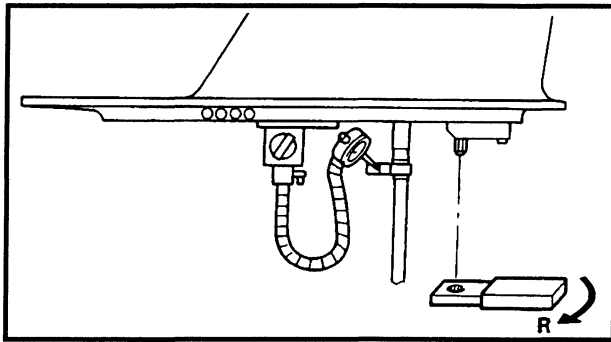
	<b>Backlash:</b> (150 ~ 225 models): 0.74 ~ 1.29 mm (P150 models): 0.79 ~ 1.38 mm
---	--

**Measuring steps:**

- Set the shift shaft in the reverse position.

	<b>Shift rod wrench:</b> YB-06052
---	--------------------------------------

- Load the reverse gear by installing the propeller without the collar and then tighten the propeller nut.



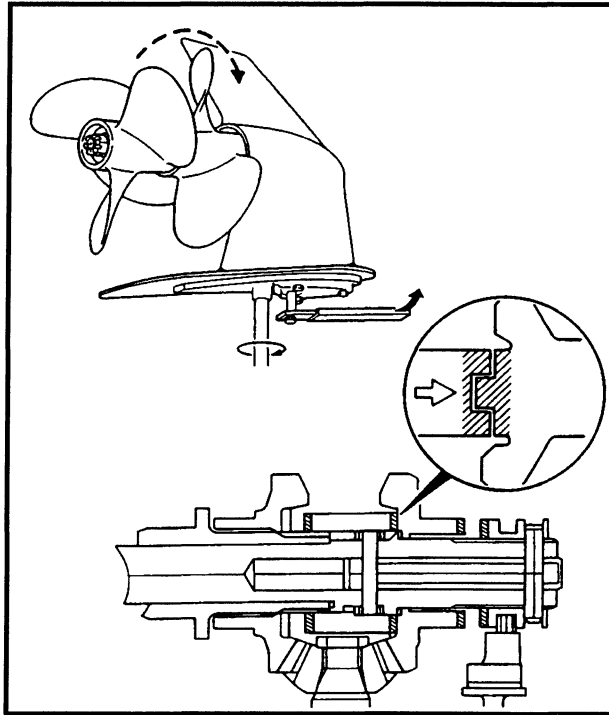
- Attach the shift rod wrench onto the shift rod.



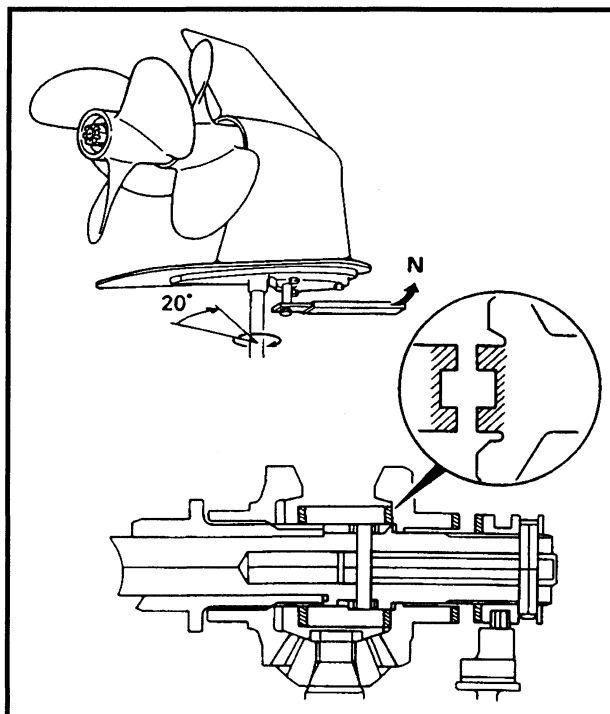
**Shift rod wrench:**  
YB-06052

- Shift into reverse.
- Turn the drive shaft clockwise until the clutch dog is fully engaged.

**NOTE:** Shift into neutral and slightly turn the front propeller clockwise, then shift into reverse and check if engagement is difficult.

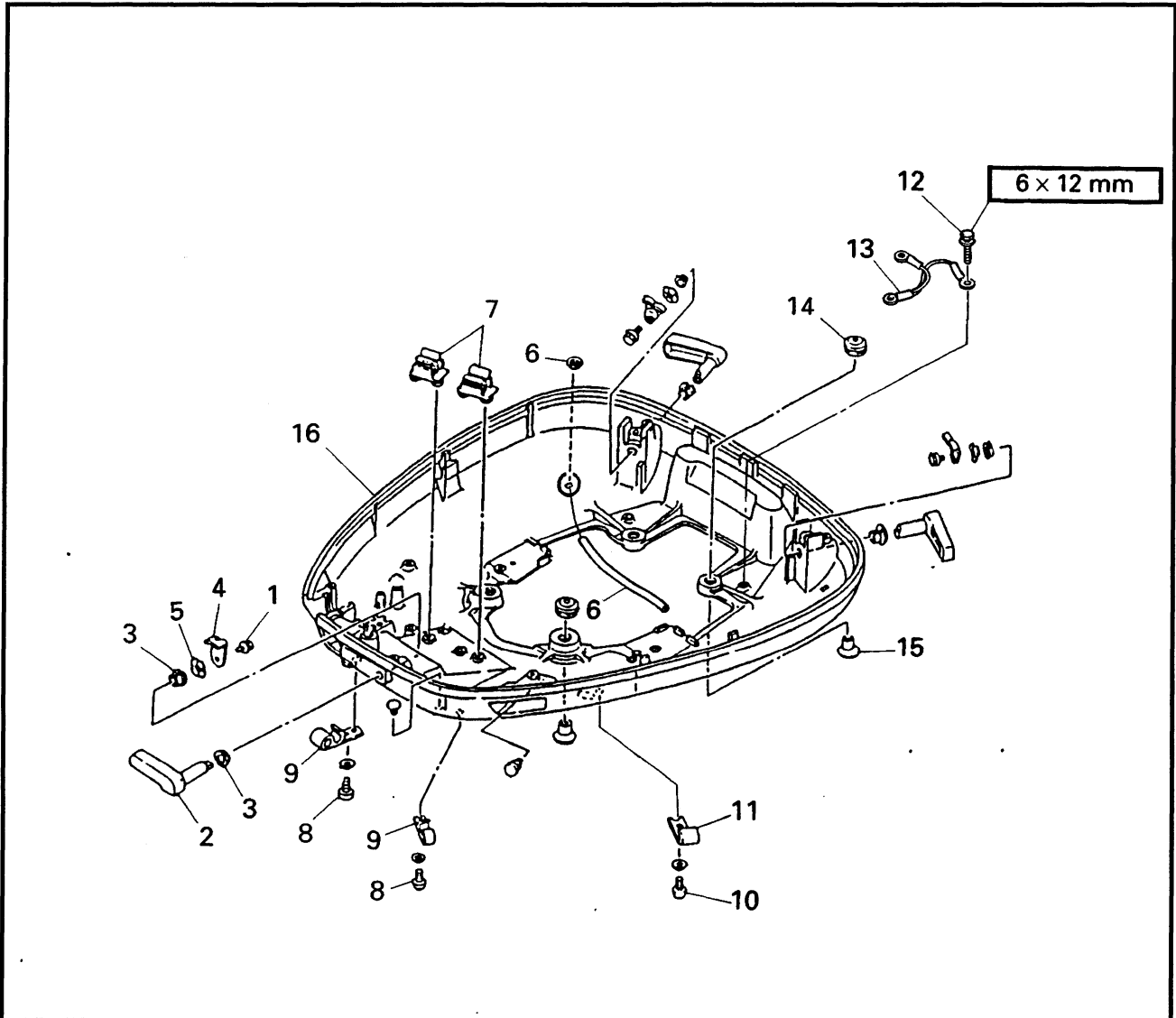


- Shift into neutral.
- Turn the drive shaft clockwise approximately 20° more.





EXPLODED DIAGRAM (For (L)150A, 175A, (L)200A models)

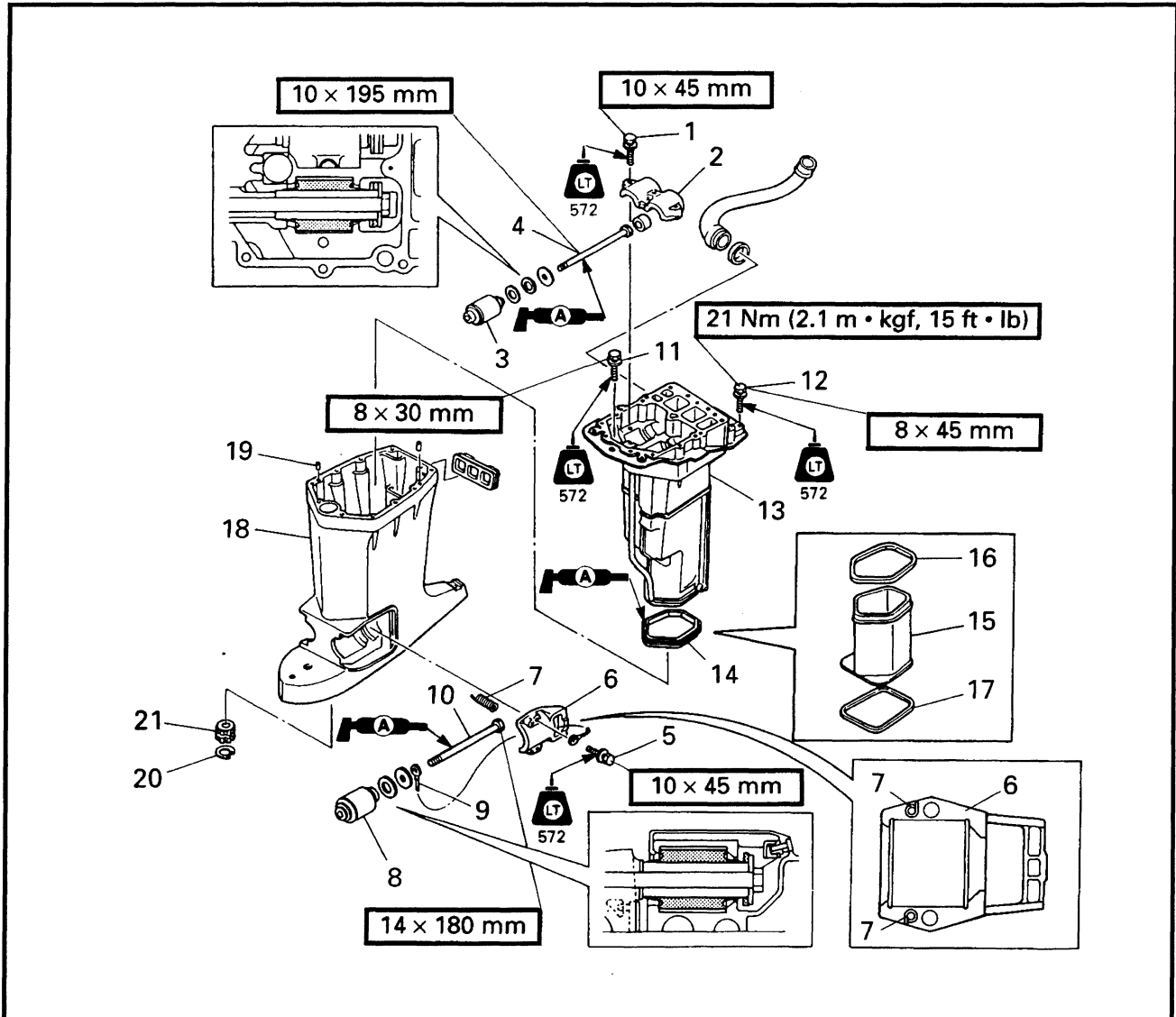


REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	<b>BOTTOM COWLING DISASSEMBLY</b>		Follow the left "Step" for removal.
1	Bolt	3	
2	Clamp lever	3	
3	Bushing	6	
4	Hook	3	
5	Wave washer	3	
6	Pilot water hose	1	
7	Cable holder	2	
8	Bolt	2	



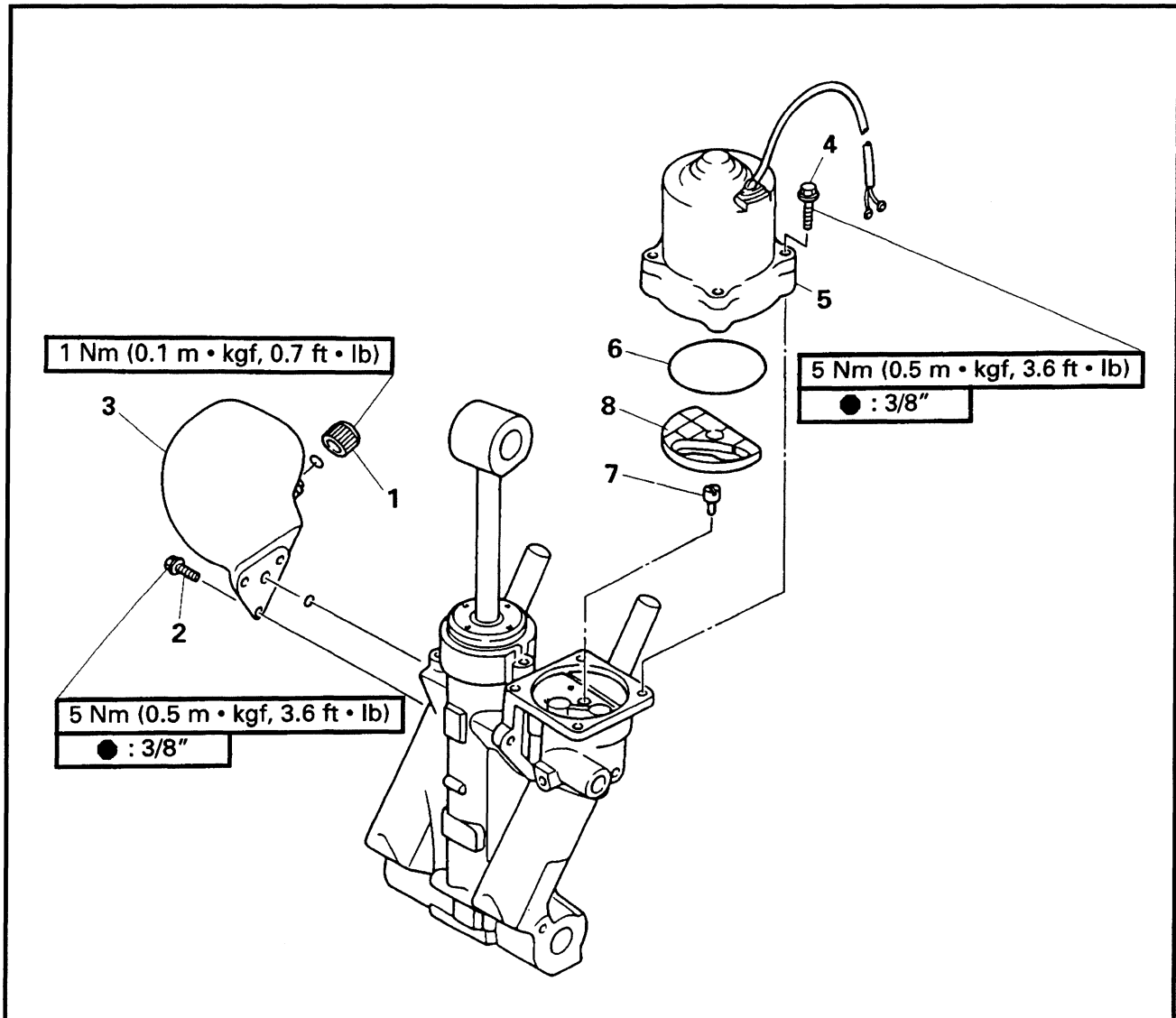
EXPLODED DIAGRAM



Step	Procedure/Part name	Q'ty	Service points
19	Dowel pin	2	
20	Circlip	1	X transom models
21	Bushing	1	X transom models
			Reverse the disassembly steps for installation.

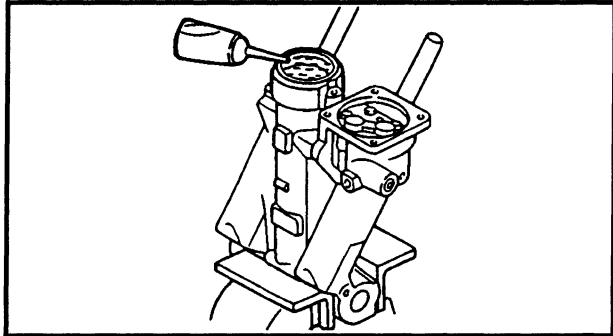


## RESERVOIR TANK AND PTT MOTOR EXPLODED DIAGRAM



### REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	<b>RESERVOIR TANK AND PTT MOTOR REMOVAL</b>		Follow the left "Step" for removal.
	PTT unit		Refer to "POWER TRIM AND TILT (PTT) UNIT".
1	Reservoir plug	1	
2	Bolt	3	
3	Reservoir tank	1	
4	Bolt	4	
5	PTT motor	1	
6	O-ring	1	
7	Drive pin	1	
8	Filter	1	
			Reverse the removal steps for installation.

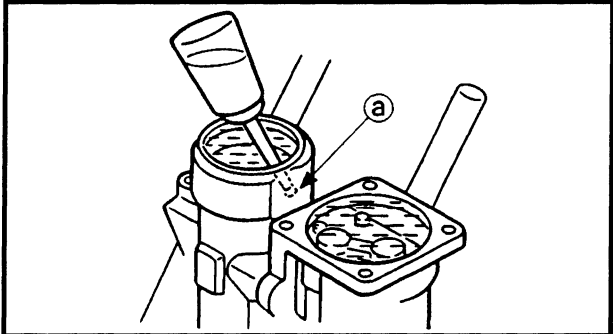


**Tilt piston installation**

**NOTE:** \_\_\_\_\_  
Hold the unit in a soft-jawed vise.

1. Fill:
  - Tilt cylinder

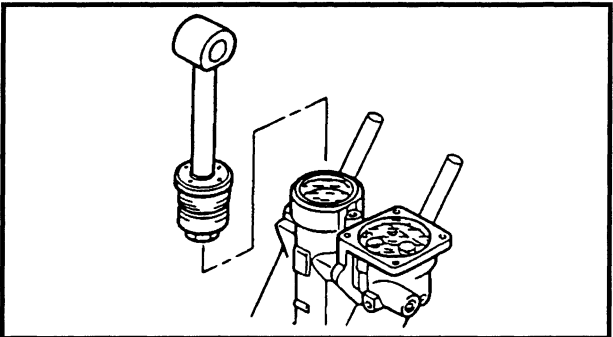
	<b>Recommended hydraulic fluid: ATF Dexron II</b>
---	---



2. Fill:
  - Gear pump

	<b>Recommended hydraulic fluid: ATF Dexron II</b>
---	---

**NOTE:** \_\_\_\_\_  
Add fluid through the hole (a) until the level is at the top of the gear pump.

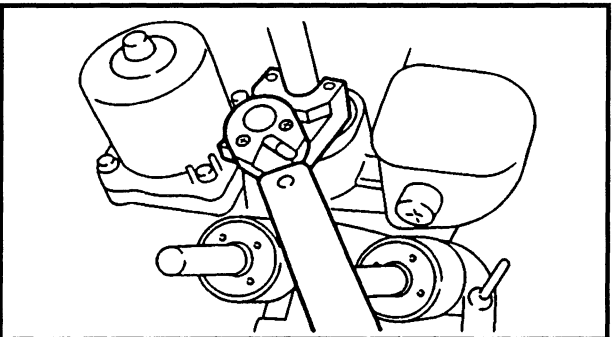


3. Install:
  - Tilt piston assy.

**NOTE:** \_\_\_\_\_  
Fully extend the tilt rod and install it onto the cylinder.


**⚠ WARNING** \_\_\_\_\_


**While installing the tilt piston, do not push it down; otherwise, fluid may spurt out.**

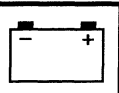


**Tilt piston end screw installation**

1. Tighten:
  - Tilt piston end screw

	<b>Piston end screw wrench: YB-06548, 90890-06548</b>
---	---

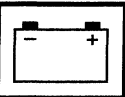
	<b>Tilt piston end screw: 120 Nm (12 m • kgf, 85 ft • lb)</b>
---	---



## CHAPTER 8

### ELECTRICAL SYSTEMS


<b>ELECTRICAL COMPONENTS</b> .....	8-1
OIL INJECTION AND 225 MODELS .....	8-1
(Port side view) .....	8-1
(Starboard side view) .....	8-2
(Rear view) .....	8-3
PRE-MIX MODELS .....	8-4
(Port side view) .....	8-4
(Starboard side view) .....	8-5
(Rear view) .....	8-6
 <b>ELECTRICAL ANALYSIS</b> .....	 8-7
INSPECTION .....	8-7
Digital circuit tester .....	8-7
Peak voltage measurement.....	8-7
Peak voltage adaptor .....	8-7
Test harness (for pulser and charge coils) .....	8-8
Low resistance measurement .....	8-9
MICROCOMPUTER DIAGNOSIS	
(OIL INJECTION AND 225 MODELS) .....	8-9
Diagnosis code indication .....	8-9
Diagnosis procedure.....	8-10
 <b>IGNITION SYSTEM</b> .....	 8-11
WIRING DIAGRAM (OIL INJECTION AND 225 MODELS).....	8-11
WIRING DIAGRAM (PRE-MIX MODELS).....	8-12
IGNITION SPARK GAP.....	8-13
IGNITION SYSTEM PEAK VOLTAGE.....	8-14
SPARK PLUG.....	8-16
SPARK PLUG CAP.....	8-17
 <b>IGNITION CONTROL SYSTEM</b> .....	 8-18
WIRING DIAGRAM (OIL INJECTION AND 225 MODELS).....	8-18
WIRING DIAGRAM (PRE-MIX MODELS).....	8-19
CRANK POSITION SENSOR PEAK VOLTAGE .....	8-20
THERMO SWITCH.....	8-20
THERMO SENSOR .....	8-21
OIL LEVEL SENSOR .....	8-21
EMERGENCY SWITCH.....	8-22
MICROCOMPUTER (CDI unit) .....	8-22
 <b>STARTING SYSTEM</b> .....	 8-23
WIRING DIAGRAM.....	8-23
BATTERY .....	8-24
FUSE .....	8-24
WIRE HARNESS .....	8-24



**Low resistance measurement**

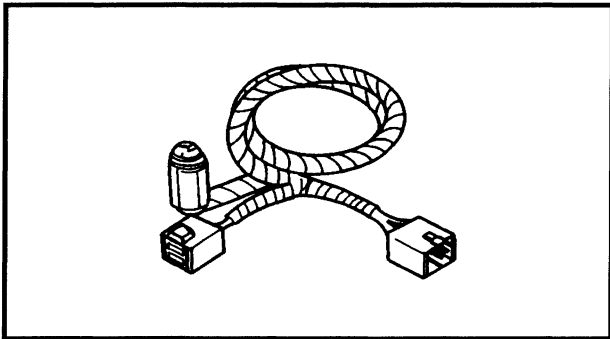
When measuring the resistance of 10 Ω or less with the digital tester, the correct measurement cannot be obtained because of the tester's internal resistance.

To obtain the correct value, subtract the internal resistance from the displayed measurement.

	<p><b>Correct value:</b>  <b>Displayed measurement –</b>  <b>internal resistance</b></p>
---	--

**NOTE:**

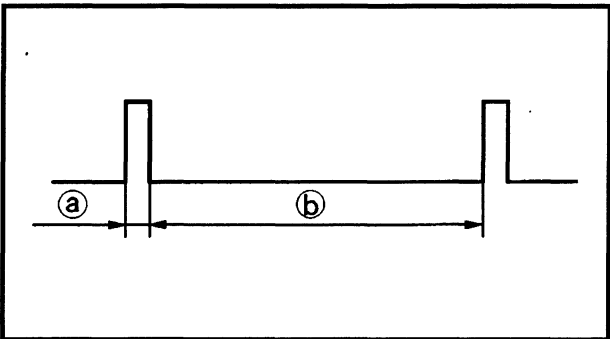
The internal resistance of the tester can be obtained by connecting both of its terminals.



**MICROCOMPUTER DIAGNOSIS  
(OIL INJECTION AND 225 MODELS)**

**NOTE:**

Connect the diagnostic flash, sensor and its processor to determine if there are any defects.



	<p><b>Diagnostic flash:</b>  <b>YB-06765/90890-06765</b></p>
---	--

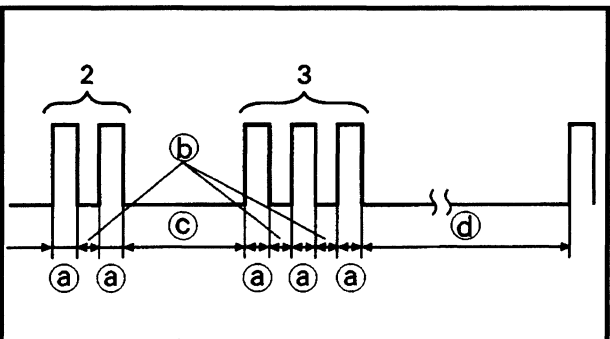
**Diagnosis code indication**

1. Normal condition

(No defective part or irregular processing is found)

Single flash is given every 3 seconds.

- Ⓐ : Light on, 0.3 sec.
- Ⓑ : Light off, 3 sec.



2. Trouble code indication

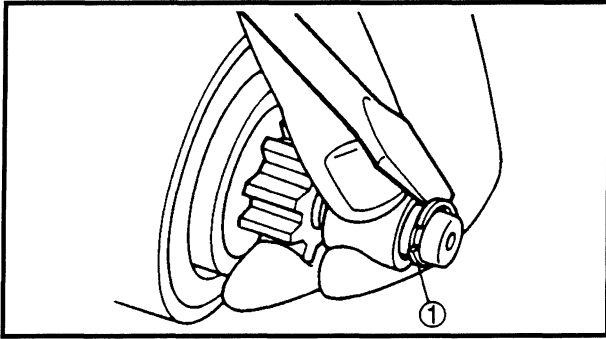
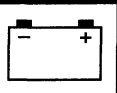
Flashes two times in one cycle.

The first flash indicates the ten digit and the next flash indicates the one digit

(Example: The illustration indicates code number 23.)

- Ⓐ : Light on, 0.3 sec.
- Ⓑ : Light off, 0.3 sec.
- Ⓒ : Light off, 1.3 sec.
- Ⓓ : Light off, 3 sec.





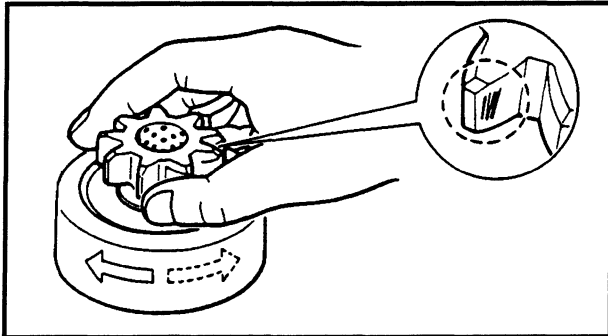
## SERVICE POINTS

### Pinion removal

1. Remove:
  - Clip ①

### NOTE:

Remove the clip with a thin screwdriver.

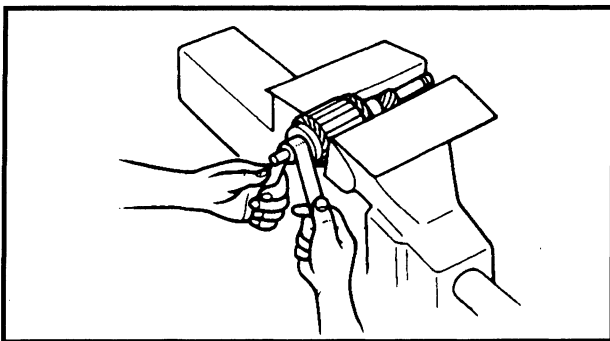


### Pinion inspection

1. Inspect:
  - Pinion teeth  
Damage/wear → Replace.
2. Check:
  - Clutch movement  
Incorrect → Replace.

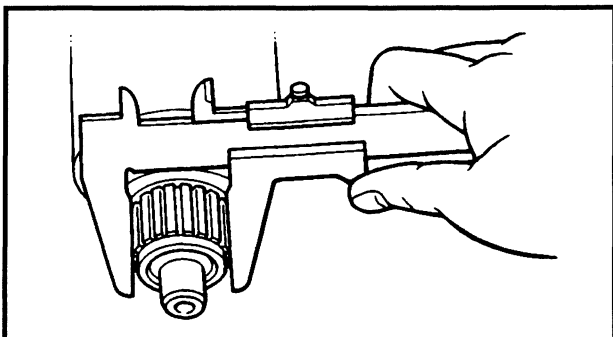
### NOTE:

Rotate the pinion clockwise to check that it moves freely. Also, rotate the pinion counterclockwise to make sure that it locks.



### Armature inspection

1. Inspect:
  - Commutator  
Dirt → Clean with 600 grit sandpaper.



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



**Commutator diameter limit:**  
31.0 mm (1.22 in)

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