A50000-0

HOW TO USE THIS MANUAL

MANUAL FORMAT

This manual provides the mechanic with descriptions of the operations of disassembly, repair, assembly, adjustment and inspection, each of which is presented in a sequential, step-by-step procedure.

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	50GETO	60FEHTO	60FED	60FEDO	60FET	60FETO	70BEDO	70BETO
USA and Canada name	—	P60TH	C60ER	—	C60TR	—	—	70TR
Indication	50GETO	60FEHTO	60FED	60FEDO	60FET	60FETO	70BEDO	70BETO
Model name	75CET	75CETO	75CEHTO	80AETO	90AEHD	90AED	90AET	90AETO
USA and Canada name	C75TR	75TR	P75TH	—	—	—	C90TR	90TR B90TR
Indication	75CET	75CETO	75CEHTO	80AETO	90AEHD	90AED	90AET	90AETO

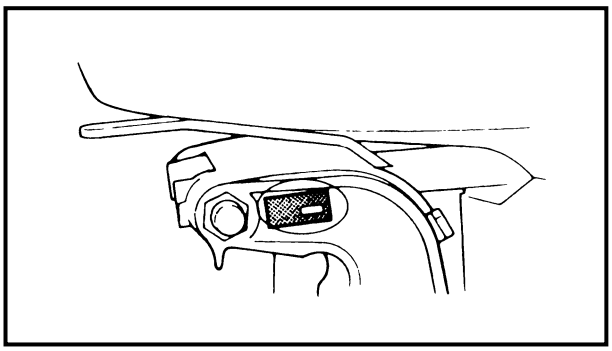
THE ILLUSTRATIONS

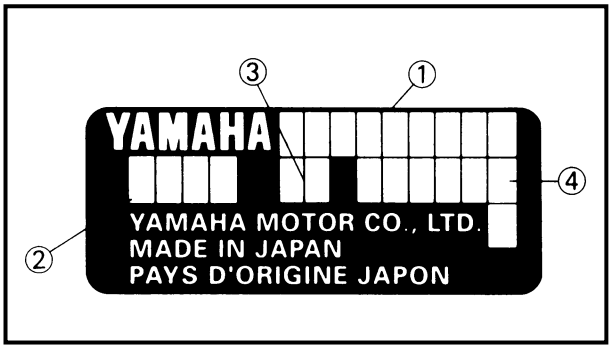
Some illustrations in this manual may differ from the model you have. This is because the procedure described may relate to several models, though only one may be illustrated. (The name of the model described will be mentioned in the description.)

To help you identify components and understand the correct procedures of disassembly and assembly, exploded diagrams are provided. Steps in the procedures are numbered thus: 1), 2), 3). Parts shown in the illustrations are identified thus: ①, ②, ③.

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.





A60000-1*

IDENTIFICATION

SERIAL NUMBER

The serial number of the outboard motor is stamped on a plate attached to the port side of the clamp bracket.

① Serial number

NOTE:

For USA model:

As an anti-theft measure, a special label on which the outboard motor serial number is stamped is bonded to the port side of the clamp bracket. The label is specially treated so that peeling it off causes cracks across the serial number.

① Model name
② Approved model No.
③ Transom height
④ Serial number

STARTING SERIAL NUMBERS

The starting serial number blocks are as follows:

Model			Approved model No.	Serial number	Model			Approved model No.	Serial number
World-wide	USA	Canada			World-wide	USA	Canada		
50GETO	—	—	62F	L: 400805 ~	70BEDO	—	—	6H3	L: 402029 ~
60FEHTO	P60TH	P60TH	6H2	L: 551924 ~	70BETO	70TR	70TR		L: 491824 ~
				X: 750186 ~					X: 731262 ~
60FED	—	C60ER		S: 001118 ~	75CET	C75TR	C75TR	6H0	L: 001251 ~
				L: 305624 ~	75CETO	—	75TR		L: 951540 ~
60FEDO	—	—		S: 100850 ~	75CEHTO	P75TH	—		L: 900371 ~
				L: 407212 ~	80AETO	—	—		L: 457543 ~
60FET	C60TR	C60TR		S: 050474 ~					X: 851331 ~
				L: 357665 ~	90AEHD	—	—	6H1	L: 320132 ~
				X: 710231 ~	90AED	—	—		L: 401108 ~
60FETO	—	—		S: 150756 ~	90AET	C90TR	C90TR		L: 354053 ~
				L: 472180 ~	90AETO	90TR B90TR	90TR		L: 498690 ~
				X: 732000 ~					X: 856313 ~

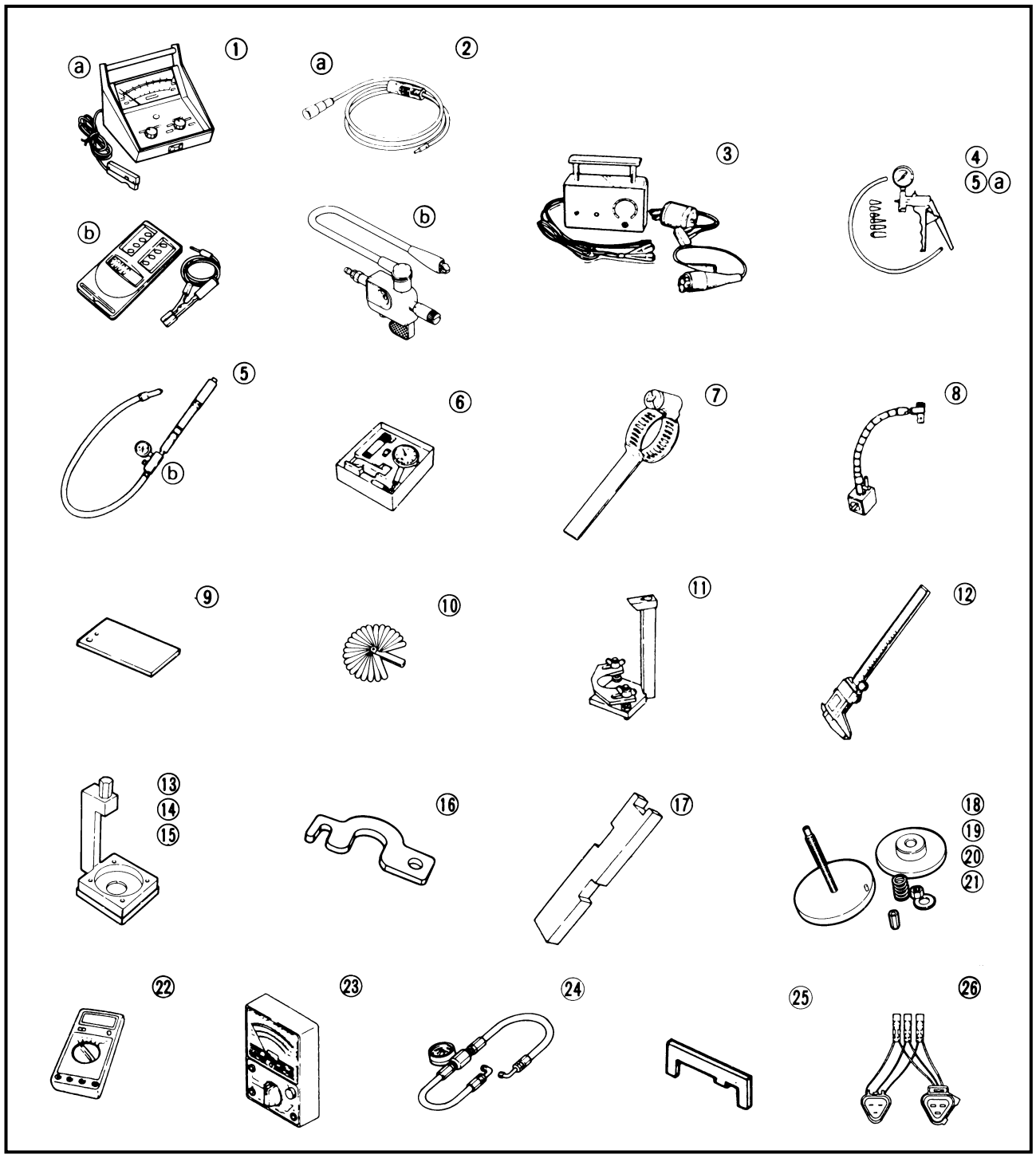
A80000-0*

SPECIAL TOOLS

The use of 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 USA and Canada, use part numbers starting with "YB-", "YM-", "YU-" or "YW-".
- For others, use part numbers starting with "90890-".



C20000-0*

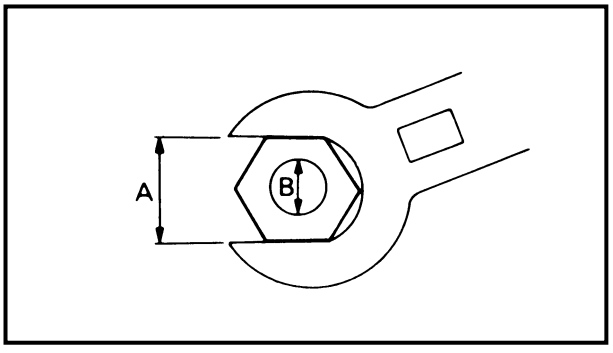
GENERAL SPECIFICATION

		Unit	Model		
			50 hp	60 hp	70 hp
Model			50GETO	*1: P60TH/ 60FEHTO *2: C60ER/60FED *3: 60FEDO *4: C60TR/60FET *5: 60FETO	*3: 70BEDO *5: 70TR/70BETO
Approved model No.			62F	6H2	6H3
Overall Length		mm (in)	698 (27.5)	713 (28.1)	
			—	1,330 (52.4)*1	—
Overall width		mm (in)	364 (14.3)		
Overall height	S	mm (in)	—	1,252 (49.3)*2,3,4	—
	L	mm (in)	1,351 (53.2)	1,374 (54.1)	
	X	mm (in)	—	1,501 (59.1)*1,4,5	
Boat transom height	S	mm (in)	—	381 (15.0)*2,3,4,5	—
	L	mm (in)	508 (20.0)		
	X	mm (in)	—	635 (25.0)*1,4,5	
O/M transom height	S	mm (in)	—	400 (15.7)*2,3,4,5	—
	L	mm (in)	520 (20.5)	521 (20.5)	
	X	mm (in)	—	648 (25.5)*1,4,5	
Weight (Al.)	S	kg (lb)	—	94 (207)*2 95.5 (211)*3 104 (229)*4 103.5 (228)*5	—
	L	kg (lb)	102 (225)	97.5 (215)*3 105.5 (233)*5	
				112 (247)*1 96 (212)*2 106 (234)*4	—
	X	kg (lb)	—	115 (254)*1 109 (240)*4	108.5 (239)*5
Weight (SUS.)	S	kg (lb)	—	97.5 (215)*3	—
			—	105.5 (233)*5	—
	L	kg (lb)	—	99.5 (219)*3	
			—	107.5 (237)*5	
	X	kg (lb)	—	110.5 (244)*5	
Full throttle speed range		r/min	4,500 ~ 5,500		5,000 ~ 6,000
Output (ISO)		kW (hp) @ r/min	36.8 (50) @ 5,000	44.1 (60) @ 5,000	51.5 (70) @ 5,500
Maximum fuel consumption		L (US gal, lmp gal)/h @ r/min	22 (5.81, 4.84) @ 5,500	23 (6.08, 5.06) @ 5,500	26 (6.87, 5.72) @ 5,500
Type			2 stroke - L		
Cylinders			3		
Total displacement		cm^3 (cu in)	849 (51.8)		
Bore × Stroke		mm (in)	72.0 × 69.5 (2.83 × 2.74)		
Compression ratio			6.33	6.10	
Compression pressure		kPa (kg/cm^2)	853 (8.53)		
Carburetor number			3		
Intake system			Reed valve		

TIGHTENING TORQUE/ GENERAL TORQUE SPECIFICATIONS

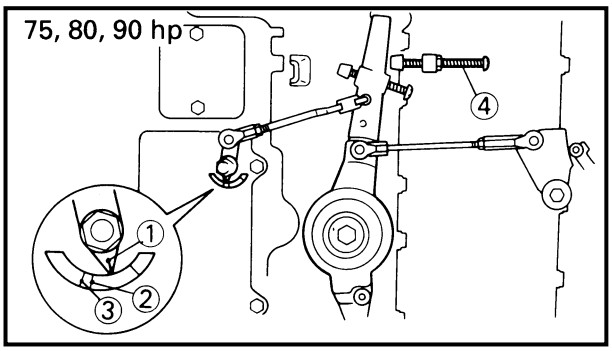
Parts to be tightened	Part name	Thread size	Q'ty		Tightening torque			Remarks
			50, 60, 70 hp	75, 80, 90 hp	Nm	m • kg	ft • lb	
POWER TRIM AND TILT:								
Tilt cylinder end screw	Screw	—	1	—	80	8.0	58	6H308
				1	90	9.0	65	6H1-15, 62F-02
Trim cylinder end screw	Screw	—	2	—	70	7.0	50	6H308
				2	160	16.0	115	6H1-15, 62F-02
Fluid-level plug	Bolt	—	1	—	3	0.3	2.2	6H308
				1	7	0.7	5.1	6H1-15, 62F-02
Lock nut	Nut	—	6	—	10	1.0	7.2	6H308
				6	15	1.5	11	6H1-15, 62F-02
Valve spring mounting	Screw	—	2	2	4	0.4	2.9	6H1-15, 62F-02
Valve lock screw	Screw	—	1	—	13	1.3	9.4	6H308
				1	4	0.4	2.9	6H1-15, 62F-02
Gear pump mounting	Bolt	M6	3	—	5	0.5	3.6	6H308
				3	4	0.4	2.9	6H1-15, 62F-02
Manual valve	Screw	—	1	1	3	0.3	2.2	
Main valve	Screw	—	2	—	10	1.0	7.2	6H308
				2	11	1.1	8.0	6H1-15, 62F-02

Nut (A)	Bolt (B)	General torque specifications		
		Nm	m•kg	ft•lb
8 mm	M5	5.0	0.5	3.6
10 mm	M6	8.0	0.8	5.8
12 mm	M8	18	1.8	13
14 mm	M10	36	3.6	25
17 mm	M12	43	4.3	31

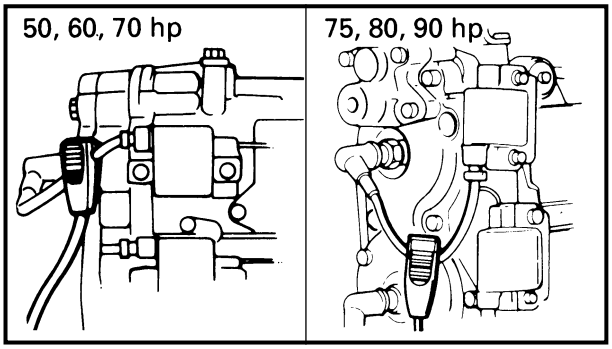


GENERAL TORQUE SPECIFICATIONS

This chart specifies the torque for tightening standard fastners with standard fastners 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 crisscross fashion and in progressive stages a until the specified torque is reached.



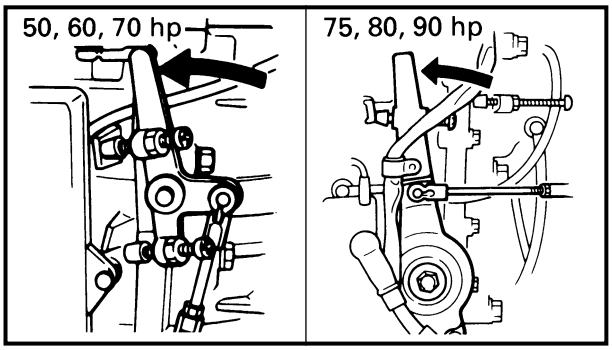
① Timing indicator
② Full-advance indication (75, 80 hp)
③ Full-advance indication (90 hp)
④ Full-advance adjusting screw



IGNITION TIMING ADJUSTMENT

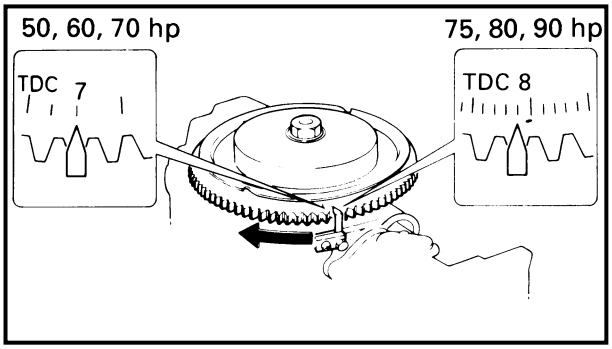
CAUTION:

When checking ignition timing using a timing light, be sure to replace the propeller with the specified test propeller, and make tests with the machine placed in a test tank.



NOTE:

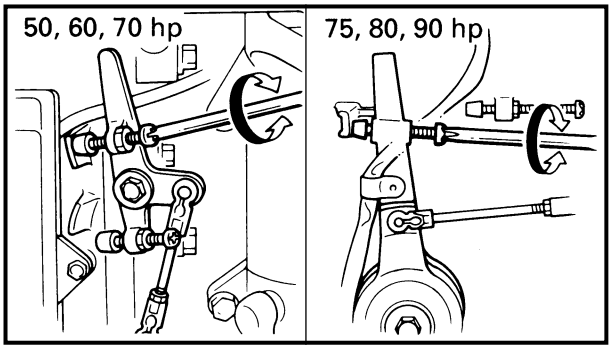
Before adjusting, be sure to warm up the engine.



1. Attach the timing light and tachometer to the No. 1 cylinder high tension code.
2. While keeping the stopper in contact with the full-retard adjusting screw, measure the full-retard ignition timing with the timing light.
   If the timing is out of specification, adjust it by turning the full-retard adjusting screw.

NOTE:

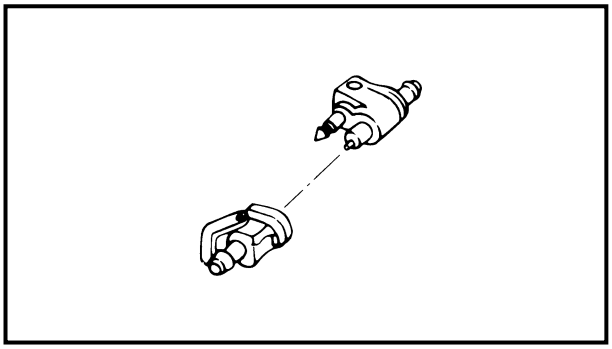
When measuring the full-retard ignition timing, keep the specified engine speed.



Full-retard side engine speed:
800 ± 50 rpm

Full-retard side ignition timing:
50, 60, 70 hp: 7 ± 1° ATDC
75, 80, 90 hp: 8 ± 1° ATDC

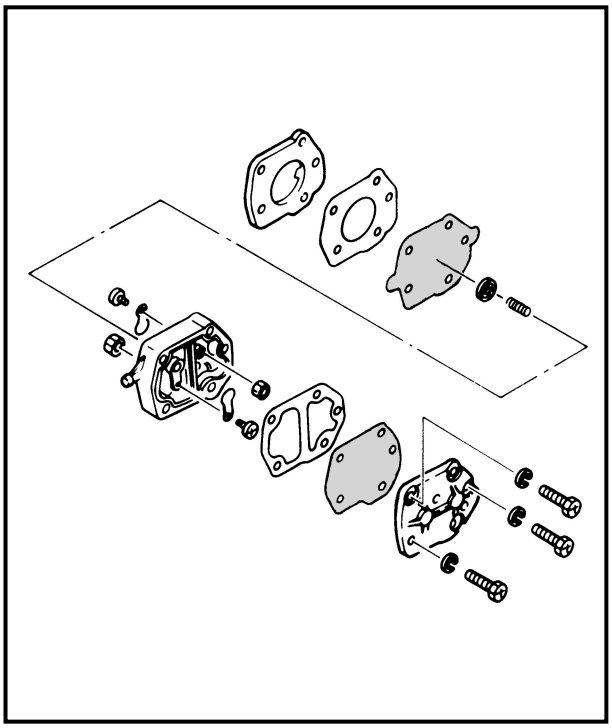
3. Using a soft brush and solvent, clean the filter element thoroughly. Inspect the filter element for breakage or distortion and replace if required.
4. Using a soft brush and solvent, clean the filter-cup thoroughly. Inspect the filter-cup for cracks or thread damage and replace if required.
5. Place the O-ring on the filter body, install the element and screw in the filter cup.



E21050-0

FUEL JOINTS

1. Inspect the fuel joints for leaks and cracks and replace as required.



E21060-0

FUEL PUMP

1. Using a screwdriver, disassemble the fuel pump.
2. Visually inspect the pump body for cracks and replace if required.
3. Inspect the valves for cracks or distortion and replace if required.
4. Inspect the diaphragm for sign of damage, perforation or stretching and replace if required.
5. Assemble the fuel pump with new gaskets.

E22000-0

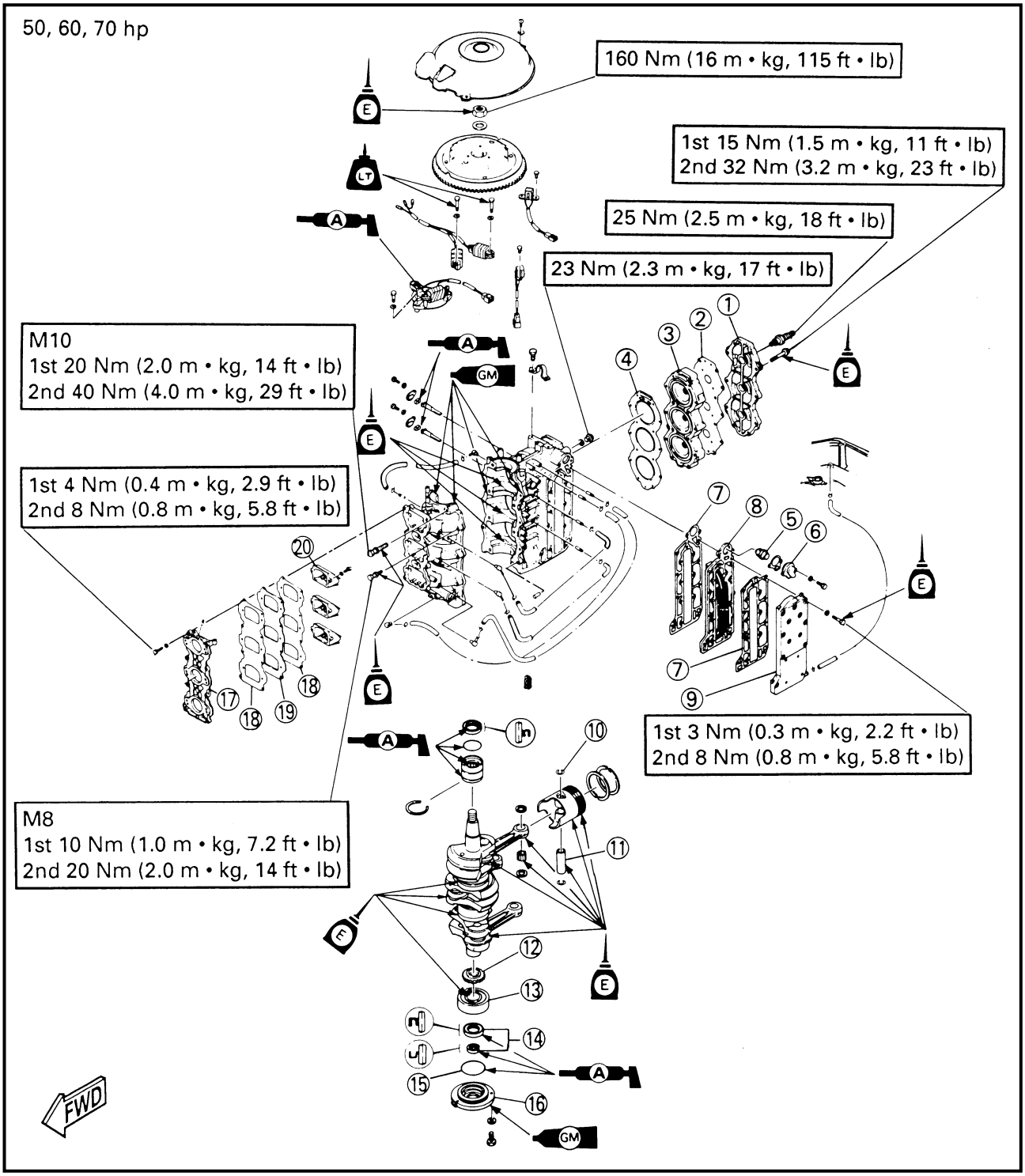
INSTALLATION

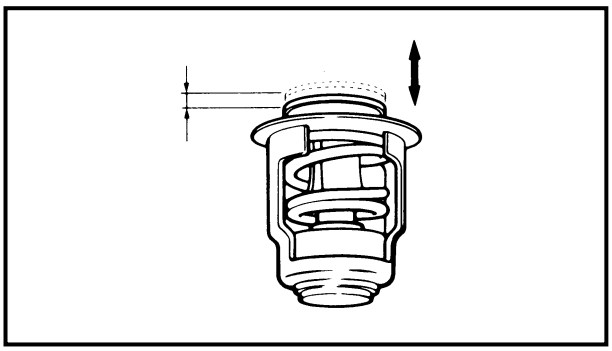
Referring to the diagram, install the fuel system.
Note the following points:
When connecting the fuel hoses to the fuel pump and fuel filter, follow the direction of flow indicated by the embossed arrows.
Place the clips in position, connect the hoses, and tighten the clips. Check for leaks.

G20000-0

EXPLODED DIAGRAM

① Cylinder head cover
② Head cover gasket
③ Cylinder head
④ Cylinder head gasket
⑤ Thermostat
⑥ Thermostat cover
⑦ Exhaust cover gasket
⑧ Exhaust inner cover
⑨ Exhaust outer cover
⑩ Piston pin clip
⑪ Piston pin
⑫ Drive gear
⑬ Bearing
⑭ Oil seal
⑮ O-ring
⑯ Oil seal housing
⑰ Intake manifold
⑱ Valve seat packing
⑲ Reed valve plate
⑳ Reed valve assembly





G64500-0*

THERMOSTAT

CLEANING

1. Using a soft brush and water, remove all traces of salt, dirt or corrosion.

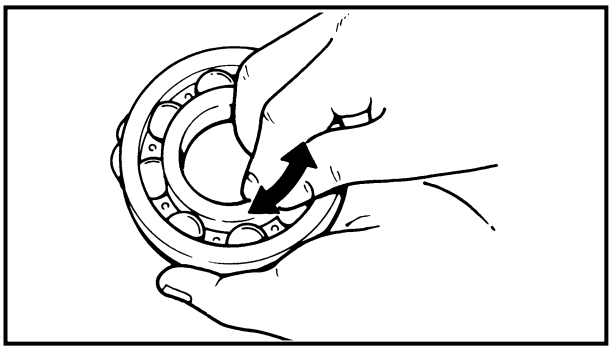
INSPECTION

1. Visually inspect the thermostat for damage. If the thermostat is damaged or if it opens when cold, replace it.

2. Immerse the thermostat in water and heat the water gradually. Check the valve opening temperature and the valve lift.

	Water temperature	Valve lift
	Below 48 ~ 52˚C (118 ~ 126˚F)	0 mm
	Above 60˚C (140˚F)	Minimum 3 mm (0.12 in)

If the valve opening and/or temperature and valve-lift are not within the specifications, replace the thermostat.



G65000-0*

CRANK MAIN BEARING

CLEANING

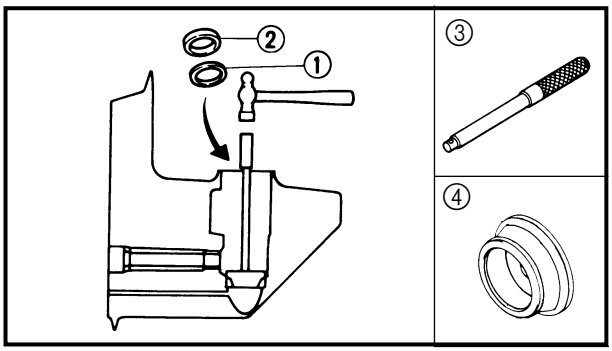
1. Using a soft brush and solvent, thoroughly clean the bearing. Dry it with air, and sparingly lubricate it with 2-stroke outboard motor oil.

NOTE:

Do not spin bearing with air blower. This can damage the bearing. Also, take care not to scratch the bearing balls when cleaning.

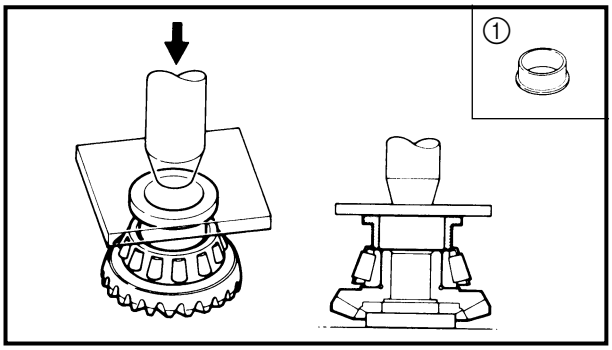
INSPECTION

1. Hold the bearing inner race and slowly turn the bearing outer race with your fingers. If any rough spots are felt, replace the bearing.



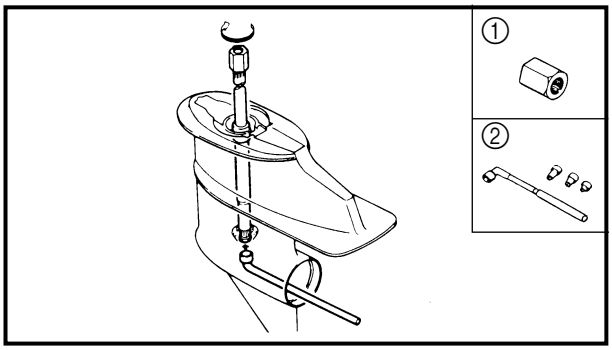
4. Place the forward-gear shim-pack ① in position and install the forward-gear outer race ② on the shim-pack.

Driver rod:
YB-6071/90890-06605 ..... ③
Bearing outer race attachment:
50 hp: 90890-06622 ..... ④
60 ~ 90 hp:
YB-6276B/90890-06621 ..... ④



5. Install the bearing inner race to the forward-gear, then place the forward-gear complete onto the outer race.

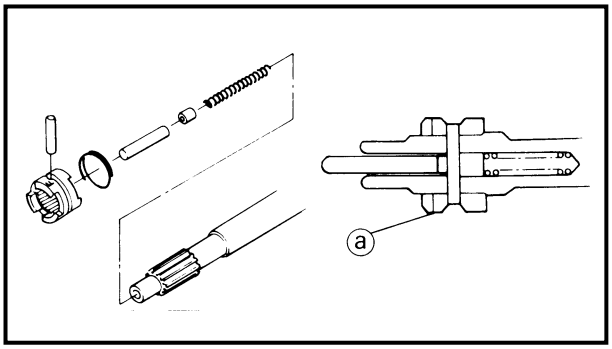
Bearing inner race attachment:
50 hp: 90890-06640 ..... ①
60 ~ 90 hp: 90890-06662 ..... ①



6. Place the drive-shaft in the gear case and insert it into the pinion.
Tighten the pinion nut to the specified torque.

Pinion nut:
50 hp:
75 Nm (7.5 m • kg, 54 ft • lb)
60 ~ 90 hp:
95 Nm (9.5 m • kg, 69 ft • lb)

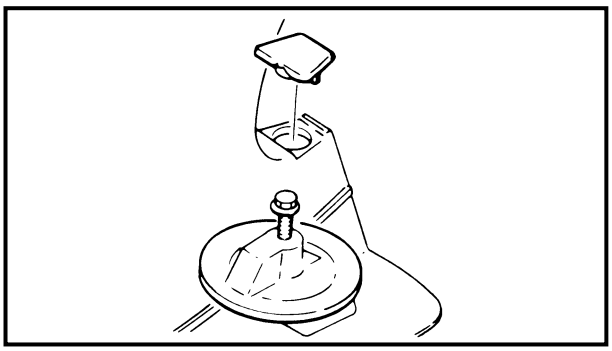
Drive shaft holder:
50, 60, 70 hp:
YB-6049/90890-06518 ..... ①
75, 80, 90 hp:
YB-6151/90890-06519 ..... ①
Pinion nut holder:
90890-06505..... ②



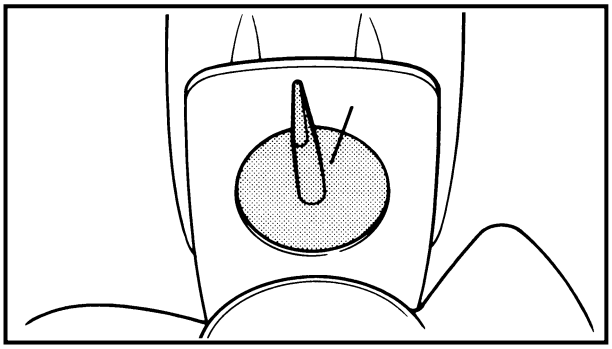
7. Assemble the propeller shaft.
(For 50GETO, C60ER, C60TR/60FET (Oceania), C75TR, 90AEHD, 90AED, C90TR/90AET)

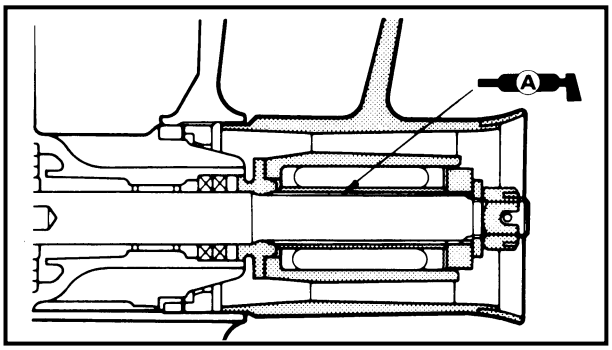
1) Referring to the illustration.

ⓐ "F" mark side



4. Install the trim tab on the gear case. Be sure to align the marks put on both of them when they were removed. Place the cap over the bolt hole.

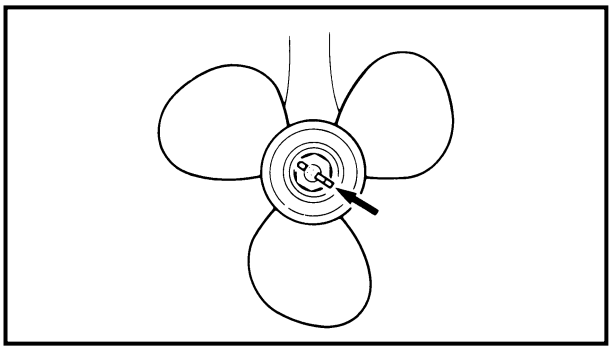




5. Install the spacers, propeller, washer, and propeller nut over the propeller shaft.

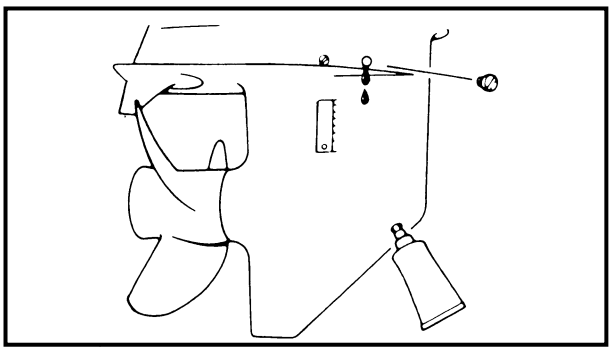
	Propeller nut: **35 Nm (3.5 m • kg, 25 ft • lb)**

6. Align the recess in the propeller nut with the hole in the propeller shaft and insert the cotter pin into the hole. Be sure to bend the cotter pin ends.



NOTE:

If the propeller nut does not align with the propeller shaft hole when the nut is tightened to specification, turn it in further so that they align.

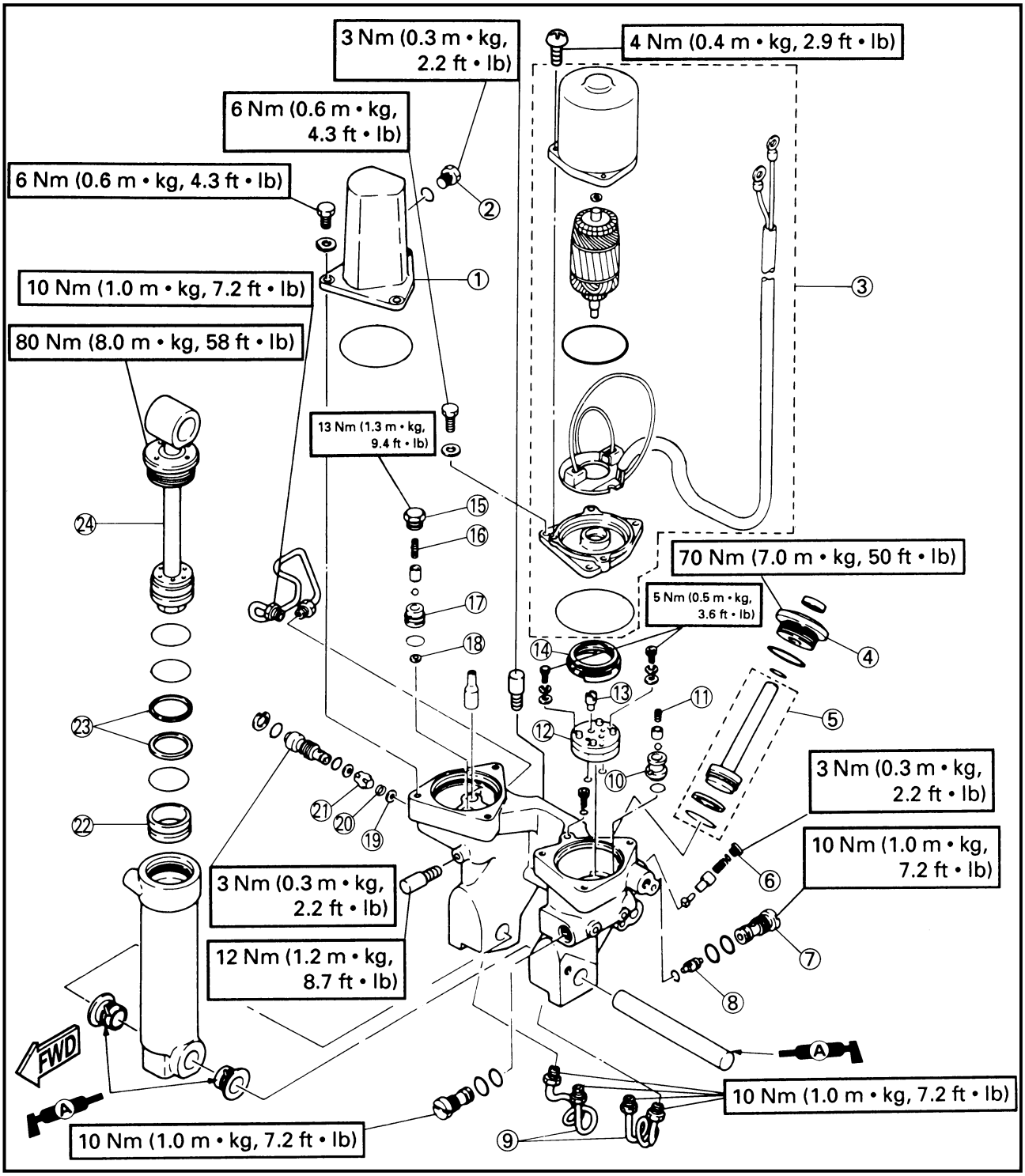


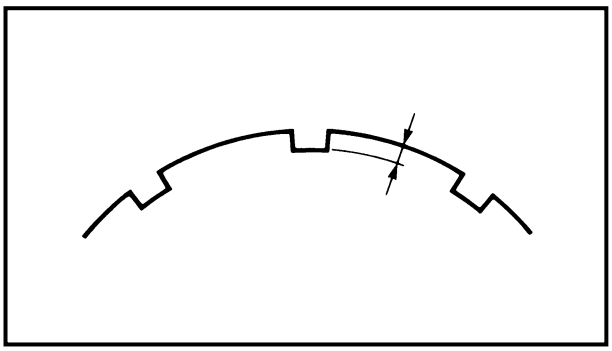
7. Fill with fresh gear oil through the oil plug-hole until oil flows out through the level-plug hole, then secure the plugs in these two holes. (Secure the check plug first.)

K51000-0

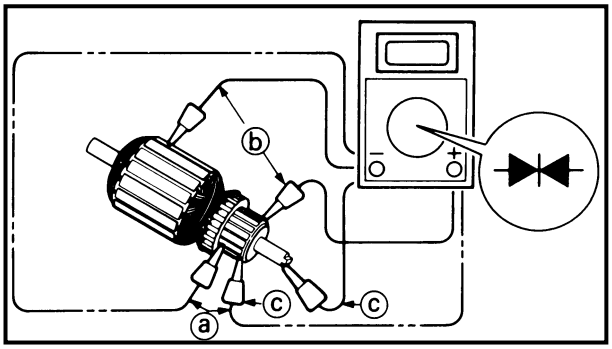
EXPLODED DIAGRAM (Short transom [6H308])

① Reservoir body
② Reservoir plug
③ Motor assembly
④ Trim cylinder end screw
⑤ Trim piston assembly
⑥ Valve seat screw
⑦ Main valve assembly
⑧ Shuttle piston
⑨ Pipe
⑩ Down relief valve seat
⑪ Down relief spring
⑫ Gear pump assembly
⑬ Shaft connector
⑭ Filter 2
⑮ Up relief valve lock screw
⑯ Up relief spring
⑰ Up relief valve seat
⑱ Filter 1
⑲ Manual valve seat
⑳ Manual release spring
㉑ Adapter
㉒ Free piston
㉓ Back-up ring 2
㉔ Tilt cylinder assembly



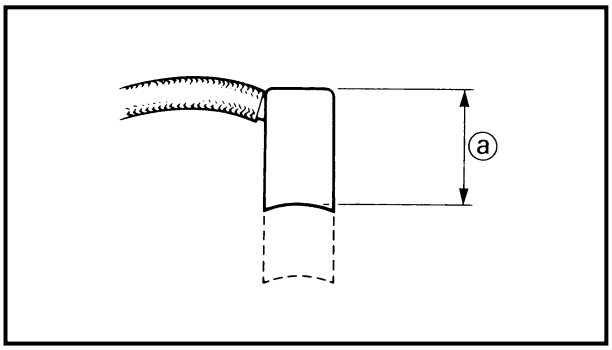


3. Scrape between the segments with a hack-saw blade and then carefully remove all particles of metal and mica with compressed air.



4. Check for continuity or discontinuity of the armature coil. If it is out of specification, replace the armature.

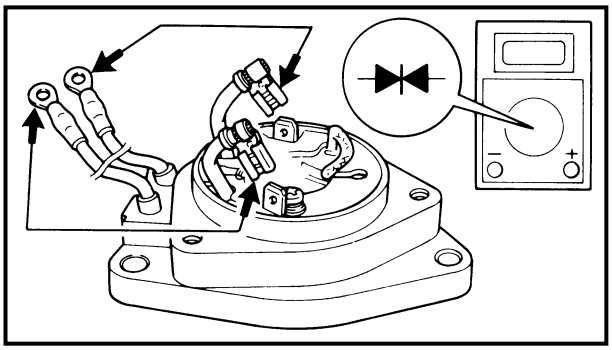
Armature coil continuity/ discontinuity	
Commutator segments ⓐ	**Continuity**
Segment-Laminations ⓑ	**Discontinuity**
Segment-Shaft ⓒ	**Discontinuity**



BRUSH

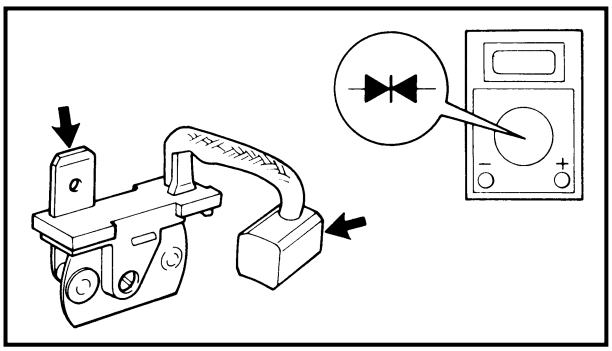
1. Measure the brushes for wear.

Brush, size ⓐ:
Standard: 9.8 mm (0.39 in)
Minimum: 4.8 mm (0.19 in)



BASE ASSEMBLY

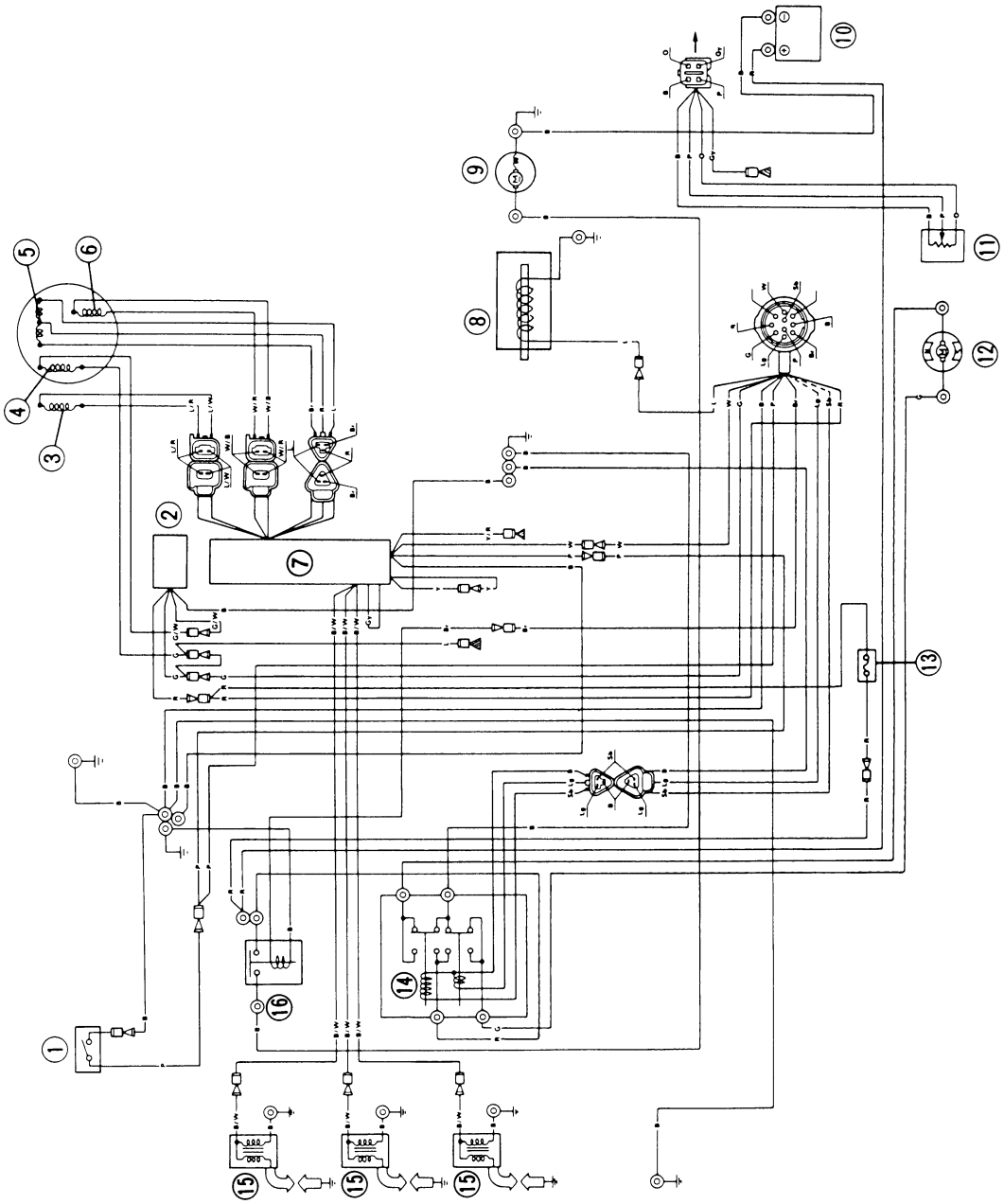
1. Inspect the base assembly for cracks or burns and replace the base assembly if such are found.
2. Check for continuity between the connector and lead wire. If there is discontinuity, replace the base assembly.



CIRCUIT BREAKER

1. Check for continuity between the brush and the terminal. If there is discontinuity, replace the circuit breaker.

C75TR



① Thermo switch
② Rectifier/regulator
③ Crank position sensor
④ Lighting coil
⑤ Charge coil
⑥ Pulser coil
⑦ CDI unit
⑧ Fuel enrichment valve
⑨ Starter motor
⑩ Battery
⑪ Trim sensor
⑫ Power trim and tilt motor
⑬ Fuse
⑭ Power trim and tilt relay
⑮ Ignition coil
⑯ Starter relay

B.....Black
Br.....Brown
G.....Green
Gy.....Gray
L.....Blue
Lg.....Light green
O.....Orange
P.....Pink
R.....Red
Sb.....Sky blue
W.....White
Y.....Yellow