

YAMAHA

Marine

Outboards

**50G, 60F, 70B,
75C, 90A**

**SERVICE
MANUAL**

6H2-28197-Z9-11

A50001-1-4

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 Lower Unit
- ⑦ Bracket Unit
- ⑧ Electrical Systems
- ⑨ Trouble Analysis

Symbols ⑩ to ⑯ indicates specific data:

- ⑩ Special service tool
- ⑪ Specified liquid
- ⑫ Specified grease
- ⑬ Specified engine speed
- ⑭ Specified torque
- ⑮ Specified measurement
- ⑯ Specified electrical value
[Resistance (Ω), Voltage (V),
Electric current (A)]

Symbol ⑰ to ⑳ in an exploded diagram indicate grade of lubricant and location of lubrication point:

- ⑰ Apply engine oil
- ⑱ Apply gear oil
- ⑲ Apply molybdenum disulfide oil
- ⑳ Apply water resistant grease (Yamaha marine grease A, Yamaha marine grease)

Symbols ㉑ to ㉔ in an exploded diagram indicate grade of sealing or locking agent, and location of application point:










- ㉑ Apply Gasket Maker[®]
- ㉒ Apply LOCTITE[®] No. 271 (Red LOCTITE)
- ㉓ Apply LOCTITE[®] No. 242 (Blue LOCTITE)
- ㉔ Apply LOCTITE[®] No. 572

NOTE: _____

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

①	②
③	④
⑤	⑥
⑦	⑧
⑨	⑩
⑪	⑫
⑬	⑭
⑮	⑯
⑰	⑱
⑲	⑳
㉑	㉒
㉓	㉔

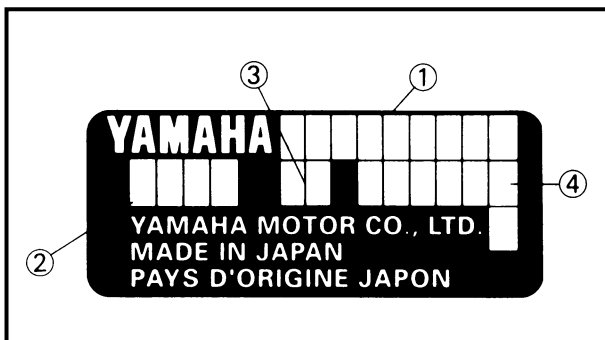
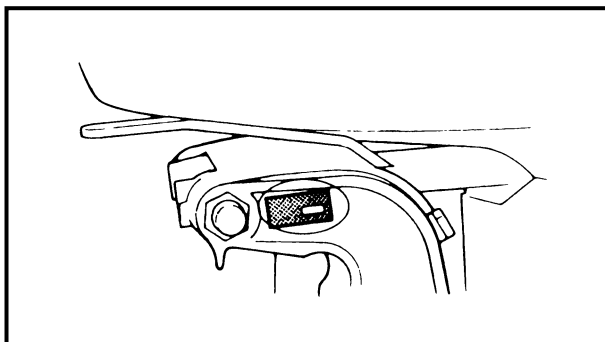
INDEX

GENERAL INFORMATION	 GEN INFO	1
SPECIFICATIONS	 SPEC	2
PERIODIC INSPECTION AND ADJUSTMENT	 INSP ADJ	3
FUEL SYSTEM	 FUEL	4
POWER UNIT	 POWR	5
LOWER UNIT	 LOWR	6
BRACKET UNIT	 BRKT	7
ELECTRICAL SYSTEMS	 ELEC	8
TROUBLE ANALYSIS	 TRBL ANLS	9

CHAPTER 1 GENERAL INFORMATION

IDENTIFICATION	1-1
SERIAL NUMBER	1-1
STARTING SERIAL NUMBERS	1-1
SAFETY WHILE WORKING	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
SPECIAL TOOLS	1-5
MEASURING	1-6
REMOVAL AND INSTALLATION	1-8





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

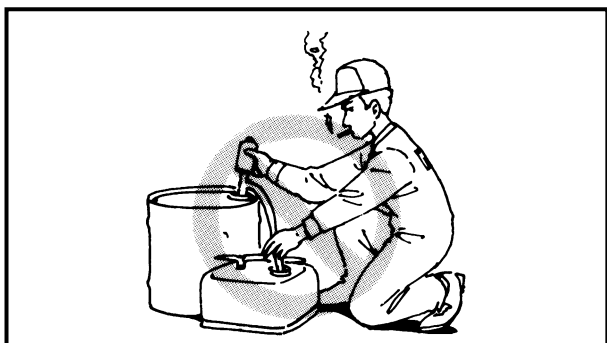
STARTING SERIAL NUMBERS

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		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 ~	90AETO	90AEHD	—	—	6H1	X: 851331 ~			
				L: 357665 ~						90AED	—	—	L: 320132 ~
				X: 710231 ~						90AET	C90TR	C90TR	L: 401108 ~
			S: 150756 ~	90AET						C90TR	C90TR	L: 354053 ~	
			L: 472180 ~	90AETO						90TR	90TR	L: 498690 ~	
60FETO	—	—	X: 732000 ~									X: 856313 ~	

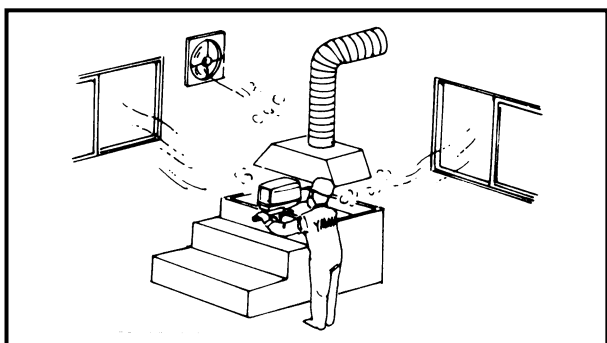
SAFETY WHILE WORKING

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



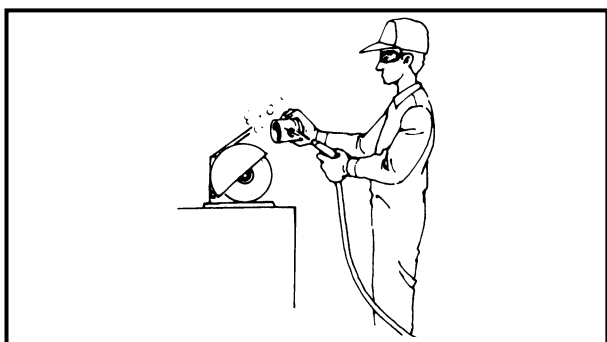
FIRE PREVENTION

Gasoline (petrol) is highly flammable. Petroleum vapor is explosive if ignited. Do not smoke while handling 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 glasses 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.



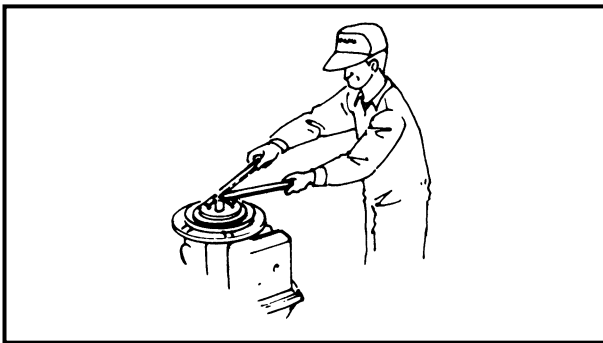
OILS, GREASES AND SEALING FLUIDS

Use only genuine Yamaha oils, grease 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. However, safety is all-important and by adopting good safety practices, 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.



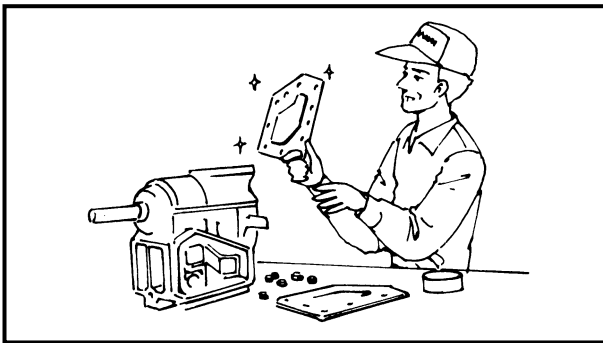
GOOD WORKING PRACTICES

1. The right tools

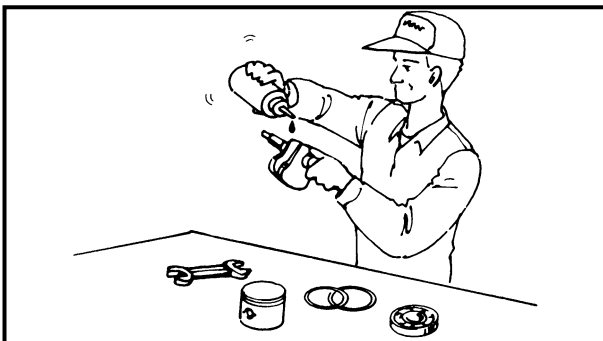
Use the special tools that are advised to protect parts from damage. Use the right tool in the right manner - don't improvise.

2. Tightening torque

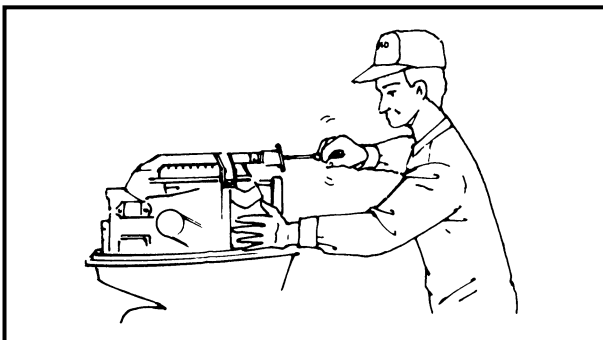
Follow the torque tightening instructions. When tightening bolts, nuts and screws, tighten the larger sizes first, and tighten inner-positioned fixings before outer-positioned ones.

**3. Non-reusable items**

When reassembling, always use new gaskets, packing, O-rings, oil seals, split-pins and circlips, etc.

**DISASSEMBLY AND ASSEMBLY**

1. Clean parts with compressed-air when disassembling them.
2. Oil the contact surfaces of moving parts before 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.
5. When installing oil seals, apply a light coating of water-resistant grease to the outside circumference.

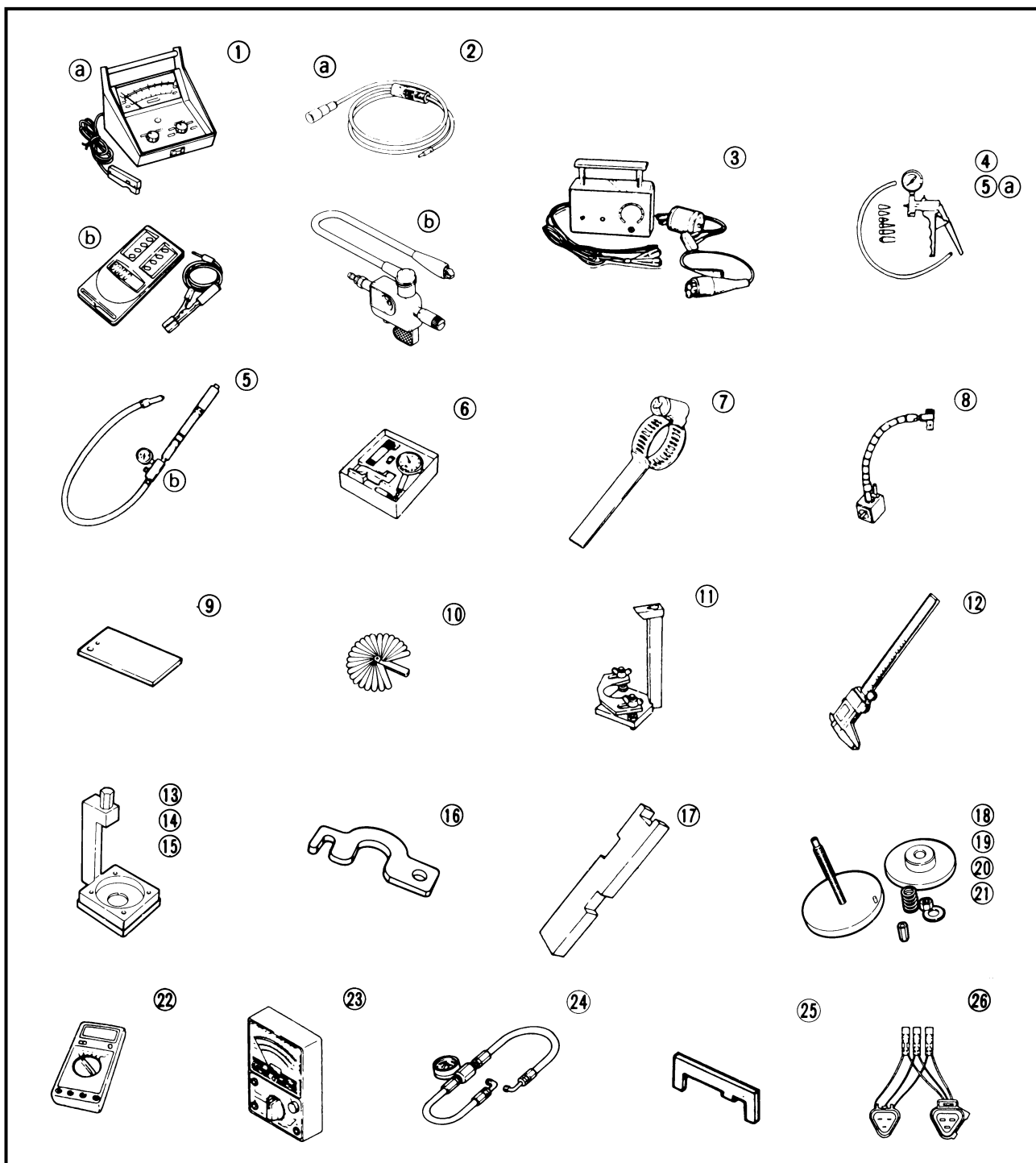
A80000-0*

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.

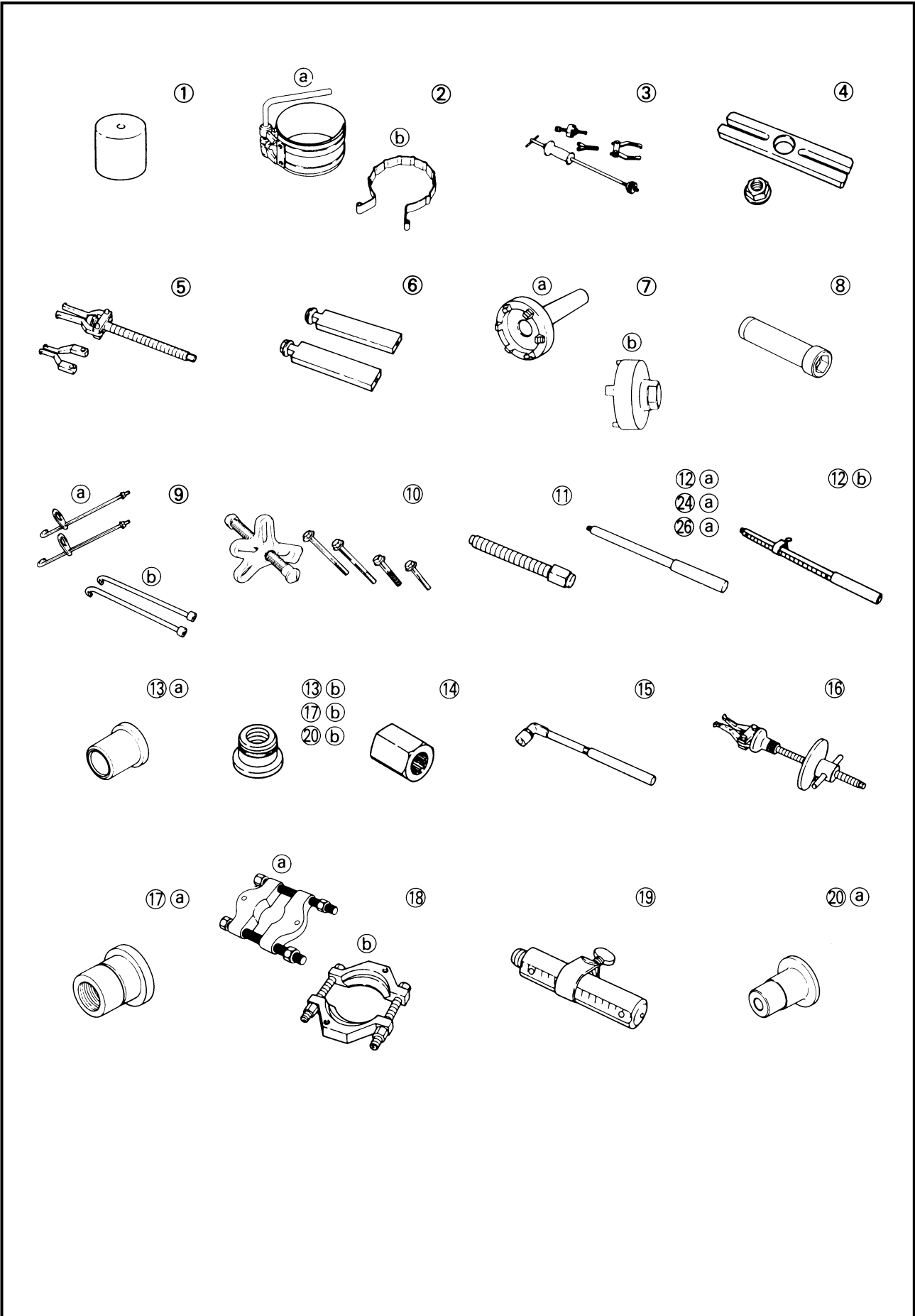
NOTE:

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



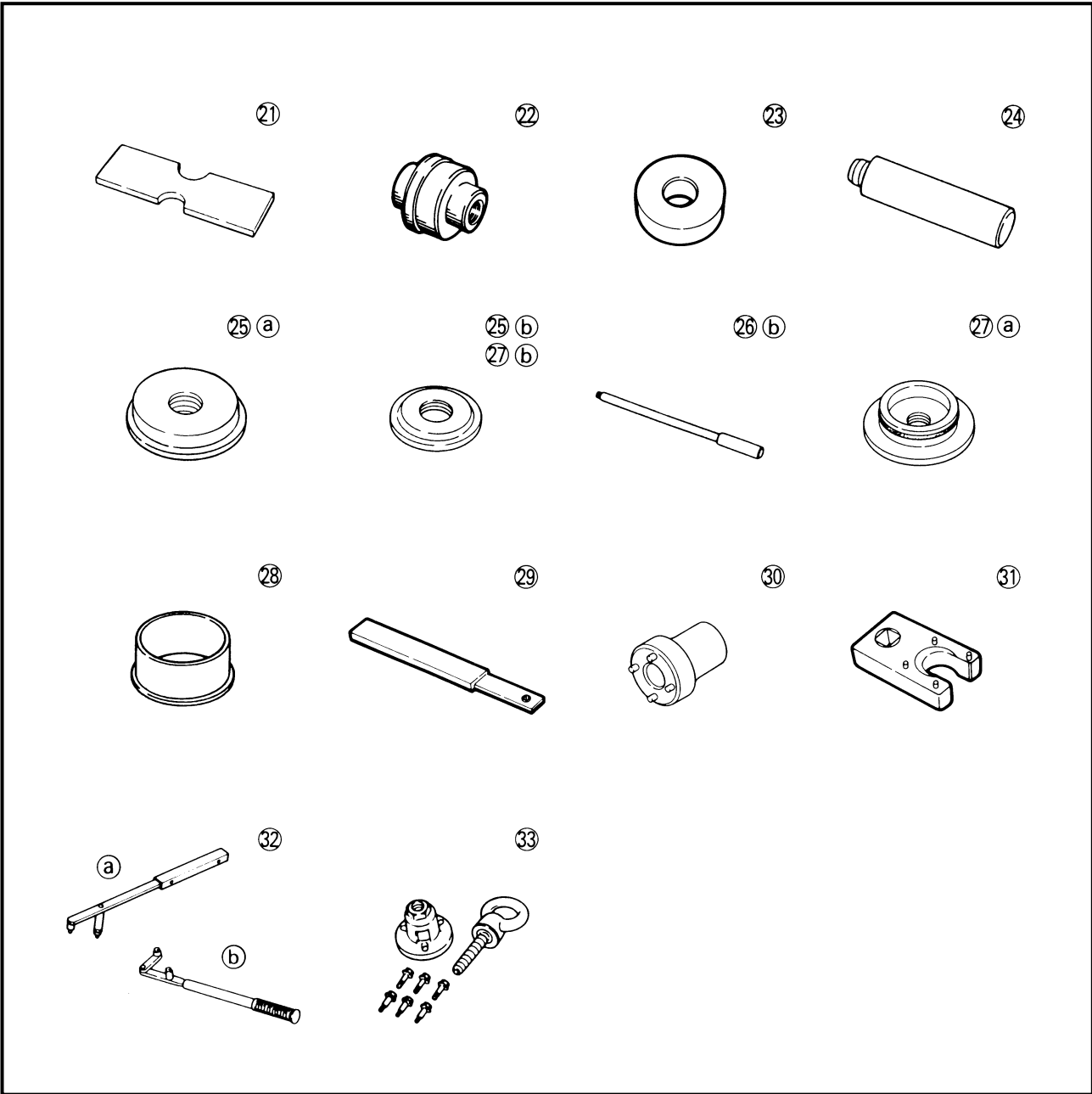
MEASURING

	Tool name	Tool No.		Use for:	
		USA and Canada [Ⓐ]	Except for USA and Canada [Ⓑ]		
1	Tachometer	YU-08036-A	90890-06760	Idle speed	
2	Dynamic spark tester	YM-34487	90890-06754	Ignition system	
3	CDI tester	YU-91022-B	N.A.	Ignition system	
4	Mity Vac	YB-35956	90890-06756	Fuel joint	
5	Pressure tester	YB-35956	90890-06762	Lower case	
6	Dial gauge	YU-03097	90890-01252	Backlash	
7	Backlash indicator	YB-06265	90890-06706	Backlash	
8	Magnet base	YU-34481	90890-06705	Backlash	
9	Backlash adjusting plate	YB-07003	N.A.	Backlash	
10	Thickness gauge	YU-26900-8	N.A.	Shimming	
11	Pinion height gauge	N.A.	90890-06702	Pinion shimming	
12	Digital caliper	N.A.	90890-06704	Pinion shimming	Forward shimming
13	Gauge block	YB-34432-9	N.A.	Pinion shimming	
14	Adapter plate	YB-34432-10	N.A.	Pinion shimming	
15	Gauge base	YB-34432-11	N.A.	Pinion shimming	
16	Clamp	YB-34432-17	N.A.	Pinion shimming	
17	Shimming plate	N.A.	90890-06701	Forward shimming	
18	Base plate	YB-34446-1	N.A.	Forward shimming	
19	Compression spring	YB-34446-3	N.A.	Forward shimming	
20	Press plate	YB-34446-5	N.A.	Forward shimming	
21	Gauge pin	YB-34446-7	N.A.	Forward shimming	
22	Digital multimeter	YU-34899-A	90890-06752	Electrical	
23	Pocket tester	YU-03112	90890-03112	Electrical	
24	Pressure gauge	YB-06181	N.A.	PTT unit	
25	Shimming gauge	YB-34468-3 YB-34468-5	N.A.	Reverse shimming	
26	3 pins test harness	YB-06443	90890-06757	Peak voltage measurement	



REMOVAL AND INSTALLATION

	Tool name	Tool No.		Use for:
		USA and Canada ①	Except for USA and Canada ②	
1	Small end bearing installer	YB-06107 YB-06287	90890-06527	Connecting rod
2	Piston slider	YU-33294	90890-06530	Cylinder piston
3	Slide hammer set	YB-06096	N.A.	Water pump housing oil seal Reverse gear bearing Propeller shaft housing oil seal Drive shaft outer bearing Forward gear outer bearing
4	Stopper guide plate	N.A.	90890-06501	Water pump housing oil seal Bearing housing Reverse gear bearing Propeller shaft housing oil seal Drive shaft outer bearing
5	Bearing puller	N.A.	90890-06535	Water pump housing oil seal Reverse gear bearing Propeller shaft housing oil seal Drive shaft outer bearing
6	Stopper guide stand	N.A.	90890-06538	Water pump housing oil seal Reverse gear bearing Propeller shaft housing oil seal Drive shaft outer bearing
7	Ring nut wrench	YB-06048 YB-34447	90890-06510 90890-06511	Ring nut
8	Extension	N.A.	90890-06513	Ring nut
9	Claw	YB-06207	90890-06502 90890-06503	Propeller shaft housing
10	Universal puller	YB-06117	N.A.	Propeller shaft housing
11	Center bolt	N.A.	90890-06504	Propeller shaft housing
12	Drive rod	YB-06071	90890-06602	Propeller shaft housing oil seal Drive shaft needle bearing
13	Needle bearing attachment	YB-06153	90890-06612	Propeller shaft housing bearing
14	Drive shaft holder	YB-06049 YB-06151	90890-06518 90890-06519	Pinion nut
15	Pinion nut holder	N.A.	90890-06505	Pinion nut
16	Bearing outer race puller	N.A.	90890-06523	Forward gear outer bearing
17	Needle bearing attachment	YB-06155	90890-06611	Drive shaft needle bearing
18	Bearing separator	YB-06219	90890-06534	Crank shaft bearing Reverse gear bearing Forward gear bearing
19	Drive rod	YB-06071	90890-06604	Propeller shaft needle bearing
20	Needle bearing attachment	YB-06153	90890-06612 90890-06614	Propeller shaft needle bearing



	Tool name	Tool No.		Use for:
		USA and Canada [Ⓐ]	Except for USA and Canada [Ⓑ]	
21	Bearing depth plate	N.A.	90890-06603	Propeller shaft needle bearing Drive shaft needle bearing
22	Oil seal attachment	YB-06269	N.A.	Propeller shaft oil seal
23	Needle bearing depth stop	YB-34473	N.A.	Drive shaft needle bearing
24	Driver rod	YB-06071	90890-06606	Drive shaft outer bearing
25	Bearing outer race attachment	YB-06156	90890-06626 90890-06627	Drive shaft outer bearing
26	Driver rod	YB-06071	90890-06605	Forward gear outer bearing
27	Bearing outer race attachment	YB-06276-B	90890-06621 90890-06622	Forward gear outer bearing
28	Bearing inner race attachment	N.A.	90890-06640 90890-06662	Forward gear inner bearing
29	Shift rod wrench	YB-06052	N.A.	Shift rod
30	Cylinder end screw wrench	YB-06175-1A	N.A.	PTT
31	Cylinder end screw wrench	YB-06175-2B	90890-06544 90890-06548	PTT
32	Flywheel holder	YB-06139	90890-06522	Flywheel
33	Flywheel puller	YB-06117	90890-06521	Flywheel

CHAPTER 2 SPECIFICATIONS

GENERAL SPECIFICATION 2-1

MAINTENANCE SPECIFICATIONS..... 2-5

 ENGINE 2-5

 ELECTRICAL 2-7

 DIMENSION..... 2-10

TIGHTENING TORQUE 2-12

GENERAL TORQUE SPECIFICATIONS 2-13



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, Imp 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		



	Unit	Model		
		75hp	80hp	90hp
Model		C75TR/75CET* ¹ 75TR/75CETO* ² P75TH/75CEHTO* ³	80AETO	90AEHD* ¹ 90AED* ² C90TR/90AET* ³ 90TR/90AETO* ⁴ B90TR/90AETO* ⁴
Approved model No.		6H0		6H1
Overall Length	mm (in)	726 (28.6) ^{*1,2} 1,343 (52.9) ^{*3}	726 (28.6) —	726 (28.6) ^{*2,3,4} 1,343 (52.9) ^{*1}
Overall Width	mm (in)	374 (14.7) ^{*1,2} 398 (15.7) ^{*3}	374 (14.7) —	374 (14.7) ^{*2,3,4} 398 (15.7) ^{*1}
Overall Height	S	mm (in)	—	
	L	mm (in)	1,413 (55.6)	
	X	mm (in)	—	1,540 (60.6) 1,540 (60.6) ^{*4}
Boat transom height	S	mm (in)	—	
	L	mm (in)	508 (20.0)	
	X	mm (in)	—	635 (25.0) 635 (25.0) ^{*4}
O/M transom height	S	mm (in)	—	
	L	mm (in)	520 (20.5)	
	X	mm (in)	—	647 (25.5) 647 (25.5) ^{*4}
Weight (Al.)	S	kg (lb)	—	
	L	kg (lb)	119.5 (263) ^{*1} 120.5 (266) ^{*2} 124.5 (275) ^{*3}	115.5 (255) ^{*1} 111.5 (246) ^{*2} 119.5 (263) ^{*3} 120.5 (266) ^{*4}
	X	kg (lb)	—	123.5 (272) 123.5 (272) ^{*4}
Weight (SUS.)	S	kg (lb)	—	
	L	kg (lb)	121.5 (268) ^{*1} 122.5 (270) ^{*2}	113.5 (250) ^{*2} 121.5 (268) ^{*3} 122.5 (270) ^{*4}
	X	kg (lb)	—	125.5 (277) 125.5 (277) ^{*4}
Full throttle speed range	r/min	4,500 ~ 5,500		
Output (ISO)	kW (hp) @ r/min	55.2 (75) @ 5,000	58.8 (80) @ 5,000	66.2 (90) @ 5,000
Maximum fuel consumption	L (US gal, Imp gal)/h @ r/min	32 (8.45, 7.04) @ 5,500		34.5 (9.11, 7.59) @ 5,500
Type		2 stroke-L		
Cylinders		3		
Total Displacement	cm ³ (cu in)	1,141 (69.6)		
Bore × Stroke	mm (in)	82.0 × 72.0 (3.23 × 2.83)		
Compression ratio		5.90		5.86
Compression pressure	kPa (kg/cm ²)	922 (9.22)		
Carburetor number		3		
Intake system		Reed valve		



	Unit	Model					
		50 hp	60 hp	70 hp	75 hp	80 hp	90 hp
Scavenging system		Loop charge					
Starting system		Electric					
Ignition system		CDI					
Alternator output		6A			10A		
Carburetor starting system		Choke valve ^{*1} /Prime start					
Advance type		Micro computer					
Spark plug (NGK)		BR8HS-10	B8HS-10				
Spark plug with noise suppressor (NGK)		BR8HS-10/Register plug-cap (standard)					
Exhaust system		Through prop boss					
Cooling system		Water					
Lubrication system		Pre-mixed gasoline & oil ^{*2} /Oil injection					
Fuel type	P.O.N. ^{*3}	Regular gasoline					
Fuel rating		Min.86					
Engine oil type/grease		TC-W3 ^{*4}					
Gear oil type		Hypoid gear oil-SAE#90 ^{*5}					
Gear oil quantity	cm ³ (US oz, Imp oz)	500 (16.91, 17.60)	610 (20.62, 21.47)				
Engine oil tank capacity	L (US qt, Imp qt)	2.8 (2.96, 2.46)			3.3 (3.49, 2.90)		
Tilt angle (Manual tilt model)	degree	8/12/16/20/24					
Tilt-up angle S	degree	63			—		
L, X		67					
Trim angle (PTT model)	at 12 transom	-4 ~ 15			-4 ~ 16		
Steering angle	degree (left + right)	35 + 35			30 + 30		
Gear shift position		F-N-R ^{*6}					
Gear ratio		14:24 (1.714)	12:28 (2.333)		13:26 (2.000)		
Gear type		Spiral bevel gear					
Clutch type		Dog clutch					
Propeller direction		Clockwise					
Propeller drive system		Spline					
Propeller series mark		K					
Battery capacity	Ah (kC)	70 (252)					
Cold cranking	Amps	380					

*1: For C60ER, C60TR, C75TR

*2: For C60ER/60FED, C60TR/60FET, C75TR, 90AEHD, 90AED, C90TR/90AET

*3: Pump Octane Number; (Research octane + Motor octane)/2

*4: YAMALUBE two-cycle outboard motor oil is recommended in USA
YAMALUBE 1 is recommended in Canada

*5: GEAR CASE LUBE is recommended in USA

*6: Forward-Neutral-Reverse



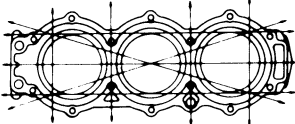
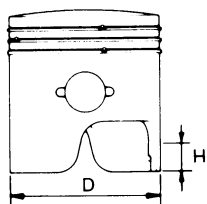
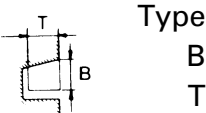
Item	Unit	Model	
		50 hp	
Propeller		G type (aluminum)	
No. of blades × diameter × pitch	in	3 × 11-3/8 × 12 3 × 11-1/8 × 13	

Item	Unit	Model	
		60, 70 hp	
Propeller		K type (aluminum)	K type (stainless)
No. of blades × diameter × pitch	in	3 × 13-1/4 × 17 3 × 13 × 23 3 × 12-5/8 × 21 3 × 13 × 19 3 × 13-1/2 × 15 3 × 13-5/8 × 13	3 × 13 × 17 3 × 13 × 19 3 × 13 × 21 3 × 13 × 23 3 × 13 × 25 3 × 13-1/2 × 14 3 × 13-1/2 × 16
P: High performance propeller	in	P type (stainless)	
		3 × 14 × 20 3 × 14 × 24 3 × 14 × 28	

Item	Unit	Model	
		75, 80, 90 hp	
Propeller		K type (aluminum)	K type (stainless)
No. of blades × diameter × pitch	in	3 × 12-5/8 × 21 3 × 13 × 19 3 × 13 × 23 3 × 13-1/4 × 17 3 × 13-1/2 × 15 3 × 13-1/2 × 17 3 × 13-5/8 × 13 3 × 14 × 11	3 × 13 × 17 3 × 13 × 19 3 × 13 × 21 3 × 13 × 23 3 × 13 × 25 3 × 13-1/2 × 14 3 × 13-1/2 × 16
P: High performance propeller	in	P type (stainless)	
		3 × 14 × 20 3 × 14 × 22 3 × 14 × 24 3 × 14 × 26 3 × 14 × 28	

C31000-0*

**MAINTENANCE SPECIFICATIONS
ENGINE**

Item	Unit	Model					
		50 hp	60 hp	70 hp	75 hp	80 hp	90 hp
Cylinder head: Warpage limit  (Lines indicate straight measurement)	mm (in)	0.1 (0.004)					
Cylinder: Bore size	mm (in)	72.00 ~ 72.02 (2.834 ~ 2.835)			82.00 ~ 82.02 (3.228 ~ 3.229)		
Taper limit	mm (in)	0.08 (0.003)					
Out of round limit	mm (in)	0.05 (0.002)					
Piston: Piston to cylinder clearance	mm (in)	0.050 ~ 0.055 (0.0020 ~ 0.0022)			0.060 ~ 0.065 (0.0024 ~ 0.0026)		
<Limit>	mm (in)	0.105 (0.0041)			0.115 (0.0045)		
Piston size "D"	mm (in)	71.945 ~ 71.970 (2.8325 ~ 2.8335)			81.935 ~ 81.960 (3.2258 ~ 3.2268)		
Measuring point "H" 	mm (in)	10 (0.4)					
Oversize 1st 2nd	mm (in)	72.25 (2.844)* 72.50 (2.854)			82.25 (3.238)* 82.50 (3.248)		
Offset [direction]	mm (in)	0.5 (0.0197) [Exhaust side]			1.0 (0.039) [Exhaust side]		
Piston ring: Sectional sketch Top ring & 2nd ring 	mm (in)	Keystone					
Type	mm (in)	2.0 (0.08)					
End gap [installed]	mm (in)	3.0 (0.12)			3.2 (0.13)		
Top ring & 2nd ring	mm (in)	0.3 ~ 0.5 (0.012 ~ 0.020)			0.4 ~ 0.6 (0.016 ~ 0.024)		
Side clearance	mm (in)	0.03 ~ 0.07 (0.0012 ~ 0.0028)			0.03 ~ 0.06 (0.0012 ~ 0.0024)		

*: Except for USA



Item	Unit	Model					
		50 hp	60 hp	70 hp	75 hp	80 hp	90 hp
Crankshaft:							
Crank width "A"	mm (in)	57.90 ~ 57.95 (2.280 ~ 2.281)			—		
Crank width "B"	mm (in)	151.7 ~ 152.0 (5.972 ~ 5.984)			—		
Crank width "C"	mm (in)	245.5 ~ 246.1 (9.67 ~ 9.69)			284.2 ~ 284.8 (11.19 ~ 11.21)		
Maximum deflection "D"	mm (in)	0.03 (0.0012)			0.05 (0.0020)		
Connecting rod side clearance "E"	mm (in)	0.20 ~ 0.70 (0.008 ~ 0.028)			0.12 ~ 0.26 (0.005 ~ 0.010)		
Connecting rod maximum axial play "F"	mm (in)	2.0 (0.08)					
Carburetor:							
Stamp mark		62F00	6H20A, 6H210* ¹	6H30A	6H007, 6H015* ²	6H007	6H107
Main jet (M.J.)	#	125	140, 145 (L)* ³	150	160		
Main air jet (M.A.J.)	#	170	175, 180* ¹	160	180		175
Pilot jet (P.J.)	#	65	65, 70* ¹	75	78, 80* ²	78	78
Pilot air jet (P.A.J.)	#	70	75, 80* ¹	70	80, 75* ²	80	70
Pilot screw (P.S.)	Turns out	1-3/8 ± 1/4	1-1/2 ± 1/4, 1-3/8 ± 1/4* ¹	1-1/4 ± 1/4	1-3/8 ± 1/4		1-1/4 ± 1/4
Float height (F.H.)	mm (in)	15.0 ± 1.0 (0.59 ± 0.04)	14.0 ± 1.0 (0.55 ± 0.04) 14.0 ± 2.0 (0.55 ± 0.08)* ¹ 19.5 ± 3.0 (0.77 ± 0.12)* ²				
Valve seat size	∅	1.2 (0.047)	1.6 (0.063), 1.4 (0.055)* ¹	1.4 (0.055)	1.6 (0.063)		
Idling speed	r/min	800 ± 50					
Oil injection pump:							
Stamped mark		62F00	6H302	6H102			
Discharge	cm ³ (US oz, Imp oz)	1.90 ± 0.50 (0.064 ± 0.017, 0.067 ± 0.018)	2.20 ± 0.50 (0.074 ± 0.017, 0.077 ± 0.018)	3.10 ± 0.70 (0.105 ± 0.024, 0.109 ± 0.025)			
Reed valve:							
Stopper height	mm (in)	3.0 ± 0.2 (0.12 ± 0.01)		9.9 ± 0.2 (0.39 ± 0.01)			
Warpage limit	mm (in)	0.2 (0.01)					

*1: For C60ER, C60TR

*2: For C75TR

*3: Lower cylinder



Item	Unit	Model					
		50 hp	60 hp	70 hp	75 hp	80 hp	90 hp
Thermostat:							
Valve opening temperature	°C (°F)	48 ~ 52 (118 ~ 126)					
Full-opening temperature	°C (°F)	60 (140)					
Valve lift	mm (in)	3 (0.12)					

C32000-0*

ELECTRICAL

Item	Unit	Model					
		50hp	60hp	70hp	75hp	80hp	90hp
Ignition system:							
Ignition timing at full reversed	ATDC degree	7 ± 1			8 ± 1		
at full advanced	BTDC degree	22 ± 1		20 ± 1		22 ± 1	
cam roller pick-up	ATDC degree	7 ± 1			8 ± 1		
Piston position at full advanced	BTDC mm (in)	3.23 ± 0.28 (0.127 ± 0.11)		2.68 ± 0.26 (0.106 ± 0.010)	2.83 ± 0.27 (0.111 ± 0.011)		3.41 ± 0.29 (0.134 ± 0.011)
Charging coil resistance [20°C (68°F)]	Ω	136 ~ 204 (Brown – Blue)			64 ~ 96 (Br – R) 191 ~ 288 (B – R)		
Charge coil output peak voltage (minimum) color		Br – L			R – Br		R – L
@ cranking (open)	V	120			55		90
@ cranking (connect)	V	150			60		100
@ 1,500 r/min	V	160			170		135
@ 3,500 r/min	V	120			150		135
Pulser coil resistance [20°C (68°F)]	Ω	240 ~ 360 (W/R – W/B)			241 ~ 362 (W/R – W/B)		
Pulser coil output peak voltage (minimum) color		W/R – W/B			W/R – W/B		
@ cranking (open)	V	4.5			7.0		
@ cranking (connect)	V	2.5			5.0		
@ 1,500 r/min	V	6.5			14		
@ 3,500 r/min	V	10			20		

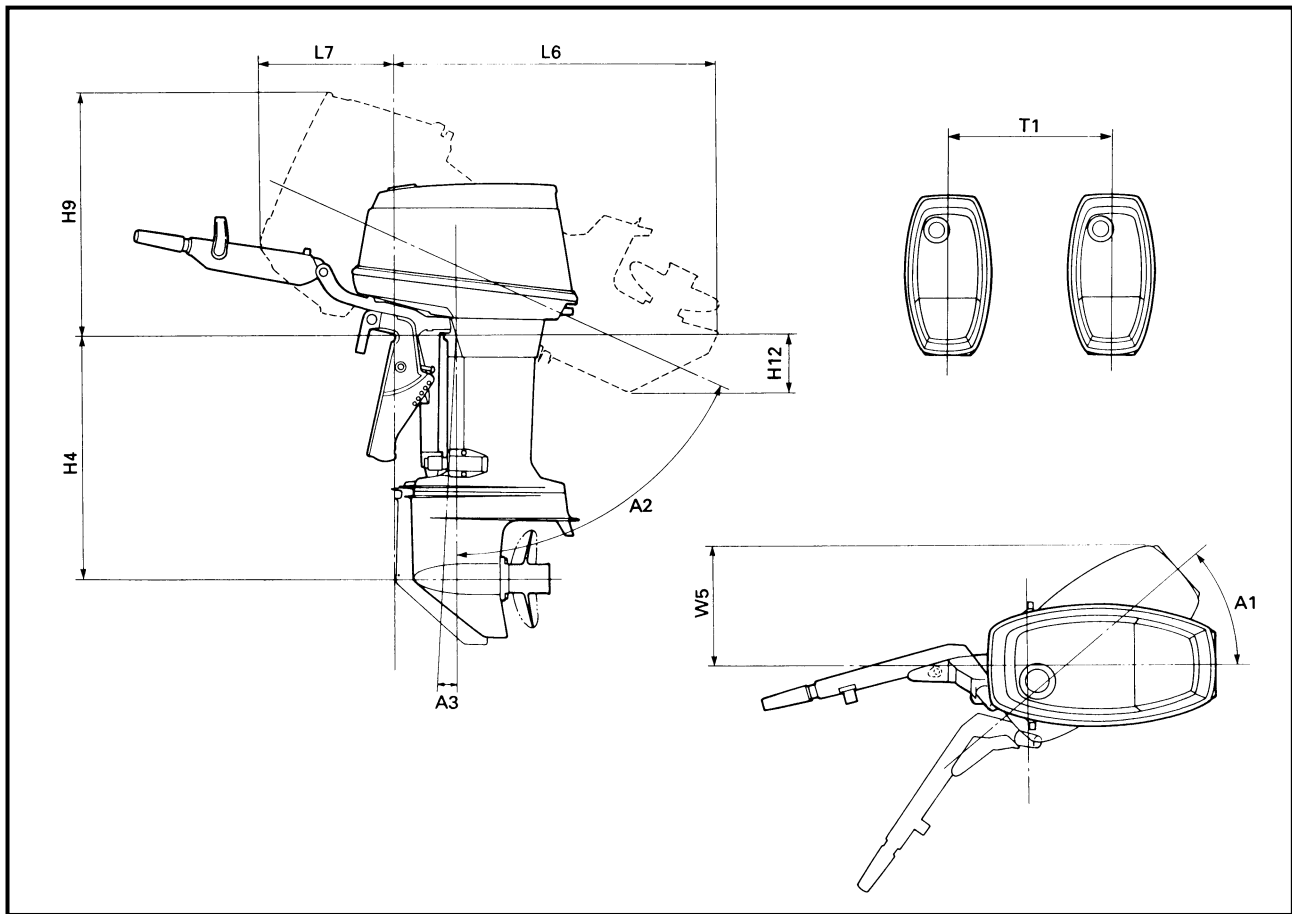


Item	Unit	Model					
		50hp	60hp	70hp	75hp	80hp	90hp
Ignition coil:							
Primary coil resistance [20°C (68°F)]	Ω	0.18 ~ 0.24 (Black/White – Black)					
Secondary coil resistance [20°C (68°F)]	kΩ	3.26 ~ 4.88 (Black/White – High tension cord)					
Crank position sensor resistance [20°C (68°F)]	Ω	158 ~ 236 (Blue/White – Blue/Red)					
Crank position sensor peak voltage: (minimum) color		L/R – L/W			L/R – L/W		
@ cranking (open)	V	5.0			5.5		
@ cranking (connect)	V	5.0			5.5		
@ 1,500 r/min	V	20			25		
@ 3,500 r/min	V	16			20		
Spark plug:							
Spark plug gap	mm (in)	0.9 ~ 1.0 (0.035 ~ 0.039)					
CDI unit output peak voltage: (minimum) color		B/W – B			B/W – B		
@ cranking (open)	V	—			—		
@ cranking (connect)	V	#1, 3: 105 #2: —			#1,3: 130 #2: —		
@ 1,500 r/min	V	145			155		
@ 3,500 r/min	V	105			130		
Lighting system:							
Lighting coil resistance STD (12V 80W) [20°C (68°F)]	Ω	0.57 ~ 0.85 (G/W – G)			0.4 ~ 0.6 (G/W – G)		
Lighting coil output peak voltage (minimum) color		G – G/W			G – G/W		
@ cranking (open)	V	8.5			10		
@ cranking (connect)	V	8.0			11		
@ 1,500 r/min	V	25			25		
@ 3,500 r/min	V	25			25		
Starter motor:							
Rating	Sec	30					
Output	kW	0.6			1.0		
Clutch type		Overrunning					
Brush length	mm (in)	12.5 (0.49)			16.0 (0.63)		
<Wear limit>	mm (in)	9.0 (0.35)			12.0 (0.47)		
Commutator undercut	mm (in)	0.8 (0.03)					
<Repair limit>	mm (in)	0.2 (0.01)					



Item	Unit	Model					
		50hp	60hp	70hp	75hp	80hp	90hp
Commutator outside diameter	mm (in)	30 (1.18)			33 (1.30)		
<Repair limit>	mm (in)	29 (1.14)			31 (1.22)		
Pinion/ring gear gap	mm (in)	3.0 ~ 5.0 (0.12 ~ 0.20)					
Others:							
Electrothermal valve resistance [20°C (68°F)]	Ω	2.3 ~ 3.5 (L – B)					
Fuel enrichment valve resistance [20°C (68°F)]	Ω	3.4 ~ 4.0 (L – B)					
Trim sensor resistance	Ω	360 ~ 540 (P – B) 800 ~ 1,200 (B – O)					
Fuse	A	20					

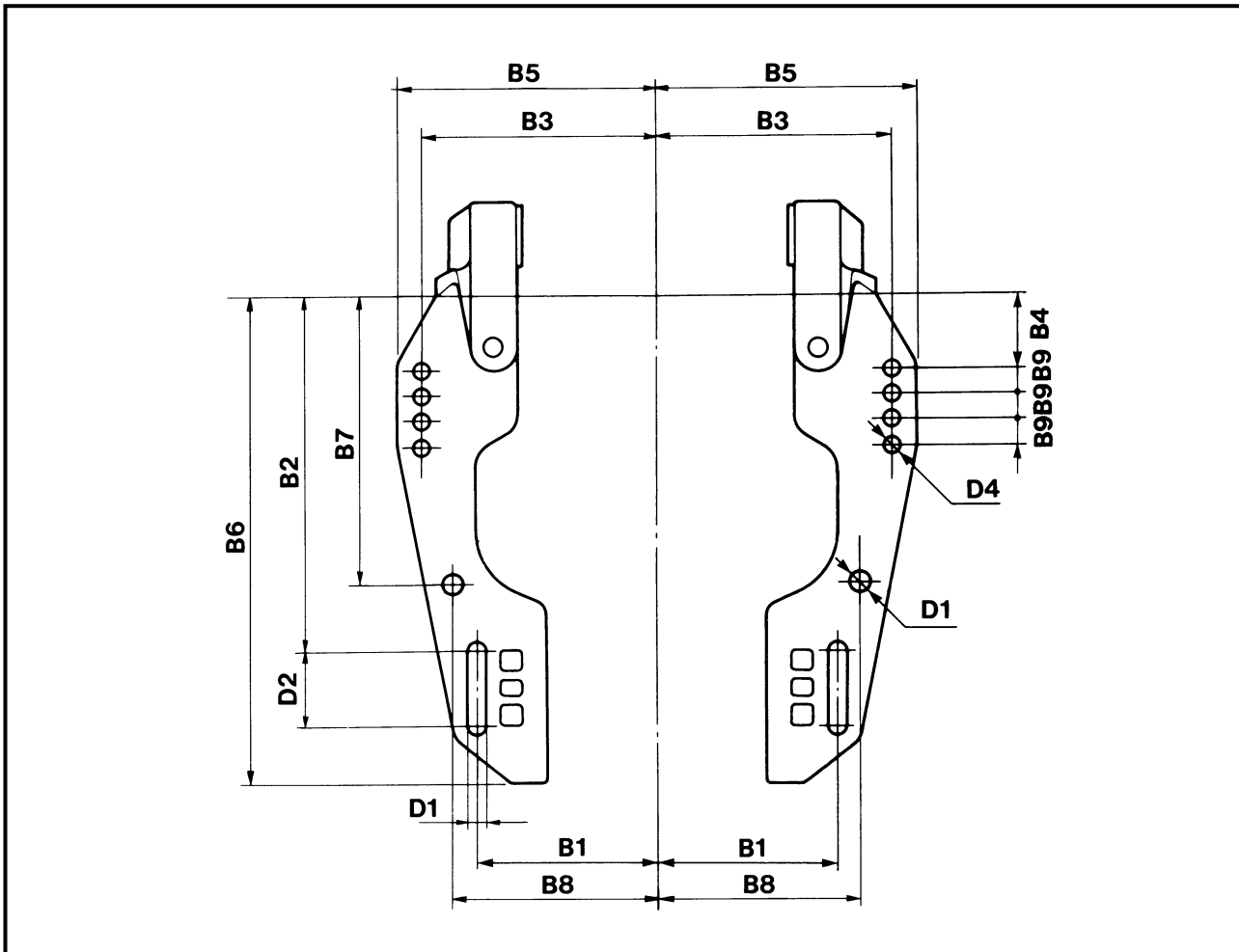
DIMENSION



Item	Unit	Model			
		50 hp	60, 70 hp	75, 80, 90 hp	
L6	S	mm (in)	—	868 (34.2)	—
	L		918 (36.1)	968 (38.1)	
	X		—	1,081 (42.6)	
L7	S	mm (in)	—	403 (15.9)	—
	L, X		411 (16.2)		457 (18.0)
H4	S	mm (in)	—	400 (15.7)	—
	L		520 (20.5)		
	X		—	648 (25.5)	647 (25.5)
H9	S	mm (in)	—	719 (28.3)	—
	L, X		706 (27.8)		730 (28.7)
H12	S	mm (in)	—	135 (5.3)	—
	L		204 (8.0)	205 (8.1)	203 (8.0)
	X		—	264 (10.4)	
W5		mm (in)	321 (12.6)		331 (13.0)
A1		degree	35		
A2	S	degree	—	63	—
	L, X		67, 62 ^{*1}		
A3	S	degree	—	0	—
	L, X		4		
T1		mm (in)	—	600 (23.6) ^{*2}	

*1: For P60TH/60FEHTO, P75TH/75CEHTO












*2: Except for P75TH/75CEHTO, 90AEHD



	Unit	Model			
		50 hp	60 hp	70 hp	75, 80, 90 hp
B1	mm (in)	125.4 (4.9)			
B2	mm (in)	254 (10.0)			
B3	mm (in)	163.5 (6.4)			
B4	mm (in)	50.8 (2.0)			
B5	mm (in)	180 (7.1)			
B6	mm (in)	—	329 (13.0)	—	
B7	mm (in)	351 (13.8)			
B8	mm (in)	203.2 (8.0)			
B9	mm (in)	18.5 (0.7)			
D1	mm (in)	13 (0.5)			
D2	mm (in)	55.5 (2.2)			
D4	mm (in)	12 (0.5)			

C33000-0

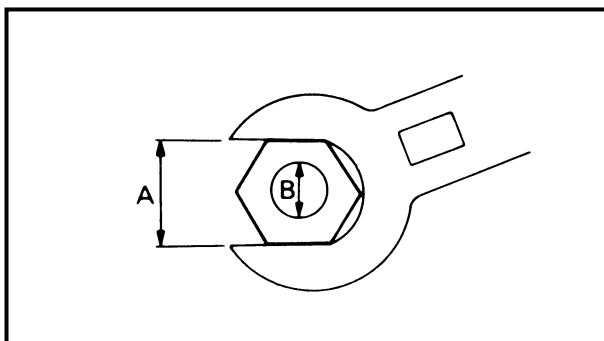
TIGHTENING TORQUE

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				
ENGINE:											
Crank case	1st	Bolt	M6	—	12	4	0.4	2.9			
	2nd					12	1.2	8.7			
	1st	Bolt	M8	6	—	10	1.0	7.2			
	2nd					20	2.0	14			
	1st	Bolt	M10	8	8	20	2.0	14			
2nd	40					4.0	29				
Connecting rod	1st	Bolt	M8	—	6	12	1.2	8.7			
	2nd					35	3.5	25			
Cylinder head	1st	Bolt	M8	14	14	15	1.5	11			
	2nd				—	32	3.2	23			
						—	14	30		3.0	22
Exhaust cover	1st	Bolt	M6	16	—	3	0.3	2.2			
	2nd					8	0.8	5.8			
	1st	Bolt	M8	—	18	9	0.9	6.5			
	2nd					18	1.8	13			
Intake manifold	1st	Bolt	M6	8	12	4	0.4	2.9			
	2nd				—	8	0.8	5.8			
					—	12	12	1.2		8.7	
Spark plug	Bolt	M14	3	3	25	2.5	18				
Flywheel	Nut	M20	1	1	160	16.0	115				
Power unit mounting	Bolt	M8	8	11	21	2.1	15				
Starter motor mounting	Bolt	M8	2	2	20	2.0	14				
Straight screw plug	Screw	M12	1	1	23	2.3	1.7				
UPPER CASE AND GEAR CASE:											
Upper mount rubber	Nut	M10	2	2	24	2.4	17				
Bracket bolt	Nut	M22	1	1	15	1.5	11				
Upper case mounting	Bolt	M8	11	11	21	2.1	15				
Exhaust guide	Bolt	M8	4	4	21	2.1	15				
Exhaust manifold	Bolt	M8	4	4	21	2.1	15				
Muffler	Bolt	M8	4	4	21	2.1	15				
Ring nut	Nut	—	1	—	130	13	94	50 hp			
			1	1	145	14.5	105				
Pinion nut	Nut	M12	1	—	75	7.5	54				
	Nut	M16	1	1	95	9.5	69				
Lower case mounting	Bolt	M10	5	5	40	4.0	29				
Propeller	Nut	M16	1	1	35	3.5	25				
Tiller handle mounting	Nut	M10	1	1	38	3.8	27				
Handle bracket mounting	Nut	M10	2	2	38	3.8	27				



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 fasteners with 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 crisscross fashion and in progressive stages a until the specified torque is reached.

CHAPTER 3

PERIODIC INSPECTION AND ADJUSTMENT

PERIODIC SERVICE	3-1
MAINTENANCE SCHEDULE	3-1
ANODE.....	3-1
BATTERY	3-2
CARBURETOR	3-3
CARBURETOR LINK ADJUSTMENT.....	3-3
CYLINDER HEAD BOLTS, ENGINE MOUNTING BOLTS, AND FLYWHEEL NUT	3-4
FUEL FILTER.....	3-4
FUEL TANK AND FUEL LINE.....	3-4
GEAR OIL.....	3-5
IDLE-SPEED	3-5
IGNITION TIMING ADJUSTMENT.....	3-6
TIMING PLATE POSITION ADJUSTMENT	3-6
THROTTLE SENSOR CONTROL LINK ADJUSTMENT.....	3-7
IGNITION TIMING ADJUSTMENT	3-8
PICK-UP TIMING ADJUSTMENT	3-9
OIL INJECTION PUMP	3-10
OPERATIONAL TEST	3-10
CHECKING THE OIL LEVEL WARNING SYSTEM	3-11
OIL PUMP LINK ADJUSTMENT.....	3-12
POWER TRIM AND TILT FLUID (PTT model).....	3-12
PROPELLER	3-13
SPARK PLUG.....	3-13
GREASING POINTS	3-14



Download the full PDF manual instantly.

Our customer service e-mail:

aservicemanualpdf@yahoo.com