

CONTENTS

1. SPECIFICATIONS.....	3
1. SPECIFICATIONS.....	3
2. DIMENSIONAL DRAWINGS.....	4
11. SERVICE INFORMATION.....	5
1. GENERAL SAFETY.....	5
2. SERVICE RULES.....	6
3. SERIAL NUMBER LOCATION.....	6
4. MAINTENANCE STANDARDS.....	7
5. TORQUE VALUES.....	8
6. SPECIAL TOOLS.....	8
7. WIRING DIAGRAM.....	10
8. TROUBLESHOOTING.....	11
9. MAINTENANCE SCHEDULE.....	14
10. LUBRICATION CHART.....	15
111. MAINTENANCE.....	16
1. ENGINE OIL.....	16
2. GEAR OIL.....	17
3. SPARK PLUG.....	17
4. COMBUSTION CHAMBER.....	18
5. VALVE CLEARANCE.....	19
6. CARBURETOR.....	20
IV. DISASSEMBLY AND SERVICE.....	21
1. DISASSEMBLY CHART.....	21
2. ENGINE COVER/RECOIL STARTER STEERING HANDLE.....	22
3. FUEL TANK.....	25
4. THROTTLE CABLE / CHOKE ROD.....	26
5. FAN COVER / EXHAUST PIPE PROTECTOR.....	27
6. FLYWHEEL / IGNITION COIL.....	28
7. CARBURETOR.....	30
8. ENGINE AND LOWER UNIT.....	32
9. OIL PAN.....	33
10. CYLINDER HEAD / VALVES.....	34
11. PISTON / CRANKSHAFT / CYLINDER.....	40
12. STERN BRAKET / EXTENSION CASE.....	46
13. GEAR CASE / VERTICAL SHAFT WATER PUMP.....	48
V. OPERATION.....	51
1. TRANSISTORIZED IGNITION SYSTEM.....	51
2. EXHAUST SYSTEM.....	52
BF2 SUPPLEMENT.....	54 - 59

PREFACE

This manual covers construction, function and servicing procedures of Honda BF20·BF2A outboard motors.

Careful observance of these instructions will result in better, safer service work.

ALL INFORMATION, ILLUSTRATIONS, DIRECTIONS AND SPECIFICATIONS INCLUDED IN THIS PUBLICATION ARE BASED ON THE LATEST PRODUCT INFORMATION AVAILABLE AT THE TIME OF APPROVAL FOR PRINTING. HONDA MOTOR CO., LTD. RESERVES THE RIGHT TO MAKE CHANGES WITHOUT INCURRING ANY OBLIGATION WHATEVER. NO PART OF THIS PUBLICATION MAY BE REPRODUCED WITHOUT WRITTEN PERMISSION.

HONDA MOTOR CO., LTD.
SERVICE PUBLICATIONS OFFICE

I. SPECIFICATIONS

1. SPECIFICATIONS

2. DIMENSIONAL DRAWINGS

1. SPECIFICATIONS

DIMENSIONS AND WEIGHTS

Item		Model	BF2OS	BF2OL	BF2AS	BF2AL
Length	mm (in)	410 (16.1)				
Width	mm (in)	275 (10.8)				
Height	mm (in)	930 (36.6)	1,080 (42.5)	930 (36.6)	1,080 (42.5)	
Dry weight	kg (lb)	12.5 (27.6)	13.0 (28.7)	12.5 (27.6)	13.0 (28.7)	
Operating weight	kg (lb)	13.6 (30.0)	14.0 (30.9)	13.6 (30.0)	14.0 (30.9)	
Transom height	mm (in)	420 (16.5)	570 (22.4)	420 (16.5)	570 (22.4)	
Transom angle		4 stages (5°–10°–15°–20°)				
Tilting stage		1 stage				
Tilting angle		75°				
Turning angle		360°				

ENGINE

Type	4-stroke, side valve, 1 cylinder
Displacement	76 cm ³ (4.6 cu in)
Bore and stroke	46 x 46 mm (1.8 x 1.8 in)
Max. horsepower	2.0 HP/5,000 rpm [At propeller shaft]
Max. torque	0.62 kg-m (4.5 ft-lb)
Compression ratio	6.5 : 1
Fuel consumption	400 g/HPh
Cooling system	Forced-air cooling (Water cooling for exhaust system)
Ignition system	Transistorized magneto
Ignition timing	20° B.T.D.C. (Fixed)
Spark plug	BMR-4A (NGK)
Carburetor	BMR-4A (NGK), W14MR-U (ND)
Lubrication system	Horizontal-type butterfly valve
Oil capacity	Splash-type
Starting system	0.4ℓ (0.42 US qt)
Stopping system	Recoil starter
Fuel tank capacity	Grounding primary circuit
Fuel	1.0ℓ (0.26 US gal)
Exhaust system	Regular grade automobile gasoline
	Underwater exhaust system.

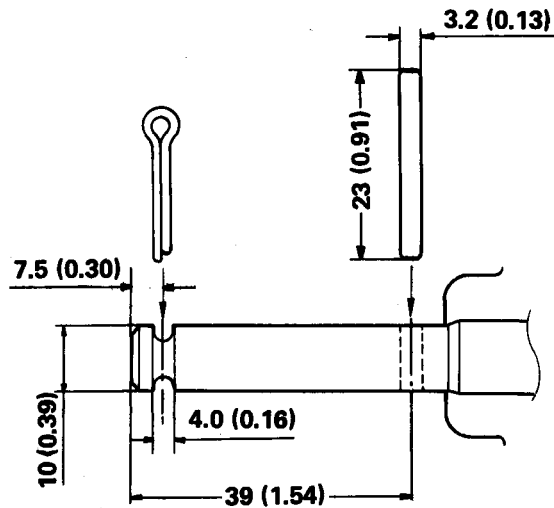
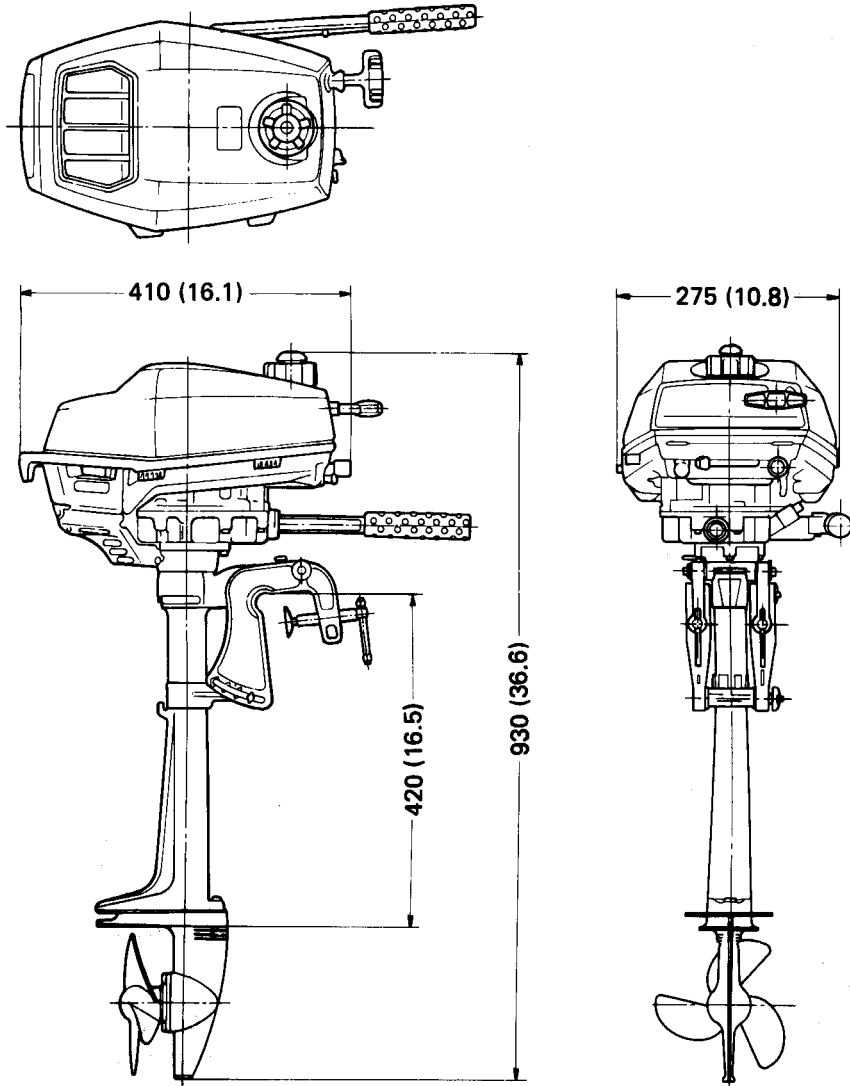
LOWER UNIT

Gear ratio	13 : 28
Gear case oil capacity	0.05ℓ (0.053 US qt)
Propeller (No. of blades—dia. x pitch)	3—184 x 120 mm (3—7.2 x 4.7 in)
Rotating direction	Clockwise (viewed from rear)

2. DIMENSIONAL DRAWINGS

UNIT: mm (in)

Illustrations are based on model BF20S.



II. SERVICE INFORMATION

- | | |
|---------------------------|-------------------------|
| 1. GENERAL SAFETY | 6. SPECIAL TOOLS |
| 2. SERVICE RULES | 7. WIRING DIAGRAM |
| 3. SERIAL NUMBER LOCATION | 8. TROUBLESHOOTING |
| 4. MAINTENANCE STANDARDS | 9. MAINTENANCE SCHEDULE |
| 5. TORQUE VALUES | 10. LUBRICATION CHART |

1. GENERAL SAFETY

Pay attention to these symbols and their meaning:

▲ WARNING Indicates a strong possibility of severe personal injury or loss of life if instructions are not followed.

CAUTION: Indicates a possibility of personal injury or equipment damage if instructions are not followed.

▲ WARNING

Stop the engine and remove the spark plug before servicing.

If the motor must be running to do some work, make sure the area is well ventilated. Never run the engine in a closed area. The exhaust contains poisonous carbon monoxide gas.

▲ WARNING

Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks in your working area.

CAUTION:

Keep away from rotating or hot parts and high tension wires when the engine is run with the cover off.

2. SERVICE RULES

1. Use genuine Honda or Honda-recommended parts and lubricants or their equivalents. Parts that do not meet Honda's design specifications may damage the unit.
2. Use the special tools designed for the product.
3. Install new gaskets, O-rings, etc. when reassembling.
4. When torquing bolts or nuts, begin with larger-diameter or inner bolts first and tighten to the specified torque diagonally, unless a particular sequence is specified.
5. Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surface before reassembly.
6. After reassembly, check all parts for proper installation and operation.
7. Many screws used in this machine are self-tapping. Be aware that cross-threading or overtightening these screws will strip the female threads and ruin the hole.
8. Use only metric tools when servicing this unit. Metric bolts, nuts and screws are not interchangeable with nonmetric fasteners. The use of incorrect tools and fasteners may damage the unit.
9. Follow the instructions represented by these symbols when they are used:

p. : Indicates the reference page

0 x 0 (○) : Indicates the type and quantity of bolts used.



: Apply oil.



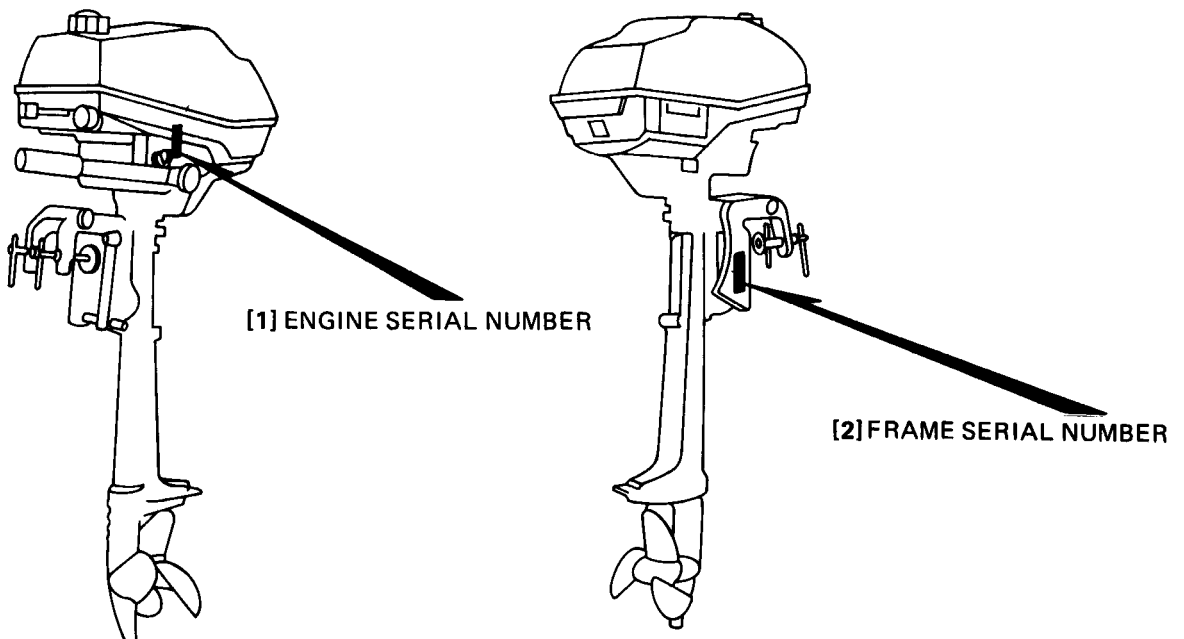
: Apply grease.



: Use special tool.

3. SERIAL NUMBER LOCATION

The serial numbers are stamped on the engine and the stern bracket as illustrated below. Always give these numbers when inquiring about the outboard motor or ordering parts to be sure you get the correct parts.



4. MAINTENANCE STANDARDS

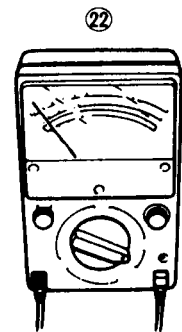
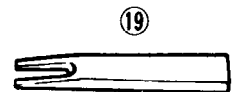
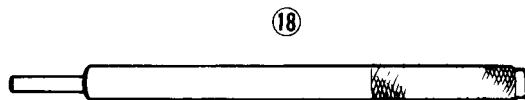
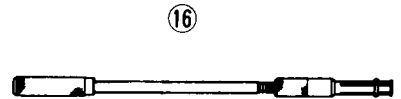
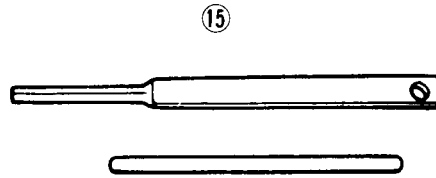
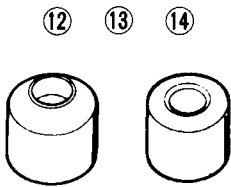
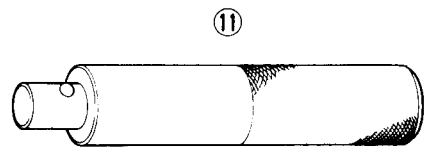
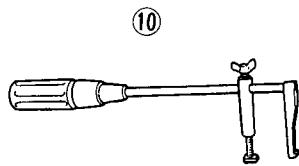
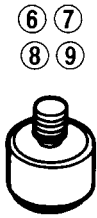
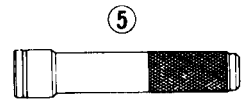
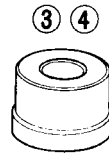
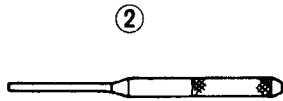
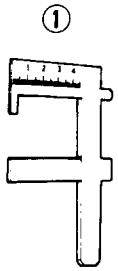
PART	ITEM	STANDARD	SERVICE LIMIT	
Engine	Idle speed	1400±100 min ⁻¹ (rpm)	—	
	Cylinder compression	6.5kg/cm ² (92.4 lbs/in ²)[800 min ⁻¹ (rpm)]	—	
Carburetor	Main jet	#70	—	
	Pilot screw	BF20S: 2 turns (Engine serial number 1000001–1007046)	—	
		BF20L, BF2A: 1-3/4 turns(Engine serial number 1007047 and subsequent)	—	
	Float height	2-1/8 turns 10.5–13.5 mm (0.413–0.531 in)	—	
Spark plug	Gap	0.6–0.7 mm (0.024–0.028 in)	—	
Transistor unit	Primary side	0.7–0.9Ω	—	
	Secondary side	6.3–7.7KΩ	—	
	Air gap	0.2–0.6 mm (0.008–0.024 in)	—	
Valve	Valve clearance	IN	0.08–0.16 mm (0.003–0.006 in)	—
		EX	0.08–0.16 mm (0.003–0.006 in)	—
	Stem O.D.	IN	5.490 mm (0.216 in)	5.45 mm (0.215 in)
		EX	5.445 mm (0.214 in)	5.40 mm (0.213 in)
	Guide I.D.	IN/EX	5.50 mm (0.217 in)	5.56 mm (0.219 in)
	Stem-to-guide clearance	IN	0.010 mm (0.0004 in)	0.11 mm (0.004 in)
		EX	0.055 mm (0.0022 in)	0.16 mm (0.006 in)
	Seat width	IN/EX	0.7 mm (0.028 in)	1.0 mm (0.04 in)
Spring free length		27.1 mm (1.07 in)	25.0 mm (0.98 in)	
Cylinder	Sleeve I.D.	46.00 mm (1.8110 in)	46.05 mm (1.813 in)	
Piston	Skirt O.D.	45.995 mm (1.8108 in)	45.92 mm (1.808 in)	
	Piston-to-cylinder clearance	0–0.03 mm (0–0.0012 in)	0.13 mm (0.0051 in)	
	Pin bore I.D.	10.002 mm (0.3938 in)	10.05 mm (0.3957 in)	
Piston pin	O.D.	10.00 mm (0.3937 in)	9.95 mm (0.3917 in)	
	Pin-to-pin bore clearance	0.015 mm (0.0006 in)	0.10 mm (0.0039 in)	
Piston ring	Width	Top/Second	1.5 mm (0.0591 in)	1.37 mm (0.0539 in)
	Side clearance	Top	0.055–0.090 mm (0.0022–0.0035 in)	0.15 mm (0.0059 in)
		Second	0.055–0.085 mm (0.0022–0.0033 in)	0.15 mm (0.0059 in)
	End gap	Top/Second	0.15–0.035 mm (0.0059–0.014 in)	1.0 mm (0.039 in)
Oil		0.2–0.8 mm (0.0079–0.031 in)	1.0 mm (0.039 in)	
Connecting rod	Small end I.D.	10.006 mm (0.3939 in)	10.05 mm (0.3957 in)	
	Rod-to-pin clearance	0.006–0.023 mm (0.00024–0.00091 in)	0.10 mm (0.0039 in)	
	Big end oil clearance	0.016–0.038 mm (0.00063–0.0015 in)	0.10 mm (0.0039 in)	
	Big end axial clearance	0.20–0.90 mm (0.0079–0.035 in)	1.10 mm (0.043 in)	
	Big end I.D.	18.00 mm (0.7087 in)	18.04 mm (0.7102 in)	
Crankshaft	Crank pin O.D.	17.984 mm (0.7080 in)	17.94 mm (0.7063 in)	
Camshaft	Cam height	IN/EX	20.82 mm (0.8197 in)	20.47 mm (0.8059 in)
	Journal O.D.		12.184 mm (0.4797 in)	12.15 mm (0.4783 in)
Crankcase	Journal I.D.	12.20 mm (0.4803 in)	12.25 mm (0.4823 in)	
Propeller shaft	O.D. at bevel gear	10.973–10.984 mm (0.4320–0.4324 in)	10.93 mm (0.4303 in)	
Propeller shaft holder	Shaft bore I.D.	11.000–11.018 mm (0.4331–0.4338 in)	11.06 mm (0.4354 in)	
	Shaft-to-shaft bore clearance	0.016–0.045 mm (0.0006–0.0018 in)	—	
Vertical shaft	O.D. at gear case	10.973–10.984 mm (0.4320–0.4324 in)	10.93 mm (0.4303 in)	
Gear case	Vertical shaft bore I.D.	11.000–11.018 mm (0.4331–0.4338 in)	11.06 mm (0.4354 in)	
	Vertical shaft-to-bore clearance	0.016–0.045 mm (0.0006–0.0018 in)	—	

5. TORQUE VALUES

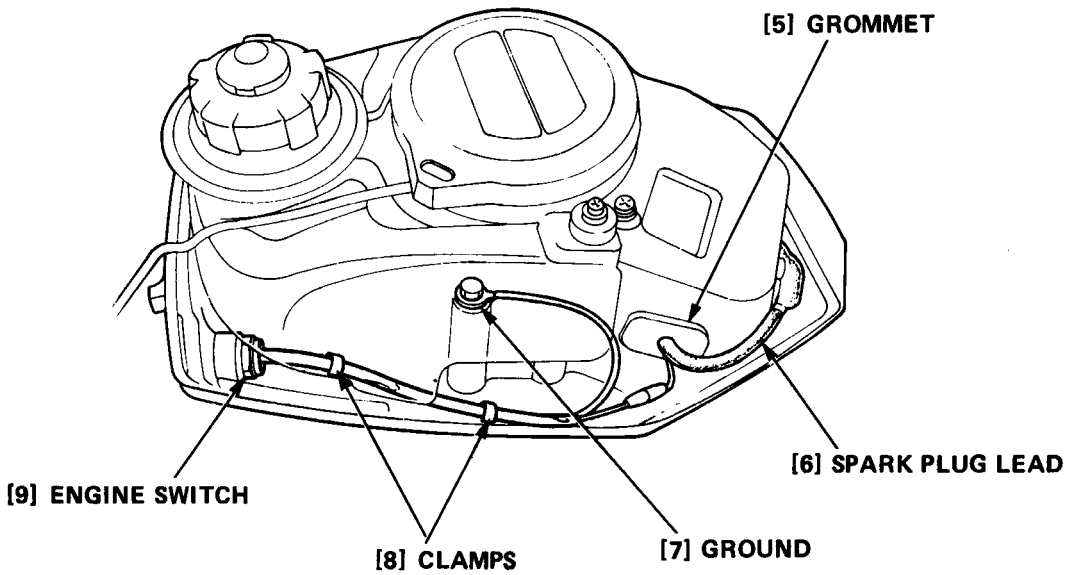
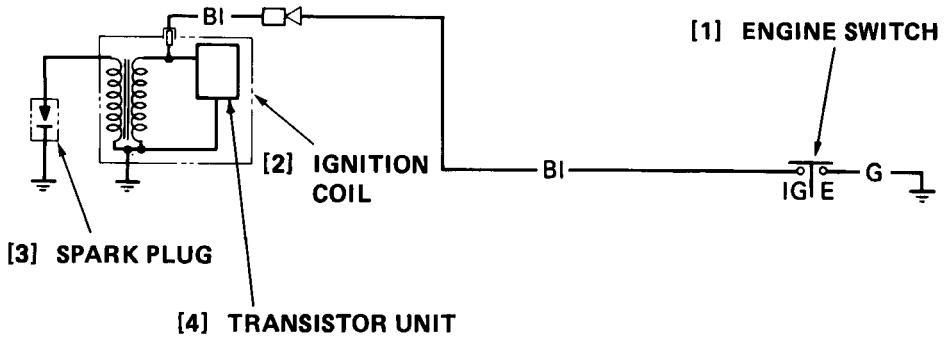
Tightening points	Thread diameter	Torque
Flywheel Connecting rod Throttle cable clamp Engine switch	12 mm bolt 5 mm bolt 6 mm bolt 16 mm nut	450–550 kg-cm (32.5–39.8 ft-lb) 40–60 kg-cm (2.9–4.3 ft-lb) 45–55 kg-cm (3.3–4.0 ft-lb) 8–12 kg-cm (0.6–0.9 ft-lb)
Standard torque	5 mm bolt, nut 6 mm bolt, nut 8 mm bolt, nut 10 mm bolt, nut	40–70 kg-cm (2.9–5.1 ft-lb) 80–120 kg-cm (5.8–8.7 ft-lb) 200–280 kg-cm (14.5–20.2 ft-lb) 350–400 kg-cm (25.3–28.9 ft-lb)

6. SPECIAL TOOLS

Tool Name		Tool number	Application
1	Float level gauge	07401–0010000	Carb. float level inspection
2	Pin driver, 2.5 mm	07744–0010100	2.5 mm spring pin removal/installation
3	Attachment, 32 x 35 mm	07746–0010100	Oil seal installation (Use with Tool No. 07746–0040500)
4	Attachment, 37 x 40 mm	07746–0010200	Water seal installation (Use with Tool No. 07746–0040400)
5	Bearing driver, 22 mm	07746–0020100	Crankshaft timing gear installation
6	Pilot, 10 mm	07746–0040100	Gear case bearing installation
7	Pilot, 17 mm	07746–0040400	Water seal installation
8	Pilot, 20 mm	07746–0040500	Oil seal installation
9	Pilot, 22 mm	07746–0041000	Propeller shaft holder seal installation
10	Water seal removal	07748–0010000	Water seal removal
11	Driver	07749–0010000	Use with attachments and pilots
12	Valve seat cutter, 45°	07780–0010100	Valve seat reconditioning
13	Valve seat cutter, 32°	07780–0012000	
14	Valve seat cutter, 32°	07780–0012600	
15	Cutter holder	07781–0010100	
16	Bearing remover, 15 mm	07936–KC10500	11 x 21 x 8 mm Water seal removal
17	Remover weight	07936–3710200	Use with Tool No. 07936–KC10500
18	Valve guide driver	07942–8920000	Valve guide removal/installation
19	Valve holder	07972–8120000	Tappet adjuster disassembly/reassembly
20	Valve lapping guide	07975–8920000	Tappet adjuster lapping
21	Valve guide reamer, 5.5 mm	07984–2000000	Valve guide reaming
22	Digital volt-ohmmeter or Analog volt-ohmmeter	KS–AH–32–003 or, KS–TH–5H–1	Ignition coil and engine stop switch inspection



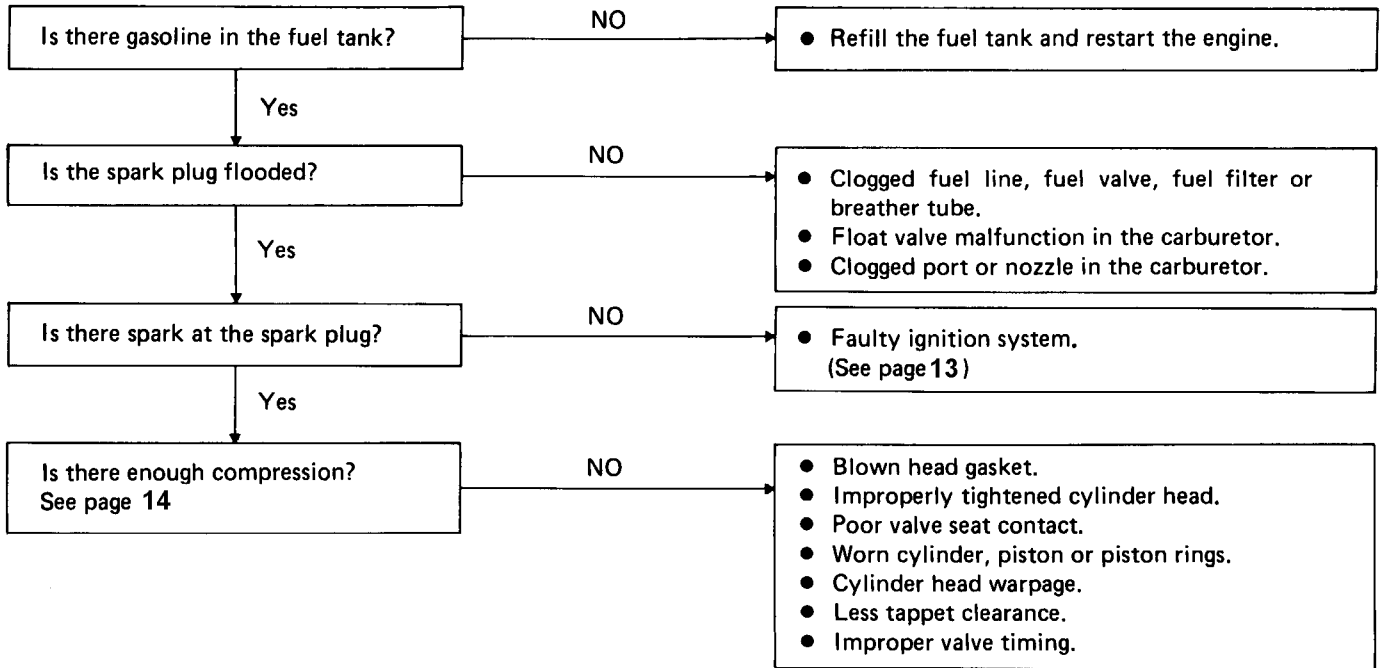
7. WIRING DIAGRAM



8. TROUBLESHOOTING

● ENGINE

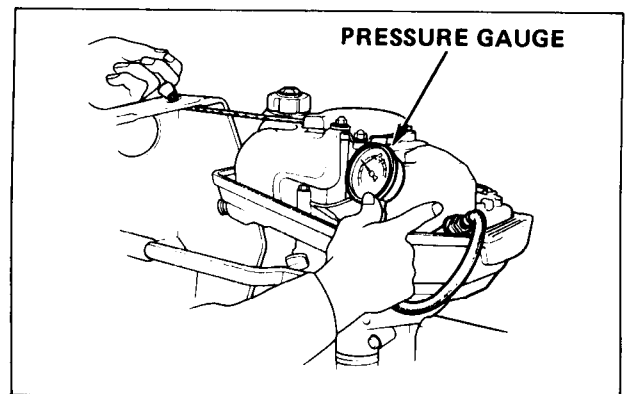
a. Engine will not start.



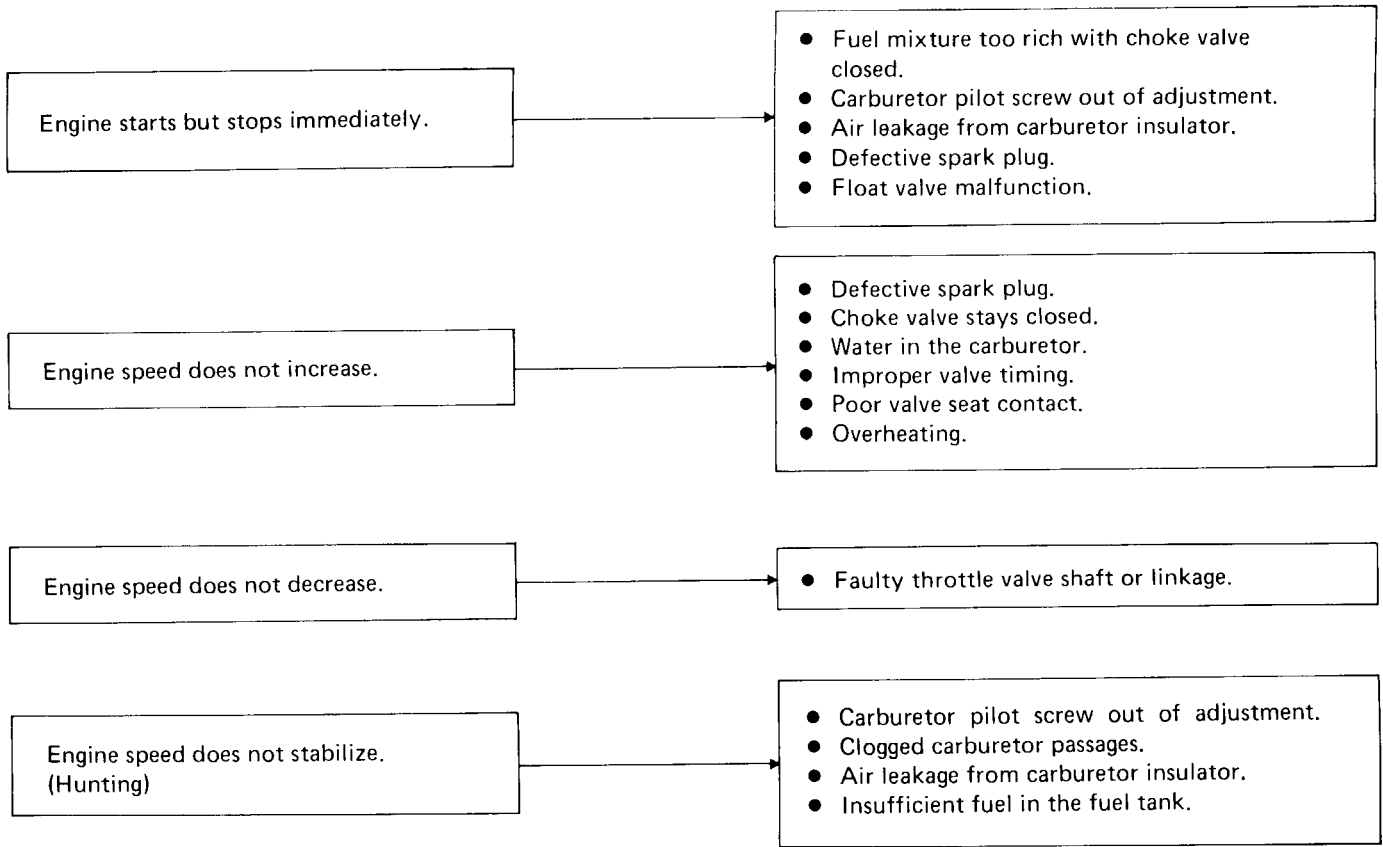
CYLINDER COMPRESSION TEST

- 1) Remove the spark plug and connect a pressure gauge to the plug hole.
- 2) Move the throttle lever to the FAST position, and operate the recoil starter until the highest reading is attained.

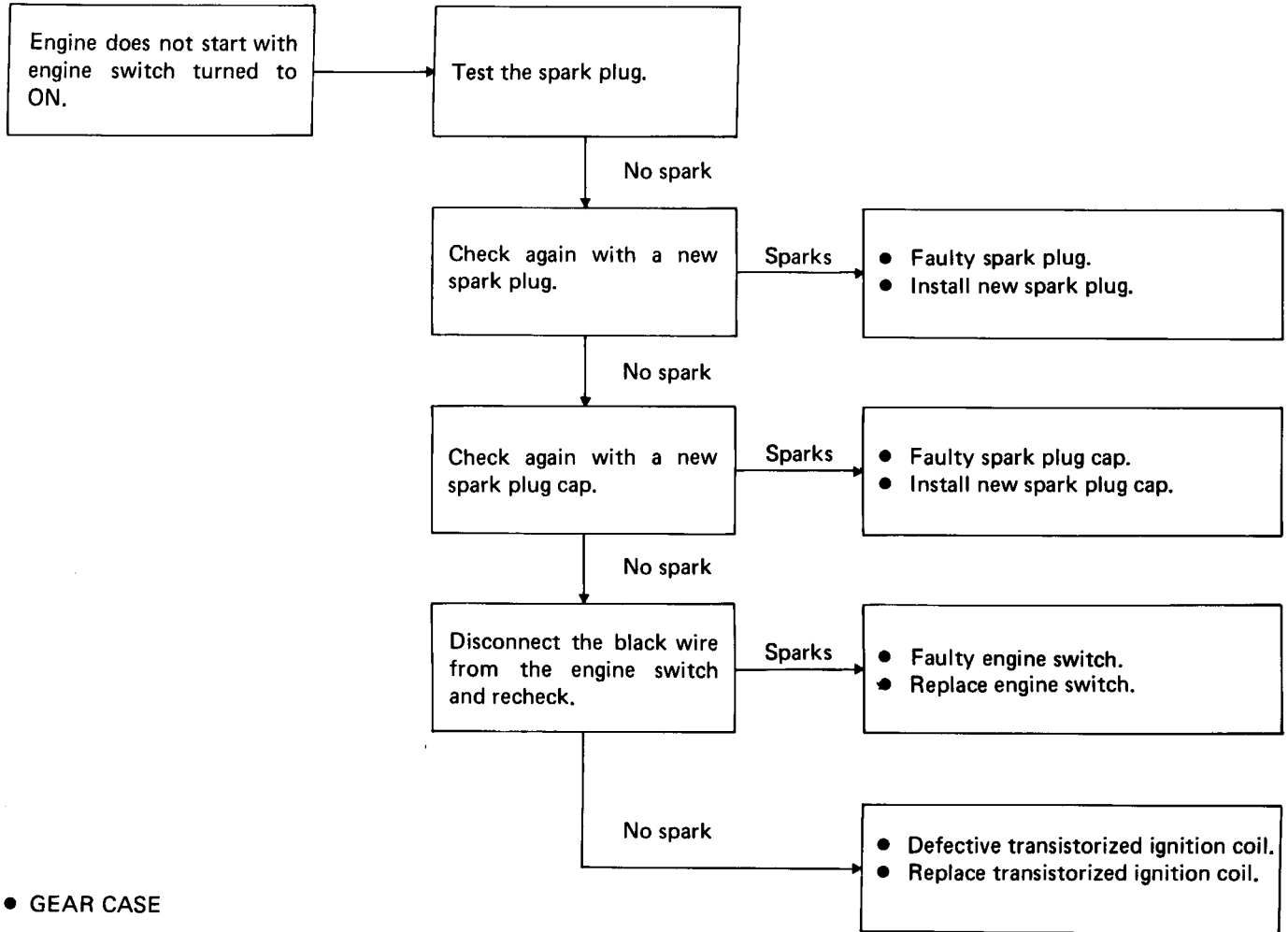
Standard cylinder compression	6.5 kg/cm ² (92.4 lbs/in ²) / 800 min ⁻¹ (r.p.m.)
-------------------------------	---



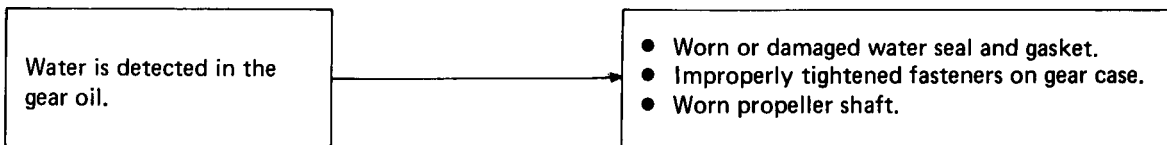
b. ABNORMAL ENGINE SPEED



c. IGNITION SYSTEM TROUBLESHOOTING



• GEAR CASE

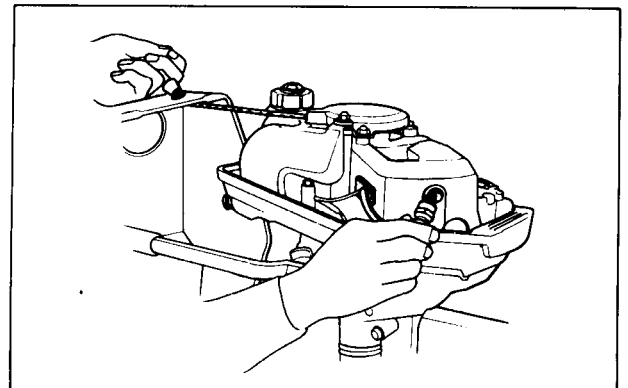


SPARK TEST

- 1) Remove the engine cover, plug cap and spark plug.
- 2) Attach the spark plug to the plug cap, and ground the side electrode against the 6 x 20 mm bolt.
- 3) Pull the recoil starter and check to see if sparks jump across the electrodes.

▲ WARNING

- Never hold the spark plug lead with wet hands while performing this test.
- Make sure that no fuel has been spilled on the engine—and that the plug is not wet with fuel.
- To avoid fire hazards, do not allow sparks near the plug hole.



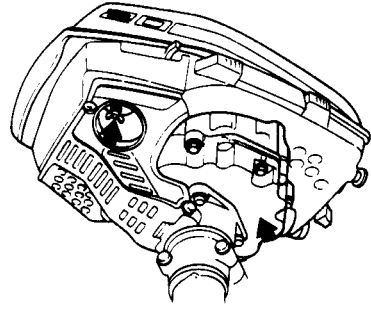
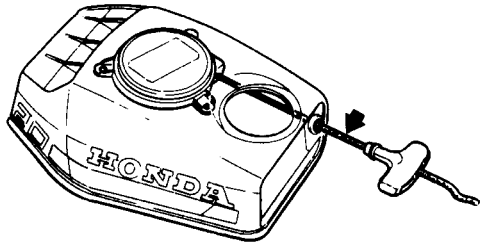
9. MAINTENANCE SCHEDULE

REGULAR SERVICE PERIOD Performed at every indicated month or operating hour intervals, whichever comes first.		EACH USE (3)	FIRST MONTH OR 20 HRS (2)	EVERY 6 MONTHS OR 100 HRS (2)	EVERY YEAR OR 200 HRS (2)
ITEM					
Engine oil	Check level	○			
	Change		○	○	
Gear case oil	Check level	○			
	Change		○		○
	Check for water contamination			○	
Starter rope	Check			○	
Carburetor linkage	Check		○		
Valve clearance	Check-Readjust		○		○
Spark plug	Clean-Readjust			○	
Shear pin	Check			○	
Lubrication	Grease			○(1)	
Fuel tank and filter	Clean				○
Combustion chamber and valves	Clean-Relap	Every 300 hours			
Fuel line	Check (Replace if necessary)	Every 3 years			

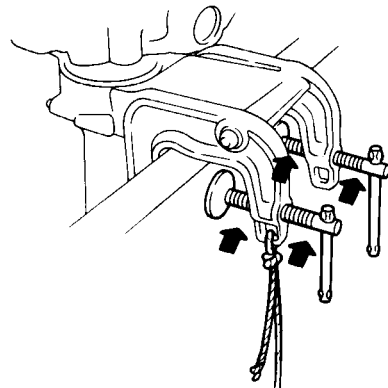
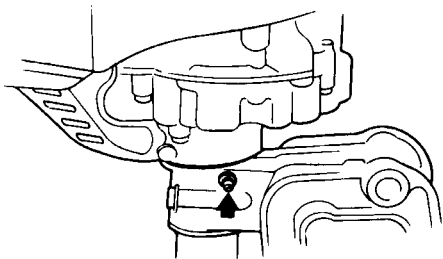
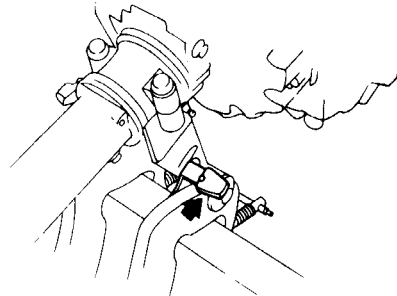
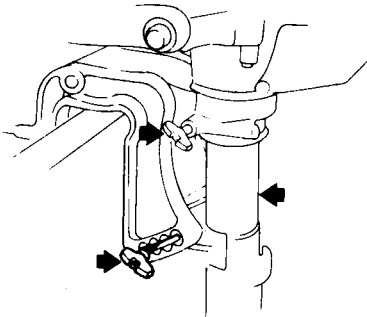
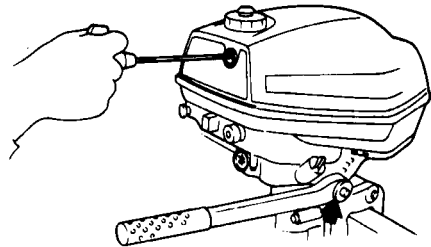
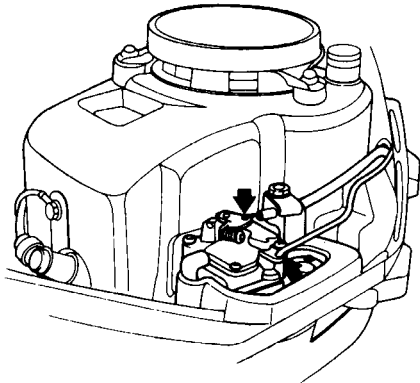
- NOTE: (1) Lubricate more frequently when used in salt water.
 (2) For professional commercial use, log hours of operation to determine proper maintenance intervals.
 (3) To maintain cooling system efficiency, flush the outboard motor with fresh water after each use in salt water.

10. LUBRICATION CHART

1. Wipe the outside of the engine with a cloth dipped in oil. Apply oil to the following parts.



2. Apply marine anti-corrosion grease to the following parts.



III. MAINTENANCE

HONDA
BF20·BF2A

- | | |
|---------------|-----------------------|
| 1. ENGINE OIL | 4. COMBUSTION CHAMBER |
| 2. GEAR OIL | 5. VALVE CLEARANCE |
| 3. SPARK PLUG | 6. CARBURETOR |

1. ENGINE OIL

CAUTION:

Used motor oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

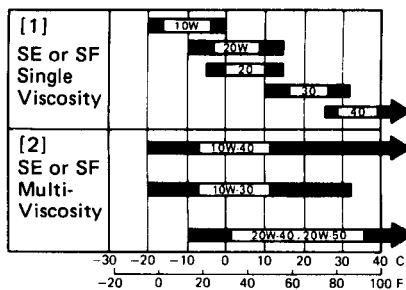
Drain the oil while the engine is still warm to assure rapid and complete draining.

1. Turn the fuel valve lever OFF, and close the fuel cap vent knob.
2. Remove the oil filler cap, and turn the motor on its side to drain the oil.
3. Stand the engine in an upright position, and fill the crankcase with the recommended oil. Check the oil level with the dipstick resting on the filler opening (do not screw in). Fill to the upper level mark on the dipstick.

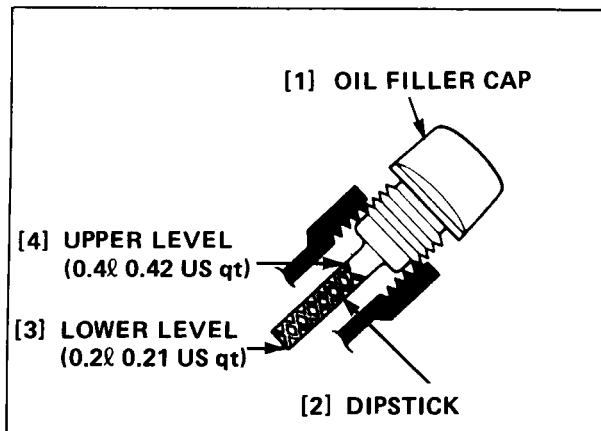
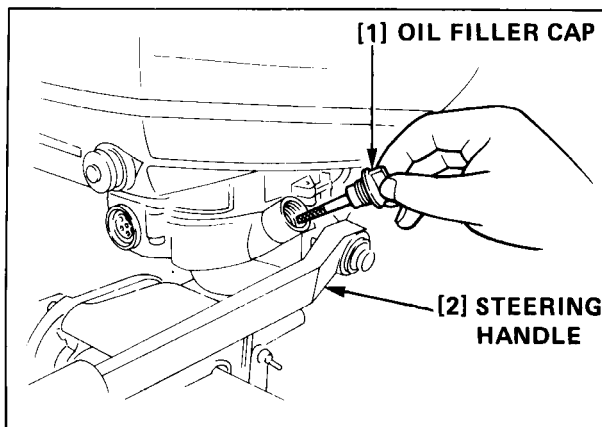
Engine oil capacity	0.4ℓ (0.42 US qt)
---------------------	-------------------

Recommended oil:

Select the appropriate viscosity for the average temperature in your area. SAE10W-40 is recommended for general, all-temperature use.



[3] Ambient temperature



2. GEAR OIL

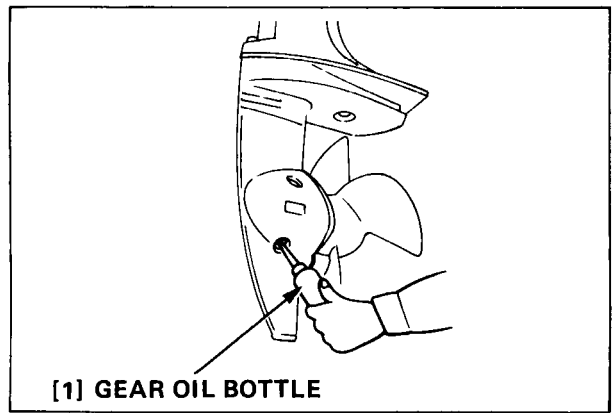
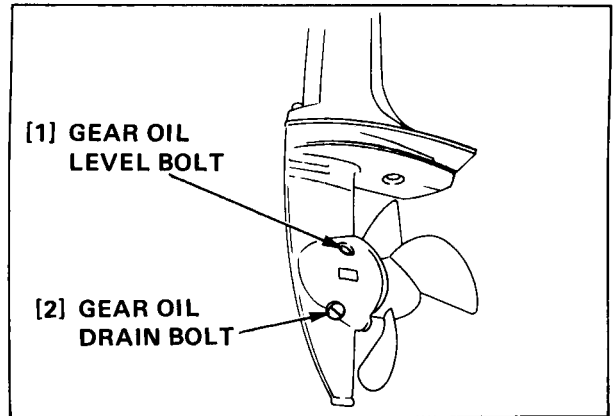
- 1) Remove the gear oil level bolt and gear oil drain bolt to drain the oil.
- 2) Using the gear oil bottle (optional part), inject oil through the drain bolt hole until it starts flowing out through the level bolt hole.
- 3) Reinstall and tighten the level and drain bolts securely.
- 4) Remove the oil bottle and reinstall the drain bolt.

Gear oil capacity	0.05ℓ (0.053 US qt)
-------------------	---------------------

Recommended oil	API standard (GL-4 or GL-5) SAE90 outboard motor gear oil
-----------------	--

CAUTION:

If water is detected in the oil, check the gasket and water seal for damage and the gear case for improper installation.



3. SPARK PLUG

- 1) Remove the engine cover and spark plug cap. Remove the spark plug using the socket wrench.
- 2) Visually inspect the spark plug. Discard it if the insulator is cracked or chipped.

Standard spark plug	BF20: BMR-4A (NGK) BF2A: BMR-4A (NGK), W14MR-U (ND)
---------------------	---

- 3) Remove carbon or other deposit with a stiff wire brush.
- 4) Measure the plug gap with a wire type feeler gauge.

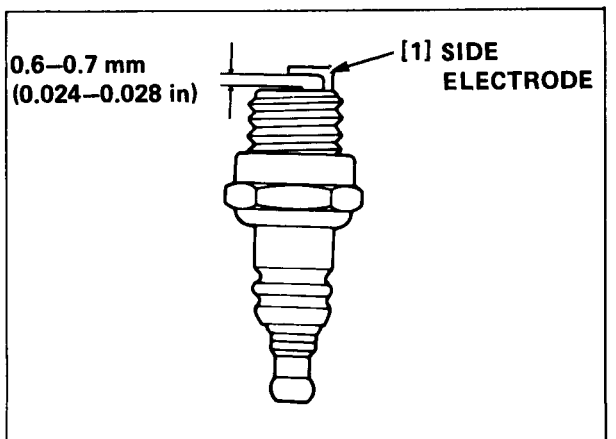
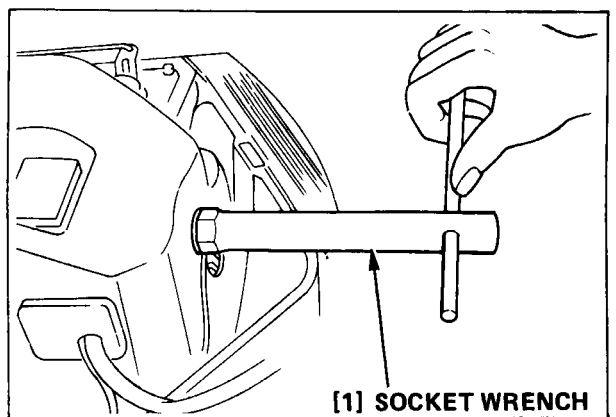
Spark plug gap	0.6–0.7 mm (0.024–0.028 in)
----------------	-----------------------------

If necessary, adjust the gap by bending the side electrode. Make sure the sealing washer is in good condition, replace if necessary.

Install the plug fingertight to seat the washer, then tighten with a plug wrench (an additional 1/2 turn if a new plug) to compress the sealing washer. If you are reusing a plug, tighten 1/8–1/4 turn after the plug seats.

CAUTION:

- The spark plug must be securely tightened. An improperly tightened plug can become very hot and possibly damage the engine.
- Never use a spark plug with an improper heat range.

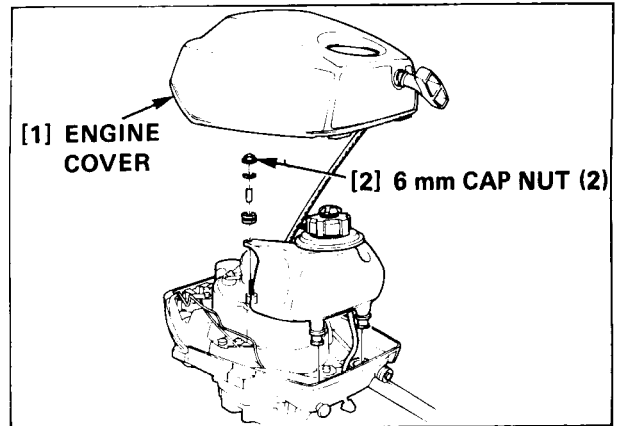


4. COMBUSTION CHAMBER

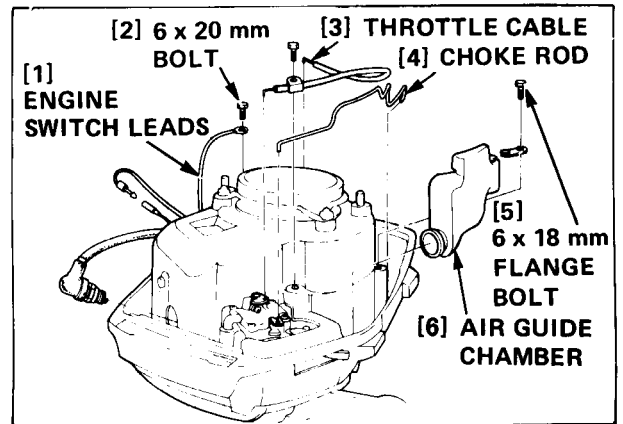
▲ WARNING

- Gasoline is flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks near the outboard motor while draining fuel.
- Always work in a well-ventilated area.
- Be sure to store drained fuel in a safe container.
- Be careful not to spill fuel. Fuel vapor or spilled fuel may ignite; Wipe up any spilled fuel immediately, and make sure the area is dry before starting the engine.

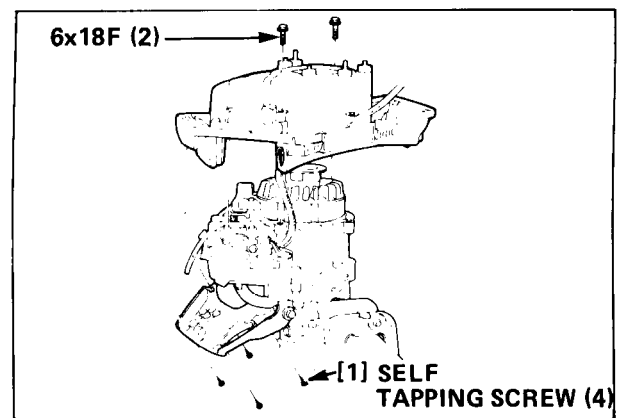
1) Remove the engine cover, recoil starter, two 6 mm cap nuts, and fuel tank.



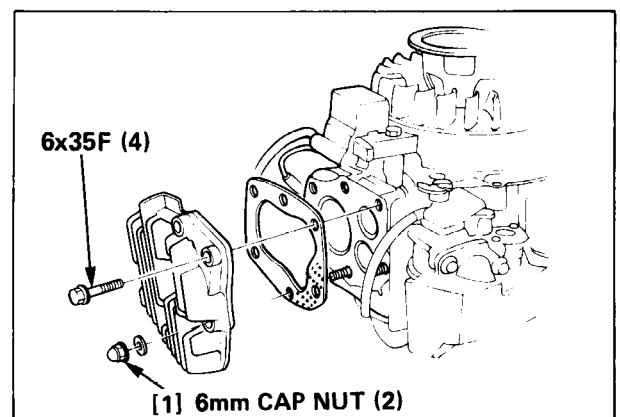
2) Remove the choke rod, throttle cable, 6 x 18 mm flange bolt, and air chamber. Disconnect the engine switch leads, spark plug cap and remove the 6 x 20 mm bolt. Remove the spark plug and fan cover grommet.



3) Remove the four 5 mm tapping screws, two 6x18 mm flange bolts, and fan cover.



4) Remove the four 6x35 mm flange bolts, two 6 mm cap nuts, and cylinder head.





Download the full PDF manual instantly.

Our customer service e-mail:

aservicemanualpdf@yahoo.com