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# **HONDA**

## **BF50·BF5A**

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### **PREFACE**

This manual covers the construction, function and servicing procedure of the Honda BF50·BF5A outboard motor. 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.

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# I. SPECIFICATIONS

**HONDA**  
**BF50·BF5A**

## 1. SPECIFICATIONS

## 2. DIMENSIONAL DRAWINGS

### 1. SPECIFICATIONS

#### DIMENSIONS/WEIGHT

Item \ Type	BF50S	BF50L	BF5A S	BF5A L
Overall length	525 mm (20.7 in)			
Overall width	340 mm (13.4 in)			
Overall height	1,005 mm (39.6 in)	1,135 mm (44.7 in)	1,005 mm (39.6 in)	1,135 mm (44.7 in)
Dry weight	27.0 kg (59.5 lb)	27.5 kg (60.6 lb)	27.0 kg (59.5 lb)	27.5 kg (60.6 lb)
Operating weight (incl. oil)	27.5 kg (60.6 lb)	28.0 kg (61.7 lb)	27.5 kg (60.6 lb)	28.0 kg (61.7 lb)
Transom height	445 mm (17.5 in)	572 mm (22.5 in)	445 mm (17.5 in)	572 mm (22.5 in)
Transom angle	5-stage (5° - 9° - 13° - 17° - 21°)			
Tilting	3-stage (30° - 45° - 70°)			
Swivel angle	R: 45°, L: 45°			

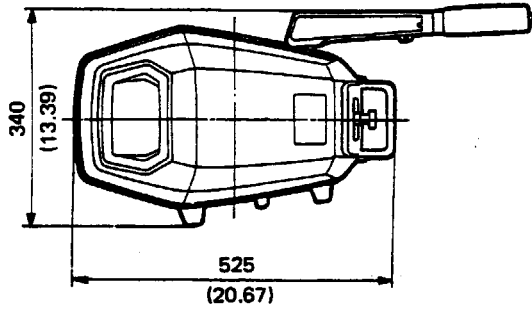
Type	Single cylinder, 4 stroke, water cooled, vertical OHV
Total piston displacement	127 cm <sup>3</sup> (7.7 cu in)
Bore x stroke	60 x 45 mm (2.36 x 1.77 in)
Maximum horsepower	5.0 PS/5,000 rpm
Maximum torque	7.9 N-m (0.79 kg-m, 5.71 ft-lb)
Compression ratio	8.7 : 1
Fuel consumption ratio	310 g/PS-h (0.68 lb/PS-h)
Cooling system	Forced water circulation by impeller pump with thermostat
Ignition system	Transistorized magneto
Ignition timing	25° BTDC fixed
Spark plug	(NGK) BPR5ES, (ND) W16EPR-U
Carburetor	Horizontal type, butterfly valves
Lubrication system	Pressure lubrication by trochoid pump
Lubricant capacity	0.55 ℓ (0.58 US qt, 0.48 Imp qt)
Starting system	Recoil starter
Stopping system	Grounding of primary circuit
Fuel	Regular automotive gasoline
Fuel tank capacity	13 ℓ (3.4 US gal, 2.9 Imp gal)
Fuel pump	Diaphragm type
Exhaust system	Underwater type

#### LOWER UNIT

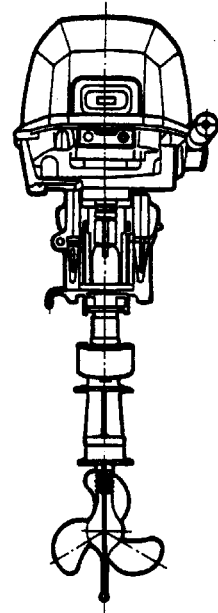
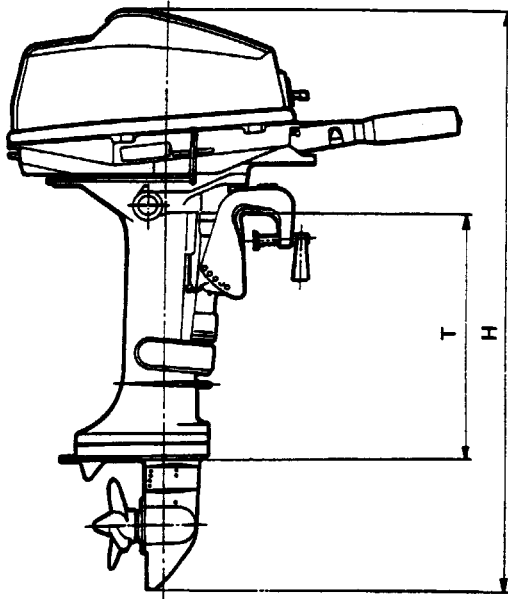
Clutch	Dog clutch (Forward - Neutral - Reverse)	
Gear ratio	0.48 (13/27)	
Gear case oil capacity	0.1 ℓ (0.21 US pt, 0.18 Imp pt)	
Propeller	(Standard)	(Optional)
No. of blades-Dia. x Pitch	3-200 mm x 190 mm (7-7/8 in x 7-1/2 in)	3-200 mm x 170 mm (7-7/8 in x 6-11/16 in)
Rotating direction	Clockwise (viewed from rear)	

## 2. DIMENSIONAL DRAWINGS

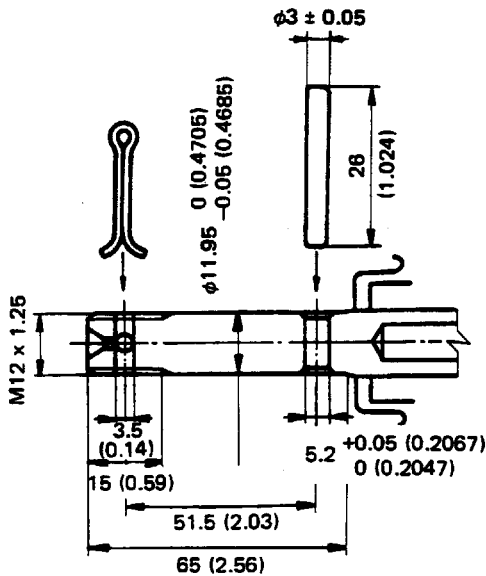
Unit mm (in)



	H: HEIGHT	T: TRANSOM HEIGHT
BF50S, BF5AS	1,005 mm (39.6 in)	445 mm (17.5 in)
BF50L, BF5AL	1,135 mm (44.7 in)	572 mm (22.5 in)



### ● PROPELLER SHAFT



# II. SERVICE INFORMATION

**HONDA**  
**BF50·BF5A**

- |                           |                                   |
|---------------------------|-----------------------------------|
| 1. GENERAL SAFETY         | 7. WIRING DIAGRAM                 |
| 2. SERVICE RULES          | 8. TUBE ROUTING                   |
| 3. SERIAL NUMBER LOCATION | 9. TROUBLESHOOTING                |
| 4. MAINTENANCE STANDARDS  | 10. MAINTENANCE SCHEDULE          |
| 5. TORQUE VALUES          | 11. RECOMMENDED SERVICE MATERIALS |
| 6. SPECIAL TOOLS          | 12. LUBRICATION CHART             |

## 1. GENERAL SAFETY

Pay attention to these symbols and their meanings:

**▲ 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

- 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.
- 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 spark plug wires when the engine is run with the cover off.
- Make sure the water level is above the anti-cavitation plate when testing the unit in a tank, otherwise the pump will be damaged and the engine will overheat.

## 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 bolt 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 surfaces before reassembly.
6. After reassembly, check all parts for proper installation and operation.
7. Follow the instructions represented by these symbols when they are used:



: Apply oil.

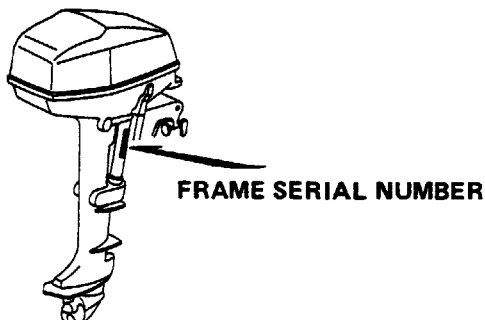


: Apply grease.



: Use special tool.

## 3. SERIAL NUMBER LOCATION



The serial number is stamped on the identification plate attached to the swivel case. Refer to the serial number when ordering parts or making technical inquiries.

### 4. MAINTENANCE STANDARDS

Item		Standard	Service Limit	
Engine	Idle speed	1,300±100min <sup>-1</sup> (rpm) (in Forward)	—	
	Cylinder compression	4,500±100 kPa (4.5±1 kg/cm <sup>2</sup> , 64±14 psi)/600 min <sup>-1</sup> (rpm)	—	
Carburetor	Main jet	#75	—	
	Pilot screw opening	2-3/8 turns	—	
	Float height	9.0–11.0 mm (0.35–0.43 in)	—	
Thermostat	Opens	50°–54°C (122°–140°F)	—	
	Valve lift	3–4 mm (0.12–0.16 in)	—	
Spark plug	Gap	0.7–0.8 mm (0.028–0.031 in)	—	
Valve	Valve tappet clearance	IN	0.06–0.14 mm (0.002–0.006 in)	—
		EX	0.11–0.19 mm (0.004–0.007 in)	—
	Valve stem O.D.	IN	5.48 mm (0.216 in)	5.45 mm (0.215 in)
		EX	5.44 mm (0.214 in)	5.41 mm (0.213 in)
	Valve guide I.D.	IN	5.50 mm (0.217 in)	5.54 mm (0.218 in)
		EX	5.50 mm (0.217 in)	5.57 mm (0.219 in)
	Valve stem-to-guide clearance	IN	0.020–0.044 mm (0.0008–0.0017 in)	0.07 mm (0.003 in)
		EX	0.060–0.087 mm (0.0024–0.0034 in)	0.15 mm (0.006 in)
	Valve seat width		0.8 mm (0.03 in)	1.80 mm (0.070 in)
			29.60 mm (1.165 in)	28.10 mm (1.106 in)
Camshaft	Cam height	IN	27.710 mm (1.0909 in)	27.45 mm (1.081 in)
		EX	27.747 mm (1.0924 in)	27.50 mm (1.083 in)
Oil pump	O.D. (at oil pump)	13.984 mm (0.5506 in)	13.95 mm (0.549 in)	
	Body I.D.	23.15 mm (0.911 in)	23.20 mm (0.913 in)	
	Inner rotor-to-outer rotor clearance	0.15 mm (0.006 in) max.	0.20 mm (0.008 in)	
	Outer rotor-to-body clearance	0.15–0.21 mm (0.006–0.008 in)	0.26 mm (0.010 in)	
	Outer rotor height	11.98 mm (0.472 in)	11.95 mm (0.470 in)	
	Pump body depth	12.00 mm (0.472 in)	12.06 mm (0.475 in)	
	Rotor-to-body side clearance	0.02–0.09 mm (0.0008–0.0035 in)	0.11 mm (0.004 in)	
Piston	O.D. (at skirt)	59.985 mm (2.3616 in)	59.92 mm (2.359 in)	
	Piston pin hole I.D.	18.002 mm (0.7087 in)	18.02 mm (0.709 in)	
	Piston pin O.D.	18.000 mm (0.7087 in)	17.97 mm (0.707 in)	
	Piston pin-to-piston clearance	0.002–0.014 mm (0.0001–0.0006 in)	0.04 mm (0.002 in)	
Cylinder	Piston ring side clearance			
		Top/Second/Oil	0.015–0.045 mm (0.0006–0.0018 in)	0.10 mm (0.004 in)
	Ring end gap	Top/Second/Oil	0.15–0.35 mm (0.006–0.014 in)	0.50 mm (0.020 in)
	Sleeve I.D.	60.000 mm (2.3622 in)	60.07 mm (2.365 in)	
	Piston-to-cylinder clearance	0.015–0.050 mm (0.0006–0.0020 in)	0.10 mm (0.004 in)	

# HONDA

## BF50·BF5A

Item		Standard	Service Limit
Connecting rod	Small end I.D.	18.005 mm (0.7089 in)	18.04 mm (0.710 in)
	Big end radial clearance	0.04–0.063 mm (0.0016–0.0025 in)	0.08 mm (0.003 in)
Crankshaft	Big end axial clearance	0.1–0.7 mm (0.004–0.028 in)	1.00 mm (0.039 in)
	Crankpin O.D.	29.98 mm (1.180 in)	29.95 mm (1.179 in)
Oil pan	Journal O.D. (at oil pan)	24.993 mm (0.9840 in)	24.97 mm (0.983 in)
	I.D.	25.013 mm (0.9848 in)	25.04 mm (0.986 in)
Propeller shaft	Oil pan-to-crankshaft clearance	0.020–0.046 mm (0.0008–0.0018 in)	0.07 mm (0.003 in)
	O.D. (at bevel gear) Forward	11.984 mm (0.4718 in)	11.95 mm (0.470 in)
Pinion shaft	Reverse	12.984 mm (0.5112 in)	12.95 mm (0.510 in)
	Bevel gear I.D. Forward	12.00 mm (0.472 in)	12.04 mm (0.474 in)
	Reverse	13.00 mm (0.512 in)	13.04 mm (0.513 in)
	O.D. (at gear case)	12.984 mm (0.5112 in)	12.95 mm (0.510 in)
Gear case	Bushing I.D.	13.00 mm (0.512 in)	13.04 mm (0.513 in)
	Case-to-pinion shaft clearance	0.016–0.045 mm (0.0006–0.0018 in)	0.09 mm (0.004 in)
Transistorized ignition coil	Resistance Primary	0.7 – 0.9 Ω	—
	Secondary	6.3 – 7.7 kΩ	—
	Air gap	0.4±0.2 mm (0.02±0.01 in)	—

## 5. TORQUE VALUES

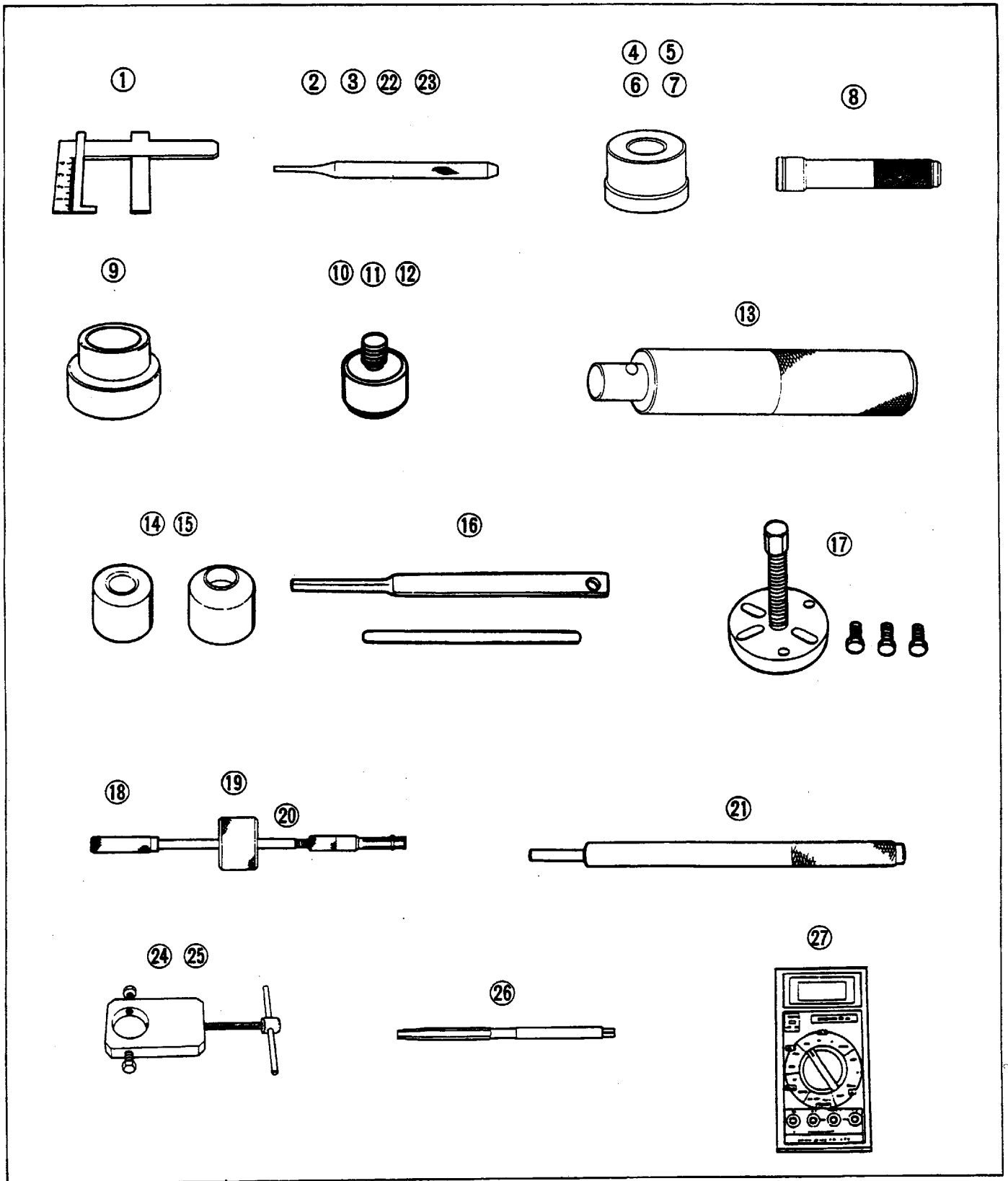
Part	Fasteners	Torque
Connecting rod	M7 x 1.0 x 35 bolt	11–13 N·m (110–130 kg-cm, 8.0–9.3 ft-lb)
Oil drain plug	M10 x 1.25 x 24 bolt	15–20 N·m (150–200 kg-cm, 10.8–14.5 ft-lb)
Oil pan	M8 x 1.25 x 32 bolt	22–28 N·m (220–280 kg-cm, 15.9–20.2 ft-lb)
Cylinder head	M8 x 1.25 x 60 bolt	22–28 N·m (220–280 kg-cm, 15.9–20.2 ft-lb)
	M8 x 1.25 x 90 bolt	22–28 N·m (220–280 kg-cm, 15.9–20.2 ft-lb)
Pivot bolt	M8 x 1.25 bolt	28–30 N·m (280–300 kg-cm, 20.2–21.7 ft-lb)
Pivot adjust nut	M6 x 0.5 nut	8–12 N·m (80–120 kg-cm, 5.8–8.7 ft-lb)
Oil pressure switch	PT1/8	7–10 N·m (70–100 kg-cm, 5.1–7.2 ft-lb)
Oil pressure switch wire	4 mm pan screw	1–2 N·m (10–20 kg-cm, 0.7–1.4 ft-lb)
Flywheel	M14 x 1.5 nut	70–80 N·m (700–800 kg-cm, 50.6–57.8 ft-lb)
Spark plug	M10 x 1.25	15–25 N·m (150–250 kg-cm, 10.8–18.1 ft-lb)
Fuel meter	M5 x 0.8 x 10 pan screw	3–4 N·m (30–40 kg-cm, 2.2–2.9 ft-lb)
Oil check bolt	M8 x 1.25 bolt	5–8 N·m (50–80 kg-cm, 3.6–5.8 ft-lb)
Stearn bracket	M8 x 1.25 x 130 bolt	15–20 N·m (150–200 kg-cm, 10.8–14.5 ft-lb)
Choke knob guide	M16 x 1.0 nut	2–4 N·m (20–40 kg-cm, 1.4–2.9 ft-lb)
Throttle rod set bolt	M5 x 0.8 x 8	1.7–2.5 N·m (17–25 kg-cm, 1.2–1.8 ft-lb)
Engine mounting bolt	M6 x 1.0 x 32 bolt	10–12 N·m (100–120 kg-cm, 7.2–8.7 ft-lb)
	M6 x 1.0 x 40 bolt	10–12 N·m (100–120 kg-cm, 7.2–8.7 ft-lb)
Standard torque values	5 mm bolt, nut	4–7 N·m (40–70 kg-cm, 2.9–5.1 ft-lb)
	6 mm bolt, nut	8–12 N·m (80–120 kg-cm, 5.8–8.7 ft-lb)
	8 mm bolt, nut	20–28 N·m (200–280 kg-cm, 14.5–20.2 ft-lb)
	10 mm bolt, nut	35–40 N·m (350–400 kg-cm, 25.3–28.9 ft-lb)

### 6. SPECIAL TOOLS

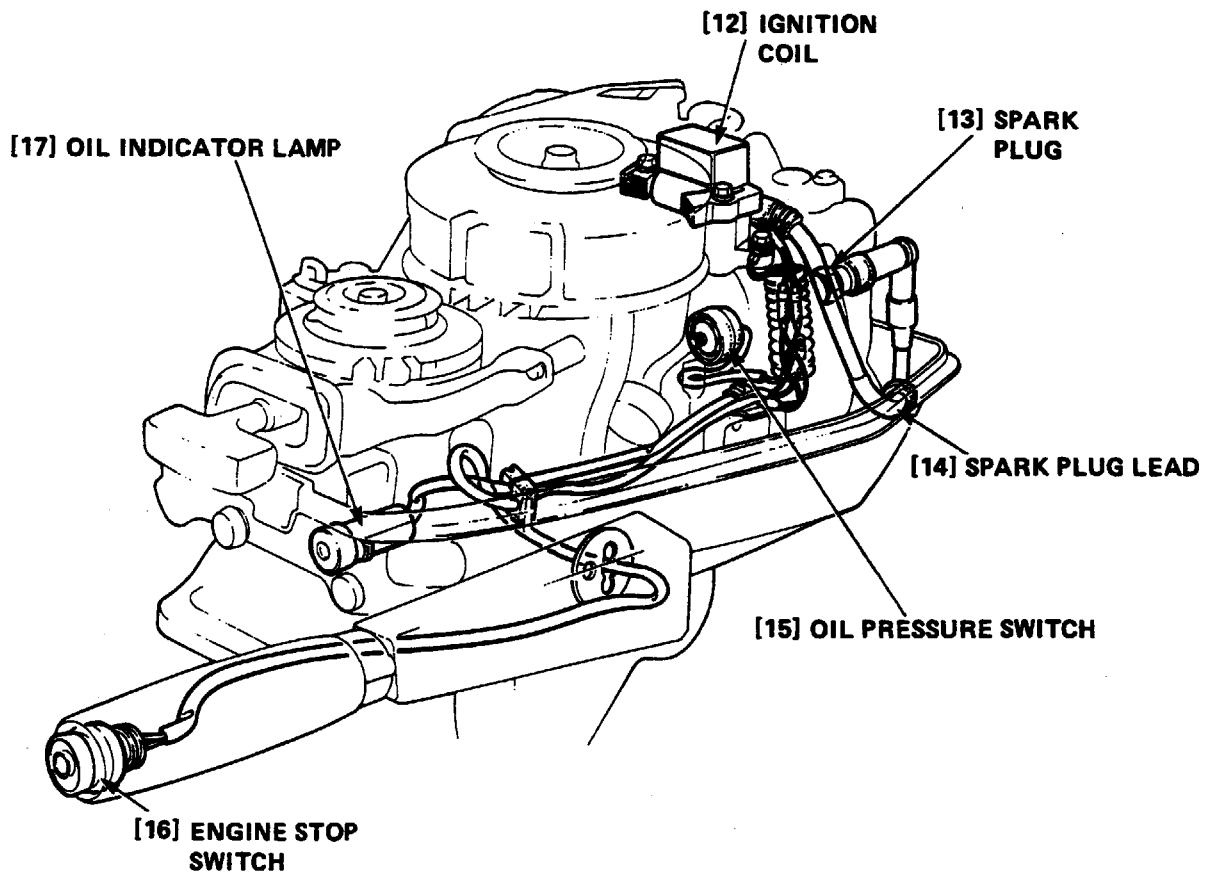
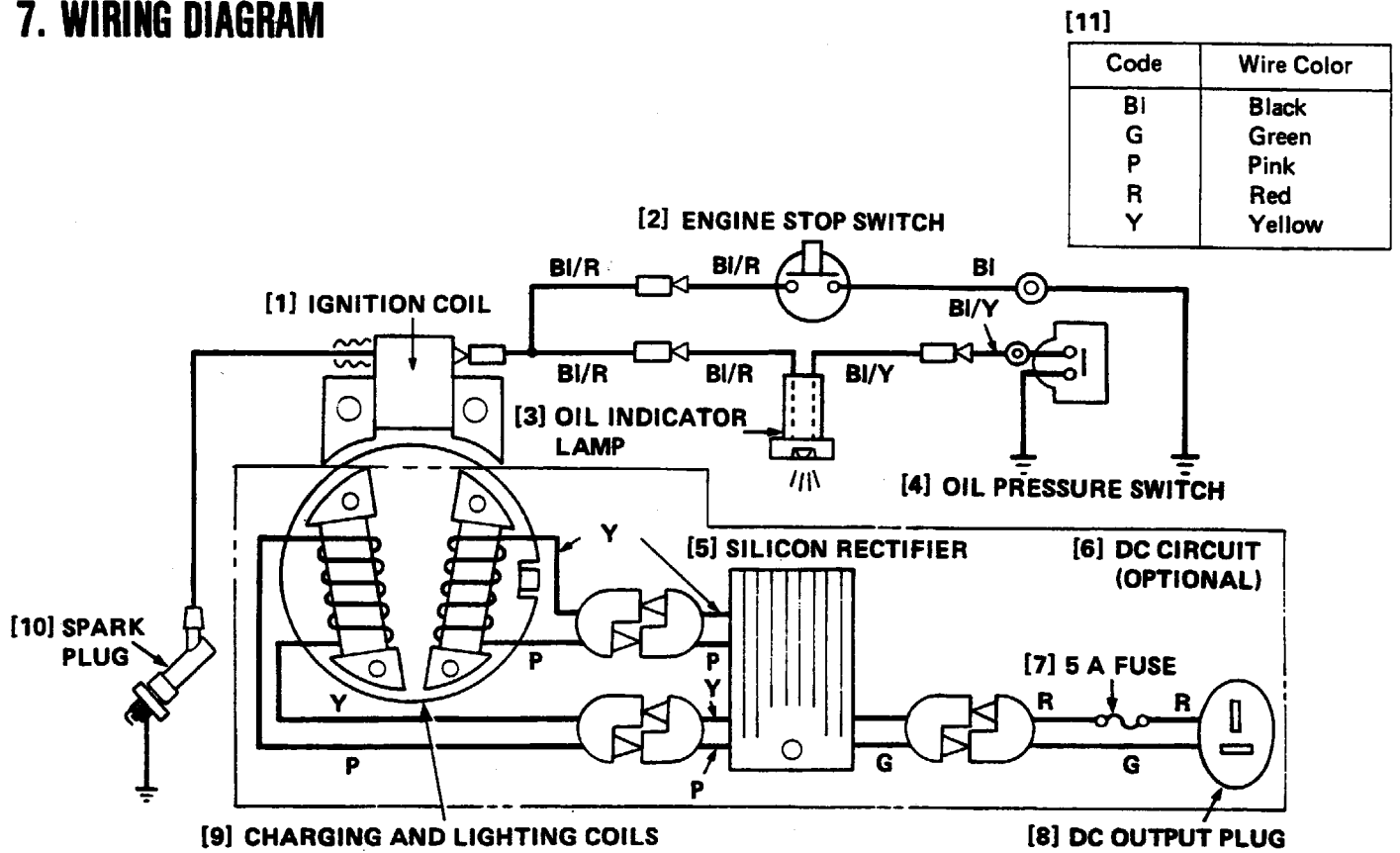
No.	Tool name	Tool number	Application
1	Float level gauge	07401-0010000	Carburetor float level inspection
2	Pin driver, 2.5 mm	07744-0010100	2.5 mm spring pin removal/installation
3	Pin driver, 3 mm	07744-0010200	3.0 mm spring pin removal/installation
4	Attachment, 32 x 35 mm	07746-0010100	Swivel case oil seal, 13 mm water seal installation
5	Attachment, 37 x 40 mm	07746-0010200	Crankshaft oil seal, coupling seal installation
6	Attachment, 42 x 47 mm	07746-0010300	6004 bearing (gear case) installation
7	Attachment, 52 x 55 mm	07746-0010400	6205 bearing (gear case) installation
8	Driver, 40 mm	07746-0030100	Use with 07746-0030200 (9)
9	Attachment, 25 mm	07746-0030200	Timing gear installation
10	Pilot, 20 mm	07746-0040500	6004 bearing (gear case) installation
11	Pilot, 25 mm	07746-0040600	6205 bearing (crankcase) installation
12	Pilot, 28 mm	07746-0041100	Swivel case oil seal installation
13	Driver	07749-0010000	Handle for tools (4) thru (7) and (10) thru (12)
14	Valve seat cutter, 45°	07780-0010200	} Valve seat reconditioning
15	Valve seat cutter, 32°	07780-0012100	
16	Cutter holder	07781-0010100	
17	Flywheel puller	07935-8050002	Flywheel removal
		or	
		07935-8050003	
18	Bearing remover handle	07936-3710100	Use with 07936-3710600 (20)
19	Bearing remover weight	07936-3710200	Use with 07936-3710600 (20)
20	Bearing remover, 20 mm	07936-3710600	6004 bearing (gear case) removal
21	Valve guide driver	07942-3290100	Valve guide removal/installation
22	Pin driver, 2 mm	07944-9350100	2 mm spring pin removal/installation
23	Pin driver, 4 mm	07944-9350200	4 mm spring pin removal/installation
24	Pin flare tool, 3.0 mm	07968-ZV10000	Propeller shaft dis./assembly
25	Pin remover shaft 3.0 mm	07968-ZV10100	Use with 07968-ZV10000 (24)
26	Valve guide reamer	07984-2000000	Valve guide reaming
27	Digital multimeter	KS-AHM-32-003	Electrical testing



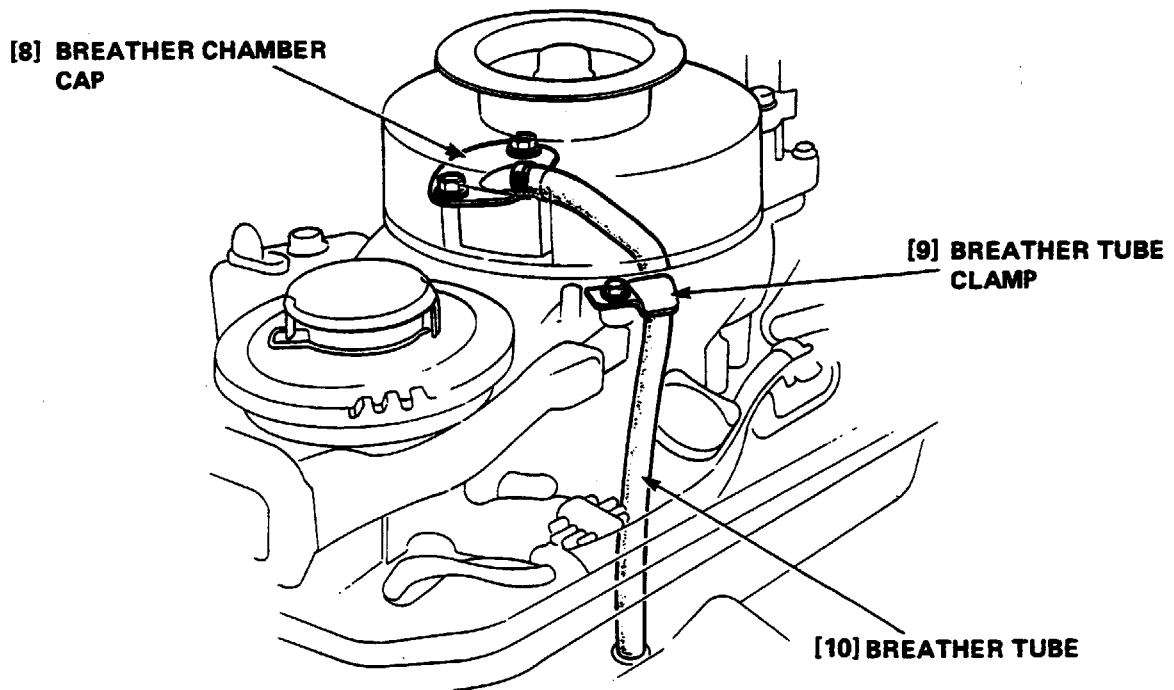
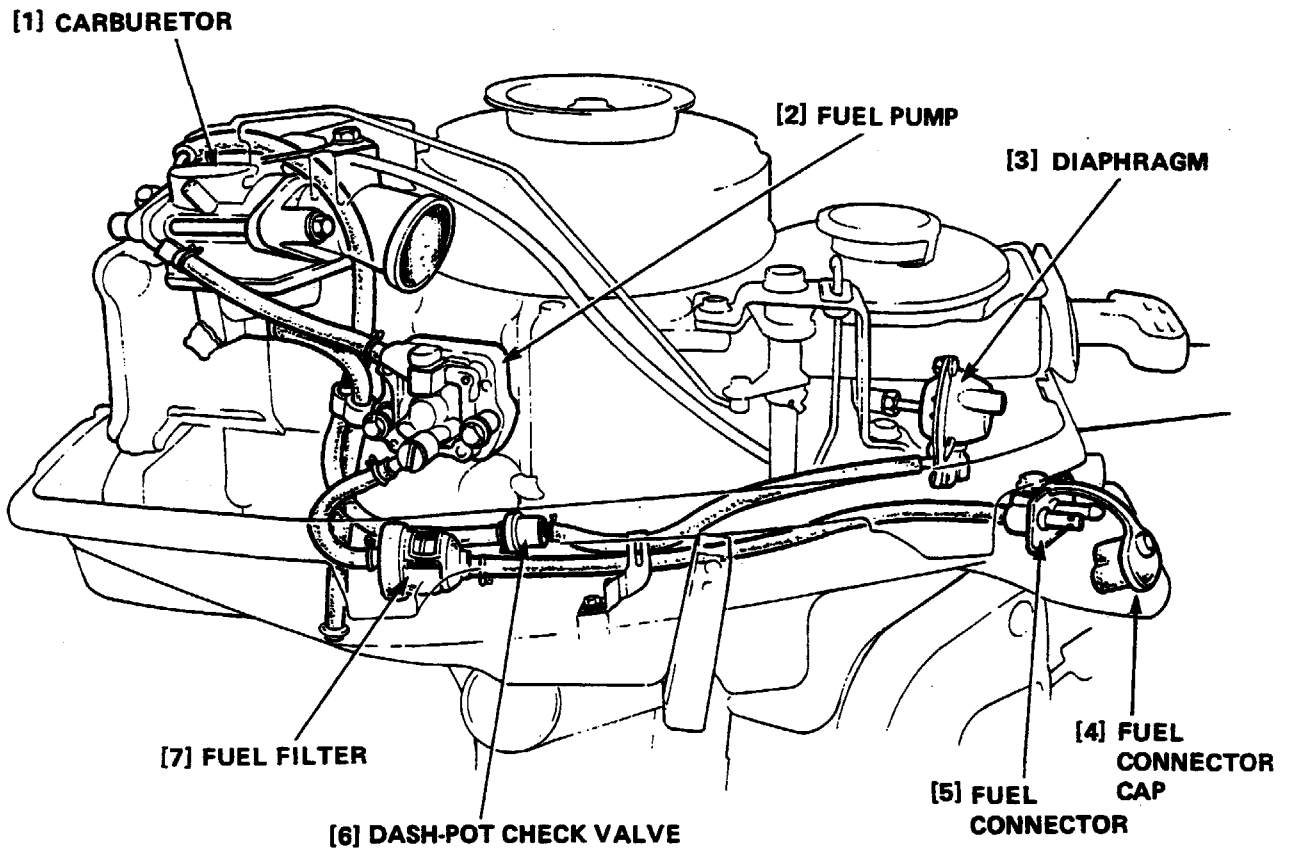
# HONDA BF50·BF5A



## 7. WIRING DIAGRAM



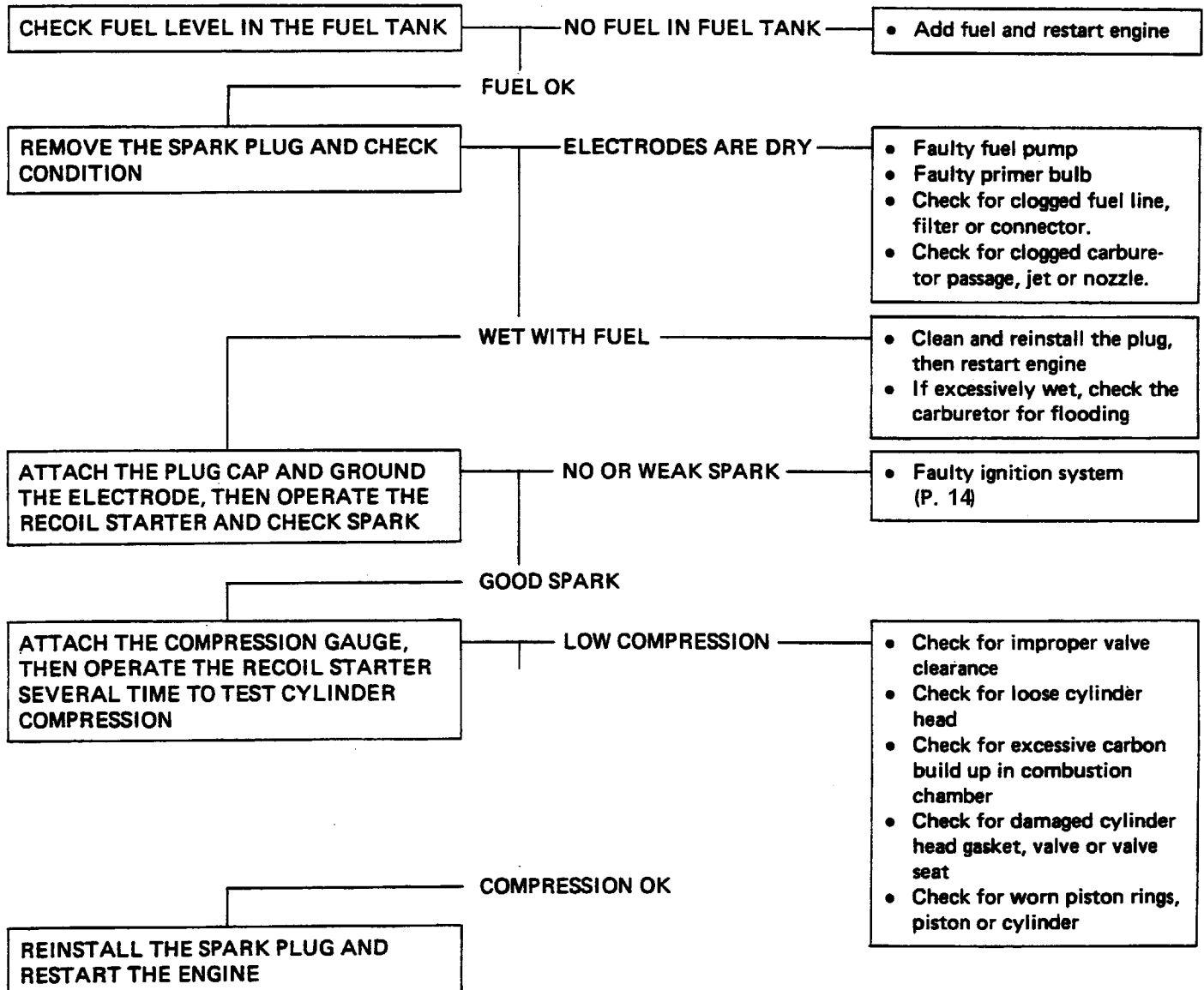
**8. TUBE ROUTING**



## 9. TROUBLESHOOTING

### • ENGINE

#### a. HARD STARTING

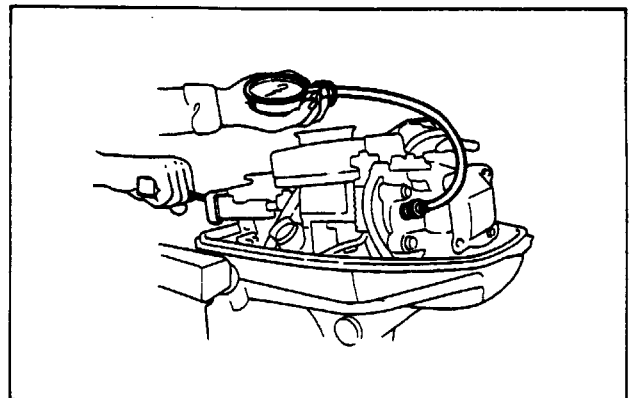


### CYLINDER COMPRESSION

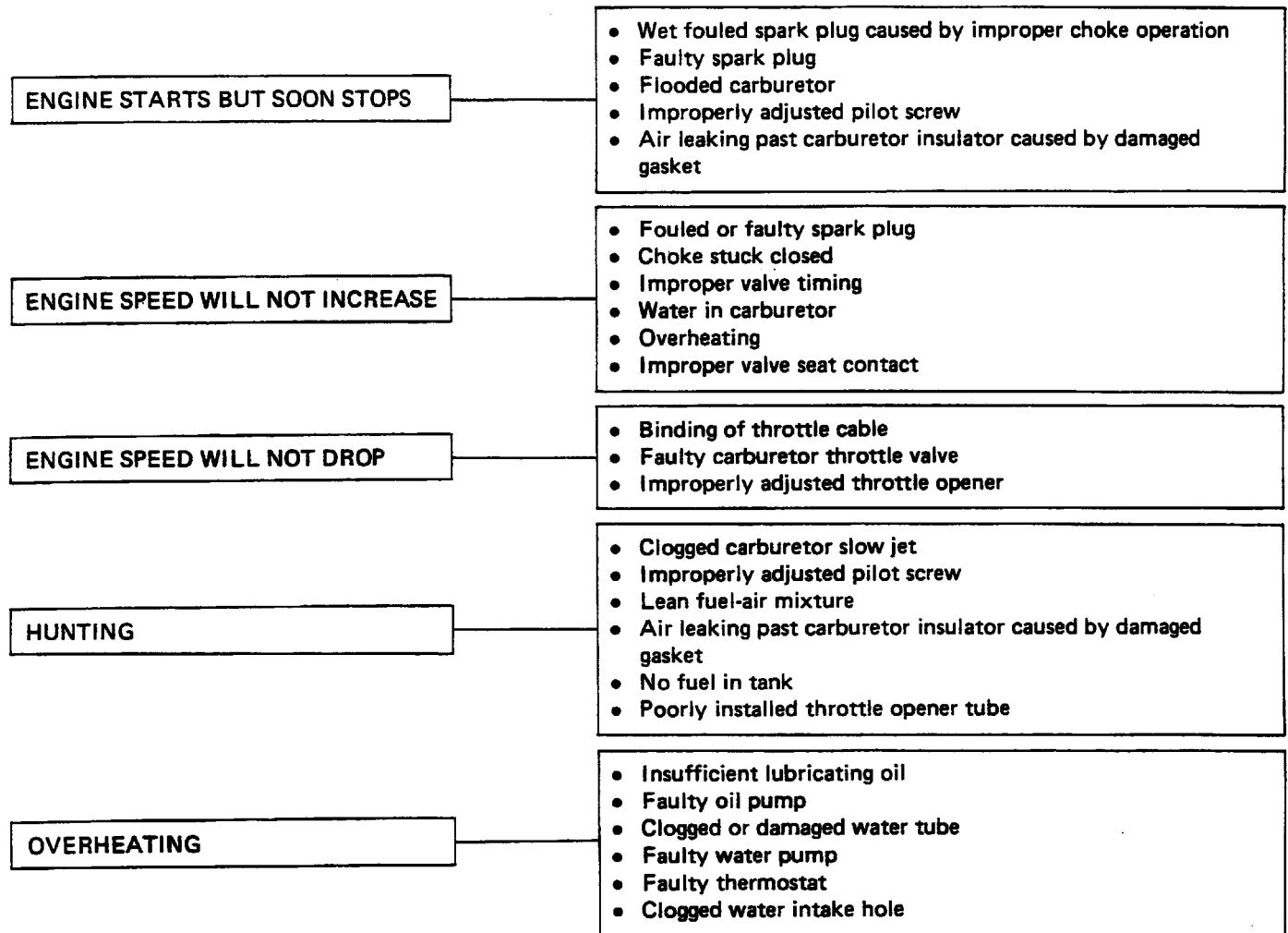
- 1) Remove the spark plug, ground the spark lead, and install a compression gauge in the spark plug hole.
- 2) Use the throttle friction knob to hold the throttle in the fully open position and pull out the choke knob to hold it in the fully open position.
- 3) Operate the recoil starter until the highest reading is reached.

Cylinder compression	4,500 ± 100 kPa (4.5 ± 1 kg/cm <sup>2</sup> , 64 ± 14 psi)/600 min <sup>-1</sup> (rpm)
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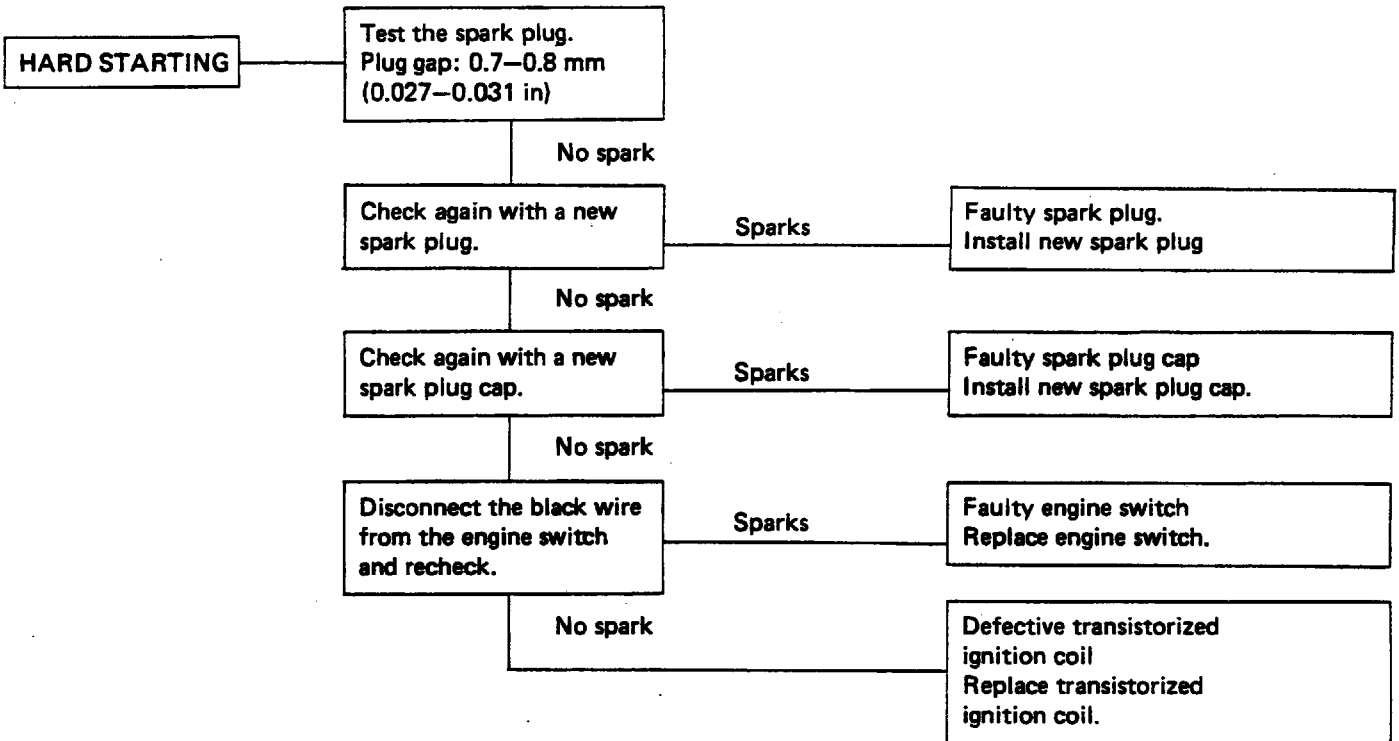
- 4) Remove the compression gauge and reinstall the plug.



### b. POOR PERFORMANCE



### • IGNITION SYSTEM

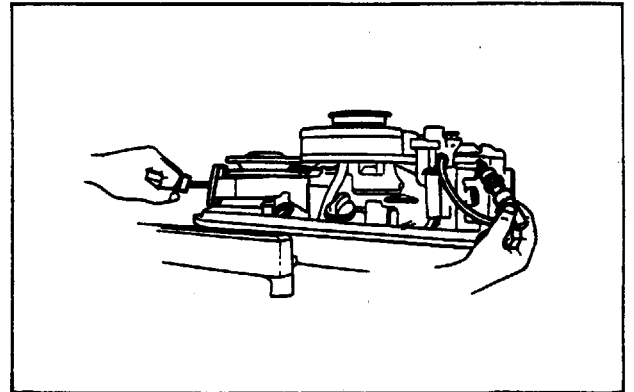


### SPARK TEST

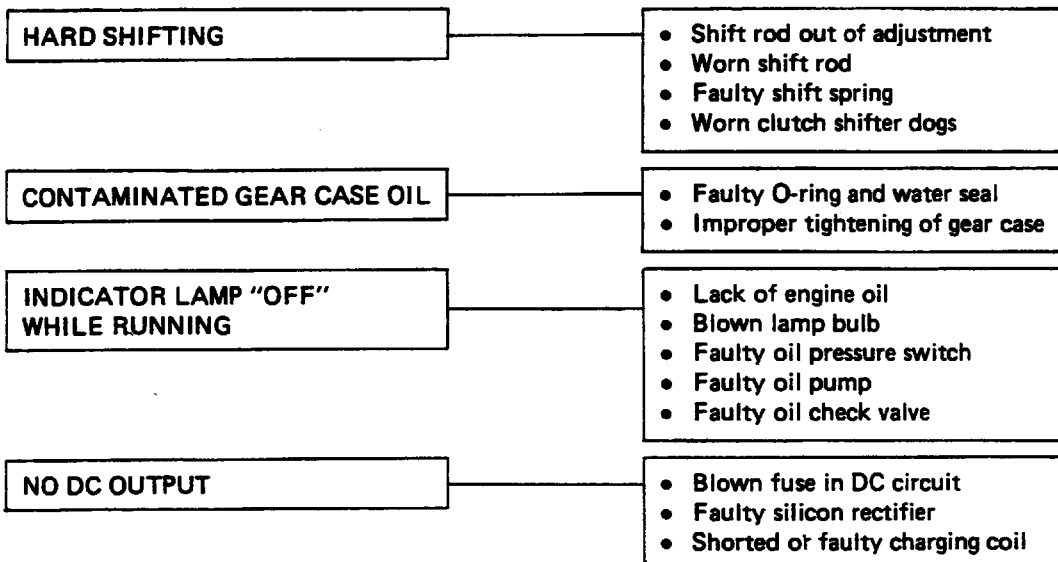
#### ▲ WARNING

- When checking spark, keep your hands away from high tension electrical parts.
- Make sure that no fuel has been spilled on the engine and that the plug is not wet with fuel.

- 1) Remove the spark plug, attach the plug cap and ground the circuit by touching the negative (side) electrode to an 8 mm head bolt as shown.
- 2) Pull the recoil starter and check to see if sparks jump across the electrodes.



### • MISCELLANEOUS



### 10. MAINTENANCE SCHEDULE

REGULAR SERVICE PERIOD Performed at every indicated month or operating hour interval, whichever comes first. (2)		EACH USE	FIRST MONTH OR 20 HRS	EVERY 6 MONTHS OR 100 HRS	EVERY YEAR OR 200 HRS
ITEM					
Engine oil	Check level	○			
	Change		○	○	
Gear case oil	Check level	○			
	Change		○		○
	Check for water contamination			○	
Carburetor linkage	Check		○		
Valve clearance	Check-Readjust		○		○
Spark plug	Clean-Readjust			○	
Shear pin	Check			○	
Lubrication	Grease			○ (1)	
Fuel tank and filter	Clean				○
Fuel filter	Replace				○
Thermostat	Check				○
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.

### 11. RECOMMENDED SERVICE MATERIALS

Types of Lubricants or Materials	Items to be Serviced	Brand	Remarks
OIL	ENGINE OIL PAN	SAE 10W-40 SE or SF Rated	Capacity: 0.55 ℓ (0.58 US qt, 0.48 Imp qt)
	GEAR CASE	SAE 90 MARINE	Capacity: 0.1 ℓ (0.21 US pt, 0.18 Imp pt)
LIQUID SEALANT	CRANKCASE	THREE-BOND · 5TW ←	} or equivalent
	EXTENSION CASE	CEMEDINE 521 ←	
	OIL FILLER BODY	CEMEDINE 521 ←	
	OIL FILTER	THREE-BOND · No. 50 ←	
	OIL PRESSURE SWITCH	CEMEDINE 521 ←	
	HANDLEBAR GRIP	LOCTITE ←	With anti-rust agent
RUBBER			
BOLTS			

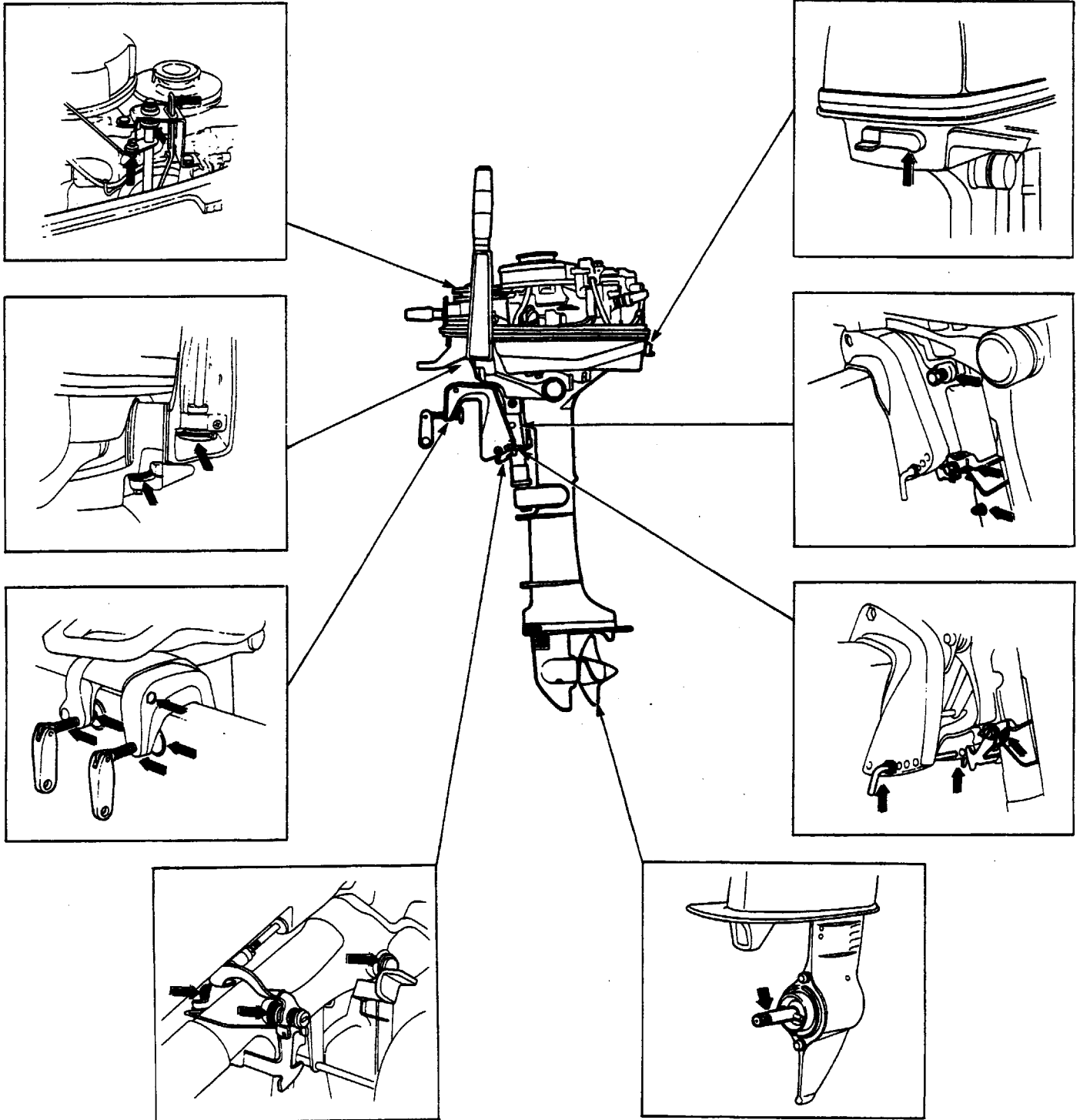


## 12. LUBRICATION CHART

Apply marine anticorrosion grease to the following parts.

**NOTE:**

Apply anticorrosion oil to pivot surface where grease cannot penetrate.



# III. MAINTENANCE

**HONDA**  
**BF50·BF5A**

1. ENGINE OIL
2. GEAR OIL
3. SPARK PLUG
4. VALVE CLEARANCE
5. FUEL LINE FILTER
6. FUEL TANK FILTER

7. CARBURETOR
8. THROTTLE CABLE
9. THROTTLE OPENER SYSTEM
10. SHIFT ROD
11. REVERSE LOCK

## 1. ENGINE OIL

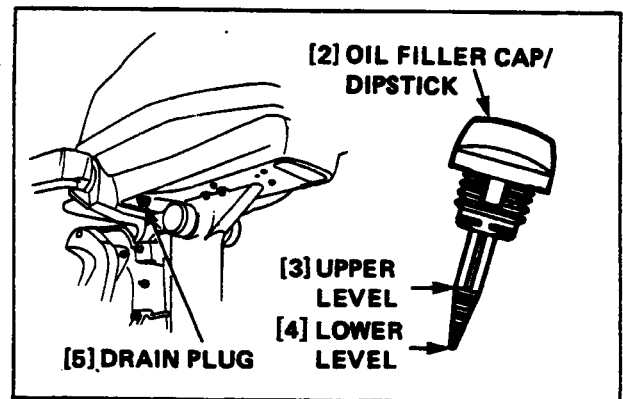
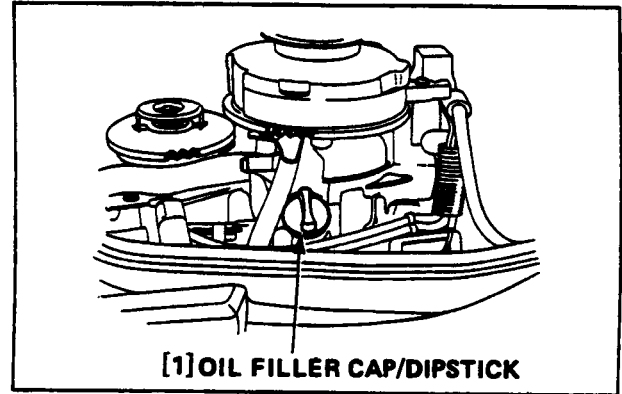
### NOTE:

Draining can be performed rapidly and completely while the engine is still warm.

- 1) Remove the oil filler cap/dipstick and drain plug. Allow the oil to drain completely.
- 2) Reinstall the drain plug and tighten it securely.
- 3) Fill the crankcase with the recommended engine oil to the upper level mark on the dipstick. Check the oil level with the dipstick resting on the filter opening (do not screw in).

### NOTE:

- Check the oil level with the dipstick fully inserted but not screwed in.
- Be sure the engine is upright, not tilted. When checking the engine oil level.



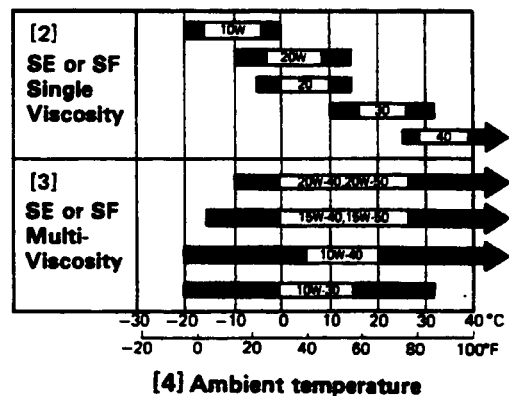
### RECOMMENDED ENGINE OIL:

SAE10W-30 is recommended for general, all-temperature use; service classification SE or SF.

OIL CAPACITY: 0.55ℓ (0.58 US qt, 0.48 Imp qt)

- 4) Reinstall the oil filler cap/dipstick.

[1] Select the appropriate viscosity for the average temperature in your area.

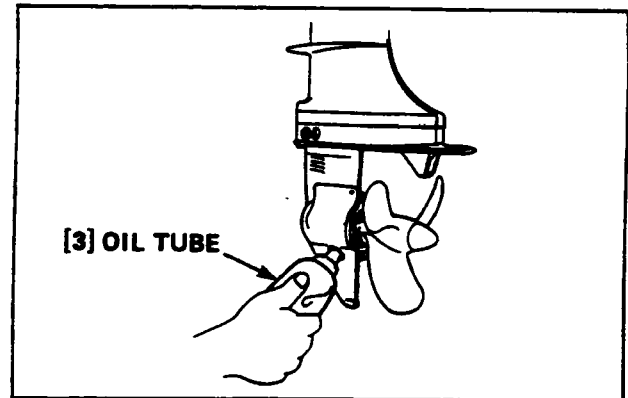
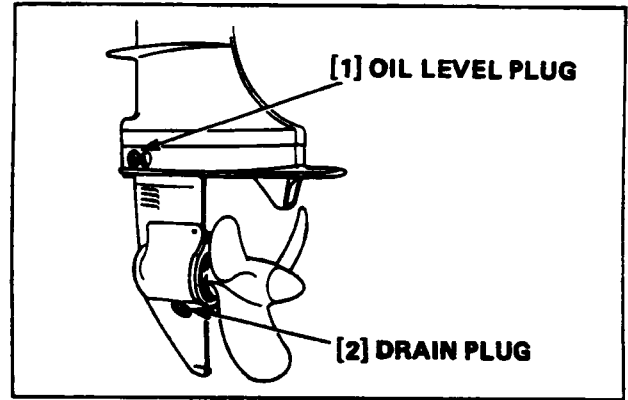


### 2. GEAR OIL

- 1) Remove the oil level plug and drain plug to drain oil thoroughly.
- 2) Squeeze fresh oil through the drain plug hole until oil begins flowing out of the level plug hole. Use the oil tube available as an optional part.

GEAR OIL CAPACITY:	0.1 ℓ (0.21 US pt, 0.18 Imp pt)
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RECOMMENDED GEAR OIL:	SAE 90 MARINE
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### 3. SPARK PLUG

#### CAUTION:

- Use only the recommended spark plugs or their equivalent.
- Spark plugs that have an improper heat range may cause engine damage.

Standard Spark Plug	BPR5ES(NGK), W14EPR-U (ND)
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- 1) Disconnect the cap and remove the spark plug.
- 2) Visually inspect the plug. Discard the plug if it is heavily fouled or if the insulator is cracked or chipped.
- 3) Remove carbon or other deposits with a stiff wire brush.
- 4) Measure the plug gap with a wire-type feeler gauge.

Spark plug gap	0.7–0.8 mm (0.028–0.031 in)
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If necessary, adjust the gap by bending the side electrode.

- 5) Make sure the sealing washer is in good condition, then thread the spark plug in by hand until it seats.
- 6) After the spark plug is seated, tighten with a spark plug wrench to compress the washer.

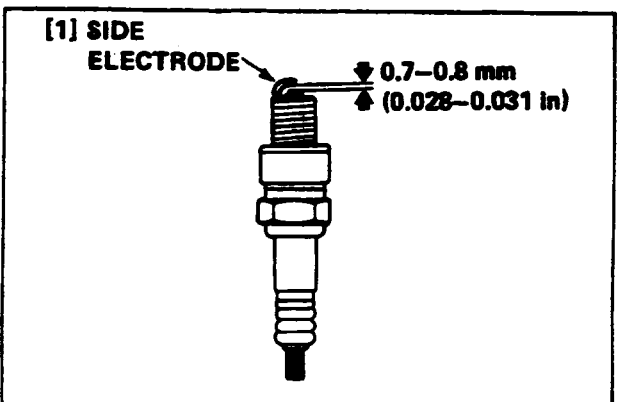
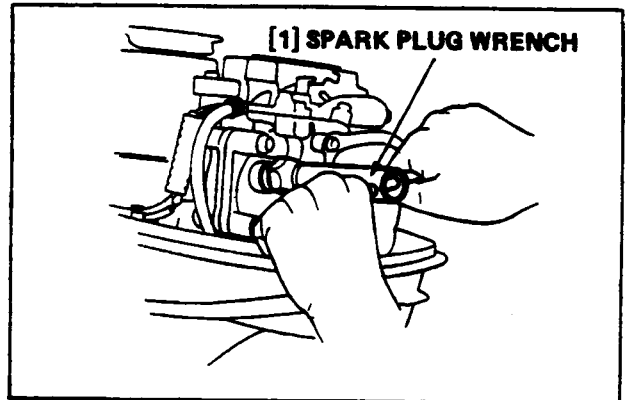
#### NOTE:

If installing a new spark plug, tighten 1/2 turn after the spark plug seats to compress the washer. If reinstalling a used spark plug, tighten 1/8 to 1/4 turn after the spark plug seats to compress the washer.

#### 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.

- 7) Install the spark plug cap.



## 4. VALVE CLEARANCE

### NOTE:

Check and adjust the valve clearance when the engine is cold.

- 1) Remove the cylinder head cover and align the "T" mark on the flywheel with the "AT" mark on the ignition coil. Make sure that the piston is at TDC of the compression stroke.
- 2) Measure the clearance between the valve and the rocker arm by inserting a thickness gauge.

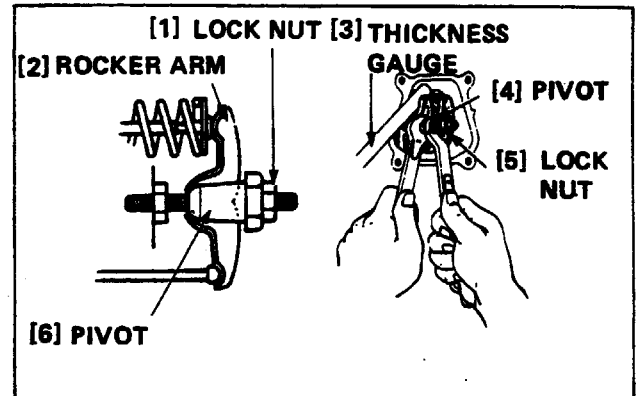
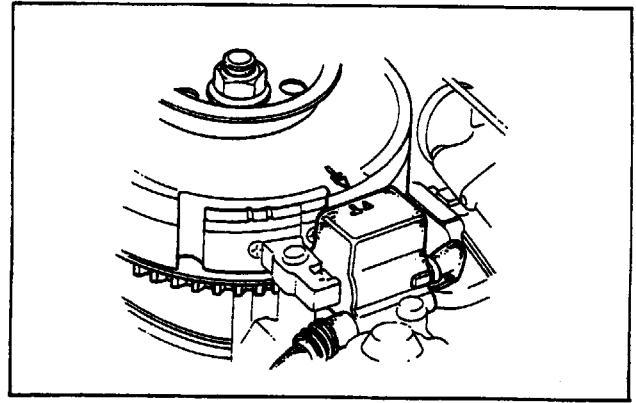
Valve clearance	IN	0.06—0.14 mm (0.002—0.006 in)
	EX	0.11—0.19 mm (0.004—0.007 in)

- 3) If the valve clearance is not within the specified range, adjust by loosening the lock nut while holding the pivot. Now turn the pivot.

TURNING IN: DECREASE CLEARANCE

TURNING OUT: INCREASE CLEARANCE

- 4) Hold the pivot and tighten the lock nut.
- 5) Recheck the valve clearance.



## 5. FUEL LINE FILTER

Water or sediment accumulated in the fuel filter can cause loss of power or hard starting. To prevent engine malfunction, replace the fuel filter regularly.

### WARNING

- Gasoline is flammable and explosive under certain conditions. Do not smoke or allow flames or sparks near the equipment while draining fuel.
- Always work in a well-ventilated area.
- Be sure that any drained fuel is stored in safe container.
- Wipe up any spilled gasoline immediately.

- 1) Turn the fuel tank vent knob to the OFF position and remove the engine cover.
- 2) Install tube clamps on the fuel tubes on each side of the filter to prevent fuel leakage. Remove the fuel filter.
- 3) Install a new fuel filter with the arrow on the filter pointing toward the carburetor.
- 4) Remove the tube clamps, turn the fuel tank vent knob to the ON position, pump the primer bulb and check for fuel leaks.

