

**PREFACE**

This manual covers the construction, function and servicing procedure of the Honda BF9.9A, BF15A outboard motors. Careful observance of these instructions will result in better, safer service work.

Illustrations in this manual are based primarily on the BF15A LCS.

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## SPECIFICATIONS

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## SPECIFICATIONS

### DIMENSIONS AND WEIGHTS

Item	Model		BF9.9A				BF15A			
	Description code		BABS		BABL		BAAS		BAAL	
	Type	Type	SC, SD	SCS, SDS	LC, LD	LCS, LDS	SC, SD	SCS, SDS	LC, LD	LCS, LDS
Overall length	550 mm (21.7 in)									
Overall width	320 mm (12.6 in)									
Overall height	1,050 mm (41.3 in)		1,180 mm (46.5 in)		1,050 mm (41.3 in)		1,180 mm (46.5 in)			
Dry weight	42 kg (92.6 lb)	46 kg (101.4 lb)	43 kg (94.8 lb)	47 kg (103.6 lb)	42 kg (92.6 lb)	46 kg (101.4 lb)	43 kg (94.8 lb)	47 kg (103.6 lb)		
Operating weight (incl. oil)	43 kg (94.8 lb)	47 kg (103.6 lb)	44 kg (97.0 lb)	48 kg (105.8 lb)	43 kg (94.8 lb)	47 kg (103.6 lb)	44 kg (97.0 lb)	48 kg (105.8 lb)		
Transom height	440 mm (17.3 in)		570 mm (22.4 in)		440 mm (17.3 in)		570 mm (22.4 in)			
Transom angle	5 stage adjustment (4°–8°–12°–16°–20°)									
Tilting	3 stage adjustment (30°, 45° and 70°)									
Swivel angle	40° (Right, Left)									

### ENGINE

Type	2 cylinder, in-line, 4 stroke, water-cooled, OHC	
Total piston displacement	280 cm <sup>3</sup> (17.1 cu in)	
Bore x stroke	58 x 53 mm (2.3 x 2.1 in)	
Maximum horsepower	7.28 kw (9.9HP) 5,500 rpm (Propeller shaft)	11.03 kw (15HP) 6,200 rpm (Propeller shaft)
Maximum torque	17.4 N·m (1.74 kg·m, 12.66 ft·lb) (Propeller shaft)	19.8 N·m (1.98 kg·m, 14.32 ft·lb) (Propeller shaft)
Compression ratio	8.6 : 1	
Fuel consumption ratio	270 g/PSh (0.60 lb/hp-h)	264 g/PSh (0.58 lb/hp-h)
Cooling system	Forced water circulation by impeller pump with thermostat	
Ignition system	CDI	
Ignition timing	5°–35° B.T.D.C	
Spark plug	DR-5HS (NGK), X16FSR-U (ND)	DR-6HS (NGK), X20FSR-U (ND)
Carburetor	Horizontal type, butterfly valves	
Lubrication system	Pressure lubrication by trochoid pump	
Lubricant capacity	1.1 ℓ (2.33 US pt, 1.94 Imp pt)	
Starting system	Recoil starter (SC, SD, LC, LD Type) recoil starter and electric starter (SCS, SDS, LCS, LDS Type)	
Stopping system	Grounding of primary circuit	
Fuel	Regular automotive gasoline (86 pump octane; unleaded preferred)	
Fuel tank capacity	13.0 ℓ (3.43 US gal, 2.86 Imp gal)	
Fuel pump	Mechanical plunger type	
Exhaust system	Underwater type	

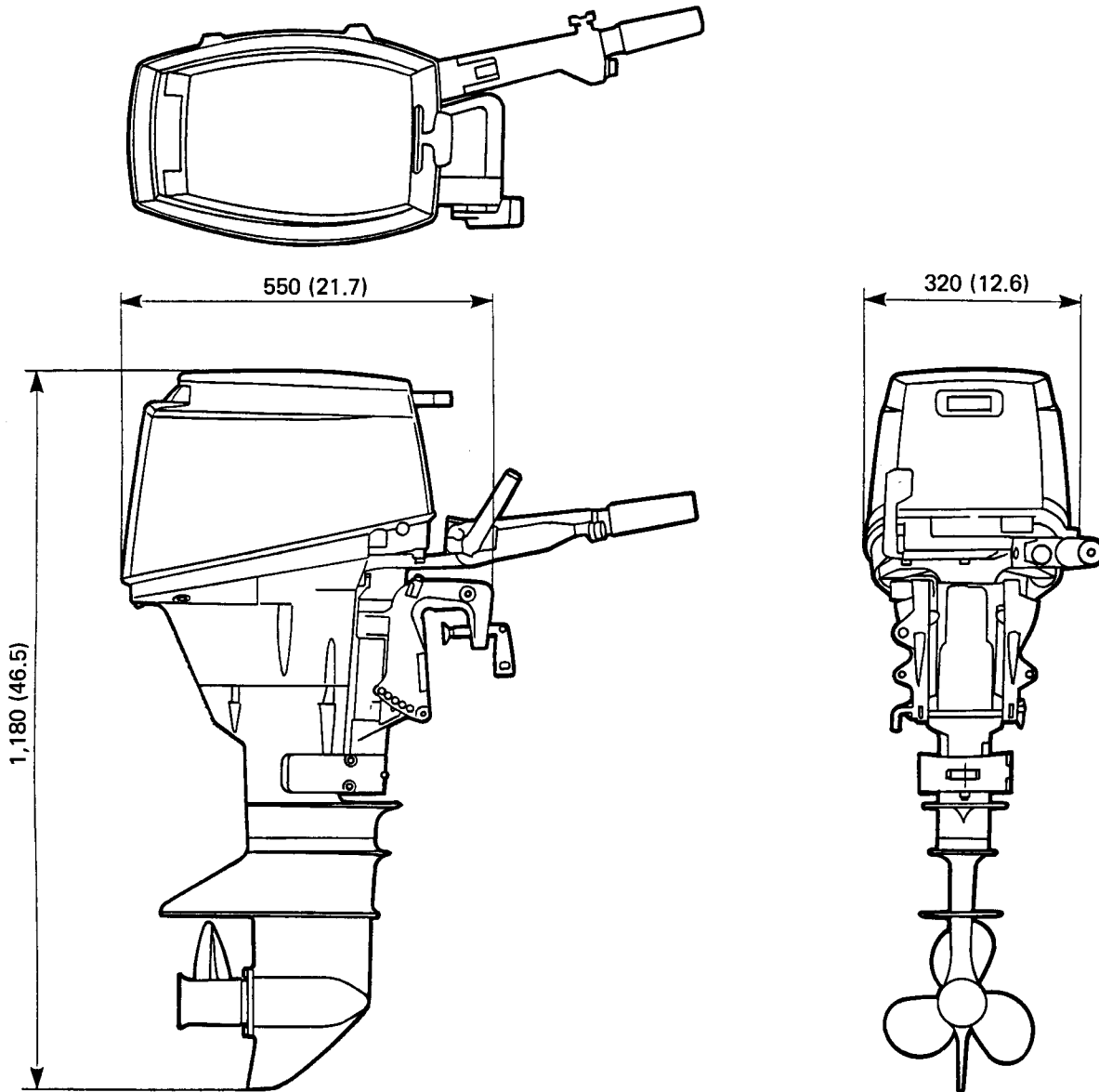
### LOWER UNIT

Clutch	Dog clutch (Forward – Neutral – Reverse)
Gear ratio	0.48 (13/27)
Gear case oil capacity	0.24 ℓ (0.254 US qt, 0.211 Imp qt.)
Propeller	
No. of blades-Dia. x Pitch	3–240 mm x 240 mm (S), 3–240 mm x 220 mm (L)
Rotating direction	Clockwise (viewed from rear)

**DIMENSIONAL DRAWINGS**

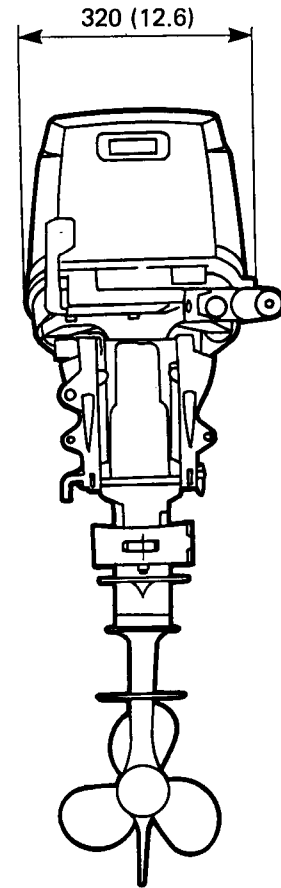
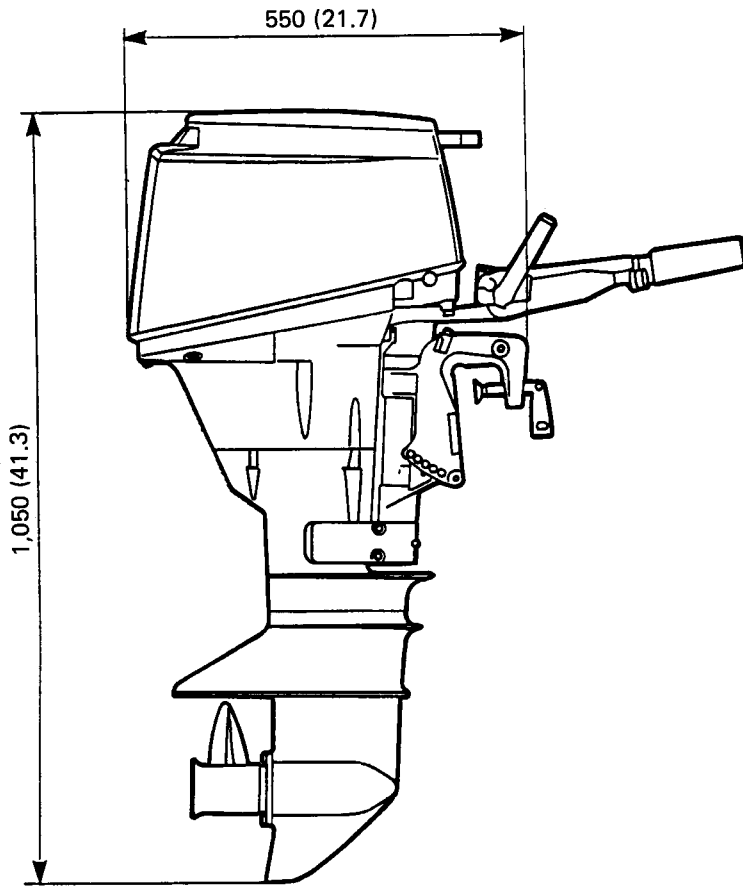
Unit: mm (in)

L Type      Type L

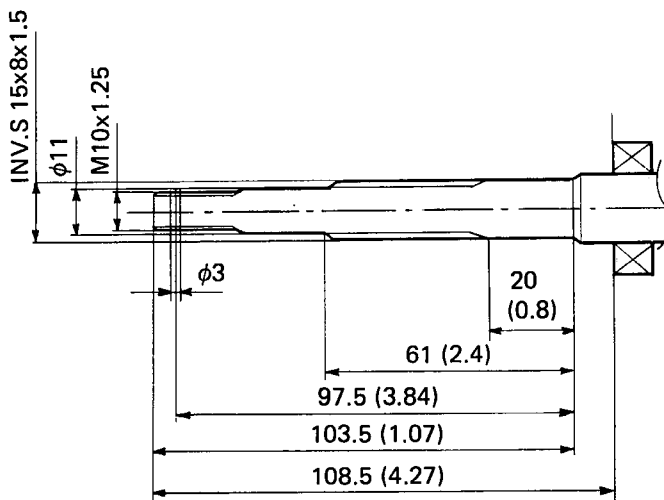


S Type

Unit: mm (in)

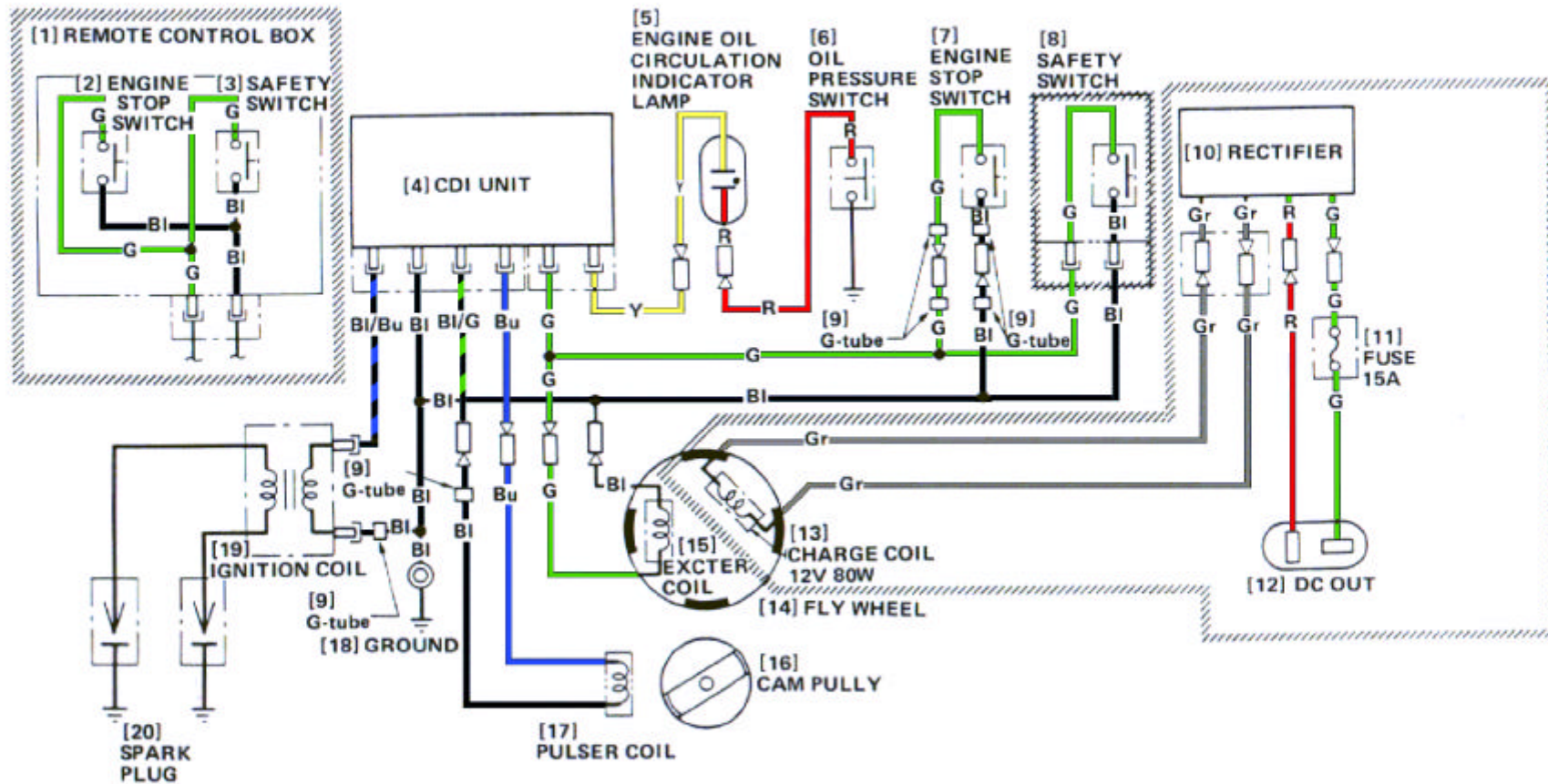


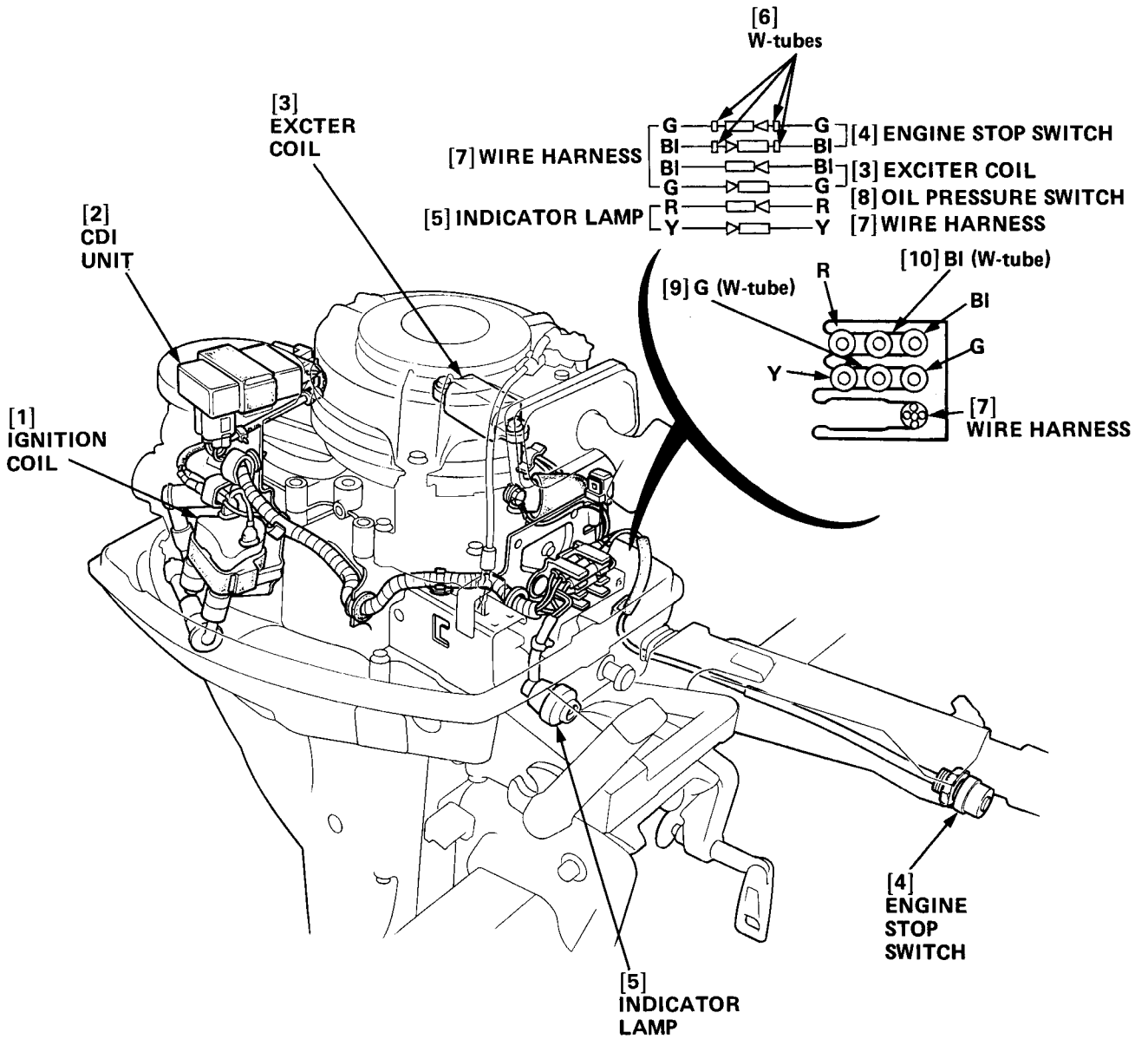
● PROPELLER SHAFT



# WIRING DIAGRAM

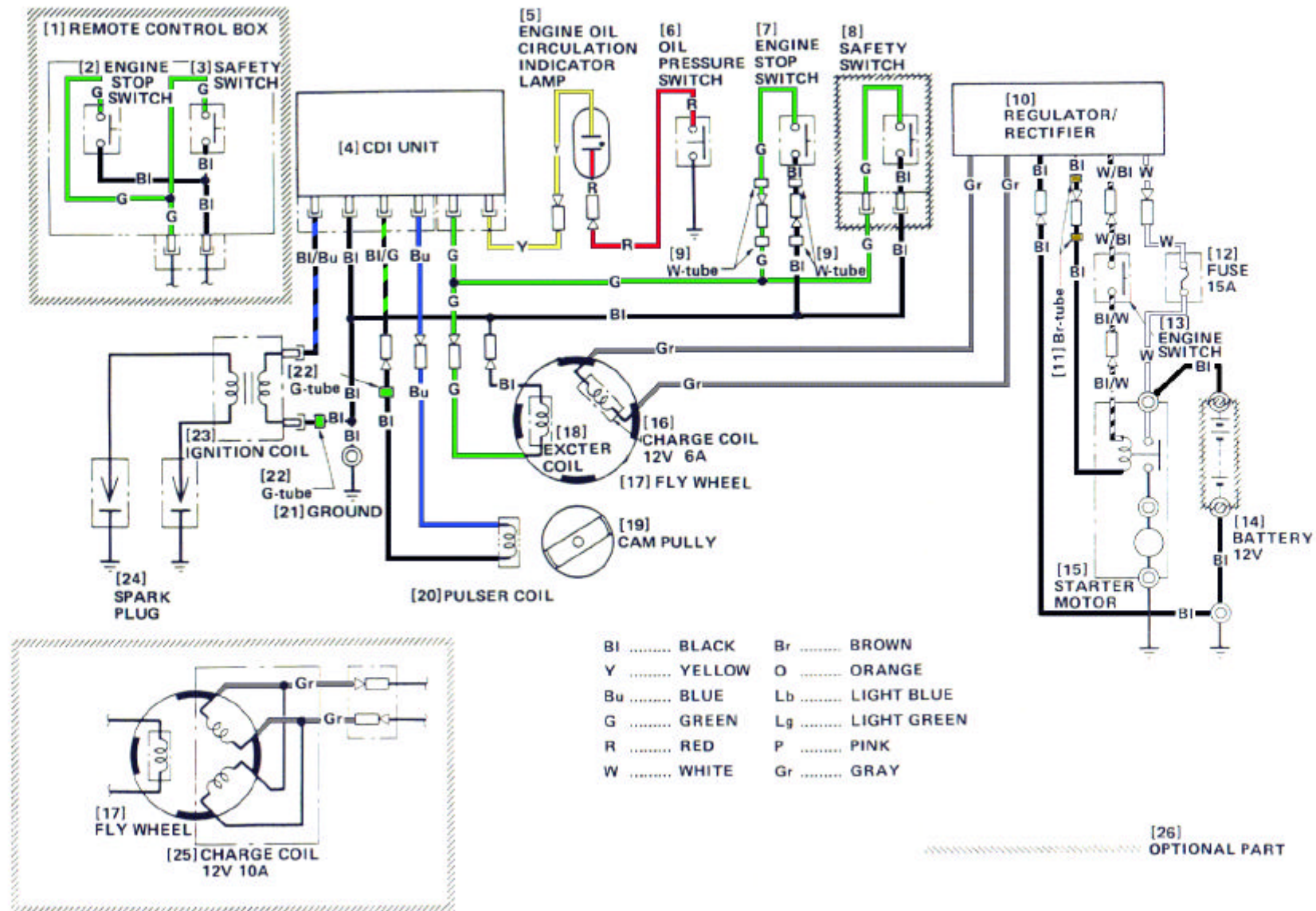
SC, SD, LC, LD Type



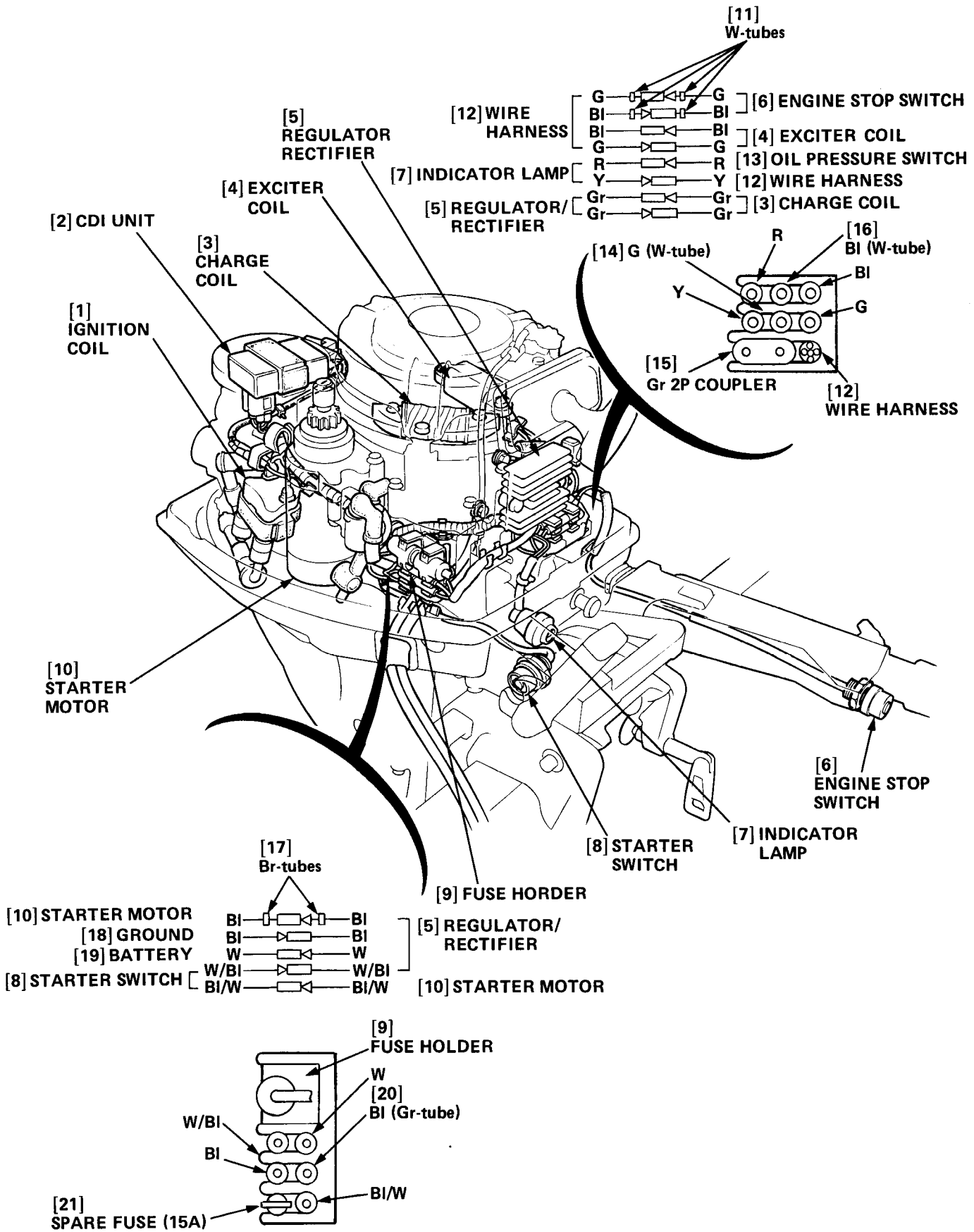


**WIRING DIAGRAM**

SCS, SDS, LCS, LDS Type



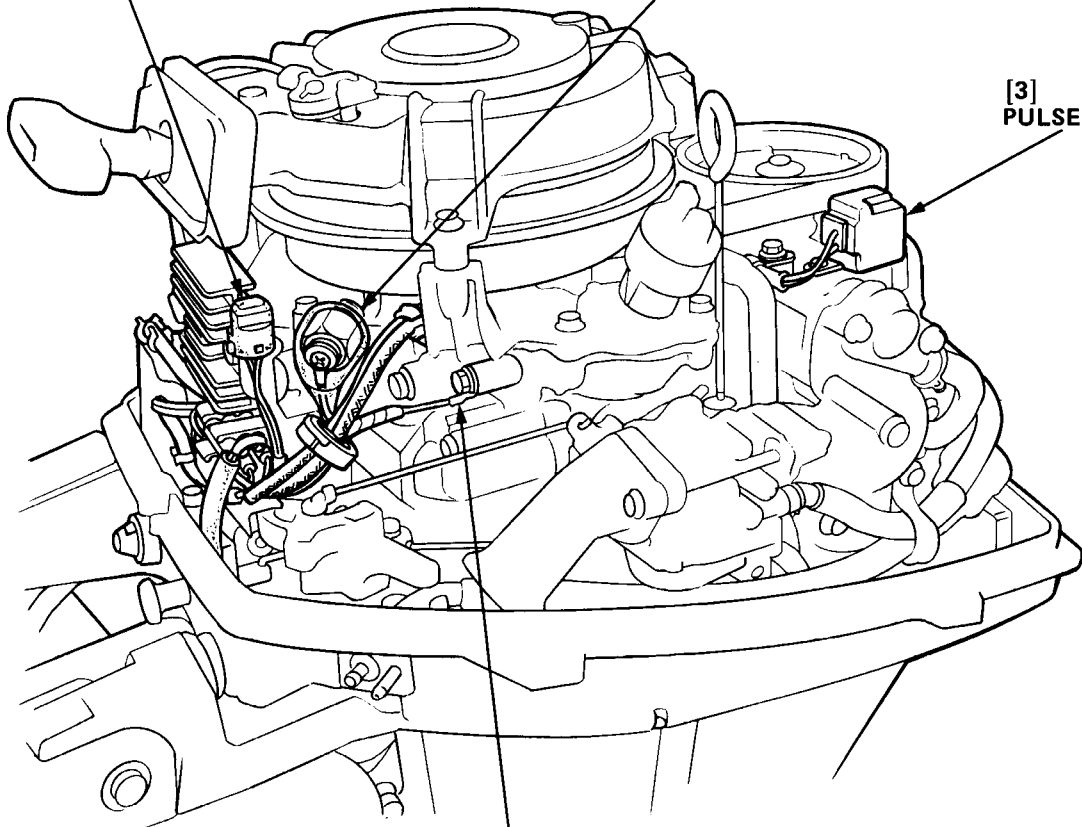




[1]  
TERMINAL FOR  
SAFETY SWITCH

[2]  
OIL PRESSURE  
SWITCH

[3]  
PULSER COIL



[4] BODY GROUND

## SERVICE INFORMATION

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## GENERAL SAFETY

Pay attention to these symbols and their meanings:

 **WARNING** Indicates a strong possibility of severe personal injury or death 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 caps before servicing the outboard motor.
- If the engine 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 high voltage wires when the engine is running.

## 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 a series of 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 surfaces 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:

 Indicates the reference page

0 x 0 (O): Indicates the type, length, and number of the flange bolt used.



: Apply grease



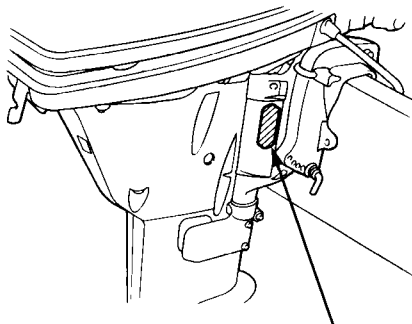
: Use special tool



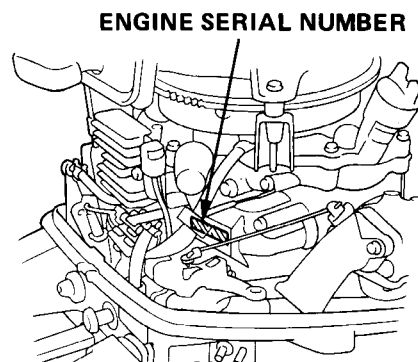
: Apply oil

## SERIAL NUMBER LOCATION

The frame serial number is stamped on the side of the swivel case while the engine serial number is on the cylinder barrel. Refer to these numbers when ordering parts or making technical inquiries.



**FRAME SERIAL NUMBER**



**ENGINE SERIAL NUMBER**

## MAINTENANCE STANDARDS

### BF9.9A ENGINE

Part	Item	Standard	Service limit
Engine	Idle rpm Cylinder compression	1,100 ± 50 min <sup>-1</sup> (rpm) (in neutral) 11 ± 1 kg/cm <sup>2</sup> (156 ± 14 psi) at 1,000 min <sup>-1</sup> (rpm)	————— —————
Cylinder	Sleeve I.D.	58.0 mm (2.28 in)	58.055 mm (2.2856 in)
Piston	Skirt O.D. Piston-to-cylinder clearance Piston pin bore I.D. Piston pin O.D. Pin-to-pin bore clearance	57.985 mm (2.2829 in) 0.015–0.050 mm (0.0006–0.0020 in) 14.002 mm (0.5513 in) 14.0 mm (0.55 in) 0.002–0.014 mm (0.00007–0.00055 in)	57.92 mm (2.280 in) 0.1 mm (0.0039 in) 14.02 mm (0.552 in) 13.97 mm (0.550 in) 0.04 mm (0.002 in)
Piston ring	Ring side clearance (top/second) (oil) Ring end gap (top) (second) (oil) Ring width (top/second)	0.025–0.055 mm (0.00098–0.00217 in) 0.055–0.140 mm (0.00217–0.00551 in) 0.15–0.30 mm (0.0059–0.0118 in) 0.35–0.50 mm (0.0138–0.0197 in) 0.2–0.8 mm (0.0079–0.0315 in) 1.2 mm (0.047 in)	0.1 mm (0.0039 in) 0.2 mm (0.0079 in) 0.5 mm (0.0197 in) 0.7 mm (0.0276 in) 1.0 mm (0.039 in) 1.08 mm (0.043 in)
Connecting rod	Small end I.D. Big end oil clearance Big end side clearance	14.005 mm (0.5514 in) 0.040–0.066 mm (0.0016–0.0026 in) 0.15–0.35 mm (0.0059–0.0138 in)	14.04 mm (0.5528 in) 0.08 mm (0.0031 in) 0.7 mm (0.0276 in)
Crankshaft	Crankpin O.D. Main journal O.D. Side clearance Oil clearance	29.98 mm (1.180 in) 33.0 mm (1.299 in) 0.10–0.30 mm (0.0039–0.0118 in) 0.021–0.040 mm (0.0008–0.0016 in)	29.95 mm (1.179 in) 32.98 mm (1.298 in) 0.6 mm (0.0236 in) 0.05 mm (0.0020 in)
Valves	Valve clearance IN. EX. Stem O.D. IN. EX. Guide I.D. IN. EX. Stem-to-guide clearance IN. EX. Seat width Spring free length	0.12 ± 0.02 mm (0.005 ± 0.001 in) 0.20 ± 0.02 mm (0.008 ± 0.001 in) 5.49 mm (0.2161 in) 5.47 mm (0.2153 in) 5.5 mm (0.2165 in) 5.5 mm (0.2165 in) 0.010–0.037 mm (0.00039–0.00145 in) 0.030–0.057 mm (0.00118–0.00224 in) 1.0 mm (0.04 in) 36.8 mm (1.45 in)	————— ————— 5.47 mm (0.2153 in) 5.45 mm (0.2145 in) 5.54 mm (0.2181 in) 5.57 mm (0.2192 in) 0.07 mm (0.00275 in) 0.12 mm (0.00472 in) 2.0 mm (0.078 in) 35.3 mm (1.39 in)
Rocker arm	Rocker arm I.D. Rocker arm shaft O.D.	13.0 mm (0.5118 in) 12.968 mm (0.5106 in)	13.04 mm (0.5133 in) 12.92 mm (0.5087 in)
Camshaft	Cam lobe height IN. EX. Journal O.D. Oil pump side Pulley side	23.89 mm (0.9405 in) 23.94 mm (0.9425 in) 15.984 mm (0.6292 in) 17.984 mm (0.7080 in)	23.64 mm (0.9307 in) 23.69 mm (0.9326 in) 15.95 mm (0.6279 in) 17.95 mm (0.7066 in)
Carburetor	Main jet Float height Pilot screw opening	#102 13.0–15.0 mm (0.51–0.59 in) 2-3/4 turns out	————— ————— —————
Spark plug	Gap	0.6–0.7 mm (0.024–0.028 in)	—————
Ignition coil	Resistance Primary Secondary	0.35–0.43 Ω 8.01–9.79 Ω	————— —————

# HONDA

## BF9.9A·BF15A

### FRAME

Part	Item	Standard	Service limit
Pulser coil	Resistance	351–429 $\Omega$	————
Exciter coil	Resistance	207–253 $\Omega$	————
Oil pump	Body I.D.	29.10 mm (1.146 in)	29.30 mm (1.154 in)
	Inner rotor-to-outer rotor clearance	0.15 mm (0.0059 in)	0.20 mm (0.0079 in)
	Outer rotor-to-body clearance	0.10–0.21 mm (0.0039–0.0083 in)	0.26 mm (0.0102 in)
	Outer rotor height	13.0 mm (0.51 in)	12.95 mm (0.509 in)
	Pump body depth	13.02 mm (0.513 in)	13.08 mm (0.515 in)
	Rotor-to-body side clearance	0.02–0.09 mm (0.00079–0.00354 in)	0.11 mm (0.0043 in)
Pinion shaft	Shaft O.D.	14.994 mm (0.5903 in)	14.96 mm (0.5890 in)
Propeller shaft	Shaft O.D. (at bevel gear)      Front	16.984 mm (0.66866 in)	16.95 mm (0.66732 in)
Bevel gear	Gear I.D.      Front	17.000 mm (0.66929 in)	17.04 mm (0.67086 in)

BF15A  
ENGINE

Part	Item	Standard	Service limit
Engine	Idle rpm Cylinder compression	1,100 ± 50 min <sup>-1</sup> (rpm) (in neutral) 11 ± 1 kg/cm <sup>2</sup> (156 ± 14 psi) at 1,000 min <sup>-1</sup> (rpm)	———— ————
Cylinder	Sleeve I.D.	58.0 mm (2.28 in)	58.055 mm (2.2856 in)
Piston	Skirt O.D. Piston-to-cylinder clearance Piston pin bore I.D. Piston pin O.D. Pin-to-pin bore clearance	57.985 mm (2.2829 in) 0.015–0.050 mm (0.0006–0.0020 in) 14.002 mm (0.5513 in) 14.0 mm (0.55 in) 0.002–0.014 mm (0.00007–0.00055 in)	57.92 mm (2.280 in) 0.1 mm (0.0039 in) 14.02 mm (0.552 in) 13.97 mm (0.550 in) 0.04 mm (0.002 in)
Piston ring	Ring side clearance (top/second) (oil) Ring end gap (top) (second) (oil) Ring width (top/second)	0.025–0.055 mm (0.00098–0.00217 in) 0.055–0.140 mm (0.00217–0.00551 in) 0.15–0.30 mm (0.0059–0.0118 in) 0.35–0.50 mm (0.0138–0.0197 in) 0.2–0.8 mm (0.0079–0.0315 in) 1.2 mm (0.047 in)	0.1 mm (0.0039 in) 0.2 mm (0.0079 in) 0.5 mm (0.0197 in) 0.7 mm (0.0276 in) 1.0 mm (0.039 in) 1.08 mm (0.043 in)
Connecting rod	Small end I.D. Big end oil clearance Big end side clearance	14.005 mm (0.5514 in) 0.040–0.066 mm (0.0016–0.0026 in) 0.15–0.35 mm (0.0059–0.0138 in)	14.04 mm (0.5528 in) 0.08 mm (0.0031 in) 0.7 mm (0.0276 in)
Crankshaft	Crankpin O.D. Main journal O.D. Side clearance Oil clearance	29.98 mm (1.180 in) 33.0 mm (1.299 in) 0.10–0.30 mm (0.0039–0.0118 in) 0.021–0.040 mm (0.0008–0.0016 in)	29.95 mm (1.179 in) 32.98 mm (1.298 in) 0.6 mm (0.0236 in) 0.05 mm (0.0020 in)
Valves	Valve clearance IN. EX. Stem O.D. IN. EX. Guide I.D. IN. EX. Stem-to-guide clearance IN. EX. Seat width Spring free length	0.12 ± 0.02 mm (0.005 ± 0.001 in) 0.20 ± 0.02 mm (0.008 ± 0.001 in) 5.49 mm (0.2161 in) 5.47 mm (0.2153 in) 5.5 mm (0.2165 in) 5.5 mm (0.2165 in) 0.010–0.037 mm (0.00039–0.00145 in) 0.030–0.057 mm (0.00118–0.00224 in) 1.0 mm (0.04 in) 36.8 mm (1.45 in)	———— ———— 5.47 mm (0.2153 in) 5.45 mm (0.2145 in) 5.54 mm (0.2181 in) 5.57 mm (0.2192 in) 0.07 mm (0.00275 in) 0.12 mm (0.00472 in) 2.0 mm (0.078 in) 35.3 mm (1.39 in)
Rocker arm	Rocker arm I.D. Rocker arm shaft O.D.	13.0 mm (0.5118 in) 12.968 mm (0.5106 in)	13.04 mm (0.5133 in) 12.92 mm (0.5087 in)
Camshaft	Cam lobe height IN. EX. Journal O.D. Oil pump side Pulley side	24.47 mm (0.9634 in) 24.52 mm (0.9654 in) 15.984 mm (0.6292 in) 17.984 mm (0.7080 in)	24.22 mm (0.9535 in) 24.27 mm (0.9555 in) 15.95 mm (0.6279 in) 17.95 mm (0.7066 in)
Carburetor	Main jet Float height Pilot screw opening	#108 13.0–15.0 mm (0.51–0.59 in) 1-5/8 turns out	———— ———— ————
Spark plug	Gap	0.6–0.7 mm (0.024–0.028 in)	————
Ignition coil	Resistance Primary Secondary	0.35–0.43 Ω 8.01–9.79 Ω	———— ————

# HONDA

## BF9.9A·BF15A

### FRAME

Part	Item	Standard	Service limit
Pulser coil	Resistance	351–429 $\Omega$	————
Exciter coil	Resistance	207–253 $\Omega$	————
Oil pump	Body I.D.	29.10 mm (1.146 in)	29.30 mm (1.154 in)
	Inner rotor-to-outer rotor clearance	0.15 mm (0.0059 in)	0.20 mm (0.0079 in)
	Outer rotor-to-body clearance	0.10–0.21 mm (0.0039–0.0083 in)	0.26 mm (0.0102 in)
	Outer rotor height	13.0 mm (0.51 in)	12.95 mm (0.509 in)
	Pump body depth	13.02 mm (0.513 in)	13.08 mm (0.515 in)
	Rotor-to-body side clearance	0.02–0.09 mm (0.00079–0.00354 in)	0.11 mm (0.0043 in)
Pinion shaft	Shaft O.D.	14.994 mm (0.5903 in)	14.96 mm (0.5890 in)
Propeller shaft	Shaft O.D. (at bevel gear)      Front	16.984 mm (0.66866 in)	16.95 mm (0.66732 in)
Bevel gear	Gear I.D.      Front	17.000 mm (0.66929 in)	17.04 mm (0.67086 in)



## TORQUE VALUES

Item	Thread dia. (mm)	Torque		
		N·m	kg-cm	ft-lb
<b>● ENGINE</b>				
Flywheel	M16 x 1.5 (Special nut)	115	1,150	83.2
Timing pulley	M27 x 1.0	27.5	275	19.9
Connecting rod	M7 x 1.0 (Special bolt)	12	120	8.7
Cylinder head	M8 x 1.25	26	260	18.8
Cylinder barrel	M6 x 1.0	11	110	8.0
	M8 x 1.25	22	220	15.9
Oil pressure switch	PT1/8	8.5	85	6.1
Oil pressure switch lead	M4 x 0.7	1.5	15	1.1
Tappet adjusting nut	M5 x 0.5	8	80	5.2
Fuel pump	M6 x 1.0	5	50	3.6
Pulser coil	M5 x 0.8	3.5	35	2.5
Starting switch terminal nut	M6 x 1.0	5	50	3.6
<b>● FRAME</b>				
Starter switch	M16 x 1.0	1	10	0.7
Engine stop switch	M16 x 1.0	1	10	0.7
Pinion gear	M8 x 1.0 (Special nut)	26	260	18.8
Steering handle	M8 x 1.25 (Handle pivot screw)	24	240	17.4
Choke guide knob	M16 x 1.0	3	30	2.2
Fuel meter	M5 x 0.8	3.5	35	2.5
Oil check bolt	M8 x 1.25 (Special bolt)	6.5	65	4.7
Standard torque values	5 mm screw, bolt, nut	5	50	3.6
	6 mm screw	9	90	6.5
	6 mm bolt, nut	10	100	7.2
	6 mm flange bolt, nut	11	110	8.0
	8 mm bolt, nut	21	210	15.2
	8 mm flange bolt, nut	22	220	15.9
	10 mm bolt, nut	35	350	25.3
	10 mm flange bolt, nut	40	400	28.9

NOTE: Use standard torque values for fasteners that are not listed in this table.

**SPECIAL TOOLS**

Tool name	Tool number	Application
1. Float level gauge	07401-0010000	Inspection for carburetor float level
2. Pressure gauge attachment	07406-0030000	Inspection for oil pressure
3. Valve adjusting wrench or Adjusting wrench B	07908-KE90000 07708-0030400	Valve adjuster Valve adjuster
4. Pin driver, 2.5 mm	07744-0010100	2.5 mm spring pin removal/installation
5. Pin driver, 3 mm	07744-0010200	3 mm spring pin removal/installation
6. Attachment, 32 x 35 mm	07746-0010100	17 mm water seal installation
7. Attachment, 37 x 40 mm	07746-0010200	25 x 40 x 8 mm coupling seal installation
8. Attachment, 42 x 47 mm	07746-0010300	6005 ball bearing installation
9. Attachment, 52 x 55 mm	07746-0010400	6205 ball bearing installation
10. Attachment, 24 x 26 mm	07746-0010700	17 x 23 x 12 mm needle bearing installation
11. Driver, 40 mm I.D.	07746-0030100	For tool number 6-10
12. Attachment, 35 mm I.D.	07746-0030400	Balancer drive gear installation
13. Pilot, 15 mm	07746-0040300	6302 ball bearing installation
14. Pilot, 17 mm	07746-0040400	17 x 23 x 12 mm needle bearing installation
15. Pilot, 25 mm	07746-0040600	6205, 6005 ball bearing installation
16. Seal remover	07748-0010000	Water seal and coupling seal removal
17. Driver	07749-0010000	For tools number 6-9
18. Valve spring compressor	07757-0010000	Valve cotter removal/installation
19. Valve seat cutter 60°φ26.0	07780-0014500	Valve seat refacing IN.
Valve seat cutter 60°φ22.0	07780-0014202	Valve seat refacing EX.
20. Valve seat cutter 45°φ29.0	07780-0010300	Valve seat refacing IN.
Valve seat cutter 45°φ24.5	07780-0010100	Valve seat refacing EX.
21. Valve seat cutter 32°φ30.0	07780-0012200	Valve seat refacing IN.
Valve seat cutter 32°φ25.0	07780-0012000	Valve seat refacing EX.
22. Adjusting wrench	07908-3570000	Hold for 8 mm self-locking nut of pinion shaft
23. Crankshaft holder	07923-ZA00000	27 mm lock nut removal/installation
24. Pully holder	07925-8930000	Flywheel nut removal/installation
25. Flywheel puller	07935-8050002 or 07935-8050003	Flywheel removal/installation
26. Bearing remover, 12 mm	07936-1660001	6001 ball bearing removal
27. Bearing remover, 15 mm	07936-9350001	6302 ball bearing removal
28. Bearing remover, 25 mm	07936-ZV10000	6105, 6005 ball bearing removal
29. Valve guide driver	07942-8920000	Valve guide removal/installation
30. Pin driver, 2 mm	07944-9350100	2 mm spring pin removal/installation
31. Pin driver, 4 mm	07944-9350200	3 mm spring pin removal/installation
32. Bearing driver	07945-GG00000	17 x 23 x 12 mm needle bearing removal
33. Attachment, 28 x 30 mm	07946-1870100	6001 ball bearing installation
34. Bearing remover	07946-MJ00100	15 x 21 x 12 mm needle bearing removal/installation
35. Pin flare tool, 4 mm	07968-9350000	Shifter pin of propeller shaft removal/installation
36. Valve guide reamer	07984-2000001	Valve guide I.D. reaming
37. Test propeller	07HPZ-ZV40100 07HPZ-ZV60100	For test operation in water tank (BF15A) For test operation in water tank (BF9.9A)



**TUBE ROUTING**

