

PREFACE

This manual covers the construction, function and servicing procedure of the Honda BF35A·45A outboard motors. Careful observance of these instructions will result in better, safer service work.

Illustrations in this manual are based primarily on the BF45A LRT.

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SPECIFICATIONS

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SPECIFICATIONS

DIMENSIONS AND WEIGHTS

Unit: mm (in)

	Model	BF35A					BF45A		
	Description code	BSAG (Short type), BLAG (Long type)					BSAF (Short type), BLAF (Long type)		
	Type	SH	LH	LR	LRT	SR	SR	LR	LRT
Overall length		*1: 725 (28.5) *2: 1,059 (41.7)			685 (27.0)				
Overall width		370 (14.6)							
Overall height		1,255 (49.4)	1,360 (53.5)			1,255 (49.4)		1,360 (53.5)	
Dry weight		89 kg (196.2 lb)	91 kg (200.7 lb)	90 kg (198.5 lb)	92 kg (202.9 lb)	88 kg (194.0 lb)		90 kg (198.5 lb)	92 kg (202.9 lb)
Operating weight (incl. oil)		91.5 kg (201.8 lb)	93.5 kg (206.1 lb)	92.5 kg (204.0 lb)	94.5 kg (208.4 lb)	90.5 kg (200.0 lb)		92.5 kg (204.0 lb)	94.5 kg (208.4 lb)

- *1: With handlebar raised
*2: With handlebar extended

FRAME

	Model	BF35A					BF45A		
	Type	SH	LH	LR	LRT	SR	SR	LR	LRT
Transom height		416 mm (16.4 in)	521 mm (20.5 in)			416 mm (16.4 in)		521 mm (20.5 in)	
Transom angle		5 stage adjustment (11.5°, 15.5°, 19.5°, 23.5°, 27.5°)							
Tilting angle		73°							
Swivel angle		37.5° right and left							
Trim angle		—			0–20°		—		0–20°

Model	BF35A					BF45A		
	Type	SH	LH	LR	LRT	SR	SR	LR
Shaft Length	S	L	L	L	S	S	L	L
Tiller Handle	H	H						
Remote Control			R	R	R	R	R	R
Gas Assisted Tilt	GAT	GAT	GAT		GAT	GAT	GAT	
Power Tilt/Trim				T				T
Tachometer				*				*
Trim meter				*				*

- *: Standard Equipment
- According to Shaft Length
S: Short Shaft
L: Long Shaft
- According to Control System
H: Tiller Handle Control
R: Remote Control
- According to tilt system
GAT: Gas-assisted Tilt (with gas damper assist function)
T: Power trim & tilt (with hydraulic assist function)

ENGINE

Model	BF35A	BF45A
Type	4-stroke, O.H.C, 3-cylinder	
Displacement	808 cm ³ (49.4 cu in)	
Bore x stroke	70 x 70 mm (2.8 x 2.8 in)	
Rated power * 1	35 HP (26.1 kw)/4,600–5,600 min ⁻¹ (r.p.m.)	45 HP (33.6 kw)/5,000–6,000 min ⁻¹ (r.p.m.)
Maximum torque	6.0 kg-m (43.4 ft-lb) 3,500 min ⁻¹ (r.p.m.)	6.05 kg-m (43.8 ft-lb) 4,500 min ⁻¹ (r.p.m.)
Compression ratio	9.2 : 1	
Fuel consumption ratio [g/PS·hr]	210	
Cooling system	Forced water circulation by impeller pump with thermostat	
Ignition system	CDI	
Ignition timing	5–32° B.T.D.C.	
Spark plug	DR7EA (NGK), X22ESR-U (NIPPONDENSO)	
Carburetor	Horizontal type, butterfly valve (3 carburetor)	
Lubrication system	Pressure lubrication by trochoid pump	
Lubrication capacity	2.4 ℓ (2.54 US qt, 2.11 Imp qt)	
Starter system	Electric starter	
Stopping system	Grounding of primary circuit	
Fuel	Regular automotive gasoline (86 pump octane; unleaded preferred)	
Fuel tank capacity	25 ℓ (6.6 US gal, 5.5 Imp gal)	
Fuel pump	Mechanical plunger type	
Exhaust system	Underwater type	
Recommended oil	SAE 10 W–30/40	

* 1: Full throttle r.p.m. range.

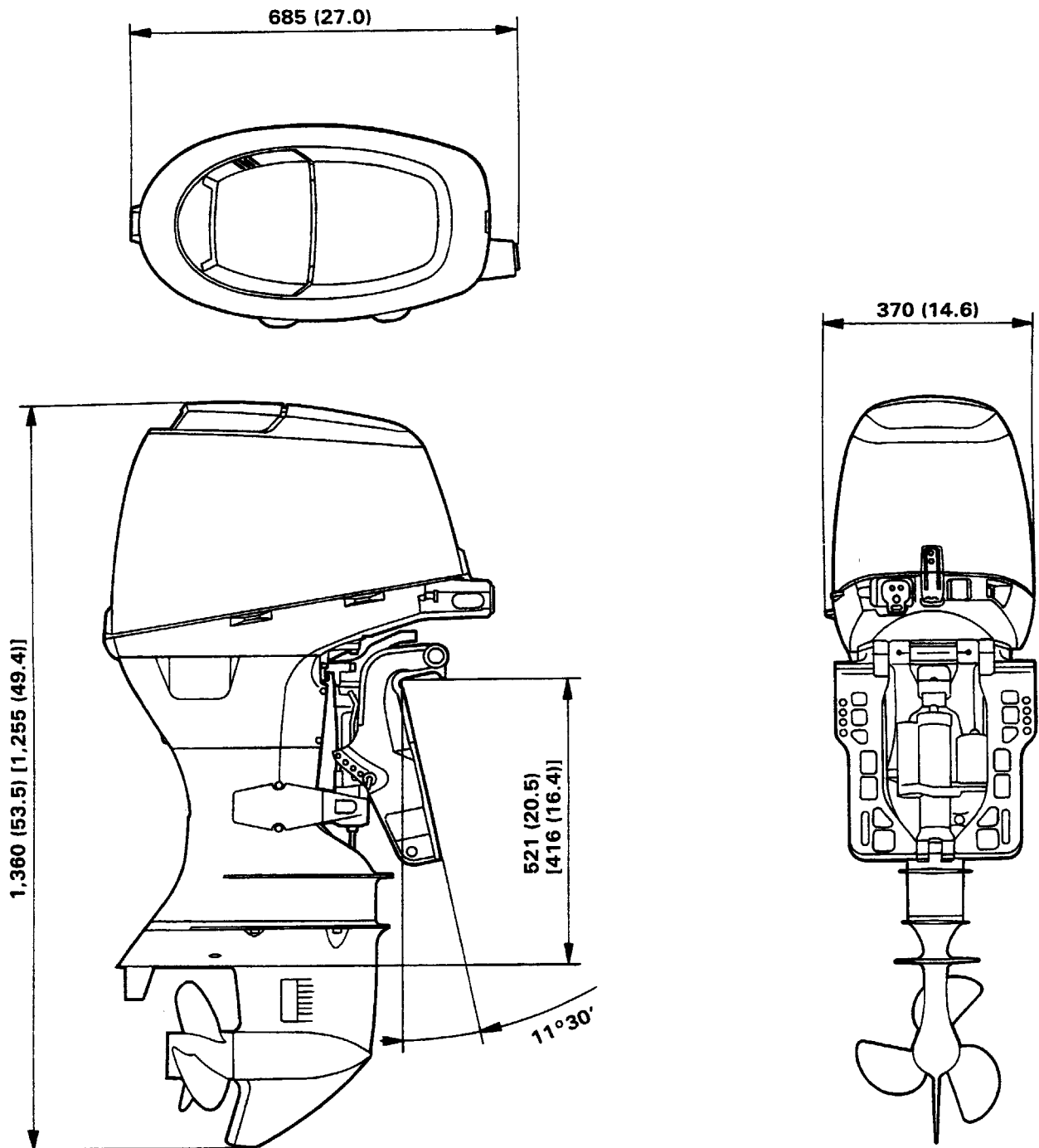
LOWER UNIT

Clutch	Dog clutch (Forward–Neutral–Reverse)
Gear ratio	0.48 (26/33 x 14/23)
Reduction	Spiral bevel
Gear case oil capacity	0.52 ℓ (0.550 US qt, 0.458 Imp qt)
Propeller No. of blades-Dia. x Pitch	3-286 x 330 mm (11-1/4 x 13.0 in)
Propeller rotating direction	Clockwise (viewed from rear)
Propeller driving system	Spline

DIMENSIONAL DRAWINGS

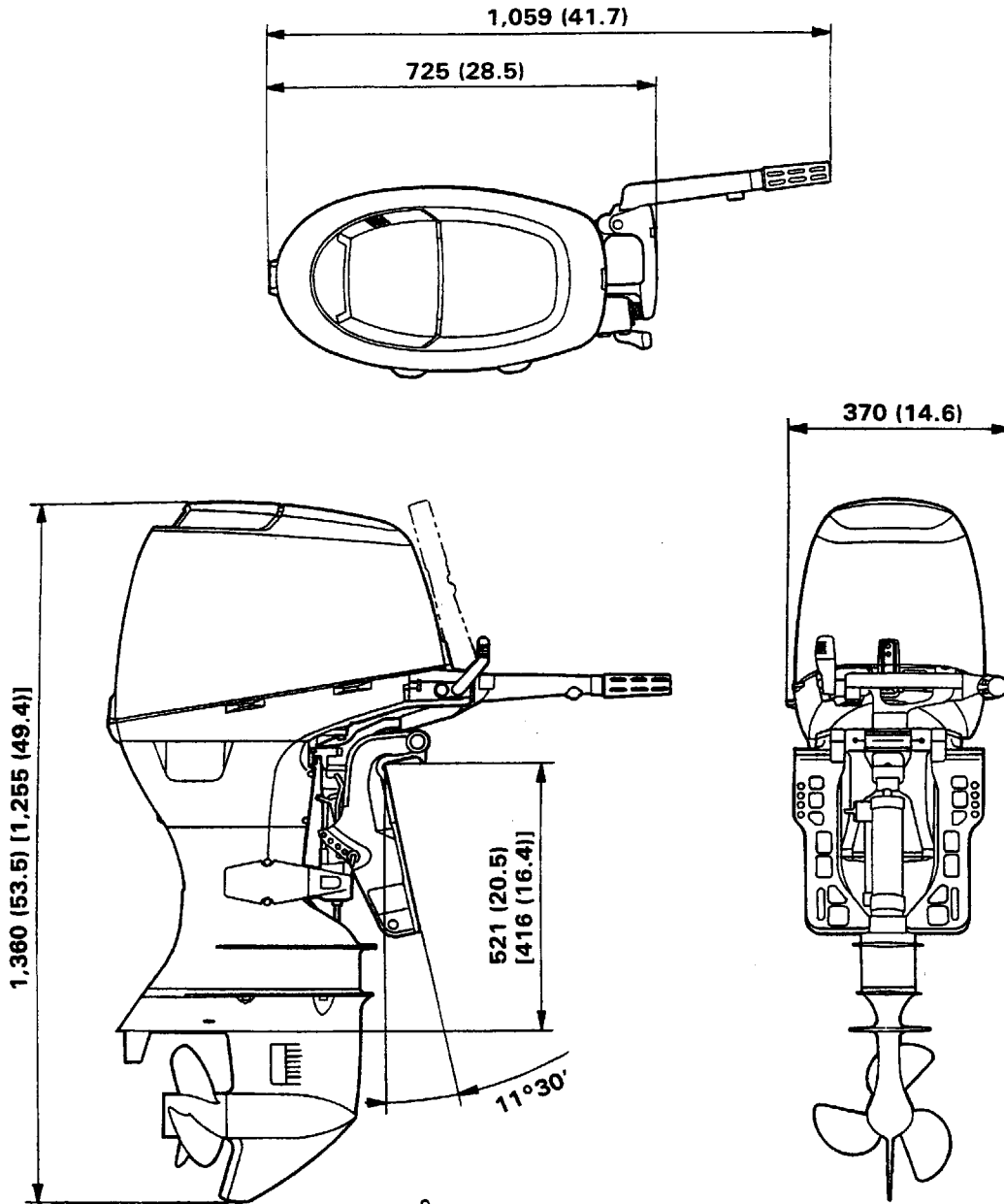
Unit: mm (in)

Remote control type
[]: Short shaft type

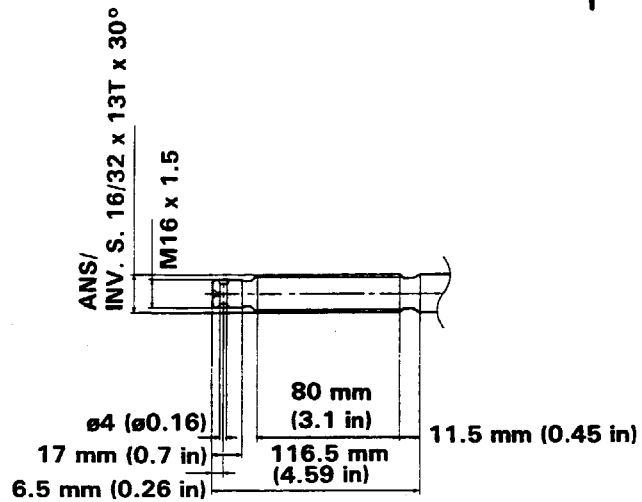


Tiller handle type
[]: Short shaft type

Unit: mm (in)



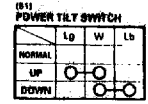
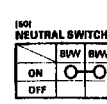
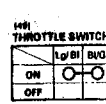
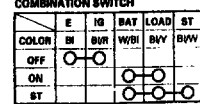
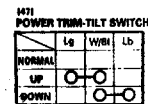
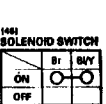
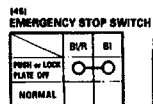
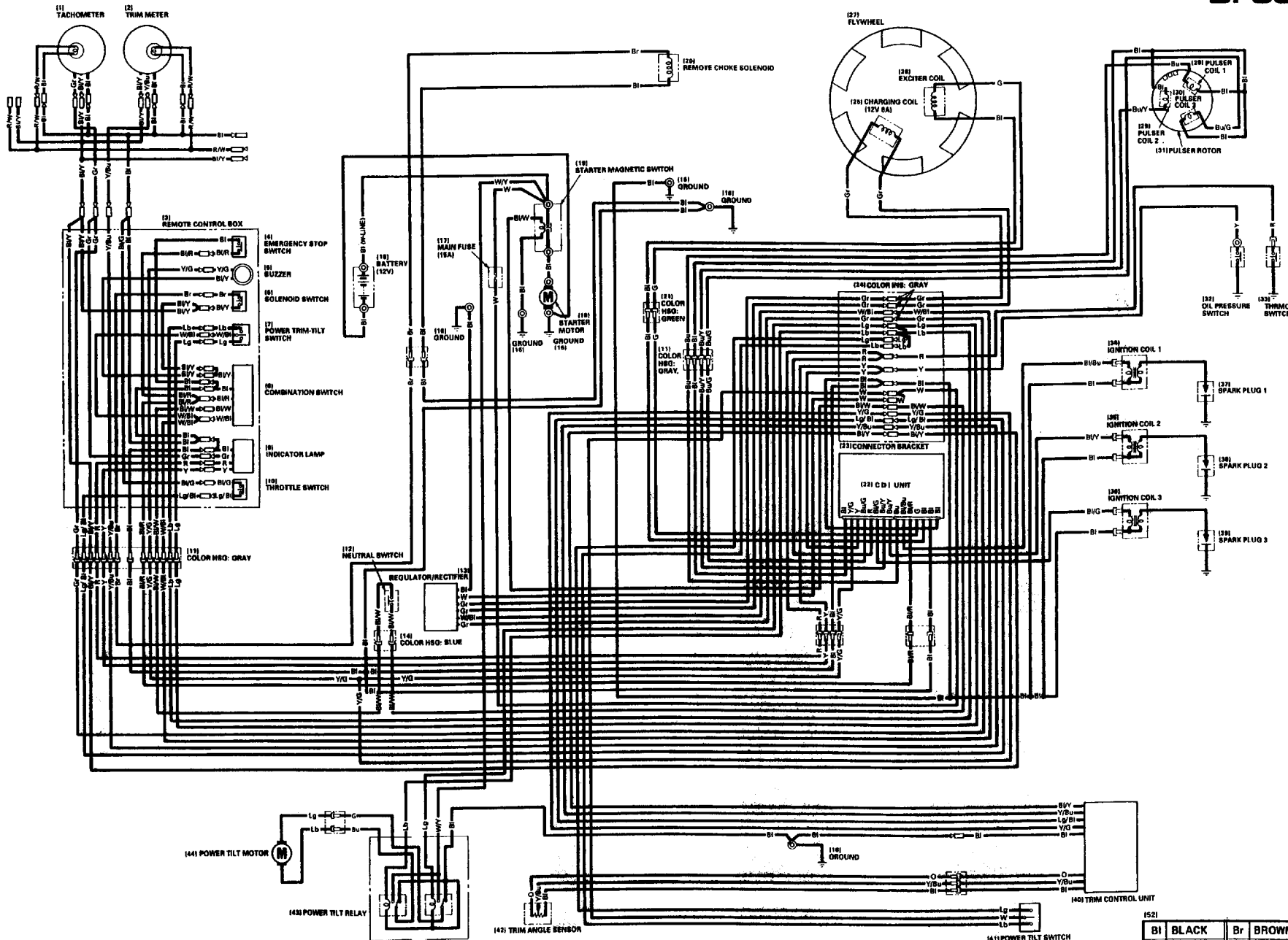
PROPELLER SHAFT



WIRING DIAGRAM Power trim & tilt/remote control type

HONDA

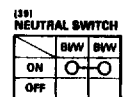
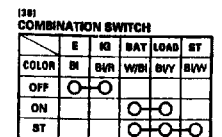
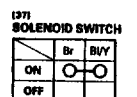
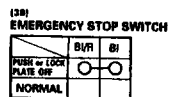
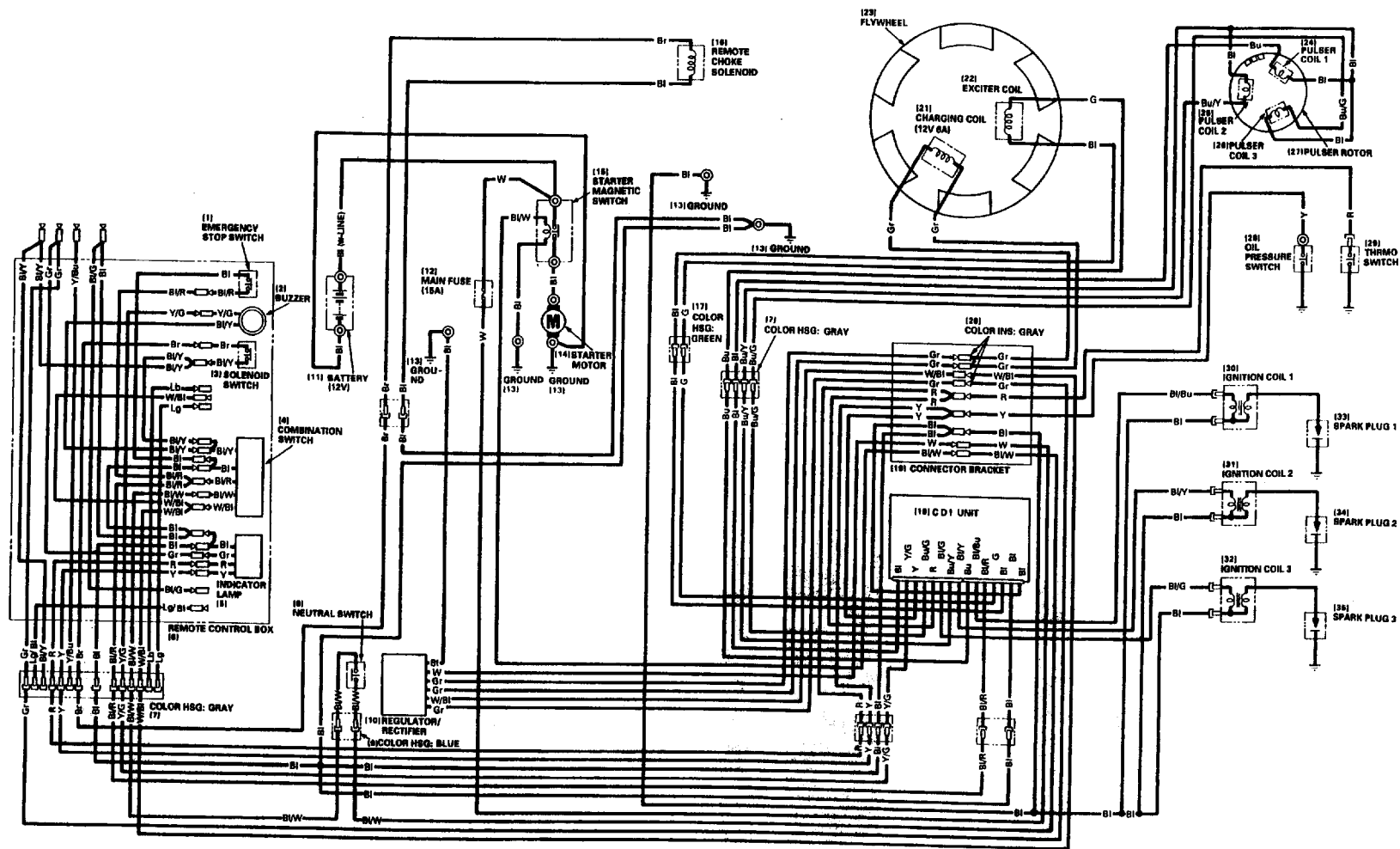
BF35A·45A



1521

BI	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

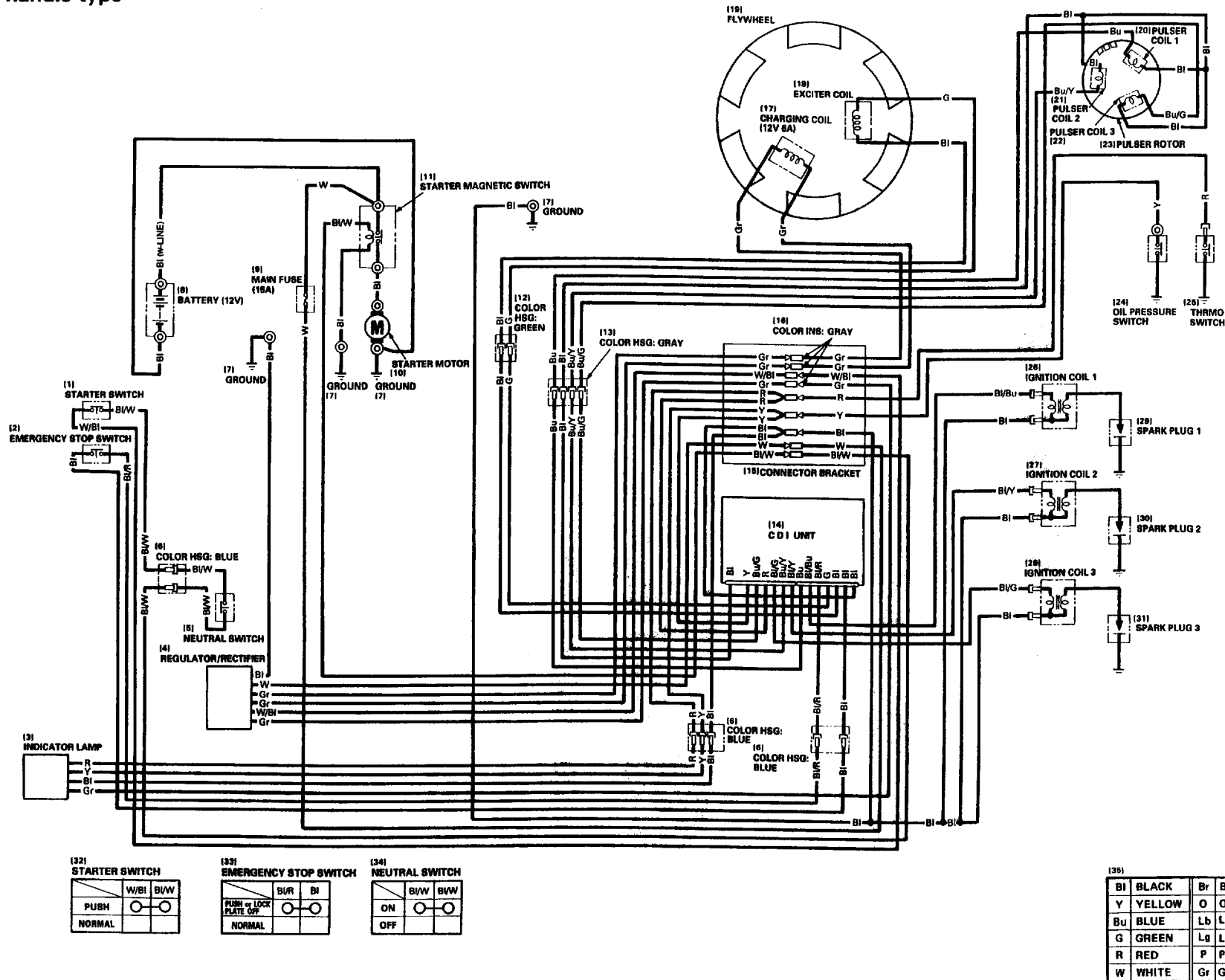
Remote control type



(40)

BI	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

Tiller handle type



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 and ignition key before servicing the outboard motor.
- 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 high voltage wires when the engine is run with the engine cover off.

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 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 bolt, nuts and screws are not interchangeable with nonmetric fasteners. The use of incorrect tools and fasteners will damage the unit.
9. Follow the instructions represented by these symbols when they are used:



: Apply oil



: Use special tool



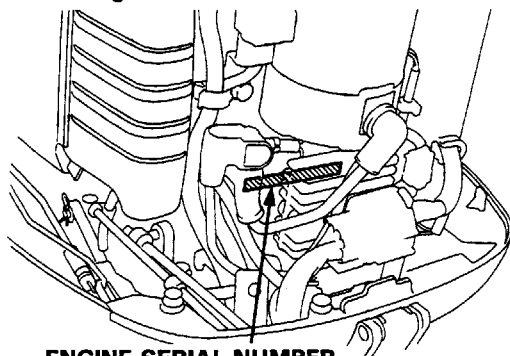
: Apply grease

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

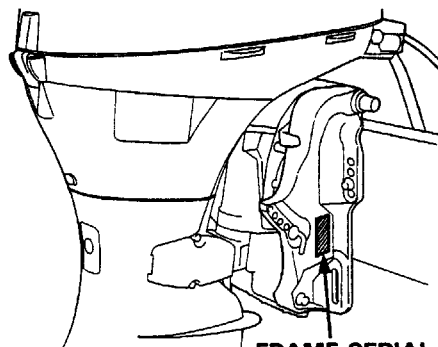
: Indicates the reference page.

SERIAL NUMBER LOCATION

The engine serial number is stamped on the crankcase and the frame serial number is located on the R. stern bracket. Always specify these numbers when inquiring about the engine or when ordering parts in order to obtain the correct parts for outboard motor being serviced.



ENGINE SERIAL NUMBER



FRAME SERIAL NUMBER

MAINTENANCE STANDARDS
BF35A
ENGINE

Unit: mm (in)

Part	Item		Standard	Service limit
Engine	Idle speed		950 ± 50 min ⁻¹ (rpm)	—
	Cylinder compression		15 ± 1 kg/cm ² (212 ± 14 psi) at 500 min ⁻¹ (rpm)	—
Carburetor	Main jet		#102	—
	Pilot screw opening		2-1/8 turns out	—
	Float height		14 (0.6)	—
Spark plug	Gap		0.6–0.7 (0.024–0.028)	—
Valves	Valve clearance	IN	0.13–0.17 (0.005–0.007)	—
		EX	0.21–0.25 (0.008–0.010)	—
	Stem O.D.	IN	5.480–5.490 (0.2157–0.2161)	5.45 (0.215)
		EX	5.460–5.470 (0.2150–0.2154)	5.42 (0.213)
	Guide I.D.	IN/EX	5.500–5.512 (0.2165–0.2170)	5.53 (0.218)
	Seat width	IN	1.25–1.55 (0.049–0.061)	2.0 (0.08)
		EX	1.25–1.55 (0.049–0.061)	2.0 (0.08)
	Spring free length	IN/EX	36.9 (1.45)	35.4 (1.39)
	Stem-to-guide clearance	IN	0.010–0.032 (0.0004–0.0013)	0.06 (0.0024)
EX		0.030–0.052 (0.0012–0.0020)	0.10 (0.004)	
Rocker arm	Rocker arm I.D.		14.010–14.028 (0.5516–0.5523)	14.05 (0.553)
	Rocker arm shaft O.D.		13.976–13.994 (0.5502–0.5509)	13.95 (0.549)
	Rocker arm shaft-to-rocker arm clearance		0.016–0.052 (0.0006–0.0020)	0.07 (0.003)
Piston	Skirt O.D.		69.970–69.990 (2.7547–2.7555)	69.910 (2.7524)
	Piston-to-cylinder clearance		0.010–0.045 (0.0004–0.0018)	0.09 (0.0035)
	Pin hole I.D.		18.002–18.008 (0.7087–0.7090)	18.012 (0.709)
	Pin O.D.		17.994–18.000 (0.7084–0.7086)	17.954 (0.7068)
	Pin-to-pin hole clearance		0.002–0.014 (0.0001–0.0005)	0.04 (0.0016)
Piston ring	Ring side clearance	Top	0.040–0.065 (0.0016–0.0026)	0.1 (0.004)
		Second	0.015–0.045 (0.00059–0.0018)	0.1 (0.004)
		Oil	0.055–0.140 (0.0022–0.0055)	0.15 (0.006)
	Ring end gap	Top	0.15–0.3 (0.006–0.012)	0.8 (0.03)
		Second	0.3–0.45 (0.012–0.018)	0.95 (0.037)
		Oil	0.2–0.7 (0.0079–0.028)	1.0 (0.04)
	Ring width	Top	0.990–1.025 (0.0390–0.0404)	0.96 (0.038)
Second		1.190–1.225 (0.0469–0.0482)	1.160 (0.0457)	
Cylinder/ cylinder head	Cylinder sleeve I.D.		70.0–70.015 (2.7559–2.7565)	70.06 (2.758)
	Distortion of cylinder head		0.05 (0.0019)	0.1 (0.004)
	I.D. of camshaft journal		23.0–23.021 (0.9055–0.9063)	23.05 (0.908)

HONDA

BF35A·45A

Unit: mm (in)

Part	Item		Standard	Service limit
Connecting rod	Small end I.D.		18.016–18.034 (0.7093–0.7100)	18.05 (0.711)
	Big end oil clearance		0.016–0.040 (0.0006–0.0016)	0.05 (0.0019)
	Big end axial clearance		0.05–0.2 (0.0019–0.0079)	0.3 (0.012)
	Connecting rod bearing oil clearance		0.020–0.038 (0.0008–0.0015)	0.08 (0.003)
Crankshaft	Journal O.D.	Main	39.982–40.006 (1.5741–1.5750)	39.95 (1.572)
		Pin	37.976–38.0 (1.4951–1.4961)	37.94 (1.494)
	Crankshaft main bearing oil clearance		0.020–0.038 (0.0008–0.0015)	0.05 (0.0019)
	Crankshaft side clearance		0.05–0.3 (0.0019–0.012)	0.45 (0.018)
Camshaft	Shaft axial clearance		0.03–0.11 (0.0012–0.0043)	0.3 (0.012)
	Shaft runout		0.03 (0.0012) Max.	0.05 (0.0019)
	Journal O.D.		22.959–22.980 (0.9039–0.9047)	22.93 (0.903)
	Cam height	IN	34.928–35.248 (1.3751–1.3877)	34.708 (1.3665)
		EX	34.973–35.293 (1.3769–1.3895)	34.753 (1.3682)
Shaft oil clearance		0.020–0.065 (0.0008–0.0026)	0.08 (0.003)	
Oil pump	Body I.D.		50.15–50.18 (1.974–1.975)	50.20 (1.976)
	Inner rotor-to-outer rotor clearance		0.15 (0.006) Max.	0.20 (0.0079)
	Outer rotor-to-body clearance		0.15–0.22 (0.006–0.009)	0.26 (0.0102)
	Outer rotor height		16.98–17.0 (0.6685–0.6693)	16.93 (0.667)
	Pump body depth		17.02–17.05 (0.670–0.671)	17.09 (0.673)
	Pump end clearance		0.02–0.07 (0.0008–0.0028)	0.1 (0.004)
Ignition coil	Resistance	Primary coil	0.19–0.23 Ω	—
		Secondary coil	2.8–3.4 k Ω	—
Charging coil	Resistance		0.20–0.26 Ω	—
Exciter coil	Resistance		168–227 Ω	—
Pulser coil	Resistance		288–352 Ω	—

FRAME

Part	Item		Standard	Service limit
Vertical shaft	Shaft O.D. (at needle bearing)		22.217–22.230 (0.8747–0.8752)	22.196 (0.8739)
Bevel gear	Gear I.D.	Forward	19.000–19.021 (0.7480–0.7489)	19.04 (0.750)
		Reverse	22.05–22.30 (0.868–0.878)	22.35 (0.880)
Propeller shaft	Shaft O.D.	Front	18.967–18.980 (0.7467–0.7472)	18.946 (0.7459)
		Rear	20.9–21.2 (0.82–0.83)	20.85 (0.821)
	Shaft O.D. (at needle bearing)		22.007–22.020 (0.8664–0.8669)	21.99 (0.866)

HONDA

BF35A·45A

BF45A

ENGINE

Unit: mm (in)

Part	Item	Standard	Service limit	
Engine	Idle speed	950 ± 50 min ⁻¹ (rpm)	—	
	Cylinder compression	15 ± 1 kg/cm ² (212 ± 14 psi) at 500 min ⁻¹ (rpm)	—	
Carburetor	Main jet	#125	—	
	Pilot screw opening	2-1/8 turns out	—	
	Float height	14 (0.6)	—	
Spark plug	Gap	0.6–0.7 (0.024–0.028)	—	
Valves	Valve clearance	IN	0.13–0.17 (0.005–0.007)	—
		EX	0.21–0.25 (0.008–0.010)	—
	Stem O.D.	IN	5.480–5.490 (0.2157–0.2161)	5.45 (0.215)
		EX	5.460–5.470 (0.2150–0.2154)	5.42 (0.213)
	Guide I.D.	IN/EX	5.500–5.512 (0.2165–0.2170)	5.53 (0.218)
	Seat width	IN	1.25–1.55 (0.049–0.061)	2.0 (0.08)
		EX	1.25–1.55 (0.049–0.061)	2.0 (0.08)
	Spring free length	IN/EX	36.9 (1.45)	35.4 (1.39)
Stem-to-guide clearance	IN	0.010–0.032 (0.0004–0.0013)	0.06 (0.0024)	
	EX	0.030–0.052 (0.0012–0.0020)	0.10 (0.004)	
Rocker arm	Rocker arm I.D.	14.010–14.028 (0.5516–0.5523)	14.05 (0.553)	
	Rocker arm shaft O.D.	13.976–13.994 (0.5502–0.5509)	13.95 (0.549)	
	Rocker arm shaft-to-rocker arm clearance	0.016–0.052 (0.0006–0.0020)	0.07 (0.003)	
Piston	Skirt O.D.	69.970–69.990 (2.7547–2.7555)	69.910 (2.7524)	
	Piston-to-cylinder clearance	0.010–0.045 (0.0004–0.0018)	0.09 (0.0035)	
	Pin hole I.D.	18.002–18.008 (0.7087–0.7090)	18.012 (0.709)	
	Pin O.D.	17.994–18.000 (0.7084–0.7086)	17.954 (0.7068)	
	Pin-to-pin hole clearance	0.002–0.014 (0.0001–0.0005)	0.04 (0.0016)	
Piston ring	Ring side clearance	Top	0.040–0.065 (0.0016–0.0026)	0.1 (0.004)
		Second	0.015–0.045 (0.00059–0.0018)	0.1 (0.004)
		Oil	0.055–0.140 (0.0022–0.0055)	0.15 (0.006)
	Ring end gap	Top	0.15–0.3 (0.006–0.012)	0.8 (0.03)
		Second	0.3–0.45 (0.012–0.018)	0.95 (0.037)
		Oil	0.2–0.7 (0.0079–0.028)	1.0 (0.04)
	Ring width	Top	0.990–1.025 (0.0390–0.0404)	0.96 (0.038)
Second		1.190–1.225 (0.0469–0.0482)	1.160 (0.0457)	
Cylinder/ cylinder head	Cylinder sleeve I.D.	70.0–70.015 (2.7559–2.7565)	70.06 (2.758)	
	Distortion of cylinder head	0.05 (0.0019)	0.1 (0.004)	
	I.D. of camshaft journal	23.0–23.021 (0.9055–0.9063)	23.05 (0.908)	

Unit: mm (in)

Part	Item		Standard	Service limit
Connecting rod	Small end I.D.		18.016–18.034 (0.7093–0.7100)	18.05 (0.711)
	Big end oil clearance		0.016–0.040 (0.0006–0.0016)	0.05 (0.0019)
	Big end axial clearance		0.05–0.2 (0.0019–0.0079)	0.3 (0.012)
	Connecting rod bearing oil clearance		0.020–0.038 (0.0008–0.0015)	0.08 (0.003)
Crankshaft	Journal O.D.	Main	39.982–40.006 (1.5741–1.5750)	39.95 (1.572)
		Pin	37.976–38.0 (1.4951–1.4961)	37.94 (1.494)
	Crankshaft main bearing oil clearance		0.020–0.038 (0.0008–0.0015)	0.05 (0.0019)
	Crankshaft side clearance		0.05–0.3 (0.0019–0.012)	0.45 (0.018)
Camshaft	Shaft axial clearance		0.03–0.11 (0.0012–0.0043)	0.3 (0.012)
	Shaft runout		0.03 (0.0012) Max.	0.05 (0.0019)
	Journal O.D.		22.959–22.980 (0.9039–0.9047)	22.93 (0.903)
	Cam height	IN	34.928–35.248 (1.3751–1.3877)	34.708 (1.3665)
		EX	34.973–35.293 (1.3769–1.3895)	34.753 (1.3682)
	Shaft oil clearance		0.020–0.065 (0.0008–0.0026)	0.08 (0.003)
Oil pump	Body I.D.		50.15–50.18 (1.974–1.975)	50.20 (1.976)
	Inner rotor-to-outer rotor clearance		0.15 (0.006) Max.	0.20 (0.0079)
	Outer rotor-to-body clearance		0.15–0.22 (0.006–0.009)	0.26 (0.0102)
	Outer rotor height		16.98–17.0 (0.6685–0.6693)	16.93 (0.667)
	Pump body depth		17.02–17.05 (0.670–0.671)	17.09 (0.673)
	Pump end clearance		0.02–0.07 (0.0008–0.0028)	0.1 (0.004)
Ignition coil	Resistance	Primary coil	0.19–0.23 Ω	—
		Secondary coil	2.8–3.4 k Ω	—
Charging coil	Resistance		0.20–0.26 Ω	—
Exciter coil	Resistance		168–227 Ω	—
Pulser coil	Resistance		288–352 Ω	—

HONDA

BF35A·45A

FRAME

Unit: mm (in)

Part	Item	Standard	Service limit
Vertical shaft	Shaft O.D. (at needle bearing)	22.217—22.230 (0.8747—0.8752)	22.196 (0.8739)
Bevel gear	Gear I.D.	Forward	19.000—19.021 (0.7480—0.7489)
		Reverse	22.05—22.30 (0.868—0.878)
Propeller shaft	Shaft O.D.	Front	18.967—18.980 (0.7467—0.7472)
		Rear	20.9—21.2 (0.82—0.83)
	Shaft O.D. (at needle bearing)	22.007—22.020 (0.8664—0.8669)	21.99 (0.866)

TORQUE VALUES

Item	Thread Dia. (mm) and pitch (length)	Torque values			
		N·m	kg-m	ft-lb	
• ENGINE					
Crankcase bolt	* 1	M8 x 1.25	28	2.8	20.2
		M6 x 1.0	11	1.1	8.0
Oil filter cartridge		M20 x 1.5	8	0.8	5.6
Water jacket cover bolt		M6 x 1.0	12	1.2	8.7
Thermostat cover bolt		M6 x 1.0	12	1.2	8.7
Cylinder head bolt	* 1	M10 x 1.25	38	3.8	27.5
		M8 x 1.25	27	2.7	19.5
Cylinder head cover bolt		M6 x 1.0	12	1.2	8.7
Fuel pump bolt		M6 x 1.0	10	1.0	7.2
Camshaft holder bolt		M6 x 1.0	14	1.4	10.1
		M6 x 1.0	12	1.2	8.7
Throttle cam		M6 x 1.0	12	1.2	8.7
Choke arm bolt		M6 x 1.0	12	1.2	8.7
Intake manifold bolt, nut		M6 x 1.0	12	1.2	8.7
Carburetor bolt		M6 x 1.0	10	1.0	7.2
Connecting rod nut		M8 x 0.75	28	2.8	20.2
Primary drive gear nut		M22 x 1.25	92	9.2	66.5
Valve adjusting nut		M7 x 0.75	23	2.3	16.6
Oil drain bolt		M12 x 1.5	23	2.3	16.6
Exhaust pipe bolt		M6 x 1.0	10	1.0	7.2
		M8 x 1.25	21	2.1	15.2
Oil pan bolt		M6 x 1.0	10	1.0	7.2
Oil pump bolt		M6 x 1.0	13	1.3	9.4
Fuel strainer retainer bolt		M6 x 1.0	13	1.3	9.4
Timing pulley bolt		M48 x 1.5	130	13.0	94.0
Timing belt tensioner bolt		M10 x 1.25	45	4.5	32.5
Timing belt adjusting spring bolt		M6 x 1.0	12	1.2	8.7
Flywheel bolt		M10 x 1.0	66	6.6	47.7
Pulser rotor bolt		M10 x 1.25	57	5.7	41.2
Oil pressure switch		PT 1/8	9	0.9	6.5
Thermo switch		M16 x 1.5	12	1.2	8.7
Starter magnetic switch (switch side)		M6 x 1.0	5	0.5	3.6
(starter motor side)		M8 x 1.25	7	0.7	5.1
CDI unit bolt		M6 x 1.0	5	0.5	3.6
Remote choke solenoid body stay bolt (Remote control type only)		M6 x 1.0	9	0.9	6.5

* 1: Tighten the crankcase bolts to 28 N·m (2.8 kg-m, 20.2 ft-lb) and the cylinder head bolts to 38 N·m (3.8 kg-m, 27.5 ft-lb) first, then tighten them 90°⁺³⁰₀ further.

HONDA

BF35A·45A

Item	Thread Dia. (mm) and pitch (length)	Torque values		
		N·m	kg-m	ft-lb
• GEAR CASE				
Pinion gear nut	M12 x 1.25	75	7.5	54.2
Gear case end nut	M80 x 1.5	70 ⁺³⁰ ₀	7.0 ^{+3.0} ₀	50.6 ^{+21.7} ₀
Gear case bolt	M10 x 1.25	35	3.5	25.3
	M8 x 1.25	22	2.2	15.9
Oil check bolt	M8 x 1.25	6.5	0.65	4.7
Drain plug bolt	M8 x 1.25	6.5	0.65	4.7
Flushing bolt	M8 x 1.25	6.5	0.65	4.7
Sensor nipple	M8 x 1.0	3	0.3	2.2
Impeller housing bolt	M6 x 1.0	11	1.1	8.0
• EXTENSION/MOUNT				
Extension case bolt	M8 x 1.25	22	2.2	15.9
Lower mount rubber nut	M12 x 1.25	55	5.5	40.0
Lower mount housing bolt	M8 x 1.25	22	2.2	15.9
Drain plug cover bolt	M6 x 1.0	6.5	0.65	4.7
Upper mount rubber nut	M10 x 1.25	45	4.5	32.5
• STERN BRACKET				
Stern bracket nut (L. side)	7/8—14 UNF	17.5	1.75	12.7
(R. side)	7/8—14 UNF	32.5	3.25	23.5
	M10 x 1.25	35	3.5	25.3
• FRAME/ELECTRICAL				
Emergency stop switch nut	M16 x 1.0	1.5	0.15	1.1
Starter switch nut (Tiller handle type only)	M16 x 1.0	1.5	0.15	1.1
Tilt handle nut (Tiller handle type only)	M6 x 1.0	6.5	0.65	4.7
Neutral switch nut	M20 x 1.0	2.5	0.25	1.8
Under cover screw	M5 x 0.8	3	0.3	2.2

STANDARD TORQUE VALUES

Item	Thread Dia.	Torque values		
		N·m	kg-m	ft-lb
Bolt and nut	5 mm	5	0.5	3.6
	6 mm	10	1.0	7.2
	8 mm	21	2.1	15.2
	10 mm	35	3.5	25.3
	12 mm	55	5.5	40.0
Flange bolt and nut	6 mm (SH Flange bolt)	9	0.9	6.5
	6 mm	12	1.2	8.7
	8 mm	27	2.7	19.5
	10 mm	35	3.5	25.3
	12 mm	60	6.0	43.4
Screw	5 mm	4	0.4	2.9
	6 mm	9	0.9	6.5

SPECIAL TOOLS

Tool name	Tool number	Application
1. Float level gauge	07401-0010000	Inspection for carburetor float level
2. Vacuum 4ch tester set	07404-0030001	Carburetor vacuum pressure inspection
3. Oil pressure gauge	07506-3000000	Inspection for oil pressure
3-1 -attachment	07406-0030000	
4. Universal bearing puller	07631-0010000	Vertical shaft, gear case inner race removal
5. Torx bit handle	07703-0010300	Handle for 5-1, 5-2
5-1. -screw T20H	07703-0010400	Fuel pump disassembly/reassembly
5-2. -screw T30H	07703-0010600	Diaphragm adjustment
6. Valve guide driver, 5.5 mm	07742-0010100	Valve guide removal/installation
7. Pin driver, 2.5 mm	07744-0010100	2.5 x 12 mm, 2.5 x 18 mm, 2.5 x 20 mm spring pin removal/installation
8. Attachment, 32 x 35 mm	07746-0010100	22 x 35 x 7 mm water seal installation
9. Attachment, 37 x 40 mm	07746-0010200	Gear case inner race, 25 x 40 x 7 mm water seal installation
10. Attachment, 42 x 47 mm	07746-0010300	6005 bearing, vertical shaft outer race installation
11. Attachment, 52 x 55 mm	07746-0010400	6205 bearing installation
12. Attachment, 62 x 68 mm	07746-0010500	Gear case outer race installation
13. Attachment, 24 x 26 mm	07746-0010700	7/8 x 1-1/8 x 1 mm needle bearing removal/installation, 6007 bearing, 17 x 26 x 7 mm water seal installation
14. Inner driver, 35 mm	07746-0030400	6007 bearing, gear case inner race installation
15. Pilot, 25 mm	07746-0040600	6205, 6005 bearing installation
16. Pilot, 22 mm	07746-0041000	7/8 x 1-1/8 x 1 mm, 22 x 28 x 20 mm needle bearing removal/installation
17. Oil seal driver	07748-0010001	Oil seal, water seal removal
18. Handle A	07749-0010000	Driver for 8, 9, 10, 11, 13 and 33
19. Valve spring compressor	07757-0010000	Valve cotter removal/installation
20. Valve seat cutter, 45° φ29	07780-0010300	Valve seat reconditioning EX
21. Valve seat cutter, 45° φ33	07780-0010800	Valve seat reconditioning IN
22. Valve seat cutter, 32° φ30	07780-0012200	Valve seat reconditioning EX
23. Valve seat cutter, 32° φ33	07780-0012900	Valve seat reconditioning IN
24. Valve seat cutter, 60° φ30	07780-0014000	Valve seat reconditioning EX
25. Valve seat cutter, 60° φ37.5	07780-0014100	Valve seat reconditioning IN
26. Cutter holder, 5.5 mm	07781-0010101	Valve seat reconditioning
27. Valve guide reamer	07984-2000001	Valve guide reaming
28. Bearing remover, 35 mm	07936-3710400	6007 bearing removal
29. Bearing remover, 25 mm	07936-ZV10000	6205, 6005 bearing removal
30. Remover weight	07741-0010201	□ Constituents of Bearing remover, 35 mm and Bearing race puller (above item 28 and 46).
31. Remover handle	07936-3710100	
32. Pin driver, 4 mm	07944-9350200	
33. Attachment, 28 x 30 mm	07946-1870100	4 x 20 mm, 4 x 25 mm Spring pin removal/installation (Tiller handle type only) 22 x 28 x 20 mm needle bearing removal/installation, 17 x 30 x 7 mm water seal installation
34. Stem race driver	07946-GC40000	Vertical shaft inner race installation
35. Bearing driver	07946-KM40701	22 x 28 x 20 mm needle bearing removal/installation
36. Handle	07946-MJ00100	Reverse gear removal
37. Base	07965-SD90100	Reverse gear removal/installation
38. Remover attachment, 22 mm	07GMD-KT70200	Reverse gear removal