

**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                                  |                       |                       |
|---------------------------------|--|-----------------------|-----------------------|-----------------------|--------------------|--|-----------------------|-----------------------|
|                                 | BSAG (Short type),<br>BLAG (Long type) |                       |                       |                       |                    | BSAF (Short type),<br>BLAF (Long type) |                       |                       |
|                                 | Type                                   | SH                    | LH                    | LR                    | LRT                | SR                                     | SR                    | LR                    |
| Overall length                  | *1: 725 (28.5)<br>*2: 1,059 (41.7)     |                       | 685 (27.0)            |                       |                    |  |                       |                       |
| Overall width                   | 370 (14.6)                             |                       |                       |                       |                    |  |                       |                       |
| Overall height                  | 1,255<br>(49.4)                        | 1,360 (53.5)          |                       |                       | 1,255 (49.4)       |  | 1,360 (53.5)          |                       |
| Dry weight                      | 89 kg<br>(196.2 lb)                    | 91 kg<br>(200.7 lb)   | 90 kg<br>(198.5 lb)   | 92 kg<br>(202.9 lb)   | 88 kg (194.0 lb)   |  | 90 kg<br>(198.5 lb)   | 92 kg<br>(202.9 lb)   |
| Operating weight<br>(incl. oil) | 91.5 kg<br>(201.8 lb)                  | 93.5 kg<br>(206.1 lb) | 92.5 kg<br>(204.0 lb) | 94.5 kg<br>(208.4 lb) | 90.5 kg (200.0 lb) |  | 92.5 kg<br>(204.0 lb) | 94.5 kg<br>(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<br>(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 <sup>3</sup> (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 <sup>-1</sup> (r.p.m.)           | 45 HP (33.6 kw)/5,000–6,000 min <sup>-1</sup> (r.p.m.)  |
| Maximum torque                   | 6.0 kg-m (43.4 ft-lb) 3,500 min <sup>-1</sup> (r.p.m.)           | 6.05 kg-m (43.8 ft-lb) 4,500 min <sup>-1</sup> (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.

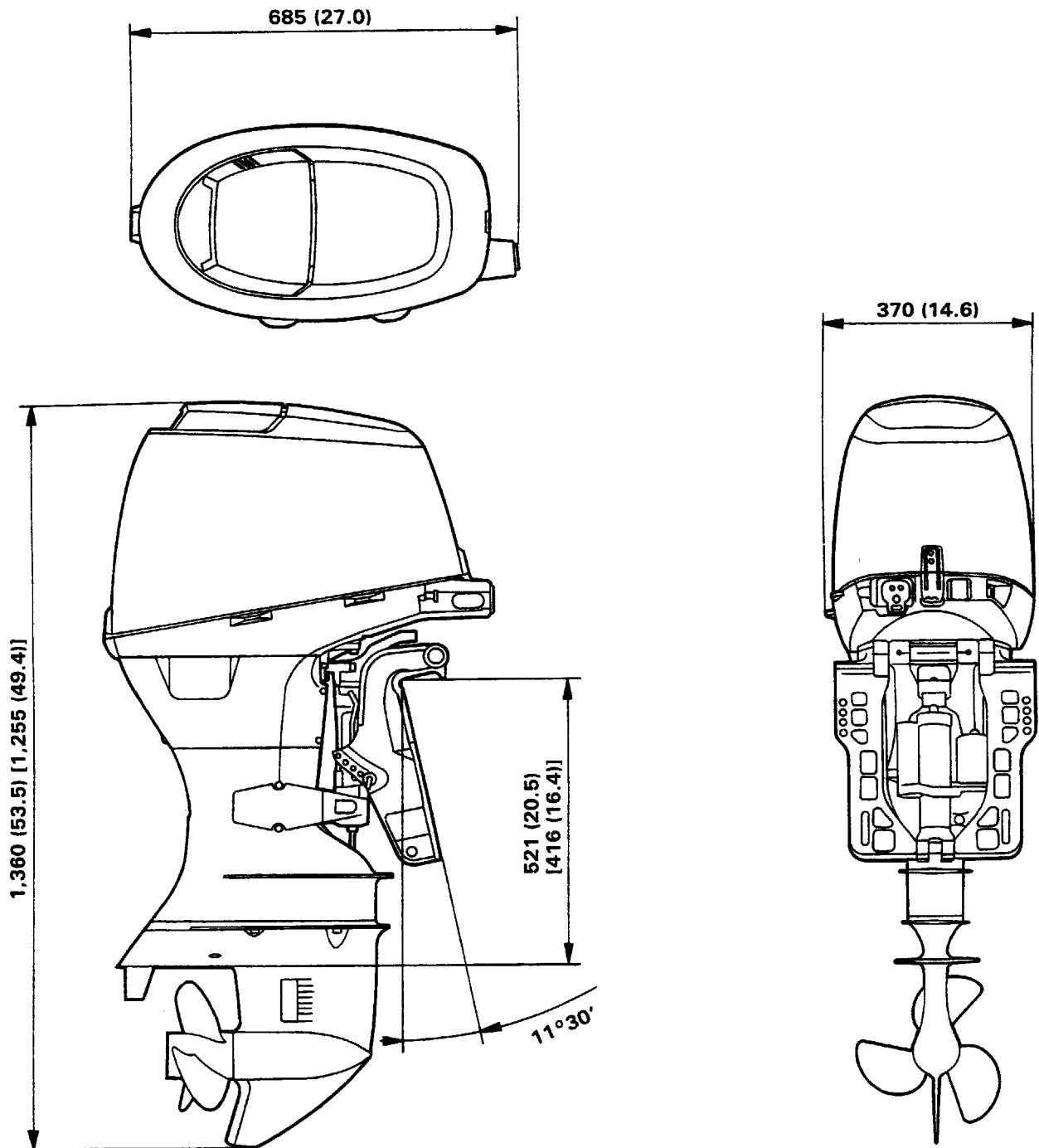
**LOWER UNIT**

|  |                                      |
|--|--------------------------------------|
| 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<br>No. of<br>blades-Dia. x Pitch | 3-286 x 330 mm<br>(11-1/4 x 13.0 in) |
| Propeller rotating<br>direction            | Clockwise (viewed from rear)         |
| Propeller driving system                   | Spline                               |

**DIMENSIONAL DRAWINGS**

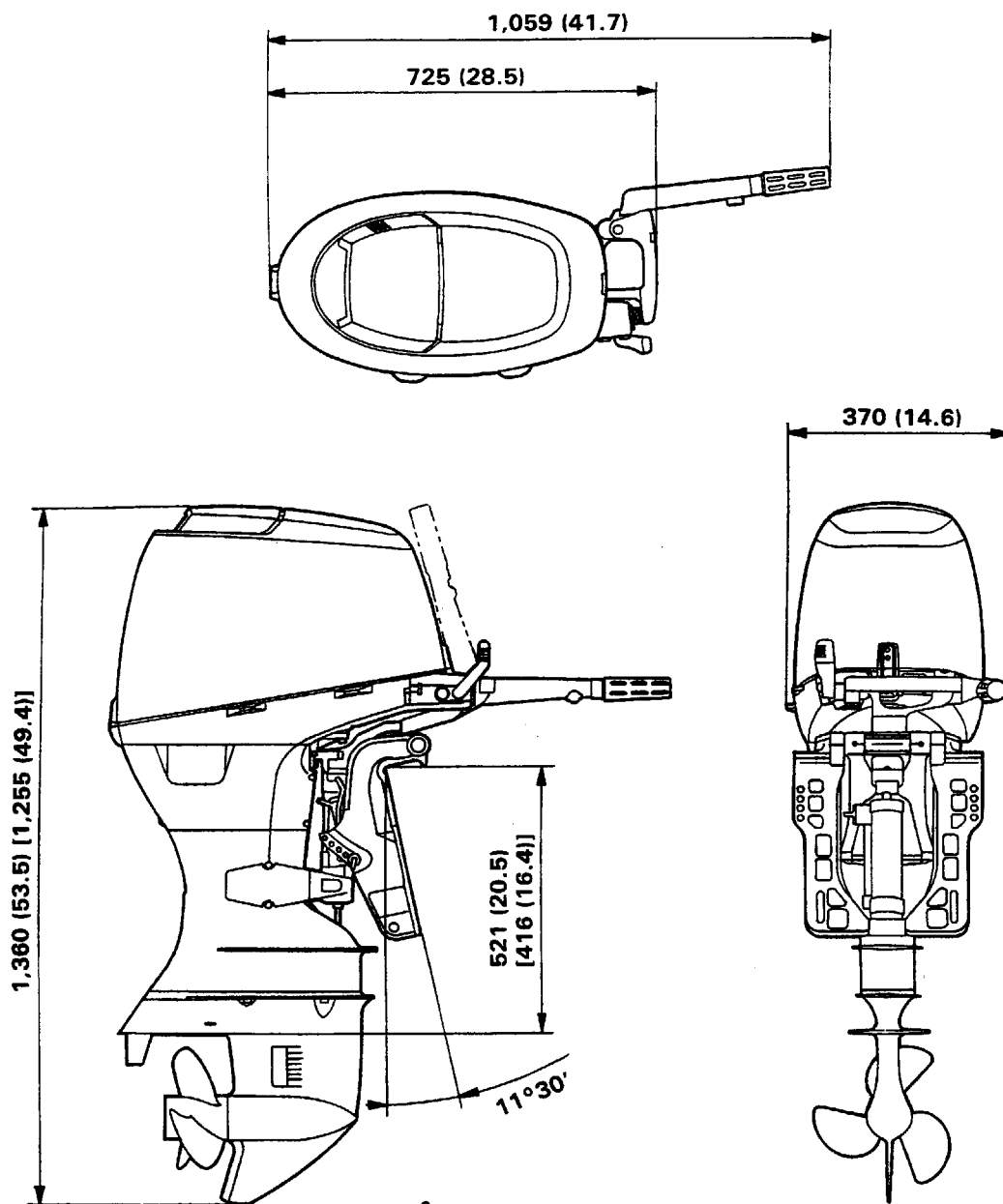
Unit: mm (in)

Remote control type  
[ ]: Short shaft type

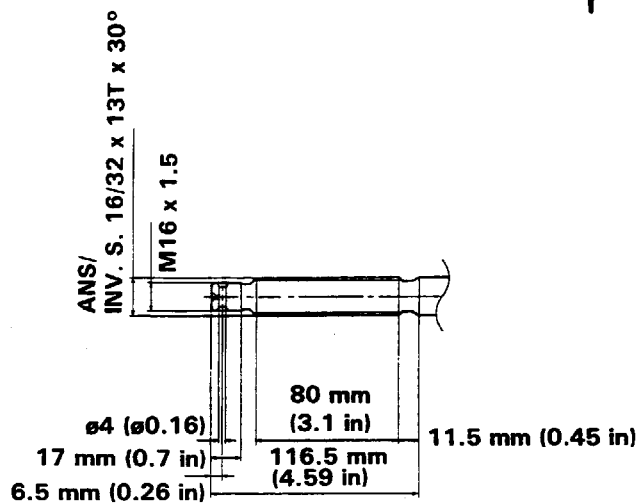


Tiller handle type  
[ ]: Short shaft type

Unit: mm (in)



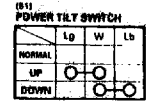
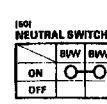
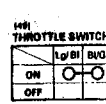
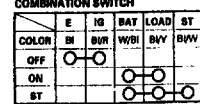
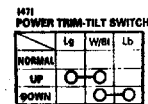
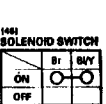
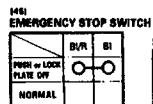
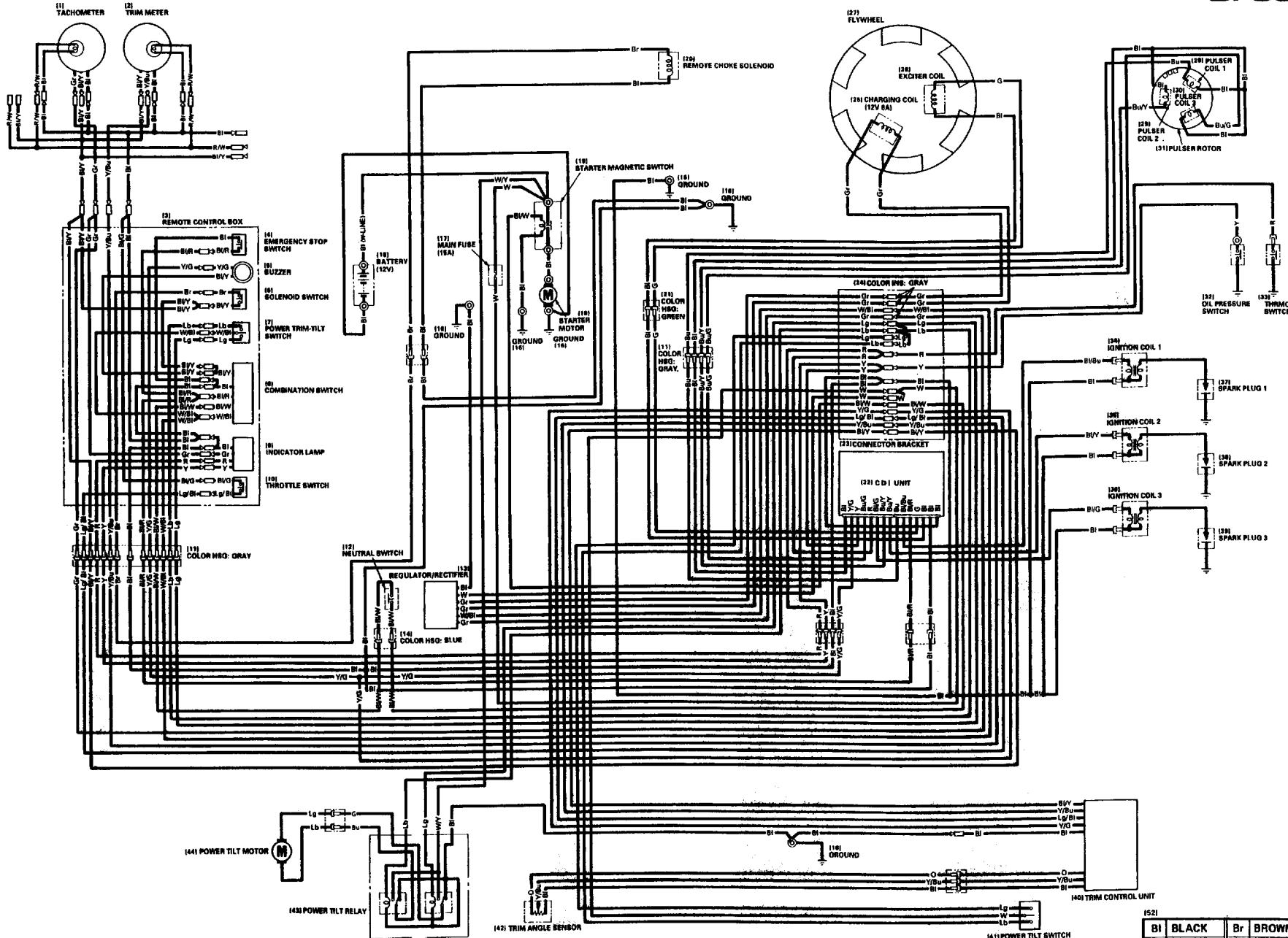
### PROPELLER SHAFT



# WIRING DIAGRAM Power trim & tilt/remote control type

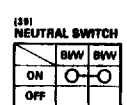
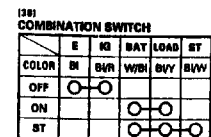
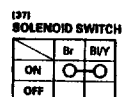
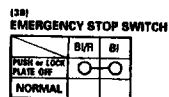
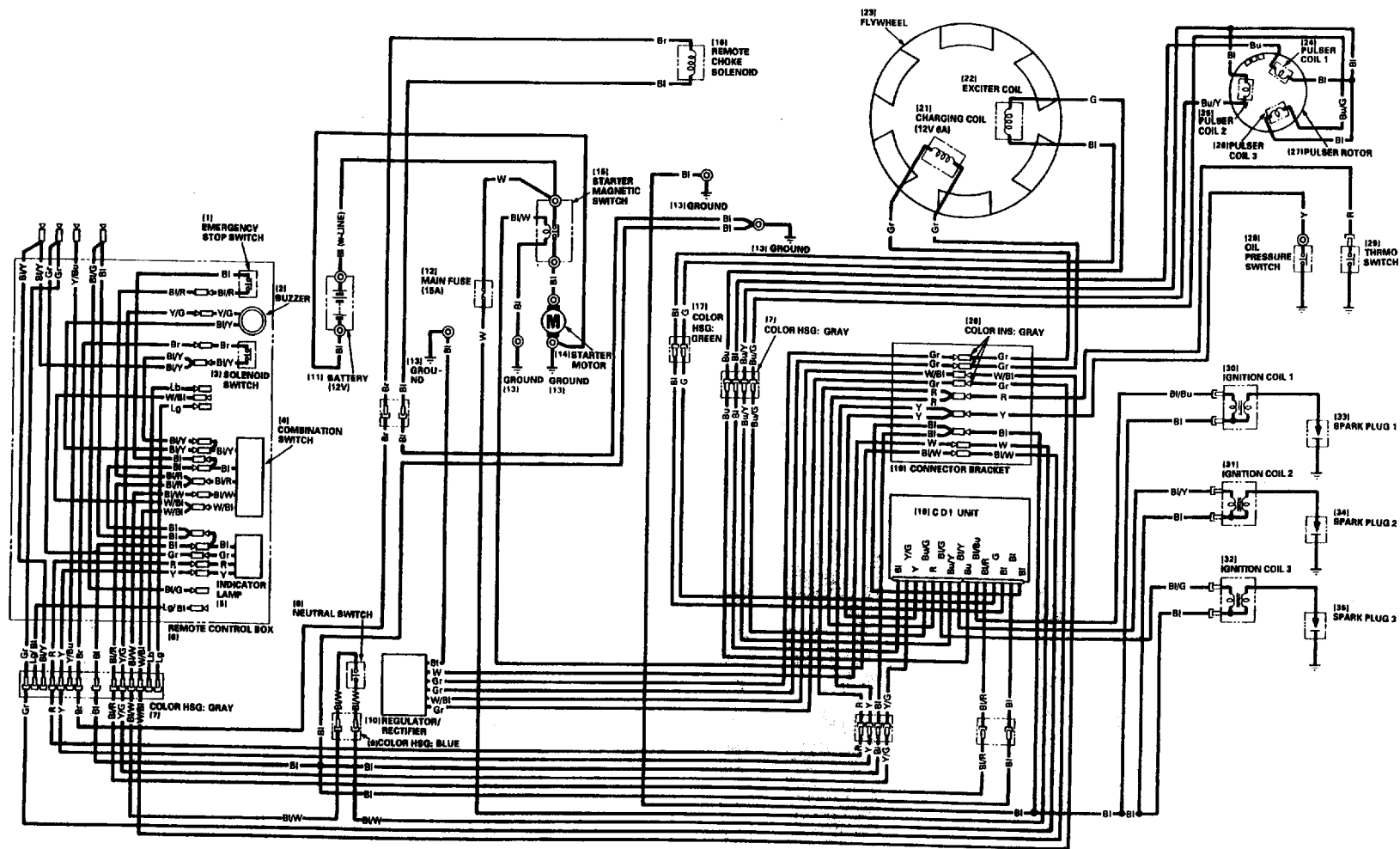
# HONDA

BF35A·45A



|    |        |    |             |
|----|--------|----|-------------|
| B1 | 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

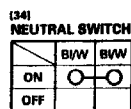
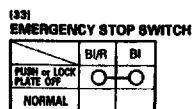
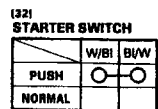
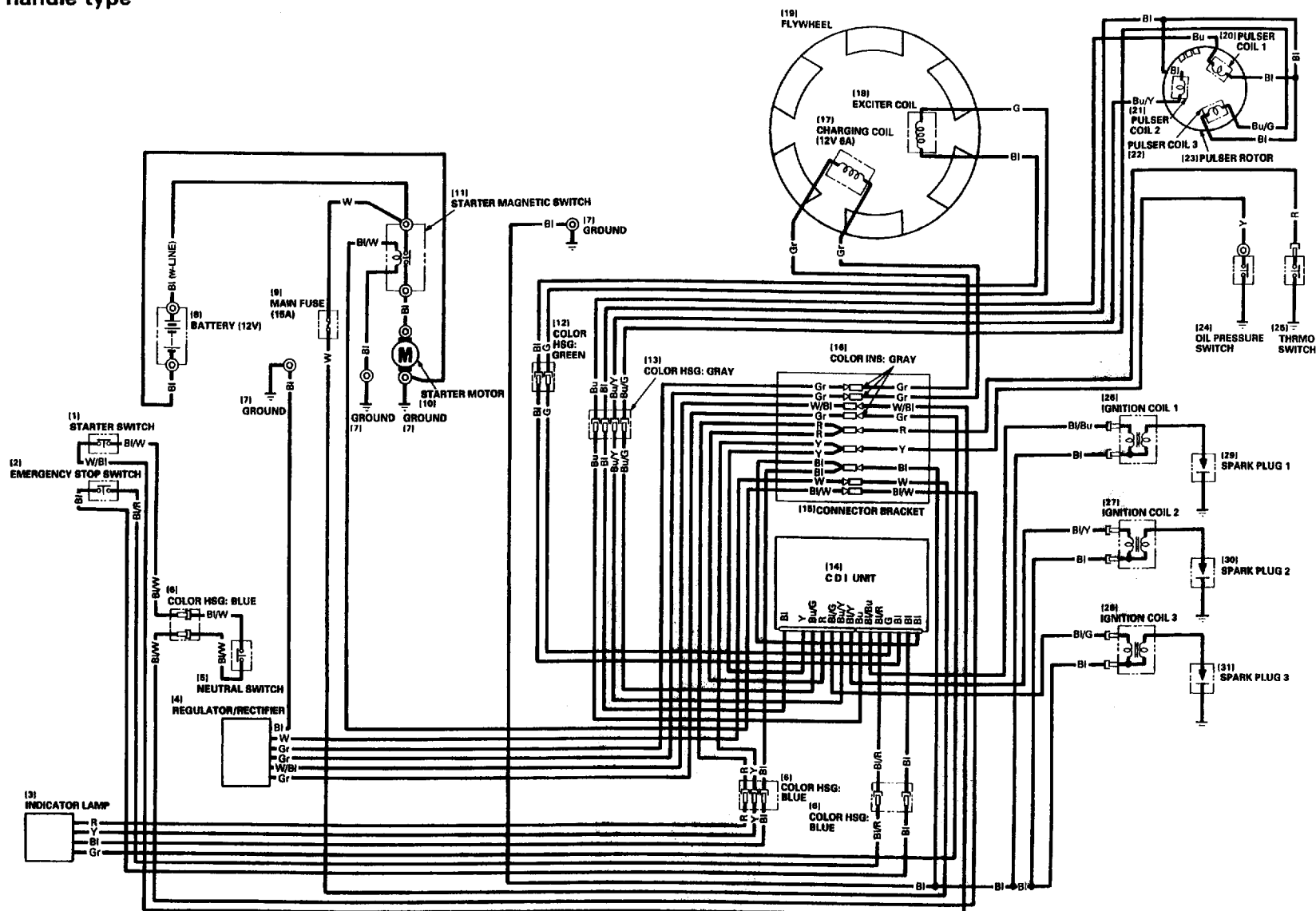


(40)

|    |        |    |             |
|----|--------|----|-------------|
| 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



(35)

|    |        |    |             |
|----|--------|----|-------------|
| 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        |

## 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

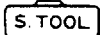
- Keep away from rotating or hot parts and high voltage wires when the engine is run with the engine cover off.

## 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



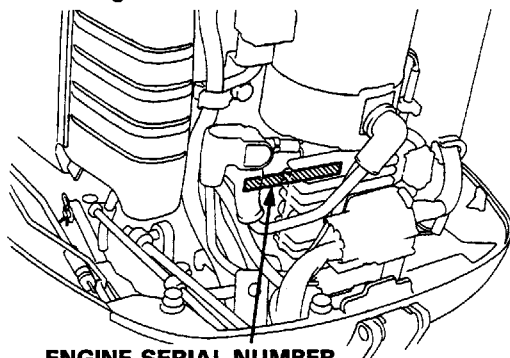
: Apply grease

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

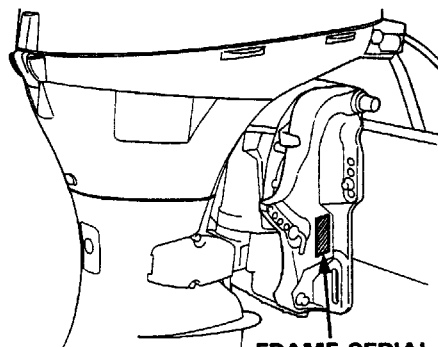
: Indicates the reference page.

## 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 <sup>-1</sup> (rpm)   | —               |
|                            | Cylinder compression                     |                             | 15 ± 1 kg/cm <sup>2</sup> (212 ± 14 psi)<br>at 500 min <sup>-1</sup> (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/<br>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 $\Omega$            | —               |
|                     |                                       | Secondary coil              | 2.8–3.4 k $\Omega$            | —               |
| Charging coil       | Resistance                            |                             | 0.20–0.26 $\Omega$            | —               |
| Exciter coil        | Resistance                            |                             | 168–227 $\Omega$              | —               |
| Pulser coil         | Resistance                            |                             | 288–352 $\Omega$              | —               |

**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 <sup>-1</sup> (rpm)   | —                            |              |
|                            | Cylinder compression                     | 15 ± 1 kg/cm <sup>2</sup> (212 ± 14 psi)<br>at 500 min <sup>-1</sup> (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/<br>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 $\Omega$            | —               |
|                |                                       | Secondary coil | 2.8–3.4 k $\Omega$            | —               |
| Charging coil  | Resistance                            |                | 0.20–0.26 $\Omega$            | —               |
| Exciter coil   | Resistance                            |                | 168–227 $\Omega$              | —               |
| Pulser coil    | Resistance                            |                | 288–352 $\Omega$              | —               |



# 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) | 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)   |

**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°<sup>+30</sup><sub>0</sub> 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 <sup>+30</sup> <sub>0</sub> | 7.0 <sup>+3.0</sup> <sub>0</sub> | 50.6 <sup>+21.7</sup> <sub>0</sub> |
| 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)<br>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  |