











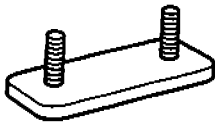

SERVICE SPECIFICATIONS

| | |
|---------------------------------|-------|
| STANDARD BOLT | SS-1 |
| ENGINE MECHANICAL | SS-3 |
| ELECTRONIC FUEL INJECTION | SS-7 |
| COOLING | SS-10 |
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STANDARD BOLT TORQUE SPECIFICATIONS

SS203-01

HOW TO DETERMINE BOLT STRENGTH

| | Mark | Class | | Mark | Class | |
|--|--|-------|-------------|---|---|-----|
| Hexagon head bolt |  Bolt head No. | 4- | 4T | Hexagon flange bolt w/ washer hexagon bolt |  4 Protruding lines | 9T |
| | | 5- | 5T | | | |
| | | 6- | 6T | Hexagon flange bolt w/ washer hexagon bolt |  5 Protruding lines | 10T |
| | | 7- | 7T | | | |
| | | 8- | 8T | | | |
| | | 9- | 9T | Hexagon flange bolt w/ washer hexagon bolt |  6 Protruding lines | 11T |
| | | 10- | 10T | | | |
| 11- | 11T | | | | | |
| |  No mark | 4T | | | | |
| Hexagon flange bolt w/ washer hexagon bolt |  No mark | 4T | Stud bolt |  No mark | 4T | |
| Hexagon head bolt |  2 Protruding lines | 5T | | | | |
| Hexagon flange bolt w/ washer hexagon bolt |  2 Protruding lines | 6T | |  Grooved | 6T | |
| Hexagon head bolt |  3 Protruding lines | 7T | | | | |
| Hexagon head bolt |  4 Protruding lines | 8T | Welded bolt |  | 4T | |

SPECIFIED TORQUE FOR STANDARD BOLTS

| Class | Diameter mm | Pitch mm | Specified torque | | | | | |
|-------|----------------|-------------|-------------------|--------|------------|---------------------|--------|------------|
| | | | Hexagon head bolt | | | Hexagon flange bolt | | |
| | | | N·m | kgf·cm | ft·lbf | N·m | kgf·cm | ft·lbf |
| 4T | 6 | 1 | 5 | 55 | 48 in.·lbf | 6 | 60 | 52 in.·lbf |
| | 8 | 1.25 | 12.5 | 130 | 9 | 14 | 145 | 10 |
| | 10 | 1.25 | 26 | 260 | 19 | 29 | 290 | 21 |
| | 12 | 1.25 | 47 | 480 | 35 | 53 | 540 | 39 |
| | 14 | 1.5 | 74 | 760 | 55 | 84 | 850 | 61 |
| | 16 | 1.5 | 115 | 1,150 | 83 | — | — | — |
| 5T | 6 | 1 | 6.5 | 65 | 56 in.·lbf | 7.5 | 75 | 65 in.·lbf |
| | 8 | 1.25 | 15.5 | 160 | 12 | 17.5 | 175 | 13 |
| | 10 | 1.25 | 32 | 330 | 24 | 36 | 360 | 26 |
| | 12 | 1.25 | 59 | 600 | 43 | 65 | 670 | 48 |
| | 14 | 1.5 | 91 | 930 | 67 | 100 | 1,050 | 76 |
| | 16 | 1.5 | 140 | 1,400 | 101 | — | — | — |
| 6T | 6 | 1 | 8 | 80 | 69 in.·lbf | 9 | 90 | 78 in.·lbf |
| | 8 | 1.25 | 19 | 195 | 14 | 21 | 210 | 15 |
| | 10 | 1.25 | 39 | 400 | 29 | 44 | 440 | 32 |
| | 12 | 1.25 | 71 | 730 | 53 | 80 | 810 | 59 |
| | 14 | 1.5 | 110 | 1,100 | 80 | 125 | 1,250 | 90 |
| | 16 | 1.5 | 170 | 1,750 | 127 | — | — | — |
| 7T | 6 | 1 | 10.5 | 110 | 8 | 12 | 120 | 9 |
| | 8 | 1.25 | 25 | 260 | 19 | 28 | 290 | 21 |
| | 10 | 1.25 | 52 | 530 | 38 | 58 | 590 | 43 |
| | 12 | 1.25 | 95 | 970 | 70 | 105 | 1,050 | 76 |
| | 14 | 1.5 | 145 | 1,500 | 108 | 165 | 1,700 | 123 |
| | 16 | 1.5 | 230 | 2,300 | 166 | — | — | — |
| 8T | 8 | 1.25 | 29 | 300 | 22 | 33 | 330 | 24 |
| | 10 | 1.25 | 61 | 620 | 45 | 68 | 690 | 50 |
| | 12 | 1.25 | 110 | 1,100 | 80 | 120 | 1,250 | 90 |
| 9T | 8 | 1.25 | 34 | 340 | 25 | 37 | 380 | 27 |
| | 10 | 1.25 | 70 | 710 | 51 | 78 | 790 | 57 |
| | 12 | 1.25 | 125 | 1,300 | 94 | 140 | 1,450 | 105 |
| 10T | 8 | 1.25 | 38 | 390 | 28 | 42 | 430 | 31 |
| | 10 | 1.25 | 78 | 800 | 58 | 88 | 890 | 64 |
| | 12 | 1.25 | 140 | 1,450 | 105 | 155 | 1,600 | 116 |
| 11T | 8 | 1.25 | 42 | 430 | 31 | 47 | 480 | 35 |
| | 10 | 1.25 | 87 | 890 | 64 | 97 | 990 | 72 |
| | 12 | 1.25 | 155 | 1,600 | 116 | 175 | 1,800 | 130 |

ENGINE MECHANICAL

SERVICE DATA

EG005-24

| | | | |
|-----------------------|--|--|--|
| Idle CO | Concentration | 0 - 1.0 % | |
| Compression pressure | at 250 rpm STD | 1,330 kPa (13.6 kgf/cm ² , 193 psi) or more | |
| | Minimum | 1,080 kPa (11.0 kgf/cm ² , 156 psi) | |
| | Difference of pressure between each cylinder | 98 kPa (1.0 kgf/cm ² , 14 psi) or less | |
| Valve clearance | at cold Intake | 0.19 - 0.29 mm (0.007 - 0.011 in.) | |
| | Exhaust | 0.39 - 0.49 mm (0.015 - 0.020 in.) | |
| Ignition timing | w/ Terminals TE1 and E1 connected | 10 ± 2° BTDC @ idle | |
| Idle speed | | 880 ± 50 rpm | |
| Timing belt tensioner | Protrusion from housing side | 11.9 - 12.8 mm (0.469 - 0.504 in.) | |
| Cylinder head | Warpage | | |
| | Cylinder block side | Maximum | 0.10 mm (0.0039 in.) |
| | Manifold side | Maximum | 0.10 mm (0.0039 in.) |
| | Valve seat | | |
| | Refacing angle | | 30°, 45°, 60° |
| | Contacting angle | | 45° |
| | Contacting width | | 1.0 - 1.4 mm (0.039 - 0.055 in.) |
| Valve guide bushing | Inside diameter | | 5.010 - 5.030 mm (0.1972 - 0.1980 in.) |
| | Outside diameter (for repair part) | STD | 9.727 - 9.738 mm (0.3830 - 0.3834 in.) |
| | | O/S 0.05 | 9.777 - 9.788 mm (0.3850 - 0.3854 in.) |
| Valve | Valve overall length | STD Intake | 98.51 mm (3.8783 in.) |
| | | Exhaust | 108.45 mm (4.2697 in.) |
| | Minimum | Intake | 97.81 mm (3.8508 in.) |
| | | Exhaust | 107.75 mm (4.2421 in.) |
| | Valve face angle | | 44.5° |
| | Stem diameter | Intake | 4.970 - 4.985 mm (0.1957 - 0.1963 in.) |
| | | Exhaust | 4.965 - 4.980 mm (0.1955 - 0.1961 in.) |
| | Stem oil clearance | STD Intake | 0.025 - 0.060 mm (0.0010 - 0.0024 in.) |
| | | Exhaust | 0.030 - 0.065 mm (0.0012 - 0.0026 in.) |
| | | Maximum Intake | 0.08 mm (0.0031 in.) |
| | | Exhaust | 0.10 mm (0.0039 in.) |
| | Margin thickness | STD | 0.8 - 1.2 mm (0.031 - 0.047 in.) |
| Minimum | | 0.5 mm (0.020 in.) | |
| Valve spring | Deviation | Maximum | 2.0 mm (0.079 in.) |
| | Free length | | 48.97 mm (1.9279 in.) |
| | Installed tension | at 37.7 mm (1.4842 in.) | 145 - 165 N (15.2 - 16.8 kgf, 33.5 - 37.0 lbf) |
| Camshaft | Thrust clearance | STD | 0.080 - 0.190 mm (0.0031 - 0.0075 in.) |
| | | Maximum | 0.25 mm (0.0098 in.) |
| | Journal oil clearance | STD | 0.035 - 0.072 mm (0.0014 - 0.0028 in.) |
| | | Maximum | 0.10 mm (0.0039 in.) |
| | Journal diameter | | 24.949 - 24.965 mm (0.9822 - 0.9829 in.) |
| | Circle runout | Maximum | 0.04 mm (0.0016 in.) |
| | Cam lobe height | STD Intake | 40.28 - 40.38 mm (1.5858 - 1.5898 in.) |
| | | Exhaust | 40.09 - 40.19 mm (1.5783 - 1.5823 in.) |
| | | Minimum Intake | 40.13 mm (1.5799 in.) |
| | Exhaust | 39.94 mm (1.5724 in.) | |

SERVICE SPECIFICATIONS - ENGINE MECHANICAL

| | | | | |
|------------------------|-------------------------------|-----------------------|--|--|
| Valve lifter | Lifter diameter | | 23.475 - 23.485 mm (0.9242 - 0.9246 in.) | |
| | Lifter bore diameter | | 23.500 - 23.521 mm (0.9252 - 0.9260 in.) | |
| | Oil clearance | STD | 0.015 - 0.046 mm (0.0006 - 0.0018 in.) | |
| | | Maximum | 0.10 mm (0.0039 in.) | |
| Manifold | Warpage | Maximum Intake | 0.10 mm (0.0039 in.) | |
| | | Exhaust | 0.30 mm (0.0118 in.) | |
| Cylinder head bolt | Bolt length | Standard | 114.0 - 115.0 mm (4.4882 - 4.5276 in.) | |
| | | maximum | 116.5 mm (4.5866 in.) | |
| Spark plug tube | Protrusion | | 33.1 - 33.9 mm (1.303 - 1.335 in.) | |
| Cylinder block | Cylinder head surface warpage | Maximum | 0.05 mm (0.0020 in.) | |
| | | | | |
| | Cylinder bore diameter | STD Mark 1 | 81.000 - 81.010 mm (3.1890 - 3.1894 in.) | |
| | | Mark 2 | 81.010 - 81.020 mm (3.1894 - 3.1898 in.) | |
| | | Mark 3 | 81.020 - 81.030 mm (3.1898 - 3.1902 in.) | |
| | Maximum STD | 81.23 mm (3.1980 in.) | | |
| | O/S 0.50 | 81.73 mm (3.2177 in.) | | |
| Piston and piston ring | Piston diameter | STD Mark 1 | 80.895 - 80.905 mm (3.1849 - 3.1852 in.) | |
| | | Mark 2 | 80.905 - 80.915 mm (3.1852 - 3.1856 in.) | |
| | | Mark 3 | 80.915 - 80.925 mm (3.1856 - 3.1860 in.) | |
| | | O/S 0.50 | 81.500 - 81.530 mm (3.2087 - 3.2098 in.) | |
| | | | | |
| | Piston oil clearance | STD | 0.095 - 0.115 mm (0.0037 - 0.0045 in.) | |
| | | Maximum | 0.13 mm (0.0051 in.) | |
| | Piston ring groove clearance | No.1 | 0.040 - 0.080 mm (0.0016 - 0.0031 in.) | |
| | | No.2 | 0.030 - 0.070 mm (0.0012 - 0.0028 in.) | |
| | | Oil Teikoku made | 0.020 - 0.160 mm (0.0008 - 0.0063 in.) | |
| | | Riken made | 0.030 - 0.110 mm (0.0012 - 0.0043 in.) | |
| | Piston ring end gap | STD No.1 | Teikoku made | 0.250 - 0.350 mm (0.0098 - 0.0138 in.) |
| | | | Riken made | 0.280 - 0.350 mm (0.0110 - 0.0138 in.) |
| | | No.2 | Teikoku made | 0.350 - 0.500 mm (0.0138 - 0.0197 in.) |
| | | | Riken made | 0.350 - 0.450 mm (0.0138 - 0.0177 in.) |
| Oil | | Teikoku made | 0.100 - 0.350 mm (0.0039 - 0.0138 in.) | |
| | | Riken made | 0.150 - 0.400 mm (0.0059 - 0.0157 in.) | |
| Maximum | | No.1 | 0.95 mm (0.0374 in.) | |
| | | No.2 | 1.05 mm (0.0413 in.) | |
| | Oil | 1.00 mm (0.0394 in.) | | |

| | | | |
|---------------------------------------|---|--|--|
| Connecting rod | Thrust clearance | STD | 0.150 - 0.250 mm (0.0059 - 0.0098 in.) |
| | | Maximum | 0.30 mm (0.0118 in.) |
| | Connecting rod bearing center wall thickness Reference | STD Mark 1 | 1.486 - 1.490 mm (0.0585 - 0.0587 in.) |
| | | Mark 2 | 1.490 - 1.494 mm (0.0587 - 0.0588 in.) |
| | | Mark 3 | 1.494 - 1.498 mm (0.0588 - 0.0590 in.) |
| | Connecting rod oil clearance | STD STD | 0.030 - 0.061 mm (0.0012 - 0.0024 in.) |
| | | U/S 0.25 | 0.019 - 0.073 mm (0.0007 - 0.0029 in.) |
| | | Maximum | 0.08 mm (0.0031 in.) |
| | Rod bend | Maximum per 100 mm (3.94 in.) | 0.03 mm (0.0012 in.) |
| | Rod twist | Maximum per 100 mm (3.94 in.) | 0.05 mm (0.0020 in.) |
| Connecting rod bolt out side diameter | STD | 8.860 - 9.000 mm (0.3488 - 0.3543 in.) | |
| | Minimum | 8.60 mm (0.3386 in.) | |
| Crankshaft | Thrust clearance | STD | 0.020 - 0.220 mm (0.0008 - 0.0087 in.) |
| | | Maximum | 0.30 mm (0.0118 in.) |
| | Thrust washer thickness | | 2.440 - 2.490 mm (0.0961 - 0.0980 in.) |
| | Main journal oil clearance | STD STD | 0.015 - 0.045 mm (0.0006 - 0.0018 in.) |
| | | U/S 0.25 | 0.015 - 0.053 mm (0.0006 - 0.0021 in.) |
| | | Maximum | 0.08 mm (0.0031 in.) |
| | Main journal diameter | STD | 47.982 - 48.010 mm (1.8891 - 1.8898 in.) |
| | | U/S 0.25 | 47.745 - 47.555 mm (1.8797 - 1.8801 in.) |
| | Main bearing center wall thickness (Reference) | STD Mark 1 | 2.002 - 2.005 mm (0.0788 - 0.0789 in.) |
| | | Mark 2 | 2.005 - 2.008 mm (0.0789 - 0.0791 in.) |
| | | Mark 3 | 2.008 - 2.011 mm (0.0791 - 0.0792 in.) |
| | | Mark 4 | 2.011 - 2.014 mm (0.0792 - 0.0793 in.) |
| | | Mark 5 | 2.014 - 2.017 mm (0.0793 - 0.0794 in.) |
| | Crank pin diameter | STD | 41.985 - 42.000 mm (1.6530 - 1.6535 in.) |
| | | U/S 0.25 | 41.735 - 41.750 mm (1.6431 - 1.6437 in.) |
| | Circle runout | Maximum | 0.03 mm (0.0012 in.) |
| Main journal taper and out-of-round | Maximum | 0.005 mm (0.0002 in.) | |
| Crank pin taper and out-of-round | Maximum | 0.005 mm (0.0002 in.) | |

ES000-00

TORQUE SPECIFICATION

| Part | N·m | kgf·cm | ft·lbf |
|--|----------|----------|------------|
| Spark plug x Cylinder head | 18 | 180 | 13 |
| Distributor x Cylinder head | 23 | 230 | 17 |
| Idler pulley x Cylinder block | 35 | 350 | 25 |
| Camshaft timing pulley x Camshaft | 59 | 600 | 43 |
| No.1 cylinder head cover x Cylinder head | 8 | 80 | 69 in.·lbf |
| Tensioner x Oil pump | 9.5 | 95 | 82 in.·lbf |
| Timing belt covers x Cylinder head, Cylinder block, Oil pump | 9.5 | 95 | 82 in.·lbf |
| Crankshaft pulley x Crankshaft | 140 | 1,400 | 101 |
| No.2 cylinder head cover x No.1 cylinder head cover | 9.5 | 95 | 82 in.·lbf |
| Cylinder head x Cylinder block (1st) | 30 | 300 | 22 |
| Cylinder head x Cylinder block (2nd) | Turn 90° | Turn 90° | Turn 90° |
| Cylinder head x Cylinder block (3rd) | Turn 90° | Turn 90° | Turn 90° |
| Camshaft bearing cap x Cylinder head | 17 | 175 | 13 |

SERVICE SPECIFICATIONS - ENGINE MECHANICAL

| | | | |
|--|----------|----------|------------|
| Engine mounting stay x Cylinder head | 35 | 350 | 25 |
| No.2 water inlet x Cylinder head | 15 | 150 | 11 |
| Oil dipstick guide x Alternator adjusting bar | 9.5 | 95 | 82 in.-lbf |
| Intake manifold x Cylinder head | 22 | 220 | 16 |
| Intake manifold stay x Intake manifold, Cylinder block | 22 | 220 | 16 |
| Engine hanger (RH) x Cylinder head | 22 | 220 | 16 |
| Water inlet housing x Cylinder head | 22 | 220 | 16 |
| Water outlet x Cylinder head | 22 | 220 | 16 |
| OSV x Cylinder head | 9.5 | 95 | 82 in.-lbf |
| Exhaust manifold x Cylinder head | 50 | 500 | 36 |
| Exhaust manifold stay x Exhaust manifold, Cylinder block | 45 | 450 | 33 |
| Heat insulator x Exhaust manifold | 9.5 | 95 | 82 in.-lbf |
| Main bearing cap x Cylinder block | 60 | 610 | 44 |
| Connecting rod cap x Connecting rod (1st) | 29 | 300 | 22 |
| Connecting rod cap x Connecting rod (2nd) | Turn 90° | Turn 90° | Turn 90° |
| Rear oil seal retainer x Cylinder block | 9.5 | 95 | 82 in.-lbf |
| Knock sensor x Cylinder block | 45 | 450 | 33 |
| Water pump x Cylinder block | 14 | 145 | 11 |
| RH engine mounting bracket x Cylinder block | 51 | 525 | 38 |
| Alternator adjusting bar x Cylinder block | 39 | 400 | 29 |
| Rear end plate x Cylinder block | 9.5 | 95 | 82 in.-lbf |
| Flywheel x Crankshaft | 75 | 750 | 54 |

ELECTRONIC FUEL INJECTION**SERVICE DATA**

SS96C-01

| | | |
|--|--|---|
| Fuel pressure regulator | Fuel pressure at no vacuum | 235 - 275 kPa (2.4 - 2.8 kgf/cm ² , 34 - 40 psi) |
| Fuel pump | Resistance at 20°C (68°F) | 0.2 - 3.0 Ω |
| Injector | Resistance at 20°C (68°F) | 13.4 - 14.2 Ω |
| | Injection volume | 65 - 82 cm ³ (4.0 - 5.0 cu in.) per 15 sec. |
| | Difference between each cylinder | 5 cm ³ (0.3 cu in.) or less |
| | Fuel leakage | One drop or less per minute |
| Throttle body | Throttle opener setting speed | 2,500 rpm or less |
| Throttle position sensor | Clearance between stop screw and lever | |
| | 0 mm (0 in.) | VTA - E2 0.3 - 6.3 kΩ |
| | 0.80 mm (0.031 in.) | IDL - E2 0.5 kΩ or less |
| | 1.0 mm (0.040 in.) | IDL - E2 Infinity |
| | Throttle valve fully open | VTA - E2 1.8 - 11.5 kΩ |
| | - | VC - E2 3.5 - 6.5 kΩ |
| Idle Air Control Valve | Resistance (+B - RSC or RSO) | Cold 17.5 - 28.5 Ω Hot 17.0 - 24.5 Ω |
| Camshaft timing oil control valve | Resistance at 20°C (68°F) | 11 - 13 Ω |
| SV for EVAP | Resistance at 20°C (68°F) | 30 - 33 Ω |
| Water temp. sensor and intake air temp. sensor | Resistance | at -20°C (-4°F) 10 - 20 kΩ at 0°C (32°F) 4 - 7 kΩ at 20°C (68°F) 2 - 3 kΩ at 40°C (104°F) 0.9 - 1.3 kΩ at 60°C (140°F) 0.4 - 0.7 kΩ at 80°C (176°F) 0.2 - 0.4 kΩ |
| Oxygen sensor | Heater coil resistance at 20°C (68°F) | 11 - 16 Ω |
| Vacuum sensor | Power source voltage | 4.5 - 5.5 V |

SERVICE SPECIFICATIONS - ELECTRONIC FUEL INJECTION

| ECU | Condition | Terminals | Voltage |
|-----|---|---------------|------------------|
| | - | BATT - E1 | 9 - 14 V |
| | IG SW ON | +B - E1 | 9 - 14 V |
| | IG SW ON | VC - E2 | 4.5 - 5.5 V |
| | IG SW ON (Throttle valve fully closed) | VTA - E2 | 0.3 - 0.8 V |
| | IG SW ON (Throttle valve open) | VTA - E2 | 3.2 - 4.9 V |
| | IG SW ON | PIM - E2 | 3.3 - 3.9 V |
| | IG SW ON | #1 - E01, E02 | 9 - 14 V |
| | IG SW ON | #2 - E01, E02 | 9 - 14 V |
| | IG SW ON | #3 - E01, E02 | 9 - 14 V |
| | IG SW ON | #4 - E01, E02 | 9 - 14 V |
| | IG SW ON (Intake air temp. 20°C (68°F)) | THA - E2 | 0.5 - 3.4 V |
| | IG SW ON (Coolant temp. 80°C (176°F)) | THW - E2 | 0.2 - 1.0 V |
| | Cranking | STA - E1 | 6 V or more |
| | IG SW ON (Igniter connector disconnected) | IGF - E1 | 4.5 - 5.5 V |
| | Idling | IGT - E1 | Pulse generation |
| | IG SW ON (Engine ECU connector disconnected) | RSC - E1 | 9 - 14 V |
| | IG SW ON (Engine ECU connector disconnected) | RSO - E1 | 9 - 14 V |
| | No trouble (Check engine warning light off) and engine running | W - E1 | 9 - 14 V |
| | IG SW ON (Air conditioning ON) | AC1 - E1 | 1.5 or less |
| | IG SW ON (Air conditioning ON) | ACT - E1 | 4.5 - 5.5 |
| | Maintain engine speed at 2,500 rpm for 2 minutes after warming up then return idling | VF - E1 | 1.8 - 3.2 V |
| | Idling | G1 - G - | Pulse generation |
| | Idling | G2 - G - | Pulse generation |
| | Idling | NE - G - | Pulse generation |
| | Maintain engine speed at 2,500 rpm for 2 minutes after warming up | OX - E1 | Pulse generation |
| | Idling | KNK - E1 | Pulse generation |
| | Electric cooling fan ON | ELS1 - E1 | 7.5 - 14 V |
| | Electric cooling fan OFF | ELS1 - E1 | 0 - 1.5 V |
| | Blower motor ON | ELS2 - E1 | 7.5 - 14 V |
| | Blower motor OFF | ELS2 - E1 | 0 - 1.5 V |
| | Taillight switch ON | ELS3 - E1 | 7.5 - 14 V |
| | Taillight switch OFF | ELS3 - E1 | 0 - 1.5 V |
| | Defogger switch ON | ELS4 - E1 | 7.5 - 14 V |
| | Defogger switch OFF | ELS4 - E1 | 0 - 1.5 V |
| | IG SW ON | HT - E1 | 9 - 14 V |
| | Idling | HT - E1 | 0 - 3 V |
| | IG SW ON | FC - E1 | 9 - 14 V |
| | Idling | FC - E1 | 0 - 3 V |
| | IG SW ON | TE1 - E1 | 9 - 14 V |
| | IG SW ON | TE2 - E1 | 9 - 14 V |

SERVICE SPECIFICATIONS -- ELECTRONIC FUEL INJECTION

| ECU | Condition | Terminals | Resistance |
|--------------|-------------------------------------|-------------|-------------------------|
| | Throttle valve fully open | VTA - E2 | 2,400 - 11,200 Ω |
| | Throttle valve fully closed | VTA - E2 | 340 - 6,300 Ω |
| | - | VC - E1 | 3,100 - 7,200 Ω |
| | Intake air temp. 20°C (68°F) | THA - E2 | 2,000 - 3,000 Ω |
| | Coolant temp. 80°C (176°F) | THW - E2 | 200 - 400 Ω |
| | Cold (-10°C (14°F) to 50°C (122°F)) | G1, G2 - G- | 125 - 200 Ω |
| | Hot (50°C (122°F) to 100°C (212°F)) | G1, G2 - G- | 160 - 250 Ω |
| | Cold (-10°C (14°F) to 50°C (122°F)) | NE - G- | 125 - 200 Ω |
| | Hot (50°C (122°F) to 100°C (212°F)) | NE - G- | 160 - 250 Ω |
| | Cold (-10°C (14°F) to 50°C (122°F)) | RSC - +B | 17 - 24.5 Ω |
| | Hot (50°C (122°F) to 100°C (212°F)) | RSC - +B | 21.5 - 28.5 Ω |
| | Cold (-10°C (14°F) to 50°C (122°F)) | RSO - +B | 17 - 24.5 Ω |
| | Hot (50°C (122°F) to 100°C (212°F)) | RSO - +B | 21.5 - 28.5 Ω |
| | - | HT - +B | 11 - 16 Ω |
| Fuel cut rpm | Fuel return rpm | | 1,400 rpm |

TORQUE SPECIFICATIONS

EJ04E-00

| Part tightened | N·m | kgf·cm | ft·lbf |
|---|------|--------|-----------|
| Fuel line (Union bolt type) | 29.5 | 300 | 22 |
| Fuel line (Flare nut type) | 35 | 350 | 25 |
| Fuel line (Flare nut type) w/ SST | 30 | 310 | 22 |
| Fuel pump x Fuel tank | 3.4 | 35 | 30 in·lbf |
| Fuel pressure regulator x Throttle body assembly | 7.0 | 70 | 60 in·lbf |
| Ink bracket x throttle body assembly | 7.0 | 70 | 60 in·lbf |
| Label bracket x Throttle body assembly | 7.0 | 70 | 60 in·lbf |
| Injector cover x Throttle body assembly | 7.0 | 70 | 60 in·lbf |
| Fuel inlet hose x Delivery pipe | 33 | 330 | 24 |
| Throttle body x Intake manifold | 7.0 | 70 | 60 in·lbf |
| Throttle body assembly x cylinder head | 28 | 280 | 20 |
| Surge tank stay x Cylinder block, throttle body | 22 | 220 | 16 |
| Intake pipe x Throttle body | 22 | 220 | 16 |
| Surge tank cover x surge tank | 15 | 150 | 11 |
| Camshaft timing oil control valve x Cylinder head | 8.0 | 80 | 71 in·lbf |
| SC Valve x Cylinder block | 22 | 220 | 16 |
| Crack sensor x Cylinder block | 44 | 450 | 33 |

COOLING

SERVICE DATA

E007L-2N

| | | |
|----------------------|-------------------------------|--|
| Thermostat | Valve opening temperature | 80 - 84°C (176 - 183°F) |
| | Valve lift at 95°C (203°F) | 8 mm (0.31 in.) or more |
| Radiator cap | Relief valve opening pressure | 74 - 103 kPa (0.75 - 1.05 kgf/cm ² , 10.7 - 14.9 psi) |
| | STD Minimum | 59 kPa (0.6 kgf/cm ² , 8.5 psi) |
| Electric cooling fan | Rotating amperage | 3.2 - 4.4 A |

TORQUE SPECIFICATIONS

E007M-2M

| Part tightened | N-m | kgf-cm | ft-lbf |
|---------------------------------------|-----|--------|------------|
| Cylinder block x Drain plug | 35 | 350 | 25 |
| Water pump cover x Water pump housing | 9.3 | 92.5 | 80 in.-lbf |
| Water pump x Cylinder block | 15 | 150 | 11 |
| Alternator adjusting bar x Water pump | 22 | 220 | 16 |
| Oil dipstick guide x No.2 water inlet | 9.5 | 95 | 82 in.-lbf |
| Water inlet x Water inlet housing | 9.3 | 95 | 82 in.-lbf |
| Fan x Fan motor | 6.2 | 63 | 55 in.-lbf |
| Fan motor x Fan shroud | 2.6 | 26 | 23 in.-lbf |

LUBRICATION

SERVICE DATA

E015A-17

| | | | |
|--------------|----------------|---------------|---|
| Oil pressure | | at idle speed | 59 kPa (0.6 kgf/cm ² , 8.5 psi) or more |
| | | at 3,000 rpm | 245 - 490 kPa (2.5 - 5.0 kgf/cm ² , 36 - 71 psi) |
| Oil pump | Body clearance | STD | 0.100 - 0.191 mm (0.0039 - 0.0075 in.) |
| | | Maximum | 0.20 mm (0.0079 in.) |
| | Tip clearance | STD | 0.060 - 0.220 mm (0.0024 - 0.0087 in.) |
| | | Maximum | 0.35 mm (0.0138 in.) |
| | Side clearance | STD | 0.025 - 0.075 mm (0.0010 - 0.0030 in.) |
| | | Maximum | 0.10 mm (0.0039 in.) |

TORQUE SPECIFICATIONS

E015C-1K

| Part tightened | N·m | kgf·cm | ft·lbf |
|---|-----|--------|------------|
| Oil pan x Drain plug | 44 | 450 | 33 |
| Oil pump body cover x Oil pump body | 10 | 105 | 8 |
| Oil pump x Cylinder block | 22 | 220 | 16 |
| Oil strainer x Cylinder block | 9.3 | 95 | 82 in.·lbf |
| Oil strainer x Oil pump | 9.3 | 95 | 82 in.·lbf |
| Oil pan x Cylinder block | 4.9 | 50 | 43 in.·lbf |
| Oil pan x Oil pump | 4.9 | 50 | 43 in.·lbf |
| Oil pan x Rear oil seal retainer | 4.9 | 50 | 43 in.·lbf |
| Dipstick guide x Alternator adjusting bar | 9.5 | 95 | 82 in.·lbf |
| Oil nozzle x Cylinder block | 25 | 250 | 18 |

IGNITION

SERVICE DATA

SS00-01

| | | | |
|-------------------|------------------------------------|--------------------------|----------------------------------|
| Firing order | | | 1-3-4-2 |
| High-tension cord | Resistance | Maximum | 25 k Ω per cord |
| Spark plug | Recommended spark plug | DENSO | PK20R11 |
| | | NGK | BKR6EP-11 |
| | Correct electrode gap for new plug | | 1.1 mm (0.043 in.) |
| Ignition coil | Primary coil resistance | at cold | 0.36 - 0.55 Ω |
| | | at hot | 0.45 - 0.65 Ω |
| | Secondary coil resistance | at cold | 9.0 - 15.4 k Ω |
| | | at hot | 11.4 - 18.1 k Ω |
| Distributor | Air gap | | 0.2 - 0.5 mm (0.008 - 0.020 in.) |
| | Pickup coil resistance | at cold G1 - G \ominus | 125 - 200 Ω |
| | | G2 - G \ominus | 125 - 200 Ω |
| | | NE - G \ominus | 155 - 250 Ω |
| | | at hot G1 - G \ominus | 160 - 235 Ω |
| | | G2 - G \ominus | 160 - 235 Ω |
| NE - G \ominus | | 190 - 290 Ω | |

TORQUE SPECIFICATIONS

IG00L-07

| Part tightened | N-m | kgf-cm | ft-lbf |
|-----------------------------|-----|--------|--------|
| Spark plug x Cylinder head | 18 | 180 | 13 |
| Distributor x Cylinder head | 23 | 230 | 17 |

SERVICE SPECIFICATIONS - STARTING

STARTING
SERVICE DATA

SS08E-01

| | | |
|--------------------------------|---------|--|
| Rated voltage and output power | | 12 V 0.8 kW |
| No-load characteristics | Current | 90 A or less at 11.5 V |
| | rpm | 3,000 rpm or more |
| Brush length | STD | 14.0 mm (0.551 in.) |
| | Minimum | 9.0 mm (0.354 in.) |
| Spring installed load | | 13.7 - 17.6 N (1.4 - 1.8 kgf, 3.1 - 4.0 lbf) |
| Commutator | | |
| Diameter | STD | 28 mm (1.10 in.) |
| | Minimum | 27 mm (1.06 in.) |
| Undercut depth | STD | 0.6 mm (0.024 in.) |
| | Minimum | 0.2 mm (0.008 in.) |
| Circle runout | Maximum | 0.05 mm (0.0020 in.) |
| | | |
| Planetary shaft diameter | | 14.982 - 15.000 mm (0.5898 - 0.5906 in.) |
| Center bearing | | |
| Inside diameter | | 15.008 - 15.050 mm (0.5909 - 0.5925 in.) |
| Oil clearance | STD | 0.01 - 0.06 mm (0.0004 - 0.0024 in.) |
| | Maximum | 0.2 mm (0.008 in.) |
| Pinion clearance | STD | 1 - 5 mm (0.04 - 0.20 in.) |
| | | |

ST00H-03

TORQUE SPECIFICATIONS

| Part tightened | N·m | kgf·cm | ft·lbf |
|---|-----|--------|-----------|
| cover x Brush holder | 1.5 | 15 | 13 in·lbf |
| cover x Starter housing | 5.9 | 60 | 52 in·lbf |
| magnetic switch x Starter housing | 8.3 | 85 | 73 in·lbf |
| 1 wire of field frame x Magnetic switch | 9.8 | 100 | 87 in·lbf |

CHARGING

SERVICE DATA

SS06F-01

| | | | |
|---------------------------|-----------------------|------------------|---------------------------------------|
| Battery | Specific gravity | at 20°C (68°F) | 1.250 - 1.290 |
| | Voltage | at 20°C (68°F) | 12.5 - 12.9 V |
| Drive belt | Deflection | New belt | 3.5 - 4.5 mm (0.14 - 0.18 in.) |
| | | Used belt | 6.0 - 7.0 mm (0.24 - 0.28 in.) |
| | Tension | New belt | 686 - 785 N (70 - 80 kgf) |
| | | Used belt | 294 - 441 N (30 - 45 kgf) |
| Alternator | Rated output | | 12 V - 70 A |
| | Rotor coil resistance | | 2.8 - 3.0 Ω |
| | Slip ring diameter | STD | 14.2 mm - 14.4 mm (0.559 - 0.567 in.) |
| | | Minimum | 12.8 mm (0.504 in.) |
| | Brush exposed length | STD | 9.5 - 11.5 mm (0.374 - 0.453 in.) |
| | | Minimum | 1.5 mm (0.059 in.) |
| Alternator regulator (IC) | Regulator voltage | at 25°C (77°F) | 14.0 - 15.0 V |
| | | at 115°C (239°F) | 13.5 - 14.3 V |

TORQUE SPECIFICATIONS

CH07X-01

| Part tightened | N·m | kgf·cm | ft·lbf |
|--|-------|--------|------------|
| Bearing retainer x Drive end frame | 2.6 | 27 | 23 in.·lbf |
| Drive end frame x Rectifier end frame | 4.5 | 46 | 40 in.·lbf |
| Pulley nut | 110.5 | 1,125 | 81 |
| Rectifier holder x Rectifier end frame | 3.9 | 40 | 36 in.·lbf |
| Rectifier holder x Coil lead on drive end frame | 1.96 | 20 | 18 in.·lbf |
| Rectifier end frame x IC regulator, Brush holder | 1.96 | 20 | 18 in.·lbf |
| Rectifier end frame x Rear end cover | 4.5 | 46 | 40 in.·lbf |
| Terminal nut | 4.1 | 42 | 36 in.·lbf |