# ENGINE MECHANICAL

0316B–01

## SERVICE DATA

### 3RZ–FE:

| | | |
|---|---|---|
| New drive belt deflection | Pressing force: 98 N (10 kgf, 22 lbf) | |
| | For fan and generator | 5 – 7 mm (0.197 – 0.276 in.) |
| | For cooler compressor | 7 – 10 mm (0.276 – 0.394 in.) |
| | For vane pump | 4.5 – 5.5 mm (0.177 – 0.216 in.) |
| Used drive belt deflection | Pressing force: 98 N (10 kgf, 22 lbf) | |
| | For fan and generator | 7 – 8 mm (0.276 – 0.315 in.) |
| | For cooler compressor | 10 – 13 mm (0.394 – 0.512 in.) |
| | For vane pump | 6.5 – 7.5 mm (0.256 – 0.295 in.) |
| New drive belt tension | | |
| | For fan and generator | 685 – 785 N (70 – 80 kgf, 154 – 176 lbf) |
| | For cooler compressor | 520 – 755 N (53 – 77 kgf, 117 – 170 lbf) |
| | For vane pump | 540 – 640 N (55 – 65 kgf, 121 – 143 lbf) |
| Used drive belt tension | | |
| | For fan and generator | 295 – 440 N (30 – 45 kgf, 66 – 99 lbf) |
| | For cooler compressor | 200 – 390 N (20 – 40 kgf, 44 – 88 lbf) |
| | For vane pump | 245 – 390 N (25 – 40 kgf, 55 – 88 lbf) |
| Ignition timing | w/ Terminal TC and CG of DLC3 connected | 3 – 7°BTDC |
| | W/ Terminal TC and CG of DLC3 disconnected | 7 – 13°BTDC |
| Idle speed | | 650 – 750 r/min (Unleaded gasoline)<br>750 – 850 r/min (Lead gasoline) |
| Compression | | |
| Compression pressure | | 1.23 MPa (12.5 kgf/cm$^2$, 178 psi) |
| Minimum pressure | | 0.88 MPa (8.9 kgf/cm$^2$, 127 psi) |
| Difference between each cylinder | | 98 kPa (1.0 kgf·cm$^2$, 14 psi) |
| Valve clearance at cold | Intake | 0.15 – 0.25 mm (0.006 – 0.010 in.) |
| | Exhaust | 0.25 – 0.35 mm (0.010 – 0.014 in.) |
| Cylinder head set bolt | | |
| Outer diameter | Standard | 10.76 – 10.97 mm (0.4236 – 0.4319 in.) |
| | Minimum | 10.40 mm (0.4094 in.) |

### 5L–E:

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|---|---|---|
| New drive belt deflection | Pressing force: 98 N (10 kgf, 22 lbf) | |
| | For vane pump | 8.0 – 10 mm (0.31 – 0.39 in.) |
| | For cooler compressor | 11 – 15 mm (0.43 – 0.59 in.) |
| | For fan and generator | 7.0 – 10 mm (0.28 – 0.39 in.) |
| Used drive belt deflection | Pressing force: 98 N (10 kgf, 22 lbf) | |
| | For vane pump | 10 – 15 mm (0.39 – 0.59 in.) |
| | For cooler compressor | 15 – 20 mm (0.59 – 0.79 in.) |
| | For fan and generator | 10 – 14 mm (0.39 – 0.55 in.) |
| New drive belt tension | | |
| | For vane pump | 441 – 539 N (45 – 55 kgf) |
| | For cooler compressor | 372 – 608 N (38 – 62 kgf) |
| | For fan and generator | 441 – 539 N (45 – 55 kgf) |
| Used drive belt tension | | |
| | For vane pump | 196 – 343 N (20 – 35 kgf) |
| | For cooler compressor | 196 – 392 N (20 – 40 kgf) |
| | For fan and generator | 196 – 343 N (20 – 35 kgf) |
| Idle speed | | 650 – 750 rpm |
| Maximum speed | | 4,750 – 5,050 rpm |
| Compression pressure | | 3,138 kPa (32.0 kgf/cm$^2$, 455 psi) or more |
| Minimum pressure | | 1,961 kPa (20.0 kgf/cm$^2$, 284 psi) |
| Difference between each cylinder | | 490 kPa (5.0 kgf/cm$^2$, 71 psi) or less |
| Valve clearance at cold | Intake | 0.20 – 0.30 mm (0.008 – 0.012 in.) |
| | Exhaust | 0.40 – 0.50 mm (0.016 – 0.020 in.) |

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|---|---|---|
| Idler tension spring | | |
| Free length | | 44.4 – 45.4 mm (1.748 – 1.787 in.) |
| Installed tension | at 52.1 mm (2.051 in.) | 53 – 59 N (5.42 – 5.98 kgf, 11.9 – 13.2 lbf) |
| Cylinder head set bolt | | |
| Outer diameter | Standard | 11.80 – 12.00 mm (0.4646 – 0.4724 in.) |
| | Minimum | 11.60 mm (0.4567 in.) |
| Cylinder head gasket | | |
| Piston protrusion from cylinder block | | 0.68 – 0.97 mm (0.0268 – 0.0382 in.) |
| New installed cylinder head gasket thickness | Mark B | 1.40 – 1.50 mm (0.0551 – 0.0591 in.) |
| | D | 1.50 – 1.60 mm (0.0591 – 0.0630 in.) |
| | F | 1.60 – 1.70 mm (0.0630 – 0.0669 in.) |

## 1KZ–TE:

| | | |
|---|---|---|
| New drive belt deflection | Pressing force: 98 N (10 kgf, 22 lbf) | |
| | For cooler compressor | 13 – 15 mm (0.52 – 0.58 in.) |
| | For fan and generator | 6 – 8 mm (0.24 – 0.31 in.) |
| Used drive belt deflection | Pressing force: 98 N (10 kgf, 22 lbf) | |
| | For cooler compressor | 15 – 21 mm (0.58 – 0.82 in.) |
| | For fan and generator | 8 – 12 mm (0.31 – 0.47 in.) |
| New drive belt tension | | |
| | For cooler compressor | 370 – 610 N (38 – 62 kgf) |
| | For fan and generator | 400 – 600 N (41 – 61 kgf) |
| Used drive belt tension | | |
| | For cooler compressor | 190 – 395 N (20 – 40 kgf) |
| | For fan and generator | 300 – 500 N (31 – 51 kgf) |
| Idle speed | | 650 – 750 rpm |
| Maximum speed | | 4,450 – 4,750 rpm |
| Compression pressure | | 3,040 kPa (31.0 kgf/cm$^2$, 441 psi) or more |
| Minimum pressure | | 1,961 kPa (20.0 kgf/cm$^2$, 284 psi) |
| Difference between each cylinder | | 490 kPa (5.0 kgf/cm$^2$, 71 psi) or less |
| Valve clearance at cold | Intake | 0.20 – 0.30 mm (0.008 – 0.012 in.) |
| | Exhaust | 0.25 – 0.35 mm (0.010 – 0.014 in.) |
| Cylinder head set bolt | | |
| Outer diameter | Standard | 13.500 – 14.000 mm (0.5315 – 0.5512 in.) |
| | Minimum | 12.60 mm (0.4961 in.) |
| Cylinder head gasket | | |
| Piston protrusion from cylinder block | | 0.08 – 0.33 mm (0.0031 – 0.0130 in.) |
| New installed cylinder head gasket thickness | Hole number 1 | 0.80 – 0.90 mm (0.0315 – 0.0354 in.) |
| | 3 | 0.90 – 1.00 mm (0.0354 – 0.0394 in.) |
| | 5 | 1.00 – 1.10 mm (0.0394 – 0.0433 in.) |

## 1KD–FTV:

| | | |
|---|---|---|
| Idle speed | | 650 – 750 rpm |
| Maximum speed | | 4,500 – 4,700 rpm |
| Compression pressure | | |
| | at 250 rpm STD | 2,700 kPa (27.5 kgf/cm$^2$, 391 psi) or more |
| | Minimum pressure | 2,200 kPa (22.5 kgf/cm$^2$, 320 psi) or more |
| | Difference between each cylinder | 500 kPa (5.0 kgf/cm$^2$, 71 psi) or less |
| Valve clearance | | |
| | Cold Intake | 0.20 – 0.30 mm (0.0079 – 0.0118 in.) |
| | Exhaust | 0.35 – 0.45 mm (0.0138 – 0.0177 in.) |
| Cylinder head set bolt | | |
| | STD | 11.76 – 11.97 mm (0.463 – 0.471 in.) |
| | Minimum outer diameter | 11.60 mm (0.457 in.) |
| Cylinder head gasket | | |
| New cylinder head gasket thickness | A | 0.80 – 0.90 mm (0.0315 – 0.0354 in.) |
| | B | 0.85 – 0.95 mm (0.0335 – 0.0374 in.) |
| | C | 0.90 – 1.00 mm (0.0354 – 0.0394 in.) |
| | D | 0.95 – 1.05 mm (0.0374 – 0.0413 in.) |
| | E | 1.00 – 1.10 mm (0.0394 – 0.0433 in.) |