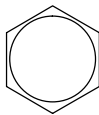
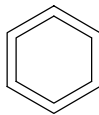
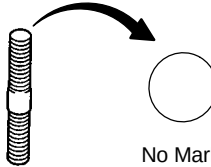
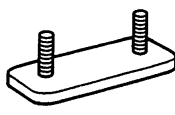
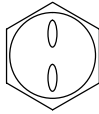
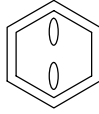
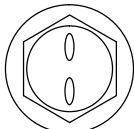
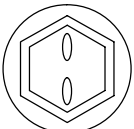
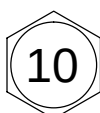
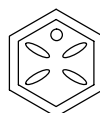
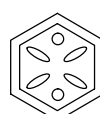


# STANDARD BOLT

## HOW TO DETERMINE BOLT STRENGTH

0305S-01

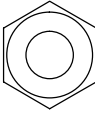
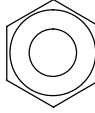
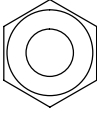
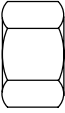
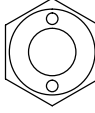
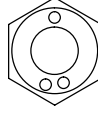
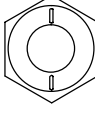
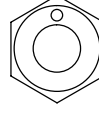
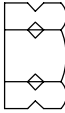
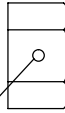
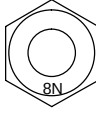
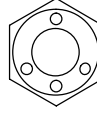
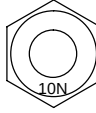
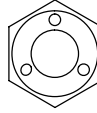
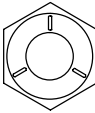
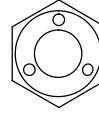
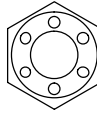
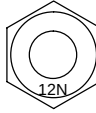
| Bolt Type                                                                                                                                                                                     |                                                                                                                                                                                   |                                                                                                                                                                                   |                                                                                                | Class |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------|
| Hexagon Head Bolt                                                                                                                                                                             |                                                                                                                                                                                   | Stud Bolt                                                                                                                                                                         | Weld Bolt                                                                                      |       |
| Normal Recess Bolt                                                                                                                                                                            | Deep Recess Bolt                                                                                                                                                                  |                                                                                                                                                                                   |                                                                                                |       |
| <div><br/>No Mark</div>     | <div><br/>No Mark</div>                                                                          | <div><br/>No Mark</div>                                                                          | <div></div> | 4T    |
| <div></div>                 | <div></div>                                                                                      |                                                                                                                                                                                   |                                                                                                | 5T    |
| <div><br/>w/ Washer</div> | <div><br/>w/ Washer</div>                                                                       | <div></div>                                                                                      |                                                                                                | 6T    |
| <div></div>             | <div></div> |                                                                                                                                                                                   |                                                                                                | 7T    |
| <div></div>                                                                                                | <div></div>                                                                                    | <div></div> |                                                                                                | 8T    |
| <div></div>                                                                                                | <div></div>                                                                                    |                                                                                                                                                                                   |                                                                                                | 9T    |
| <div></div>                                                                                                | <div></div> |                                                                                                                                                                                   |                                                                                                | 10T   |
| <div></div>                                                                                                | <div></div> |                                                                                                                                                                                   |                                                                                                | 11T   |

B06431

## SPECIFIED TORQUE FOR STANDARD BOLTS

| Class | Diameter<br>mm | Pitch<br>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        |

## HOW TO DETERMINE NUT STRENGTH

| Nut Type                                                                                                                                                                                                                                              |                                                                                                                                                                         |                                                                                                                                                                          | Class    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Present Standard Hexagon Nut                                                                                                                                                                                                                          | Old Standard Hexagon Nut                                                                                                                                                |                                                                                                                                                                          |          |
|                                                                                                                                                                                                                                                       | Cold Forging Nut                                                                                                                                                        | Cutting Processed Nut                                                                                                                                                    |          |
| <br>No Mark                                                                                                                                                          |                                                                                                                                                                         |                                                                                                                                                                          | 4N       |
| <br>No Mark (w/ Washer)                                                                                                                                              | <br>No Mark (w/ Washer)                                                                | <br>No Mark                                                                           | 5N (4T)  |
|    |                                                                                                                                                                         |                                                                                                                                                                          | 6N       |
|                                                                                                                                                                                                                                                       |     |   | 7N (5T)  |
|                                                                                 |                                                                                                                                                                         |                                                                                                                                                                          | 8N       |
|                                                                                 |   | <br>No Mark                                                                         | 10N (7T) |
|                                                                                 |                                                                                                                                                                         |                                                                                                                                                                          | 11N      |
|                                                                                 |                                                                                                                                                                         |                                                                                                                                                                          | 12N      |

\*: Nut with 1 or more marks on one side surface of the nut.

B06432

### HINT:

Use the nut with the same number of the nut strength classification or the greater than the bolt strength classification number when tightening parts with a bolt and nut.

Example: Bolt = 4T

Nut = 4N or more

2002 LEXUS ES300 REPAIR MANUAL (RM911U)

# ENGINE CONTROL SYSTEM

030GS-01

## SERVICE DATA

|                                            |                                                                                      |                                                                      |
|--------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| Throttle body                              |                                                                                      |                                                                      |
| Standard throttle valve opening percentage |                                                                                      | 60 % or more                                                         |
| Accelerator pedal position sensor          |                                                                                      |                                                                      |
| Standard voltage                           |                                                                                      | 0.6 - 1.0 V                                                          |
| Camshaft timing oil control valve assy     |                                                                                      |                                                                      |
| Standard                                   | VVT system is OFF (OCV is OFF)<br>VVT system is ON (OCV is ON)                       | Normal engine speed<br>Rough idle or engine stalled                  |
| Intake air flow meter assy                 |                                                                                      |                                                                      |
| Resistance                                 | at -20°C (-4°F)<br>at 20°C (68°F)<br>at 60°C (140°F)                                 | 13.6 - 18.4 kΩ<br>2.21 - 2.69 kΩ<br>0.493 - 0.667 kΩ                 |
| Camshaft timing control Valve              |                                                                                      |                                                                      |
| Resistance                                 | at 20°C (68°F)                                                                       | 6.9 - 7.9 Ω                                                          |
| Accelerator pedal assy                     |                                                                                      |                                                                      |
| Resistance                                 | 2 (VPA2) - 3 (EP1)<br>5 (VPA1) - 1 (EP2)<br>6 (VCP1) - 3 (EP1)<br>4 (VCP2) - 1 (EP2) | 5.0 kΩ or less<br>5.0 kΩ or less<br>2.25 - 4.75 kΩ<br>2.25 - 4.75 kΩ |
| Throttle body assy                         |                                                                                      |                                                                      |
|                                            | M+ - M-                                                                              | 0.3 - 100 kΩ at 20°C (68°F)                                          |
| Throttle position sensor                   |                                                                                      |                                                                      |
| Resistance                                 | VC - E2                                                                              | 1.2 - 3.2 kΩ                                                         |
| Coolant temperature sensor                 |                                                                                      |                                                                      |
| Resistance                                 | Approx. 20°C (68°F)<br>Approx. 80°C (176°F)                                          | 2.32 - 2.59 kΩ<br>0.310 - 0.326 kΩ                                   |

## TORQUE SPECIFICATION

| Part Tightened                                | N·m | kgf·cm | ft·lbf    |
|-----------------------------------------------|-----|--------|-----------|
| Throttle position sensor x Throttle body      | 2.0 | 20     | 17 in·lbf |
| Throttle body assy x Intake air control valve | 11  | 112    | 8         |
| Front suspension upper brace center x Body    | 80  | 816    | 59        |

# FUEL

030GU-01

## SERVICE DATA

|                                  |                |                                                             |
|----------------------------------|----------------|-------------------------------------------------------------|
| Fuel pressure                    |                | 304 - 343 kPa (3.1 - 3.5 kgf/cm <sup>2</sup> , 44 - 50 psi) |
| Fuel pressure                    |                | 147 kPa (1.5 kgf/cm <sup>2</sup> , 21 psi) or more          |
| Fuel injector                    |                |                                                             |
| Resistance                       | at 20°C (68°F) | 13.4 - 14.2Ω                                                |
| Injection volume                 |                | 60 - 73 cm <sup>3</sup> (3.7 - 4.5 cu in.) per 15 seconds   |
| Difference between each cylinder |                | 13 cm <sup>3</sup> (0.8 cu in.) or less                     |
| Fuel leakage                     |                | 1 drop or less per 12 minutes                               |
| Fuel pump                        |                |                                                             |
| Resistance                       | at 20°C (68°F) | 0.2 - 3.0 Ω                                                 |

## TORQUE SPECIFICATION

| Part Tightened                               | N·m | kgf·cm | ft·lbf     |
|----------------------------------------------|-----|--------|------------|
| Delivery pipe x Cylinder head                | 10  | 102    | 7          |
| Pulsation damper x Delivery pipe             | 33  | 336    | 24         |
| Fuel pipe x Delivery pipe                    | 33  | 336    | 24         |
| Fuel pipe x Intake manifold                  | 20  | 199    | 14         |
| Front suspension upper brace center x Body   | 80  | 816    | 59         |
| Fuel tank vent tube set plate x Fuel tank    | 3.5 | 36     | 31 in.·lbf |
| Fuel main tube support x Fuel tank           | 5.4 | 55     | 48 in.·lbf |
| Fuel tank x Body                             | 39  | 400    | 29         |
| Fuel tank protector lower center x Fuel tank | 5.4 | 55     | 48 in.·lbf |
| Parking brake cable assy No.2 x Body         | 5.4 | 55     | 48 in.·lbf |
| Parking brake cable assy No.3 x Body         | 5.4 | 55     | 48 in.·lbf |

# EMISSION CONTROL

## SERVICE DATA

030GW-01

|                                                |                                      |                            |
|------------------------------------------------|--------------------------------------|----------------------------|
| VSV for pressure switching valve<br>Resistance | at 20°C (68°F)<br>at 120°C (248°F)   | 37 - 44 Ω<br>51 - 62 Ω     |
| VSV for EVAP<br>Resistance                     | at 20°C (68°F)                       | 27 - 33 Ω                  |
| VSV for canister closed valve<br>Resistance    | at 20°C (68°F)                       | 25 - 30 Ω                  |
| Oxygen sensor<br>Resistance                    | at 20°C (68°F)                       | 11 - 16 Ω                  |
| A/F sensor<br>Resistance                       | at 20°C (68°F)<br>at 800°C (1,472°F) | 0.8 - 1.4 Ω<br>1.8 - 3.2 Ω |

# INTAKE

## SERVICE DATA

030GX-01

|                                                   |                |           |
|---------------------------------------------------|----------------|-----------|
| Intake air control valve No.3 (VSV)<br>Resistance | at 20°C (68°F) | 37 - 44 Ω |
| Vacuum switching valve assy No.1<br>Resistance    | at 20°C (68°F) | 33 - 39 Ω |

## TORQUE SPECIFICATION

| Part Tightened                                              | N·m | kgf·cm | ft·lbf |
|-------------------------------------------------------------|-----|--------|--------|
| Intake air control valve assy x Intake air surge tank       | 21  | 214    | 15     |
| Surge tank stay No. 2 x Throttle body assy                  | 20  | 199    | 14     |
| Front suspension upper brace center x Body                  | 80  | 816    | 59     |
| Intake air control valve assy No. 2 x Intake air surge tank | 10  | 102    | 7.4    |

# ENGINE MECHANICAL

## SERVICE DATA

030GZ-01

|                                                                    |                                                                                         |                                                                                                                                        |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Battery specific gravity                                           | at 20°C (68°F)                                                                          | 1.25~1.29                                                                                                                              |
| New drive belt deflection                                          | Pressing force: 98 N (10 kgf, 22 lbf)<br>For fan and generator<br>For vane pump         | 9.1 - 10.5 mm (0.358 - 0.413 in.)<br>7.0 - 9.0 mm (0.276 - 0.354 in.)                                                                  |
| Used drive belt deflection                                         | Pressing force: 98 N (10 kgf, 22 lbf)<br>For fan and generator<br>For vane pump         | 11.0 - 13.5 mm (0.433 - 0.531 in.)<br>10.0 - 12.0 mm (0.394 - 0.472 in.)                                                               |
| New drive belt tension                                             | For fan and generator<br>For vane pump                                                  | 617 - 853 N (63 - 87 kgf, 139 - 192 lbf)<br>647 - 843 N (66 - 86 kgf, 146 - 190 lbf)                                                   |
| Used drive belt tension                                            | For fan and generator<br>For vane pump                                                  | 294 - 490 N (30 - 50 kgf, 66 - 110 lbf)<br>323 - 519 N (33 - 53 kgf, 73 - 117 lbf)                                                     |
| Ignition timing                                                    | w/ Terminals TC and CG of DLC3 connected<br>w/ Terminals TC and CG of DLC3 disconnected | 8 - 12° BTDC<br>7 - 24° BTDC                                                                                                           |
| Idle speed                                                         |                                                                                         | 550 - 650 r/min.                                                                                                                       |
| Compression pressure                                               |                                                                                         | 1.47 MPa (15 kgf/cm <sup>2</sup> , 213 psi)                                                                                            |
| Minimum pressure                                                   |                                                                                         | 0.98 MPa (10 kgf/cm <sup>2</sup> , 142 psi)                                                                                            |
| Difference between each cylinder                                   |                                                                                         | 100 kPa (1.0 kgf/cm <sup>2</sup> , 14 psi)                                                                                             |
| Camshaft circle runout                                             | Maximum                                                                                 | 0.06 mm (0.0024 in.)                                                                                                                   |
| Camshaft cam lobe height                                           | Standard Intake<br>Exhaust<br>Minimum Intake<br>Exhaust                                 | 42.932 - 43.032 mm (1.6902 - 1.6942 in.)<br>42.764 - 42.864 mm (1.6836 - 1.6876 in.)<br>42.78 mm (1.6842 in.)<br>42.61 mm (1.6776 in.) |
| Camshaft Journal diameter                                          |                                                                                         | 26.959 - 26.975 mm (1.0614 - 1.0620 in.)                                                                                               |
| 12 pointed head cylinder head set bolt diameter at tension portion | Standard<br>Minimum                                                                     | 8.95 - 9.05 mm (0.3524 - 0.3563 in.)<br>8.75 mm (0.3775 in.)                                                                           |
| Valve clearance at cold                                            | Intake<br>Exhaust                                                                       | 0.15 - 0.25 mm (0.006 - 0.010 in.)<br>0.25 - 0.35 mm (0.010 - 0.014 in.)                                                               |
| Cylinder head warpage                                              | Maximum Cylinder block side<br>Intake manifold side<br>Exhaust manifold side            | 0.05 mm (0.0020 in.)<br>0.10 mm (0.0039 in.)<br>0.10 mm (0.0039 in.)                                                                   |
| Intake valve overall length                                        | Standard<br>Minimum                                                                     | 95.45 mm (3.7579 in.)<br>94.95 mm (3.7382 in.)                                                                                         |
| Intake valve stem diameter                                         | Standard                                                                                | 5.470 - 5.485 mm (0.2154 - 0.2159 in.)                                                                                                 |
| Intake valve margin thickness                                      | Standard<br>Minimum                                                                     | 1.0 mm (0.039 in.)<br>0.5 mm (0.020 in.)                                                                                               |
| Exhaust valve overall length                                       | Standard<br>Minimum                                                                     | 95.40 mm (3.7559 in.)<br>94.90 mm (3.7362 in.)                                                                                         |
| Exhaust valve stem diameter                                        | Standard                                                                                | 5.465 - 5.480 mm (0.2152 - 0.2157 in.)                                                                                                 |
| Exhaust valve margin thickness                                     | Standard<br>Minimum                                                                     | 1.0 mm (0.039 in.)<br>0.5 mm (0.020 in.)                                                                                               |
| Valve spring free length                                           |                                                                                         | 45.50 mm (1.7913 in.)                                                                                                                  |
| Valve spring deviation                                             | Maximum                                                                                 | 2.0 mm (0.079 in.)                                                                                                                     |
| Valve spring installed tension at 33.8 mm (1.331 in.)              |                                                                                         | 186 - 206 N (19.0 - 21.0 kgf, 41.9 - 46.3 lbf)                                                                                         |

|                                                 |                                 |                                            |
|-------------------------------------------------|---------------------------------|--------------------------------------------|
| Bushing inside diameter                         |                                 | 5.510 - 5.530 mm (0.2169 - 0.2177 in.)     |
| Valve guide bushing oil clearance               | Standard 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.)                       |
| Cylinder head valve guide bushing bore diameter | STD                             | 10.295 - 10.313 mm (0.4053 - 0.4060 in.)   |
|                                                 | O/S 0.05                        | 10.345 - 10.363 mm (0.4073 - 0.4080 in.)   |
| Bushing diameter                                | STD                             | 10.333 - 10.344 mm (0.4068 - 0.4072 in.)   |
|                                                 | O/S 0.05                        | 10.383 - 10.394 mm (0.4088 - 0.4092 in.)   |
| Bushing length                                  | Intake                          | 34.5 mm (1.358 in.)                        |
|                                                 | Exhaust                         | 40.5 mm (1.594 in.)                        |
| Bushing protrusion height                       | Intake                          | 11.1 - 11.5 mm (0.437 - 0.453 in.)         |
|                                                 | Exhaust                         | 8.9 - 9.3 mm (0.350 - 0.366 in.)           |
| Lifter diameter                                 |                                 | 30.966 - 30.976 mm (1.2191 - 1.2195 in.)   |
| Lifter bore diameter                            |                                 | 31.000 - 31.018 mm (1.2205 - 1.2212 in.)   |
| Oil clearance                                   | Standard                        | 0.024 - 0.050 mm (0.0009 - 0.0021 in.)     |
|                                                 | Maximum                         | 0.07 mm (0.0028 in.)                       |
| Camshaft gear backlash                          | Standard                        | 0.020 - 0.200 mm (0.0008 - 0.0079 in.)     |
|                                                 | Maximum                         | 0.30 mm (0.0118 in.)                       |
| Camshaft thrust clearance                       | Standard                        | 0.040 - 0.090 mm (0.0016 - 0.0035 in.)     |
|                                                 | Maximum                         | 0.12 mm (0.0047 in.)                       |
| Camshaft oil clearance                          | Standard Intake #4, #5 journals | 0.025 - 0.057 mm (0.0010 - 0.0022 in.)     |
|                                                 | Other journals                  | 0.025 - 0.062 mm (0.0010 - 0.0024 in.)     |
|                                                 | Maximum                         | 0.10 mm (0.0039 in.)                       |
| Connecting rod thrust clearance                 | Standard                        | 0.15 - 0.30 mm (0.0059 - 0.0118 in.)       |
|                                                 | Maximum                         | 0.35 mm (0.0138 in.)                       |
| Connecting rod oil clearance                    | Standard                        | 0.038 - 0.066 mm (0.0015 - 0.0026 in.)     |
|                                                 | Maximum                         | 0.08 mm (0.0031 in.)                       |
| Crankshaft thrust clearance                     | Standard                        | 0.04 - 0.24 mm (0.0016 - 0.0094 in.)       |
|                                                 | Maximum                         | 0.30 mm (0.0118 in.)                       |
| Cylinder block warpage                          | Maximum                         | 0.05 mm (0.0020 in.)                       |
| Cylinder bore diameter                          | Standard                        | 87.500 - 87.512 mm (3.4449 - 3.4453 in.)   |
|                                                 | Maximum                         | 87.52 mm (3.4457 in.)                      |
| Piston diameter                                 |                                 | 87.406 - 87.416 mm (3.4412 - 3.4416 in.)   |
| Oil clearance                                   | Standard                        | 0.084 - 0.106 mm (0.0033 - 0.0042 in.)     |
|                                                 | Maximum                         | 0.13 mm (0.0051 in.)                       |
| Connecting rod out-of alignment                 | Maximum                         | 0.05 mm (0.0020 in.) per 100 mm (3.94 in.) |
| Connecting rod twist                            | Maximum                         | 0.15 mm (0.0059 in.) per 100 mm (3.94 in.) |
| Connecting rod bushing inside diameter          |                                 | 22.005 - 22.014 mm (0.8663 - 0.8667 in.)   |
| Piston pin diameter                             |                                 | 21.997 - 22.006 mm (0.8660 - 0.8664 in.)   |
| Oil clearance                                   | Standard                        | 0.005 - 0.011 mm (0.0002 - 0.0004 in.)     |
|                                                 | Maximum                         | 0.05 mm (0.0020 in.)                       |
| Piston ring groove clearance                    | No.1                            | 0.02 - 0.07 mm (0.0008 - 0.0028 in.)       |
|                                                 | No.2                            | 0.02 - 0.06 mm (0.0008 - 0.0024 in.)       |
|                                                 | Oil                             | 0.03 - 0.11 mm (0.0011 - 0.0043 in.)       |
| Piston ring end gap                             | Standard No.1                   | 0.25 - 0.35 mm (0.0098 - 0.0138 in.)       |
|                                                 | No.2                            | 0.35 - 0.45 mm (0.0138 - 0.0177 in.)       |
|                                                 | Oil (Side rail)                 | 0.15 - 0.40 mm (0.0059 - 0.0157 in.)       |
|                                                 | Maximum No. 1                   | 0.95 mm (0.0374 in.)                       |
|                                                 | No.2                            | 1.05 mm (0.0413 in.)                       |
|                                                 | Oil (Side rail)                 | 1.00 mm (0.0394 in.)                       |
| Connecting rod bolt diameter                    | Standard                        | 7.2 - 7.3 mm (0.283 - 0.287 in.)           |
|                                                 | Minimum                         | 7.0 mm (0.276 in.)                         |
| Crankshaft bearing cap set bolt diameter        | Standard                        | 7.5 - 7.6 mm (0.295 - 0.299 in.)           |
|                                                 | Minimum                         | 7.2 mm (0.283 in.)                         |

## SERVICE SPECIFICATIONS - ENGINE MECHANICAL

|                                     |                                   |                                          |
|-------------------------------------|-----------------------------------|------------------------------------------|
| Crankshaft circle runout            | Maximum                           | 0.06 mm (0.0024 in.)                     |
| Main journal diameter               |                                   | 60.988 - 61.000 mm (2.4011 - 2.4016 in.) |
| Main journal taper and out-of-round | Maximum                           | 0.02 mm (0.0008 in.)                     |
| Crank pin diameter                  |                                   | 52.992 - 53.000 mm (2.0863 - 2.0866 in.) |
| Crank pin taper and out-of-round    | Maximum                           | 0.02 mm (0.0008 in.)                     |
| Crankshaft oil clearance            | Standard No. 1 and No. 4 journals | 0.014 - 0.034 mm (0.0006 - 0.0013 in.)   |
|                                     | No. 2 and No. 3 journals          | 0.026 - 0.046 mm (0.0010 - 0.0018 in.)   |
|                                     | Maximum No. 1 and No. 4 journals  | 0.05 mm (0.0020 in.)                     |
|                                     | No. 2 and No. 3 journals          | 0.06 mm (0.0024 in.)                     |

## TORQUE SPECIFICATION

| Part Tightened                                                                        |        | N·m | kgf·cm | ft·lbf     |
|---------------------------------------------------------------------------------------|--------|-----|--------|------------|
| Engine hanger No. 2 x Cylinder head                                                   |        | 20  | 199    | 14         |
| Knock control sensor x Cylinder block                                                 |        | 39  | 398    | 29         |
| Oil pressure switch assy x Cylinder block                                             |        | 15  | 152    | 11         |
| Compressor mounting bracket No.1 x Cylinder block                                     |        | 25  | 255    | 18         |
| Generator bracket No.1 x Cylinder block                                               |        | 58  | 591    | 43         |
| Pump bracket x Cylinder head                                                          |        | 32  | 326    | 24         |
| Drive shaft bearing bracket x Cylinder block                                          |        | 64  | 653    | 47         |
| Exhaust manifold LH x Cylinder head                                                   |        | 49  | 500    | 36         |
| Exhaust manifold RH x Cylinder head                                                   |        | 49  | 500    | 36         |
| Ignition coil assy x Cylinder head cover                                              |        | 8.0 | 82     | 71 in.·lbf |
| Surge tank stay No.1 x Cylinder head                                                  |        | 20  | 199    | 14         |
| Surge tank stay No.1 x Intake air surge tank                                          |        | 20  | 199    | 14         |
| Engine hanger No. 1 x Cylinder head                                                   |        | 20  | 199    | 14         |
| Engine hanger No. 1 x Intake air surge tank                                           |        | 20  | 199    | 14         |
| Manifold stay No. 2 x Exhaust manifold LH                                             |        | 34  | 347    | 25         |
| Manifold stay No. 2 x Automatic transaxle assy                                        |        | 34  | 347    | 25         |
| Engine mounting insulator RH x Engine mounting bracket                                |        | 95  | 969    | 70         |
| Engine mounting insulator LH x Automatic transaxle assy                               |        | 95  | 969    | 70         |
| Engine mounting insulator FR x Automatic transaxle assy                               |        | 87  | 887    | 64         |
| Vane pump assy x Pump bracket                                                         |        | 43  | 439    | 32         |
| Vane pump assy x Engine mounting bracket                                              |        | 43  | 439    | 32         |
| Frame side rail plate sub-assembly x Front frame assy<br>(See page 14-20)             | Bolt A | 85  | 867    | 63         |
|                                                                                       | Bolt B | 32  | 326    | 24         |
|                                                                                       | Nut    | 32  | 326    | 24         |
| Front suspension member brace rear x Front frame assy<br>(See page 14-20)             | Bolt C | 85  | 867    | 63         |
|                                                                                       | Bolt D | 32  | 326    | 24         |
|                                                                                       | Nut    | 32  | 326    | 24         |
| Compressor and magnetic clutch x Compressor mounting bracket No.1<br>(See page 14-20) | Bolt   | 25  | 250    | 18         |
|                                                                                       | Nut    | 26  | 260    | 19         |
| Generator belt adjusting bar x Cylinder block<br>(See page 14-20)                     | Nut A  | 43  | 438    | 32         |
|                                                                                       | Bolt B | 18  | 184    | 13         |
|                                                                                       | Bolt C | 8.0 | 82     | 71 in.·lbf |
| Generator bracket No. 2 x Transverse engine engine mounting bracket                   |        | 28  | 286    | 21         |
| Intermediate shaft sub-assy                                                           |        | 35  | 357    | 26         |
| Drive plate & ring gear x Torque converter                                            |        | 41  | 418    | 30         |
| Flywheel housing under cover x Automatic transaxle assy                               |        | 7.8 | 80     | 69 in.·lbf |
| Front suspension arm x Lower ball joint                                               |        | 127 | 1,295  | 94         |
| Tie rod end x Steering knuckle                                                        |        | 49  | 500    | 36         |
| Front axle hub nut x Front drive shaft                                                |        | 294 | 2,998  | 217        |
| Front stabilizer link assy x Front suspension                                         |        | 74  | 755    | 55         |
| V-bank cover x Cylinder head cover                                                    |        | 7.9 | 81     | 70 in.·lbf |
| Engine mounting stay No. 2 RH x Transverse engine engine mounting bracket             |        | 64  | 653    | 47         |
| Engine moving control rod (See page 14-20)                                            | Bolt A | 64  | 653    | 47         |
|                                                                                       | Bolt B | 23  | 235    | 17         |
| Front wheel                                                                           |        | 103 | 1,050  | 76         |
| Camshaft sub-gear x Main gear                                                         |        | 5.4 | 55     | 48 in.·lbf |
| Engine rear oil seal retainer x Cylinder block                                        |        | 8.0 | 82     | 71 in.·lbf |

## SERVICE SPECIFICATIONS - ENGINE MECHANICAL

| Part Tightened                                                   |                     | N·m      | kgf·cm   | ft·lbf    |
|------------------------------------------------------------------|---------------------|----------|----------|-----------|
| Oil pump Assy x Cylinder block (See page 14-38)                  | 10 mm head          | 8.0      | 82       | 71 in·lbf |
|                                                                  | 12 mm head          | 20       | 199      | 14        |
|                                                                  | 14 mm head          | 43       | 439      | 32        |
| Crank position sensor x Oil pump Assy                            |                     | 8.0      | 82       | 71 in·lbf |
| Oil pan baffle plate x Oil pan sub-assy                          |                     | 8.0      | 82       | 71 in·lbf |
| Oil pan sub-assy x Cylinder block (See page 14-38)               | 10 mm head          | 8.0      | 82       | 71 in·lbf |
|                                                                  | 12 mm head          | 20       | 199      | 14        |
| Oil strainer sub-assy x Oil pan sub-assy                         |                     | 8.0      | 82       | 71 in·lbf |
| Oil pan sub-assy No. 2 x Oil pan sub-assy                        |                     | 8.0      | 82       | 71 in·lbf |
| Oil pan drain plug x Oil pan sub-assy No. 2                      |                     | 45       | 459      | 33        |
| Water inlet housing x Cylinder block                             |                     | 8.0      | 82       | 71 in·lbf |
| Cylinder head x Cylinder block                                   | 12 pointed head 1st | 54       | 551      | 40        |
|                                                                  | 2nd                 | Turn 90° | Turn 90° | Turn 90°  |
|                                                                  | Recessed head       | 19       | 189      | 14        |
| Camshaft bearing cap x Cylinder head                             |                     | 16       | 163      | 12        |
| Timing belt plate x Oil pump Assy                                |                     | 8.0      | 82       | 71 in·lbf |
| Water pump Assy x Cylinder block                                 |                     | 8.0      | 82       | 71 in·lbf |
| Oil level gage guide x Cylinder block                            |                     | 8.0      | 82       | 71 in·lbf |
| Oil filter union x Cylinder block                                |                     | 30       | 306      | 22        |
| Timing belt idler bracket x Cylinder block                       |                     | 28       | 286      | 21        |
| Timing belt No. 3 cover x Cylinder head                          |                     | 8.5      | 87       | 76 in·lbf |
| Camshaft timing pulley x Camshaft                                |                     | 125      | 1,275    | 92        |
| Timing belt idler sub-assy No. 2 x Timing belt idler bracket     |                     | 43       | 438      | 32        |
| Timing belt idler sub-assy No. 1 x Cylinder block                |                     | 34       | 347      | 25        |
| Chain tensioner Assy No. 1 x Oil pump Assy                       |                     | 27       | 280      | 20        |
| Transverse engine engine mounting bracket x Cylinder block       |                     | 28       | 286      | 21        |
| Timing belt No. 2 cover x Timing belt No. 3 cover                |                     | 8.5      | 87       | 76 in·lbf |
| Timing belt No. 1 cover x Oil pump Assy                          |                     | 8.5      | 87       | 76 in·lbf |
| Crankshaft pulley x Crankshaft                                   |                     | 215      | 2,192    | 159       |
| Crank position sensor No. 1 x Cylinder head                      |                     | 8.0      | 82       | 71 in·lbf |
| Cylinder head cover x Cylinder head                              |                     | 8.0      | 82       | 71 in·lbf |
| Spark plug x Cylinder head                                       |                     | 18       | 184      | 13        |
| W/head straight screw plug No. 1 x Cylinder head                 |                     | 44       | 449      | 32        |
| W/head straight screw plug No. 2 x Cylinder head                 |                     | 44       | 449      | 32        |
| Connecting rod cap x Connecting rod                              | 1st                 | 25       | 250      | 18        |
|                                                                  | 2nd                 | Turn 90° | Turn 90° | Turn 90°  |
| Main bearing cap x Cylinder block                                | 12 pointed head 1st | 22       | 224      | 16        |
|                                                                  | 2nd                 | Turn 90° | Turn 90° | Turn 90°  |
|                                                                  | 6 pointed head      | 27       | 275      | 20        |
| Cylinder block w/head straight screw No. 1 plug x Cylinder block |                     | 30       | 306      | 22        |
| Cylinder block w/head straight screw No. 2 plug x Cylinder block |                     | 50       | 510      | 37        |
| Cylinder block w/head straight screw No. 3 plug x Cylinder block |                     | 30       | 306      | 22        |
| Water seal plate x Cylinder block                                |                     | 18       | 184      | 13        |
| Cylinder block water drain cock sub-assy x Cylinder block        |                     | 39       | 398      | 29        |
| Vane pump Assy x Adjusting strut                                 |                     | 43       | 439      | 32        |
| Generator x Generator bracket                                    |                     | 58       | 591      | 43        |
| Generator x Adjusting bar                                        |                     | 18       | 184      | 13        |
| Intake air surge tank x Intake manifold                          |                     | 28       | 286      | 21        |
| Front suspension upper brace center x Body                       |                     | 80       | 816      | 59        |
| Drive plate & ring gear sub-assy x Crankshaft                    |                     | 83       | 846      | 61        |
| Water outlet x Cylinder head                                     |                     | 15       | 153      | 11        |
| Intake manifold x Cylinder head                                  |                     | 15       | 153      | 11        |

| Part Tightened                                                        | N·m   | kgf·cm   | ft·lbf    |
|-----------------------------------------------------------------------|-------|----------|-----------|
| Exhaust manifold heat insulator No.2 x Exhaust manifold LH            | 8.5   | 87       | 55 in·lbf |
| Exhaust pipe support bracket No.1 x Automatic transaxle assy          | 21    | 214      | 15        |
| Emission control valve set x Emission control valve bracket           | 8.0   | 82       | 71 in·lbf |
| Surge tank stay No. 2 x Throttle body assy                            | 20    | 199      | 14        |
| Cylinder block side cover x Cylinder block                            | 9.0   | 92       | 80 in·lbf |
| Cylinder block side cover drain cock plug x Cylinder block side cover | 7.0   | 71       | 62 in·lbf |
| Oil control valve filter x Cylinder head                              | 45    | 459      | 33        |
| Cylinder head cover rear x Cylinder head                              | 10    | 102      | 7         |
| Camshaft timing gear assy (VVT-i) x Camshaft                          | 150±5 | 1,530±50 | 111±4     |
| Camshaft timing oil control valve assy x Cylinder head                | 8.0   | 82       | 71 in·lbf |
| Exhaust manifold converter sub-assy No. 2 x Exhaust pipe assy FR      | 62    | 633      | 46        |

# EXHAUST

## TORQUE SPECIFICATION

030H1-01

| Part Tightened                                                        | N-m | kgf-cm | ft-lbf |
|-----------------------------------------------------------------------|-----|--------|--------|
| Exhaust pipe assy center x Tail pipe assy                             | 56  | 571    | 41     |
| Exhaust pipe assy front x Exhaust manifold RH                         | 62  | 633    | 46     |
| Exhaust pipe assy front x Exhaust manifold converter No.2             | 62  | 633    | 46     |
| Exhaust pipe assy front x Exhaust pipe assy center                    | 56  | 571    | 41     |
| Exhaust pipe No.1 support bracket x Body                              | 33  | 337    | 24     |
| Floor panel brace rear x Body                                         | 20  | 199    | 14     |
| Exhaust pipe No.1 support bracket x Exhaust pipe support bracket No.1 | 33  | 337    | 24     |
| Oxygen sensor x Exhaust pipe assy front                               | 44  | 449    | 32     |

# COOLING

## SERVICE DATA

030H2-01

|                           |                 |                                                                      |
|---------------------------|-----------------|----------------------------------------------------------------------|
| Thermostat                |                 |                                                                      |
| Valve opening temperature |                 | 80 - 84°C (176 - 183°F)                                              |
| Valve lift                | at 95°C (203°F) | 10 mm (0.394 in.) or more                                            |
| Radiator cap sub-assy     |                 |                                                                      |
| Standard opening pressure |                 | 83.4 - 112.8 kPa (0.85 - 1.15 kgf/cm <sup>2</sup> , 12.1 - 16.4 psi) |
| Minimum opening pressure  |                 | 69 kPa (0.7 kgf/cm <sup>2</sup> , 10.0 psi)                          |
| Cooling fan               |                 |                                                                      |
| Standard amperage         | at 20°C (68°F)  | 8.0 - 12.0 A                                                         |
| Coolant                   |                 |                                                                      |
| Capacity                  |                 | 9.2 liters (9.7 US qts, 8.1 Imp. qts)                                |

## TORQUE SPECIFICATION

| Part Tightened                                             | N·m | kgf·cm | ft·lbf    |
|------------------------------------------------------------|-----|--------|-----------|
| Water pump assy x Cylinder block                           | 8   | 82     | 71 in·lbf |
| Idler sub-assy No.2 x Cylinder block                       | 43  | 438    | 32        |
| Transverse engine engine mounting bracket x Cylinder block | 28  | 286    | 21        |
| Generator bracket No.2 x Cylinder block                    | 28  | 286    | 21        |
| Front wheel                                                | 103 | 1051   | 76        |
| Water inlet x Cylinder block                               | 8   | 82     | 71 in·lbf |
| Water inlet pipe x Water inlet                             | 20  | 204    | 15        |
| Fan assy, w/ motor x Radiator assy                         | 5.0 | 51     | 44 in·lbf |
| Radiator support upper x body                              | 14  | 142    | 10        |

# LUBRICATION

## SERVICE DATA

030H4-01

|                |                                                                                             |                                                                                                                         |
|----------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Oil pressure   | at idle speed<br>at 3,000 rpm                                                               | 29 kPa (0.3 kgf-cm <sup>2</sup> , 4.3 psi) or more<br>294 - 539 kPa (3.0 - 5.5 kgf-cm <sup>2</sup> , 43 - 78 psi)       |
| Oil pump       |                                                                                             |                                                                                                                         |
| Side clearance | Standard<br>Maximum                                                                         | 0.03 - 0.09 mm (0.0012 - 0.0035 in.)<br>0.15 mm (0.0059 in.)                                                            |
| Tip clearance  | Standard<br>Maximum                                                                         | 0.11 - 0.24 mm (0.0043 - 0.0094 in.)<br>0.35 mm (0.0138 in.)                                                            |
| Body clearance | Standard<br>Maximum                                                                         | 0.125 - 0.162 mm (0.0050 - 0.0064 in.)<br>0.30 mm (0.0118 in.)                                                          |
| Engine oil     |                                                                                             |                                                                                                                         |
| Oil capacity   | Drain and refill w/ oil filter change<br>Drain and refill w/o oil filter change<br>Dry fill | 4.7 liters (5.0 US qts, 4.1 Imp. qts)<br>4.5 liters (4.8 US qts, 4.0 Imp. qts)<br>5.5 liters (5.8 US qts, 4.8 Imp. qts) |

## TORQUE SPECIFICATION

| Part Tightened                                                                |            | N·m | kgf·cm | ft·lbf     |
|-------------------------------------------------------------------------------|------------|-----|--------|------------|
| Oil pressure switch x Cylinder block                                          |            | 15  | 152    | 11         |
| Oil pump rotor set x Oil pump assembly                                        |            | 10  | 105    | 8          |
| Oil pump relief valve x Oil pump assembly                                     |            | 24  | 245    | 18         |
| Drain plug x Oil pump sub-assembly No.2                                       |            | 45  | 459    | 33         |
| Oil pump assembly x Cylinder block<br>(See page 17-3)                         | 10 mm head | 8   | 82     | 71 in.·lbf |
|                                                                               | 12 mm head | 20  | 199    | 14         |
|                                                                               | 14 mm head | 43  | 439    | 32         |
| Crank position sensor x Oil pump assembly                                     |            | 8   | 82     | 71 in.·lbf |
| Oil pan sub-assembly x Cylinder block<br>(See page 17-3)                      | 10 mm head | 8   | 82     | 71 in.·lbf |
|                                                                               | 12 mm head | 20  | 199    | 14         |
| Oil strainer x Main bearing cap                                               |            | 8   | 82     | 71 in.·lbf |
| Oil pan sub-assembly No.2 x Oil pan sub-assembly No.1                         |            | 8   | 82     | 71 in.·lbf |
| Transverse engine engine mounting bracket x Cylinder block<br>(See page 17-3) | Bolt A     | 54  | 550    | 40         |
|                                                                               | Nut B      | 54  | 550    | 40         |
| Transverse engine engine mounting bracket x PS pump bracket                   |            | 43  | 439    | 32         |
| Engine mounting insulator RH x Engine mounting bracket                        |            | 95  | 969    | 70         |
| Engine mounting insulator RH x Front frame                                    |            | 87  | 887    | 64         |
| Engine mounting insulator FR x Cylinder block                                 |            | 87  | 887    | 64         |
| Engine mounting insulator FR x Front frame                                    |            | 52  | 531    | 38         |
| Oil level gage guide x Cylinder block                                         |            | 8   | 82     | 71 in.·lbf |
| Compressor mounting bracket No.1 x Cylinder block                             |            | 25  | 250    | 18         |
| Generator bracket No.2 x Transverse engine engine mounting bracket            |            | 28  | 286    | 21         |
| Timing belt idler sub-assembly No.1 x Cylinder block                          |            | 34  | 347    | 25         |
| Compressor and magnetic clutch x Compressor mounting bracket                  |            | 25  | 250    | 18         |
| Front suspension upper brace center x Body                                    |            | 80  | 816    | 59         |
| Front wheel                                                                   |            | 103 | 1051   | 76         |

# IGNITION

030H6-01

## SERVICE DATA

|                                        |          |                                 |
|----------------------------------------|----------|---------------------------------|
| Spark plug                             |          |                                 |
| Recommended spark plug                 | DENSO    | SK20R11                         |
|                                        | NGK      | IFR6A11                         |
| Electrode gap                          | Standard | 1.0 - 1.1mm (0.039 - 0.043 in.) |
|                                        | Maximum  | 1.2 mm (0.047 in.)              |
| Camshaft position sensor (RH Cylinder) |          |                                 |
| Resistance                             | at cold  | 835 - 1400 $\Omega$             |
|                                        | at hot   | 1,060 - 1645 $\Omega$           |
| Crank position sensor                  |          |                                 |
| Resistance                             | at cold  | 1,630 - 2740 $\Omega$           |
|                                        | at hot   | 2,065 - 3225 $\Omega$           |

TORQUE SPECIFICATION

| Part Tightened                      | N·m | kgf·cm | ft·lbf    |
|-------------------------------------|-----|--------|-----------|
| Spark plug x Cylinder head cover    | 18  | 184    | 13        |
| Ignition coil x Cylinder head cover | 8.0 | 82     | 71 in·lbf |

# STARTING & CHARGING

## SERVICE DATA

030H8-01

|                       |                |                                    |
|-----------------------|----------------|------------------------------------|
| Starter assy          |                |                                    |
| Specified current     |                | 90 A or less at 11.5 V             |
| Circle runout         | Standard       | 0.02 mm (0.0008 in.)               |
|                       | Maximum        | 0.05 mm (0.0020 in.)               |
| Commutator length     | Standard       | 3.3 mm (0.130 in.)                 |
|                       | Maximum        | 4.0 mm (0.158 in.)                 |
| Brush holder length   | Standard       | 9.0 mm (0.354 in.)                 |
|                       | Maximum        | 4.0 mm (0.158 in.)                 |
| Snap ring length      |                | 5.0 mm (0.197 in.)                 |
| Battery               |                |                                    |
| Voltage               | Standard       | 12.5 - 12.9 V at 20°C (68°F)       |
| Generator assy        |                |                                    |
| Rotor coil resistance | at 20°C (68°F) | 2.7 - 3.1 Ω                        |
| Slip ring diameter    | Standard       | 14.2 - 14.4 mm (0.559 - 0.567 in.) |
|                       | Minimum        | 12.8 mm (0.504 in.)                |
| Brush exposed length  | Standard       | 9.5 - 11.5 mm (0.374 - 0.453 in.)  |
|                       | Minimum        | 1.5 mm (0.059 in.)                 |

## TORQUE SPECIFICATION

| Part Tightened                                          |                       | N·m | kgf·cm | ft·lbf    |
|---------------------------------------------------------|-----------------------|-----|--------|-----------|
| Lead wire of field frame x Magnetic switch              |                       | 5.9 | 60     | 52 in·lbf |
| Starter x Engine                                        | Bolt                  | 42  | 429    | 31        |
|                                                         | Nut                   | 9.8 | 100    | 7         |
| Starter Assy                                            |                       |     |        |           |
| Commutator end frame assy x Motor terminal starter kit  |                       | 6.0 | 61     | 53 in·lbf |
| Repair service starter kit x Motor terminal starter kit |                       | 7.5 | 77     | 66 in·lbf |
| Lead wire x Terminal C of starter                       |                       | 6.5 | 66     | 58 in·lbf |
| Generator x Engine<br>(see page 19-13)                  | Bolt A                | 58  | 592    | 43        |
|                                                         | Bolt B                | 18  | 184    | 13        |
| Alternator wire                                         |                       | 9.8 | 100    | 7         |
| Generator assy                                          |                       |     |        |           |
| Rectifire end frame x Drive end frame                   | For without cord clip | 4.5 | 46     | 39 in·lbf |
|                                                         | For with cord clip    | 5.4 | 55     | 47 in·lbf |
| Recrifire holder x Coil lead on rectifire end frame     |                       | 2.9 | 30     | 26 in·lbf |
| Voitage regulator x Rectifire end frame                 |                       | 2.0 | 20     | 18 in·lbf |
| Brush holder x Rectifire end frame                      |                       | 2.0 | 20     | 18 in·lbf |
| Rear end cover x Rectifire holder                       |                       | 4.4 | 45     | 39 in·lbf |
| Plate terminal x Rectifire holder                       |                       | 3.9 | 39     | 35 in·lbf |
| Terminal insulator x Rectifire holder                   |                       | 4.1 | 42     | 36 in·lbf |
| Generator pulley x Rotor                                |                       | 111 | 1,125  | 81        |

# SUSPENSION CONTROL SYSTEM

## TORQUE SPECIFICATION

0307L-03

| Part Tightened                                             | N·m | kgf·cm | ft·lbf    |
|------------------------------------------------------------|-----|--------|-----------|
| Front acceleration sensor x Instrument panel reinforcement | 7.8 | 80     | 69 in·lbf |
| Rear acceleration sensor x Side pillar RH                  | 7.8 | 80     | 69 in·lbf |
| Absorber control ECU set nut                               | 7.8 | 80     | 69 in·lbf |

# FRONT SUSPENSION

030HT-01

## SERVICE DATA

|                              |                                               |                                          |                                                       |
|------------------------------|-----------------------------------------------|------------------------------------------|-------------------------------------------------------|
| Cold tire inflation pressure | Tire size: P215/60R16 94V                     | Front, Rear                              | 200 kPa (2.0 kgf/cm <sup>2</sup> , 29 psi)            |
| Front wheel alignment        | Vehicle height                                | Front: A *1 - B *2<br>Rear: D *3 - C *4  | 120 mm (4.72 in.)<br>52 mm (2.05 in.)                 |
|                              | Toe-in (total)                                |                                          | 0° ± 12' (0° ± 0.2°, 0 ± 2 mm, 0 ± 0.08 in.)          |
|                              |                                               | Rack end length difference               | 1.5 mm (0.059 in.) or less                            |
|                              | Wheel angle                                   | Inside wheel<br>Outside wheel: Reference | 36°39' ± 2° (36.65° ± 2°)<br>32°11' (32.18°)          |
|                              | Camber                                        |                                          | -0°43' ± 45' (-0.72° ± 0.75°)                         |
|                              |                                               | Right-left error                         | 45' (0.75°) or less                                   |
|                              | Caster                                        |                                          | 2°46' ± 45' (2.77° ± 0.75°)                           |
|                              |                                               | Right-left error                         | 45' (0.75°) or less                                   |
|                              | Steering axis inclination                     |                                          | 11°27' ± 45' (11.45° ± 0.75°)                         |
|                              |                                               | Right-left error                         | 45' (0.75°) or less                                   |
| Front suspension             | Lower ball joint turning torque               |                                          | 0.98 - 3.43 N·m (10 - 35 kgf·cm, 8.7 - 30 in.·lbf)    |
|                              | Stabilizer bar link ball joint turning torque |                                          | 0.05 - 1.96 N·m (0.5 - 20 kgf·cm, 0.4 - 17.4 in.·lbf) |

\*1: Ground clearance of front wheel center

\*2: Ground clearance of lower suspension arm No. 2 set bolt center

\*3: Ground clearance of strut rod set bolt center

\*4: Ground clearance of rear wheel center

## TORQUE SPECIFICATION

| Part Tightened                                            | N·m         | kgf·cm | ft·lbf |
|-----------------------------------------------------------|-------------|--------|--------|
| Tie rod end lock nut                                      | 74          | 755    | 55     |
| Steering knuckle x Shock absorber                         | 210         | 2,141  | 155    |
| Hub nut                                                   | 103         | 1,050  | 76     |
| Front shock absorber cap set nut                          | 14          | 143    | 10     |
| Suspension support x Body                                 | 80          | 816    | 59     |
| Suspension support x Piston rod                           | 49          | 500    | 36     |
| Speed sensor wire harness bracket set bolt                | 18.8        | 192    | 14     |
| Lower suspension arm set bolt                             | Front side: | 200    | 2,039  |
|                                                           | Rear side:  | 206    | 2,101  |
| Transverse engine engine mounting insulator set nut       | 87          | 887    | 64     |
| Stabilizer bar bracket x Suspension member                | 19          | 194    | 14     |
| Front suspension member dynamic damper x Front frame assy | 29          | 296    | 21     |
| Stabilizer bar link set nut                               | 74          | 755    | 55     |

# REAR SUSPENSION

030HN-01

## SERVICE DATA

|                      |                                               |                                                                                                 |
|----------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------|
| Rear wheel alignment | Toe-in (total)                                | $0^{\circ}22' \pm 11'$ ( $0.3^{\circ} \pm 0.2^{\circ}$ , $4.0 \pm 2.0$ mm, $0.16 \pm 0.08$ in.) |
|                      | Camber<br>Right-left error                    | $-1^{\circ}23' \pm 45'$ ( $-1.38^{\circ} \pm 0.75^{\circ}$ )<br>45' ( $0.75^{\circ}$ ) or less  |
| Rear suspension      | Stabilizer bar link ball joint turning torque | 0.05 - 1.0 N·m (0.5 - 10 kgf·cm, 0.4 - 8.7 in.·lbf)                                             |

## TORQUE SPECIFICATION

| Part Tightened                                               | N·m | kgf·cm | ft·lbf    |
|--------------------------------------------------------------|-----|--------|-----------|
| Shock absorber x Body                                        | 39  | 400    | 29        |
| Shock absorber x Rear axle carrier                           | 255 | 2,600  | 188       |
| Flexible hose x Shock absorber                               | 19  | 194    | 14        |
| ABS speed sensor wire harness x Shock absorber               | 5.5 | 56     | 49 in·lbf |
| Piston rod set nut                                           | 49  | 500    | 36        |
| Shock absorber x Stabilizer bar link                         | 39  | 400    | 29        |
| Rear suspension member x Rear suspensio arm assy No. 1 LH    | 100 | 1,020  | 74        |
| Rear suspension member x Body<br>A, B<br>C                   | 55  | 561    | 41        |
|                                                              | 38  | 387    | 28        |
| Rear suspension arm assy No. 1 x Rear axle carrier           | 100 | 1,020  | 74        |
| Rear suspension arm assy No. 2 x Rear axle carrier           | 100 | 1,020  | 74        |
| Stabilizer bar bracket                                       | 19  | 195    | 14        |
| Stabilizer bar x Stabilizer bar link                         | 39  | 400    | 29        |
| Strut rod x Body                                             | 113 | 1,150  | 83        |
| Strut rod x Rear axle carrier                                | 113 | 1,152  | 83        |
| Parking brake cable x Body                                   | 5.4 | 55     | 48 in·lbf |
| Rear suspension arm No. 2 RH x Height control sensor bracket | 5.4 | 55     | 48 in·lbf |
| Hub nut                                                      | 103 | 1,050  | 76        |

TIRE & WHEEL  
SERVICE DATA

030E8-01

|                            |                            |
|----------------------------|----------------------------|
| Tire runout                | 1.0 mm (0.039 in.) or less |
| Imbalance after adjustment | 8.0 g (0.018 lb) or less   |

# DRIVE SHAFT / PROPELLER SHAFT / AXLE

030HR-01

## SERVICE DATA

|                        |           |                               |
|------------------------|-----------|-------------------------------|
| Front axle hub bearing | Backlash  | Maximum: 0.05 mm (0.0020 in.) |
| Front axle hub bearing | Deviation | Maximum: 0.05 mm (0.0020 in.) |
| Rear axle hub bearing  | Backlash  | Maximum: 0.05 mm (0.0020 in.) |
| Rear axle hub bearing  | Deviation | Maximum: 0.07 mm (0.0027 in.) |

## TORQUE SPECIFICATION

| Part Tightened                                                     | N·m  | kgf·cm | ft·lbf |
|--------------------------------------------------------------------|------|--------|--------|
| Front wheel set nut                                                | 103  | 1,050  | 76     |
| Lower ball joint x Lower suspension arm                            | 127  | 1,295  | 94     |
| Tie rod end x Steering knuckle                                     | 49   | 500    | 36     |
| Axle hub x Front drive shaft                                       | 294  | 2,998  | 217    |
| Front drive shaft center bearing set bolt                          | 32.4 | 330    | 24     |
| Front speed sensor set bolt                                        | 8.0  | 82     | 71     |
| Front flexible hose and speed sensor wire harness x Shock absorber | 18.8 | 192    | 14     |
| Rear wheel set nut                                                 | 103  | 1,050  | 76     |
| Rear flexible hose x Shock absorber                                | 18.8 | 192    | 14     |
| Shock absorber x Rear axle carrier                                 | 255  | 2,600  | 188    |
| Rear axle hub set bolt                                             | 80   | 816    | 59     |
| Rear axle carrier x Brake caliper                                  | 61.8 | 630    | 46     |

## BRAKE

## SERVICE DATA

030HJ-01

|                                                                        |                                           |                                            |
|------------------------------------------------------------------------|-------------------------------------------|--------------------------------------------|
| Brake pedal height (from asphalt sheet)                                |                                           | 144.1 - 154.1 mm (5.673 - 6.067 in.)       |
| Brake pedal free play                                                  | Pedal free play:                          | 1 - 6 mm (0.04 - 0.24 in.)                 |
| Stop light switch clearance                                            |                                           | 0.5 - 2.5 mm (0.020 - 0.098 in.)           |
| Pedal reserve distance from asphalt sheet at 490 N (50 kgf, 110.2 lbf) |                                           | More than 70 mm (2.76 in.)                 |
| Brake booster push rod to piston clearance (w/ SST)                    | Clearance:                                | 0 mm (0 in.)                               |
| Front brake pad thickness (Single piston type)                         | Standard thickness:<br>Minimum thickness: | 12.0 mm (0.472 in.)<br>1.0 mm (0.039 in.)  |
| Front brake pad thickness (Twin piston type)                           | Standard thickness:<br>Minimum thickness: | 10.6 mm (0.417 in.)<br>1.0 mm (0.039 in.)  |
| Front brake disc thickness                                             | Standard thickness:<br>Minimum thickness: | 28.0 mm (1.102 in.)<br>26.0 mm (1.024 in.) |
| Front brake disc runout                                                | Maximum disc runout:                      | 0.05 mm (0.0020 in.)                       |
| Rear brake pad thickness (USA, Canada models)                          | Standard thickness:<br>Minimum thickness: | 10.0 mm (0.394 in.)<br>1.0 mm (0.039 in.)  |
| Rear brake pad thickness (Brazil models)                               | Standard thickness:<br>Minimum thickness: | 11.0 mm (0.433 in.)<br>1.0 mm (0.039 in.)  |
| Rear disc brake thickness (USA, Canada models)                         | Standard thickness:<br>Minimum thickness: | 12.0 mm (0.472 in.)<br>10.5 mm (0.413 in.) |
| Rear disc brake thickness (Brazil models)                              | Standard thickness:<br>Minimum thickness: | 10.0 mm (0.394 in.)<br>8.5 mm (0.335 in.)  |
| Rear brake disc runout                                                 | Maximum disc runout:                      | 0.15 mm (0.0059 in.)                       |

## TORQUE SPECIFICATION

| Part Tightened                                                         | N·m   | kgf·cm | ft·lbf     |
|------------------------------------------------------------------------|-------|--------|------------|
| Bleeder plug                                                           | 8.3   | 85     | 74 in.·lbf |
| Brake booster clevis lock nut                                          | 26    | 265    | 19         |
| Brake pedal sub-assy set bolt                                          | 37    | 375    | 27         |
| Stop lamp lock nut                                                     | 26    | 265    | 19         |
| Brake pedal support assy x Reinforcement                               | 20    | 204    | 15         |
| Brake pedal support assy x Body                                        | 13    | 130    | 9          |
| Master cylinder piston stopper bolt w/o VSC                            | 10    | 100    | 7          |
| Brake master cylinder x Brake booster                                  | 13    | 130    | 9          |
| Brake line union nut                                                   | 15    | 155    | 11         |
| Vacuum hose bracket set bolt                                           | 5.4   | 55     | 48 in.·lbf |
| Chacoal canister bracket set bolt                                      | 43    | 440    | 32         |
| Wheel nut                                                              | 103   | 1,050  | 76         |
| Front brake cylinder mounting x Steering knuckle                       | 106.9 | 1,090  | 79         |
| Front brake cylinder x Front brake cylinder mounting                   | 34.3  | 350    | 25         |
| Front brake cylinder x Flexible hose                                   | 29.4  | 300    | 22         |
| Rear disc brake cylinder mounting set bolt                             | 61.8  | 630    | 46         |
| Rear disc brake cylinder slide pin x Rear disc brake cylinder mounting |       |        |            |
| Upper side:                                                            | 39.2  | 400    | 29         |
| Lower side:                                                            | 34.3  | 350    | 25         |
| Rear disc brake cylinder x Flexible hose                               | 29.4  | 300    | 22         |
| Brake actuator assy x Actuator bracket                                 | 5.4   | 55     | 48 in.·lbf |
| Brake actuator bracket x Body                                          | 19    | 194    | 14         |
| ABS & TRAC actuator assy x Actuator bracket                            | 5.4   | 55     | 48 in.·lbf |
| ABS & TRACTION actuator bracket x Body                                 | 19    | 194    | 14         |
| Front speed sensor x Steering knuckle                                  | 8.0   | 82     | 71 in.·lbf |
| Front speed sensor wire harness clamp x shock absorber                 |       |        |            |
| Bolt A:                                                                | 5.0   | 51     | 44 in.·lbf |
| Bolt B:                                                                | 18.8  | 192    | 14         |
| Rear axle hub set bolt                                                 | 80    | 816    | 59         |
| Yawrate sensor x Body                                                  | 12.5  | 127    | 9          |
| Skid control ECU x Body                                                | 5.5   | 56     | 49 in.·lbf |

# PARKING BRAKE

030HZ-01

## SERVICE DATA

|                                                          |                                                                                           |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Parking brake pedal travel at 300 N (31 kgf, 68.3 lbf):  | 3 - 6 clicks                                                                              |
| Rear brake disc inside diameter                          | Standard inside diameter: 170 mm (6.69 in.)<br>Maximum inside diameter: 171 mm (6.73 in.) |
| Parking brake shoe lining thickness                      | Standard thickness: 2.0 mm (0.079 in.)<br>Minimum thickness: 1.0 mm (0.039 in.)           |
| Parking brake shoe clearance between rear shoe and lever | Less than 0.35 mm (0.0138 in.)                                                            |

# TORQUE SPECIFICATION

| Part Tightened                              | N·m  | kgf·cm | ft·lbf     |
|---------------------------------------------|------|--------|------------|
| Wheel nut                                   | 103  | 1,050  | 76         |
| Parking brake cable lock nut                | 5.4  | 55     | 48 in.·lbf |
| Parking brake control pedal set bolt        | 39   | 398    | 29,        |
| Console box mounting set bolt               | 12.5 | 128    | 9          |
| Parking brake cable No.1 x Turn buckle      | 5.4  | 55     | 48 in.·lbf |
| Parking brake cable No.3 x Backing plate    | 7.8  | 80     | 69 in.·lbf |
| Parking brake cable heart insulator set nut | 5.4  | 55     | 48 in.·lbf |
| Parking brake cable No.4 x Body             | 12.5 | 128    | 9          |

# AUTOMATIC TRANSMISSION / TRANSAXLE

## SERVICE DATA

0305K-04

|                                                               |                                                                                                                 |                                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| U150E                                                         |                                                                                                                 |                                                                                                                                                                                                                                                                        |
| Line pressure (Wheel locked)                                  | Engine idling<br>D position<br>R position<br>AT stall (Throttle valve fully opened)<br>D position<br>R position | 370 - 410 kPa (3.8 - 4.2 kgf-cm <sup>2</sup> , 54 - 60 psi)<br>670 - 740 kPa (6.8 - 7.5 kgf-cm <sup>2</sup> , 97 - 106 psi)<br>930 - 1,030 kPa (9.5 - 10.5 kgf-cm <sup>2</sup> , 135 - 150 psi)<br>1,770 - 1,970 kPa (18.0 - 20.1 kgf-cm <sup>2</sup> , 256 - 286 psi) |
| Engine stall revolution                                       | D and R positions                                                                                               | 2,600 ± 150 rpm                                                                                                                                                                                                                                                        |
| Time lag                                                      | N → D position<br>N → R position                                                                                | Less than 1.2 seconds<br>Less than 1.5 seconds                                                                                                                                                                                                                         |
| Engine idle speed<br>(A/C OFF)                                | N position                                                                                                      | 650 ± 50 rpm                                                                                                                                                                                                                                                           |
| Drive plate runout                                            | Max.                                                                                                            | 0.20 mm (0.0079 in.)                                                                                                                                                                                                                                                   |
| Torque converter runout                                       | Max.                                                                                                            | 0.30 mm (0.0118 in.)                                                                                                                                                                                                                                                   |
| Differential oil seal drive in depth                          | LH side<br>RH side                                                                                              | 0 ± 0.5 mm (0 ± 0.020 in.)<br>0 ± 0.5 mm (0 ± 0.020 in.)                                                                                                                                                                                                               |
| Shift schedule<br>D position<br>(Throttle valve fully opened) | 1 → 2<br>2 → 3<br>3 → 4<br>4 → 5<br>5 → 4<br>4 → 3<br>3 → 2<br>2 → 1                                            | 47 - 54 km/h (29 - 34 mph)<br>89 - 96 km/h (55 - 60 mph)<br>143 - 154 km/h (89 - 96 mph)<br>201 - 213 km/h (125 - 132 mph)<br>195 - 206 km/h (121 - 128 mph)<br>137 - 148 km/h (85 - 92 mph)<br>83 - 89 km/h (52 - 55 mph)<br>41 - 46 km/h (25 - 29 mph)               |
| (Throttle valve fully closed)                                 | 4 → 5<br>5 → 4                                                                                                  | 45 - 50 km/h (28 - 31 mph)<br>35 - 41 km/h (22 - 25 mph)                                                                                                                                                                                                               |
| 3 position<br>(Throttle valve fully opened)                   | 1 → 2<br>2 → 3<br>4 → 3<br>3 → 2<br>2 → 1                                                                       | 47 - 54 km/h (29 - 34 mph)<br>89 - 96 km/h (55 - 60 mph)<br>147 - 157 km/h (91 - 98 mph)<br>83 - 89 km/h (52 - 55 mph)<br>41 - 46 km/h (25 - 29 mph)                                                                                                                   |
| 2 position<br>(Throttle valve fully opened)                   | 1 → 2<br>3 → 2<br>2 → 1                                                                                         | 47 - 54 km/h (29 - 34 mph)<br>95 - 102 km/h (59 - 63 mph)<br>41 - 46 km/h (25 - 29 mph)                                                                                                                                                                                |
| L position<br>(Throttle valve fully opened)                   | 2 → 1                                                                                                           | 41 - 46 km/h (25 - 29 mph)                                                                                                                                                                                                                                             |
| Lock-up point<br>D position<br>5th gear                       | Throttle valve opening 5 %<br>Lock-up ON<br>Lock-up OFF                                                         | 61 - 67 km/h (38 - 42 mph)<br>59 - 65 km/h (37 - 40 mph)                                                                                                                                                                                                               |
| 4th gear                                                      | Lock-up ON<br>Lock-up OFF                                                                                       | 100 - 107 km/h (62 - 66 mph)<br>94 - 100 km/h (58 - 62 mph)                                                                                                                                                                                                            |
| 4 position<br>4th gear                                        | Lock-up ON<br>Lock-up OFF                                                                                       | 100 - 107 km/h (62 - 66 mph)<br>94 - 100 km/h (58 - 62 mph)                                                                                                                                                                                                            |

## TORQUE SPECIFICATION

| Part Tightened                                          |            | N·m  | kgf·cm | ft·lbf     |
|---------------------------------------------------------|------------|------|--------|------------|
| Park/neutral position switch                            | Bolt       | 6.9  | 70     | 61 in.·lbf |
|                                                         | Nut        | 5.4  | 55     | 48 in.·lbf |
| Control shaft lever x Control shaft                     |            | 12.7 | 130    | 9          |
| Shift control cable x Control shaft lever               |            | 14.7 | 150    | 10         |
| Transaxle housing x Engine block                        | A bolt     | 64   | 650    | 47         |
|                                                         | B bolt     | 46   | 470    | 34         |
|                                                         | C bolt     | 44   | 449    | 32         |
| Torque converter clutch x Drive plate                   |            | 41   | 418    | 30         |
| Exhaust pipe support bracket No.1 x Automatic transaxle | Bolt       | 7.8  | 80     | 69 in.·lbf |
|                                                         | Nut        | 21   | 214    | 16         |
| Engine mounting bracket FR x Transaxle                  |            | 64   | 653    | 47         |
| Oil filler tube x Transaxle                             |            | 5.5  | 56     | 49 in.·lbf |
| Control cable bracket x Transaxle                       |            | 11.8 | 122    | 9          |
| Oil cooler tube clamp x Control cable bracket           |            | 5.4  | 55     | 48 in.·lbf |
| Oil cooler inlet tube x Transaxle                       |            | 34.3 | 350    | 25         |
| Oil cooler outlet tube x Transaxle                      |            | 34.3 | 350    | 25         |
| Starter x Transaxle                                     |            | 37   | 377    | 27         |
| Wire harness x Transaxle                                |            | 25.5 | 260    | 19         |
| Wire harness clamp x Transaxle                          |            | 8.4  | 86     | 74 in.·lbf |
| Control cable clamp x Transaxle                         |            | 11.8 | 122    | 9          |
| Speed sensor x Transaxle                                |            | 11.3 | 115    | 8          |
| Air cleaner x Air cleaner hose                          |            | 5.0  | 51     | 44 in.·lbf |
| Drain plug x Oil pan                                    |            | 49   | 500    | 36         |
| Transmission wire x Transaxle                           |            | 5.4  | 55     | 48 in.·lbf |
| ATF temperature sensor x Valve body                     |            | 6.6  | 67     | 58 in.·lbf |
| Oil pan x Transaxle                                     |            | 7.8  | 80     | 69 in.·lbf |
| Solenoid valve x Valve body                             | A B C bolt | 10.8 | 110    | 8          |
|                                                         | D bolt     | 6.6  | 67     | 58 in.·lbf |
| Valve body x transaxle                                  |            | 10.8 | 110    | 8          |
| Oil strainer x Valve body                               |            | 10.8 | 110    | 8          |
| Floor shift assy x Body                                 |            | 11.8 | 122    | 9          |
| Control cable x Body                                    |            | 4.9  | 50     | 43 in.·lbf |

STEERING COLUMN  
SERVICE DATA

03014-01

|                         |         |                  |
|-------------------------|---------|------------------|
| Steering wheel freeplay | Maximum | 30 mm (1.18 in.) |
|-------------------------|---------|------------------|

## TORQUE SPECIFICATION

| Part tightened                                                        | N·m | kgf·cm | ft·lbf     |
|-----------------------------------------------------------------------|-----|--------|------------|
| Steering column assembly set bolt and nut                             | 21  | 214    | 15         |
| Steering Intermediate shaft sub-assy x Steering sliding yoke sub-assy | 35  | 360    | 26         |
| Steering Intermediate shaft x Steering gear assy                      | 35  | 360    | 26         |
| Steering wheel set nut                                                | 50  | 510    | 37         |
| Steering wheel pad set screw (Torx screw)                             | 8.8 | 90     | 78 in.·lbf |
| Main shaft assy x Steering sliding yoke sub-assy                      | 35  | 360    | 26         |
| Tie rod end lock nut                                                  | 74  | 755    | 55         |

# POWER STEERING

## SERVICE DATA

030GQ-01

|                                                           |                |                                                                     |
|-----------------------------------------------------------|----------------|---------------------------------------------------------------------|
| POWER STEERING FLUID                                      |                |                                                                     |
| Fluid level rise                                          | Maximum        | 5 mm (0.20 in.)                                                     |
| Fluid pressure at idle speed with valve closed            |                | 7,800 - 8,300 kPa (80 - 85 kgf/cm <sup>2</sup> , 1,138 - 1,209 psi) |
| STEERING WHEEL                                            |                |                                                                     |
| Steering effort at idle speed                             | (Reference)    | 6 N·m (60 kgf·cm, 53 in.-lbf)                                       |
| VANE PUMP ASSY                                            |                |                                                                     |
| Vane pump rotating torque                                 |                | 0.27 N·m (2.8 kgf·cm, 2.4 in.-lbf) or less                          |
| Vane pump shaft and vane pump housing front oil clearance | STD<br>Maximum | 0.027 - 0.054 mm (0.00106 - 0.00213 in.)<br>0.07 mm (0.0028 in.)    |
| Vane pump plate height                                    | Minimum        | 8.6 mm (0.339 in.)                                                  |
| Vane pump plate thickness                                 | Minimum        | 1.397 mm (0.05500 in.)                                              |
| Vane pump plate length                                    | Minimum        | 14.991 mm (0.59020 in.)                                             |
| Vane pump plate and vane pump rotor groove clearance      | Maximum        | 0.03 mm (0.0012 in.)                                                |
| Flow control valve compression spring free length         | Minimum        | 32.24 mm (1.2693 in.)                                               |
| RACK & PINION POWER STEERING GEAR ASSY                    |                |                                                                     |
| Power steering rack runout                                | Maximum        | 0.3 mm (0.012 in.)                                                  |
| Total preload (Tie rod assy rotating torque)              | (Turning)      | 0.83 - 3.43 N·m (8.5 - 35.0 kgf·cm, 7.3 - 30.4 in.-lbf)             |
| Total preload (Control valve rotating torque)             | (Turning)      | 1.2 - 1.5 N·m (12.2 - 15.3 kgf·cm, 10.6 - 13.3 in.-lbf)             |

## TORQUE SPECIFICATION

|                                                         |                    |           |            |
|---------------------------------------------------------|--------------------|-----------|------------|
| VANE PUMP ASSY                                          |                    |           |            |
| Vane pump housing rear x Vane pump housing front        | 24                 | 245       | 18         |
| Pressure port union                                     | 83                 | 846       | 61         |
| Power steering suction port union set bolt              | 13                 | 133       | 10         |
| Pump bracket front x Vane pump bracket rear             | (TYPE A VANE PUMP) | 43        | 438        |
|                                                         | (TYPE B VANE PUMP) | 44        | 449        |
| Vane pump pulley set nut                                | (TYPE A VANE PUMP) | 44        | 449        |
| Vane pump assy set bolt                                 | 43                 | 438       | 32         |
| Pressure feed tube assy x Vane pump assy                | 51.5               | 525       | 38         |
| Power steering oil pressure switch                      | 21                 | 214       | 15         |
| RACK & PINION POWER STEERING GEAR ASSY                  |                    |           |            |
| Control valve housing set bolt                          | 21                 | 214       | 15         |
| Control valve shaft lock nut                            | 24.5               | 250       | 18         |
| Rack housing cap                                        | 58.5               | 597       | 43         |
| Rack guide spring cap nut                               | 48 (68.5)          | 489 (699) | 35 (51)    |
| Power steering rack x Steering rack end sub-assy        | 58.5 (83.5)        | 597 (851) | 43 (62)    |
| Tie rod assy lock nut                                   | 74                 | 755       | 55         |
| Turn pressure tube union nut                            | 11.5 (12.5)        | 117 (127) | 8 (9)      |
| Rack & pinion power steering gear assy set bolt and nut | 70                 | 714       | 52         |
| Pressure feed and return tubes x Control valve housing  | 22.5 (24.5)        | 229 (250) | 17 (18)    |
| Pressure feed tube clamp set bolt                       | 9.8                | 100       | 87 in. lbf |
| Return tube assy clamp set nut                          | 9.8                | 100       | 87 in. lbf |
| Front stabilizer bracket                                | 19                 | 194       | 14         |
| Stabilizer link assy set nut                            | 74                 | 755       | 55         |
| Tie rod assy set nut                                    | 49                 | 500       | 36         |
| Steering intermediate shaft sub-assy x Control valve    | 35.3               | 360       | 26         |
| Hub nut                                                 | 103                | 1,050     | 76         |

( ): For use without SST

# HEATER & AIR CONDITIONER

## SERVICE DATA

030G8-01

|                                                               |                                                  |
|---------------------------------------------------------------|--------------------------------------------------|
| Refrigerant charge volume                                     | Standard: 550 ± 50 g (19.37 ± 1.76 oz.)          |
| V (cooler compressor to crankshaft pulley) belt No. 1 tension | New belt: 165 ± 27 lbf<br>Used belt: 88 ± 22 lbf |
| Magnetic clutch clearance                                     | 0.35 - 0.60 mm (0.014 - 0.024 in.)               |

## TORQUE SPECIFICATION

| Part Tightened                                                         |                          | N·m  | kgf·cm | ft·lbf     |
|------------------------------------------------------------------------|--------------------------|------|--------|------------|
| V (COOLER COMPRESSOR TO CRANKSHAFT PULLEY) BELT NO.1                   |                          |      |        |            |
| Generator installation bolt                                            | Bolt A                   | 17.5 | 178    | 12         |
| Generator installation bolt                                            | Bolt C                   | 58   | 591    | 43         |
| AIR CONDITIONING RADIATOR ASSY                                         |                          |      |        |            |
| Air conditioning tube assy x Cooler evaporator sub-assy No. 1          |                          | 3.5  | 35     | 30 in.·lbf |
| Air conditioning radiator assy x Body                                  |                          | 1.5  | 15     | 12 in.·lbf |
| Blower assy x Body                                                     |                          | 1.5  | 15     | 12 in.·lbf |
| Junction block x Instrument panel reinforcement                        |                          | 8.4  | 85     | 73 in.·lbf |
| Instrument panel reinforcement x Body                                  | Bolt A                   | 20   | 203    | 14         |
| Instrument panel brace sub-assy No. 1 x Instrument panel reinforcement | Screw                    | 9.8  | 100    | 87 in.·lbf |
| COOLER COMPRESSOR ASSY                                                 |                          |      |        |            |
| Magnet clutch hub x Cooler compressor assy                             |                          | 18   | 184    | 13         |
| Compressor and magnet clutch x Engine                                  | Bolt A, B, C, F<br>Nut D | 25   | 250    | 18         |
| Compressor and magnet clutch x Engine                                  | Bolt E                   | 18   | 184    | 13         |
| Cooler refrigerant suction hose No.1 x Compressor and magnet clutch    |                          | 9.8  | 100    | 87 in.·lbf |
| Cooler refrigerant discharge hose No.1 x Compressor and magnet clutch  |                          | 9.8  | 100    | 87 in.·lbf |
| COOLER CONDENSER ASSY                                                  |                          |      |        |            |
| Cap x Cooler condenser assy                                            |                          | 12   | 125    | 9          |
| Cooler condenser assy x Body                                           |                          | 9.8  | 100    | 85 in.·lbf |
| Cooler refrigerant liquid pipe A x Cooler condenser assy               |                          | 5.4  | 55     | 47 in.·lbf |
| Cooler refrigerant discharge hose No. 1 x Cooler condenser assy        |                          | 5.4  | 55     | 47 in.·lbf |

# SUPPLEMENTAL RESTRAINT SYSTEM

## TORQUE SPECIFICATION

03013-01

| Part Tightened                                                     |                    | N·m  | kgf·cm | ft·lbf    |
|--------------------------------------------------------------------|--------------------|------|--------|-----------|
| Horn button assy x Steering wheel assy                             |                    | 8.8  | 90     | 78 in·lbf |
| Steering wheel assy x Steering column assy                         |                    | 50   | 510    | 37        |
| Instr pnl pass l/door airbag assy x Instrument panel reinforcement |                    | 20   | 200    | 14        |
| Curtain shield airbag assy x Body                                  |                    | 9.8  | 100    | 87 in·lbf |
| Airbag sensor assy center x Body                                   |                    | 17.5 | 178    | 13        |
| Airbag front sensor set bolt                                       |                    | 17.5 | 178    | 13        |
| Side airbag sensor assy x Body                                     | Property class 8T: | 20   | 200    | 14        |
|                                                                    | Property class 6T: | 17.5 | 178    | 13        |
| Airbag sensor rear LH x Body                                       | Property class 8T: | 20   | 200    | 14        |
|                                                                    | Property class 6T: | 17.5 | 178    | 13        |
| Seat position airbag sensor x Front seat                           |                    | 8.0  | 82     | 71 in·lbf |

# SEAT BELT

## TORQUE SPECIFICATION

030HU-01

| Part Tightened                                 | N·m  | kgf·cm | ft·lbf     |
|------------------------------------------------|------|--------|------------|
| Front seat outer belt retractor × Body         | 7.5  | 80     | 66 in.·lbf |
| Upper side bolt                                |      |        |            |
| Lower side bolt                                | 42.0 | 420    | 31         |
| Front seat outer belt shoulder anchor × Body   | 42.0 | 420    | 31         |
| Front seat outer belt floor anchor × Body      | 42.0 | 420    | 31         |
| Front seat inner belt × Front seat inner track | 42.0 | 420    | 31         |
| Rear seat inner belt × Body                    | 42.0 | 420    | 31         |
| Rear seat outer belt floor anchor × Body       | 42.0 | 420    | 31         |
| Rear seat outer belt retractor × Body          | 42.0 | 420    | 31         |
| Rear seat center belt retractor × Body         | 42.0 | 420    | 31         |
| Rear seat center belt floor anchor × Body      | 42.0 | 420    | 31         |

# LIGHTING

## TORQUE SPECIFICATION

030HX-01

| Part Tightened                                                            | N·m | kgf·cm | ft·lbf    |
|---------------------------------------------------------------------------|-----|--------|-----------|
| Height control sensor sub-assy rear RH × Rear suspension arm assy No.2 RH | 8.0 | 81     | 71 in·lbf |
| Height control sensor sub-assy rear RH × Rear suspension member sub-assy  | 5.4 | 55     | 15 in·lbf |

# WIPER & WASHER

## TORQUE SPECIFICATION

030HY-01

| Part Tightened                                 | N·m  | kgf·cm | ft·lbf     |
|------------------------------------------------|------|--------|------------|
| Wind shield wiper motor assy × Wiper link assy | 5.4  | 55     | 48 in.·lbf |
| Wiper link assy × Body                         | 7.0  | 71     | 62 in.·lbf |
| FR Wiper arm RH × Wiper link                   | 20.1 | 205    | 15         |
| FR Wiper arm LH × Wiper link                   | 20.1 | 205    | 15         |

# INSTRUMENT PANEL/METER

## TORQUE SPECIFICATION

03011-01

| Part Tightened                       | N·m | kgf·cm | ft·lbf |
|--------------------------------------|-----|--------|--------|
| Instrument panel Reinforce × Air bag | 20  | 200    | 14     |

# SEAT

## TORQUE SPECIFICATION

030HW-02

| Part Tightened                     | N·m  | kgf·cm | ft·lbf |
|------------------------------------|------|--------|--------|
| FRONT SEAT                         | 36.8 | 377    | 27     |
| Seat back assembly × Seat adjuster | 43.1 | 440    | 32     |
| REAR SEAT                          | 36.7 | 375    | 27     |
| Seat back assembly × Body          | 18.1 | 185    | 13     |

# ENGINE HOOD/DOOR

## TORQUE SPECIFICATION

030HM-01

| Part Tightened           | N-m | kgf-cm | ft-lbf |
|--------------------------|-----|--------|--------|
| HOOD                     | -   | -      | -      |
| Hood x Hood hinge        | 26  | 265    | 19     |
| FRONT DOOR               | -   | -      | -      |
| Door hinge x Body        | 26  | 265    | 19     |
| Door hinge x Door panel  | 26  | 265    | 19     |
| Door lock striker x Body | 23  | 235    | 17     |
| REAR DOOR                | -   | -      | -      |
| Door hinge x Body        | 26  | 265    | 19     |
| Door hinge x Door panel  | 26  | 265    | 19     |
| Door lock striker x Body | 23  | 235    | 17     |