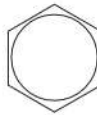
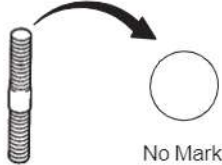
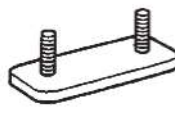
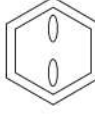
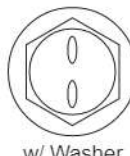


# STANDARD BOLT

## HOW TO DETERMINE BOLT STRENGTH

030LK-09

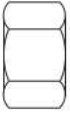
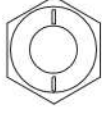
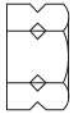
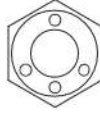
| Bolt Type                                                                                                                                |                                                                                                                                                                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

### 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

# ENGINE CONTROL SYSTEM

## SERVICE DATA

031TB-02

|                                            |                                          |                                                                            |
|--------------------------------------------|------------------------------------------|----------------------------------------------------------------------------|
| Throttle body assy<br>Resistance           | 1 (M-) – 2 (M+)<br>3 (E2) – 5 (VC)       | 0.3 to 100 $\Omega$ at 20°C (68°F)<br>1.2 to 3.2 k $\Omega$ at 20°C (68°F) |
| Accelerator pedal assy (LHD)<br>Resistance | 3 (EP1) – 6 (VCP1)<br>1 (EP2) – 4 (VCP2) | 1.5 to 6.0 k $\Omega$<br>1.5 to 6.0 k $\Omega$                             |
| Accelerator pedal assy (RHD)<br>Resistance | 1 (EP1) – 4 (VCP1)<br>3 (EP2) – 6 (VCP2) | 1.5 to 6.0 k $\Omega$<br>1.5 to 6.0 k $\Omega$                             |

TORQUE SPECIFICATION

| Part Tightened                                     | N·m | kgf·cm | ft·lbf     |
|----------------------------------------------------|-----|--------|------------|
| Throttle body assy x Intake manifold               | 9.0 | 90     | 80 in.·lbf |
| Air cleaner hose x Throttle body assy              | 1.5 | 15     | 13 in.·lbf |
| Cylinder head cover No. 2 x Cylinder head sub-assy | 7.0 | 71     | 62 in.·lbf |
| Accelerator pedal assy x Body                      | 5.4 | 55     | 48 in.·lbf |

ENGINE MECHANICAL  
SERVICE DATA

031H1-06

|                               |          |                                        |
|-------------------------------|----------|----------------------------------------|
| Cylinder head set bolt Length | Standard | 146.8 to 148.2 mm (5.780 to 5.835 in.) |
|                               | Maximum  | 148.5 mm (5.846 in.)                   |

## TORQUE SPECIFICATION

| Part Tightened                                                                                      |        | N·m      | kgf·cm   | ft·lbf     |
|-----------------------------------------------------------------------------------------------------|--------|----------|----------|------------|
| Camshaft bearing cap No. 3 x Cylinder head sub-assy                                                 |        | 13       | 133      | 10         |
| Camshaft bearing cap No. 1 x Cylinder head sub-assy                                                 |        | 23       | 235      | 17         |
| Chain tensioner assy No. 1 x Timing chain or belt cover sub-assy                                    |        | 9.0      | 92       | 80 in.·lbf |
| V-ribbed belt tensioner assy x Cylinder block sub-assy                                              |        | 69       | 704      | 51         |
| V-ribbed belt tensioner assy x Cylinder head sub-assy                                               |        | 29       | 296      | 21         |
| Engine mounting insulator RH x Body                                                                 |        | 52       | 530      | 38         |
| Engine mounting insulator RH x Transverse engine engine mounting bracket                            |        | 52       | 530      | 38         |
| Cylinder head cover sub-assy x Cylinder head sub-assy                                               | A      | 11       | 112      | 8          |
|                                                                                                     | B      | 9.0      | 92       | 80 in.·lbf |
| Cylinder head cover sub-assy x Timing chain or belt cover sub-assy                                  |        | 11       | 112      | 8          |
| Ignition coil assy x Cylinder head cover sub-assy                                                   |        | 9.0      | 92       | 80 in.·lbf |
| Engine wire x Cylinder head cover sub-assy                                                          |        | 9.0      | 92       | 80 in.·lbf |
| Cylinder head cover No. 2 x Cylinder head cover sub-assy                                            |        | 7.0      | 71       | 62 in.·lbf |
| Engine hanger x Cylinder head sub-assy                                                              |        | 38       | 387      | 28         |
| Radio setting condenser x Cylinder head sub-assy                                                    |        | 10       | 102      | 7          |
| Engine coolant temperature sensor x Cylinder head sub-assy                                          |        | 20       | 204      | 15         |
| Exhaust manifold x Cylinder head sub-assy                                                           |        | 37       | 377      | 27         |
| Exhaust manifold heat insulator No. 1 x Exhaust manifold                                            | Bolt   | 18       | 184      | 13         |
|                                                                                                     | Nut    | 12       | 122      | 9          |
| Manifold stay No. 2 x Exhaust manifold                                                              |        | 49       | 500      | 36         |
| Manifold stay No. 2 x Cylinder block sub-assy                                                       |        | 49       | 500      | 36         |
| Manifold stay x Exhaust manifold                                                                    | A      | 49       | 500      | 36         |
| Manifold stay x Cylinder block sub-assy                                                             | B      | 37       | 377      | 27         |
| Transverse engine engine mounting bracket x Timing chain or belt cover sub-assy                     |        | 47       | 479      | 35         |
| V-ribbed idler assy No. 1 x Cylinder block sub-assy                                                 |        | 39       | 400      | 29         |
| Knock sensor x Cylinder block sub-assy                                                              |        | 20       | 204      | 15         |
| Crankshaft position sensor x Timing chain or belt cover                                             |        | 9.0      | 92       | 80 in.·lbf |
| Camshaft position sensor x Cylinder head sub-assy                                                   |        | 9.0      | 92       | 80 in.·lbf |
| Water inlet x Cylinder block sub-assy                                                               |        | 11       | 112      | 8          |
| Water by-pass pipe No. 1 x Cylinder block sub-assy                                                  |        | 9.0      | 92       | 80 in.·lbf |
| Water by-pass pipe No. 1 x Cylinder head sub-assy                                                   |        | 9.0      | 92       | 80 in.·lbf |
| Oil level gage guide x Water by-pass pipe No. 1                                                     |        | 13       | 133      | 10         |
| Intake manifold x Cylinder head sub-assy                                                            |        | 30       | 306      | 22         |
| Flywheel sub-assy x Crankshaft                                                                      | 1st    | 49       | 500      | 36         |
|                                                                                                     | 2nd    | Turn 90° | Turn 90° | Turn 90°   |
| Drive plate & ring gear sub-assy x Crankshaft                                                       |        | 88       | 897      | 65         |
| Transverse engine engine mounting bracket front x Transverse engine engine mounting insulator front |        | 52       | 530      | 38         |
| Transverse engine engine mounting bracket rear x Transverse engine engine mounting insulator rear   |        | 87       | 887      | 64         |
| Transverse engine engine mounting bracket LH x Transverse engine engine mounting insulator LH       |        | 80       | 816      | 59         |
| Transverse engine engine mounting bracket RH x Transverse engine engine mounting insulator RH       |        | 52       | 530      | 38         |
| Front suspension crossmember sub-assy x Body                                                        | A      | 45       | 459      | 33         |
|                                                                                                     | B      | 133      | 1,356    | 98         |
| Front suspension member brace x Body                                                                | Bolt A | 133      | 1,356    | 98         |
|                                                                                                     | Bolt B | 80       | 816      | 59         |
| Floor panel brace front x Body                                                                      |        | 30       | 306      | 22         |
| Battery carrier x Body                                                                              |        | 13       | 131      | 9          |

| Part Tightened                                                  |     | N·m      | kgf·cm   | ft·lbf    |
|-----------------------------------------------------------------|-----|----------|----------|-----------|
| Battery x Body                                                  |     | 5.0      | 51       | 44 in·lbf |
| Air cleaner case x Body                                         |     | 5.0      | 51       | 44 in·lbf |
| Air cleaner case x Transverse engine engine mounting bracket LH |     | 5.0      | 51       | 44 in·lbf |
| Radiator support upper x Body                                   |     | 19       | 194      | 14        |
| Front wheel RH & LH x Front axle hub sub-assy RH & LH           |     | 103      | 1,050    | 76        |
| Chain tensioner slipper x Cylinder block sub-assy               |     | 19       | 194      | 14        |
| Timing chain or belt cover sub-assy x Cylinder head sub-assy    |     | 13       | 133      | 10        |
| Timing chain or belt cover sub-assy x Cylinder block sub-assy   | M6  | 13       | 133      | 10        |
|                                                                 | M8  | 19       | 194      | 14        |
| Crankshaft pulley x Crankshaft                                  |     | 138      | 1,407    | 102       |
| Cylinder head sub-assy x Cylinder block sub-assy                | 1st | 49       | 500      | 36        |
|                                                                 | 2nd | Turn 90° | Turn 90° | Turn 90°  |
| Camshaft timing oil control valve assy x Cylinder head sub-assy |     | 9.0      | 92       | 80 in·lbf |
| Chain vibration damper No. 1 x Cylinder head sub-assy           |     | 9.0      | 92       | 80 in·lbf |
| Chain vibration damper No. 1 x Cylinder block sub-assy          |     | 9.0      | 92       | 80 in·lbf |
| Stud bolt x Cylinder head sub-assy                              |     | 9.5      | 97       | 84 in·lbf |
| Air cleaner hose No. 1 x Air cleaner                            |     | 1.5      | 15       | 13 in·lbf |
| Oil pan sub-assy x Drain plug                                   |     | 37       | 377      | 27        |

COOLING  
SERVICE DATA

031H3-03

|                           |                 |                                                        |
|---------------------------|-----------------|--------------------------------------------------------|
| Thermostat                |                 |                                                        |
| Valve opening temperature |                 | 80 to 84°C (176 to 183°F)                              |
| Valve lift                | at 95°C (203°F) | 10 mm (0.39 in.) or more                               |
| Radiator cap sub-assy     |                 |                                                        |
| Standard opening pressure |                 | 74 to 103 kPa (0.75 to 1.05 kgf/cm2, 10.7 to 14.9 psi) |
| Minimum opening pressure  |                 | 59 kPa (0.6 kgf/cm2, 8.6 psi)                          |

## TORQUE SPECIFICATION

| Part Tightened                                      | N·m | kgf·cm | ft·lbf |
|-----------------------------------------------------|-----|--------|--------|
| Cylinder block drain plug x Cylinder block sub-assy | 13  | 130    | 9      |

# SUPPLEMENTAL RESTRAINT SYSTEM

## TORQUE SPECIFICATION

031HM-02

|                                |     |    |            |
|--------------------------------|-----|----|------------|
| Airbag sensor front x Body     | 9.0 | 92 | 80 in.-lbf |
| Side airbag sensor assy x Body | 9.0 | 92 | 80 in.-lbf |
| Airbag sensor rear x Body      | 9.0 | 92 | 80 in.-lbf |

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## INSTRUMENT PANEL/METER

### TORQUE SPECIFICATION

0310-02

| Part Tightened                                    | N·m | kgf·cm | ft·lbf |
|---------------------------------------------------|-----|--------|--------|
| Instrument Panel Reinforcement × Passenger Airbag | 20  | 204    | 15     |