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# INFINITI®

## QX4

### MODEL R50 SERIES

This service Manual is applicable for 1999 model year vehicles beginning with serial No. 060001~. This serial No. is shown on the Vehicle Identification Number plate.



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# FOREWORD

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This manual contains maintenance and repair procedures for the 1999 INFINITI QX4.

In order to assure your safety and the efficient functioning of the vehicle, this manual should be read thoroughly. It is especially important that the PRECAUTIONS in the GI section be completely understood before starting any repair task.

All information in this manual is based on the latest product information at the time of publication. The right is reserved to make changes in specifications and methods at any time without notice.

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## IMPORTANT SAFETY NOTICE

The proper performance of service is essential for both the safety of the technician and the efficient functioning of the vehicle. The service methods in this Service Manual are described in such a manner that the service may be performed safely and accurately. Service varies with the procedures used, the skills of the technician and the tools and parts available. Accordingly, anyone using service procedures, tools or parts which are not specifically recommended by INFINITI must first be completely satisfied that neither personal safety nor the vehicle's safety will be jeopardized by the service method selected.



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NISSAN MOTOR CO., LTD.

Overseas Service Department  
Tokyo, Japan



**PLEASE HELP MAKE THIS SERVICE MANUAL BETTER!**

**INFINITI®**

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Technical Service Information  
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Farmington Hills, MI USA 48331  
FAX: (248) 488-3910

**SERVICE MANUAL: Model:**\_\_\_\_\_ **Year:**\_\_\_\_\_

**PUBLICATION NO. (Please photocopy back cover):**\_\_\_\_\_

**VEHICLE INFORMATION VIN:**\_\_\_\_\_ **Production Date:**\_\_\_\_\_

Please describe any issues or problems in detail:

Page number(s)\_\_\_\_\_ *Note: Please include a copy of each page, marked with your comments.*

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**Are the trouble diagnosis procedures logical and easy to use? (circle your answer)**      **YES**      **NO**

If no, what page number(s)?\_\_\_\_\_ *Note: Please include a copy of each page, marked with your comments.*

Please describe the issue or problem in detail:\_\_\_\_\_

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**Is the organization of the manual clear and easy to follow? (circle your answer)**      **YES**      **NO**

Please comment:\_\_\_\_\_

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**What information should be included in INFINITI Service Manuals to better support you in servicing or repairing customer vehicles?**

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**DATE:**\_\_\_\_\_ **YOUR NAME:**\_\_\_\_\_ **POSITION:**\_\_\_\_\_

**DEALER:**\_\_\_\_\_ **DEALER NO.:**\_\_\_\_\_ **ADDRESS:**\_\_\_\_\_

**CITY:**\_\_\_\_\_ **STATE/PROV./COUNTRY:**\_\_\_\_\_ **ZIP/POSTAL CODE:**\_\_\_\_\_

## INCH TO METRIC CONVERSION TABLE

(Rounded-off for automotive use)

| inches | mm           | inches | mm            |
|--------|--------------|--------|---------------|
| .100   | <b>2.54</b>  | .610   | <b>15.49</b>  |
| .110   | <b>2.79</b>  | .620   | <b>15.75</b>  |
| .120   | <b>3.05</b>  | .630   | <b>16.00</b>  |
| .130   | <b>3.30</b>  | .640   | <b>16.26</b>  |
| .140   | <b>3.56</b>  | .650   | <b>16.51</b>  |
| .150   | <b>3.81</b>  | .660   | <b>16.76</b>  |
| .160   | <b>4.06</b>  | .670   | <b>17.02</b>  |
| .170   | <b>4.32</b>  | .680   | <b>17.27</b>  |
| .180   | <b>4.57</b>  | .690   | <b>17.53</b>  |
| .190   | <b>4.83</b>  | .700   | <b>17.78</b>  |
| .200   | <b>5.08</b>  | .710   | <b>18.03</b>  |
| .210   | <b>5.33</b>  | .720   | <b>18.29</b>  |
| .220   | <b>5.59</b>  | .730   | <b>18.54</b>  |
| .230   | <b>5.84</b>  | .740   | <b>18.80</b>  |
| .240   | <b>6.10</b>  | .750   | <b>19.05</b>  |
| .250   | <b>6.35</b>  | .760   | <b>19.30</b>  |
| .260   | <b>6.60</b>  | .770   | <b>19.56</b>  |
| .270   | <b>6.86</b>  | .780   | <b>19.81</b>  |
| .280   | <b>7.11</b>  | .790   | <b>20.07</b>  |
| .290   | <b>7.37</b>  | .800   | <b>20.32</b>  |
| .300   | <b>7.62</b>  | .810   | <b>20.57</b>  |
| .310   | <b>7.87</b>  | .820   | <b>20.83</b>  |
| .320   | <b>8.13</b>  | .830   | <b>21.08</b>  |
| .330   | <b>8.38</b>  | .840   | <b>21.34</b>  |
| .340   | <b>8.64</b>  | .850   | <b>21.59</b>  |
| .350   | <b>8.89</b>  | .860   | <b>21.84</b>  |
| .360   | <b>9.14</b>  | .870   | <b>22.10</b>  |
| .370   | <b>9.40</b>  | .880   | <b>22.35</b>  |
| .380   | <b>9.65</b>  | .890   | <b>22.61</b>  |
| .390   | <b>9.91</b>  | .900   | <b>22.86</b>  |
| .400   | <b>10.16</b> | .910   | <b>23.11</b>  |
| .410   | <b>10.41</b> | .920   | <b>23.37</b>  |
| .420   | <b>10.67</b> | .930   | <b>23.62</b>  |
| .430   | <b>10.92</b> | .940   | <b>23.88</b>  |
| .440   | <b>11.18</b> | .950   | <b>24.13</b>  |
| .450   | <b>11.43</b> | .960   | <b>24.38</b>  |
| .460   | <b>11.68</b> | .970   | <b>24.64</b>  |
| .470   | <b>11.94</b> | .980   | <b>24.89</b>  |
| .480   | <b>12.19</b> | .990   | <b>25.15</b>  |
| .490   | <b>12.45</b> | 1.000  | <b>25.40</b>  |
| .500   | <b>12.70</b> | 2.000  | <b>50.80</b>  |
| .510   | <b>12.95</b> | 3.000  | <b>76.20</b>  |
| .520   | <b>13.21</b> | 4.000  | <b>101.60</b> |
| .530   | <b>13.46</b> | 5.000  | <b>127.00</b> |
| .540   | <b>13.72</b> | 6.000  | <b>152.40</b> |
| .550   | <b>13.97</b> | 7.000  | <b>177.80</b> |
| .560   | <b>14.22</b> | 8.000  | <b>203.20</b> |
| .570   | <b>14.48</b> | 9.000  | <b>228.60</b> |
| .580   | <b>14.73</b> | 10.000 | <b>254.00</b> |
| .590   | <b>14.99</b> | 20.000 | <b>508.00</b> |
| .600   | <b>15.24</b> |        |               |

## METRIC TO INCH CONVERSION TABLE

(Rounded-off for automotive use)

| mm        | inches | mm         | inches |
|-----------|--------|------------|--------|
| <b>1</b>  | .0394  | <b>51</b>  | 2.008  |
| <b>2</b>  | .079   | <b>52</b>  | 2.047  |
| <b>3</b>  | .118   | <b>53</b>  | 2.087  |
| <b>4</b>  | .157   | <b>54</b>  | 2.126  |
| <b>5</b>  | .197   | <b>55</b>  | 2.165  |
| <b>6</b>  | .236   | <b>56</b>  | 2.205  |
| <b>7</b>  | .276   | <b>57</b>  | 2.244  |
| <b>8</b>  | .315   | <b>58</b>  | 2.283  |
| <b>9</b>  | .354   | <b>59</b>  | 2.323  |
| <b>10</b> | .394   | <b>60</b>  | 2.362  |
| <b>11</b> | .433   | <b>61</b>  | 2.402  |
| <b>12</b> | .472   | <b>62</b>  | 2.441  |
| <b>13</b> | .512   | <b>63</b>  | 2.480  |
| <b>14</b> | .551   | <b>64</b>  | 2.520  |
| <b>15</b> | .591   | <b>65</b>  | 2.559  |
| <b>16</b> | .630   | <b>66</b>  | 2.598  |
| <b>17</b> | .669   | <b>67</b>  | 2.638  |
| <b>18</b> | .709   | <b>68</b>  | 2.677  |
| <b>19</b> | .748   | <b>69</b>  | 2.717  |
| <b>20</b> | .787   | <b>70</b>  | 2.756  |
| <b>21</b> | .827   | <b>71</b>  | 2.795  |
| <b>22</b> | .866   | <b>72</b>  | 2.835  |
| <b>23</b> | .906   | <b>73</b>  | 2.874  |
| <b>24</b> | .945   | <b>74</b>  | 2.913  |
| <b>25</b> | .984   | <b>75</b>  | 2.953  |
| <b>26</b> | 1.024  | <b>76</b>  | 2.992  |
| <b>27</b> | 1.063  | <b>77</b>  | 3.031  |
| <b>28</b> | 1.102  | <b>78</b>  | 3.071  |
| <b>29</b> | 1.142  | <b>79</b>  | 3.110  |
| <b>30</b> | 1.181  | <b>80</b>  | 3.150  |
| <b>31</b> | 1.220  | <b>81</b>  | 3.189  |
| <b>32</b> | 1.260  | <b>82</b>  | 3.228  |
| <b>33</b> | 1.299  | <b>83</b>  | 3.268  |
| <b>34</b> | 1.339  | <b>84</b>  | 3.307  |
| <b>35</b> | 1.378  | <b>85</b>  | 3.346  |
| <b>36</b> | 1.417  | <b>86</b>  | 3.386  |
| <b>37</b> | 1.457  | <b>87</b>  | 3.425  |
| <b>38</b> | 1.496  | <b>88</b>  | 3.465  |
| <b>39</b> | 1.535  | <b>89</b>  | 3.504  |
| <b>40</b> | 1.575  | <b>90</b>  | 3.543  |
| <b>41</b> | 1.614  | <b>91</b>  | 3.583  |
| <b>42</b> | 1.654  | <b>92</b>  | 3.622  |
| <b>43</b> | 1.693  | <b>93</b>  | 3.661  |
| <b>44</b> | 1.732  | <b>94</b>  | 3.701  |
| <b>45</b> | 1.772  | <b>95</b>  | 3.740  |
| <b>46</b> | 1.811  | <b>96</b>  | 3.780  |
| <b>47</b> | 1.850  | <b>97</b>  | 3.819  |
| <b>48</b> | 1.890  | <b>98</b>  | 3.858  |
| <b>49</b> | 1.929  | <b>99</b>  | 3.898  |
| <b>50</b> | 1.969  | <b>100</b> | 3.937  |

# QUICK REFERENCE CHART: QX4

1999

## ENGINE TUNE-UP DATA

|                                             |              |                                                     |                             |
|---------------------------------------------|--------------|-----------------------------------------------------|-----------------------------|
| Engine model                                |              | VG33E                                               |                             |
| Firing order                                |              | 1-2-3-4-5-6                                         |                             |
| Idle speed                                  | rpm          | A/T<br>(in "N" position)                            | 750±50                      |
| Ignition timing (degree BTDC at idle speed) |              | 15°±2°                                              |                             |
| CO% at idle                                 |              | Idle mixture screw is preset and sealed at factory. |                             |
| Drive belt deflection (Cold)                | mm (in)      | Used belt                                           |                             |
|                                             |              | Limit                                               | Deflection after adjustment |
|                                             |              | Generator                                           | 10.5 (0.413)                |
|                                             |              | Air conditioner compressor                          | 16.5 (0.650)                |
| Power steering oil pump                     | 18 (0.71)    |                                                     |                             |
| Applied pressed force                       |              | 98 (10, 22)                                         |                             |
| Drive belt tension adjustment (Cold)        | N (kg, lb)   | Used belt                                           |                             |
|                                             |              | Limit                                               | After adjustment            |
|                                             |              | Generator                                           | 324 (33, 73)                |
|                                             |              | Air conditioner compressor                          | 196 (20, 44)                |
| Power steering pump                         | 147 (15, 33) |                                                     |                             |
| Radiator cap relief pressure                |              | 78 - 98 (0.8 - 1.0, 11 - 14)                        |                             |
| Cooling system leakage testing pressure     |              | 157 (1.6, 23)                                       |                             |
| Compression pressure                        | Standard     | 1,196 (12.20, 173.4)/300                            |                             |
|                                             | Minimum      | 883 (9.01, 128.0)/300                               |                             |
| Spark plug                                  | Standard     | FR5AP-10                                            |                             |
|                                             | Cold         | FR6AP-10                                            |                             |
|                                             | Hot          | FR4AP-10                                            |                             |

## BRAKE

Unit: mm (in)

|                          |                         |
|--------------------------|-------------------------|
| Front brake              |                         |
| Pad wear limit           | 2.0 (0.079)             |
| Rotor repair limit       | 26.0 (1.024)            |
| Rear brake               |                         |
| Lining wear limit        | 1.5 (0.059)             |
| Drum repair limit        | 296.5 (11.67)           |
| Pedal free height        | 175 - 185 (6.89 - 7.28) |
| Pedal depressed height*1 | 70 (2.76)               |
| Parking brake            |                         |
| Number of notches*2      | 6 - 8                   |

\*1 Under force of 490 N (50 kg, 110 lb) with engine running

\*2 At pulling force: 196 N (20 kg, 44 lb)

## REFILL CAPACITIES

| Unit                    |                              | Liter          | US measure     |
|-------------------------|------------------------------|----------------|----------------|
| Coolant with reservoir  |                              | 10.2           | 10-3/4 qt      |
| Engine*                 | With oil filter              | 3.7            | 3-7/8 qt       |
|                         | Without oil filter           | 3.4            | 3-5/8 qt       |
|                         | Dry engine (engine overhaul) | 4.2            | 4-1/2 qt       |
| Transmission            | A/T                          | 8.5            | 9 qt           |
| All-mode 4WD transfer   |                              | 3.0            | 2-5/8 qt       |
| Differential carrier    | Front                        | 1.85           | 3-7/8 pt       |
|                         | Rear                         | 2.8            | 5-7/8 pt       |
| Power steering system   |                              | 0.9            | 1 qt           |
| Air conditioning system | Refrigerant                  | 0.60 - 0.70 kg | 1.32 - 1.54 lb |
|                         | Compressor oil               | 0.20           | 6.8 fl oz      |

\* For further details, see "Changing Engine Oil" in MA section.

## WHEEL ALIGNMENT (Unladen\*)

|                                 |                           |                     |
|---------------------------------|---------------------------|---------------------|
| Applied model                   | 245/70 R16 tire           |                     |
| Camber                          | Minimum                   | -0°35' (-0.58°)     |
|                                 | Nominal                   | 0°10' (0.17°)       |
|                                 | Maximum                   | 0°55' (0.92°)       |
| Caster                          | Left and right difference | 45' (0.75°) or less |
|                                 | Minimum                   | 2°15' (2.25°)       |
|                                 | Nominal                   | 3°00' (3.00°)       |
| Total toe-in                    | Left and right difference | 45' (0.75°) or less |
|                                 | Minimum                   | 1 (0.04)            |
|                                 | Nominal                   | 2 (0.08)            |
| Distance (A - B)                | mm (in)                   | 3 (0.12)            |
|                                 | Minimum                   | 5' (0.08°)          |
|                                 | Nominal                   | 10' (0.17°)         |
| Angle (left plus right)         | Minimum                   | 15' (0.25°)         |
|                                 | Nominal                   | 30°00' (30.00°)     |
|                                 | Nominal                   | 33°00' (33.00°)     |
| Wheel turning angle (Full turn) | Minimum                   | 34°00' (34.00°)     |
|                                 | Nominal                   | 28°00' (28.00°)     |
|                                 | Nominal                   | 31°00' (31.00°)     |
| Inside                          | Minimum                   | 32°00' (32.00°)     |
|                                 | Nominal                   | 33°00' (33.00°)     |
|                                 | Nominal                   | 34°00' (34.00°)     |
| Outside                         | Minimum                   | 28°00' (28.00°)     |
|                                 | Nominal                   | 31°00' (31.00°)     |
|                                 | Nominal                   | 32°00' (32.00°)     |

## FRONT WHEEL BEARING

|                                        |                                                            |                                         |
|----------------------------------------|------------------------------------------------------------|-----------------------------------------|
| Preload<br>(At hub bolt)<br>N (kg, lb) | Wheel bearing lock nut                                     |                                         |
|                                        | Tightening torque                                          | 78 - 98 (8 - 10, 58 - 72)               |
|                                        | Retightening torque after loosening wheel bearing lock nut | 0.5 - 1.5 (0.05 - 0.15, 4.3 - 13.0)     |
|                                        | Axial end play                                             | 0 (0)                                   |
|                                        | Starting force at wheel hub bolt                           | A                                       |
|                                        | Turning angle                                              | 15° - 30°                               |
|                                        | Starting force at wheel hub bolt                           | B                                       |
|                                        | Wheel bearing preload at wheel hub bolt B - A              | 7.06 - 20.99 (0.72 - 2.14, 1.59 - 4.72) |

\* Fuel, radiator coolant and engine oil full.  
Spare tire, jack, hand tools and mats in designated positions.

**TEST VALUE AND TEST LIMIT (GST ONLY — NOT APPLICABLE TO CONSULT-II)**

The following is the information specified in Mode 6 of SAE J1979.

The test value is a parameter used to determine whether a system/circuit diagnostic test is “OK” or “NG” while being monitored by the ECM during self-diagnosis. The test limit is a reference value which is specified as the maximum or minimum value and is compared with the test value being monitored.

Items for which these data (test value and test limit) are displayed are the same as SRT code items.

These data (test value and test limit) are specified by Test ID (TID) and Component ID (CID) and can be displayed on the GST screen.

| SRT item    | Self-diagnostic test item                 | DTC   | Test value<br>(GST display) |     | Test limit | Conversion           |
|-------------|-------------------------------------------|-------|-----------------------------|-----|------------|----------------------|
|             |                                           |       | TID                         | CID |            |                      |
| CATALYST    | Three way catalyst function (Bank 1)      | P0420 | 01H                         | 01H | Max.       | 1/128                |
|             | Three way catalyst function (Bank 2)      | P0430 | 03H                         | 02H | Max.       | 1/128                |
| EVAP SYSTEM | EVAP control system (Small leak)          | P0440 | 05H                         | 03H | Max.       | 1/128mm <sup>2</sup> |
|             |                                           | P1440 | 05H                         | 03H | Max.       | 1/128mm <sup>2</sup> |
|             | EVAP control system purge flow monitoring | P1447 | 06H                         | 83H | Min.       | 20mV                 |
| HO2S        | Heated oxygen sensor 1 (Bank 1)           | P0133 | 09H                         | 04H | Max.       | 16ms                 |
|             |                                           | P0131 | 0AH                         | 84H | Min.       | 10mV                 |
|             |                                           | P0130 | 0BH                         | 04H | Max.       | 10mV                 |
|             |                                           | P0132 | 0CH                         | 04H | Max.       | 10mV                 |
|             |                                           | P0134 | 0DH                         | 04H | Max.       | 1s                   |
|             | Heated oxygen sensor 1 (Bank 2)           | P0153 | 11H                         | 05H | Max.       | 16ms                 |
|             |                                           | P0151 | 12H                         | 85H | Min.       | 10mV                 |
|             |                                           | P0150 | 13H                         | 05H | Max.       | 10mV                 |
|             |                                           | P0152 | 14H                         | 05H | Max.       | 10mV                 |
|             |                                           | P0154 | 15H                         | 05H | Max.       | 1s                   |
|             | Heated oxygen sensor 2 (Bank 1)           | P0139 | 19H                         | 86H | Min.       | 10mV/500ms           |
|             |                                           | P0137 | 1AH                         | 86H | Min.       | 10mV                 |
|             |                                           | P0140 | 1BH                         | 06H | Max.       | 10mV                 |
|             |                                           | P0138 | 1CH                         | 06H | Max.       | 10mV                 |
|             | Heated oxygen sensor 2 (Bank 2)           | P0159 | 21H                         | 87H | Min.       | 10mV/500ms           |
|             |                                           | P0157 | 22H                         | 87H | Min.       | 10mV                 |
|             |                                           | P0160 | 23H                         | 07H | Max.       | 10mV                 |
|             |                                           | P0158 | 24H                         | 07H | Max.       | 10mV                 |
| HO2S HTR    | Heated oxygen sensor 1 heater (Bank 1)    | P0135 | 29H                         | 08H | Max.       | 20mV                 |
|             |                                           | P0135 | 2AH                         | 88H | Min.       | 20mV                 |
|             | Heated oxygen sensor 1 heater (Bank 2)    | P0155 | 2BH                         | 09H | Max.       | 20mV                 |
|             |                                           | P0155 | 2CH                         | 89H | Min.       | 20mV                 |
|             | Heated oxygen sensor 2 heater (Bank 1)    | P0141 | 2DH                         | 0AH | Max.       | 20mV                 |
|             |                                           | P0141 | 2EH                         | 8AH | Min.       | 20mV                 |
|             | Heated oxygen sensor 2 heater (Bank 2)    | P0161 | 2FH                         | 0BH | Max.       | 20mV                 |
|             |                                           | P0161 | 30H                         | 8BH | Min.       | 20mV                 |
| EGR SYSTEM  | EGR function                              | P0400 | 31H                         | 8CH | Min.       | 1°C                  |
|             |                                           | P0400 | 32H                         | 8CH | Min.       | 1°C                  |
|             |                                           | P0400 | 33H                         | 8CH | Min.       | 1°C                  |
|             |                                           | P0400 | 34H                         | 8CH | Min.       | 1°C                  |
|             |                                           | P1402 | 35H                         | 0CH | Max.       | 1°C                  |
|             | EGRC-BPT valve function                   | P0402 | 36H                         | 0CH | Max.       | 1count               |
|             |                                           | P0402 | 37H                         | 8CH | Min.       | 1count               |