

## APPENDIX 4

# BOLT TORQUE TIGHTENING CHART

The torque applied to fasteners is determined by the diameter and grade of the fastener. The material of the components being fastened and whether the fastener is lubricated must also be considered. Torque specifications for specific fasteners can be found in the vehicle's service manual. If specifications are not available, the following

charts can be used as a guide. The specifications in these charts are for clean, lubricated bolts.

The charts give the specifications in foot-pounds (ft-lb). Multiplying by 12 converts foot-pounds to inch-pounds (in.-lb). Multiplying by 1.356 converts foot-pounds to Newton-meters (N-m).

### SAE Standard

<i>Grade</i>	<i>1 &amp; 2</i>	<i>5</i>	<i>8</i>	<i>Wrench size</i>	
<i>Size</i>				<i>Bolt</i>	<i>Nut</i>
1/4	5	7	10	3/8	7/16
5/16	9	14	22	1/2	9/16
3/8	15	25	37	9/16	5/8
7/16	24	40	60	5/8	3/4
1/2	37	60	92	3/4	13/16

### Metric Standard

<i>Grade</i>	<i>5</i>	<i>8</i>	<i>10</i>	<i>12</i>	<i>Wrench size</i>
<i>Size</i>					<i>Bolt</i>
6 mm	5	9	11	12	10 mm
8 mm	12	21	26	32	14 mm
10 mm	23	40	50	60	17 mm
12 mm	40	70	87	105	19 mm
14 mm	65	110	135	160	22 mm