

## Torque Specifications for Aluminum Fittings

One of the most frequently asked questions is how tight should the connection between the fitting and the adapter be?

The correct answer is to follow the specification guidelines listed below. This will give the proper tightness to allow for a good seal, but prevents damage to the fitting by over torque.

Torque Specification Guidelines		
Nut Size	Minimum Torque <sup>1</sup>	Maximum Torque <sup>1</sup>
-02	50	80
-03	70	105
-04	100	140
-05	130	180
-06	150	195
-08	270	350
-10	360	430
-12	460	550
-16	700	840
-20	850	1020
-24	900	1080
-32	1800	2000

<sup>1</sup>Torque values are shown in inch pounds for aluminum fittings.

There may be times when the correct torque wrench may not be available. In these cases you can follow one of the alternate tightening methods listed at right. **Please note that these methods are for aluminum performance fittings and adapters.** See Bulletin JA14A for steel fittings.

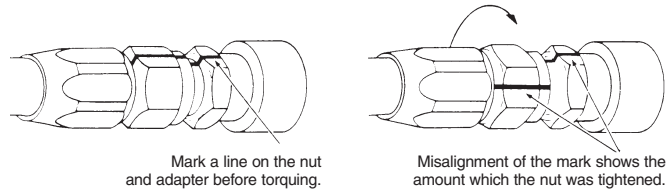
**Remember, overtightening will result in possible damage to the fitting, resulting in possible leaks.**

### Alternate Tightening Method One

**Flats Method**  
Here are the steps for an excellent method of tightening. Anyone can tell if the joint was tightened and how much.

1. Tighten the nut by hand until it bottoms the seats.
2. Using a marker, draw a line lengthwise on the nut and extend it onto the adapter.
3. Using a wrench, rotate the nut to tighten. Turn the nut the amount shown on the chart.

Size	Number of Hex Flats Rotations
-04	1½ to 1¾
-06	1 to 1½
-08	1¼ to 1¾
-10	1¼ to 1¾
-12	1to 1½
-16	¾ to 1
-20	½ to ¾
-24	½ to ¾



### Alternate Tightening Method Two

The second alternate method of tightening is very simple and easy to remember. Bring the nut to hand tight and then rotate a quarter of a turn. This applies to all sizes. Mark the fitting as indicated in the flat method to confirm the quarter turn.

## Conversion Tables

Inch and Millimeter Equivalents		
Inches		Millimeters
Fractions	Decimals	Decimals
1/64	.016	.397
1/32	.031	.794
3/64	.047	1.191
1/16	.063	1.588
5/64	.078	1.984
3/32	.094	2.381
7/64	.109	2.778
1/8	.125	3.175
9/64	.141	3.572
5/32	.156	3.969
11/64	.172	4.366
3/16	.188	4.763
13/64	.203	5.159
7/32	.219	5.556
15/64	.234	5.953
1/4	.250	6.350
17/64	.266	6.747
9/32	.281	7.144
19/64	.297	7.541
15/16	.313	7.938
21/64	.328	8.334
11/32	.344	8.731
23/64	.359	9.128
3/8	.375	9.525
25/64	.391	9.922
13/32	.406	10.319

Converting Units of Measure		
Multiply	By	To Obtain
Atmospheres	14.70	Pounds/square inch
Atmospheres	1.013	Bars
Bars	0.9869	Atmospheres
Bars	14.50	Pounds/square inch
Centimeters	0.3937	Inches
Feet	0.3048	Meters
Gallons	231	Cubic inches
Gallons	3.785	Liters
Gallons (Imperial)	1.20095	U.S. gallons
Gallons (U.S.)	0.83267	Imperial gallons
Gallons (water)	8.3453	Pounds of water
Gallons/minute	8.0208	Cubic feet/hour
Horsepower	745.7	Watts
Inches of mercury	1.133	Feet of water
Kilometers	0.6214	Miles
Liters	0.03531	Cubic feet
Liters	61.02	Cubic inches
Liters	0.2642	Gallons
Meters	3.281	Feet
Meters	39.37	Inches
Microns	10 <sup>6</sup>	Meters
Miles	5280	Feet
Miles	1.609	Kilometers
Miles/hour	1.609	Kilometers/hour
Miles/hour	0.8684	Knots
Ounces	0.0625	Pounds
Ounces	28.349527	Grams
Ounces (fluid)	1.805	Cubic inches
Ounces (fluid)	0.02957	Liters
Pounds	453.5924	Grams
Pounds of water	0.1198	Gallons
Pounds/square inch	0.06804	Atmospheres
Temperature (°C)	1.8	+32 Temperature (°F)
Temperature (°F) -32	5/9	Temperature (°C)