



PRODUCT INSTALLATION GUIDELINES

NOTE: All torques specified refer to clean threads lightly lubricated.

All torques to be checked in the direction tightened. Break-away torque values do not relate accurately to seating torques.

Torques specified relate to bolts and screws. For nuts use 80% of grade 5 values for corresponding fastener size.

Torque values relate to commercial fasteners only. Like threads applied to fabricated parts need to have appropriate torque values specified to those unique parts/applications.

All torque specifications presume zinc-plated fasteners. Other finishes will require adjustments to specifications.

Grade #2 fasteners do not apply within these torque recommendations and are prohibited by Barr Marine for use.

Tolerances on specifications is +/- 20% unless noted.

Self tapping screws will meet 75% of grade 5 specifications for seated torque after threads are fully developed. Driving torque may exceed specifications as threads are developed.

GASKETS:

Any gasket used to seal water passage ways i.e. manifold to riser/elbow gasket should be sealed with a sealant. Sealant should be a high temperature, non-silicone, aviation grade sealant.

Gasket used to seal manifold to engine can be applied without the use of any sealant.

SAE Bolt Size	Recommended Torque			
	Grade 5		Grade 8	
	Coarse	Fine	Coarse	Fine
8	30	31	40	42
10	44	48	60	68
1/4	8	10	12	14
5/16	17	19	24	27
3/8	31	35	44	49
7/16	49	55	70	78
1/2	75	85	105	120
9/16	110	120	155	170
5/8	150	170	284	323
3/4	270	295	510	568
7/8	395	435	813	902
1	590	660	905	1030

Sizes 8 & 10 torque spec is in inch pounds
Sizes from 1/4 & up are in foot pounds

Metric Bolt Dia MM	Recommended Torque in Newton Meters	
	Class 8.8	Class 8.9
5	7	9
6	12	16
8	30	40
10	55	75
12	100	135
14	160	215
16	245	335
20	480	650