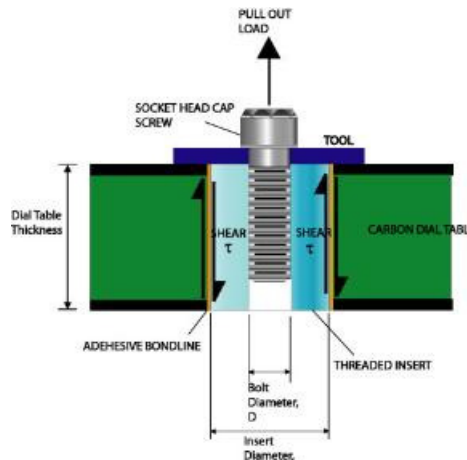


## Threaded Insert Pull Out Analysis

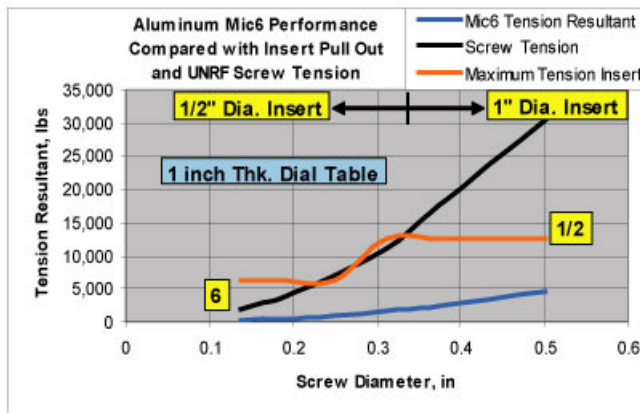
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Pull out Comparison analysis of inserts compared with Aluminum Mic6, Aluminum 6061-T6 and A36 steel. Insert pull out was determined using a shear strength allowable of 2,000 psi (Epoxy adhesive).

To show comparison a factor of safety was calculated comparing each material pull out strength with the strength derived for insert pull out. A factor of safety greater than 1 means that the traditional material experienced pull out (thread failure) before the insert.



Graphs show pull out performance for 1 inch thick Dial Table.

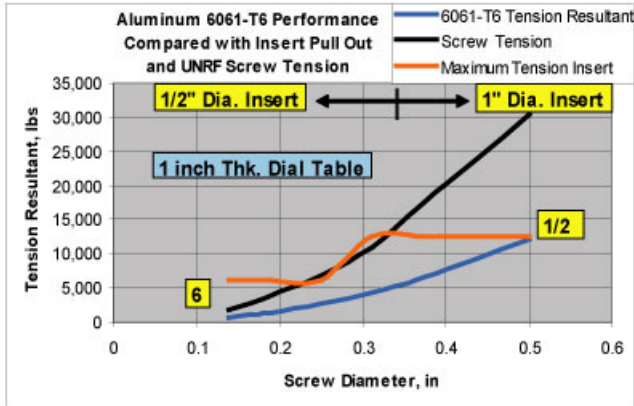


Graph shows screws in Aluminum Mic6 pull out before the insert. Note for small screw sizes the screw may break before insert pull out.

1 inch Diameter Insert  
1/2 inch Diameter Insert

Screw	Dial Table Thickness						
	0.5	0.75	1	1.25	1.5	2	3
6	11.8	17.7	23.6	29.5	35.4	47.2	70.9
8	8.0	12.0	16.0	20.0	24.0	32.1	48.1
10	5.8	8.7	11.7	14.6	17.5	23.3	35.0
1/4	3.1	4.7	6.3	7.8	9.4	12.6	18.8
5/16	3.9	5.8	7.8	9.7	11.6	15.5	23.3
3/8	2.5	3.8	5.1	6.4	7.6	10.2	15.3
1/2	1.4	2.1	2.8	3.5	4.1	5.5	8.3

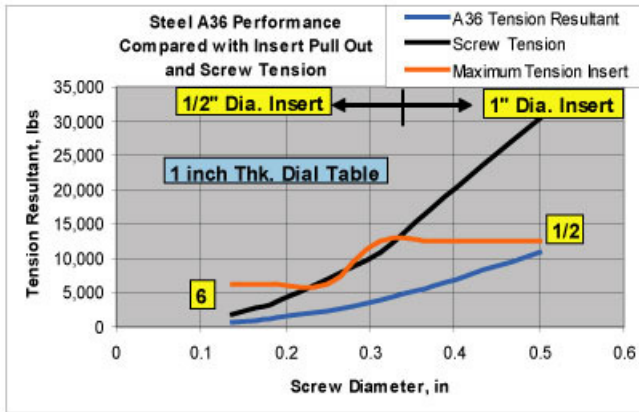
Graph shows screws in Aluminum 6061-T6 pull out before the insert. Note for small screw sizes the screw may break before insert pull out.



**1 inch Diameter Insert**  
**1/2 inch Diameter Insert**

Screw	Dial Table Thickness						
	0.5	0.75	1	1.25	1.5	2	3
6	4.4	6.6	8.9	11.1	13.3	17.7	26.6
8	3.0	4.5	6.0	7.5	9.0	12.0	18.0
10	2.2	3.3	4.4	5.5	6.5	8.7	13.1
1/4	1.2	1.8	2.4	2.9	3.5	4.7	7.1
5/16	1.5	2.2	2.9	3.6	4.4	5.8	8.7
3/8	1.0	1.4	1.9	2.4	2.9	3.8	5.7
1/2			1.0	1.3	1.6	2.1	3.1

Graph shows screws in A36 steel pull out before the insert. Note for small screw sizes the screw may break before insert pull out.



**1 inch Diameter Insert**  
**1/2 inch Diameter Insert**

Screw	Dial Table Thickness						
	0.5	0.75	1	1.25	1.5	2	3
6	4.9	7.4	9.8	12.3	14.8	19.7	29.5
8	3.3	5.0	6.7	8.3	10.0	13.3	20.0
10	2.4	3.6	4.9	6.1	7.3	9.7	14.6
1/4	1.3	2.0	2.6	3.3	3.9	5.2	7.8
5/16	1.6	2.4	3.2	4.0	4.8	6.5	9.7
3/8	1.1	1.6	2.1	2.7	3.2	4.2	6.4
1/2			1.2	1.4	1.7	2.3	3.5

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