



BULLETIN

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I NSETS



AE 1203

ATLAS™ BLIND THREADED INSERTS

Atlas Blind threaded inserts are designed to provide strong threads in thin panel sections. They are called “blind” because they can be installed from one side of the panel. Access to both sides is not required. That’s why these fasteners are ideally suited for tubing, extrusion, and other similar types of applications.

There are three types: SpinTite®, MaxTite®, and Plus+Tite™ fasteners. The SpinTite types are used for most applications where strong threads are required for blind applications. Most commonly known as “blind threaded inserts”, they are installed from one side using a spin/spin technique. The clockwise spinning action of the pneumatic tool draws the fastener in, compressing the unthreaded portion of the fastener wall. The bulge that is created presses against the panel creating a clamping force which tightly grips the sheet. In addition to high thread strength and torque-out, these fasteners have minimal inventory requirements since each size can accommodate many grip ranges.

The heavy duty MaxTite types, most commonly known as “blind threaded rivet nuts” are designed for the most demanding applications. They are installed from one side using a “spin/pull” technique. A hydraulic/pneumatic tool is used to draw the fastener in, creating the bulge and clamping force as described above.

The blind Plus+Tite inserts feature a pre-bulbed slotted body that folds into four petals upon installation, gripping the backside of the parent material. These inserts can be installed into single, variable, or multiple thickness materials using Atlas Series 800 pneumatic tools or an Atlas Series AE 40 pneumatic/hydraulic tool.

The advantages of blind threaded insert technology include:

- Fast, easy one-sided installation.
- Strong, permanent threads in thin panels.
- Installs anytime during production, in painted panels, in the field, and repair applications.
- Works in close-to-edge applications.
- Attaches to panels of any hardness.
- Utilizes light, compact, cost-effective installation tooling.
- Can assemble multiple dissimilar materials during installation.

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• Feature a large diameter, low-profile head and knurled shank. • Offers highest all around strength	
TYPE AEK - MINIMIZED-PROFILE HEAD	Page 6
• Same as the AEL but with a minimized-profile head. • Allows near-flush installations with no need for special hole preparations such as countersinking or dimpling.	
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Atlas Plus+Tite™ Blind Threaded Inserts

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• Internal formed threads are compatible with unified grade 5 or metric class 9.8 screws. • Shoulder provides self-locating feature. • All surfaces are plated for superior corrosion resistance.	

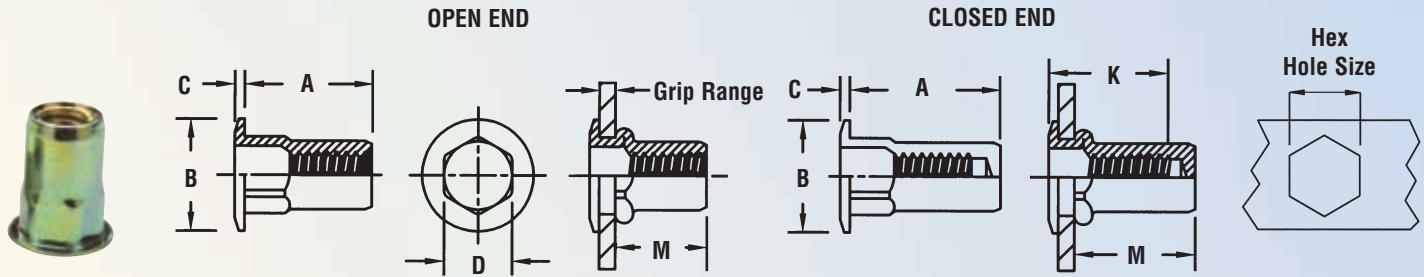
Atlas MaxTite® Blind Threaded Inserts

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• Thread sizes 440 - 1/2" and M3-M12. • Countersunk feature allow fastener to be installed flush with the surface of the sheet. • Available with rib, key or full hex features for high torque applications.	
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SpinTite - HALF-HEX SHANK LOW-PROFILE HEAD-TYPE AEH



All dimensions are in inches.

Thread Size (1)	Part Number	Grip Range (1)	Open					Closed					Hex Hole Size In Sheet +.006 -.000	
			A ±.015	B ±.015	C Nom.	D Max.	M Ref	A ±.015	B ±.015	C Nom.	D Max.	K Min.		M Ref.
#6-32	AEHS-632-80	.020 - .080	.385	.375	.027	.249	.295	.740	.375	.027	.249	.43	.640	.250
#6-32	AEHS-632-130	.080 - .130	.435	.375	.027	.249	.295	.740	.375	.027	.249	.43	.580	.250
#8-32	AEHS-832-80	.020 - .080	.385	.375	.027	.249	.295	.740	.375	.027	.249	.43	.640	.250
#8-32	AEHS-832-130	.080 - .130	.435	.375	.027	.249	.295	.740	.375	.027	.249	.43	.580	.250
#10-32	AEHS-1032-130	.020 - .130	.435	.390	.027	.280	.275	1.030	.390	.027	.280	.58	.845	.281
#10-32	AEHS-1032-225	.130 - .225	.535	.390	.027	.280	.275	1.030	.390	.027	.280	.58	.735	.281
1/4-20	AEHS-420-165	.027 - .165	.585	.510	.030	.374	.400	1.190	.510	.030	.374	.70	1.015	.375
1/4-20	AEHS-420-260	.165 - .260	.685	.510	.030	.374	.400	1.190	.510	.030	.374	.70	.915	.375
5/16-18	AEHS-518-150	.027 - .150	.685	.655	.035	.499	.530	1.445	.655	.035	.499	.82	1.235	.500
5/16-18	AEHS-518-312	.150 - .312	.845	.655	.035	.499	.515	1.445	.655	.035	.499	.82	1.220	.500
3/8-16	AEHS-616-150	.027 - .150	.685	.655	.035	.499	.530	1.445	.655	.035	.499	.83	1.235	.500
3/8-16	AEHS-616-312	.150 - .312	.845	.655	.035	.499	.515	1.445	.655	.035	.499	.83	1.220	.500

All dimensions are in millimeters.

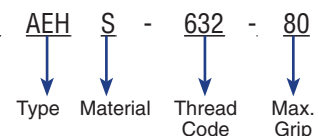
Thread Size x Pitch ⁽¹⁾	Part Number	Grip Range ⁽¹⁾	Open					Closed						Hex Hole Size In Sheet +0.15
			A ±0.38	B ±0.38	C Nom.	D Max.	M Ref.	A ±0.38	B ±0.38	C Nom.	D Max.	K Min.	M Ref.	
M4 x 0.7	AEHS-470-2.0	0.5 - 2	9.78	9.53	0.68	6.35	7.49	18.8	9.53	0.68	6.35	11.6	16.26	6.35
M4 x 0.7	AEHS-470-3.3	2 - 3.3	11.05	9.53	0.68	6.35	7.49	18.8	9.53	0.68	6.35	11.6	14.73	6.35
M5 x 0.8	AEHS-580-3.3	0.5 - 3.3	11.05	9.91	0.68	7.1	6.99	26.16	9.91	0.68	7.1	15.6	21.46	7.14
M5 x 0.8	AEHS-580-5.7	3.3 - 5.7	13.59	9.91	0.68	7.1	6.99	26.16	9.91	0.68	7.1	15.6	18.67	7.14
M6 x 1	AEHS-610-4.2	0.7 - 4.2	14.86	12.96	0.76	9.5	10.16	30.23	12.96	0.76	9.5	17.5	25.78	9.53
M6 x 1	AEHS-610-6.6	4.2 - 6.6	17.4	12.96	0.76	9.5	10.16	30.23	12.96	0.76	9.5	17.5	23.24	9.53
M8 x 1.25	AEHS-8125-3.8	0.7 - 3.8	17.4	16.64	0.89	12.7	13.46	36.7	16.64	0.89	12.7	20.2	31.37	12.7
M8 x 1.25	AEHS-8125-7.9	3.8 - 7.9	21.46	16.64	0.89	12.7	13.08	36.7	16.64	0.89	12.7	20.2	30.99	12.7
M10 x 1.5	AEHS-1015-3.8	0.7 - 3.8	17.4	16.64	0.89	12.7	13.46	36.7	16.64	0.89	12.7	20.8	31.37	12.7
M10 x 1.5	AEHS-1015-7.9	3.8 - 7.9	21.46	16.64	0.89	12.7	13.08	36.7	16.64	0.89	12.7	20.8	30.99	12.7

(1) Additional thread sizes and grip ranges available.

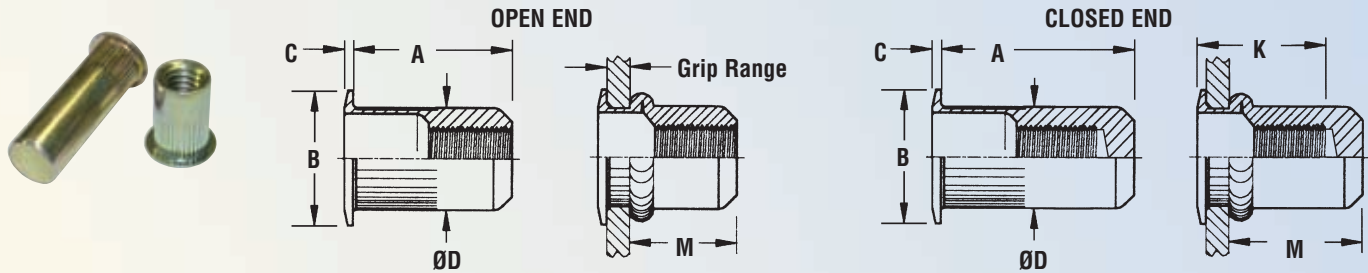
MATERIAL & FINISH SPECIFICATIONS

Type	Material	Standard Finish
AEH	Steel, C-1008 or C-1010, or Equivalent	Zinc Plate per ASTM B 633, Fe/Zn 8, Type II

Part Number Designation



SpinTite - LOW-PROFILE HEAD-TYPE AEL



All dimensions are in inches.

Thread Size (1)	Part Number (2)	Grip Range (1)	Open					Closed					Hole Size In Sheet +.006 -.000	
			A ±.015	B ±.015	C Nom.	ØD Max.	M Ref.	A ±.015	B ±.015	C Nom.	ØD Max.	K Min.		M Max.
#6-32	AELS-632-80	.020 - .080	.420	.390	.030	.265	.305	.740	.390	.030	.265	.43	.640	.266
#6-32	AELS-632-130	.080 - .130	.470	.390	.030	.265	.305	.740	.390	.030	.265	.43	.580	.266
#8-32	AELS-832-80	.020 - .080	.420	.390	.030	.265	.305	.740	.390	.030	.265	.43	.640	.266
#8-32	AELS-832-130	.080 - .130	.470	.390	.030	.265	.305	.740	.390	.030	.265	.43	.580	.266
#10-32	AELS-1032-130	.020 - .130	.475	.415	.030	.296	.315	.990	.415	.030	.296	.58	.845	.297
#10-32	AELS-1032-225	.130 - .225	.585	.415	.030	.296	.315	.990	.415	.030	.296	.58	.735	.297
1/4-20	AELS-420-165	.027 - .165	.580	.500	.030	.390	.380	1.190	.500	.030	.390	.70	1.005	.391
1/4-20	AELS-420-260	.165 - .260	.680	.500	.030	.390	.380	1.190	.500	.030	.390	.70	.905	.391
5/16-18	AELS-518-150	.027 - .150	.690	.685	.035	.530	.470	1.390	.685	.035	.530	.82	1.175	.531
5/16-18	AELS-518-312	.150 - .312	.805	.685	.035	.530	.425	1.390	.685	.035	.530	.82	1.025	.531
3/8-16	AELS-616-150	.027 - .150	.690	.685	.035	.530	.470	1.390	.685	.035	.530	.83	1.175	.531
3/8-16	AELS-616-312	.150 - .312	.805	.685	.035	.530	.425	1.390	.685	.035	.530	.83	1.025	.531
1/2-13	AELS-813-200	.063 - .200	1.150	.865	.047	.685	.850	—	—	—	—	—	—	.688
1/2-13	AELS-813-350	.200 - .350	1.300	.865	.047	.685	.850	—	—	—	—	—	—	.688
1/2-13	AELS-813-500	.350 - .500	1.450	.865	.047	.685	.850	—	—	—	—	—	—	.688

All dimensions are in millimeters.

Thread Size x Pitch ⁽¹⁾	Part Number ⁽²⁾	Grip Range ⁽¹⁾	Open					Closed					Hole Size In Sheet +0.15	
			A ±0.38	B ±0.38	C Nom.	ØD Max.	M Ref.	A ±0.38	B ±0.38	C Nom.	ØD Max.	K Min.		M Max.
M4 x 0.7	AELS-470-2.0	0.5 - 2	10.67	9.91	0.76	6.73	7.75	18.8	9.91	0.76	6.73	11.6	16.26	6.75
M4 x 0.7	AELS-470-3.3	2 - 3.3	11.94	9.91	0.76	6.73	7.75	18.8	9.91	0.76	6.73	11.6	14.73	6.75
M5 x 0.8	AELS-580-3.3	0.5 - 3.3	12.07	10.54	0.76	7.52	8	25.15	10.54	0.76	7.52	15.6	21.46	7.6
M5 x 0.8	AELS-580-5.7	3.3 - 5.7	14.86	10.54	0.76	7.52	8	25.15	10.54	0.76	7.52	15.6	18.67	7.6
M6 x 1	AELS-610-4.2	0.7 - 4.2	14.73	12.7	0.76	9.91	9.65	30.23	12.7	0.76	9.91	17.5	25.53	10
M6 x 1	AELS-610-6.6	4.2 - 6.6	17.27	12.7	0.76	9.91	9.65	30.23	12.7	0.76	9.91	17.5	22.99	10
M8 x 1.25	AELS-8125-3.8	0.7 - 3.8	17.53	17.4	0.89	13.46	11.94	35.31	17.4	0.89	13.46	20.2	29.85	13.5
M8 x 1.25	AELS-8125-7.9	3.8 - 7.9	20.45	17.4	0.89	13.46	10.8	35.31	17.4	0.89	13.46	20.2	26.04	13.5
M10 x 1.5	AELS-1015-3.8	0.7 - 3.8	17.53	17.4	0.89	13.46	11.94	35.31	17.4	0.89	13.46	20.8	29.85	13.5
M10 x 1.5	AELS-1015-7.9	3.8 - 7.9	20.45	17.4	0.89	13.46	10.8	35.31	17.4	0.89	13.46	20.8	26.04	13.5

(1) Additional thread sizes and grip ranges available.

(2) For closed end, add a "B" to the end of the part number.

Also available . . .

Wedge Head
Wedges under the head provide greater torque, especially in soft or thin materials.



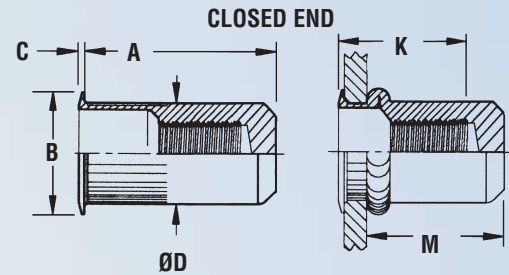
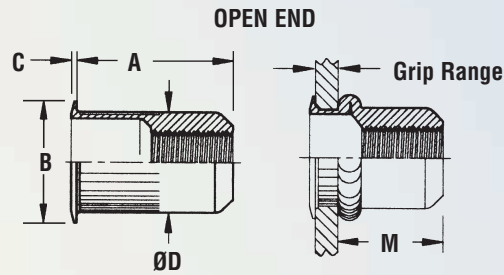
Sealed Head
A PVC foam seal is bonded to the underside of the head to provide a weathertight seal.



Part Number Designation

AEL S - 632 - 80 B
 ↓ ↓ ↓ ↓ ↓
 Type Material Thread Code Max. Grip Closed End Designation

SpinTite – MINIMIZED-PROFILE HEAD-TYPE AEK



All dimensions are in inches.

Thread Size (1)	Part Number (2)	Grip Range (1)	Open					Closed					Hole Size In Sheet +.006 -.000	
			A ±.015	B ±.015	C Nom.	ØD Max.	M Ref.	A ±.015	B ±.015	C Nom.	ØD Max.	K Min.		M Max.
#6-32	AEKS-632-80	.020 - .080	.420	.310	.019	.265	.305	.740	.310	.019	.265	.43	.640	.266
#6-32	AEKS-632-130	.080 - .130	.470	.310	.019	.265	.305	.740	.310	.019	.265	.43	.580	.266
#8-32	AEKS-832-80	.020 - .080	.420	.310	.019	.265	.305	.740	.310	.019	.265	.43	.640	.266
#8-32	AEKS-832-130	.080 - .130	.470	.310	.019	.265	.305	.740	.310	.019	.265	.43	.580	.266
#10-32	AEKS-1032-130	.020 - .130	.475	.340	.019	.296	.315	.990	.340	.019	.296	.58	.845	.297
#10-32	AEKS-1032-225	.130 - .225	.585	.340	.019	.296	.315	.990	.340	.019	.296	.58	.735	.297
1/4-20	AEKS-420-165	.027 - .165	.580	.455	.022	.390	.380	1.190	.455	.022	.390	.70	1.005	.391
1/4-20	AEKS-420-260	.165 - .260	.680	.455	.022	.390	.380	1.190	.455	.022	.390	.70	.905	.391
5/16-18	AEKS-518-150	.027 - .150	.690	.595	.022	.530	.470	1.390	.595	.022	.530	.82	1.175	.531
5/16-18	AEKS-518-312	.150 - .312	.805	.595	.022	.530	.425	1.390	.595	.022	.530	.82	1.025	.531
3/8-16	AEKS-616-150	.027 - .150	.690	.595	.022	.530	.470	1.390	.595	.022	.530	.83	1.175	.531
3/8-16	AEKS-616-312	.150 - .312	.805	.595	.022	.530	.425	1.390	.595	.022	.530	.83	1.025	.531

All dimensions are in millimeters.

Thread Size x Pitch ⁽¹⁾	Part Number ⁽²⁾	Grip Range ⁽¹⁾	Open					Closed					Hole Size In Sheet +0.15	
			A ±0.38	B ±0.38	C Nom.	ØD Max.	M Ref.	A ±0.38	B ±0.38	C Nom.	ØD Max.	K Min.		M Max.
M4 x 0.7	AEKS-470-2.0	0.5 - 2	10.67	7.87	0.48	6.73	7.75	18.8	7.78	0.48	6.73	11.6	16.26	6.75
M4 x 0.7	AEKS-470-3.3	2 - 3.3	11.94	7.87	0.48	6.73	7.75	18.8	7.87	0.48	6.73	11.6	14.73	6.75
M5 x 0.8	AEKS-580-3.3	0.5 - 3.3	12.07	8.64	0.48	7.52	8	25.15	8.64	0.48	7.52	15.6	21.46	7.6
M5 x 0.8	AEKS-580-5.7	3.3 - 5.7	14.86	8.64	0.48	7.52	8	25.15	8.64	0.48	7.52	15.6	18.67	7.6
M6 x 1	AEKS-610-4.2	0.7 - 4.2	14.73	11.56	0.55	9.91	9.65	30.23	11.56	0.55	9.91	17.5	25.53	10
M6 x 1	AEKS-610-6.6	4.2 - 6.6	17.27	11.56	0.55	9.91	9.65	30.23	11.56	0.55	9.91	17.5	22.99	10
M8 x 1.25	AEKS-8125-3.8	0.7 - 3.8	17.53	15.11	0.55	13.46	11.94	35.31	15.11	0.55	13.46	20.2	29.85	13.5
M8 x 1.25	AEKS-8125-7.9	3.8 - 7.9	20.45	15.11	0.55	13.46	10.8	35.31	15.11	0.55	13.46	20.2	26.04	13.5
M10 x 1.5	AEKS-1015-3.8	0.7 - 3.8	17.53	15.11	0.55	13.46	11.94	35.31	15.11	0.55	13.46	20.8	29.85	13.5
M10 x 1.5	AEKS-1015-7.9	3.8 - 7.9	20.45	15.11	0.55	13.46	10.8	35.31	15.11	0.55	13.46	20.8	26.04	13.5

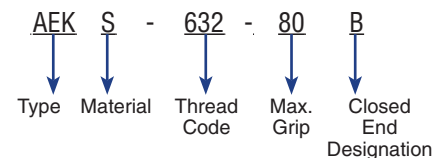
(1) Additional thread sizes and grip ranges available.

(2) For closed end, add a "B" to the end of the part number.

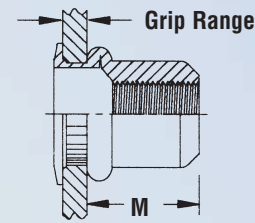
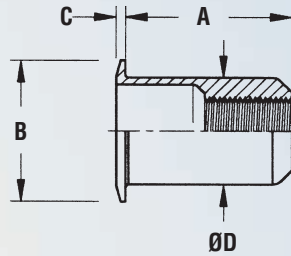
MATERIAL & FINISH SPECIFICATIONS

Type	Material	Standard Finish
AEL / AEK	Steel, C-1008 or C-1010, or Equivalent	Zinc Plate per ASTM B 633, Fe/Zn 8, Type II

Part Number Designation



SpinTite – THIN-WALL LOW-PROFILE HEAD-TYPE AEO



All dimensions are in inches.

Thread Size ⁽¹⁾	Part Number	Grip Range ⁽¹⁾	A ±.015	B ±.015	C Nom.	ØD max.	M Ref.	Hole Size In Sheet +.006 -.000
#6-32	AEOS-632-80	.020 - .080	.385	.295	.018	.249	.315	.250
#8-32	AEOS-832-80	.020 - .080	.385	.295	.018	.249	.315	.250
#10-24	AEOS-1024-130	.020 - .130	.440	.320	.020	.280	.330	.281
#10-32	AEOS-1032-130	.020 - .130	.440	.320	.020	.280	.330	.281
1/4-20	AEOS-420-165	.030 - .165	.580	.425	.022	.374	.440	.375
1/4-28	AEOS-428-165	.030 - .165	.580	.425	.022	.374	.440	.375
5/16-18	AEOS-518-200	.040 - .200	.690	.560	.022	.499	.540	.500
5/16-24	AEOS-524-200	.040 - .200	.690	.560	.022	.499	.540	.500
3/8-16	AEOS-616-200	.040 - .200	.690	.560	.022	.499	.540	.500
3/8-24	AEOS-624-200	.040 - .200	.690	.560	.022	.499	.540	.500

All dimensions are in millimeters.

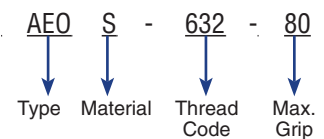
Thread Size x Pitch ⁽¹⁾	Part Number	Grip Range ⁽¹⁾	A ±0.38	B ±0.25	C Nom.	ØD max.	M Ref.	Hole Size In Sheet +0.15
M4 x 0.7	AEOS-470-2.0	0.5 - 2	9.78	7.49	0.46	6.32	8	6.4
M5 x 0.8	AEOS-580-3.3	0.5 - 3.3	11.18	8.13	0.51	7.11	8.38	7.2
M6 x 1	AEOS-610-4.2	0.76 - 4.2	14.73	10.8	0.56	9.5	11.18	9.6
M8 x 1.25	AEOS-8125-5.1	1.02 - 5.1	17.53	14.22	0.56	12.67	13.72	12.7
M10 x 1.5	AEOS-1015-5.1	1.02 - 5.1	17.53	14.22	0.56	12.67	13.72	12.7

(1) Additional thread sizes and grip ranges available.

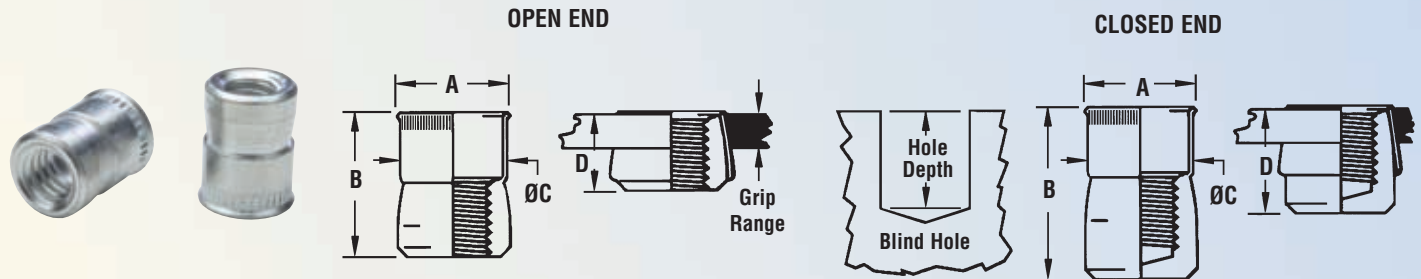
MATERIAL & FINISH SPECIFICATIONS

Type	Material	Standard Finish
AEO	Steel, C-1008 or C-1010, or Equivalent	Zinc Plate per ASTM B 633, Fe/Zn 8, Type I

Part Number Designation



SpinTite - 360° SWAGING LOW-PROFILE HEAD-TYPE AET



Thread Size ⁽¹⁾	Type			Thread Code	Installation Hole Size				Open				Closed				Blind Hole Depth Min.
	Steel	Stain-less	Alum-inum		Grip Range ⁽¹⁾				A ±.005	B ±.015	ØC Max.	D Max.	A ±.005	B ±.015	ØC Max.	D Max.	
					.030 - .090	.091 - .124	.125 - .186	.187 - OVER									
#4-40	AETS	AETC	AETA	440	.188	.194	.194	.196	.211	.370	.1875	.205	.211	.660	.1875	.495	.400
#6-32	AETS	AETC	AETA	632	.219	.221	.228	.228	.240	.370	.2185	.205	.240	.675	.2185	.505	.400
#8-32	AETS	AETC	AETA	832	.250	.257	.266	.266	.269	.370	.2495	.205	.269	.675	.2495	.505	.400
#10-24	AETS	AETC	AETA	024	.281	.290	.290	.297	.306	.370	.2805	.205	.306	.685	.2805	.520	.400
#10-32	AETS	AETC	AETA	032	.281	.290	.290	.297	.306	.370	.2805	.205	.306	.685	.2805	.520	.400
1/4-20	AETS	AETC	AETA	420	.375	.375	.386	.391	.400	.515	.3745	.275	.400	1.005	.3745	.760	.540
5/16-18	AETS	AETC	AETA	518	.500	.500	.516	.516	.528	.615	.4995	.325	.528	1.065	.4995	.770	.640
3/8-16	AETS	AETC	AETA	616	.563	.563	.578	.578	.588	.745	.5615	.390	.588	1.450	.5615	1.095	.770
1/2-13	AETS	AETC	AETA	813	.750	.766	.781	.790	.800	.935	.7485	.485	.800	NA	.7485	NA	.960

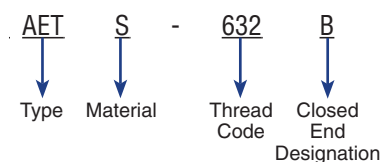
Thread Size x Pitch ⁽¹⁾	Type			Thread Code	Installation Hole Size				Open				Closed				Blind Hole Depth Min.
	Steel	Stain-less	Alum-inum		Grip Range ⁽¹⁾				A ±0.13	B ±0.38	ØC Max.	D Max.	A ±0.13	B ±0.38	ØC Max.	D Max.	
					1.52 - 2.3	2.31 - 3.15	3.16 - 4.75	4.76 - OVER									
M3x0.5	AETS	AETC	AETA	350	4.75	4.9	4.9	4.97	5.36	9.4	4.76	5.21	5.36	16.77	4.76	12.57	10.16
M4x0.7	AETS	AETC	AETA	470	6.35	6.5	6.74	6.74	6.83	9.4	6.34	5.21	6.83	17.15	6.34	12.83	10.16
M5x0.8	AETS	AETC	AETA	580	7.14	7.37	7.4	7.54	7.77	9.4	7.12	5.21	7.77	17.4	7.12	13.21	10.16
M6x1	AETS	AETC	AETA	610	9.52	9.52	9.8	9.92	10.16	13.08	9.51	6.99	10.16	25.53	9.51	19.3	13.72
M8x1.25	AETS	AETC	AETA	8125	12.7	12.7	13.09	13.09	13.41	15.62	12.69	8.26	13.41	27.05	12.69	19.56	16.26
M10x1.5	AETS	AETC	AETA	1015	14.28	14.28	14.68	14.68	14.94	18.92	14.26	9.91	14.94	36.83	14.26	27.81	19.56
M12x1.75	AETS	AETC	AETA	12175	19.05	19.44	19.84	20.05	20.32	23.75	19.01	12.32	20.32	NA	19.01	NA	24.38

(1) Additional thread sizes and grip ranges available.

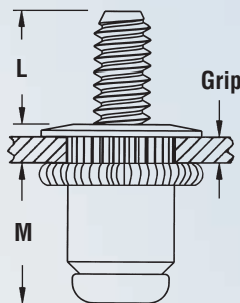
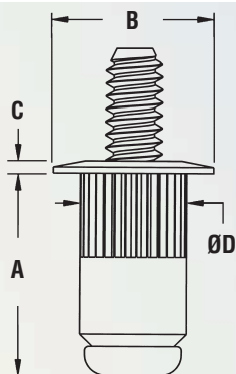
MATERIAL & FINISH SPECIFICATIONS

Type	Material	Standard Finish
AETS	12L14 Steel or equivalent	Cadmium Plate per SAE AMS-QQ-P-416, Class III, Type I
AETC	300 Series Stainless Steel	Cadmium Plate per SAE AMS-QQ-P-416, Class III, Type I
AETA	5056 Aluminum or equivalent	Cadmium Plate per SAE AMS-QQ-P-416, Class III, Type I

Part Number Designation



SpinTite - BLIND THREADED STUDS-TYPE AES-UNIFIED



NOTE: The "L" dimension is the height of the installed stud at max grip. The height of the stud will increase if it is installed into thinner material. To calculate "actual L" use this formula:
max grip - actual grip + L = "actual L"

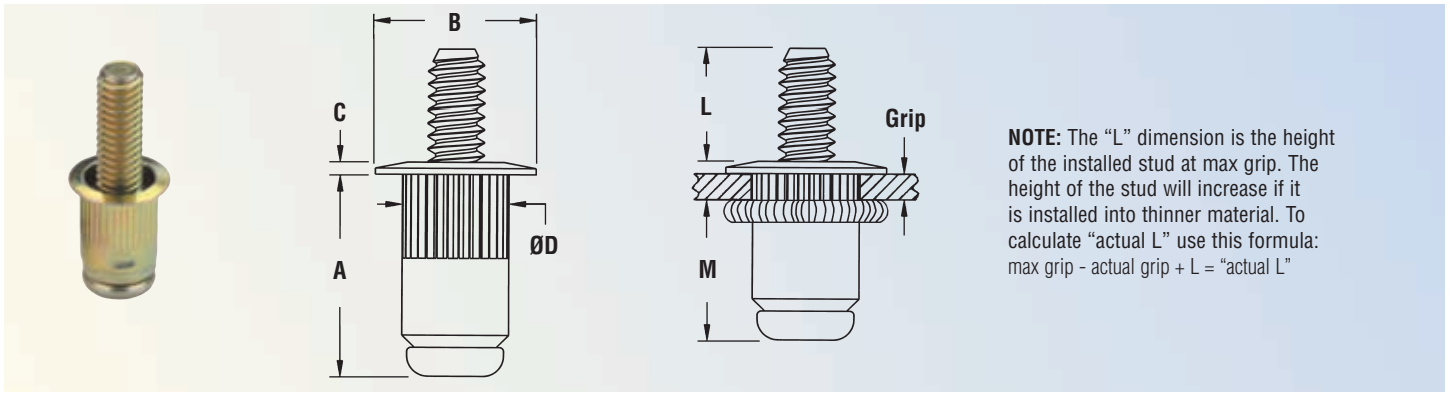
All dimensions are in inches.

Thread Size	Grip Code	Grip Range	Stud Length “L” Nom. (at Max. Grip)			A ±.020	B ±.015	C Nom.	ØD Max.	M Ref.	Hole Size In Sheet +.006 -.000
			Part Number								
#6-32	80	.020 - .080	.500	.625	.750	.490	.390	.030	.265	.375	.266
			AESS-632-80-500	AESS-632-80-625	AESS-632-80-750						
#6-32	130	.080 - .130	.450	.575	.700	.540	.390	.030	.265	.375	.266
			AESS-632-130-450	AESS-632-130-575	AESS-632-130-700						
#8-32	80	.020 - .080	.500	.625	.750	.490	.390	.030	.265	.375	.266
			AESS-832-80-500	AESS-832-80-625	AESS-832-80-750						
#8-32	130	.080 - .130	.450	.575	.700	.540	.390	.030	.265	.375	.266
			AESS-832-130-450	AESS-832-130-575	AESS-832-130-700						
#10-24	130	.020 - .130	.500	.625	.750	.545	.415	.030	.296	.385	.297
			AESS-1024-130-500	AESS-1024-130-625	AESS-1024-130-750						
#10-24	225	.130 - .225	.405	.530	.655	.655	.415	.030	.296	.385	.297
			AESS-1024-225-405	AESS-1024-225-530	AESS-1024-225-655						
#10-32	130	.020 - .130	.500	.625	.750	.545	.415	.030	.296	.385	.297
			AESS-1032-130-500	AESS-1032-130-625	AESS-1032-130-750						
#10-32	225	.130 - .225	.405	.530	.655	.655	.415	.030	.296	.385	.297
			AESS-1032-225-405	AESS-1032-225-530	AESS-1032-225-655						
1/4-20	165	.027 - .165	.625	.8125	1.000	.670	.500	.030	.390	.470	.391
			AESS-420-165-625	AESS-420-165-8125	AESS-420-165-1000						
1/4-20	260	.165 - .260	.530	.7175	.905	.770	.500	.030	.390	.470	.391
			AESS-420-260-530	AESS-420-260-7175	AESS-420-260-905						
5/16-18	150	.027 - .150	.625	.875	1.125	.805	.685	.035	.530	.585	.531
			AESS-518-150-625	AESS-518-150-875	AESS-518-150-1125						
5/16-18	312	.150 - .312	.508	.713	.963	.920	.685	.035	.530	.540	.531
			AESS-518-312-463	AESS-518-312-713	AESS-518-312-963						
3/8-16	150	.027 - .150	.750	1.000	1.250	.805	.685	.035	.530	.585	.531
			AESS-616-150-750	AESS-616-150-1000	AESS-616-150-1250						
3/8-16	312	.150 - .312	.508	.838	1.088	.920	.685	.035	.530	.540	.531
			AESS-616-312-588	AESS-616-312-838	AESS-616-312-1088						

Part Number Designation

AES S - 1015 - 3.8 - 20
 ↓ ↓ ↓ ↓ ↓
 Type Material Thread Size Max. Grip Stud Length

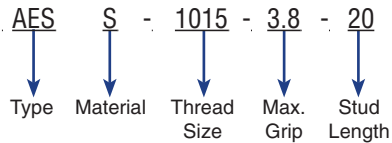
SpinTite - BLIND THREADED STUDS-TYPE AES-METRIC



All dimensions are in millimeters.

Thread Size x Pitch	Grip Code	Grip Range	Stud Length “L” Nom. (at Max. Grip)			A ±0.51	B ±0.38	C Nom.	ØD Max.	M Ref.	Hole Size In Sheet +0.15
			Part Number								
M4 x 0.7	2.0	0.5 - 2.0	12	15	20	12.45	9.91	0.76	6.73	9.53	6.75
			AESS-470-2.0-12.0	AESS-470-2.0-15.0	AESS-470-2.0-20.0						
M4 x 0.7	3.3	2.0- 3.3	10.7	13.7	18.7	13.72	9.91	0.76	6.73	9.53	6.75
			AESS-470-3.3-10.7	AESS-470-3.3-13.7	AESS-470-3.3-18.7						
M5 x 0.8	3.3	0.5 - 3.3	12	15	20	13.85	10.54	0.76	7.52	9.78	7.6
			AESS-580-3.3-12.0	AESS-580-3.3-15.0	AESS-580-3.3-20.0						
M5 x 0.8	5.7	3.3 - 5.7	9.6	12.6	17.6	16.64	10.54	0.76	7.52	9.78	7.6
			AESS-580-5.7-9.6	AESS-580-5.7-12.6	AESS-580-5.7-17.6						
M6 x 1	4.2	0.7 - 4.2	15	20	25	17.02	12.7	0.76	9.91	11.94	10
			AESS-610-4.2-15.0	AESS-610-4.2-20.0	AESS-610-4.2-25.0						
M6 x 1	6.6	4.2 - 6.6	12.6	17.6	22.6	19.56	12.7	0.76	9.91	11.94	10
			AESS-610-6.6-12.6	AESS-610-6.6-17.6	AESS-610-6.6-22.6						
M8 x 1.25	3.8	0.7 - 3.8	16	22	28	20.45	17.4	0.89	13.46	14.86	13.5
			AESS-8125-3.8-16.0	AESS-8125-3.8-22.0	AESS-8125-3.8-28.0						
M8 x 1.25	7.9	3.8 - 7.9	13	17.9	23.9	23.37	17.4	0.89	13.46	13.72	13.5
			AESS-8125-7.9-11.9	AESS-8125-7.9-17.9	AESS-8125-7.9-23.9						
M10 x 1.5	3.8	0.7 - 3.8	20	25	30	20.45	17.4	0.89	13.46	14.86	13.5
			AESS-1015-3.8-20.0	AESS-1015-3.8-25.0	AESS-1015-3.8-30.0						
M10 x 1.5	7.9	3.8 - 7.9	17	20.9	25.9	23.37	17.4	0.89	13.46	13.72	13.5
			AESS-1015-7.9-5.9	AESS-1015-7.9-20.9	AESS-1015-7.9-25.9						

Part Number Designation



MATERIAL & FINISH SPECIFICATIONS

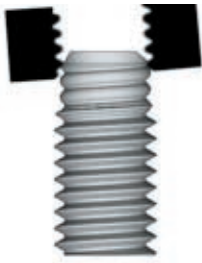
Threads	Material	Standard Finish
Unified 2A/21 Per ASME B1.1 Metric 6g/21 Per ASME B1.13M	Insert - Steel, C-1008 or C-1010, or Equivalent Stud - Heat-treated medium carbon steel	Zinc Yellow Plate per ASTM B 633, Fe/Zn 8, Type II

ATLAS TYPE AES STUDS AVAILABLE WITH OPTIONAL ANTI CROSS-THREADING FEATURE

PennEngineering Fastening Technologies is a licensee for MATHread® anti cross-threading technology. Originally developed for the demands of the automotive industry, this patented design helps speed assembly and eliminates failures, repairs, scrap, downtime, and warranty service associated with thread damage.

- Eases assembly!
- Aligns components!
- Slides through clogged internal threads!
- Improves assembly line productivity!

HOW IT WORKS



Misaligned Axis:

This design offers users the benefits of self-aligning, anti cross-threading threads.



Threads Cam:

As the threads come into contact, the patented anti cross-thread begins to cam over the female thread.



Threads Drive Normally:

The design promotes alignment of the thread helixes. The fasteners drive easily with reduced effort.

MATHread is a trademark of MATHread, Inc.

SpinTite INSTALLATION USING ATLAS SERIES 800 TOOL

With the tool disconnected from the air source, check to see that the socket head cap screw extends beyond the face of the anvil far enough to allow at least one thread of the screw to extend beyond the end of the insert. If the screw is not long enough, measure what is required and obtain a socket head cap screw that is long enough.

If you set up a first grip fastener and you are going to install second grip inserts in the same work area, obtain a screw that is long enough to extend at least one thread beyond the end of the longest fastener.

Figure 1



Figure 2

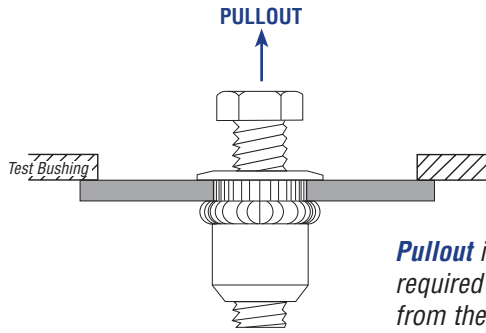


Now, connect the air line to the tool. Hold the threaded insert to the tool mandrel. Actuate position “F” of the trigger (top rocker) and start engagement of the insert threads on the mandrel (Fig. 1).

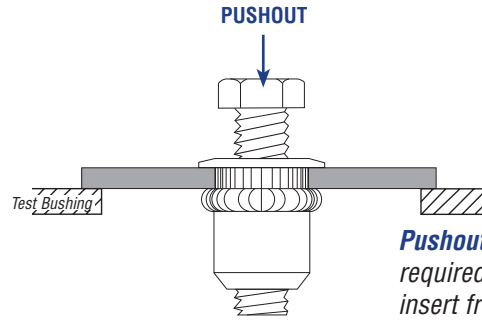
Insert the fastener into the installation hole of a test plate, that is the same material and thickness as the actual application (Fig. 2). Actuate position “F” of the trigger and let the mandrel drive through the fastener and clinch it securely into the test plate and allow the air tool to stall. Actuate position “R” of the trigger (the bottom rocker) to disengage the mandrel from the installed fastener

SpinTite TYPES AEH, AEL, AEK, AEO, AND AET

PERFORMANCE DATA ⁽⁵⁾



Pullout is the force required to pull the insert from the sheet. ⁽¹⁾



Pushout is the force required to push the insert from the sheet. ⁽³⁾

Thread Size	Max. Grip	Test Sheet	Near Minimum Grip				Near Maximum Grip				
			Thickness (in.)	Sheet Hardness	Pullout (lbs.) (1)	Spinout (in. lbs.) (2)	Thickness (in.)	Sheet Hardness	Pullout (lbs.) (1)	Pushout (lbs.) (3) (4)	
6-32 & 8-32	.080	Aluminum	.032	HRB 48	339	—	.060	HRB 67	897	—	—
		Cold-rolled Steel	.030	HRB 37	339	19	.071	HRB 43	969	689	390
	.130	Aluminum	.090	HRB 66	1515	—	.123	HRB 63	1684	—	—
		Cold-rolled Steel	.087	HRB 75	1514	18	.115	HRB 52	1869	689	390
10-32 & 10-24	.130	Aluminum	.030	HRB 28	342	—	.125	HRB 57	2284	—	—
		Cold-rolled Steel	.029	HRB 47	469	24	.128	HRB 49	2429	940	408
	.225	Aluminum	.136	HRB 20	2464	—	.185	HRB 57	2220	—	—
		Cold-rolled Steel	.165	HRB 56	2530	24	.187	HRB 77	2442	940	408
1/4-20 & 1/4-28	.165	Aluminum	.032	HRB 48	561	—	.125	HRB 57	2441	—	—
		Cold-rolled Steel	.030	HRB 43	581	80	.165	HRB 56	3448	744	615
	.260	Aluminum	.185	HRB 58	2798	—	.250	HRB 60	3796	—	—
		Cold-rolled Steel	.165	HRB 56	3028	64	.247	HRB 96	3370	744	615
5/16-18, 5/16-24, & 3/8-16	.150	Aluminum	.032	HRB 48	668	—	.125	HRB 57	3602	—	—
		Cold-rolled Steel	.030	HRB 43	687	100	.115	HRB 52	3478	1505	901
	.312	Aluminum	.185	HRB 60	5152	—	.312	HRB 52	6451	—	—
		Cold-rolled Steel	.165	HRB 60	4934	59	.312	HRB 90	5975	1505	901

Thread Size	Max. Grip	Test Sheet	Near Minimum Grip				Near Maximum Grip				
			Thickness (mm)	Sheet Hardness	Pullout (kN) (1)	Spinout (N•m) (2)	Thickness (N•m)	Sheet Hardness	Pullout (kN) (1)	Pushout (kN) (3) (4)	
M4	2.0	Aluminum	0.8	HRB 48	1.5	—	1.5	HRB 67	4	—	—
		Cold-rolled Steel	0.8	HRB 37	1.5	2.1	1.8	HRB 43	4.3	3.1	1.7
	3.3	Aluminum	2.3	HRB 66	6.7	—	3.1	HRB 63	7.5	—	—
		Cold-rolled Steel	2.2	HRB 75	6.7	2	2.9	HRB 52	8.3	3.1	1.7
M5	3.3	Aluminum	0.8	HRB 28	1.5	—	3.1	HRB 57	10.2	—	—
		Cold-rolled Steel	0.7	HRB 47	2.1	2.7	3.3	HRB 49	10.8	4.2	1.8
	5.7	Aluminum	3.5	HRB 20	11	—	4.7	HRB 57	9.9	—	—
		Cold-rolled Steel	4.2	HRB 56	11.3	4.1	4.7	HRB 77	10.9	4.2	1.8
M6	4.2	Aluminum	0.8	HRB 48	2.5	—	3.2	HRB 57	10.9	—	—
		Cold-rolled Steel	0.8	HRB 43	2.6	9	4.2	HRB 56	15.3	3.3	2.7
	6.6	Aluminum	4.7	HRB 58	12.4	—	6.4	HRB 60	16.9	—	—
		Cold-rolled Steel	4.2	HRB 56	13.5	7.2	6.3	HRB 96	15	3.3	2.7
M8 & M10	3.8	Aluminum	0.8	HRB 48	3	—	3.2	HRB 57	16	—	—
		Cold-rolled Steel	0.8	HRB 43	3.1	11.3	2.9	HRB 52	15.5	6.7	4
	7.9	Aluminum	4.7	HRB 60	22.9	—	7.9	HRB 52	28.7	—	—
		Cold-rolled Steel	4.2	HRB 60	21.9	6.7	7.9	HRB 90	26.6	6.7	4

(1) For pullout, test sheet is supported with a bushing diameter of three times the ØD Max.

(2) Spinout testing conducted by inserting a screw into shank end of insert and tightening until insert spins in sheet.

(3) For pushout, test sheet is supported with a bushing diameter of three times the ØD Max.

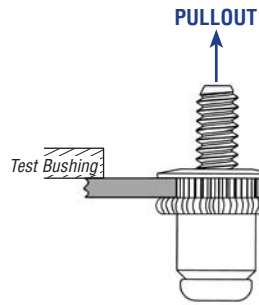
(4) Pushout testing conducted only for near max grip steel sheet. For this condition type AEK has lower pushout than type AEL due to thinner head height.

Pullout and spinout performance is the same for type AEL and AEK.

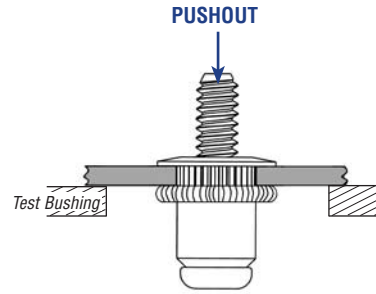
(5) All performance values shown are the average of three or more lots.

SpinTite TYPE AES

PERFORMANCE DATA ⁽³⁾



Pullout is the force required to pull the insert from the sheet. ⁽¹⁾



Pushout is the force required to push the insert through the sheet. ⁽²⁾

Thread Size	Max. Grip	Test Sheet	Near Minimum Grip			Near Maximum Grip			
			Thickness (in.)	Sheet Hardness	Pullout (lbs.) (1)	Thickness (in.)	Sheet Hardness	Pullout (lbs.) (1)	Pushout (lbs.) (2) (3)
6-32 & 8-32	.080	Aluminum	.032	HRB 48	339	.060	HRB 67	897	—
		Cold-rolled Steel	.030	HRB 37	339	.071	HRB 43	969	689
	.130	Aluminum	.090	HRB 66	1515	.123	HRB 63	1684	—
		Cold-rolled Steel	.087	HRB 75	1514	.115	HRB 52	1869	689
10-32 & 10-24	.130	Aluminum	.030	HRB 28	342	.125	HRB 57	2284	—
		Cold-rolled Steel	.029	HRB 47	469	.128	HRB 49	2429	940
	.225	Aluminum	.136	HRB 20	2464	.185	HRB 57	2220	—
		Cold-rolled Steel	.165	HRB 56	2530	.187	HRB 77	2442	940
1/4-20 & 1/4-28	.165	Aluminum	.032	HRB 48	561	.125	HRB 57	2441	—
		Cold-rolled Steel	.030	HRB 43	581	.165	HRB 56	3448	744
	.260	Aluminum	.185	HRB 58	2798	.250	HRB 60	3796	—
		Cold-rolled Steel	.165	HRB 56	3028	.247	HRB 96	3370	744
5/16-18, 5/16-24, & 3/8-16	.150	Aluminum	.032	HRB 48	668	.125	HRB 57	3602	—
		Cold-rolled Steel	.030	HRB 43	687	.115	HRB 52	3478	1505
	.312	Aluminum	.185	HRB 60	5152	.312	HRB 52	6451	—
		Cold-rolled Steel	.165	HRB 60	4934	.312	HRB 90	5975	1505

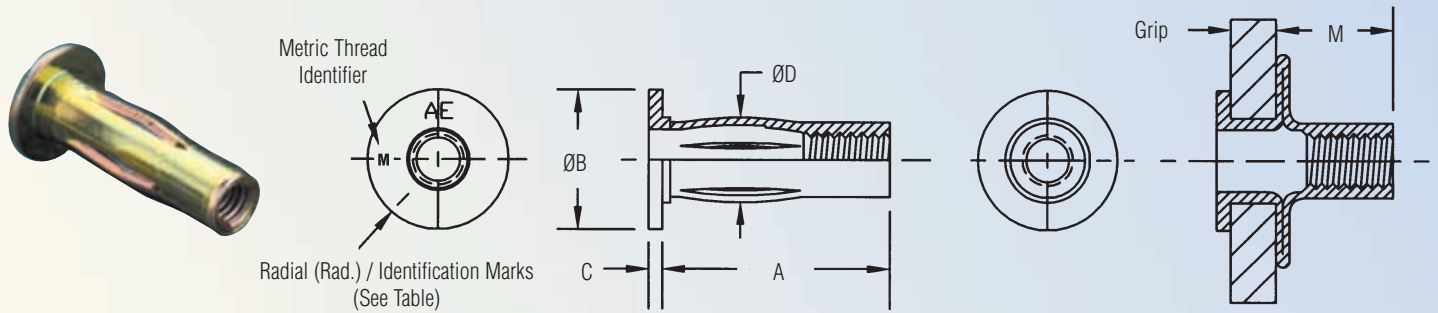
Thread Size	Max. Grip	Test Sheet	Near Minimum Grip			Near Maximum Grip			
			Thickness (mm)	Sheet Hardness	Pullout (kN) (1)	Thickness (N•m)	Sheet Hardness	Pullout (kN) (1)	Pushout (kN) (2) (3)
M4	2.0	Aluminum	0.8	HRB 48	1.5	1.5	HRB 67	4	—
		Cold-rolled Steel	0.8	HRB 37	1.5	1.8	HRB 43	4.3	3.1
	3.3	Aluminum	2.3	HRB 66	6.7	3.1	HRB 63	7.5	—
		Cold-rolled Steel	2.2	HRB 75	6.7	2.9	HRB 52	8.3	3.1
M5	3.3	Aluminum	0.8	HRB 28	1.5	3.1	HRB 57	10.2	—
		Cold-rolled Steel	0.7	HRB 47	2.1	3.3	HRB 49	10.8	4.2
	5.7	Aluminum	3.5	HRB 20	11	4.7	HRB 57	9.9	—
		Cold-rolled Steel	4.2	HRB 56	11.3	4.7	HRB 77	10.9	4.2
M6	4.2	Aluminum	0.8	HRB 48	2.5	3.2	HRB 57	10.9	—
		Cold-rolled Steel	0.8	HRB 43	2.6	4.2	HRB 56	15.3	3.3
	6.6	Aluminum	4.7	HRB 58	12.4	6.4	HRB 60	16.9	—
		Cold-rolled Steel	4.2	HRB 56	13.5	6.3	HRB 96	15	3.3
M8 & M10	3.8	Aluminum	0.8	HRB 48	3	3.2	HRB 57	16	—
		Cold-rolled Steel	0.8	HRB 43	3.1	2.9	HRB 52	15.5	6.7
	7.9	Aluminum	4.7	HRB 60	22.9	7.9	HRB 52	28.7	—
		Cold-rolled Steel	4.2	HRB 60	21.9	7.9	HRB 90	26.6	6.7

(1) For pullout, test sheet is supported with a bushing diameter three times ØD Max.

(2) For pushout, test sheet is supported with a bushing diameter three times ØD Max.

(3) All performance values shown are the average of three or more lots.

Plus+Tite – PRE-BULBED INSERT



All dimensions are in inches.

Thread Size	Part Number	Grip Range	Identification Mark	A ±.015	ØB Nom.	C Nom.	ØD Max.	M Max.	Hole Size In Sheet +.006 -.000
1/4-20	AES25P280PB	.020 - .280	None	1.000	.625	.057	.384	.520	.390
1/4-20	AES25P500PB	.280 - .500	1 Rad.	1.235	.625	.057	.384	.520	.390
5/16-18	AES31P280PB	.020 - .280	None	1.118	.750	.062	.495	.570	.500
5/16-18	AES31P500PB	.280 - .500	1 Rad.	1.348	.750	.062	.495	.570	.500

All dimensions are in millimeters.

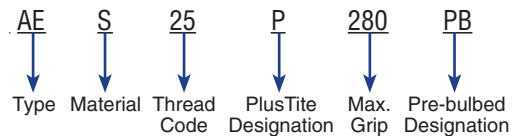
Thread Size x Pitch	Part Number	Grip Range	Identification Mark	A ±0.38	ØB Nom.	C Nom.	ØD Max.	M Max.	Hole Size In Sheet +0.15
M6 x 0.1	AESM6P7.1PB	0.50 - 7.1	None	25.4	15.88	1.45	9.75	13.2	9.91
M6 x 0.1	AESM6P12.7PB	7.1 - 12.7	1 Rad.	31.34	15.88	1.45	9.75	13.2	9.91
M8 x 1.25	AESM8P7.1PB	0.50 - 7.1	None	28.4	19.05	1.57	12.57	14.48	12.7
M8 x 1.25	AESM8P12.7PB	7.1 - 12.7	1 Rad.	34.24	19.05	1.57	12.57	14.48	12.7

NOTE: The Atlas pneumatic tools will install Plus+Tite series inserts. Material hardness will affect the published grip ranges. Trial installations of this product in your application are recommended. We will be happy to provide samples for this purpose.



Installs into single, variable, or multiple thickness materials.

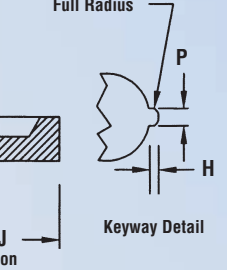
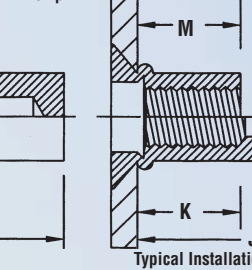
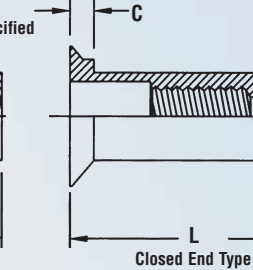
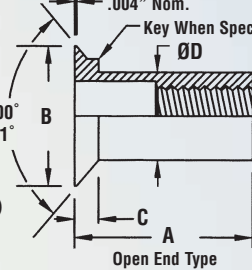
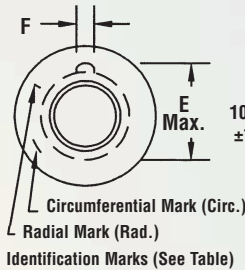
Part Number Designation



MATERIAL & FINISH SPECIFICATIONS

Threads	Material	Standard Finish
Unified 2B/21 Per ASME B1.1 Metric 6H/21 Per ASME B1.13M	Steel, C-1008 or C-1010, or Equivalent	Zinc Yellow Plate per ASTM B 633, Fe/Zn 8, Type II, .0003" thick with clear protective coating

MaxTite® - COUNTERSUNK HEAD-UNIFIED



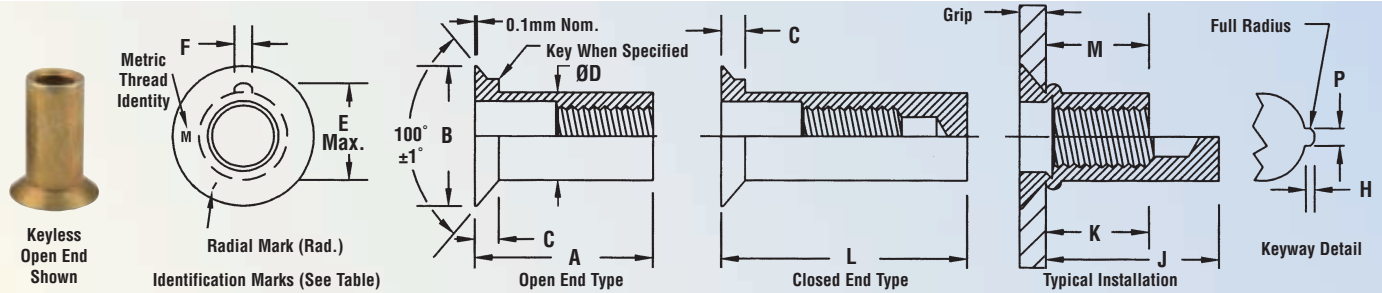
All dimensions are in inches.

See page AE-20 for part number key.

Thread Size*	B Ref.	C Max.	ØD +.000 - .004	E Max.	F +.005 - .000	Install Drill Size (Ref.)	Install Hole Size		Keyway Dimensions		Pull Up Factor
							Min.	Max.	P +.003 - .000	H	
#4-40	.263	.051	.155	.198	.054	5/32	.155	.157	.062	.046 - .048	.055
#6-32	.323	.063	.189	.240	.054	#12	.189	.193	.062	.056 - .058	.065
#8-32	.355	.063	.221	.271	.054	#2	.221	.226	.062	.056 - .058	.065
#10-32	.391	.065	.250	.302	.054	1/4	.250	.256	.062	.056 - .058	.080
1/4-20	.529	.089	.332	.382	.054	Q	.332	.338	.062	.056 - .058	.095
5/16-18	.656	.104	.413	.505	.120	Z	.413	.423	.128	.097 - .102	.120
3/8-16	.770	.124	.490	.597	.120	12.5mm	.490	.500	.128	.110 - .115	.155
1/2-13	.906	.124	.625	.733	.120	5/8	.625	.635	.128	.110 - .115	.185

Thread-Grip Number	Grip Range	Indent. Mark	Open End Keyed and Keyless						Closed End Keyless				Closed End Keyed			
			A ±.015	M Ref.	Wt. (lbs./1000)		L ±.015	J Ref.	K Ref.	Wt. (lbs./1000)		L ±.015	J Ref.	K Ref.	Wt. (lbs./1000)	
					Alum.	Steel				Alum.	Steel				Alum.	Steel
4-81	.050 - .081	Blank	.370	.235	.4	1.3	.525	.390	.235	.6	1.9	.525	.390	.235	.6	1.9
4-106	.081 - .106	1 Rad.	.395	.235	.4	1.3	.550	.390	.235	.6	1.9	.550	.390	.235	.6	1.9
4-131	.106 - .131	2 Rad.	.420	.235	.4	1.4	.575	.390	.235	.7	2.0	.575	.390	.235	.7	2.0
4-156	.131 - .156	3 Rad.	.450	.235	.5	1.4	.600	.390	.235	.7	2.0	.600	.390	.235	.7	2.0
4-181	.156 - .181	4 Rad.	.475	.235	.5	1.5	.625	.390	.235	.7	2.1	.625	.390	.235	.7	2.1
4-206	.181 - .206	5 Rad.	.500	.235	.5	1.5	.650	.390	.235	.7	2.1	.650	.390	.235	.7	2.1
6-106	.065 - .106	Blank	.500	.325	.8	2.5	.687	.510	.325	1.2	3.6	.812	.635	.425	1.4	4.2
6-161	.106 - .161	2 Rad.	.500	.280	.8	2.4	.687	.465	.280	1.2	3.5	.812	.590	.380	1.3	4.1
6-201	.161 - .201	4 Rad.	.562	.295	.9	2.6	.687	.420	.260	1.1	3.4	.812	.545	.335	1.3	4.0
6-241	.201 - .241	1 Circ.	.625	.315	.9	2.9	.812	.505	.295	1.3	4.0	.812	.505	.295	1.3	4.0
6-281	.241 - .281	2 Circ.	.625	.270	.9	2.8	.812	.465	.265	1.3	3.9	.812	.465	.265	1.3	3.9
6-321	.281 - .321	3 Circ.	.687	.290	1.0	3.0	.844	.455	.265	1.3	4.0	.844	.455	.265	1.3	4.0
8-106	.065 - .106	Blank	.500	.325	1.0	3.1	.687	.510	.325	1.5	4.6	.812	.635	.425	1.8	5.4
8-161	.106 - .161	2 Rad.	.500	.280	1.0	3.0	.687	.465	.280	1.5	4.5	.812	.590	.380	1.7	5.3
8-201	.161 - .201	4 Rad.	.562	.290	1.1	3.3	.687	.415	.255	1.4	4.4	.812	.540	.330	1.7	5.2
8-241	.201 - .241	1 Circ.	.625	.310	1.2	3.6	.875	.560	.290	1.8	5.5	.875	.560	.290	1.8	5.5
8-281	.241 - .281	2 Circ.	.687	.325	1.1	3.2	.875	.515	.290	1.8	5.4	.875	.515	.290	1.8	5.4
8-321	.281 - .321	3 Circ.	.687	.295	1.2	3.8	.875	.485	.300	1.7	5.2	.875	.485	.300	1.7	5.2
10-116	.065 - .116	Blank	.578	.395	1.4	4.3	.828	.645	.395	2.2	6.7	.828	.645	.395	2.2	6.7
10-166	.116 - .166	1 Rad.	.625	.385	1.5	4.6	.875	.635	.385	2.3	6.9	.875	.635	.385	2.3	6.9
10-216	.166 - .216	2 Rad.	.687	.400	1.6	4.9	.938	.650	.400	2.4	7.2	.938	.650	.400	2.4	7.2
10-266	.216 - .266	3 Rad.	.734	.390	1.7	5.1	.984	.640	.390	2.5	7.5	.984	.640	.390	2.5	7.5
10-316	.266 - .316	4 Rad.	.781	.385	1.8	5.4	1.031	.635	.385	2.5	7.7	1.031	.635	.385	2.5	7.7
10-366	.316 - .366	5 Rad.	.844	.400	1.9	5.7	1.094	.650	.400	2.6	8.0	1.094	.650	.400	2.6	8.0
25-151	.089 - .151	Blank	.687	.440	3.2	9.8	1.000	.750	.435	5.0	15.1	1.000	.750	.435	5.0	15.1
25-211	.151 - .211	1 Rad.	.750	.440	3.4	10.3	1.062	.750	.435	5.2	15.7	1.062	.750	.435	5.2	15.7
25-271	.211 - .271	2 Rad.	.812	.440	3.6	10.9	1.125	.750	.435	5.4	16.3	1.125	.750	.435	5.4	16.3
25-331	.271 - .331	3 Rad.	.875	.435	3.8	11.5	1.187	.750	.435	5.5	16.9	1.187	.750	.435	5.5	16.9
25-391	.331 - .391	4 Rad.	.937	.435	4.0	12.1	1.250	.750	.435	5.7	17.5	1.250	.750	.435	5.7	17.5
25-451	.391 - .451	5 Rad.	1.000	.445	4.2	12.7	1.312	.760	.445	5.9	18.1	1.312	.760	.445	5.9	18.1
31-181	.106 - .181	Blank	.844	.540	5.9	17.8	1.218	.915	.540	9.0	27.5	1.218	.915	.540	9.0	27.5
31-256	.181 - .256	1 Rad.	.937	.560	6.3	19.3	1.312	.935	.560	9.5	28.9	1.312	.935	.560	9.5	29.0
31-331	.256 - .331	2 Rad.	1.000	.550	6.6	20.1	1.406	.955	.550	10.0	30.4	1.406	.955	.550	10.0	30.5
31-406	.331 - .406	3 Rad.	1.093	.565	7.1	21.5	1.468	.940	.565	10.2	31.1	1.468	.940	.565	10.2	31.2
31-481	.406 - .481	4 Rad.	1.156	.555	7.3	22.3	1.562	.960	.555	10.7	32.6	1.562	.960	.555	10.8	32.7
31-556	.481 - .556	5 Rad.	1.250	.575	7.8	23.7	1.625	.950	.575	10.9	33.3	1.625	.950	.575	11.0	33.4
37-211	.125 - .211	Blank	.938	.580	8.9	27.0	1.375	1.020	.655	13.9	42.3	1.375	1.020	.655	13.9	42.4
37-296	.211 - .296	1 Rad.	1.031	.590	9.4	28.7	1.468	1.030	.655	14.5	44.1	1.468	1.030	.655	14.5	44.1
37-381	.296 - .381	2 Rad.	1.125	.600	10.0	30.5	1.562	1.040	.675	15.0	45.8	1.562	1.040	.675	15.1	45.9
37-466	.381 - .466	3 Rad.	1.219	.615	10.6	32.3	1.656	1.050	.690	15.6	47.6	1.656	1.050	.690	15.7	47.7
37-551	.466 - .551	4 Rad.	1.312	.625	11.2	34.0	1.750	1.065	.705	16.2	49.4	1.750	1.065	.705	16.2	49.5
37-636	.551 - .636	5 Rad.	1.422	.650	11.9	36.2	1.859	1.090	.715	16.9	51.6	1.859	1.090	.715	17.0	51.7
50-226	.125 - .226	Blank	.984	.610	14.0	43.2	1.406	1.030	.610	21.9	66.6	1.406	1.030	.610	21.9	66.6
50-326	.226 - .326	1 Rad.	1.094	.620	15.0	45.7	1.515	1.040	.620	22.9	69.7	1.515	1.040	.620	22.9	69.7
50-426	.326 - .426	2 Rad.	1.218	.640	16.2	49.2	1.625	1.050	.640	23.8	72.6	1.625	1.050	.640	23.8	72.6
50-526	.426 - .526	3 Rad.	1.312	.635	16.9	51.6	1.750	1.075	.635	25.0	76.3	1.750	1.075	.635	25.0	76.3

MaxTite - COUNTERSUNK HEAD-METRIC



All dimensions are in millimeters.

See page AE-20 for part number key.

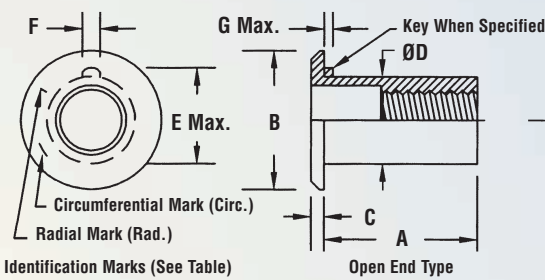
Thread Size x Pitch	B Ref.	C Max.	ØD -0.1	E Max.	F +0.13	Install Drill Size (Ref.)	Install Hole Size		Keyway Dimensions		Pull Up Factor
							Min.	Max.	P +0.08	H	
M3 x 0.5	6.68	1.29	3.93	5.03	1.37	4	3.94	4.01	1.57	1.17 - 1.22	1.4
M4 x 0.7	9.01	1.6	5.61	6.88	1.37	5.6	5.6	5.74	1.57	1.42 - 1.47	1.9
M5 x 0.8	11.17	1.83	7.13	8.73	1.85	7.2	7.2	7.3	2.06	1.7 - 1.75	2.4
M6 x 1	13.43	2.26	8.43	10.33	2.23	8.5	8.5	8.6	2.44	2.06 - 2.13	2.92
M7 x 1	14.92	2.39	9.37	11.27	2.23	9.4	9.4	9.5	2.44	2.06 - 2.13	2.92
M8 x 1.25	16.65	2.64	10.48	12.82	3.05	10.5	10.5	10.75	3.25	2.46 - 2.59	3.18
M10 x 1.5	19.50	3.15	12.44	15.15	3.05	12.5	12.5	12.7	3.25	2.79 - 2.92	3.94
M12 x 1.75	22.79	3.15	15.88	18.2	3.05	15.5	15.5	15.74	3.25	2.79 - 2.92	4.58

Thread-Grip Number	Grip Range	Indent. Mark	Open End Keyed and Keyless				Closed End Keyed and Keyless				
			A ±0.38	M Ref.	Wt. (lbs./1000)		L ±0.38	J Ref.	K Ref.	Wt. (lbs./1000)	
					Alum.	Steel				Alum.	Steel
M3 - 2.1	1.29 - 2.1	Blank	9	5.48	.3	1	13	9.52	5.48	.5	1.6
M3 - 2.86	2.1 - 2.86	1 Rad.	9.75	5.48	.4	1.1	13.75	9.52	5.48	.6	1.7
M3 - 3.6	2.86 - 3.6	2 Rad.	10.5	5.48	.4	1.2	14.5	9.52	5.48	.6	1.8
M3 - 4.36	3.6 - 4.36	3 Rad.	11.25	5.48	.4	1.2	15.25	9.52	5.48	.6	1.8
M3 - 5.1	4.36 - 5.1	4 Rad.	12	5.48	.4	1.2	16	9.52	5.48	.6	1.8
M3 - 5.86	5.1 - 5.86	5 Rad.	12.75	5.48	.4	1.3	16.75	9.52	5.48	.6	1.9
M4 - 3.1	1.6 - 3.1	Blank	12	6.98	1	3	16.5	11.5	6.98	1.5	4.6
M4 - 4.1	3.1 - 4.1	1 Rad.	13	6.98	1	3.2	17.5	11.5	6.98	1.6	4.7
M4 - 5.1	4.1 - 5.1	2 Rad.	14	6.98	1.1	3.4	18.5	11.5	6.98	1.6	4.8
M4 - 6.1	5.1 - 6.1	3 Rad.	15	6.98	1.1	3.5	19.5	11.5	6.98	1.6	5
M4 - 7.1	6.1 - 7.1	4 Rad.	16	6.98	1.2	3.7	20.5	11.5	6.98	1.7	5.2
M4 - 8.1	7.1 - 8.1	5 Rad.	17	6.98	1.2	3.8	21.5	11.5	6.98	1.8	5.3
M5 - 3.6	1.8 - 3.6	Blank	16	9.98	2.1	6.3	22	15.97	9.98	3.1	9.5
M5 - 5.1	3.6 - 5.1	1 Rad.	17.5	9.98	2.2	6.6	23.5	15.97	9.98	3.2	9.8
M5 - 6.6	5.1 - 6.6	2 Rad.	19	9.98	2.3	7	25	15.97	9.98	3.3	10.1
M5 - 8.1	6.6 - 8.1	3 Rad.	20.5	9.98	2.4	7.3	26.5	15.97	9.98	3.4	10.5
M5 - 9.6	8.1 - 9.6	4 Rad.	22	9.98	2.5	7.6	28	15.97	9.98	3.5	10.8
M5 - 11.1	9.6 - 11.1	5 Rad.	23.5	9.98	2.6	8	29.5	15.97	9.98	3.7	11.2
M6 - 4.1	2.25 - 4.1	Blank	18	10.96	3.3	10.1	25	17.97	10.96	5	15.1
M6 - 5.6	4.1 - 5.6	1 Rad.	19.5	10.96	3.5	10.6	26.5	17.97	10.96	5.1	15.6
M6 - 7.1	5.6 - 7.1	2 Rad.	21	10.96	3.6	11.1	28	17.97	10.96	5.3	16
M6 - 8.6	7.1 - 8.6	3 Rad.	22.5	10.96	3.8	11.6	29.5	17.97	10.96	5.4	16.5
M6 - 10.1	8.6 - 10.1	4 Rad.	24	10.96	4	12.2	31	17.97	10.96	5.6	17.1
M6 - 11.6	10.1 - 11.6	5 Rad.	25.5	10.96	4.2	12.7	32.5	17.97	10.96	5.8	17.7
M8 - 5.1	2.69 - 5.1	Blank	20.5	12.23	5.2	15.9	28.5	20.23	12.23	7.9	24.2
M8 - 7.1	5.1 - 7.1	1 Rad.	22.5	12.23	5.5	16.7	30.5	20.23	12.23	8.3	25.2
M8 - 9.1	7.1 - 9.1	2 Rad.	24.5	12.23	5.8	17.7	32.5	20.23	12.23	8.5	26
M8 - 11.1	9.1 - 11.1	3 Rad.	26.5	12.23	6.1	18.6	34.5	20.23	12.23	8.9	27
M8 - 13.1	11.1 - 13.1	4 Rad.	28.5	12.23	6.4	19.6	36.5	20.23	12.23	9.1	27.8
M8 - 15.1	13.1 - 15.1	5 Rad.	30.5	12.23	6.7	20.4	38.5	20.23	12.23	9.5	28.9
M10 - 6.1	3.17 - 6.1	Blank	23	12.72	7.6	23.1	31.5	21.47	12.72	11.4	34.7
M10 - 8.6	6.1 - 8.6	1 Rad.	25.5	12.72	8	24.4	34	21.47	12.72	11.8	36
M10 - 11.1	8.6 - 11.1	2 Rad.	28	12.72	8.4	25.7	36.5	21.47	12.72	12.2	37.2
M10 - 13.6	11.1 - 13.6	3 Rad.	30.5	12.72	8.9	27	39	21.47	12.72	12.7	38.6
M10 - 16.1	13.6 - 16.1	4 Rad.	33	12.72	9.3	28.4	41.5	21.47	12.72	13.1	39.8
M12 - 6.1	3.17 - 6.1	Blank	27	16.35	14.2	43.2	35	24.34	16.35	20.3	61.7
M12 - 8.6	6.1 - 8.6	1 Rad.	29.5	16.35	15.1	46	37.5	24.34	16.35	21.1	64.4
M12 - 11.1	8.6 - 11.1	2 Rad.	32	16.35	15.9	48.3	40	24.34	16.35	21.9	66.8
M12 - 13.6	11.1 - 13.6	3 Rad.	34.5	16.35	16.9	51.4	42.5	24.34	16.35	22.9	69.8
M12 - 16.1	13.6 - 16.1	4 Rad.	37	16.35	17.7	53.9	45	24.34	16.35	23.8	72.6

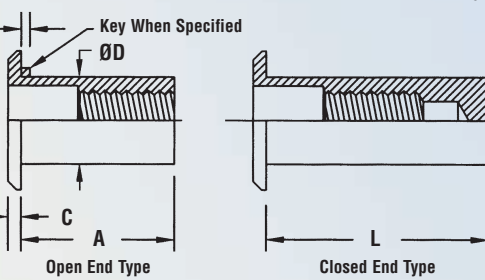
MaxTite - FLATHEAD-UNIFIED



Ribbed
Open End
Shown

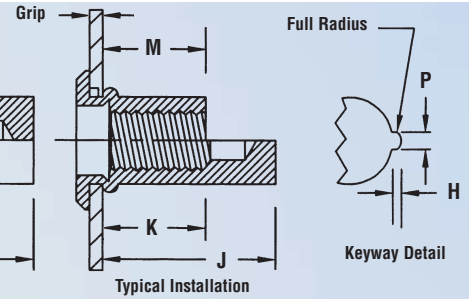


Identification Marks (See Table)



Open End Type

Closed End Type



Typical Installation

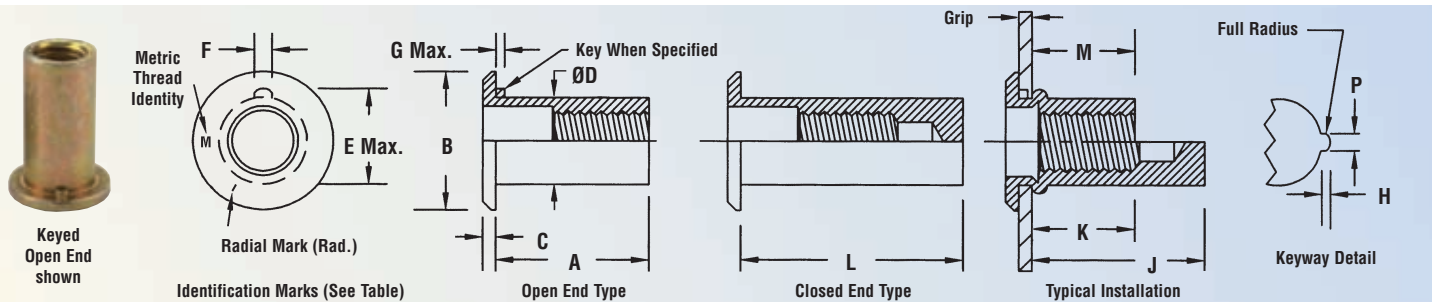
Keyway Detail

All dimensions are in inches. See page AE-20 for part number key.

Thread Size*	B ±.015	C Nom.	ØD +.000 -.004	E Max.	F +.005 -.000	G Max.	Install Drill Size (Ref.)	Install Hole Size		Keyway Dimensions		Pull Up Factor
								Min.	Max.	P +.003 - .000	H	
#4-40	.270	.025	.155	.198	.054	.023	5/32	.155	.157	.062	.046 - .048	.055
#6-32	.325	.032	.189	.240	.054	.023	#12	.189	.193	.062	.056 - .058	.065
#8-32	.357	.032	.221	.271	.054	.023	#2	.221	.226	.062	.056 - .058	.065
#10-32	.406	.038	.250	.302	.054	.023	1/4	.250	.256	.062	.056 - .058	.080
1/4-20	.475	.058	.332	.382	.054	.035	Q	.332	.338	.062	.056 - .058	.095
5/16-18	.665	.062	.413	.505	.120	.040	Z	.413	.423	.128	.097 - .102	.120
3/8-16	.781	.088	.490	.597	.120	.040	12.5mm	.490	.500	.128	.110 - .115	.155
1/2-13	.906	.085	.625	.733	.120	.040	5/8	.625	.635	.128	.110 - .115	.185

Thread- Grip Number	Grip Range	Indent. Mark	Open End Keyed and Keyless				Closed End Keyless				Closed End Keyed					
			A ±.015	M Ref.	Wt. (lbs./1000)		L ±.015	J Ref.	K Ref.	Wt. (lbs./1000)		L ±.015	J Ref.	K Ref.	Wt. (lbs./1000)	
					Alum.	Steel				Alum.	Steel				Alum.	Steel
4-60	.010 - .060	Blank	.345	.230	.4	1.3	.500	.385	.230	.6	1.9	.500	.385	.230	.6	1.9
4-85	.060 - .085	1 Rad.	.370	.230	.4	1.4	.525	.385	.230	.7	2.0	.525	.385	.230	.7	2.0
4-110	.085 - .110	2 Rad.	.400	.230	.5	1.4	.555	.390	.230	.7	2.0	.555	.390	.230	.7	2.0
4-135	.110 - .135	3 Rad.	.425	.230	.5	1.5	.580	.385	.230	.7	2.1	.580	.385	.230	.7	2.1
4-160	.135 - .160	4 Rad.	.450	.230	.5	1.5	.605	.385	.230	.7	2.1	.605	.385	.230	.7	2.1
4-185	.160 - .185	5 Rad.	.480	.230	.5	1.6	.635	.385	.230	.7	2.2	.635	.385	.230	.7	2.2
6-75	.010 - .075	1 Rad.	.438	.300	.8	2.4	.625	.490	.305	1.2	3.5	.750	.615	.405	1.4	4.1
6-120	.075 - .120	3 Rad.	.500	.315	.9	2.6	.625	.440	.255	1.1	3.4	.750	.565	.355	1.3	4.0
6-160	.120 - .160	5 Rad.	.500	.270	.9	2.6	.750	.520	.260	1.3	4.0	.750	.520	.310	1.3	4.0
6-200	.160 - .200	1 Circ.	.562	.290	.9	2.8	.750	.480	.260	1.3	3.9	.750	.480	.260	1.3	3.9
6-240	.200 - .240	2 Circ.	.625	.310	1.0	3.0	.750	.435	.260	1.3	3.8	.750	.435	.260	1.3	3.8
6-280	.240 - .280	3 Circ.	.687	.330	1.1	3.3	.812	.455	.265	1.3	4.1	.812	.455	.265	1.3	4.1
8-75	.010 - .075	1 Rad.	.438	.300	1.0	3.0	.625	.490	.305	1.5	4.5	.750	.615	.405	1.7	5.3
8-120	.075 - .120	3 Rad.	.500	.315	1.1	3.3	.625	.440	.255	1.4	4.4	.750	.565	.355	1.7	5.2
8-160	.120 - .160	5 Rad.	.500	.270	1.1	3.2	.750	.520	.260	1.7	5.1	.750	.520	.310	1.7	5.1
8-200	.160 - .200	1 Circ.	.625	.350	1.3	3.9	.750	.475	.265	1.6	5.0	.750	.475	.265	1.6	5.0
8-240	.200 - .240	2 Circ.	.625	.305	1.2	3.8	.875	.555	.310	1.9	5.6	.875	.555	.310	1.9	5.6
8-280	.240 - .280	3 Circ.	.687	.340	1.3	4.1	.875	.530	.290	1.8	5.6	.875	.530	.290	1.8	5.6
10-80	.010 - .080	Blank	.531	.380	1.5	4.5	.781	.630	.380	2.3	6.8	.781	.630	.380	2.3	6.8
10-130	.080 - .130	1 Rad.	.594	.390	1.6	4.9	.843	.640	.390	2.4	7.2	.843	.640	.390	2.4	7.2
10-180	.130 - .180	2 Rad.	.641	.390	1.7	5.1	.891	.640	.390	2.4	7.4	.891	.640	.390	2.4	7.4
10-230	.180 - .230	3 Rad.	.703	.395	1.8	5.4	.953	.645	.395	2.6	7.8	.953	.645	.395	2.6	7.8
10-280	.230 - .280	4 Rad.	.750	.395	1.9	5.7	1.000	.645	.395	2.6	8.0	1.000	.645	.395	2.6	8.0
10-330	.280 - .330	5 Rad.	.797	.385	1.9	5.9	1.047	.630	.385	2.7	8.2	1.047	.630	.385	2.7	8.2
25-80	.020 - .080	Blank	.625	.450	3.2	9.7	.937	.760	.440	4.9	15.1	.937	.760	.440	5.0	15.1
25-140	.080 - .140	1 Rad.	.687	.450	3.4	10.3	1.000	.760	.440	5.1	15.7	1.000	.760	.440	5.1	15.7
25-200	.140 - .200	2 Rad.	.750	.450	3.6	10.9	1.062	.760	.440	5.3	16.2	1.062	.760	.440	5.3	16.3
25-260	.200 - .260	3 Rad.	.812	.445	3.8	11.5	1.125	.755	.445	5.5	16.8	1.125	.755	.445	5.5	16.8
25-320	.260 - .320	4 Rad.	.875	.445	4.0	12.0	1.187	.755	.445	5.7	17.4	1.187	.755	.445	5.7	17.4
25-380	.320 - .380	5 Rad.	.937	.445	4.1	12.6	1.250	.755	.445	5.9	18.0	1.250	.755	.445	5.9	18.0
31-125	.030 - .125	Blank	.750	.505	6.0	18.2	1.187	.940	.550	9.6	29.1	1.187	.940	.550	9.6	29.2
31-200	.125 - .200	1 Rad.	.875	.555	6.7	20.3	1.281	.960	.555	10.1	30.6	1.281	.960	.555	10.1	30.7
31-275	.200 - .275	2 Rad.	.937	.540	6.9	21.1	1.343	.950	.560	10.3	31.4	1.343	.950	.560	10.3	31.5
31-350	.275 - .350	3 Rad.	1.032	.560	7.4	22.6	1.437	.965	.570	10.8	32.9	1.437	.965	.570	10.8	32.9
31-425	.350 - .425	4 Rad.	1.125	.580	7.9	24.0	1.531	.985	.575	11.3	34.3	1.531	.985	.575	11.3	34.4
31-500	.425 - .500	5 Rad.	1.187	.565	8.2	24.9	1.593	.975	.580	11.5	35.1	1.593	.975	.580	11.6	35.2
37-115	.030 - .115	Blank	.844	.585	9.7	29.7	1.281	1.020	.660	14.8	45.0	1.281	1.020	.660	14.8	45.1
37-200	.115 - .200	1 Rad.	.938	.595	10.3	31.4	1.375	1.030	.670	15.4	46.8	1.375	1.030	.670	15.4	46.9
37-285	.200 - .285	2 Rad.	1.031	.605	10.9	33.2	1.468	1.040	.680	15.9	48.5	1.468	1.040	.680	16.0	48.6
37-370	.285 - .370	3 Rad.	1.125	.615	11.5	34.9	1.562	1.050	.690	16.5	50.3	1.562	1.050	.690	16.5	50.4
37-455	.370 - .455	4 Rad.	1.218	.630	12.0	36.7	1.656	1.065	.710	17.1	52.1	1.656	1.065	.710	17.1	52.2
37-540	.455 - .540	5 Rad.	1.312	.635	12.6	38.5	1.750	1.075	.715	17.7	53.8	1.750	1.075	.715	17.7	53.9
50-150	.050 - .150	Blank	.906	.605	14.0	42.6	1.328	1.030	.605	21.9	66.6	1.328	1.030	.605	21.9	66.6
50-250	.150 - .250	1 Rad.	1.031	.630	15.2	46.3	1.453	1.055	.630	23.1	70.3	1.453	1.055	.630	23.1	70.3
50-350	.250 - .350	2 Rad.	1.141	.640	16.2	49.2	1.562	1.060	.640	24.0	73.2	1.562	1.060	.640	24.0	73.2
50-450	.350 - .450	3 Rad.	1.250	.650	17.1	52.2	1.671	1.070	.650	25.0	76.1	1.671	1.070	.650	25.0	76.1

MaxTite - FLATHEAD-METRIC



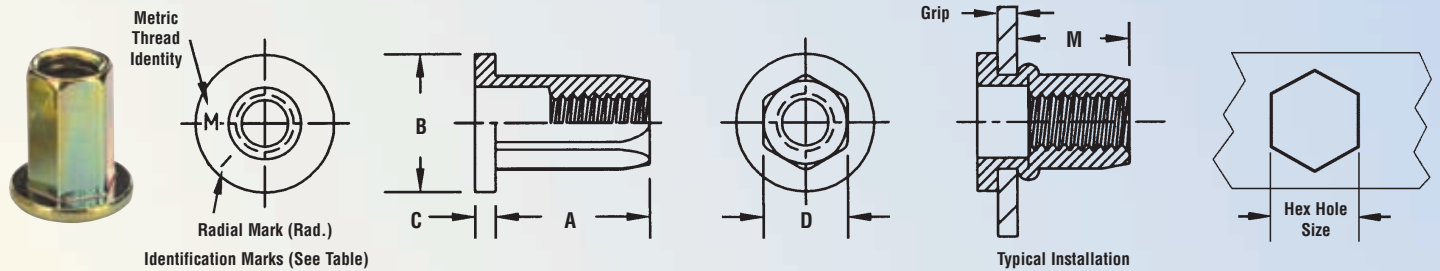
All dimensions are in millimeters.

See page AE-20 for part number key.

Thread Size x Pitch	B ±0.38	C Nom.	ØD -0.1	E Max.	F +0.13	G Max.	Install Drill Size (Ref.)	Install Hole Size		Keyway Dimensions		Pull Up Factor
								Min.	Max.	P +0.08	H	
M3 x 0.5	6.68	0.63	3.93	5.03	1.37	0.58	4	3.94	4.01	1.57	1.17 - 1.22	1.4
M4 x 0.7	9.01	0.81	5.61	6.88	1.37	0.58	5.6	5.6	5.74	1.57	1.42 - 1.47	1.9
M5 x 0.8	11.17	1.22	7.13	8.73	1.85	0.58	7.2	7.2	7.3	2.06	1.7 - 1.75	2.4
M6 x 1	13.43	1.47	8.43	10.33	2.23	0.89	8.5	8.5	8.6	2.44	2.06 - 2.13	2.9
M7 x 1	14.92	1.47	9.37	11.27	2.23	0.89	9.4	9.4	9.5	2.44	2.06 - 2.13	2.9
M8 x 1.25	16.65	1.57	10.48	12.82	3.05	1.02	10.5	10.5	10.75	3.25	2.46 - 2.59	3.18
M10 x 1.5	19.5	2.23	12.44	15.15	3.05	1.02	12.5	12.5	12.7	3.25	2.79 - 2.92	3.94
M12 x 1.75	22.79	2.23	15.88	18.2	3.05	1.02	15.5	15.5	15.74	3.25	2.79 - 2.92	4.57

Thread-Grip Number	Grip Range	Indent. Mark	Open End Keyed and Keyless				Closed End Keyed and Keyless				
			A ±0.38	M Ref.	Wt. (lbs./1000)		L ±0.38	J Ref.	K Ref.	Wt. (lbs./1000)	
					Alum.	Steel				Alum.	Steel
M3 - 1	0.25 - 1	Blank	8	5.61	.3	1	12	9.62	5.61	.5	1.6
M3 - 1.75	1 - 1.75	1 Rad.	8.75	5.61	.4	1.1	12.75	9.62	5.61	.5	1.7
M3 - 2.5	1.75 - 2.5	2 Rad.	9.5	5.61	.4	1.1	13.5	9.62	5.61	.6	1.7
M3 - 3.25	2.5 - 3.25	3 Rad.	10.25	5.61	.4	1.2	14.24	9.62	5.61	.6	1.7
M3 - 4	3.25 - 4	4 Rad.	11	5.61	.4	1.2	15	9.62	5.61	.6	1.8
M3 - 4.75	4 - 4.75	5 Rad.	11.75	5.61	.4	1.3	15.75	9.62	5.61	.6	1.9
M4 - 2	0.25 - 2	Blank	11	7.08	1	3.1	16	12.08	7.08	1.6	5
M4 - 3	2 - 3	1 Rad.	12	7.08	1.1	3.3	17	12.08	7.08	1.7	5.2
M4 - 4	3 - 4	2 Rad.	13	7.08	1.1	3.4	18	12.08	7.08	1.8	5.3
M4 - 5	4 - 5	3 Rad.	14	7.08	1.2	3.5	19	12.08	7.08	1.8	5.5
M4 - 6	5 - 6	4 Rad.	15	7.08	1.2	3.7	20	12.08	7.08	1.9	5.7
M4 - 7	6 - 7	5 Rad.	16	7.08	1.3	3.8	21	12.08	7.08	1.9	5.8
M5 - 2	0.25 - 2	Blank	14.5	10.09	2.2	6.6	20	15.6	10.09	3	9.3
M5 - 3.5	2 - 3.5	1 Rad.	16	10.09	2.3	6.9	21.5	15.6	10.09	3.2	9.6
M5 - 5	3.5 - 5	2 Rad.	17.5	10.09	2.4	7.2	23	15.6	10.09	3.2	9.9
M5 - 6.5	5 - 6.5	3 Rad.	19	10.09	2.5	7.5	24.5	15.6	10.09	3.4	10.3
M5 - 8	6.5 - 8	4 Rad.	20.5	10.09	2.6	7.9	26	15.6	10.09	3.5	10.6
M5 - 9.5	8 - 9.5	5 Rad.	22	10.09	2.7	8.2	27.5	15.6	10.09	3.6	11.1
M6 - 2	0.75 - 2	Blank	15.5	10.58	3.4	10.3	23	18.07	10.58	5.1	15.5
M6 - 3.5	2 - 3.5	1 Rad.	17	10.58	3.5	10.7	24.5	18.07	10.58	5.3	16
M6 - 5	3.5 - 5	2 Rad.	18.5	10.58	3.7	11.2	26	18.07	10.58	5.4	16.5
M6 - 6.5	5 - 6.5	3 Rad.	20	10.58	3.8	11.7	27.5	18.07	10.58	5.6	17
M6 - 8	6.5 - 8	4 Rad.	21.5	10.58	4	12.2	29	18.07	10.58	5.7	17.5
M6 - 9.5	8 - 9.5	5 Rad.	23	10.58	4.2	12.7	30.5	18.07	10.58	5.9	18
M8 - 3	0.75 - 3	Blank	18	11.83	5.2	15.9	26	19.82	11.83	7.9	24
M8 - 5	3 - 5	1 Rad.	20	11.83	5.7	16.9	28	19.82	11.83	8.2	25
M8 - 7	5 - 7	2 Rad.	22	11.83	5.9	17.9	30	19.82	11.83	8.6	26
M8 - 9	7 - 9	3 Rad.	24	11.83	6.2	19	32	19.82	11.83	8.9	27.2
M8 - 11	9 - 11	4 Rad.	26	11.83	6.5	19.7	34	19.82	11.83	9.1	27.8
M8 - 13	11 - 13	5 Rad.	28	11.83	6.8	20.8	36	19.82	11.83	9.5	28.8
M10 - 3	1 - 3	Blank	20	13.2	8	24.5	29	22.18	13.2	12.2	37.3
M10 - 5.5	3 - 5.5	1 Rad.	22.5	13.2	8.5	25.9	31.5	22.18	13.2	12.6	38.4
M10 - 8	5.5 - 8	2 Rad.	25	13.2	8.9	27	34	22.18	13.2	13.1	39.5
M10 - 10.5	8 - 10.5	3 Rad.	27.5	13.2	9.3	28.4	36.5	22.18	13.2	13.4	41
M10 - 13	10.5 - 13	4 Rad.	30	13.2	9.7	29.6	39	22.18	13.2	13.8	42.1
M12 - 3	1 - 3	Blank	24	16.45	14.9	45.5	32	24.44	16.45	21.1	64.1
M12 - 5.5	3.99 - 5.5	1 Rad.	26.5	16.45	15.9	48.3	34.5	24.44	16.45	21.9	66.7
M12 - 8	5.5 - 8	2 Rad.	29	16.45	16.6	50.7	37	24.44	16.45	22.7	69.3
M12 - 10.5	8 - 10.5	3 Rad.	31.5	16.45	17.6	53.5	39.5	24.44	16.45	23.6	71.9
M12 - 13	10.5 - 13	4 Rad.	34	16.45	18.5	56.3	42	24.44	16.45	24.5	74.7

MaxTite - STANDARD FULL-HEX



All dimensions are in inches.

Thread Size (1)	Part Number	Grip Range (1)	Identification Mark	A ±.015	B ±.015	C Nom.	D Max.	M Ref.	Hex Hole Size In Sheet +.005 -.000
#10-32	AES10H85	.010 - .085	Blank	.344	.344	.043	.223	.200	.224
#10-32	AES10H135	.085 - .135	1 Rad.	.406	.344	.043	.223	.210	.224
#10-32	AES10H185	.135 - .185	2 Rad.	.453	.344	.043	.223	.210	.224
1/4-20	AES25H85	.020 - .085	Blank	.406	.437	.043	.296	.245	.297
1/4-20	AES25H145	.085 - .145	1 Rad.	.469	.437	.043	.296	.250	.297
1/4-20	AES25H205	.145 - .205	2 Rad.	.531	.437	.043	.296	.250	.297
5/16-18	AES31H105	.030 - .105	Blank	.562	.562	.048	.368	.375	.369
5/16-18	AES31H175	.105 - .175	1 Rad.	.640	.562	.048	.368	.380	.369
5/16-18	AES31H245	.175 - .245	2 rad.	.703	.562	.048	.368	.375	.369
3/8-16	AES37H115	.030 - .115	Blank	.625	.656	.058	.437	.400	.438
3/8-16	AES37H205	.115 - .205	1 Rad.	.718	.656	.058	.437	.405	.438
3/8-16	AES37H295	.205 - .295	2 Rad.	.812	.656	.058	.437	.410	.438

All dimensions are in millimeters.

Thread Size (1)	Part Number	Grip Range (1)	Identification Mark	A ±0.38	B ±0.38	C Nom.	D Max.	M Ref.	Hex Hole Size In Sheet +0.13
M5 x 0.8	AESM5H215	0.5 - 2.15	Blank	10.3	9.52	1.09	6.35	6.72	6.36
M5 x 0.8	AESM5H355	2.15 - 3.55	1 Rad.	11.9	9.52	1.09	6.35	6.72	6.36
M5 x 0.8	AESM5H505	3.55 - 5.05	2 Rad.	13.48	9.52	1.09	6.35	6.72	6.36
M6 x 1	AESM6H215	0.5 - 2.15	Blank	10.3	11.09	1.09	7.52	6.22	7.54
M6 x 1	AESM6H365	2.15 - 3.65	1 Rad.	11.9	11.09	1.09	7.52	6.22	7.54
M6 x 1	AESM6H520	3.65 - 5.2	2 Rad.	13.48	11.09	1.09	7.52	6.22	7.54
M8 x 1.25	AESM8H255	0.5 - 2.55	Blank	15.86	15.07	1.57	10.08	10.35	10.11
M8 x 1.25	AESM8H455	2.5 - 4.55	1 Rad.	17.84	15.07	1.57	10.08	10.35	10.11
M8 x 1.25	AESM8H660	4.55 - 6.6	2 Rad.	19.82	15.07	1.57	10.08	10.35	10.11
M10 x 1.5	AESM10H295	0.75 - 2.95	Blank	15.88	17.48	1.57	11.89	13.08	11.91
M10 x 1.5	AESM10H520	2.95 - 5.2	1 Rad.	18.24	17.48	1.57	11.89	13.08	11.91
M10 x 1.5	AESM10H750	5.2 - 7.5	2 Rad.	20.62	17.48	1.57	11.89	13.08	11.91

(1) Additional thread sizes and grip ranges are available.

PART NUMBER DESIGNATION

AE	Type	
SS	Material	A = Aluminum S = Steel NM = 300 Series Stainless SS = 430 Stainless Steel BR = Brass CH = 4037 Alloy Steel
25	Thread Code	4 = 4-40 6 = 6-32 8 = 8-32 10 = 10-32 25 = 1/4-20 31 = 5/16-18 37 = 3/8-16 50 = 1/2-13 (For metric use thread designation. Example M3=M3)
KB	Style	— = Keyless open end K = Keyed open end B = Keyless closed end KB = Keyed closed end R = Ribbed shank H = Full-hex body
80	Grip Range	80 = .020 to .080 grip range (See charts for other ranges). Grip Range Codes ending in 0 or 5 are flathead, and 1 or 6 have countersunk heads.

For parts other than steel with cadmium plating, call the factory for an additional part number code.

MaxTite

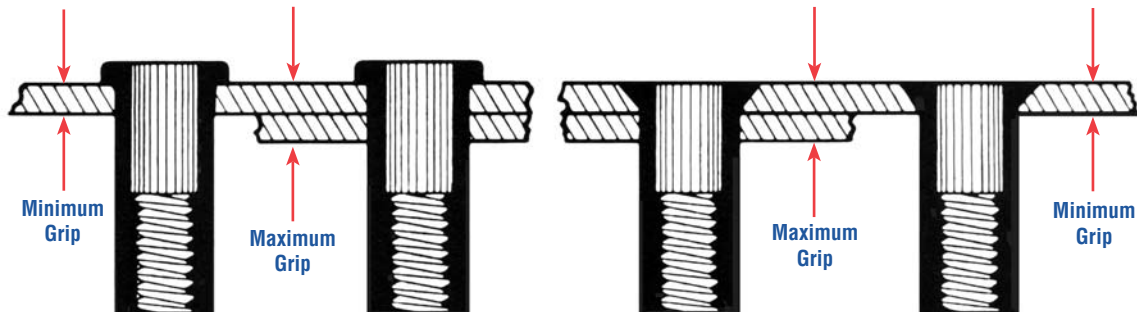
MATERIAL & FINISH SPECIFICATIONS

Round Body			
Material	Type	Standard Finish	Min. Tensile Strength (PSI Ult.)
Aluminum	6053-T4 6061-T4	Anodized in accordance with SAE AMS-A-8625, Type II	25,000
Steel	C-1010 or C-1110	Cadmium Plate - .0002" Minimum Thickness Per SAE AMS-QQ-P-416 Class 3, Type I	42,000
Alloy Steel	4037	Cadmium Plate - .0003" Minimum Thickness Per SAE AMS-QQ-P-416 Class 2, Type II	55,000 (No. 4 & No. 6 Thread Size) 85,000 (No. 8 to 1/2" Thread Sizes)
Stainless Steel	430	Pickled and Passivated Per SAE AMS QQ-P-35, Type II	67,000
	300 Series	Pickled and Passivated Per SAE AMS QQ-P-35, Type II	80,000
Brass	Alloy No. 260	None - Bright as Machined	50,000
Hex Body			
Material	Type No.	Standard Finish	Min. Tensile Strength (PSI Ult.)
Steel	C-1008 C-1010	Zinc Plate per ASTM B 633, Fe/Zn 8, Type II	45,000

Weights: For brass fasteners, multiply weight of aluminum equivalent by 3.13. Weights for CH (4037 alloy steel) and SS (Type 430 stainless steel) same as steel.

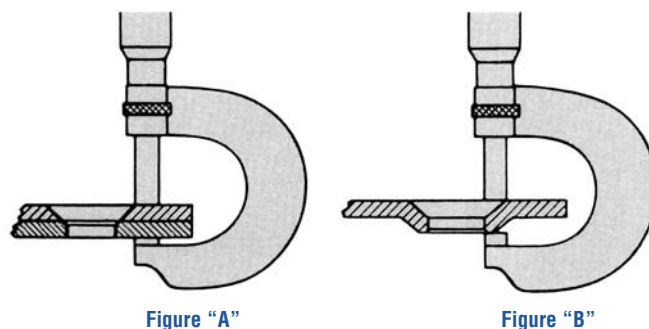
MaxTite GRIP RANGE

All fasteners are designed for installation into a range of material thickness. Maximum Grip represents the greatest material thickness into which a specific fastener should be properly installed. Minimum Grip represents the least thickness of material into which a specific fastener should be properly installed. The zone of material thickness between the minimum and maximum grip is the grip range.



In surface installations or machine countersunk installations, the grip is the same as the material thickness (see figure "A"). For dimple or press countersunk holes, the grip is the measurement from the top metal surface to the underside of the dimple hole (see figure "B").

IMPORTANT: Measurements must include air gaps, paint and any burrs that cannot be removed.

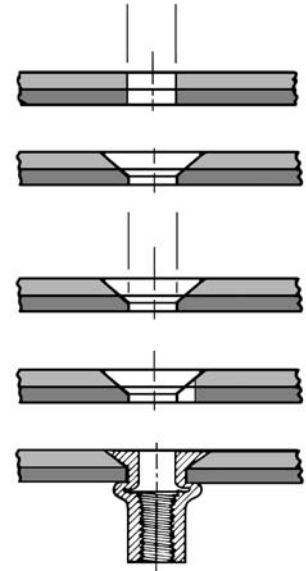


COUNTERSUNK HOLE PREPARATION

MACHINE COUNTERSINKING INSTALLATION

To obtain a precision hole and countersink, follow these steps:

- Step 1** Drill an undersized hole in the sheet.
- Step 2** Countersink the hole.
- Step 3** Drill correct diameter hole with finish drill.
- Step 4** If keyed fastener is to be used, cut a keyway with a round file or guided drill.
- Step 5** Install fastener.

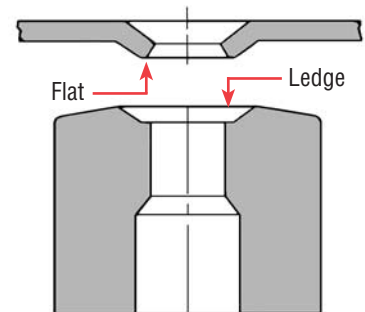


DIMPLE COUNTERSINKING INSTALLATION

Sheets thinner than a fastener head thickness require a dimple countersink installation.

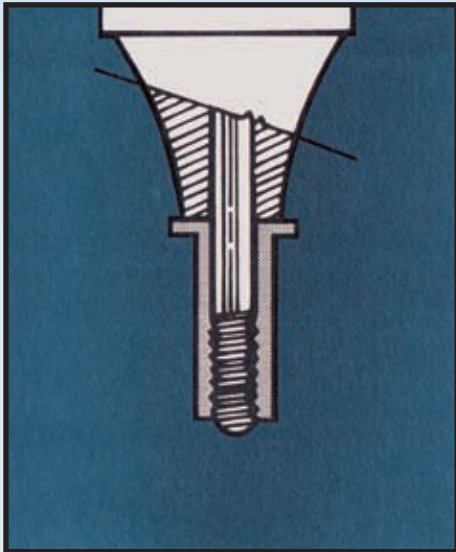
The ideal bulge on any fastener installation will always be formed against a flat under-surface. The bell-mouth that results from ordinary dimpling will not permit the fastener to form a proper bulge and these fasteners will form a weak bulge, a spread shank, and may possibly shear.

A ledge at the bottom of the dimpling die must be used to provide a flat surface in the dimpling operation. The “flat” on the dimple will save costly deburring before dimpling and enables the fastener to form normally, providing maximum strength.

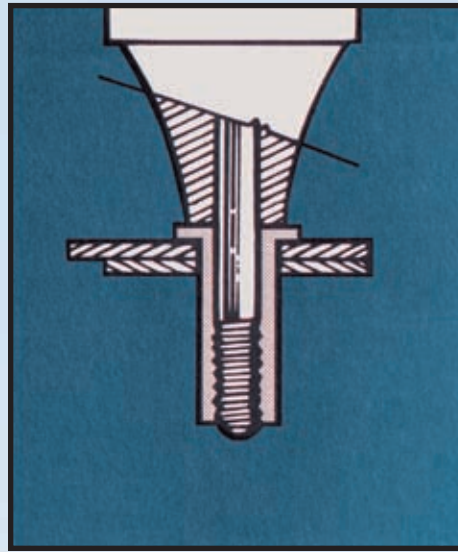


MaxTite

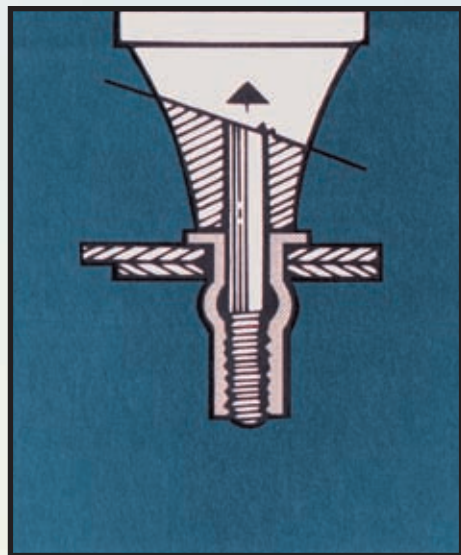
INSTALLATION



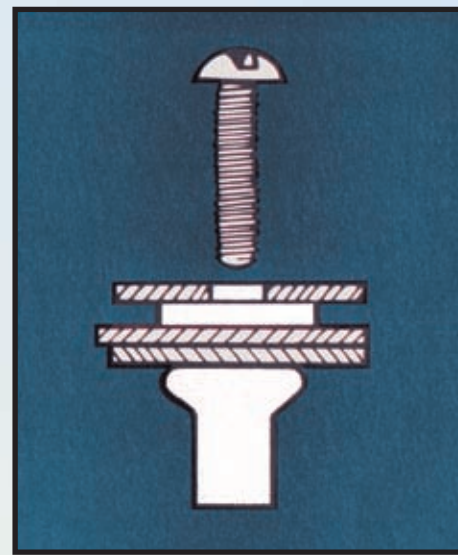
STEP 1 The fastener is threaded onto the pull-up stud of an installation tool.



STEP 2 The fastener, on the pull-up stud, is inserted into the drilled or punched hole.



STEP 3 The pull-up stud retracts and bulges the unthreaded portion of the fastener shank against the flat undersurface.



STEP 4 The installation tool stud is removed, leaving the fastener secure and ready for the attachment screw.

NOTE: For open end fasteners, the pull-up stud tip protrudes beyond the end of the MaxTite fastener. On closed end fasteners, screw the pull-up stud into the fastener about seven or eight turns. Be sure the anvil rests on the fastener head.

MaxTite

PERFORMANCE DATA

TORQUE STRENGTH DATA - TORQUE-AXIAL LOAD RELATIONSHIP

Used as nut plates, these fasteners may be safely loaded to torque equivalent of their maximum upset loads. Surpassing these loads will cause the screw to break, or the fastener will continue to upset until ultimate strip load is attained.

Because of the many variables such as type of lubrication, plating, type and grade of screw or bolt, it is recommended that a pilot test be conducted to determine the optimum assembly torque.

TORQUE-OUT STRENGTH

Although these fasteners are never used as shown in this view, it is used to illustrate the effects of accidental imposition of torque by: over-length screw bottoming in a blind end fastener; unthreaded shank area of an insufficiently threaded screw bottoming in the first thread of a fastener; cross threading in inserting screw.

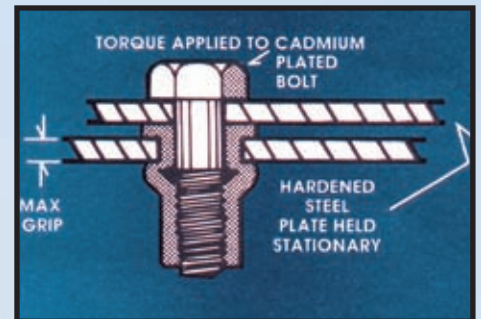
Thread Size	Torque Equiv. of Max. Upset Load (in. lbs.) ⁽¹⁾			
	Aluminum	Brass	Steel	Stainless Steel
#4-40	8	15	15	15
#6-32	12	24	24	30
#8-32	16	40	38	45
#10-32	25	45	45	60
1/4-20	60	130	130	160
5/16-18	100	156	156	260
3/8-16	190	345	344	400
1/2-13	350	NA	660	NA

(1) These values are averages only.

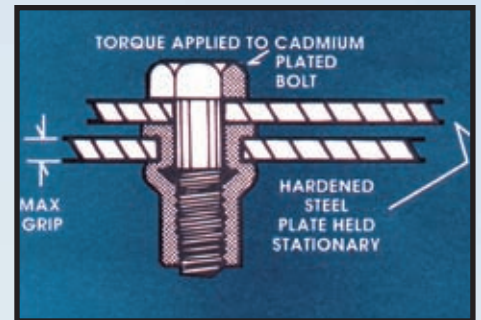
Thread Size	Torque Required to Turn Fastener (in. lbs.)							
	Aluminum		Brass		Steel		Stainless Steel	
	Key	Keyless	Key	Keyless	Key	Keyless	Key	Keyless
#4-40	9	4	20	8	20	8	45	8
#6-32	12	4	30	8	29	13	46	15
#8-32	20	9	37	12	34	21	66	38
#10-32	22	12	46	23	43	23	77	38
1/4-20	55	30	100	50	93	51	134	78
5/16-18	101	46	NA	103	176	70	360	115
3/8-16	116	83	300	198	361	131	400	201
1/2-13	216	130	NA	NA	NA	300	NA	NA

Aluminum fasteners tested in aluminum plates. Steel and brass fasteners tested in steel plates. Stainless steel fasteners tested in stainless steel plates. These values are averages only and based on controlled tests - certain variations must be expected in actual practice.

NA - Test data not available.



TORQUE STRENGTH



TORQUE-OUT STRENGTH

MaxTite

PERFORMANCE DATA (Continued)

UPSET LOAD (lbs.)

Thread Size	Aluminum		Brass		Steel		Stainless Steel	
	Min. Grip	Max. Grip	Min. Grip	Max. Grip	Min. Grip	Max. Grip	Min. Grip	Max. Grip
#4-40	400	450	700	800	700	800	800	900
#6-32	500	600	800	950	850	1000	1000	1300
#8-32	600	700	1300	1500	1000	1250	1400	1650
#10-32	750	800	1600	1800	1300	1500	1900	2000
1/4-20	1300	1450	2570	2880	2300	2610	3300	3400
5/16-18	1900	2150	3870	4210	3300	3650	4800	5600
3/8-16	2570	2700	4620	4940	4965	5325	6100	6660
1/2-13	4000	4400	NA	NA	6700	7200	NA	NA

ULTIMATE THREAD STRENGTH (lbs.)

Thread Size	Aluminum		Brass		Steel		Stainless Steel	
	Min. Grip	Max. Grip	Min. Grip	Max. Grip	Min. Grip	Max. Grip	Min. Grip	Max. Grip
#4-40	675	575	1265	1075	1180	1000	1600	1300
#6-32	964	820	1740	1480	1705	1450	2400	2000
#8-32	1095	935	2050	1740	1920	1630	3000	2200
#10-32	1600	1450	3025	2525	3000	2500	4000	3500
1/4-20	2500	2400	4900	4250	5240	4520	6000	5100
5/16-18	4000	3700	7795	6840	7625	6300	8700	7500
3/8-16	4700	4450	11600	11200	11500	10450	11700	9650
1/2-13	7900	6400	NA	NA	17250	14500	NA	NA

ULTIMATE TENSILE STRENGTH (lbs.)

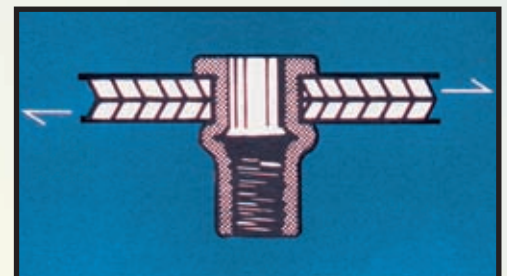
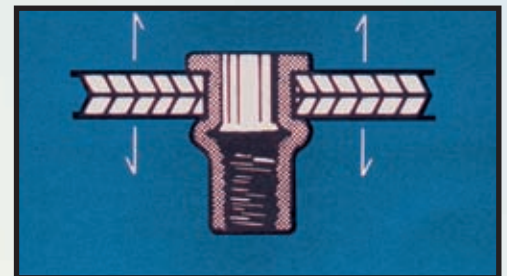
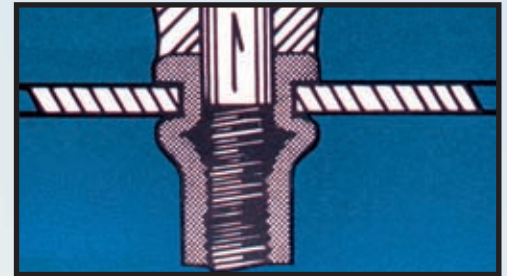
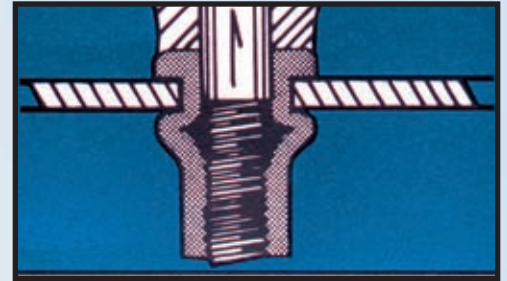
Thread Size	Aluminum	Brass	Steel	Stainless Steel
#4-40	261	474	458	621
#6-32	373	678	656	889
#8-32	485	882	853	1153
#10-32	617	1120	1085	1470
1/4-20	1150	2020	1850	2510
5/16-18	1600	2995	2750	3730
3/8-16	2075	3925	3900	5280
1/2-13	3100	NA	4900	NA

ULTIMATE SHEAR STRENGTH (lbs.)

Thread Size	Aluminum	Brass	Steel	Stainless Steel
#4-40	158	300	316	515
#6-32	230	430	460	749
#8-32	294	558	588	958
#10-32	374	710	748	1220
1/4-20	710	1230	1100	1790
5/16-18	930	1850	1750	2850
3/8-16	1260	2425	2420	3940
1/2-13	2150	NA	3400	NA

Aluminum fasteners tested in aluminum plates. Steel and brass fasteners tested in steel plates. Stainless steel fasteners tested in stainless steel plates. These values are averages only and based on controlled tests - certain variations must be expected in actual practice. Performance testing of this product in your application is recommended. We will be happy to provide samples for this purpose.

NA - Test data not available.



INSTALLATION TOOLS

	SERIES 800 SPIN/SPIN TOOL Atlas Series 800 tools provide totally pneumatic, spin/spin operation to easily install all Atlas SpinTite and Plus+Tite fasteners. They are lightweight, economical, low maintenance, ergonomically designed, and portable.
	AE 40 SPIN/PULL TOOL The Atlas AE 40 portable tool provides a hydraulic/pneumatic action to install Atlas MaxTite products for those heavy-duty applications. It is a powerful, efficient, and quiet tool, designed to provide long life and trouble free service.
	HEX WRENCH INSTALLATION TOOL The Atlas Hex Wrench Tool is designed for installing MaxTite fasteners. This tool is ideal for field installations, repair work, and prototype applications.
	L6000 INSTALLATION TOOL The Atlas hand operated L6000 tool installs SpinTite fasteners in most types and sizes and is also suitable for light production requirements.
	ROBOTIC SYSTEM CAPABILITIES Atlas robotic technology offers a completely automated and intelligent system for worker-free part handling and fastener installation. The robotic assembly system can reduce installed fastener costs, increase quality installations, improve job productivity, and reduce floor-space requirements. We provide the fastener feed module and the installation tool that works with your robot or we can provide the entire system. System components and capabilities are configured to meet your specific assembly needs.

For more complete tool information see Bulletin PS

The background of the slide is a technical drawing or blueprint, rendered in a light blue color. It features various mechanical components, lines, and text, including labels like 'Q15204A', 'P-254', '1.010', and '990'.

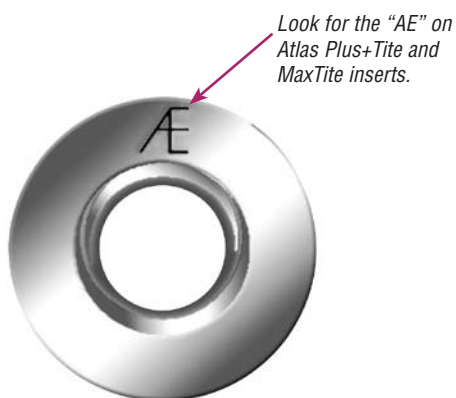
Custom Hardware Options

In addition to catalog standard hardware and equipment, our “custom solution” capabilities can solve the most demanding design or assembly challenge.

Our *fastener*⁺ approach focuses all our product, application and automation experience on your specific requirement. Working together we can help you gain a competitive edge, providing solutions from unique fasteners to complete assembly systems, engineered and delivered to optimize and add value to your operation.

WORLDWIDE REPRESENTATIVES

For representatives and distributors, or more information on Atlas brand products, visit www.pennfast.com or call us at 877-682-2505 (USA Only) or 330-676-1006.



Look for the "AE" on Atlas Plus+Tite and MaxTite inserts.



Look for the "ring" identifier on Atlas brand studs.

Specifications subject to change without notice.

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