PennEngineering®

SI® THREADED INSERTS FOR PLASTICS

BULLETIN **SI**

PEM®

615
Rev 1216

SI® THREADED INSERTS FOR PLASTICS

- SI® inserts are typically specified in applications where strong, durable metal threads are required in plastic material, especially where frequent assembly and disassembly of the unit for service or repair is necessary.
- Applications for SI® products include: electronics (including wearables, smart phones and hand held devices), automotive, aerospace and defence, medical, transportation, industrial and recreational equipment.
- SI inserts are available in brass, stainless steel and aluminum.
- SI inserts are available in a large variety of ultrasonic / heat staking, molded-in or press-in types.
- Aluminum and stainless steel inserts for plastics offer lead-free alternatives to leaded brass typically used for brass inserts.
  - Lead-free inserts offer alternative to brass to address environmental active use and end-of-life recycling concerns.
  - NEW aluminum inserts are approximately 70% lighter than brass equivalents and made from lead-free aluminum.
  - Stainless steel inserts are typically stronger than brass and may offer better protection from certain types of corrosive agents.

PART NUMBER DESIGNATION AND MATERIAL AND FINISH SPECIFICATIONS

IU B - 440 - 2

Length Code (where applicable):
See individual product charts for actual corresponding dimensional lengths.

Thread Code:
Internal, ASME B1.1, 2B / ASME B1.13M, 6H
For Types PPB, PFLB, and PKB collapsed slot and burrs may cause prevailing torque while thread accepts class 3A/4h screw.
See individual product charts for actual corresponding thread size.

Material Code:
B = Free-machining, leaded brass. Plain finish. Meets RoHS requirements.
C = 300 series stainless steel. Passivated and/or tested per ASTM A380.
A = 7075-T6 or 2024-T4 aluminum. Plain finish.

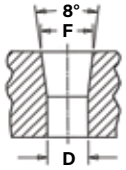
Type:
IU = Ultrasonic, tapered
IUT = Ultrasonic, straight wall
IS = Ultrasonic, symmetrical
MSI = microPEM®, Ultrasonic, symmetrical
IB = Molded-in, blind threaded
IBL = Molded-in, self-locking blind threaded
IT = Molded-in, thru-threaded
STK = Molded-in, knurled
NFP = Press-in, hexagonal
PP = Press-in, thru-threaded
PFL = Press-in, flange-head
PK = Press-in, straight knurl

All types of SI inserts are now available in aluminum

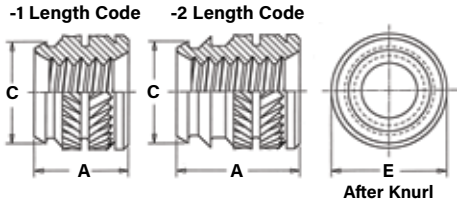
TABLE OF CONTENTS

Tapered Thru-Threaded, Types IUA™, IUB™ and IUC™

- Designed for use in tapered holes.
- Tapered mounting hole allows for rapid and accurate alignment prior to installation.
- Aluminum inserts offer light weight, lead-free alternative.

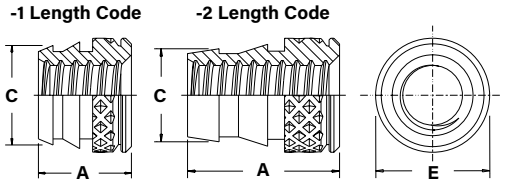


Mounting Hole



After Knurl

Diagonal Knurl
Thread sizes 4-40 to 3/8-16 and M2.5 to M8



After Knurl

Diamond Knurl
Thread sizes 0-80 & 2-56

All dimensions are in inches.

	Thread Size	Type: New Aluminum	Type: Brass	Type: Stainless Steel	Thread Code (1)	Length Code	A ± .005	E ± .005	C ±.005	Hole Size in Material: Min. Hole Depth	Hole Size in Material: D ± .002	Hole Size in Material: F ± .002
UNIFIED	.060-80 (#0-80)	IUA	IUB	IUC	080	1	.115	.141	.123	.155	.118	.123
						2	.188		.115	.228	.107	
	.086-56 (#2-56)	IUA	IUB	IUC	256	1	.115	.141	.123	.155	.118	.123
						2	.188		.115	.228	.107	
	.112-40 (#4-40)	IUA	IUB	IUC	440	1	.135	.172	.157	.175	.153	.159
						2	.219		.149	.259	.141	
	.138-32 (#6-32)	IUA	IUB	IUC	632	1	.150	.219	.203	.190	.199	.206
						2	.250		.190	.290	.185	
	.164-32 (#8-32)	IUA	IUB	IUC	832	1	.185	.250	.230	.225	.226	.234
						2	.312		.213	.352	.208	
	.190-24 (#10-24)	IUA	IUB	IUC	024	1	.225	.297	.272	.265	.267	.277
						2	.375		.251	.415	.246	
	.190-32 (#10-32)	IUA	IUB	IUC	032	1	.225	.297	.272	.265	.267	.277
						2	.375		.251	.415	.246	
	.250-20 (1/4-20)	IUA	IUB	IUC	0420	1	.300	.375	.354	.340	.349	.363
						2	.500		.332	.540	.321	
	.250-28 (1/4-28)	IUA	IUB	IUC	0428	1	.300	.375	.354	.340	.349	.363
						2	.500		.332	.540	.321	
	.313-18 (5/16-18)	IUA	IUB	IUC	0518	1	.335	.469	.439	.375	.431	.448
						2	.562		.406	.602	.401	
	.375-16 (3/8-16)	IUA	IUB	IUC	0616	1	.375	.563	.532	.415	.523	.540
						2	.625		.493	.665	.488	

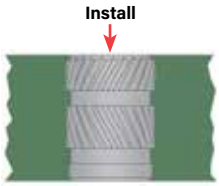
All dimensions are in millimeters.

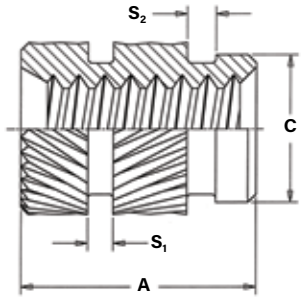
	Thread Size x Pitch	Type: New Aluminum	Type: Brass	Type: Stainless Steel	Thread Code (1)	Length Code	A ± 0.13	E ± 0.13	C ±0.13	Hole Size in Material: Min. Hole Depth	Hole Size in Material: D ± 0.05	Hole Size in Material: F ± 0.05
METRIC	M2.5 x 0.45	IUA	IUB	IUC	M2.5	1	3.43	4.37	3.99	4.44	3.89	4.04
						2	5.56		3.79	6.58	3.58	
	M3 x 0.5	IUA	IUB	IUC	M3	1	3.43	4.37	3.99	4.44	3.89	4.04
						2	5.56		3.79	6.58	3.58	
	M3 x 0.5	IUAA	IUBB	IUCC	M3	1	3.81	5.56	5.16	4.83	5.05	5.23
						2	6.35		4.83	7.42	4.7	
	M3.5 x 0.6	IUA	IUB	IUC	M3.5	1	3.81	5.56	5.16	4.83	5.05	5.23
						2	6.35		4.83	7.42	4.7	
	M4 x 0.7	IUA	IUB	IUC	M4	1	4.7	6.35	5.84	5.72	5.74	5.94
						2	7.92		5.41	8.94	5.28	
	M5 x 0.8	IUA	IUB	IUC	M5	1	5.72	7.54	6.91	6.74	6.78	7.03
						2	9.53		6.38	10.55	6.25	
	M5 x 0.8	IUAA	IUBB	IUCC	M5	1	6.71	8.33	7.83	7.72	7.7	8
						2	11.1		7.16	12.12	7.06	
	M6 x 1	IUA	IUB	IUC	M6	1	7.62	9.52	8.99	8.64	8.86	9.22
						2	12.7		8.43	13.72	8.15	
	M8 x 1.25	IUA	IUB	IUC	M8	1	8.51	11.91	11.15	9.53	10.95	11.38
						2	14.27		10.31	15.29	10.19	

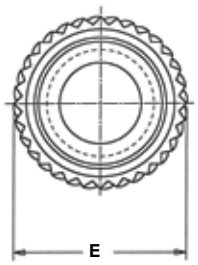
(1) Thread tapped thru, Class 3A/4h screw must pass with finger torque, but basic go gauge may stop at last thread.

Straight Wall, Thru-Threaded, Types IUA™, IUTB™ and IUTC™

- Self-aligning lead-in of insert provides for accurate alignment prior to installation.
- Aluminum inserts offer light weight, lead-free alternative.







All dimensions are in inches.

	Thread Size	Type			Thread Code (1)	A ± .005	E ± .009	C ±.005	S_1 Nom.	S_2 Nom.	Hole Size in Material	
		New Aluminum	Brass	Stainless Steel							Min. Hole Depth	Hole Dia. + .003 - .000
UNIFIED	.086-56 (#2-56)	IUTA	IUTB	IUTC	256	.157	.147	.121	.031	.031	.187	.127
	.112-40 (#4-40)	IUTA	IUTB	IUTC	440	.226	.179	.152	.031	.031	.256	.158
	.138-32 (#6-32)	IUTA	IUTB	IUTC	632	.281	.210	.183	.031	.031	.311	.189
	.164-32 (#8-32)	IUTA	IUTB	IUTC	832	.321	.243	.217	.031	.040	.351	.223
	.190-24 (#10-24)	IUTA	IUTB	IUTC	024	.375	.273	.247	.046	.046	.405	.253
	.190-32 (#10-32)	IUTA	IUTB	IUTC	032	.375	.273	.247	.046	.046	.405	.253
	.250-20 (1/4-20)	IUTA	IUTB	IUTC	0420	.500	.342	.310	.046	.062	.530	.316
	.250-28 (1/4-28)	IUTA	IUTB	IUTC	0428	.500	.342	.310	.046	.062	.530	.316
	.375-16 (3/8-16)	IUTA	IUTB	IUTC	0616	.500	.509	.462	.046	.062	.530	.468

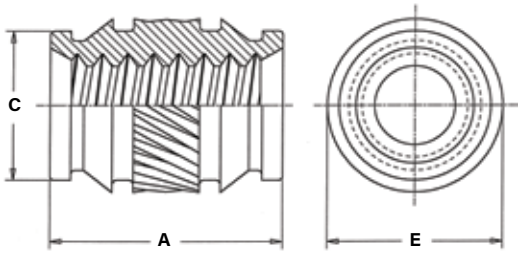
All dimensions are in millimeters.

	Thread Size x Pitch	Type			Thread Code (1)	A ± 0.13	E ± 0.23	C ±0.13	S_1 Nom.	S_2 Nom.	Hole Size in Material	
		New Aluminum	Brass	Stainless Steel							Min. Hole Depth	Hole Dia. + 0.08
METRIC	M2 x 0.4	IUTA	IUTB	IUTC	M2	4	3.73	3.07	0.79	0.79	4.76	3.23
	M2.5 x 0.45	IUTA	IUTB	IUTC	M2.5	5.74	4.55	3.86	0.79	0.79	6.5	4.01
	M3 x 0.5	IUTA	IUTB	IUTC	M3	5.74	4.55	3.86	0.79	0.79	6.5	4.01
	M3.5 x 0.6	IUTA	IUTB	IUTC	M3.5	7.14	5.33	4.65	0.79	0.79	7.9	4.81
	M4 x 0.7	IUTA	IUTB	IUTC	M4	8.15	6.17	5.51	0.79	1.02	8.91	5.67
	M5 x 0.8	IUTA	IUTB	IUTC	M5	9.52	6.93	6.27	1.17	1.17	10.28	6.43
	M6 x 1	IUTA	IUTB	IUTC	M6	12.7	8.69	7.87	1.17	1.58	13.46	8.03

(1) Thread tapped thru, Class 3A/4h screw must pass with finger torque, but basic go gauge may stop at last thread.

Symmetrical, Thru-Threaded, Types ISA™, ISB™ and ISC™

- Symmetrical design eliminates the need for orientation.
- Aluminum inserts offer light weight, lead-free alternative.



All dimensions are in inches.

	Thread Size	Type			Thread Code (1)	A ± .005	E ± .005	C ± .003	Hole Size in Material	
		New Aluminum	Brass	Stainless Steel					Hole Depth	Hole Dia. +.003-.000
UNIFIED	.086-56 (#2-56)	ISA	ISB	ISC	256	.157	.151	.122	.187	.126
UNIFIED	.112-40 (#4-40)	ISA	ISB	ISC	440	.226	.182	.153	.256	.157
UNIFIED	.138-32 (#6-32)	ISA	ISB	ISC	632	.281	.215	.184	.311	.188
UNIFIED	.164-32 (#8-32)	ISA	ISB	ISC	832	.321	.245	.217	.351	.221
UNIFIED	.190-32 (#10-32)	ISA	ISB	ISC	032	.375	.276	.248	.405	.252
UNIFIED	.250-20 (1/4-20)	ISA	ISB	ISC	0420	.500	.338	.311	.530	.315

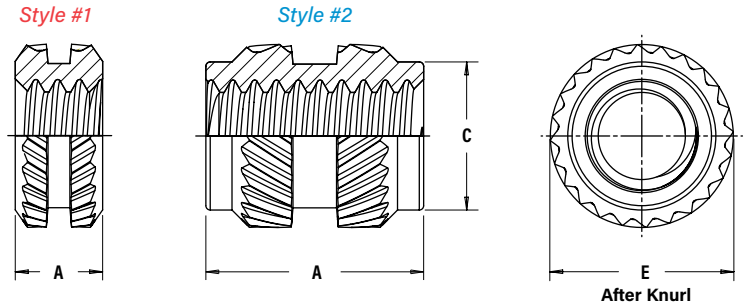
All dimensions are in millimeters.

	Thread Size x Pitch	Type			Thread Code (1)	A ± 0.13	E ± 0.13	C ± 0.08	Hole Size in Material	
		New Aluminum	Brass	Stainless Steel					Hole Depth	Hole Dia. +0.08
METRIC	M3 x 0.5	ISA	ISB	ISC	M3	5.74	4.62	3.88	6.5	3.99
METRIC	M4 x 0.7	ISA	ISB	ISC	M4	8.15	6.22	5.51	8.92	5.62
METRIC	M5 x 0.8	ISA	ISB	ISC	M5	9.52	7.01	6.3	10.29	6.4
METRIC	M6 x 1	ISA	ISB	ISC	M6	12.7	8.58	7.9	13.46	8

(1) Thread tapped thru, Class 3A/4h screw must pass with finger torque, but basic go gauge may stop at last thread.

microPEM® Symmetrical, Thru-Threaded, Types MSIA™ MSIB™

- Threads as small as M1.
- Symmetrical design eliminates the need for orientation.
- Provides excellent performance in wide range of plastics.
- Aluminum inserts offer light weight, lead-free alternative.



All dimensions are in millimeters.

	Thread Size x Pitch	Type		Thread Code	Length Code	A ±0.1	E ± 0.1	C Max.	Mounting Hole in Material		
		New Aluminum	Brass						Min. Wall Thickness (6)	Hole Depth Min.	Hole Diameter +0.05
METRIC	M1 x 0.25(3)	MSIA	MSIB	M1	100(1)	1	2.1	—	0.7	1.77	1.75
					250(2)	2.5		1.75		3.27	
	M1.2 x 0.25(3)	MSIA	MSIB	M1.2	100(1)	1	2.1	—	0.7	1.77	1.75
					250(2)	2.5		1.75		3.27	
	M1.4 x 0.3(4)	MSIA	MSIB	M1.4	150(2)	1.5	2.5	2.15	0.8	2.27	2.15
					300(2)	3				3.77	
	M1.6 x 0.35(5)	MSIA	MSIB	M1.6	150(2)	1.5	2.5	2.15	0.8	2.27	2.15
					300(2)	3				3.77	

(1) *Style #1* - length codes less than 150
(2) *Style #2* - length codes 150 and greater
(3) Metric ISO 68-1, 5H
(4) Metric ISO 68-1, 6H
(5) Metric ASME B1.13M, 6H
(6) Refers to wall diameter of boss as tested in ABS and polycarbonate.

microPEM® FASTENERS

ULTRASONIC THREADED INSERTS PERFORMANCE DATA

Types IUA, IUB, IUBB, IUC, and IUCC[1]

	Thread Code	ABS		Polycarbonate	
		Pullout (lbs.)	Torque-out (in. lbs.)	Pullout (lbs.)	Torque-out (in. lbs.)
UNIFIED	080-1	75	3	90	3
	256-1	75	3	90	6
	256-2	75	3	90	6
	440-1	80	4	160	7
	440-2	80	4	160	7
	632-1	145	15	165	18
	632-2	275	15	450	24
	832-1	205	18	295	20
	832-2	370	19	645	20
	024-1	270	45	430	55
	024-2	560	60	910	80
	032-1	270	45	430	55
	032-2	560	60	910	80
	0420-1	374	65	614	85
	0420-2	680	65	1415	108

	Thread Code	ABS		Polycarbonate	
		Pullout (N)	Torque-out (N·m)	Pullout (N)	Torque-out (N·m)
METRIC	M2.5-1	334	0.3	400	0.7
	M2.5-2	334	0.3	400	0.7
	M3-1	356	0.5	712	0.8
	M3-2	356	0.5	712	0.8
	M3.5-1	645	1.7	734	2
	M3.5-2	1223	1.7	2002	2.7
	M4-1	912	2	1312	2.3
	M4-2	1646	2.1	2869	2.3
	M5-1	1201	5.1	1913	6.2
	M5-2	2491	6.8	4048	9
	M6-1	1664	7.3	2731	9.6
	M6-2	3025	7.3	6294	12.2

Types IUTA, IUTB, IUTC[1]

	Thread Code	ABS		Polycarbonate	
		Pullout (lbs.)	Torque-out (in. lbs.)	Pullout (lbs.)	Torque-out (in. lbs.)
UNIFIED	256	90	6	112	8
	440	165	14	245	16
	632	268	25	295	31
	832	328	36	385	52
	032	385	54	565	80
	0420	480	135	600	190

	Thread Code	ABS		Polycarbonate	
		Pullout (N)	Torque-out (N·m)	Pullout (N)	Torque-out (N·m)
METRIC	M2.5/M3	730	1.58	1080	1.81
	M4	1450	4.07	1710	5.88
	M5	1710	6.1	2510	9.04
	M6	2130	15.26	2660	21.47

Types ISA, ISB and ISC[1]

	Thread Code	ABS		Polycarbonate	
		Pullout (lbs.)	Torque-out (in. lbs.)	Pullout (lbs.)	Torque-out (in. lbs.)
UNIFIED	256	85.5	6.14	149.4	6.37
	440	151.37	14.38	344.94	23.17
	632	320.3	21.69	405.9	18.19
	832	462.9	31.7	663.9	57.15
	032	549.6	52.3	1015.4	71.79
	0420	600.45	100.25	–	–

	Thread Code	ABS		Polycarbonate	
		Pullout (N)	Torque-out (N·m)	Pullout (N)	Torque-out (N·m)
METRIC	M3	680	1.62	1550	2.6
	M4	2080	3.58	2980	6.45
	M5	2470	5.9	4560	8.11
	M6	2700	11.1	–	–

Types MSIA and MSIB[1]

	Thread Code	Length Code	ABS		Polycarbonate	
			Pullout (N)	Torque-out (N·cm) (2)	Pullout (N)	Torque-out (N·cm) (2)
METRIC	M1	100	50	3.5	50	4.5
		250	150	10	200	12
	M1.2	100	50	3.5	50	4.5
		250	150	10	200	12
	M1.4	150	100	15	140	15
		300	330	30	400	30
	M1.6	150	100	15	140	15
		300	330	30	400	30

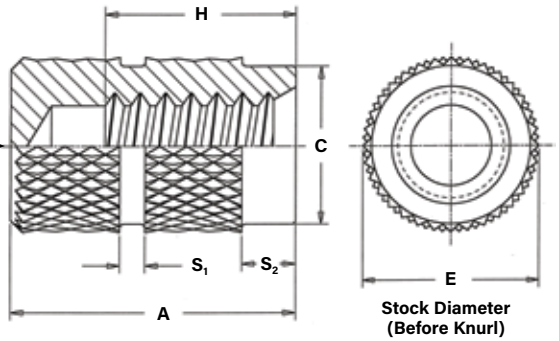
(1) The values reported are averages for ultrasonically inserted inserts when all installation specifications and procedures are followed. Variations in mounting hole size, sheet material and installation procedure will affect results. Performance testing of this product in your application is recommended. Samples can be provided for this purpose.

(2) Torque-out performance will depend on the strength and type of screw being used. In most cases, the screw threads will fail before the insert threads. For testing purposes, inserts were installed using heat stake equipment into a flat sheet.

Blind Threaded, Types IBA™, IBB™ and IBC™

- Blind-end protects the threads from plastic intrusion.
- Aluminum inserts offer light weight, lead-free alternative.

NOTE: Manufacturing techniques may leave a slight projection a maximum of .025" / 0.65 mm beyond the "A" dimension.



All dimensions are in inches.

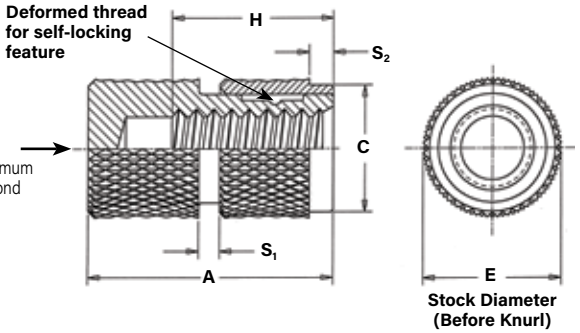
	Thread Size	Type			Thread Code	Length A ± .005 / H Min.					E Nom.	C ± .005	S_1 Nom.	S_2 Nom.	Minor Dia. Min./Max.
		New Aluminum	Brass	Stainless Steel		Min. No. of Full Threads									
						4	6	8	10	12					
UNIFIED	.086-56 (#2-56)	IBA	IBB	IBC	256	.156/.080	.219/.115	.250/.150	.312/.185	.344/.220	.156	.142	.03	.03	.067/.0737
	.112-40 (#4-40)	IBA	IBB	IBC	440	.205/.110	.281/.160	.344/.210	.406/.260	.438/.310	.188	.171	.03	.03	.086/.0939
	.138-32 (#6-32)	IBA	IBB	IBC	632	.250/.135	.344/.200	.406/.260	.469/.325	.531/.385	.219	.202	.03	.06	.105/.114
	.164-32 (#8-32)	IBA	IBB	IBC	832	.250/.135	.344/.200	.406/.260	.469/.325	.531/.385	.250	.226	.05	.06	.131/.139
	.190-24 (#10-24)	IBA	IBB	IBC	024	.356/.175	.438/.260	.531/.345	.625/.425	.716/.510	.281	.259	.05	.06	.146/.156
	.190-32 (#10-32)	IBA	IBB	IBC	032	.281/.135	.438/.200	.531/.260	.469/.325	.531/.385	.281	.259	.05	.06	.157/.164
	.250-20 (1/4-20)	IBA	IBB	IBC	0420	.344/.200	.531/.315	.625/.415	.719/.515	.819/.615	.344	.321	.06	.09	.197/.207
	.313-18 (5/16-18)	IBA	IBB	IBC	0518	.438/.235	.594/.345	.719/.460	.811/.570	.949/.680	.438	.404	.078	.094	.254/.265
	.375-16 (3/8-16)	IBA	IBB	IBC	0616	.500/.265	.688/.390	.812/.515	.935/.640	1.00/.765	.500	.466	.094	.094	.309/.321

All dimensions are in millimeters.

	Thread Size x Pitch	Type			Thread Code	Length A ± 0.13 / H Min.					E Nom.	C ± 0.13	S_1 Nom.	S_2 Nom.	Minor Dia. Min./Max.
		New Aluminum	Brass	Stainless Steel		Min. No. of Full Threads									
						4	6	8	10	12					
METRIC	M2.5 x 0.45	IBA	IBB	IBC	M2.5	4.78/2.01	6.35/2.87	7.14/3.74	9.53/4.6	10.31/5.47	4.78	4.34	0.8	0.8	2.03/2.14
	M3 x 0.5	IBA	IBB	IBC	M3	5.21/2.21	7.13/3.21	8.73/4.21	10.31/5.21	11.13/6.21	4.78	4.34	0.8	0.8	2.47/2.59
	M3.5 x 0.6	IBA	IBB	IBC	M3.5	6.35/2.62	8.73/3.81	10.31/5.02	11.91/6.22	13.48/7.42	5.56	5.13	0.8	1.6	2.87/3.01
	M4 x 0.7	IBA	IBB	IBC	M4	6.35/3.08	8.73/4.47	10.31/5.89	11.91/7.29	13.48/8.69	6.35	5.74	1.2	1.6	3.25/3.42
	M5 x 0.8	IBA	IBB	IBC	M5	7.13/3.49	11.12/5.09	13.48/6.69	11.91/8.29	13.48/9.89	7.14	6.57	1.2	1.6	4.15/4.34
	M6 x 1	IBA	IBB	IBC	M6	8.73/4.37	13.49/6.37	15.87/8.37	18.26/10.57	20.8/12.37	8.74	8.15	1.6	2.4	4.94/5.16
	M8 x 1.25	IBA	IBB	IBC	M8	11.13/5.72	15.09/7.82	18.24/10.32	20.62/12.82	22.23/15.32	11.13	10.26	1.98	2.4	6.68/6.92

Self-Locking, Blind Threaded, Type IBLC™

- Deformed threads lock screw in place to resist vibration.
- Blind-end protects the threads from plastic intrusion.
- Stainless steel, lead-free.



NOTE: Manufacturing techniques may leave a slight projection a maximum of .025" / 0.65 mm beyond the "A" dimension.

All dimensions are in inches.

	Thread Size	Type	Thread Code	Length Code	A ± .005	E Nom.	C ± .005	S_1 ± .005	S_2 ± .005	(1) Minor Dia. Min/Max	H Min.	First Cycle on Locking Torque (in. lbs.) (2)	
												Min.	Max.
UNIFIED	.086-56 (#2-56)	IBLC	256	8	.250	.156	.150	.03	.03	.067/.0737	.150	0.2	2.5
UNIFIED	.112-40 (#4-40)	IBLC	440	8	.344	.188	.180	.03	.03	.086/.0939	.210	0.5	5
UNIFIED	.138-32 (#6-32)	IBLC	632	8	.406	.219	.200	.03	.03	.105/.114	.260	1	10
UNIFIED	.164-32 (#8-32)	IBLC	832	8	.406	.250	.235	.05	.06	.131/.139	.260	1.5	15
UNIFIED	.190-32 (#10-32)	IBLC	032	8	.531	.281	.270	.05	.06	.157/.164	.260	2	18
UNIFIED	.250-20 (1/4-20)	IBLC	0420	8	.625	.344	.325	.06	.09	.197/.207	.415	4.5	30

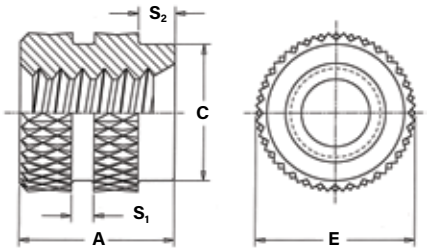
All dimensions are in millimeters.

	Thread Size x Pitch	Type	Thread Code	Length Code	A ± 0.13	E Nom.	C ± 0.13	S_1 ± 0.13	S_2 ± 0.13	(1) Minor Dia. Min/Max	H Min.	First Cycle on Locking Torque (N·m) (2)	
												Min.	Max.
METRIC	M3 x 0.5	IBLC	M3	8	8.73	4.78	4.57	0.8	0.8	2.48/2.59	4.21	0.06	0.6
METRIC	M4 x 0.7	IBLC	M4	8	10.31	6.35	5.97	1.2	1.6	3.26/3.42	5.89	0.16	1.6
METRIC	M5 x 0.8	IBLC	M5	8	13.48	7.14	6.86	1.2	1.6	4.15/4.34	6.69	0.23	2.1
METRIC	M6 x 1	IBLC	M6	8	15.87	8.73	8.26	1.6	2.4	4.95/5.15	8.37	0.37	3.2

(1) Minor diameter may be below minimum in deformed thread area.
(2) Locking torque values shown apply when the mating screw has the following thread class, material and finish. Screw thread class must be 3A for unified sizes and class 4h for metric sizes. Screws must be 300 series stainless steel with no additive finish.

Thru-Threaded, Types ITA™, ITB™ and ITC™

- Pilot diameter and undercuts allow plastic to flow into grooves providing high pullout resistance.
- Aluminum inserts offer light weight, lead-free alternative.



Stock Diameter (Before Knurl)

All dimensions are in inches.

	Thread Size	Type: New Aluminum	Type: Brass	Type: Stainless Steel	Thread Code (1)	A ± .005	E Nom.	C ± .005	S_1 Nom.	S_2 Nom.	Minor Dia. Min./Max.
UNIFIED	.060-80 (#0-80)	ITA	ITB	ITC	080	.125	.109	.078	.03	.03	.0475/.051
	.086-56 (#2-56)	ITA	ITB	ITC	256	.125	.156	.142	.03	.03	.067/.0737
	.112-40 (#4-40)	ITA	ITB	ITC	440	.188	.188	.171	.03	.03	.086/.0939
	.138-32 (#6-32)	ITA	ITB	ITC	632	.219	.219	.202	.03	.06	.105/.114
	.164-32 (#8-32)	ITA	ITB	ITC	832	.250	.250	.226	.05	.06	.131/.139
	.190-24 (#10-24)	ITA	ITB	ITC	024	.281	.281	.259	.05	.06	.146/.156
	.190-32 (#10-32)	ITA	ITB	ITC	032	.281	.281	.259	.05	.06	.157/.164
	.250-20 (1/4-20)	ITA	ITB	ITC	0420	.375	.344	.321	.06	.09	.197/.207
	.250-28 (1/4-28)	ITA	ITB	ITC	0428	.375	.344	.321	.06	.09	.212/.220
	.313-18 (5/16-18)	ITA	ITB	ITC	0518	.469	.437	.404	.08	.09	.254/.265
	.375-16 (3/8-16)	ITA	ITB	ITC	0616	.562	.500	.466	.09	.09	.309/.321

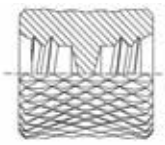
All dimensions are in millimeters.

	Thread Size x Pitch	Type: New Aluminum	Type: Brass	Type: Stainless Steel	Thread Code (1)	A ± 0.13	E Nom.	C ± 0.13	S_1 Nom.	S_2 Nom.	Minor Dia. Min./Max.
METRIC	M3 x 0.5	ITA	ITB	ITC	M3	4.77	4.77	4.34	0.78	0.78	2.47/2.59
	M4 x 0.7	ITA	ITB	ITC	M4	6.35	6.35	5.74	1.16	1.57	3.25/3.42
	M5 x 0.8	ITA	ITB	ITC	M5	7.13	7.13	6.57	1.16	1.57	4.15/4.34
	M6 x 1	ITA	ITB	ITC	M6	9.53	8.74	8.15	1.57	2.38	4.94/5.16
	M10 x 1.5	ITA	ITB	ITC	M10	14.27	12.7	11.84	2.38	2.38	8.55/8.67

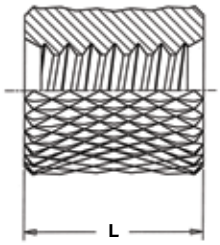
(1) Thread tapped thru, Class 3A/4h screw must pass with finger torque, but basic go gauge may stop at last thread.

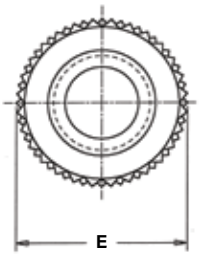
Thru-Threaded, Knurled, Types STKA™, STKB™ and STKC™

- Uniform knurl diameter reduces the risk of sink marks.
- Available in varying lengths for injection molding assemblies.
- Aluminum inserts offer light weight, lead-free alternative.



Configuration for STKA/STKB/STKC-256-20 and -24





Stock Diameter (Before Knurl)

All dimensions are in inches.

	Thread Size	Type: New Aluminum	Type: Brass	Type: Stainless Steel	Thread Code (1)	Length Code "L" ± .005 in 32nds of an Inch: .125	.187	.250	.312	.375	.500	.625	.750	E Nom.	Minor Dia. Min./Max.
UNIFIED	.086-56 (#2-56)	STKA	STKB	STKC	256	4	6	8	10	12	16	20	24	.156	.067/.0737
	.112-40 (#4-40)	STKA	STKB	STKC	440	4	6	8	10	12	16	20	24	.188	.086/.0939
	.138-32 (#6-32)	STKA	STKB	STKC	632	4	6	8	10	12	16	20	24	.219	.105/.114
	.164-32 (#8-32)	STKA	STKB	STKC	832	4	6	8	10	12	16	20	24	.250	.131/.139
	.190-32 (#10-32)	STKA	STKB	STKC	032	4	6	8	10	12	16	20	24	.281	.157/.164
	.250-20 (1/4-20)	STKA	STKB	STKC	0420	4	6	8	10	12	16	20	24	.375	.197/.207
	.313-18 (5/16-18)	STKA	STKB	STKC	0518	4	6	8	10	12	16	20	24	.437	.254/.265
	.375-16 (3/8-16)	STKA	STKB	STKC	0616	4	6	8	10	12	16	20	NA	.500	.309/.321

All dimensions are in millimeters.

	Thread Size x Pitch	Type: New Aluminum	Type: Brass	Type: Stainless Steel	Thread Code (1)	Length Code "L" ±0.13 in millimeters: 3	4	6	8	10	12	15	18	E Nom.	Minor Dia. Min./Max.
METRIC	M3 x 0.5	STKA	STKB	STKC	M3	3	4	6	8	10	12	15	18	4.74	2.47/2.59
	M4 x 0.7	STKA	STKB	STKC	M4	3	4	6	8	10	12	15	18	6.35	3.25/3.42
	M5 x 0.8	STKA	STKB	STKC	M5	3	4	6	8	10	12	15	18	7.13	4.15/4.34

(1) Thread tapped thru, Class 3A/4h screw must pass with finger torque, but basic go gauge may stop at last thread.
NA Not Available.

Types IBA, IBB and IBC(1)

	Thread Code	Length Code	ABS		Polycarbonate	
			Pullout (lbs.)	Torque-out (in. lbs.)	Pullout (lbs.)	Torque-out (in. lbs.)
UNIFIED	256	6	148 / 140	5.8 / 5.5	165 / 158	6.2 / 5.8
		10	150 / 143	6 / 5.7	167 / 160	6.4 / 5.9
	440	6	250 / 240	6.2 / 5.7	265 / 253	6.9 / 6.5
		10	252 / 243	6.4 / 5.9	268 / 262	7 / 6.6
	632	6	425 / 415	8.5 / 8	455 / 440	9.2 / 8.7
		10	428 / 420	8.6 / 8.2	458 / 452	9.3 / 8.8
	832	6	530 / 521	15 / 14.1	545 / 536	16.1 / 15.4
		10	533 / 526	15.8 / 15	547 / 540	16.4 / 15.8
	032	6	635 / 624	57 / 52	648 / 640	59 / 56
		10	637 / 629	58 / 54	651 / 646	60 / 57
	0420	6	910 / 895	108 / 103	928 / 912	111 / 107

	Thread Code	Length Code	ABS		Polycarbonate	
			Pullout (N)	Torque-out (N·m)	Pullout (N)	Torque-out (N·m)
METRIC	M2.5/M3	6	1110 / 1060	0.7 / 0.64	1170 / 1120	0.77 / 0.73
		10	1120 / 1080	0.72 / 0.66	1190 / 1160	0.79 / 0.74
	M4	6	2350 / 2310	1.69 / 1.59	2420 / 2380	1.81 / 1.74
		10	2370 / 2330	1.78 / 1.69	2430 / 2400	1.85 / 1.79
	M5	6	2820 / 2770	6.44 / 5.87	2880 / 2840	6.66 / 6.32
		10	2830 / 2790	6.55 / 6.1	2890 / 2870	6.78 / 6.44
	M6	6	4040 / 3980	12.2 / 11.6	4120 / 4050	12.5 / 12

Type IBLC(1)

	Thread Code	ABS		Polycarbonate	
		Pullout (lbs.)	Torque-out (in. lbs.)	Pullout (lbs.)	Torque-out (in. lbs.)
UNIFIED	256	128 / 118	5 / 4.6	142 / 134	5.8 / 5
	440	230 / 220	6 / 5.5	238 / 226	6.8 / 6.2
	632	392 / 378	7.8 / 7	406 / 390	9 / 8.2
	832	496 / 480	11 / 9	500 / 468	14 / 13
	032	592 / 580	40 / 30	592 / 564	48 / 42
	0420	760 / 738	90 / 78	798 / 780	99 / 84

	Thread Code	ABS		Polycarbonate	
		Pullout (N)	Torque-out (N·m)	Pullout (N)	Torque-out (N·m)
METRIC	M3	1020 / 970	0.67 / 0.62	1050 / 1000	0.76 / 0.7
	M4	2200 / 2130	1.24 / 1.01	2220 / 2080	1.58 / 1.46
	M5	2630 / 2570	4.52 / 3.39	2630 / 2500	5.42 / 4.74
	M6	3380 / 3280	10.1 / 8.81	3540 / 3460	11.1 / 9.49

Types ITA, ITB and ITC(1)

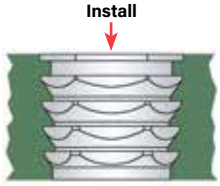
	Thread Code	ABS		Polycarbonate	
		Pullout (lbs.)	Torque-out (in. lbs.)	Pullout (lbs.)	Torque-out (in. lbs.)
UNIFIED	080/256	104 / 96	5.6 / 5.2	115 / 106	6 / 5.6
	440	175 / 166	6 / 5.5	186 / 173	6.9 / 6.2
	632	298 / 290	8 / 7.5	318 / 302	9 / 8.5
	832	370 / 368	14 / 13.6	382 / 372	16 / 14.7
	032	444 / 432	55 / 50	454 / 445	57 / 52
	0420/0428	635 / 620	75 / 70	650 / 635	103 / 98

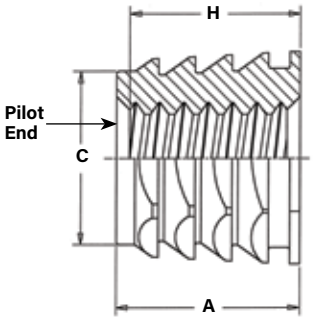
	Thread Code	ABS		Polycarbonate	
		Pullout (N)	Torque-out (N·m)	Pullout (N)	Torque-out (N·m)
METRIC	M3	770 / 730	0.67 / 0.62	820 / 760	0.77 / 0.7
	M4	1640 / 1630	1.58 / 1.53	1690 / 1650	1.8 / 1.66
	M5	1970 / 1920	6.22 / 5.65	2010 / 1970	6.44 / 5.87
	M6	2820 / 2750	8.47 / 7.91	2890 / 2820	11.6 / 11

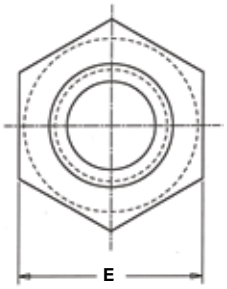
(1) The values reported are high and low ranges when all installation specifications and procedures are followed. Variations in mounting hole size, workpiece material and installation procedure will affect results. Performance testing of this product in your application is recommended. Samples can be provided for this purpose.

Hexagonal, Types NFPA™ and NFPC™

- Press-fit insert provides strong, reusable threads. No heat or ultrasonics required.
- Hexagonal "barbed" configuration ensures high torque-out and pullout values.
- Aluminum inserts offer light weight, lead-free alternative.







All dimensions are in inches.

	Thread Size	Type		Thread Code	A Max.	Min. Sheet Thickness	Hole Size in Sheet + .003 - .000	C Max.	E Nom.	Min. Boss Dia.	Min. Depth Full Thread H(1)
		Aluminum	Stainless Steel								
UNIFIED	.086-56 (#2-56)	NFPA	NFPC	256	.230	.240	.187	.186	.187	.500	.212
	.112-40 (#4-40)	NFPA	NFPC	440	.230	.240	.187	.186	.187	.500	.212
	.138-32 (#6-32)	NFPA	NFPC	632	.230	.240	.187	.186	.187	.500	.212
	.164-32 (#8-32)	NFPA	NFPC	832	.265	.275	.250	.249	.250	.625	.248
	.190-24 (#10-24)	NFPA	NFPC	024	.265	.275	.250	.249	.250	.625	.248
	.190-32 (#10-32)	NFPA	NFPC	032	.265	.275	.250	.249	.250	.625	.248
	.250-20 (1/4-20)	NFPA	NFPC	0420	.315	.328	.312	.311	.312	.750	.300
	.313-18 (5/16-18)	NFPA	NFPC	0518	.365	.380	.375	.374	.375	.950	.345

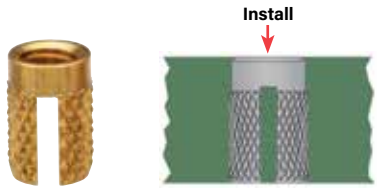
All dimensions are in millimeters.

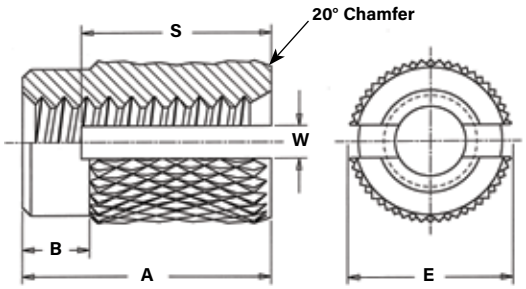
	Thread Size x Pitch	Type		Thread Code	A Max.	Min. Sheet Thickness	Hole Size in Sheet + 0.08	C Max.	E Nom.	Min. Boss Dia.	Min. Depth Full Thread H(1)
		Aluminum	Stainless Steel								
METRIC	M3 x 0.5	NFPA	NFPC	M3	5.84	6.1	4.75	4.72	4.75	12.7	5.38
	M3.5 x 0.6	NFPA	NFPC	M3.5	5.84	6.1	4.75	4.72	4.75	12.7	5.38
	M4 x 0.7	NFPA	NFPC	M4	6.73	6.99	6.35	6.32	6.35	15.88	6.3
	M5 x 0.8	NFPA	NFPC	M5	6.73	6.99	6.35	6.32	6.35	15.88	6.3
	M6 x 1	NFPA	NFPC	M6	8	8.33	7.92	7.89	7.92	19.05	7.62
	M8 x 1.25	NFPA	NFPC	M8	9.27	9.65	9.53	9.50	9.53	24.13	8.76

(1) Thread tapped thru, Class 3A/4h screw must pass with finger torque, but basic go gauge may stop at pilot end.

Thru-Threaded, Types PPA™ and PPB™

- Press-fit insert with strong, reusable threads. No heat or ultrasonics required.
- Slotted insert compresses allowing easy access into the mounting hole.
- Aluminum inserts offer light weight, lead-free alternative.





Stock Diameter (Before Knurl)

All dimensions are in inches.

	Thread Size	Type		Thread Code (1)	Length Code	A ± .005	E Nom.	B ± .015	S Nom.	W ± .015	Hole Size in Material	
		New Aluminum	Brass								Min. Hole Depth	Hole Dia. ± .002
UNIFIED	.086-56 (#2-56)	PPA	PPB	256	1	.156	.125	.040	.115	.020	.196	.125
	.112-40 (#4-40)	PPA	PPB	440	1	.188	.156	.045	.140	.020	.228	.156
					2	.250		.060	.190		.290	
	.138-32 (#6-32)	PPA	PPB	632	1	.250	.188	.060	.190	.031	.290	.188
					2	.313		.075	.235		.353	
	.164-32 (#8-32)	PPA	PPB	832	1	.250	.219	.060	.190	.047	.290	.219
					2	.313		.075	.235		.353	
	.190-32 (#10-32)	PPA	PPB	032	1	.313	.250	.075	.235	.062	.353	.250
					2	.375		.090	.280		.415	
	.250-20 (1/4-20)	PPA	PPB	0420	1	.438	.313	.105	.330	.078	.478	.313
					2	.500		.120	.375		.540	

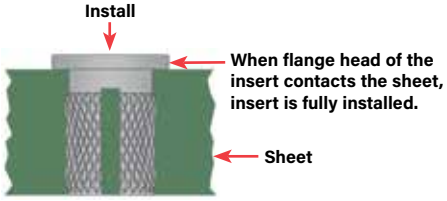
All dimensions are in millimeters.

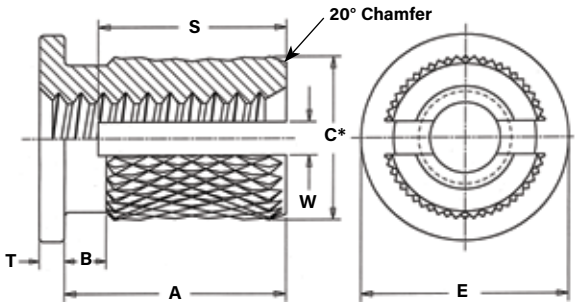
	Thread Size x Pitch	Type		Thread Code (1)	Length Code	A ± 0.13	Nom.	B ± 0.4	S Nom.	W ± 0.4	Hole Size in Material	
		New Aluminum	Brass								Min. Hole Depth	Hole Dia. ± 0.05
METRIC	M3 x 0.5	PPA	PPB	M3	1	4.77	3.96	1.14	3.56	0.5	5.79	3.96
					2	6.35		1.52	4.83		7.37	
	M4 x 0.7	PPA	PPB	M4	1	6.35	5.56	1.52	4.83	1.2	7.37	5.56
					2	7.95		1.91	5.97		8.97	
	M5 x 0.8	PPA	PPB	M5	1	7.95	6.35	1.91	5.97	1.6	8.97	6.35
					2	9.52		2.29	7.11		10.54	
	M6 x 1	PPA	PPB	M6	1	11.12	7.95	2.67	8.38	2	12.14	7.95
					2	12.7		3.05	9.53		13.72	

(1) Collapsed slot and burrs may cause prevailing torque while thread accepts class 3A/4h screw.

Flange-Head, Types PFLA™ and PFLB™

- Press-fit insert with strong, reusable threads. No heat or ultrasonics required.
- Flange-head eliminates direct contact of plastic with mating parts.
- Slotted insert compresses allowing easy access into the mounting hole.
- Aluminum inserts offer light weight, lead-free alternative.





*C Diameter (After Knurl)

All dimensions are in inches.

	Thread Size	Type: New Aluminum	Type: Brass	Thread Code (1)	Length Code	A ± .005	E Nom.	C Nom.	T ± .005	B ± .010	S Nom.	W ± .015	Hole Size in Material: Min. Hole Depth	Hole Size in Material: Hole Dia. ± .002
UNIFIED	.086-56 (#2-56)	PFLA	PFLB	256	1	.136	.188	.135	.020	.025	.115	.020	.176	.125
	.112-40 (#4-40)	PFLA	PFLB	440	1	.166	.219	.166	.022	.027	.140	.020	.206	.156
					2	.228					.190		.268	
	.138-32 (#6-32)	PFLA	PFLB	632	1	.222	.250	.200	.028	.033	.190	.031	.262	.188
					2	.253					.210		.293	
	.164-32 (#8-32)	PFLA	PFLB	832	1	.246	.281	.230	.035	.040	.210	.047	.286	.219
					2	.278					.235		.318	
	.190-32 (#10-32)	PFLA	PFLB	032	1	.270	.313	.262	.043	.048	.235	.062	.310	.250
					2	.332					.280		.372	
	.250-20 (1/4-20)	PFLA	PFLB	0420	1	.388	.375	.335	.050	.055	.330	.078	.428	.313
					2	.450					.375		.490	

All dimensions are in millimeters.

	Thread Size x Pitch	Type: New Aluminum	Type: Brass	Thread Code (1)	Length Code	A ± 0.13	E Nom.	C Nom.	T ± 0.13	B ± 0.25	S Nom.	W ± 0.4	Hole Size in Material: Min. Hole Depth	Hole Size in Material: Hole Dia. ± 0.05
METRIC	M3 x 0.5	PFLA	PFLB	M3	1	4.22	5.56	4.22	0.56	0.69	3.56	0.5	5.24	3.96
					2	5.8					4.83		6.82	
	M4 x 0.7	PFLA	PFLB	M4	1	6.25	7.14	5.84	0.89	1.02	5.33	1.14	7.27	5.56
					2	7.06					5.97		8.08	
	M5 x 0.8	PFLA	PFLB	M5	1	6.86	7.95	6.65	1.09	1.22	5.97	1.6	7.88	6.35
					2	8.43					7.11		9.45	
	M6 x 1	PFLA	PFLB	M6	1	9.86	9.53	8.51	1.27	1.40	8.38	2	10.88	7.95
					2	11.43					9.53		12.45	

(1) Collapsed slot and burrs may cause prevailing torque while thread accepts class 3A/4h screw.

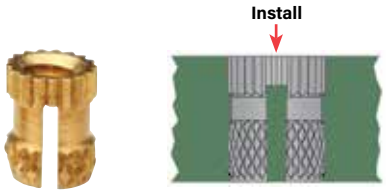
PEM® VARIMOUNT BONDING FASTENERS

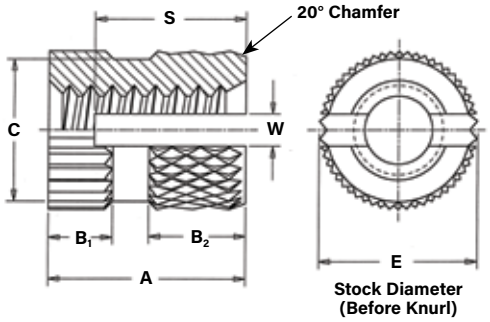
- Laminate within composite layers.
- Mold into plastics.
- Surface bond to panels from front or back side.
- Available with studs, nuts, or standoffs to meet a variety of applications.

For more information, see PEM® Bulletin VM.

Straight Knurl, Types PKA™ and PKB™

- Press-fit insert with strong, reusable threads. No heat or ultrasonics required.
- Straight knurls at the top end of the insert offers higher torsional resistance.
- Slotted insert compresses allowing easy access into the mounting hole.
- Aluminum inserts offer light weight, lead-free alternative.





All dimensions are in inches.

	Thread Size	Type		Thread Code (1)	A ± .005	E Nom.	C ± .010	B_1 ± .010	B_2 ± .010	S Nom.	W ± .015	Hole Size in Material	
		New Aluminum	Brass									Min. Hole Depth	Hole Dia. ± .002
UNIFIED	.086-56 (#2-56)	PKA	PKB	256	.125	.125	.110	.037	.053	.095	.020	.165	.125
	.112-40 (#4-40)	PKA	PKB	440	.188	.156	.137	.056	.079	.140	.020	.228	.156
	.138-32 (#6-32)	PKA	PKB	632	.250	.188	.165	.075	.105	.190	.031	.290	.188
	.164-32 (#8-32)	PKA	PKB	832	.312	.219	.196	.094	.131	.235	.047	.352	.219
	.190-32 (#10-32)	PKA	PKB	032	.375	.250	.234	.112	.158	.280	.062	.415	.250
	.250-20 (1/4-20)	PKA	PKB	0420	.500	.312	.291	.150	.210	.375	.078	.540	.312

All dimensions are in millimeters.

	Thread Size x Pitch	Type		Thread Code (1)	A ± 0.13	E Nom.	C ± 0.25	B_1 ± 0.25	B_2 ± 0.25	S Nom.	W ± 0.4	Hole Size in Material	
		New Aluminum	Brass									Min. Hole Depth	Hole Dia. ± 0.05
METRIC	M3 x 0.5	PKA	PKB	M3	4.78	3.96	3.48	1.42	2.01	3.56	0.5	5.8	3.96
	M4 x 0.7	PKA	PKB	M4	7.92	5.56	4.98	2.39	3.33	5.97	1.19	8.94	5.56
	M5 x 0.8	PKA	PKB	M5	9.53	6.35	5.94	2.84	4.01	7.11	1.57	10.55	6.35
	M6 x 1	PKA	PKB	M6	12.7	7.92	7.39	3.81	5.33	9.53	1.98	13.72	7.92

(1) Collapsed slot and burrs may cause prevailing torque while thread accepts class 3A/4h screw.

PRESS-IN THREADED INSERTS PERFORMANCE DATA

Types NFPA and NFPC(1)

	Thread Code	ABS			Polycarbonate		
		Install. Force (lbs.)	Pullout (lbs.)	Torque-out (in. lbs.)	Install. Force (lbs.)	Pullout (lbs.)	Torque-out (in. lbs.)
UNIFIED	440	225	125	4	600	280	16
	632	225	125	4	600	280	16
	832	300	135	10	600	380	42
	032	300	135	10	600	380	42
	0420	400	235	28	–	–	–

	Thread Code	ABS			Polycarbonate		
		Install. Force (kN)	Pullout (N)	Torque-out (N · m)	Install. Force (kN)	Pullout (N)	Torque-out (N · m)
METRIC	M3	1	556	0.45	2.67	1245	1.8
	M4	1.33	600	1.13	2.67	1690	4.74
	M5	1.33	600	1.13	2.67	1690	4.74
	M6	1.78	1045	3.16	–	–	–

Types PPA and PPB(1)

	Thread Code	Length Code	Phenolic		Polycarbonate	
			Pullout (lbs.)	Torque-out (in. lbs.)	Pullout (lbs.)	Torque-out (in. lbs.)
UNIFIED	256	1	60	12.8	52	7.2
	440	1	81	20.8	74	15.3
		2	193	38.6	170	25.2
	632	1	104	29.2	94	23.4
		2	221	49.6	198	35.6
	832	1	126	36.8	116	31.6
		2	249	59.8	224	45.6
	032	1	147	45.0	138	39.6
		2	276	69.6	253	55.6
	0420	1	192	61.6	182	56.0
		2	334	91.2	308	76.6

	Thread Code	Length Code	Phenolic		Polycarbonate	
			Pullout (N)	Torque-out (N · m)	Pullout (N)	Torque-out (N · m)
METRIC	M3	1	360	2.35	330	1.73
		2	860	4.36	760	2.85
	M4	1	560	4.16	520	3.57
		2	1110	6.76	1000	5.15
	M5	1	650	5.09	610	4.47
		2	1230	7.86	1130	6.28
	M6	1	850	6.96	810	6.33
		2	1490	10.31	1370	8.66

Types PFLA and PFLB(1)

	Thread Code	Length Code	Phenolic		Polycarbonate	
			Pullout (lbs.)	Torque-out (in. lbs.)	Pullout (lbs.)	Torque-out (in. lbs.)
UNIFIED	256	1	28	8.0	17	8.0
	440	1	40	14.7	28	14.7
		2	64	14.7	44	14.7
	632	1	53	22.0	41	22.0
		2	77	22.0	56	22.0
	832	1	64	28.8	53	28.8
		2	72	28.8	68	28.8
	032	1	76	35.6	65	35.6
		2	100	35.6	80	35.6
	0420	1	100	49.8	89	49.8
		2	125	49.8	104	49.8

	Thread Code	Length Code	Phenolic		Polycarbonate	
			Pullout (N)	Torque-out (N · m)	Pullout (N)	Torque-out (N · m)
METRIC	M3	1	180	1.66	130	1.66
		2	280	1.66	200	1.66
	M4	1	280	3.25	240	3.25
		2	320	3.25	300	3.25
	M5	1	340	4.02	290	4.02
		2	450	4.02	360	4.02
	M6	1	450	5.63	400	5.63
		2	560	5.63	460	5.63

Types PKA and PKB(1)

	Thread Code	Phenolic		Polycarbonate	
		Pullout (lbs.)	Torque-out (in. lbs.)	Pullout (lbs.)	Torque-out (in. lbs.)
UNIFIED	256	22	13.2	11	5.2
	440	42	22.2	32	14.4
	632	64	32.6	53	24.6
	832	84	42.0	73	33.8
	032	106	51.2	94	43.0
	0420	149	71.0	136	62.0

	Thread Code	Phenolic		Polycarbonate	
		Pullout (N)	Torque-out (N · m)	Pullout (N)	Torque-out (N · m)
METRIC	M3	190	2.51	140	1.63
	M4	370	4.75	320	3.82
	M5	470	5.79	420	4.86
	M6	660	8.02	610	7.01

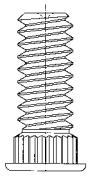
(1) The values reported are averages when all installation specifications and procedures are followed. Variations in mounting hole size, work piece material and installation procedure will affect results. Performance testing of this product in your application is recommended. Samples can be provided for this purpose.

CUSTOM DESIGNS FOR SPECIAL APPLICATIONS

If you can not find a standard product in this catalog to meet your requirements, our Application Engineering Department will assist you to design a custom fastener to satisfy your requirements. Below are a few examples of custom insert designs.

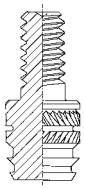
THIN SHEET STUDS

Provide external threads in material as thin as .125" / 3.175 mm. SI® studs are available in lengths from 1/4" to 3/4" / 6.35 to 19.05 mm in thread sizes #4-40 to 1/4-20 / M3 to M6. These inserts can be provided in aluminum, brass, steel and stainless steel and can be pressed into pre-molded or drilled holes.



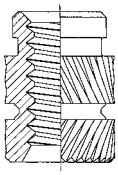
ULTRASONIC STUDS

Tapered body provides easy insertion in pre-molded or drilled holes. They are available in lengths from 1/4" to 3/4" / 6.35 to 19.05 mm in thread sizes #2-56 to 1/4-20 / M2 to M6. These inserts can be provided in aluminum, brass, steel and stainless steel.



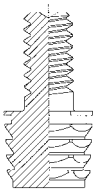
SELF-LOCKING ULTRASONIC INSERTS

The self-locking feature prevents screw loosening and is advantageous in applications where vibration is present. They are available in thread sizes #2-56 to 1/4-20 / M2 to M6 and are designed for ultrasonic installation into straight or tapered holes.

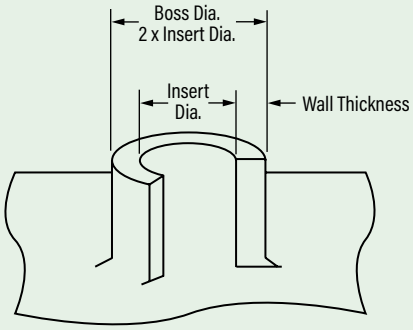


PRESS-IN STUDS

Allows for mounting a component on the external thread. They are available in lengths from 3/16" to 1" / 4.76 to 25.4 mm. Thread sizes #4-40 to 1/4-20 / M3 to M6. SI® press-in studs can be provided in aluminum, brass, steel and stainless steel and can be installed into pre-molded or drilled holes without the use of heat or ultrasonics.

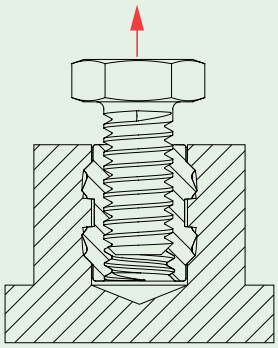


HOLE PREPARATION GUIDELINES



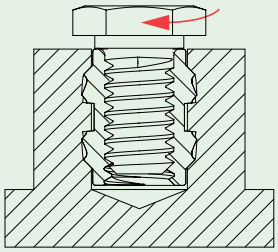
Thinner walls and bosses may be used but will affect performance.

PULLOUT



Pullout is the force required to pull the insert from the sheet.

TORQUE OUT



Torque-out is the torque required to turn the fastener in the parent material after installation without inducing clamp load on the fastener.

The SI® prototype kit contains a wide variety of SI® threaded inserts for plastics for your prototype needs. The kit contains over 1,000 ultrasonic, molded-in, and press-in inserts of various types and sizes, so you can choose the one which will best suit your specific design requirements. The kit contains both unified and metric parts.

PEM Part #PKSI-100. Price - US $50.00 (Subject to change without notice).

All specifications in this bulletin are presented as accurately and up-to-date as possible. We reserve the right to make changes to any information contained in this bulletin without notice.

We recommended that you test a particular product to be sure it is ideally suited to your application. We will be happy to provide samples for this purpose and our authorized distributors can also help you with your selection.

All PEM® products meet our stringent quality standards. If you require additional industry or other specific quality certifications, special procedures and/or part numbers are required. Please contact your local sales office or representative for further information.

Regulatory compliance information is available in Technical Support section of our website. Specifications subject to change without notice. See our website for the most current version of this bulletin.

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