

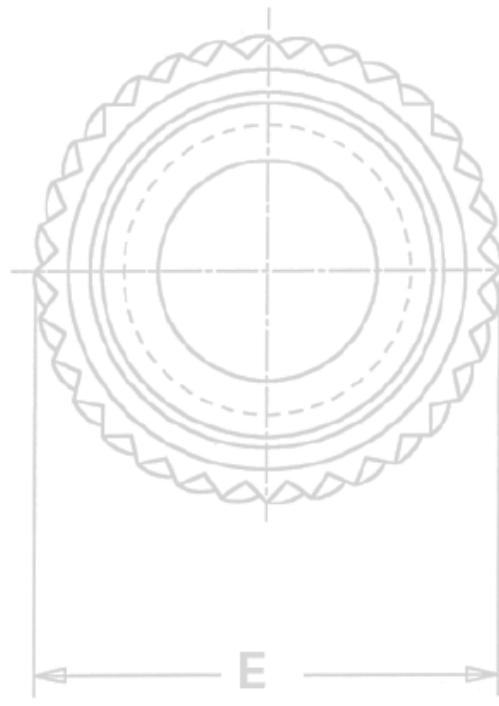
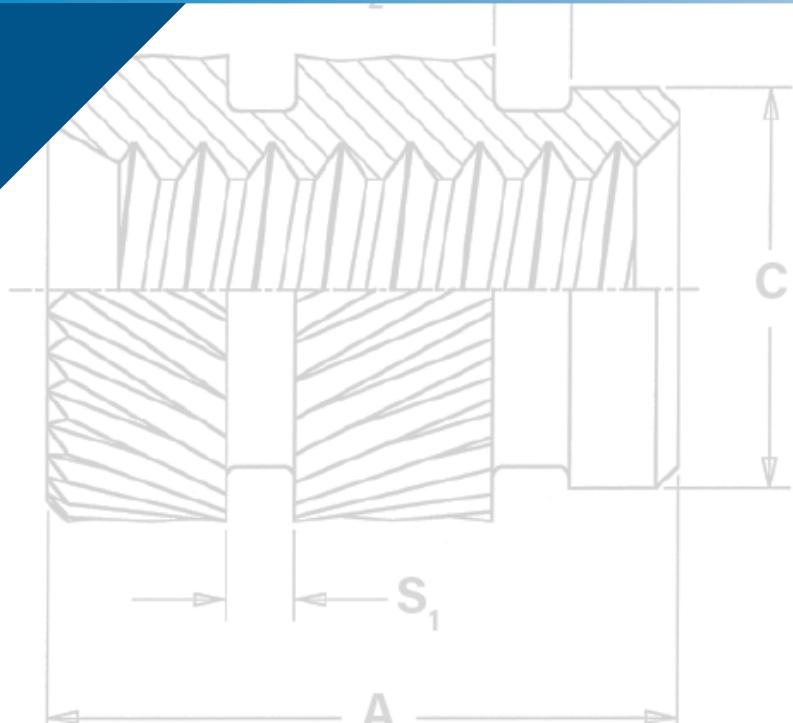


SI® brand inserts employ press-in, molded-in, or heat/ultrasonic installation methods to provide strong, reusable, permanent threads in plastic.



SI®

## THREADED INSERTS FOR PLASTICS



## SI® brand inserts employ press-in, molded-in, or heat/ultrasonic installation methods to provide strong, reusable, permanent threads in plastic.

- 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 defense, 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 leaded brass to address environmental and end-of-life recycling concerns.
  - 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.
- **NEW compression limiters** for plastic assemblies.
- SI® microPEM® inserts provide threads as small as M1.



*Lead-free, lightweight aluminum inserts.*

### 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 (except where noted). For PPB, PFLB, and PKB inserts 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 = 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



*Featuring threads as small as M1.*

**microPEM®**  
**FASTENERS**



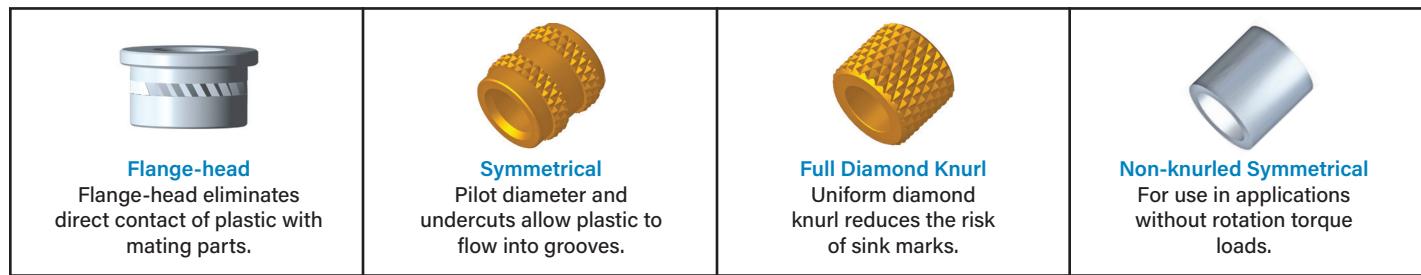
Insert drawings  
and models are  
available at  
[www.pemnet.com](http://www.pemnet.com)

**SI® BRAND COMPRESSION LIMITERS**

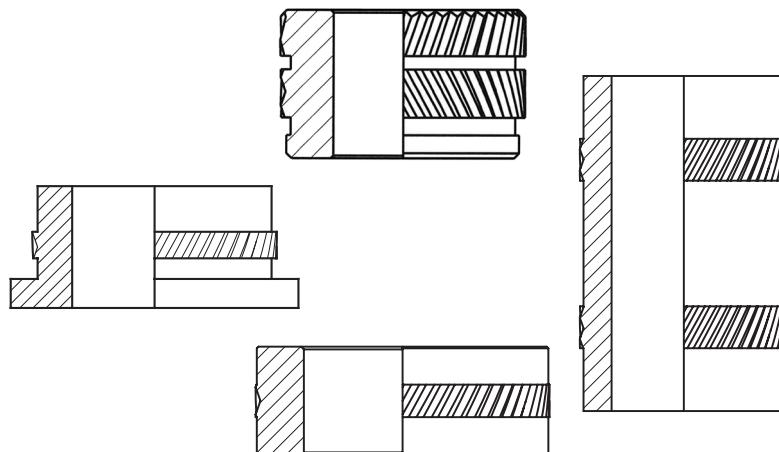
for plastic applications

Compression limiters are non-threaded inserts that are commonly used in applications where a compressive load is applied to a plastic assembly. The compression limiter strengthens the plastic and withstands the compressive force that is applied when a mating screw is tightened in the assembly. The integrity of the plastic is not compromised by the load that is applied.

- Custom designed in a wide range of sizes and profiles
- Available in brass, stainless steel, and lead-free aluminum
- Installed using ultrasonic, heat-staking or molded-in installation methods
- Available design types; flange-head, symmetrical, full diamond knurl and non-knurled symmetrical

**AVAILABLE OPTIONS**

| Installation Methods                    | Insert Design Types | Insert Materials | Finishes                               | Clearance Hole for Mating Screw Sizes:  |
|---|---------------------|------------------|--|---|
| Ultrasonic<br>Heat Staking<br>Molded-in | Flange-head         | Aluminum, Brass  | Plain                                  | #2-56 through 5/16-18 and M2 through M8 |
|   | Symmetrical         | Carbon Steel     | Zinc plated, 5µm, colorless            |   |
|   | Full Diamond Knurl  | Stainless Steel  | Passivated and/or tested per ASTM A380 |   |



## ULTRASONIC / HEAT STAKING INSERTS

- Ultrasonic - Installed by pressing the insert into the mounting hole with ultrasonic insertion equipment while simultaneously applying a high frequency vibration. Frictional heat caused by the vibration melts the plastic surrounding the insert allowing easy insertion. When the vibration ceases, the plastic solidifies, locking the insert permanently in place.
- Heat Staking - Installed by pressing the insert into the mounting hole with a thermal press to melt the plastic surrounding the insert.



IUA, IUB, IUC (Tapered, through threaded inserts) - [Page 6](#)

IUTA, IUTB, IUTC (Straight wall, through threaded inserts) - [Page 7](#)

ISA, ISB, ISC (Symmetrical, through threaded inserts) - [Page 8](#)

MSIA, MSIB (microPEM® symmetrical, through threaded inserts) - [Page 9](#)

Performance data for ultrasonic inserts - [Page 10](#)

## MOLDED-IN INSERTS

- Installed during the molding process, the inserts are located in the mold cavity by core pins. When the mold opens, the core pins are withdrawn leaving the inserts permanently encapsulated in the plastic section with only the threads exposed.
- Installing the inserts during the molding process eliminates the need for secondary steps or installation equipment.



IBA, IBB, IBC (Blind threaded inserts) - [Page 12](#)

IBLC (Self-locking blind threaded inserts) - [Page 13](#)

ITA, ITB, ITC (Through threaded inserts) - [Page 14](#)

STKA, STKB, STKC (Knurled inserts) - [Page 15](#)

Performance data for molded-in inserts - [Page 16](#)

## PRESS-IN INSERTS

- Installed by simply pressing the inserts into pre-molded or drilled holes. Installation is accomplished using any standard press at any time during the production process.
- Eliminates the need for molding-in inserts.
- Eliminates the need for heat or ultrasonic equipment.



NFPC, NFPA (Hexagonal, press-in inserts) - [Page 18](#)

PPA, PPB (Through threaded inserts) - [Page 19](#)

PFLA, PFLB (Flange-head inserts) - [Page 20](#)

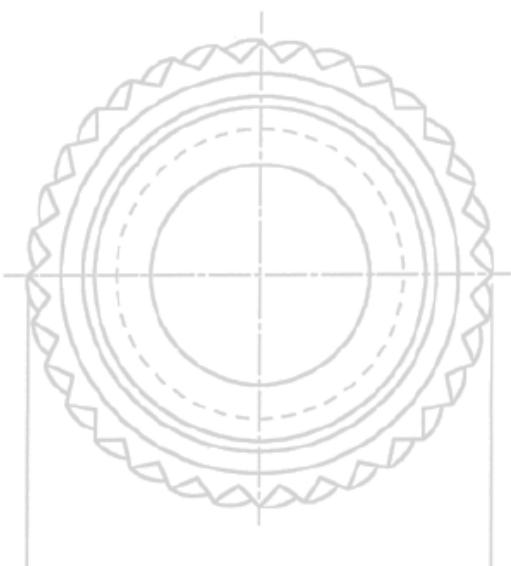
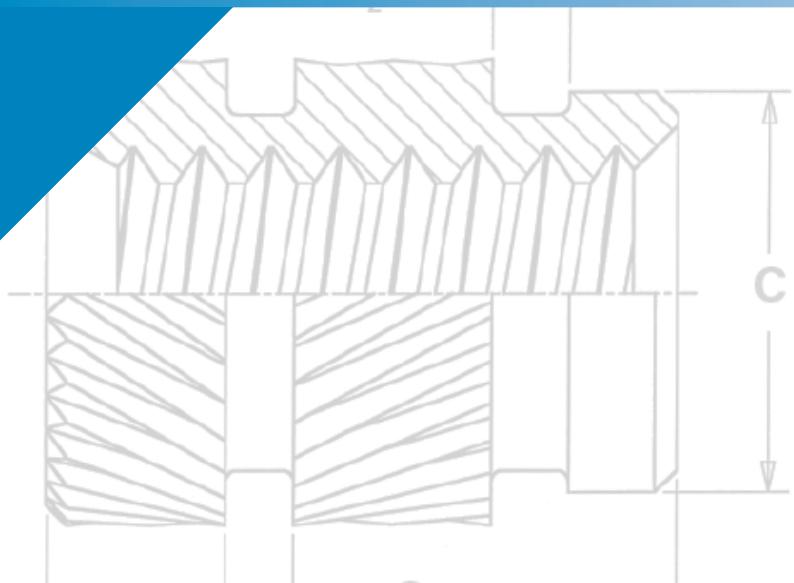
PKA, PKB (Straight knurl inserts) - [Page 21](#)

Performance data for press-in inserts - [Page 22](#)

Custom Designs, Hole Preparation Guidelines and SI Prototype Kit - [Page 23-24](#)

SI®

## ULTRASONIC / HEAT STAKING INSERTS

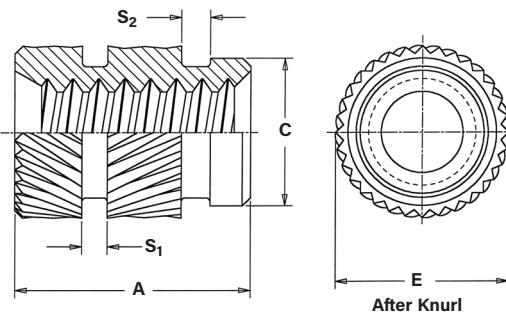
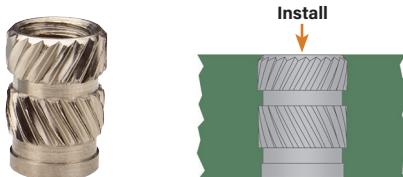




## ULTRASONIC / HEAT STAKING INSERTS

**Straight Wall, Thru-Threaded, IUTA™, IUTB™ and IUTC™ Inserts**

- Self-aligning lead-in of insert provides for accurate alignment prior to installation.
- Aluminum inserts ideal for light weight designs.
- Aluminum and stainless steel inserts offer lead-free alternative.



All dimensions are in inches.

| UNIFIED | Thread Size      | Type     |       |                 | Thread Code (1) | A<br>± .005 | E<br>± .009 | C<br>± .005 | S <sub>1</sub> Nom. | S <sub>2</sub> Nom. | Hole Size in Material |                             |
|---------|------------------|----------|-------|-----------------|-----------------|-------------|-------------|-------------|---------------------|---------------------|-----------------------|-----------------------------|
|         |                  | Aluminum | Brass | Stainless Steel |                 |             |             |             |                     |                     | Min. Hole Depth       | Hole Dia.<br>+.003<br>-.000 |
|         | .086-56 (#2-56)  | IUTA     | IUTB  | IUTC            | 256             | .157        | .147        | .121        | .021                | .021                | .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.

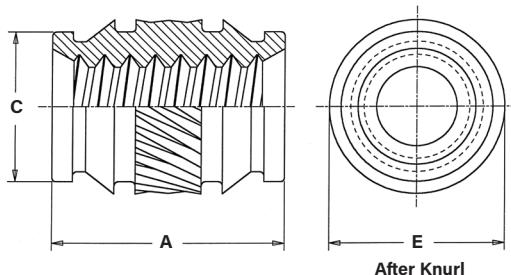
| METRIC | Thread Size x Pitch | Type     |       |                 | Thread Code (1) | A<br>± 0.13 | E<br>± 0.23 | C<br>± 0.13 | S <sub>1</sub> Nom. | S <sub>2</sub> Nom. | Hole Size in Material |                     |
|--------|---------------------|----------|-------|-----------------|-----------------|-------------|-------------|-------------|---------------------|---------------------|-----------------------|---------------------|
|        |                     | Aluminum | Brass | Stainless Steel |                 |             |             |             |                     |                     | Min. Hole Depth       | Hole Dia.<br>+ 0.08 |
|        | 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.

## ULTRASONIC / HEAT STAKING INSERTS

**Symmetrical, Thru-Threaded, ISA™, ISB™ and ISC™ Inserts**

- Symmetrical design eliminates the need for orientation.
- Aluminum inserts ideal for light weight designs.
- Aluminum and stainless steel inserts offer lead-free alternative.



All dimensions are in inches.

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

All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type     |       |                 | Thread Code (I) | A<br>± 0.13 | E<br>± 0.13 | C<br>± 0.08 | Hole Size in Material |                    |
|--------|---------------------|----------|-------|-----------------|-----------------|-------------|-------------|-------------|-----------------------|--------------------|
|        |                     | Aluminum | Brass | Stainless Steel |                 |             |             |             | Hole Depth            | Hole Dia.<br>+0.08 |
|        | M3 x 0.5            | ISA      | ISB   | ISC             | M3              | 5.74        | 4.62        | 3.88        | 6.5                   | 3.99               |
|        | M4 x 0.7            | ISA      | ISB   | ISC             | M4              | 8.15        | 6.22        | 5.51        | 8.92                  | 5.62               |
|        | M5 x 0.8            | ISA      | ISB   | ISC             | M5              | 9.52        | 7.01        | 6.3         | 10.29                 | 6.4                |
|        | 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.

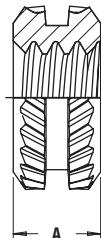
## ULTRASONIC / HEAT STAKING INSERTS

**microPEM® Symmetrical, Thru-Threaded, MSIA™ MSIB™ Inserts**

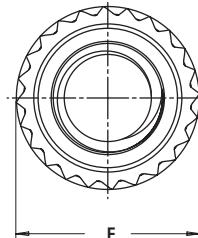
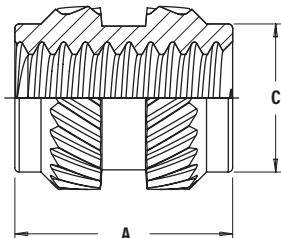
- Threads as small as M1.
- Symmetrical design eliminates the need for orientation.
- Provides excellent performance in wide range of plastics.
- Aluminum inserts ideal for light weight designs.
- Aluminum inserts offer lead-free alternative.



Style #1



Style #2



After Knurl

All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type          |       | Thread Code | Length Code | A ±0.1 | E ±0.1 | C Max. | Mounting Hole in Material |                 |                     |
|--------|---------------------|---------------|-------|-------------|-------------|--------|--------|--------|---------------------------|-----------------|---------------------|
|        |                     | Aluminum      | Brass |             |             |        |        |        | Min. Wall Thickness (6)   | Hole Depth Min. | Hole Diameter +0.05 |
|        |                     | M1 x 0.25 (3) | MSIA  | MSIB        | M1          | 100(1) | 1      | —      | 0.7                       | 1.77            | 1.75                |
| (1)    | M1 x 0.25 (3)       |               |       |             | 250(2)      | 2.5    | 2.1    | 1.75   | 0.7                       | 3.27            | 1.75                |
|        |                     |               |       |             | 100(1)      | 1      | 2.1    | —      |                           | 1.77            |                     |
| (2)    | M1.2 x 0.25 (3)     | MSIA          | MSIB  | M1.2        | 250(2)      | 2.5    | 2.1    | 1.75   | 0.7                       | 3.27            | 1.75                |
|        |                     |               |       |             | 150(1)      | 1      | —      | —      |                           | 1.77            |                     |
| (3)    | M1.4 x 0.3 (4)      | MSIA          | MSIB  | M1.4        | 300(2)      | 3      | 2.5    | 2.15   | 0.8                       | 2.27            | 2.15                |
|        |                     |               |       |             | 150(2)      | 1.5    | —      | —      |                           | 3.77            |                     |
| (4)    | M1.6 x 0.35 (5)     | MSIA          | MSIB  | M1.6        | 300(2)      | 3      | 2.5    | 2.15   | 0.8                       | 2.27            | 2.15                |
|        |                     |               |       |             | 300(2)      | 3      | 2.5    | 2.15   |                           | 3.77            |                     |
| (5)    | M2 x 0.4 (5)        | MSIA          | MSIB  | M2          | 400(2)      | 4      | 3.2    | 2.85   | 1.6                       | 3.77            | 2.85                |
|        |                     |               |       |             | 300(2)      | 3      | —      | —      |                           | 4.77            |                     |

(1) Style #1 - length codes less than 150

(2) Style #2 - length codes 150 and greater

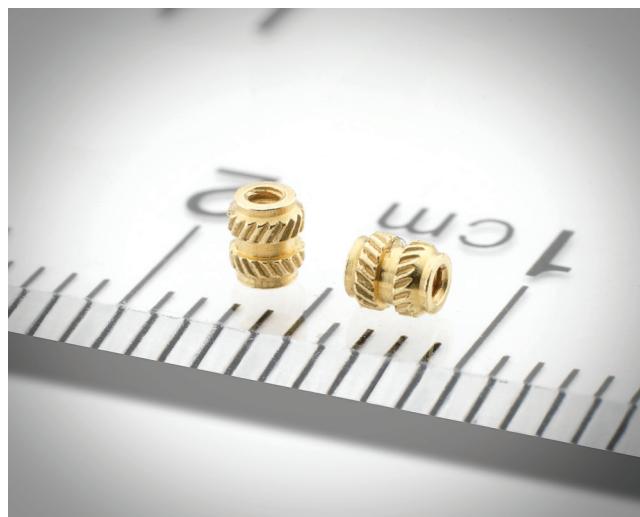
(3) Metric ISO 68-1, 5H

(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.

**micro  FASTENERS**



## PERFORMANCE DATA FOR ULTRASONIC / HEAT STAKING INSERTS

## IUA, IUB, IUBB, IUC, and IUCC Inserts (1)

| UNIFIED<br>Thread Code | ABS            |                       | Polycarbonate  |                       |
|------------------------|----------------|-----------------------|----------------|-----------------------|
|                        | Pullout (lbs.) | Torque-out (in. lbs.) | Pullout (lbs.) | Torque-out (in. lbs.) |
| 080-1                  | 75             | 3                     | 90             | 3                     |
| 080-2                  | 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                   |

| METRIC<br>Thread Code | ABS         |                  | Polycarbonate |                  |
|-----------------------|-------------|------------------|---------------|------------------|
|                       | Pullout (N) | Torque-out (N·m) | Pullout (N)   | Torque-out (N·m) |
| 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             |

## IUTA, IUTB, IUTC Inserts(1)

| UNIFIED<br>Thread Code | ABS            |                       | Polycarbonate  |                       |
|------------------------|----------------|-----------------------|----------------|-----------------------|
|                        | Pullout (lbs.) | Torque-out (in. lbs.) | Pullout (lbs.) | Torque-out (in. lbs.) |
| 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                   |

| METRIC<br>Thread Code | ABS         |                  | Polycarbonate |                  |
|-----------------------|-------------|------------------|---------------|------------------|
|                       | Pullout (N) | Torque-out (N·m) | Pullout (N)   | Torque-out (N·m) |
| 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            |

## ISA, ISB and ISC Inserts(1)

| UNIFIED<br>Thread Code | ABS            |                       | Polycarbonate  |                       |
|------------------------|----------------|-----------------------|----------------|-----------------------|
|                        | Pullout (lbs.) | Torque-out (in. lbs.) | Pullout (lbs.) | Torque-out (in. lbs.) |
| 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                | -              | -                     |

| METRIC<br>Thread Code | ABS         |                  | Polycarbonate |                  |
|-----------------------|-------------|------------------|---------------|------------------|
|                       | Pullout (N) | Torque-out (N·m) | Pullout (N)   | Torque-out (N·m) |
| 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             | -             | -                |

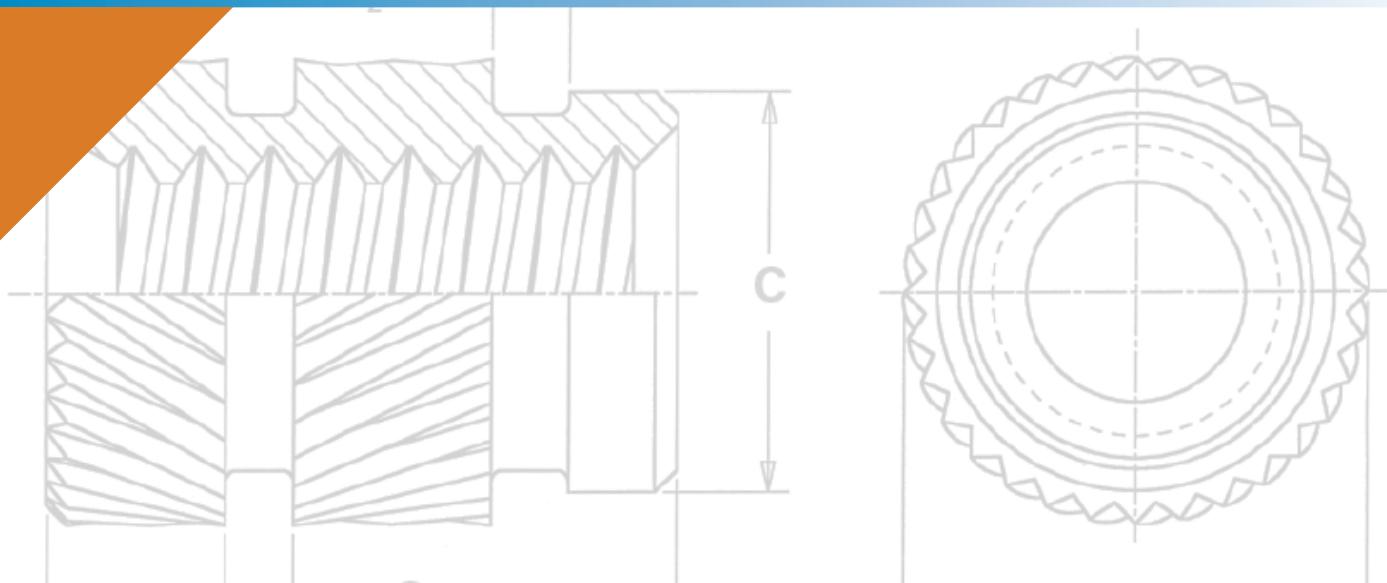
## MSIA and MSIB Inserts(1)

| METRIC<br>Thread Code | Length Code | ABS         |                       | Polycarbonate |                       |
|-----------------------|-------------|-------------|-----------------------|---------------|-----------------------|
|                       |             | Pullout (N) | Torque-out (N·cm) (2) | Pullout (N)   | Torque-out (N·cm) (2) |
| 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                    |
| M2                    | 300         | 335         | 35                    | 410           | 33                    |
|                       | 400         | 470         | 40                    | 595           | 35                    |

- (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.



**SI®**  
**MOLDED-IN INSERTS**



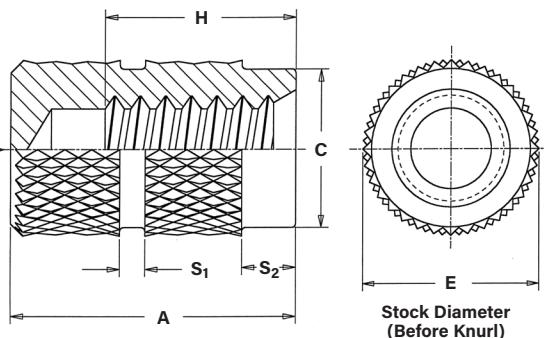
## MOLDED-IN INSERTS

**Blind Threaded, IBA™, IBB™ and IBC™ Inserts**

- Blind-end protects the threads from plastic intrusion.
- Aluminum inserts ideal for light weight designs.
- Aluminum and stainless steel inserts offer 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.

| UNIFIED | Thread Size       | Type     |       |                 | Thread Code | Length A ± .005 / H Min. |           |           |           |           | E Nom. | C ± .005 | S <sub>1</sub> Nom. | S <sub>2</sub> Nom. | Minor Dia. Min./Max. |  |  |  |  |  |  |  |
|---------|-------------------|----------|-------|-----------------|-------------|--------------------------|-----------|-----------|-----------|-----------|--------|----------|---------------------|---------------------|----------------------|--|--|--|--|--|--|--|
|         |                   |          |       |                 |             | Min. No. of Full Threads |           |           |           |           |        |          |                     |                     |                      |  |  |  |  |  |  |  |
|         |                   | Aluminum | Brass | Stainless Steel |             | 4                        | 6         | 8         | 10        | 12        |        |          |                     |                     |                      |  |  |  |  |  |  |  |
|         | .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            |  |  |  |  |  |  |  |

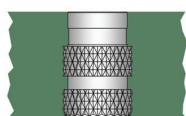
All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type     |       |                 | Thread Code | Length A ± 0.13 / H Min. |            |             |             |             | E Nom. | C ± 0.13 | S <sub>1</sub> Nom. | S <sub>2</sub> Nom. | Minor Dia. Min./Max. |  |  |  |  |  |  |
|--------|---------------------|----------|-------|-----------------|-------------|--------------------------|------------|-------------|-------------|-------------|--------|----------|---------------------|---------------------|----------------------|--|--|--|--|--|--|
|        |                     |          |       |                 |             | Min. No. of Full Threads |            |             |             |             |        |          |                     |                     |                      |  |  |  |  |  |  |
|        |                     | Aluminum | Brass | Stainless Steel |             | 4                        | 6          | 8           | 10          | 12          |        |          |                     |                     |                      |  |  |  |  |  |  |
|        | 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            |  |  |  |  |  |  |

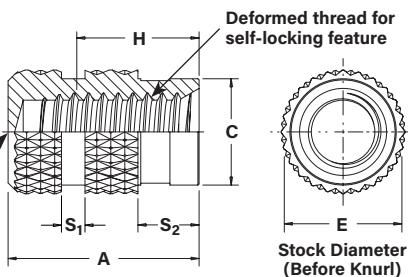
## MOLDED-IN INSERTS

**Self-Locking, Blind Threaded, IBLC™ Inserts**

- Deformed threads create prevailing torque locking feature to prevent screw loosening due to vibration.
- Blind-end protects the threads from plastic intrusion.
- Stainless steel inserts offer lead-free alternative.

**Style #1**

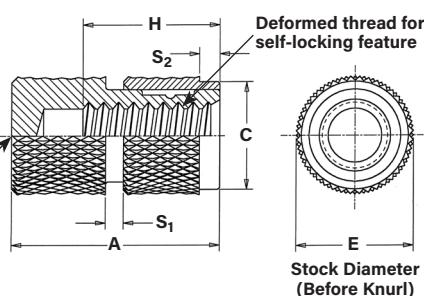
**NOTE:** Manufacturing techniques may leave a slight projection a maximum of .025"/0.65 mm beyond the "A" dimension.

**PART NUMBER DESIGNATION**

**IBLC - 832 - 8**  
 ↓      ↓      ↓  
 Type and Material    Thread Code    Length Code

**Style #2**

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

**PART NUMBER DESIGNATION**

**IBLC - 832 - 8ASSY**  
 ↓      ↓      ↓  
 Type and Material    Thread Code    Length Code

All dimensions are in inches.

| UNIFIED | Thread Size      | Type | Thread Code | Length Code |          | A ± .005 | E Nom. | C ± .005 |          | S <sub>1</sub> ± .005 | S <sub>2</sub> ± .005 | Minor Dia. Min./Max. (1) | H Min.     | First Cycle on Locking Torque (in. lbs.) (2) |      |     |
|---------|------------------|------|-------------|-------------|----------|----------|--------|----------|----------|-----------------------|-----------------------|--------------------------|------------|--|------|-----|
|         |                  |      |             | Style #1    | Style #2 |          |        | Style #1 | Style #2 |                       | Style #1              | Style #2                 |            | Min.   | Max. |     |
|         | .086-56 (#2-56)  | IBLC | 256         | N/A         | 8ASSY    | .250     | .156   | N/A      | .150     | .030                  | N/A                   | .030                     | .067/.0737 | .150   | 0.2  | 2.5 |
|         | .112-40 (#4-40)  | IBLC | 440         | 8           | 8ASSY    | .344     | .188   | .171     | .180     | .030                  | .130                  | .030                     | .086/.0939 | .210   | 0.5  | 5   |
|         | .138-32 (#6-32)  | IBLC | 632         | 8           | 8ASSY    | .406     | .219   | .195     | .200     | .050                  | .130                  | .030                     | .105/.114  | .260   | 1    | 10  |
|         | .164-32 (#8-32)  | IBLC | 832         | 8           | 8ASSY    | .406     | .250   | .226     | .235     | .050                  | .130                  | .060                     | .131/.139  | .260   | 1.5  | 15  |
|         | .190-32 (#10-32) | IBLC | 032         | 8           | 8ASSY    | .531     | .281   | .259     | .270     | .050                  | .130                  | .060                     | .157/.164  | .260   | 2    | 18  |
|         | .250-20 (1/4-20) | IBLC | 0420        | 8           | 8ASSY    | .625     | .344   | .298     | .325     | .060                  | .150                  | .060                     | .197/.207  | .415   | 4.5  | 30  |

All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type | Thread Code | Length Code |          | A ± 0.13 | E Nom. | C ± 0.13 |          | S <sub>1</sub> ± 0.13 | S <sub>2</sub> ± 0.13 | Minor Dia. Min./Max. (1) | H Min.    | First Cycle on Locking Torque (N·m) (2) |      |     |
|--------|---------------------|------|-------------|-------------|----------|----------|--------|----------|----------|-----------------------|-----------------------|--------------------------|-----------|---|------|-----|
|        |                     |      |             | Style #1    | Style #2 |          |        | Style #1 | Style #2 |                       | Style #1              | Style #2                 |           | Min.                                    | Max. |     |
|        | M3 x 0.5            | IBLC | M3          | 8           | 8ASSY    | .873     | 4.78   | 4.34     | 4.57     | 0.8                   | 3.3                   | 0.8                      | 2.48/2.59 | 4.21                                    | 0.06 | 0.6 |
|        | M4 x 0.7            | IBLC | M4          | 8           | 8ASSY    | 10.31    | 6.35   | 5.74     | 5.97     | 1.2                   | 3.3                   | 1.6                      | 3.26/3.42 | 5.89                                    | 0.16 | 1.6 |
|        | M5 x 0.8            | IBLC | M5          | 8           | 8ASSY    | 13.48    | 7.14   | 6.58     | 6.86     | 1.2                   | 3.3                   | 1.6                      | 4.15/4.34 | 6.69                                    | 0.23 | 2.1 |
|        | M6 x 1              | IBLC | M6          | 8           | 8ASSY    | 15.87    | 8.73   | 7.57     | 8.26     | 1.6                   | 3.8                   | 2.4                      | 4.95/5.15 | 8.37                                    | 0.37 | 3.2 |

N/A - Not Available.

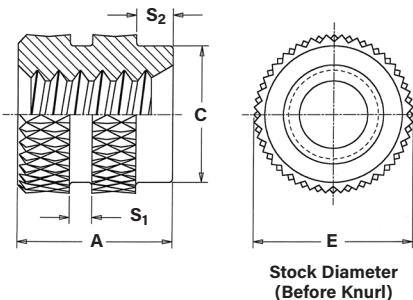
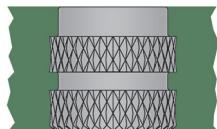
(1) Minor diameter may be below minimum in deformed thread area.

(2) Locking torque values shown apply when the mating screw has thread class of 3A for unified sizes and class 4h for metric sizes and is made from 300 series stainless steel with no additive finish. Other screws may be used, but the locking torque may not comply with the values shown.

## MOLDED-IN INSERTS

## Thru-Threaded, ITA™, ITB™ and ITC™ Inserts

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



All dimensions are in inches.

|         | Thread Size       | Type     |       |                 | Thread Code (1) | A ± .005 | E Nom. | C ± .005 | S <sub>1</sub> Nom. | S <sub>2</sub> Nom. | Minor Dia. Min./Max. |
|---------|-------------------|----------|-------|-----------------|-----------------|----------|--------|----------|---------------------|---------------------|----------------------|
|         |                   | Aluminum | Brass | Stainless Steel |                 |          |        |          |                     |                     |                      |
| 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.

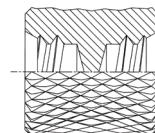
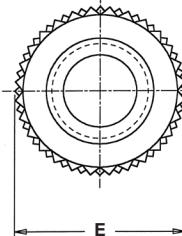
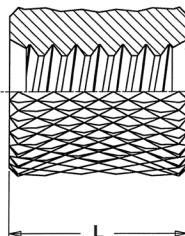
| METRIC | Thread Size x Pitch | Type     |       |                 | Thread Code (1) | A ± 0.13 | E Nom. | C ± 0.13 | S <sub>1</sub> Nom. | S <sub>2</sub> Nom. | Minor Dia. Min./Max. |
|--------|---------------------|----------|-------|-----------------|-----------------|----------|--------|----------|---------------------|---------------------|----------------------|
|        |                     | Aluminum | Brass | Stainless Steel |                 |          |        |          |                     |                     |                      |
|        | 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.

## MOLDED-IN INSERTS

**Thru-Threaded, Knurled, STKA™, STKB™ and STKC™ Inserts**

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

Configuration for  
STKA/STKB/STKC-256-20 and -24Stock Diameter  
(Before Knurl)

All dimensions are in inches.

| UNIFIED | Thread Size       | Type     |       |                 | Thread Code (I) | Length Code "L" ± .005 in 32nds of an inch |      |      |      |      |      |      | E Nom. | Minor Dia. Min./Max. |            |
|---------|-------------------|----------|-------|-----------------|-----------------|--|------|------|------|------|------|------|--------|----------------------|------------|
|         |                   | Aluminum | Brass | Stainless Steel |                 | .125                                       | .187 | .250 | .312 | .375 | .500 | .625 |        |                      |            |
|         | .086-56 (#2-56)   | STKA     | STKB  | STKC            | 256             | 4  | 6    | 8    | 10   | 12   | 16   | —    | —      | .156                 | .067/.0737 |
|         | .112-40 (#4-40)   | STKA     | STKB  | STKC            | 440             | 4  | 6    | 8    | 10   | 12   | 16   | —    | —      | .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   | —      | .500                 | .309/.321  |

All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type     |       |                 | Thread Code (I) | Length Code "L" ± 0.13 in millimeters |   |   |   |    |    |    | E Nom. | Minor Dia. Min./Max. |           |
|--------|---------------------|----------|-------|-----------------|-----------------|---------------------------------------|---|---|---|----|----|----|--------|----------------------|-----------|
|        |                     | Aluminum | Brass | Stainless Steel |                 | 3                                     | 4 | 6 | 8 | 10 | 12 | 15 | 18     |                      |           |
|        | 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.

## PERFORMANCE DATA FOR MOLDED-IN INSERTS

## IBA, IBB and IBC Inserts(1)

| UNIFIED | Thread Code | Length Code | ABS            |                       | Polycarbonate  |                       |
|---------|-------------|-------------|----------------|-----------------------|----------------|-----------------------|
|         |             |             | Pullout (lbs.) | Torque-out (in. lbs.) | Pullout (lbs.) | Torque-out (in. lbs.) |
| 256     | 4           | 147 / 139   | 5.7 / 5.4      | 164 / 157             | 6.1 / 5.7      |                       |
|         | 6           | 148 / 140   | 5.8 / 5.5      | 165 / 158             | 6.2 / 5.8      |                       |
|         | 8           | 149 / 142   | 5.9 / 5.6      | 166 / 159             | 6.3 / 5.85     |                       |
|         | 10          | 150 / 143   | 6 / 5.7        | 167 / 160             | 6.4 / 5.9      |                       |
|         | 12          | 151 / 145   | 6.1 / 5.8      | 168 / 161             | 6.5 / 6        |                       |
| 440     | 4           | 249 / 239   | 6.1 / 5.6      | 264 / 249             | 6.8 / 6.4      |                       |
|         | 6           | 250 / 240   | 6.2 / 5.7      | 265 / 253             | 6.9 / 6.5      |                       |
|         | 8           | 251 / 242   | 6.3 / 5.8      | 267 / 258             | 6.95 / 6.55    |                       |
|         | 10          | 252 / 243   | 6.4 / 5.9      | 268 / 262             | 7 / 6.6        |                       |
|         | 12          | 253 / 245   | 6.5 / 6        | 270 / 267             | 7.1 / 6.7      |                       |
| 632     | 4           | 424 / 413   | 8.5 / 7.9      | 454 / 434             | 9.1 / 8.6      |                       |
|         | 6           | 425 / 415   | 8.5 / 8        | 455 / 440             | 9.2 / 8.7      |                       |
|         | 8           | 427 / 418   | 8.6 / 8.1      | 457 / 446             | 9.25 / 8.75    |                       |
|         | 10          | 428 / 420   | 8.6 / 8.2      | 458 / 452             | 9.3 / 8.8      |                       |
|         | 12          | 431 / 423   | 8.7 / 8.3      | 460 / 458             | 9.4 / 8.9      |                       |
| 832     | 4           | 529 / 519   | 14.6 / 13.7    | 544 / 534             | 15.9 / 15.2    |                       |
|         | 6           | 530 / 521   | 15 / 14.1      | 545 / 536             | 16.1 / 15.4    |                       |
|         | 8           | 532 / 524   | 14.5 / 14.6    | 546 / 538             | 16.3 / 15.6    |                       |
|         | 10          | 533 / 526   | 15.8 / 15      | 547 / 540             | 16.4 / 15.8    |                       |
|         | 12          | 535 / 529   | 16.2 / 15.5    | 548 / 542             | 16.6 / 16      |                       |
| 032     | 4           | 634 / 622   | 56.5 / 51      | 647 / 637             | 58 / 55        |                       |
|         | 6           | 635 / 624   | 57 / 52        | 648 / 640             | 59 / 56        |                       |
|         | 8           | 636 / 627   | 57.5 / 53      | 650 / 643             | 59.5 / 56.5    |                       |
|         | 10          | 637 / 629   | 58 / 54        | 651 / 646             | 60 / 57        |                       |
|         | 12          | 638 / 632   | 58.5 / 55      | 653 / 649             | 61 / 58        |                       |
| 0420    | 6           | 910 / 895   | 108 / 103      | 928 / 912             | 111 / 107      |                       |

## IBLC Inserts(1)

| UNIFIED | Thread Code | ABS            |                       | Polycarbonate  |                       |
|---------|-------------|----------------|-----------------------|----------------|-----------------------|
|         |             | Pullout (lbs.) | Torque-out (in. lbs.) | Pullout (lbs.) | Torque-out (in. lbs.) |
|         | 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               |

## ITA, ITB and ITC Inserts(1)

| UNIFIED | Thread Code | ABS            |                       | Polycarbonate  |                       |
|---------|-------------|----------------|-----------------------|----------------|-----------------------|
|         |             | Pullout (lbs.) | Torque-out (in. lbs.) | Pullout (lbs.) | Torque-out (in. lbs.) |
|         | 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              |

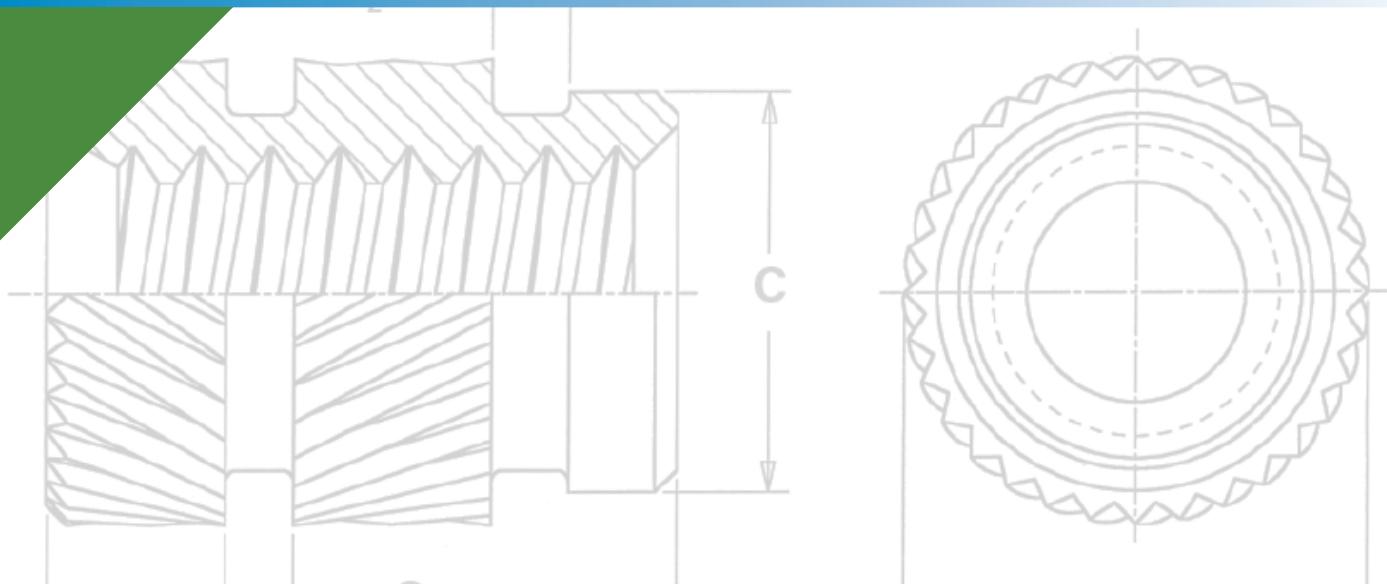
| METRIC  | Thread Code | Length Code | ABS         |                  | Polycarbonate |                  |
|---------|-------------|-------------|-------------|------------------|---------------|------------------|
|         |             |             | Pullout (N) | Torque-out (N·m) | Pullout (N)   | Torque-out (N·m) |
| M2.5/M3 | 4           | 1105 / 1050 | 0.69 / 0.63 | 1160 / 1100      | 0.76 / 0.73   |                  |
|         | 6           | 1110 / 1060 | 0.7 / 0.64  | 1170 / 1120      | 0.77 / 0.73   |                  |
|         | 8           | 1115 / 1070 | 0.71 / 0.65 | 1180 / 1140      | 0.78 / 0.74   |                  |
|         | 10          | 1120 / 1080 | 0.72 / 0.66 | 1190 / 1160      | 0.79 / 0.74   |                  |
|         | 12          | 1125 / 1090 | 0.73 / 0.67 | 1200 / 1180      | 0.8 / 0.75    |                  |
| M4      | 4           | 2340 / 2300 | 1.66 / 1.54 | 2415 / 2370      | 1.79 / 1.72   |                  |
|         | 6           | 2350 / 2310 | 1.69 / 1.59 | 2420 / 2380      | 1.81 / 1.74   |                  |
|         | 8           | 2360 / 2320 | 1.74 / 1.64 | 2425 / 2390      | 1.83 / 1.77   |                  |
|         | 10          | 2370 / 2330 | 1.78 / 1.69 | 2430 / 2400      | 1.85 / 1.79   |                  |
|         | 12          | 2380 / 2340 | 1.83 / 1.74 | 2435 / 2410      | 1.87 / 1.82   |                  |
| M5      | 4           | 2815 / 2760 | 6.39 / 5.8  | 2870 / 2825      | 6.6 / 6.26    |                  |
|         | 6           | 2820 / 2770 | 6.44 / 5.87 | 2880 / 2840      | 6.66 / 6.32   |                  |
|         | 8           | 2825 / 2780 | 6.5 / 5.94  | 2885 / 2855      | 6.72 / 6.38   |                  |
|         | 10          | 2830 / 2790 | 6.55 / 6.1  | 2890 / 2870      | 6.78 / 6.44   |                  |
|         | 12          | 2835 / 2800 | 6.61 / 6.17 | 2895 / 2885      | 6.84 / 6.7    |                  |
| M6      | 6           | 4040 / 3980 | 12.2 / 11.6 | 4120 / 4050      | 12.5 / 12     |                  |

| METRIC | Thread Code | ABS         |                  | Polycarbonate |                  |
|--------|-------------|-------------|------------------|---------------|------------------|
|        |             | Pullout (N) | Torque-out (N·m) | Pullout (N)   | Torque-out (N·m) |
| 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   |                  |

(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.



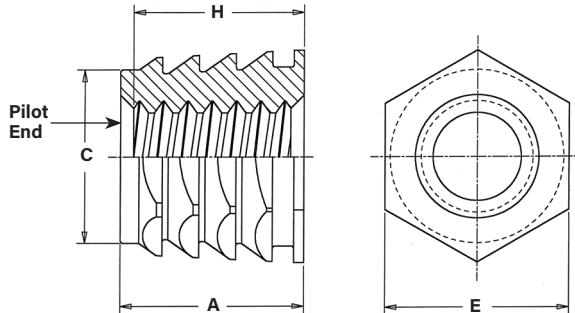
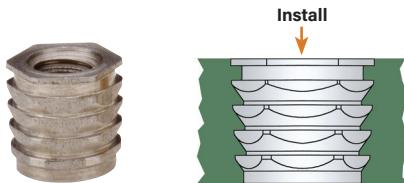
# SI® PRESS-IN INSERTS



## PRESS-IN INSERTS

**Hexagonal, NFPA™ and NFPC™ Inserts**

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



All dimensions are in inches.

| UNIFIED | Thread Size       | Type     |                 | Thread Code | A Max. | Min. Material Thickness | Hole Size in Material + .003 - .000 | C Max. | E Nom. | Min. Boss Dia. | Min. Depth Full Thread H(l) |
|---------|-------------------|----------|-----------------|-------------|--------|-------------------------|-------------------------------------|--------|--------|----------------|-----------------------------|
|         |                   | Aluminum | Stainless Steel |             |        |                         |                                     |        |        |                |                             |
|         | .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.

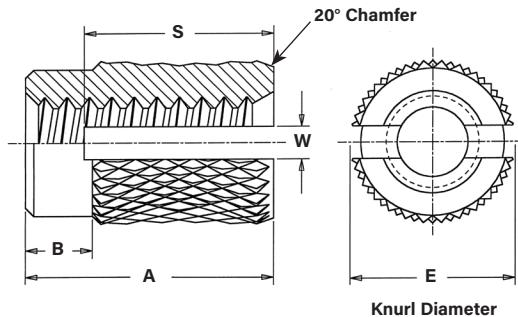
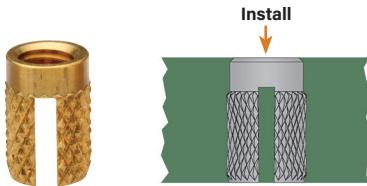
| METRIC | Thread Size x Pitch | Type     |                 | Thread Code | A Max. | Min. Material Thickness | Hole Size in Material + 0.08 | C Max. | E Nom. | Min. Boss Dia. | Min. Depth Full Thread H(l) |
|--------|---------------------|----------|-----------------|-------------|--------|-------------------------|------------------------------|--------|--------|----------------|-----------------------------|
|        |                     | Aluminum | Stainless Steel |             |        |                         |                              |        |        |                |                             |
|        | 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.

## PRESS-IN INSERTS

**Thru-Threaded, PPA™ and PPB™ Inserts**

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



All dimensions are in inches.

|         | Thread Size      | Type     |       | Thread Code (I) | Length Code | A ± .005 | E Nom. | B ± .015 | S Nom. | W ± .015 | Hole Size in Material |                  |
|---------|------------------|----------|-------|-----------------|-------------|----------|--------|----------|--------|----------|-----------------------|------------------|
|         |                  | Aluminum | Brass |                 |             |          |        |          |        |          | Min. Hole Depth       | Hole Dia. ± .002 |
| UNIFIED | .086-56 (#2-56)  | PPA      | PPB   | 256             | 1           | .156     | .134   | .040     | .115   | .020     | .196                  | .125             |
|         | .112-40 (#4-40)  | PPA      | PPB   | 440             | 1           | .188     | .169   | .045     | .140   | .020     | .228                  | .156             |
|         |                  |          |       |                 | 2           | .250     |        | .060     | .190   |          | .290                  |                  |
|         | .138-32 (#6-32)  | PPA      | PPB   | 632             | 1           | .250     | .200   | .060     | .190   | .031     | .290                  | .188             |
|         |                  |          |       |                 | 2           | .313     |        | .075     | .235   |          | .353                  |                  |
|         | .164-32 (#8-32)  | PPA      | PPB   | 832             | 1           | .250     | .231   | .060     | .190   | .047     | .290                  | .219             |
|         |                  |          |       |                 | 2           | .313     |        | .075     | .235   |          | .353                  |                  |
|         | .190-32 (#10-32) | PPA      | PPB   | 032             | 1           | .313     | .263   | .075     | .235   | .062     | .353                  | .250             |
|         |                  |          |       |                 | 2           | .375     |        | .090     | .280   |          | .415                  |                  |
|         | .250-20 (1/4-20) | PPA      | PPB   | 0420            | 1           | .438     | .332   | .105     | .330   | .078     | .478                  | .313             |
|         |                  |          |       |                 | 2           | .500     |        | .120     | .375   |          | .540                  |                  |

All dimensions are in millimeters.

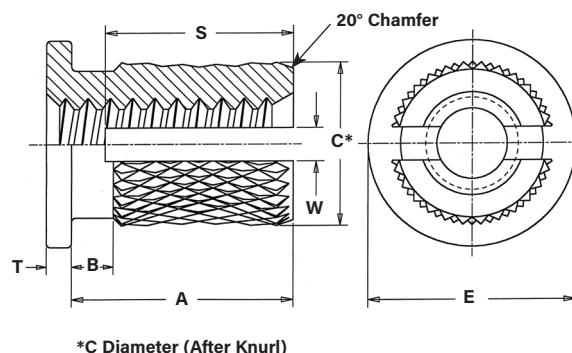
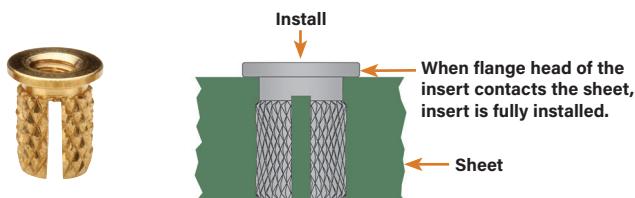
|        | Thread Size x Pitch | Type     |       | Thread Code (I) | Length Code | A ± 0.13 | E Nom. | B ± 0.4 | S Nom. | W ± 0.4 | Hole Size in Material |                  |
|--------|---------------------|----------|-------|-----------------|-------------|----------|--------|---------|--------|---------|-----------------------|------------------|
|        |                     | Aluminum | Brass |                 |             |          |        |         |        |         | Min. Hole Depth       | Hole Dia. ± 0.05 |
| METRIC | M3 x 0.5            | PPA      | PPB   | M3              | 1           | 4.77     | 4.29   | 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     | 5.87   | 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     | 6.68   | 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    | 8.43   | 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.

## PRESS-IN INSERTS

**Flange-Head, PFLA™ and PFLB™ Inserts**

- 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 ideal for light weight designs.
- Aluminum inserts offer lead-free alternative.



All dimensions are in inches.

| UNIFIED | Thread Size      | Type     |       | Thread Code (l) | Length Code | A ± .005 | E Nom. | C Nom. | T ± .005 | B ± .010 | S Nom. | W ± .015 | Hole Size in Material |                  |
|---------|------------------|----------|-------|-----------------|-------------|----------|--------|--------|----------|----------|--------|----------|-----------------------|------------------|
|         |                  | Aluminum | Brass |                 |             |          |        |        |          |          |        |          | Min. Hole Depth       | Hole Dia. ± .002 |
|         | .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.

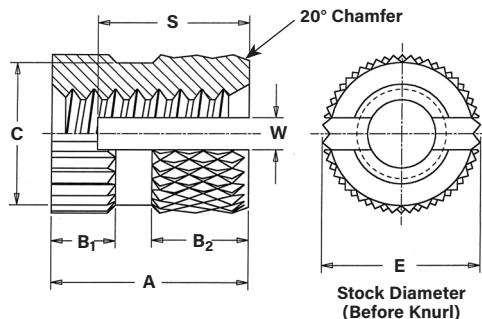
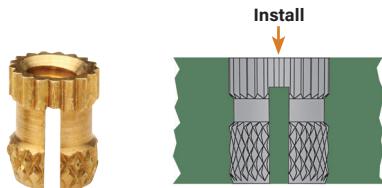
| METRIC | Thread Size x Pitch | Type     |       | Thread Code (l) | Length Code | A ± 0.13 | E Nom. | C Nom. | T ± 0.13 | B ± 0.25 | S Nom. | W ± 0.4 | Hole Size in Material |                  |
|--------|---------------------|----------|-------|-----------------|-------------|----------|--------|--------|----------|----------|--------|---------|-----------------------|------------------|
|        |                     | Aluminum | Brass |                 |             |          |        |        |          |          |        |         | Min. Hole Depth       | Hole Dia. ± 0.05 |
|        | 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.

## PRESS-IN INSERTS

**Straight Knurl, PKA™ and PKB™ Inserts**

- 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 ideal for light weight designs.
- Aluminum inserts offer lead-free alternative.



All dimensions are in inches.

|         | Thread Size      | Type     |       | Thread Code (I) | A ± .005 | E Nom. | C ± .010 | B <sub>1</sub> ± .010 | B <sub>2</sub> ± .010 | S Nom. | W ± .015 | Hole Size in Material |                  |
|---------|------------------|----------|-------|-----------------|----------|--------|----------|-----------------------|-----------------------|--------|----------|-----------------------|------------------|
|         |                  | 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 (I) | A ± 0.13 | E Nom. | C ± 0.25 | B <sub>1</sub> ± 0.25 | B <sub>2</sub> ± 0.25 | S Nom. | W ± 0.4 | Hole Size in Material |                  |
|--------|---------------------|----------|-------|-----------------|----------|--------|----------|-----------------------|-----------------------|--------|---------|-----------------------|------------------|
|        |                     | 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.

## PERFORMANCE DATA FOR PRESS-IN INSERTS

NFPA and NFPC Inserts<sup>(1)</sup>

| UNIFIED | Thread Code | ABS                   |                |                       | Polycarbonate         |                |                       |
|---------|-------------|-----------------------|----------------|-----------------------|-----------------------|----------------|-----------------------|
|         |             | Install. Force (lbs.) | Pullout (lbs.) | Torque-out (in. lbs.) | Install. Force (lbs.) | Pullout (lbs.) | Torque-out (in. lbs.) |
|         | 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                    | -                     | -              | -                     |

| METRIC | Thread Code | ABS                 |             |                    | Polycarbonate       |             |                    |
|--------|-------------|---------------------|-------------|--------------------|---------------------|-------------|--------------------|
|        |             | Install. Force (kN) | Pullout (N) | Torque-out (N · m) | Install. Force (kN) | Pullout (N) | Torque-out (N · m) |
|        | 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               | -                   | -           | -                  |

PPA and PPB Inserts<sup>(1)</sup>

| UNIFIED | Thread Code | Length Code | Phenolic       |                       | Polycarbonate  |                       |
|---------|-------------|-------------|----------------|-----------------------|----------------|-----------------------|
|         |             |             | Pullout (lbs.) | Torque-out (in. lbs.) | Pullout (lbs.) | Torque-out (in. lbs.) |
|         | 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                  |

| METRIC | Thread Code | Length Code | Phenolic    |                    | Polycarbonate |                    |
|--------|-------------|-------------|-------------|--------------------|---------------|--------------------|
|        |             |             | Pullout (N) | Torque-out (N · m) | Pullout (N)   | Torque-out (N · m) |
|        | 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               |

PFLA and PFLB Inserts<sup>(1)</sup>

| UNIFIED | Thread Code | Length Code | Phenolic       |                       | Polycarbonate  |                       |
|---------|-------------|-------------|----------------|-----------------------|----------------|-----------------------|
|         |             |             | Pullout (lbs.) | Torque-out (in. lbs.) | Pullout (lbs.) | Torque-out (in. lbs.) |
|         | 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                  |

| METRIC | Thread Code | Length Code | Phenolic    |                    | Polycarbonate |                    |
|--------|-------------|-------------|-------------|--------------------|---------------|--------------------|
|        |             |             | Pullout (N) | Torque-out (N · m) | Pullout (N)   | Torque-out (N · m) |
|        | 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               |

PKA and PKB Inserts<sup>(1)</sup>

| UNIFIED | Thread Code | Phenolic       |                       | Polycarbonate  |                       |
|---------|-------------|----------------|-----------------------|----------------|-----------------------|
|         |             | Pullout (lbs.) | Torque-out (in. lbs.) | Pullout (lbs.) | Torque-out (in. lbs.) |
|         | 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                  |

| METRIC | Thread Code | Phenolic    |                    | Polycarbonate |                    |
|--------|-------------|-------------|--------------------|---------------|--------------------|
|        |             | Pullout (N) | Torque-out (N · m) | Pullout (N)   | Torque-out (N · m) |
|        | 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.

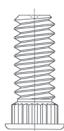


# SI® INSERTS FOR PLASTICS

If necessary our applications engineering department can assist you to design a custom component to satisfy your requirements. Below are a few examples.

## 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.



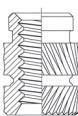
## ULTRASONIC STUDS

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 external threads. 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 are available in aluminum, brass, steel and stainless steel and can be installed into pre-molded or drilled holes without the use of heat or ultrasonics.



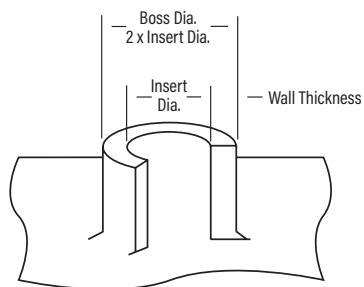
## PEM® VARIMOUNT® BONDING FASTENERS

- 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.](#)

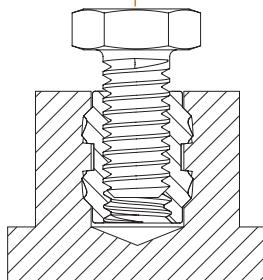


### HOLE PREPARATION GUIDELINES



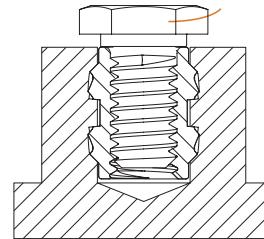
Thinner walls and bosses may be used but will affect performance.

### 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.



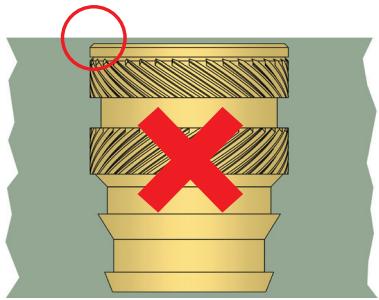
The SI® prototype kit contains a wide variety of SI® threaded inserts for plastics for your prototype needs. The kit contains over 1,000 ultrasonic, molded-in, and press-in inserts of various types and sizes, so you can choose the one which will best suit your specific design requirements. The kit contains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

**PEM Part #PKSI-100. US \$50.00**

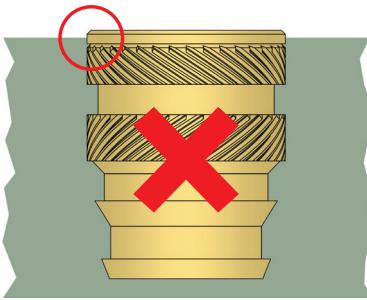
(Subject to change without notice).



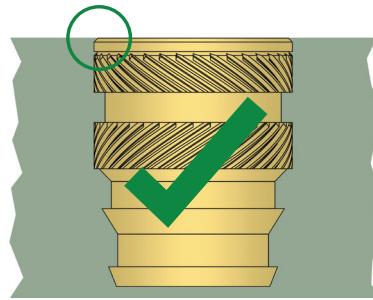
## Proper installation for SI® brand inserts

**Incorrect**

Inserts installed below the surface of the host plastic will be subjected to jack-out.

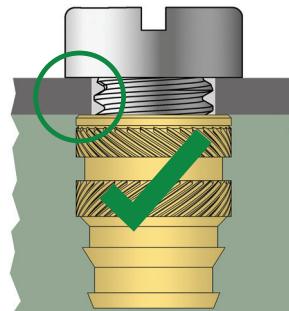
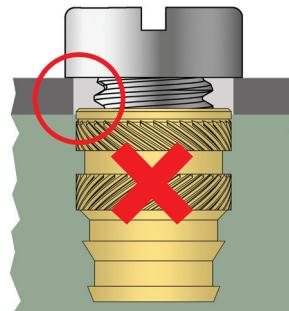
**Incorrect**

Inserts installed above the surface of the host plastic will not achieve optimal effectiveness.

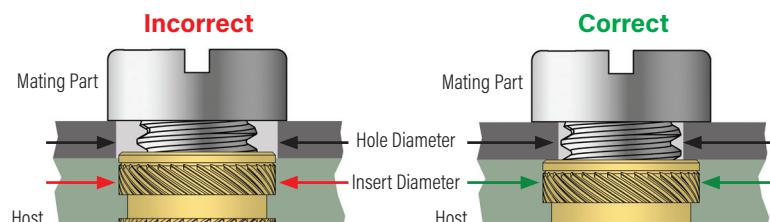
**Correct**

Inserts should be installed flush or within .005" above the host plastic for the best performance.

## Mating Component



To prevent jack-out, it is very important that the clearance hole of the mating component is sized correctly. The clearance hole should be larger than the assembly screw, yet smaller than the outside diameter of the insert so that the insert, not the host plastic, carries the compressive load. If the clearance hole must be oversized for misalignment purposes, a headed insert is recommended to increase the insert bearing area surface.



Hole in mating part must be smaller than insert diameter in host to prevent the insert from pulling through the assembly – known as "jack-out."

The diameter of the clearance hole in the mating component is very important. The insert and not the plastic must carry the load. The hole in the mating component must be larger than the outside diameter of the assembly screw, but smaller than the pilot or face diameter of the insert. This prevents jack-out. If a larger hole in the mating component is required for alignment purposes, a headed insert should be considered. Inserts should be installed flush (or no more than 0.13 mm (.005") above the hole).

*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 recommend 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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