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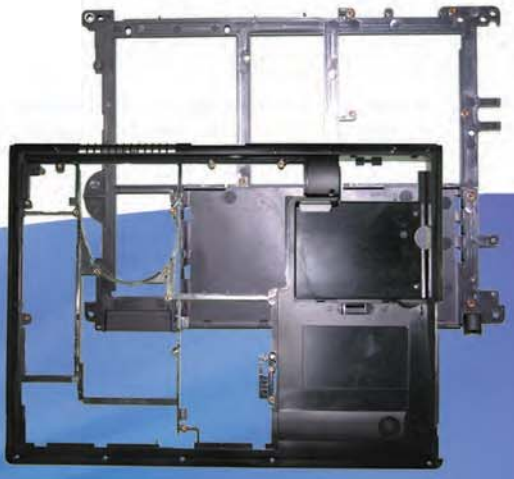
INSERTS FOR PLASTICS



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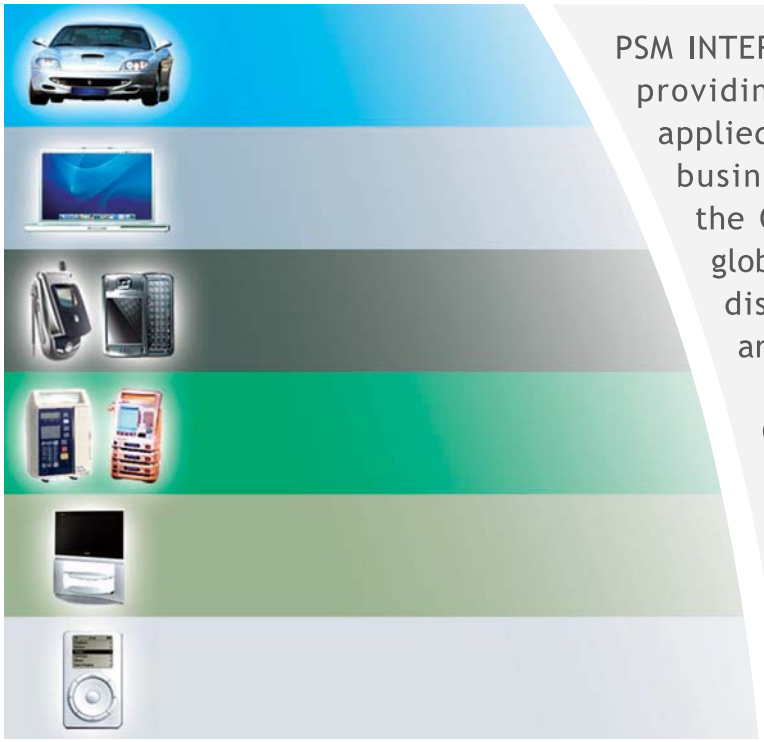

PSM INTERNATIONAL is a British based company providing specialized engineered fasteners applied to a broad range of industries. The business was established in 1931, today the Company is a member of EQT and has global capabilities with manufacturing and distribution operations in 23 countries around the world.

Our customers include the major players in the mobile telecommunication, PC and laptop markets as well as the automotive industry. Wherever manufactured goods are produced PSM has local people providing technical support, application engineering, project management and customer service to a consistently high standard.

Wherever you are...

we have the solution!

In addition to the standard products detailed in this catalog, PSM can supply modified standard products, special designs, fasteners for unusual applications, etc. Please contact PSM if you have any questions - we would be happy to review your application and propose a solution.

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INSERT SELECTION CHART

MATERIAL CHARACTERISTICS

TABLE 1	SONIC LOK	TAPER X	6030	HI TORK	TECH SONIC	MINI TECH	HEAT LOK	PRESS LOK	FIN LOK	SPIRO	BANC LOK	SCREW SERT	FLO TECH
Hard Thermoplastics													
Medium Thermoplastics													
Soft Thermoplastics													
Amorphous Thermoplastics													
Themosetting Polyester													
Themosetting (Other)													
Foams- Thermoplastics													
Foams-Themosetting													

MATERIAL CHARACTERISTICS

TABLE 2	POPULAR THERMOPLASTICS		
HARD	MEDIUM	SOFT	AMORPHOUS
PA-FILLED	ABS	PP	PPO
PPS	PA-Unfilled	PE	PC
PBT	POM(Acetal)	HDPE	
PC/ABS Blends	PVC		

THERMOSETTING PLASTICS	
POLYESTER	OTHERS
SMC	Phenolic
DMC	Ureas
BMC	Tufnol
	Polyurethane(rigid)

INSTALLATION METHODS

TABLE 3	SONIC LOK	TAPER X	6030	HI TORK	TECH SONIC	MINI TECH	HEAT LOK	PRESS LOK	FIN LOK	SPIRO	BANC LOK	SCREW SERT	FLO TECH
Hand Tool													
Simple Press													
Direct Heat													
Ultrasonic													
Tapping Machine													
Moulded In													
Fully Automated													

FASTENER CHARACTERISTICS

TABLE 4	SONIC LOK	TAPER X	6030	HI TORK	TECH SONIC	MINI TECH	HEAT LOK	PRESS LOK	FIN LOK	SPIRO	BANC LOK	SCREW SERT	FLO TECH
Pull Out													
Direct torque													
Jack Out													
Free Running Thread													
Thread Locking Effect													
Symmetrical													
Headed Versions													
Stud Versions													

TABLE 5	KEY
Recommended	
Possible	
Contact P.S.M Tech Center	
Not Recommended	
High	
Moderate	

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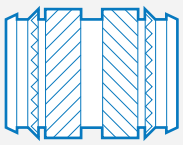
GLOBAL FASTENING SOLUTIONS

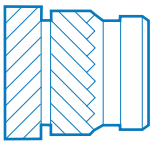
PRODUCT INDEX

TECH-SONIC©
Insert Type TEC series & Stud Type TCTS

Features a unique combination of opposed knurls and knurled vanes providing increased performance levels, even over the Sonic-Lok insert. Installation is simplified by the symmetrical nature of the insert, eliminating the need for orientation during automated or hand feeding.



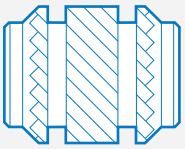
SONIC-LOK®
Insert Type SL & SHK series and Stud Type SLTS & SLHS series



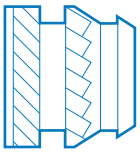
Designed for rapid installation into thermoplastics using heat or ultrasonic. It features opposed helical knurl bands to provide a combination of high torque and pull out resistance.

MINI-TECH©
Insert Type MTEC & HMTEC series

A miniature insert with all the design features and characteristics of the Tech-Sonic range. It is ideal for today's smaller plastic products and enables the use of very small screws that will provide complete re-usability with no risk of thread stripping problems.



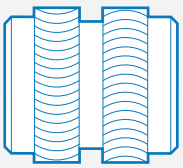
TAPER-X®
Insert Type TX series



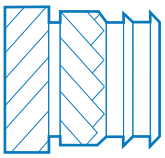
Has been designed for instances where fasteners must be installed into a 8° tapered hole. The combination of angled knurls and upwardly directed vanes provide high torque and pull-out performance.

HEAT-LOK®
Insert Type HL & HLH and Stud Type HLTS & HLHS series

Designed for installation into notch sensitive amorphous thermoplastics by heat. It features rounded knurls, avoiding the stress raising sharp crests and roots which typify knurls used on most inserts.



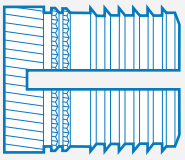
6030 INSERT
Insert Type 6030 & 6030H series



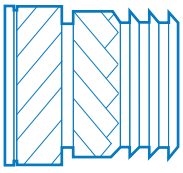
Has been developed for installation into thermoplastics where the design incorporates a tapered hole configuration. The parallel body design combined with the opposing helical knurl bands enables users to achieve up to a 25% increase in productivity by the ability to reduce the recommended dwell time compared with standard tapered hole inserts.

PRESS-LOK©
Insert Type PLK series

Offers ease of installation without the typical high screw installation torque and its plain and knurled vanes offer the levels of pull-out and torque resistance usually expected only of heat-installed inserts.



HI-TORK
Insert Type HT series



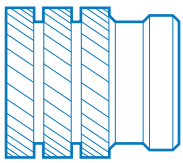
Offering high pull out/torque performance. Hi-Tork is recommended for high fill plastics with reduced installation depth, is tolerant of moulding process variables and provides high process capability.

PSM International
GLOBAL FASTENING SOLUTIONS

PRODUCT INDEX

SPIRO®

Insert Type SP & HSR series and Stud Type SPTS & SPHS series

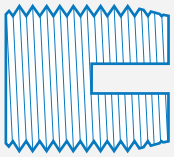


Designed to cope with the difficulties presented by hard brittle thermoset materials. The sharp precision knurl pattern cuts into these materials reducing radial stresses and allowing thinner boss walls than many other inserts.

SCREW-SERT®

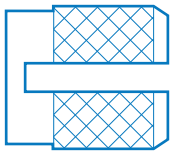
Insert Type SCT & HSCT series & Stud Type SCTS series

A self-tapping insert suitable for installation into a wide range of thermoplastic and thermosetting plastic materials. They are particularly suitable for applications involving high jack-out loading and materials with low core strengths.



BANC-LOK®

Insert Type N41, N42 & N42R series

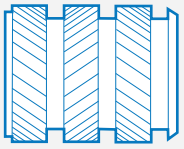


Ideal for use in hard thermosetting plastics, BancLok are press-in expansion inserts which, due to Banc-Lok diamond knurl pattern, give minimum penetration of the sides of the hole without sacrificing pull-out resistance.

FLO-TECH®

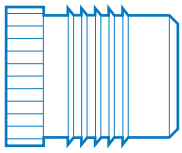
Insert Type FTC series

A blind-ended threaded insert which has been introduced to meet the needs of those moulders who, for a variety of reasons, prefer to mould-in. The unique design of three opposed helical knurl bands combined with the included recesses give extremely high levels of performance in both pullout and torque tests.



FIN-LOK®

Insert Type FL & FLH and Stud Type HLTS & HLHS series



A press-in insert, which can be easily installed into most thermoplastic materials. It features a combination of sharp fins and straight knurls. Unlike the Press-Lok range, this insert has a free running thread.

Technical details may change. Please contact P.S.M for latest drawings and specifications Order conditions and minimum quantities may apply for some products .

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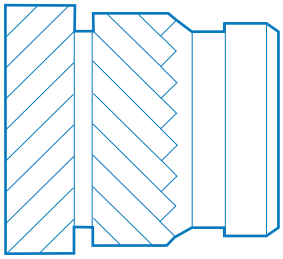
SONIC-LOK®
INSERTS & STUDS



Designed for rapid installation into thermoplastics using heat or ultrasonic. It features opposed helical knurl bands to provide a combination of high torque and pull out resistance.

ADVANTAGES

- Permits thin boss walls allowing compact boss design
- Provides high torque and pull out performance
- Rapid installation using heat or ultrasonic
- Choice of lengths available
- Self-aligning-Assists Installation

DESIGN GUIDE

HOLE PREPARATION

Moulded holes are recommended wherever possible. The taper on a moulded hole should be 1° inclusive and the hole diameter recommended should apply at the point reached by the bottom of the insert. Drilled holes may be used but performance may be reduced when compared with a moulded hole. The top of the hole should not be chamfered or counterbored and care must be taken to avoid bell mouthing. Hole diameter tolerance: -0.00 + 0.10mm.

WALL THICKNESS

A general guide to minimum wall thickness is given in the data table but this will vary depending upon the nature of the plastic. Where thinner walls are required these can often be accommodated, but consultation with the P.S.M Technology Centre or Local Sales Office and pre-production testing is strongly advised.

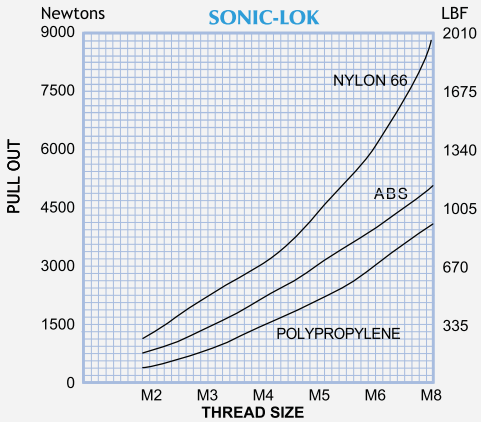
INSTALLATION

The fastener may be installed using either a pre-heating process or using heat generated by ultrasonic vibrations. Where preheating is used, care must be exercised to ensure that the fastener softens but does not melt the plastic. This will avoid any tendency to generate unsightly flash around the top of the insert. Ultrasonic installation is best carried out using low amplitude vibration and the minimum power consistent with satisfactory softening of the plastic material.

In either case excessive pressure should be avoided, since this may result in the insert being forced into the hole without allowing the plastic to soften and flow around the surface profile.

PERFORMANCE DATA

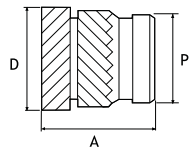
The complexity of materials and variations in service conditions make it impossible to detail fastener performance for specific applications.The chart below gives a general guide and shows the relative performance of the inserts in the range.



TECHNICAL DATA

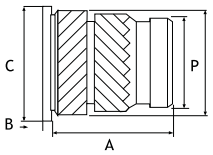
STANDARD MATERIAL: BRASS (B)
Other materials possible on quotation

INSERTS



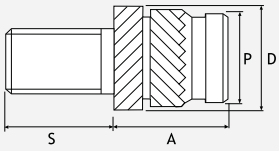
PRODUCT CODE (SL)

HEADED INSERTS



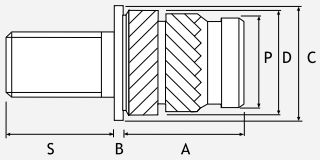
PRODUCT CODE (SHK)

STUD



PRODUCT CODE (SLTS)

HEADED STUD



PRODUCT CODE (SLHS)

DIMENSIONS

ISO METRIC

Unit: Millimetres

Thread Size	Insert Length A	Preferred Other Length A*			Stud Lengths (For SLTS & SLHS only) S										Head Height B	Head ø C	Insert ø D	Pilot End ø P	Rec.Hole Size -0.00 +0.10	Min. Wall Thickness
M2	4.0	2.5	3.0	-	5	6	8	10	12	14	16	18	20	25	0.53	4.8	3.6	3.1	3.2	1.3
M2.5	5.7	4.0	-	-	5	6	8	10	12	14	16	18	20	25	0.61	5.5	4.6	3.9	4.0	1.6
M3	5.7	4.0	4.8	-	5	6	8	10	12	14	16	18	20	25	0.61	5.5	4.6	3.9	4.0	1.6
M3.5	7.1	5.0	-	-	5	6	8	10	12	14	16	18	20	25	0.76	6.4	5.4	4.7	4.8	1.8
M4	8.1	4.0	4.8	5.8	5	6	8	10	12	14	16	18	20	25	0.91	7.1	6.3	5.5	5.6	2.1
M5	9.5	5.8	-	-	5	6	8	10	12	14	16	18	20	25	1.09	7.9	7.1	6.3	6.4	2.6
M6	12.7	6.8	9.5	-	5	6	8	10	12	14	16	18	20	25	1.35	9.5	8.7	7.9	8.0	3.3
M8	12.7	-	-	-	5	6	8	10	12	14	16	18	20	25	1.35	11.1	10.2	9.5	9.6	4.5
M10	12.7	-	-	-	5	6	8	10	12	14	16	18	20	25	1.60	14.0	12.6	11.8	11.9	6.0
M12	15.9	-	-	-	5	6	8	10	12	14	16	18	20	25	2.00	19.0	16.7	15.8	16.0	8.0

Other lengths possible on quotation.

UNIFIED

Unit: Inches

Thread Size	Insert Length A	Preferred Other Length A*				Stud Lengths (For SLTS & SLHS only) S										Head Height B	Head ø C	Insert ø D	Pilot End ø P	Rec.Hole Size -0.00 +0.04	Min. Wall Thickness
0-80	.125	-	-	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	-	-	.116	.095	.100	.051
2-56	.157	.100	.125	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.021	.187	.141	.123	.126	.051
4-40	.226	.096	.140	.170	.250	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.024	.218	.181	.154	.157	.063
6-32	.281	.150	.226	.250	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.030	.250	.214	.185	.189	.071
8-32	.321	.185	.250	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.036	.281	.248	.218	.220	.083
10-24	.375	.250	-	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.043	.312	.278	.249	.252	.102
10-32	.375	.226	.250	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.043	.312	.278	.249	.252	.102
1/4-20	.500	.250	-	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.053	.375	.341	.312	.315	.130
1/4-28	.500	-	-	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.053	.375	.341	.312	.315	.130
5/16-18	.500	-	-	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.053	.437	.403	.374	.378	.177
5/16-24	.500	-	-	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.053	.437	.403	.374	.378	.177
3/8-16	.500	-	-	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.063	.551	.494	.465	.469	.236
3/8-24	.500	-	-	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.063	.551	.494	.465	.469	.236
1/8-NPT	.625	-	-	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	-	-	.479	.450	.453	.236
1/2	.625	-	-	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.079	.748	.657	.622	.630	.315

Other lengths possible on quotation.

HOW TO SPECIFY

	SL	SHK	SLHS	SLTS
Product Code	SL-B-M4	SHK-B-M4	SLHS-B-M4-15.00	SLTS-B-M4-15.00
Material Code	SL-B-M4	SHK-B-M4	SLHS-B-M4-15.00	SLTS-B-M4-15.00
Thread Size	SL-B-M4	SHK-B-M4	SLHS-B-M4-15.00	SLTS-B-M4-15.00
Stud Length			SLHS-B-M4-15.00	SLTS-B-M4-15.00

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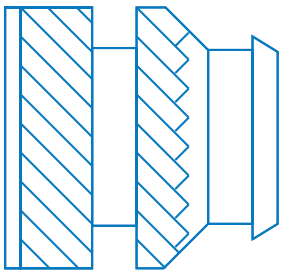
TAPER-X® INSERTS



Has been designed for instances where fasteners must be installed into a 8° tapered hole. The combination of angled knurls and upwardly directed vanes provide high torque and pull-out performance.

ADVANTAGES

- Designed for use in an 8° tapered hole
- High pull out performance
- High torque resistance
- Flange prevents escape of plastic
- Can be installed by heat or ultrasonics
- Self-aligning

DESIGN GUIDE

HOLE PREPARATION

The taper on the hole should be 8° inclusive. The insert is tapered for approximately 1/3 of its length and is parallel for the remainder. Note: Blind Holes - hole depth should be a minimum of 1 mm or 0.039 inches greater than the length of the insert to be installed.

SELECTION OF INSERT TYPE

Depending on the depth of the hole, the holding power can be increased significantly by selecting the double vane version.

INSTALLATION

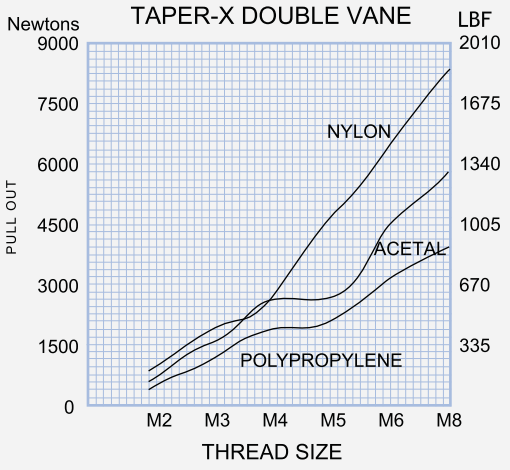
The fastener may be installed using either a pre-heating process or using heat generated by ultrasonic vibrations. Where preheating is used care must be exercised to ensure that the fastener softens but does not melt the plastic. This will avoid any tendency to generate unsightly "flash" around the top of the insert and could have a detrimental effect on performance. Insert must be installed flush to provide maximum performance.

WALL THICKNESS

A general guide to minimum wall thickness is given in the data table but this will vary depending upon the nature of the plastic. Where thinner walls are required these can often be accommodated, but consultation with the P.S.M Technology Centre or Local Sales Office and pre-production testing is strongly advised.

PERFORMANCE DATA

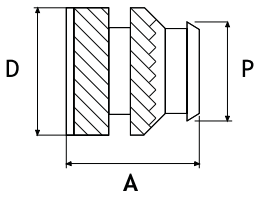
The complexity of materials and variations in service conditions make it impossible to detail fastener performance for specific applications. The chart below gives a general guide and show the relative performance of the inserts in the range.



TECHNICAL DATA

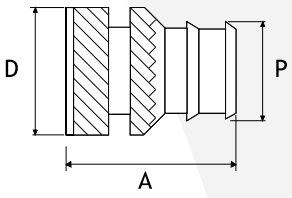
STANDARD MATERIAL: BRASS (B)
Other materials possible on quotation

SINGLE VANE INSERTS



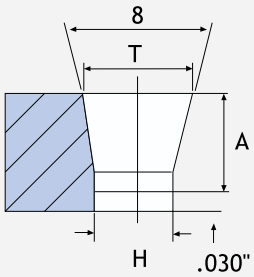
PRODUCT CODE [TX] (SHORT)

DOUBLE VANE INSERTS



PRODUCT CODE [TX] (LONG)

HOLE CONFIGURATION



DIMENSIONS

"SINGLE VANE" METRIC

Unit: Millimetres

Thread Size	Insert Length A	Insert ø D	Pilot End ø P	Rec.Hole Size + / - 0.025 T	H	Min. Wall Thickness
M1	2.9	3.45	3.10	3.12	3.00	2.0
M2	2.9	4.37	3.10	3.12	3.00	2.0
M2.5	3.4	4.37	3.98	4.03	3.88	2.4
M3	3.8	5.58	5.15	5.23	5.05	3.0
M3.5	3.8	5.58	5.15	5.23	5.05	3.0
M4	4.7	6.35	5.84	5.94	5.74	3.4
M5	6.7	8.33	7.82	8.00	7.69	4.4
M6	7.6	9.53	8.99	9.22	8.86	4.9
M8	8.5	11.9	11.15	11.38	10.95	6.2
M10	9.5	14.3	13.46	13.71	13.28	7.5

Other lengths possible on quotation.

"SINGLE VANE" UNIFIED

Unit: Inches

Thread Size	Insert Length A	Insert ø D	Pilot End ø P	Rec.Hole Size + / - .001 T	H	Min. Wall Thickness
0-80	.115	.136	.122	.123	.118	.080
2-56	.115	.136	.122	.123	.118	.080
4-40	.135	.172	.157	.159	.153	.093
6-32	.150	.220	.203	.206	.199	.116
8-32	.185	.250	.230	.234	.226	.133
10-24	.225	.296	.272	.277	.267	.159
10-32	.225	.296	.272	.277	.267	.159
1/4-20	.300	.375	.354	.363	.349	.194
1/4-28	.300	.375	.354	.363	.349	.194
5/16-18	.335	.469	.439	.448	.431	.245
5/16-24	.335	.469	.439	.448	.431	.245
3/8-16	.375	.563	.530	.540	.523	.293
3/8-24	.375	.563	.530	.540	.523	.293

Other lengths possible on quotation.

DIMENSIONS

"DOUBLE VANE" METRIC

Unit: Millimetres

Thread Size	Insert Length A	Insert ø D	Pilot End ø P	Rec.Hole Size + / - 0.025 T	H	Min. Wall Thickness
M1	4.8	3.45	2.92	3.12	2.72	2.0
M2	4.8	3.45	2.92	3.12	2.75	2.0
M2.5	5.6	4.37	3.66	4.04	3.58	2.4
M3	6.4	5.59	4.82	5.23	4.70	3.0
M3.5	6.4	5.59	4.82	5.23	4.70	3.0
M4	7.9	6.35	5.38	5.94	5.28	3.4
M5	11.1	8.33	7.19	8.00	7.06	4.4
M6	12.7	9.53	8.43	9.22	8.15	4.9
M8	14.3	11.9	10.31	11.38	10.18	6.2
M10	15.9	14.3	12.52	13.71	12.39	7.5

Other lengths possible on quotation.

"DOUBLE VANE" UNIFIED

Unit: Inches

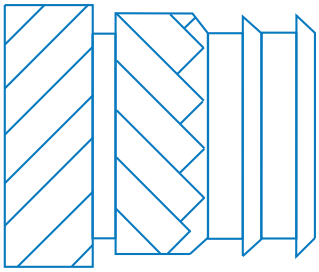
Thread Size	Insert Length A	Insert ø D	Pilot End ø P	Rec.Hole Size + / - .001 T	H	Min. Wall Thickness
0-80	.188	.136	.115	.123	.107	.080
2-56	.188	.136	.115	.123	.107	.080
4-40	.219	.172	.144	.159	.141	.093
6-32	.250	.220	.190	.206	.185	.116
8-32	.312	.250	.212	.234	.208	.133
10-24	.375	.297	.251	.277	.246	.159
10-32	.375	.297	.251	.277	.246	.159
1/4-20	.500	.375	.332	.363	.321	.194
1/4-28	.500	.375	.332	.363	.321	.194
5/16-18	.562	.469	.406	.448	.401	.245
5/16-24	.562	.469	.406	.448	.401	.245
3/8-16	.625	.563	.493	.540	.488	.293
3/8-24	.625	.563	.493	.540	.488	.293

Other lengths possible on quotation.

HOW TO SPECIFY

	TX
Product Code	TX-B-M3
Material Code	TX-B-M3
Thread Size	TX-B-M3

6030 INSERTS



Has been developed for installation into thermoplastics where the design incorporates a tapered hole configuration. The parallel body design combined with the opposing helical knurl bands enables users to achieve up to a 25% increase in productivity by the ability to reduce the recommended dwell time compared with standard tapered hole inserts.

ADVANTAGES

- Designed for use in an 8° tapered hole
- High pull out performance
- High torque resistance
- Flange prevents escape of plastic
- Can be installed by heat or ultrasonics
- Self-aligning

DESIGN GUIDE

HOLE PREPARATION

Moulded holes are recommended wherever possible. The taper on the hole should be 8° inclusive and the hole diameter recommended applies at the top of the hole.

Where possible, chamfers and counterbores at the top of the hole should be avoided. If the existing design incorporates one of these features please contact the P.S.M Technology Centre or your local Sales Office for **application advice.**

INSTALLATION

The fastener may be installed using either a preheating process or using heat generated by ultrasonic vibrations.

Where the preheating process is used, care must be exercised to ensure that the fastener softens but does not melt the plastic.

Ultrasonic installation is best carried out using low amplitude vibrations and the minimum power consistent with satisfactory softening of the plastic material.

WALL THICKNESS

A general guide to minimum wall thickness is given in the data table but this will vary depending upon the nature of the plastic. Where thinner walls are required, these can often be accommodated, but consultation with the P.S.M Technology Centre or your local Sales Office and pre-production testing is strongly advised.

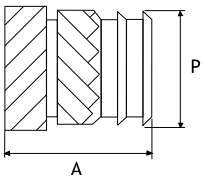
PERFORMANCE DATA

The complexity of materials and variations in service conditions make it impossible to detail fastener performance. Please consult with the P.S.M Technology Centre or your local Sales Office for specific application advice.

TECHNICAL DATA

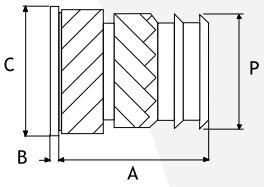
STANDARD MATERIAL: BRASS (B)
Other materials possible on quotation

INSERTS



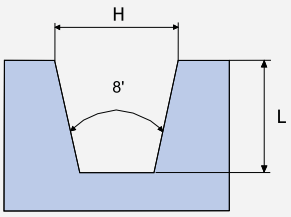
PRODUCT CODE [6030]

HEADED INSERTS



PRODUCT CODE [6030H]

HOLE CONFIGURATION



DIMENSIONS

METRIC

Unit: Millimetres

Thread Size	Insert Length A	Head Height B	Head Diamater C	Pilot End ø P	Rec.Hole Size H -0.00 +0.10	Rec.Hole Size L	Min. Wall Thickness
M2	5.0	0.6	5.0	5.0	3.8	6.0	1.5
M3	5.5	0.6	6.0	6.0	4.4	6.5	1.8
M3.5	6.0	0.8	7.0	7.0	5.2	7.0	1.8
M4	7.5	0.8	8.0	8.0	5.8	8.5	2.0
M5	9.0	1.0	8.5	8.5	7.0	10.0	2.0
M6	10.0	1.0	10.0	10.0	8.5	11.0	2.5
M8	12.0	1.0	12.0	12.0	10.9	13.0	3.0

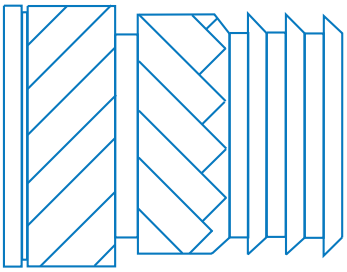
Other lengths possible on quotation.

HOW TO SPECIFY

	6030	6030H
Product Code	6030-B-M3	6030H-B-M3
Material Code	6030-B-M3	6030H-B-M3
Thread Size	6030-B-M3	6030H-B-M3

PSM International
GLOBAL FASTENING SOLUTIONS

HI-TORK INSERTS



Offering high pull out/torque performance. HiTork is recommended for high fill plastics with reduced installation depth, is tolerant of moulding process variables and provides high process capability.

ADVANTAGES

- High Pull Out and Torque Performance
- Capable of providing "bolt break performance"
- Especially recommended for high fill plastics
- Reduced installation depth
- Tolerant of variations from moulding process
- High installation speeds
- Greatly reduced scrap rate
- Higher productivity
- Provides high process capability

DESIGN GUIDE

HOLE PREPARATION

The special Hi-Tork hole form is specifically designed for moulding. Dimensions for the hole are detailed in diagram and table on previous page.

INSTALLATION

The fastener may be installed using either a pre-heating process or using heat generated by ultrasonics.

Where pre-heating process is used, care must be exercised to ensure that the fastener softens but does not melt the plastic.

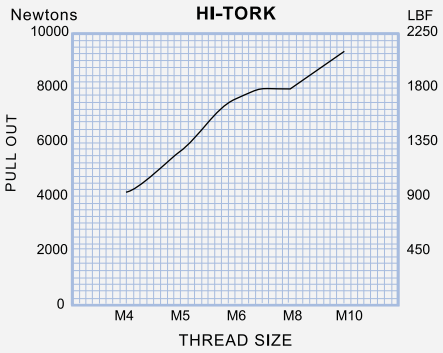
P.S.M offers a wide range of pre-heating installation equipment which ensures high levels of process capability and throughput.

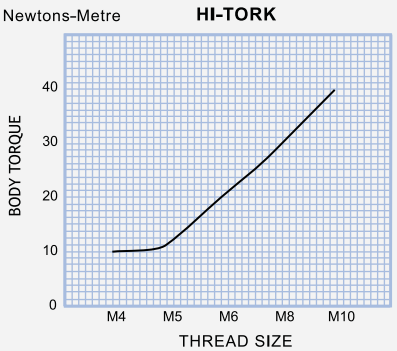
WALL THICKNESS

A general guide to minimum wall thickness is given in the data table but this will vary depending upon the nature of the plastic. Where thinner walls are required, these can often be accommodated, but consultation with the P.S.M Technology Centre or your local Sales Office and production testing is strongly advise.

PERFORMANCE DATA

The complexity of materials and variations in service conditions make it impossible to detail fastener performance individual applications. Please consult with the P.S.M Technology Centre or your local Sales.

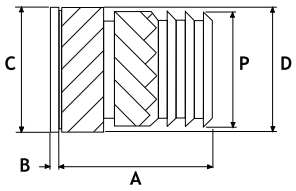




TECHNICAL DATA

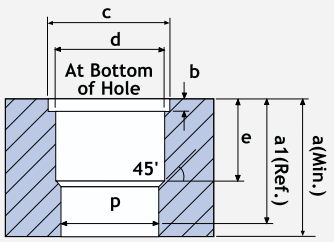
STANDARD MATERIAL: BRASS (B)
Other materials possible on quotation

INSERTS



PRODUCT CODE [HT]

HOLE CONFIGURATION



Moulding Taper
1' Inclusive

DIMENSIONS

ISO METRIC

Unit: Millimetres

Thread Size	Insert Length A	Head Height A	Head Diameter A	Insert ø D	Pilot End ø P	Rec.Hole Size -0.00 + 0.10 a	a1	b	c	d	e	p	Min. Wall Thickness
M4	9.6	0.5	9.0	9.0	8.2	11.0	9.6	0.9	10.0	8.3	6.5	7.4	3.5
M5	11.0	0.5	10.5	10.5	9.7	12.0	11.0	0.9	11.4	9.9	6.5	8.6	4.5
M6	11.0	0.5	12.0	12.0	11.2	12.0	11.0	0.9	13.0	11.3	6.5	10.4	6.0
M8	11.0	0.5	13.7	13.7	12.9	12.0	11.0	0.9	14.0	13.0	6.5	12.1	8.0
M10	11.0	0.5	15.2	15.2	14.5	12.0	11.0	0.9	16.0	14.6	6.5	13.7	10.0

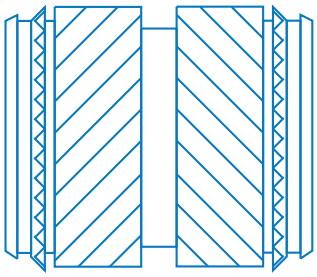
Other lengths possible on quotation.

HOW TO SPECIFY

	HT
Product Code	HT-B-M4
Material Code	HT-B-M4
Thread Size	HT-B-M4

PSM International
GLOBAL FASTENING SOLUTIONS

TECH-SONIC©
INSERTS & STUDS



Features a unique combination of opposed knurls and knurled vanes providing increased performance levels, even over the Sonic-Lok insert. Installation is simplified by the symmetrical nature of the insert, eliminating the need for orientation during automated or hand feeding.

ADVANTAGES

- Double ended - assists automatic feeding
- Increased pull out and torque performance
- Self-aligning - assists installation
- Permits thin boss walls allowing compact boss design
- Choice of lengths available

DESIGN GUIDE

HOLE PREPARATION

Moulded holes are recommended wherever possible. The taper on a moulded hole should be 0.5° inclusive and the hole diameter recommended should apply at the point reached by the bottom of the insert. The top of the hole should not be chamfered or counterbored and care must be taken to avoid bell mouthing. Hole diameter tolerance:-0.00 +0.10mm.

INSTALLATION

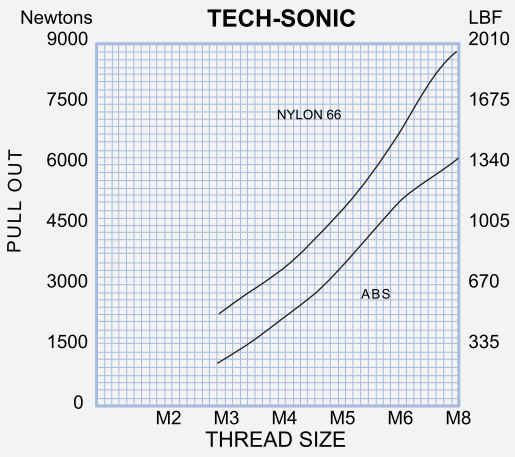
The fastener has been designed for installation using a pre-heating process. Care must be exercised to ensure that the fastener softens but does not melt the plastic. This will avoid any tendency to generate unsightly flash around the top of the insert and ensure optimum performance. Excessive pressure should be avoided since this may result in the insert being forced into the hole without allowing the plastic to soften and flow around the surface profile.

WALL THICKNESS

A general guide to minimum wall thickness is given in the data table but this will vary depending upon the nature of the plastic. Where thinner walls are required these can often be accommodated, but consultation with the P.S.M Technology Centre or Local Sales Office and pre-production testing is strongly advised.

PERFORMANCE DATA

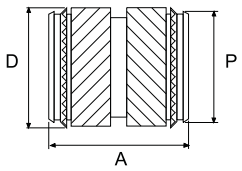
The complexity of materials and variations in service conditions make it impossible to detail fastener performance for specific applications. The chart below give a general guide and show the relative performance of the inserts in the range.



TECHNICAL DATA

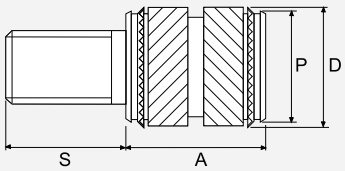
STANDARD MATERIAL: BRASS (B)
Other materials possible on quotation

INSERTS



PRODUCT CODE [TEC]

STUDS



PRODUCT CODE [TCTS]

DIMENSIONS

ISO METRIC

Unit: Millimetres

Thread Size	Insert Length A	Preferred Shorter Length A*			Stud Lengths (For TCTS only) S										Insert ø D	Pilot End ø P	Rec.Hole Size -0.00 +0.10	Min. Wall Thickness
2	4.0	3.0	-	-	5	6	8	10	12	14	16	18	20	25	3.5	3.1	3.2	1.3
2.5	5.7	4.0	-	-	5	6	8	10	12	14	16	18	20	25	4.4	3.9	4.0	1.6
3	5.7	4.0	4.8	-	5	6	8	10	12	14	16	18	20	25	4.4	3.9	4.0	1.6
3.5	7.1	5.0	-	-	5	6	8	10	12	14	16	18	20	25	5.2	4.7	4.8	1.8
4	8.1	4.0	4.8	5.8	5	6	8	10	12	14	16	18	20	25	6.1	5.5	5.6	2.1
5	9.5	5.8	-	-	5	6	8	10	12	14	16	18	20	25	6.8	6.3	6.4	2.6
6	12.7	6.8	9.5	-	5	6	8	10	12	14	16	18	20	25	8.5	7.9	8.0	3.3
8	12.7	-	-	-	5	6	8	10	12	14	16	18	20	25	10.0	9.5	9.6	4.5
10	12.7	-	-	-	5	6	8	10	12	14	16	18	20	25	12.3	11.8	11.9	6.0
12	15.9	-	-	-	5	6	8	10	12	14	16	18	20	25	16.3	15.8	16.0	8.0

Other lengths possible on quotation.

UNIFIED

Unit: Inches

Thread Size	Insert Length A	Preferred Other Length A*			Stud Lengths (For TCTS only) S										Insert ø D	Pilot End ø P	Rec.Hole Size -0.000 +0.004	Min. Wall Thickness
2-56	.155	.118	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.137	.123	.125	.051
4-40	.224	.157	.188	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.174	.154	.157	.063
6-32	.279	.197	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.205	.185	.189	.071
8-32	.319	.157	.188	.228	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.239	.218	.220	.083
10-24	.373	.228	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.269	.249	.252	.102
10-32	.373	.228	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.269	.249	.252	.102
1/4-20	.498	.269	.374	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.333	.312	.315	.130
1/4-28	.498	.269	.374	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.333	.312	.315	.130
5/16-18	.498	-	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.394	.374	.378	.177
5/16-24	.498	-	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.394	.374	.378	.177
3/8-16	.498	-	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.485	.465	.469	.236
3/8-24	.498	-	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.485	.465	.469	.236
1/2	.626	-	-	-	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.643	.622	.630	.315

Other lengths possible on quotation.

HOW TO SPECIFY

	TEC	TCTS
Product Code	TEC-B-M3	TCTS-B-M3-5.0
Material Code	TEC-B-M3	TCTS-B-M3-5.0
Thread Size	TEC-B-M3	TCTS-B-M3-5.0
Stud Length		TCTS-B-M3-5.0

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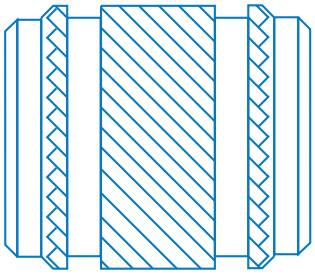
MINI - TECH©
INSERTS



A miniature insert with all the design features and characteristics of the Tech-Sonic range. It is ideal for today's smaller plastic products and enables the use of very small screws that will provide complete re-usability with no risk of thread stripping problems.

ADVANTAGES

- Re-usable threads for miniature applications
- Eliminates thread stripping problems
- Double ended - assists automatic feeding
- Permits space-saving boss design

DESIGN GUIDE

HOLE PREPARATION

Moulded holes are recommended wherever possible. The taper on a moulded hole should be 0.5° inclusive and the hole diameter recommended should apply at the point reached by the bottom of the insert. The top of the hole should not be chamfered or counterbored and care must be taken to avoid bell mouthing. Hole diameter tolerance: -0.00 +0.05mm.

INSTALLATION

The fastener has been designed for installation using a pre-heating process. Care must be exercised to ensure that the fastener softens but does not melt the plastic. This will avoid any tendency to generate unsightly flash around the top of the insert. Excessive pressure should be avoided, since this may result in the insert being forced into the hole without allowing the plastic to soften and flow around the surface profile.

WALL THICKNESS

A general guide to minimum wall thickness is given in the data table but this will vary depending upon the nature of the plastic. Where thinner walls are required these can often be accommodated, but consultation with the P.S.M Technology Centre or Local Sales Office and pre-production testing is strongly advised.

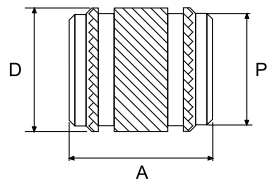
PERFORMANCE DATA

The complexity of materials and variations in service conditions make it impossible to detail fastener performance for specific applications. Please consults P.S.M Technology Centre or local sales offices for specific application advice.

TECHNICAL DATA

STANDARD MATERIAL: BRASS (B)
Other materials possible on quotation

INSERTS



PRODUCT [MTEC]

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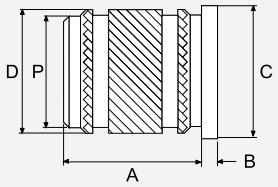


PRODUCT [HMTEC]

DIMENSIONS

ISO METRIC

Unit: Millimetres

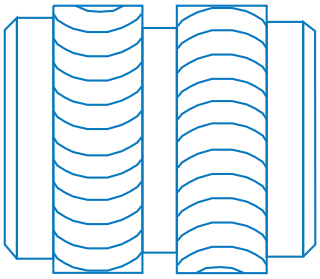
Thread Size	Insert Length A	Preferred Other Length A*			Head Height B	Head ø C	Insert ø D	Pilot End ø P	Rec.Hole Size -0.00 +0.10	Min. Wall Thickness
M1	2.5	-	-	-	-	-	2.10	1.70	1.75	0.70
M1.2	2.5	-	-	-	-	-	2.10	1.70	1.75	0.70
M1.4	3.0	-	-	-	0.40	3.0	2.50	2.10	2.15	0.80
M1.6	3.0	2.5	2.2	2.0	0.40	3.0	2.50	2.10	2.15	0.80
M2	3.0	-	-	-	0.40	3.5	3.00	2.60	2.65	0.80
M2.5	4.0	-	-	-	0.40	4.0	3.65	3.15	3.20	1.00

Other lengths possible on quotation.

HOW TO SPECIFY

	MTEC	HMTEC
Product Code	MTEC-B-M1.6	HMTEC-B-M1.6
Material Code	MTEC-B-M1.6	HMTEC-B-M1.6
Thread Size	MTEC-B-M1.6	HMTEC-B-M1.6

HEAT-LOK®
INSERTS & STUDS



Designed for installation into notch sensitive amorphous thermoplastics by heat. It features rounded knurls,avoiding the stress raising sharp crests and roots which typify knurls used on most inserts.

ADVANTAGES

- Low stress generating characteristics - ideal for amorphous thermoplastics
- Double ended - assists automatic feeding
- High torque resistance
- Self-aligning - assists Installation

DESIGN GUIDE

HOLE PREPARATION

Moulded holes are recommended wherever possible. The taper on a moulded hole should be 0.5° inclusive and the hole diameter recommended should apply at the point reached by the bottom of the insert. The top of the hole should not be chamfered or counterbored and care must be taken to avoid bell mouthing. Hole diameter tolerance:-0.00 +0.10mm.

MOULDING PRACTICE

Mould design should be arranged to eliminate residual stresses in the area of the boss or hole into which the insert is to be installed.

INSTALLATION

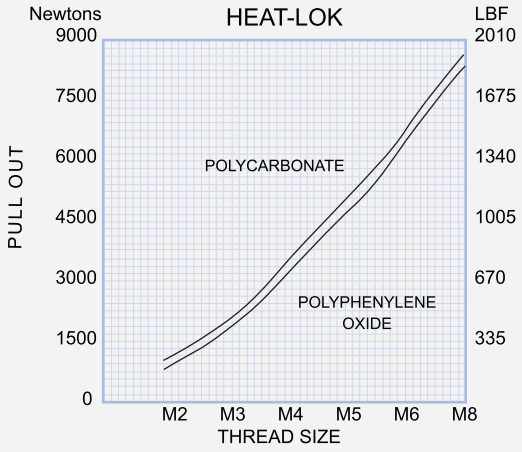
Heat-lok has been designed for installation using heat rather than ultrasonics, since direct heat best suits the plastic flow required by the insert profile.

WALL THICKNESS

A general guide to minimum wall thickness is given in the data table but this will vary depending upon the nature of the plastic. Where thinner walls are required these can often be accommodated, but consultation with the P.S.M Technology Centre or Local Sales Office and pre-production testing is strongly advised.

PERFORMANCE DATA

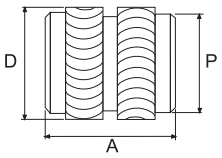
The complexity of materials and variations in service conditions make it impossible to detail fastener performance for specific applications. The chart below gives a general guide and show the relative performance of the inserts in the range.



TECHNICAL DATA

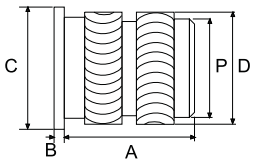
STANDARD MATERIAL: BRASS (B)
Other materials possible on quotation

INSERTS



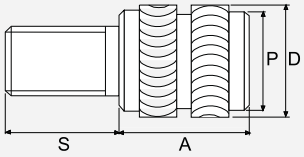
PRODUCT CODE [HL]

HEADED INSERTS



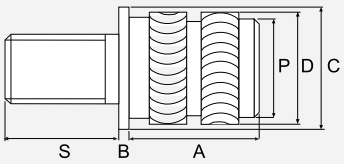
PRODUCT CODE [HLH]

STUD



PRODUCT CODE [HLTS]

HEADED STUD



PRODUCT CODE [HLHS]

DIMENSIONS

ISO METRIC

Unit: Millimetres

Thread Size	Insert Length A	Stud Lengths (For HLTS & HLHS only) S										Head Height B	Head ø C	Insert ø D	Pilot End ø P	Rec.Hole Size -0.00 +0.10	Min. Wall Thickness
M2	3.9	5	6	8	10	12	14	16	18	20	25	0.51	4.8	3.5	3.1	3.2	1.4
M2.5	5.8	5	6	8	10	12	14	16	18	20	25	0.58	5.5	4.4	3.9	4.0	1.8
M3	5.8	5	6	8	10	12	14	16	18	20	25	0.58	5.5	4.4	3.9	4.0	1.8
M3.5	7.1	5	6	8	10	12	14	16	18	20	25	0.74	6.4	5.2	4.7	4.8	2.1
M4	8.1	5	6	8	10	12	14	16	18	20	25	0.89	7.1	6.1	5.5	5.6	2.4
M5	9.5	5	6	8	10	12	14	16	18	20	25	1.07	7.9	6.9	6.3	6.4	2.8
M6	12.7	5	6	8	10	12	14	16	18	20	25	1.32	9.5	8.5	7.9	8.0	3.6
M8	12.7	5	6	8	10	12	14	16	18	20	25	1.32	11.1	10.0	9.5	9.6	5.0

Other lengths possible on quotation.

UNIFIED

Unit: Inches

Thread Size	Insert Length A	Stud Lengths (For HLTS & HLHS only) S										Head Height B	Head ø C	Insert ø D	Pilot End ø P	Rec.Hole Size -0.000 +0.004	Min. Wall Thickness
2-56	.155	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.020	.187	.137	.123	.126	.055
4-40	.228	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.023	.217	.174	.154	.157	.071
6-32	.281	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.029	.250	.206	.185	.189	.083
8-32	.320	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.035	.280	.239	.218	.220	.094
10-24	.374	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.042	.312	.270	.249	.252	.110
10-32	.374	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.042	.312	.270	.249	.252	.110
1/4-20	.500	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.052	.375	.333	.312	.315	.142
1/4-28	.500	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.052	.375	.333	.312	.315	.142
5/16-18	.500	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.052	.437	.393	.375	.378	.197
5/16-24	.500	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.052	.437	.393	.375	.378	.197

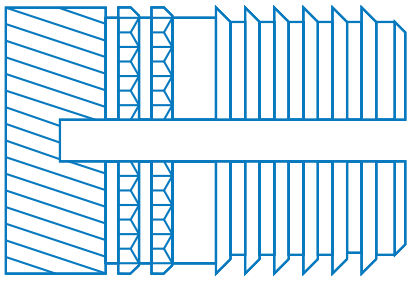
Other lengths possible on quotation.

HOW TO SPECIFY

	HL	HLH
Product Code	HL-B-M3	HLH-B-M3
Material Code	HL-B-M3	HLH-B-M3
Thread Size	HL-B-M3	HLH-B-M3

	HLTS	HLHS
Product Code	HLTS-B-M3-5.0	HLHS-B-M3-5.0
Material Code	HLTS-B-M3-5.0	HLHS-B-M3-5.0
Thread Size	HLTS-B-M3-5.0	HLHS-B-M3-5.0
Stud Length	HLTS-B-M3-5.0	HLHS-B-M3-5.0

PRESS-LOK© INSERTS



Offers ease of installation without the typical high screw inst- torque and its plain and knurled vanes offer the levels of pu- ll out and torque resistance usually expected only of heat-installed inserts.

ADVANTAGES

- Degree of self locking action on screw
- High pull-out and torque performance
- Easy press-in insertion
- Suitable for most thermoplastics

DESIGN GUIDE

HOLE PREPARATION

Moulded holes are recommended wherever possible. The taper on a moulded hole should be 1° inclusive and the hole diameter recommended should apply at the point reached by the bottom of the insert. Drilled holes may be used but performance may be reduced when compared with a moulded hole. The top of the hole should not be chamfered or counterbored and care must be taken to avoid bell mouthing. Hole diameter tolerance: -0.00 +0. 10mm.

DIRECTION OF LOADING

The fixing screw must always be assembled From the knurled end of the component to develop the necessary expansion action.

INFLUENCE OF SCREW DIMENSIONS

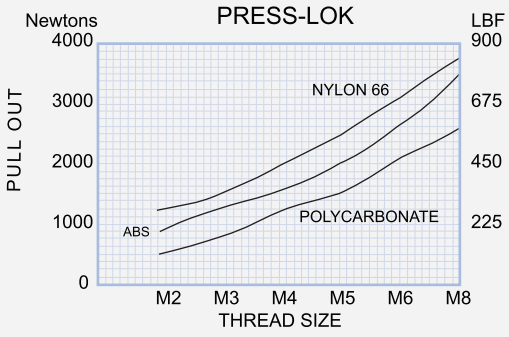
It is important that the fixing screw fully penetrates the insert in order to achieve full expansion, screw length should therefore be calculated to ensure that this condition is met before final clamp torque is applied.

WALL THICKNESS

A general guide to minimum wall thickness is given in the data table but this will vary depending upon the nature of the plastic. Where thinner walls are required these can often be accommodated, but consultation with the P.S.M Technology Centre or Local Sales Office and preproduction testing is strongly advised.

PERFORMANCE DATA

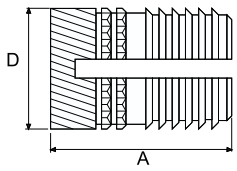
The complexity of materials and variations in service conditions make it impossible to detail fastener performance for specific applications. The chart below gives a general guide and show the relative performance of the inserts in the range.



TECHNICAL DATA

STANDARD MATERIAL: BRASS (B)
Other materials possible on quotation

INSERTS



PRODUCT CODE [PLK]

DIMENSIONS

ISO METRIC

Unit: Millimetres

Thread Size	Insert Length A	Preferred Other Length A*		Insert ø D	Rec.Hole Size -0.00 +0.10	Min. Wall Thickness
M2	4.0	-	-	3.7	3.2	1.6
M2.5	5.8	4.0	-	4.5	4.0	2.0
M3	5.8	4.0	-	4.5	4.0	2.0
M3.5	7.2	4.0	-	5.3	5.8	2.4
M4	8.2	5.8	-	6.2	5.6	2.8
M5	9.5	5.8	8.2	6.9	6.4	3.2
M6	12.7	7.2	9.5	8.5	8.0	4.0
M8	12.7	-	-	10.1	9.6	4.8

Other lengths possible on quotation.

UNIFIED

Unit: Inches

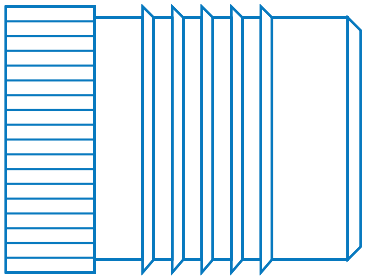
Thread Size	Insert Length A	Preferred Other Length A*		Insert ø D	Rec.Hole Size -0.000 +0.004	Min. Wall Thickness
2-56	.157	-	-	.146	.126	.063
4-40	.228	.157	-	.177	.157	.079
6-32	.283	.157	-	.209	.189	.094
8-32	.323	.228	-	.242	.220	.110
10-24	.374	.228	.322	.272	.252	.126
10-32	.374	.228	.322	.272	.252	.126
1/4-20	.500	.283	.374	.335	.315	.157
1/4-28	.500	.283	.374	.335	.315	.157
5/16-18	.500	-	-	.398	.378	.189
5/16-24	.500	-	-	.398	.378	.189

Other lengths possible on quotation.

HOW TO SPECIFY

	PLK
Product Code	PLK-B-M3
Material Code	PLK-B-M3
Thread Size	PLK-B-M3

FIN-LOK®
INSERTS & STUDS



A press-in insert, which can be easily installed into most thermoplastic materials. It features a combination of sharp fins and straight knurls.

Unlike the Press-Lok range, this insert has a free running thread.

ADVANTAGES

- Easy press-in insertion
- High pull-out performance in most thermoplastics
- Self-aligning - Assists Installation

DESIGN GUIDE

HOLE PREPARATION

Moulded holes are recommended wherever possible. The taper on a moulded hole should be 1° inclusive and the hole diameter recommended should apply at the point reached by the bottom of the insert. The top of the hole should not be chamfered or counterbored and care must be taken to avoid bell mouthing. Hole diameter tolerance: -0.00 +0.10mm.

INSTALLATION

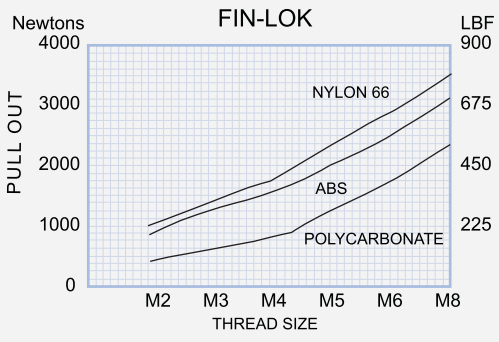
The inserts must be installed using a steady squeeze action press. A hammer blow type installation will prevent plastic flow and may damage the boss.

WALL THICKNESS

A general guide to minimum wall thickness is given in the data table but this will vary depending upon the nature of the plastic. Where thinner walls are required these can often be accommodated, but consultation with the P.S.M Technology Centre or Local Sales Office and pre-production testing is strongly advised.

PERFORMANCE DATA

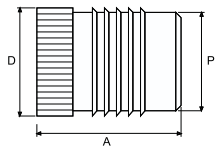
The complexity of materials and variations in service conditions make it impossible to detail fastener performance for specific applications. The chart below gives a general guide and show the relative performance of the inserts in the range.



TECHNICAL DATA

STANDARD MATERIAL: BRASS (B)
Other materials possible on quotation

INSERTS



PRODUCT CODE [FL]

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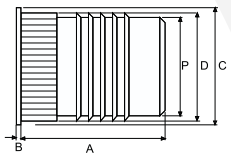
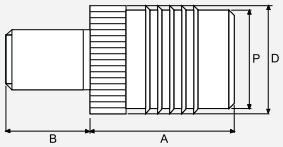


PRODUCT CODE [FLH]

STUDS



PRODUCT CODE [FLTS]

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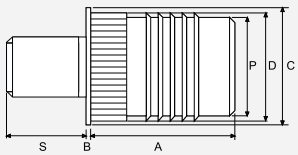


PRODUCT CODE [FLHS]

DIMENSIONS

ISO METRIC

Unit: Millimetres

Thread Size	Insert Length A	Stud Lengths (For FLTS & FLHS only S										Head Height B	Head ø C	Insert ø D	Pilot End ø P	No. of Fins	Rec.Hole Size -0.00 +0.10	Min. Wall Thickness
M2	4.0	5	6	8	10	12	14	16	18	20	25	0.45	4.8	3.7	3.1	2	3.2	1.6
M2.5	4.8	5	6	8	10	12	14	16	18	20	25	0.58	5.5	4.5	3.9	3	4.0	2.0
M3	4.8	5	6	8	10	12	14	16	18	20	25	0.58	5.5	4.5	3.9	3	4.0	2.0
M3.5	6.4	5	6	8	10	12	14	16	18	20	25	0.74	6.4	5.3	4.7	4	4.8	2.4
M4	7.9	5	6	8	10	12	14	16	18	20	25	0.89	7.1	6.1	5.5	5	5.6	2.8
M5	9.5	5	6	8	10	12	14	16	18	20	25	1.07	7.9	7.0	6.3	5	6.4	3.2
M6	12.7	5	6	8	10	12	14	16	18	20	25	1.32	9.5	8.6	7.9	7	8.0	4.0
M8	12.7	5	6	8	10	12	14	16	18	20	25	1.32	11.1	10.2	9.5	7	9.6	4.8

Other lengths possible on quotation.

UNIFIED

Unit: Inches

Thread Size	Insert Length A	Stud Lengths (For FLTS & FLHS only S										Head Height B	Head ø C	Insert ø D	Pilot End ø P	No. of Fins	Rec.Hole Size -0.000 +0.004	Min. Wall Thickness
2-56	.157	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.018	.189	.147	.123	2	.126	.063
4-40	.187	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.023	.217	.178	.154	3	.157	.079
6-32	.250	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.029	.250	.209	.185	4	.189	.094
8-32	.312	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.035	.281	.240	.218	5	.220	.110
10-24	.375	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.042	.312	.274	.248	5	.252	.126
10-32	.375	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.042	.312	.274	.248	5	.252	.128
1/4-20	.500	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.052	.375	.337	.310	7	.315	.157
1/4-28	.500	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.052	.375	.337	.310	7	.315	.157
5/16-18	.500	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.052	.433	.400	.375	7	.378	.189
5/16-24	.500	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.052	.433	.400	.375	7	.378	.189

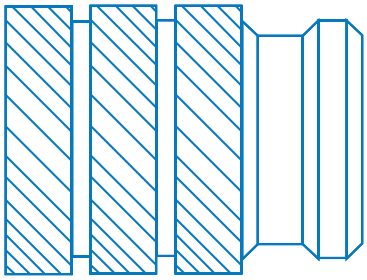
Other lengths possible on quotation.

HOW TO SPECIFY

	FL	FLHS
Product Code	FL-B-M3	FLHS-B-M3
Material Code	FL-B-M3	FLHS-B-M3
Thread Size	FL-B-M3	FLHS-B-M3

	FLTS	FLHS
Product Code	FLTS-B-M3-5.0	FLHS-B-M3-5.0
Material Code	FLTS-B-M3-5.0	FLHS-B-M3-5.0
Thread Size	FLTS-B-M3-5.0	FLHS-B-M3-5.0
Stud Length	FLTS-B-M3-5.0	FLHS-B-M3-5.0

SPIRO®
INSERTS & STUDS



Designed to cope with the difficulties presented by hard brittle thermoset materials.

The sharp precision knurl pattern cuts into these materials reducing radial stresses and allowing thinner boss walls than many other inserts.

ADVANTAGES

- Easy press-in insertion
- High torque resistance
- Low bursting stress allows the use of thinner wall bosses
- reducing the risk of sink marks
- Self-aligning--Assists Installation

DESIGN GUIDE

HOLE PREPARATION

Holes for Spiro inserts should be moulded to remove the danger of drill induced stresses. The taper on a moulded hole should be 1° inclusive and the hole diameter recommended should apply at the point reached by the bottom of the insert. The top of the hole should not be chamfered or counterbored and care must be taken to avoid bell mouthing. Hole diameter tolerance: -0.00 +0.10mm.

INSTALLATION

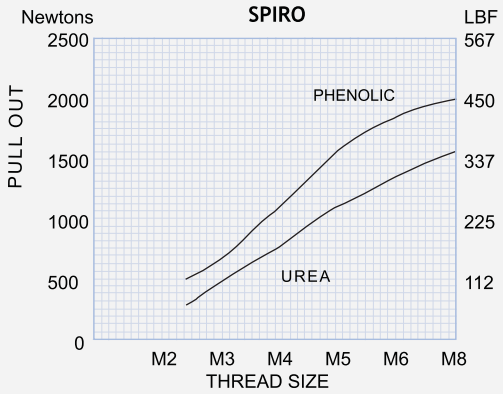
The insert must be installed using a squeeze action press, NEVER a hammer blow. The insert must be allowed to rotate in the direction of the knurl during installation. This is best achieved by the use of a punch having either a polished face or a thrust bearing. The insert must be kept axially square during installation, as any tilting will induce side loads on the boss wall. The recommended hole size must not be increase beyond the top tolerance limit since oversize holes reduce or remove the self aligning effects, producing side loads and consequent risk of boss cracking.

WALL THICKNESS

A general guide to minimum wall thickness is given in the data table but this will vary depending upon the nature of the plastic. Where thinner walls are required these can often be accommodated, but consultation with the P.S.M Technology Centre or Local Sales Office and pre-production testing is strongly advised.

PERFORMANCE DATA

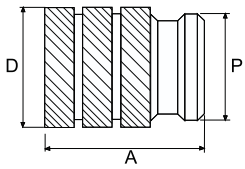
The complexity of materials and variations in service conditions make it impossible to detail fastener performance for specific applications. The chart below gives a general guide and show the relative performance of the inserts in the range.



TECHNICAL DATA

STANDARD MATERIAL: BRASS (B)
Other materials possible on quotation

INSERTS



PRODUCT CODE [SP]

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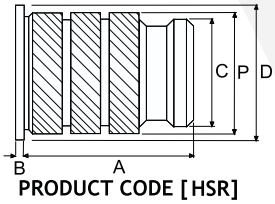
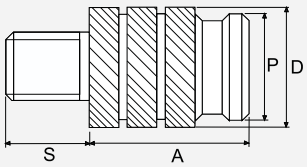


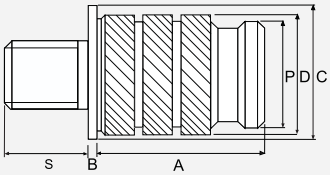
PRODUCT CODE [HSR]

STUD



PRODUCT CODE [SPTS]

HEADED STUD



PRODUCT CODE [SPHS]

DIMENSIONS

ISO METRIC

Unit: Millimetres

Thread Size	Insert Length A	Stud Lengths (For FLTS & FLHS only S										Head Height B	Head ø C	Insert ø D	Pilot End ø P	Rec.Hole Size -0.00 +0.10	Min. Wall Thickness
M2	4.1	5	6	8	10	12	14	16	18	20	25	0.51	4.8	3.3	3.0	3.1	1.6
M2.5	5.3	5	6	8	10	12	14	16	18	20	25	0.58	5.5	4.2	3.7	3.8	2.0
M3	5.3	5	6	8	10	12	14	16	18	20	25	0.58	5.5	4.2	3.7	3.8	2.0
M3.5	6.3	5	6	8	10	12	14	16	18	20	25	0.74	6.4	5.0	4.5	4.6	2.5
M4	7.4	5	6	8	10	12	14	16	18	20	25	0.89	7.1	5.8	5.3	5.4	2.5
M5	8.3	5	6	8	10	12	14	16	18	20	25	1.07	7.9	6.6	6.1	6.2	2.5
M6	9.2	5	6	8	10	12	14	16	18	20	25	1.32	9.5	8.2	7.7	7.8	2.8
M8	9.2	5	6	8	10	12	14	16	18	20	25	1.32	11.1	9.7	9.3	9.3	3.8
M10	9.2	5	6	8	10	12	14	16	18	20	25	1.57	14.0	12.7	12.2	12.3	5.0

Other lengths possible on quotation.

UNIFIED

Unit: Inches

Thread Size	Insert Length A	Stud Lengths (For SPTS &SPHS only S										Head Height B	Head ø C	Insert ø D	Pilot End ø P	Rec.Hole Size -0.000 +0.004	Min. Wall Thickness
2-56	.162	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.020	.187	.131	.117	.122	.063
4-40	.208	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.023	.217	.165	.146	.150	.079
6-32	.247	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.029	.250	.196	.178	.181	.098
8-32	.292	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.035	.281	.228	.209	.213	.098
10-24	.326	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.042	.312	.259	.241	.244	.098
10-32	.326	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.042	.312	.259	.241	.244	.098
1/4-20	.362	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.052	.375	.332	.304	.307	.110
1/4-28	.362	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.052	.375	.332	.304	.307	.110
5/16-18	.362	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.052	.437	.383	.365	.366	.150
5/16-24	.362	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.052	.437	.383	.365	.366	.150
3/8-46	.362	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.062	.551	.499	.481	.484	.197
3/8-24	.362	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.062	.551	.499	.481	.484	.197

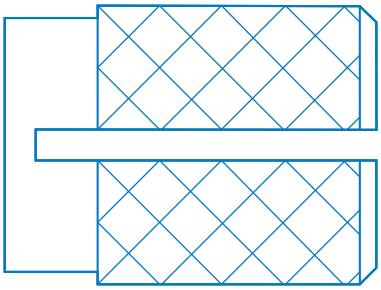
Other lengths possible on quotation.

HOW TO SPECIFY

	SP	HSP
Product Code	SP-B-M3	HSP-B-M3
Material Code	SP-B-M3	HSP-B-M3
Thread Size	SP-B-M3	HSP-B-M3

	SPTS	SPHS
Product Code	SPTS-B-M3-5.0	SPHS-B-M3-5.0
Material Code	SPTS-B-M3-5.0	SPHS-B-M3-5.0
Thread Size	SPTS-B-M3-5.0	SPHS-B-M3-5.0
Stud Length	SPTS-B-M3-5.0	SPHS-B-M3-5.0

BANC-LOK® INSERTS



Ideal for use in hard thermosetting plastics, BancLok are press-in expansion inserts which, due to Banc-Lok diamond knurl pattern, give minimum penetration of the sides of the hole without sacrificing pull-out resistance.

ADVANTAGES

- Easy press in insertion
- Self locking action on the screw - ideal where vibration
- is present
- Suitable for most thermosetting plastics

DESIGN GUIDE

HOLE PREPARATION

Moulded holes are recommended wherever possible. The taper on a moulded hole should be 1° inclusive and the hole diameter recommended should apply at the point reached by the bottom of the insert. The top of the hole should not be chamfered or counterbored and care must be taken to avoid bell mouthing. Drilled holes may be used but performance may be reduce when compared with a moulded hole. Hole diameter tolerance: -0.00 +0.10mm.

SELECTION OF INSERT TYPE

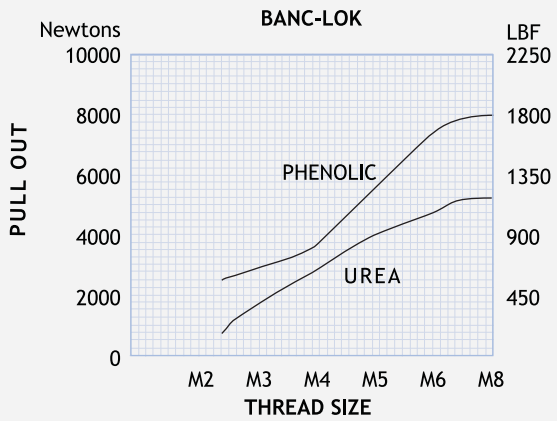
Headed inserts may be used for improved electrical contact or to fill gaps which would result in a jack-out condition. Alternatively a reverse headed type may be used with the head on the back of the moulding. This head then gives extra support for resistance to jack-out loads. These inserts are not recommended for use in thermosetting polyesters with high filler content (DMC, SMC, BMC), for applications using these materials we recommended Screw-Sert.

INFLUENCE OF SCREW DIMENSIONS

It is important that the fixing screw fully penetrates the insert in order to achieve full expansion. Screw length should therefore be calculated to ensure that this condition is met before the final clamp torque is applied.

PERFORMANCE DATA

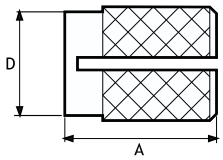
The complexity of materials and variations in service conditions make it impossible to detail fastener performance for specific applications. The chart below gives a general guide and show the relative performance of the inserts in the range.



TECHNICAL DATA

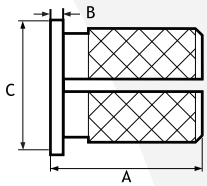
STANDARD MATERIAL: BRASS (B)
Other materials possible on quotation

INSERTS



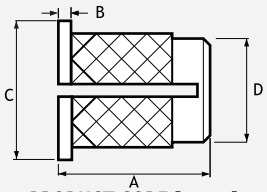
PRODUCT CODE [N41]

HEADED INSERTS



PRODUCT CODE [N42]

REVERSE INSERTS



PRODUCT CODE [N42R]

DIMENSIONS

ISO METRIC

Unit: Millimetres

Thread Size	Insert Length A	Preferred Other Length A	Head Height B	Head ø C	Insert ø D	Rec.Hole Size - 0.00 + /0.10	Min. Wall Thickness
M2	3.9	-	0.43	4.8	3.2	3.2	2.4
M2.5	4.7	-	0.51	5.5	4.0	4.0	3.2
M3	4.7	3.5	0.51	5.5	4.0	4.0	3.2
M3.5	6.3	3.5	0.66	6.4	4.7	4.8	3.6
M4	7.9	5.0	0.82	7.1	5.5	5.6	4.0
M5	9.4	6.0	0.99	7.9	6.3	6.4	4.8
M6	12.6	9.5	1.25	9.5	7.9	8.0	6.0
M8	12.6	9.5	1.25	11.1	9.5	9.6	7.0

Other lengths possible on quotation.

UNIFIED

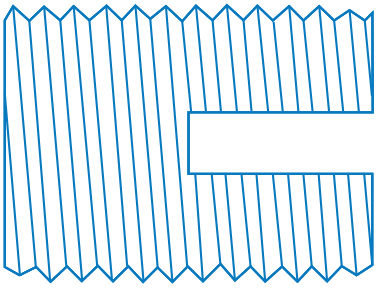
Unit: Inches

Thread Size	Insert Length A	Preferred Other Length A	Head Height B	Head ø C	Insert ø D	Rec.Hole Size **-0.000 +0.004**	Min. Wall Thickness
2-56	.155	-	.017	.187	.124	.126	.094
4-40	.186	.138	.020	.218	.156	.157	.126
6-32	.249	.138	.026	.250	.186	.189	.142
8-32	.312	.197	.032	.281	.217	.220	.157
10-24	.371	.236	.039	.312	.249	.252	.189
10-32	.371	.236	.039	.312	.249	.252	.189
1/4-20	.497	.374	.049	.375	.311	.315	.236
1/4-28	.497	.374	.049	.375	.311	.315	.236
5/16-18	.497	.374	.049	.437	.374	.378	.276
5/16-24	.497	.374	.049	.437	.374	.378	.276

Other lengths possible on quotation.

HOW TO SPECIFY

	N41	N42	N42R
Product Code	N41-B-M3	N42-B-M3	N42R-B-M3
Material Code	N41-B-M3	N42-B-M3	N42R-B-M3
Thread Size	N41-B-M3	N42-B-M3	N42R-B-M3



A self-tapping insert suitable for installation into a wide range of thermoplastic and thermosetting plastic materials.

They are particularly suitable for applications involving high jack-out loading and materials with low core strengths.

ADVANTAGES

- High pull-out resistance
- I deal where. jack-out loading is unavoidable
- Can carry high loads in weak plastics

DESIGN GUIDE

HOLE PREPARATION

Hole diameter will vary with the type of plastic material used - hard plastics will require larger holes than softer plastics etc. For this reason, the data table shows the hole size ranges recommended for thermoplastics and thermosetting plastics. Exact hole size is best determined by pre-production trials - please consult the P.S.M Technology Centre.It is recommended that moulded holes are used. A 60° countersink at the top of the hole is strongly recommended in order to avoid the risk of chipping to the surrounding surface. The depth of the countersink should be equal to the external thread pitch of the insert. Tapers on moulded holes should be 1° inclusive.

TYPE OF LOADING

Direct torque loads should be avoided with this type of insert.

INSTALLATION

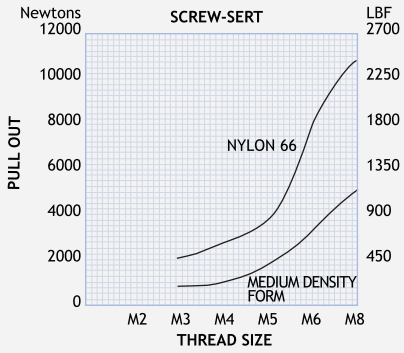
The insert is installed using traditional tapping principles. Installation can be carried out using a hand tool (for low volumes), a tapping head attachment for a pillar drill, a standard tapping machine or fully automatic installation equipment.

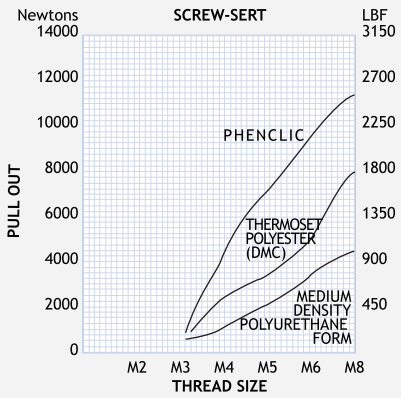
WALL THICKNESS

This must be evaluated by pre-production tests in conjunction with the P.S.M Technology Centre - contact your local Sales Office for advice.

PERFORMANCE DATA

The complexity of materials and variations in service conditions make it impossible to detail fastener performance for specific applications. The charts below give a general guide and show the relative performance of the inserts in the range.

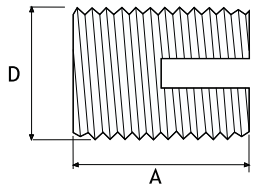




TECHNICAL DATA

STANDARD MATERIAL: BRASS (B)
Other materials possible on quotation

INSERTS



PRODUCT CODE [SCT]

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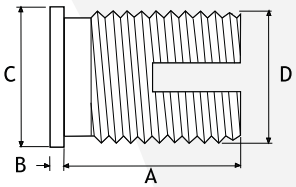
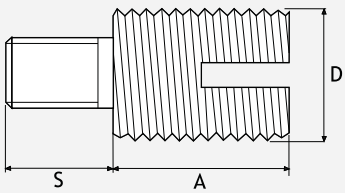


PRODUCT CODE [HSCT]

STUD



PRODUCT CODE [SCTS]

DIMENSIONS

ISO METRIC

Unit: Millimetres

Thread Size	Insert Length A	Stud Length (For SCTS only) S										Head Height B	Head ø C	Insert ø D MAX	For Thermoplastics Rec.Hole Size -0.00+0.10	Rec.Hole Size For Thermosetting -0.00+0.10	Min. Wall Thickness
M2.5	6.0	5	6	8	10	12	14	16	18	20	25	0.58	6.0	4.5	4.0-4.1	4.1-4.3	Evaluated by pre-production tests
M3	6.0	5	6	8	10	12	14	16	18	20	25	0.58	6.5	5.0	4.5-4.6	4.6-4.8	
M3.5	8.0	5	6	8	10	12	14	16	18	20	25	0.73	8.5	6.0	5.3-5.4	5.5-5.7	
M4	8.0	5	6	8	10	12	14	16	18	20	25	0.89	8.0	6.5	5.8-5.9	6.0-6.2	
M5	10.0	5	6	8	10	12	14	16	18	20	25	1.06	9.5	8.0	7.1-7.2	7.3-7.6	
M6	14.0	5	6	8	10	12	14	16	18	20	25	1.32	12.0	10.0	8.6-8.8	9.0-9.4	
M8	15.0	5	6	8	10	12	14	16	18	20	25	1.32	14.0	12.0	10.6-10.8	11.0-11.4	
M10	18.0	5	6	8	10	12	14	16	18	20	25	1.57	16.0	14.0	12.6-12.8	13.0-13.4	
M12	22.0	5	6	8	10	12	14	16	18	20	25	1.57	18.0	16.0	14.6-14.8	15.0-15.4	

Other lengths possible on quotation.

UNIFIED

Unit: Inches

Thread Size	Insert Length A	Stud Length (For SCTS only) S										Head Height B	Head ø C	Insert ø D MAX	For Thermoplastics Rec.Hole Size -0.000 +0.004	Rec.Hole Size For Thermosetting -0.00+0.10	Min. Wall Thickness
2-56	.236	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.023	.236	.177	.157-.161	.161-.169	Evaluated by pre-production tests
4-40	.236	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.023	.236	.177	.157-.161	.161-.169	
6-32	.315	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.029	.295	.236	.209-.213	.217-.224	
8-32	.315	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.035	.312	.256	.228-.232	.236-.244	
10-24	.394	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.042	.374	.315	.283-.283	.287-.299	
10-32	.394	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.042	.374	.315	.280-283	.287-.299	
1/4-20	.551	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.052	.472	.394	.339-.346	.354-.370	
1/4-28	.551	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.052	.472	.394	.339-.346	.354-.370	
5/16-18	.591	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.052	.551	.472	.417-.425	.433-.449	
5/16-24	.591	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.052	.551	.472	.417-.425	.433-.449	
3/8-16	.709	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.062	.630	.551	.496-.504	.512-.528	
3/8-24	.709	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.062	.630	.551	.496-.504	.512-.528	
1/2	.866	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.062	.709	.630	.575-.583	.591-.606	

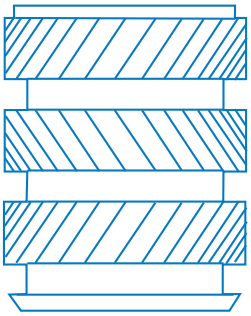
Other lengths possible on quotation.

HOW TO SPECIFY

	SCT	HSCT	SCTS
Product Code	SCT-B-M3-5.0	HSCT-B-M3	SCTS-B-M3-5.0
Material Code	SCT-B-M3	HSCT-B-M3	SCTS-B-M3-5.0
Thread Size	SCT-B-M3	HSCT-B-M3	SCTS-B-M3-5.0
Stud Length			SCTS-B-M3-5.0

PSM International
GLOBAL FASTENING SOLUTIONS

FLO - TECH®
INSERTS



A blind-ended threaded insert which has been introduced to meet the needs of those moulders who, for a variety of reasons, prefer to mould in. The unique design of three opposed helical knurl bands combined with the included recesses give extremely high levels of performance in both pullout and torque tests.

ADVANTAGES

- Blind ended - prevents ingress of plastic
- Counterbore prevents ingress of plastic and eases assembly on locating pins
- Unique design ensures high levels of performance
- Rolled Threads reduce risk of contamination of mouldings due to metal swarf
- Absence of PIP at blind end reduces risk of contamination and
- assists automatic insert loaders

DESIGN GUIDE

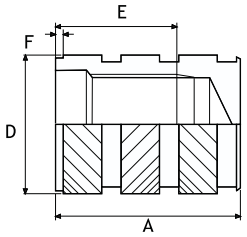
Flo-Tech inserts can be installed after moulding in some applications - please consult the P.S.M Technology Centre or your local Sales Office for further advice.

Mould pin design is critical to the success of the moulding-in operation since the features shown are used to locate and retain the insert prior to moulding and prevent the ingress of plastic during the process.

TECHNICAL DATA

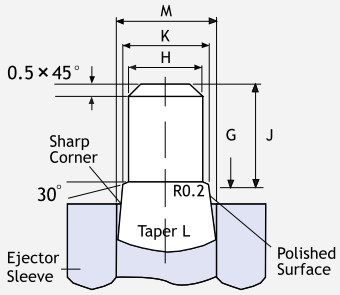
STANDARD MATERIAL: BRASS (B)
Other materials possible on quotation

INSERTS



PRODUCT CODE [FTC]

LOCATING PIN



DIMENSIONS

ISO METRIC

Unit: Millimetres

Thread Size	Insert Length A	Insert ø D	Min E	Counterbore Depth F	G -.020 +.040	H -.025 +.000	J -.100 +.100	K -.0125 +.0125	L Inclusive degress	M
M2	5.5	3.4	3.6	1.0	0.80	1.55	2.65	2.300	6	3.00
M2.5	6.4	4.3	4.0	1.2	0.90	2.00	3.00	2.800	5	3.50
M3	7.3	4.7	4.6	1.3	1.05	2.45	3.40	3.125	4.5	4.00
M3.5	9.2	5.5	6.0	1.6	1.30	2.85	4.55	3.750	4.5	4.70
M4	10.2	6.3	6.7	1.8	1.55	3.25	5.00	4.425	4.5	5.40
M5	11.2	7.3	7.4	2.0	1.70	4.15	5.55	5.125	5	6.00
M6	14.4	9.8	8.1	2.0	1.80	4.95	6.15	6.600	5.5	8.00
M8	16.5	11.4	11.1	2.3	2.00	6.70	9.00	8.500	6	10.00
M10	17.9	13.8	11.9	2.4	2.10	8.40	9.70	10.500	6	12.00

Other lengths possible on quotation

HOW TO SPECIFY

	FTC
Product Code	FTC-B-M3
Material Code	FTC-B-M3
Thread Size	FTC-B-M3

INSTALLATION METHODS

To meet varying production conditions, a range of assembly methods have been developed to cover most production requirements. A few examples of typical installation sequences are shown below with suggested methods of installation.

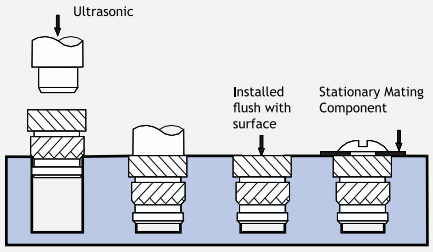
UNTRASONIC VIBRATION

Recommended for:

SONIC-LOK®
TAPER-X®
welder
6030
HI-TORK

LOW/HIGH VOLUME
- Any standard ultrasonic

NOTE:
Careful tuning is required to achieve satisfactory results. Some preliminary trials will be necessary.



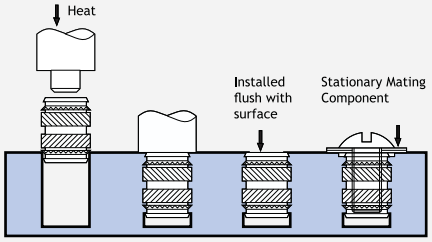
DIRECT HEAT

Recommemded for:

SONIC-LOK®
TAPER-X®
6030
HI-TORK
TECH-SONIC©
MINI-TECH©
HEAT-LOK®

LOW VOLUME
- P.S.M HS1000 Hand Heat Serter – P.S.M HS1000

HIGH VOLUME
- P.S.M HS2300 Automatic Heat – P.S.M HS2300 Serter



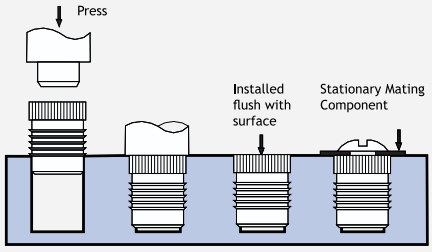
PRESS - IN INSTALLATION

Recommemded for (Free Running Inserts):

FIN-LOK®
SPIRO®

LOW VOLUME
- Any squeeze action press

HIGH VOLUME
- Consult P.S.M



PRESS - IN INSTALLATION

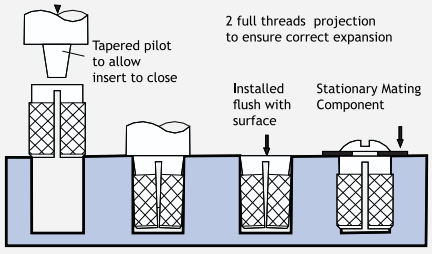
Recommended for (Expansion Type Inserts):

PRESS-LOK©
BANC-LOK®

LOW VOLUME
- Hand tools

MEDIUM VOLUME
- any simple press

HIGH VOLUME
- Consult P.S.M



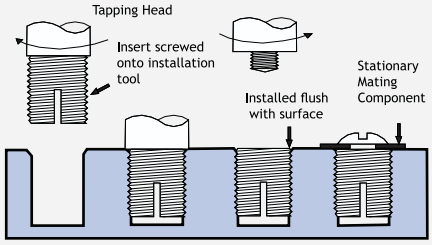
SELF - TAPPING ACTION

Recommended for:

S C R E W - SERT®

LOW VOLUME
- P.S.M Hand tool and tap wrench

MEDIUM VOLUME
-P.S.M "Snap-break" tool standard tapping head



PSM International
GLOBAL FASTENING SOLUTIONS

Wherever you are PSM can support you with...
Global Sales Offices
Market Leading Applications Engineering
State of the Art Technical Centers
Rapid Prototyping
Complete Product Line

Inserts for Plastics

The application of plastics in engineering design is on the increase, which is why we offer the widest selection of inserts for plastics and every installation technique.
Our applications Engineers are on hand to help you choose the most suitable fastener for your specific requirements, can offer pre-production test facilities and provide accurate performance data for your particular installation conditions.

Sheet Metal fasteners

Self-clinching fasteners for sheet metal provide deep tapped female threads or studs for use in conjunction with thin sheet metallic materials.
Permanently attached to the parent material they allow the associated nut or bolt to be removed in service, without risk of the fastener becoming dislodged.
This features has already enabled a range of industries to streamline production methods and to fabricate complex shapes such as closed box sections.

Direct Screw fixings

Direct Screw Fixings are a fast, economical, production line solution for fixing plastic and light alloy components recommended where the need for re-use and high assembly torque are not major considerations.
The range's unique thread forms have been engineered to maximise the advantages of Direct Screw Fixings.
The range includes forming screws for thermoplastics/light alloy materials and cutting types for use with thermosetting materials.

fasteners for Special Materials

The success of new materials is often dependent on the ability to devise methods of fixing and fastening. This is particularly true of mechanical fastening systems that allow dismantling for adjustment, servicing or repair. The captive fasteners shown here have been designed to meet the needs of designers who require the strength of a steel thread when using lightweight alloys such as magnesium and resin-based printed circuit boards.

Spring Steel & Special components

P.S.M International's range of spring steel purpose designed pressings offer designers unique, cost effective fasteners include simple lineside assembly, multi-functional capability, high strength to weight performance and ability to assemble multi material types.

While this catalog focuses primarily on Inserts for Plastics, PSM International is also a market leader in Sheet Metal Fasteners and other assembly components. If you do not see exactly what you are looking for, please contact PSM International – we would be happy to review your application and propose a solution.

http://www.psminternational.com