





PSM International

Driving for excellence

Product Guide

Over 100 products in more than 10,000 variations

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Table of Contents



INTRODUCTION 06



DIRECT SCREW FIXINGS FOR PLASTICS & LIGHT ALLOYS 07-22



PT® SERIES 09-13



DURO-PT ® SERIES 14-17



PT® TYPE DG 18-21

OPTIONAL FEATURES 22



INSERTS FOR PLASTICS 23-74



TECH-SONIC© 29-31



SONIC-LOK® 32-34



TAPER-X® 35-38



6030 INSERTS 39-41

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Table of Contents

 HI-TORK ® 42-44

 MINI-TECH © 45-46

 HEAT-LOK ® 47-49

 PRESS-LOK © 50-52

 SPIRO ® 53-55

 BANC-LOK ® 56-58

 FIN-LOK ® 59-61

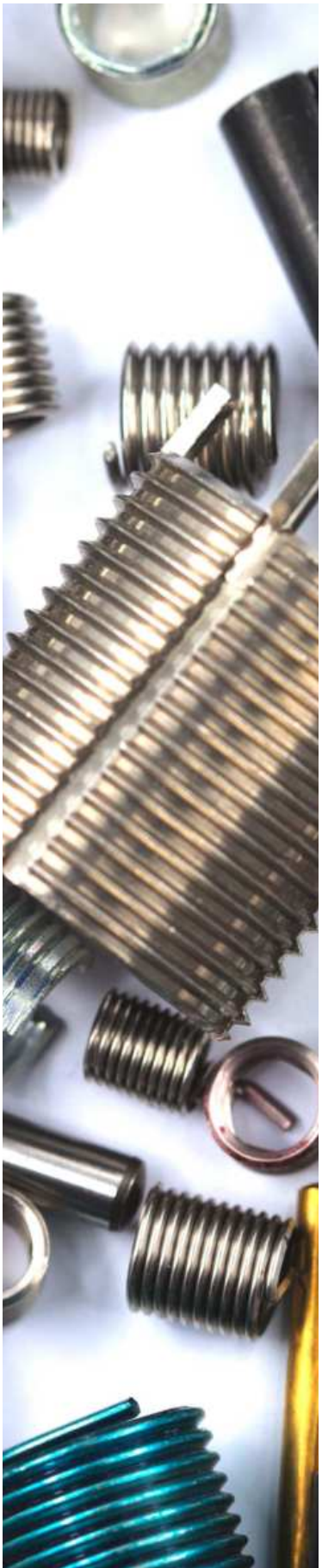
 SCREW-SERT ® 62-64

 FLO-TECH ® 65-66

 TRI-STEP ™ 67-71

 MOLD-FORM ™ 72-74

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SHEET METAL FASTENERS 75-124


ANCHOR® RIVET BUSH 81-83


MINIATURE ANCHOR® RIVET BUSH 84-86


SELF-LOCKING MINARB® 87-88


SELF-CLINCHING NUTS 89-97


PF FLUSH SELF-CLINCHING NUTS 98-102


P-FH & P-FHS SELF-CLINCHING STUD 103-112


SELF-CLINCHING STAND-OFFS 113-119

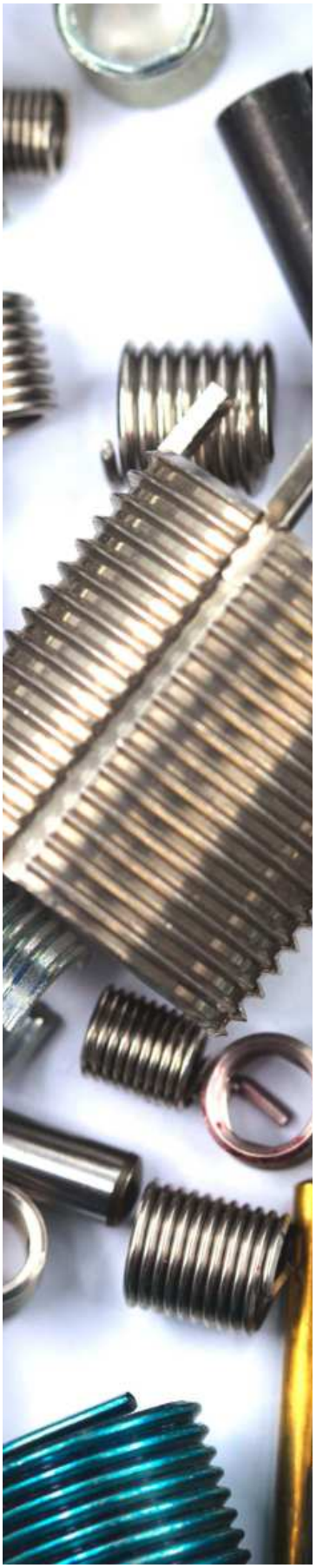

FLANGEFORM® NUTS 120-123


OTHER SHEET METAL FASTENERS 124



THREADED SPACERS & SUPPORT PILLARS 125-131

PSM International





FASTENERS FOR SPECIAL MATERIALS 132-140



PRECISION HARDENED INSERTS & STUDS 134-135



HARDENED STEEL SCREW-SERTS® 136-137



PRINTED CIRCUIT BOARD FASTENERS 138-140



COMPRESSION LIMITERS & CAPTIVE BOLT ASSEMBLIES 141-143



SPRING, STEEL & PLASTIC FASTENERS 144-173



THREAD LOCKING AND SEALING 174-188

INTRODUCTION

PSM International is a global manufacturer and distributor of specialised fasteners and joining systems.

The Company has its origins in the heartland of British manufacturing – the so called "Black Country" in the English Midlands.

The business was established in 1931 to supply special high-precision, machine-turned components for the lock industry for which the area is still famous.

The development of the Company's present product range began in 1951 and by the 1960's the business was almost entirely devoted to the manufacture and distribution of specialist fastener products.

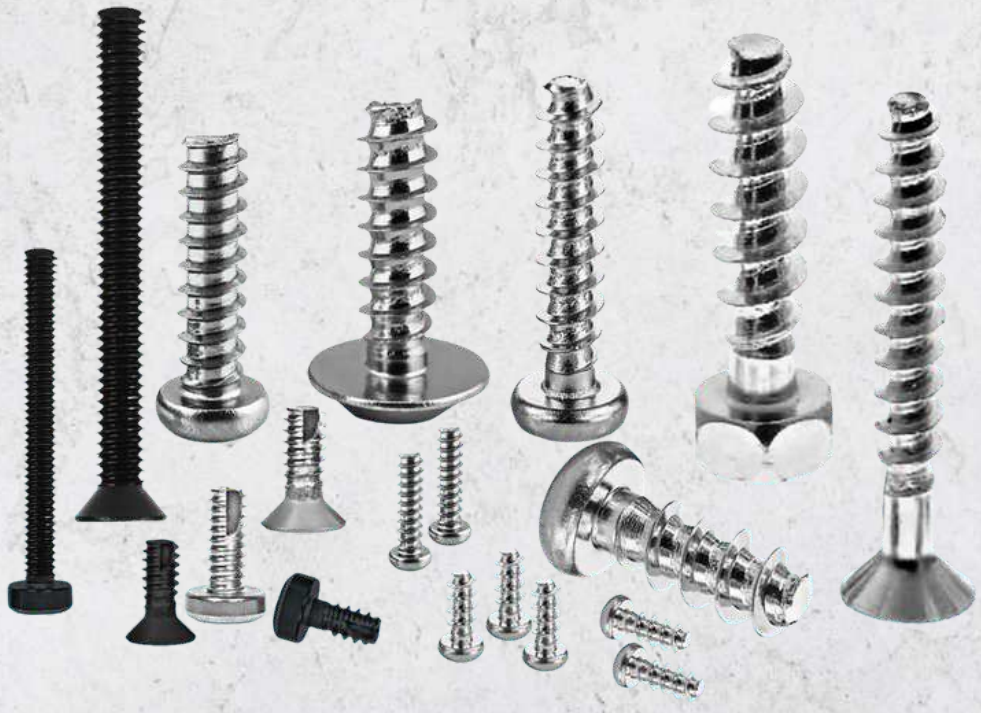
Today, PSM is focused solely on providing design engineers and manufacturers with engineered solutions to assembly problems which provide cost effective methods and enhance the performance of the finished item. PSM engineers are trained to high standards
to assist design engineers in this specialised area. PSM manufactures over 100 different products in 10,000 variations.

Wherever manufactured goods are made PSM has local people providing technical support, application engineering, project management and customer service to a consistently high standard.

. . . Worldwide

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DIRECT SCREW FIXINGS

FOR PLASTICS & LIGHT ALLOYS

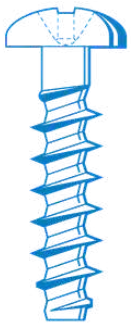
INTRODUCTION

Direct Screw Fixings provide a fast, economical, production line solution to fixing plastic and light alloy components where the need for re-use and high assembly torque is not a major factor.

The unique patented thread forms of the PT® Screw range have been engineered to maximise the advantages of Direct Screw Fixings with forming screws for thermoplastics and light alloy materials and cutting types for use with thermosetting materials.

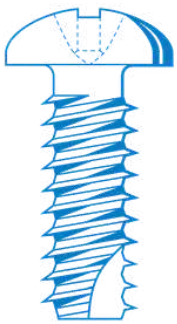
The adoption of these thread forms ensures that the margins between installation and stripping torque are optimised (an essential for trouble-free installation) together with higher than normal reusability - typically greater than 10 times - into thermoplastic materials, and maximum resistance to vibration.

The information in this catalogue is intended as a general guide. For further advice please consult your local PSM Sales Engineer or our Applications Engineers. The PSM Technology Centre can also provide pre-production test facilities for accurate performance data.



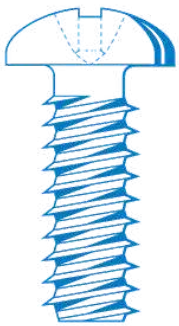
PT SERIES

PT ® SERIES - Designed for use in thermoplastics, its key design features include a profiled thread root to assist plastic flow, a 30° flank angle to reduce boss bursting forces and an 8° pitch angle.



DURO-PT SERIES

DURO-PT ® SERIES - The cutting notch combined with the profiled thread root gives low installation torques whilst the special thread form provides high stripping torques when used in thermosetting materials.



PT TYPE DG

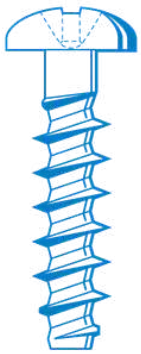
PT ® TYPE DG - Developed to provide an effective screw fixing in light alloy materials with low installation torque and high stripping torque.

Technical details may change. Please contact PSM International for latest drawings and specifications.

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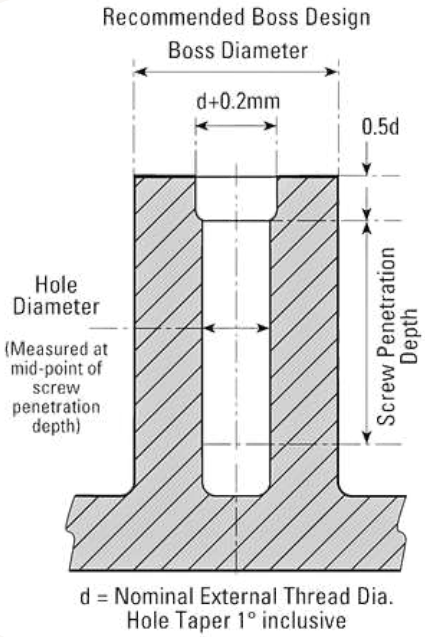
PT ® SERIES - PT SCREWS



ADVANTAGES

- Reduced installation torque.
- High stripping torque.
- Greater safety margin between installation torque and stripping torque.
- High parent material shear strength.
- Minimises material flow resistance.
- Designed to reduce stress within the thermoplastic to an absolute minimum.
- High resistance to vibration and relaxation
- Allows for smaller bosses.

The PT® SCREW is a direct screw fastener for use in thermoplastics.
The key design aspects include a profiled thread root to assist plastic flow, a 30° flank angle to reduce boss bursting forces and an 8° pitch angle which combine to give low installation torques with high stripping torques. For those applications not requiring the high levels of thread re-use and high clamping torque, (properties associated with threaded inserts) PT® screw offers an economical solution to plastics assembly and has distinct advantages over other direct screw fixings.



DESIGN GUIDE

When choosing a direct screw fixing, one of the major criteria is to obtain the maximum margin between driving torque and stripping torque. Screw design, material characteristics, molding practice, hole size and installation speed all have an influence.
The specialised equipment necessary to measure the effect of these factors is available at P.S.M's Technology Centre. This allows customers to obtain the best design possible. Pre-production testing is therefore strongly recommended.
Please note the inclusion of a counterbore - this is important for the following reasons:

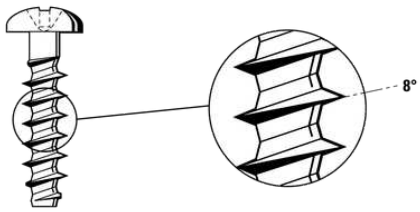
- Prevents damage to the top of the boss
- Helps alignment of the screw in the boss
- Assists in repeated assemblies of the screw
- Acts as a relief for any material extruded to the head of the screw and allows flush finishes.

N.B. If molded tool design or application into an existing boss renders the recommended boss design impractical, please contact P.S.M for specific advice.

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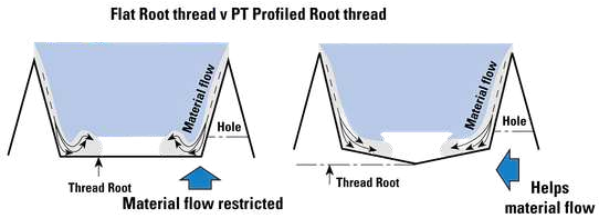
PT ® TYPE
DESIGN FEATURES

8° OPTIMUM PITCH ANGLE



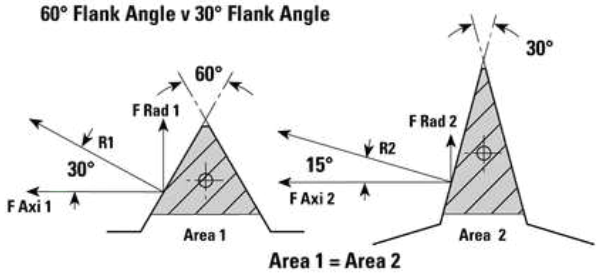
- Lowest installation torque/highest stripping torque
- Maximum resistance to vibration loosening and material relaxation in the component

PROFILED THREAD ROOT



- Improved plastic flow reduces stress, providing long term reliability
- Greater surface area contact between screw thread and plastic, to give a high shear and stripping torque
- Lower installation torques

30° COMBINED FLANK ANGLE



- Lower radial stresses, reducing boss bursting force
- Greater thread penetration into the plastic material, permitting enhanced clamping torque.
- Reduced centre of pressure, producing lower installation torque.

Resolution of Resultant Forces for the Same Volume Displacement

F Rad 1 = 0.500R **F Rad 2 = 0.259R**
F Axi 1 = 0.867R **F Axi 2 = 0.966R**

DESIGN RECOMMENDATION

MATERIAL	HOLE DIAMETER	BOSS DIAMETER	MIN. SCREW PENETRATION DEPTH
ABS	0.8d	2d	2d
ABS / PC Blend	0.8d	2d	2d
ASA	0.78d	2d	2d
PA 4.6	0.73d	1.85d	1.8d
PA 4.6 - GF 30	0.78d	1.85d	1.8d
PA 6	0.75d	1.85d	1.7d
PA 6 - GF 30	0.8d	2d	1.9d
PA 6.6	0.75d	1.85d	1.7d
PA 6.6 - GF 30	0.82d	2d	1.8d
PBT	0.75d	1.85d	1.7d
PBT - GF 30	0.8d	1.8d	1.7d
PC	0.85d	2.5d	2.2d*
PC - GF 30	0.85d	2.2d	2.0d*

For other materials contact PSM.

MATERIAL	HOLE DIAMETER	BOSS DIAMETER	MIN. SCREW PENETRATION DEPTH
LDPE	0.7d	2d	2d
HDPE	0.75d	1.8d	1.8d
PET	0.75d	1.85d	1.7d
PET - GF 30	0.8d	1.8d	1.7d
PMMA	0.85d	2d	2d
POM	0.75d	1.95d	2d
PP	0.7d	2d	2d
PP-TF 20	0.72d	2d	2d
PPO	0.85d	2.5d	2.2d*
PS	0.8d	2d	2d
PVC (Hard)	0.8d	2d	2d
SAN	0.77d	2d	1.9d
PPS	CONTACT PSM		

d = Nominal External Thread Diameter.

* Where materials are known to be sensitive to environmental stress cracking, ageing tests should be carried out as recommended by the material manufacturer.

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PT ® TYPE

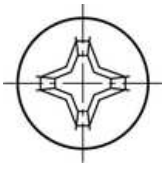
PRODUCT CODE WN 14

	Nominal Diameter		K18	K22	K25	K30	K35	K40	K50	K60	K70	K100
	External Thread	d	1.8	2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0	10.0
	Thread Root	R	1.0	1.3	1.4	1.7	1.9	2.2	2.7	3.2	3.7	5.2
	Thread Pitch	P	0.80	0.98	1.12	1.34	1.57	1.79	2.24	2.69	3.14	4.49
HEAD STYLE 11 Pan Flange	Head Diameter	HD		4.4	5.0	6.0	7.0	8.0	10.0	12.0	14.0	
	Head Height	H		1.6	1.8	2.1	2.4	2.5	3.2	4.0	4.6	
	Washer Thickness	S		0.5	0.6	0.7	0.8	0.9	1.1	1.3	1.5	
	A PHILLIPS	Recess No		1	1	1	2	2	2	3	3	
	B POZI	Recess No		1	1	1	2	2	2	3	3	
	Head Diameter	HD		4.5	5.0	6.0	7.0	8.0	10.0	12.0	14.0	20.0
	Head Height	H		1.4	1.5	2.1	2.4	2.6	3.3	3.6	4.2	5.5
	Washer Thickness	S		0.5	0.5	0.6	0.7	0.8	1.0	1.2	1.4	2.0
	C TORX	Recess No		T6	T6	T10	T10	T20	T20	T25	T30	T40
	D TORX PLUS with AUTOSERT	Recess No		6 IP	6 IP	10 IP	10 IP	20 IP	20 IP	25 IP	30 IP	40 IP
	Screw Lengths > 3d	X	1.8	2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0	10.0
	Screw Lengths ≤ 3d	X	0.9	1.1	1.3	1.5	1.8	2.0	2.5	3.0	3.5	5.0
HEAD STYLE 12 Pan	Head Diameter	HD	3.6	3.9	4.4	5.3	6.1	7.0	8.8	10.5	12.3	
	Head Height	H	1.5	1.5	1.7	2.0	2.5	2.7	3.4	4.0	4.5	
	A PHILLIPS	Recess No.	0	1	1	1	2	2	2	3	3	
	B POZI	Recess No.	0	1	1	1	2	2	2	3	3	
	Head Diameter	HD	3.6	4.0	4.2	5.6	6.9	7.5	8.2	10.8	12.5	16.0
	Head Height	H	1.3	1.4	1.6	2.1	2.3	2.6	2.9	3.8	4.4	6.0
	C TORX	Recess No.	T6	T6	T7	T10	T10	T20	T20	T25	T30	T40
	D TORX PLUS with AUTOSERT	Recess No.	6 IP	6 IP	7 IP	10 IP	10 IP	20 IP	20 IP	25 IP	30 IP	40 IP
	Screw Lengths > 3d	X	1.8	2.2	2.5	3.0	3.5	4.0	5.0	6.0	7.0	10.0
	Screw Lengths ≤ 3d	X	0.9	1.1	1.3	1.5	1.8	2.0	2.5	3.0	3.5	5.0
HEAD STYLE 13 Countersunk	Head Diameter	HD	3.4	3.8	4.7	5.5	7.3	8.4	9.3	11.3	13.6	
	Cylinder Head Height	F	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	
	Screw Lengths > 3d	Y	0.90	1.10	1.30	1.50	1.80	2.00	2.50	3.00	3.50	
	Screw Lengths ≤ 3d	Y	0.50	0.60	0.70	0.75	1.00	1.00	1.25	1.50	1.75	
	A PHILLIPS	Recess No.	0	1	1	1	2	2	2	3	3	
	B POZI	Recess No.	0	1	1	1	2	2	2	3	3	
	Head Diameter	HD	3.4	3.8	4.7	5.5	7.3	8.4	9.3	11.3	13.6	
	C TORX	Recess No.	T6	T6	T8	T8	T15	T20	T20	T30	T40	
	D TORX PLUS with AUTOSERT	Recess No.	6 IP	6 IP	8 IP	8 IP	15 IP	20 IP	20 IP	30 IP	40 IP	

TORX PLUS®,TORX® and AUTOSERT® are registered trademarks of Camcar Division of Textron Inc.

STANDARD RECESS STYLES

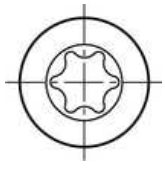
Other available recesses are shown on optional features page.



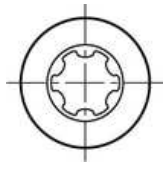
A PHILLIPS



B POZI



C TORX®



D TORX PLUS®

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PT ® TYPE

MATERIAL
Through Hardened & Tempered Steel

STANDARD FINISHES
Zinc Plate and Clear Passivation (Z)
Zinc Plate and Chromate (ZC)
Zinc Plate and Black Chromate (ZBC)
Stainless Steel (SS)
Stainless Steel 316 (S6)

OTHER FINISHES
– Available to order.

SIZE RANGE

PT SCREWS	K18	K22	K25	K30	K35	K40	K50	K60	K70	K100
Length 'L' (mm) / Nominal Ø (mm)	1.8	2.20	2.50	3.00	3.50	4.00	5.00	6.00	7.00	10.00
4 ± 0.6		■	■	■	■	■	■	■	■	■
5 ± 0.6				■	■	■	■	■	■	■
6 ± 0.6					■	■	■	■	■	■
7 ± 0.75						■	■	■	■	■
8 ± 0.75								■	■	■
10 ± 0.75								■	■	■
12 ± 0.9									■	■
14 ± 0.9										■
16 ± 0.9										■
18 ± 0.9										■
20 ± 1.05	■									
25 ± 1.05	■									
30 ± 1.05	■	■								
35 ± 1.25	■	■	■	■						
40 ± 1.25	■	■	■	■	■					
50 ± 1.25	■	■	■	■	■	■				
60 ± 1.5	■	■	■	■	■	■	■			
70 ± 1.5	■	■	■	■	■	■	■	■		
80 ± 1.5	■	■	■	■	■	■	■	■	■	
90 ± 1.75	■	■	■	■	■	■	■	■	■	
100 ± 1.75	■	■	■	■	■	■	■	■	■	

HOW TO SPECIFY

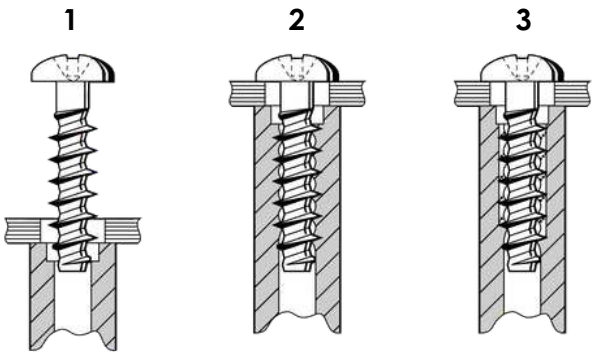
SCREW TYPE	WN1412-KB30 x10-Z
HEAD STYLE	WN1412-KB30 x10-Z
RECESS CODE	WN1412-KB30 x10-Z
THREAD DIAMETER	WN1412-KB30 x10-Z
LENGTH OF SCREW	WN1412-KB30 x10-Z
FINISH	WN1412-KB30 x10-Z

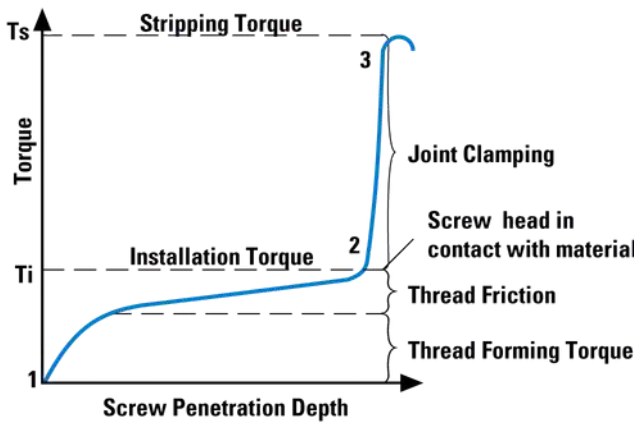
ASSEMBLY DATA

To determine the optimum performance of direct screw fixings there are a number of influential factors which have to be considered if problems on the production line or in service are to be avoided. In order to establish the optimum clamping torque it is first necessary to establish the following:

1. The amount of torque required to form the first thread.
2. The amount of torque required for the screwhead to come into contact with the mating component.
3. The amount of torque required for the joint to fail.

These figures should be obtained by the use of specialised equipment which simulates production line conditions since testing by hand omits the important effect of friction due to installation speed.
PSM's Technology Centre is fully equipped to conduct these tests for you.
The repeat torque accuracy of the installation tool can vary and should always be considered when specifying the recommended clamping torque.





RECOMMENDED INSTALLATION TOOL SPEEDS

The speed at which screws are installed should be carefully considered - speeds which are too high can destroy the material into which the screws are being driven.

Although a speed of 600rpm is recommended for most materials, pre-production testing and consultation with PSM should be undertaken for optimum results.

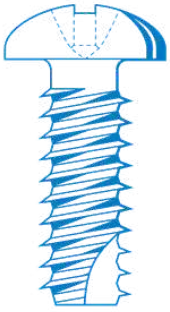
DURO-PT® SCREW



The DURO-PT® SCREW is a direct screw fastener for use in thermosetting plastics.
The design incorporates many unique features which provide designers with a really effective direct screw fixing for these materials. The cutting notch combined with the profiled thread root and special thread form provides low installation and high stripping torques.
The efficient removal of cutting debris ensures greatly reduced bursting forces, providing the solution to a common problem associated with conventional self-tapping screws, when used in thermosets.

ADVANTAGES

- Reduces stress in thermosetting plastics to an absolute minimum
- Wide safety margin between installation and stripping torque
- Suitable for all types of thermosetting plastics.
- Can be used in thermoplastics with a high fill content (>30%)

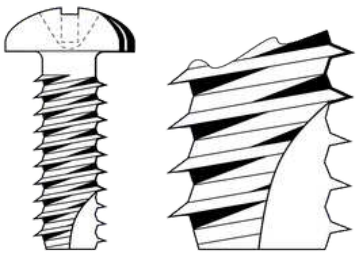


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DURO-PT® SCREW
DESIGN FEATURES

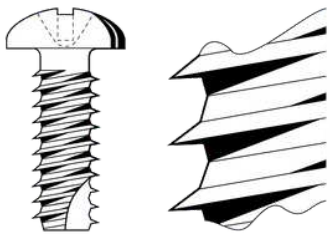
SPECIAL CUTTING NOTCH

- Removes 60-80% of material cut during the thread cutting operation
- Reduces installation torque
- Reduces radial pressure



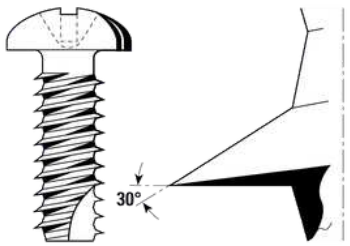
SPECIAL PROFILED ROOT

- Provides space for debris
- Reduces radial stress
- Reduces installation torque
- Increases stripping torque



SPECIAL SHAPED TOOTH

- Reduces radial stress
- Maximum surface bearing area
- High stripping torque
- High clamping force
- High back-off torque



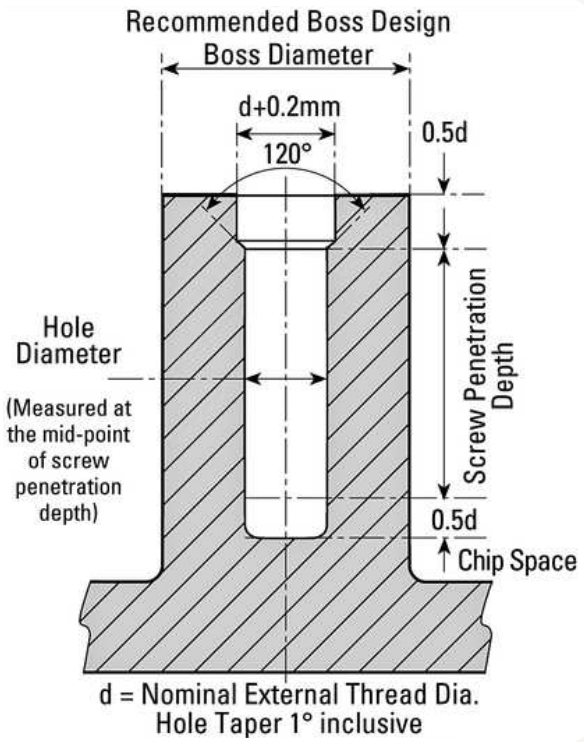
DESIGN GUIDE

BOSS DESIGN DEPENDS ON THE FOLLOWING FACTORS:

- Type of thermoset material used
- The density of the material
- The amount and type of filler
- Because of these variables the following recommendations are minimum and maximum guidelines only.

	MINIMUM	MAXIMUM
HOLE DIAMETER	0.85 x d	0.88 x d
BOSS DIAMETER	2.5 x d	3.0 x d
SCREW PENETRATION DEPTH	1.5 x d	1.5 x d

FOR SPECIFIC APPLICATION ADVICE, CONTACT PSM

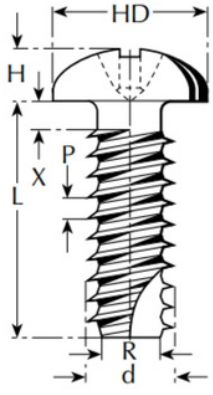


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DURO-PT ® TYPE

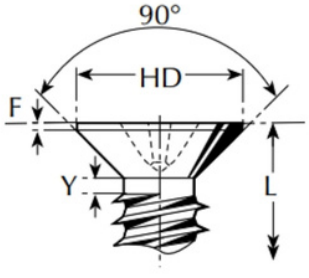
PRODUCT CODE WN 17

HEAD STYLE 42 Pan



Nominal Diameter		K22	K25	K30	K35	K40	K50	K60	K80
External Thread	d	2.2	2.5	3.0	3.5	4.0	5.0	6.0	8.0
Thread Root	R	1.59	1.81	2.18	2.56	2.93	3.68	4.42	5.91
Thread Pitch	P	0.71	0.77	0.86	0.95	1.04	1.23	1.42	1.79
Head Diameter	HD	4.0	5.0	6.0	7.0	8.0	10.0	12.0	16.0
Head Height	H	1.6	2.0	2.4	2.7	3.1	3.8	4.6	6.0
A PHILLIPS	Recess No.	1	1	1	2	2	2	3	4
B POZI	Recess No.	1	1	1	2	2	2	3	4
Head Diameter	HD	4.0	5.0	6.0	7.0	8.0	10.0	12.0	16.0
Head Height	H	1.6	2.0	2.4	2.7	3.1	3.8	4.6	6.0
C TORX	Recess No.	T6	T8	T10	T15	T20	T25	T30	T40
D TORX PLUS with AUTOSERT	Recess No.	6 IP	8 IP	10 IP	15 IP	20 IP	25 IP	30 IP	40 IP
Screw Lengths > 3d	X	2.2	2.5	3.0	3.5	4.0	5.0	6.0	8.0
Screw Lengths ≤ 3d	X	1.1	1.3	1.5	1.8	2.0	2.5	3.0	4.0

HEAD STYLE 43 Countersunk

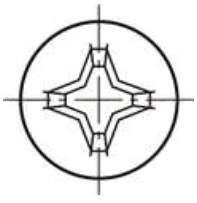


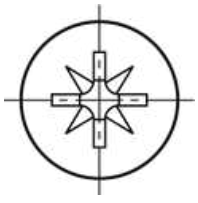
Head Diameter	HD	3.8	4.7	5.6	6.5	7.5	9.2	11.0	14.5
Cylinder Head Height	F	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.70
A PHILLIPS	Recess No.	1	1	1	2	2	2	3	4
B POZI	Recess No.	1	1	1	2	2	2	3	4
Head Diameter	HD	3.8	4.7	5.5	7.3	8.4	9.3	11.3	15.8
Cylinder Head Height	F	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.70
C TORX	Recess No.	T6	T8	T10	T15	T20	T25	T30	T40
D TORX PLUS with AUTOSERT	Recess No.	6 IP	8 IP	10 IP	15 IP	20 IP	25 IP	30 IP	40 IP
Screw Lengths > 3d	Y	1.10	1.30	1.50	1.80	2.00	2.50	3.00	4.00
Screw Lengths ≤ 3d	Y	0.60	0.70	0.75	1.00	1.00	1.25	1.50	2.00

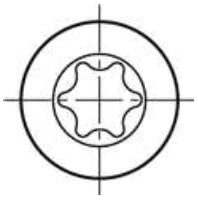
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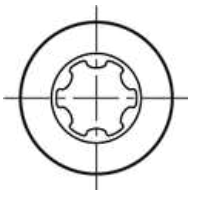
STANDARD RECESS STYLES

Other available recesses are shown on optional features page


A PHILLIPS


B POZI


C TORX®


D TORX PLUS®

DURO-PT ® TYPE

MATERIAL
Case Hardened Mild Steel

STANDARD FINISHES
Zinc Plate and Clear Passivation (Z)
Zinc Plate and Chromate (ZC)
Zinc Plate and Black Chromate (ZBC)

OTHER FINISHES
– Possible on quotation.

SIZE RANGE

DURO-PT SCREWS	K22	K25	K30	K35	K40	K50	K60	K80
Nominal Ø (mm)	2.20	2.50	3.00	3.50	4.00	5.00	6.00	8.00
Length 'L' (mm)								
5 ± 0.6			■	■	■	■	■	■
6 ± 0.6				■	■	■	■	■
7 ± 0.75					■	■	■	■
8 ± 0.75						■	■	■
10 ± 0.75							■	■
12 ± 0.9								■
14 ± 0.9								
16 ± 0.9								
18 ± 0.9								
20 ± 1.05	■							
25 ± 1.05	■							
30 ± 1.05	■	■						
35 ± 1.25	■	■	■					
40 ± 1.25	■	■	■	■				
50 ± 1.25	■	■	■	■	■			
60 ± 1.5	■	■	■	■	■	■		
70 ± 1.5	■	■	■	■	■	■	■	
80 ± 1.5	■	■	■	■	■	■	■	

HOW TO SPECIFY

SCREW TYPE	WN1742-KB30 x10-Z
HEAD STYLE	WN1742-KB30 x10-Z
RECESS CODE	WN1742-KB30 x10-Z
THREAD DIAMETER	WN1742-KB30 x10-Z
LENGTH OF SCREW	WN1742-KB30 x10-Z
FINISH	WN1742-KB30 x10-Z

PT ® TYPE DG



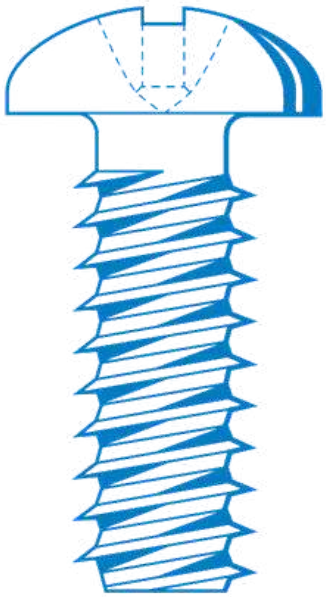
The PT® TYPE DG is a direct screw fastener for use in light alloys.

The design incorporates many unique features which provide designers with a really effective direct screw fixing for these materials.

The profiled thread root gives low installation torque whilst the special thread form provides high stripping torque.

ADVANTAGES

- Thread forming - No debris
- Reliable & easy installation into punched, drilled, extruded & molded holes
- Reusability of screw



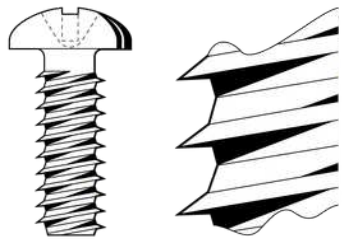
PT is a registered trade mark of EJOT Verbindungstechnik GmbH & Co. KG, Bad Laasphe, Germany

PSM International
www.psmfasteners.com

PT ® TYPE DG
DESIGN FEATURES

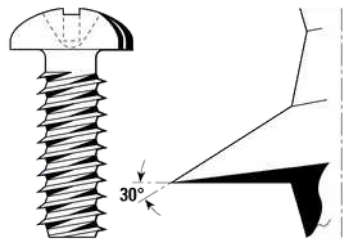
SPECIAL PROFILED ROOT

- Reduces stress
- Allows material to flow during thread forming
- Reduces installation torque
- Increases stripping torque
- Increases pull-out load



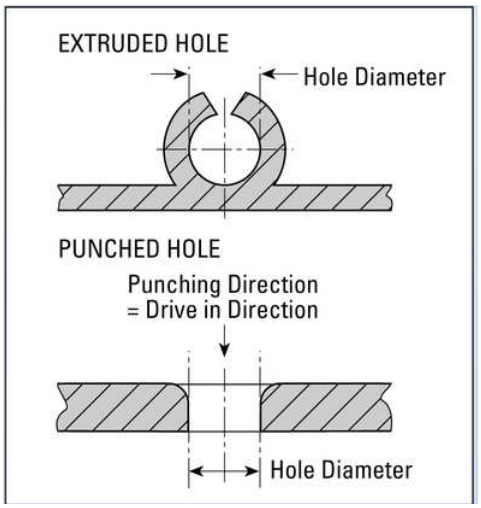
SPECIAL SHAPED TOOTH

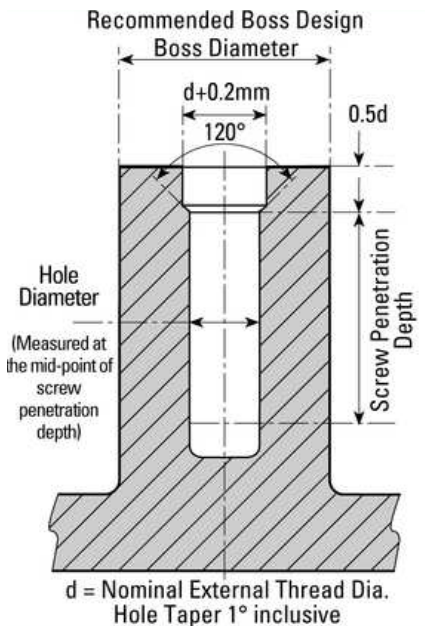
- Reduces radial stress
- Maximum surface bearing area
- High stripping torque
- High clamping force
- High back-off torque



DESIGN GUIDE

	HARD MATERIALS	MEDIUM SOFT MATERIALS	SOFT MATERIALS
HOLE DIAMETER	0.94 x d	0.92 x d	0.90 x d
MINIMUM BOSS DIAMETER	2.5 x d	2.5 x d	2.5 x d
MINIMUM SCREW PENETRATION	1.5 x d	1.5 x d	1.5 x d
MAXIMUM SCREW PENETRATION	2.5 x d	2.5 x d	2.5 x d



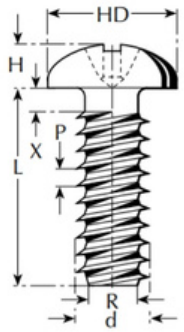
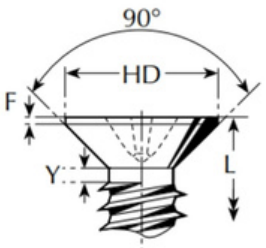


SOFT MATERIALS = ≤ 50 VPN
MEDIUM SOFT MATERIALS = 51 TO 75 VPN
HARD MATERIALS = 76 TO 100 VPN

FOR SPECIFIC APPLICATION ADVICE,
CONTACT P.S.M.

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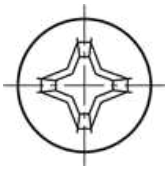
PT ® TYPE DG

PRODUCT CODE WN 15	Nominal Diameter		K22	K25	K30	K35	K40	K50	K60	K80
	External Thread	d	2.2	2.5	3.0	3.5	4.0	5.0	6.0	8.0
	Thread Root	R	1.59	1.81	2.18	2.56	2.93	3.68	4.42	5.91
	Thread Pitch	P	0.71	0.77	0.86	0.95	1.04	1.23	1.42	1.79
HEAD STYLE 42 Pan	Head Diameter	HD	4.0	5.0	6.0	7.0	8.0	10.0	12.0	16.0
	Head Height	H	1.6	2.0	2.4	2.7	3.1	3.8	4.6	6.0
	A PHILLIPS	Recess No.	1	1	1	2	2	2	3	4
	B POZI	Recess No.	1	1	1	2	2	2	3	4
	Head Diameter	HD	4.0	5.0	6.0	7.0	8.0	10.0	12.0	16.0
	Head Height	H	1.6	2.0	2.4	2.7	3.1	3.8	4.6	6.0
	C TORX	Recess No.	T6	T8	T10	T15	T20	T25	T30	T40
	D TORX PLUS with AUTOSERT	Recess No.	6 IP	8 IP	10 IP	15 IP	20 IP	25 IP	30 IP	40 IP
	Screw Lengths > 3d	X	2.2	2.5	3.0	3.5	4.0	5.0	6.0	8.0
	Screw Lengths ≤ 3d	X	1.1	1.3	1.5	1.8	2.0	2.5	3.0	4.0
HEAD STYLE 43 Countersunk	Head Diameter	HD	3.8	4.7	5.6	6.5	7.5	9.2	11.0	14.5
	Cylinder Head Height	F	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.65
	A PHILLIPS	Recess No.	1	1	1	2	2	2	3	4
	B POZI	Recess No.	1	1	1	2	2	2	3	4
	Head Diameter	HD	3.8	4.7	5.5	7.3	8.4	9.3	11.3	15.8
	Cylinder Head Height	F	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.70
	C TORX	Recess No.	T6	T8	T10	T15	T20	T25	T30	T40
	D TORX PLUS with AUTOSERT	Recess No.	6 IP	8 IP	10 IP	15 IP	20 IP	25 IP	30 IP	40 IP
	Screw Lengths > 3d	Y	1.10	1.30	1.50	1.80	2.00	2.50	3.00	4.00
	Screw Lengths ≤ 3d	Y	0.60	0.70	0.75	1.00	1.00	1.25	1.50	2.00

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STANDARD RECESS STYLES

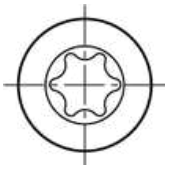
Other available recesses are shown on optional features page



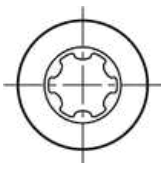
A PHILLIPS



B POZI



C TORX®



D TORX PLUS®

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PT ® TYPE DG

MATERIAL
Case Hardened Mild Steel

STANDARD FINISHES
Zinc Plate and Clear Passivation (Z)
Zinc Plate and Chromate (ZC)
Zinc Plate and Black Chromate (ZBC)

OTHER FINISHES
– Possible on quotation.

SIZE RANGE

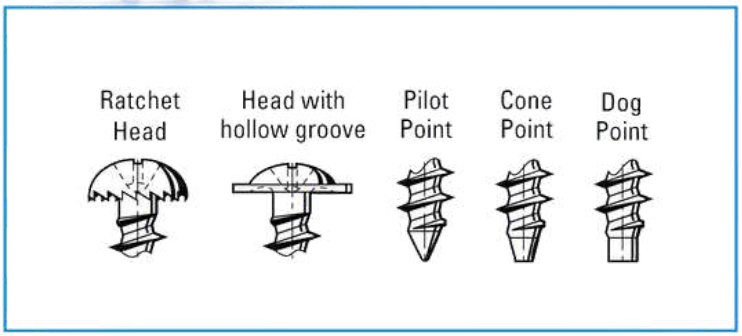
PT-DG SCREWS		K22	K25	K30	K35	K40	K50	K60	K80
Length 'L' (mm)	Nominal Ø (mm)	2.20	2.50	3.00	3.50	4.00	5.00	6.00	8.00
5 ± 0.6				■	■	■	■	■	■
6 ± 0.6					■	■	■	■	■
7 ± 0.75						■	■	■	■
8 ± 0.75							■	■	■
10 ± 0.75								■	■
12 ± 0.9									■
14 ± 0.9									
16 ± 0.9									
18 ± 0.9									
20 ± 1.05		■							
25 ± 1.05		■							
30 ± 1.05		■	■						
35 ± 1.25		■	■	■					
40 ± 1.25		■	■	■	■				
50 ± 1.25		■	■	■	■	■			
60 ± 1.5		■	■	■	■	■	■		
70 ± 1.5		■	■	■	■	■	■	■	
80 ± 1.5		■	■	■	■	■	■	■	

HOW TO SPECIFY

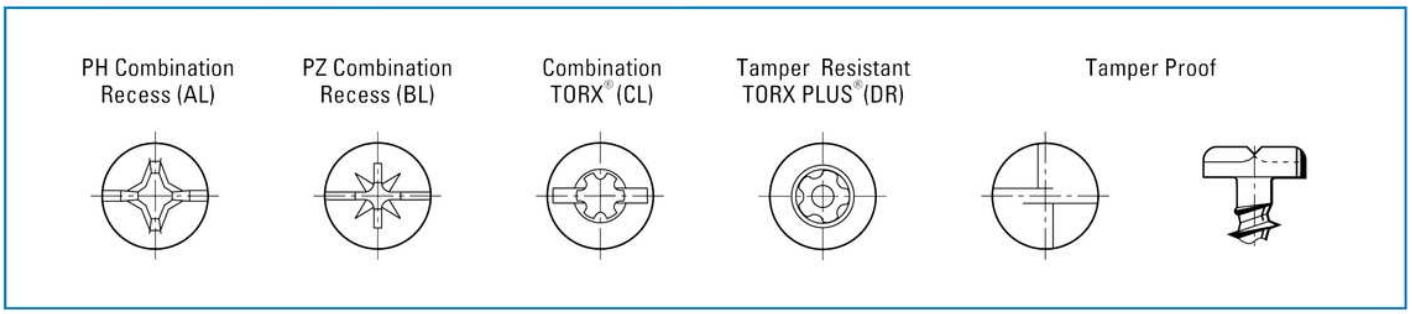
SCREW TYPE	WN1542-KB30 x10-Z
HEAD STYLE	WN1542-KB30 x10-Z
RECESS CODE	WN1542-KB30 x10-Z
THREAD DIAMETER	WN1542-KB30 x10-Z
LENGTH OF SCREW	WN1542-KB30 x10-Z
FINISH	WN1542-KB30 x10-Z

OPTIONAL FEATURES

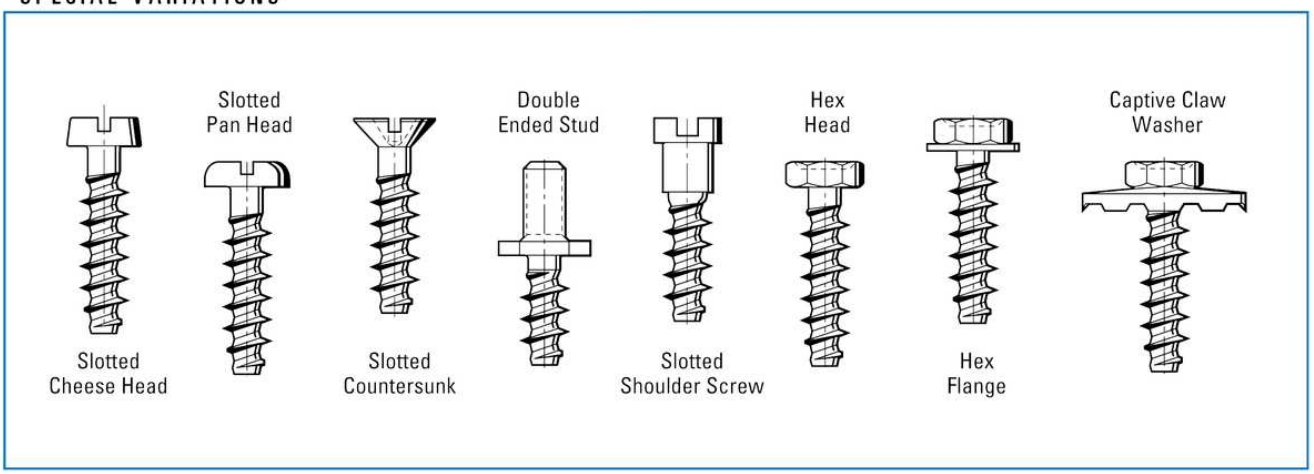
OPTIONAL FEATURES



OTHER AVAILABLE RECESSES



SPECIAL VARIATIONS



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INSERTS
FOR PLASTICS

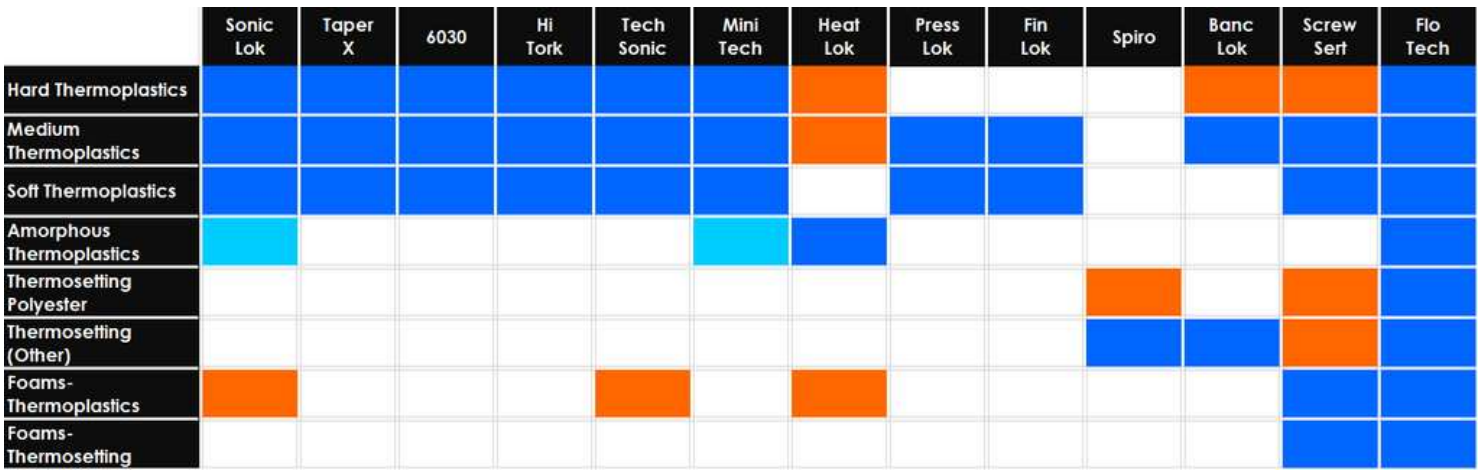
PSM International
www.psmfasteners.com

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.

MATERIAL CHARACTERISTICS



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
BMS	Tufnol
	Polyurethane (grid)

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INSERTS FOR PLASTICS

INSTALLATION METHODS

	SonicLok	Taper X	6030	HI Tork	Tech Sonic	Mini Tech	Heat Lok	Press Lok	Fin Lok	Spiro	Banc Lok	Screw Serf	Flo Tech
Hand Tool								■			■	■	
Simple Press								■	■	■	■		
Direct Heat	■	■	■	■	■	■	■						■
Ultrasonic	■	■	■	■									
Tapping Machine												■	
Moulded In	■	■	■	■		■							■
Fully Automated	■	■	■	■	■	■	■	■	■	■	■	■	■

FASTENER CHARACTERISTICS

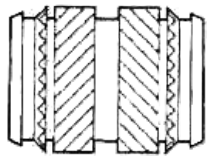
	SonicLok	Taper X	6030	HI Tork	Tech Sonic	Mini Tech	Heat Lok	Press Lok	Fin Lok	Spiro	Banc Lok	Screw Serf	Flo Tech
Pull Out													
Direct Torque													
Jack Out													
Free Running Thread	■	■	■	■	■	■	■		■	■		■	■
Thread Locking Effect								■			■		
Symmetrical					■	■	■						
Headed Versions	■		■			■	■		■	■	■	■	
Stud Versions	■	■	■	■	■		■		■	■		■	

	KEY
Recommended	■
Possible	■
Contact PSM Technology Centre	■
Not Recommended	
High	■
Moderate	■

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PRODUCT INDEX

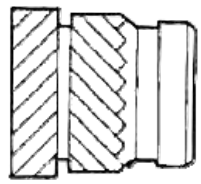
TECH-SONIC ©



Insert Type TEC series & Stud Type TCTS series 29-31

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.

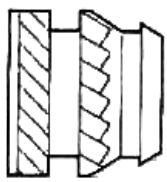
SONIC-LOK ®



Insert Type SL & SHK series and Stud Type SLTS & SLHS series 32-34

Has been 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.

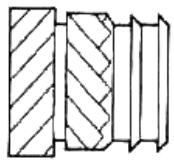
TAPER-X ®



Insert Type TX series 35-38

Designed for use in an 8° tapered hole. The combination of angled splines and upwardly directed vanes provide high torque and pull-out performance.

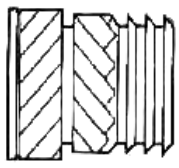
6030 INSERTS



Insert Type 6030 & 6030H series 39-41

Has been developed for installation into thermoplastics designed for use in an 8° tapered hole. 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.

HI-TORK ®



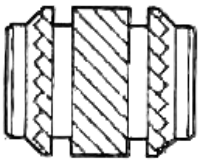
Insert Type HT series 42-44

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

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PRODUCT INDEX

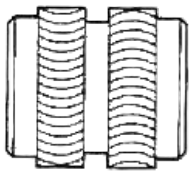
MINI-TECH©



Minsert Type TEC series & Stud Type TCTS series 45-46

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 reusability with no risk of thread stripping problems.

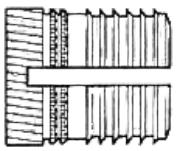
HEAT-LOK®



Insert Type HL & HLH and Stud Type HLTS & HLHS series 47-49

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.

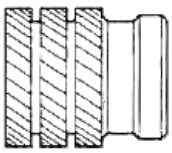
PRESS-LOK©



50-52

Is a press-in expansion insert designed for use in thermoplastic moldings. It has been developed to give the ease of installation associated with this type of fastener but without the high screw installation torque which has previously been typical. The incorporation of plain and knurled vanes gives levels of pull-out and torque resistance usually expected from heat installed inserts.

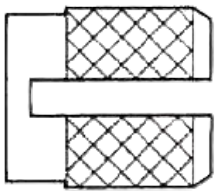
SPIRO®



Insert Type SP & HSR series and Stud Type SPTS & SPHS series 53-55

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.

BANC-LOK®



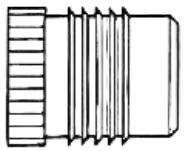
Insert Type N41, N42 & N42R series 56-58

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

PSM International
www.psmfasteners.com

PRODUCT INDEX

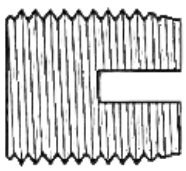
FIN-LOK®



Insert Type FL & FLH and Stud Type FLTS & FLHS series 59-61

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.

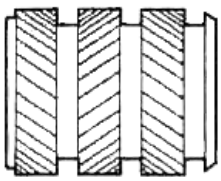
SCREW-SERT®



Insert Type SCT & HSCT series & Stud Type SCTS series 62-64

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.

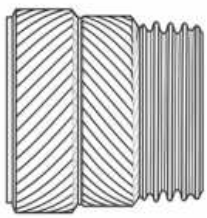
FLO-TECH ®



Insert Type FTC series 65-66

A blind-ended threaded insert which has been introduced to meet the needs of those molders who, for a variety of reasons, prefer to mold-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.

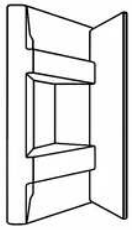
TRI-STEP™



67-71

Provides the ease-of-location and hole-centering benefits of tapered inserts, while eliminating the inherent drawbacks of a tapered design. For post-mold installation, TRI-STEP™ inserts are ideal for lowering your "installed cost."

MOLD-FORM™



72-74

A cold-formed thru-hole insert that provides reduced cost, ease of installation, and excellent performance.

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TECH-SONIC ©
INSERTS & STUDS

ADVANTAGES

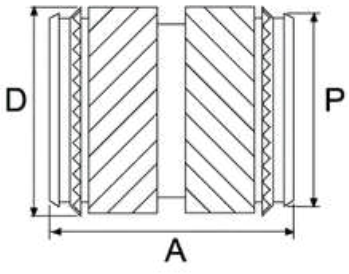
- Double ended - assists automatic feeding
- Increased pull out and torque performance
- Self-aligning - assists installation
- Permits thin boss walls allowing compact boss design
- Choice of lengths available

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TECH-SONIC ©
INSERTS & STUDS

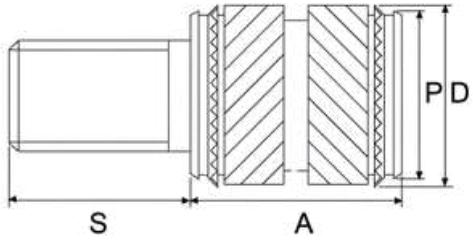
SELECTION OF INSERT OR STUD

INSERTS



PRODUCT CODE [TEC]

STUDS



PRODUCT CODE [TCTS]

ISO METRIC

Unit: Millimetres

PRODUCT CODE	THREAD SIZE	INSERT LENGTH A	PREFERRED SHORTER LENGTH A*			STUD LENGTHS (FOR TCTS ONLY) S										INSERT Ø D	PILOT Ø P	REC. HOLE SIZE -0.00 +0.10	MIN. WALL THICKNESS
TEC-B TCTS-B	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

PRODUCT CODE	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
TEC-B TCTS-B	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.

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

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TECH-SONIC ©
INSERTS & STUDS

SPECIFYING AN INSERT & STUD

INSERTS (METRIC)								STUDS (METRIC)								
	TEC	–	B	–	M3	×	4.0	TCTS	–	B	–	M3	×	4.0	–	5.0
	PRODUCT CODE		MATERIAL		THREAD SIZE		PREFERRED OTHER LENGTH	PRODUCT CODE		MATERIAL		THREAD SIZE		PREFERRED OTHER LENGTH		STUD LENGTH
	TEC	–	B	–	632	×	.157	TCTS	–	B	–	632	×	.157	–	3/16
INSERTS (INCHES)								STUDS (INCHES)								

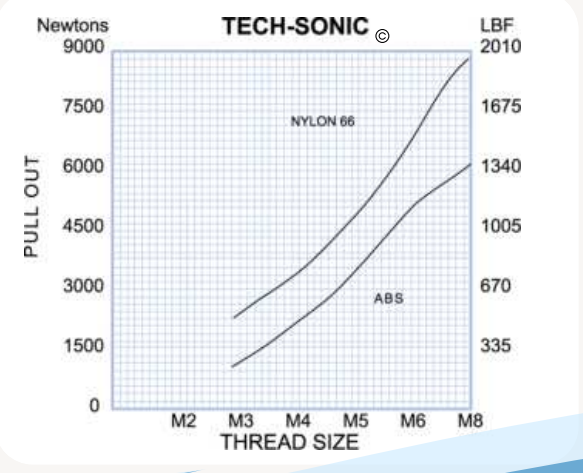
BOSS DESIGN SPECIFICATION

HOLE PREPARATION
Molded holes are recommended wherever possible. The taper on a molded 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 gives a general guide and shows the relative performance of the inserts in the range.



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SONIC-LOK®
INSERTS & STUDS

ADVANTAGES

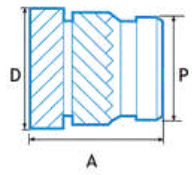
- Permits thin boss walls allowing compact boss design
- Provides high torque and pull out performance
- Rapid installation using heat or ultrasonic
- Choice of lengths available
- Self-aligning – Assists Installation

PSM International
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SONIC-LOK®
INSERTS & STUDS

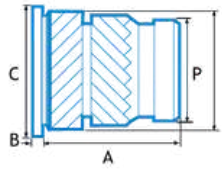
SELECTION OF INSERT OR STUD

INSERTS



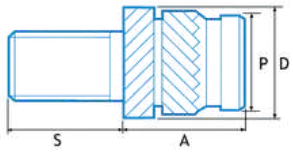
PRODUCT CODE (SL)

HEADED INSERTS



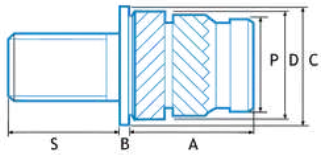
PRODUCT CODE (SHK)

STUD



PRODUCT CODE (SLTS)

HEADED STUD



PRODUCT CODE (SLHS)

ISO METRIC

Unit: Millimetres

PRODUCT CODE	THREAD SIZE	INSERT LENGTH A	PREFERRED SHORTER LENGTHS 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
SL-B SHK-B SLTS-B SLHS-B	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	2.16
	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

PRODUCT CODE	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
SL-B SHK-B SLTS-B SLHS-B	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.

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

SPECIFYING AN INSERT

INSERTS (METRIC)								STUDS (METRIC)								
	SL	–	B	–	M3	x	4.0	SLTS	–	B	–	M3	x	4.0	–	5.0
	PRODUCT CODE		MATERIAL		THREAD SIZE		PREFERRED SHORTER LENGTH	PRODUCT CODE		MATERIAL		THREAD SIZE		PREFERRED SHORTER LENGTH		STUD LENGTH
	SHK	–	B	–	632	x	.157	SLHS	–	B	–	632	x	.157	–	3/16
INSERTS (INCHES)								STUDS (INCHES)								

BOSS DESIGN SPECIFICATION

HOLE PREPARATION

Molded holes are recommended wherever possible. The taper on a molded 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 molded 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

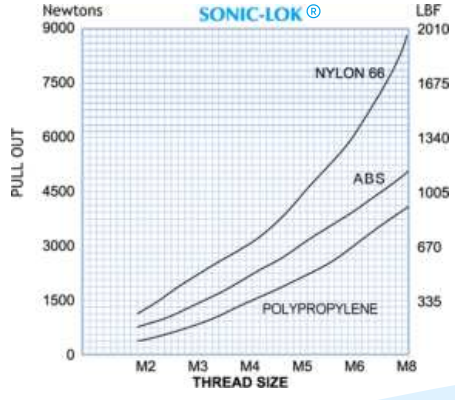
A general guide to minimum wall thickness is given in the data table but this will vary depending upon the nature of the plastic. Where thinner walls are required these can often be accommodated, but consultation with the P.S.M Technology Centre or local sales office and pre-production testing is strongly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



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TAPER-X® INSERTS

ADVANTAGES

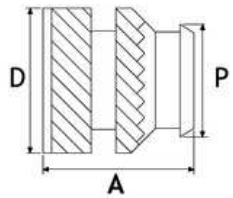
- Designed for use in an 8° tapered hole
- High pull out performance
- High torque resistance
- Flange prevents escape of plastic
- Can be installed by heat or ultrasonics
- Self-aligning

PSM International
www.psmfasteners.com

TAPER-X® INSERTS

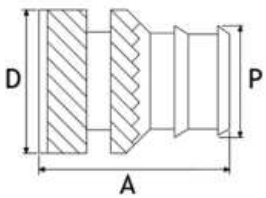
SELECTION OF INSERT OR STUD

SINGLE VANE INSERTS



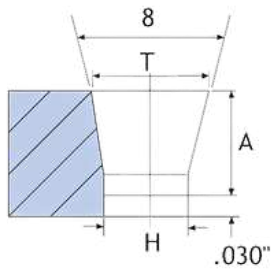
PRODUCT CODE [TX] (SHORT)

DOUBLE VANE INSERTS



PRODUCT CODE [TX] (LONG)

HOLE CONFIGURATION



"SINGLE VANE" METRIC

Unit: Millimetres

PRODUCT CODE	THREAD SIZE	INSERT LENGTH A	INSERT Ø D	PILOT END Ø P	REC. HOLE SIZE +/- 0.025		MIN. WALL THICKNESS
					T	H	
TX-B	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

PRODUCT CODE	THREAD SIZE	INSERT LENGTH A	INSERT Ø D	PILOT END Ø P	REC. HOLE SIZE +/- 0.001		MIN. WALL THICKNESS
					T	H	
TX-B	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.

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

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TAPER-X® INSERTS

"DOUBLE VANE" METRIC

Unit: Millimetres

PRODUCT CODE	THREAD SIZE	INSERT LENGTH A	INSERT Ø D	PILOT END Ø P	REC. HOLE SIZE +/- 0.025		MIN. WALL THICKNESS
					T	H	
TX-B	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

PRODUCT CODE	THREAD SIZE	INSERT LENGTH A	INSERT Ø D	PILOT END Ø P	REC. HOLE SIZE +/- 0.001		MIN. WALL THICKNESS
					T	H	
TX-B	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.

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

SPECIFYING AN INSERT

INSERTS (METRIC)								
	TX	–	B	–	M3	X	3.8	
	PRODUCT CODE		MATERIAL		THREAD SIZE		PREFERRED OTHER LENGTH	
	TX	–	B	–	632	X	.150	
INSERTS (INCHES)								

BOSS DESIGN SPECIFICATION

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

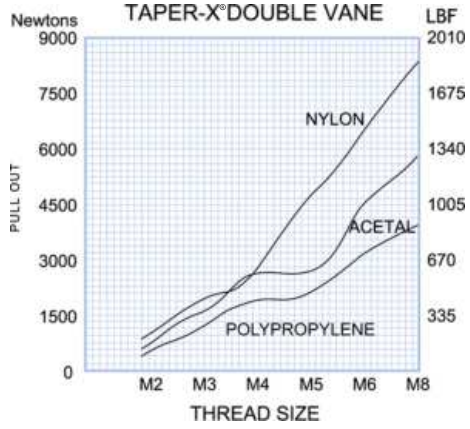
The fastener may be installed using either a pre-heating process or using heat generated by ultrasonic vibrations. Where preheating is used care must be exercised to ensure that the fastener softens but does not melt the plastic. This will avoid any tendency to generate unsightly "flash" around the top 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 shows the relative performance of the inserts in the range.



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6030 INSERTS

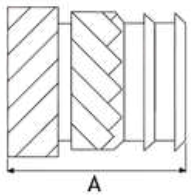
ADVANTAGES

- Increased productivity
- Improved quality
- Ensures positional accuracy
- High torque and pull out
- Avoids “flash” on non-countersunk holes

6030
INSERTS

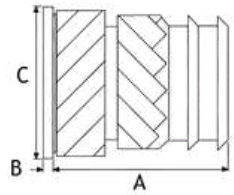
SELECTION OF INSERT

INSERTS



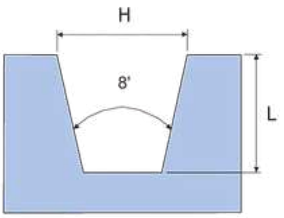
PRODUCT CODE [6030]

HEADED INSERTS



PRODUCT CODE [6030H]

HOLE CONFIGURATION



ISO METRIC

Unit: Millimetres

PRODUCT CODE	THREAD SIZE	INSERT LENGTH A	INSERT Ø B	PILOT END Ø C	REC. HOLE SIZE		MIN. WALL THICKNESS
					H -0.00 +0.10	L MIN	
6030-B	M2	5.0	0.6	5.0	3.8	6.0	1.5
	M3	5.5	0.6	6.0	4.4	6.5	1.8
	M3.5	6.0	0.8	7.0	52	7.0	1.8
	M4	7.5	0.8	8.0	5.8	8.5	2.0
	M5	9.0	1.0	8.5	7.0	10.0	2.0
	M6	10.0	1.0	10.0	8.5	11.0	2.5
	M8	12.0	1.0	12.0	10.9	13.0	3.0

Other lengths possible on quotation.

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

SPECIFYING AN INSERT

INSERTS (METRIC)					
	6030	–	B	–	M3
	PRODUCT CODE		MATERIAL		THREAD SIZE
	6030H	–	B	–	M3
HEADED INSERTS (METRIC)					

BOSS DESIGN SPECIFICATION

HOLE PREPARATION

Molded 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.

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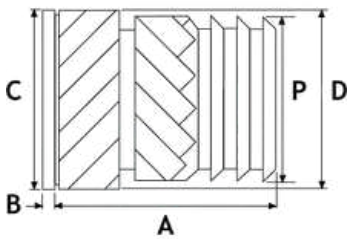
HI-TORK® INSERTS

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 molding process
- High installation speeds
- Greatly reduced scrappage rate
- Higher productivity
- Provides high process capability

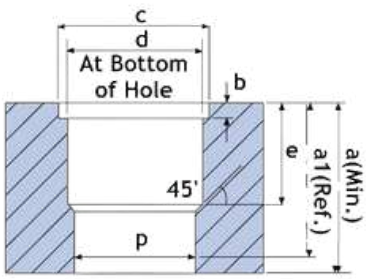
SELECTION OF INSERT

INSERTS



PRODUCT CODE [HT]

HOLE CONFIGURATION



Moulding Taper
1° Inclusive

ISO METRIC

Unit: Millimetres

PRODUCT CODE	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							MIN. WALL THICKNESS
							A	A1	B	C	D	E	P	
HT-B	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	9.1	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	1.2	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.

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

SPECIFYING AN INSERT

INSERTS (METRIC)					
	HT	–	B	–	M4
	PRODUCT CODE		MATERIAL		THREAD SIZE

BOSS DESIGN SPECIFICATION

HOLE PREPARATION

The special Hi-Tork® hole form is specifically designed for molding. Dimensions for the hole are detailed in diagram and table overleaf.

INSTALLATION

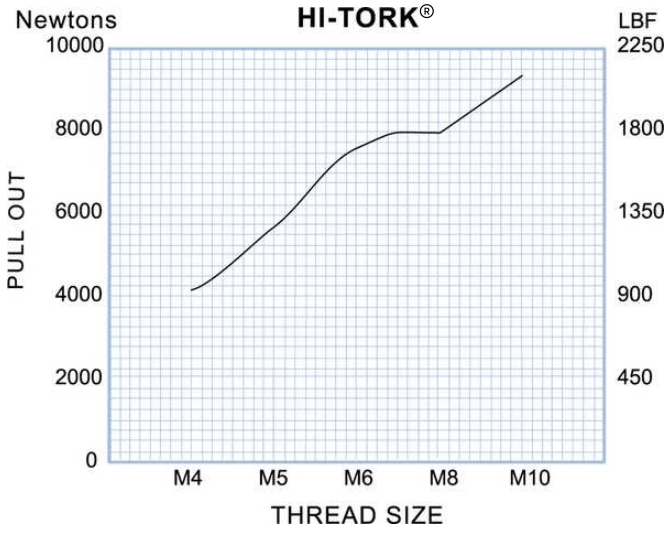
The fastener may be installed using either a pre-heating process or using heat generated by ultrasonics. Where pre-heating process is used, care must be exercised to ensure that the fastener softens but does not melt the plastics. P.S.M offers a wide range of pre-heating installation equipment which ensures high levels of process capability and throughput.

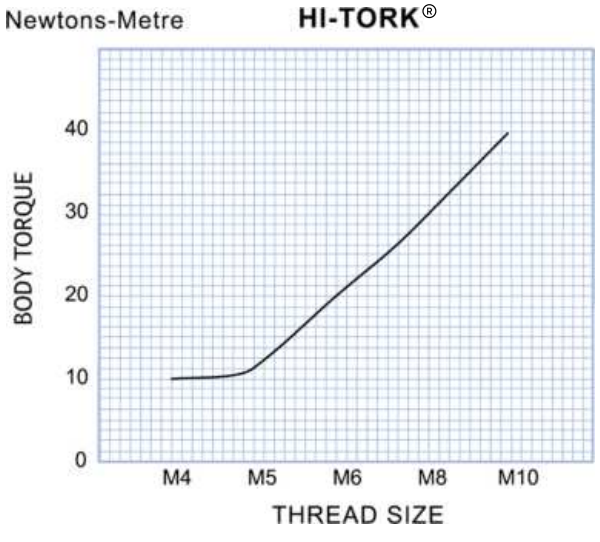
WALL THICKNESS

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 PSM 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 in individual applications. Please consult with the P.S.M Technology Centre or your local sales office for specific application advice.





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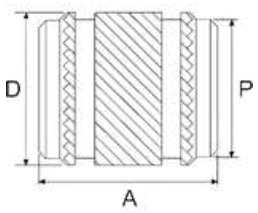
MINI-TECH© INSERTS

ADVANTAGES

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

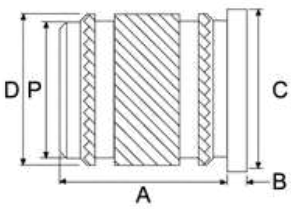
SELECTION OF INSERT OR STUD

INSERTS



PRODUCT [MTEC]

HEADED



PRODUCT [HMTEC]

ISO METRIC

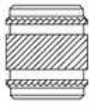
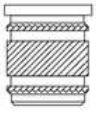
Unit: Millimetres

PRODUCT CODE	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
MTEC-B HMTEC-B	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.

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

SPECIFYING AN INSERT

INSERTS (METRIC)							
	MTEC	–	B	–	M1.6	×	2.0
	PRODUCT CODE		MATERIAL		THREAD SIZE		PREFERRED OTHER LENGTH
	HMTEC	–	B	–	M1.6	×	2.5

BOSS DESIGN SPECIFICATION

HOLE PREPARATION

Molded holes are recommended wherever possible. The taper on a molded 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 consult P.S.M Technology Centre or local sales office for specific application advice.

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HEAT-LOK®
INSERTS & STUDS

ADVANTAGES

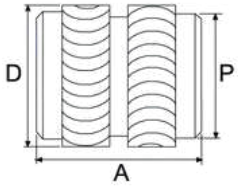
- Low stress generating characteristics - ideal for amorphous thermoplastics
- Double ended - assists automatic feeding
- High torque resistance
- Self-aligning - assists installation

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HEAT-LOK®
INSERTS & STUDS

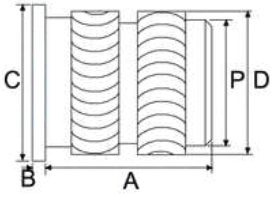
SELECTION OF INSERT OR STUD

INSERTS



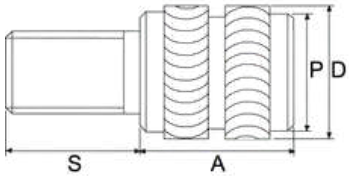
PRODUCT CODE [HL]

HEADED INSERTS



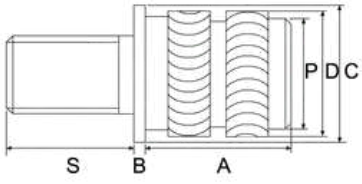
PRODUCT CODE [HLH]

STUD



PRODUCT CODE [HLTS]

HEADED STUD



PRODUCT CODE [HLHS]

ISO METRIC

Unit: Millimetres

PRODUCT CODE	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
HL-B HLH-B HLTS-B HLHS-B	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

PRODUCT CODE	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
HL-B HLH-B HLTS-B HLHS-B	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

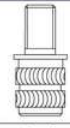
Other lengths possible on quotation.

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

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HEAT-LOK®
INSERTS & STUDS

SPECIFYING AN INSERT & STUD

INSERTS (METRIC)						STUDS (METRIC)							
	HL	–	B	–	M3	HLTS	–	B	–	M3	×	5.0	
	PRODUCT CODE		MATERIAL		THREAD SIZE	PRODUCT CODE		MATERIAL		THREAD SIZE		STUD LENGTH	
	HLH	–	B	–	632	HLHS	–	B	–	632	×	3/16	
INSERTS (INCHES)						STUDS (INCHES)							

BOSS DESIGN SPECIFICATION

HOLE PREPARATION

Molded holes are recommended wherever possible. The taper on a molded 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.

MOLDING PRACTICE

Mold 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

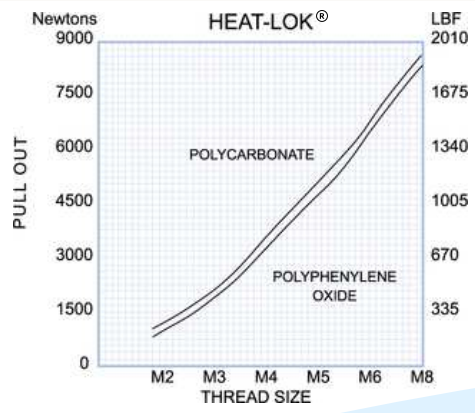
Heat-lok® has been designed for installation using heat rather than ultrasonics, since direct heat best suits the plastic flow required by the insert profile.

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.



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PRESS-LOK© INSERTS

ADVANTAGES

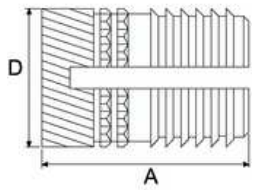
- Degree of self-locking action on screw
- High pull-out and torque performance
- Easy press-in insertion
- Suitable for most thermoplastics

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PRESS-LOK©
INSERTS

SELECTION OF INSERT

INSERTS



PRODUCT CODE [PLK]

ISO METRIC

Unit: Millimetres

PRODUCT CODE	THREAD SIZE	INSERT LENGTH A	PREFERRED OTHER LENGTH A*		INSERT Ø D	REC. HOLE SIZE -0.00 +0.10	MIN. WALL THICKNESS
PLK-B	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

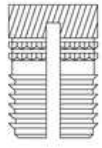
Unit: Inches

PRODUCT CODE	THREAD SIZE	INSERT LENGTH A	PREFERRED OTHER LENGTH A*		INSERT Ø D	REC. HOLE SIZE -0.000 +0.004	MIN. WALL THICKNESS
PLK-B	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.

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

SPECIFYING AN INSERT

INSERTS (METRIC)							
	PLK	–	B	–	M3	×	4.0
	PRODUCT CODE		MATERIAL		THREAD SIZE		PREFERRED OTHER LENGTH
	PLK	–	B	–	632	×	.175
INSERTS (INCHES)							

BOSS DESIGN SPECIFICATION

HOLE PREPARATION

Molded holes are recommended wherever possible. The taper on a molded 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 molded 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

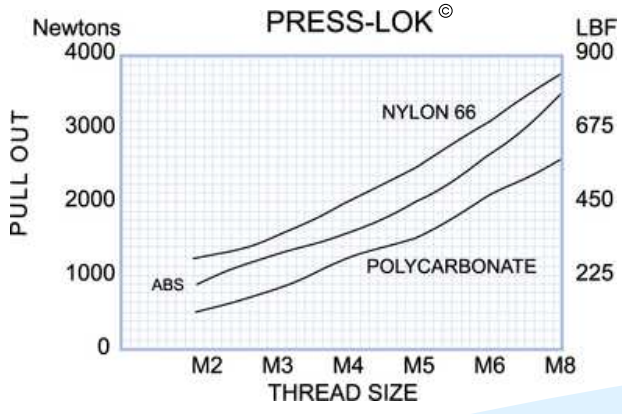
It is important that the fixing screw fully penetrates the insert in order to achieve full expansion, screw length should therefore be calculated to ensure that this condition is met before final clamp torque is applied.

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 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.



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SPIRO®
INSERTS & STUDS

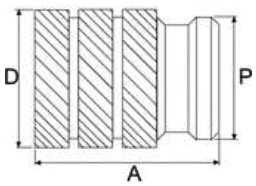
ADVANTAGES

- 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

SPIRO®
INSERTS & STUDS

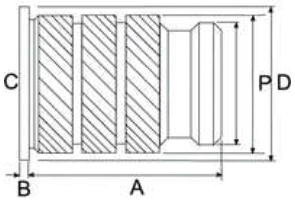
SELECTION OF INSERT OR STUD

INSERTS



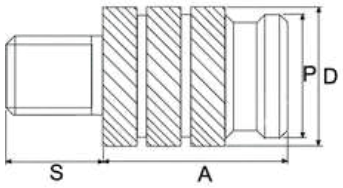
PRODUCT CODE [SP]

HEADED INSERTS



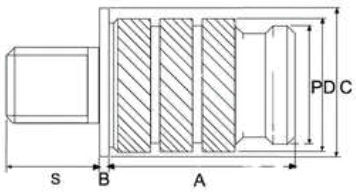
PRODUCT CODE [HSR]

STUD



PRODUCT CODE [SPTS]

HEADED STUD



PRODUCT CODE [SPHS]

ISO METRIC

Unit: Millimetres

PRODUCT CODE	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 THICKNES S
SP-B HSR-B SPTS-B SPHS-B	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

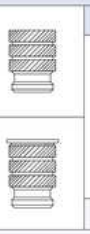
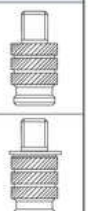
Unit: Inches

PRODUCT CODE	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 THICKNES S
SP-B HSR-B SPTS-B SPHS-B	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.

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

SPECIFYING AN INSERT & STUD

INSERTS (METRIC)						STUDS (METRIC)							
	SP	–	B	–	M3	SPTS	–	B	–	M3	×	5.0	
	PRODUCT CODE		MATERIAL		THREAD SIZE	PRODUCT CODE		MATERIAL		THREAD SIZE		STUD LENGTH	
	HSP	–	B	–	632	SPHS	–	B	–	632	×	3/16	
INSERTS (INCHES)						STUDS (INCHES)							

BOSS DESIGN SPECIFICATION

HOLE PREPARATION

Holes for Spiro® inserts should be molded to remove the danger of drill induced stresses. The taper on a molded 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

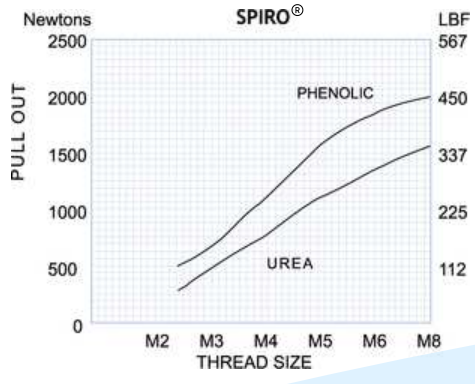
The insert must be installed using a squeeze action press, NEVER a hammer blow. The insert must be allowed to rotate in the direction of the knurl during installation. This is best achieved by the use of a punch having either a polished face or a thrust bearing. The insert must be kept axially square during installation, as any tilting will induce side loads on the boss wall. The recommended hole size must not be increased 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.



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BANC-LOK®
INSERTS

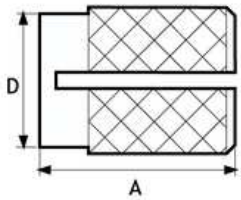
ADVANTAGES

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

BANC-LOK® INSERTS

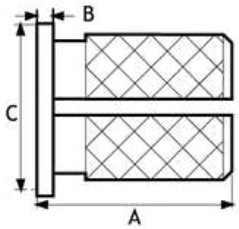
SELECTION OF INSERT

INSERTS



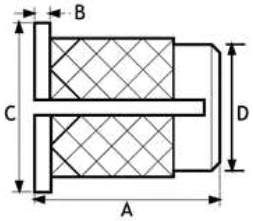
PRODUCT CODE [N41]

HEADED INSERTS



PRODUCT CODE [N42]

REVERSE INSERTS



PRODUCT CODE [N42R]

ISO METRIC

PRODUCT CODE	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
N41-B N42-B N42R-B	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

PRODUCT CODE	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
N41-B N42-B N42R-B	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.

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

BANC-LOK®
INSERTS

SPECIFYING AN INSERT

INSERT (METRIC)							
	N41	–	B	–	M3	×	3.5
	PRODUCT CODE		MATERIAL		THREAD SIZE		PREFERRED OTHER LENGTH
	N42	–	B	–	632	×	.138
INSERTS (INCHES)							

BOSS DESIGN SPECIFICATION

HOLE PREPARATION

Molded holes are recommended wherever possible. The taper on a molded 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 reduced when compared with a molded hole. Hole diameter tolerance: -0.00 +0.10mm.

SELECTION OF INSERT TYPE

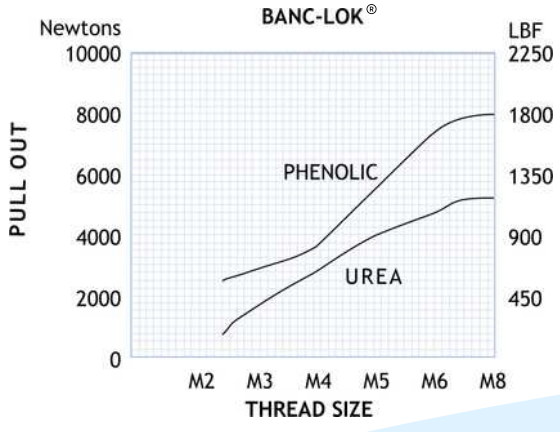
Headed inserts may be used for improved electrical contact or to fill gaps which would result in a jack-out condition. Alternatively a reverse headed type may be used with the head on the back of the molding. This head then gives extra support for resistance to jack-out loads. These inserts are not recommended 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.



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FIN-LOK®
INSERTS & STUDS

ADVANTAGES

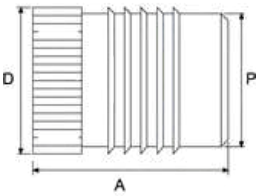
- Easy press-in insertion
- High pull-out performance in most thermoplastics
- Self-aligning - Assists installation

PSM International
www.psmfasteners.com

FIN-LOK®
INSERTS & STUDS

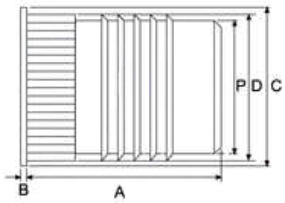
SELECTION OF INSERT OR STUD

INSERTS



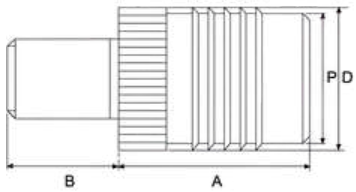
PRODUCT CODE [FL]

HEADED INSERTS



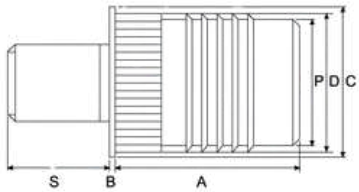
PRODUCT CODE [FLH]

STUDS



PRODUCT CODE [FLTS]

HEADED STUD



PRODUCT CODE [FLHS]

ISOMETRIC

PRODUCT CODE	THREAD SIZE	INSERT LENGTH A	STUD LENGTHS (FOR FLTS & FLHS ONLY) S										HEAD HEIGHT B	HEAD ⌀ C	INSERT ⌀ D	PILOT END ⌀ P	NO. OF FINS	REC. HOLE SIZE -0.00 +0.10	MIN. WALL THICKNESS
FL-B FLH-B FLTS-B FLHS-B	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.

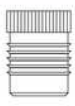
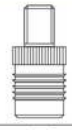
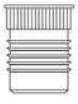
UNIFIED

PRODUCT CODE	THREAD SIZE	INSERT LENGTH A	STUD LENGTHS (FOR FLTS & FLHS ONLY) S										HEAD HEIGHT B	HEAD ⌀ C	INSERT ⌀ D	PILOT END ⌀ P	NO. OF FINS	REC. HOLE SIZE -0.000 +0.004	MIN. WALL THICKNESS
FL-B FLH-B FLTS-B FLHS-B	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.

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

SPECIFYING AN INSERT & STUD

INSERTS (METRIC)							STUDS (METRIC)							
	HL	–	B	–	M3		HLTS	–	B	–	M3	×	5.0	
	PRODUCT CODE		MATERIAL		THREAD SIZE		PRODUCT CODE		MATERIAL		THREAD SIZE		STUD LENGTH	
	HLH	–	B	–	632		HLHS	–	B	–	632	×	3/16	
INSERTS (INCHES)							STUDS (INCHES)							

BOSS DESIGN SPECIFICATION

HOLE PREPARATION

Molded holes are recommended wherever possible. The taper on a molded 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

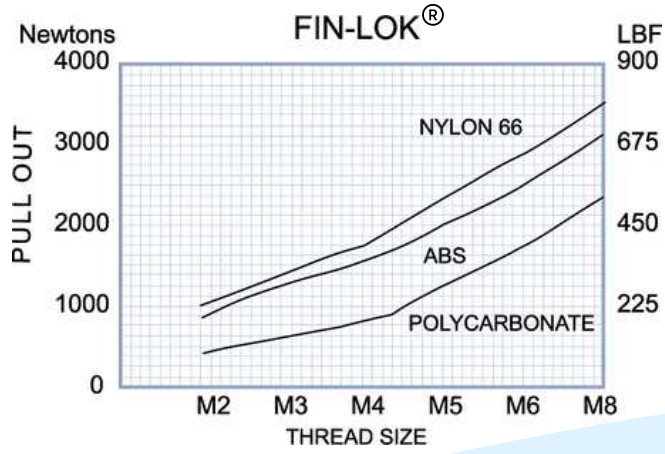
The inserts must be installed using a steady squeeze action press. A hammer blow type installation will prevent plastic flow and may damage the boss.

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.



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SCREW-SERT®
INSERTS & STUDS

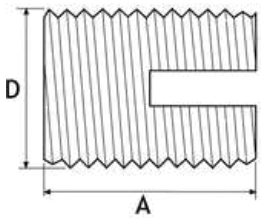
ADVANTAGES

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

SCREW-SERT®
INSERTS & STUDS

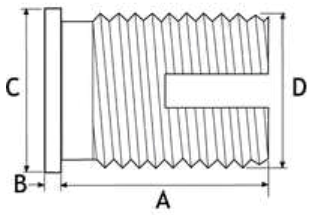
SELECTION OF INSERT OR STUD

INSERTS



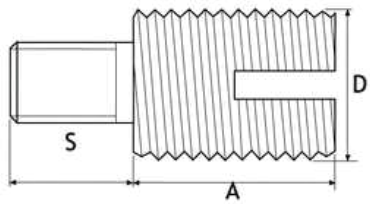
PRODUCT CODE [SCT]

HEADED INSERTS



PRODUCT CODE [HSCT]

STUD



PRODUCT CODE [SCTS]

ISOMETRIC

PRODUCT CODE	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
SCT-B HSCT-B SCTS-B	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

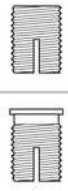
PRODUCT CODE	THREAD SIZE	INSERT LENGTH A	STUD LENGTH (FOR SCTS ONLY) S										HEAD HEIGHT B	HEAD ø C	INSERT ø D MAX	FOR THERMOPLASTICS REC. HOLE SIZE -0.000 +0.004	REC. HOLE SIZE FOR THERMOSETTING -0.00 +0.10	MIN. WALL THICKNESS
SCT-B HSCT-B SCTS-B	2-56	.236	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	.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	.217-.224	
	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.

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

SCREW-SERT®
INSERTS & STUDS

SPECIFYING AN INSERT & STUD

INSERTS (METRIC)						STUDS (METRIC)						
	SCT	–	B	–	M3	SCTS	–	B	–	M3	×	5.0
	PRODUCT CODE		MATERIAL		THREAD SIZE	PRODUCT CODE		MATERIAL		THREAD SIZE		STUD LENGTH
	HSCT	–	B	–	632	SCTS	–	B	–	632	×	3/16
	INSERTS (INCHES)					STUDS (INCHES)						



BOSS DESIGN SPECIFICATION

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 molded 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 molded holes should be 1° inclusive.

TYPE OF LOADING

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

INSTALLATION

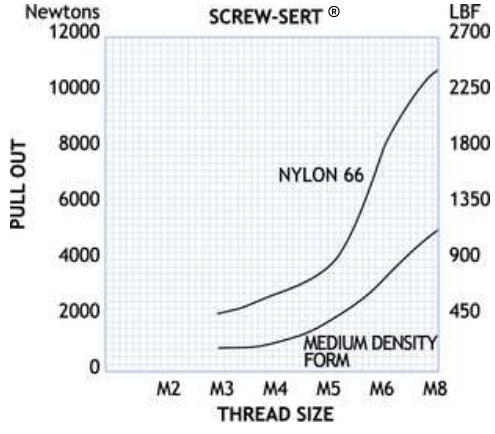
The insert is installed using traditional tapping principles. Installation can be carried out using a hand tool (for low volumes), a tapping head attachment for a pillar drill, a standard tapping machine or fully automatic installation equipment.

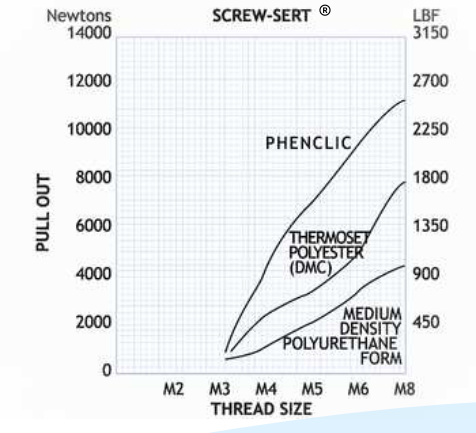
WALL THICKNESS

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.





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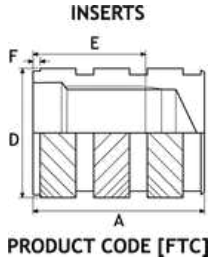
FLO-TECH® INSERTS

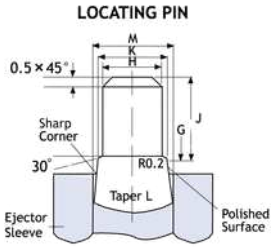
ADVANTAGES

- 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 moldings due to metal swarf
- Absence of PIP at blind end reduces risk of contamination and assists automatic insert loaders

FLO-TECH® INSERTS

SELECTION OF INSERT



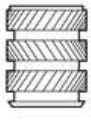


ISO METRIC

PRODUCT CODE	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 DEGREES	M
FTC-B	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.

SPECIFYING AN INSERT

INSERTS(METRIC)					
	FTC	–	B	–	M3
	PRODUCT CODE		MATERIAL		THREAD SIZE
	FTC	–	B	–	632
INSERTS (INCHES)					

BOSS DESIGN SPECIFICATION

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

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

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TRI-STEP™ INSERTS



TRI-STEP™ Inserts freely locate more than two-thirds into the hole, reducing the installation stroke by 60%.

Additionally, TRI-STEP™ requires little to no dwell time and produces no spring-back, further increasing productivity.

Aluminium versions maximise cost reduction without sacrificing performance.

TRI-STEP™ Inserts provide the ease-of-location and hole-centering benefits of a tapered insert, while eliminating the inherent drawbacks of a tapered design.

CONVENTIONAL TAPERED INSERTS



Tapered inserts often produce plastic flash, resulting in secondary de-burring processes and added costs.

NEW TRI-STEP™ INSERTS



TRI-STEP™ Inserts are installed quickly and efficiently, and do not produce plastic flash.

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TRI-STEP™ INSERTS
FAQs

HOW ARE TRI-STEP™ INSERTS DIFFERENT FROM OTHER INSERTS FOR PLASTICS?
TRI-STEP™ Inserts feature an opposing helical knurl pattern along with a series of annular vanes. This unique design is the basis for the performance benefits of the TRI-STEP™.

WHAT ARE THE BENEFITS OF TRI-STEP™ INSERTS?
TRI-STEP™ Inserts provide reduced installation time & cost – in addition to higher performance – compared with conventional inserts.

HOW WILL TRI-STEP™ INSERTS LOWER MY COST?
70% of the TRI-STEP™ Insert freely locates into the stepped hole, reducing insertion travel by 60%, and increasing the speed of installation. When using aluminium, there is also a dwell time savings compared to conventional brass inserts. TRI-STEP™ produces no plastic flash, so any secondary de-burring processes are eliminated, further lowering cost.

ARE THERE DIFFERENT TYPES OF TRI-STEP™ INSERTS?
Yes! TRI-STEP™ Inserts are available in a High Strength version (TST) and a Thin Walled version (TTW). The TRI-STEP™ TST is ideal for automotive & industrial applications requiring the highest strength performance. The TRI-STEP™ TTW can replace the majority of commonly used parallel and tapered inserts, including our industry standards as well as commercial equivalents. Additionally, the TTW is available in a Mini Aluminium version that is ideal for notebooks and other hand-held consumer electronics. (Mini Aluminium Insert data is available on our website.)



WHAT MATERIAL ARE TRI-STEP™ INSERTS AVAILABLE IN?
The most common materials would be brass and aluminium. Our automotive customers have been switching from brass to aluminium because it offers maximum installation cost reduction; 40% higher thermal conductivity means it heats quicker and cools quicker. Aluminium also offers a 66% weight reduction.

HOW ARE TRI-STEP™ INSERTS INSTALLED?
TRI-STEP™ Inserts are designed for post-molded installation into thermoplastics. PSM recommends heat for post-molded installation. However, they can also be installed ultrasonically.

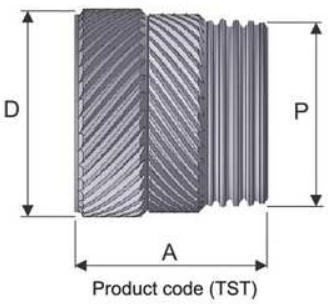
I HAVE AN EXISTING APPLICATION. HOW EASY IS IT TO SWITCH FROM MY CURRENT INSERT TO A TRI-STEP™ INSERT?
In most instances, it would be as easy as switching to a stepped pin in your plastic mold.

We would be pleased to review your insert application and propose the most costeffective solution. Please contact PSM or your local representative.

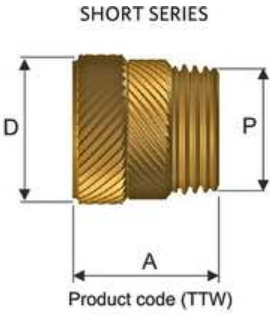
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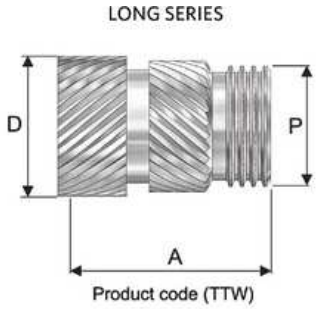
TRI-STEP™ INSERTS
DIMENSIONS

HIGH STRENGTH



THIN WALLED





AVAILABLE MATERIALS

- Aluminium (A)
- Brass (B)
- Steel - Zinc Nickel Plated (S)
- Stainless Steel (STST)

METRIC HIGH STRENGTH (TST)

Thread Size	A	D	P
M4	8.1	9.07	7.75
M5	10.0	10.50	9.15
M6	11.0	11.97	10.7
M8	13.5	14.00	12.7

METRIC THIN WALLED (TTW)

Thread Size	Short Series A	Long Series A	D	P
M2	3.0	4.0	4.50	3.17
M3	4.5	5.7	5.70	4.37
M3.5	5.3	7.1	6.20	4.87
M4	6.0	8.1	6.90	5.57
M5	7.5	9.5	7.90	6.50
M6	9.0	12.7	9.00	7.80
M8	12.7	-	11.00	9.80

UNIFIED HIGH STRENGTH (TST)

Thread Size	A	D	P
8-32	0.319	0.357	0.305
10-32	0.394	0.414	0.361
1/4-20	0.433	0.472	0.425
5-16-18	0.532	0.552	0.504

UNIFIED THIN WALLED (TTW)

Thread Size	Short Series A	Long Series A	D	P
2-56	0.118	0.158	0.177	0.125
4-40	0.177	0.225	0.225	0.172
6-32	0.209	0.280	0.244	0.192
8-32	0.236	0.319	0.272	0.219
10-32	0.296	0.374	0.311	0.256
1/4-20	0.355	0.500	0.355	0.307
5/16-18	0.500	-	0.433	0.386

HOW TO SPECIFY (METRIC EXAMPLES)

	TST	TTW (Short)	TTW (Long)
Product Code	TST-S-M6	TTW-B-M6-9.0	TTW-A-M6-12.7
Material code	TST-S-M6	TTW-B-M6-9.0	TTW-A-M6-12.7
Thread size	TST-S-M6	TTW-B-M6-9.0	TTW-A-M6-12.7
Length	TST-S-M6	TTW-B-M6-9.0	TTW-A-M6-12.7

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TRI-STEP™ INSERTS
DESIGN GUIDE

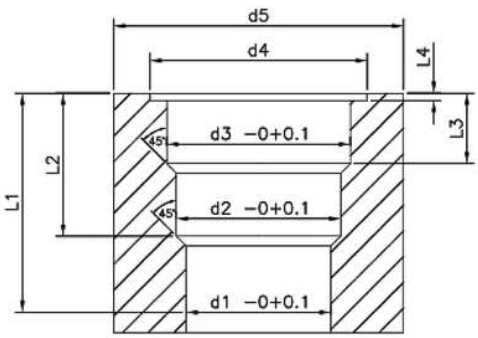
INSTALLATION

The insert may be installed using either a pre-heating process or by using heat generated by Ultrasonics. An insert at the correct temperature should soften the plastic without melting, allowing plastic to flow into the knurls and vanes. Excessive heat can affect insert performance and generate plastic flash on the top surface of the boss. Inserts should be installed flush to slightly proud, relative to the top surface of the boss, never sub-flush.

HOLE PREPARATION

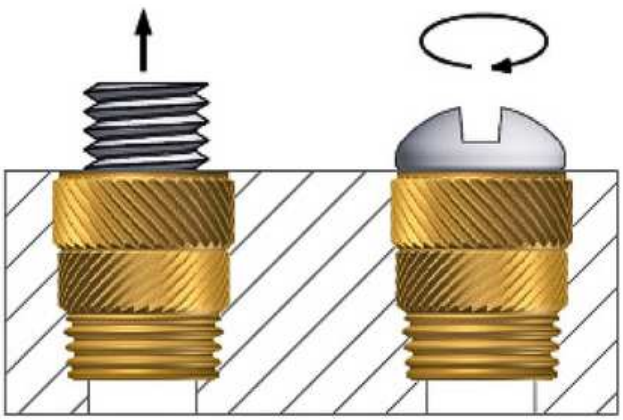
The specified hole diameters apply at the bottom of each bore, with a tolerance of -0.00 / +0.10mm. The hole depth should ideally exceed the insert length by 0.5mm. A 1 ° inclusive molding taper must be used, slightly increasing the hole diameter at the top of each bore.

HOLE DIMENSIONS



PULL OUT

DIRECT TORQUE



Test conducted using PA6 GF30 Nominal values shown at failure

TRI-STEP™ INSERTS

METRIC	d1	d2	d3	d4	d5	L1	L2	L3	L4	PULL OUT N	DIRECT TORQUE Nm
TST-M4	7.25	7.90	8.55	10.00	13.00	8.10	5.20	2.40	0.50	4000	10.0
TST-M5	8.65	9.35	10.00	11.50	15.00	10.00	6.45	3.20	0.50	5700	16.0
TST-M6	10.25	10.90	11.50	13.00	18.00	11.00	7.10	3.50	0.50	7000	24.0
TST-M8	12.30	12.90	13.50	15.00	22.00	13.50	8.70	4.30	0.50	8200	38.0
TTW-M2-3.0	2.90	3.42	4.04	-	6.20	3.00	2.00	0.90	-	590	1.0
TTW-M2-4.0	2.90	3.42	4.04	-	6.20	4.00	2.70	1.35	-	900	1.2
TTW-M3-4.5	3.85	4.62	5.24	-	7.50	4.50	3.00	1.50	-	1400	2.9
TTW-M3-5.7	3.85	4.62	5.24	-	7.50	5.70	3.80	1.90	-	1750	3.3
TTW-M3.5-5.3	4.35	5.12	5.74	-	8.80	5.30	3.60	1.80	-	2150	4.2
TTW-M3.5-7.1	4.35	5.12	5.74	-	8.80	7.10	4.60	2.30	-	2900	5.6
TTW-M4-6.0	5.05	5.82	6.44	-	9.80	6.00	4.00	2.00	-	2700	6.0
TTW-M4-8.1	5.05	5.82	6.44	-	9.80	8.10	5.35	2.70	-	3300	7.7
TTW-M5-7.5	6.15	6.72	7.45	-	11.50	7.50	5.05	2.50	-	3700	10.0
TTW-M5-9.5	6.15	6.72	7.45	-	11.50	9.50	6.40	3.35	-	4500	12.8
TTW-M6-9.0	7.35	7.95	8.55	-	13.50	9.00	6.10	3.30	-	4600	14.5
TTW-M6-12.7	7.35	7.95	8.55	-	13.50	12.70	8.60	4.65	-	6000	17.0
TTW-M8-12.7	9.35	9.95	10.55	-	16.00	12.70	8.60	4.65	-	6500	28.0

UNIFIED	d1	d2	d3	d4	d5	L1	L2	L3	L4	PULL OUT lbs	DIRECT TORQUE lbs-ft
TST-8-32	0.286	0.311	0.337	0.394	0.512	0.319	0.205	0.095	0.020	900	7.4
TST-10-32	0.341	0.368	0.394	0.453	0.591	0.394	0.254	0.126	0.020	1280	11.8
TST-1/4-20	0.404	0.429	0.453	0.512	0.709	0.433	0.280	0.138	0.020	1570	17.7
TST-5/16-18	0.485	0.508	0.532	0.591	0.867	0.532	0.343	0.169	0.020	1840	28.0
TTW-2-56-118	0.114	0.135	0.159	-	0.244	0.118	0.079	0.035	-	130	0.7
TTW-2-56-158	0.114	0.135	0.159	-	0.224	0.158	0.106	0.053	-	200	0.9
TTW-4-40-177	0.152	0.182	0.206	-	0.296	0.177	0.118	0.059	-	315	2.1
TTW-4-40-225	0.152	0.182	0.206	-	0.296	0.225	0.150	0.075	-	390	2.4
TTW-6-32-209	0.171	0.202	0.226	-	0.346	0.209	0.142	0.071	-	2150	4.2
TTW-6-32-280	0.171	0.202	0.226	-	0.346	0.280	0.181	0.096	-	2900	5.6
TTW-8-32-236	0.199	0.229	0.254	-	0.386	0.236	0.158	0.079	-	600	4.4
TTW-8-32-319	0.199	0.229	0.254	-	0.386	0.319	0.211	0.103	-	740	5.7
TTW-10-32-296	0.242	0.265	0.294	-	0.453	0.296	0.199	0.099	-	830	7.4
TTW-10-32-374	0.242	0.265	0.294	-	0.453	0.374	0.252	0.132	-	1010	9.4
TTW-1/4-20-355	0.290	0.313	0.337	-	0.532	0.355	0.240	0.130	-	1030	10.7
TTW-1/4-20-500	0.290	0.313	0.337	-	0.532	0.500	0.339	0.183	-	1350	12.5
TTW-5/16-18-500	0.368	0.392	0.416	-	0.630	0.500	0.339	0.183	-	1460	20.7

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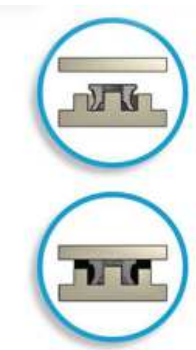


MOLD-FORM™ INSERTS

REDUCED COST
MOLD-FORM™ is a cold-formed steel insert, providing a cost savings of up to 50% over comparable machined inserts.

EASE OF INSTALLATION
MOLD-FORM™ is simply located on a pin within the mold tool, giving a consistent flash-free insertion.

EXCEPTIONAL PERFORMANCE
Six large splines provide exceptional direct torque resistance. Cold formed steel achieves PC 8 strength, with PC 10 also available.



FREQUENTLY ASKED QUESTIONS ABOUT MOULD-FORM™

HOW IS MOLD-FORM™ DIFFERENT FROM TRADITIONAL INSERTS FOR PLASTICS?
Traditionally, inserts for plastics have been made from brass, manufactured by metal cutting and had relatively fine knurls and undercuts. MOLD-FORM™ is steel, manufactured by cold-forming and has six large splines and a very large undercut.

WHAT MATERIALS, STRENGTH GRADES, SURFACE TREATMENTS ARE AVAILABLE?
Steel is the standard material type, aluminum and stainless steel are special material options. The standard steel type achieves PC 8 mechanical properties. Steel to PC 10 is available to special order. Zinc plating is the standard surface treatment, almost all commercially available finishes can be specified.



WHAT ARE THE PERFORMANCE BENEFITS OF MOLD-FORM™ ?
The six large splines give exceptional torque resistance, eliminating the risk of inserts turning. The very large undercut created by the flange and flare diameters provides excellent resistance to pushout and pull-out. Molding-in gives a 100% plastic fill around the insert profile. The large top flange diameter provides a large contact area with the mating part, eliminating a torque induced pull-out failure.

HOW WILL MOLD-FORM™ REDUCE MY COST?
MOLD-FORM™ is manufactured by high speed cold forming, where material utilisation is optimised, this should typically give a 30-50% cost saving when compared with a metal-cut steel equivalent.



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MOLD-FORM™ INSERTS

FAQs

ARE THERE DIFFERENT TYPES OF MOLD-FORM™?
Yes, MOLD-FORM™ can be manufactured with special diameters and lengths to suit your application. Male threaded stud types are also available. Special variants, including plain hole inserts, locating pins, ball pins and spacers can be made to order where volumes warrant a custom fastener.

WHAT ARE THE BENEFITS OF MOLD-FORM™ AND MOLDING-IN?
MOLD-FORM™ can be molded to all types of plastic. With post molded insertion into thermoset plastic, it is very difficult to achieve both high torque and high pull-out, MOLD-FORM™ overcomes this problem. Post molded insertion costs can be high due to equipment cost and machine hour rate for secondary insertion. MOLD-FORM™ is designed to withstand a light compression as the mold tools close, eliminating thread damage. Cold form splines eliminate the risk of metal chips associated with knurls.

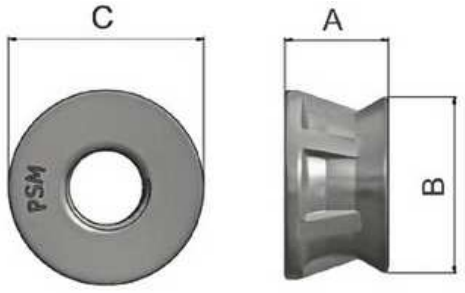
WHAT APPLICATIONS WOULD BE MOST SUITED TO MOLD-FORM™?
Most thermosetting plastic components utilise molding-in; therefore, MOLD-FORM™ is an ideal high-strength replacement for high-cost machined inserts. It achieves a much higher performance than conventional post-molded inserts, making it ideal for heavy-duty industrial and automotive applications. Molding-in also eliminates handling problems associated with post-molded insertion of large moldings.







MOLD-FORM™ INSERTS
DIMENSIONS



Product Code - (MF)
Standard Material - Steel (S)
Standard Finish - Zinc Trivalent & Clear Sealer (W)
Special Materials - Steel PC10 (S10)
Aluminium (A) Stainless Steel (STST)

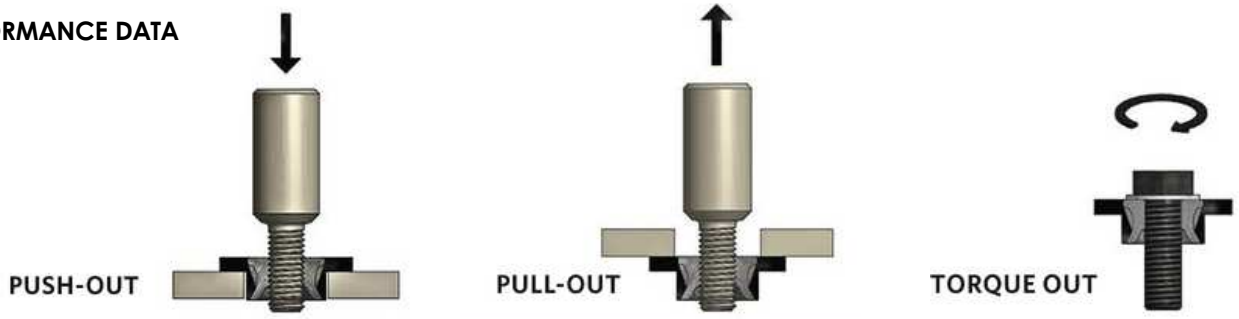
HOW TO SPECIFY

Product Code	**MF**-S-M6-W
Material Code	MF-**S**-M6-W
Thread Size	MF-S-**M6**-W
Finish	MF-S-M6-**W**

DESIGN GUIDE

MOLD-FORM™ is designed to be molded-in, the end face of the insert should be closed off using the faces of the mold tool or the face of a molding pin against diameter B, if the plastic is thicker than insert length A. The performance obtained will be dependant on the type of plastic used and the localised strength of the boss and surrounding area. The suggested boss diameter should equal diameter B plus the thread size, e.g. M6 = 18.1 (12.1 +6). Smaller bosses can be used with a suggested minimum of diameter B plus (0.5 x thread size), e.g. M6 = 15.1 (12.1+(0.5 x 6).

PERFORMANCE DATA



METRIC	UNIFIED	PULL-OUT (N)	PUSH-OUT (N)	TORQUE OUT (Nm)	A	B**	C
M4 X 0.7	8.32	2600	3000	6Nm	04.50	07.80	08.80
M5 X 0.8	10.32	4400	5000	17Nm	06.95	09.75	10.90
M6 X 1.0	1/4-20	6500	8600	19Nm	08.20	11.90	13.20
M8 X 1.25	5/16-18	9100	10500	40Nm	09.30	16.30	17.60
M10 X 1.5	3/8-16	11500	14700	110Nm	10.80	19.60	21.75
M12 X 1.75	1/2-13	24500	26000	157Nm	13.60	24.70	26.30

The above results were obtained from PA6 GF30 bosses, molded to the above suggested boss diameters, produced on an in-house prototype molding machine.
** Measurement based on maximum metal condition as slight out of roundness will be present.

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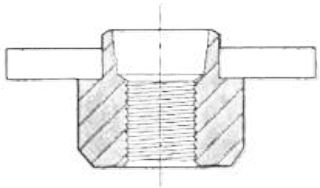
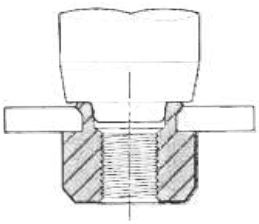
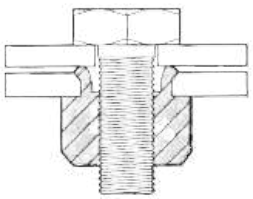
SHEET METAL FASTENERS

INTRODUCTION

Captive Fasteners provide deep tapped female threads or studs to be used in conjunction with thin sheet metallic materials. They are permanently attached to the parent material allowing the associated bolt (or nut) to be removed in service without risk of the fastener becoming dislodged. This feature has allowed industry to streamline production methods and to fabricate complex shapes including closed box sections. The captive fasteners shown in this catalogue feature attachment by mechanical means avoiding the damage and uncertainty often associated with weld nuts and studs allowing their use in pre-finished materials. They can be described as either 'riveting' or 'clinching' types, according to their method of installation. The simplicity of installation afforded by the mechanical method of attachment make these fasteners equally suitable for installation by methods ranging from a simple press to fully automated equipment. The installation method and equipment will therefore be determined simply by the quantity of fasteners involved and the speed of production dictated by the production process. The information given in this catalogue should be regarded as a general guide only.

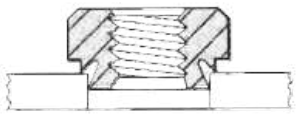
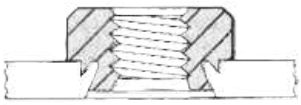
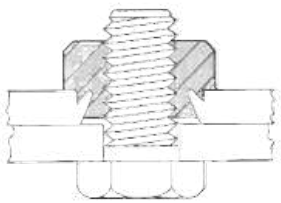
RIVETING TYPES

This method of capture involves a 'shank' which is passed through a pre-punched hole in the parent material and then riveted over on the reverse side. Since the shank of the fastener passes completely through, and does not involve deformation of the parent material this method is ideally suited to use in the thinner, harder grades of sheet metal.

CLINCHING TYPES

The knurled or hexagonal platform formed on the fastener is designed to displace the parent material into a groove formed below. The balance of the platform and groove volumes allows the deformation of the sheet to be confined to the immediate area of the fastener preventing the risk of marking on the sheet in general. Since the clinching features of the fasteners are contained within the thickness of the sheet material these fasteners give a completely flush finish on the reverse side of the sheet. The heat-treated nature of self-clinching fasteners allows high levels of thread strength to be developed within a very compact size envelope. The combination of heat-treated fastener, sheet deformation and the complete encapsulation of the clinching feature make this system ideal for the thicker (0.8mm plus) sheet and softer metallic materials.

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FASTENER SELECTOR CHART

		ARB ARBSO	MINARB MINOFF	PS PSS	PCLS PCLSS	PF	PFH	PFHS	PHFH	PSO PSOS	PBSO PBSOS	MINLOK
SHEET HARDNESS	20 - 70RB	■	■	■	■	■	■	■	■	■	■	■
	70 - 80RB	■	■	■			■		■	■	■	■
	>80RB	■	■									■
SHEET THICKNESS	0.5 - 0.8	■	■									■
	0.8 - 1.0	■	■	■	■		■	■				■
	1.0 - 1.5	■	■	■	■		■	■	■	■	■	■
	1.5 - 3.0	■	■	■	■	■	■	■	■	■	■	■
	3.0 - 4.0	■		■	■	■	■	■	■	■	■	
	4.0 - 6.0	■		■	■	■	■	■	■	■	■	
	>6.0			■	■	■	■	■	■	■	■	

		ARB ARBSO	MINARB MINOFF	PS PSS	PCLS PCLSS	PF	PFH	PFHS	PHFH	PSO PSOS	PBSO PBSOS	MINLOK
SUITABLE FOR	Brass	■	■									■
	Aluminium	■	■	■	■	■	■	■	■	■	■	■
	Mild Steel	■	■	■	■	■	■	■	■	■	■	■
	Stainless Steel	■	■	●	●	●	●	●	●	●	●	■

		ARB ARBSO	MINARB MINOFF	PS PSS	PCLS PCLSS	PF	PFH	PFHS	PHFH	PSO PSOS	PBSO PBSOS	MINLOK
MANUFACTURED FROM	Mild Steel	■	■									■
	Mild Steel Case Hardened						■			■	■	
	Steel Through Hardened			■					■			
	Stainless Steel	■	■		■	■		■		■	■	

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FASTENER SELECTOR CHART

		ARB ARBSO	MINARB MINOFF	PS PSS	PCLS PCLSS	PF	PFH	PFHS	PHFH	PSO PSOS	PBSO PBSOS	MINLOK
PERFORMANCE	Push Out	ΔΔ	Δ	ΔΔ	ΔΔ	ΔΔ	Δ	Δ	Δ	Δ	Δ	Δ
	Pull Through	ΔΔ	ΔΔ	ΔΔ	ΔΔ	Δ	Δ	Δ	ΔΔ	Δ	Δ	N/A
	Body Torque	Δ	Δ	ΔΔ	ΔΔ	Δ	ΔΔ	ΔΔ	ΔΔ	ΔΔ	ΔΔ	Δ
	Max Torque	ΔΔ	ΔΔ	ΔΔ	ΔΔ	Δ	Δ	Δ	ΔΔ	ΔΔ	ΔΔ	ΔΔ
	Torque Through	N/A	N/A	N/A	N/A	Δ	Δ	Δ	ΔΔ	N/A	N/A	N/A
	Through Tapped	YES	YES	YES	YES	YES	N/A	N/A	N/A	YES	NO	YES
	Blind Tapped	NO	NO	NO	NO	NO	N/A	N/A	N/A	NO	YES	NO
	Flush Finish	NO	NO	YES	YES	YES	YES	YES	NO	YES	YES	NO
	Self Locking	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES

		ARB ARBSO	MINARB MINOFF	PS PSS	PCLS PCLSS	PF	PFH	PFHS	PHFH	PSO PSOS	PBSO PBSOS	MINLOK
INSTALLATION	Simple Hand Tools											
	Fly Press											
	Squeeze Action Press											
	Fully Automated											

KEY	
Recommended	
Possible	
Contact PSM Technology Centre	●
Not Recommended	
High	ΔΔ
Moderate	Δ
Not Applicable	N/A

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PRODUCT INDEX

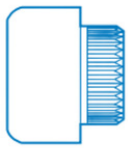
ANCHOR® RIVET BUSH



81-83

The ANCHOR® RIVET BUSH (ARB) is a threaded fastener which incorporates a serrated shank. This shank when riveted over, cuts into the surface of the sheet, giving high torque resistance and firmly retaining the bush in position.

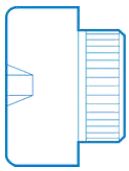
MINIATURE ANCHOR® RIVET BUSH



84-86

MINARB is a miniaturised Anchor® Rivet Bush designed for use where space is at a premium.

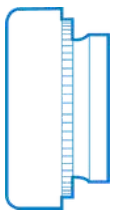
SELF-LOCKING MINARB®



87-88

MINLOK is a miniaturised captive threaded fastener for sheet metal with an inbuilt all-metal self-locking feature. It combines the simplicity and reliability of a standard MINARB with thread locking capability to BS 4929

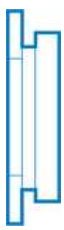
SELF-CLINCHING NUTS



89-97

PSM SELF-CLINCHING NUTS are threaded fasteners which incorporate a knurled platform and a groove. This platform, when embedded in the sheet, causes the displaced material to flow evenly into the groove of the fastener to give a positive retention.

PF FLUSH SELF-CLINCHING NUTS



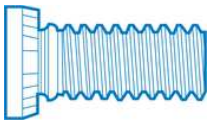
98-102

PF FLUSH SELF-CLINCHING NUTS have been designed to provide a thread within the sheet thickness giving a flush finish to both sides. A simple squeezing action embeds the hexagonal head into the sheet and the displaced metal flows evenly round the back tapered shank securely locking it into place.

PSM International
www.psmfasteners.com

PRODUCT INDEX

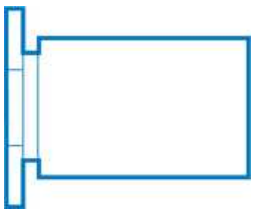
P-FH & P-FHS SELF-CLINCHING STUD



103-112

The SELF-CLINCHING STUD is a threaded fastener which incorporates a knurled platform under the head, which when embedded in the sheet, displaces material into the clinch ring securing the fastener.

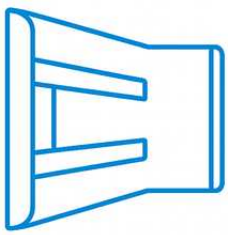
SELF-CLINCHING STAND-OFFS



113-119

SELF-CLINCHING STAND-OFFS are designed to serve spacers or distance pieces. A simple squeezing action embeds the hexagonal head into the sheet causing the displaced metal to flow into the clinching groove.

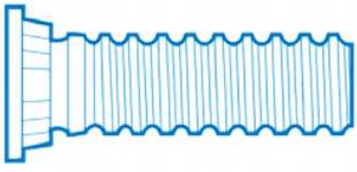
FLANGEFORM® NUTS



120-123

FLANGEFORM® NUTS are threaded fasteners with unique ribs designed for installation into thin gauge materials. The fastener plunges the prepunched hole and wraps itself around the material whilst the ribs embed themselves providing an integral high strength attachment point.

OTHER SHEET METAL FASTENERS



124

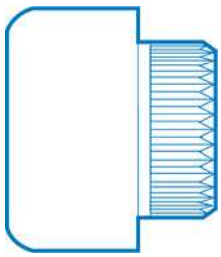
PSM also has a large range of other sheet metal fasteners to suit all applications.

Technical details may change. please contact PSM International for latest drawings and specifications.
Order conditions and minimum quantities may apply to some products.

PSM International
www.psmfasteners.com



ANCHOR® RIVET BUSH



ADVANTAGES

- Ideal for both thinner and harder sheet metals
- Ideal for light alloys, aluminium, magnesium etc
- Can be installed by hand or automatic methods
- Suitable for use in punched or drilled holes
- Can be used for sheet thickness up to 6mm
- Can be used to join two sheets together

The ANCHOR® RIVET BUSH (ARB) is a captive threaded bush designed to suit a wide range of sheet thicknesses. Its serrated shank when riveted, achieves high torque and push out resistance. A stand-off version (ARBSO) allows the body length to be specified, thus providing a captive .

DESIGN GUIDE

HOLE SIZE IN SHEET
Holes may be punched or drilled and a tolerance of -0.00 +0.1mm should be maintained.

INSTALLATION
To reduce the projection on the reverse side of the sheet it is essential that the correct design of riveting punch is always used (see Assembly Punch data).
For consistent results a press is recommended, however small quantities may be installed using hand tools.

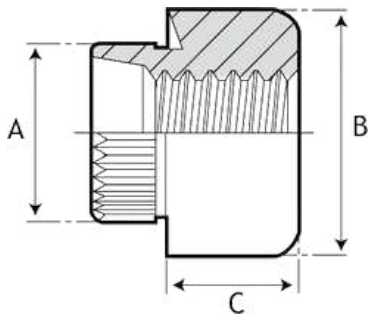
STAND-OFF TYPES
Where minimum projection is not essential there are performance advantages in specifying the next larger shank code.

DIRECTION OF LOAD
Although the mating component can be fastened to either side of the bush, maximum performance will be achieved when fastening to the riveted shank side.

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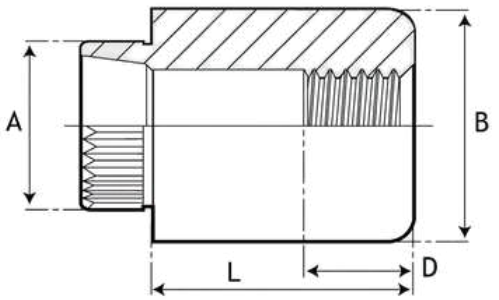
ANCHOR® RIVET BUSH
TECHNICAL DATA

BUSHES



Product Code ARB

STAND-OFFS



Product Code ARBSO

STANDARD MATERIAL- Mild Steel (S)
STANDARD FINISH- Zinc & Clear Trivalent Passivation (Z)
Other materials and finishes possible on quotation.

DIMENSIONS

INTERNAL THREAD SIZES		DIA. OF SHANK A	DIA. OF BODY B	DEPTH OF BODY C	THREAD LENGTH D	REC HOLE SIZE -0.00 +0.10
Unified	ISO Metric	mm	mm	mm	mm	mm
4	2.5/3	5.8	7.9	3.2	3.3	5.90
6	3.5	6.9	9.5	3.8	3.9	6.95
8	4	6.9	9.5	3.8	3.9	6.95
10	5	8.3	11.1	4.4	4.6	8.35
1/4	6	9.5	12.7	5.7	5.9	9.65
5/16	8	13.0	15.9	6.4	6.5	13.10
3/8 - 7/16	10	15.4	19.1	7.6	7.9	15.50
1/2	12	19.4	10.2	10.2	10.4	19.50

ARBSO - LENGTHS AVAILABLE ('L')

LENGTH	3	4	5	6	8	10	12	14	16	18	20	25
SHANK CODE	001	003	004	006	008	010	012	013	014			
SHEET THICKNESS	0.5 - 0.6	0.7 - 0.8	0.9 - 1.0	1.1 - 1.3	1.4 - 1.6	1.7 - 1.9	2.0 - 2.2	2.3 - 2.5	2.6 - 2.8			
SHANK CODE	016	017	018	019	020	022	023	024	026			
SHEET THICKNESS	2.9 - 3.1	10swg	3.2 - 3.4	3.5 - 3.7	3.8 - 4.0	4.1 - 4.3	4.4 - 4.6	4.7 - 4.9	5.0 - 6.0			

HOW TO SPECIFY

ARB	
PRODUCT CODE	ARB-M4-008-S-Z
THREAD SIZE	ARB-M4-008-S-Z
SHANK CODE	ARB-M4-008-S-Z
MATERIAL CODE	ARB-M4-008-S-Z
FINISH	ARB-M4-008-S-Z

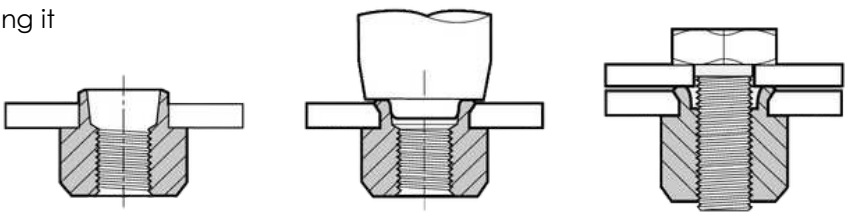
ARBSO	
PRODUCT CODE	ARBSO-M4-008-S-12MM-Z
THREAD SIZE	ARBSO-M4-008-S-12MM-Z
SHANK CODE	ARBSO-M4-008-S-12MM-Z
MATERIAL CODE	ARBSO-M4-008-S-12MM-Z
LENGTH	ARBSO-M4-008-S-12MM-Z
FINISH	ARBSO-M4-008-S-12MM-Z

ANCHOR® RIVET BUSH

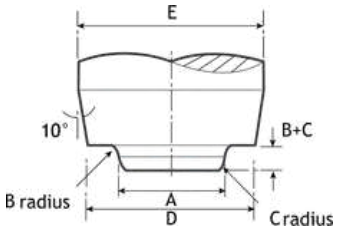
METHOD OF ASSEMBLY

1. Punch a hole in the metal sheet to the size recommended in our technical data table. De-burring of the hole is not recommended.
2. Insert the serrated shank through the hole in the sheet.
3. Using the profiled punch detailed below, rivet the shank, spreading and flattening it onto the face of the sheet.

Anchor® Rivet Bushes can be installed using both an "impact" and a "squeeze" action, allowing both hand and machine installation. Sheet hardness is not critical as the Bush deforms rather than the sheet, during installation.



PUNCH DETAIL



THREAD SIZE		ARB & ARBSO PUNCH				
UNIFIED	METRIC	A mm	B mm	C mm	D mm	E mm
4	M2.5 / M3	4.3	0.5	0.5	7.1	12.0
6/8	M3.5 / M4	5.3	0.6	0.5	8.7	12.0
10	M5	6.8	0.8	0.5	10.3	16.0
1/4	M6	8.0	0.9	0.6	11.9	16.0
5/16	M8	11.1	1.0	0.6	15.5	19.0
3/8 / 7/16	M10	13.5	1.1	0.6	18.3	19.0
1/2	M12	17.1	1.3	0.6	22.2	25.0

Punch material 1% C/Mn Steel (Silver Steel)
Water quench pilot end from 820°C, Temper at 260°C

PERFORMANCE DATA

ARB METRIC

THREAD SIZE	CONTROLLED ROLLED STEEL		ALUMINIUM	
	PUSHOUT (N)	TORQUE-OUT (Nm)	PUSHOUT (N)	TORQUE-OUT (Nm)
M2.5 / M3	1100	3.0	800	2.1
M3.5 / M4	1600	6.0	1100	4.5
M5	2500	9.0	1700	6.8
M6	4000	16.0	2850	11.5
M8	5500	24.0	3800	16.2
M10	6800	40.0	4200	28.5
M12	7500	60.0	5500	42.5

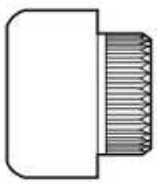
Tests conducted using a Steel Rivet Bush - 008 shank code into 1.5mm sheet. For unified values see equivalent metric size.

Note: The above values are averages when correct installation is performed. Variations in hole size, material and installation will affect these results. For specific advice we strongly recommend consultation with your PSM Technology Centre.

PSM International
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MINIATURE ANCHOR® RIVET BUSH



ADVANTAGES

- Ideal for both thinner and harder sheet metals
- Can be installed by hand or automatic methods
- Suitable for use in punched or drilled holes
- Can be supplied for sheet thickness from 0.5mm to 3.1mm
- Can be installed close to edge of sheet
- Provides almost flush finish

The MINARB® is a miniature ANCHOR® RIVET BUSH designed for applications where space or distance to the sheet edge is at a premium. Weight saving is one reason the MINARB® may be selected. A stand-off version (MINOFF) allows the body length to be specified, thus providing a captive threaded spacer.

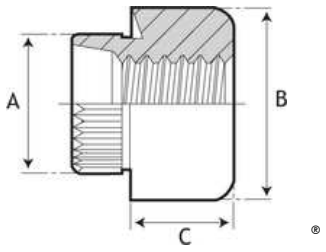
DESIGN GUIDE

HOLE SIZE IN SHEET	Holes may be punched or drilled and a tolerance of -0.00 +0.1mm should be maintained.
INSTALLATION	It is essential that the correct design of riveting punch is always used (see Assembly Punch data). For consistent results a press is recommended, however small quantities may be installed using hand tools.
STAND-OFF TYPES	Where minimum projection is not essential there are performance advantages in specifying the next larger shank code.
DIRECTION OF LOAD	Although the mating component can be fastened to either side of the bush, maximum performance will be achieved when fastening to the riveted shank side.

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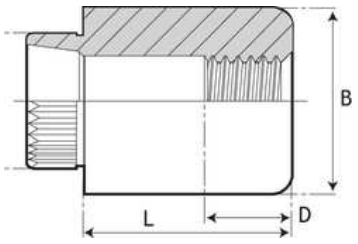
MINIATURE ANCHOR®
RIVET BUSH
TECHNICAL DATA

BUSHES



PRODUCT CODE MINARB

STANDOFFS



PRODUCT CODE MINOFF

STANDARD MATERIAL	Mild Steel (S)
STANDARD MATERIAL	Zinc & Clear Trivalent Passivation (Z). Other materials and finishes possible on quotation.

DIMENSIONS

INTERNAL THREAD SIZES		Dia. Of Shank A	Dia. Of Body B	Depth of Body C	Thread Length D	Rec Hole Size -0.00 +0.10
Unified	ISO Metric	mm	mm	mm	ARBSO	mm
2	2	3.5	5.0	2.3	2.8	3.6
-	2.5	4.2	5.5	2.8	3.3	4.3
4	3	4.2	5.5	2.8	3.3	4.3
6	3.5	5.4	7.0	3.2	3.8	5.5
8	4	5.4	7.0	3.2	3.8	5.5
10	5	6.4	8.5	3.8	4.3	6.5
1/4	6	7.6	10.0	5.1	5.6	7.7
1/3	8	9.7	12.0	6.5	7.0	9.8

MINOFF - Lengths Available ('L')

MILLIMETRES	3	4	5	6	8	10	12	14	16	18	20
SHANK CODE	001		003	004	006	008	010	012	013	014	016
SHEET THICKNESS	0.5-0.6	0.7-0.8		0.9-1.0	1.1-1.3	1.4-1.6	1.7-1.9	2.0-2.2	2.3-2.5	2.6-2.8	2.9-3.1

HOW TO SPECIFY

MINARB®

PRODUCT CODE	MINARB-M4-008-S-Z
THREAD SIZE	MINARB-M4-008-S-Z
SHANK CODE	MINARB-M4-008-S-Z
MATERIAL CODE	MINARB-M4-008-S-Z
FINISH	MINARB-M4-008-S-Z

MINOFF

PRODUCT CODE	MINOFF-M4-008-S-12MM-Z
THREAD SIZE	MINOFF-M4-008-S-12MM-Z
SHANK CODE	MINOFF-M4-008-S-12MM-Z
MATERIAL CODE	MINOFF-M4-008-S-12MM-Z
LENGTH	MINOFF-M4-008-S-12MM-Z
FINISH	MINOFF-M4-008-S-12MM-Z

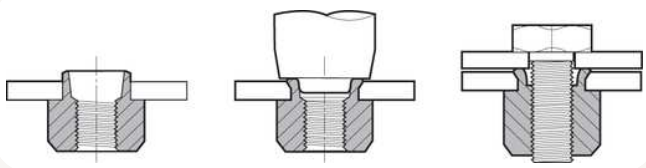
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MINIATURE ANCHOR® RIVET BUSH

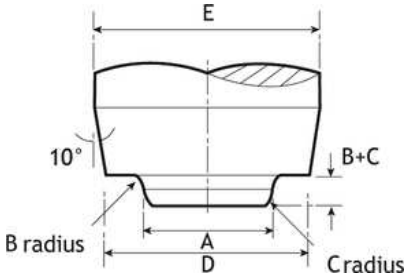
METHOD OF ASSEMBLY

1. Punch a hole in the metal sheet to the size recommended in our technical data table. Deburring of the hole is not recommended.
2. Insert the serrated shank through the hole in the sheet.
3. Using the profiled punch detailed below, rivet the shank, spreading and flattening it onto the face of the sheet.

MINARB® can be installed using both an "impact" and a "squeeze" action, allowing both hand and machine installation. Sheet hardness is not critical as the bush deforms rather than the sheet, during installation



PUNCH DETAIL



Punch material 1% C/Mn Steel (Silver Steel)

Water quench pilot end from 820°C, Temper at 260°C

THREAD SIZE		MINARB & MINOFF PUNCH				
UNIFIED	METRIC	A mm	B mm	C mm	D mm	E mm
2	M2	2.4	0.5	0.5	4.8	12.0
4	M2.5 / M3	3.1	0.5	0.5	5.5	12.0
6 / 8	M3.5 / M4	4.3	0.5	0.5	7.1	12.0
10	M5	5.3	0.5	0.5	8.7	12.0
1 / 4	M6	6.5	0.75	0.5	10.3	12.0
5 / 16	M8	8.5	0.75	0.5	12.4	16.0

PERFORMANCE DATA

THREAD SIZE	Cold Rolled Steel		Aluminium	
	Pushout (N)	Torque-out (Nm)	Pushout (N)	Torque-out (Nm)
M2	700	1.2	500	0.9
M2.5 / M3	900	1.7	720	1.2
M3.5 / M4	1300	3.4	915	2.4
M5	2250	5.3	1550	3.5
M6	2600	9.5	1850	6.7
M8	M2	13.0	2100	9.7

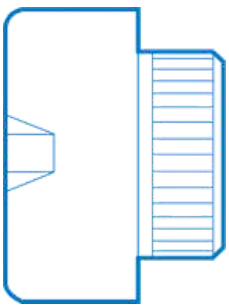
Tests conducted using a steel MINARB® - 008 shank code into 1.5mm sheet. For unified see equivalent metric size.

Note: *The above values are averages when correct installation is performed. Variations in holes, size, material and installation will affect these results. For specific advice we strongly recommend consultation with your PSM technology Centre.*

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SELF-LOCKING MINARB®
TECHNICAL DATA



ADVANTAGES

- Provides excellent resistance to screws working loose
- Eliminates the need for locking washers
- Eliminates the need for the application of locking adhesives
- Suitable for high temperature applications

MINLOK is a miniaturised Anchor® threaded fastener for sheet metal with an inbuilt all-metal self-locking feature. It combines the simplicity and reliability of a standard MINARB® with thread locking offering a minimum of five re-uses.



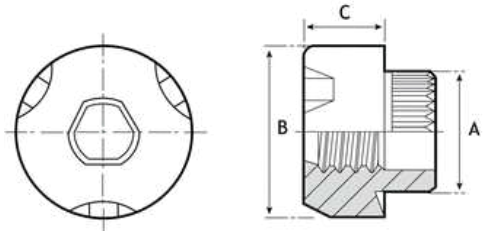
DESIGN GUIDE

HOLE SIZE IN SHEET
Holes may be punched or drilled and a tolerance of -0.00 +0.1mm should be maintained.

INSTALLATION
It is essential that the correct design of riveting punch is always used (see Assembly Punch data).
For consistent results a press is recommended, however small quantities may be installed using hand tools.

SELF-LOCKING MINARB®

TECHNICAL DATA MINLOK



STANDARD MATERIAL- Mild Steel (S)
STANDARD FINISH - Zinc & Clear Trivalent Passivation plus special lubricant.

***NOTE:**
This product carries a pre-applied torque control lubricant which should not be removed.

DIMENSIONS

INTERNAL THREAD SIZES		DIA. OF SHANK A	DIA. OF BODY B	DEPTH OF BODY C	REC HOLE SIZE -0.00 +0.10
Unified	ISO Metric	mm	mm	mm	mm
4	9	4.2	5.5	2.8	4.3
6-8	4	5.4	7.0	3.2	5.5
10	5	6.4	8.5	3.8	6.5
1/4	6	7.6	10.0	5.1	7.7
5/16	8	9.7	12.0	6.5	9.8

SHANK CODE	001	003	004	006	008	010	012	013	014	016
SHEET THICKNESS	0.5 - 0.6	0.7 - 0.8	0.9 - 1.0	1.1 - 1.3	1.4 - 1.6	1.7 - 1.9	2.0 - 2.2	2.3 - 2.5	2.6 -2.8	2.9 - 3.1

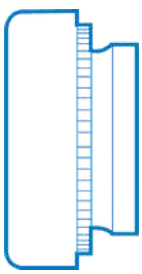
HOW TO SPECIFY

MINLOK	
PRODUCT CODE	MINLOK-M4-008
THREAD CODE	MINLOK-M4-008
SHANK CODE	MINLOK-M4-008

PSM International
www.psmfasteners.com



SELF-CLINCHING NUTS



ADVANTAGES

- High torque resistance
- Reverse side of the sheet remains totally flush
- Small and neat, ideal for all electronics or precision equipment
- Easy assembly with any squeeze action press

PSM SELF-CLINCHING NUTS are threaded fasteners which incorporate a knurled platform and a groove. This platform, when embedded in the sheet, causes the displaced material to flow evenly into the groove of the fastener to give a positive retention.

DESIGN GUIDE

HOLE PREPARATION
Holes may be punched or drilled and a tolerance of -.000" +.003" (-0.00mm +0.08mm). Where possible install from punched side. Holes should not be de-burred or countersunk.

SHEET HARDNESS
See individual product data sheet for maximum sheet hardness.

INSTALLATION
Must always be carried out using a squeeze action - NEVER a shock load.

SHEET THICKNESS
Self-Clinching fasteners are suitable for any thickness of material from the minimum specified for each individual product.

SHANK NUMBER
Always choose the longest shank possible for the sheet thickness.
This will optimise performance and increase retention.

DIRECTION OF LOAD
We recommend that Self-Clinching fasteners should always be loaded from the pilot end.
(See method of assembly diagrams)

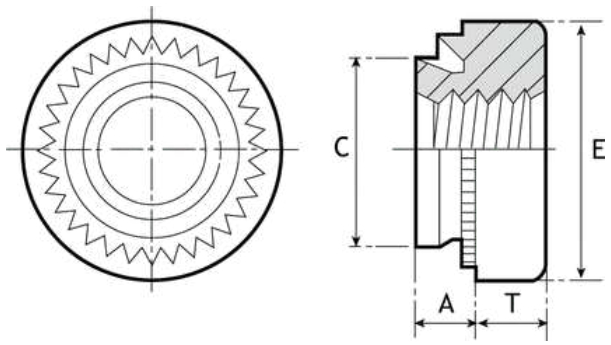
SELF-CLINCHING NUTS
TECHNICAL DATA

P-S & P-CLS TYPES (METRIC)

MATERIAL CODES
P-S & P-SS* - Hardened Steel Plated
P-CLS & P-CLSS* - Stainless Steel
(P-SS* and P-CLSS* codes refer to M5 sizes only)

STANDARD PLATING FINISH
Zinc & Clear Trivalent Passivation (Z)

MAXIMUM SHEET HARDNESS
P-S & P-SS = Rb80
P-CLS & P-CLSS = Rb70



METRIC

THREAD SIZE / CODE	SHANK CODE	FOR MIN SHEET THICKNESS	A (MAX)	HOLE SIZE IN SHEET +0.08 -0.00	DIAMETER OF SHANK C (MAX)	DIAMETER OF BODY E +/-0.25	DEPTH OF BODY T +/- 0.25	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
M2	0	0.8 - 1.0	0.77	4.25	4.22	6.3	1.5	4.8
	1	1.0	0.97					
	2	1.4	1.38					
M2.5	0	0.8 - 1.0	0.77	4.25	4.22	6.3	1.5	4.8
	1	1.0	0.97					
	2	1.4	1.38					
M3	0	0.8 - 1.0	0.77	4.25	4.22	6.3	1.5	4.8
	1	1.0	0.97					
	2	1.4	1.38					
3.5M3	0	0.8 - 1.0	0.77	4.75	4.73	7.1	1.7	5.6
	1	1.0	0.97					
	2	1.4	1.38					
M3.5	0	0.8 - 1.0	0.77	4.75	4.73	7.1	1.5	5.6
	1	1.0	0.97					
	2	1.4	1.38					
M4	0	0.8 - 1.0	0.77	5.4	5.38	7.9	2.0	6.9
	1	1.0	0.97					
	2	1.4	1.38					
M5	0	0.8 - 1.0	0.77	6.4	6.38	8.7	2.0	7.1
	1	1.0	0.97					
	2	1.4	1.38					
M6	00	0.92	0.89	8.75	8.72	11.05	4.08	8.6
	0	1.2	1.15					
	1	1.4	1.38					
	2	2.3	2.21					
M8	1	1.4	1.38	10.5	10.47	12.65	5.47	9.7
	2	2.3	2.21					
M10	1	2.31	2.21	14.0	13.97	17.35	7.48	13.5
	2	3.18	3.05					
M12	1	3.18	3.05	16.66	16.64	20.0	9.14	16.0
	2	6.00	5.97					

All dimensions in millimetres

HOW TO SPECIFY

P-S (Steel Standard Sizes)	
PRODUCT CODE	P-S-M4-1-Z
THREAD CODE	P-S-M4-1-Z
SHANK CODE	P-S-M4-1-Z
PLATING CODE	P-S-M4-1-Z

P-CLS (Stainless Steel Standard Sizes)	
PRODUCT CODE	P-CLS-M4-1
THREAD CODE	P-CLS-M4-1
SHANK CODE	P-CLS-M4-1

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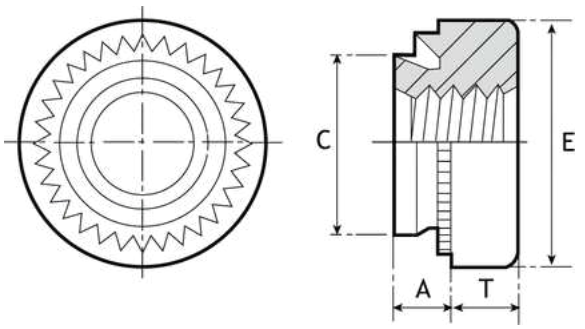
SELF-CLINCHING NUTS
TECHNICAL DATA

P-S & P-CLS TYPES (UNIFIED)

MATERIAL CODES
P-S & P-SS* - Hardened Steel Plated
P-CLS & P-CLSS* - Stainless Steel (Unplated)
(P-SS* and P-CLSS* codes refer 032 and 024 sizes only)

STANDARD PLATING FINISH
Zinc & Clear Trivalent Passivation (Z)

MAXIMUM SHEET HARDNESS
P-S & P-SS = Rb80
P-CLS & P-CLSS = Rb70



UNIFIED

THREAD SIZE / CODE	SHANK CODE	FOR MIN SHEET THICKNESS	A (MAX)	HOLE SIZE IN SHEET +0.003 -0.000	DIAMETER OF SHANK C (MAX)	DIAMETER OF BODY E +/-0.010	DEPTH OF BODY T +/- 0.10	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
256	0	0.030	0.030	0.166	0.165	0.250	0.070	0.190
	1	0.040	0.038					
	2	0.056	0.054					
440	0	0.030	0.030	0.166	0.165	0.250	0.070	0.190
	1	0.040	0.038					
	2	0.056	0.054					
	3	0.091	0.087					
632	0	0.030	0.030	0.1875	0.187	0.280	0.070	0.220
	1	0.040	0.038					
	2	0.056	0.054					
	3	0.091	0.087					
832	0	0.030	0.030	0.213	0.212	0.310	0.090	0.270
	1	0.040	0.038					
	2	0.056	0.054					
	3	0.091	0.087					
032 024	0	0.030	0.030	0.250	0.249	0.340	0.090	0.280
	1	0.040	0.038					
	2	0.056	0.054					
	3	0.091	0.087					
0420 0428	0	0.047	0.045	0.344	0.343	0.440	0.170	0.340
	1	0.056	0.054					
	2	0.091	0.087					
	3	0.125	0.120					
0518 0524	1	0.056	0.054	0.413	0.412	0.500	0.230	0.380
	2	0.091	0.087					
	3	0.125	0.120					
0616 0624	1	0.091	0.235	0.500	0.499	0.560	0.270	0.440
	2	0.125	0.120					
	3	0.250	0.235					
0813 0820	1	0.125	0.120	0.656	0.655	0.810	0.360	0.630
	2	0.250	0.235					

All dimensions in inches

HOW TO SPECIFY

P-S (Steel Standard Sizes)	
PRODUCT CODE	P-S-832-1-Z
THREAD CODE	P-S-832-1-Z
SHANK CODE	P-S-832-1-Z
PLATING CODE	P-S-832-1-Z

P-CLS (Stainless Steel Standard Sizes)	
PRODUCT CODE	P- CLS - 832 - 1
THREAD CODE	P- CLS - 832 - 1
SHANK CODE	P- CLS - 832 - 1

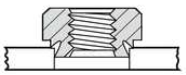
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P-S & P-CLS
SELF-CLINCHING NUTS

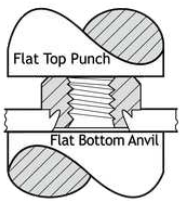
METHOD OF ASSEMBLY

1. Punch a hole in the metal sheet to the size recommended in our technical data table. De-burring of the hole is not recommended.
2. Apply pressure to the head of the fastener sufficient to totally embed the clinching ring around the entire circumference and bring body in contact with the sheet.
3. Insert fixing screw or bolt from side opposite to the fastener body.

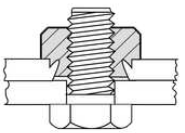
1.



2.



3.



PERFORMANCE DATA

P-S & P-CLS METRIC

THREAD CODE	SHANK CODE	TEST SHEET MATERIAL					
		COLD ROLLED STEEL			5052-H34 Aluminium		
		Installation (kN)	Pushout (N)	Torque-out (Nm)	Installation (kN)	Pushout (N)	Torque-out (Nm)
M2 M2.5 M3	0	11.0 - 15.5	500	1.7	7.0 - 9.0	280	0.95
	1		600	1.9		420	1.15
	2		1000	2.1		700	1.40
3.5M3	0	14.0 - 22.0	550	2	11.0 - 14.0	350	1.70
	1		720	2.45		480	1.85
	2		1150	2.5		800	2.10
M3.5	0	14.0 - 22.0	550	2	11.0 - 14.0	350	1.70
	1		720	2.45		480	1.85
	2		1150	2.5		800	2.10
M4	0	17.0 - 27.0	600	2.95	12.0 - 15.0	400	2.20
	1		750	4.6		550	2.70
	2		1320	5.7		900	4.30
M5	0	19.0 - 33.0	670	4.1	13.0 - 17.0	460	3.20
	1		950	5.45		620	4.10
	2		1230	7.1		870	5.50
M6	0	25.0 - 36.0	1330	12.6	17.0 - 29.0	950	8.10
	1		1820	15.5		1480	10.1
	2		2140	16.8		1560	13.5
M8	1	27.0 - 39.0	2540	25.1	20.0 - 32.0	1890	15.6
	2		3100	29.5		2170	18.9
M10	1	35.0 - 50.0	3560	45	25.0 - 36.0	2650	35.0
	2						

Note: The above values are averages when correct installation is performed. Variations in hole size, material and installation will affect these results. For specific advice we strongly recommend consultation with your PSM Technology Centre

P-S & P-CLS UNIFIED

THREAD CODE	SHANK CODE	TEST SHEET MATERIAL					
		COLD ROLLED STEEL			5052-H34 Aluminium		
		Installation (Lbs)	Pushout (Lbs)	Torque-out (in. Lbs)	Installation (Lbs)	Pushout (Lbs)	Torque-out (in. Lbs)
256 440	0	2500 - 3500	112	15	1500 - 2000	63	9
	1		135	17		94	10
	2 & 3		225	19		157	12
632	0	3200 - 5000	124	18	2500 - 3200	79	15
	1		162	21		108	17
	2 & 3		258	22		180	19
832	0	3800 - 6000	135	26	2700 - 3400	90	20
	1		169	41		124	24
	2 & 3		297	50		202	38
032 024	0	4200 - 7500	151	36	2900 - 3800	103	28
	1		213	48		139	36
	2 & 3		276	63		196	49
0420 0428	0	5500 - 8000	299	112	3800 -6500	213	72
	1		409	137		333	89
	2 & 3		481	149		351	120
0518 0524	1	6000 - 8500	570	222	4500 -7200	425	138
	2 & 3		687	261		488	167
0616 0624	1	8000 - 11000	800	398	5600 - 8000	596	310
	2						
0813 0820	1	10000 - 15000	1180	750	7000 - 9000	710	380
	2						

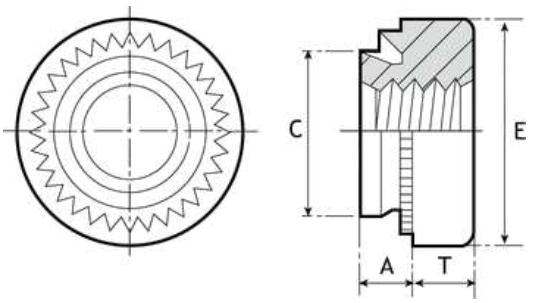
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P-CLA
SELF-CLINCHING NUTS

P-CLA

MATERIAL CODE
P-CLA – Aluminium

MAXIMUM SHEET HARDNESS
P-CLA = Rb 50



METRIC

THREAD SIZE / CODE	SHANK CODE	FOR MIN SHEET THICKNESS	A (MAX)	HOLE SIZE IN SHEET +0.08 -0.00	DIAMETER OF SHANK C (MAX)	DIAMETER OF BODY E +/- 0.25	DEPTH OF BODY T +/- 0.25	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
M2	1	1.0	0.98	4.25	4.22	6.3	1.5	4.8
	2	1.4	1.38					
M3	1	1.0	0.98	4.75	4.73	6.3	2.0	5.6
	2	1.4	1.38					
M3.5	1	1.0	0.98	5.4	5.38	7.1	2.0	6.9
	2	1.4	1.38					
M4	1	1.0	0.98	6.0	5.97	7.9	3.0	7.1
	2	1.4	1.38					
M5	1	1.0	0.98	7.5	7.47	9.5	3.8	7.9
	2	1.4	1.38					
M6	1	1.4	1.38	8.75	8.72	11.05	4.08	8.6
	2	2.3	2.21					

All dimensions in millimitres

UNIFIED

THREAD SIZE / CODE	SHANK CODE	FOR MIN SHEET THICKNESS	A (MAX)	HOLE SIZE IN SHEET +0.08 -0.00	DIAMETER OF SHANK C (MAX)	DIAMETER OF BODY E +/- 0.25	DEPTH OF BODY T +/- 0.25	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
256	1	0.040	0.038	.166	.165	.250	.070	.190
	2	0.056	0.054					
440	1	0.040	0.038	.1875	.187	.250	.090	.220
	2	0.056	0.054					
632	1	0.040	0.038	.213	.212	.280	.090	.270
	2	0.056	0.054					
832	1	0.040	0.038	.234	.233	.310	.130	.280
	2	0.056	0.054					
032 024	1	0.040	0.038	.296	.295	.370	.160	.310
	2	0.056	0.054					
0420	1	0.056	0.054	.344	.343	.440	.170	.340
	2	0.091	0.087					
	3	0.125	0.12					

All dimensions in inches

HOW TO SPECIFY

P-CLS (Stainless Steel Standard Sizes)	
PRODUCT CODE	P- CLA - M4 - 1
THREAD CODE	P- CLA - M4 - 1
SHANK CODE	P- CLA - M4 - 1

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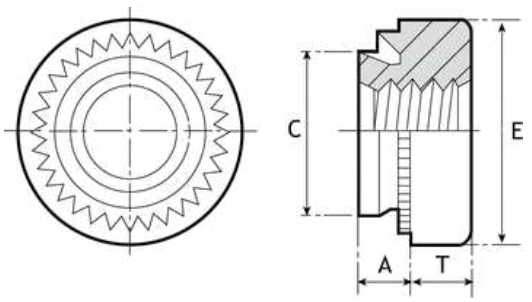
P-SMPS
SELF-CLINCHING NUTS

P-SMPS

MATERIAL
P-SMPS - Stainless Steel

STANDARD PLATING FINISH
Zinc & Clear Trivalent Passivation (Z)

MAXIMUM SHEET HARDNESS
P-SMPS = Rb70



METRIC

THREAD SIZE / CODE	FOR MIN SHEET THICKNESS	A (MAX)	HOLE SIZE IN SHEET +0.08 - 0.00	DIAMETER OF SHANK C (MAX)	DIAMETER OF BODY E +/- 0.25	DEPTH OF BODY T +/- 0.25	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
M2.5	0.64	0.61	3.80	3.79	5.6	1.4	3.7
M3	0.64	0.61	4.24	4.22	5.6	1.4	4.3
M3.5	0.64	0.61	4.75	4.73	6.4	1.4	5.1

All dimensions in millimitres

UNIFIED

THREAD SIZE / CODE	FOR MIN SHEET THICKNESS	A (MAX)	HOLE SIZE IN SHEET +.003 -.000	DIAMETER OF SHANK C (MAX)	DIAMETER OF BODY E +/- .010	DEPTH OF BODY T +/- .010	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
256	.025	.024	.136	.135	.220	.065	.145
440	.025	.024	.166	.165	.220	.065	.170
632	.025	.024	.187	.186	.252	.065	.200

All dimensions in inches

P-SMPS METRIC

THREAD CODE	COLD ROLLED STEEL		
	INSTALLATION (KN)	PUSHOUT (N)	TORQUE-OUT (Nm)
M2.5	7-8	165	1.2
M3	8-9	280	1.4
M3.5	9-10	300	1.6

P-SMPS UNIFIED

THREAD CODE	COLD ROLLED STEEL		
	INSTALLATION (Lbs)	PUSHOUT (Lbs)	TORQUE-OUT (In. Lbs)
256	1350-2000	45	10
440	1600-2200	60	13
632	2000-2700	72	15

HOW TO SPECIFY

P-SMPS	
PRODUCT CODE	P- SMPS - M4
THREAD CODE	P- SMPS - M4

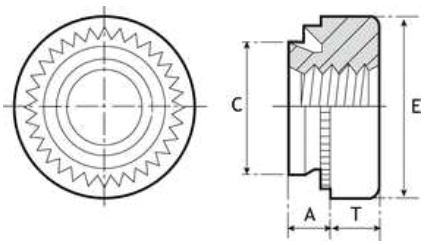
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P-SP SELF-CLINCHING NUTS FOR STAINLESS STEEL

P-SP

MATERIAL CODE
P-SP – Hardened Stainless Steel

MAXIMUM SHEET HARDNESS
P-SP = Rb 90



METRIC

THREAD SIZE / CODE	SHANK CODE	FOR MIN SHEET THICKNESS	A (MAX)	HOLE SIZE IN SHEET +0.08 -0.00	DIAMETER OF SHANK C (MAX)	DIAMETER OF BODY E +/- 0.25	DEPTH OF BODY T +/- 0.25	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
M3	0	0.8	0.77	4.22	4.20	6.3	1.5	4.8
	1	1.0	0.97					
	2	1.4	1.38					
M4	0	0.8	0.77	5.4	5.38	7.9	2.0	6.9
	1	1.0	0.97					
	2	1.4	1.38					
M5	0	0.8	0.77	6.35	6.33	8.7	2.0	7.1
	1	1.0	0.97					
	2	1.4	1.38					
M6	1	1.4	1.38	8.75	8.72	11.05	4.10	8.6

All dimensions in millimitres

UNIFIED

THREAD SIZE / CODE	SHANK CODE	FOR MIN SHEET THICKNESS	A (MAX)	HOLE SIZE IN SHEET +.003 -.000	DIAMETER OF SHANK C (MAX)	DIAMETER OF BODY E +/- .010	DEPTH OF BODY T +/- .010	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
440	0	0.030	0.030	.166	.165	.250	.070	.190
	1	0.040	0.038					
	2	0.056	0.054					
632	0	0.030	0.030	.1875	.187	.280	.070	.220
	1	0.040	0.038					
	2	0.056	0.054					
832	0	0.030	0.030	.213	.212	.310	.090	.270
	1	0.040	0.038					
	2	0.056	0.054					
032	0	0.030	0.030	.250	.249	.340	.090	.280
	1	0.040	0.038					
	2	0.056	0.054					
0420	1	0.056	0.054	.344	.343	.440	.170	.340

All dimensions in inches

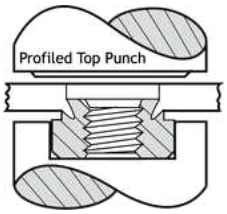
HOW TO SPECIFY

P-SP	
PRODUCT CODE	P- SP - M4 - 1
THREAD CODE	P- SP - M4 - 1
SHANK CODE	P- SP - M4 - 1

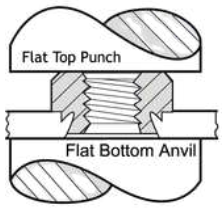
P-SP
SELF-CLINCHING NUTS

The P-SP SELF-CLINCHING NUT is a threaded fastener which incorporates a knurled platform under the head, which when embedded in the sheet, displaces material into the clinch ring securing the fastener firmly in place.

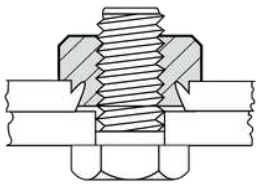
METHODS OF ASSEMBLY



Tooling option 1, install using profiled punch to achieve optimum performance. Apply sufficient load to bring body in contact with sheet around full circumference.



Tooling option 2 using flat punch and anvil. Apply pressure to the body of the fastener sufficient to totally embed the clinching ring and bring body in contact with the sheet.



Insert fixing screw or bolt from side opposite to the fastener body.

Contact local Tech Centre for tooling detail.

PERFORMANCE DATA

P-SP METRIC

THREAD CODE	SHANK CODE	TEST SHEET MATERIAL: 304 STAINLESS STEEL — INSTALLATION (KN)	PUSHOUT (N)	TORQUE-OUT (Nm)
M3	0	14 -23	600	1.7
	1		780	2.0
	2		1200	2.2
M4	0	20 - 33	740	3.6
	1		890	4.3
	2		1470	5.4
M5	0	27 - 41	800	4.1
	1		1100	5.3
	2		1650	6.9
M6	1	39 - 50	2130	16.4

P-SP UNIFIED

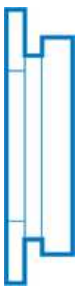
THREAD CODE	SHANK CODE	TEST SHEET MATERIAL: 304 STAINLESS STEEL — INSTALLATION (Lbs)	PUSHOUT (Lbs)	TORQUE-OUT (In. Lbs)
440	0	3000 -5000	135	15
	1		175	18
	2		265	20
632	0	3500 - 6500	150	18
	1		190	21
	2		315	27
832	0	4000 - 7500	165	32
	1		200	38
	2		330	48
032	0	6000 - 9000	180	36
	1		245	47
	2		370	61
0420	1	9000 - 11000	480	145

Note: The above values are averages when correct installation is performed. Variations in hole size, material and installation will affect these results. For specific advice we strongly recommend consultation with your PSM technology Centre

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P-F FLUSH SELF-CLINCHING NUTS



ADVANTAGES

- Allows captive nuts to be used in panels where lack of space prevents the use of conventional captive fasteners
- Easily assembled into round holes
- High pull out
- High torque resistance
- Provides flush finish to both sides of the sheet

P-F FLUSH SELF-CLINCHING NUTS have been designed to provide a thread within the sheet thickness giving a flush finish to both sides.

A simple squeezing action embeds the hexagonal head into the sheet and the displaced metal flows evenly around the undercut shank securely locking it into place.

DESIGN GUIDE

HOLE SIZE
Holes must be held to a tolerance of -.000" +.003" (-0.00mm +0.08mm) Therefore punched holes are recommended. Holes must not be de-burred or chamfered.

INSTALLATION
Must always be carried out using a squeeze action - NEVER a shock load.

SHEET HARDNESS
Must be less than 70RB (128VPN).

SHEET THICKNESS
See dimensions table.

SHANK NUMBER
Always use the longest shank possible for the sheet thickness. This will optimize the stripping strength and resistance to side loads.

DIRECTION OF LOAD
P-F fasteners should always be loaded from the pilot end. See maximum screw tightening torque to prevent overloading of head or thread.

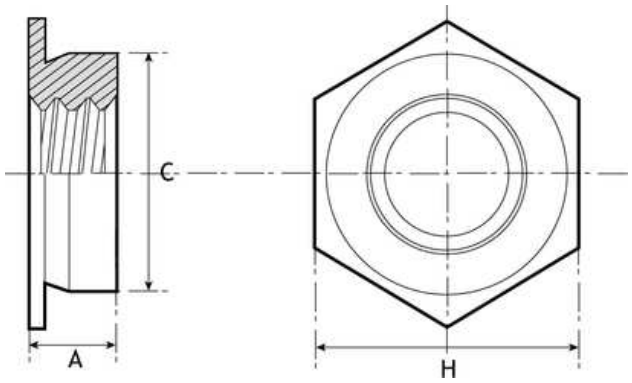
P-F FLUSH SELF-CLINCHING NUTS
TECHNICAL DATA

P-F TYPE (METRIC)

MATERIAL CODES
P-F - Stainless Steel

MAXIMUM SHEET HARDNESS
P-F = Rb 70





METRIC

THREAD SIZE / CODE	SHANK CODE	FOR MIN SHEET THICKNESS	A (MAX)	HOLE SIZE IN SHEET +0.08 - 0.00	DIAMETER OF SHANK C (MAX)	H A/F NOMINAL	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
M2	1	1.50 - 2.3	1.50	4.37	4.35	4.80	6.0
	2	≥ 2.32	2.30				
M2.5	1	1.50 - 2.3	1.50	4.37	4.35	4.80	6.0
	2	≥ 2.32	2.30				
M3	1	1.50 - 2.3	1.50	4.37	4.35	4.80	6.0
	2	≥ 2.32	2.30				
M4	1	1.50 - 2.3	1.50	7.37	7.35	7.90	7.2
	2	≥ 2.32	2.30				
M5	1	1.50 - 2.3	1.50	7.92	7.90	8.70	8.0
	2	≥ 2.32	2.30				
M6	3	3.1 - 3.85	3.05	8.74	8.72	9.50	8.8
	4	3.9 - 4.63	3.84				
	5	≥ 4.65	4.63				

All dimensions in millimetres

HOW TO SPECIFY

P-F (Stainless Steel Standard Sizes)	
PRODUCT CODE	P-F-M4-1
THREAD CODE	P-F-M4-1
SHANK CODE	P-F-M4-1

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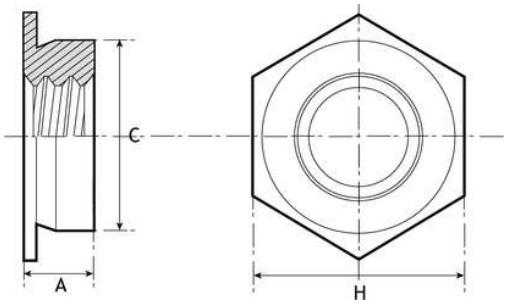
P-F FLUSH SELF-CLINCHING NUTS
TECHNICAL DATA

P-F TYPE (UNIFIED)



MATERIAL CODE
P-F - Stainless Steel

MAXIMUM SHEET HARDNESS
P-F = Rb70



UNIFIED

THREAD SIZE / CODE	SHANK CODE	FOR MIN SHEET THICKNESS	A (MAX)	Hole Size in Sheet +.003 -.000	DIAMETER OF SHANK C (MAX)	H A/F NOMINAL	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
256	1	.060 - .090	.060	.172	.171	.188	.230
	2	≥ .091	.090				
440	1	.060 - .090	.060	.172	.171	.188	.230
	2	≥ .091	.090				
632	1	.060 - .090	.060	.213	.212	.250	.270
	2	≥ .091	.090				
832	1	.060 - .090	.060	.290	.289	.312	.280
	2	≥ .091	.090				
032 / 024	1	.060 - .090	.060	.312	.311	.343	.310
	2	≥ .091	.090				
0420 / 0428	3	.125 - .155	.120	.344	.343	.375	.340
	4	.156 - .186	.151				
	5	≥ 187	.182				

All dimensions in inches

HOW TO SPECIFY

P-F (Stainless Steel Standard Sizes)	
PRODUCT CODE	P-F-832-1
THREAD CODE	P-F-832-1
SHANK CODE	P-F-832-1

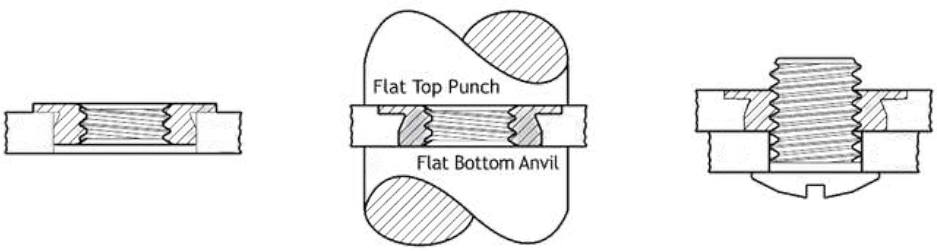
P-F FLUSH SELF-CLINCHING NUTS

METHOD OF ASSEMBLY

1. Punch a hole in the metal sheet to the size recommended in our technical data table. De-burring of the hole is not recommended.
2. Insert the shank of the fastener into the hole.
3. Apply squeezing pressure sufficient to embed hexagonal head flush in sheet.

P-F SELF-CLINCHING NUTS are easy to install because no special tooling is necessary. However, it is very important to note they must always be installed by a squeeze action press rather than a hammer blow.

Punched holes are always recommended.



PERFORMANCE DATA (METRIC)

THREAD CODE	SHANK CODE	MAX. TIGHTENING TORQUE FOR MATING SCREW (Nm)	TEST SHEET METAL			
			COLD ROLLED STEEL		5052-H34 Aluminium	
			Installation (Kn)	Pushout (N)	Installation (Kn)	Pushout (N)
M2	1 2	0.20	15	1000	10	850
M2.5	1 2	0.25	15	1000	10	850
M3	1 2	0.35	15	1000	10	850
M3.5	1 2	0.40	17	1200	12	1000
M4	1 2	0.60	19	1450	13	1200
M5	1 2	1.00	20	1600	14	1300
M6	3 4 5	3.90	22	2800	17	2000

P-F FLUSH SELF-CLINCHING NUTS

PERFORMANCE DATA (UNIFIED)

THREAD CODE	SHANK CODE	MAX. TIGHTENING TORQUE FOR MATING SCREW (in/lbs)	TEST SHEET METAL			
			COLD ROLLED STEEL		5052-H34 Aluminium	
			Installation (lbs)	Pushout (lbs)	Installation (lbs)	Pushout (lbs)
256	1	1.8	3300	220	2200	190
	2					
440	1	3.0	3300	200	2200	190
	2					
632	1	3.7	3800	270	2400	220
	2					
832	1	5.5	4200	325	2600	270
	2					
032 / 024	1	8.0	4500	360	2800	290
	2					
0420 / 0428	3	40	4900	630	3500	450
	4					
	5					

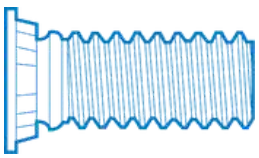
Note: The above values are averages when correct installation is performed. Variations in hole size, material and installation will affect these results. For specific advice we strongly recommend consultation with your PSM Technology Centre.

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P-FH & P-FHS
SELF-CLINCHING STUD

ADVANTAGES



- Easy to assemble with any squeeze press
- High torque resistance
- No damage to decorative finishes on panels
- Visual proof of security
- Always perpendicular to panel
- Head installs flush with surface of sheet

The P-FH / P-FHS SELF-CLINCHING STUD is a threaded fastener which incorporates a knurled platform under the head, which when embedded in the sheet, displaces material into the clinch ring securing the fastener firmly in place.

DESIGN GUIDE

HOLE PREPARATION
It is recommended that the holes are formed using a punch operation, although drilled holes may be used. Holes should not be countersunk or de-burred.

HOLE SIZE
Holes must be held to a tolerance of -0.00mm + 0.08mm (-.000" +.003")

MINIMUM SHEET THICKNESS
See product data sheets and method of assembly.

MAXIMUM SHEET HARDNESS
Rb80 for Steel Studs (P-FH)
Rb70 for Stainless Steel Studs (P-FHS)

INSTALLATION
Apply squeezing pressure sufficient only to embed the head of the stud flush with surface of the sheet. Avoid excessive pressures.
Installation forces vary with sheet hardness and thickness.
See PERFORMANCE DATA for recommended forces.

TOOLING NOTE:
Studs are installed using a flat top punch and flat bottom anvil with a clearance hole to accept the threaded section of the stud.
Where the sheet material is thin, a special thin sheet bottom anvil is required which includes a countersink at the top to create space for clinch ring and displaced sheet material.
See METHODS OF ASSEMBLY page for details

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P-FH & P-FHS SELF-CLINCHING STUD

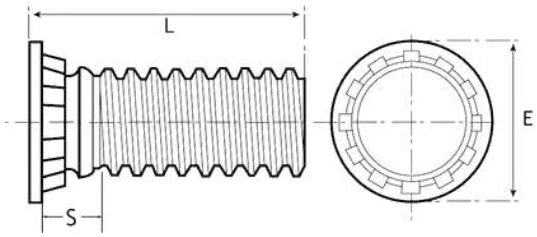
TECHNICAL DATA



P-FH & P-FHS TYPES (METRIC)

MATERIAL CODES
P-FH - Hardened Steel Zinc Plated
P-FHS - Stainless Steel

STANDARD PLATING FINISH
Zinc & Clear Trivalent Passivation (Z)



GENERAL DIMENSIONS

THREAD SIZE / CODE	MIN SHEET THICKNESS	HOLE SIZE IN SHEET -0.08 -0.00	MAX HOLE IN MATING COMPONENT	S MAX	HEAD DIAMETER E +/- 0.4	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
M2.5	1.0	2.5	3.1	1.95	4.1	5.4
M3	1.0	3.0	3.6	2.10	4.6	5.6
M3.5	1.0	3.5	4.1	2.25	5.3	6.4
M4	1.0	4.0	4.6	2.40	5.9	7.2
M5	1.0	5.0	5.6	2.70	6.5	7.2
M6	1.5	6.0	6.6	3.00	8.2	7.9
M8	2.4	8.0	8.6	3.70	9.6	9.6

All dimensions in millimetres

THREAD & LENGTH DATA

THREAD SIZE / CODE	TYPE		LENGTH CODE "L" +/- .04 (LENGTH CODE IN MILLIMETRES)									
	STEEL	STAINLESS STEEL										
M2.5	P-FH	P-FHS	6	8	10	12	15	18	N/A	N/A	N/A	N/A
M3	P-FH	P-FHS	6	8	10	12	15	18	20	25	N/A	N/A
M3.5	P-FH	P-FHS	6	8	10	12	15	18	20	25	30	N/A
M4	P-FH	P-FHS	6	8	10	12	15	18	20	25	30	35
M5	P-FH	P-FHS	N/A	8	10	12	15	18	20	25	30	35
M6	P-FH	P-FHS	N/A	N/A	10	12	15	18	20	25	30	35
M8	P-FH	P-FHS	N/A	N/A	N/A	12	15	18	20	25	30	35

HOW TO SPECIFY

P-FH (Steel Standard Sizes)	
PRODUCT CODE	P- FH - M4 - 10 - Z
THREAD CODE	P- FH - M4 - 10 - Z
LENGTH CODE	P- FH - M4 - 10 - Z
PLATING CODE	P- FH - M4 - 10 - Z

P-FHS (Stainless Steel Standard Sizes)	
PRODUCT CODE	P- FHS - M4 - 10
THREAD CODE	P- FHS - M4 - 10
LENGTH CODE	P- FHS - M4 - 10

P-FH & P-FHS SELF-CLINCHING STUD

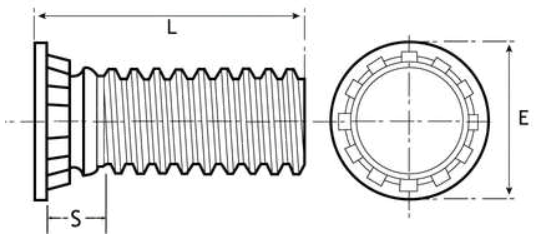
TECHNICAL DATA



P-FH & P-FHS TYPES (UNIFIED)

MATERIAL CODES
P-FH - Hardened Steel Zinc Plated
P-FHS - Stainless Steel

STANDARD PLATING FINISH
Zinc & Clear Trivalent Passivation (Z)



GENERAL DIMENSIONS

THREAD SIZE / CODE	MIN SHEET THICKNESS	HOLE SIZE IN SHEET +.003 -.000	MAX. HOLE IN MATING COMPONENT	S MAX	HEAD DIAMETER E +/- 0.015	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
256	.040	.085	.105	.075	.144	.187
440	.040	.111	.135	.085	.176	.219
632	.040	.137	.160	.090	.206	.250
832	.040	.163	.185	.090	.237	.281
032 / 024	.040	.189	.210	.100	.256	.281
0420 / 0428	.062	.249	.270	.135	.337	.312
0518 / 0524	.093	.311	.333	.160	.376	.375

All dimensions in inches

THREAD & LENGTH DATA

THREAD SIZE / CODE	TYPE		LENGTH CODE "L" +/- .015 (LENGTH CODE IN 16THS OF AN INCH)									
	STEEL	STAINLESS STEEL	1/4 .250	5/16 .312	3/8 .375	1/2 .500	5/8 .625	3/4 .750	7/8 .875	1 1.00	1.1/4 1.25	1.1/2 1.50
256	P-FH	P-FHS	4	5	6	8	10	12	N/A	N/A	N/A	N/A
440	P-FH	P-FHS	4	5	6	8	10	12	14	16	N/A	N/A
632	P-FH	P-FHS	4	5	6	8	10	12	14	16	20	24
832	P-FH	P-FHS	4	5	6	8	10	12	14	16	20	24
032 / 024	P-FH	P-FHS	N/A	5	6	8	10	12	14	16	20	24
0420 / 0428	P-FH	P-FHS	N/A	N/A	6	8	10	12	14	16	20	24
0518 / 0524	P-FH	P-FHS	N/A	N/A	N/A	8	10	12	14	16	20	24

HOW TO SPECIFY

P-FH (Steel Standard Sizes)	
PRODUCT CODE	P- FH - 832 - 10 - Z
THREAD CODE	P- FH - 832 - 10 - Z
LENGTH CODE	P- FH - 832 - 10 - Z
PLATING CODE	P- FH - 832 - 10 - Z

P-FHS (Stainless Steel Standard Sizes)	
PRODUCT CODE	P- FHS - 832 - 10
THREAD CODE	P- FHS - 832 - 10
LENGTH CODE	P- FHS - 832 - 10

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P-FH & P-FHS
SELF-CLINCHING STUD

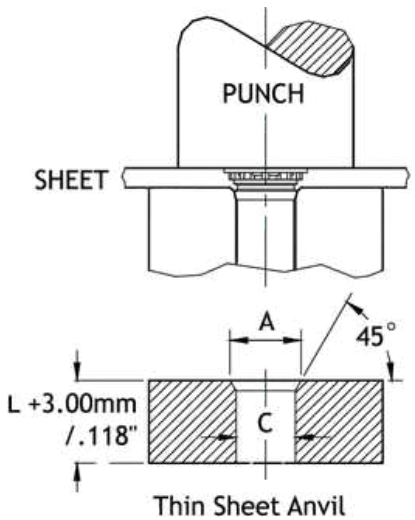
METHOD OF ASSEMBLY

1. Punch a hole in the metal sheet to the size recommended in our technical data table. De-burring of the hole is not recommended.
2. Insert the stud through the hole in sheet and into the appropriate anvil as detailed below.
3. Apply squeezing pressure sufficient to install the head flush with top face of sheet.

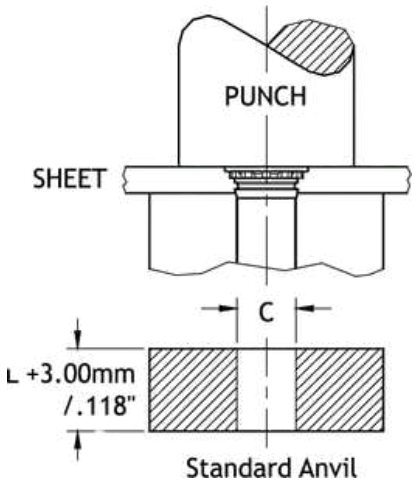
P-FH / P-FHS SELF-CLINCHING STUDS are easy to install because no special tooling is necessary. However, it is very important to note that they must always be installed by a squeeze action press rather than a hammer blow.

Punched holes are recommended.

ASSEMBLY DETAILS



Thin Sheet Anvil



Standard Anvil

THREAD SIZE METRIC	ANVIL	
	A mm	C mm
2.5	3.10 - 3.20	2.53 - 2.61
3	3.61 - 3.71	3.02 - 3.10
3.5	4.12 - 4.22	3.53 - 3.61
4	4.60 - 4.70	4.01 - 4.07
5	5.66 - 5.77	5.03 - 5.11
6	7.14 - 7.26	6.01 - 6.07
8	9.14 - 9.26	8.01 - 8.08

THREAD SIZE UNIFIED	ANVIL	
	A inch	C inch
256	.110 - .114	.087 - .090
440	.136 - .140	.113 - .116
632	.162 - .166	.139 - .142
832	.188 - .192	.165 - .168
032	.216 - 220	.191 - .194
420	.295 - .300	.250 - .253
518	.334 - .338	.313 - .316

Thin Sheet Anvil Use

M2.5 - M5 for sheet 1.0 - 1.49
M6 for sheet 1.5 - 2.4
M8 for sheet 2.0 - 2.4

256 - 032 for sheet .040" - .060"
0420 for sheet .062" - .092"
0518 for sheet .078" - .092"

P-FH & P-FHS
SELF-CLINCHING STUD



PERFORMANCE DATA (METRIC)

THREAD CODE	STUD TYPE	MAX NUT TIGHTENING TORQUE (Nm)	TEST SHEET MATERIAL					
			COLD ROLLED STEEL			ALUMINIUM		
			INSTALLATION (Kn)	PUSHOUT (N)	TORQUE-OUT (Nm)	INSTALLATION (Kn)	PUSHOUT (N)	TORQUE-OUT (Nm)
M2.5	Steel / Stainless Steel	0.41	14	800	1.2	12	500	1.0
M3	Steel / Stainless Steel	0.85	17	900	1.9	14	600	1.7
M3.5	Steel / Stainless Steel	1.15	23	1400	2.8	16	850	2.0
M4	Steel / Stainless Steel	1.9	26	1800	4.0	20	1050	3.0
M5	Steel / Stainless Steel	3.8	30	2300	7.0	25	1300	4.0
M6	Steel / Stainless Steel	8.0	40	2800	12.0	30	1700	7.0
M8	Steel / Stainless Steel	14.0	50	3200	22.0	35	7950	12.0

PERFORMANCE DATA (UNIFIED)

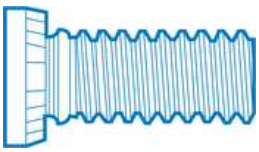
THREAD CODE	STUD TYPE	MAX NUT TIGHTENING TORQUE (in/lbs)	TEST SHEET MATERIAL					
			COLD ROLLED STEEL			ALUMINIUM		
			INSTALLATION (lbs)	PUSHOUT (lbs)	TORQUE-OUT (in/lbs)	INSTALLATION (lbs)	PUSHOUT (lbs)	TORQUE-OUT (in/lbs)
256	Steel / Stainless Steel	2.5	2800	160	7.0	2000	100	6.0
440	Steel / Stainless Steel	5.0	3800	240	12.0	3000	150	12.0
632	Steel / Stainless Steel	9.0	5000	315	23.0	3600	190	18.0
832	Steel / Stainless Steel	18.0	6300	400	38.0	4800	250	22.0
032	Steel / Stainless Steel	32	7000	500	60.0	5500	290	35.0
0420	Steel / Stainless Steel	70.0	9000	630	105.0	6700	380	65.0
0518	Steel / Stainless Steel	130.0	11200	720	190.0	7800	440	105.0

Note: The above values are averages when correct installation is performed. Variations in hole size, material and installation will affect these results. For specific advice we strongly recommend consultation with your PSM Technology Centre.

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P-HFH / P-HFHS SELF-CLINCHING STUD

ADVANTAGES



- Easy to assemble with any squeeze press
- High torque resistance
- Visual proof of security
- Always perpendicular to panel
- Made from through-hardened steel for high thread strength

P-HFH / P-HFHS SELF-CLINCHING STUDS have been designed to achieve higher levels of performance than the P-FH range of fasteners for applications that do not demand a flush finish condition.

DESIGN GUIDE

HOLE PREPARATION
It is recommended that the holes are formed using a punch operation, although drilled holes may be used.

HOLE SIZE
Holes must be held to a tolerance of -0.00mm + 0.13mm (-.000" +.005")

MINIMUM SHEET THICKNESS
See product data sheets and method of assembly.

MAXIMUM SHEET HARDNESS
Rb80 for Steel Studs (P-HFH)
Rb70 for Stainless Steel Studs (P-HFHS)

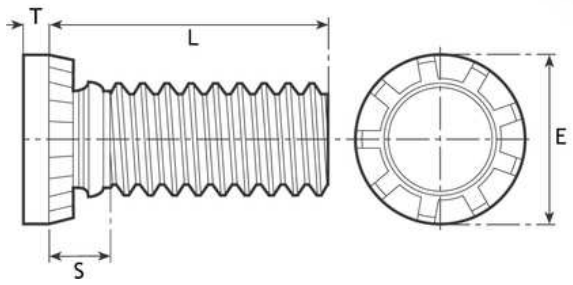
INSTALLATION
Using a squeeze action, apply sufficient force to fully embed the teeth into the host sheet metal, bringing the head in contact with the sheet. See PERFORMANCE DATA for recommended forces.
The head of the stud is not designed to be installed flush

TOOLING NOTE:
Studs are installed using a recessed top punch to control the insertion depth and a flat bottom anvil with a clearance hole to accept the threaded section of the stud. Where the sheet material is thin, a special thin sheet bottom anvil is required which includes a countersink at the top to create space for the clinch ring and displaced sheet material.

See METHODS OF ASSEMBLY page for details

P-HFH / P-HFHS
SELF-CLINCHING STUD

TECHNICAL DATA



METRIC

MATERIAL CODES
P-HFH - Hardened Steel Zinc Plated
P-HFHS - Stainless Steel

STANDARD PLATING FINISH
Zinc & Clear Trivalent Passivation (Z)

GENERAL DIMENSIONS

THREAD SIZE / CODE	MIN SHEET THICKNESS	REC HOLE SIZE -0.00 +0.13	MAX HOLE IN MATING COMPONENT	HEAD DIAMETER E +/- 0.25	MAX HEAD HEIGHT T	MAX UNTHREADED LENGTH S	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
M5	0.9	5.0	6.5	7.8	1.14	2.7	10.7
M6	1.0	6.0	7.5	9.4	1.27	2.8	11.5
M8	1.5	8.0	9.5	12.5	1.78	3.5	12.7
M10	2.3	10.0	11.5	15.7	2.29	4.1	13.7

All dimensions in millimetres

THREAD & LENGTH

THREAD SIZE / CODE	TYPE		LENGTH CODE "L" +/- 0.4 (LENGTH CODE IN MILLIMETRES)						
	STEEL	STAINLESS STEEL							
M5	P-HFH	P-HFHS	15	20	25	30	35	40	50
M6	P-HFH	P-HFHS	15	20	25	30	35	40	50
M8	P-HFH	P-HFHS	15	20	25	30	35	40	50
M10	P-HFH	P-HFHS	15	20	25	30	35	40	50

HOW TO SPECIFY

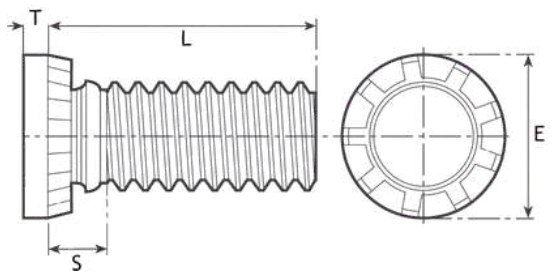
P-HFH (Steel Standard Sizes)	
PRODUCT CODE	P- HFH - M6 - 20 - Z
THREAD CODE	P- HFH - M6 - 20 - Z
LENGTH CODE	P- HFH - M6 - 20 - Z
PLATING CODE	P- HFH - M6 - 20 - Z

P-HFHS (Stainless Steel Standard Sizes)	
PRODUCT CODE	P- HFHS - M6 - 20
THREAD CODE	P- HFHS - M6 - 20
LENGTH CODE	P- HFHS - M6 - 20

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P-HFH / P-HFHS
SELF-CLINCHING STUD

TECHNICAL DATA



UNIFIED

MATERIAL CODES
P-HFH - Hardened Steel Zinc Plated
P-HFHS - Stainless Steel

STANDARD PLATING FINISH
Zinc & Clear Trivalent Passivation (Z)

GENERAL DIMENSIONS

THREAD SIZE / CODE	MIN SHEET THICKNESS	REC HOLE SIZE -.000 +.005	MAX HOLE IN MATING COMPONENT	HEAD DIAMETER E +/- 0.010	MAX HEAD HEIGHT T	MAX UNTHREADED LENGTH S	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
032 / 024	0.050	0.190	0.250	0.300	0.040	0.105	0.415
0420 / 0428	0.060	0.250	0.312	0.380	0.050	0.125	0.460
0518 / 0524	0.075	0.312	0.375	0.480	0.070	0.140	0.500
0616 / 0624	0.090	0.375	0.437	0.580	0.085	0.155	0.530

All dimensions in inches

THREAD & LENGTH DATA

THREAD SIZE / CODE	TYPE		LENGTH CODE "L" +/- .015 (LENGTH CODE IN 16ths OF AN INCH)						
	STEEL	STAINLESS STEEL	1/2 .500	3/4 .750	1 1.00	1.1/4 1.25	1.1/2 1.50	1.3/4 1.75	2 2.00
032 / 024	P-HFH	P-HFHS	8	12	16	20	24	28	32
0420 / 0428	P-HFH	P-HFHS	8	12	16	20	24	28	32
0518 / 0524	P-HFH	P-HFHS	8	12	16	20	24	28	32
0616 / 0624	P-HFH	P-HFHS	N/A	12	16	20	24	28	32

HOW TO SPECIFY

P-HFH (Steel Standard Sizes)	
PRODUCT CODE	P- HFH - 0420 - 20 - Z
THREAD CODE	P- HFH - 0420 - 20 - Z
LENGTH CODE	P- HFH - 0420 - 20 - Z
PLATING CODE	P- HFH - 0420 - 20 - Z

P-HFHS (Stainless Steel Standard Sizes)	
PRODUCT CODE	P- HFHS - 0420 - 20
THREAD CODE	P- HFHS - 0420 - 20
LENGTH CODE	P- HFHS - 0420 - 20

P-HFH / P-HFHS
SELF-CLINCHING STUD

PERFORMANCE DATA (METRIC)

THREAD CODE	STUD TYPE	MAX NUT TIGHTENING TORQUE (Nm)	TEST SHEET MATERIAL					
			COLD ROLLED STEEL			ALUMINIUM		
			INSTALLATION (kN)	PUSHOUT (N)	TORQUE-OUT (Nm)	INSTALLATION (kN)	PUSHOUT (N)	TORQUE-OUT (Nm)
M5	Steel	4.5	25	1600	9	15	1000	6
	Stainless Steel				7			
M6	Steel	10	30	2200	15	20	1500	13
	Stainless Steel				11			11
M8	Steel	22	45	3500	35	30	2000	28
	Stainless Steel				20			20
M10	Steel	37	55	5000	55	40	3000	35
	Stainless Steel				35			

PERFORMANCE DATA (UNIFIED)

THREAD CODE	STUD TYPE	MAX NUT TIGHTENING TORQUE (ft/lbs)	TEST SHEET MATERIAL					
			COLD ROLLED STEEL			ALUMINIUM		
			INSTALLATION (lbs)	PUSHOUT (lbs)	TORQUE-OUT (ft/lbs)	INSTALLATION (lbs)	PUSHOUT (lbs)	TORQUE-OUT (ft/lbs)
10	Steel	3.5	5500	350	6	3300	200	4
	Stainless Steel				4			
1/4	Steel	10	7000	520	11	4500	320	10
	Stainless Steel				8			8
5/16	Steel	17	10000	700	23	7000	450	22
	Stainless Steel				16			16
3/8	Steel	26	12000	900	35	8300	600	25
	Stainless Steel				24			

Note: The above values are averages when correct installation is performed. Variations in hole size, material and installation will affect these results. For specific advice we strongly recommend consultation with your PSM Technology Centre.

P-HFH / P-HFHS
SELF-CLINCHING STUDS

METHOD OF ASSEMBLY

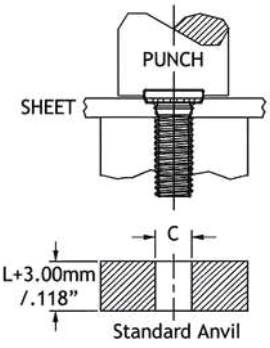
Punch a hole in the metal sheet to the size recommended in our technical data table. De-burring of the hole is not recommended.

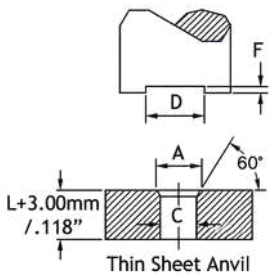
Insert the stud through the hole in sheet and into the appropriate anvil as detailed below.

Apply squeezing pressure sufficient to fully embed the teeth, bringing the head into contact with the sheet.

P-HFH / P-HFHS SELF-CLINCHING STUDS are easy to install because only simple tooling is required. However, it is very important to note that they must always be installed by a squeeze action press rather than a hammer blow.

Punched holes are recommended.





THREAD SIZE Metric	PUNCH		ANVIL			
	RECESS WIDTH D mm	RECESS WIDTH F mm	MIN DIE LENGTH	BORE DIAMETER C mm	THIN SHEET	
					C/SINK DIA A mm	SHEET THICKNESS mm
M5	8.2 - 8.4	0.99 - 1.04	L	5.1 - 5.15	5.8 - 5.9	0.90 - 1.29
M6	9.8 - 10.0	1.12 - 1.17	L	6.1 - 6.15	7.0 - 7.1	1.00 - 1.49
M8	12.9 - 13.1	1.63 - 1.68	L	8.1 - 8.15	9.0 - 9.1	1.50 - 1.99
M10	16.1 - 16.3	2.10 - 2.12	L	10.1 - 10.15	-	-

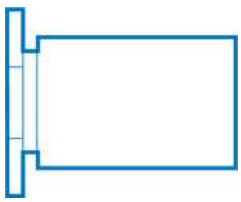
THREAD SIZE Unified	PUNCH		ANVIL			
	RECESS WIDTH D inch	RECESS WIDTH F inch	MIN DIE LENGTH	BORE DIAMETER C inch	THIN SHEET	
					C/SINK DIA A inch	SHEET THICKNESS inch
10	.315 - .325	.035 - .036	L	.191 - .194	.216 - .220	.036 - .049
1/4	.395 - .405	.045 - .046	L	.250 - .253	.286 - .296	.040 - .059
5/6	.495 - .505	.063 - .064	L	.313 - .316	.350 - .354	.060 - .074
3/8	.595 - .605	.077 - ..078	L	.376 - .379	-	-

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SELF-CLINCHING STAND-OFFS

ADVANTAGES



- Available in a range of spacer lengths
- Remains mechanically clinched in sheet
- For heavy duty applications LSS (Larger Support Surface) types are available (3.5M3 - 6440 - 8632)
- Through threaded and blind threaded ranges
- Plain hole versions available to special order

SELF-CLINCHING STAND-OFFS are designed to serve as spacers or distance pieces. A simple squeezing action embeds the hexagonal head into the sheet causing the displaced metal to flow into the clinching groove.

DESIGN GUIDE

HOLE SIZE
Holes must be held to a tolerance of -.000" +.003" (-0.00mm +0.08mm) Therefore punched holes are recommended. Holes should not be de-burred or countersunk.

INSTALLATION
Must always be carried out using a squeeze action - NEVER a shock load.

MAXIMUM SHEET HARDNESS
Rb80 for hardened steel fasteners (P-SO & P-BSO)
Rb70 for stainless steel fasteners (P-SOS & P-BSOS)
Rb50 for aluminium fasteners (P-SOA & P-BSOA)

HEAVY DUTY USE
Where heavy duty use is anticipated, P-SO and P-BSO fasteners in the smaller thread sizes may be specified in larger body sizes offering greater wall thickness.
(For example: M3 in M3.5 body size would be coded 3.5M3 and 4.40UNC in 6.32UNC body size would be coded 6440 (see dimension charts)

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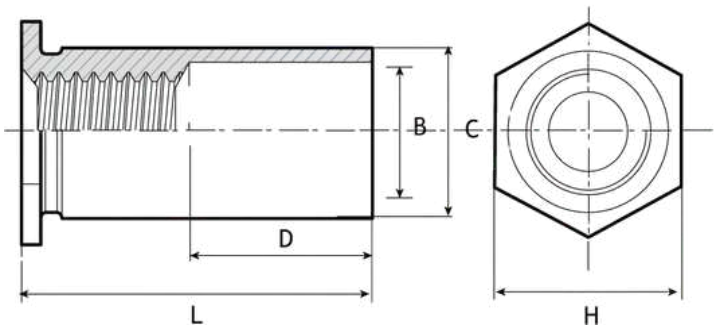
SELF-CLINCHING STAND-OFFS
TECHNICAL DATA

P-SO THROUGH HOLE TYPE (METRIC)

MATERIAL CODE
P-SO - Hardened Steel Zinc Plated
P-SOS - Stainless Steel
P-SOA - Aluminium

STANDARD PLATING FINISH
Zinc & Clear Trivalent Passivation (Z)





GENERAL DIMENSIONS

THREAD SIZE / CODE	MIN SHEET THICKNESS	HOLE SIZE IN SHEET +0.08 -0.00	C +0.00 -0.13	B COUNTER-BORE DIA +/- 0.13	H A/F NOMINAL	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
M2.5	1.0	4.20	4.19	3.20	4.80	6.0
M3	1.0	4.20	4.19	3.20	4.80	6.0
3.5M3	1.0	5.40	5.39	3.20	6.40	6.8
M3.5	1.0	5.40	5.39	3.90	6.40	6.8
M4	1.3	7.15	7.12	4.80	7.90	8.0
M5	1.3	7.15	7.12	5.35	7.90	8.0

All dimensions in millimetres

THREAD & LENGTH DATA

THREAD SIZE / CODE	TYPE			LENGTH CODE "L" +0.05 - 0.13 (LENGTH CODE IN MILLIMETRES)											
	STEEL	STAINLESS STEEL	ALUMINIUM												
M2.5	P-SO	P-SOS	P-SOA	3	4	6	8	10	12	14	16	18	N/A	N/A	N/A
M3	P-SO	P-SOS	P-SOA	3	4	6	8	10	12	14	16	18	N/A	N/A	N/A
3.5M3	P-SO	P-SOS	P-SOA	3	4	6	8	10	12	14	16	18	N/A	N/A	N/A
M3.5	P-SO	P-SOS	P-SOA	3	4	6	8	10	12	14	16	18	20	22	25
M4	P-SO	P-SOS	P-SOA	3	4	6	8	10	12	14	16	18	20	22	25
M5	P-SO	P-SOS	P-SOA	3	4	6	8	10	12	14	16	18	20	22	25
D = Counterbore Depth +/- 0.25				NONE				4			8			11	

HOW TO SPECIFY

P-SO (STEEL STANDARD SIZE)	
PRODUCT CODE	P-SO-M4-10-Z
THREAD CODE	P-SO-M4-10-Z
LENGTH CODE	P-SO-M4-10-Z
PLATING CODE	P-SO-M4-10-Z

Plain hole versions are available upon special order.

P-SOS (Stainless Steel Standard Size)	
PRODUCT CODE	P-SOS-M4-10
THREAD CODE	P-SOS-M4-10
LENGTH CODE	P-SOS-M4-10

Plain hole versions are available upon special order.

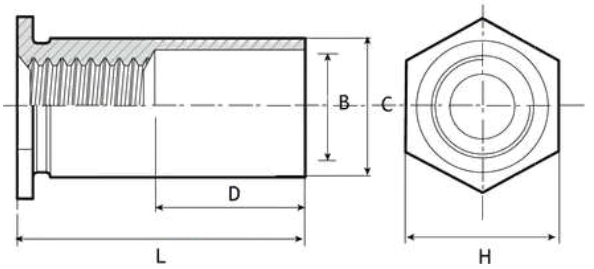
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SELF-CLINCHING STAND-OFFS TECHNICAL DATA

P-SO THROUGH HOLE TYPE (UNIFIED)

MATERIAL CODE
P-SO - Hardened Steel Zinc Plated
P-SOS - Stainless Steel
P-SOA - Aluminium

STANDARD PLATING FINISH
Zinc & Clear Trivalent Passivation (Z)



GENERAL DIMENSIONS

THREAD SIZE / CODE	MIN SHEET THICKNESS	HOLE SIZE IN SHEET +0.003 -0.00	C +0.000 -0.005	B COUNTER-BORE DIA +/- 0.005	H A/F NOMINAL	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
440	0.040	0.166	0.165	0.125	0.187	0.230
6440	0.040	0.213	0.212	0.125	0.250	0.270
632	0.040	0.213	0.212	0.156	0.250	0.270
8632	0.050	0.281	0.280	0.156	0.312	0.310
832	0.050	0.281	0.280	0.188	0.312	0.310
032 / 024	0.050	0.281	0.280	0.203	0.312	0.310

All dimensions in inches

THREAD & LENGTH DATA

THREAD SIZE / CODE	TYPE			LENGTH CODE "L" +.002 -.005 (LENGTH CODE IN 32nds OF AN INCH)															
	STEEL	STAINLESS STEEL	ALUMINIUM	1/8 .125	3/16 .187	1/4 .250	5/16 .312	3/8 .375	7/16 .437	1/5 .500	9/16 .562	5/8 .625	11/16 .687	3/4 .750	13/16 .812	7/8 .875	15/16 .937	1 1.00	1.1/16 1.062
440	P-SO	P-SOS	P-SOA	4	6	8	10	12	14	16	18	20	22	24	N/A	N/A	N/A	N/A	N/A
6440	P-SO	P-SOS	P-SOA	4	6	8	10	12	14	16	18	20	22	24	N/A	N/A	N/A	N/A	N/A
632	P-SO	P-SOS	P-SOA	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34
8632	P-SO	P-SOS	P-SOA	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34
832	P-SO	P-SOS	P-SOA	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34
032 / 024	P-SO	P-SOS	P-SOA	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34
D = Counterbore Depth +/- .010				NONE				0.187				0.312				0.437			

HOW TO SPECIFY

P-SO (STEEL STANDARD SIZE)	
PRODUCT CODE	P-SO-832-10-Z
THREAD CODE	P-SO-832-10-Z
LENGTH CODE	P-SO-832-10- Z
PLATING CODE	P-SO-832-10-Z

Plain hole versions are available upon special order.

P-SOS (Stainless Steel Standard Size)	
PRODUCT CODE	P-SOS-832-10
THREAD CODE	P-SOS-832-10
LENGTH CODE	P-SOS-832-10

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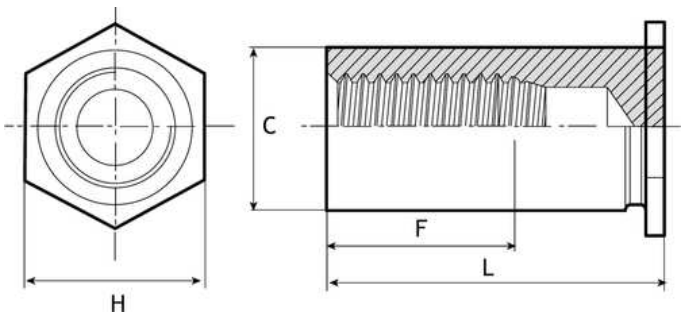
SELF-CLINCHING STAND-OFFS
TECHNICAL DATA

P-BSO BLIND HOLE TYPE (METRIC)

MATERIAL CODES
P-BSO - Hardened Steel Zinc Plated
P-BSOS - Stainless Steel
P-BSOA - Aluminium

STANDARD PLATING FINISH
Zinc & Clear Trivalent Passivation (Z)





GENERAL DIMENSIONS

THREAD SIZE / CODE	MIN SHEET THICKNESS	HOLE SIZE IN SHEET +0.08 -0.00	C +0.00 -0.13	H A/F NOMINAL	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
M2.5	>1.0	4.20	4.19	4.80	6.0
M3	>1.0	4.20	4.19	4.80	6.0
3.5M3	>1.0	5.40	5.39	6.40	6.8
M3.5	>1.0	5.40	5.39	6.40	6.8
M4	>1.3	7.15	7.12	7.90	8.0
M5	>1.3	7.15	7.12	7.90	8.0

All dimensions in millimitres

THREAD & LENGTH DATA

THREAD SIZE / CODE	TYPE			LENGTH CODE "L" +0.05 - 0.13 (LENGTH CODE IN MILLIMETRES)									
	STEEL	STAINLESS STEEL	ALUMINIUM										
M2.5	P-BSO	P-BSOS	P-BSOA	6	8	10	12	14	16	18	N/A	N/A	N/A
M3	P-BSO	P-BSOS	P-BSOA	6	8	10	12	14	16	18	20	22	25
3.5M3	P-BSO	P-BSOS	P-BSOA	6	8	10	12	14	16	18	20	22	25
M3.5	P-BSO	P-BSOS	P-BSOA	6	8	10	12	14	16	18	20	22	25
M4	P-BSO	P-BSOS	P-BSOA	6	8	10	12	14	16	18	20	22	25
M5	P-BSO	P-BSOS	P-BSOA	6	8	10	12	14	16	18	20	22	25
F = min full threads in mm				32	4		5	6.5		9.5			

HOW TO SPECIFY

P-BSO (STEEL STANDARD SIZE)	
PRODUCT CODE	P-BSO-M4-10-Z
THREAD CODE	P-BSO-M4-10-Z
LENGTH CODE	P-BSO-M4-10-Z
PLATING CODE	P-BSO-M4-10-Z

P-BSOS (Stainless Steel Standard Size)	
PRODUCT CODE	P-BSOS-M4-10
THREAD CODE	P-BSOS-M4-10
LENGTH CODE	P-BSOS-M4-10

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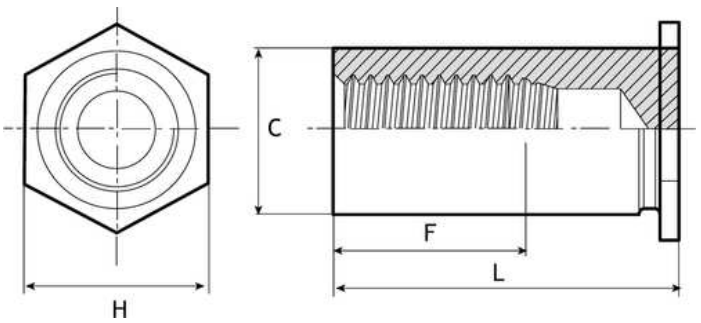
SELF-CLINCHING STAND-OFFS
TECHNICAL DATA

P-BSO BLIND HOLE TYPE (UNIFIED)

MATERIAL CODES
P-BSO - Hardened Steel Zinc Plated
P-BSOS - Stainless Steel
P-BSOA - Aluminium

STANDARD PLATING FINISH
Zinc & Clear Trivalent Passivation (Z)





GENERAL DIMENSIONS

THREAD SIZE / CODE	MIN SHEET THICKNESS	HOLE SIZE IN SHEET +0.003 -0.000	C +0.000 -0.005	H A/F NOMINAL	MINIMUM DISTANCE CENTRE LINE HOLE TO SHEET EDGE
440	0.040	0.166	0.165	0.187	0.230
6440	0.040	0.213	0.212	0.250	0.270
632	0.040	0.213	0.212	0.250	0.270
8632	0.050	0.281	0.280	0.312	0.310
832	0.050	0.281	0.280	0.312	0.310
032 / 024	0.050	0.281	0.280	0.312	0.310

All dimensions in inches

THREAD & LENGTH DATA

THREAD SIZE / CODE	TYPE			LENGTH CODE "L" +.002-.005 (LENGTH CODE IN 32NDS OF AN INCH)												
	STEEL	STAINLESS STEEL	ALUMINIUM	5/16 .312	3/8 .375	7/16 .437	1/2 .500	9/16 .562	5/8 .625	11/16 .687	3/4 .750	13/16 .812	7/8 .875	15/16 .937	1 1.00	1.1/16 1.062
440	P-BSO	P-BSOS	P-BSOA	10	12	14	16	18	20	22	24	26	28	30	32	34
6440	P-BSO	P-BSOS	P-BSOA	10	12	14	16	18	20	22	24	26	28	30	32	34
632	P-BSO	P-BSOS	P-BSOA	10	12	14	16	18	20	22	24	26	28	30	32	34
8632	P-BSO	P-BSOS	P-BSOA	10	12	14	16	18	20	22	24	26	28	30	32	34
832	P-BSO	P-BSOS	P-BSOA	10	12	14	16	18	20	22	24	26	28	30	32	34
032 / 024	P-BSO	P-BSOS	P-BSOA	10	12	14	16	18	20	22	24	26	28	30	32	34
F = min full threads in inches				0.156		0.187	0.250			0.375						

HOW TO SPECIFY

P-BSO (STEEL STANDARD SIZE)	
PRODUCT CODE	P-BSO-832-10-Z
THREAD CODE	P-BSO-832-10-Z
LENGTH CODE	P-BSO-832-10-Z
PLATING CODE	P-BSO-832-10-Z

P-BSOS (Stainless Steel Standard Size)	
PRODUCT CODE	P-BSOS-832-10
THREAD CODE	P-BSOS-832-10
LENGTH CODE	P-BSOS-832-10

SELF-CLINCHING STAND-OFFS

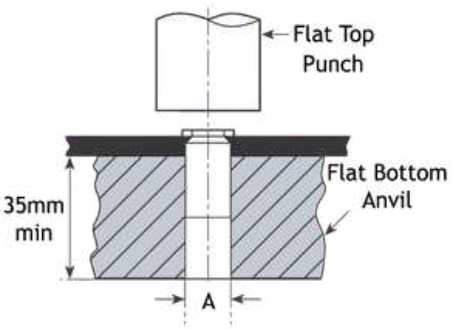
SELF-CLINCHING STAND-OFFS are easy to install because no special tooling is necessary. However, it is very important to note that they must always be installed by a squeeze action press rather than a hammer blow.

Punched holes are always recommended.

METHODS OF ASSEMBLY

- Punch a hole in the metal sheet to the size recommended in our technical data table. De-burring of the hole is not recommended.
- Insert the stand-off through the hole in sheet and into the "anvil" as shown in the drawing.
- Apply squeezing pressure sufficient to embed hexagonal head flush in sheet.

THREAD SIZE		A' = HOLE IN ANVIL	
METRIC	UNIFIED	MM	INCHES
2.5/3	440	4.3 - 4.4	.169 - .173
3.5m3	6440	5.5 - 5.6	.217 - .220
3.5	632	5.5 - 5.6	.217 - .220
4	832	7.2 - 7.3	.283 - .287
5	1032	7.2 - 7.3	.283 - .287



SELF-CLINCHING STAND-OFFS

PERFORMANCE DATA (METRIC)

THREAD CODE	STAND-OFF TYPE	TEST SHEET MATERIAL					
		1.5mm COLD ROLLED STEEL			1.5mm 5052-H34 Aluminum		
		Installation (kN)	Pushout (N)	Torque-out (Nm)	Installation (kN)	Pushout (N)	Torque-out (Nm)
M2.5	Steel	10	1200	2.0	5.5	820	1.40
	Stainless Steel	10	1200	2.0	5.5	820	1.40
	Aluminium	NA	NA	NA	5.5	820	1.40
M3	Steel	10	1200	2.2	5.5	820	1.40
	Stainless Steel	10	1200	2.2	5.5	820	1.40
	Aluminium	NA	NA	NA	5.5	820	1.40
3.5M3	Steel	15	1700	2.2	8.5	1260	1.80
	Stainless Steel	15	1700	2.2	8.5	1260	1.80
	Aluminium	NA	NA	NA	8.5	1260	1.80
M3.5	Steel	15	1700	3.9	8.5	1260	2.65
	Stainless Steel	15	1700	3.9	8.5	1260	2.65
	Aluminium	NA	NA	NA	8.5	1260	2.65
M4	Steel	18	2550	8.8	11	1850	5.65
	Stainless Steel	18	2550	8.8	11	1850	5.65
	Aluminium	NA	NA	NA	11	1850	5.65
M5	Steel	18	2550	8.8	11	1850	5.65
	Stainless Steel	18	2550	8.8	11	1850	5.65
	Aluminium	NA	NA	NA	11	1850	5.65

PERFORMANCE DATA (UNIFIED)

THREAD CODE	STAND-OFF TYPE	TEST SHEET MATERIAL					
		0.60" Cold Rolled Steel			0.60" 5052-H34 Aluminium		
		Installation (lbs)	Pushout (lbs)	Torque-out (in/lbs)	Installation (lbs)	Pushout (lbs)	Torque-out (in/lbs)
440	Steel	2200	270	20	1200	185	13
	Stainless Steel	2200	270	20	1200	185	13
	Aluminium	NA	NA	NA	1200	185	13
6440	Steel	3300	380	20	1900	285	13
	Stainless Steel	3300	380	20	1900	285	13
	Aluminium	NA	NA	NA	1900	285	13
632	Steel	3400	380	35	1900	285	24
	Stainless Steel	3400	380	35	1900	285	24
	Aluminium	NA	NA	NA	1900	285	24
8632	Steel	4000	575	35	2500	415	30
	Stainless Steel	4000	575	35	2500	415	30
	Aluminium	NA	NA	NA	2500	415	30
832	Steel	4000	575	78	2500	415	50
	Stainless Steel	4000	575	78	2500	415	50
	Aluminium	NA	NA	NA	2500	415	50
32	Steel	4000	575	78	2500	415	50
	Stainless Steel	4000	575	78	2500	415	50
	Aluminium	NA	NA	NA	2500	415	50

Note: The above values are averages when correct installation is performed. Variations in hole size, material and installation will affect these results. For specific advice we strongly recommend consultation with your PSM Technology Centre.

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FLANGEFORM® NUTS



ADVANTAGES

- High strength attachment point in thin materials.
- Accurate & positive positioning.
- High bending moment resistance.
- One fastener type per size covering material thickness range.
- No weld splatter / fumes – environmentally friendly process.
- Provides a flush mounting surface.
- Provides exceptional strength from both sides of the mating sheet, unlike traditional clinch fasteners which provide exceptional strength from only one side of the mating sheet.
- Can be installed into 2 layers of material.
- Ideally suited to multiple insertion and automated assembly in die or off line.

Flangeform® Clinch Nuts are threaded fasteners with unique ribs designed for installation into thin gauge materials. The fastener plunges the prepunched hole and wraps itself around the material whilst the ribs embed themselves providing an integral high strength attachment point.

PROCESS

HOLE PREPARATION
A pre-punched or drilled hole is required with a tolerance of +/- 0.1mm. Refer to product data sheet for hole sizes

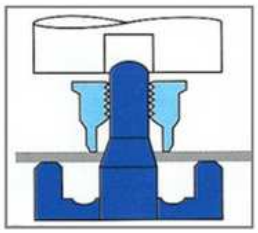
SHEET PREPARATION
Flangeform®is suited up to 80Rb material hardness.

SHEET THICKNESS
Refer to the product data sheet for material thickness range.

INSTALLATION
Can be used on progression, transfer, off-line mechanical / hydraulic presses using auto-fed or manual technique.

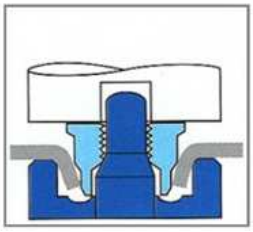
TOOLING
Mini-Die (bottom tool) will vary depending upon the material thickness, hole size and hardness.

LOCATION



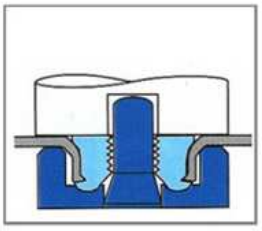
Material is placed over the mini-die and radially located on the pin.

PLUNGING



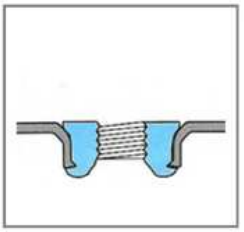
Force is applied to the nut/ stud which enables it to plunge the material.

WRAPPING



The nut/stud is formed around the parent material by the profile of the mini-die.

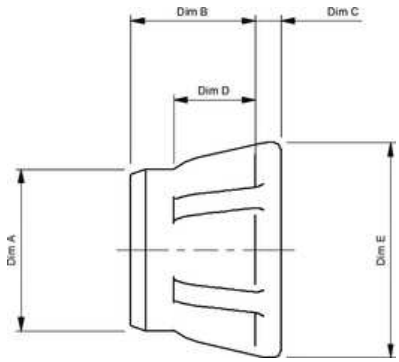
INSTALLED



The nut is flush and integral with the component.

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FLANGEFORM® NUTS
TECHNICAL DATA





Thread Size		Can Dia. A	Overall Height B	Spline Length D	Fiange Dia. E	Material mm	Hole Size Typical	Tonnage Typical
Unified	Metric							
-	M4	6.63	5.13	2.85	8.8	0.7	4.6	3
						1	4.6	3
						1.2	4.6	3
						1.5	4.7	3.5
10-32	M5	8.25	7.68	4.25	10.9	0.7	4.8	3.5
						1	4.8	3.5
						1.2	5.5	4
						1.5	5.7	4.5
						2	5.8	5
1/4	M6	9.9	9.18	5	13.17	0.7	5.1	4
						1	5.1	4
						1.2	5.9	4.5
						1.5	6.5	5.5
						2	6.5	6
						2.5	6.6	8
5/16	M8	13.29	10.85	5.65	17.6	0.7	6.9	5
						1	6.9	5
						1.2	8	5.5
						1.5	8	7.5
						2	8.5	8
						2.5	8.6	9.5
						3	8.9	10
7/16	M10	16.48	12.58	6.45	21.75	1	9.4	8
						1.2	9.4	8.5
						1.5	10	9.5
						2	10.3	10
						2.5	11.4	11.5
						3	11.6	12
1/2	M12	19.9	16.23	8.75	26.3	1.5	11.1	16
						2	12.1	16.5
						2.5	13.1	17
						3	13.1	17.5

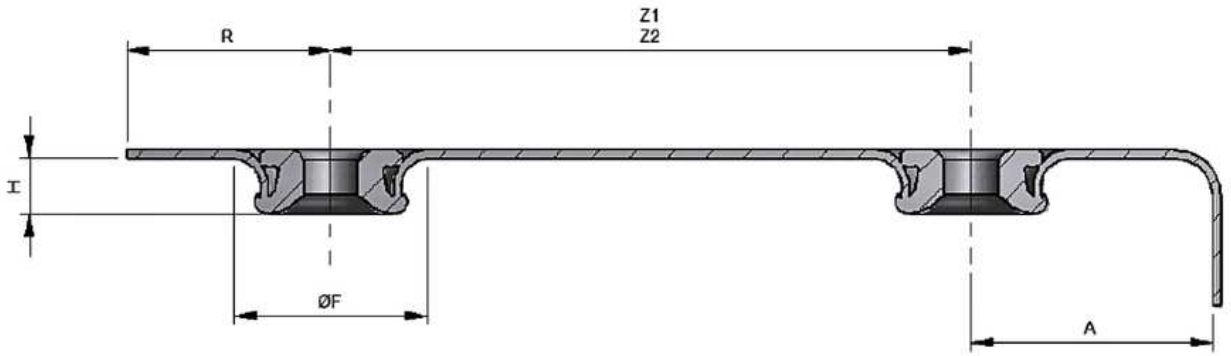
MATERIAL
Nuts
Steel BS EN ISO 10263-2.
Finished nuts to conform to BS3692 Grade 8 mechanical properties. Other materials are available.

THREAD
Standard ISO Metric coarse pitch series to ISO 965/BS 3643-6H. Gauge tolerances in accordance with ISO 1502 / BS919 used to determine thread acceptability. After plating, threads must be capable of accepting a Go gauge of basic size. Other thread forms available.

FINISH
Zinc & Clear trivalent passivation as standard, other plating finishes available.

PSM International
www.psmfasteners.com

FLANGEFORM® NUTS
INSTALLATION DATA



Flangeform studs manual emplacement data.						
Nut size	Dimension H	Dimension ØF	Dimension R min	Dimension A min	*Dimension Z1	*Dimension Z2
M4	2.5	9.5	7.0	9.0	16.0	13.0
M5	3.8	12.5	8.5	10.0	19.0	16.0
M6	4.00-5.0	15.0	10.0	12.0	22.0	19.0
M8	5.5-7.5	19.0	14.0	15.0	28.5	24.0
M10	6.5-8.5	25.4	17.0	20.0	38.0	32.0
M12	10.2-10.7	35.0	25.0	27.0	48.0	44.0

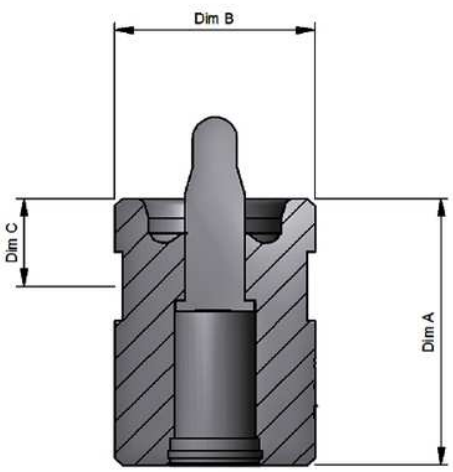
***Dimension Z1 When nuts are emplaced manually simultaneously.**
***Dimension Z2 When nuts are emplaced manually one at a time.**

These dimensions relate to when standard mini–dies are used. Mini-dies can be modified & tailored to customer needs to achieve closer A & Z dimensions.

MINI DIE INSERTION TOOL DIMENSIONS ®

Mini-die tools are specific for each metric / imperial size of Flangeform nut and material thickness. This data is required to choose the correct mini-die for the application.

Size	Height A	Diameter B	Groove Centre C
M4	20.70/20.80	15.989/16.000	8
M5	27.55/27.65	18.989/19.000	8
M6	32.00/32.10	21.963/21.975	12.5
M8	38.00/38.10	28.463/28.475	12.5
M10	54.00/54.10	37.963/37.975	12.5
M12	66.10/66.00	44.980/45.000	21



FLANGEFORM® NUTS
HOW TO SPECIFY

- **Product code** – High Torque Spline feature is product code 10, the standard spline feature is product code 20.
- **Thread code** – Refer to thread code matrix.
- **Grade & plating code** - Grade 8 is H, 9 is J. Standard plating is Zinc & Clear trivalent passivation (W).

Part Number Layout/Meaning		
Product	Thread	Grade & Finish
10	M06	HW
10	M06	HW
10	M06	HW

THREAD CODE MATRIX



		M					
		4	5	6	8	10	12
Metric	Coarse - 6H	M04	M05	M06	M08	M10	M12
	Coarse - 6E	E04	E05	E06	E08	E10	E12
	Fine	N04	N05	N06	N08	N10	N12

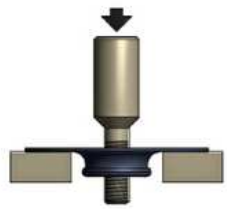
Unified	Coarse	8-32	10-24	12-24	1/4-20	5/16-18	3/8-16	7/16-14	1/2-13
		CEG	CTE	CTV	C04	C05	C06	C07	C08
	Fine	8-36	10-32	12-28	1/4-28	5/16-24	3/8-24	7/16-20	1/2-20
		FEG	FTE	FTV	F04	F05	F06	F07	F08

PERFORMANCE DATA

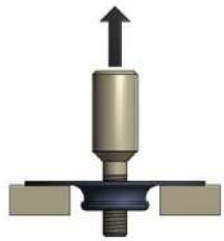
Nut Size	Material Thickness mm	Cold Rolled Mild Steel		
		Push-out Kn	Pull-out Kn	Torque-out Nm
M5	0.7	3	4	9
	1	7	7	9
	1.5	9	10	9
M6	0.7	3.9	4.7	19
	1	7.3	7.4	19
	1.5	11.9	11	19
	2	14	11.5	19
M8	0.7	4.8	4.5	
	1	6.5	9.7	36
	1.5	13.1	16	36
	2	17	16	36
	2.5	27.9	18	36
M10	1	7.3	9.6	
	1.5	10.8	15.2	80
	2	16.7	20	81
	2.5	28	20	84
	3	29	20	86
M12	1.5	26	18	100
	2	44	24	114
	2.5	44	28	140
	3	45	31	140



Torque Out



Push Out



Pull Out

Note: The data provided above is for general guidance only and may vary depending upon material, hole size, tonnages & tooling. For specific advice and data please contact BAS Components technical centre.

OTHER SHEET METAL FASTENERS



PSS
SELF-CLINCHING CAPTIVE SCREW FOR CLIP MOUNTING OF CIRCUIT BOARDS



PSKC
SELF-CLINCHING STANDOFF FOR PRINTED CIRCUIT BOARDS



MPS
MINIATURE SELF-CLINCHING NUT



PPL
SELF-CLINCHING SELF-BLOCKING NUT WITH NYLON INSERT



PLA / PA
SELF-CLINCHING FLOATING NUT



PB
SELF-CLINCHING BLIND NUT



PSL
SELF-CLINCHING SELF-BLOCKING NUT



PPF2P
FLUSH-MOUNTED SELF-CLINCHING CAPTIVE PANEL SCREW



PPF3
WIDE-HEAD SELF-CLINCHING CAPTIVE PANEL SCREW



PPF2
STANDARD-HEAD SELF-CLINCHING CAPTIVE PANEL SCREW



PTP
SMOOTH-SHANK SELF-CLINCHING STUDS



PSK
SELF-CLINCHING HEX NUT



HPFH
WIDE-HEAD SELF-CLINCHING STUD



PFHL
SMALL-HEAD SELF-CLINCHING STUD



GRIPFORM
SHEET-METAL NUT



ARB-TANK
BLIND ANCHOR RIVET BUSH



SLS
SELF-LOCKING SELF-CLINCHING NUT



PKFH
BROACHING STUD FOR PRINTED CIRCUIT BOARDS



FLANGEFORM
CLINCH STUD



ASL
SELF-LOCKING ANCHOR RIVET BUSH

Contact PSM for more information

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THREADED SPACERS & SUPPORT PILLARS

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THREADED SPACERS & SUPPORT PILLARS

SPA 01/02/03

Reference and Dimensional Specifications(mm)

HEXAGONAL SPACERS



ADVANTAGES

- Easily Attached.
- Suitable for high temperature applications.
- High strength.
- Precision reusable threads.

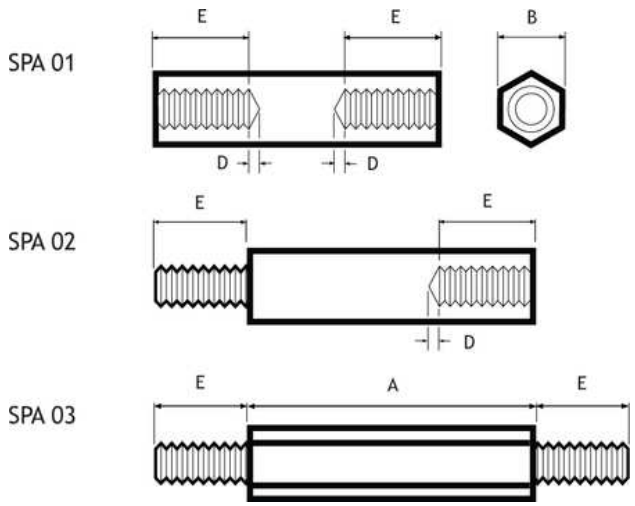
SPA Series

Threaded Spacers and Support Pillars provide a convenient means of spacing panels and/or other components with standard nuts and machine screws. Types are available with reuseable threads, for high temperature applications and where high electrical insulation is required.

MATERIALS AVAILABLE

B - Brass (electro nickel plated).
SS - Stainless steel 18/8.
S - Mild Steel (zinc plated).
AC - Acetal

SPA 01/02/03
HEXAGONAL SPACERS



THREAD SIZE (METRIC)	THREAD SIZE (UNIFIED)	Dim.AF B	E	D
M2	2.56	4.0	4.0	2.0
M3	4.40	5.0	6.0	2.5
M3.5	6.32	6.0	7.0	3.0
M4	8.32	7.0	8.0	3.0
M5	10.32	8.0	10.0	3.5
M6	1/4 UNC	10.0	10.0	4.5

SPACER LENGTH A +/- 0.1						
	5.0	6.0	8.0	10.0	12.0	14.0
	16.0	18.0	20.0	25.0	30.0	35.0
	40.0	45.0	50.0	55.0	60.0	-

SPA 04/05/06 ROUND ACETAL SPACERS

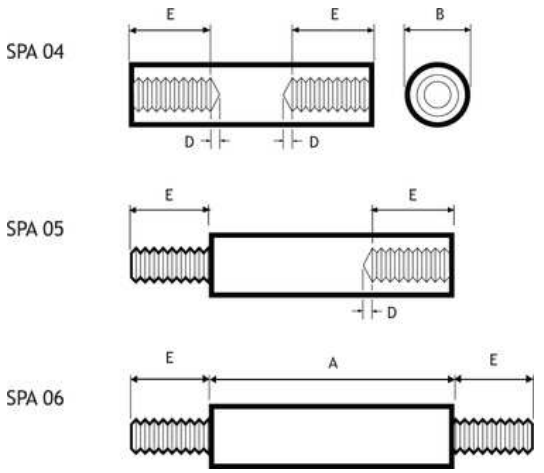


SPA 04/05/06

ROUND ACETAL SPACERS

ADVANTAGES

- High electrical insulation.
- Lightweight.
- High strength plastic.
- Good thermal stability.



MATERIAL:

AC - Acetal

THREAD SIZE (METRIC)	THREAD SIZE (UNIFIED)	Dia. B	E	D
M2	2.56	5.0	4.0	2.0
M3	4.40	6.0	6.0	2.5
M3.5	6.32	6.0	7.0	3.0
M4	8.32	8.0	8.0	3.0
M5	10.32	10.0	10.0	3.5
M6	1/4 UNC	12.0	10.0	4.5

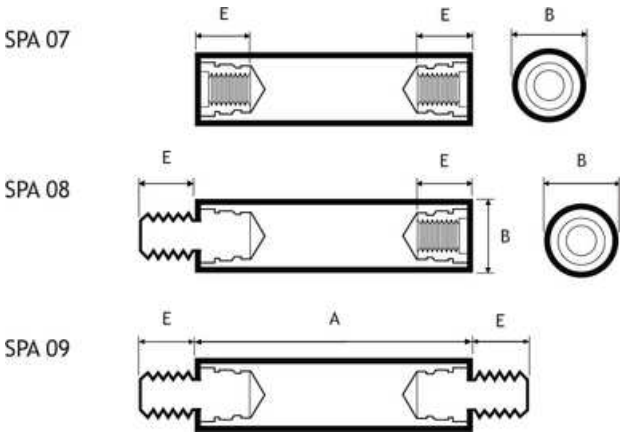
SPACER LENGTH A +/- 0.1						
	5.0	6.0	8.0	10.0	12.0	14.0
	16.0	18.0	20.0	25.0	30.0	35.0
	40.0	45.0	50.0	55.0	60.0	-

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SPA 07/08/09 HIGH STRENGTH INSULATING SPACERS

SPA 07/08/09
HIGH STRENGTH INSULATING SPACERS

ADVANTAGES
- Acetal spacers incorporating permanently retained brass Inserts or studs.
- high strength reusable threads.



MATERIAL:
AB - Acetal with Brass insert.

THREAD SIZE (METRIC)	THREAD SIZE (UNIFIED)	B	E	MINIMUM LENGTH
M3	4.40	7.0	4.0	14.0
M3.5	6.32	8.0	5.0	16.0
M4	8.32	10.0	6.0	20.0
M5	10.32	12.0	7.0	22.0
M6	1/4 UNC	12.0	8.0	25.0

SPACER LENGTH A +/- 0.1						
	14.0	16.0	18.0	20.0	25.0	30.0
	35.0	40.0	45.0	50.0	55.0	60.0

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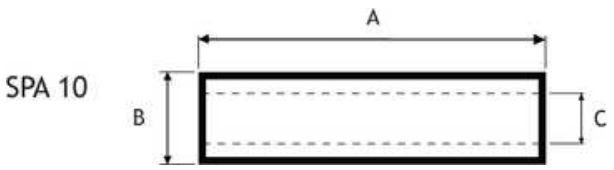
SPA 10 ROUND PLAIN HOLE SPACERS



SPA 10
ROUND PLAIN HOLE SPACERS

ADVANTAGES

- Spacers with through holes.
- Light weight.
- Good thermal stability for Acetal.



MATERIALS:

AC - Acetal.
B - Brass (electro nickel plated).
SS - Stainless steel 18/8.
MS - Mild Steel (zinc plated).

SIZE CODE	DIA B	DIA C	TO ACCOMMODATE SCREW SIZE (METRIC)	TO ACCOMMODATE SCREW SIZE (UNIFIED)
22	5.0	2.2	M2	2.56
33	6.0	3.2	M3	4.40
35	6.0	3.7	M3.5	6.32
44	8.0	4.2	M4	8.32
55	10.0	5.2	M5	10.32
66	12.0	6.4	M6	1/4 UNC

SPACER LENGTH A +/- 0.1				
	5.0	6.0	8.0	10.0
	12.0	14.0	16.0	18.0
	20.0	25.0	30.0	

THREADED SPACERS & SUPPORT PILLARS
PRODUCT INFORMATION

Type SPA01

Where body length is less than the combined depths of thread shown, thread length is total length of spacer.

Type SPA02

Where body length is insufficient to allow full depth of thread, maximum thread length will be body length minus D to allow for drill point and tapping clearance.
For example: — M2 thread in 5mm body would only have 3mm of thread (5mm minus 2mm).

Type SPA04

Where body length is less than the combined depths of thread shown, thread length is total length of spacer.

Type SPA05

Where body length is insufficient to allow full depth of thread, maximum thread length will be body length minus D to allow for drill point and tapping clearance.

HOW TO SPECIFY

PRODUCT CODE	SPA02-B-M3-8.0
MATERIAL CODE	SPA05-AC-M3-8.0
THREAD SIZE / SIZE CODE	SPA08-AB-M3-14.0
LENGTH	SPA08-AB-M3-14.0

Material and mechanical properties can be advised by your local Tech Centre.

If the dimensions of the spacers shown do not meet your requirements, contact your local sales office, special parts can be made to order.

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FASTENERS FOR SPECIAL MATERIALS

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FASTENERS FOR SPECIAL MATERIALS

INTRODUCTION

The introduction of new materials and their successful use by designers are usually dependent on a mechanical fastening system to allow dismantling for adjustment, servicing or repair.

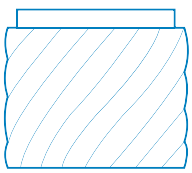
The captive fasteners shown in this catalogue have been designed to meet the needs of designers who require the strength of a steel thread when using lightweight alloys such as magnesium and resin based printed circuit boards.

The information in this catalogue is intended as a general guide.

For further advice please consult your local PSM Sales Engineer or our Applications Engineers.

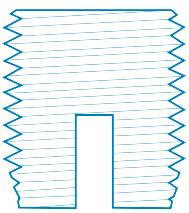
The PSM Technology Centre can also provide pre-production test facilities for accurate performance data.

PRECISION HARDENED INSERTS & STUDS



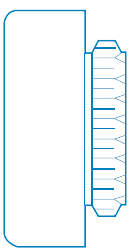
These fasteners have been designed to provide a hardened steel thread to resist tensile and torsional loading in the softer aluminium and zinc based diecastings.

HARDENED STEEL SCREW-SERTS®



The Screw-sert ®range of fasteners have been designed to provide a hardened steel thread in the softer aluminium and zinc based diecastings, magnesium and thermosetting plastics.

PRINTED CIRCUIT BOARD FASTENERS



These fasteners have been designed to provide a metallic deep tapped thread into resin based printed circuit boards.

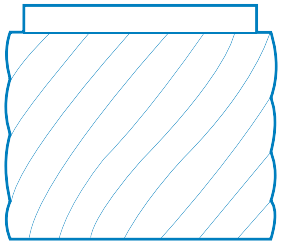
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PRECISION HARDENED INSERTS & STUDS



PRECISION HARDENED INSERTS & STUDS have been designed to provide a hardened steel thread to resist tensile and torsional loading in the softer aluminium and zinc based diecastings.

The external spiral knurl cuts into the parent material reducing radial stresses in the casting.



ADVANTAGES

- Easy assembly with any squeeze press
- Low bursting stress allows the use of thinner walled bosses
- Steel thread provides a high degree of reusability
- Installed into plain cored hole
- Eliminates tapping opeprations

DESIGN GUIDE

JOINT DESIGN

To achieve optimum pull-out performance the joint must be designed with a stationary mating component in contact with the face of the insert.

HOLE PREPARATION

Holes may be cored or drilled. The taper on a cored hole should be 0.5~ inclusive and the hole diameter recommended should apply at the point reached by the bottom of the insert.

INSTALLATION

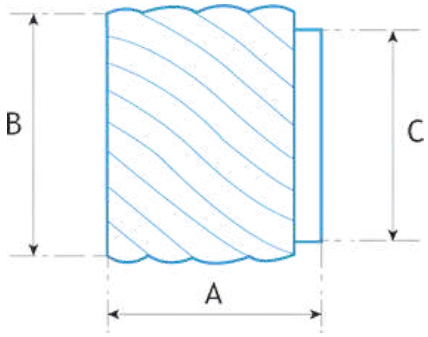
See page 140.

WALL THICKNESS

The minimum wall thickness will vary with the ductility of the diecasting alloy, but as a general guide wall thickness should not be less than the nominal thread diameter.
Specific use of materials like magnesium and applications requiring thinner boss walls may require subtle changes to the design of the insert. In either case consultation with the PSM Technology Centre or local sales office and pre-production testing is essential.

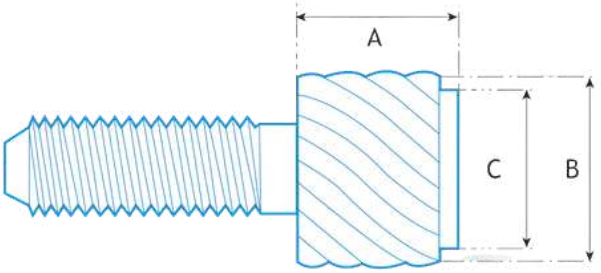
PSM International
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PRECISION HARDENED INSERTS & STUDS
TECHNICAL DATA



PRODUCT CODE PHI

STANDARD MATERIAL - Case Hardened Mild Steel
STANDARD FINISH - Zinc & Chromate



PRODUCT CODE PHS

DIMENSIONS

INTERNAL THREAD SIZES		A LENGTH	B KNURL DIAMETER	C PILOT DIAMETER	RECOMMENDED HOLE SIZE
UNIFIED	ISOMetric	mm	mm	mm	mm
4	2.5	4.5	5.3	4.8	4.85
-	3	4.5	5.3	4.8	4.85
6	3.5	5.6	6.2	5.5	5.60
8	4	6.9	7.7	7.1	7.20
10	5	6.9	7.7	7.1	7.20
1/4	6	9.5	10.3	9.5	9.60

STUD LENGTHS - Lengths Available ('L')

MILLIMETRES	5	6	8	10	12	14	16	18	20
INCHES	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8

HOW TO SPECIFY

PHI		PHS	
PRODUCT CODE	PHI-M3	PRODUCT CODE	PHS-M3-10
THREAD SIZE	PHI-M3	THREAD SIZE	PHS-M3-10
		LENGTH	PHS-M3-10

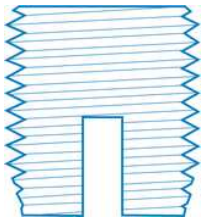
PSM International
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HARDENED STEEL SCREW-SERTS®



The PSM SCREW-SERT® range of fasteners have been designed to provide a hardened steel thread in the softer aluminium and zinc based diecastings, magnesium and thermosetting plastics. The external thread cuts into the parent material reducing radial stresses in the casting.

ADVANTAGES



- Steel thread provides high degree of reusability
- Eliminates tapping operations
- High pull-out resistance
- Installed into plain cored hole
- High mechanical strength enables use of reduced diameter fasteners
- Ideal where jack-out is unavoidable

WALL THICKNESS

A general guide to minimum wall thickness is given
in the table, but this will vary according to the ductility of the die casting alloy. Special modified inserts can be supplied to cater for applications where smaller bosses are required in certain materials such as magnesium.

Please contact PSM Technology Centre or your local sales office for assistance.

HOLE PREPARATION

Hole diameter will vary with the type of material used. For this reason the data table shows the hole size ranges for the different material classes.

Holes may be cored or drilled. The taper on a cored hole should be 1° inclusive and the hole diameter should apply at the point reached by the bottom of the insert.

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.

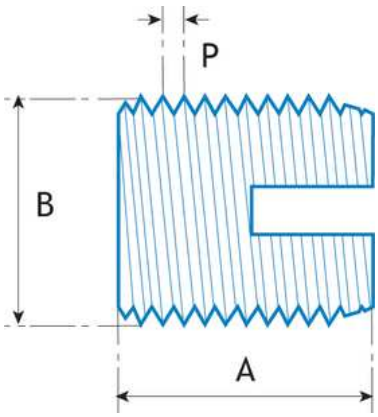
The depth of blind holes must be a minimum of 1.2 x insert length.

TYPE OF LOADING

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

HARDENED STEEL SCREW-SERTS®
TECHNICAL DATA

TECHNICAL DATA SCT



PRODUCT CODE SCT

STANDARD MATERIAL -
Case Hardened Mild Steel

DIMENSIONAL REFERENCES

INTERNAL THREAD SIZES		A	B	C	MINIMUM WALL THICKNESS
UNIFIED	ISO Metric	mm	mm	mm	
4	2.5	6.0	4.5	0.50	8.0
-	3	6.0	5.0	0.50	8.0
6	3.5	8.0	6.0	0.75	10.0
8	4	8.0	6.5	0.75	10.0
10	5	10.0	8.0	1.00	13.0
-	6g*	12.0	9.0	1.00	15.0
1/4	6	14.0	10.0	1.50	17.0
5/16	8	15.0	12.0	1.50	18.0
3/8	10	18.0	14.0	1.50	22.0
1/2	12	22.0	16.0	1.50	26.0
-	14	24.0	18.0	1.50	28.0
-	16	22.0	20.0	1.50	27.0

HIGH STRENGTH >320 N/mm ² (>35 H.BAR)	MATERIAL CLASS MEDIUM STRENGTH 235-320 N/mm² (25-35 H.BAR)	LOW STRENGTH <235 N/mm² (<25 H.BAR)
4.2 - 4.3	4.1 - 4.2	4.1 - 4.2
4.8 - 4.9	4.7 - 4.8	4.6 - 4.7
5.6 - 5.7	5.5 - 5.6	5.4 - 5.5
6.1 - 6.2	6.1 - 6.2	5.9 - 6.0
7.5 - 7.6	7.4 - 7.5	7.2 - 7.4
8.5 - 8.7	8.4 - 8.5	8.2 - 8.4
9.3 - 9.4	9.1 - 9.3	8.7 - 9.0
11.2 - 11.3	11.0 - 11.2	10.8 - 11.0
13.2 - 13.4	13.0 -13.2	12.8 - 13.0
15.2 - 15.4	15.0 - 15.2	14.8 - 15.0
17.2 - 17.3	17.0 -17.1	16.8 - 17.0
19.2 - 19.4	19.0 - 19.2	18.8 - 19.0

HOW TO SPECIFY

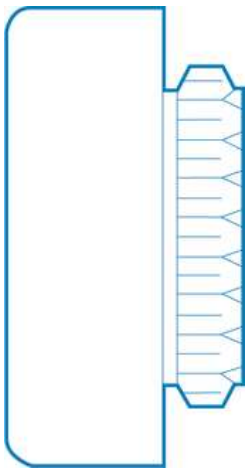
SCT	
PRODUCT CODE	SCT-S-M3
MATERIAL	SCT-S-M3
THREAD SIZE	SCT-S-M3

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PRINTED CIRCUIT BOARD FASTENERS



These fasteners have been designed to provide a metallic deep tapped thread into resin based printed circuit boards.



ADVANTAGES

- Simple Press-in Installation
- High Pull-Out
- Guaranteed not to crack brittle PCB

DESIGN GUIDE

HOLE PREPARATION

Holes must be held to a tolerance of -0.000 +0.075mm.

INSTALLATION

All Self-Broaching fasteners are easy to install as no special tooling is required. However - this must always be carried out using a squeeze action - never a shock load. (See page 140).

POSITIONING THE FASTENER

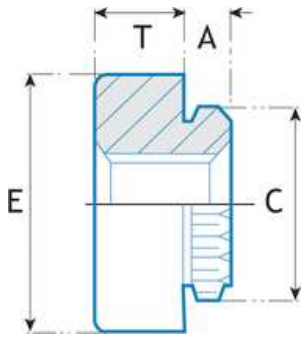
The recommendations given in the table must be closely followed to prevent chipping at the edge of the board.

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PRINTED CIRCUIT BOARD FASTENERS

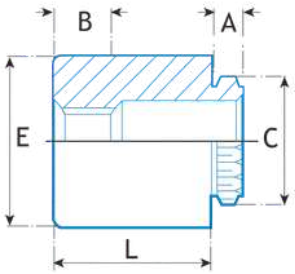
TECHNICAL DATA

BUSH



PRODUCT CODE PCBR

STAND-OFF



PRODUCT CODE SCBR

STANDARD MATERIAL - Mild Steel (Electrotinned)

DIMENSIONS

INTERNAL THREAD SIZES		A	B	C	T	E	HOLE SIZE IN BOARD	MINIMUM DISTANCE FROM CENTRE LINE TO BOARD EDGE
UNIFIED	ISO Metric	mm	mm	mm	mm	mm	mm	mm
2	2	1.5	2.0	4.06	1.5	5.54	3.7	3.5
-	2.5	1.5	2.0	4.55	1.5	5.54	4.2	4.5
4	3	1.5	2.0	4.55	1.5	5.54	4.2	4.5
6	3.5	1.5	2.0	5.74	2.0	7.00	5.4	5.0
8	4	1.5	3.0	6.68	2.0	8.72	6.4	6.5
10	5	1.5	3.0	7.24	3.0	9.53	6.9	7.0
1/4	6	1.5	6.0	8.66	6.0	10.00	8.3	8.0

STANDOFF - Lengths Available ('L')

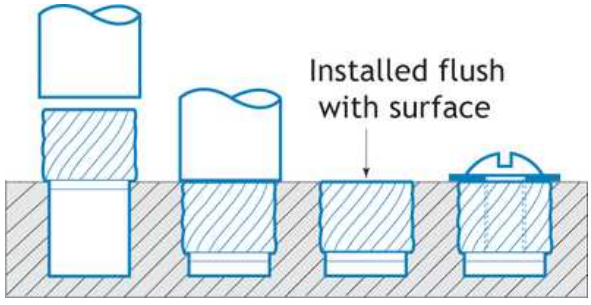
MILLIMETRES	3	4	5	6	8	10	12	14	18	20	25
INCHES	1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	3/4	7/8	1

HOW TO SPECIFY

PCBR		SCBR	
PRODUCT CODE	PCBR-M3	PRODUCT CODE	SCBR-M3
THREAD SIZE	PCBR-M3	THREAD SIZE	SCBR-M3
		LENGTH	SCBR-M3-10

RECOMMENDED INSTALLATION SEQUENCES

HOW TO SPECIFY

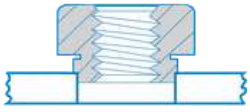


The insert must be installed by a steady squeeze action press with tooling that will allow the insert to rotate.

Care must be taken during installation to ensure that the insert is kept axially square, avoiding side loads that may damage the boss.

PRINTED CIRCUIT BOARD FASTENERS

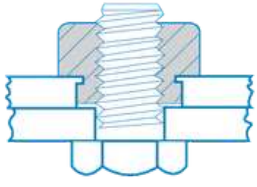
1. Form a hole in the material to size recommended and install the fastener square in the hole.



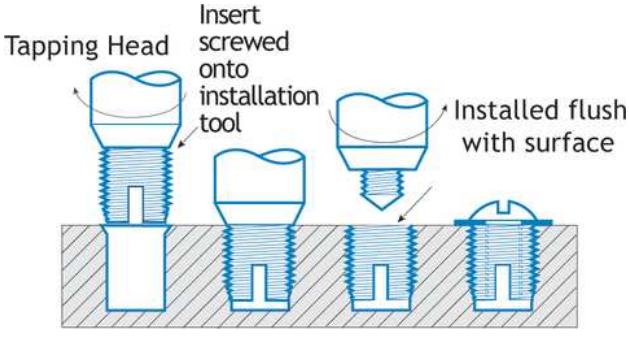
2. Apply pressure to the head of the fastener sufficient to totally install the broaching feature into the board, locking the fastener securely in place.



3 . Insert fixing screw or bolt from side opposite to the fastener head.



SCREW-SERT® INSERTS & STUDS



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.

TOTAL ASSEMBLY SOLUTIONS

PSM's philosophy is to provide a total package of fastener design, prototype production, application advice, installation systems and technical liaison for design and production engineers worldwide.

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COMPRESSION LIMITERS & CAPTIVE BOLT ASSEMBLIES

DESIGN GUIDE

HOLE DESIGN

Compression limiters can generally be installed into a standard 1.0° inclusive molded hole. However, the length of the compression limiter, required retention, maximum insertion force, and boss wall thickness should be considered when selecting the hole diameter. The hole taper should always produce a larger hole at the insertion side, to aide location and installation. In some instances a location counterbore is recommended particularly with Split types. For long compression limiters an interference fit may only be required over a reduced section of the compression limiter.

COMPRESSION LIMITER LENGTH

The common method used to determine the compression limiter length relationship to the plastic is the minimum plastic thickness, equals the maximum compression limiter length. With this method the force transferred to the plastic is minimised, at the same time it ensures the plastic component is securely clamped and prevented from moving.

Compression Limiters prevent damage to plastic assemblies by retaining the compressive force that would otherwise be applied directly to the plastic.

PSM has designed and manufactured a wide range of Compression Limiters and Compression Limiter Assemblies.

Specifying the most appropriate part will be dependent on the customer application. Wherever possible we recommend standard designs; however, application requirements frequently dictate a custom design, particularly with Compression Limiter Assemblies

PLASTIC BOSS WALL THICKNESS

The plastic boss wall thickness is very much dependant on the application requirements and molding design. The amount of stress / force transferred to the boss during installation and bolt assembly should always be considered. Based on typical applications we suggest a minimum wall thickness equal to 50% of the bolt diameter, this would equate to 3.0mm for a M6 compression limiter.

CUSTOM DESIGNS

Headed, Oval, Split and Compression Limiter Assemblies are “Custom Designs”, the form and sizes have to be specified to suit the particular application. Please contact PSM or your local representative – we would be pleased to review your application and propose the most cost-effective solution

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COMPRESSION LIMITERS & CAPTIVE BOLT ASSEMBLIES

Compression limiters and "captive bolt" Compression Limiter Assemblies (CLA) are available in a wide range of designs to suit application and assembly requirements. They are produced using a number of manufacturing methods and can be made from a range of materials, common variants are shown below.

SOLID



Solid compression limiters have a plain round inside and outside diameter and they are installed using a simple cold press method of installation. They offer high compressive strength, available in standard, high strength and custom ranges. Commonly made in steel by cold forming, brass and aluminium also available often made by machining.

HEADED



Headed compression limiters offer the benefits of the Solid tube, plus the addition of a head. The head can be placed at the mating face of soft materials like aluminium, to spread the induced load over a greater area, thus reducing the stress. The head can also be placed at the bolt face, if a greater contact area with the plastic is required. Double headed types can be made for over-molding, providing very high retention.

KNURLED



Knurled designs provide additional push-out resistance, often a requirement with short compression limiters. Complex knurled designs are available where designers want the compression limiter to be longer than the plastic thickness, thus totally isolating the plastic from the bolted joint. The knurl design then prevents movement of the assembled component.

OVAL



With some components, designers use an oval hole to datum their component to it's mating threaded component in one plane, whilst allowing radial clearance in the other.

SPLIT



Split compression limiters are produced from rolled strip, this process can offer cost benefits. However, they are generally used on less demanding application where tolerance, form, flatness and roundness are not so critical.

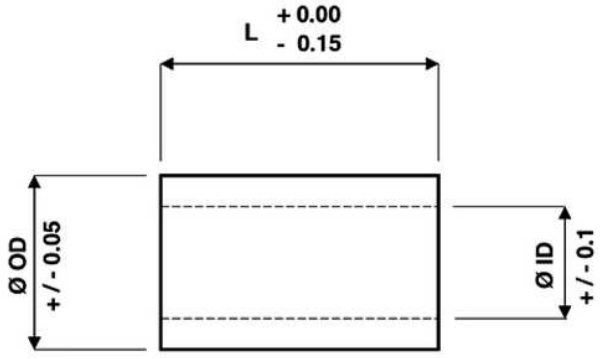
CLA



Compression Limiter Assemblies (CLA) combine the compression limiter and its mating bolt, they provide the necessary axial and radial float during bolt assembly. They eliminate bolt handling at the assembly stage and also provide logistical and procurement cost savings.

COMPRESSION LIMITERS & CAPTIVE BOLT ASSEMBLIES

STANDARD RANGES





Standard Material – Steel (S)
Standard Finish – Trivalent Zinc + Sealer (W)
Special Materials – Brass (B)
Aluminium (A)
Other finishes available on request

STANDARD – SCL200-SERIES

Bolt Size	ID	OD	Length Range	Hole Size
M4	4.8	6.70	4-12	6.50-6.60
M5	5.8	8.00	4-15	7.80-7.90
M6	6.8	9.20	4-20	9.00-9.10
M8	8.8	12.00	6-25	11.75-11.85
M10	10.8	14.75	8-30	14.50-14.60

HIGH STRENGTH – HCL350-SERIES

Bolt Size	ID	OD	Length Range	Hole Size
M6	6.8	10.15	4-20	9.95-10.05
M8	8.8	13.35	6-25	13.10-13.20

HIGH STRENGTH – HCL350-SERIES

Bolt Size	ID	OD	Knurl Dia	Length Range	Hole Size
M6	6.8	10.15	10.40	4-20	10.18-10.28
M8	8.8	13.35	13.70	6-25	13.40-13.50



How to specify – SERIES/ Bolt Size/ Length / Material/ Finish
Example – HCL350-M6-15-S-W

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SPRING, STEEL & PLASTIC FASTENERS

INTRODUCTION

From an anti-rattle can washer to a mobile phone belt clip, firewall fasteners to cable trunking fixings every application demands a different mix of spring steels attributes. Some need more strength than mild steel can provide. Others call for enhanced spring quality, while often it's a combination of both that's needed.

Whatever project, PSM will custom make spring steel pressings or its lightweight molded plastic products to suit. Giving designers of complex parts all the flexibility they want.

The secret lies in PSM's complete in-house resources, covering every aspect of a project from first design to final installation method. The whole process is tightly controlled through application engineering, product development (including rapid prototyping) and manufacture that uses all the latest techniques and machinery, such as the most advanced specification linear tooling and vision inspection equipment. The result? Total quality assurance for customers, whether we're designing a single component or a completely automated fastening system.

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PRODUCT INDEX

'U' TYPE NUTS
149-152



'U' TYPE NUTS RETAINERS
152



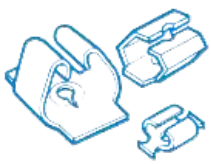
'J' TYPE NUTS
153-154



FLAT NUTS
155-156



EXPANSION NUTS
157



PREVAILING TORQUE NUTS
158



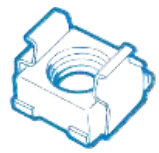
WELD NUTS
159



ANGLE NUTS
160



CAGE NUTS
161-162



KNOB CLIPS
163



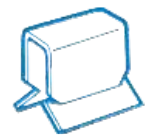
SPRING LATCHES
164



PUSH-ON-FIXES
165-166



EDGE CLIPS
167



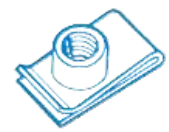
HOSE CLIPS
168



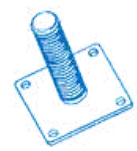
COMPRESSION RINGS
169-170



CAPTAR NUT RETAINERS
171



PLAS-STUDS
172



SPECIAL PARTS
173

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PRODUCT INFORMATION

The table should be used as a general guide only as the amount of tightening torque is dependent on the size or type of fastener. Approximately 50% higher torque can be obtained when using helical type thread forms and for heavy duty applications it is recommended that ACME screws are used.

It is important that fasteners are not overtightened as their holding power is solely dependent upon the spring tension of the fastening to effect thread locking.

RECOMMENDED INSTALLATION TORQUE

All threaded spring steel fastenings are designed to suit AB type sheet Metal Screws to BS 4174 or certain I.S.O. Metric and Imperial sized machine screws. In many cases they are fully interchangeable with other thread types as indicated below.

2BA is interchangeable with 10 UNF
3/16 BSW is interchangeable with 10 UNC
1/4 BSW is interchangeable with 1/4 UNC
14 AB is interchangeable with 1/4 - 12 ACME
14 AB is equivalent to 6.3 Metric Sheet Metal Screws
16 AB is interchangeable with 5/16 x 10
ACME Sheet Metal Screws

PROTECTIVE FINISHES

Below are listed finishes generally available, however some finishes may be subject to minimum order quantity.

RECOMMENDED INSTALLATION TORQUE

SCREW SIZE	lbs. ins	N.M.	SCREW SIZE	lbs. ins	N.M.
4	6	0.68	10 UNC	11	1.24
6	12	1.35	10 UNF	7	0.79
8	18	2.03	6 BA	2	0.23
10	24	2.71	4 BA	4	0.46
12	30	3.39	2 BA	7	0.79
14	42	4.75	6 mm	16	1.81
1/4 ACME	50	5.65	4 mm	6	0.69
5/16 ACME	75	8.48	1/4 BSW	20	2.26
2 BA	7	0.79			
3/16 BSW	11	1.24			

CODE	DESCRIPTION	COLOUR	USEAGE
00	Blue, oil dipped	Blue temper	Very light corrosive conditions
05	Clear Zinc RoHS CR3+	Silver	Highly corrosive conditions
09	Phosphate, oil dipped	Dark grey	Light corrosive conditions
13	Chromate passivated electro plated zinc	Pale translucent yellow	Highly corrosive conditions
08	Phosphate & zinc chromate paint	Green	Highly corrosive conditions
10	Phosphate & zinc chromate paint	Black	Highly corrosive conditions
11	Plastic coating	Black	As required
14	Polyester	Various	As required
22	Polyseal	Black	Highly corrosive conditions
24	Dacromet	Silver	Highly corrosive conditions

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'U' TYPE NUTS



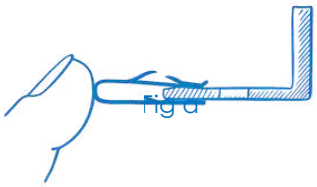
ADVANTAGES

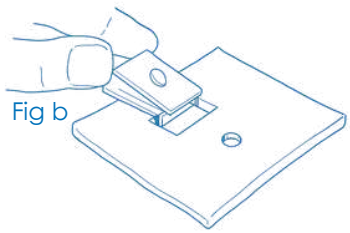
- No welding, staking or riveting
- Self-retaining and floating
- Self-locking and vibration proof
- Quick and easy to apply
- Lightweight
- Non-paint clogging

PSM 'U'-Nuts offer substantial savings in manufacturing costs. They can be applied quickly and easily into self-retaining position either over panel edges or to inside panel positions with most types providing a degree of float to allow for panel misalignment.

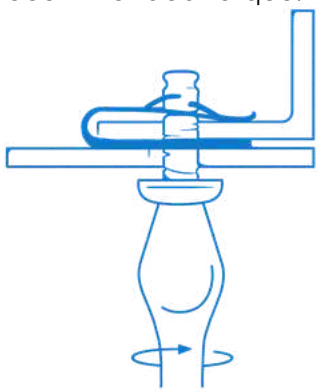
METHOD OF ASSEMBLY

1. The P.S.M 'U'-Nut is placed over the edge of the panel (Fig a) or through a pre-tamped slot (Fig b) and simply pushed home until the rear of the fastener locates against the panel/slot edge or the extrusion snaps the fastener into the clearance hole.


Fig a


Fig b

2. Insert screw through plain hole of fastener and tighten to recommended torque.



FEATURE CODE

- △ Prong type thread impression
- ◯ No panel locating tongue
- ▲ Earthing barbs
- \+ No lead on upper leg
- □ Reduced width on bend
- ● Helical thread impression


\+ No lead on upper leg


□ Reduced width on bend


◯ No panel locating tongue


● Helical thread impression

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'U' Type Nuts - CBUN SERIES

Part No.	Screw Size	A Length	B Width	C Panel Dim	D	T Thickness	H Panel Hole	Panel Range	Feature Code
0240	4	11.1	8.0	4.3	5.1	0.50	4.8	2.0 - 2.6	△
0238	4	11.1	8.0	4.8	5.1	0.50	4.8	0.71 - 1.2	△
0327	4	11.1	8.0	4.8	5.1	0.50	4.8	0.61 - 0.71	△
0331	6	11.1	8.0	4.0	4.7	0.50	5.2	2.1 -2.3	●
0374	6	9.4	8.0	3.0	5.3	0.56	3.96	1.98 - 2.06	●
0253	6	9.5	8.0	3.3	4.8	0.50	4.0	1.98 - 2.06	●○
0243	6	9.5	8.0	3.5	4.8	0.50	4.0	0.91	●
0246	6	9.5	8.0	3.5	4.8	0.50	4.0	1.2	●
0344	6	9.5	8.0	4.0	4.7	0.50	4.0	2.0 - 2.2	●○
0330	6	11.1	8.0	4.0	4.7	0.50	5.2	1.45 - 1.82	●
0262	6	11.1	8.0	5.5	4.8	0.50	5.2	0.91 - 1.2	●
0254	6	11.7	8.0	5.5	4.8	0.50	5.2	0.91 - 1.2	●▲
0371	6	11.7	12.0	6.1	6.35	0.56	7.13	2.41	●+
0280	6	12.7	12.7	6.3	6.3	0.56	4.0	2.4 - 2.7	●○+
0370	6	13.3	12.7	6.3	6.3	0.56	5.54	2.16 - 2.41	●+
0211	6	13.3	11.1	6.7	10.7	0.56	5.95	2.54 - 2.8	△
0210	6	17.2	11.1	6.7	7.9	0.56	7.2	0.71 - 1.6	△
0310	6	16.7	11.1	6.7	7.9	0.56	7.2	0.71 - 1.6	●
0333	6	15.0	11.1	6.7	7.9	0.56	7.2	2.5 - 4.0	△
0982	6	11	11.1	6.7	7.9	0.56	5.96	0.71 - 1.63	△○
0360	6	11.7	8.0	7.0	8.0	0.50	4.0	2.5 - 3.0	●○
1197	6	11.0	8	4.0	4.8	0.50	4	3	●○
1018	6	10.3	8	5.6	4.8	0.60	5.2	0.91 - 1.2	●
0353	8	10.3	12.7	3.8	5.6	0.56	4.8	1.62 - 1.83	●○▲+
0354	8	11.9	11.1	3.8	5.6	0.56	4.8	0.71 - 91	●○▲+
0224	8	11.9	8.7	4.4	4.8	0.56	6.8	1.2 - 1.6	△+
0225	8	11.9	10.3	4.8	5.6	0.50	6.35	0.81 - 96	△+
0226	8	11.9	10.3	4.8	5.6	0.50	6.35	1.14	△+
0227	8	11.7	10.3	4.8	5.6	0.50	6.35	1.22	△+
0251	8	13.9	10.3	4.8	5.6	0.50	6.35	0.81 - 96	△+□
0366	8	13.9	8.0	5.5	4.8	0.50	6.5	0.91- 1.2	●
0236	8	13.9	12.7	5.5	6.35	0.56	7.14	0.9 - 1.2	●
0244	8	13.9	12.7	5.5	5.35	0.56	7.14	0.55 - 1.0	●
0229	8	13.9	12.7	5.6	6.3	0.56	7.14	1.2 - 1.6	△
0230	8	13.9	12.7	5.6	6.3	0.56	7.14	0.56 - 1.2	△
0232	8	13.9	12.7	5.6	6.3	0.61	7.14	1.2 - 1.6	●
0235	8	13.9	12.7	5.6	6.3	0.56	7.14	0.56 - 1.2	●
0208	8	14.3	12.7	5.9	6.3	0.56	7.13	0.9 - 1.25	●△
0259	8	14.3	12.7	6.0	6.3	0.56	7.2	0.56 - 1.16	●▲
0281	8	14.3	12.7	6.0	6.3	0.56	7.2	0.56 - 1.6	●
1008	8	16.6	11.1	6.7	7.9	0.56	7.14	0.71 - 1.63	●○
0987	8	14.6	12.7	6.4	6.4	0.56	7.10	0.56 - 1.0	△
0206	8	16.0	11.1	6.7	7.9	0.56	6.36	4.32 - 4.82	△
0212	8	16.3	11.1	6.7	8.0	0.56	7.2	0.71 - 1.6	△
0242	8	16.3	11.1	6.7	8.0	0.56	7.2	2.03 - 2.80	△
0312	8	16.3	11.1	6.7	8.0	0.56	7.2	0.71 - 1.6	●
0213	8	17.4	11.1	6.7	8.0	0.56	7.2	2.5 - 4.0	△
0255	8	16.3	11.1	6.7	8.0	0.56	7.2	0.71 - 1.6	△▲
0267	8	17.1	11.1	6.3	8.0	0.56	6.35	3.2 - 3.6	△○
0257	8	16.5	11.1	7.13	8.0	0.56	6.35	0.5 - 1.78	●
0980	8	15.2	14.2	7.9	6.1	0.56	6.35	0.5 - 1.78	△
1196	8	13.5	9.3	7.0	4.8	0.60	6.00	2.25 - 3.0	●
0326	8	15.2	14.3	8.0	5.7	0.56	6.35	0.81 - 1.8	△
0277	8	17.8	11.1	8.0	8.0	0.56	7.1	0.71 - 1.6	△
0285	8	17.1	12.7	8.0	6.3	0.56	8.0	0.91 - 2.0	●▲
0367	8	19.0	12.0	8.0	8.6	0.56	7.1	3.0 - 4.0	△

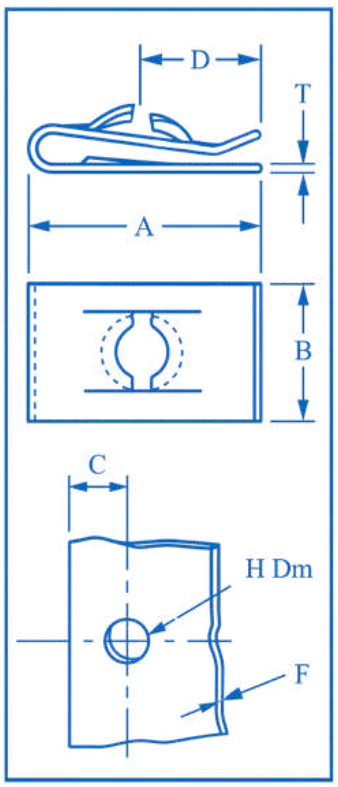
DIMENSIONS IN MILLIMETRES

Material

CS60, CS70 carbon steel, austempered or Type 300 series stainless steel.

WHEN SPECIFYING PLEASE STATE:

1. Quantity
2. Prefix (CBUN)
3. Part No.
4. Finish code
   e.g. 2000 CBUN-0212-13

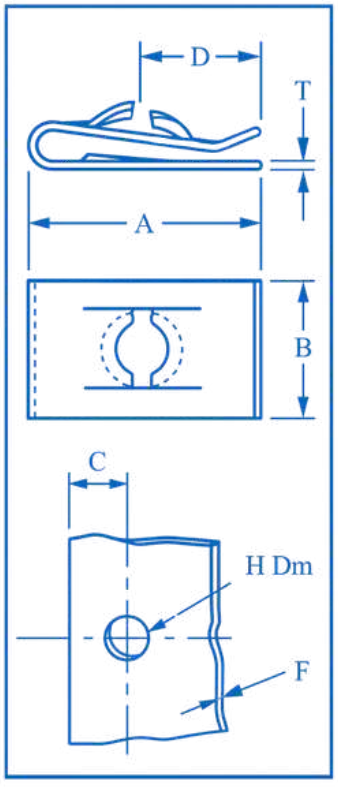


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'U' Type Nuts - CBUN SERIES

Part No.	Screw Size	A Length	B Width	C Panel Dim	D	T Thickness	H Panel Hole	Panel Range	Feature Code
0997	8	16.0	8.7	8.4	6.3	0.50	5.20	2.4	●○
0332	8	15.5	8.7	8.5	6.3	0.56	5.1	3.0 - 3.3	●○
0239	8	16.7	8.7	8.7	6.3	0.56	5.1	1.2 - 1.5	●○
0249	8	16.7	8.7	8.7	6.3	0.56	5.1	2.9 -3.1	●○
0272	8	25.4	9.5	12.7	8.3	0.56	7.1	0.71 - 3.0	△
0394	8	16.5	11.1	8.3	7.7	0.56	7.14	2.3 - 2.5	△▲
0364	8	23.0	11.1	13.5	8.0	0.71	5.6	3.56 - 4.16	△○
0261	8	24.6	11.1	14.3	8.0	0.56	7.1	0.71 - 1.6	△
0393	8	23.3	11.1	14.5	7.5	0.56	7.4	0.75 - 1.0	●
0342	8	27.4	12.7	18.3	8.0	0.56	6.8	2.02 - 2.64	△○
1045	8	10.3	12.7	3.8	5.6	0.56	4.8	1.6 - 1.8	●○▲+
1021	8	10.5	8.7	4.3	4.8	0.6	6.8	1.2 - 1.6	△○+
1017	8	11.7	10.4	4.7	5.6	0.5	6.3	0.7 - 1.0	△+
1048	8	16.5	11.1	6.7	8	0.56	7.2	0.7 - 1.6	△▲○
1164	8	15.2	14.3	7.9	5.7	0.6	6.3	0.8 - 1.8	△
1069	8	19.8	12.7	8	9.5	0.56	8	0.7 - 2.5	●
1230	8	15.7	8.7	8.7	6.2	0.56	5.5	2 - 2.4	●○
0223	10	12.3	15.9	5.6	5.6	0.71	8.0	0.91 - 1.5	△
0252	10	12.3	15.9	5.6	5.6	0.71	8.0	0.91 - 2.0	△□
0218	10	19.8	12.7	7.9	9.53	0.71	7.94	0.91 - 2.03	△
0284	10	19.9	12.7	7.9	9.53	0.56	7.94	0.91 - 2.03	△
0214	10	19.9	12.7	8.0	9.5	0.71	8.0	0.91 - 2.0	△
0250	10	19.9	12.7	8.0	9.5	0.71	8.0	0.91 - 2.0	△□
0215	10	19.9	12.7	8.0	9.5	0.71	8.0	2.0 - 2.4	△
0217	10	19.9	12.7	8.0	9.5	0.71	8.0	0.91 - 2.0	△
0287	10	17.1	12.7	8.0	6.3	0.56	8.0	0.91 - 2.0	●▲
0294	10	19.9	12.7	8.0	9.5	0.71	8.0	0.91 - 2.0	●
0295	10	19.8	12.7	8.0	9.5	0.71	8.0	1.63 - 2.03	●▲
0296	10	19.9	12.7	8.0	9.5	0.71	8.0	1.63 - 2.03	●
0241	10	19.9	12.7	8.0	9.5	0.71	8.0	1.22 - 2.03	△□
0274	10	25.4	12.7	14.3	8.5	0.71	7.2	0.71- 3.0	△
0992	10	30.7	12.7	18.8	9.6	0.71	8.1	0.71 - 1.0	△
1030	10	19.7	12.7	7.9	9.5	0.7	7.9	0.7 - 1.5	△□
1084	10	19.8	12.7	7.9	9.5	0.7	7.9	1.6 - 2	●○
0268	12	26.3	15.1	11.1	12.3	0.82	10.0	0.91 - 2.6	△
0297	12	23.6	15.1	12.7	9.2	0.91	9.5	0.91 - 2.6	●
0269	12	29.8	15.1	14.3	12.3	0.82	7.2	0.92 - 2.6	△○
1072	12	20.9	13	10	8.8	0.8	9.5	1.2 - 2.0	●
1226	12	21	15	9.5	10	0.9	9.5	5 - 6.5	●
0289	14	15.5	17.5	6.3	7.0	0.91	7.2	0.71 - 0.91	●○△
0339	14	15.5	17.5	6.9	7.0	0.91	7.0	0.7 - 0.9	●▲○
0337	14	22.6	16.0	10.3	10.4	0.91	8.7	0.7 - 0.9	●
0338	14	22.6	16.0	10.3	10.4	0.92	8.8	1.22 - 1.63	△
0266	14	27.0	14.3	12.7	12.3	0.91	11.1	0.61 - 1.9	●
0286	14	27.0	14.3	12.7	12.3	0.91	11.1	1.9 - 3.1	●
0260	14	27.0	15.9	13.5	11.5	0.91	11.1	0.91 - 1.2	●
1027	14	15.5	17.5	6.3	7	0.9	7	1.0 - 1.8	●▲○
1138	14	27	16	10.9	11.5	0.9	10	2.2 - 3.0	●
0335	M4	16.6	11.1	6.8	8.0	0.41	6.0	0.71 - 1.6	△
0205	M5	19.9	12.7	8.0	9.6	0.41	8.0	0.91 - 2.1	△
0376	M5	16.8	12.0	8.0	6.3	0.41	8.0	0.78 - 1.8	●
0349	M6	22.6	14.3	10.3	10.4	0.56	8.8	1.22 - 1.63	△
0305	M6	23.8	15.9	11.1	11.9	0.56	7.2	2.4 - 2.7	△○
0203	6BA	11.1	8.0	4.76	5.1	0.27	4.8	0.46 - 1.0	△
0216	2BA	19.9	12.7	8.0	9.6	0.41	8.0	0.91 - 2.1	△

DIMENSIONS IN MILLIMETRES



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'U' Type Nuts - CBUN SERIES

PART NO.	SCREW SIZE	A LENGTH	B WIDTH	C PANEL DIM	D	T THICKNESS	H PANEL HOLE	PANEL RANGE	FEATURE CODE
0220	3/16 WHIT	19.9	12.7	8.0	9.6	0.56	8.0	0.91 - 2.1	△
0256	3/16 WHIT	17.1	12.7	8.0	6.3	0.56	8.0	0.91 - 2.1	●▲
0221	1/4 WHIT	25.0	15.9	10.3	11.9	0.56	10.3	0.91 - 2.7	△○
0258	3/16 WHIT	24.6	9.5	14.26	8.71	0.50	6.35	0.56 - 1.0	○△
1217	10-24 UNC	16.5	11.1	6.7	7.9	0.6	7.2	0.7 - 1.6	△
0247	5/16 ACME	27.0	15.9	12.7	11.1	1.1	11.1	2.0 - 2.7	△
0248	5/16 ACME	27.0	15.9	12.7	11.1	1.1	11.1	0.91 - 2.7	△

DIMENSIONS IN MILLIMETRES

'U' Nut Retainers - CBUR SERIES



ADVANTAGES

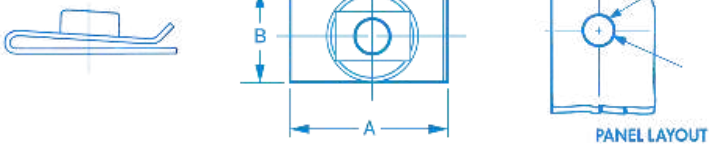
- High load bearing faces
- Enables high torque on machine screws
- Electro-plated finish not subject to embrittlement failure
- Removes need for expensive rivet bushes

PSM 'U'-Nut retainers have been developed for use where extra high torque and holding power is required.

METHODS OF ASSEMBLY

Exactly the same as conventional 'U-Nut.

DIMENSIONAL DATA & SIZES



MATERIAL

Carbon steel.

WHEN SPECIFYING PLEASE STATE:

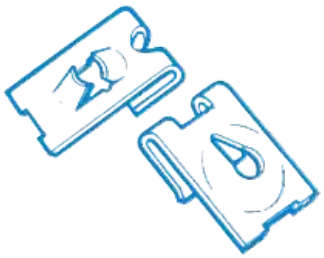
1. Quantity
2. Prefix (CBUR)
3. Part No.
4. Finish code
   e.g. 1000 CBUR-0170-13

PART NO.	THREAD SIZE	A	B	C	H	PANEL RANGE
0166	M5	26.2	15.9	11.1	9.5	0.71 - 1.62
0168	M6	26.2	15.9	11.1	9.5	0.71 - 1.62
0979	M6	26.0	15.9	11.1	9.5	2.0 - 2.2
0170	M8	31.8	17.5	15.1	12.7	0.71 - 1.62

Other thread sizes available on request.

PSM International
www.psmfasteners.com

'J' TYPE NUTS - GENERAL DESCRIPTION



ADVANTAGES

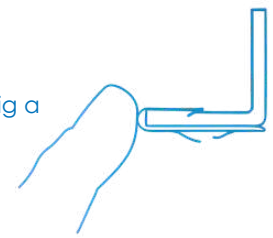
- All the benefits of the PSM 'U'-Nuts +
- Complete visibility of mounting hole
- No 'fouling' of panel corners in restricted dimensions

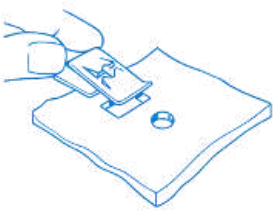
PSM 'J' type nuts though carrying the same advantages as 'U' Nuts have a shorter lower arm, particularly useful where complete visibility of the mounting hole is required.

METHOD OF ASSEMBLY

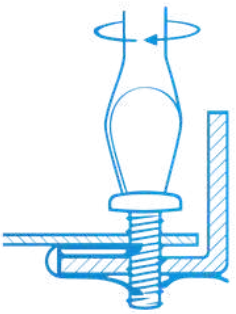
1. The PSM 'J'-Nut is installed in exactly the same manner as the 'U'-Nut, except when as in Fig (a) the panel return shows the particular advantage of the 'J'-Nut.

Fig a





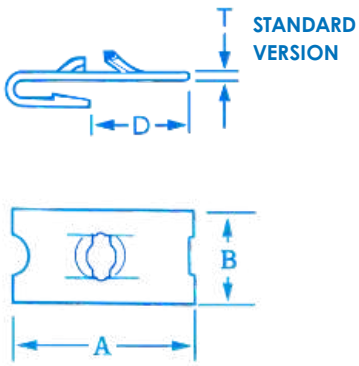
2. Insert screw through plain hole of fastener and tighten to recommended torque.

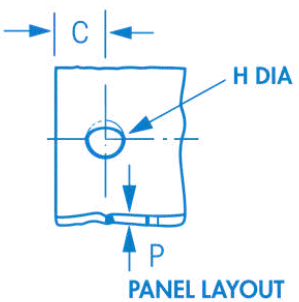


'J' Type Nuts - CBJN series

MATERIAL

CS60, CS70 carbon steel, austempered or Type 300 series stainless steel.





WHEN SPECIFYING PLEASE STATE:

1. Quantity
2. Prefix (CBJN)
3. Part No.
4. Finish code
   e.g. 2000 CBJN-0316-13

'J' TYPE NUTS - CBJN SERIES

PART NO.	SCREW SIZE	A	B	C	D	H	T	PANEL RANGE
0315	6	16.7	11.1	7.1	7.9	5.9	0.56	0.61 - 1.02
0314	6	16.7	11.1	7.1	7.9	5.9	0.56	1.22 - 1.62
0988	6	16.5	11.1	6.7	7.9	5.94	0.56	1.83 - 2.03
0316	8	16.7	11.1	7.1	7.9	7.1	0.61	0.71 - 1.22
0313	8	16.7	11.1	7.1	7.9	7.1	0.61	1.42 - 1.83
0341	10	15.9	17.5	7.1	7.1	8.0	0.71	0.81 - 1.0
0317	10	19.8	12.7	8.7	9.1	7.9	0.71	0.71 - 1.22
0343	10	19.8	12.7	8.7	9.1	7.9	0.71	1.42 - 2.03
0320	12	25.4	15.1	11.1	11.1	9.5	0.81	0.91 - 1.62
0347	12	25.4	15.1	11.1	11.1	9.5	0.81	1.83 - 2.64
0321*	14	24.6	14.3	11.9	11.1	9.5	0.81	0.71 - 1.22
0346	14	26.2	15.9	12.7	10.3	9.9	0.91	0.81 - 0.91
0322	1/4 ACME	17.7	19.0	8.0	7.6	8.74	0.91	0.91
0324	3/16 ACME	19.8	12.7	8.7	9.1	7.9	0.56	0.71 - 1.22
0318	1/4 ACME	26.2	15.9	12.7	10.3	9.9	0.91	0.91 - 1.62
0346	1/4 ACME	26.2	15.9	12.7	10.3	9.9	0.91	0.81 - 0.91

* Denotes Helical Thread Impression
1/4 ACME is interchangeable with a No. 14AB Screw.

FLAT NUTS - CBFN SERIES



ADVANTAGES

- One piece application
- No spanner usually required
- Vibration proof
- Self-locking
- Non-paint clogging
- Reusable

PSM 'Flat nuts' are one piece, heat treated, self-locking spring steel fasteners which provide the most inexpensive means of threaded fastening usually without the need for a spanner. They replace conventional threaded nuts and lock washers in low torque applications.

MATERIAL

CS60, CS70 carbon steel, austempered.

WHEN SPECIFYING PLEASE STATE:

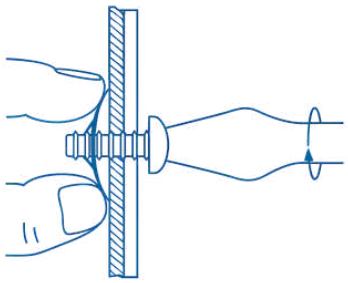
1. Quantity
2. Prefix (CBFN)
3. Part No.
4. Finish code

e.g. 2500 CBFN-0410-0

FLAT NUTS - CBFN SERIES

METHOD OF ASSEMBLY

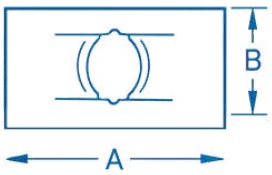
Hold fastener over the mounting hole in exactly the same manner as conventional nut and tighten screw up to recommended torque.



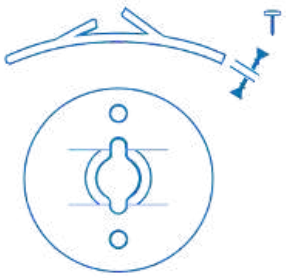
FEATURE CODE

● Helical thread impression

▲ Earthing barb



RECTANGULAR TYPE

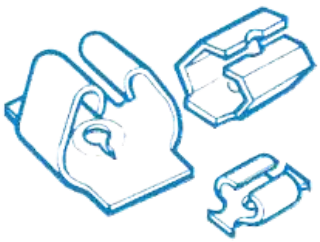


ROUND TYPE

PART NO.	SCREW SIZE	A LENGTH	B WIDTH	T THICKNESS	FEATURE CODE	TYPE
0410	6	13.5	8.7	0.51		Rect
0421	8	15.9	9.5	0.61	▲	Rect
0411	8	15.1	9.5	0.61		Rect
0426	8	18.8 dia	-	0.61		Round
0412	10	16.7	10.3	0.71		Rect
0425	M4	13.5	8.7	4.41		Rect
0442	M5	15.9	9.5	0.51		Rect
0416	10	15.9	9.5	0.56	▲	Rect
0415	1/4 Whit	19.1	12.7	0.61		Rect
0427	1/4 Whit	48.0 dia	-	0.61		Round

PSM International
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EXPANSION NUTS - CBEN SERIES



ADVANTAGES

- Vibration proof
- One side panel access
- High pull out retention
- Non-paint clogging
- Reusable
- Can be used in square or rectangular holes

PSM Expansion Nuts provide a secure vibration proof fastening to
panels where access is only available from one side of the panel.

MATERIAL

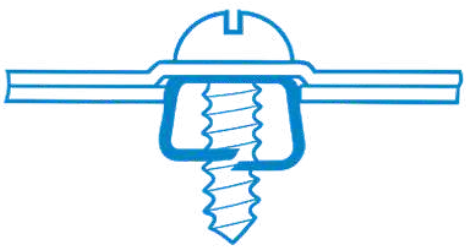
CS60, CS70 carbon steel, austempered.

WHEN SPECIFYING PLEASE STATE:

1. Quantity
2. Prefix (CBEN)
3. Part No.
4. Finish code
   e.g. 5000 CBEN-0264-13

METHOD OF ASSEMBLY

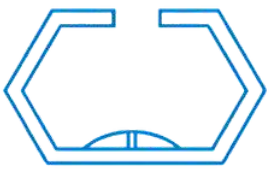
Push the expansion nut through either a square or rectangular hole in panel and simply tighten the screw down through the fastener.



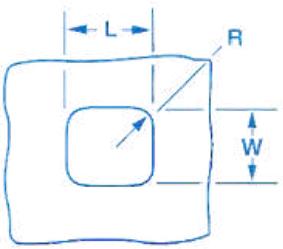
DIMENSIONAL DATA & SIZES



TYPE A



TYPE B



PANEL LAYOUT

PART NO.	SCREW SIZE	H	L	W	R	PANEL RANGE	TYPE
0264	8	7.1	10.3	10.3	0.38	0.81 - 1	B
0278	8	9.0	12.7	8.75	3.2	0.91 - 1.22	A
0345	8	4.8	9.5	6.9	0.76	0.71 - 1.01	B
0293*	8	4.8	9.1	6.9	0.76	0.71 - 1.01	B

* Denotes with earthing barbs
Dimensions in millimetres

PSM International
www.psmfasteners.com

PREVAILING TORQUE NUTS - CBTN SERIES



ADVANTAGES

- Higher installation torque than conventional U-Nuts
- High vibration resistance
- Screw will not loosen even in low torque applications
- Non-paint clogging
- Re-usable

PSM Prevailing torque nuts are a development on the standard U-Nuts for use in applications where high torque and/or extreme vibration is encountered.

METHOD OF ASSEMBLY

Exactly the same as conventional U-Nut.

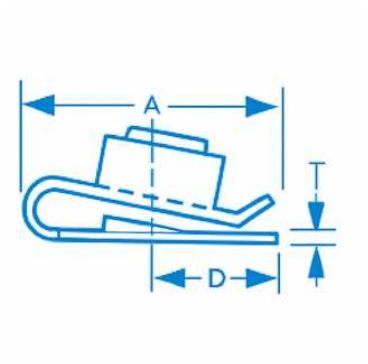
MATERIAL

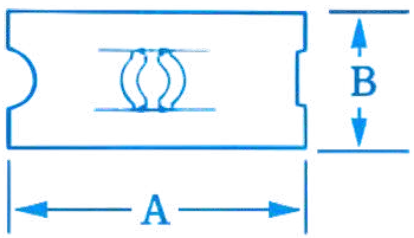
CS50, CS60 carbon steel, austempered.

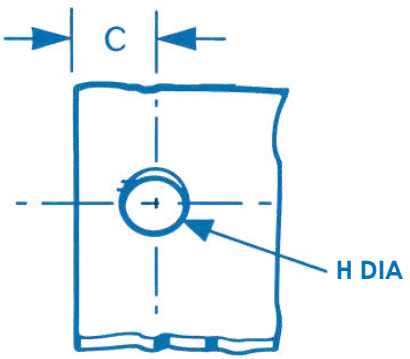
WHEN SPECIFYING PLEASE STATE:

1. Quantity
2. Prefix (CBTN)
3. Part No.
4. Finish code
   e.g. 4000 CBTN-0361-08

DIMENSIONAL DATA & SIZES







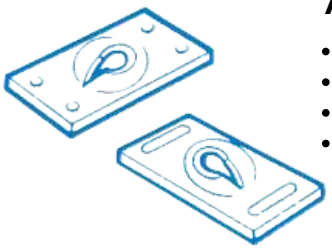
PANEL LAYOUT

PART NO.	SCREW SIZE	A	B	C	D	H DIA	T	PANEL RANGE
0350	8	16.7	11.1	6.7	7.9	7.1	0.56	0.71 - 1.62
0356	8	16.7	11.1	6.7	7.9	7.1	0.56	1.83 - 2.03
0391	8	16.7	11.1	6.7	7.9	7.1	0.56	3.00
0351	10	19.8	12.7	7.9	9.5	7.9	0.71	0.91 - 2.64
0359	10	19.8	12.7	7.9	9.5	7.9	0.71	2.0 - 3.0
0361	10	19.8	12.7	9.5	9.5	7.9	0.71	2.03 - 3.05
0352	12	23.8	17.0	11.1	12.4	9.9	0.81	0.91 - 2.64
0358	12	23.8	17.0	11.1	12.4	9.9	0.81	2.94 - 3.07

Dimensions in millimetres

PSM International
www.psmfasteners.com

WELD NUTS - CBWN SERIES



ADVANTAGES

- Non paint clogging
- High strength
- Ideal for automated assembly
- Low cost

PSM Weld nuts provide a neat, strong fastening where a welded nut is desirable.

METHOD ASSEMBLY

Place fastener over panel hole and projection weld in the normal manner.

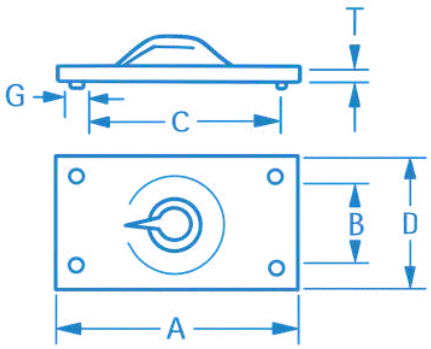
MATERIAL

Mild steel

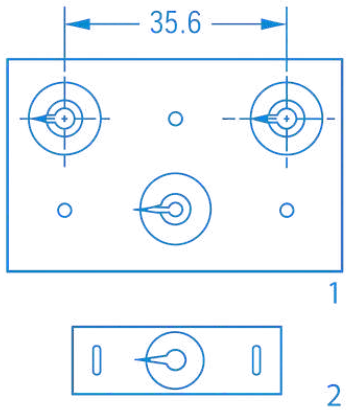
WHEN SPECIFYING PLEASE STATE:

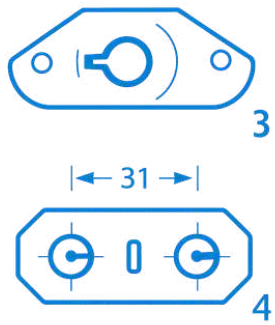
1. Quantity
2. Prefix (CBWN)
3. Part No.
4. Finish code
   e.g. 1000 CBWN-0219

DIMENSIONAL DATA & SIZES



STANDARD VERSION





PART NO.	SCREW SIZE	A	B	C	D	G	T	TYPE
0329	10	41.4	14.3	-	-	-	1.22	-
0306	10	24.1	10.4	16.5	-	3.2	1.01	3
0237	10	28.2	12.7	20.3	4.8	2.5	1.01	2
0270	12	25.4	14.3	19.1	7.9	2.5	1.22	Standard
0219	14*	28.6	15.9	22.2	9.5	3.2	1.62	Standard
0302	14*	58.4	25.4	-	-	-	1.22	4
0336	14*	55.9	35.0	35.6	14.7	3.8	1.5	1

* Denotes suitability for No 14 x 10 TPI Screws only (metric)
Dimensions in millimetres

PSM International
www.psmfasteners.com

ANGLE NUTS - CBAN SERIES



ADVANTAGES

- Faster assembly
- Provides fixings for differing materials
- Low cost

Designed by P.S.M to provide a stand-off threaded attachment for angled fastening requirements.

METHOD OF ASSEMBLY

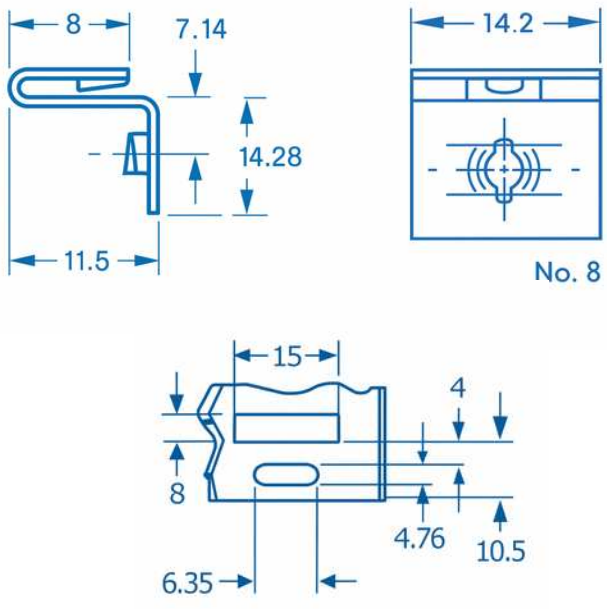
Screw fastener to panel and bring leading edge of "panel for assembly" under returned edge of fastener, for a vibration proof, right angled fixing.

MATERIAL

CS60, CS70 carbon steel

WHEN SPECIFYING PLEASE STATE:

1. Quantity
2. Prefix (CBAN)
3. Part No.
4. Finish code
   e.g. 6000 CBAN-0308-13

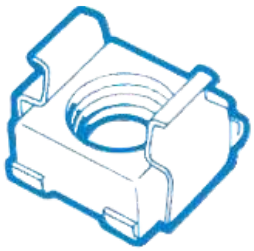


PART NO.	SCREW SIZE	PANEL RANGE
0355	4	0.70 - 1.0
0309	8	0.70 - 1.0
0308	8	1.17 - 1.42
0365	8	2.0

Dimensions in millimetres

PSM International
www.psmfasteners.com

CAGE NUTS - CN SERIES



ADVANTAGES

- Fast and easy to apply
- Self-retaining
- High strength
- Blind fitting
- Low cost
- Can be installed after painting or stoving, so no clean-up problems

PSM now offers an increased range of cage nuts thereby eliminating the need for weld or clinch type nuts.

Note: Design may vary from that illustrated, but efficiency and functional ability will not be affected.

MATERIAL

Cage - Carbon steel hardened, austempered
Nut - Low carbon mild steel

FINISHES AVAILABLE:

Code 05 - Zinc
Code ZB - Black

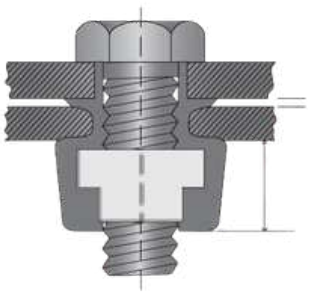
WHEN SPECIFYING PLEASE STATE:

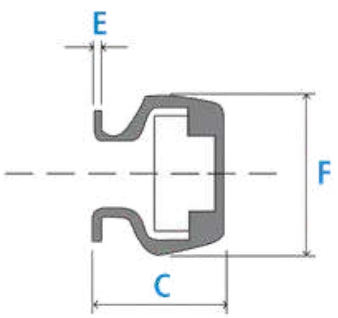
Simply quote part number and finish code required

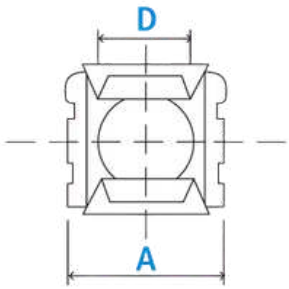
Example: CN-0147-00 denotes an M6 Cage Nut, lanolin dipped

METHOD OF ASSEMBLY

1. Pierce hole in panel as per dimensions shown in data sheet below.
2. Grip ears of cage nut together with pliers or similar tool and insert through panel. Release ears to enable expansion to locating hole side.
3. After releasing ears cage nut is held firmly in locating hole by spring tension. Then simply screw bolt through panel into retaining nut.





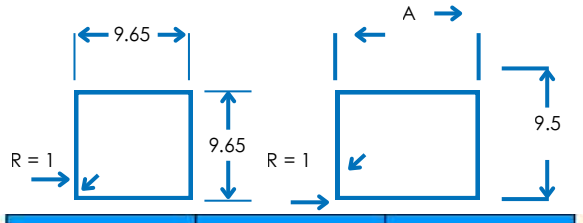


PSM International
www.psmfasteners.com

CAGE NUTS - CN SERIES

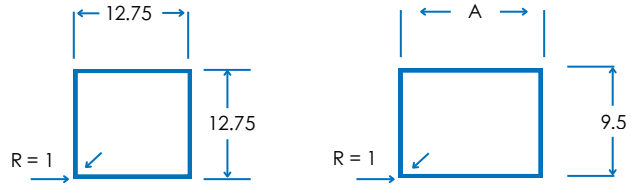
DIMENSIONAL DATA & SIZES

HOLE SIZE 2
A = To customer requirements. R = Radius



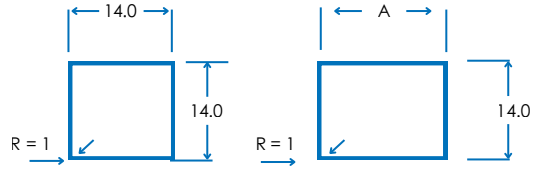
THREAD SIZE	SHEET THICKNESS	PART NO.
M4 X 0.7	0.71 - 1.62 1.83 - 2.64	CN-0126 CN-0127
M5 X 0.8	0.71 - 1.62 1.83 - 2.64	CN-0136 CN-0137
10 UNF	0.71 - 1.62 1.83 - 2.64	CN-0134 CN-0135
10 UNC	0.71 - 1.62 1.83 - 2.64	CN-0148 CN-0149
M6 X 1.0	0.71 - 1.62 1.83 - 2.64	CN-0146 CN-0147
1/4" UNC	0.71 - 1.62 1.83 - 2.64	CN-0140 CN-0141
1/4" UNF	0.71 - 1.62 1.83 - 2.64	CN-0138 CN-0139

HOLE SIZE 3
A = To customer requirements. R = Radius



THREAD SIZE	SHEET THICKNESS	PART NO.
1/4" UNC	0.71 - 2.34 2.36 - 4.1	CN-3001 CN-3002
5/16" UNC	0.71 - 2.34 2.36 - 4.1	CN-3003 CN-3004
3/8" UNC	0.71 - 2.34 2.36 - 4.1	CN-3005 CN-3006
M8 X 1.25	0.71 - 2.34 2.36 - 4.1	CN-3184 CN-3185
M10 X 1.5	0.71 - 2.34 2.36 - 4.1	CN-3186 CN-3187

HOLE SIZE 4
A = To customer requirements. R = Radius



THREAD SIZE	SHEET THICKNESS	PART NO.
1/4" UNC	1.45 - 2.34 2.34 - 4.31 4.57 - 6.1	CN-4001 CN-4002 CN-4003
3/8" UNC	1.45 - 2.34 2.34 - 4.31 4.57 - 6.1	CN-4004 CN-4005 CN-4006
7/16" UNC	1.45 - 2.34 2.34 - 4.31 4.57 - 6.1	CN-4007 CN-4008 CN-4009
1/2" UNC	1.45 - 2.34 2.34 - 4.31 4.57 - 6.1	CN-4010 CN-4011 CN-4012
M12 X 1.75	1.45 - 2.34 2.34 - 4.31 4.57 - 6.1	CN-4013 CN-4014 CN-4015

Imperial and other thread sizes available on request - subject to minimum order quantity

PSM International
www.psmfasteners.com

KNOB CLIPS - CBKC SERIES



ADVANTAGES

- Low cost
- Replaces expensive inserts and grub screws
- Fast, easy assembly
- Holds firm
- Easy to remove for servicing

PSM knob clips are a useful alternative to compression rings for the fitting of thermoplastic knobs. Details of the hub are shown in the dimensional data.

METHOD OF APPLICATION

Push knob clips over hub of knob, line up the flat of the clip with the flat of the shaft and simply push on.

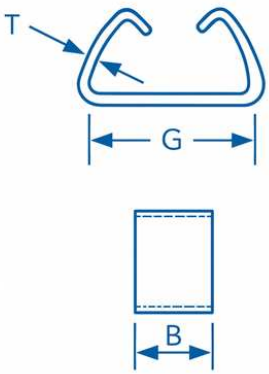
MATERIAL

CS60, CS70 carbon steel.

WHEN SPECIFYING PLEASE STATE:

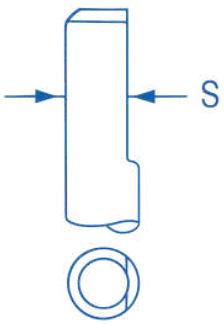
1. Quantity
2. Prefix (CBKC)
3. Part No.
4. Finish code
   e.g. 3000 CBKC-0111-00

DIMENSIONAL DATA & SIZES

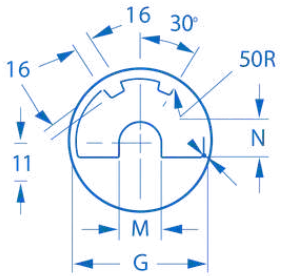




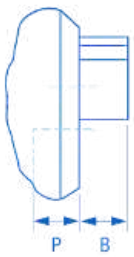
ALTERNATIVE VERSION



SHAFT DETAIL



KNOB MOLDING DETAIL



PART NO.	SHAFT DATA	T	B	G	H	M DIA	N	P	S
0115	4.8	0.51	4.8	12.7 - 12.8	1.4 - 1.5	4.8 - 4.9	4.3 - 4.5	4.8	4.2 - 4.3
0119*	4.8	0.40	4.8	12.7 - 12.8	1.4 - 1.5	4.8 - 4.9	4.3 - 4.5	4.8	4.2 - 4.3
0111	6.4	0.56	6.4	15.1 - 15.2	1.9 - 2.0	6.4 - 6.5	5.6 -5.7	6.4	5.5 - 5.6
0114*	6.4	0.56	6.4	15.1 - 15.2	1.9 - 2.0	6.4 - 6.5	5.6 - 5.7	6.4	5.5 - 5.6

* Denotes alternative version
Dimensions in millimetres

PSM International
www.psmfasteners.com

SPRING LATCHES - CBSL SERIES

ADVANTAGES



- Firm reliable grip
- Removes need for time-consuming screw fasteners
- Allows quick, easy access for inspection, repair purposes
- Assembled after finishing operations

PSM spring latches are a simple reliable means of fastening removable assemblies when used with stud or peg.

METHOD OF ASSEMBLY

Squeeze fastener together with fingers or hand tool and insert through pre-stamped hole, when released the spring latch opens firmly to sides of hole.

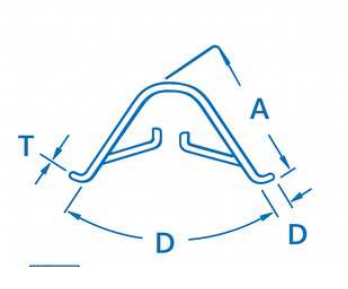
MATERIAL

CS60, CS70 carbon steel, austempered

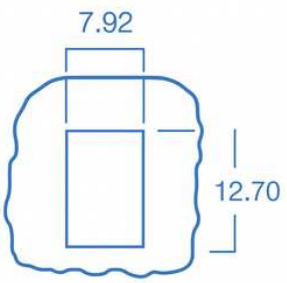
WHEN SPECIFYING PLEASE STATE:

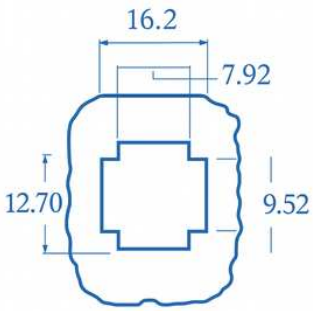
1. Quantity
2. Prefix (CBSL)
3. Part No.
4. Finish code
   e.g. 2000 CBSL-0872-13

DIMENSIONAL DATA & SIZES









ALTERNATIVE PANEL LAYOUTS

The ideal fastener for use on access doors or removable panels.
Self-retaining it provides a simple cost saving method of assembly.

PART NO.	PANEL RANGE	APPROX. PULL OUT FORCE	A	B	C	T	D*
0872	0.91 - 1.22	9.1 KG	18.0	16.0	3.0	0.56	40°
0873	0.91 - 1.22	2.7 KG	18.8	16.0	2.8	0.36	60°

Dimensions in millimetres

PSM International
www.psmfasteners.com

PUSH-ON-FIXES
GENERAL DESCRIPTION



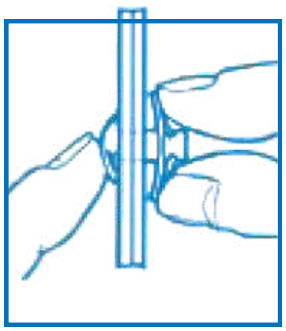
ADVANTAGES

- Ultra low in-place cost due to rapid installation
- Eliminates threaded studs
- Reduces cost of mating part
- Will not loosen, vibration Proof
- Once assembled, push-on fix must be destroyed to remove

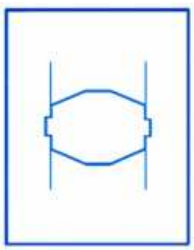
The PSM Push-on-Fix is the most economical method of securely holding components in place over rivets, metal or plastic studs, tubes, nails or wire.

METHOD OF ASSEMBLY

The Push-on fix is applied over the male mating part with a simple applicator. (This ensures correct alignment of fix to stud). When the body of the fix is pressed home and then released against the held component the arched prongs dig into the male stud, thus preventing a relaxation of pressure.



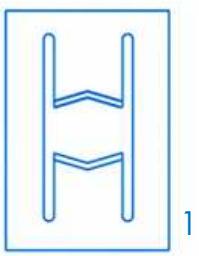
TYPES AVAILABLE



RECT. STD



ROUND STD



1



2



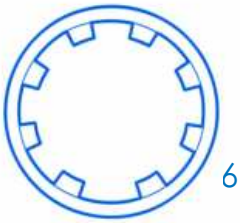
3



4



5



6

Items shown are a selection of a wider range available

PSM International
www.psmfasteners.com

PUSH-ON-FIXES
CBPF SERIES

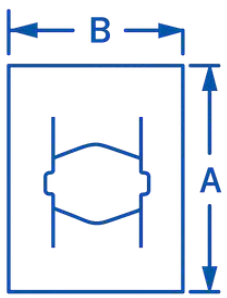
Part No.	Nominal Stud Dia.	Stud Tolerance		A		B		T		Type See panel opposite
		Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	
0510	3/32"	0.091	2.31	0.437	11.11	.250	6.35	0.012	0.31	Rect. Std.
0635		0.094	2.39	0.375	9.52	-	-	0.010	0.25	2
0638	12 SWG	0.102 0.105	2.59 2.67	1.500	38.1	-	-	0.010	0.25	5 Large Dia.
0641				1.500	38.1	-	-	0.010	0.25	5 Large Dia.
0528		0.115	2.92	0.500	12.7	312	7.93	0.014	0.37	1
0633	3.00mm	0.120	3.05	0.375	9.52	-	-	0.010	0.25	2
0617				0.530	13.46	-		0.010	0.25	Round Std.
0511		0.122	3.10	0.500	12.70	-	-			1
0634	1/8"	0.126	3.20	0.375	9.52	312	7.93	0.010	0.37	2
0627				0.375	9.52	-	-	0.014	0.25	3
0639	10 SWG	0.126 0.129	3.20 3.28	1.500	38.1	- -	- -	0.010 0.010	0.25 0.25	5 Large Dia.
0629	0.148"	0.146 0.150	3.71 3.81	0.375	9.52	-	-	0.014 0.010	0.25	3
0512	5/32"			0.562	14.29	.375	9.52	0.010	0.37	Rect. Std.
0600	&	0.153	3.89	0.450	11.43	-	-	0.015	0.25	Round Std.
0533	4.00mm	0.157	3.99	0.709	18.00	.532	13.5	0.010	0.50	Rect. Std.
0625				0.375	9.52	-	-	0.020	0.25	2
0962	0.180	0.179 0.181	4.54 4.59	0.450	11.43	-	-	0.010	0.25	Round Std.
0513				0.625	15.87	.375	9.52	0.015	0.37	Rect. Std.
0615		0.184	4.67	0.562	14.29	-	-	0.016	0.41	5
0636	3/16"			0.562	14.29	-	-	0.015	0.37	3
0601		0.189	4.80	0.450	11.43	-	-	0.010	0.25	Round Std.
0640				1.500	38.1	-	-	0.010	0.25	5 Large Dia.
0529	5.00mm	0.194	4.93	0.625	15.87	.375	9.52	0.015	0.37	Rect. Std.
0604		0.199	5.05	0.530	13.46	-	-	0.010	0.25	Round Std.
1231	5.00mm	0.194 0.199	4.93 5.05	1.500	32.1	-	-	0.010	0.25	5 Large Dia.
0619	0.228"	0.226 0.230	5.74 5.84	0.530	13.46	-	-	0.010	0.25	Round Std.
0622				0.562	14.29	-	-	0.015	0.37	3
0530		0.233	5.92	0.750	19.05	.500	12.70	0.016	0.41	Rect. Std.
0602	6.00mm	0.238	6.04	0.530	13.46	-	-	0.010	0.25	Round Std.
0642				1.500	38.1	-	-	0.010	0.25	5 Large Dia.
1221	6.00mm	0.233 0.238	5.91 6.04	0.530	13.5	-	-	0.010	0.25	6
0515				0.750	19.05	.500	12.70	0.016	0.41	Rect. Std.
0616	1/4"	0.246	6.25	0.562	14.29	-	-	0.015	0.37	3
0603				0.530	13.46	-	-	0.010	0.25	Round Std.
0609		0.252	6.40	0.630	16.00	-	-	0.016	0.41	5
0645				1.500	38.1	-	-	0.010	0.25	5 Large Dia.
0643	0.270"	0.270	6.86	1.500	38.1	-	-	0.010	0.25	5 Large Dia.
0626	9/32"	0.277	7.00	0.562	14.29	-	-	0.020	0.51	4
0605		0.283	7.20	0.590	14.98	-	-	0.010	0.25	Round Std.
0532	5/16"			0.875	22.22	.625	15.87	0.016	0.41	1
0606	&	0.309	7.90	0.590	14.98	-	-	0.010	0.25	Round Std.
0618	8.00mm	0.315	8.05	0.600	15.24	-	-	0.015	0.41	4
0644				1.500	38.1	-	-	0.010	0.25	5 Large Dia.
1220	14.2	0.558 0.563	14.1 14.3	0.866	22.0	-	-	0.016	0.41	6

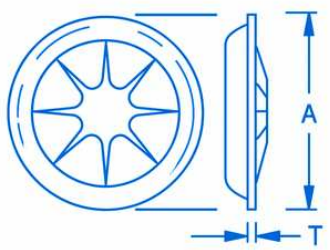
MATERIAL

CS70 carbon steel.

WHEN SPECIFYING PLEASE STATE:

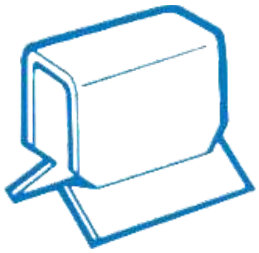
1. Quantity
2. Prefix (CBPF)
3. Part No.
4. Finish code
   e.g. 1500 CBPF-0627-13





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EDGE CLIPS - CBEC SERIES



ADVANTAGES

- Eliminates holes and screws
- Resists vibration

PSM edge clips provide an inexpensive method of holding panels
with a secure vibration free grip.

METHOD OF ASSEMBLY

Push the edge clip over the two edges that are required to be held together. The inner barbs on the fastener will prevent any separation.

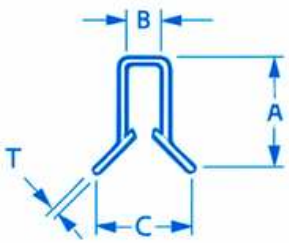
MATERIAL

CS60, CS70 carbon steel, austempered

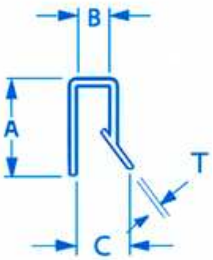
WHEN SPECIFYING PLEASE STATE:

1. Quantity
2. Prefix (CBEC)
3. Part No.
4. Finish code
   e.g. 4000 CBEC-0761-13

DIMENSIONAL DATA & SIZES



STYLE 1



STYLE 2

PART NO.	A	B	C	T	WIDTH	PANEL RANGE	STYLE
0761	8.6	2.3	6.4	0.42	12.7	1.42 - 1.83	1
0766	7.4	2.3	5.0	0.42	12.7	1.42 - 1.83	1
0787	12.7	6.5	9.5	0.71	14.3	5.9 - 6.3	2
1216	10.7	2.5	4.8	0.4	12.7	1.42 - 1.83	2
1297	9.8	2.3	6.3	0.6	12.7	1.42 - 1.83	1
1373	10.1	2.5	4.2	0.4	12.7	1.92 - 2.2	2

Dimensions in millimetres

PSM International
www.psmfasteners.com

HOSE CLIPS - CBHC SERIES



ADVANTAGES

- Easily applied
- Low in place cost due to speed of assembly
- Will not damage surface of hose
- Easily removed

PSM Hose clips provide a secure clamp for low pressure hose applications.

METHOD OF ASSEMBLY

Squeeze together the two wings of the hose clip and place over end of hose. Push hose clip over connection and release the 'wings'.

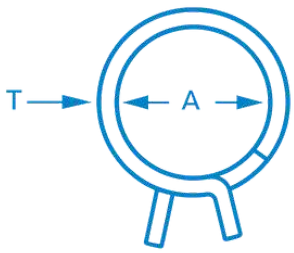
MATERIAL

CS60, CS70 carbon steel, austempered.

WHEN SPECIFYING PLEASE STATE:

1. Quantity
2. Prefix (CBHC)
3. Part No.
4. Finish code
   e.g. 3000 CBHC-0901-13

DIMENSIONAL DATA & SIZES

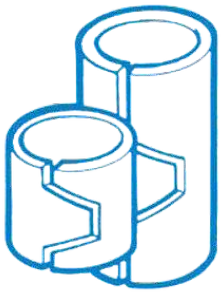


PART NO.	A DIA	HOSE DIA. RANGE	T	WIDTH
0902	13.6	14.68 - 15.44	0.80	8.0
0570	14.35	14.6 - 15.7	0.71	11.1
0580	15.2	15.1 - 16.8	0.71	11.1
0903	15.1	15.57 - 15.82	0.80	8.0
0901	11.7	13.0 - 13.6	0.80	8.0
0907	13.1	14.27	0.80	8.0
0908	11.0	12.0	0.80	8.0
0909	13.8	14.5	0.51	8.0
0917	15.4	16.30 - 16.49	0.51	8.0
0974	13.0	13.30 - 14.76	0.80	8.0

Dimensions in millimetres

PSM International
www.psmfasteners.com

COMPRESSION RINGS - CBCR SERIES



ADVANTAGES

- Easily applied
- Low in place cost due to speed of assembly
- Will not damage surface of hose
- Easily removed

PSM, through its policy of continuing development to meet the needs of a specific market, have now developed one of the most comprehensive ranges of compression rings for the attachment of thermoplastic knobs to split shafts.

METHOD OF ASSEMBLY

Simply push compression ring over split knob end and then push whole assembly over shaft.

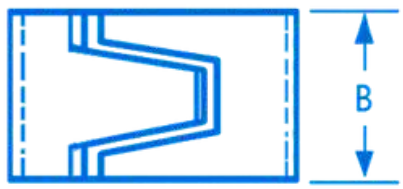
MATERIAL

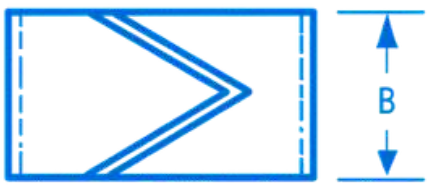
CS60, CS70 carbon steel, austempered.

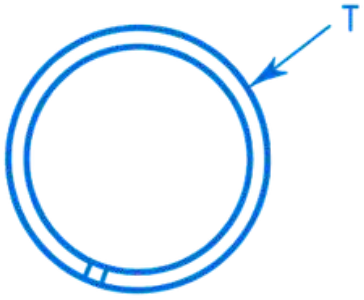
WHEN SPECIFYING PLEASE STATE:

1. Quantity
2. Prefix (CBCR)
3. Part No.
4. Finish code
   e.g. 5000 CBCR-0940-00

DIMENSIONAL DATA & SIZES







COMPRESSION RINGS
CBCR SERIES

Part No.	Hub Dia	B	T
0712	7.9 -8.1	6.35	0.61
0713	7.9 -8.1	6.35	0.51
0714	8.74 - 8.86	6.35	0.61
0715	11.1 - 11.2	8.0	0.61
0716	11.1 - 11.2	8.0	0.81
0717	9.5 - 9.7	6.35	0.61
0719	6.4 - 6.5	12.7	0.61
0785	11.05 - 11.18	6.35	0.61
0935	6.35 - 6.48	4.0	0.51
0936	6.35 - 6.48	4.0	0.35
0937	7.98 - 8.07	6.35	0.35
0938	8.74 - 8.87	6.35	0.35
0939	9.53 - 9.66	6.35	0.61
0940	9.53 - 9.66	4.0	0.71
0941	12.85 - 13.00	6.35	0.61
0942	14.20 - 14.35	6.35	0.61
0943	7.11 - 7.24	6.35	0.51
0945	8.74 - 8.87	6.35	0.61
0946	9.53 - 9.66	6.35	0.35
0947	9.53 - 9.66	4.0	0.51
0948	10.24 - 10.37	6.35	0.35
0949	10.40 - 10.53	6.35	0.51
0950	12.70 - 12.85	6.35	0.61
0951	12.70 - 12.85	6.35	0.61
0952	15.82 - 16.00	6.35	0.61
0953	20.6 - 20.8	6.35	0.61
0954	24.57 - 27.74	6.35	0.61
0956	10.24 - 10.37	6.35	0.61
1004	11.05 - 11.18	6.35	0.81
1093	9.56 - 9.66	4.00	0.61
1229	15.85 - 16.00	6.35	0.81
1370	9.5 - 9.7	5.00	0.61

Dimensions in millimetres

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CAPTAR© NUT RETAINERS
CBCC SERIES



ADVANTAGES

- No risk of thread splitting or embrittlement
- Thread conforms to relevant British Standard
- Easily replaceable
- Fast assembly

In response to engineers' requests for a high strength replaceable machine screw fastener, PSM Ltd. engineers have developed a composite range incorporating the renowned P.S.M Fasteners "Minarb".

METHOD OF ASSEMBLY

Simply push compression ring over split knob end and then push whole assembly over shaft.

MATERIAL

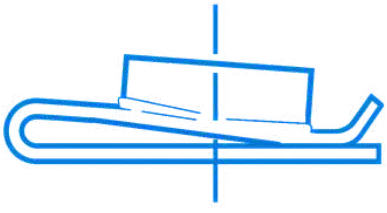
Low carbon steel

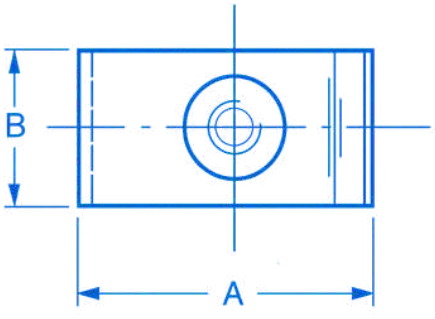
WHEN SPECIFYING PLEASE STATE:

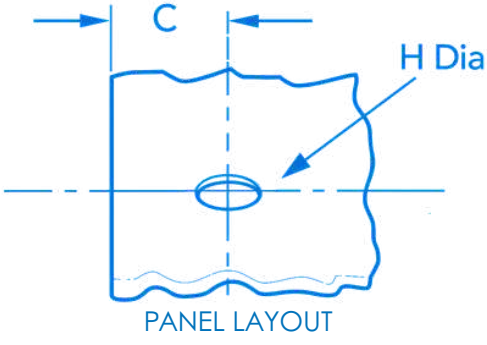
1. Quantity
2. Prefix (CBCC)
3. Part No.
4. Finish code

e.g. 1000 CBCC-1034-13

DIMENSIONAL DATA & SIZES







PANEL LAYOUT

PART NO.	THREAD SIZE	A	B	C	H	PANEL RANGE
1034	M6	25.0	15.9	11.5	9.5	2.0 - 2.2
1091	M6	24.5	13.0	12.5	9.0	0.8 - 1.6
1246	M6	24.5	13.5	11.5	9.0	3.0 - 4.0
1247*	M6	27.5	17.0	13.75	9.5	2.5 - 3.5
1262	M6	43.0	13.0	30.8	9.0	0.6 Max

*With earthing barbs
Dimensions in millimetres

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PLAS-STUDS - PL SERIES



PL1 SERIES

For use in panels of 1.0mm minimum thickness

PL2 SERIES

For heavier loads and use in panels of 1.5mm minimum thickness

MATERIAL

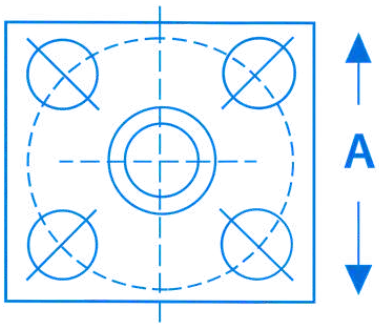
Mild steel - zinc & clear passivated to BS 3382

WHEN SPECIFYING PLEASE STATE:

1. Quantity
2. Prefix
3. Thread size
4. Stud Length
   e.g. 5000 PL1-M5-16

N.B.

Dog point studs are also available on certain sizes - details available upon request.



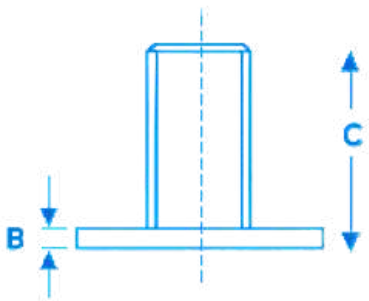


Plate Dimensions				Stud Length 'C' Overall									
Thread Size	'A' Sq.	'B' Sq (PL1)	'B' Sq (PL2)	6	8	10	12	14	16	18	20	25	30
M3	10	1.0	1.5	▲	▲	▲	▲	▲	▲	▲			
M4	15	1.0	1.5			▲	▲	▲	▲	▲	▲	▲	
M5	15	1.0	1.5			▲	▲	▲	▲	▲	▲	▲	▲
M6	20	1.0	1.5			▲	▲	▲	▲	▲	▲	▲	▲

SPECIAL COMPONENTS

From an anti-rattle washer to a belt clip, fasteners to cable trunking fixings – every application demands a different mix of spring steel's attributes.

Some need more strength than mild steel can provide. Others call for enhanced spring quality, while often, it is a combination of both that is needed.

Whatever the project, PSM will custom design and manufacture spring steel pressings or lightweight molded plastic products to suit – giving designers of complex parts all the flexibility they could want.

Wherever manufactured goods are made, PSM has local people on hand to provide technical support, advice and application engineering, project management and customer service.

That's the reassurance you get from working with a global organisation dedicated to improving your competitive edge – whether you're using spring steel or any of PSM's family of fastening solutions.



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THREAD LOCKING AND SEALING

PSM International
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PSM THREAD LOCKING & SEALING DIVISION

ADVANTAGES



- Eliminates secondary locking features such as nuts, washers, etc.
- Replaces hand applied tapes or gaskets
- Controlled patch position
- Replaces liquid adhesives

OUR MISSION

To provide our customers with the right pre-applied locking & sealing solutions for their fastening demands.

PSM Thread Locking and Sealing is the leader for pre-applied locking and sealing solutions. We are constantly working with our material suppliers to develop new processes and offer innovative solutions to meet the ever changing demands from our customer base.

Our pre-applied adhesive products contain thousands of micro-capsules of adhesive material which is coated onto the screw threads, forming a bright coloured, dry to touch and ready to use coating.

COMPONENT PROCESSING TO ONE-STOP SOLUTIONS

Our strengths lie in our ability to satisfy our customers' diverse demands - for everything from component processing to one-stop solutions - by helping them to source or manufacture quality components, quickly processing them and providing logistic solutions.

- From miniature items for mobile communication to M30 bolts for bridge construction, we have the ability to process a vast range of components.
- We can also work with a wide range of materials including stainless steel and non-ferrous materials
- We are approved by a majority of OEMs and have been recognised with a number of industry approvals and standards
- Complete fastener finishing service including a comprehensive range of corrosion resistant surface treatments

QUALITY APPROVALS

B.S.I. IS0 9002 - ISO 14001 Our products are approved to a wide range of industry standards including: DIN 267, Ford, Rover, Jaguar, GME

PSM International
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AN EXTENSIVE RANGE OF PRODUCTS

We offer a comprehensive range of pre-applied locking and sealing processes, incorporating the branded products shown below, which are colour-coded for identification purposes:

PRODUCT GROUP	TL&S PRODUCT DESCRIPTION	COLOUR CODED	RE-USEABLE	ADJUSTABLE IN SERVICE	LOW INSTALLATION TORQUE	CONTROLLABLE PREVAILING TORQUE	HIGH BREAKLOOSE TORQUE	LOW BREAKLOOSE TORQUE	INSTANT SEAL	FAST CURE RATE	HIGH WORKING TEMPERATURE	LOW CURING TEMPERATURE	CLOSE POSITIONAL TOLERANCE
NYLON	TUFLOK® 180	Blue	●	●		●							●
	TUFLOK® 360	Blue	●	●		●			●				●
	NYTEMP®	Orange	●	●		●					●		●
ADHESIVES	PRECOTE® 80	Pink			●		●			●	●	●	
	PRECOTE® 85	Turquoise			●		●			●	●	●	
	PRECOTE® 30	Yellow			●			●		●	●	●	
	SCOTCHGRIP®2353	Dark Blue			●		●					●	
	SCOTCHGRIP®2510	Orange			●		●				●	●	
SEALING	PRECOTE® 5	White	●	●	●				●		●		
	SCOTCHSEAL® 4291	Light Blue	●	●	●				●				
	DRISEAL® 506	Light Blue	●	●	●				●				
	MICROSEAL® 204	Light Green	●	●	●				●				
	NYLTITE®	Natural	●	●					●				
	NYSEAL®	Green	●	●	●				●				●
	NYPLASTM	Black	●	●	●				●				●

TECHNICAL SUPPORT

Our application engineers are on hand to work with you on all aspects of component production, including:

- Application development
- New product development
- Testing and evaluation samples

When you need technical support, our specialists are on hand to offer expert technical advice on a global scale.

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PRE-APPLIED ADHESIVES

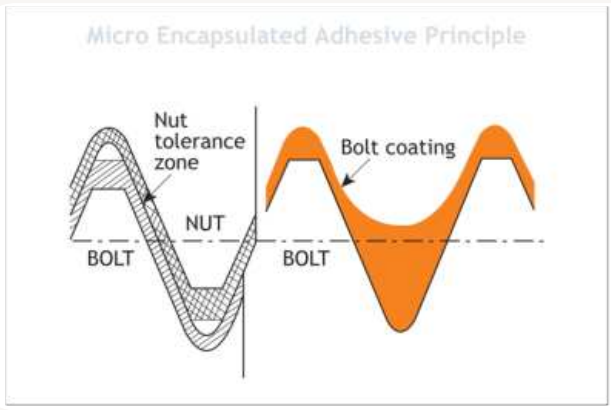


PSM Thread Locking and Sealing is the leader for pre-applied locking and sealing solutions. We are constantly working with our material suppliers to develop new processes and offer innovative solutions to meet the ever changing demands from our customer base.

Our pre-applied adhesive products contain thousands of micro-capsules of adhesive material which is coated onto the screw threads, forming a bright coloured, dry to touch and ready to use coating.

ADVANTAGES

- High Breakaway Torque Pre-applied Adhesives
- Low Installation Torque
- Fast Curing
- Plate and Patch service
- Easy identification
- Not effected by most oils and solvents
- Working temperatures -560C to +2000C
- Controlled Patch Position
- Replaces Liquid Adhesives
- Replaces mechanical locking devices



PRE-APPLIED ADHESIVES

This is a range of inert, dry to touch and ready to use high performance adhesive products.

The thread covered with the adhesive develops its desired locking and sealing properties when compression or shear stress ruptures the micro-capsules after the assembly of the screw. The adhesive is released and within a short time the system hardens. The threads become locked, bonded together and reliably sealed.

- The Pre-applied process consists of applying the micro-encapsulated adhesive onto a defined area of the male thread surface.
- The adhesive coating is inert, dry to touch, ready to use.
- Upon assembly into the mating threaded component the micro-capsules rupture, developing a secure locking of the two components with a high strength adhesive bond.

PRE-APPLIED ADHESIVES

RECOMMENDATIONS

Hole Preparation
In all cases the female thread of the mating components should have the lead thread de-burred or countersunk to avoid damage to the patch material upon assembly.

Thread Preparation
To obtain optimum patch performance both male and female threads should be in accordance with class 6g/h (metric) or class 2 a/b (unified).

Finishes
Pre-applied adhesives can be applied to most popular plated finishes, as well as polymer and organic coatings. Epoxy products should be avoided with Aluminium as the resultant reaction can cause assembly problems.

Scotchgrip® 2353
Uses a hardening product which is hydroscopic, and therefore contact with moisture (which may exhibit a whitening effect) prior to assembly should be avoided.

We currently process a range of Headed Components, Studs, Plugs and similar parts.

We can apply our coating to ferrous or non-ferrous materials (Steel, Aluminium, Brass or Stainless Steel and some plastic materials).

With our on site Plating Division we offer a complete Plate and Patch service.

This is a general guide to the products we currently process. We are able to process other components subject to evaluation.

Reusability of micro-encapsulated adhesives is not recommended.

PRODUCT GUIDE

PRODUCT	COLOUR	TYPE	MAX PATCH LENGTH	STANDARD PATCH LENGTH	STANDARD PATCH LEAD	STORAGE LIFE	STORAGE CONDITIONS (MAX)	OPERATING TEMP (°C)	SEALING CAPACITY (M10 THREAD)	COEFFICIENT OF FRICTION	FULL CURE TIME (HRS)	SIZE RANGE
Precote®80	Pink	Acrylic	50mm	4-6 Pitch	1-2 Pitch Lead	4 Years	35 deg C @100%RH	-50 + 170	>200 Bar	0.26 / 0.28	12	M4-M30
Precote® 85	Light Blue	Acrylic	50mm	4-6 Pitch	1-2 Pitch Lead	4 Years	35 deg C @100%RH	-50 + 170	>200 Bar	0.16 / 0.18	12	M4-M30
Precote® 30	Yellow	Acrylic	50mm	4-6 Pitch	1-2 Pitch Lead	4 Years	35 deg C @100%RH	-40 + 150	>200 Bar	0.14 / 0.16	12	M4-M30
Scotchgrip® 2353	Dark Blue	Epoxy	50mm	4-6 Pitch	1-2 Pitch Lead	2 Years	35 deg C @70%RH	-60 + 150	>200 Bar	0.16 / 0.18	48	M4-M30
Scotchgrip® 2510	Orange	Epoxy	50mm	4-6 Pitch	1-2 Pitch Lead	2 Years	35 deg C @85%RH	-40 + 200	>200 Bar	0.26 / 0.28	72	M4-M30

TABLE: EXTRACT FROM BS 7795:1995

THREAD SIZE	BREAKAWAY TORQUE Nm	
	Maximum	Minimum
M6 X 1	8	2
M8 X 1.25	24	4
M10 X 1.5	44	10
M12 X 1.75	80	15
M14 X 2	130	20
M16 X 2	160	30

Note: Adhesive performance to BS 7795 - 1995 standard is based on Precote 80 & 85, and Scotchgrip 2353 & 2510

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PRE-APPLIED THREAD SEALANT



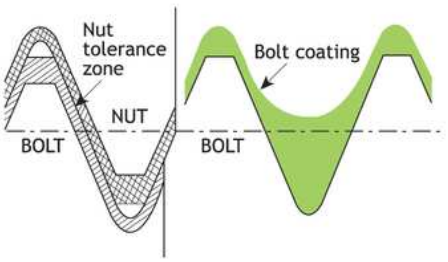
With production facilities throughout the world, PSM Thread Locking and Sealing offers a consistent approach with Technical support, Applications Engineering and production facilities strategically located to support our diverse customer base.

Our pre-applied sealant products form a dry to touch coating that provides a highly efficient seal developed by compression of the sealant material between the mating thread flanks.

ADVANTAGES

- Instantaneous high pressure seal
- Unlimited adjustment
- Superior Torque / Tension relationship
- Plate and Patch service
- Replaces hand applied tapes or gaskets
- Reusable
- High temperature resistance
- Controlled Patch position

The Pre-Applied Thread Sealant Principle



PRE-APPLIED THREAD SEALANT PRODUCTS

A range of dry-to-touch non-reactive coatings applied to the threads of screws, bolts, fittings or special components, eliminating the need for hand applied tapes or liquid sealant.

Applied as a water based suspension which is oven dried, finished parts are easy to handle and have no special storage requirements.

These processes offer high pressure sealing within the thread flank without any increase in removal torque. During assembly the coating is compressed, filling in all axial tolerances between the mating threads, creating a barrier against water, oils, air and gases at high pressure.

- The Pre-applied process consists of applying a thin film of sealant onto a defined area of the male thread surface.
- The coating is non-toxic, dry to touch, ready to use and safe to handle.
- Upon installation into the female threaded component, a compressive force is developed, forming a barrier against liquid, oils and gases.

INDUSTRY APPROVALS

Our sealant product is approved to a wide range of industry standards including:- Ford WX201, Ford WSS-M18P12-A, Rover RES.22.FP.03, Varity Perkins PMS P.1.04. Plus many other industry approvals.

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PRE-APPLIED THREAD SEALANT

RECOMMENDATIONS

Hole Preparation
In all cases the female thread of the mating components should have the lead thread de-burred or countersunk to avoid damage to the patch material.

Thread Preparation
To obtain optimum patch performance both male and female threads should be in accordance with class 6g/h (metric) or class 2 a/b (unified).

Finishes
A Sealant can be applied to most popular plated finishes, as well as polymer and organic coatings.

Customer free issue components
We would not recommend reusability of these products on parallel threads. Our experience is that reuse up to 5 times is achievable on tapered threads, however, tests should be conducted on your specific application.

We currently process a range of Headed Components, Studs, Plugs and similar parts.

We can apply our coating to ferrous or non-ferrous materials (Steel, Aluminium, Brass or Stainless Steel and some plastic materials).

With our on site Plating Division we offer a complete Plate and Patch service.

This is a general guide to the products we currently process.

We are able to process other components subject to evaluation.



PRODUCT GUIDE

PRODUCT	COLOUR	TYPE	MAX PATCH LENGTH	STANDARD PATCH LEAD	STANDARD PATCH LENGTH	STORAGE LIFE	STORAGE CONDITIONS (MAX)	OPERATING TEMP (°C)	SEALING CAPACITY (M10 THREAD)	COEFFICIENT OF FRICTION	REUSABILITY	SIZE RANGE
Precote® 5	White	Aqueous Mineral	50 mm	4-6 Pitch	1-2 Pitch Lead	4 Years	38 deg C @100%RH	-50 + 180	>50 Bar	0.11/0.13	Up to 5	M4-M30
Scotchseal® 4291	White	Latex	25 mm	4-6 Pitch	1-2 Pitch Lead	1 Year	38 deg C @100%RH	-25 + 150	>50 Bar	0.11/0.15	Nil	M4-M30
Dri-Seal® 506	Light Blue	PTFE Mineral	25 mm	4-6 Pitch	1-2 Pitch Lead	2 Years	38 deg C @100%RH	-50 + 150	>50 Bar	0.08/0.15	Up to 5	M4-M30
Miroseal® 204	Light Green	PTFE Mineral	25 mm	4-6 Pitch	1-2 Pitch Lead	2 Years	38 deg C @100%RH	-50 + 150	>50 Bar	0.08/0.15	Up to 5	M4-M30

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TUFLOK NYLON PROCESSING

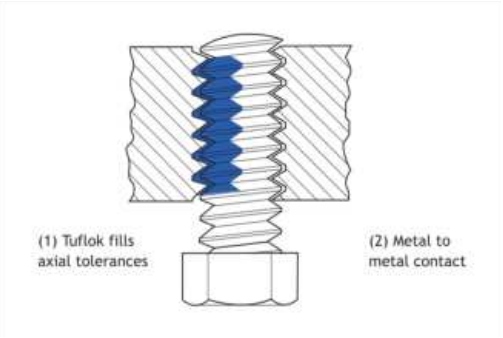


The Thread Locking and Sealing division of PSM International offers the world's widest range of pre-applied locking and sealing solutions, eliminating the need for secondary locking devices, hand-applied liquid adhesives, or sealing tapes.

The Tuflok Blue Nylon patch when applied is permanently fused onto the screw thread of the parent component, and increases the prevailing removal torque, allowing the screw to be locked in any position upon assembly.

ADVANTAGES

- Blue patch identifies Tuflok
- Reuseable
- Anti-vibrational
- Engineered torque flexibility
- Variable patch length and position
- Eliminates secondary locking features such as nuts, washers, etc.
- Automatically locks in any position
- Non Curing
- Plate and Patch
- Resistant to chemicals like alcohol, petroleum, oil, kerosene, diesel fuel and hydraulic fluids



TUFLOK 180

Tuflok 180 is a blue nylon patch permanently fused to the screw thread. This process provides excellent vibration resistance and torque performance for all applications requiring controlled loading and reusability.

Tuflok is effective, whether or not the fastener is fully seated, making it ideal for applications where continual adjustment is required.

- The Tuflok process consists of fusing the Blue Nylon 11 material onto a defined area of the male thread surface.
- Upon installation into the female threaded component, the nylon material is compressed filling the axial tolerances between the threads (1).
- The Tuflok process creates a strong metal to-metal radial loading on the flanks of the mating thread forms (2), which provides the locking action.

TUFLOK 360

Tuflok 360 gives full circumference coverage (completely around the thread) and is suitable for applications requiring a fully re-usable high pressure seal against liquid or gas.

INDUSTRY APPROVALS

Our Tuflok product is approved to a wide range of industry standards including:- DIN 267 part 28, BS 7795:1994, General Motors, Ford WA970, Rover RES.22.FP.02, Jaguar JFS.02.01.04. Plus many other industry approvals.

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TUFLOK NYLON PROCESSING

RECOMMENDATIONS

Hole Preparation
In all cases the female thread of the mating components should have the lead thread de-burred or countersunk to avoid damage to the patch material.

Thread Preparation
To obtain optimum patch performance both male and female threads should be in accordance with class 6g/h (metric) or class 2 a/b (unified).

Finishes
Tuflok can be applied to most popular plated finishes, as well as polymer and organic coatings.

Customer free issue components
Parts manufactured from non-ferrous material should be supplied free from any surface contaminants.
Variations in material structure can effect heating capability of the part during processing, which may result in torque variation.
High installation speeds can create galling of the threads affecting product performance.

We currently process a range of Headed Components, Studs, Plugs and similar size parts.

We can apply our coating to ferrous or non-ferrous materials (Steel, Aluminium, Stainless Steel or Brass).

With our on site Plating division we offer a complete Plate and Patch service.

This is a general guide to the products we currently process. We are able to process other components subject to evaluation.

PRODUCT GUIDE

Product	Colour	Type	Max Patch Length	Standard Patch Length	Standard Patch Lead	Storage Life @ Ambient Conditions	Operating Temp (°C)	Sealing Capacity 3600 Patch	Reusability	Size Range
Tuflok	Blue	Nylon	40 mm	4-6 Pitch	1-2 Pitch Lead	Indefinite	-56 + 120	>15 BAR (M10 Thread)	>5	M1-M30

RECOMMENDATIONS

THREAD SIZES		FIRST INSTALLATION		FIRST REMOVAL		FIFTH REMOVAL	
BA	ISO Metric	Prevailing Torque Max		Min.		Min.	
		IBF/IN	NM	IBF/IN	NM	IBF/IN	NM
8	2	2.5	0.28	0.1	0.01	1.0ozs	0.01
-	2.5	4.0	0.45	0.4	0.03	0.09	0.01
6	3	6.0	0.68	0.5	0.06	0.25	0.03
4	4	12.0	1.36	1.0	0.11	0.5	0.06
2	5	17.0	1.92	1.5	0.17	1.0	0.11
1/4	6	40.0	4.5	3.0	0.34	1.5	0.17
5/16	8	80.0	9.0	5.0	0.6	2.5	0.28
3/83/5	10	110.0	12.4	7.5	0.85	4.0	0.45
7/16	-	135.0	15.2	10.0	1.13	5.0	0.5
1/2	12	200.0	22.6	15.0	1.7	7.5	0.85
9/16	14	300.0	33.9	20.0	2.26	10.0	1.13
5/8	16	420.0	47.9	25.0	2.83	12.5	1.41
3/4	18-20	540.0	61.0	35.0	4.0	20.0	2.26
7/8	22	840.0	94.9	50.0	5.56	30.0	3.39
1	24	1080.0	122.0	80.0	9.0	40.0	4.52

Pre-production samples are evaluated and then processed free of charge

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NYLTITE SEALING SOLUTIONS

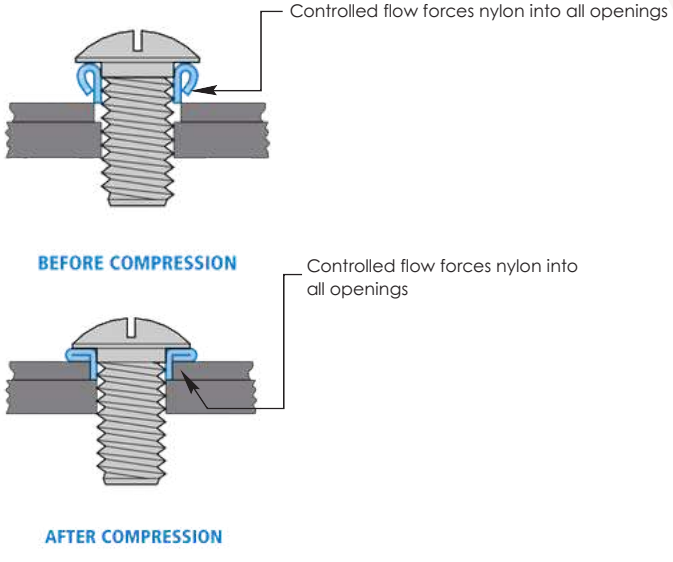


Nyltite from PSM International
Nyltite is manufactured from extruded thin wall tubing and is designed for applications where locking and sealing is required under the head of the screw. Nyltite can be supplied pre-assembled to fasteners of your specification. Tests have proved that Nyltite will provide superior sealing performance, as well as reducing joint failure caused by vibration. Nyltite headed/ unheaded sleeves are available for electrical applications requiring a high degree of insulation or cable protection.

Insulating spacers are also available.

ADVANTAGES

- Seals and locks almost any type of headed screw
- Effectively locks and seals self-tapping screws
- Can be re-used
- Provides electrical insulation between screw and component assembly
- Also prevents electrolytic corrosion in the same area
- Provides sound and vibration isolation
- The seal resists petroleum products, salt water, hot oils, refrigerants, alkalies, diluted mineral acids and most solvents and chemicals



NYPLAS BENEFITS

The Nyltite product does not need any particular preparation of the fastener or work piece and does not require any kind of adhesive.

The Nyltite seal or headed sleeves, combined with any compression fastener (screws, bolts and nuts, rivets, eyelets, pop rivets, nails) offers a cost effective and high performance seal over traditional sealing methods.

As an added advantage, Nyltite offers vibrational dampening through increased torque and against galvanic corrosion of dissimilar material.

For applications which may be subject to ultra violet rays, it is recommended that Nyltite should be specified in black.

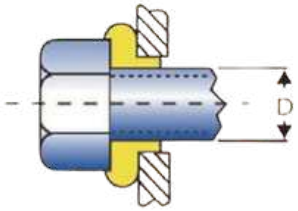
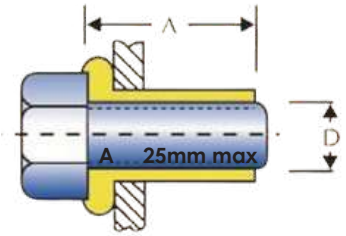
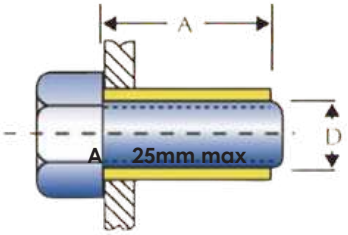
The Nylon interface eliminates damage due to surface chipping and crazing of the mating component.

The configuration of this kind of seal makes the nylon flow inwardly under compression, filling all the voids between the fastener and work piece.

TECHNICAL DATA



Material	Nylon
Colour	Natural / Black
Storage Life	
Operating Temp	-560C + 1200C
Reusability	>5
Installation Torque	Not applicable
Sealing Capacity (M10 Thread)	>15 Bar

Seals	Headed Seals	Unheaded Seals
		
D M2-M12 + 6BA-1/2"	D M2-M12 + 6BA-1/2"	D M2-M12 + 6BA-1/2"

SEATING TORQUES

THREAD SIZE	M5	M6	M8	M10	M12
Nm	2.94	4.97	11.30	13.60	33.90
ibf.in.	26	45	100	120	300

RECOMMENDED CLEARANCE HOLE SIZES

BA	UNIFIED	ISO METRIC	REF O/D		MIN.		SLEEVES	
			Inch	mm	Inch	mm	Inch	mm
-	-	2	0.078	2.0	0.093	2.38	0.124	3.18
-	-	2.5	0.098	2.5	0.113	2.87	0.144	3.65
6	-	-	0.110	2.8	0.125	3.17	0.156	3.96
-	4	-	0.112	2.8	0.125	3.17	0.156	3.96
-	-	3	0.118	3.0	0.133	3.37	0.165	4.19
-	6	3.5	0.138	3.5	0.156	3.96	0.187	4.75
4	-	-	0.142	3.6	0.156	3.96	0.196	4.97
-	-	4	0.157	4.0	0.172	4.36	0.208	5.28
-	8	-	0.164	4.1	0.185	4.70	0.216	5.48
2	-	-	0.185	4.7	0.203	5.15	0.240	6.09
-	10	-	0.190	4.8	0.208	5.28	0.244	6.19
-	-	5	0.196	5.0	0.218	5.53	0.250	6.35
0	-	6	0.236	6.0	0.256	6.50	0.296	7.51
-	1/4"	-	0.250	6.3	0.271	6.88	0.312	7.92
-	5/16"	-	0.312	7.9	0.334	8.48	0.375	9.52
-	-	8	0.315	8.0	0.334	8.48	0.375	9.52
-	3/8"	-	0.375	9.5	0.394	10.00	0.437	11.10
-	-	10	0.394	10.0	0.413	10.49	0.456	11.58
-	7/16"	-	0.437	11.1	0.456	11.58	0.503	12.77
-	-	12	0.472	12.0	0.496	12.60	0.539	13.69
-	1/2"	-	0.500	12.7	0.523	13.28	0.562	14.27

Larger sizes up to 1" - details on request. For effective sealing with Cap Screws a counterbored hole is required.

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NYPLAS PRE-APPLIED UNDERHEAD SEALANT



Nyplas from PSM International
Nyplas is a plastisol (PVC) material, pre-applied coating under the heads of a variety of fasteners to provide sealing against water, moisture, dust, air and noise dampening.

ADVANTAGES

- Seals/dampens immediately upon assembly
- No secondary material required
- Eliminates the need for O-rings, gasket seals and sealant compounds
- Eliminates leak path
- Re-usable
- Non-toxic, assembler friendly
- Excellent shelf life; will not shrink or dry out with age
- Meets major automotive manufacturers' specifications
- Saves money and time
- Working temperature: (-40°F to 300°F) -40°C to 150°C

Company Name Specification	
GM	GM6086M - TYPE 3
GM	GM1131M - TYPE D
Ford	ESN 800688 - S100
Ford	WSK - M4G70C*
Daimler Chrysler	MSCD - 43
*Except Fogging	

NYPLAS BENEFITS

Nyplas was developed to solve manufacturers' needs for a fastener that would seal and dampen without additional parts at assembly.

Nyplas can be applied to an extensive range of fastener types, such as rivet nuts, break-stem rivets and a wide range of screw type components. We currently process a range of Headed Components, Studs, Plugs and similar size parts.

We can apply our coating to ferrous or non-ferrous materials (Steel, Aluminium, Stainless Steel or Brass).

This is a general guide to the products we currently process. We are able to process other components subject to evaluation.

Nyplas can be applied to most popular plated finishes, as well as polymer and organic coatings.

Parts manufactured from non-ferrous material should be supplied free from any surface contaminants.

NYSEAL PRE-APPLIED UNDERHEAD SEALANT



ADVANTAGES

- Eliminates time-consuming in-house applications of O-rings, gasket seals and sealant compounds
- Will not work loose
- Eliminates the leak path
- Prevents galvanic corrosion between dissimilar materials
- Re-usable
- Highly durable
- NYSEAL's green sealing element will not shrink or dry out from age
- Resistant to chemicals like alcohol, petroleum, oil, kerosene, diesel fuel and hydraulic fluids
- Working temperature: maximum 66°C (150°F)
- Screw strength is unaffected
- Assembly ready

Nyltite from PSM International
Nyseal is a patented pre-applied permanently fused fastener underhead sealing element. Green-coloured Nyseal creates a gasket-type seal, preventing leakage of fluids and gases under pressures up to 500 psi. The coating is permanently fused on the bearing surface of the fastener. As the screw is seated to its final position against the mating part, the Nyseal element compresses slightly and fills the void under the bearing surface of the head and countersink/counterbore.

NYSEAL BENEFITS

Nyseal was developed as a solution to a need for a highly durable fastener sealing element that could perform under high pressure and was resistant to a wide variety of chemicals. It eliminates the need and cost of secondary application during the assembly process.

PSM engineers are available to assist in recommending the correct sealant solution for your application.

Industrial Fastening Solutions

PSM Fasteners, together with its sister company RGA Fasteners, delivers a complete range of high-quality fastening solutions backed by shared expertise and consistent standards.

Product Range Includes:



Assembled Screw Range



High Tensile Boilts & Nuts



Metal Thread Screws



Masonry Anchors



Mild Steel Bolts & Nuts



Nuts



Nylon Products



Rivets



Self Drilling Screws



Self Tapping Screws



Socket Screws



Southco - Dzus Products



Special Turned Products



Stainless Steel Range



Metal Stamping



Structural Bolts & Nuts



Threaded Rod



Washers

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