

**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.

## ADVANTAGES

- AVAILABLE IN A RANGE OF SPACER LENGTHS
- FOR HEAVY DUTY APPLICATIONS LSS TYPE (LARGER SUPPORT SURFACE) IS AVAILABLE
- REMAINS CAPTIVE IN SHEET
- THROUGH THREADED (PTSO) AND BLIND THREADED (PBSO) AVAILABLE



## DESIGN GUIDE

### HOLE SIZE

Holes must be held to a tolerance of  $-0.00 +0.08\text{mm}$  therefore punched holes are recommended.

### INSTALLATION

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

### SHEET HARDNESS

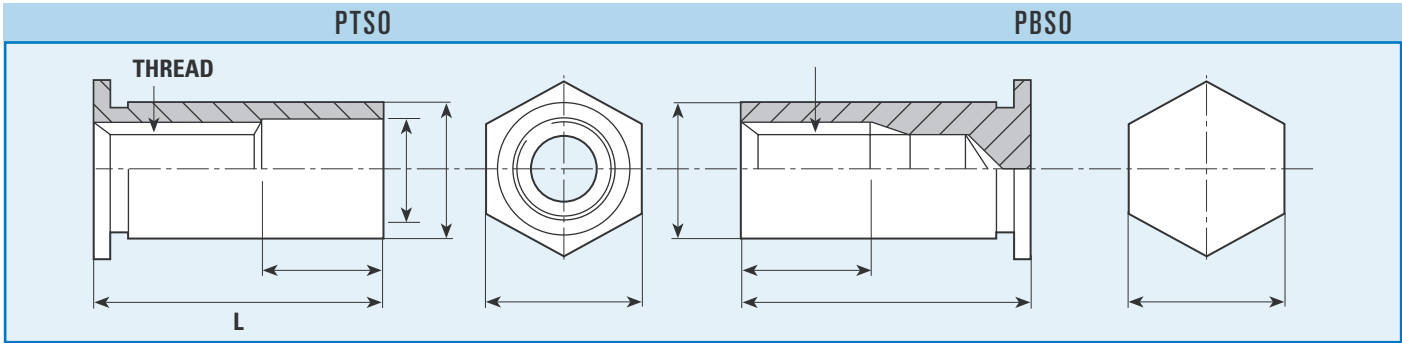
must be less than  $80R_b$  (150VPN) for steel fasteners and  $70R_b$  (128VPN) for stainless steel fasteners.

### HEAVY DUTY USE

Where heavy duty use is anticipated, PTSO and PBSO fasteners in the smaller thread sizes may be specified as "LSS" type. Larger Support Surface fasteners have a larger head and body size for a given thread than the standard type (see table).

# TECHNICAL DATA

# PTSO & PBSO TYPES



THREAD SIZES		For Sheet Thickness
Unified	ISO Metric	
4	2.5 / 3*	>1.0 4.20
6	3	>1.0
-	3.5	>1.0
8	4.5	>1.3
10		>1.3

	3	4	5	6	8	10	12	14	16	18	20	22	24	25	26
	NONE					4.0		8.0		11.0					

6	8	10	12	14	16	18	20	22	24	25	26	3.2	4.0	6.5	9.5
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SELF CLINCHING STAND OFF

## HOW TO SPECIFY

PTSO		PBSO	
PRODUCT CODE	<a href="#">PTSO-S-M4-12</a>	PRODUCT CODE	<a href="#">PBSO-S-M4-12</a>
MATERIAL CODE	<a href="#">PTSO-S-M4-12</a>	MATERIAL CODE	<a href="#">PBSO-S-M4-12</a>
THREAD SIZE	<a href="#">PTSO-S-M4-12</a>	THREAD SIZE	<a href="#">PBSO-S-M4-12</a>
SPACERLENGTH	<a href="#">PTSO-S-M4-12</a>	SPACERLENGTH	<a href="#">PBSO-S-M4-12</a>
LARGERSUPPORTSURFACE	<a href="#">PTSO-S-M3.5-12-LSS</a>	LARGERSUPPORTSURFACE	<a href="#">PBSO-S-M3.5-12-LSS</a>

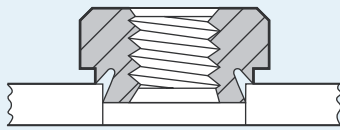
All Self-Clinching fasteners are easy to install because no special tooling is necessary. However, it is important to note that they must all be installed by a squeeze action press rather than a hammer blow. Punched holes are always recommended.

## A guide to installation forces for PS Self Clinching Fasteners

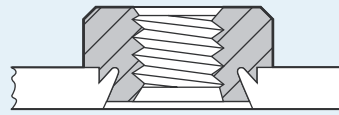
Force in Kn

Thread Size	NS4 1/2 Hard Aluminium Alloy	H515W Condition Aluminium Alloy	1/2 Hard Commercial Brass	Cold Rolled Steel
M2 & M2.5	7.5 - 10	15 - 17.5	10 - 12.5	7.5 - 10
M3 & M3.5	12.5 - 15	17.5 - 20	15 - 17.5	10 - 12.5
M4	12.5 - 15	20 - 22.5	20 - 22.5	10 - 12.5
M5	12.5 - 15	20 - 22.5	20 - 22.5	12.5 - 15
M6	22.5 - 25	42.5 - 45	35 - 37.5	20 - 22.5
M8	30 - 32.5	45 - 47.5	35 - 37.5	22.5 - 30
M10	30 - 32.5	50 - 52.5	50 - 52.5	27.5 - 30
M12	35 - 37.5	70 - 72.5	70 - 72.5	42.5 - 45

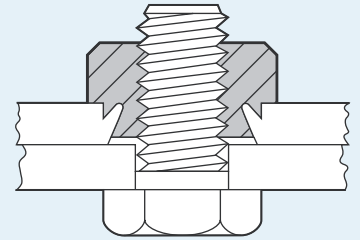
### METHOD OF ASSEMBLY - PS



- 1 Punch a hole in the metal sheet to the size recommended and install the fastener squarely in the hole.



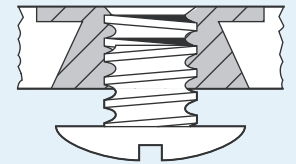
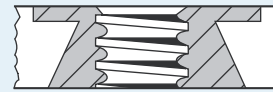
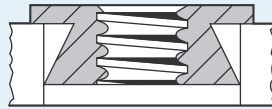
- 2 Apply pressure to the head of the fastener sufficient to totally embed clinching ring around entire circumference and bring shoulder in contact with sheet.



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

### METHOD OF ASSEMBLY - PF

- 1 Punch a hole in the sheet to the recommended size. Place shank of fastener in hole.



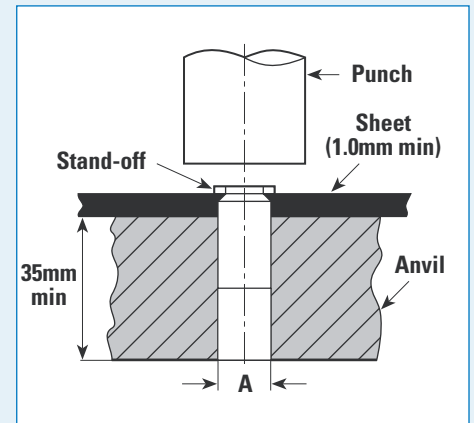
- 2 Apply squeezing pressure sufficient to embed hexagonal head flush in sheet.

### METHOD OF ASSEMBLY - PTSO & PBSO

- 1 Punch a hole in the metal sheet to the size recommended and install the fastener squarely in the hole.

Thread Size		'A' hole in Anvil
UNC	ISO Metric	
4	2.5	4.3mm/1.4
6	3	5.5 - 5.6
-	3.5	5.5 - 5.6
8	4	7.2 - 7.3
10	5	7.2 - 7.3

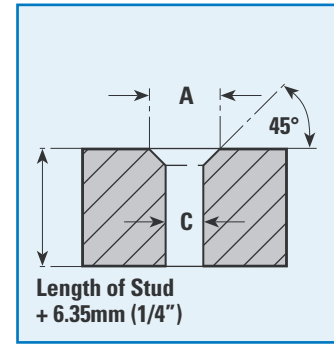
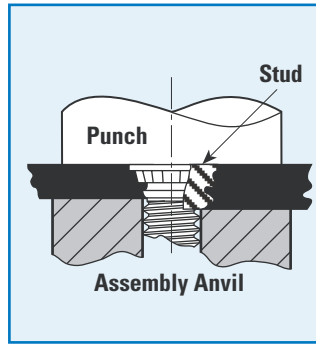
- 2 Apply squeezing pressure sufficient to embed hexagonal head flush in sheet.



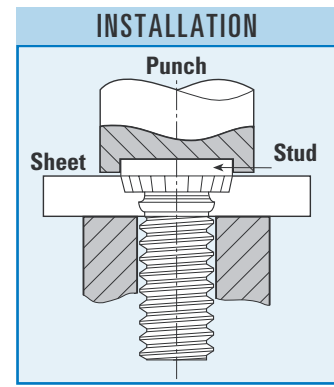
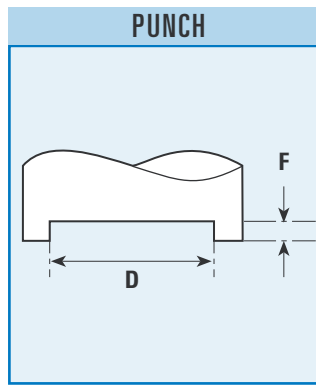
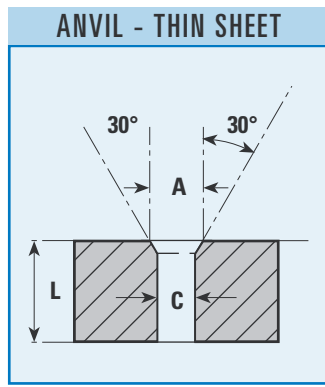
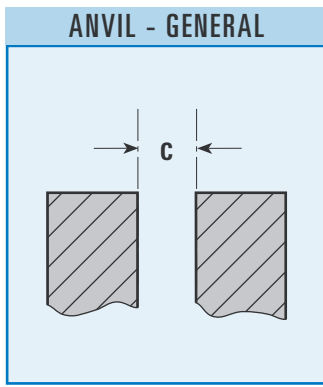
## METHOD OF ASSEMBLY - PFH

Thread Sizes ISO Metric	Anvil	
	A mm	C mm
2	2.59 - 2.69	2.01 - 2.08
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 Sizes Unified	Anvil	
	A ins	C ins
2	0.110 - 0.114	0.087 - 0.090
4	0.136 - 0.140	0.113 - 0.116
6	0.162 - 0.166	0.139 - 0.142
8	0.188 - 0.192	0.165 - 0.168
10	0.216 - 0.220	0.191 - 0.194
1/4	0.295 - .0300	0.250 - 0.253



## METHOD OF ASSEMBLY - HPFH



## Tooling Dimensions

Thread Sizes ISO Metric	PUNCH		Min. Die Length	ANVIL		
	Recess Width D mm	Recess Depth F mm		Bore Diameter C mm	Thin Sheet Countersink Diameter A mm	Sheet Thickness mm
M4	6.6-6.8	0.85-0.90	L	4.10-4.15	4.6-4.7	0.80-1.19
M5	8.2-8.4	0.99-1.04	L	5.10-5.15	5.8-5.9	0.90-1.29
M6	9.8-10.0	1.12-1.17	L	6.10-6.15	7.0-7.1	1.00-1.49
M8	12.9-13.1	1.63-1.68	L	8.10-8.15	9.0-9.1	1.50-1.99
M10	16.1-16.3	2.10-2.12	L	10.10-10.15	-	-

Thread Sizes Unified	PUNCH		Min. Die Length	ANVIL		
	Recess Width D ins	Recess Depth F ins		Bore Diameter C ins	Thin Sheet Countersink Diameter A ins	Sheet Thickness ins
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
5/16	.495-.505	.063-.064	L	.313-.316	.350-.354	.060-.074
3/8	.595-.605	.077-.078	L	.376-.379	-	-

## TOTAL ASSEMBLY SOLUTIONS

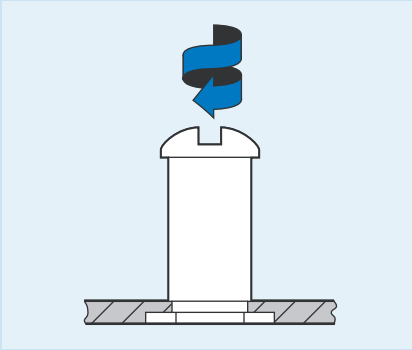
PSM's philosophy is to provide a total package of fastener design, prototype production, application advice, installation systems and technical liaison for design and production engineers worldwide. Playing a key role in this is PSM's ability - through its company Multi Automation of Redditch - to design and

manufacture a wide range of installation equipment, from a simple hand punch to the latest state-of-the-art computer controlled systems to feed and install components and fasteners. Multi Automation has the expertise to handle the most complex assembly problems enabling PSM to provide a Total Assembly Solution.

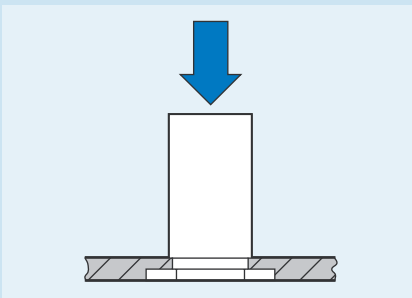
INSTALLATION METHODS - CLINCHING

# PERFORMANCE DATA - CLINCHING

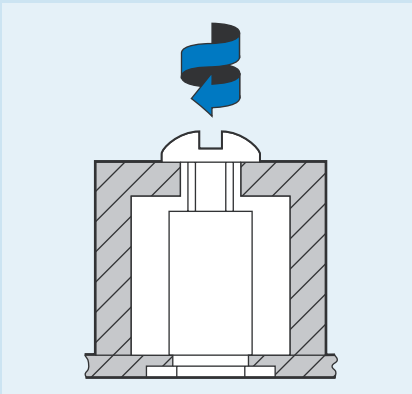
**N.B.** The graphs show the performance levels in terms of torque resistance, pull-out and push-out.



**BODY TORQUE** - measures resistance to turning.



**PUSH-OUT** - measures resistance to axial loads.

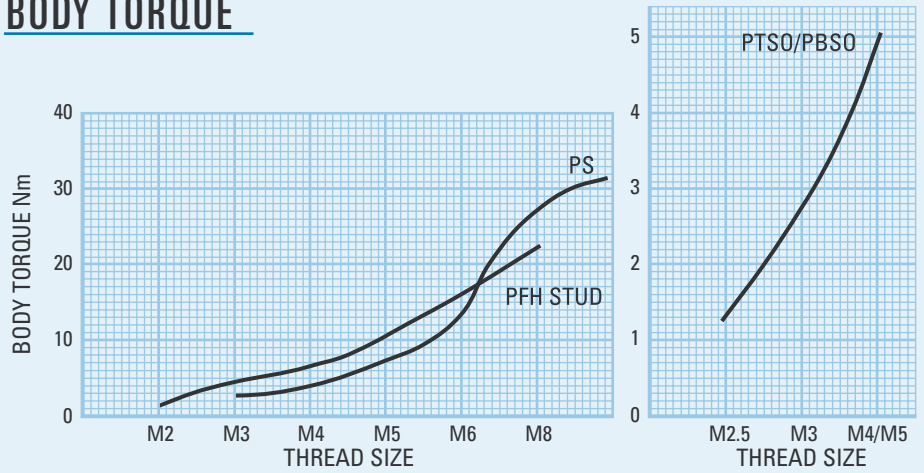


**PULL-THROUGH TORQUE** - measures the resistance to axial load applied against the head.

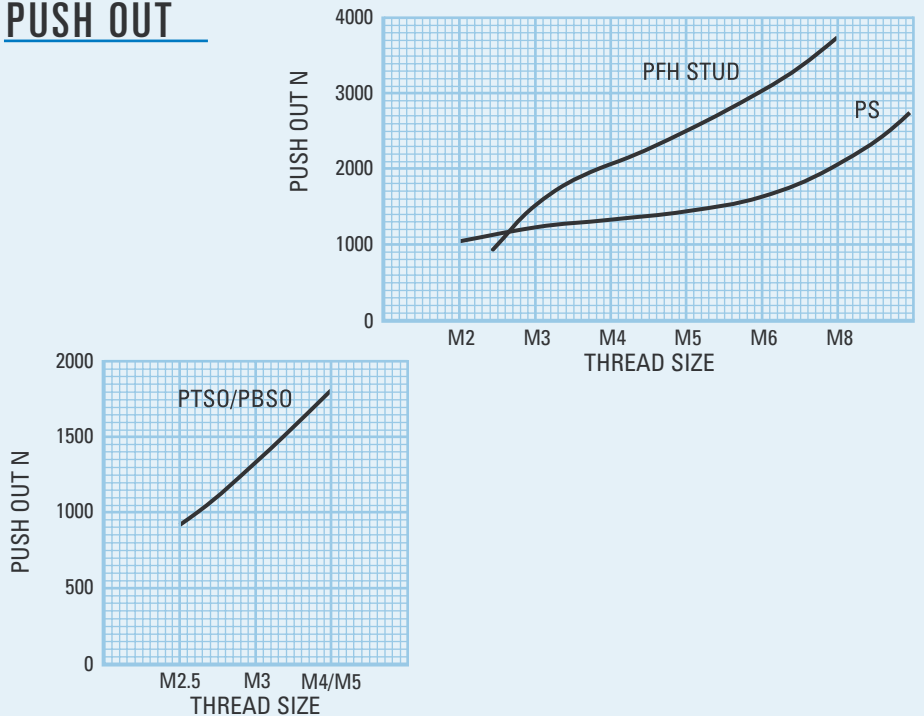
These test results were achieved using Mild Steel sheet at 68 R<sub>B</sub> (126 VPN) under laboratory conditions.

For specific advice we would strongly recommend consultation with P.S.M Technology Centre.

## BODY TORQUE



## PUSH OUT



## PULL THROUGH TORQUE

