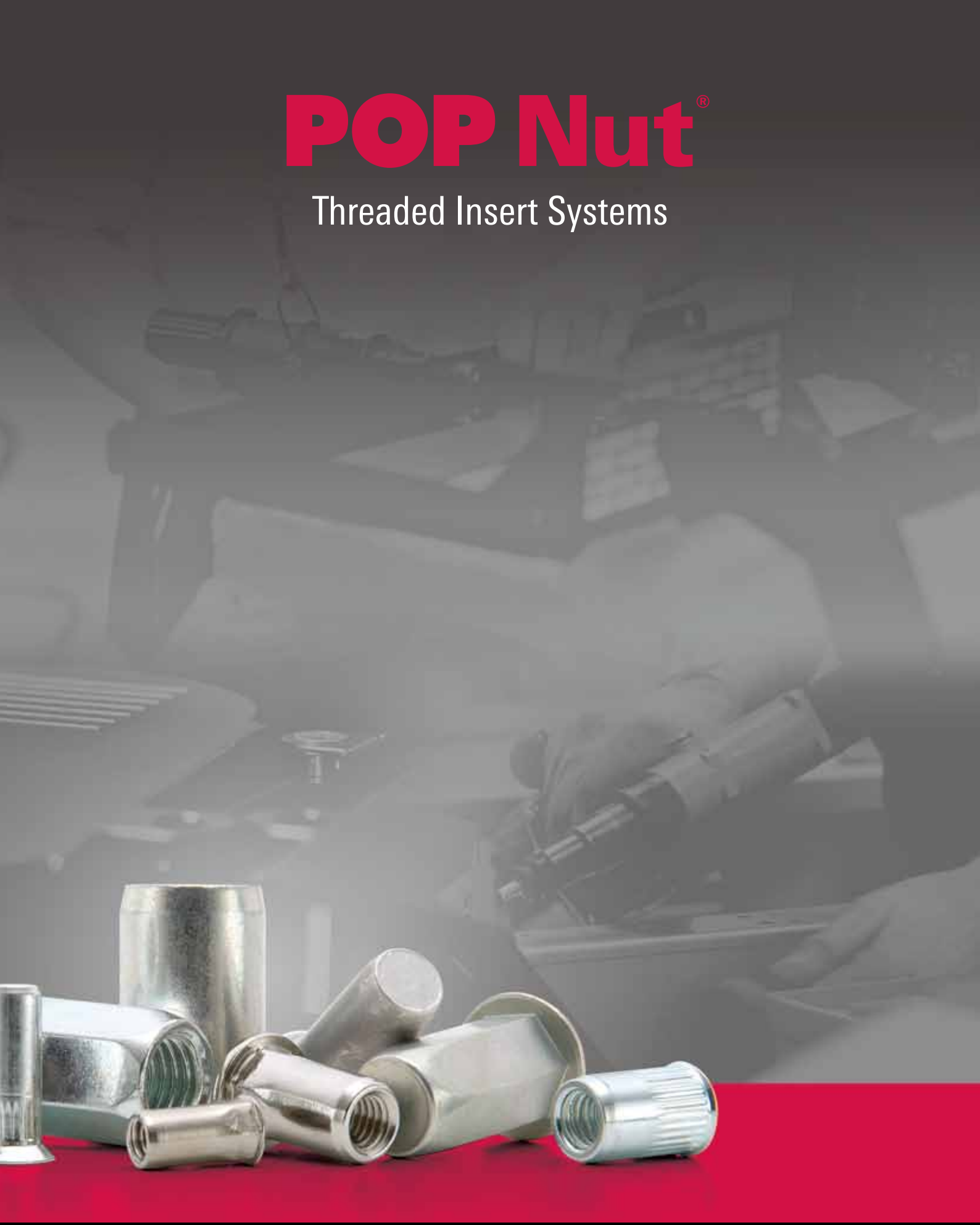
POP Nut®

Threaded Insert Systems



Edition 04 2012

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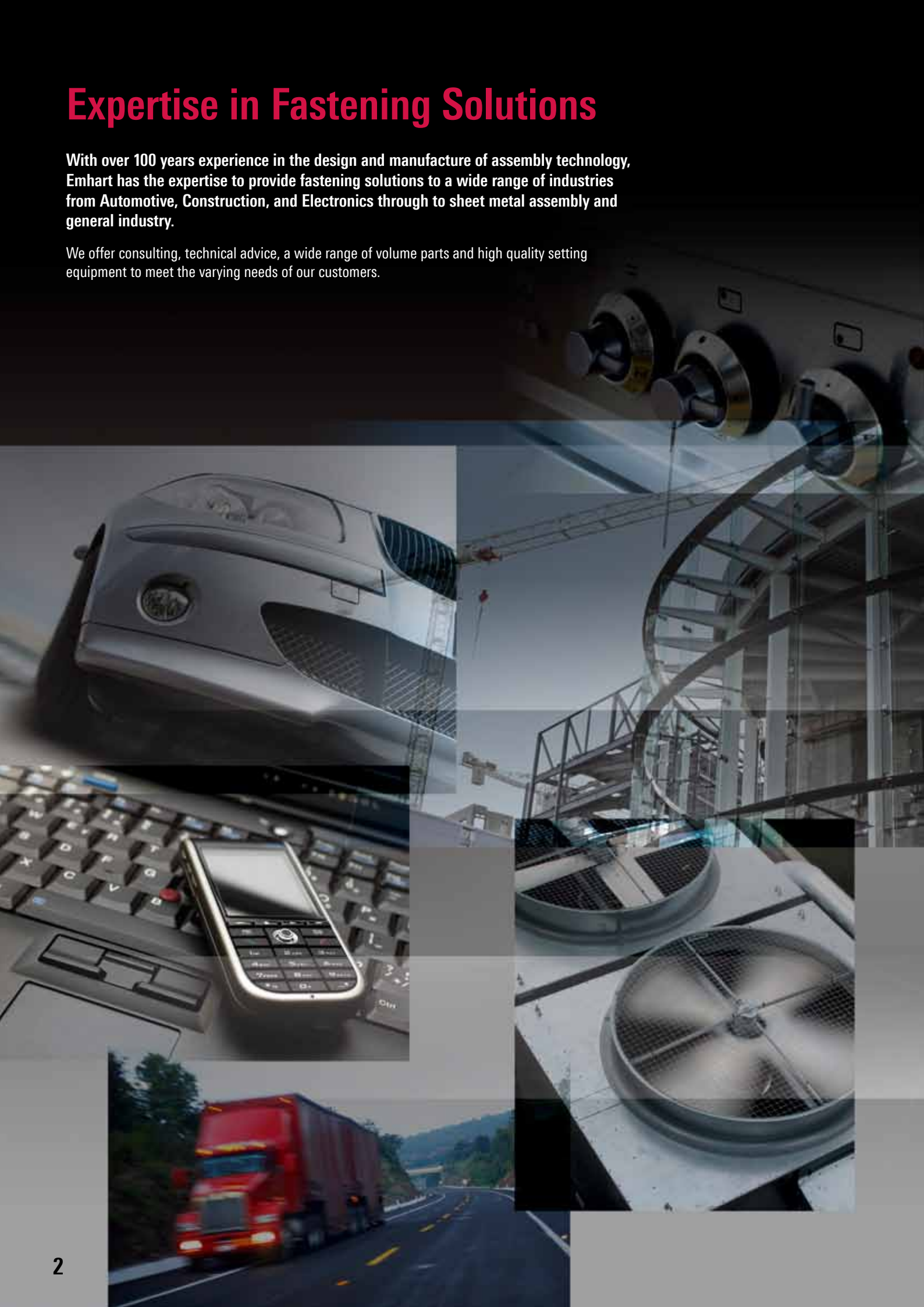
EMHART TEKNOLOGIES®

Expertise in Fastening Solutions

With over 100 years experience in the design and manufacture of assembly technology, Emhart has the expertise to provide fastening solutions to a wide range of industries from Automotive, Construction, and Electronics through to sheet metal assembly and general industry.

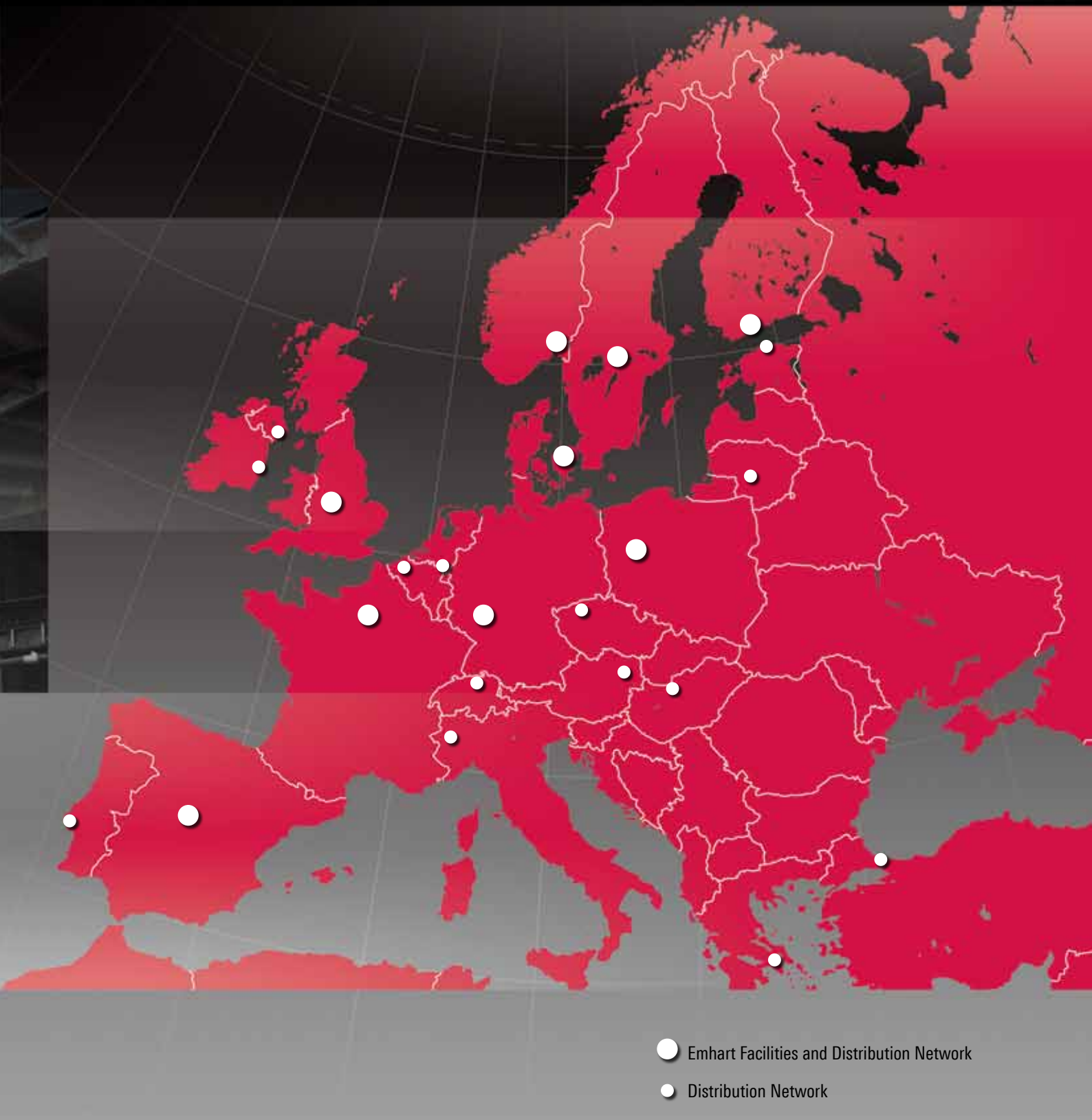
We offer consulting, technical advice, a wide range of volume parts and high quality setting equipment to meet the varying needs of our customers.



Emhart in Europe

Emhart has experienced technical experts and application engineers available throughout Europe ready to support customers with application and assembly processes and fastener specifications.

We service our European customers directly through our manufacturing and warehousing facilities around Europe or through our network of highly experienced distributors.



EMHART TEKNOLOGIES®

POP Nut®

Threaded Insert Systems

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POPNut®

POPNut® Threaded Inserts can be installed into sheet-metal, tubing, extrusions, plastics and other materials to provide an internal thread for subsequent component assembly.

POPNut® is the perfect solution for providing high quality, load bearing threads even in single thin sheets down to 0.5mm. POPNut® can be used in a variety of materials where alternative methods cannot maintain torque and pull out loads. They enable components which are assembled later in the production cycle to be adjusted and are ideally suited to applications where access is only available from one side of the workpiece.

WellNut®

WellNut® is ideal for isolating against vibration, electrical conductivity and galvanic corrosion and for sealing against ambient moisture & gases.

Available in Neoprene as standard or EPDM, which is ideal for applications in the outdoor environment, WellNut® can be simply installed from one side of the application when the mating screw is tightened.

Jack Nut®

Jack Nut® is designed to be installed in soft or brittle materials such as plastic, cardboard or glass.

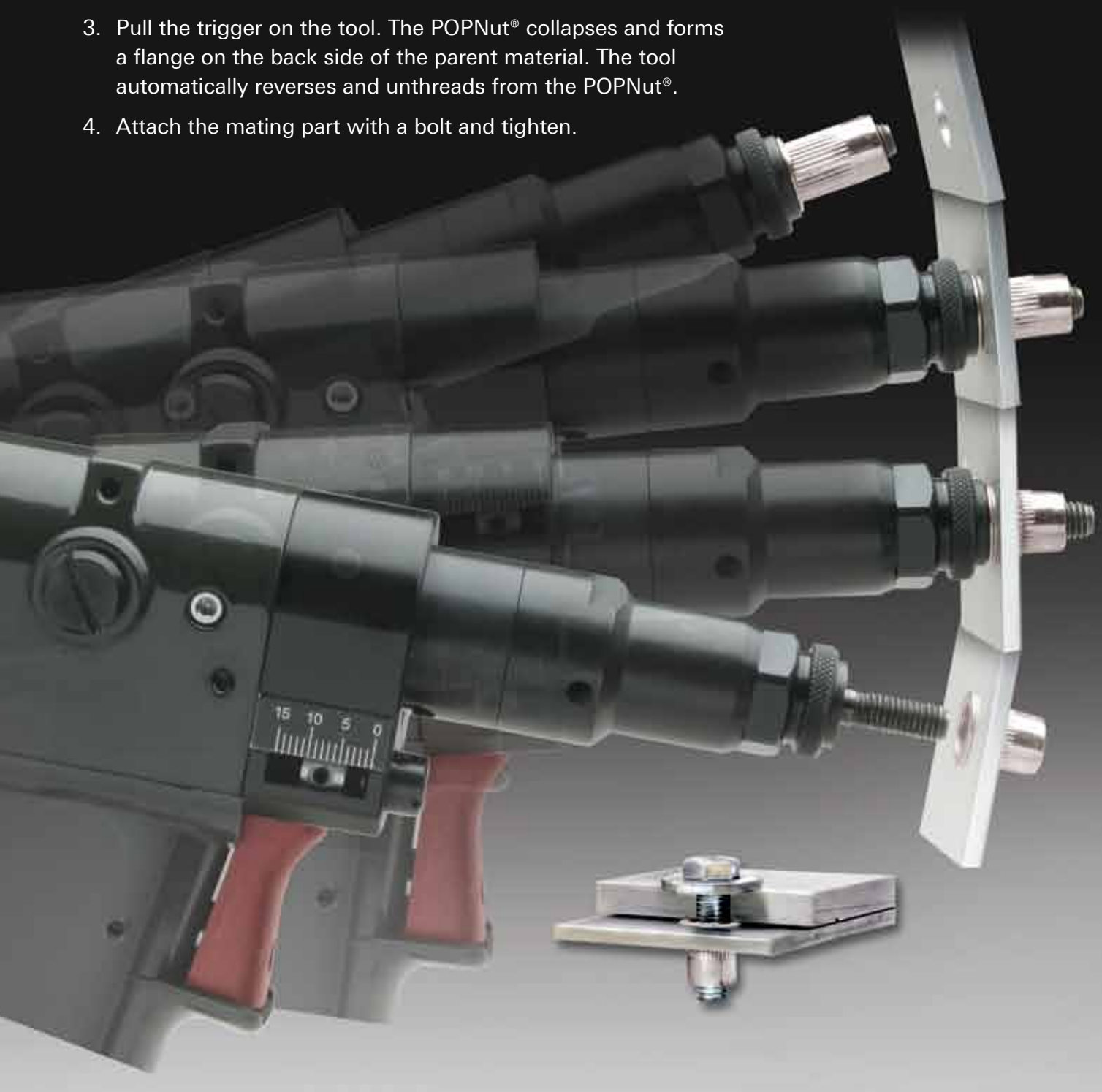
Available in steel as standard or brass, Jack Nut® has 4 “legs” which expand behind the parent material providing excellent pull out resistance.

It provides a screw thread for subsequent component assembly and can be installed into tubular materials where only one side of the application is accessible.

Manufactured to the highest industry standards, POPNut® WellNut® and Jack Nut® are RoHS, ELoV & WEEE compliant.

The POPNut® installation sequence is simple.

1. Push the POPNut® on the tool mandrel and it automatically spins on.
2. Place the POPNut® in the hole in the parent material.
3. Pull the trigger on the tool. The POPNut® collapses and forms a flange on the back side of the parent material. The tool automatically reverses and unthreads from the POPNut®.
4. Attach the mating part with a bolt and tighten.



Materials

The POPNut® Range is available in Aluminium, Steel and Stainless Steel.

Aluminium

Aluminium Alloy, self colour finish.
Used when low weight and higher corrosion resistance is required.

Steel

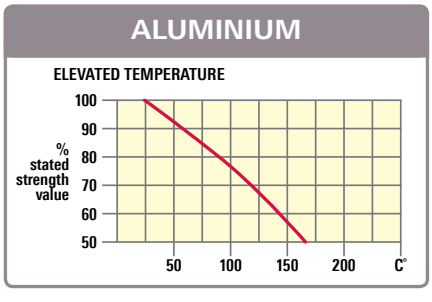
Low Carbon Steel, zinc plated with CRVI free passivation.
Used for general purpose applications with higher temperature resistance.

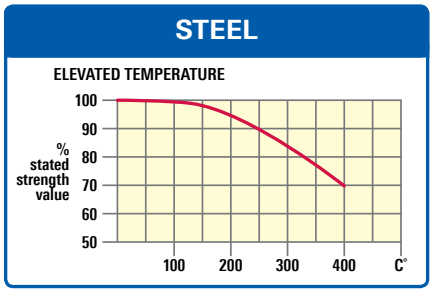
Stainless Steel

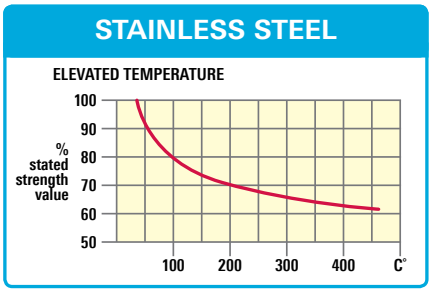
302, 304 and 316 Stainless Steel, self colour finish.
Suitable for applications requiring corrosion resistance.

Strength performance with elevated temperature

This is important to consider when the joint will be exposed to elevated temperatures.
The graphs below are for reference only; specific evaluation should given for each case.







Finishes

Finishes

Steel POPNuts® are supplied with Zinc and Clear passivation as standard and are RoHS, EolV and WEEE compliant.

There are a wide variety of other finishes also available for aesthetic and environmental needs including:- Xylan, Anodisation & Zinc Nickel.

Galvanic Corrosion

Galvanic corrosion can occur where two dissimilar metals are in contact in the presence of an electrolyte.

Where metals cannot be exactly matched, a coating such as zinc will help to minimise the area of contact.

The following table is a general guide to the possible effect of corrosion on the POPNut® body when in contact with various component materials.

Metal Contact Chart

POPNUT® MATERIAL	CONTACT METAL					
	NC	SS	Cu	CS	AL & A	Zn
Stainless Steel (SS)						
Carbon Steel (CS)						
Aluminium and Alloys (Al & A)						
Neoprene*						

Key:

None	Slight Corrosion	Acceleration of Corrosion	High Acceleration	Not Recommended

* WellNut only

Geometry

POPNut® Threaded Insert Geometry

The POPNut® Threaded Insert range has been designed to provide the perfect solution for your application requirements.

The geometry concerning Body Type and Head Style is explained below:

Body Type

Round

Used for general purpose applications.

Round, Linear Grooves

Provides improved resistance to turning in round holes, especially in softer materials such as engineering plastics.

Hexagonal

Used in conjunction with a hexagon hole to give maximum resistance to applied torque or unscrewing torque.

All of the above Body Types can be supplied Open or Closed End

Open End

Most popular style. The body of an Open End POPNut® has optimum length with minimum blind side protrusion. The bolt length is not critical provided that the bolt engages all of the POPNut® threads.

Closed End

Used to prevent ingress of moisture past the securing bolt.
For pressure tight applications a seal beneath the flange may be required.

Head Style

Flat

Most popular head style. Provides a good bearing area for application surface and for bolted-on parts.

Countersunk

Used for flush head setting, requires a countersink in the application.

Recommend flush or slight head projection above the surface of the application for maximum face contact and clamp.

Reduced

Used for near flush setting as an alternative to countersinking.
Not recommended for holes with wide tolerances or with soft ductile material.

Special POPNut® – Design Solutions

We support the application needs of our customers by designing and manufacturing Special POPNut® Threaded Inserts*.

Here are some examples:

Pipe POPNut®

- Available in Steel, M6 Thread size
- Suitable for setting into curved applications
- Creates a horizontal surface for subsequent component assembly

Slotted POPNut®

- Available in Steel, M6 Thread size
- Soft Setting POPNut®
- Ideal for plastic and thin sheet applications
- 4 “legs” expand when fastening

Square POPNut®

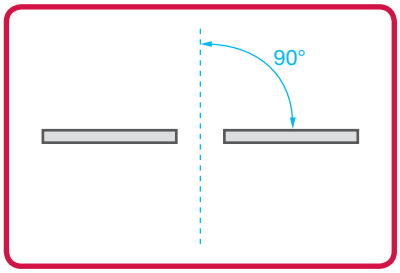
- Available in Steel, M8 Thread size
- Designed to aid line-side identification vs. Hex
- Excellent torque resistance

Large Flange Hexagonal POPNut®

- Available in Steel, M8 Thread size
- Large flange diameter 21mm
- Provides extra support to thin sheet applications
- Cover uneven holes

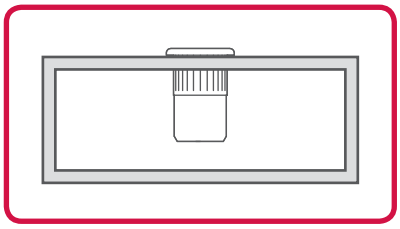
*Special POPNut® Design Solutions are subject to minimum order quantities.

POPNut® Joint Design



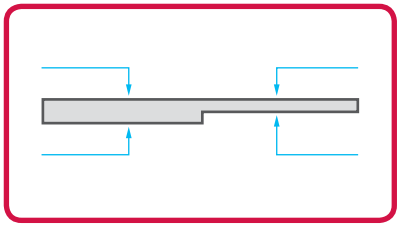
Making the hole

The hole for the POPNut® must be square to the parent material. Holes drilled or punched at an angle can cause premature tool mandrel wear.



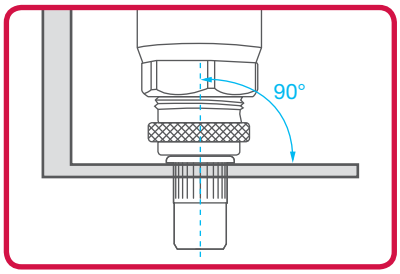
Backside clearance

Ensure sufficient clearance on the blind side when using POPNut® in tube sections, extrusions and other closed applications.



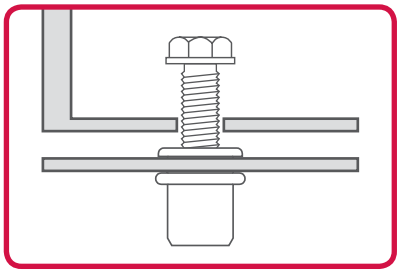
Grip range

The parent material thickness must be within the recommended grip range of the POPNut®.



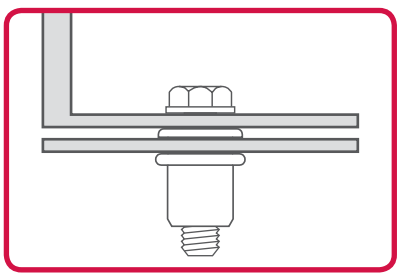
Tool access

The POPNut® tool must have perpendicular access to the parent material. If the tool is held at an angle it can cause premature mandrel wear.



Mating part fit

The hole in the mating part should be smaller than the POPNut® head to insure contact with the POPNut®.



The POPNut® joint

The ideal POPNut® joint is one where the mating part is non-rotational and contacts the head of the POPNut®.

Torque Strength

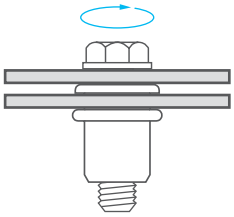
Strength Test Methods for POPNut®

Ultimate Torque

Test conditions

- Base material: Steel, 1.2mm thickness
- Affixing plate: SK3 (HRC40 or above)
- Bolt: Hex bolt or cap screw (10.9 or greater)
- Washer: Stainless steel, small round type

Apply torque to the bolt using a torque wrench and measure the maximum torque at which the threading of the POPNut® or the bolt fails.

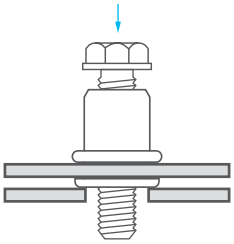


Thread Shear

Test conditions

- Base material: Steel, 1.2mm thickness
- Bolt: Hex bolt or cap screw (10.9 or greater)
- Jig hole diameter (A): Nominal thread size + 1 mm

Apply compressive load to the bolt using a tensile tester and measure the maximum load at which the threads or backside flange part of the POPNut® fails.



Technical Data

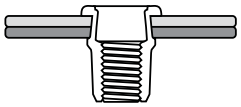
Thread	Grip	ALUMINIUM Ultimate Torque Nm	ALUMINIUM Thread Shear N	STEEL Ultimate Torque Nm	STEEL Thread Shear N	STAINLESS STEEL Ultimate Torque Nm	STAINLESS STEEL Thread Shear N
M3	1.2mm		3800	3.8	>5000		
M4	1.2mm	6.9	5200	8.3	>8000		9000
M5	1.2mm	9.5	6300	16.0	11000	16.0	>16000
M6	1.2mm	22.7	10000	24.5	21000	24.0	21000
M8	1.2mm		15000	73.0	30000	71.0	32000
M10	1.2mm		22000	121.0	39000		40000
M12	1.2mm			123+	50000		

Test conditions: *1.2mm thickness, steel sheet material and appropriate stroke adjustment. The mentioned data are average reference values only and are based on the flat head, open end, product lines. We recommend a specific test in the proper material thickness and specific application.*

POPNut® Application Types

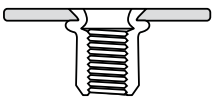
POPNut® Threaded Inserts are a versatile solution for providing load bearing threads in many application types:

Join Materials and Provide a Load Bearing Thread



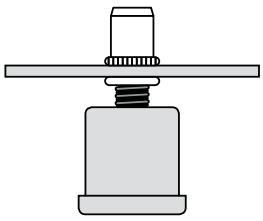
A simple and effective way to join materials with the benefit of an internal thread.

Provide a Load Bearing Thread in Single and Thin Sheet Materials



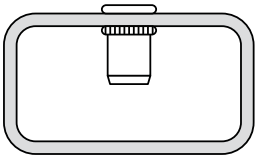
The perfect solution for providing load bearing threads in single sheets down to 0.5mm.

For Component Adjustment



Enables components, which are assembled later in the production process, to be adjusted.

Into Tubes or Enclosed Applications



Ideally suited to applications where access is only available from one side of the workpiece.

Product Index

Aluminium

Open End

	Round	
Flat Head	PAFO	16
Countersunk Head	PAKO	17
Reduced Head	PARO	18

Closed End

	Round	
Flat Head	PAFC	16
Countersunk Head	PAKC	17

Stainless Steel

Open End

	Round		Semi-Hexagonal	
Flat Head	PTFO PWFO	27 30	PTFOM	29
Countersunk Head	PTKO PWKO	28 31		
Reduced Head	PTRO	28	PTROM	29

Closed End

	Round	
Flat Head	PVFC	27

For additional details on product features - please refer to the glossary on page 45.

Steel

Open End

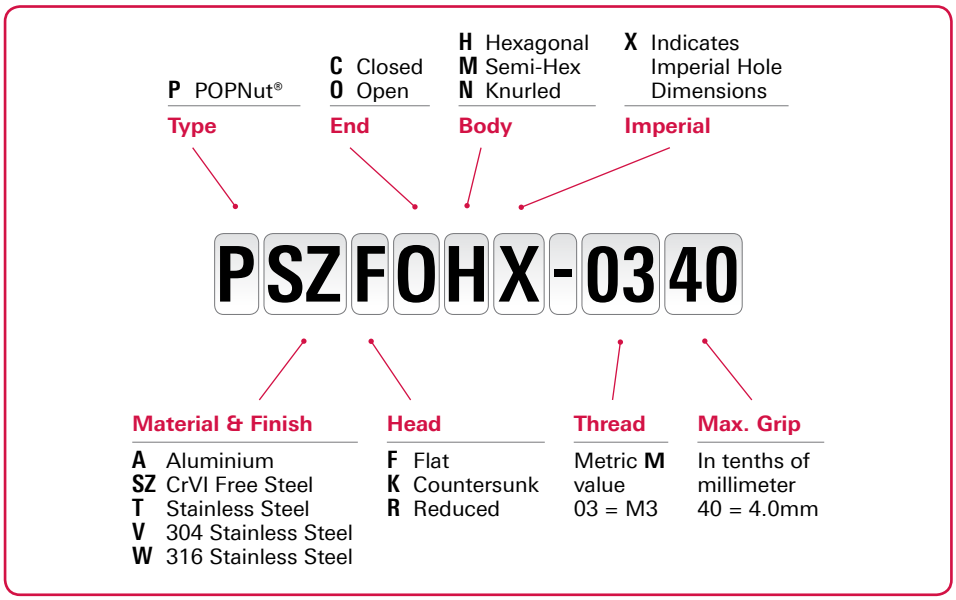
	Round	Linear Knurls	Hexagonal
Flat Head	PSZFO 20	PSZFON 19	PSZFOH 24
Countersunk Head	PSZKO 22	PSZKON 21	
Reduced Head	PSZRO 23 PSZROX 24	PSZRON 23	PSZROH 25 PSZROM* 26

* Semi-Hexagonal

Closed End

	Round	Linear Knurls	Hexagonal
Flat Head	PSZFC 20	PSZFCN 19	PSZFCH 25
Countersunk Head	PSZKC 22	PSZKCN 21	
Reduced Head			PSZRCH 26

POPNut® Coding Guide



PAFO

HEAD **Flat Head** | TYPE **Open End** | SECTION **Round**

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000 KG
	mm	mm		mm	mm	mm	mm					kg
M4	11.0 12.0	1.5 - 2.5 2.5 - 3.5	**PAFO-0425** **PAFO-0435**	6.1	9.3	0.8	6.0	32943 32944	10,000 10,000	32859 32860	500 500	0.5 0.6
M5	11.8 12.8	1.5 - 2.5 2.5 - 3.5	**PAFO-0525** **PAFO-0535**	7.1	10.3	1.0	7.0	32946 32947	10,000 10,000	32862 32863	500 500	0.7 0.8
M6	13.8 15.3	1.0 - 2.5 2.5 - 4.0	**PAFO-0625** **PAFO-0640**	9.1	12.3	1.5	9.0	32948 32949	5,000 3,000	32864 32865	500 500	1.2 1.6
M8	15.3 16.9	1.0 - 2.5 2.5 - 4.0	**PAFO-0825** **PAFO-0840**	11.1	14.3	1.5	11.0	33009 32951	2,500 2,000	32866 32867	250 250	1.5 2.3
M10	15.8 17.3	1.0 - 2.5 2.5 - 4.0	**PAFO-1025** **PAFO-1040**	13.1	16.3	1.5	13.0	32952 32953	2,000 2,000	32868 32869	200 200	2.2 2.5

PAFC

HEAD **Flat Head** | TYPE **Closed End** | SECTION **Round**

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000 KG
	mm	mm		mm	mm	mm	mm					kg
M3	13.3	0.5 - 2.0	**PAFC-0320***	5.1	8.0	0.8	5.0	33171	7,500	00702	500	0.5
M4	14.8 16.3	0.5 - 3.0 3.0 - 4.5	**PAFC-0430** **PAFC-0445***	6.1	10.0	0.8	6.0	04825 33173	5,000 4,000	98001 98003	500 500	0.7 0.7
M5	18.0 20.5	0.5 - 3.0 3.0 - 5.5	**PAFC-0530** **PAFC-0555***	7.1	11.0	1.0	7.0	33174 33175	2,500 2,500	98005 98007	500 500	1.1 1.2
M6	21.5 24.5	0.5 - 3.0 3.0 - 5.5	**PAFC-0630** **PAFC-0655***	9.1	13.0	1.5	9.0	09678 48477	1,500 1,250	98009 98011	500 500	2.3 2.5
M8	22.5 25.5	0.5 - 3.0 3.0 - 5.5	**PAFC-0830** **PAFC-0855***	11.1	16.0	1.5	11.0	48478 48479	750 750	98013 98015	250 250	3.5 3.9

* Minimum order quantities apply

M=Thread Size; *l*=Nominal Body Length; *g*=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; *k*=Nominal Head Thickness; *d*=Nominal Barrel Diameter

HEAD
Countersunk Head

TYPE
Open End

SECTION
Round

PAKO

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000
	mm	mm		mm	mm	mm	mm					kg
M3	11.3	1.7 - 3.5	**PAKO-0335***	5.1	8.0	1.5	5.0	00263	10,000	97979	500	0.4
M4	11.5 13.0	1.7 - 3.5 3.5 - 5.0	**PAKO-0435** **PAKO-0450***	6.1	9.0	1.5	6.0	47981 47982	7,500 5,000	97981 97983	500 500	0.5 0.5
M5	13.0 16.0	1.7 - 4.0 4.0 - 6.5	**PAKO-0540** **PAKO-0565***	7.1	10.0	1.5	7.0	47983 47984	5,000 4,000	97985 97987	500 500	0.7 0.8
M6	17.0 19.0	1.7 - 4.5 4.5 - 6.5	**PAKO-0645** **PAKO-0665***	9.1	12.0	1.6	9.0	47985 47986	2,000 2,000	97989 97991	500 500	1.6 1.6
M8	19.0 21.0	1.7 - 4.5 4.5 - 6.5	**PAKO-0845** **PAKO-0865***	11.1	14.0	1.5	11.0	47987 33188	1,250 1,250	97993 97995	250 250	2.1 2.2
M10	21.0 23.0	1.7 - 4.5 4.5 - 6.5	**PAKO-1045*** **PAKO-1065***	12.5	15.4	1.5	12.4	33189 33190	1,000 1,000	97997 97999	250 250	2.5 2.7

* Minimum order quantities apply

HEAD
Countersunk Head

TYPE
Closed End

SECTION
Round

PAKC

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000
	mm	mm		mm	mm	mm	mm					kg
M4	15.5 17.0	1.7 - 3.5 3.5 - 5.0	**PAKC-0435*** **PAKC-0450***	6.1	9.0	1.5	6.0	01425 33191	5,000 5,000	98017 98019	500 500	0.7 0.7
M5	18.0 20.5	1.7 - 4.0 4.0 - 6.5	**PAKC-0540*** **PAKC-0565***	7.1	10.0	1.5	7.0	00892 33193	3,000 3,000	98021 98023	500 500	1.0 1.1
M6	22.0 24.0	1.7 - 4.5 4.5 - 6.5	**PAKC-0645*** **PAKC-0665***	9.1	12.0	1.5	9.0	33194 33195	1,500 1,500	98025 98027	500 500	2.1 2.3
M8	25.0 28.0	1.7 - 4.5 4.5 - 6.5	**PAKC-0845*** **PAKC-0865***	11.1	14.0	1.5	11.0	33196 33197	1,000 750	98029 98031	250 250	3.3 3.7

* Minimum order quantities apply

M=Thread Size; *l*=Nominal Body Length; *g*=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; *k*=Nominal Head Thickness; *d*=Nominal Barrel Diameter

PARO

HEAD **Reduced Head** | TYPE **Open End** | SECTION **Round**

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000 kg
	mm	mm		mm	mm	mm	mm					kg
M4	11.3 12.3	1.5 - 2.5 2.5 - 3.5	**PARO-0425** **PARO-0435**	6.1	7.1	0.6	6.0	32955 32956	10,000 10,000	32871 32872	500 500	0.5 0.5
M5	11.8	1.5 - 2.5	**PARO-0525**	7.1	8.1	0.6	7.0	32958	10,000	32874	500	0.5
M6	13.8	1.0 - 2.5	**PARO-0625**	9.1	10.1	0.6	9.0	32960	10,000	32876	500	1.2
M8	15.3	1.0 - 2.5	**PARO-0825**	11.1	12.1	0.6	11.0	32962	2,000	32878	250	1.8

M=Thread Size; *l*=Nominal Body Length; *g*=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; *k*=Nominal Head Thickness; *d*=Nominal Barrel Diameter

HEAD **Flat Head** TYPE **Open End** SECTION **Round** SURFACE **Linear Knurls**

PSZFON

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	KG /1,000
	mm	mm		mm	mm	mm	mm					kg
M3	10.0	0.5 - 3.0	**PSZFON-0330**	5.0	6.8	0.8	4.9	33218	10,000	33217	500	0.9
M4	10.3 11.8	0.3 - 3.0 3.0 - 4.0	**PSZFON-0430** **PSZFON-0440**	6.0	8.8	1.0	5.9	33220 33222	10,000 10,000	33219 33221	500 500	1.3 1.4
M5	12.3 15.3	0.3 - 3.0 3.0 - 4.0	**PSZFON-0530** **PSZFON-0540**	7.0	9.8	1.0	6.9	33224 33485	8,000 5,000	33223 33484	500 500	1.8 2.2
M6	14.8 16.3	0.5 - 3.0 3.0 - 4.5	**PSZFON-0630** **PSZFON-0645**	9.0	11.8	1.5	8.9	33213 33228	4,000 4,000	33225 33227	500 500	4.0 4.0
M8	16.3 18.8	0.5 - 3.0 3.0 - 5.5	**PSZFON-0830** **PSZFON-0855**	11.0	14.8	1.5	10.9	33230 33232	2,000 2,000	33229 33231	250 250	5.7 6.3
M10	17.3 22.3	0.5 - 3.0 3.0 - 6.0	**PSZFON-1030** **PSZFON-1060**	12.0	15.8	2.0	11.9	33234 33236	1,500 1,500	33233 33235	250 250	7.0 7.6
M12	23.3	1.0 - 4.0	**PSZFON-1240**	16.0	21.8	2.0	15.9	33238	800	33237	200	16.8

HEAD **Flat Head** TYPE **Closed End** SECTION **Round** SURFACE **Linear Knurls**

PSZFCN

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	KG /1,000
	mm	mm		mm	mm	mm	mm					kg
M4	15.3	0.3 - 3.0	**PSZFCN-0430**	6.0	8.8	1.0	5.9	33312	5,000	33311	500	2.1
M5	17.8	0.3 - 3.0	**PSZFCN-0530**	7.0	9.8	1.0	6.9	32917	5,000	33055	500	2.9
M6	20.3	0.5 - 3.0	**PSZFCN-0630**	9.0	11.8	1.5	8.9	32918	2,000	32835	500	5.8
M8	24.8	0.5 - 3.0	**PSZFCN-0830**	11.0	14.8	1.5	10.9	32919	1,500	32836	250	9.8

M=Thread Size; *l*=Nominal Body Length; *g*=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; *k*=Nominal Head Thickness; *d*=Nominal Barrel Diameter

PSZFO

HEAD **Flat Head** | TYPE **Open End** | SECTION **Round**

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	KG /1,000
	mm	mm		mm	mm	mm	mm					kg
M3	9.8 10.8	0.5 - 2.0 2.0 - 3.0	**PSZFO-0320*** **PSZFO-0330***	5.1	8.0	0.8	5.0	00362 33244	10,000 10,000	32625 33243	500 500	1.0 1.1
M4	10.8 12.3	0.5 - 3.0 3.0 - 4.5	**PSZFO-0430** **PSZFO-0445**	6.1	10.0	0.8	6.0	04846 33246	5,000 5,000	08414 33245	500 500	1.5 1.5
M5	12.0 15.0	0.5 - 3.0 3.0 - 5.5	**PSZFO-0530** **PSZFO-0555**	7.1	11.0	1.0	7.0	32626 33248	4,000 3,000	08525 33247	500 500	2.1 2.5
M6	14.5 16.5 19.0	0.5 - 3.0 3.0 - 5.5 5.5 - 8.0	**PSZFO-0630** **PSZFO-0655** **PSZFO-0680**	9.1	13.0	1.5	9.0	33249 33250 33252	2,000 2,000 1,500	08526 08524 98877	500 500 500	4.3 4.7 5.0
M8	16.0 18.5 21.5	0.5 - 3.0 3.0 - 5.5 5.5 - 8.0	**PSZFO-0830** **PSZFO-0855** **PSZFO-0880**	11.1	16.0	1.5	11.0	08964 33253 33255	1,250 1,200 1,000	08527 08431 33254	250 200 250	6.4 7.0 7.8
M10	19.8 22.8	0.8 - 3.5 3.5 - 6.0	**PSZFO-1035** **PSZFO-1060**	12.5	18.5	2.3	12.4	00262 33259	750 750	09673 33258	250 250	9.8 10.8
M12	25.0 28.0	1.0 - 4.0 4.0 - 7.0	**PSZFO-1240** **PSZFO-1270**	16.1	23.0	2.0	16.0	08685 33262	400 300	33260 33261	100 100	19.6 21.1

* Minimum order quantities apply

PSZFC

HEAD **Flat Head** | TYPE **Closed End** | SECTION **Round**

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	KG /1,000
	mm	mm		mm	mm	mm	mm					kg
M4	14.8 16.3	0.5 - 3.0 3.0 - 4.5	**PSZFC-0430** **PSZFC-0445***	6.1	10.0	0.8	6.0	33264 33266	5,000 4,000	33263 33265	500 500	2.1 2.1
M5	18.0 20.5	0.5 - 3.0 3.0 - 5.5	**PSZFC-0530** **PSZFC-0555***	7.1	11.0	1.0	7.0	33268 33270	2,500 2,500	08528 33269	500 500	3.4 3.6
M6	21.5 24.5	0.5 - 3.0 3.0 - 5.5	**PSZFC-0630** **PSZFC-0655**	9.1	13.0	1.5	9.0	33271 33273	1,500 1,250	08529 33272	500 250	6.8 7.5
M8	22.5 25.5	0.5 - 3.0 3.0 - 5.5	**PSZFC-0830** **PSZFC-0855**	11.1	16.0	1.5	11.0	33274 33276	1,000 750	09672 33275	250 250	9.7 10.9

* Minimum order quantities apply

M=Thread Size; *l*=Nominal Body Length; *g*=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; *k*=Nominal Head Thickness; *d*=Nominal Barrel Diameter

HEAD
Countersunk Head

TYPE
Open End

SECTION
Round

SURFACE
Linear Knurls

PSZKON

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	KG /1,000
	mm	mm		mm	mm	mm	mm					kg
M4	11.8	2.0 - 3.5	**PSZKON-0435**	6.0	8.5	1.6	5.9	32924	10,000	33314	500	1.4
M5	13.8	2.0 - 4.0	**PSZKON-0540**	7.0	9.5	1.6	6.9	32925	8,000	33315	500	1.9
M6	16.3	2.0 - 4.5	**PSZKON-0645**	9.0	11.5	1.6	8.9	33317	4,000	33316	500	3.6
M8	19.3	2.0 - 4.5	**PSZKON-0845**	11.0	13.5	1.6	10.9	33319	2,000	33318	250	5.9
M10	21.3	2.0 - 4.5	**PSZKON-1045**	12.0	14.5	1.6	11.9	33321	1,500	33320	250	6.1

HEAD
Countersunk Head

TYPE
Closed End

SECTION
Round

SURFACE
Linear Knurls

PSZKCN

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	KG /1,000
	mm	mm		mm	mm	mm	mm					kg
M4	17.3	2.0 - 3.5	**PSZKCN-0435**	6.0	8.5	1.6	5.9	33323	5,000	33322	500	2.3
M5	20.3	1.5 - 4.0	**PSZKCN-0540**	7.0	9.2	1.4	6.9	39996	5,000	39997	500	3.2
M6	23.3	2.0 - 4.0	**PSZKCN-0645**	9.0	11.5	1.6	8.9	33057	2,000	33058	500	6.0
M8	27.8	2.0 - 4.5	**PSZKCN-0845**	11.0	13.5	1.6	10.9	32931	1,500	32847	250	9.7

M=Thread Size; *l*=Nominal Body Length; *g*=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; *k*=Nominal Head Thickness; *d*=Nominal Barrel Diameter

PSZKO

HEAD **Countersunk Head** | TYPE **Open End** | SECTION **Round**

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	KG /1,000
	mm	mm		mm	mm	mm	mm					kg
M3	11.3	1.7 - 3.5	**PSZKO-0335***	5.1	8.0	1.5	5.0	33278	10,000	33277	500	1.1
M4	11.5 13.0	1.7 - 3.5 3.5 - 5.0	**PSZKO-0435** **PSZKO-0450***	6.1	9.0	1.5	6.0	33279 33281	7,500 5,000	08518 33280	500 500	1.3 1.5
M5	13.0 16.0	1.7 - 4.0 4.0 - 6.5	**PSZKO-0540** **PSZKO-0565**	7.1	10.0	1.5	7.0	33282 33284	5,000 4,000	08797 33283	500 500	2.0 2.3
M6	17.0 19.0	1.7 - 4.5 4.5 - 6.5	**PSZKO-0645** **PSZKO-0665**	9.1	12.0	1.5	9.0	33285 33287	2,000 2,000	08808 33286	500 500	4.2 4.7
M8	19.0 21.0	1.7 - 4.5 4.5 - 6.5	**PSZKO-0845** **PSZKO-0865**	11.1	14.0	1.5	11.0	33288 33290	1,250 1,250	08991 33289	250 250	6.3 7.0
M10	21.0 23.0	1.7 - 4.5 4.5 - 6.5	**PSZKO-1045** **PSZKO-1055**	12.5	15.4	1.5	12.4	00589 33292	1,000 1,000	08965 33291	250 250	7.6 8.2
M12	26.0 29.0	2.0 - 4.5 4.5 - 7.5	**PSZKO-1245** **PSZKO-1275**	16.1	19.0	1.8	16.0	33294 33296	500 400	33293 03958	100 100	16.9 18.0

* Minimum order quantities apply

PSZKC

HEAD **Countersunk Head** | TYPE **Closed End** | SECTION **Round**

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	KG /1,000
	mm	mm		mm	mm	mm	mm					kg
M4	15.5 17.0	1.7 - 3.5 3.5 - 5.0	**PSZKC-0435** **PSZKC-0450***	6.1	9.0	1.5	6.0	33297 04837	5,000 5,000	08511 97877	500 500	2.0 2.2
M5	18.0 20.5	1.7 - 4.0 4.0 - 6.5	**PSZKC-0540** **PSZKC-0565***	7.1	10.0	1.5	7.0	33301 33303	3,000 3,000	33300 33302	500 500	3.0 3.4
M6	22.0 24.0	1.7 - 4.5 4.5 - 6.5	**PSZKC-0645** **PSZKC-0665***	9.1	12.0	1.5	9.0	33305 33306	1,500 1,500	33304 08428	500 500	6.1 6.5
M8	25.0 28.0	1.7 - 4.5 4.5 - 6.5	**PSZKC-0845** **PSZKC-0865***	11.1	14.0	1.5	11.0	33308 33310	1,000 750	33307 33309	250 250	9.2 10.1

* Minimum order quantities apply

M=Thread Size; *l*=Nominal Body Length; *g*=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; *k*=Nominal Head Thickness; *d*=Nominal Barrel Diameter

HEAD
Reduced Head

TYPE
Open End

SECTION
Round

SURFACE
Linear Knurls

PSZRON

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	KG /1,000
	mm	mm		mm	mm	mm	mm					kg
M3	9.8	0.5 - 2.5	**PSZRON-03025**	5.0	5.8	0.6	4.9	48491	10,000	48492	500	0.8
M4	10.3	0.5 - 3.0	**PSZRON-0430**	6.0	6.8	0.6	5.9	33036	10,000	33042	500	0.9
M5	11.8	0.5 - 3.0	**PSZRON-0530**	7.0	7.8	0.6	6.9	33049	10,000	33048	500	1.4
M6	14.3	0.5 - 3.0	**PSZRON-0630**	9.0	9.8	0.6	8.9	33047	4,000	33046	500	3.0
M8	15.8	0.5 - 3.0	**PSZRON-0830**	11.0	11.8	0.6	10.9	33240	2,000	33239	250	4.4
M10	19.8	0.8 - 3.5	**PSZRON-1035**	12.0	13.3	0.8	11.9	33242	2,000	33241	200	6.0

HEAD
Reduced Head

TYPE
Open End

SECTION
Round

PSZRO

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	KG /1,000
	mm	mm		mm	mm	mm	mm					kg
M4	10.8	0.5 - 3.0	**PSZRO-0430**	6.1	6.5	0.5	6.0	00363	10,000	08856	500	1.1
M5	12.0 15.0	0.5 - 3.0 3.0 - 5.5	**PSZRO-0530** **PSZRO-0555**	7.1	7.5	0.5	7.0	33380 33382	5,000 4,000	09659 33381	500 500	1.6 1.8
M6	14.5 16.5	0.5 - 3.0 3.0 - 5.5	**PSZRO-0630** **PSZRO-0655**	9.1	9.5	0.5	9.0	00364 33385	3,000 2,500	08530 33384	500 500	3.4 3.7
M8	16.0 18.5	0.5 - 3.0 3.0 - 5.5	**PSZRO-0830** **PSZRO-0855**	11.1	11.5	0.5	11.0	00366 33387	2,000 1,500	08937 33386	250 250	5.0 5.5
M10	19.5	0.8 - 3.5	**PSZRO-1035**	12.5	12.9	0.5	12.4	33389	1,250	33388	250	6.7

M=Thread Size; *l*=Nominal Body Length; *g*=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; *k*=Nominal Head Thickness; *d*=Nominal Barrel Diameter

PSZROX

HEAD **Reduced Head** | TYPE **Open End** | SECTION **Round**

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000 KG
	mm	mm		mm	mm	mm	mm					kg
M3	9.0	0.5 - 1.5	**PSZROX-0315**	4.8	5.3	0.5	4.7	33356	10,000	32853	500	0.6
M4	10.4	0.5 - 1.5	**PSZROX-0415**	6.4	7.0	0.6	6.3	33051	10,000	33052	500	1.2
M5	12.0	0.5 - 2.0	**PSZROX-0520**	7.2	7.8	0.6	7.2	33040	10,000	33045	500	1.5
M6	14.8	0.8 - 2.5	**PSZROX-0625**	9.6	10.5	0.9	9.5	33360	4,000	33214	500	3.4
M8	16.0	1.0 - 3.0	**PSZROX-0830**	10.6	11.5	0.8	10.5	33362	4,000	33215	250	4.1

PSZFOH

HEAD **Flat Head** | TYPE **Open End** | SECTION **Hexagonal**

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000 KG
	mm	mm		mm	mm	mm	mm					kg
M4	11.5	0.5 - 3.0	**PSZFOH-0430**	6.1	9.3	1.0	6.0	32920	10,000	32837	500	1.6
M5	13.5	0.5 - 3.0	**PSZFOH-0530**	7.1	10.3	1.0	7.0	32592	5,000	32591	500	2.4
M6	15.5	0.5 - 3.0	**PSZFOH-0630**	9.1	12.3	1.5	9.0	32594	3,000	32593	500	4.8
M8	17.5 19.0 22.0	0.5 - 3.0 3.0 - 5.5 5.5 - 8.0	**PSZFOH-0830** **PSZFOH-0855** **PSZFOH-0880**	11.1	14.3 16.0 16.0	1.5	11.0	32596 33334 33336	2,000 1,000 750	32595 33333 33335	250 250 250	7.2 7.5 8.1
M10	22.0 23.5	1.0 - 4.0 3.5 - 6.0	**PSZFOH-1040** **PSZFOH-1060**	13.1	16.3 19.0	2.0	13.0	32597 33340	750 500	32598 33339	250 250	12.0 12.3

M=Thread Size; *l*=Nominal Body Length; *g*=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; *k*=Nominal Head Thickness; *d*=Nominal Barrel Diameter

HEAD
Flat Head

TYPE
Closed End

SECTION
Hexagonal

PSZFCH

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	KG /1,000
	mm	mm		mm	mm	mm	mm					kg
M4	14.5	0.5 - 2.0	**PSZFCH-0420***	6.1	9.0	1.0	6.0	33342	5,000	33341	500	2.2
M5	19.0	0.5 - 3.0	**PSZFCH-0530**	7.1	10.0	1.0	7.0	33343	2,500	06902	500	3.6
M6	21.5 23.5	0.5 - 3.0 3.0 - 5.5	**PSZFCH-0630** **PSZFCH-0655***	9.1	13.0	1.5	9.0	33345 33347	1,500 1,500	33344 33346	500 500	7.4 7.6
M8	24.5 27.0	0.5 - 3.0 3.0 - 5.5	**PSZFCH-0830** **PSZFCH-0855***	11.1	16.0	1.5	11.0	33488 33351	750 700	33348 33350	250 100	11.6 12.0
M10	31.0 33.5	0.8 - 3.5 3.5 - 6.0	**PSZFCH-1035** **PSZFCH-1060***	13.1	19.0	2.0	13.0	33353 33355	400 400	33352 33354	100 100	19.0 19.4

* Minimum order quantities apply

HEAD
Reduced Head

TYPE
Open End

SECTION
Hexagonal

PSZROH

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	KG /1,000
	mm	mm		mm	mm	mm	mm					kg
M4	12.3	0.5 - 3.0	**PSZROH-0425**	6.1	6.8	0.9	6.0	32599	10,000	32600	250	1.5
M5	13.8 16.5	0.5 - 2.5 3.0 - 5.5	**PSZROH-0525** **PSZROH-0555**	7.1	8.0 7.7	0.9 0.6	7.0 7.0	32602 33364	5,000 4,000	32601 33363	250 500	1.7 2.3
M6	15.8 18.5	0.5 - 2.5 3.0 - 5.5	**PSZROH-0625** **PSZROH-0655**	9.1	10.0 9.8	0.9 0.7	9.0 9.0	32604 33367	3,000 2,000	32603 06188	250 500	4.2 4.6
M8	17.8 20.5	0.5 - 3.0 3.0 - 5.5	**PSZROH-0825** **PSZROH-0855**	11.1 11.1	12.0 11.8	0.9 0.7	11.0 11.0	32605 33369	2,000 1,250	32606 33368	250 250	6.2 6.9
M10	21.8	0.5 - 4.0	**PSZROH-1040**	13.1	13.8	0.9	13.0	39986	1,000	on request		10.6

M=Thread Size; *l*=Nominal Body Length; *g*=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; *k*=Nominal Head Thickness; *d*=Nominal Barrel Diameter

PSZRCH

HEAD **Reduced Head** | TYPE **Closed End** | SECTION **Hexagonal**

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000 KG
	mm	mm		mm	mm	mm	mm					kg
M4	15.5	0.5 - 2.0	**PSZRCH-0420**	6.1	6.6	0.6	6.0	33373	5,000	33372	500	2.0
M5	20.0	0.5 - 3.0	**PSZRCH-0530**	7.1	7.7	0.7	7.0	33375	3,000	33374	500	3.3
M6	22.0	0.5 - 3.0	**PSZRCH-0630**	9.1	9.8	0.7	9.0	00410	1,750	04838	250	6.6
M8	25.0	0.5 - 3.0	**PSZRCH-0830**	11.1	11.8	0.7	11.0	33379	1,000	33378	250	10.5

PSZROM

HEAD **Reduced Head** | TYPE **Open End** | SECTION **Semi-Hexagonal**

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000 KG
	mm	mm		mm	mm	mm	mm					kg
M4	11.3	1.5 - 2.5	**PSZROM-0425**	6.1	7.2	0.7	6.0	33059	10,000	33060	500	1.2
M5	12.3	1.5 - 2.5	**PSZROM-0525**	7.1	8.2	0.7	7.0	33044	8,000	33043	500	1.6
M6	14.3	1.0 - 2.5	**PSZROM-0625**	9.1	10.2	0.7	9.0	33037	4,000	33041	500	3.3
M8	15.8	1.0 - 2.5	**PSZROM-0825**	11.1	12.3	0.7	11.0	33396	2,000	33019	250	4.7
M10	18.3	1.0 - 2.5	**PSZROM-1025**	13.1	14.3	0.7	13.0	33024	1,500	33023	200	7.4
M12	24.3	1.0 - 4.0	**PSZROM-1240**	16.2	17.0	0.7	16.1	39987	800	on request		13.1

M=Thread Size; *l*=Nominal Body Length; *g*=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; *k*=Nominal Head Thickness; *d*=Nominal Barrel Diameter

HEAD
Flat Head

TYPE
Open End

SECTION
Round

PTFO

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000
	mm	mm		mm	mm	mm	mm					kg
M4	10.0 11.5	0.3 - 2.5 2.5 - 4.0	**PTFO-0425** **PTFO-0440**	6.0	8.8	1.0	5.9	32964 32965	10,000 10,000	32880 32881	500 500	1.3 1.4
M5	12.0 13.5	0.3 - 3.0 3.0 - 4.0	**PTFO-0530** **PTFO-0540**	7.0	9.8	1.0	6.9	32966 32967	8,000 8,000	32882 32883	500 500	2.0 2.0
M6	14.5 16.0	0.5 - 3.0 3.0 - 4.5	**PTFO-0630** **PTFO-0645**	9.0	11.8	1.5	8.9	32968 32969	4,000 4,000	32884 32885	500 500	3.9 4.2
M8	16.0 18.5	0.5 - 3.0 3.0 - 5.5	**PTFO-0830** **PTFO-0855**	11.0	14.8	1.5	10.9	32970 32971	2,000 2,000	32886 32823	250 250	5.8 6.3
M10	17.0 20.0	0.5 - 3.0 3.0 - 5.5	**PTFO-1030** **PTFO-1055**	13.0	15.8	2.0	12.9	32972 32973	1,500 1,500	32887 39908	250 250	7.7 8.4

HEAD
Flat Head

TYPE
Closed End

SECTION
Round

AISI 304

PVFC

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000
	mm	mm		mm	mm	mm	mm					kg
M4	15.0	0.5 - 2.0	**PVFC-0420**	6.1	9.0	1.0	6.0	33210	5,000	05000	250	2.2
M5	17.5	0.5 - 3.0	**PVFC-0530**	7.1	10.0	1.0	7.0	33211	2,500	05191	250	3.0
M6	21.5	0.5 - 3.0	**PVFC-0630**	9.1	12.0	1.5	9.0	48589	1,500	98035	250	6.6
M8	23.5	0.5 - 3.0	**PVFC-0830**	11.1	15.0	1.5	11.0	05241	1,000	05185	250	9.9

M=Thread Size; *l*=Nominal Body Length; *g*=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; *k*=Nominal Head Thickness; *d*=Nominal Barrel Diameter

PTKO

HEAD **Countersunk Head** | TYPE **Open End** | SECTION **Round**

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000 KG
	mm	mm		mm	mm	mm	mm					kg
M4	11.8	2.0 - 3.5	**PTKO-0435**	6.0	8.8	1.7	5.9	32979	10,000	32893	500	1.5
M5	13.8	2.0 - 4.0	**PTKO-0540**	7.0	9.8	1.7	6.9	32980	8,000	32894	500	2.0
M6	16.3	2.0 - 4.5	**PTKO-0645**	9.0	11.8	1.7	8.9	32981	4,000	32895	500	3.8
M8	19.3	2.0 - 4.5	**PTKO-0845**	11.0	13.8	1.7	10.9	32982	2,000	32896	250	6.3
M10	21.3	2.0 - 4.5	**PTKO-1045**	13.0	15.8	1.7	12.9	32983	1,500	32897	250	8.4

PTRO

HEAD **Reduced Head** | TYPE **Open End** | SECTION **Round**

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000 KG
	mm	mm		mm	mm	mm	mm					kg
M4	10.3	0.5 - 2.5	**PTRO-0425**	6.0	6.8	0.8	5.9	32628	10,000	32898	500	1.0
M5	11.8	0.5 - 3.0	**PTRO-0530**	7.0	7.8	0.8	6.9	32985	8,000	32899	500	1.5
M6	14.3	0.5 - 3.0	**PTRO-0630**	9.0	9.8	0.8	8.9	32986	4,000	32900	500	3.2
M8	15.8	0.5 - 3.0	**PTRO-0830**	11.0	11.8	0.8	10.9	32987	2,000	32901	250	4.6
M10	19.8	0.8 - 3.5	**PTRO-1035**	13.0	14.3	1.0	12.9	32988	1,500	32902	250	7.2

M=Thread Size; *l*=Nominal Body Length; *g*=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; *k*=Nominal Head Thickness; *d*=Nominal Barrel Diameter

HEAD
Flat Head

TYPE
Open End

SECTION
Semi-Hexagonal

PTFOM

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	KG /1,000
	mm	mm		mm	mm	mm	mm					kg
M4	11.5	0.5 - 2.5	**PTFOM-0425**	6.1	9.3	1.0	6.0	32607	5,000	32608	500	1.7
M5	13.5	0.5 - 3.0	**PTFOM-0530**	7.1	10.3	1.0	7.0	32610	5,000	32609	500	1.8
M6	15.5	0.5 - 3.0	**PTFOM-0630**	9.1	12.3	1.5	9.0	32611	3,000	32612	500	4.2
M8	17.5	0.5 - 3.0	**PTFOM-0830**	11.1	14.5	1.5	11.0	32613	2,000	32614	500	6.5

HEAD
Reduced Head

TYPE
Open End

SECTION
Semi-Hexagonal

PTROM

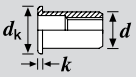
M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	KG /1,000
	mm	mm		mm	mm	mm	mm					kg
M4	12.3	0.5 - 2.5	**PTROM-0425**	6.1	6.8	0.8	6.0	32615	10,000	32616	250	1.2
M5	14.3	0.5 - 3.0	**PTROM-0530**	7.1	7.8	0.8	7.0	32618	5,000	32617	250	1.5
M6	16.3 16.5 18.5	0.5 - 3.0 3.0 - 5.0 5.0 - 7.0	**PTROM-0630** **PVROM-0650*** **PVROM-0670***	9.1	9.8 9.5 9.5	0.8 0.5 0.5	9.0	32620 33151 33153	3,000 2,500 2,500	32619 32629 33152	250 250 250	3.3 3.6 3.9
M8	17.3	0.5 - 3.0	**PTROM-0830**	11.1	11.8	0.8	11.0	32622	2,000	32621	250	4.9
M10	20.8	1.0 - 4.0	**PTROM-1040**	13.1	14.2	1.0	13.0	32623	1,500	32624	250	6.1

* Stainless Steel AISI 304

M=Thread Size; *l*=Nominal Body Length; *g*=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; *k*=Nominal Head Thickness; *d*=Nominal Barrel Diameter

PWFO

HEAD **Flat Head** | TYPE **Open End** | SECTION **Round**

M	l	g	DESCRIPTION	d_h	 d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000 KG
	mm	mm		mm	mm	mm	mm					kg
M5	12.3	0.5-3.0	**PWFO-05030**	7.0	10.0	1.0	6.9	69742	6,000	69743	500	1.90
M6	14.8	0.5-3.0	**PWFO-06030**	9.0	12.0	1.5	8.9	69744	3.500	69745	500	4.11
M8	16.3	0.5-3.0	**PWFO-08030**	11.0	15.0	1.5	10.9	69746	2,000	69747	250	5.98

M=Thread Size; l=Nominal Body Length; g=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; k=Nominal Head Thickness; d=Nominal Barrel Diameter

HEAD
Countersunk

TYPE
Open End

SECTION
Round

PWKO

M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000
	mm	mm		mm	mm	mm	mm					kg
M5	13.8	1.5-4.0	**PWKO-05040**	7.0	9.5	1.4	6.9	69748	8,000	69749	500	1.98
M6	15.8	1.5-4.0	**PWKO-06040**	9.0	11.5	1.4	8.9	69750	4,000	69751	500	3.60
M8	18.8	1.5-4.0	**PWKO-08040**	11.0	13.5	1.4	10.9	69752	2,000	69753	250	6.26

M=Thread Size; *l*=Nominal Body Length; *g*=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; *k*=Nominal Head Thickness; *d*=Nominal Barrel Diameter

POPNut® Setting Tools

The POPNut® range of setting tools have been designed to offer the user the best features available in the market today. Durable, reliable and high quality, these tools can increase the efficiency of your assembly process.

Power Tools

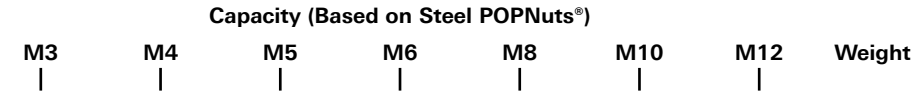
Choose from Pneumatic Control and Pneumatic-Hydraulic power tools which offer ergonomics for operator comfort and fast consistent cycle time for production efficiency. These power tools have many additional innovative features to improve the users experience and promote greater output.

Hand Tools

POPNut® hand tools are the choice of the professional.
Reliable, robust and lightweight, the range includes hand plier and lever tools.

POPNut® Setting Tools

This quick guide can help you to select the right tool for your setting requirements.



PNT110		0.8kg
PNT210		1.3kg
PNT310		2.4kg
PNT410		2.1kg
PNT800A		1.7kg
PNT800L-PC		1.8kg
PNT1000L-PC		2.8kg

POPNut® Power Tools

The POPNut® Pneumatic Control (PC) function selects the appropriate stroke required, allowing the operator to set the same insert in a range of application thicknesses without pausing to adjust stroke manually.

- Improves cycle time as optimum stroke is always delivered
- Achieves consistent setting every time in varying application conditions
- Eradicates complications caused by double stroking
- Fast cycle time for production efficiency
- Automatic mandrel spin on for fast insert loading
- Quick change mandrel and nosepiece for ease of service and set up

Ergonomic

- Lightweight, compact structure for operator comfort
- Single trigger pull for setting and reverse for operator ease
- Swivel air joint connector
- Supplied with suspension ring for use with counter balance

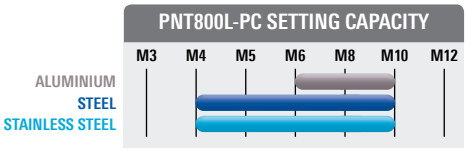
Compatibility

- Compatible with the POP® Counter System

Pneumatic Control threaded insert tools

PNT800L-PC

Compact, lightweight Pneumatic Control insert tool, ideal for production line environments.



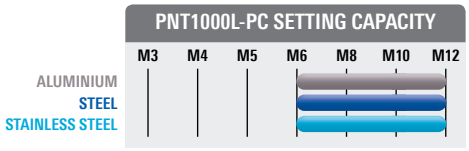
Article: **42709**

Weight: 1.81kg	**Thread**	**Mandrel**	**Nosepiece**
Length: 287mm	**M4**	42258	42578
Height: 268mm	**M5**	42259	42579
Tool Stroke: 1.3 - 6.5mm	**M6**	42260	42580
Working Air Pressure: 4.9 - 5.9 bar	**M8**	42575	42581
	M10	42576	42582

Supplied with M4 - M8 mandrels and nosepieces

PNT1000L-PC

High capacity Pneumatic Control threaded insert tool.



Article: **42708**

Weight: 2.77kg	**Thread**	**Mandrel**	**Nosepiece**
Length: 315mm	**M6**	42260	42254
Height: 295mm	**M8**	42575	42255
Tool Stroke: 1.3 - 10.5mm	**M10**	42250	42252
Working Air Pressure: 4.9 - 5.9 bar	**M12**	42251	42253

Supplied with M8 and M10 mandrels and nosepieces

POPNut® Power Tools

Pneumatic-Hydraulic threaded insert tool

Performance

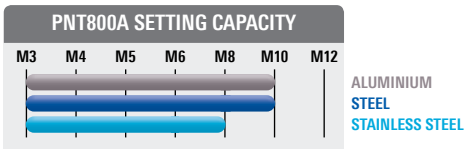
- Fast cycle time for production efficiency
- Automatic mandrel spin on for fast insert loading
- Quick change mandrel and nosepiece for ease of service and set-up
- Simple stroke adjustment gauge

Ergonomic

- Lightweight, compact structure for operator comfort
- Single trigger pull for setting and reverse for operator ease
- Swivel air joint connector
- Supplied with suspension ring for use with counter balance

Compatibility

- Compatible with the POP® Counter System



PNT800A

Lightweight, spin-pull, pneumatic-hydraulic threaded insert tool

Article: **42825**

Weight: 1.68kg	
Length: 288mm	
Height: 263mm	
Tool Stroke: 1.3 - 6.5mm	
Working Air Pressure: 4.9 - 5.9 bar	

Thread	Mandrel	Nosepiece
M3	42571	42577
M4	42258	42578
M5	42259	42579
M6	42260	42580
M8	42575	42581
M10	42576	42582

Supplied with M4 - M8 mandrels and nosepieces

POP® Counter System

The POP® Counter System is a simple-to-use batch counter that helps an operator confirm the quantity of threaded inserts that have been set.

The system is designed for use with POPNut® threaded inserts and PNT Power Tools. Operation is fully automatic and requires minimal operator involvement.

Features

- Simple “key set” display
- Counts each tool trigger pull
- Batch complete indicator
- Automatic air cut-off at batch complete point
- Maximum batch quantity 999

Compatible with the full range of POPNut® threaded inserts and the following Power Tools:

PNT800A	M3 – M10 Inserts
PNT800L-PC	M4 – M10 Inserts
PNT1000L-PC	M6 – M12 Inserts

Ideal for

- High volume production line environments
- Applications requiring high volumes of threaded inserts
- Complex applications where the operator may lose count of number of threaded inserts set

Benefits

- Assists operator accuracy
- Supports the quality assurance of the assembly process
- Ensures the correct number of threaded inserts has been set

Configuration

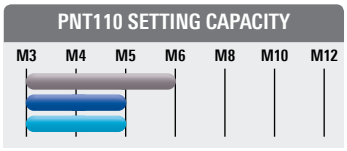
The POP® Counter System comes configured with the required tool and is ready for use.

POPNut® Hand Tools

The POPNut® range of professional hand tools are lightweight, robust and easy to use. POPNut® tools are ideal for light engineering work, maintenance and repair.

PNT110

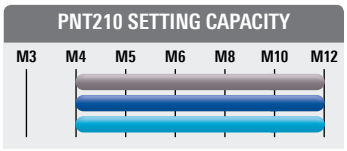
Hand Plier Tool



Article: 43111
Weight: 0.8kg
Length: 240mm

PNT210

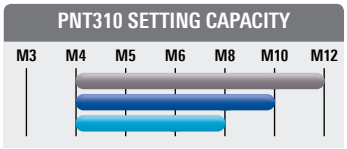
Ratchet Tool



Article: 43112
Weight: 1.3kg
Length: 210mm

PNT310

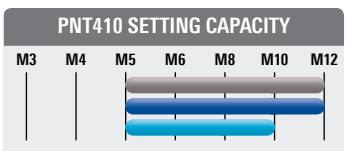
Spindle Lever Tool



Article: 43113
Weight: 2.4kg
Length: 555mm

PNT410

Lever Tool



Article: 43114
Weight: 2.1kg
Length: 580mm

WellNut® Technical Data

Vibration/Isolating Effect

WellNut® provides an excellent vibration-isolating effect to absorb vibration and noise.

Sealing Effect

WellNuts® are able to seal liquids and gases. They are particulary suited for use in a low-pressure environment.

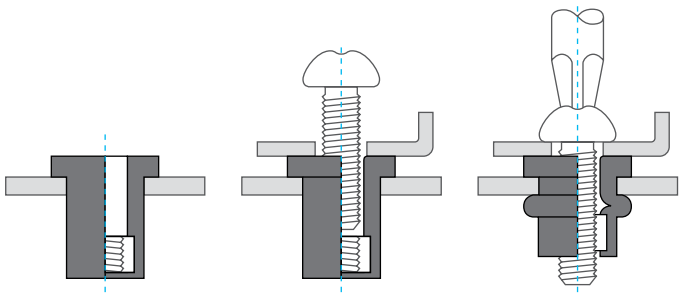
Insulating Effect

The WellNut® exhibits excellent electrical insulation properties.

WellNut® is available in a chloroprene-rubber as standard or EPDM. Chloroprene rubber offers stable strength and exhibits average levels of all beneficial properties. EPDM is particularly suitable in an outdoor environment where the nut must provide weather resistance, ozone resistance etc.

Installation Method

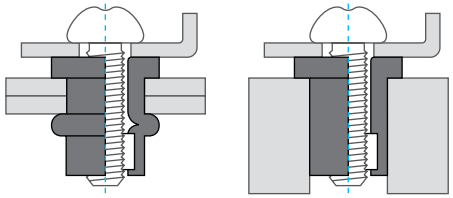
WellNut® can be installed when the mating screw is tightened.



1 Place the WellNut® in the base material

2 Place the component and locate the screw in the WellNut®

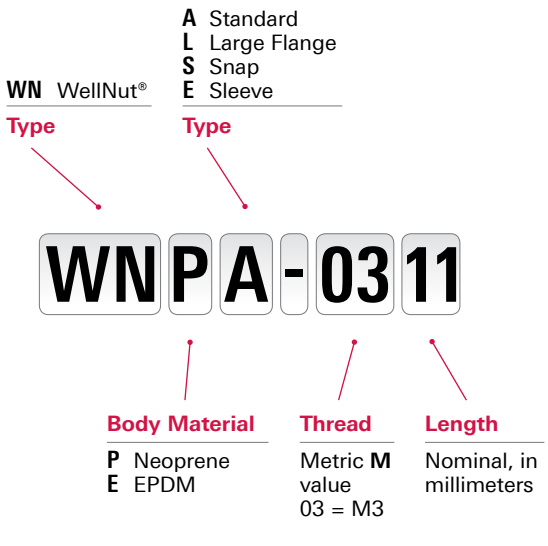
3 Fasten the WellNut® and component using a screwdriver to recommended torque



4 Multiple base materials can be fastened effectively

5 Stable fastening strength can be achieved even in a blind hole or deep hole

WellNut® Coding Guide



WellNut®

Standard Flange

- Ideal for general purpose use, where dampening of vibration and shock is required

M	g	DESCRIPTION	d_h	l	d_k	k	d	tt	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000
	mm		mm	mm	mm	mm	mm	Nm					kg
M3	0.4 - 4.0	**WNPA-0311-E632**	8.0	12.6	11.0	1.2	7.9	0.4	63537	7,500	63538	100	
M4	0.4 - 4.0	**WNPA-0411-B832**	8.0	12.6	11.0	1.2	7.9	0.3	63539	7,800	63540	100	
M5	0.4 - 4.9	**WNPA-0514-10S**	9.7	14.1	12.7	0.9	9.6	0.4	63541	4,700	63542	100	
	0.9 - 5.9	**WNPA-0516-Q1032**	9.7	17.0	14.0	1.0	9.6	0.5	63543	3,800	63544	100	
	4.0 - 10.0	**WNPA-0521-H1032**	9.7	21.5	14.0	0.9	9.6	0.6	63545	3,000	63546	100	
	7.9 - 15.0	**WNPA-0525-10SL**	9.7	26.5	14.0	1.3	9.6	0.5	63547	2,200	63548	100	
M6	0.4 - 4.0	**WNPA-0615-1/4S**	12.8	16.0	16.0	1.3	12.7	0.8	63551	2,500	63552	100	
	4.7 - 8.7	**WNPA-0619-W1420**	12.8	20.3	16.0	1.3	12.7	0.8	63553	2,000	63554	100	
	6.4 - 11.5	**WNPA-0625-J1420**	12.8	26.7	16.3	2.0	12.7	0.9	63555	1,300	63556	100	
M8	0.4 - 4.0	**WNPA-0815-E51618**	16.0	18.3	21.5	3.2	15.9	1.2	63557	1,200	63558	100	

M=Thread Size; *l*=Nominal Body Length; *g*=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; *k*=Nominal Head Thickness; *d*=Nominal Barrel Diameter; *tt*=Nominal Tightening Torque

WellNut®

- Large flange feature increases the bearing surface for weaker/thinner materials

Large Flange

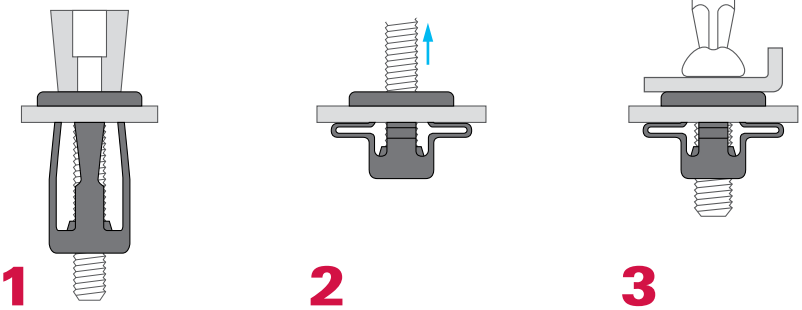
M	g	DESCRIPTION	d_h	l	d_k	k	d	tt	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000
	mm		mm	mm	mm	mm	mm	Nm					kg
M3	9.5 - 13.0	**WNPL-0324-C632**	6.2	24.9	14.0	0.9	6.1	0.4	63559	4,000	63560	100	
M4	0.4 - 4.4	**WNPL-0413-C832**	8.0	14.2	19.1	1.5	7.9	0.3	63561	3,300	63562	100	
M5	0.8 - 5.8	**WNPL-0516-G1032**	9.7	21.0	19.0	4.7	9.6	0.5	63563	1,800	63564	100	
	0.8 - 5.8	**WNPL-0516-J1032**	9.7	18.0	19.0	2.0	9.6	0.5	63565	2,500	63566	100	
M6	0.8 - 4.7	**WNPL-0615-D1420**	12.8	21.1	19.1	4.8	12.7	0.9	63567	1,600	63568	100	

M=Thread Size; ***l***=Nominal Body Length; ***g***=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; ***k***=Nominal Head Thickness; ***d***=Nominal Barrel Diameter; ***tt***=Nominal Tightening Torque

Jack Nut®

The Jack Nut® is a flat head slotted body blind rivet nut designed to be installed in soft or brittle materials such as plastic, paper, or glass. Its 4 legs expand behind the parent material providing excellent pull out resistance especially in soft materials. The Jack Nut® can be coated with RAINTITE® to seal moisture and hard plastic PVC to prevent scratching and galvanic corrosion. Jack Nut® inserts are RoHS compliant.

Installation Method

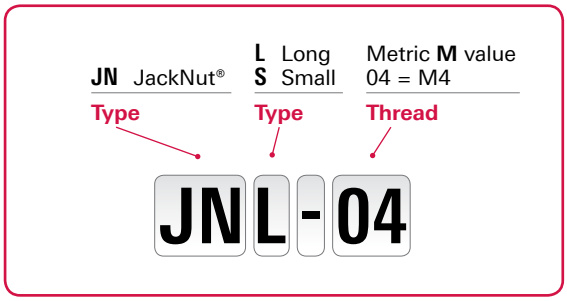


1 Thread Jack Nut® Insert onto mandrel of installation tool, then insert all the way

2 Fully collapse insert, then remove installation tool

3 Pass machine screw through part to be fastened, then tighten until snug

Jack Nut® Coding Guide



- Ideal for use in thin, soft or brittle application materials

	M	l	g	DESCRIPTION	d_h	d_k	k	d	BULK PACK ARTICLE	BULK PACK BOX QTY	SMALL PACK ARTICLE	SMALL PACK BOX QTY	/1,000 KG
	mm	mm			mm	mm	mm	mm					kg
M4	16.5	0.4 - 4.8	JNS-04		8.4	11.9	1.9	7.8	61910	6,500	62856	100	1.8
	22.9	4.8 - 9.5	JNL-04		8.4	12.2	1.9	7.8	61940	5,200	61945	100	2.0
M5	17.9	0.4 - 4.8	JNS-05		10.1	13.5	1.9	9.6	61912	4,500	62860	100	2.7
	23.5	4.8 - 9.5	JNL-05		10.1	13.9	1.9	9.6	61941	3,500	61942	100	2.9
M6	18.2	0.4 - 4.8	JNS-06		11.4	15.9	1.9	11.1	61914	3,200	62864	100	3.6
	23.0	4.8 - 9.5	JNL-06		11.4	15.9	1.9	11.1	61915	2,500	62862	100	4.1

M=Thread Size; l=Nominal Body Length; g=Grip Range (Min - Max); d_h=Hole Size; d_k=Nominal Head Diameter; k=Nominal Head Thickness; d=Nominal Barrel Diameter

Jack Nut® Tools

PNT200JN

19779

- Thread the Jack Nut® onto the tool mandrel
- Place Jack Nut® in hole
- Squeeze the top trigger to install the Jack Nut®. The tool stalls at a predetermined torque
- Squeeze the lower trigger to reverse

JNT2200

A hand operated tool that can install the full range of Jack Nut products.

- Thread a Jack Nut® onto the tool mandrel
- Insert Jack Nut® in the hole
- Squeeze tool handles together
- Turn upper knob anticlockwise to unthread
- Tool purchased pre-assembled to selected mandrel

Tool & Mandrel	Article Number
Tool & M4 Mandrel	62868
Tool & M5 Mandrel	62875
Tool & M6 Mandrel	62876

JNT2400

Article Number: **40054**

A stroke controlled tool that installs the full range of Jack Nut fasteners.

- Set the stroke of the tool per the manual
- Thread a Jack Nut® onto the tool mandrel
- Insert Jack Nut® in hole
- Squeeze tool handles together
- Turn rear knob anticlockwise to unthread
- Tool and mandrel purchased separately

Mandrel	Article Number
M4	40057
M5	40058
M6	40059

JNT1100

Article Number: **40069**

The JNT1100 is a simple low cost tool that grips the Jack Nut head so that it can be installed with a screw and ratchet or box wrench.

- Place a screw through the appropriate hole in the wrench
- Thread on a Jack Nut®
- Insert Jack Nut® in hole
- Install bolt head with a wrench or ratchet to install the Jack Nut®

Marketing Support

www.emhart.eu
For all the latest POPNut® information.

The website contains many new and exciting features to assist you in choosing the right fastener for your application.

Only three clicks to end product with fast web page navigation.

Online e-catalogue with easy drop down selection to help narrow down your search.

Application advice for the more challenging applications.

Download area containing all our latest literature and tool manuals.

Find a distributor by country selection.

A new Industry Solutions section, detailing specific products that are used in the applications of major industries, including the automotive and electronics sectors.

Glossary & Technical Advice

Head Style

Flat	Preferred. Provides a good bearing area for application surface and for bolted-on part.
Countersunk	Used for flush head setting requiring countersink in application. Recommend flush or slight head projection above the surface of application for maximum face contact and clamp.
Reduced	Used for near flush setting and as an alternative to countersinking. Not recommended for holes with wide tolerances or with soft ductile material.

Body Types

Round	Used for general purpose applications. Recommend hexagon type if high torque resistance required.
Round, Knurled	Provides improved resistance to turning in round holes especially in softer materials such as engineering plastics (acetal copolymers, acetal homopolymers, polyamides).
Hexagon	Used in conjunction with a hexagon hole to give maximum resistance to applied torque or unscrewing torque.
Open End	Preferred. Optimum length. Minimal blind side protrusion. Not bolt length critical provided the bolt engages all of the POPNut® threads.
Closed End	Used to prevent ingress of moisture past the securing bolt. For pressure-tight applications a special closed end POPNut® with seal beneath the flange may be required.

Materials and Finish

Steel	Low Carbon steel, zinc plated with Chrome VI-free passivation, used for general purpose applications with higher temperature resistance.
Aluminium	Aluminium alloy, self colour. Used when low weight and higher corrosion resistance is required.
Stainless Steel	A2 or A4 Stainless Steel with self colour giving higher temperature and corrosion resistance. Stainless steel POPNut® are suitable for some applications in food processing industries. Further information is available on request.
Finishes	For applications in adverse environmental conditions alternative finishes are available on request.

Clamp Thickness, Grip Range and Hole Dimension

Clamp Thickness	The total thickness of materials into which the POPNut® is to be installed.
Grip Range	A particular POPNut® can accommodate specific maximum and minimum material thickness.
Hole Size	The recommended hole dimensions for the application are specified in the appropriate POPNut® table.

Blind-side Set Dimensions

Axial Set Length	Set end protrusion is approximately 60% of the length of the POPNut® body plus 1mm for bolt end protrusion where applicable. It is recommended that a trial setting be made if this dimension is critical.

POPNut® Selection

The application material should be of sufficient density and thickness to support the formation of the set end flange. Determine the application material thickness, thread size and torque resistance required. From the application environmental conditions decide the material of the POPNut®. The attached part should touch the head of the POPNut® for maximum torque performance. Using the appropriate tables, determine the recommended hole dimensions and the POPNut® size. The application bolt should be at least Metric Class 8.8 strength and its fit should be Metric 6H design. The bolt thread length should be sufficiently long to engage all threads in the POPNut®.

Recommended Bolt Length

It is recommended that the screw length should protrude at least 2 threads length beyond the POPNut® open end. For a closed end POPNut® it is recommended that the following formula be used:

- Maximum bolt length = X+S+e+L2 where

X = thickness of the attached part; S = POPNut® Flange thickness; e = Thickness of Application; L2 = Length of Body after setting

Quality Accreditation

Quality systems approvals from the world's household names in manufacturing serve to reinforce accreditation to QS9000 / ISO9001 / TS16949.

As a result of our continuous design improvement, POP® fastening products are subject to modification. The latest technical data and drawings for any specific product are available on request.

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Quality systems approvals from the world's household names in manufacturing serve to reinforce accreditation to ISO14001 / ISO9001 / TS16949.
As a result of our continuous design improvement, Emhart products are subject to modification. The latest technical data and drawings are available for any specific products on request.

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