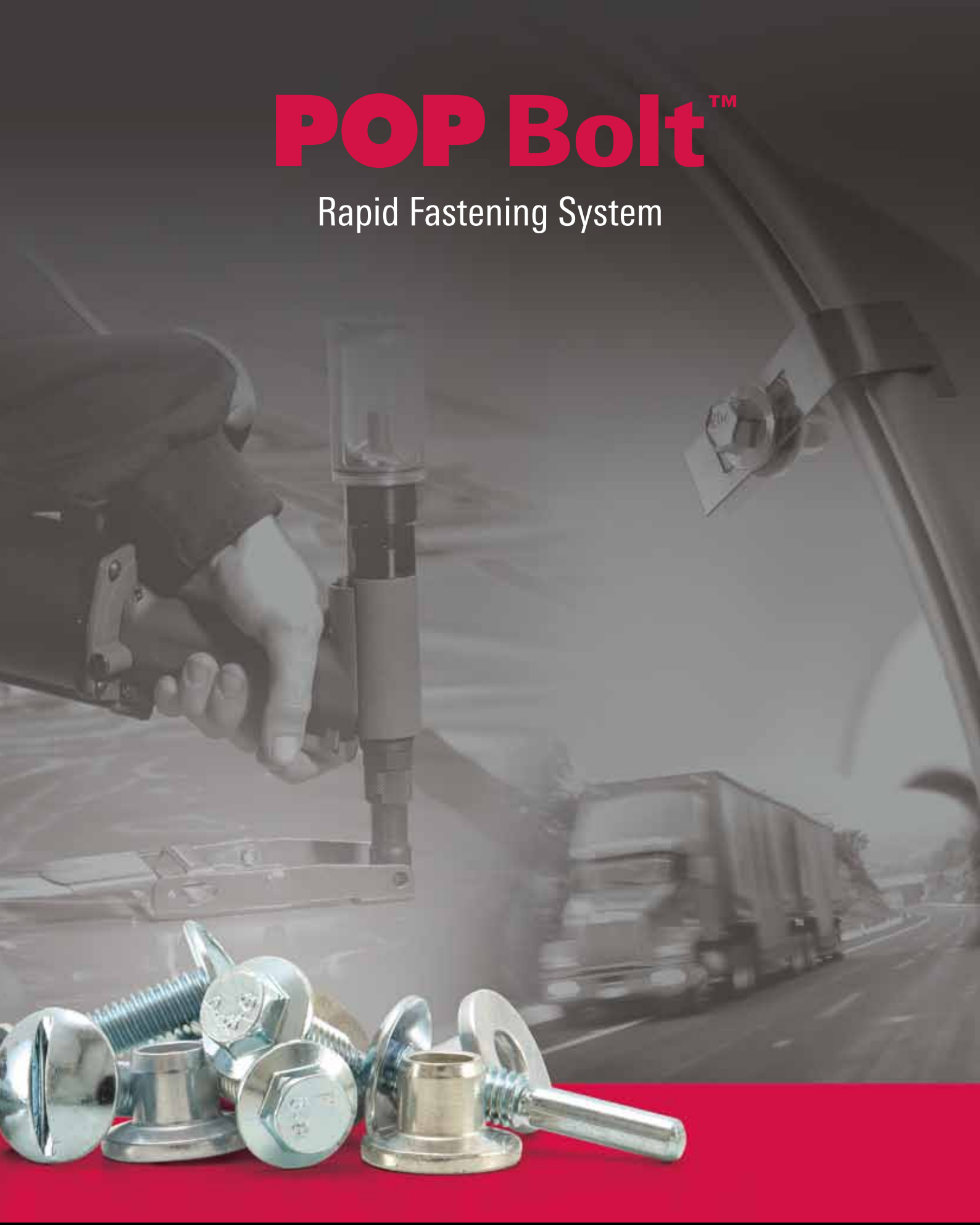
# POP Bolt™

## Rapid Fastening System



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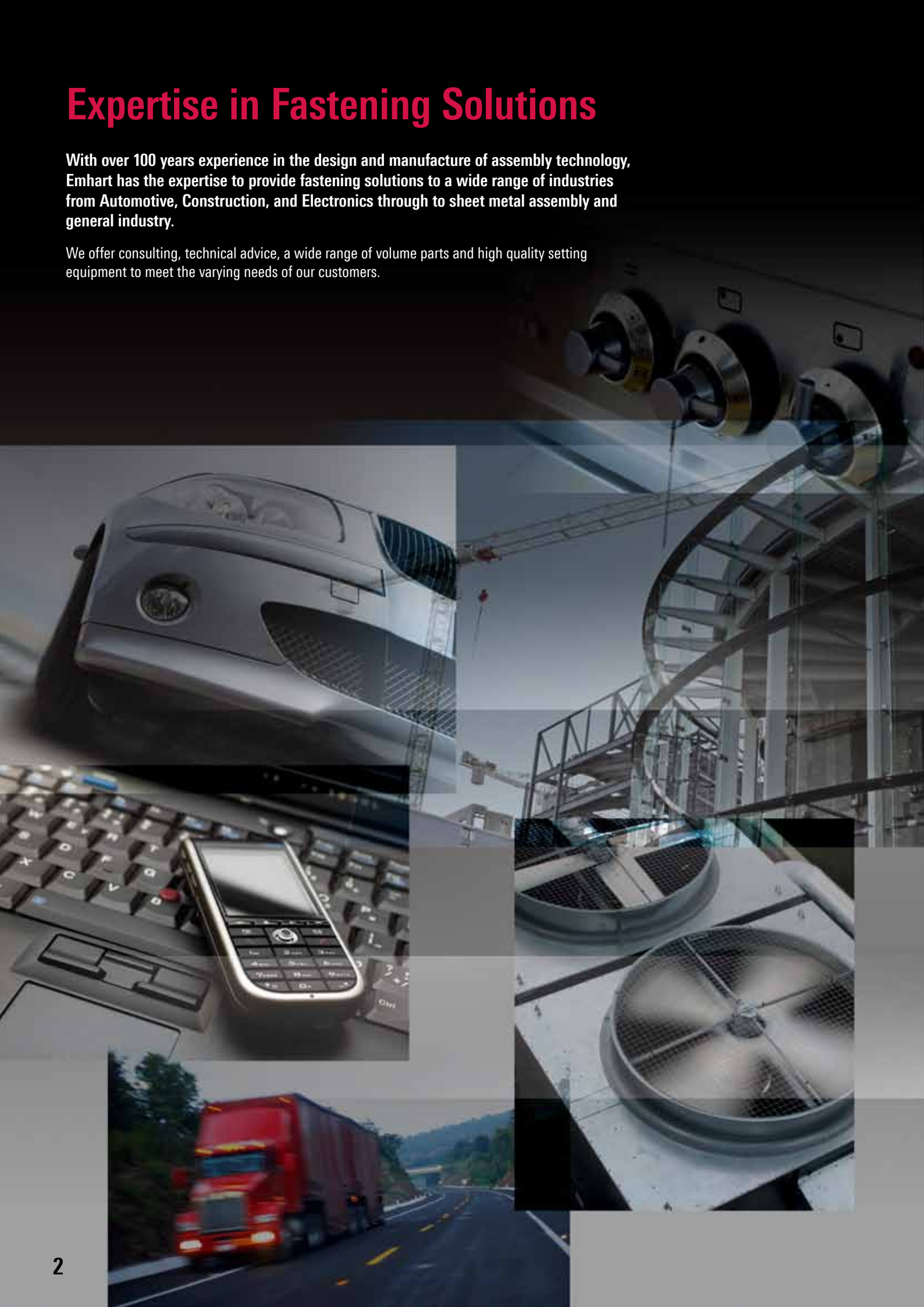
EMHART TEKNOLOGIES

# 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.**

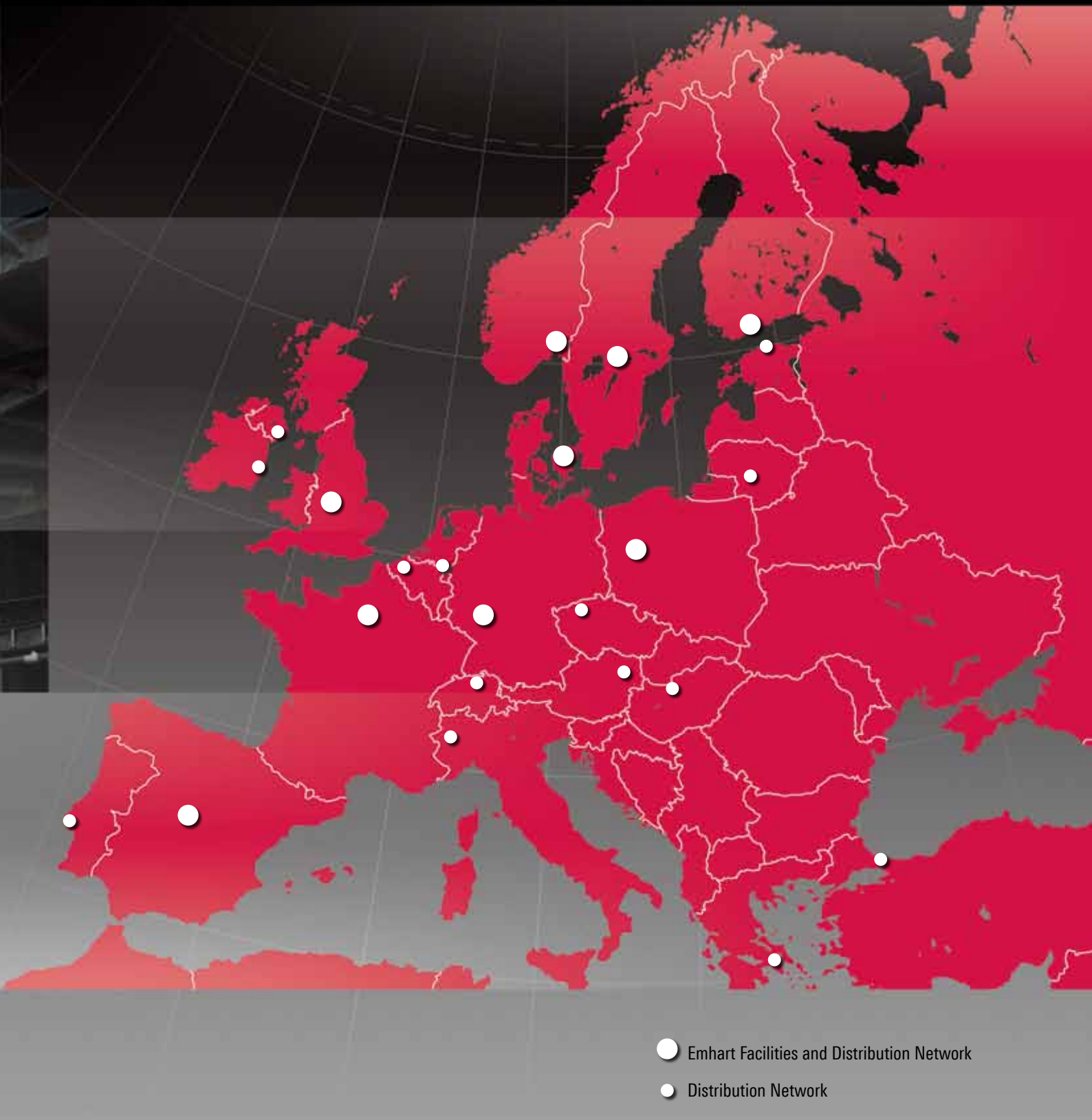
We offer consulting, technical advice, a wide range of volume parts and high quality setting equipment to meet the varying needs of our customers.



# 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.



## POP Bolt™

**POP Bolt™ is a rapid setting, removable and re-useable fastening system. Delivering the speed of riveting combined with the flexibility of a nut and bolt, POP Bolt™ is ideal for applications that require a high strength fastener that facilitates servicing.**

## POP Bolt™ Twinfix

**POP Bolt™ Twinfix has been developed specifically for the transport sector. The Twinfix carrier is designed to aid the fastening of buckles and rollers to truck curtains. The Twinfix allows for servicing and can be used in conjunction with Secureset to give a tamper resistant joint.**

## POP Bolt™ Tools

**The POP Bolt™ tool range includes a compact, lightweight pneumatic-hydraulic tool and a cordless, rechargeable battery tool.**

## The POP Bolt™ rapid installation sequence is simple.

1. Place the bolt through the holes in the materials to be fastened and load the collar into the setting tool.
2. Position the tool and loaded collar over the bolt.
3. Pull the trigger of the setting tool. As the tool pulls the bolt mandrel the collar clamps down onto the threaded section of the bolt. The collar is swaged onto the bolt forming an internal thread, while the tool's nosepiece forms an external hex shape, transforming the collar into a nut.
4. The POP Bolt™ is now assembled.

# POP Bolt™ Features

## POP Bolt™

**POP Bolt™ is a rapid setting, removable and re-useable two piece, fastening system.**

POP Bolt™ combines the advantages in functionality achieved by a traditional nut and bolt with those of a conventional pin and collar fastener. Helical threads, formed during the setting process, allow removal and reuse of the POP Bolt's™ nut, while the swaging process results in a vibration resistant joint.

The POP Bolt™ installation process takes under one second, resulting in reduced assembly time.

## POP Bolt™ offers:

- **Up to a 60% reduction in process time when compared to traditional fastening methods, increasing productivity**
- Elimination of pre-assembly processes, increasing efficiency
- Rapid installation (setting in under a second), that reduces operator fatigue
- Elimination of cross threading, as the nut's thread is formed during the setting process
- Consistent clamp load after installation, independent of operator control, eradicating the need for torque control and process monitoring
- An easily removable and reusable and vibration resistant nut, that facilitates servicing of components
- Easily set with either a lightweight, pneumatic-hydraulic power tool or a cordless, rechargeable battery tool

## Ease of Assembly

With POP Bolt™ the collar is simply and quickly loaded into the setting tool.

The time consuming pre-assembly of nut and bolt, prior to tightening, is eliminated.

## Ease of Maintenance

The POP Bolt™ collar is easily removed with a conventional wrench, allowing for repair or maintenance work.

Once removed the collar can be reapplied with a torque value of up to 10 Nm.

## Typical Applications

**Truck curtain buckles and rollers**

**Industrial lighting**

**Lighting elements**

**Castors**

**Scaffold**

# Components and Installation

## POP Bolt™ system components

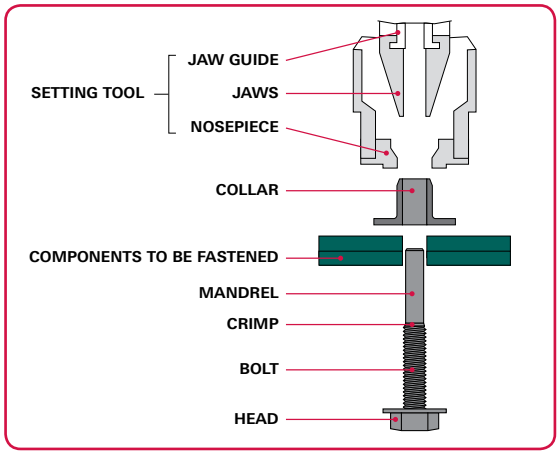
The diagram illustrates the components of the POP Bolt™ fastening system. After the non-threaded, flanged collar is loaded into the setting tool it is placed over the threaded section of the bolt. The jaws of the setting tool engage the non-threaded section of the bolt, which is known as the mandrel.

Once the jaws are engaged, they pull on the mandrel and force the collar into a hexagonal former located in the nosepiece of the tool.

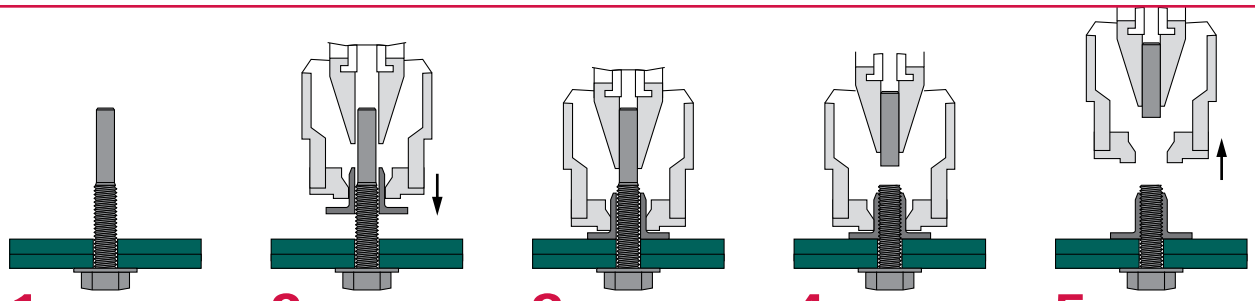
The former forces the external collar into a hexagonal shape, while the swaging of the collar onto the bolt forms internal threads. The collar is transformed into a nut.

On completion the mandrel breaks at the crimp, and is ejected into the collector at the rear of the tool.

This process results in the creation of a serviceable, mechanical joint with a consistent clamp force.




## Installation method



**1** Place the bolt through the holes in the materials to be fastened

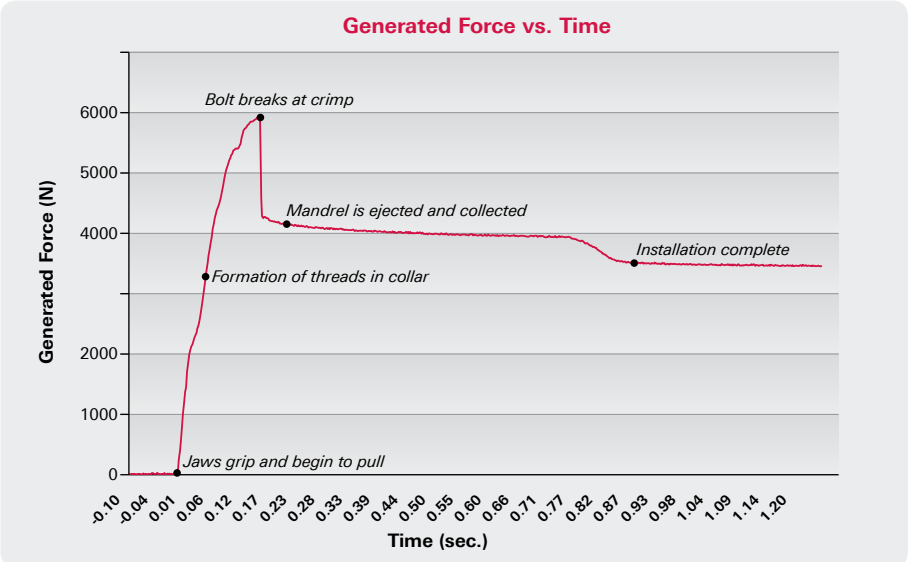
**2** Load the collar into the setting tool and place it over the bolt

**3** Pull the trigger of the setting tool

**4** The setting tool transforms the collar into a nut and the mandrel breaks

**5** The mandrel is ejected and installation is complete

## Installation sequence curve



POP Bolt™ before setting

POP Bolt™ after setting

# POP Bolt™ Head and Collar Styles

## POP Bolt™ Head Styles

POP Bolt™ is available in standard head style configurations as seen below:

**Hex Washer Head**

**Slotted Truss Head**

## POP Bolt™ Collar Styles

POP Bolt™ collars are available as standard in steel and aluminium. (Stainless steel collars are available on request.)

During the setting process the nosepiece of the setting tool dictates the final shape the collar will have externally, once formed into a nut.

The two options are:

**Hex Set**

This hexagonal form is suitable for easy removal with a conventional wrench.

**Secureset**

This rounded form offers excellent tamper resistance and can be removed with a reverse spiral fluted socket. Additional benefits of Secureset are improved vibration resistance and a higher tensile yield.

## Hex Washer Head Bolt

8.8 Grade Steel

| THREAD SIZE | DESCRIPTION | $d_k$ | $k$ | $l$ | $l_1$ | $g$ | KG /1,000 | ARTICLE | BOX QTY | PCS-6S HEX SET $T$ | PCS-6S SECURESET $T$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | mm | mm | mm | mm | mm | kg | | | N | N |
| M6 | PBS-HWH-8-M6X13 | 13.6 | 6.8 | 29 | 13 | 0-3.5 | 8.10 | 78908 | 500 | 7,000 | 10,000 |
| | PBS-HWH-8-M6X16 | 13.6 | 6.8 | 32 | 16 | 1.5-6.5 | 8.66 | 78909 | 500 | 7,000 | 10,000 |
| | PBS-HWH-8-M6X19 | 13.6 | 6.8 | 35 | 19 | 4.5-9.5 | 9.20 | 78910 | 500 | 7,000 | 10,000 |
| | PBS-HWH-8-M6X22 | 13.6 | 6.8 | 38 | 22 | 7.5-12.5 | 9.74 | 78911 | 500 | 7,000 | 10,000 |
| | PBS-HWH-8-M6X25 | 13.6 | 6.8 | 41 | 25 | 10.5-15.5 | 10.30 | 78912 | 500 | 7,000 | 10,000 |
| | PBS-HWH-8-M6X28 | 13.6 | 6.8 | 44 | 28 | 13.5-18.5 | 10.84 | 78921 | 500 | 7,000 | 10,000 |
| | PBS-HWH-8-M6X31 | 13.6 | 6.8 | 47 | 31 | 16.5-21.5 | 11.38 | 78922 | 500 | 7,000 | 10,000 |
| | PBS-HWH-8-M6X34 | 13.6 | 6.8 | 50 | 34 | 19.5-24.5 | 11.93 | 78923 | 500 | 7,000 | 10,000 |
| | PBS-HWH-8-M6X37 | 13.6 | 6.8 | 53 | 37 | 22.5-27.5 | 12.47 | 78924 | 500 | 7,000 | 10,000 |
| | PBS-HWH-8-M6X40 | 13.6 | 6.8 | 56 | 40 | 25.5-30.5 | 13.02 | 78925 | 500 | 7,000 | 10,000 |

## Slotted Truss Head Bolt

8.8 Grade Steel

| THREAD SIZE | DESCRIPTION | $d_k$ | $k$ | $l$ | $l_1$ | $g$ | KG /1,000 | ARTICLE | BOX QTY | PCS-6S HEX SET $T$ | PCS-6S SECURESET $T$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | mm | mm | mm | mm | mm | kg | | | N | N |
| M6 | PBS-THS-8-M6X13 | 16 | 3.5 | 29 | 13 | 0-3.5 | 7.03 | 78936 | 500 | 7,000 | 10,000 |
| | PBS-THS-8-M6X16 | 16 | 3.5 | 32 | 16 | 1.5-6.5 | 7.58 | 78937 | 500 | 7,000 | 10,000 |
| | PBS-THS-8-M6X19 | 16 | 3.5 | 35 | 19 | 4.5-9.5 | 8.13 | 78938 | 500 | 7,000 | 10,000 |
| | PBS-THS-8-M6X22 | 16 | 3.5 | 38 | 22 | 7.5-12.5 | 8.68 | 78939 | 500 | 7,000 | 10,000 |
| | PBS-THS-8-M6X25 | 16 | 3.5 | 41 | 25 | 10.5-15.5 | 9.22 | 78940 | 500 | 7,000 | 10,000 |
| | PBS-THS-8-M6X28 | 16 | 3.5 | 44 | 28 | 13.5-18.5 | 9.76 | 78941 | 500 | 7,000 | 10,000 |
| | PBS-THS-8-M6X31 | 16 | 3.5 | 47 | 31 | 16.5-21.5 | 10.31 | 78942 | 500 | 7,000 | 10,000 |
| | PBS-THS-8-M6X34 | 16 | 3.5 | 50 | 34 | 19.5-24.5 | 10.86 | 78943 | 500 | 7,000 | 10,000 |
| | PBS-THS-8-M6X37 | 16 | 3.5 | 53 | 37 | 22.5-27.5 | 11.40 | 78944 | 500 | 7,000 | 10,000 |
| | PBS-THS-8-M6X40 | 16 | 3.5 | 56 | 40 | 25.5-30.5 | 11.95 | 78945 | 500 | 7,000 | 10,000 |

## Collars

For Steel Bolts

| SIZE | MATERIAL | DESCRIPTION | $d_f$ | $l$ | KG /1,000 | ARTICLE | BOX QTY |
|---|---|---|---|---|---|---|---|
| | | | mm | mm | kg | | |
| 6mm | Steel | PCS-6S | 16 | 10.25 | 4.50 | 78904 | 500 |

$d_k$=Head Diameter; $d_f$=Flange Diameter; $k$=Head Thickness; $l$=Length; $l_1$=Thread Length; $g$=Grip Range (Min - Max); $T$=Tensile Strength

## Hex Washer Head Bolt

A2 Grade Stainless Steel

| THREAD SIZE | DESCRIPTION | $d_k$ | $k$ | $l$ | $l_1$ | $g$ | KG /1,000 | ARTICLE | BOX QTY | PCS-6S HEX SET $T$ | PCS-6S SECURESET $T$ | PCA-6S HEX SET $T$ | PCA-6S SECURESET $T$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | mm | mm | mm | mm | mm | kg | | | N | N | N | N |
| M6 | PBSS-HWH-A2-M6X13 | 13.6 | 6.8 | 29 | 13 | 0-3.5 | 8.10 | 78983 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-HWH-A2-M6X16 | 13.6 | 6.8 | 32 | 16 | 1.5-6.5 | 8.66 | 78984 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-HWH-A2-M6X19 | 13.6 | 6.8 | 35 | 19 | 4.5-9.5 | 9.20 | 78985 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-HWH-A2-M6X22 | 13.6 | 6.8 | 38 | 22 | 7.5-12.5 | 9.74 | 78986 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-HWH-A2-M6X25 | 13.6 | 6.8 | 41 | 25 | 10.5-15.5 | 10.30 | 78987 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-HWH-A2-M6X28 | 13.6 | 6.8 | 44 | 28 | 13.5-18.5 | 10.84 | 78988 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-HWH-A2-M6X31 | 13.6 | 6.8 | 47 | 31 | 16.5-21.5 | 11.38 | 78989 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-HWH-A2-M6X34 | 13.6 | 6.8 | 50 | 34 | 19.5-24.5 | 11.93 | 78990 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-HWH-A2-M6X37 | 13.6 | 6.8 | 53 | 37 | 22.5-27.5 | 12.47 | 78991 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-HWH-A2-M6X40 | 13.6 | 6.8 | 56 | 40 | 25.5-30.5 | 13.02 | 78992 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |

## Slotted Truss Head Bolt

A2 Grade Stainless Steel

| THREAD SIZE | DESCRIPTION | $dk$ | $l$ | $l$ | $g$ | KG /1,000 | ARTICLE | BOX QTY $T$ | PCS-6S HEX SET $T$ | PCS-6S SECURESET $T$ | PCA-6S HEX SET $T$ | PCA-6S SECURESET $T$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | mm | mm | mm | mm | kg | | | N | N | N | N |
| M6 | PBSS-THS-A2-M6X13 | 16 | 3.5 | 29 | 13 | 0-3.5 | 7.03 | 79012 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-THS-A2-M6X16 | 16 | 3.5 | 32 | 16 | 1.5-6.5 | 7.58 | 79013 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-THS-A2-M6X19 | 16 | 3.5 | 35 | 19 | 4.5-9.5 | 8.13 | 79014 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-THS-A2-M6X22 | 16 | 3.5 | 38 | 22 | 7.5-12.5 | 8.68 | 79015 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-THS-A2-M6X25 | 16 | 3.5 | 41 | 25 | 10.5-15.5 | 9.22 | 79016 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-THS-A2-M6X28 | 16 | 3.5 | 44 | 28 | 13.5-18.5 | 9.76 | 79017 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-THS-A2-M6X31 | 16 | 3.5 | 47 | 31 | 16.5-21.5 | 10.31 | 79018 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-THS-A2-M6X34 | 16 | 3.5 | 50 | 34 | 19.5-24.5 | 10.86 | 79019 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-THS-A2-M6X37 | 16 | 3.5 | 53 | 37 | 22.5-27.5 | 11.40 | 79020 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-THS-A2-M6X40 | 16 | 3.5 | 56 | 40 | 25.5-30.5 | 11.95 | 79021 | 500 | 7,000 | 10,000 | 5,700 | 9,000 |

## Collars

For Stainless Steel Bolts

| SIZE | MATERIAL | DESCRIPTION | $d_f$ | $l$ | KG /1,000 | ARTICLE | BOX QTY |
|---|---|---|---|---|---|---|---|
| | | | mm | mm | kg | | |
| 6mm | Steel | PCS-6S | 16 | 10.25 | 4.50 | 78904 | 500 |
| 6mm | Aluminium | PCA-6S | 16 | 10.25 | 1.61 | 79034 | 500 |

Stainless Steel collars available on request.

$d_k$=Head Diameter; $d_f$=Flange Diameter; $k$=Head Thickness; $l$=Length; $l_1$=Thread Length; $g$=Grip Range (Min - Max); $T$=Tensile Strength

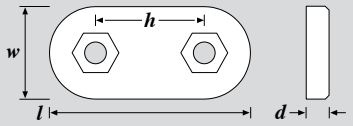
## Twinfix with Hex Head Bolt

A2 Grade Stainless Steel

| THREAD SIZE | DESCRIPTION | $l$ | $l_1$ | $g$ | KG /1,000 | ARTICLE | BOX QTY | PCS-6S HEX SET $T$ | PCS-6S SECURESET $T$ | PCA-6S HEX SET $T$ | PCA-6S SECURESET $T$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | mm | mm | mm | kg | | | N | N | N | N |
| M6 | PBSS-TFX-A2-M6X13 | 29 | 13 | 0-3.5 | 13.71 | 79170 | 250 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-TFX-A2-M6X16 | 32 | 16 | 1.5-6.5 | 14.27 | 79171 | 250 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-TFX-A2-M6X19 | 35 | 19 | 4.5-9.5 | 14.81 | 79172 | 250 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-TFX-A2-M6X22 | 38 | 22 | 7.5-12.5 | 15.35 | 79173 | 250 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-TFX-A2-M6X25 | 41 | 25 | 10.5-15.5 | 15.91 | 79174 | 250 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-TFX-A2-M6X28 | 44 | 28 | 13.5-18.5 | 16.45 | 79175 | 250 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-TFX-A2-M6X31 | 47 | 31 | 16.5-21.5 | 16.99 | 79176 | 250 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-TFX-A2-M6X34 | 50 | 34 | 19.5-24.5 | 17.54 | 79177 | 250 | 7,000 | 10,000 | 5,700 | 9,000 |
| | PBSS-TFX-A2-M6X37 | 53 | 37 | 22.5-27.5 | 18.08 | 79178 | 250 | 7,000 | 10,000 | 5,700 | 9,000 |

## Carrier Dimensions

Nylon 6



| WIDTH $w$ | LENGTH $l$ | HOLE CENTRES $h$ | DEPTH $d$ |
|---|---|---|---|
| mm | mm | mm | mm |
| 25 | 53 | 28.5 | 6 |

## Collars

For Stainless Steel Bolts

| SIZE | MATERIAL | DESCRIPTION | $d_f$ | $l$ | KG /1,000 | ARTICLE | BOX QTY |
|---|---|---|---|---|---|---|---|
| | | | | | mm | mm | kg |
| 6mm | Steel | PCS-6S | 16 | 10.25 | 4.50 | 78904 | 500 |
| 6mm | Aluminium | PCA-6S | 16 | 10.25 | 1.61 | 79034 | 500 |

Stainless Steel collars available on request.

## The Twinfix installation method

$l$=Length; $l_1$=Thread Length; $g$=Grip Range (Min - Max); $T$=Tensile Strength; $W$=Width; $h$=Hole Centres; $d$=Depth; $d_f$=Flange Diameter

# POP Bolt™ Power Tool

## ProSet® PSL2500CJ-HEX

**The ProSet® range of power tools sets a new standard for pneumatic setting tools.**

This POP Bolt™ setting tool is compact and lightweight, and features an integrated bolt release mechanism.

**Features & Benefits:**

- Lightweight aluminium and polymer construction
- Comfortable two finger, low activation force trigger
- Left or right swivel air fitting
- Airless mandrel collection system (MCS) to reduce air consumption
- Integrated bolt release mechanism
- Secureset nosepiece compatible

Mandrel Collection System (MCS)

**PSL2500CJ-HEX**
Article Number: **19661**

### Specifications

| | |
|---|---|
| **Weight** | 1.31 kg |
| **Length** | 324 mm |
| **Height** | 259 mm |
| **Tool stroke** | 18 mm |
| **Working air pressure** | 5.0 - 6.9 bar |
| **Pulling force** | 9400 N @ 6.2 bar |
| **Force/Weight ratio** | 7.18 kN/kg |
| **Air consumption** | 70 litres/min (max) |

# POP Bolt™ Battery Tool

## MCS5800-HEX

**Cordless, rechargeable battery tool.**

This portable POP Bolt™ tool is ideal for site, automotive and maintenance work, or in instances that compressed air is not available.

**Features & Benefits:**

- Instant return to start position on release of trigger
- Up to 500 settings with one charge
- Integral Mandrel Collection System
- Supplied in durable metal case, including tool, battery and charger
- Charging time approx. 1 hour

**MCS5800-HEX**
Article Number: **17501**

### Specifications

| | |
|---|---|
| **Weight** | 2.2 kg |
| **Length** | 265 mm |
| **Height** | 300 mm |
| **Tool stroke** | 20 mm |

## Secureset

The Secureset nosepiece is available for use in both POP Bolt™ tools.

Installation of either the Hex or Secureset nosepiece in both POP Bolt™ tools takes a matter of minutes.

Secureset gives a rounded form to the assembled POP Bolt™ nut, for tamper resistance.

A Secureset nut is removable using a reverse spiral fluted socket.

**Secureset Nosepiece**
Article Number: **79180**

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