

## 8 ADVANTAGES THAT SET UNBRAKO SOCKET SCREWS OVER ANY OTHER MANUFACTURERS:

### 1. ALL SOCKET CAP SCREWS HAVE FORGED HEADS AND HEX SOCKETS

In all sizes, the ASTM A574 (inch and metric) specifications permit hex sockets to be forged or machined. All Unbrako socket cap screw heads and their hex sockets are forged, resulting in increased strength, better installation ability, and a longer product life.

### 2. ALL SOCKET CAP SCREWS HAVE ROLLED THREADS

Cut threads interrupt the grain flow of the material and result in weaker threads. Conversely, roll threads compresses the material's grain flow and enhances fatigue resistance. Because of that benefit, all Unbrako socket cap screws are roll threaded.

### 3. HIGHER MINIMUM TENSILE STRENGTHS

The ASTM A574 (inch and metric) specifications require minimum tensile strength of 180,000 psi through 1/2", and 170,000 psi for 5/8" sizes larger, and the appropriate metric equivalents as well as corresponding requirements for core hardness. Unbrako tensile specifications are 10,000 psi higher than standards—while maintaining the core hardness range. To exceed such standard, we had to exert extremely tight controls on our heat treatment process.

### 4. E-CODE™ LOT CODE™ HEAD MARKINGS

This patented alpha numeric head marking system allows each fastener to be traced to its original manufacturing lot, raw material chemistry, and performance test results. This marking system generates codes found on top of the heads of all inch and metric socket cap screws, 1/4" or 6mm and larger. It is the ultimate in product tracking.

### 5. COMPOUND FILLET RADIUS

Each size of socket screw has a specially designed compound fillet radius that blends 2 different radii within the ASME B18.3 standard fillet "envelope". This design change alone is responsible for doubling tension-tension fatigue life, the most common loading in application.

### 6. RADIUS ROOT THREAD RUN-OUT

Thread specs MIL-S-8870 for aircraft fasteners state that the run-out threads must have root radii as large or larger than the normal root radius of the threads. The purpose was to strengthen the specific area where most fastener failures occurred. Though this type of requirement never became a commercial fastener standard, Unbrako saw the merits of this technological advancement and decided to make a standard feature on all its socket cap screws.

### 7. "WR" THREAD FORM

This is an exclusive Unbrako design. "WR" stands for WIDE ROOT. "WR" provides the strongest UNR thread form with the greatest opportunity to maximize fatigue resistance. It is achieved by first making the root of the thread as wide as the UTS permits, and then by restricting the tolerance of the root radius to the upper, largest 30% of the specification. Only by having our own thread roll die manufacturing plants can we implement such a design.

### 8. ETCHING FOR THREAD LAPS

When threads are rolled onto our products, random samples are being etched in heated acid, and then examined under a stereo microscope to detect flaws such as thread laps. Tedious microscopic reviews are the best way to detect thread laps and their unwanted consequences: fatigue cracking which leads to fastener failures. Because of these efforts, we can certify to ASTM F788, Supplemental Requirement S1, for assemblies subject to severe dynamic stresses on all Unbrako socket cap screws.



As the largest industrial fastener manufacturer in India since 1956, and as the proud Worldwide owner of UNBRAKO, Deepak Fasteners Limited is committed to quality and delivery at the best possible price. Since its establishment, Deepak Fasteners Limited has pro-actively implemented global strategies to create an internationally integrated business structure.

Deepak Fasteners Limited has set-up a new state-of-the-art plant in Bhopal, India, which will become the largest fastener facility in Asia, with an estimated production of 600 tones per day. In addition to the existing plants in Ireland and India, this new facility will cater to the U.S and European markets.

As part of its global strategy, Deepak Fasteners Ltd. has opened an Unbrako distribution warehouse in Southern California, the first of many in the United States. Unbrako LLC is dedicated to providing its high performance products to the U.S market through distribution only.

## DID YOU KNOW?

- The first development of an internal wrenching hexagon drive, of which there are records, is that of circa 1911 in Pennsylvania, by the founders of Unbrako.
- Unbrako is the brand name given to the World's original *Socket Head Cap Screw*.
- 100 years later, Unbrako is still regarded as the World's **Premium** Socket Screw.

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## PREMIUM SOCKET CAP SCREWS



Unbrako is the World's leading socket screw brand with more than 100 years experience of supplying to high-end industries, such as the automotive, aerospace, petrochemical, heavy machinery and military sectors.



# HIGH-PERFORMANCE SCREWS

## □ Socket Head Cap Screws

Metric size: M1.6 to M36  
Standard: #0 to #10, 1/4" to 1 1/2" (UNC/UNF)  
Grade 12.9  
Specs: ASTM A574/A574M  
ISO 4762/ASME B18.3 1M/DIN912/BS 4168-1



## □ Socket Head Cap Screws-Fully Threaded

Metric size: M5 to M10  
Grade 12.9  
Specs: ASTM A574/A574M  
ISO 4762/ASME B18.3 1M/DIN912/BS 4168-1



## □ Low Head Cap Screws

Metric size: M4 to M20  
Standard: #8 (UNC), #10 (UNC/UNF), 1/4" to 3/8" (UNC)  
Specs: ASTM A574/A574M  
DIN 7984 + 6912/ASME B18.3.1



## □ Socket Set Screws-Knurled Cup Point

Metric size: M3 to M20  
Standard: #4 to #10 (UNC/UNF), 1/4" to 5/8" (UNC/UNF)  
Grade 45H  
Specs: ASTM F912/F912M  
ISO 4029/ASME B18.6 1M/DIN916/BS 4168-4/BS 2470  
DIN914/BS 4168-3



## □ Socket Set Screws-Plain Cup Point

Metric size: M2.5 to M12  
Standard: #2 to 10 (UNC), #0,1,4,6,10 (UNC),  
1/4" to 5/8" (UNC/UNF)  
Grade 45H  
Specs: ASTM F912/F912M  
ISO 4029/ASME B18.3 .6M/DIN916/BS 4168-4/BS 2470



## □ Button Head Socket Cap Screws

Metric size: M3 to M12  
Standard: #4 to 5/8" (UNC)  
#10, 1/4", 5/16", 3/8", 1/2" (UNF)  
Specs: ASTM F835/F835M  
ISO 7380/ASME B18.3. 4M/BS 4168-6/BS 2470



## □ Flange Button Head Socket Screws

Metric size: M3 to M10  
Standard: #8 to 5/8" (UNC), #10 (UNF)  
Specs: ASTM F835/F835M  
ISO 898/1/DIN 267



## □ Countersunk Socket Head Screws

Metric size: M3 to M20  
Standard: #4 to 3/4" (UNC)  
#10, 1/4" to 1/2" (UNF)  
Specs: ASTM F835/F835M  
ISO 10642/ASME B18.3. 5M/DIN7991  
BS 4168-8/BS 2470



## □ Socket Head Shoulder Screws

Metric size: M5 to M20  
Standard: 1/4" to 3/4"  
Specs: ASTM A574/A574M  
ISO 7379/ASME B18.3. 3M/BS 4168-7/BS 2470



**Standard finish is in thermal black oxide**

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## □ Taper Pressure Plugs

Standard: 3/4" BSPT/NPTF, 7/8" NPTF  
Specs: DIN 906.22/DIN 158



## □ Hexagon Wrenches (Keys)

Short Arm, Long Arm  
Specs: ISO 2936/ASME B18.3. 2M  
BS 4168-9

## □ Dowel Pins

Metric size: 2mm to 16mm  
Standard: #4 to #10 (UNC/UNF), 1/4" to  
5/8" (UNC/UNF)  
Specs: DIN 6325/ASME B18.8.2/ANSI B 18.8.2



## □ Spiral Pull Out Dowel Pins

Standard: 1/4" to 1"  
Specs: ANSI

### SERVICES:

- Special orders
- Mill shipments
- Specialty Plating
- Certifications
- Complete traceability
- Specials to print
- PPAP Level III

**Call your Unbrako representative for details**

The great majority of Unbrako Premium sockets are made in Ireland and India with some made in China. Dowel pins are made in the U.S.A.