

## High-performance Socket Screws



### Why Socket Screws? Why Unbrako?

The most important reasons for the increasing use of socket head cap screws in industry are safety, reliability and economy. All three reasons are directly traceable to the superior performance of socket screws vs. other fasteners due to their superior strength and advanced design.

Reliability, higher pressures, stresses and speeds in today's machines and equipment demand stronger, more reliable fasteners to hold them together.

Rising costs make failure and downtime intolerable. Bigger, more complex units break down more frequently despite every effort to prevent it.

This is why the reliability of every component has become critical. Components must stay together to function properly, and to keep them together joints must stay tight.

Unbrako developed the first internal hex socket screw and is the world's leading socket screw brand with more than 100 years' experience of supplying to the high-end industries, such as the automotive,

infrastructure, aerospace, petrochemical, heavy machinery and military sectors.

UNBRAKO socket cap screws offer joint reliability, safety with maximum strength and fatigue resistance greater than any other threaded fastener.

### Higher Tensile Strength

Unbrako 12.9 metric alloy steel socket head cap screws are manufactured to strength levels of 1300/1250 MPa (depending on dia) compared to the industry standard of 1220 MPa. For inch sizes, Unbrako manufactures to 190/180 Ksi compared to the industry standard per ASTM A574 of 180/170 Ksi.

This higher tensile strength can be translated into savings. Fewer socket screws of the same size can be used to achieve the same clamping force in the joint. A joint requiring 12 x 1-3/8" Grade 5 hex heads would need only 7 UNBRAKO socket head cap screws. Thus, there are fewer holes to drill & tap, fewer screws to buy & handle.

Using smaller diameter socket head cap screws vs. larger hex screws costs less to drill and tap, need less space, require no additional wrench space, take less energy

to drive, and there is also weight saving.

### Greater Fatigue Strength

Joints that are subject to external stress loading are susceptible to fatigue failure. UNBRAKO socket screws have distinct advantages that give you an extra bonus of protection against this hazard, namely - design improvements, mechanical properties & closely controlled manufacturing processes.

### Austenitic Stainless Steel Series

UNBRAKO Socket Screws are available in alloy steel & stainless steel. Unbrako stainless socket screws are made from austenitic stainless steel and are ideal for corrosive, magnetic, hygienic, cryogenic or elevated temperature environments. These offer excellent resistance to rust & corrosion from acids, organic substances, salt solutions and atmospheres. Superior properties include retention of a high percentage of tensile strength and good creep resistance up to 800°F, without scaling or oxidation.



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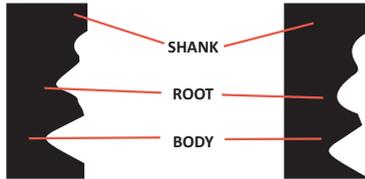


## High-performance Socket Screws

Head with increased bearing area for greater load carrying capability. Precision forged for symmetrical grain flow, maximum strength.

Specially designed Elliptical fillet doubles fatigue life at critical head-shank juncture.

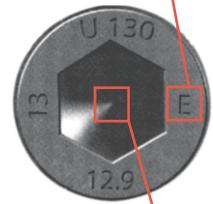
"3-R" (radiused-root runout) increases fatigue life at this critical juncture.



**CONVENTIONAL THREAD RUNOUT** - Note sharp angle at root where high stress concentration soon develops crack which penetrates into body of the screw.

**UNBRAKO "3-R" (Radiused Root Runout) THREAD** - Controlled radius of runout root provides a smooth form that distributes stress and increases fatigue life of thread run-out as much as 300% in certain sizes.

Total Traceability: Patented E-CODE™ head marking system allows tracing of test records to specific production batches



Deep, accurate socket for high torque wrenching. Knurls for easier handling. Marked for easier identification.

Fully formed radiused thread increases fatigue life 100% over flat root thread forms.

Controlled heat treatment produces maximum strength without brittleness.

### Unbrako Socket Products

Socket Head Cap Screws  
Alloy / Stainless



Socket Head Cap Screws  
Low Head Series  
Alloy / Stainless



Socket Set Screws  
(Grub Screws)  
Alloy / Stainless



Shoulder Screws



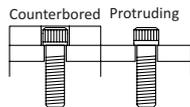
Button Head Cap Screws  
Alloy / Stainless



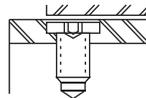
Flat Head Countersunk  
Socket Screws  
Alloy / Stainless



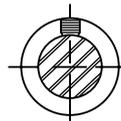
### Application / Features



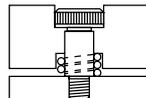
Suitable for all high tensile applications. Up to 190,000 psi/ 1300 Mpa– highest of any socket cap screw. Use Stainless for corrosive, cryogenic or elevated temperature environment.



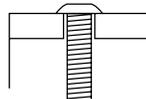
Suitable for use in parts too thin for standard SHCS and for applications with limited clearance.



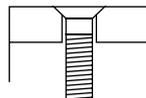
Fasten collars, sheaves, gears, knobs on shafts. Locate machine parts. Self-locking knurled cup point is standard. Special Points like Flat, Dog, Cone & Plain Cup are also available.



Replaces costly special parts – shafts, pivots, pins, guides, linkages and trunnion mountings. Also standard for tool and die industries.



Low heads streamline design. Use them in materials too thin to countersink; also for non-critical loading requiring heat treated screws



Controlled angle under the head ensures maximum flushness and side wall contact. Non-slip Hex socket prevents marring of material.

