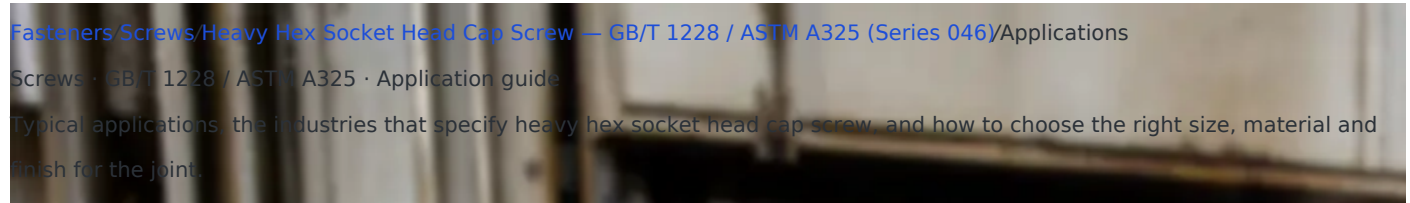


# What Are Heavy Hex Socket Head Cap Screw Used For?

Engineering Hardware & Fasteners · [engineeringhardware.com/applications/cad-svg-046-sockethead](https://engineeringhardware.com/applications/cad-svg-046-sockethead)



Heavy Hex Socket Head Cap Screws are used for threaded assemblies where the head drive and seating style matter. They are manufactured to GB/T 1228 / ASTM A325, and the choice of size, property class and finish is driven by the load in the joint and the environment it sits in.

## Primary duty

Threaded assemblies where the head drive and seating style matter

## Governing standard

GB/T 1228 / ASTM A325

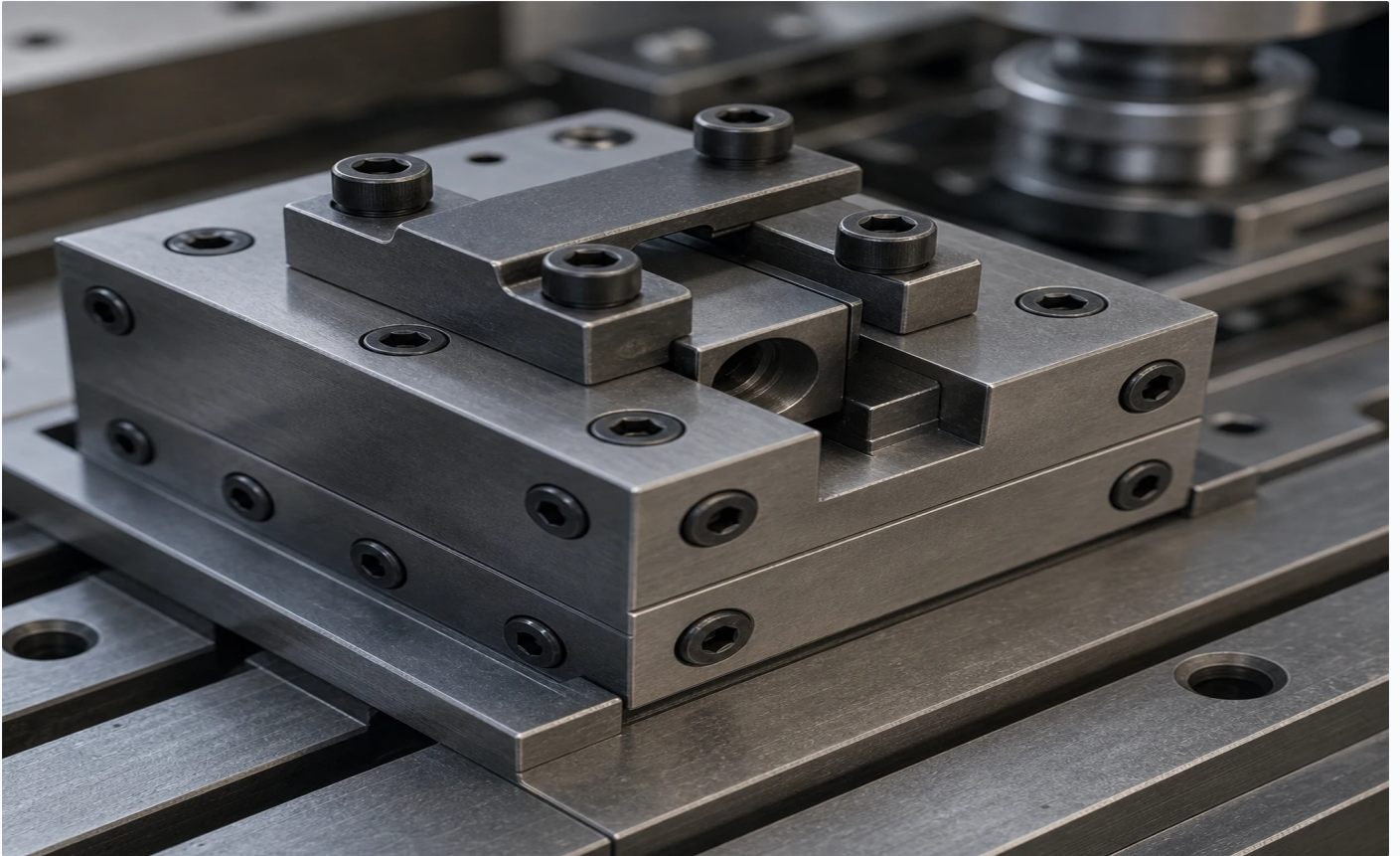
## Thread size range

M3 to M36

## Category

Screws

Application notes are general engineering guidance. Verify the property class and any approval requirement against your own design calculation.



Heavy Hex Socket Head Cap Screws are selected when an assembly calls for threaded assemblies where the head drive and seating style matter. This application guide to the GB/T 1228 / ASTM A325 type covers concrete end-uses, the specification checklist, correct installation, and where an alternative fastener performs better. Stocked across roughly M3 to M36, they cover general to heavy-duty work.

## Typical Applications for Heavy Hex Socket Head Cap Screw — GB/T 1228 / ASTM A325 (Series 046)

The most common settings where these are specified:

- **General machine building:** fastening covers, brackets, motors and sub-assemblies on production equipment.
- **Maintenance & repair (MRO):** a stocked size for servicing existing plant where the original fastener spec must be matched.
- **Fabrication & metalwork:** bench and on-site assembly of steel frames, enclosures and weldments.
- **Electronics & enclosures:** mounting PCBs, panels and lids where the drive style and head height matter.
- **Appliances & consumer goods:** high-volume assembly with power tools and consistent seating.

## How to Specify Heavy Hex Socket Head Cap Screw — GB/T 1228 / ASTM A325 (Series 046) for Your Application

- **Size:** Match the nominal size to the mating thread or hole. This product spans M3–M36; check the full table below for the exact dimensions of each size.
- **Drive & head:** Pick the drive (socket, cross, slot) and head style for the tool access and seating surface; a recessed drive resists cam-out under power tools.
- **Environment:** For damp, coastal or chemical exposure prefer A4/316 stainless or a suitable coating; indoors, plated steel or A2 is usually sufficient.
- **Standard:** This product is supplied to GB/T 1228 / ASTM A325. Quoting the standard on your order guarantees interchangeable dimensions between suppliers.

## Installation & Assembly Practice

- Match the driver exactly to the recess (PH ≠ PZ; hex key sizes per ISO 2936) and keep the tool axial — side load is the main cause of stripped drives.
- In tapped holes, engage a thread length of at least 1× the nominal diameter in steel, 2× in aluminum.
- Set power tools to a torque that seats the head without embedding it into the mating surface.

## Common Selection Mistakes with Heavy Hex Socket Head Cap Screw — GB/T 1228 / ASTM A325 (Series 046)

- Under-sizing the drive for the installation torque — a small recess at high torque strips before the screw is seated.
- Using a countersunk head in thin sheet where the countersink removes most of the load-bearing material.
- Specifying stainless in high-strength duty: A2-70 is roughly class 7 steel, not a 10.9 substitute.

## Where Heavy Hex Socket Head Cap Screw — GB/T 1228 / ASTM A325 (Series 046) Are Not the Right Choice

Not for high-preload structural joints (use a property-class bolt and nut), and not in thin sheet where a self-drilling or self-tapping type suits better.

## Technical Drawing

Customize the parameters below — every spec field is editable, and the drawing redraws to match the values you choose. Changing the size will snap the other fields to that size's standard values; you can then override any individual value.

Sends the selected values to the quote form below.

## Request a Quote

The form below follows the current technical drawing configuration. Change the drawing values above and the request details update automatically.

## Dimensions & Specifications (GB/T 1228 / ASTM A325)

| Size | Pitch<br>(mm) | Length L<br>(mm) | Head diameter dk<br>(mm) | Head height k<br>(mm) | Hex socket s<br>(mm) | Reference<br>standard |
|------|---------------|------------------|--------------------------|-----------------------|----------------------|-----------------------|
| M3   | 0.5           | 20               | 5.5                      | 3                     | 2.5                  | ISO 4762 / GB/T 70.1  |
| M4   | 0.7           | 25               | 7.0                      | 4                     | 3.0                  | ISO 4762 / GB/T 70.1  |
| M5   | 0.8           | 30               | 8.5                      | 5                     | 4.0                  | ISO 4762 / GB/T 70.1  |
| M6   | 1.0           | 40               | 10.0                     | 6                     | 5.0                  | ISO 4762 / GB/T 70.1  |
| M8   | 1.25          | 50               | 13.0                     | 8                     | 6.0                  | ISO 4762 / GB/T 70.1  |
| M10  | 1.5           | 60               | 16.0                     | 10                    | 8.0                  | ISO 4762 / GB/T 70.1  |
| M12  | 1.75          | 80               | 18.0                     | 12                    | 10.0                 | ISO 4762 / GB/T 70.1  |
| M14  | 2.0           | 80               | 21.0                     | 14                    | 12.0                 | ISO 4762 / GB/T 70.1  |
| M16  | 2.0           | 100              | 24.0                     | 16                    | 14.0                 | ISO 4762 / GB/T 70.1  |
| M18  | 2.5           | 100              | 27.0                     | 18                    | 14.0                 | ISO 4762 / GB/T 70.1  |
| M20  | 2.5           | 120              | 30.0                     | 20                    | 17.0                 | ISO 4762 / GB/T 70.1  |
| M24  | 3.0           | 150              | 36.0                     | 24                    | 19.0                 | ISO 4762 / GB/T 70.1  |
| M30  | 3.5           | 180              | 45.0                     | 30                    | 22.0                 | ISO 4762 / GB/T 70.1  |
| M36  | 4.0           | 200              | 54.0                     | 36                    | 27.0                 | ISO 4762 / GB/T 70.1  |

Inside the plant

## Manufactured in our own plant

This part is cold-formed, threaded, heat-treated and finished in-house. The stages below are where its class and finish are actually decided.

1.



01

### **Cold heading**

Wire rod is drawn to size and cold-formed into blanks. Forming rather than cutting keeps the grain flow continuous around the head, which is where a bolt is most likely to fail.

Head dimensions and under-head radius checked at set-up and per shift.





2.

02

## Thread rolling

Threads are rolled between hardened dies rather than cut. Rolled threads are stronger in fatigue than cut threads and hold pitch and flank angle far more consistently across a batch.

Go / no-go ring gauges to ISO 965 tolerance class 6g.

3.



03

### Heat treatment

Quench-and-temper brings carbon and alloy steel to the property class ordered — 8.8, 10.9 or 12.9 — with the furnace charge tracked so a finished lot can be traced back to it.

Core hardness and tensile tested per lot to ISO 898-1.



4.



04

### Surface treatment

Zinc, zinc-nickel, hot-dip galvanizing, black oxide, phosphate and Dacromet, selected against the service environment rather than against the price list.

Coating thickness and neutral salt spray hours to ISO 9227.

## Frequently Asked Questions

What are Heavy Hex Socket Head Cap Screw — GB/T 1228 / ASTM A325 (Series 046) used for?

Threaded assemblies where the head drive and seating style matter. They are supplied to GB/T 1228 / ASTM A325.

Which industries use Heavy Hex Socket Head Cap Screw — GB/T 1228 / ASTM A325 (Series 046)?

They are commonly specified in fabrication & metalwork, electronics & enclosures and appliances & consumer goods, among other sectors.

How do I choose the right size of Heavy Hex Socket Head Cap Screw — GB/T 1228 / ASTM A325 (Series 046)?

Match the nominal size to the mating thread or hole. This product is available from M3 to M36; the full dimension table on this page lists each size.

What drive type do Heavy Hex Socket Head Cap Screw — GB/T 1228 / ASTM A325 (Series 046) use?



Drive depends on the head style — socket (hex key), cross (Phillips/Pozi) or slot. A recessed drive resists cam-out when driven with power tools; check the product head style on this page.

Can I get a quote for Heavy Hex Socket Head Cap Screw — GB/T 1228 / ASTM A325 (Series 046) in the size and material I need?

Yes. Use the technical drawing and quote form on this page to set the size and options, then send the exact configuration to our team for pricing and lead time.

## Related Pages

Product page: [Heavy Hex Socket Head Cap Screw — GB/T 1228 / ASTM A325 \(Series 046\) — specifications & sizes](#)

### Heavy Hex Socket Head Cap Screw — GB/T 1228 / ASTM A325 (Series 046) Specification Guides

- [M3 Heavy Hex Socket Head Cap Screw — GB/T 1228 / ASTM A325 \(Series 046\) size guide](#)
- [A4 stainless Heavy Hex Socket Head Cap Screw — GB/T 1228 / ASTM A325 \(Series 046\)](#)

### Related Fastener Applications

- [Button Head Socket Screws applications](#)
- [Cheese Head Screws applications](#)
- [Countersunk Socket Screws applications](#)
- [Fine Adjustment Set Screws applications](#)
- [Hex Socket Cone Point Set Screw — GB/T 77 / ISO 4026 \(Series 022\) applications](#)
- [Hex Socket Cone Point Set Screw — GB/T 78 / ISO 4027 \(Series 027\) applications](#)