

GB/T 77 Hex Socket Cone Point Set Screw Specification

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GB/T 77 specifies the dimensions and tolerances for hex socket cone point set screw. The full dimensional table is reproduced below, followed by the DIN, ISO and ASME parts that match or supersede it.

Standard

GB/T 77

Product

Hex Socket Cone Point Set Screw — GB/T 77 / ISO 4026 (Series 022)

Governing standards

GB/T 77 / ISO 4026

Equivalence between national standards is dimensional, not always metallurgical. Check the property class separately when substituting.



Hex Socket Cone Point Set Screw manufactured to GB/T 77 are dimensioned by the size table reproduced on this page. The standard fixes geometry and tolerances only; material and property class are assigned by separate documents, and surface finish by separate finish standards.

GB/T 77 — Scope

GB/T 77 is "Hexagon socket set screws with flat point". GB/T 77 is the Chinese national adoption of the same document.

Material, property class, surface finish and packaging are governed by separate documents — ISO 898-1 and ISO 898-2 for mechanical property classes, ISO 4042 for electroplated finishes.

Tolerance & Product Grades

GB/T 77 does not divide hex socket cone point set screw — gb/t 77 / iso 4026 (series 022) into product grades. Tolerances are given as limits on the individual dimensions in the table.

Where a general-tolerance class is cited on the drawing instead, it applies to the dimensions not otherwise toleranced.

Dimensions Specified by GB/T 77

Size	Pitch (mm)	Length L (mm)	Hex socket s (mm)	Engagement depth t min (mm)
M3	0.5	6	1.5	1.4
M4	0.7	6	2.0	2.0
M5	0.8	7	2.5	2.5
M6	1.0	9	3.0	3.0
M8	1.25	12	4.0	4.0
M10	1.5	15	5.0	5.0
M12	1.75	18	6.0	6.0
M16	2.0	24	8.0	8.0
M20	2.5	30	10.0	10.0
M24	3.0	36	12.0	12.0

Companion Standards

GB/T 77 controls only the geometry of hex socket cone point set screw — gb/t 77 / iso 4026 (series 022). The mechanical strength is set by ISO 898-1 (bolts, screws and studs) or ISO 898-2 (nuts); the surface finish is governed by separate finish standards such as ISO 4042 for electroplating. For corrosion testing, the relevant document is ISO 9227

(neutral salt spray).

When to Specify GB/T 77

Choose GB/T 77 for international engineering work and OEM supply where ISO standards are the contractual reference. It is the default modern specification for hex socket cone point set screw — gb/t 77 / iso 4026 (series 022).

Custom manufacturing · Made to drawing

Need a screw to this standard in a non-standard size?

Parts built to GB T 77 are already in the catalog, so a special is usually a variation on existing tooling rather than a new design — which is what keeps the cost down. Made by cold heading or warm forging.

Minimum order from 2,000 pieces; samples within 7 days of drawing approval.

Custom screw manufacturing

(<https://engineeringhardware.com/custom/screws/>)

Send a drawing (<https://engineeringhardware.com/custom/screws/#rfq>)

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.



Dimensioned line drawing of M3 Hex Socket Cone Point Set Screw — GB/T 77 / ISO 4026 (Series 022) to GB/T 77 / ISO 4026. Side view and top view, drawn to the dimensions in the table below and redrawn for any size selected.

Opens a short step to confirm the exact specification before you enter contact details.

Request a Quote

Click “Request this configuration” under the drawing to confirm the exact specification, then add your contact details. You can also send the request without a specification — but only an accurate selection gets an accurate quote.

Dimensions & Specifications (GB/T 77 / ISO 4026)

Size	Pitch (mm)	Length L (mm)	Hex socket s (mm)	Engagement depth t min (mm)
M3	0.5	6	1.5	1.4
M4	0.7	6	2.0	2.0
M5	0.8	7	2.5	2.5
M6	1.0	9	3.0	3.0
M8	1.25	12	4.0	4.0
M10	1.5	15	5.0	5.0
M12	1.75	18	6.0	6.0
M16	2.0	24	8.0	8.0
M20	2.5	30	10.0	10.0
M24	3.0	36	12.0	12.0

Materials & Grades

Select a material class to see the grades we supply it in. Each designation is listed with its ISO/EN, AISI/SAE, JIS and GB equivalents.

Stainless Steel

Carbon Steel66

Alloy Steel41

Bearing Steels5

Spring Steel25

Aluminum and Aluminum Alloys21

Brass17

Bronze11

Copper8

Titanium and Titanium Alloys18

Nickel and Nickel Alloys22

Iron-Nickel and High-Temperature Alloys10

Tool Steel and Specialty Hardened Steels9

Structural and Construction Steels9

Stainless Steel

Austenitic Stainless Steel

A1

AISI 303 · SAE 303 · SUS303 · EN 1.4305 · X8CrNiS18-9

A2

AISI 304 · SAE 304 · SUS304 · EN 1.4301 · X5CrNi18-10 · 06Cr19Ni10

304L

AISI 304L · SUS304L · EN 1.4307 · X2CrNi18-9 · 022Cr19Ni10

302

AISI 302 · SUS302 · EN 1.4310

305

AISI 305 · SUS305 · EN 1.4303

A4

AISI 316 · SAE 316 · SUS316 · EN 1.4401 · X5CrNiMo17-12-2 · 06Cr17Ni12Mo2

316L

AISI 316L · SUS316L · EN 1.4404 · X2CrNiMo17-12-2 · 022Cr17Ni12Mo2

321

AISI 321 · SUS321 · EN 1.4541 · X6CrNiTi18-10

310 / 310S

AISI 310 · AISI 310S · SUS310S · EN 1.4845

302HQ

AISI 302HQ

A3**A5****347**

AISI 347 · SUS347 · EN 1.4550 · X6CrNiNb18-10

309 / 309S

AISI 309 · AISI 309S · SUS309S

Martensitic Stainless Steel**AISI 410**

SUS410 · EN 1.4006 · X12Cr13 · 12Cr13

AISI 420

SUS420J1 · SUS420J2 · EN 1.4021 · EN 1.4028 · 20Cr13 · 30Cr13

AISI 431

SUS431 · EN 1.4057 · X17CrNi16-2

C1**C3****C4****AISI 440A****AISI 440B****AISI 440C****SUS440C · EN 1.4125****Ferritic Stainless Steel****AISI 430****SUS430 · EN 1.4016 · X6Cr17 · 10Cr17****F1****AISI 434****AISI 444****Precipitation-Hardening Stainless Steel****17-4 PH****AISI 630 · UNS S17400 · SUS630 · EN 1.4542 · X5CrNiCuNb16-4****15-5 PH****UNS S15500****17-7 PH****UNS S17700****Duplex and Super Duplex Stainless Steel****Duplex 2205****UNS S31803 · UNS S32205 · EN 1.4462****Super Duplex 2507****UNS S32750 · EN 1.4410****D2****D4****D6**

D8**Lean Duplex 2101****UNS S32101****Super Duplex S32760****UNS S32760 · EN 1.4501**

Carbon Steel

Low-Carbon Steel

SAE 1006**SAE 1008****SAE 1010****SAE 1018****SAE 1020****Q195****Q235****SAE 1012****SAE 1015****Q215****ML08****ML08AI****ML10****ML15****ML20****SWRCH6A****SWRCH8A****SWRCH10A****SWRCH12A**

SWRCH15A**SWRCH18A****Medium-Carbon Steel****SAE 1035****SAE 1045****S45C****C45****SAE 1030****SAE 1040****SAE 1050****30****35****40****45****50****S35C****S40C****S50C****C35****C40****High-Carbon Steel****SAE 1060****SAE 1070****65Mn****SAE 1065**

SAE 1075**SAE 1080****SAE 1085****SAE 1090****SAE 1095****60****65****70****75****80****85**

Cold-Heading Steel

SWRCH22A**10B21****SWRCH22K****SWRCH25K****SWRCH30K****SWRCH35K****SWRCH40K****ML20Mn****ML25****ML30****ML35****ML40****15B25**

Alloy Steel

Chromium Steel

40Cr**45Cr****AISI 5140****SAE 5140****AISI 5120****SAE 5120****SCr420****SCr440**

Chromium-Molybdenum Steel

35CrMo**42CrMo****AISI 4140****SCM435****SCM440****42CrMo4****30CrMo****AISI 4130****SAE 4130****SAE 4140****AISI 4142****AISI 4145****SCM415****SCM420****SCM445**

EN 1.7220**EN 1.7225****25CrMo4****34CrMo4****Nickel-Chromium-Molybdenum Steel****AISI 4340****SAE 4340****40CrNiMo****SNCM439****EN 1.6511****36CrNiMo4****Boron Alloy Steel****10B22****10B21****15B21****15B25****20MnTiB****20Mn2B****35VB****40MnB****Bearing Steel****Bearing Steel****GCr15****AISI 52100**

SAE 52100 · UNS G52986**SUJ2****100Cr6****EN 1.3505****GCr15SiMn**

Spring Steel

Carbon Spring Steel

SAE 1065**SAE 1070****SAE 1075****SAE 1080****SAE 1095****65****70****75****80****65Mn**

Silicon-Manganese Spring Steel

60Si2Mn**60Si2MnA****SUP6****SUP7**

Chromium-Vanadium Spring Steel

50CrVA**SAE 6150**

AISI 6150**SUP10****Stainless Spring Steel****AISI 301****SUS301****EN 1.4310****AISI 302****AISI 304****AISI 316****17-7 PH****Aluminum and Aluminum Alloys****Commercially Pure Aluminum****1050****1060****1070****1100****2xxx Series Aluminum****2024****2011****2014****2017****5xxx Series Aluminum****5052**

5083**5754****6xxx Series Aluminum****6061****6061-T6****6063****6082****6082-T6****7xxx Series Aluminum****7075****7075-T6****7005****7050****7075-T73****Brass****Free-Cutting Brass****C36000****H62****HPb59-1****C3601****C3602****C3604****CuZn36Pb3****CuZn39Pb3**

EN CW614N**EN CW617N****H65****Lead-Free Brass****C69300****C27450****CW510L****CW511L****Naval Brass****C46400****CuZn39Sn1****Bronze****Silicon Bronze****C65500****C65100****C65600****Phosphor Bronze****C51000****C52100****CuSn6****CuSn8**

Aluminum Bronze

C95400**C95500****C63000****CuAl10Ni5Fe4**

Copper

Copper

C11000**T2****C10100****C10200****C12200****T1****TU1****TU2**

Titanium and Titanium Alloys

Commercially Pure Titanium

Grade 2**Grade 1****Grade 3****Grade 4****TA1****TA2**

TA3**Alpha-Beta Titanium Alloys****Grade 5****Ti-6Al-4V****TC4****UNS R56400****Low-Interstitial Grade****Grade 23****Ti-6Al-4V ELI****UNS R56407****Other Titanium Fastener Alloys****Ti-6Al-6V-2Sn****Ti-6Al-2Sn-4Zr-2Mo****Beta-C titanium****Ti-10V-2Fe-3Al****Nickel and Nickel Alloys****Commercially Pure Nickel****Nickel 200****UNS N02200****Nickel 201****UNS N02201**

Inconel Alloys

Inconel 625

UNS N06625

Inconel 718

UNS N07718

Inconel 600

UNS N06600

Inconel 601

UNS N06601

Inconel 686

UNS N06686

Inconel X-750

UNS N07750

Monel Alloys

Monel 400

UNS N04400

Monel K-500

UNS N05500

Hastelloy Alloys

Hastelloy C-276

UNS N10276

Hastelloy C-22

UNS N06022

Hastelloy B-2

UNS N10665

Hastelloy B-3

UNS N10675

Hastelloy X

UNS N06002

Other Nickel Alloys

Alloy 20**UNS N08020****Alloy 625****Alloy 718****Alloy 825****UNS N08825****Alloy 925****UNS N09925**

Iron-Nickel and High-Temperature Alloys

A286

A-286**UNS S66286****EN 1.4980**

Invar

Invar 36**Alloy 36****UNS K93600****FeNi36**

Alloy 42

Alloy 42**UNS K94100****FeNi42**

Tool Steel and Specialty Hardened Steel

Tool Steel and Specialty Hardened Steel

AISI D2

AISI H13

SKD11

Cr12MoV

AISI O1

AISI A2

AISI S7

SKD61

9CrSi

Structural and Construction Steel

Structural and Construction Steel

ASTM A36

Q235B

Q355B

S355JR

Q235C

Q355C

S235JR

S275JR

S355J2

Applications & Industries

What Hex Socket Cone Point Set Screw are specified for, industry by industry. Stocked from M3 to M24.

Industries that specify Hex Socket Cone Point Set Screw

Steel fabrication **Bolted connections in frames, enclosures, walkways and weldments, on the bench and on site.**

Energy & infrastructure **Tower, pipework, switchgear and plant fixings specified for long service life and inspectable joints.**

Maintenance & MRO **Stocked replacements matched to an existing property class, thread and finish.**

Food, pharma & cleanroom **Stainless assemblies that are washed down, where the finish matters as much as the strength.**

Machine building & OEM **The default fastener on production equipment: covers, brackets, motor mounts and sub-assemblies tightened to a specified torque.**

Automotive & transport **Chassis, driveline and body fixings that see vibration and are assembled to a controlled preload.**

Typical applications

- **assemblies that are dismantled for service and re-torqued**
- **joints where the property class is stated on the drawing**
- **clamping two machined faces to a calculated preload**
- **bolting brackets, motors and gearboxes to a frame**

Service conditions to specify against

Marine and coastal

Available in A4 (316) stainless for chloride exposure — coastal structures, pool halls, water treatment and deck hardware, where A2 will eventually pit.

High load

Supplied in ISO 898-1 property classes, so the joint can be designed to a stated proof load and tightened to a calculated torque rather than by feel.

Torque and preload

The joint is designed around bolt tension, so lubrication, coating and the friction coefficient all change the torque figure — state them together.

Where to use something else

- **Do not use a machine thread into unthreaded sheet or timber; use a tapping screw, rivet nut or insert made for that parent material.**

Full application guide: where Hex Socket Cone Point Set Screw are used, how to specify them, and the cases they are wrong for (<https://engineeringhardware.com/applications/cad-svg-022-setscrewcone/>)

Video: GB/T 77 Hex Socket Cone Point Set Screw Specification



<https://www.youtube.com/watch?v=DYhqyYZ714> (https://www.youtube.com/watch?v=DYhqyYZ714)
► Watch video: <https://www.youtube.com/watch?v=DYhqyYZ714> (https://www.youtube.com/watch?v=DYhqyYZ714)

Third-party video, selected automatically for this topic. It is not produced by Engineering Hardware and is not a specification source — use the tables on this page for dimensional data.

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.



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.



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.



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.



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

Does GB/T 77 specify the mechanical strength?

No. GB/T 77 controls only the geometry of hex socket cone point set screw — gb/t 77 / iso 4026 (series 022). The mechanical strength is set by ISO 898-1 (bolts, screws and studs) or ISO 898-2 (nuts), and the finish by separate documents.

Can I substitute GB/T 77 for the corresponding DIN standard on a drawing?

On modern drawings the ISO standard is the master reference; the older DIN equivalent is a cross-reference. For most dimensional purposes the parts are interchangeable, but check tolerance grades and the head height — these are the most common points of divergence.

Which edition of GB/T 77 does this table follow?

The table reproduces the dimensions we supply hex socket cone point set screw — gb/t 77 / iso 4026 (series 022) to. We do not publish an edition year against it, so where the edition is contractually significant, cite the edition you require on the enquiry and we will confirm it against the table before quoting.

What is GB/T 77?

GB/T 77 is "Hexagon socket set screws with flat point". GB/T 77 is the Chinese national adoption of the same document.

How do I request a quotation?

Use the technical drawing on this page to pick the exact configuration, then submit it with the quote form. We respond within one business day.

Related Pages

[View the full Hex Socket Cone Point Set Screw — GB/T 77 / ISO 4026 \(Series 022\) page](https://engineeringhardware.com/fastener/cad-svg-022-setscrewcone/)
(<https://engineeringhardware.com/fastener/cad-svg-022-setscrewcone/>)

More Hex Socket Cone Point Set Screw — GB/T 77 / ISO 4026 (Series 022) Guides

- **ISO 4026 Hex Socket Cone Point Set Screw — GB/T 77 / ISO 4026 (Series 022)**
(<https://engineeringhardware.com/guide/standard/iso-4026-cad-svg-022-setscrewcone/>)