

M20 Slotted Countersunk Head Screw Dimensions

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M20 Slotted Countersunk Head Screw dimensions to GB/T 68 / ISO 2009: head diameter 36.5 mm, head height 10 mm, coarse thread pitch 2.5 mm, clearance hole (ISO 273 medium) 22 mm. Tighten to approximately 420 Nm at property class 8.8 in a dry, as-supplied condition.

Head diameter

36.5 mm

Head height

10 mm

Coarse thread pitch

2.5 mm

Clearance hole (ISO 273 medium)

22 mm

Tightening torque (class 8.8)

420 Nm

Figures are nominal values from the governing standard. Confirm against the tolerance class for your application before machining or ordering.



Dimensional and assembly data for M20 Slotted Countersunk Head Screw to GB/T 68 / ISO 2009. Includes head size and width across flats, clearance-hole and tapping-drill diameters, tightening torque per property class, and the sizes to step up or down to when the joint requires it.

M20 Dimensional Row (GB/T 68 / ISO 2009)

Size	Pitch (mm)	Length L (mm)	Head diameter dk (mm)	Head height k (mm)	Cross section
M20	2.5	120	36.5	10.0	PH4

Spanner & Drive for M20 Slotted Countersunk Head Screw — GB/T 68 / ISO 2009 (Series 039)

The hex socket for M20 Slotted Countersunk Head Screw — GB/T 68 / ISO 2009 (Series 039) is shown in the spec table — use the matching Allen / hex key (an ISO 2936 hex key set covers the full range). Ball-end keys are for reaching the screw, not for tightening it — finish on the plain end, and on production work use a torque-controlled driver.

Hole Sizes for M20

Coarse-thread pitch (ISO 724)	2.5 mm
Through-hole / clearance (ISO 273 medium)	22 mm
Tapping drill, coarse thread	17.5 mm

Tightening Torque for M20

Class 8.8 (dry, $\sim\mu$ 0.125)	$\approx$ 420 Nm
Class 10.9 (dry, $\sim\mu$ 0.125)	$\approx$ 598 Nm
Class 12.9 (dry, $\sim\mu$ 0.125)	$\approx$ 700 Nm

*Indicative dry-joint values. Lubrication can lower the required torque by 15–25%.
Always confirm against the joint design, especially when going up a strength class.*

Proof Load & Strength for M20

Tensile stress area As (ISO 724)	245 mm ²
Proof load, class 8.8	147 kN
Proof load, class 10.9	203 kN
Proof load, class 12.9	237 kN
Min. ultimate tensile load, class 8.8	203 kN

Proof load = tensile stress area × the proof stress S_p of the class, per ISO 898-1 — S_p is a lower figure than the yield stress $R_{p0.2}$ and the two are not interchangeable. The stress area is computed from this size's own diameter and pitch, so a fine-pitch designation gives the fine-pitch figure. Design the joint so the working preload stays below the proof load of the class selected.

M20 Slotted Countersunk Head Screw — GB/T 68 / ISO 2009 (Series 039) Weight

A steel M20 slotted countersunk head screw at the listed 120 mm length weighs approximately 986 g each — about 986 kg per 1,000 pieces. Stainless A2/A4 weighs roughly the same (density 7.9–8.0 g/cm³).

Actual weight varies slightly with head form, thread and finish; use this figure for freight estimation only.

Installation Tips for M20 Slotted Countersunk Head Screw — GB/T 68 / ISO 2009 (Series 039)

- Use a quality Allen key fully seated in the socket — partial engagement is the most common cause of stripped sockets at this size.
- For countersunk and button-head variants, chamfer the through-hole to seat the head flush without preloading the head/shank fillet.
- At M20 the stretch in the bolt becomes the controlling factor — for critical joints, use angle-controlled or stretch-controlled tightening instead of pure torque.

When to Step Up or Down from M20

When the joint preload approaches the proof load of M20 class 8.8, step up to M24 class 8.8 (or move to M20 class 10.9). When the joint is over-specified, M16 often saves weight and cost without losing the safety margin.

Custom manufacturing · Made to drawing

Need slotted countersunk head screw in a size this table does not list?

This page covers M20 slotted countersunk head screw. Thread size and pitch, length, property class, drive form, head geometry and head marking are all

specifiable — the standard part is where it starts, not where it stops. 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 M20 Slotted Countersunk Head Screw — GB/T 68 / ISO 2009 (Series 039) to GB/T 68 / ISO 2009. 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 68 / ISO 2009)

Size	Pitch (mm)	Length L (mm)	Head diameter dk (mm)	Head height k (mm)	Cross section
M3	0.5	20	5.6	1.65	PH1
M4	0.7	25	7.5	2.2	PH2
M5	0.8	30	9.2	2.5	PH2
M6	1.0	40	11.0	3.0	PH3
M8	1.25	50	14.5	4.0	PH3
M10	1.5	60	18.0	5.0	PH4
M12	1.75	80	22.0	6.0	PH4
M14	2.0	80	25.0	7.0	PH4
M16	2.0	100	29.0	8.0	PH4
M18	2.5	100	33.0	9.0	PH4
M20	2.5	120	36.5	10.0	PH4
M24	3.0	150	43.5	12.0	PH4

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 Steel9

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 for M20 Slotted Countersunk Head Screw

What Slotted Countersunk Head Screw are specified for, industry by industry. Stocked from M3 to M24.

Industries that specify Slotted Countersunk Head Screw

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.**

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.**

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.**

Need help matching Slotted Countersunk Head Screw to your application? Send the assembly, the load and the environment with your enquiry and we will specify the size, material and finish against them.

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

What torque do M20 class 8.8 Slotted Countersunk Head Screw — GB/T 68 / ISO 2009 (Series 039) take?

A dry M20 class 8.8 joint takes about 420 Nm ($\approx$ 598 Nm for 10.9, $\approx$ 700 Nm for 12.9). Confirm against your joint design; lubrication reduces these values.

What clearance and tapping drill suit M20?

Use a 22 mm clearance hole (ISO 273 medium) for through-fixing, or a 17.5 mm tapping drill for a coarse M20 thread.

Should M20 Slotted Countersunk Head Screw — GB/T 68 / ISO 2009 (Series 039) be tightened by torque or by angle?

For critical structural joints at M20, angle-controlled or stretch-controlled tightening is more repeatable than pure torque — the friction scatter at large diameters can dominate the torque signal.

What grip range is typical for M20 structural bolts?

Grip ranges are highly application-dependent at M20. As a guide, choose a length that gives at least 1× the thread diameter engagement in the nut plus 2–3 thread pitches projecting.

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 Slotted Countersunk Head Screw — GB/T 68 / ISO 2009 \(Series 039\) page](https://engineeringhardware.com/fastener/cad-svg-039-countersunk/)
(<https://engineeringhardware.com/fastener/cad-svg-039-countersunk/>)

More Slotted Countersunk Head Screw — GB/T 68 / ISO 2009 (Series 039) Guides

- **M3 Slotted Countersunk Head Screw — GB/T 68 / ISO 2009 (Series 039)** (<https://engineeringhardware.com/guide/size/m3-cad-svg-039-countersunk/>)
- **M4 Slotted Countersunk Head Screw — GB/T 68 / ISO 2009 (Series 039)** (<https://engineeringhardware.com/guide/size/m4-cad-svg-039-countersunk/>)
- **M5 Slotted Countersunk Head Screw — GB/T 68 / ISO 2009 (Series 039)** (<https://engineeringhardware.com/guide/size/m5-cad-svg-039-countersunk/>)
- **M6 Slotted Countersunk Head Screw — GB/T 68 / ISO 2009 (Series 039)** (<https://engineeringhardware.com/guide/size/m6-cad-svg-039-countersunk/>)
- **M8 Slotted Countersunk Head Screw — GB/T 68 / ISO 2009 (Series 039)** (<https://engineeringhardware.com/guide/size/m8-cad-svg-039-countersunk/>)
- **M10 Slotted Countersunk Head Screw — GB/T 68 / ISO 2009 (Series 039)**
(<https://engineeringhardware.com/guide/size/m10-cad-svg-039-countersunk/>)
- **M12 Slotted Countersunk Head Screw — GB/T 68 / ISO 2009 (Series 039)**
(<https://engineeringhardware.com/guide/size/m12-cad-svg-039-countersunk/>)
- **M14 Slotted Countersunk Head Screw — GB/T 68 / ISO 2009 (Series 039)**
(<https://engineeringhardware.com/guide/size/m14-cad-svg-039-countersunk/>)