

Property Class 8.8 Steel Equal-End Stud Bolt

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Property Class 8.8 Steel Equal-End Stud Bolt are supplied to ISO 898-1 property class 8.8. Corrosion behaviour is requires plating (zinc) for corrosion protection, the material is magnetic, and the usable service range is commonly limited to approx. +300 °C; confirm against the coating and the load. In practice this grade is the workhorse medium-carbon alloy class for structural joints.

Grade

ISO 898-1 property class 8.8

Corrosion resistance

Requires plating (zinc) for corrosion protection

Magnetic response

Magnetic

Service temperature

commonly limited to approx. +300 °C; confirm against the coating and the load

Property values are typical for the grade. Certified mechanical test data is available on request for production orders.



For equal-end stud bolt in Property Class 8.8 Steel, the controlling selection factors are corrosion exposure, strength requirement and service temperature. The grade data for Property Class 8.8 Steel (ISO 898-1 property class 8.8) is summarized below together with every size supplied.

Why Choose Property Class 8.8 Steel for Equal-End Stud Bolt — GB/T 901 / DIN 939 (Series 093)

The workhorse medium-carbon alloy class for structural joints. For equal-end stud bolt — gb/t 901 / din 939 (series 093), this matters when requires plating (zinc) for corrosion protection is the primary requirement.

Mechanical & Physical Properties

Grade designation	ISO 898-1 property class 8.8
Magnetic response	Magnetic
Service temperature	commonly limited to approx. +300 °C; confirm against the coating and the load
Corrosion characteristic	Requires plating (zinc) for corrosion protection

Corrosion Behavior in Service

Carbon and alloy steel equal-end stud bolt — gb/t 901 / din 939 (series 093) require a coating for corrosion protection. Zinc plating (with or without passivation) is the most common; hot-dip galvanizing is used for outdoor structural service; black-oxide is mainly a tarnish-prevention finish for tool-room use.

Galvanic & Galling Considerations

For equal-end stud bolt — gb/t 901 / din 939 (series 093) in steel, the dominant compatibility issue is hydrogen embrittlement at high property classes (10.9 and above) when electroplated. Plating must be followed by an appropriate baking treatment, or a non-electroplated finish (mechanical zinc, zinc flake) should be substituted.

Sizes of Equal-End Stud Bolt — GB/T 901 / DIN 939 (Series 093) Available in Property Class 8.8 Steel

Thread size	Pitch (mm)	Length L (mm)	Engagement depth bm (mm)	Material
M6	1.0	50	8	Cl. 8.8 alloy steel
M8	1.25	60	10	Cl. 8.8 alloy steel
M10	1.5	80	15	Cl. 8.8 alloy steel
M12	1.75	100	18	Cl. 8.8 alloy steel
M14	2.0	120	21	Cl. 8.8 alloy steel
M16	2.0	150	24	Cl. 8.8 alloy steel
M20	2.5	180	30	Cl. 8.8 alloy steel
M24	3.0	200	36	Cl. 8.8 alloy steel
M30	3.5	240	45	Cl. 8.8 alloy steel
M36	4.0	280	54	Cl. 8.8 alloy steel

Dimensions are independent of the material: every size above is available in Property Class 8.8 Steel.

Custom manufacturing · Made to drawing

Need this bolt in a grade that is not listed?

Grade 8 8 Steel is one of the grades the catalog describes. A non-standard bolt is quoted from the drawing; where one already exists in the catalog, the special is usually a variation on its tooling. Made by cold heading or hot forging.

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

Custom bolt manufacturing

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

Send a drawing (<https://engineeringhardware.com/custom/bolts/#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 M6 Equal-End Stud Bolt — GB/T 901 / DIN 939 (Series 093) to GB/T 901 / DIN 939. 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 901 / DIN 939)

Thread size	Pitch (mm)	Length L (mm)	Engagement depth bm (mm)	Material
M6	1.0	50	8	Cl. 8.8 alloy steel
M8	1.25	60	10	Cl. 8.8 alloy steel
M10	1.5	80	15	Cl. 8.8 alloy steel
M12	1.75	100	18	Cl. 8.8 alloy steel
M14	2.0	120	21	Cl. 8.8 alloy steel
M16	2.0	150	24	Cl. 8.8 alloy steel
M20	2.5	180	30	Cl. 8.8 alloy steel
M24	3.0	200	36	Cl. 8.8 alloy steel
M30	3.5	240	45	Cl. 8.8 alloy steel
M36	4.0	280	54	Cl. 8.8 alloy steel

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

Equal-End Stud Bolt are bought for a small number of well-defined jobs. These are the ones we ship them for. Stocked from M6 to M36.

Industries that specify Equal-End Stud Bolt

Building services **Threaded rod suspension for tray, duct and pipework.**

Pressure equipment & flanges **Studs and nuts on flanged joints, where both ends are tightened and the assembly is inspected.**

Plant & machine installation **Anchoring and levelling machines onto bases and frames.**

Steel fabrication **Hanger rods, tie rods and made-to-length threaded assemblies.**

Typical applications

- **made-to-length assemblies cut and threaded on site**
- **clamping a joint from both ends where a headed bolt will not fit**
- **suspending services from a soffit on threaded rod**

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.

Where to use something else

- **Not for a joint that must be tightened from one side only — there is no head to hold.**

Full application guide: where Equal-End Stud Bolt are used, how to specify them, and the cases they are wrong for (<https://engineeringhardware.com/applications/cad-svg-093-stud/>)

Video: Property Class 8.8 Steel Equal-End Stud Bolt



<https://www.youtube.com/watch?v=DVWM66Jl-Pc>

► Watch video: <https://www.youtube.com/watch?v=DVWM66Jl-Pc>(<https://www.youtube.com/watch?v=DVWM66Jl-Pc>)

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

When should I move from ISO 898-1 property class 8.8 to class 10.9 / 12.9 for Equal-End Stud Bolt — GB/T 901 / DIN 939 (Series 093)?

Step up to class 10.9 / 12.9 when the joint preload approaches the proof load of the current class. The higher class adds preload at the same diameter, often saving size and weight.

Is Property Class 8.8 Steel prone to hydrogen embrittlement?

Class 10.9 and above can be susceptible to hydrogen embrittlement when electroplated. Specify post-plating baking, or use mechanical-zinc / zinc-flake finishes which avoid the cathodic plating step.

Which finish is best for outdoor Equal-End Stud Bolt — GB/T 901 / DIN 939 (Series 093)?

For outdoor service in steel, hot-dip galvanizing gives the longest life; zinc-flake (Geomet/Delta-Tone family) gives a thinner film with excellent salt-spray performance; standard zinc plating is the lowest-cost option for general indoor / shielded outdoor use.

What's the service temperature limit for Property Class 8.8 Steel?

The practical service range is commonly limited to approx. +300 °C; confirm against the coating and the load.

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 Equal-End Stud Bolt — GB/T 901 / DIN 939 \(Series 093\) page](https://engineeringhardware.com/fastener/cad-svg-093-stud/)
(<https://engineeringhardware.com/fastener/cad-svg-093-stud/>)

More Equal-End Stud Bolt — GB/T 901 / DIN 939 (Series 093) Guides

- **A2 Stainless Steel Equal-End Stud Bolt — GB/T 901 / DIN 939 (Series 093)**
(<https://engineeringhardware.com/guide/material/a2-stainless-steel-cad-svg-093-stud/>)
- **A4 Stainless Steel Equal-End Stud Bolt — GB/T 901 / DIN 939 (Series 093)**
(<https://engineeringhardware.com/guide/material/a4-stainless-steel-cad-svg-093-stud/>)
- **Property Class 12.9 Steel Equal-End Stud Bolt — GB/T 901 / DIN 939 (Series 093)**
(<https://engineeringhardware.com/guide/material/grade-12-9-steel-cad-svg-093-stud/>)