M6 Weld Studs (CD and Drawn-Arc) Dimensions

M6 Weld Studs (CD and Drawn-Arc) dimensions to ISO 13918: coarse thread pitch 1 mm, clearance hole (ISO 273 medium) 6.6 mm, tapping drill 5 mm. Tighten to approximately 10 Nm at property class 8.8 in a dry, as-supplied condition.

Coarse thread pitch

1 mm

Clearance hole (ISO 273 medium)

6.6 mm

Tapping drill

5 mm

Tightening torque (class 8.8)

10 Nm

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



The M6 size of Weld Studs (CD and Drawn-Arc) is dimensioned by ISO 13918. The tables below give the dimensional row from the standard, the drill and spanner sizes that go with it, and the assembly torque per property class. The technical drawing on this page redraws to the exact values selected.

M6 Dimensional Row (ISO 13918)

Thread size	Length L before weld (mm)	Weld process	Burn-off (mm)	Minimum sheet
M6	20	CD (type PT)	0.5	1.0

Hole Sizes for M6

Coarse-thread pitch (ISO 724)	1 mm
Through-hole / clearance (ISO 273 medium)	6.6 mm
Tapping drill, coarse thread	5 mm

Tightening Torque for M6

Class 8.8 (dry, ~μ 0.125)	≈ 10 Nm
Class 10.9 (dry, ~μ 0.125)	≈ 15 Nm
Class 12.9 (dry, ~μ 0.125)	≈ 17 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 M6

Tensile stress area As (ISO 724)	20.1 mm²
Proof load, class 8.8	12 kN
Proof load, class 10.9	17 kN
Proof load, class 12.9	20 kN
Min. ultimate tensile load, class 8.8	16 kN

Proof load = tensile stress area × the proof stress Sp of the class, per ISO 898-1 — Sp is a lower figure than the yield stress Rp0.2 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.

Mating Parts for M6

For M6, pair with a M6 hex nut (ISO 4032 / DIN 934) and, where used, a M6 flat washer (ISO 7089 / DIN 125A) under the head and under the nut.

When to Step Up or Down from M6

When the joint preload approaches the proof load of M6 class 8.8, step up to M8 class 8.8 (or move to M6 class 10.9). When the joint is over-specified, M5 often saves weight

and cost without losing the safety margin.

Custom manufacturing · Made to drawing

Need weld studs (cd and drawn-arc) in a size this table does not list?

This page covers M6 weld studs (cd and drawn-arc). 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 Weld Studs (CD and Drawn-Arc) to ISO 13918. Side view and top view, drawn to the dimensions in the table below and redrawn for any size selected.

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 (ISO 13918)

Thread size	Length L before weld (mm)	Weld process	Burn-off (mm)	Minimum
M3	8	CD (type PT)	0.5	0.6
M4	10	CD (type PT)	0.5	0.7
M5	16	CD (type PT)	0.5	0.8
M6	20	CD (type PT)	0.5	1.0
M8	25	Drawn-arc (type PD)	4.0	2.0
M10	30	Drawn-arc (type PD)	4.0	2.5
M12	40	Drawn-arc (type PD)	5.0	3.0

Product catalog

Related Weld Studs products



(https://engineeringhardware.com/product/iso13918-sd-shear-connector-arc-weld-stud-for-bridge-construction/)

Weld & Shear Studs

ISO13918 SD Shear Connector Arc Weld Stud for Bridge Construction

(https://engineeringhardware.com/product/iso13918-sd-shear-connector-arc-weld-stud-for-bridge-construction/)

SD · DIN, ANSI, GB

US$0.084 – 0.11MOQ 1,000 pieces



(https://engineeringhardware.com/product/m8-m10-m12-cd-type-a3-steel-plain-finish-headless-threaded-weld-studs-bolt-for/)

Weld & Shear Studs

M8 M10 M12 CD Type A3 Steel Plain Finish Headless Threaded Weld Studs Bolt for Welding (https://engineeringhardware.com/product/m8-m10-m12-

cd-type-a3-steel-plain-finish-headless-threaded-weld-studs-bolt-for/)

Headless/Spotless · DIN, ANSI, GB, JIS, BSW, GOST

US$0.012 – 1.20 MOQ 1,000 pieces



(https://engineeringhardware.com/product/sn19t-cermic-ferule-for-stud-welding/)

Weld & Shear Studs

Sn19t Cermic Ferule for Stud Welding

(https://engineeringhardware.com/product/sn19t-cermic-ferule-for-stud-welding/)
(https://engineeringhardware.com/product/sn19t-cermic-ferule-for-stud-welding/)

Refractory Material · Ceramic

US$0.0168 – 0.0264 MOQ 20,000 pieces



(https://engineeringhardware.com/product/iso-13918-carbon-steel-round-flat-head-weld-shear-stud-bolt-m10-m16-m22-m24/)

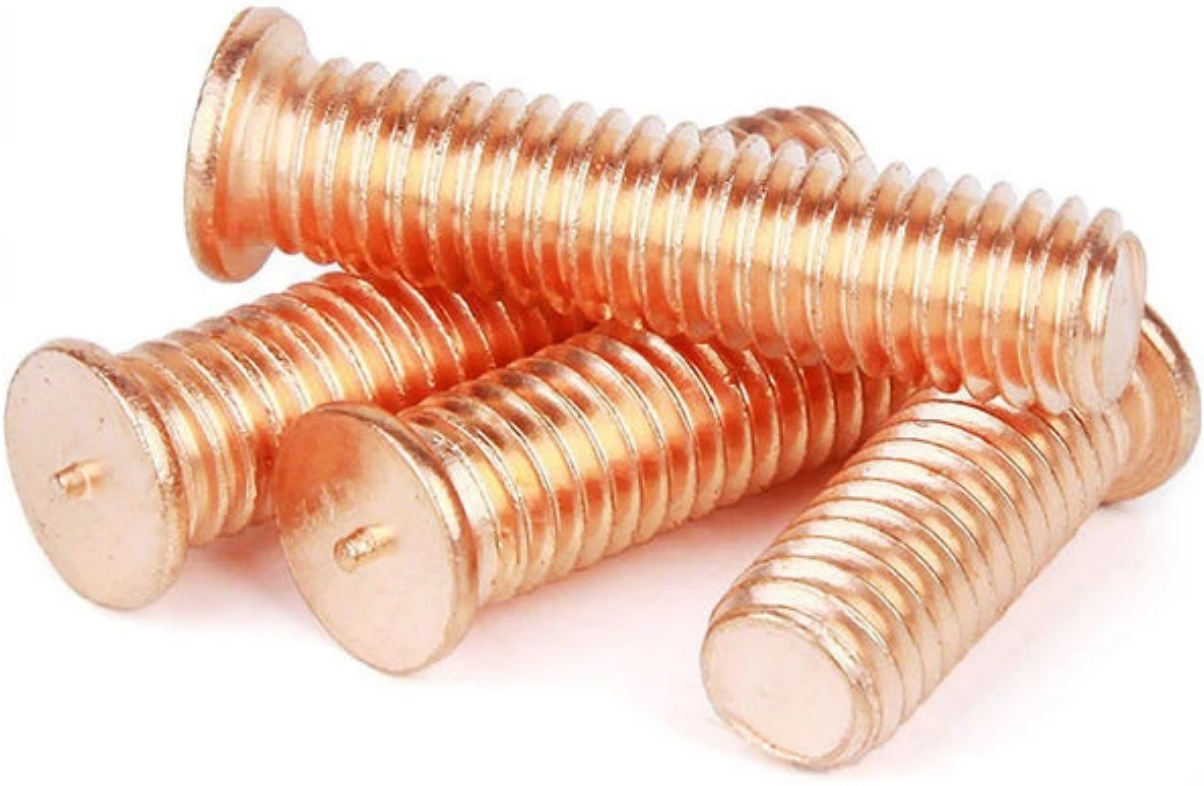
Weld & Shear Studs

ISO 13918 Carbon Steel Round Flat Head Weld Shear Stud Bolt M10 M16 M22 M24 Connection Welding Shear Stud with Ceramic Ferrule

(https://engineeringhardware.com/product/iso-13918-carbon-steel-round-flat-head-weld-shear-stud-bolt-m10-m16-m22-m24/)

Round Head · DIN, ANSI, GB, JIS, BSW

US$0.12 MOQ 1,000 pieces



(https://engineeringhardware.com/product/m4-m6-stainless-steel-aluminum-iso13918-weld-studs-for-capacitor-discharge-spot/)

Weld & Shear Studs

M4 M6 Stainless Steel Aluminum ISO13918 Weld Studs for Capacitor Discharge Spot Welding Bolt Stud

(https://engineeringhardware.com/product/m4-m6-stainless-steel-aluminum-iso13918-weld-studs-for-capacitor-discharge-spot/)
(https://engineeringhardware.com/product/m4-m6-stainless-steel-aluminum-iso13918-weld-studs-for-capacitor-discharge-spot/)

Hexagon Head · DIN, ANSI, GB, JIS

US$0.048 – 0.072 MOQ 1,000 pieces



(https://engineeringhardware.com/product/steel-shear-stud-welding-pin-nail-headed-weld-stud-for-floor-deck/)

Weld & Shear Studs

Steel Shear Stud Welding Pin Nail Headed Weld Stud for Floor Deck (https://engineeringhardware.com/product/steel-shear-stud-welding-pin-nail-headed-weld-stud-for-floor-deck/)

Carbon Steel · A

US$0.12 MOQ 1 piece

View all Weld & Shear Studs → (https://engineeringhardware.com/fastener-products/threaded-rods-studs/weld-shear-studs/)

Full product catalog (https://engineeringhardware.com/products/)

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 Steel 66

Alloy Steel 41

Bearing Steel 5

Spring Steel 25

Aluminum and Aluminum Alloys 21

Brass 17

Bronze 11

Copper 8

Titanium and Titanium Alloys 18

Nickel and Nickel Alloys 22

Iron-Nickel and High-Temperature Alloys 10

Tool Steel and Specialty Hardened Steel 9

Structural and Construction Steel 9

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
ML08Al
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 M6 Weld Studs

Where Weld Studs are used, and what decides the specification in each case. Stocked from M3 to M12.

Industries that specify Weld Studs

Sheet-metal fabrication **Threads added to a panel with no hole and no mark on the show face.**

Automotive & appliance **High-volume stud welding on the production line.**

Insulation & cladding **Pins and studs welded to duct and vessel walls.**

Shipbuilding & structural **Drawn-arc studs on plate and section.**

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.**

Typical applications

- **quote the length BEFORE welding — the stud burns off as it welds**
- **putting a thread on a panel in about a second, from one side**
- **assemblies where a hole would break a seal or a coating**
- **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 Weld Studs are used, how to specify them, and the cases they are wrong for (https://engineeringhardware.com/applications/weld-studs-iso-13918/)

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 M6 class 8.8 Weld Studs (CD and Drawn-Arc) take?

A dry M6 class 8.8 joint takes about 10 Nm (≈ 15 Nm for 10.9, ≈ 17 Nm for 12.9). Confirm against your joint design; lubrication reduces these values.

What clearance and tapping drill suit M6?

Use a 6.6 mm clearance hole (ISO 273 medium) for through-fixing, or a 5 mm tapping drill for a coarse M6 thread.

What is the coarse-thread pitch of M6 for Weld Studs (CD and Drawn-Arc)?

For M6 the standard coarse pitch is 1 mm — this is the value used for Weld Studs (CD and Drawn-Arc).

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 Weld Studs (CD and Drawn-Arc) page (https://engineeringhardware.com/fastener/weld-studs-iso-13918/)

More Weld Studs (CD and Drawn-Arc) Guides

- **M3 Weld Studs (CD and Drawn-Arc)** (https://engineeringhardware.com/guide/size/m3-weld-studs-iso-13918/)

- **M4 Weld Studs (CD and Drawn-Arc)** **(https://engineeringhardware.com/guide/size/m4-weld-studs-iso-13918/)**
- **M5 Weld Studs (CD and Drawn-Arc)** **(https://engineeringhardware.com/guide/size/m5-weld-studs-iso-13918/)**
- **M8 Weld Studs (CD and Drawn-Arc)** **(https://engineeringhardware.com/guide/size/m8-weld-studs-iso-13918/)**
- **M10 Weld Studs (CD and Drawn-Arc)** **(https://engineeringhardware.com/guide/size/m10-weld-studs-iso-13918/)**
- **M12 Weld Studs (CD and Drawn-Arc)** **(https://engineeringhardware.com/guide/size/m12-weld-studs-iso-13918/)**