A4 (316) Stainless Steel Button Head Socket Screws

A4 Stainless Steel Button Head Socket Screws are supplied to ISO 3506 group A4 (316 / 1.4401), commonly supplied A4-80. Corrosion behaviour is superior, including marine and chloride environments, the material is largely non-magnetic, and the usable service range is approx. -200 °C to +400 °C, subject to the property class and the joint. In practice this grade is specified for marine, coastal and chemical applications.

Grade

ISO 3506 group A4 (316 / 1.4401), commonly supplied A4-80

Corrosion resistance

Superior, including marine and chloride environments

Magnetic response

Largely non-magnetic

Service temperature

approx. -200 °C to +400 °C, subject to the property class and the joint

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



Material specification page for button head socket screws in A4 Stainless Steel. Covers the grade designation (ISO 3506 group A4 (316 / 1.4401), commonly supplied A4-80), corrosion and magnetic behavior, comparable grades and their trade-offs, and the sizes available to ISO 7380.

Why Choose A4 Stainless Steel for Button Head Socket Screws

Specified for marine, coastal and chemical applications. For button head socket screws, this matters when superior, including marine and chloride environments is the primary requirement.

Mechanical & Physical Properties

Grade designation	ISO 3506 group A4 (316 / 1.4401), commonly supplied A4-80
Magnetic response	Largely non-magnetic
Service temperature	approx. -200 °C to +400 °C, subject to the property class and the joint
Corrosion characteristic	Superior, including marine and chloride environments

Corrosion Behavior in Service

A4 (316) adds 2–3% molybdenum to the A2 (304) composition, which dramatically improves resistance to chloride-pitting corrosion. For Button Head Socket Screws in marine, coastal, swimming-pool or food-processing environments, A4 is the default selection.

Comparable Grades

For Button Head Socket Screws, the alternative stainless grade is A2 (304). A2 (304) covers general indoor and outdoor service. A4 (316) adds molybdenum, which is what buys the chloride resistance for marine and de-icing-salt exposure. Where strength matters more than corrosion, plated alloy steel in class 8.8 or 10.9 is the swap to make.

Using Stainless Fasteners in Aluminum

Stainless steel is more noble than aluminum, so with an electrolyte present — rain, condensation, salt spray — the aluminum becomes the anode and corrodes at the joint. Area ratio decides how bad it gets: a small stainless fastener in a large aluminum section

is normally acceptable, a large stainless fastener in thin aluminum is not. Where the joint gets wet, isolate the metals with a coated or nylon washer and a sealant, or specify an aluminum or coated fastener instead.

Sizes of Button Head Socket Screws Available in A4 Stainless Steel

Size	Pitch (mm)	Head diameter dk (mm)	Head height k (mm)	Hex socket s (mm)	F
M3	0.5	5.7	1.65	2.0	I
M4	0.7	7.6	2.2	2.5	I
M5	0.8	9.5	2.75	3.0	I
M6	1.0	10.5	3.3	4.0	I
M8	1.25	14.0	4.4	5.0	I
M10	1.5	17.5	5.5	6.0	I
M12	1.75	21.0	6.6	8.0	I
M14	2.0	24.5	7.7	10.0	I
M16	2.0	28.0	8.8	10.0	I
M20	2.5	35.0	11.0	12.0	I

Dimensions are independent of the material: every size above is available in A4 Stainless Steel.

Custom manufacturing · Made to drawing

Need this screw in a grade that is not listed?

A4 Stainless Steel is one of the grades the catalog describes. Where the standard stops, the drawing takes over: fine pitches, left-hand threads, partial threading, and property classes above the catalogued grade where material and heat treatment allow. 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 Button Head Socket Screws to ISO 7380. 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 (ISO 7380)

Size	Pitch (mm)	Head diameter dk (mm)	Head height k (mm)	Hex socket s (mm)	I
M3	0.5	5.7	1.65	2.0	I
M4	0.7	7.6	2.2	2.5	I
M5	0.8	9.5	2.75	3.0	I
M6	1.0	10.5	3.3	4.0	I
M8	1.25	14.0	4.4	5.0	I
M10	1.5	17.5	5.5	6.0	I
M12	1.75	21.0	6.6	8.0	I
M14	2.0	24.5	7.7	10.0	I
M16	2.0	28.0	8.8	10.0	I
M20	2.5	35.0	11.0	12.0	I

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

The sectors that buy Button Head Socket Screws to ISO 7380, and the duty each one buys them for. Stocked from M3 to M20.

Industries that specify Button Head Socket Screws

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.**

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.**

Typical applications

- **bolting brackets, motors and gearboxes to a frame**
- **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**

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 Button Head Socket Screws are used, how to specify them, and the cases they are wrong for (https://engineeringhardware.com/applications/button-head-socket-screws/)

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

Should I choose A4 Stainless Steel or A2 (304) for Button Head Socket Screws?

For Button Head Socket Screws, A4 Stainless Steel suits general indoor and outdoor use; A2 (304) is preferred for marine, coastal and chemical environments. Choose by corrosion exposure first.

Can A4 Stainless Steel Button Head Socket Screws gall during installation?

Yes — stainless on stainless is prone to thread galling under load, especially at smaller sizes. Use an anti-galling lubricant or wax thread compound, and slow the tightening rate where possible.

Is A4 Stainless Steel food-grade?

A4 (316) is the standard food-contact stainless grade in most jurisdictions, particularly where chloride exposure (brines, dairy CIP) is present.

Can A4 Stainless Steel Button Head Socket Screws be used with aluminum?

Yes, but stainless drives mild galvanic corrosion of aluminum in wet service — isolate with a coating, sleeve or paint, or accept the trade-off if the joint is dry and indoor.

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 Button Head Socket Screws page (https://engineeringhardware.com/fastener/button-head-socket-screws/)

More Button Head Socket Screws Guides

- **A2 Stainless Steel Button Head Socket Screws** (https://engineeringhardware.com/guide/material/a2-stainless-steel-button-head-socket-screws/)
- **Property Class 8.8 Steel Button Head Socket Screws** (https://engineeringhardware.com/guide/material/grade-8-8-steel-button-head-socket-screws/)
- **Property Class 12.9 Steel Button Head Socket Screws** (https://engineeringhardware.com/guide/material/grade-12-9-steel-button-head-socket-screws/)