What Are SAE Flat Washers (Inch) Used For?

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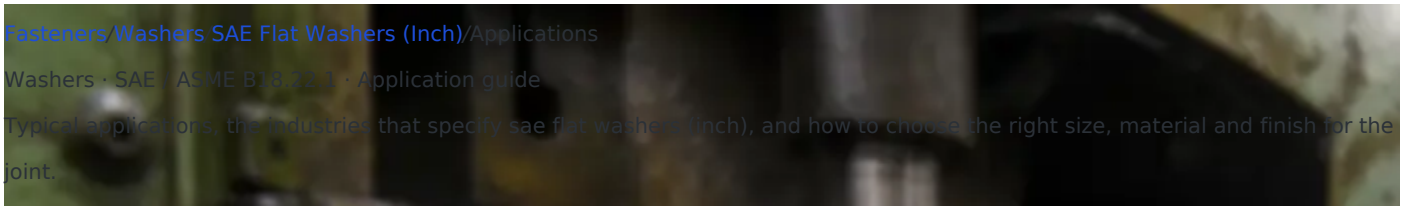


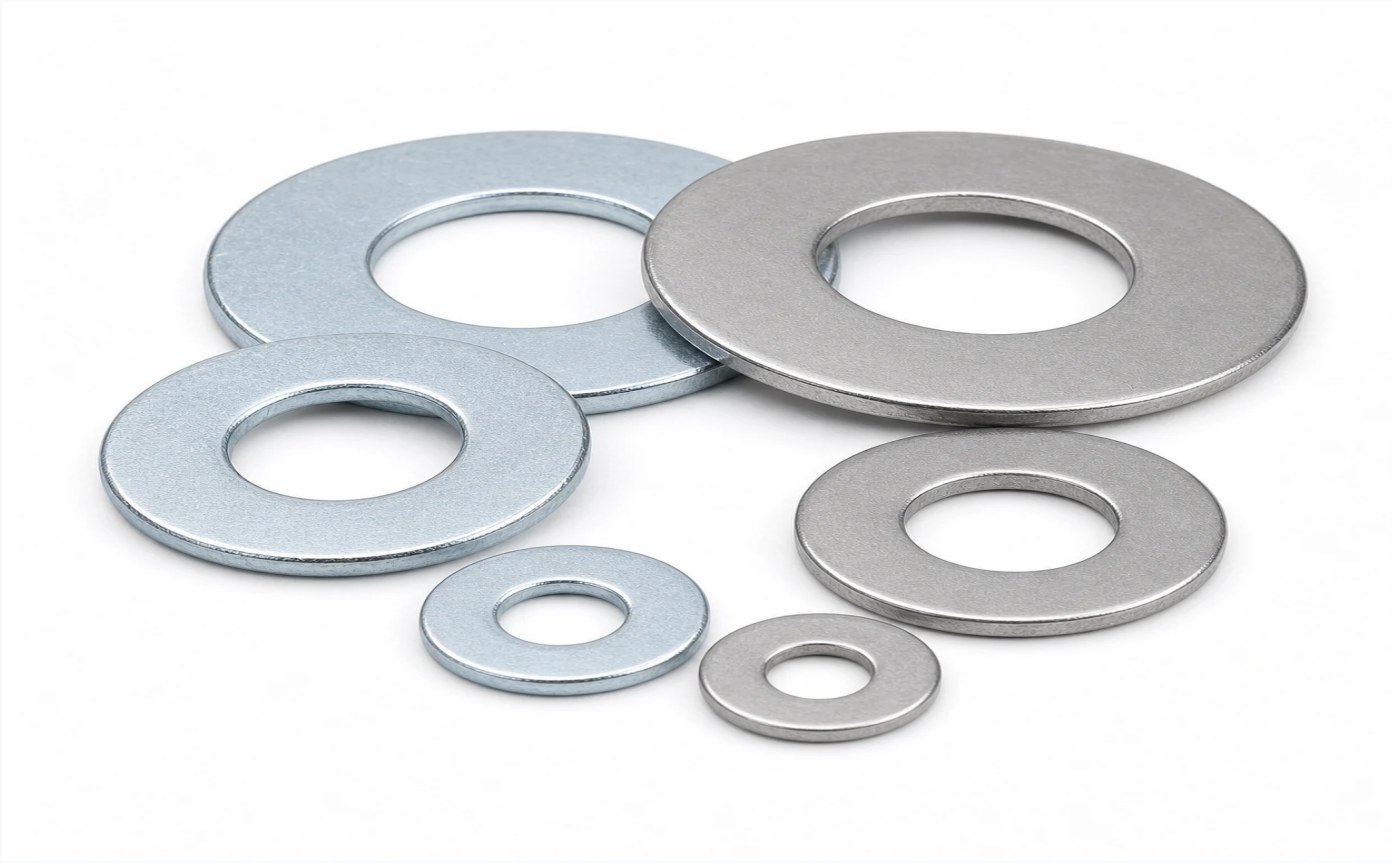
SAE Flat Washers (Inch) are used for load distribution and anti-loosening under a bolt or nut. They are manufactured to SAE / ASME B18.22.1, and selection is driven by the nominal bolt size, the fit and tolerance the assembly requires, and the service environment.

Primary duty
: Load distribution and anti-loosening under a bolt or nut

Governing standard
: SAE / ASME B18.22.1

Category
: Washers

Application notes are general engineering guidance. Verify the property class and any approval requirement against your own design calculation.



SAE Flat Washers (Inch) are used primarily for load distribution and anti-loosening under a bolt or nut. This page lists the industries and assemblies where they are specified, the selection criteria that matter for each application, installation practice, and the cases where a different fastener type is the correct choice. Parts are supplied to SAE / ASME B18.22.1.

Typical Applications for SAE Flat Washers (Inch)

The most common settings where these are specified:

- **General machine building:** fastening covers, brackets, motors and sub-assemblies on production equipment.
- **Maintenance & repair (MRO):** a stocked size for servicing existing plant where the original fastener spec must be matched.
- **Fabrication & metalwork:** bench and on-site assembly of steel frames, enclosures and weldments.
- **Bolted structural joints:** spreading load over soft or oversized holes and protecting the surface.
- **Vibration applications:** spring and serrated types that maintain tension under cyclic load.

How to Specify SAE Flat Washers (Inch) for Your Application

- **Size:** Match the size to the mating part — see the dimension table below for each option.
- **Type & OD:** Select flat for load spreading, spring/serrated for anti-loosening, or fender/large-OD for soft or oversized holes.

- **Environment:** For damp, coastal or chemical exposure prefer A4/316 stainless or a suitable coating; indoors, plated steel or A2 is usually sufficient.
- **Standard:** This product is supplied to SAE / ASME B18.22.1. Quoting the standard on your order guarantees interchangeable dimensions between suppliers.

Installation & Assembly Practice

- Place the washer under the rotating element (usually the nut) so tightening does not score the surface.
- Chamfered-hole side of a hardened washer faces the bolt head fillet.
- On serrated-flange hardware, do not add a plain washer — it defeats the serrations.

Common Selection Mistakes with SAE Flat Washers (Inch)

- Relying on a spring washer for locking on class 8.8+ joints — at high preload it flattens and adds nothing.
- Choosing an OD too small for soft material, so the head pulls through or embeds.

Where SAE Flat Washers (Inch) Are Not the Right Choice

A washer does not replace a locking feature on its own in severe vibration, and a spring washer adds little clamp on high-strength joints.

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 (SAE / ASME B18.22.1)

Screw size	Inner diameter d1 (mm)	Outer diameter d2 (mm)	Thickness s (mm)	Inner diameter d1 (in)	Outer diameter d2 (in)	Thickness s (in)	Reference standard

Video: What Are SAE Flat Washers (Inch) Used For? in use

► Watch video: https://www.youtube.com/watch?v=aTO6C30Dr7c

All About Washers - Types & Materials, USS vs SAE | Fasteners 101

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.

1. 

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.

2. 

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.

3. 

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.

4. 

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 are SAE Flat Washers (Inch) used for?

Load distribution and anti-loosening under a bolt or nut. They are supplied to SAE / ASME B18.22.1.

Which industries use SAE Flat Washers (Inch)?

They are commonly specified in vibration applications, timber & soft materials and general machine building, among other sectors.

How do I choose the right size of SAE Flat Washers (Inch)?

Match the size to the mating part using the dimension table on this page.

Do SAE Flat Washers (Inch) actually stop bolts loosening?

Spring and serrated washers help maintain tension under light vibration, but for critical joints a prevailing-torque locking nut or adhesive is more reliable. Flat washers mainly spread load and protect the surface.

Can I get a quote for SAE Flat Washers (Inch) in the size and material I need?

Yes. Use the technical drawing and quote form on this page to set the size and options, then send the exact configuration to our team for pricing and lead time.

Related Pages

Product page: SAE Flat Washers (Inch) — specifications & sizes

SAE Flat Washers (Inch) Specification Guides

- A4 stainless SAE Flat Washers (Inch)

Related Fastener Applications

- Bearing Lock Washers (MB Series) applications
- Bonded Sealing Washers applications
- Conical Spring Washers (HV) applications
- Cup Washers applications
- Disc Springs (Belleville Washers) applications
- EPDM Sealing Washers applications