What Are Fender Washers Used For?

Engineering Hardware & Fasteners · engineeringhardware.com/applications/fender-washers

Fender Washers are used for load distribution and anti-loosening under a bolt or nut. They are manufactured to DIN 9021, 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

DIN 9021

Nominal bolt size range

M3 to M36

Category

Washers

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

Fender Washers 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 DIN 9021. Stocked across roughly M3 to M36, they cover general to heavy-duty work.

Typical Applications for Fender Washers

The most common settings where these are specified:

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.

Timber & soft materials: large-OD types that prevent pull-through.

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.

How to Specify Fender Washers for Your Application

Size: Match the nominal size to the mating thread or hole. This product spans M3–M36; check the full table below for the exact dimensions of each size.

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 DIN 9021. 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 Fender Washers

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 Fender Washers 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.

Custom manufacturing · Made to drawing

Need a fender washers outside the standard range?

Bore, outside diameter, thickness, temper and finish are the variables here — there is no thread to specify, so the fit and the bearing area are what the

drawing has to pin down. Made by stamping or punching.

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

Custom washer manufacturing

(https://engineeringhardware.com/custom/washers/)

Send a drawing (https://engineeringhardware.com/custom/washers/#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 Fender Washers to DIN 9021. 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 (DIN 9021)

For bolt size	Inner diameter d1 min (mm)	Outer diameter d2 max (mm)	Thickness h (m
M3	3.2	9.0	0.8
M4	4.3	12.0	1.0
M5	5.3	15.0	1.2
M6	6.4	18.0	1.6
M8	8.4	24.0	2.0
M10	10.5	30.0	2.5
M12	13.0	37.0	3.0
M14	15.0	44.0	3.0
M16	17.0	50.0	3.0
M20	21.0	60.0	4.0
M24	25.0	72.0	5.0
M30	31.0	90.0	6.0
M36	37.0	110.0	8.0

Video: What Are Fender Washers Used For? in use

(https://www.youtube.com/watch?v=hg0GSHt9oDc)

► Watch video: https://www.youtube.com/watch?v=hg0GSHt9oDc(https://www.youtube.com/watch?v=hg0GSHt9oDc)

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

Do Fender Washers 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.

What material should Fender Washers be for outdoor use?

For damp, coastal or chemical environments specify A4 (316) stainless or a suitably coated steel. For indoor or dry use, A2 (304) stainless or zinc-plated steel is normally adequate.

Are Fender Washers made to a recognized standard?

Yes — they are manufactured to DIN 9021, so dimensions are interchangeable between suppliers when you quote the standard on your order.

What are Fender Washers used for?

Load distribution and anti-loosening under a bolt or nut. They are supplied to DIN 9021.

Can I get a quote for Fender Washers 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: Fender Washers — specifications & sizes (https://engineeringhardware.com/fastener/fender-washers/)

Fender Washers Specification Guides

- **M3 Fender Washers size guide (https://engineeringhardware.com/guide/size/m3-fender-washers/)**
- **A4 stainless Fender Washers (https://engineeringhardware.com/guide/material/a4-stainless-steel-fender-washers/)**

Related Fastener Applications

- **Aluminum Flat Sealing Washers applications (https://engineeringhardware.com/applications/aluminum-flat-sealing-washers-din-7603/)**
- **Bearing Lock Washers (MB Series) applications (https://engineeringhardware.com/applications/bearing-lock-washers-din-5406/)**
- **Belleville Washers (Inch Series) applications (https://engineeringhardware.com/applications/belleville-washers-inch/)**
- **Bonded Sealing Washers applications (https://engineeringhardware.com/applications/bonded-sealing-washers/)**
- **Conical Seat Washers, Type G applications (https://engineeringhardware.com/applications/din-6319g-conical-seat-washer/)**
- **Conical Spring Washers (HV) applications (https://engineeringhardware.com/applications/conical-spring-washers-din-6796/)**