

What Are External Tooth Lock Washers Used For?

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[Fasteners/Washers](#) [External Tooth Lock Washers](#)/Applications

[Washers](#) · [DIN 6798 A](#) · [Application guide](#)

Typical applications, the industries that specify external tooth lock washers, and how to choose the right size, material, and finish for the joint.

External Tooth Lock Washers are used for resisting loosening by biting into the bearing face and into the joint surface under the head or nut. They are manufactured to DIN 6798 A, and selection is driven by the nominal bolt size, the fit and tolerance the assembly requires, and the service environment.

Primary duty

Resisting loosening by biting into the bearing face and into the joint surface under the head or nut

Governing standard

DIN 6798 A

Nominal bolt size range

M2 to M30

Category

Washers

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



Application guide for External Tooth Lock Washers to DIN 6798 A. The core duty of the type is resisting loosening by biting into the bearing face and into the joint surface under the head or nut. The typical industries, the how-to-specify checklist, assembly practice and the exclusion cases are set out below. Stocked across roughly M2 to M30, they cover general to heavy-duty work.

Typical Applications for External Tooth Lock Washers

The most common settings where these are specified:

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

How to Specify External Tooth Lock Washers for Your Application

- **Size:** Match the nominal size to the mating thread or hole. This product spans M2-M30; 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 6798 A. 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 External Tooth Lock 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 External Tooth Lock 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.

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.

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 (DIN 6798 A)

Size	Inner diameter d1 (mm)	Outer diameter d2 (mm)	Thickness s (mm)	Type	Reference standard
M2	2.2	4.5	0.3	External teeth	DIN 6798 A
M2.5	2.7	5.5	0.4	External teeth	DIN 6798 A
M3	3.2	6	0.4	External teeth	DIN 6798 A
M3.5	3.7	7	0.5	External teeth	DIN 6798 A
M4	4.3	8	0.5	External teeth	DIN 6798 A
M5	5.3	10	0.6	External teeth	DIN 6798 A
M6	6.4	11	0.7	External teeth	DIN 6798 A
M7	7.4	12.5	0.8	External teeth	DIN 6798 A
M8	8.4	15	0.8	External teeth	DIN 6798 A
M10	10.5	18	0.9	External teeth	DIN 6798 A
M12	13	20.5	1	External teeth	DIN 6798 A
M14	15	24	1	External teeth	DIN 6798 A
M16	17	26	1.2	External teeth	DIN 6798 A
M18	19	30	1.4	External teeth	DIN 6798 A
M20	21	33	1.4	External teeth	DIN 6798 A
M22	23	36	1.5	External teeth	DIN 6798 A
M24	25	38	1.5	External teeth	DIN 6798 A
M27	28	44	1.6	External teeth	DIN 6798 A
M30	31	48	1.6	External teeth	DIN 6798 A

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

Which industries use External Tooth Lock Washers?

They are commonly specified in maintenance & repair (mro), fabrication & metalwork and bolted structural joints, among other sectors.

How do I choose the right size of External Tooth Lock Washers?

Match the nominal size to the mating thread or hole. This product is available from M2 to M30; the full dimension table on this page lists each size.

Do External Tooth Lock 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 External Tooth Lock 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.

Can I get a quote for External Tooth Lock 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: [External Tooth Lock Washers — specifications & sizes](#)

External Tooth Lock Washers Specification Guides

- [M2 External Tooth Lock Washers size guide](#)
- [A4 stainless External Tooth Lock Washers](#)

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](#)