

# What Are General Flat Washer Used For?

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[Fasteners/Washers/General Flat Washer](#) — [GB/T 97.1 / ISO 7089 \(Series 087\)](#) Applications

Washers · [GB/T 97.1 / ISO 7089](#) · Application guide

Typical applications, the industries that specify general flat washer, and how to choose the right size, material and finish for the joint.

General Flat Washers are used for load distribution and anti-loosening under a bolt or nut. They are manufactured to GB/T 97.1 / ISO 7089, 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

GB/T 97.1 / ISO 7089

## 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.



General Flat 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 GB/T 97.1 / ISO 7089. Stocked across roughly M3 to M36, they cover general to heavy-duty work.

## Typical Applications for General Flat Washer — GB/T 97.1 / ISO 7089 (Series 087)

The most common settings where these are specified:

- **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.
- **Fabrication & metalwork:** bench and on-site assembly of steel frames, enclosures and weldments.

## How to Specify General Flat Washer — GB/T 97.1 / ISO 7089 (Series 087) 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 GB/T 97.1 / ISO 7089. 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 General Flat Washer — GB/T 97.1 / ISO 7089 (Series 087)

- 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 General Flat Washer — GB/T 97.1 / ISO 7089 (Series 087) 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 (GB/T 97.1 / ISO 7089)

| For bolt size | Inner diameter d1 (mm) | Outer diameter d2 (mm) | Thickness t (mm) | Reference standard   |
|---------------|------------------------|------------------------|------------------|----------------------|
| M3            | 3.2                    | 7.0                    | 0.5              | ISO 7089 / GB/T 97.1 |
| M4            | 4.3                    | 9.0                    | 0.8              | ISO 7089 / GB/T 97.1 |
| M5            | 5.3                    | 10.0                   | 1.0              | ISO 7089 / GB/T 97.1 |
| M6            | 6.4                    | 12.0                   | 1.6              | ISO 7089 / GB/T 97.1 |
| M8            | 8.4                    | 16.0                   | 1.6              | ISO 7089 / GB/T 97.1 |
| M10           | 10.5                   | 20.0                   | 2.0              | ISO 7089 / GB/T 97.1 |
| M12           | 13.0                   | 24.0                   | 2.5              | ISO 7089 / GB/T 97.1 |
| M14           | 15.0                   | 28.0                   | 2.5              | ISO 7089 / GB/T 97.1 |
| M16           | 17.0                   | 30.0                   | 3.0              | ISO 7089 / GB/T 97.1 |
| M18           | 19.0                   | 34.0                   | 3.0              | ISO 7089 / GB/T 97.1 |
| M20           | 21.0                   | 37.0                   | 3.0              | ISO 7089 / GB/T 97.1 |
| M24           | 25.0                   | 44.0                   | 4.0              | ISO 7089 / GB/T 97.1 |
| M30           | 31.0                   | 56.0                   | 4.0              | ISO 7089 / GB/T 97.1 |
| M36           | 37.0                   | 66.0                   | 5.0              | ISO 7089 / GB/T 97.1 |

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 material should General Flat Washer — GB/T 97.1 / ISO 7089 (Series 087) 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 General Flat Washer — GB/T 97.1 / ISO 7089 (Series 087) made to a recognized standard?

Yes — they are manufactured to GB/T 97.1 / ISO 7089, so dimensions are interchangeable between suppliers when you quote the standard on your order.

What are General Flat Washer — GB/T 97.1 / ISO 7089 (Series 087) used for?

Load distribution and anti-loosening under a bolt or nut. They are supplied to GB/T 97.1 / ISO 7089.

Which industries use General Flat Washer — GB/T 97.1 / ISO 7089 (Series 087)?

They are commonly specified in fabrication & metalwork, bolted structural joints and vibration applications, among other sectors.

Can I get a quote for General Flat Washer — GB/T 97.1 / ISO 7089 (Series 087) 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: [General Flat Washer — GB/T 97.1 / ISO 7089 \(Series 087\) — specifications & sizes](#)

### General Flat Washer — GB/T 97.1 / ISO 7089 (Series 087) Specification Guides

- [M3 General Flat Washer — GB/T 97.1 / ISO 7089 \(Series 087\) size guide](#)
- [A4 stainless General Flat Washer — GB/T 97.1 / ISO 7089 \(Series 087\)](#)

### 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](#)