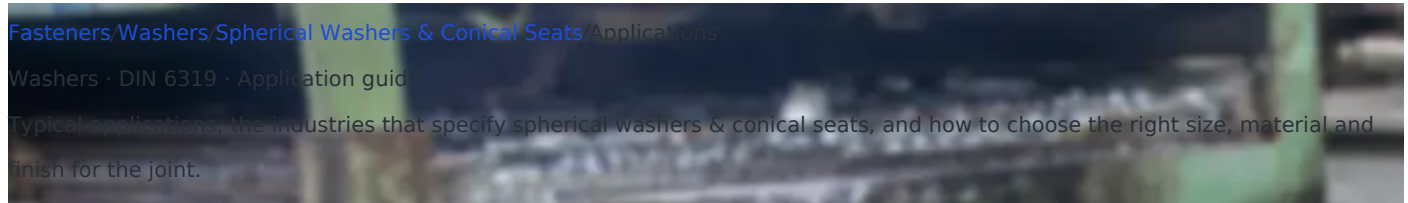


What Are Spherical Washers & Conical Seats Used For?

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Spherical Washers & Conical Seats are used for load distribution and anti-loosening under a bolt or nut. They are manufactured to DIN 6319, 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 6319

Nominal bolt size range

M5 to M30

Category

Washers

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



Spherical Washers & Conical Seats 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 6319. Stocked across roughly M5 to M30, they cover general to heavy-duty work.

Typical Applications for Spherical Washers & Conical Seats

The most common settings where these are specified:

- **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.
- **General machine building:** fastening covers, brackets, motors and sub-assemblies on production equipment.

How to Specify Spherical Washers & Conical Seats for Your Application

- **Size:** Match the nominal size to the mating thread or hole. This product spans M5–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 6319. 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 Spherical Washers & Conical Seats

- 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 Spherical Washers & Conical Seats 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 6319)

Bolt size	Bore d1 (mm)	Outer diameter d2 (mm)	Height h Form C (mm)	Thickness s (mm)	Conical seat height Form D (mm)	Spherical radius R (mm)	Max misalignment	Reference standard
M5	5.5	12	3.5	3.5	3.0	9	3 deg	DIN 6319 C/D
M6	6.4	14	3.5	3.5	3.0	10.5	3 deg	DIN 6319 C/D
M8	8.4	17	4.5	4.5	3.5	12.5	3 deg	DIN 6319 C/D
M10	10.5	21	5.0	5.0	4.0	15.5	3 deg	DIN 6319 C/D
M12	13	24	6.0	6.0	5.0	17.5	3 deg	DIN 6319 C/D
M14	15	28	7.0	7.0	5.5	20.5	3 deg	DIN 6319 C/D
M16	17	30	7.0	7.0	6.0	22	3 deg	DIN 6319 C/D
M20	21	36	8.5	8.5	7.0	26.5	3 deg	DIN 6319 C/D
M24	25	44	10	10	8.0	32	3 deg	DIN 6319 C/D
M30	31	56	12	12	10	40	3 deg	DIN 6319 C/D

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

How do I choose the right size of Spherical Washers & Conical Seats?

Match the nominal size to the mating thread or hole. This product is available from M5 to M30; the full dimension table on this page lists each size.

Do Spherical Washers & Conical Seats 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 Spherical Washers & Conical Seats 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 Spherical Washers & Conical Seats made to a recognized standard?

Yes — they are manufactured to DIN 6319, so dimensions are interchangeable between suppliers when you quote the standard on your order.

Can I get a quote for Spherical Washers & Conical Seats 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: [Spherical Washers & Conical Seats — specifications & sizes](#)

Spherical Washers & Conical Seats Specification Guides

- [M5 Spherical Washers & Conical Seats size guide](#)
- [A4 stainless Spherical Washers & Conical Seats](#)

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](#)