

What Are Retaining Ring (Circlip) Used For?

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Typical applications, the industries that specify retaining ring (circlip), and how to choose the right size, material and finish for the joint.

Retaining Ring (Circlip) are used for axial retention of components on shafts and in bores. They are manufactured to ISO / DIN, and selection is driven by the shaft / bore diameter, the fit and tolerance the assembly requires, and the service environment.

Primary duty

Axial retention of components on shafts and in bores

Governing standard

ISO / DIN

Shaft / bore diameter range

8 mm to 100 mm

Category

Retaining Rings

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



Retaining Ring (Circlip) (ISO / DIN) are specified where the joint requires axial retention of components on shafts and in bores. The sections below cover the typical end-uses by industry, the size and material decisions for each, assembly practice, and the applications this fastener type is not suited to. Stocked across roughly 8 mm to 100 mm, they cover general to heavy-duty work.

Typical Applications for Retaining Ring (Circlip) — ISO / DIN (Series 147)

The most common settings where these are specified:

- **Hydraulic & pneumatic:** holding pistons and seals in bores.
- **Automotive driveline:** axial location on rotating shafts.
- **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 Retaining Ring (Circlip) — ISO / DIN (Series 147) for Your Application

- **Size:** Select on nominal diameter, then on the hole tolerance and fit class — the fit, not the diameter alone, determines whether the part locates or slips. This product spans 8 mm–100 mm; check the full table below for the exact dimensions of each size.

- **Groove fit:** Specify to the shaft or bore groove diameter; the ring must seat fully in the groove to carry the thrust load.
- **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 ISO / DIN. Quoting the standard on your order guarantees interchangeable dimensions between suppliers.

Installation & Assembly Practice

- Use the correct circlip pliers for the ring size; over-spreading a ring permanently reduces its retention.
- Check the ring is fully seated in the groove around its whole circumference before loading the assembly.

Common Selection Mistakes with Retaining Ring (Circlip) — ISO / DIN (Series 147)

- Machining the groove to the shaft tolerance instead of the groove dimensions in the ring standard.
- Loading a standard ring axially beyond the groove rating instead of moving to a heavy-duty section ring.

Where Retaining Ring (Circlip) — ISO / DIN (Series 147) Are Not the Right Choice

Not for heavy axial thrust beyond the groove rating, and not where the groove cannot be machined to spec.

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.

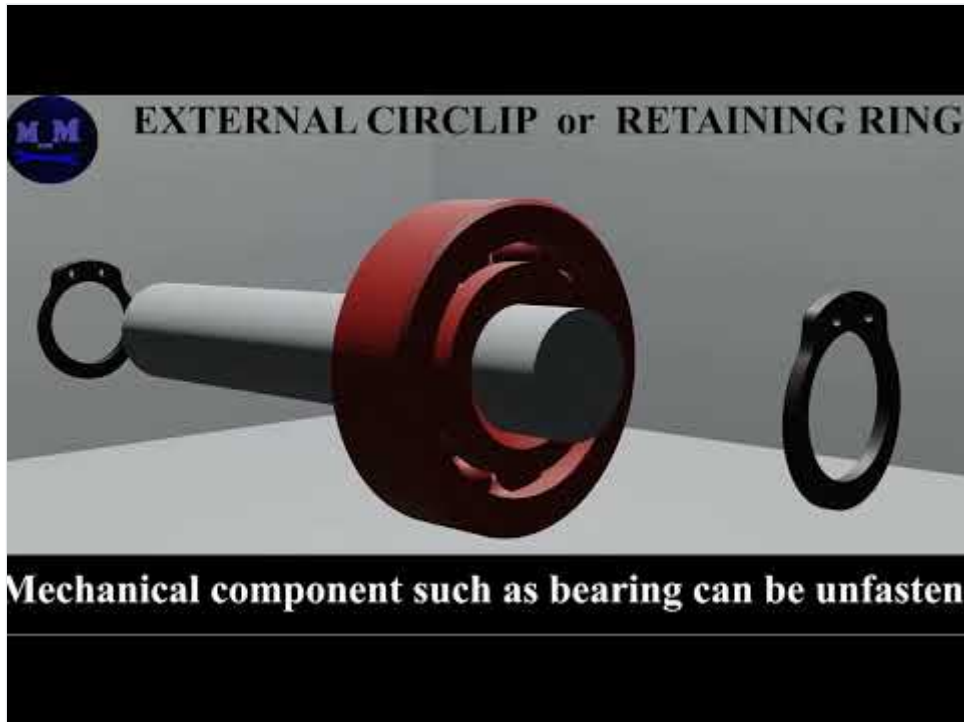
Request a Quote

The form below follows the current technical drawing configuration. Change the drawing values above and the request details update automatically.

Dimensions & Specifications (ISO / DIN)

Nominal diameter (mm)	Ring diameter d1 (mm)	Groove diameter d2 (mm)	Thickness s (mm)	Type	Reference standard
8	7.4	7.1	0.8	External	DIN 471 / GB/T 894
10	9.3	9.0	1.0	External	DIN 471 / GB/T 894
12	11.1	10.8	1.0	External	DIN 471 / GB/T 894
16	15.0	14.7	1.0	External	DIN 471 / GB/T 894
20	19.0	18.7	1.2	External	DIN 471 / GB/T 894
25	23.9	23.6	1.2	External	DIN 471 / GB/T 894
30	28.9	28.6	1.5	External	DIN 471 / GB/T 894
40	38.5	38.2	1.75	External	DIN 471 / GB/T 894
50	48.5	48.2	2.0	External	DIN 471 / GB/T 894
60	58.3	58.0	2.0	External	DIN 471 / GB/T 894
80	78.0	77.7	2.5	External	DIN 471 / GB/T 894
100	98.0	97.7	3.0	External	DIN 471 / GB/T 894

Video: What Are Retaining Ring (Circlip) Used For? in use



► Watch video: <https://www.youtube.com/watch?v=cTdnPNojXaw>

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 material should Retaining Ring (Circlip) — ISO / DIN (Series 147) 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 Retaining Ring (Circlip) — ISO / DIN (Series 147) made to a recognized standard?

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

What are Retaining Ring (Circlip) — ISO / DIN (Series 147) used for?

Axial retention of components on shafts and in bores. They are supplied to ISO / DIN.

Which industries use Retaining Ring (Circlip) — ISO / DIN (Series 147)?

They are commonly specified in hydraulic & pneumatic, automotive driveline and general machine building, among other sectors.

Can I get a quote for Retaining Ring (Circlip) — ISO / DIN (Series 147) 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: [Retaining Ring \(Circlip\) — ISO / DIN \(Series 147\) — specifications & sizes](#)

Retaining Ring (Circlip) — ISO / DIN (Series 147) Specification Guides

- [A4 stainless Retaining Ring \(Circlip\) — ISO / DIN \(Series 147\)](#)

Related Fastener Applications

- [E-Clips \(External Snap Rings\) applications](#)
- [Retaining Ring \(Circlip\) — ISO / DIN \(Series 148\) applications](#)
- [Retaining Ring \(Circlip\) — ISO / DIN \(Series 149\) applications](#)
- [Retaining Ring \(Circlip\) — ISO / DIN \(Series 151\) applications](#)
- [Retaining Rings \(Circlips\) applications](#)