Retaining Ring Selection Guide

Tip: Set your PDF viewer to "Actual size" before printing to maintain scale.

Retaining Ring Type Comparison

Ring Type	Groove Required	Installation Method	Load Capacity	Best Applications
External Retaining Ring	Yes	Snap ring pliers (external)	High	Shaft assemblies, securing gears/pulleys, high thrust loads
Internal Retaining Ring	Yes	Snap ring pliers (internal)	High	Bearing retention in housings, components in bores
E-Clip (External)	No	Push on with screwdriver	Low-Medium	Light shaft retention, simple assemblies, no groove machining
C-Clip	Yes	Hand installation, no tools	Low-Medium	Frequent assembly/disassembly, maintenance access
Push-On Retainer	No	Push on, one-time use	Low	Knobs, handles, production assembly, cost-sensitive
Spiral Ring	No	Screw on by hand	Very Low	Temporary retention, prototyping, adjustable positioning

Material Selection by Application

Material	Characteristics	Applications	Finish Options
Carbon Steel	Standard strength, economical, most common	General purpose, indoor use, moderate loads	Phosphate, black oxide, zinc plated
Stainless Steel 302/304	Excellent corrosion resistance, non-magnetic	Food service, marine, outdoor, corrosive environments	Passivated (natural finish)
Stainless Steel 316	Superior corrosion resistance, chemical resistant	Marine, chemical processing, extreme environments	Passivated (natural finish)
Beryllium Copper	Non-magnetic, non-sparking, high spring properties	Electronics, aerospace, explosive environments	Natural (gold color)
Spring Steel (Music Wire)	Maximum strength and spring properties	Heavy-duty applications, high loads	Phosphate, black oxide

Selection Criteria

1. Load Requirements

- **Light duty (under 50 lbs):** E-clips, push-on retainers, spiral rings
- **Medium duty (50-500 lbs):** Standard retaining rings, C-clips
- **Heavy duty (over 500 lbs):** Heavy-duty retaining rings, specify load requirements

2. Groove Considerations

- **Can you machine a groove?** → Use standard retaining rings for best strength
- **No groove available?** → Use E-clips, push-on retainers, or spiral rings
- **Existing groove?** → Measure precisely and match standard ring size

3. Installation Frequency

- **One-time assembly:** Push-on retainers (lowest cost)
- **Occasional maintenance:** Standard retaining rings or C-clips
- **Frequent removal:** C-clips or quick-release designs
- **Prototyping/adjustments:** Spiral rings (no tools, adjustable)

4. Environment

- **Indoor/dry:** Carbon steel with phosphate coating

- **Outdoor/moisture:** Stainless steel 302/304
- **Marine/coastal:** Stainless steel 316
- **Food service:** Stainless steel 302/304
- **Electronics:** Beryllium copper (non-magnetic)