

Retaining Ring Groove Chart

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

External Retaining Ring Groove Dimensions

Shaft Diameter	Groove Diameter	Groove Width	Edge Margin	Ring Thickness
1/4"	0.234"	0.025"	0.015"	0.015"
5/16"	0.294"	0.031"	0.015"	0.018"
3/8"	0.353"	0.035"	0.015"	0.025"
7/16"	0.412"	0.038"	0.020"	0.025"
1/2"	0.469"	0.042"	0.020"	0.035"
9/16"	0.528"	0.042"	0.025"	0.035"
5/8"	0.587"	0.046"	0.025"	0.042"
3/4"	0.706"	0.050"	0.030"	0.042"
7/8"	0.825"	0.056"	0.035"	0.050"
1"	0.943"	0.062"	0.040"	0.050"
1-1/4"	1.181"	0.070"	0.045"	0.062"
1-1/2"	1.418"	0.081"	0.050"	0.070"
2"	1.893"	0.093"	0.060"	0.087"

Internal Retaining Ring Groove Dimensions

Bore Diameter	Groove Diameter	Groove Width	Edge Margin	Ring Thickness
5/16"	0.333"	0.031"	0.015"	0.018"
3/8"	0.396"	0.035"	0.015"	0.025"
7/16"	0.458"	0.038"	0.020"	0.025"
1/2"	0.520"	0.042"	0.020"	0.035"
9/16"	0.583"	0.042"	0.025"	0.035"
5/8"	0.645"	0.046"	0.025"	0.042"
3/4"	0.770"	0.050"	0.030"	0.042"
7/8"	0.895"	0.056"	0.035"	0.050"
1"	1.020"	0.062"	0.040"	0.050"
1-1/4"	1.270"	0.070"	0.045"	0.062"
1-1/2"	1.520"	0.081"	0.050"	0.070"
2"	2.025"	0.093"	0.060"	0.087"

Critical Groove Specifications

- **Groove Depth:** Must be precise - too shallow and ring won't seat; too deep and ring loses retention
- **Groove Width:** Ring must fit freely in width but not be loose
- **Corner Radius:** Sharp corners stress rings - use 0.003" to 0.010" radius in groove bottom
- **Surface Finish:** Groove bottom should be 63 microinch or better to prevent ring damage

- **Edge Margin:** Distance from groove to shaft end - prevents stress concentration
- **Concentricity:** Groove must be concentric with shaft/bore within 0.002" TIR

Machining Tips

- Use sharp tooling to prevent burrs
- Deburr groove edges after machining
- Check groove diameter with proper gauges
- Verify groove width and depth before assembly
- For critical applications, inspect 100% of grooves

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