Radial and Multipole NdFeB Ring Magnets

Technical selection reference • 2026-10

This document describes ring configurations and dimensional selection ranges. It does not state a verified factory capability, production guarantee or measured field acceptance result.

Configuration comparison

Selection factor	Radially oriented ring	Continuous Halbach-type multipole ring
Magnetic orientation	Radial orientation. Magnetization fixture can establish the selected pole count.	Multipole orientation is established during pressing and forming.
Magnetization patterns	Single radial pole; straight or skewed multipole magnetization.	Multipole distribution on the outer or inner circumference.
Surface-field trend	The illustrated reference comparison shows a lower field concentration than the multipole example.	The illustrated reference comparison shows greater field concentration. This is qualitative, not a numeric field promise.

Dimensional reference ranges

Dimension	Radially oriented ring	Continuous Halbach-type multipole ring
Outer diameter	20–150 mm; recommended outer diameter <70 mm	5–50 mm
Inner / outer diameter ratio	0.75–0.95	0.6–0.8
Axial length	5–50 mm	5–50 mm

Application inputs and limitations

Magnetization examples

Reference examples include an outer-circumference 10-pole ring, an inner multipole ring, a skewed 12-pole radially oriented ring, a straight 8-pole radially oriented ring and a single radial pole. These examples do not imply that the same tooling or dimensions apply to every project.

Design considerations

Radially oriented rings can simplify rotor assembly and support compact air-gap designs. Pole count, angular position and skew angle require the magnetization fixture and rotor arrangement to be defined. Continuous Halbach-type multipole rings can concentrate flux toward the working air gap; the field distribution and mechanical envelope must be reviewed together.

Field-distribution evidence boundary

The reference material includes an outer 10-pole waveform and a radial-versus-multipole waveform plotted against mechanical angle in degrees. Field units, complete sample dimensions and probe gap are not fully specified. No numeric surface-field guarantee or batch-test result is derived from those illustrations. A defined measurement setup is required before any field value can be used as an acceptance limit.

Information needed for a project review

Provide outer and inner diameter, axial length, tolerance and fit; radial/axial orientation; pole count, working circumference, phase and skew; required air-gap field and probe location; rotor speed, service temperature and duty; coating, adhesive and housing constraints; and the required inspection method and acceptance limits.

Availability and acceptance

The dimensional ranges are a starting point for review. Confirm tooling, tolerances, magnetic properties, magnetization, coating, operating temperature and inspection conditions for the selected design before purchase. A configuration illustration is not proof of a completed product or project.