ELITE MAGNETS

ENGINEERING WORKSHEET
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Permanent Magnet Inspection Plan Worksheet

A practical framework and printable worksheet for connecting product risk with datums, measured state, inspection method, sampling, and evidence.

APPLICATION NOTE
Use this guide to prepare an engineering discussion. Final material, grade, coating, magnetization, tolerance, and inspection requirements must be confirmed for the actual application.

Build the inspection plan from product risk

A measurement method is useful only when it protects a defined product function. Start with the functional risk, connect it to a drawing characteristic and datum, then define the measured state, method, sampling, and evidence.

STEP 1
Functional risk and failure mode

→

STEP 2
Characteristic, datum and state

→

STEP 3
Method, fixture and correlation

→

STEP 4
Sampling, limits and evidence

Choose the method by the characteristic

Characteristic	Possible method	Questions before approval
Overall dimensions	Gauge, micrometer, optical system, CMM, dedicated fixture	Coated or uncoated state? Contact force? Datum alignment?
Runout / concentricity	Rotary fixture, indicator, optical or CMM method	Loose component or assembled rotor? Which axis is functional?
Polarity / direction	Polarity indicator, Hall probe, reference fixture	What mechanical feature establishes orientation?
Pole position / waveform	Scanning Hall system or approved magnetic mapper	Air gap, angular zero, scan path, filtering, and limits?
Coating / surface	Visual standard, thickness, adhesion or project-specific test	Edges, masking, defects, conditioning, and acceptance evidence?
Assembly function	Go/no-go fixture, torque, force, signal, balance, or end-of-line test	Does the test correlate to the product requirement?

Common specification gaps

- A tolerance is stated without a datum, measurement state, or method.
- Magnetic acceptance lacks a defined position, air gap, or mechanical orientation.
- Prototype inspection is assumed to represent the series sampling plan.
- A generic certificate is requested without defining the actual characteristics or records needed.
- Loose-magnet results are accepted without confirming correlation to the final assembly.

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PRINTABLE WORKSHEET

Permanent Magnet Inspection Plan Worksheet

APPLICATION NOTE
Use one row for each characteristic that protects fit, magnetic function, coating integrity, assembly, or traceability. Add project-specific rows rather than forcing unrelated requirements into one limit.

Project / part number	
Drawing revision	
Measured state	[ ] Uncoated [ ] Coated [ ] Magnetized [ ] Unmagnetized [ ] Assembly
Lot / prototype stage	
Responsible review	Engineering: _____ Quality: _____

Characteristic plan

Characteristic / risk	Datum / state	Method / fixture	Limit / sampling / record
1.			
2.			
3.			
4.			
5.			
6.			

Release checks

Drawing alignment	[ ] Characteristics, datums, units, and revision match the drawing
Method capability	[ ] Range, resolution, fixture, calibration, and operator method reviewed
Magnetic setup	[ ] Position, air gap, angular zero, scan path, and orientation controlled
Sampling	[ ] Prototype, first article, lot, periodic, and change-trigger rules defined
Evidence	[ ] Report format, retention, traceability, and customer submission needs defined
Change control	[ ] Material, process, tooling, fixture, and method changes trigger review

Engineering note: inspection feasibility and sampling must be approved for the actual production route and product risk. This worksheet does not establish process capability, certification status, or customer-specific quality approval.