



IEC 60745-1 Figure 7 Test Fingernail | Hand-Held Tool Test Probe

1. Executive Summary

The **IEC 60745-1 Figure 7 Test Fingernail** is a specialized precision safety probe manufactured by **KingPo**. It is engineered to evaluate the mechanical security of snap-fit assemblies, joints, and guarding systems in hand-held motor-operated electric tools. By simulating the prying action of a human fingernail, it ensures that hazardous parts remain inaccessible, fulfilling **IEC 60745-1** safety requirements.

2. Technical Parameters

Parameter	Specification	Remark / Notes
Standard	IEC 60745-1 Figure 7	Hand-held motor-operated electric tools
Tip Material	Hardened stainless steel	Excellent wear resistance and stability

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Parameter	Specification	Remark / Notes
Handle Material	High-grade insulating nylon	Superior insulation and ergonomic grip
Tip Shape	Fingernail profile	Simulates human fingernail insertion
Adapter	M5 threaded	Compatible with push-pull force gauges
Applicable Force	10 N – 50 N (adjustable)	Per specific test clause requirements
Calibration	ISO 17025 traceable	Included as standard

3. Professional Construction & Technical Precision

- **High-Durability Tip:** Precision-machined from premium stainless steel and heat-treated for optimal hardness. This ensures sharp leading edges and dimensional stability over thousands of cycles.
- **Ergonomic Handle:** Crafted from high-grade **Delrin (acetal nylon)** for outstanding electrical insulation and chemical resistance. The non-slip grip reduces operator fatigue during prolonged testing.
- **Force Gauge Compatibility:** Features an integrated **M5 threaded adapter** for quick connection to calibrated force gauges.
- **Quality Assurance:** Every probe undergoes 100% quality control, including **CMM dimensional inspection** and surface finish verification.

4. Testing Principle & Methodology

The probe is applied with a controlled force (typically **10 N to 50 N**) to critical seams, snap-fit connections, and enclosure openings. The test determines if the tip can penetrate or pry open guarding sufficiently to contact hazardous live or moving parts. This evaluates the mechanical robustness of enclosures under conditions replicating real-world misuse.

5. Common Error Mitigation

- **Pre-Test Inspection:** Check the tip for wear, deformation, or burrs before use.
- **Gradual Application:** Apply force slowly and perpendicular to the surface to avoid false positives from angled pressure.
- **Comprehensive Testing:** Target multiple critical locations, including flexible areas and ventilation seams.
- **Electrical Detection:** When testing powered tools, use a **continuity tester** connected to the probe for reliable hazard detection.
- **Maintenance:** Clean the tip and store the probe in its protective case after each session.

6. Industrial Applications & Lab Scenarios

- **Power Tool Manufacturers:** Guarding and snap-fit verification for drills, grinders, and saws.
- **Certification Labs:** Essential for **IEC 60745-1** compliance and type testing.

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- **Quality Control:** Batch inspection of mechanical assemblies and enclosures.
- **Safety Engineering:** Design validation and continuous improvement of tool guarding systems.

7. Strategic Procurement Advantages

- **Ready for Deployment:** Factory-calibrated with an **ISO 17025** certificate for immediate lab use.
- **Certified Manufacturing:** Produced under ISO 9001, ISO 14001, and ISO 45001 quality systems.
- **Global Support:** Includes a one-year warranty and lifetime technical assistance from the **Dongguan facility**.

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