



BS EN 12983-1 Cookware Handle Fastening & Torque Resistance Tester
Standard Compliance: BS EN 12983-1:2020 (Clause 7.4 & Appendix C)

1. Executive Summary

The **KingPo Cookware Handle Fastening Tester** is a high-precision laboratory instrument designed to quantify the mechanical integrity and torsional resistance of single-handle cookware. Engineered to meet the rigorous requirements of **BS EN 12983-1:2020**, this system evaluates the durability of the fastening mechanism (rivets, welds, or screws) by applying a stabilized torque through a calibrated 1-meter balance lever.

This equipment is vital for ensuring that cookware handles—including those on frying pans, saucepans, and woks—can withstand real-world operational stresses without exceeding the standard-mandated deformation limit of $\leq 10^\circ$.

2. Key Features & Metrological Advantages

- **Full Compliance:** Strictly adheres to Clause 7.4 and Appendix C (Figure C.1) of the latest BS EN 12983-1:2020 safety standard.
- **Dual Clamping Architecture:** Features interchangeable **V-shaped screw-lock clamps** for rapid testing and a **resin epoxy pouring system** for maximum stability during high-torque

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R&D audits.

- **Precision Angular Tracking:** Integrated high-resolution digital inclinometer with a **1° resolution** for immediate pass/fail assessment.
- **Optimized Leveling:** The tiltable test bench ensures that regardless of the cookware's base geometry, the handle can be perfectly aligned horizontally for accurate torque application.
- **Traceable Calibration:** Supplied with a factory-traceable certificate; ISO 17025 accredited reports are available for third-party certification labs.

3. Detailed Technical Specifications

Category	Parameter	Specification	Remark / Notes
Mechanical	Balance Lever Length	1,000 mm (1 meter)	Precision-machined aluminum/steel
	Lever Weight	1.0 kg ± 0.1 kg	Includes pointer and clamping interface
	Test Mass	1.0 kg	Calibrated standard weight
Measurement	Angle Resolution	1°	Digital LCD real-time display
	Max. Deformation Limit	10°	Per BS EN 12983-1 criteria
Construction	Test Bench Type	Tiltable / Adjustable	For precise horizontal alignment
	Clamping System	Dual: V-Clamp & Resin	Versatile for various handle designs
	Material	Industrial Steel Frame	Powder-coated for chemical resistance
Physical	Dimensions	700 × 505 × 630 mm	Compact, benchtop-friendly
	Net Weight	Approx. 29 kg	Mobile with laboratory casters
Power	Input Voltage	AC 220 V, 50/60 Hz	Customizable per regional standards

4. Engineering Excellence & Technical Precision

The tester is designed for 24/7 reliability in industrial quality control environments:

- **Balance Lever Dynamics:** The 1-meter lever is engineered to provide a constant torque arm. Its low-friction pivot point ensures that the full force of the 1kg mass is translated directly to the handle fastening without parasitic loss.
- **System Stability:** The robust steel frame eliminates structural flexing during testing, ensuring that any recorded angular movement is strictly a result of the handle's deformation.
- **Versatile Interface:** The V-clamp system is adjustable to accommodate various handle cross-sections (round, oval, or ergonomic), while the epoxy-fill option provides a "zero-slip" benchmark for high-stress certification testing.

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5. Testing Principle & Procedure

The methodology follows a systematic approach to validate mechanical safety:

1. **Preliminary Conditioning:** Perform the heat resistance test per Appendix B (standard protocol).
2. **Mounting:** The cookware is secured on the tiltable bench. The bench is adjusted until the handle is perfectly horizontal.
3. **Lever Attachment:** The balance lever is clamped at the midpoint of the handle's length.
4. **Torque Application:** A 1 kg weight is applied to one end of the lever. The system is allowed to stabilize for **30 seconds**.
5. **Data Recording:** The angle of deformation is recorded. The weight is then moved to the opposite side of the lever, and the process is repeated.
6. **Criteria:** The handle "passes" if the deformation is $\leq 10^\circ$ in both directions and no functional failure (cracking or loosening) occurs at the fastening point.

6. Common Error Mitigation

- **Leveling Integrity:** Always utilize the integrated spirit level or tiltable bench to ensure the handle starts at 0°.
- **Midpoint Precision:** Measuring the handle and marking the exact center for lever clamping is critical; an offset of even 5mm can skew torque results.
- **Stabilization Period:** Do not record the angle immediately. The full 30-second wait time is required to allow the materials to settle under load.
- **Weight Application:** Weights should be lowered gently. Dropping the weight can cause a dynamic impulse that exceeds the test parameters and damages the fastening.

7. Industrial Applications & Strategic Value

- **Cookware Manufacturers:** Essential for routine batch testing and confirming the quality of rivet/weld suppliers.
- **R&D Departments:** Used during the design phase to optimize handle ergonomics without compromising structural safety.
- **Certification Bodies (TÜV, SGS, Intertek):** Provides the traceable data required for CE marking and BS EN compliance documentation.
- **Retailer Audits:** Verifies the safety claims of private-label cookware brands before market release.

8. Ordering & Support Information

Model Code	Description	Scope of Supply
KP-12983-SINGLE	Single Handle Fastening Tester	Bench, Lever, 1kg Mass, V-Clamps
KP-12983-ACC	Epoxy Resin Kit	Resin base and specialized molds

Standard Package Includes:

- Main Test Frame and Tiltable Bench
- 1-Meter Balance Lever Assembly
- 1.0 kg Calibrated Test Weight
- Digital Angle Measurement Module

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Kingpo Technology Development Limited

- Factory Traceable Calibration Certificate
 - Full Technical Manual with BS EN 12983-1 Summary
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Manufacturer Information:

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