

HST-BPT-300 Cupping testing Machine (Erichsen Tester)



Overview:

This machine adopts an integrated electromechanical design with a neat and elegant appearance. It is a precision device for testing the process performance of thin metal sheets and strips. It can perform the tests according to GB/T4156-2007 "Metallic materials - Thin sheets and strips - Erikson cupping test method", GB9753-2007 "Paints and varnishes - Cupping test", and meets the requirements of AETME643-2008. It examines the plastic deformation performance of thin metal sheets and strips during the test process, as well as the coating's ability to resist cracking and separation from the metal substrate.

1. This cupping test machine adopts a novel structural principle, using a servo motor for constant-speed loading, enabling constant-rate control. The stamping process is computer-controlled, and the stamping speed is infinitely adjustable and pre-set. (Previous hydraulic cylinder-based force application could not achieve constant-rate control).
2. The clamping force is independently loaded by a hydraulic oil source, and the clamping force is adjustable, with synchronized data display and independent calibration.
3. The force measuring device has been changed from a hydraulic sensor to a spoke-type sensor. The cupping value is measured by an encoder. During the test, the punch movement utilizes our company's pioneering low-friction movement device, combined with a high-precision spoke-type sensor (direct force measurement), enabling testing of ultra-thin plates (0.1–2 mm). This significantly improves the accuracy and reliability of the cupping value measurement. The perfect matching of the instrument's measuring device, loading device, and control program effectively solves the problem of poor repeatability of previous test data and provides a reliable basis for the implementation of new metrological verification regulations and cupping test methods for cupping machines in my country.
4. The cupping fixture is easy to replace, and the sample loading and unloading is simple. After the sample is placed, pressing the automatic button will complete the clamping. Test parameters can be input and changed. The stamping process is controlled in a closed loop. When the stamping force value drops, it indicates that the sample has cracked and automatically stops the test. At the same time, it is easy to observe the sample cracks. The test data is displayed on the computer and has a peak value memory function, such as the maximum

stamping force and cupping value. It can realize the reporting, storage, batch, and curve plotting of test results. The deformation height is automatically memorized, and it can automatically return to the ready-to-test state after a test.

Technology parameter:

1. Sheet thickness: 0.1~3mm (High-precision sensor, enabling testing of ultra-thin sheets)
 2. Sheet width: 70-100mm
 3. Punch stroke: 40mm
 4. Clamping piston stroke: 40mm
 5. Maximum punching load: 300kNmax. (Maximum punching load configured according to the punching pressure of the customer's material)
 6. Maximum clamping load: 50kN
 7. Cupping value resolution: 0.01mm
 8. Test speed: 0.05~200mm/min stepless speed adjustment
 9. Cupping test mold specifications:
 - Standard punch ball: $S\phi 20 \pm 0.05\text{mm}$
 - Standard die hole diameter: $\phi 33 \pm 0.1\text{mm}$
 - Standard fixed die hole diameter: $\phi 27 \pm 0.05\text{mm}$
- Hydraulic oil: N46 hydraulic oil (available at most gas stations).
Power supply: AC380V.
Weight: 2000Kg.

Standard Configuration:

One desktop computer (including hydraulic station), including:

- High-precision, low-noise ball screw
- AC speed control system/servo motor
- High-precision wire photoelectric encoder
- Force sensor
- Computer
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