

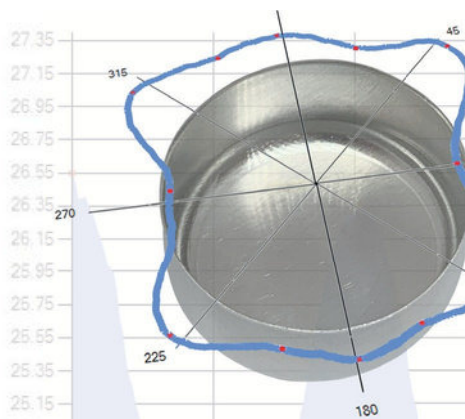
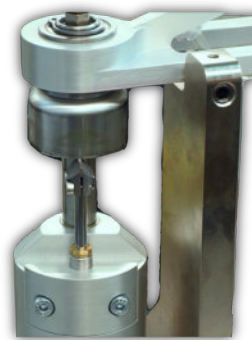
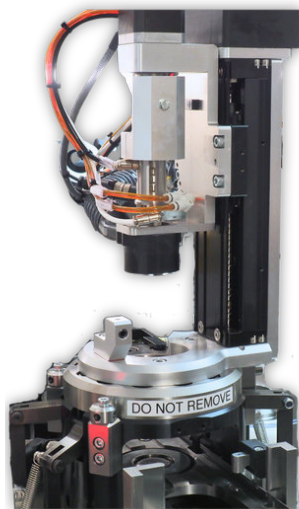
AUTOMATIC CUPPING AND EARING MACHINE

Earing testing is traditionally unreliable and arduous. Using the Huxley Bertram Automatic Cupping and Earing Machine this is transformed into a rapid, repeatable and precise operation.

Sample thickness measurement and automatic die change allow for extremely close matching of tooling to actual sample thickness.

High precision is achieved through servo-hydraulic motion control and micron-accuracy earing measurement.

Automatic batch data acquisition, automatic drawing, and automatic measuring processes enable the testing of hundreds of samples a day while eliminating human error.



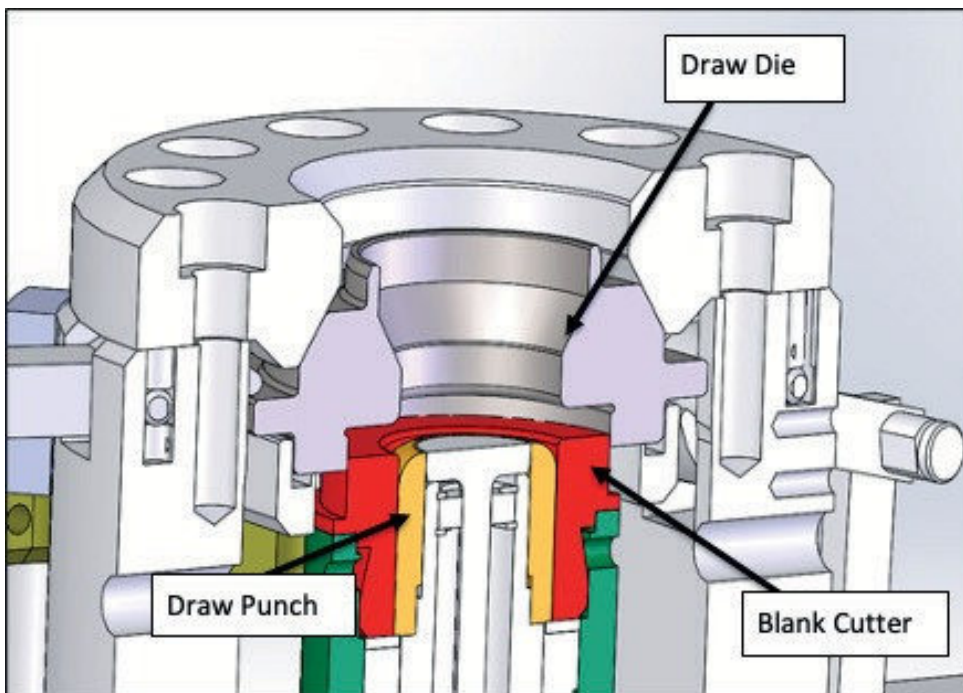
Product Description

The HB Automatic Cupping and Earing Machine allows rapid measurement of drawn cup earing profiles in sheet metal, including Aluminium, up to 4 mm (~0.15 Inch) thick and tinplate up to 2 mm (~0.08 Inch).

At the touch of a button, the machine cuts a circular blank between 55 mm and 66 mm from a sample of the sheet metal and draws cylindrical cups, with a standard 33 mm punch, transfers the cup to a measuring station and measures the earing characteristics.

Automatic die changing enables a wide variety of mixed samples sizes to be measured.

The user interface is intuitively designed to allow typical operation by only two buttons on the front of the machine but also allows complex and varied setups for research purposes. Batch information can be quickly acquired from a barcode on the sample. Sample thickness can be measured by the machine or acquired from the barcode.



The drawing and measurement process takes less than 20 seconds per cup. Once measured the data is logged and displayed as a cartesian or polar plot in our Advanced Earing Analysis Package, any inherent cup skew is computationally corrected and a slew of quantitative calculations is carried out including mean earing and earing balance to the EN1669 standard. The analysis software enables easy comparison of profiles and statistics. Calculated results and the corrected profile are written to a text file which can easily be harvested by facility database systems.

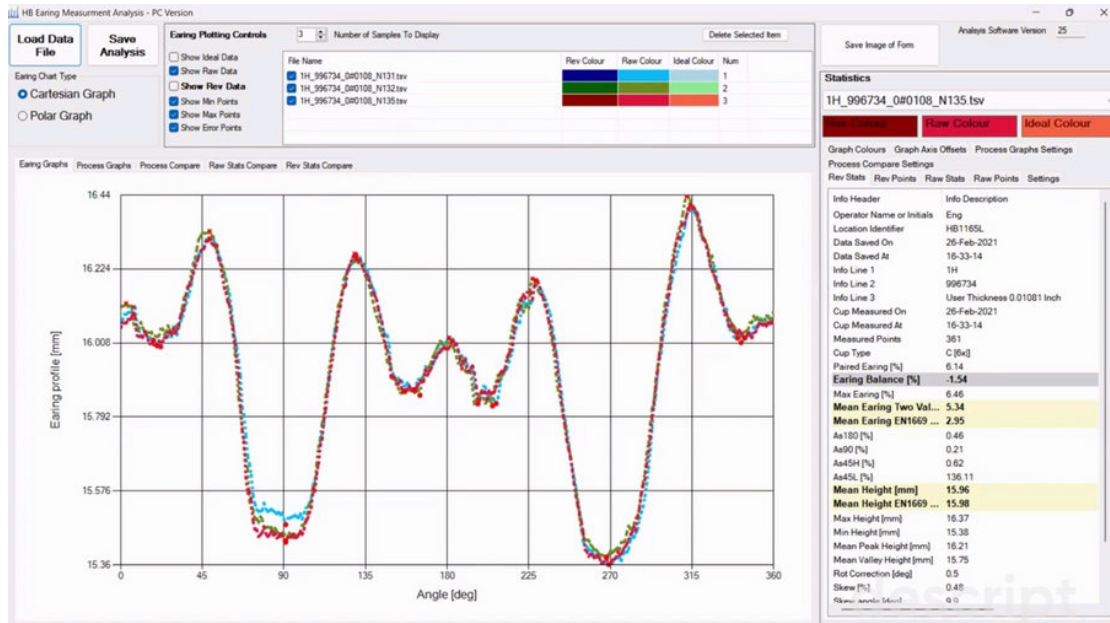
Measure earing with unparalleled speed, repeatability and accuracy due to precision servo-controlled hydraulic cut, clamp and draw actuators and digital measurement with a resolution of 1 micron.

Key Advantages

- Rapid measurement of 50 samples in under 15 mins
- Measure earing profile to 1 micron resolution
- Unparalleled matching of sample & tooling with sample thickness measurement and automatic die change
- Measure metal from hotband as well as finished thickness with a thickness range of 0.1- 4 mm (0.004 – 0.15 Inch) with our heavy gauge machine
- Unmatched repeatability with servo-hydraulic control and combined blanking and draw die
- Eliminates human error with automatic batch data acquisition from barcode and die choice and sample thickness measurement, preventing machine downtime and damage
- High-speed automatic die change, allows many different sample sizes to be measured in succession. Automatic recognition of any new die on the table with the die scan camera

Process

The operator scans the sample barcode, presses start and the required die is moved into position automatically; up to 8 dies can be stored in each machine, but can be easily manually switched for other sizes.

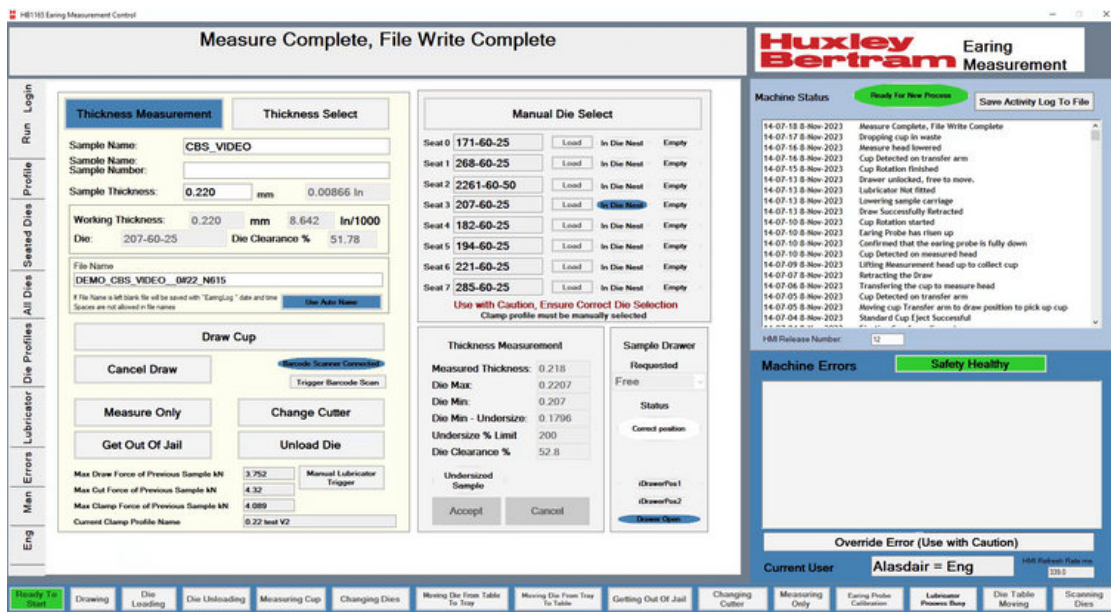


Once the sample is loaded, the hydraulic cutter punches out the blank and clamps it against the die face: once the required clamp force has been achieved the draw punch pushes through the sheet to draw the cup and it is ejected out the top of the die.

The drawn cup is then transferred to the Earing Measurement Station via the automatic transfer arm. Where it is rotated and measured by a precision anvil, with earing measurement repeatability better than +/- 10 microns. Raw data is logged and the data is immediately processed, so stock can be evaluated quickly and simply. Information from previous tests is also saved and can be easily compared. Once measured the cups are automatically dropped down a waste shoot.

It is also possible to measure the earing of pre-made cups.

The software produces analysed data and allows for intuitive and customisable comparisons of collected data and instantaneous evaluation of samples.



The machine comes with a Windows 10 Environment, and HMI to control and monitor all systems with ease. A log and error screen also aid in speedy recovery if a problem arises.

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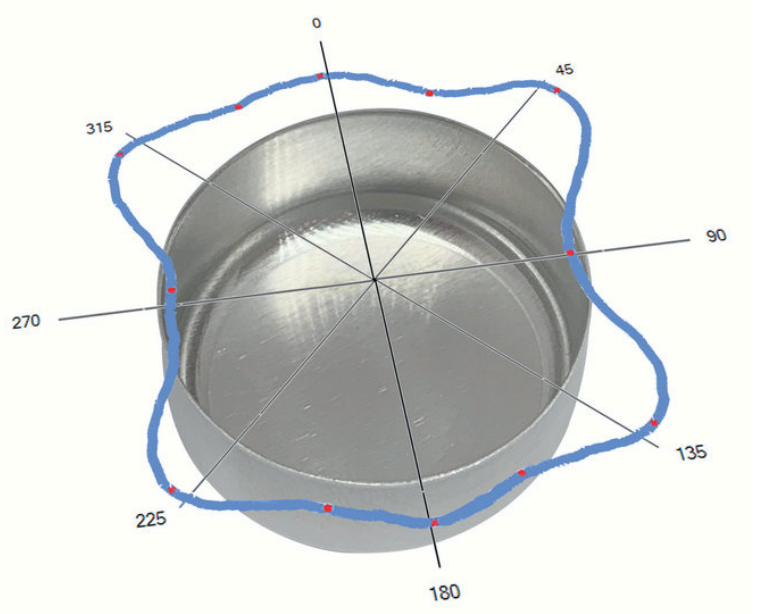
Cambridge, UK

Machine Types

Huxley Bertram produces two specifications of tester: Standard (0.1-0.4 mm sample thickness) and Heavy Gauge (0.1-4 mm sample thickness).

Description	Standard	Heavy Gauge
Blank diameter	66 mm & 55 mm	66 mm & 55 mm
Max. Aluminum Thickness	1.0 mm (0.039 Inch)	4 mm (~0.15 Inch)
Min. Material Thickness	0.1 mm (0.004 Inch)	0.1 mm (0.004 Inch)
Cut (blanking) force max	90 kN*	140 kN*
Draw force max	57 kN*	140 kN*
Clamp force max	15 kN*	15kN*
Max Die Radius	8 mm	8 mm
Number of dies in carousel	8 dies	8 dies
Punch top radii	5 mm	5 mm
Punch OD	33 mm	33 mm
Punch Height	30 mm	30 mm
User Environment	Windows 10	Windows 10
Samples Size	9" x 3" samples	9" x 3" samples
Electrical Supply	415-480 V, 50 / 60 Hz	415 - 480 V, 50 / 60 Hz
Pneumatic Supply	3 Phase supply required 6-10 Bar clean dry	3 Phase supply required 6-10 Bar clean dry
Weight Safety	compressed air ~400 kg	compressed air ~500 kg
System Built to	Beckhoff Safety System	Beckhoff Safety System
Standards	CE	CE

*Indicative force measurements for draw, cut and clamp force are calculated from the actuators hydraulic pressure during drawing, for higher accuracy measurements the system can be fitted with load cells to measure these forces directly. See force measurement options below.



Above is shown the precision earing measurement instrumentation and polar earing profile.

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Cambridge, UK

Standard Features

- **Sample thickness measurement:** The sample thickness is automatically measured to 0.5 microns resolution by a mechanical anvil, on insertion into the machine.
- **Fixed barcode scanner:** A barcode scanner is fixed above the sample input slot so that the sample is automatically scanned as they are inserted. Barcode encoded thickness values, batch numbers, sample numbers, etc, can be extracted automatically, reducing data input and cataloguing times.
- **Die removal detect:** A ring of 8 sensors detect if any of the dies have been removed by the operator.
- **Die scan camera:** Automatically scans the dies that are on the table, recognizes a data matrix marked on the top of them and records their position on the table automatically. Therefore, any new die placed on the table will be automatically scanned, located and made ready to use.



Die identification by smart camera



0.1 to 4mm thick earring cups

Options

The additions that are available for both models are:

- **Multiple blank cutter sizes:** HB offer the option to allow the use of multiple sizes of blank cutters. This allows cups to be drawn from different sized blanks. This can include the provision of a variety of cutter sizes.
- **Additional die sizes:** dies for alternative sample thickness or blank diameter are available as an optional extra.
- **Automatic Lubrication Application:** automatically applies lubricant to the sample using spray applicator head, just before blank cutting, giving unrivalled repeatability in earring results.
- **Infeed rack:** a rack is mounted on the front of the machine allowing multiple samples to be loaded and fed into the machine automatically. This allows the operator to perform other tasks while the machine works through the rack of samples, allowing the system to process 50 samples in 30 minutes while unattended.
- **Draw, cut and clamp force measurement:** additional instrumentation to allow the machine to more accurately measure draw, cut and clamp force.
- **Non-contact earring measurement:** replaces the mechanical earring probe with a laser profile scanner so that the earring can be measured without being altered by a mechanical probe.
- **HB Earring Analysis Software for PC.** one instance of the analysis software is provided on the machine but if you would like this software on other Windows PCs, this software can be provided. This option requires an annual subscription.

Huxley Bertram

Huxley Bertram Engineering Limited designs and builds mechanical solutions such as special purpose machines, automated equipment, and mechanical aids.

These solutions enable clients to increase throughput and provide new products and services around the world.

The company collaborates with clients to understand their needs to tailor the right solution and solves complex mechanical challenges, with the right mix of innovation, technology, and simplicity.

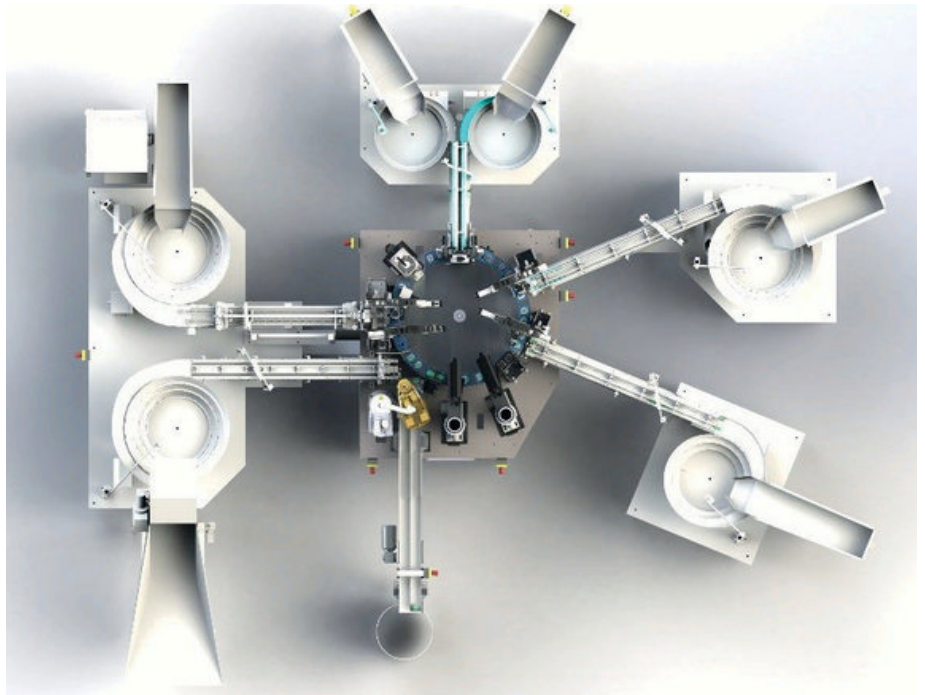
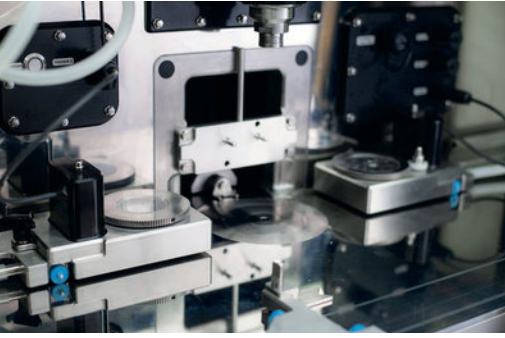
Huxley Bertram was founded in 1979. Since then it has delivered over 1,000 solutions, transforming clients' operations in industries from pharmaceutical and nuclear to research and academia.

Currently the business is in Waterbeach, Cambridge, where it has been since 2014 and has over 25,000 sqft of facilities.

Much of the equipment supplied gives clients a competitive edge in their marketplace.

For more information on Earing Measurement Machines or Huxley Bertram Special Purpose Machines contact us on

www.huxleybertram.com



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