

# PUNCHMASTER

The master tool for punch and knock out measurement



## Technical Data

**PUNCHMASTER** was specially developed for the measurement of punches, used in beverage can industry.

**PUNCHMASTER** is characterized by contactless, optical measurement with submicron resolution. The main measuring functions run automatically and software controlled.

**PUNCHMASTER** features the following measuring functions:

- Outside diameter at any z-position (height position)
- Outside roundness at any z-position (height position)
- Automatic step measurement
- Measurement of step position
- Measurement of outside profile
- Measurement of taper
- Calculation of transition radius and transition angle

**PUNCHMASTER** features also the measurement of knock outs. Therefor special adapters are necessary.

Knock out measuring functions are:

- Outside diameter at any z-position (height position)
- Outside roundness at any z-position (height position)

Along with the **PUNCHMASTER** a software for creation of tolerance models for the punch profile according CAD drawing is provided.

This allows the evaluation of the measured punch profile and the comparison of the measured profile with the tolerance model according the drawing.

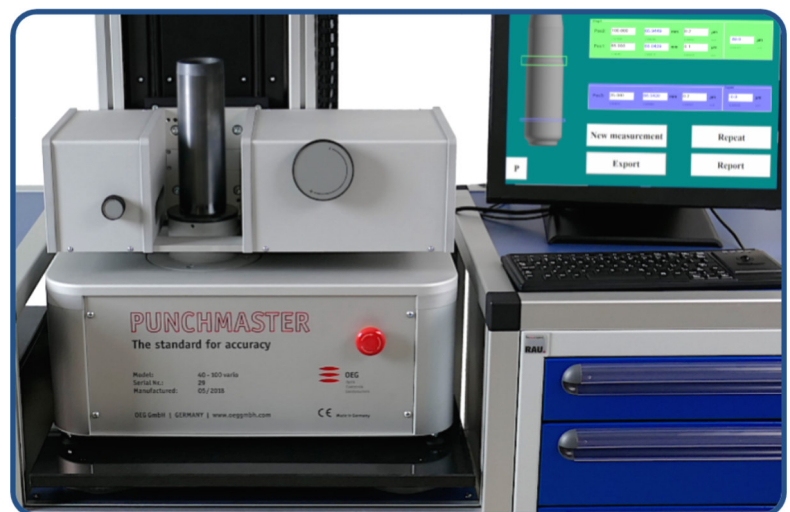
PUNCHMASTER measuring functions	
Outside diameter (OD)	At single or multiple positions
Roundness of OD	
Step depth	Max number of 2 steps
Profile / Tolerance model	Profile scan with comparison of a tolerance model from CAD drawings
Taper	Measurement of a taper from step to major diameter
Knockout outside diameter / roundness	Measurement at specified positions

PUNCHMASTER Technical parameters*	
Measuring accuracy for outside diameter /roundness**	±1 µm ±0.039 mil
Measuring accuracy for outside profile/contour	
Minimum outside diameter	40 mm / 1.575 inch
Maximum outside diameter	100 mm / 3.937 inch
Maximum punch height	250 mm / 9.843 inch
Knock out accuracy ***	±2 µm / ±0.079 mil

\* parameters can be adapted to special demands on inquiry

\*\* roundness of calibration master <0.5 micron required

\*\*\* adapters are necessary



## Measuring software

The **PUNCHMASTER** software controls the acquisition of measuring data and the motorized, fully automatic measurement. It offers simple measuring functions like the automatic step measurement and more time consuming functions like the measurement of the complete outside punch profile or the step profile. Beside the automatic measuring functions, the software offers also interactive measurements.

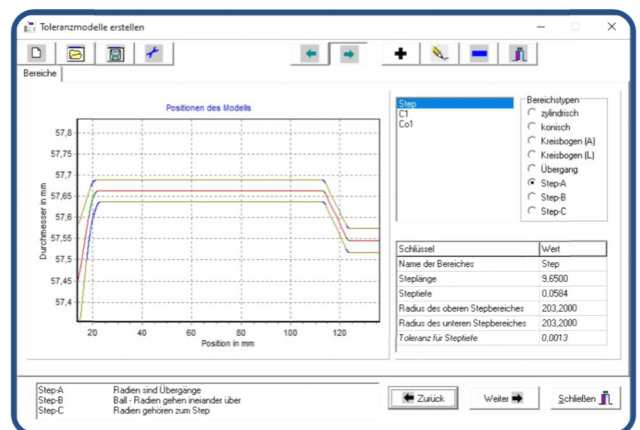
## PUNCHMASTER Calibration tool

According the measuring principle, calibration masters are necessary. OEG has developed a special master (Caltool), which can be used for all currently used can sizes.

## Software for creation of tolerance models

The **PUNCHMASTER** features the high accurate measurement of the punch profile. For the operator it is very important to compare the measured profiles with the desired punch profile according drawing. For that reason, OEG GmbH has developed a software module, which can create tolerance models, using the most important data from the drawings of the punch.

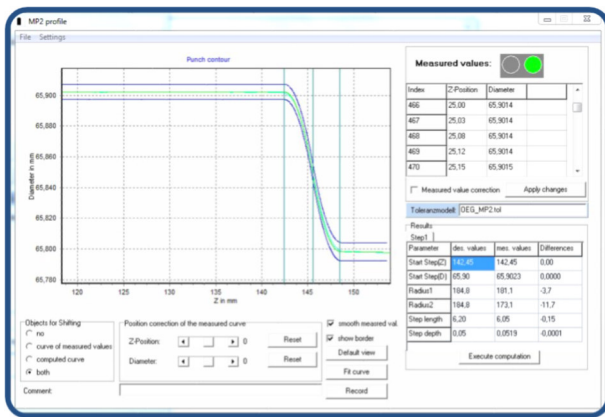
That affects the data for the transition radii and angles of the step and the complete punch profile. The model has to be produced once for each punch type. It is stored in the data base and can be loaded always, if measuring data for this punch type has to be evaluated.



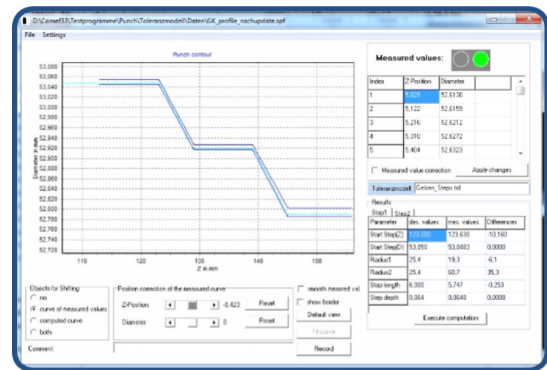
# Software for evaluation of measuring data and comparison with tolerance model

The **PUNCHMASTER** software does not only control the measuring functions and the movements. The software is also equipped with a tool for evaluation of the measured punch profile data. This tool allows the operator, to load the punch tolerance model (created with the according software) and the measured profile data in one and the same diagram. The software provides among others the good/bad decision for the measured punch profile. measuring data for this punch type has to be evaluated.

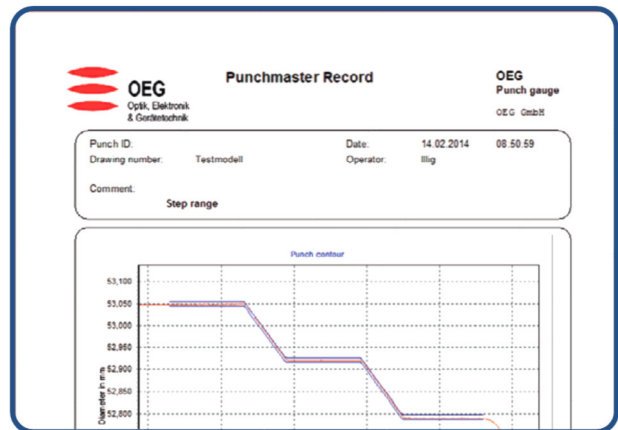
Single step detail



Two step detail



Two step profile report



Two step profile

