Brochure

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AxiSet™ Check-Up

Fully automated tests for accurate and consistent results

AxiSet™ Check-Up is a cost-effective solution for checking and improving rotary axis performance. In just a few minutes, users of multi-axis machining centres and multi-tasking machines can identify poor machine alignment, geometry and pivot point errors that can cause extended process setting times and non-conforming parts. Where possible, AxiSet Check-Up automatically corrects on-machine pivot point parameters.

By providing machine users with a fast and accurate health check of rotary axis pivot points, AxiSet Check-Up assists in building a robust process foundation by maximising the stability of the environment and machine. When used alongside Renishaw's QC20-W ballbar system and laser interferometers, AxiSet Check-Up gives an unparalleled machine diagnosis solution.

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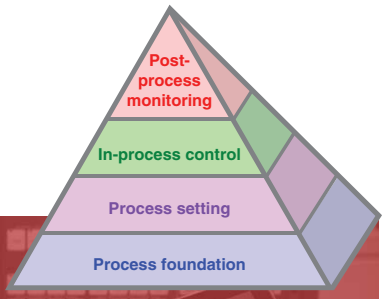
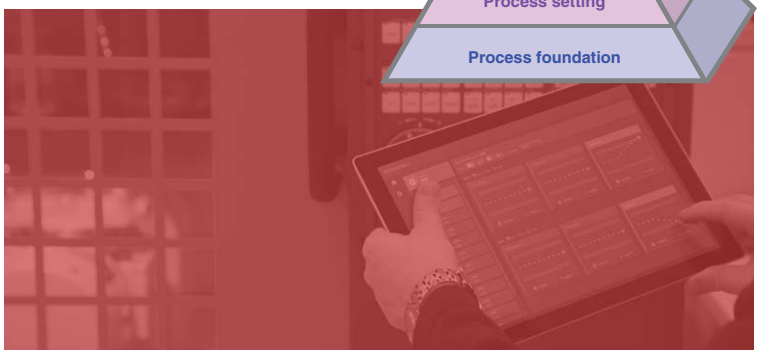
The Productive Process Pyramid™



Tackle process variation at source, and reap the rewards

The higher the degree of human involvement in the manufacturing process, the higher the risk for error. Machine tool optimisation using Renishaw products can help ***eliminate the risk.*** AxiSet Check-Up can facilitate the following measures for enhanced management of your production, leading to an ***increase in your profits.***



Process foundation

Optimisation and monitoring of machine tool performance.

- Eliminate machine errors
- Reduce unplanned stoppages
- Produce consistently good parts
- Ensure process stability and reliability
- Create a foundation for automation

> We recommend that our customers use AxiSet Check-Up to test the machines' rotary axes after they are installed, as factory conditions may differ significantly from Hartford's manufacturing conditions, in terms of foundations and how level surfaces are. Shipping and installation can also cause precision errors, so AxiSet Check-Up automatic compensation allows machine tools to maintain high levels of precision and quality.
>
> **Hartford (Taiwan)**

How it works

Using the macro software supplied, AxiSet Check-Up takes reference measurements around a dedicated single-sphere calibration artefact and can automatically correct rotational centres by updating on-machine pivot point parameters.

The AxiSet Check-Up app is installed onto a PC or tablet running Windows® 10 (32 or 64 bit) and provides graphical representations of multi-axis machine performance data, enabling PASS or FAIL decisions to be made based on defined tolerances. Performance can be tracked over time, using the historical data chart function.

Data from the app can be exported as a CSV file for further analysis or for storage of historical data. All results, including charts for the key measurement data, can be output as a PDF report and used for benchmarking or reference purposes.

Software that makes data analysis simple

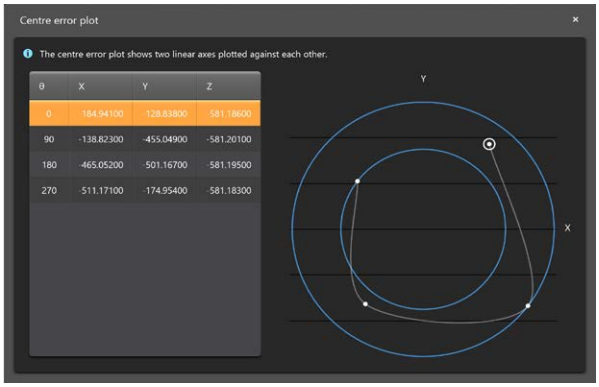
The AxiSet Check-Up app graphically displays the measurement data produced by the AxiSet Check-Up macro software.

The app provides graphical representations of multi-axis machine performance data that can help to make PASS or FAIL decisions based on defined tolerances. Machine performance can be tracked over time, using the app's historical data chart function.

Centre error plot

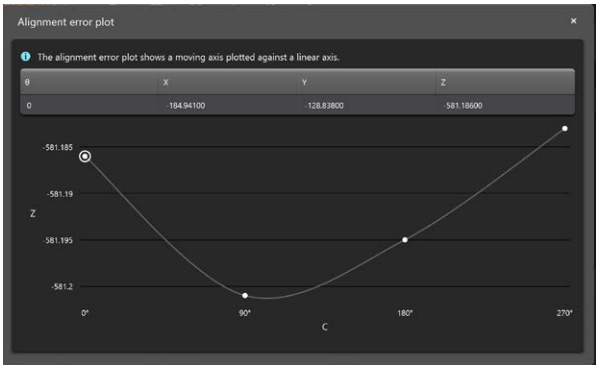
The **Centre error plot** shows two linear axes plotted against each other.

The intention of the **Centre error plot** is to provide users with an indication of a part shape or form that would be produced in a cutting trial where a machine's interpolation function is used in either 3+2 or simultaneous 5-axis mode.



Alignment error plot

The **Alignment error plot** shows the moving rotary axis plotted against a linear axis. The plot data represents actual machine data that has been scaled to highlight tracking performance.



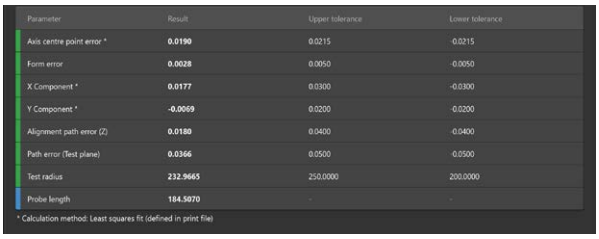
Measured data

The **Axis centre point** error is the total error between the nominal and actual measured pivot point.

The **Form error** is the residual error after the data has been best-fitted to the axis component values.

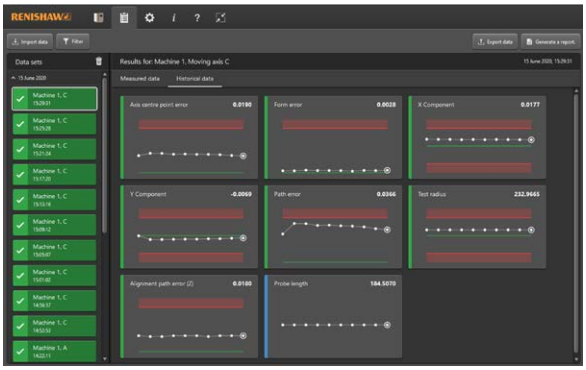
The **Path error (test plane)** is the total effect of all measured errors including axis centre point error and form error.

The **Alignment path error** is the maximum deviation of the static axis.



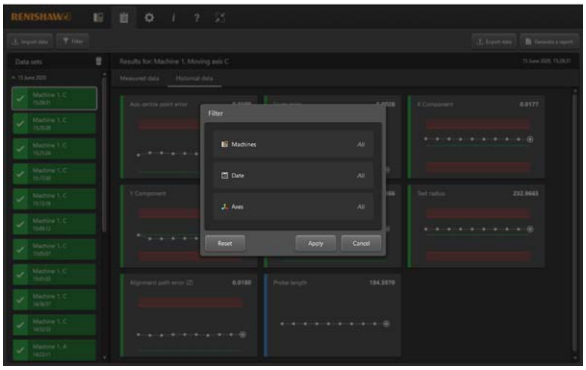
Comparison and history functions

The **Historical data** screen allows the overall trend of results to be viewed for any machine. Provided the calibration hardware is placed in the same position within the machine, the **Historical data** function allows comparisons of machine performance to be made over time. Reported errors can be monitored over time and compared to tolerances, allowing trends to be identified and events such as serious collisions to be traced.



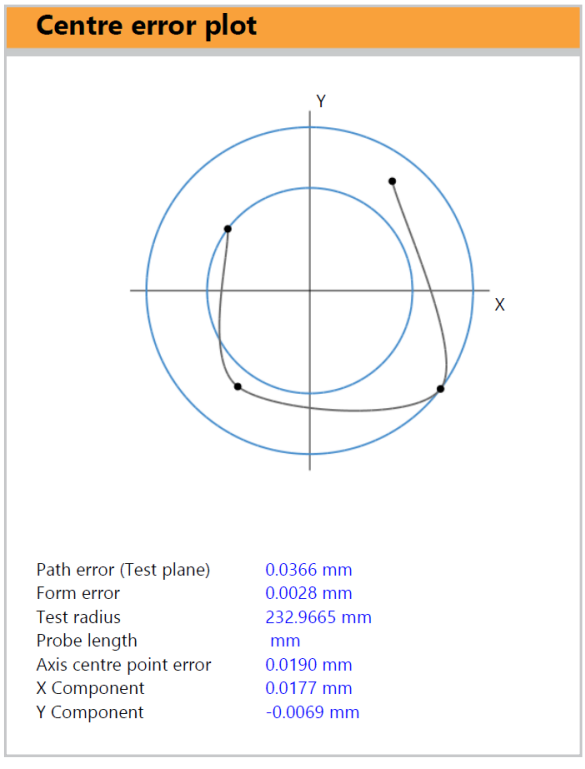
Filtering data

Data can be filtered by machine, date or axis to provide a more focussed view on the data being analysed.

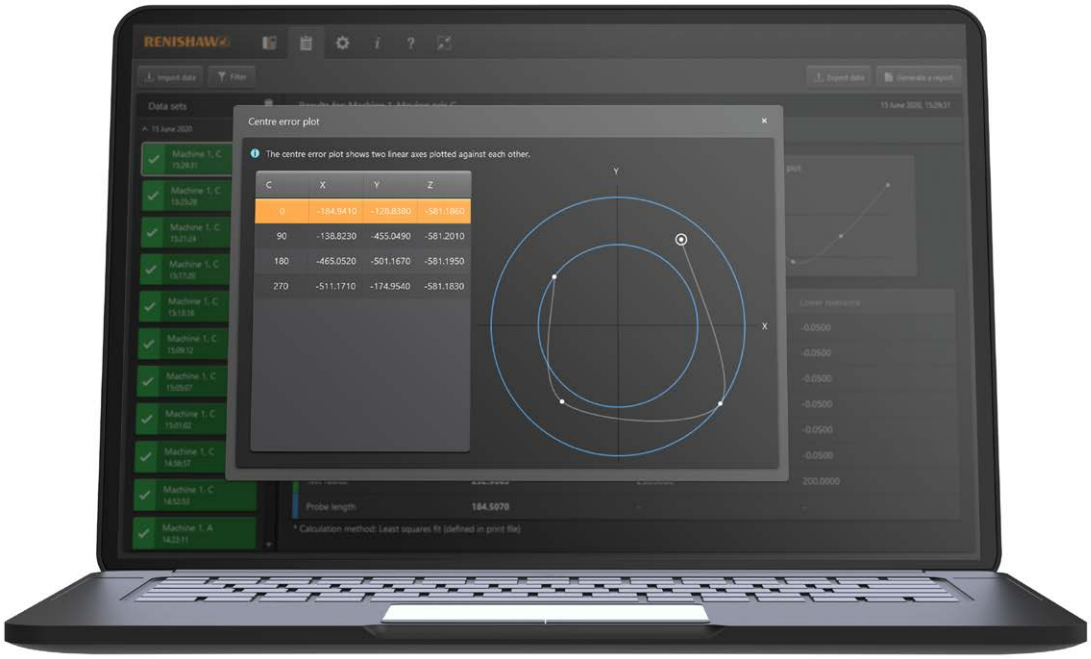


Generate reports

All results can be output as a PDF report (including charts for key measurement data), which can be used for benchmarking or reference purposes.



System components



Macros

Written for a range of CNC controllers, AxiSet Check-Up probing macros are machine specific and available for machining centres and multi-tasking machines. These macros drive the machine, collecting measurement data.

They also offer the option to automatically update parameters and compensate for rotary axis pivot point errors.

App

The AxiSet Check-Up app provides a detailed and graphical representation of the measurement data produced by the macro software.

The app is installed onto a PC or tablet running Windows 10 (32 or 64 bit) or above and must be licensed before it can be used. Perpetual and evaluation licences are available.

Hardware

A single calibration sphere, conveniently mounted on a magnetic base, is used as a reference feature for measurements.

This simple-to-use artefact ensures that set-up time is kept to a minimum and, in most cases, does not require fixtures or parts to be removed.

Recommendations

RENGAGE™ technology

For optimum performance, Renishaw's high-accuracy machine tool probes with RENGAGE technology are recommended.

Use of standard accuracy probes will result in decreased performance.

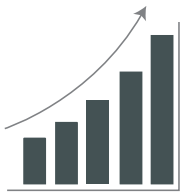
AxiSet Check-Up does not support the use of non-Renishaw probes.

Calibrated test bar

Ensures that AxiSet Check-Up measurements are traceable and comparable to the settings made by machine tool builders.

Probing pays with Renishaw

Optimise your cutting process



Ensure parts are machined “right first time”.

Reduce scrap and rework

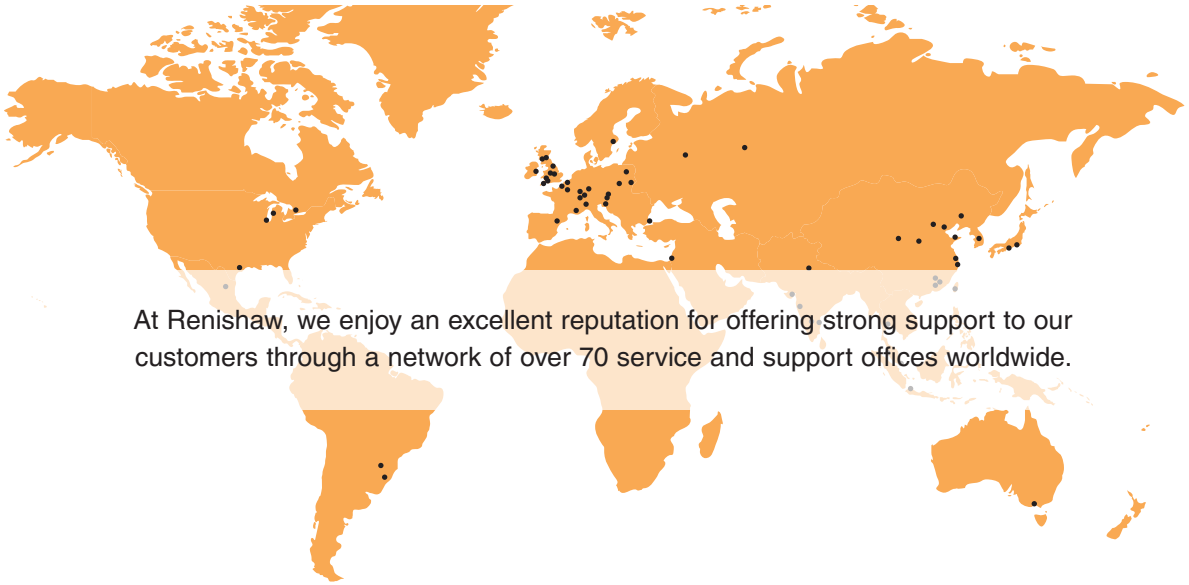
Set tools up to ten times faster than when using manual methods.

Save time and money

Produce more parts reliably and accurately.

> “Renishaw has an excellent reputation in manufacturing industries, and also provides services for different industries, so it doesn’t just offer a product or a solution, but also shares with us its experience, expertise and the industry’s best practices. Renishaw is also meticulous in terms of its technical support, the Renishaw team reacts quickly to solve problems; this is particularly impressive to us.”
>
> **SuperAlloy Industrial Company Ltd (Taiwan)**

The Renishaw advantage



At Renishaw, we enjoy an excellent reputation for offering strong support to our customers through a network of over 70 service and support offices worldwide.

Technical assistance

We supply technical assistance to all our global customers.

Support and upgrades

We provide a variety of support agreements bespoke to your individual needs.

Training

We offer standard and bespoke training courses to meet your requirements.

Spares and accessories

Buy spares and accessories online or obtain quotes for Renishaw parts 24/7.

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About Renishaw

Renishaw is an established world leader in engineering technologies, with a strong history of innovation in product development and manufacturing. Since its formation in 1973, the company has supplied leading-edge products that increase process productivity, improve product quality and deliver cost-effective automation solutions.

A worldwide network of subsidiary companies and distributors provides exceptional service and support for its customers.

Products include:

- Additive manufacturing and vacuum casting technologies for design, prototyping, and production applications
- Dental CAD/CAM scanning systems and supply of dental structures
- Encoder systems for high-accuracy linear, angle and rotary position feedback
- Fixturing for CMMs (co-ordinate measuring machines) and gauging systems
- Gauging systems for comparative measurement of machined parts
- High-speed laser measurement and surveying systems for use in extreme environments
- Laser and ballbar systems for performance measurement and calibration of machines
- Medical devices for neurosurgical applications
- Probe systems and software for job set-up, tool setting and inspection on CNC machine tools
- Raman spectroscopy systems for non-destructive material analysis
- Sensor systems and software for measurement on CMMs
- Styli for CMM and machine tool probe applications

For worldwide contact details, visit www.renishaw.com/contact

H-5642-8300-05

Part no.: H-5642-8300-05-A
Issued: 01.2021