

Equator™ versatile gauge with INTUO™ software



Process control

Use feature measurement history to control processes at all temperatures



Ease of use

Simple shop-floor operation and flexibility to switch parts and designs



Speed

Rapid part programming with just 1 day of training

What is Equator?

The **Equator gauge** is a comparator for medium to high volume gauging applications, making it an ideal process control device for continuous part manufacture, or for flexible production of a variety of parts re-occurring as regular batches.

Equator is a robust system designed specifically for the shop floor, proven in hundreds of applications across multiple industries. It can cope with wide changes in temperature, by re-zeroing the system using the principle of mastering.

Equator is:

- Flexible - can gauge multiple parts and copes easily with design changes
- Fast and automated
- Low cost of ownership with no calibration required
- Consistent and not operator dependent - excellent Gauge R&R
- Thermally insensitive
- Small machine footprint relative to part size



Organiser™ – operator system software

Organiser™ is the user-friendly software that shop floor operators use to control the Equator gauging system, with little or no training. A customised user interface is created for each part and inspection is started with just one operation.

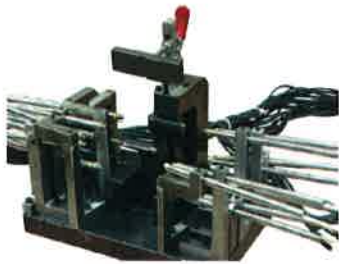


Control your process with Process Monitor

Process Monitor shows the history of feature measurements and proportion of tolerance for each feature. It enables shop floor management of the mastering process according to temperature, time or number of parts measured. Data from Equator can be used to update tool offsets, compensating for the effects of tool wear and thermal drift during the machining process.



Equator - replace existing gauging



Replace custom gauges

Equator is a radical alternative to traditional dedicated gauging:

- Custom gauges lack flexibility - designed for one part only. Equator can switch programs and fixtures in seconds
- Custom gauges require many sensors to compute geometry. Equator can rapidly capture geometry by scanning complex features
- Custom gauges are expensive to make, plus difficult and costly to change. Equator programs can be rapidly altered for design changes



Replace hand gauges

Equator is an ideal alternative to multiple manual devices such as vernier or digital callipers, micrometres and plug gauges:

- Hand gauges are fast but manual. Equator is often faster and automated
- Hand gauges can be inconsistent and are operator dependent. Equator has excellent Gauge R&R which can be proven on each part and feature



Expand CMM inspection capacity on the shop floor

While CMMs are highly accurate, flexible, absolute systems they are only certified in temperature controlled rooms:

- Equator can cope with rapidly changing temperature differences on the shop floor
- Equator cost of ownership is low, with no need for periodic calibration
- Equator has a compact footprint and can be installed on bench tops or in enclosures throughout the shop floor environment

INTUO - easy to programme, easy to use

Programme gauging routines in minutes

INTUO's intelligent functions help the engineer to programme touch-point gauging of parts in a matter of minutes.

- Re-create the engineering drawing on screen
- Minimal investment in staff training
- A simple, cost effective way to increase gauging consistency, identify parts that are out of tolerance and reduce scrap

Programmer training in one day

INTUO has been through extensive development to make it as simple to use as possible, which means in just a few hours programmers will be ready to inspect production parts. Training is 'hands-on', using the joystick to take points and rapidly build up the features to be gauged.

Feature recognition using the joystick

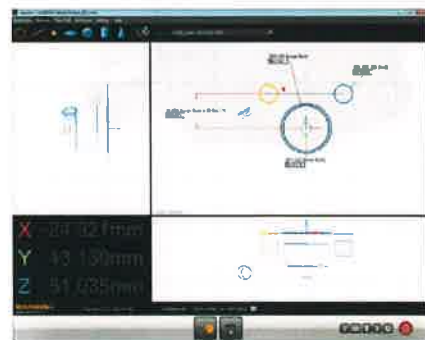
With the Feature Predict function activated, INTUO will recognise the type of feature, nominal value and an expected tolerance band by the position of points and the direction they were taken with the joystick.

Feature Predict will display the feature once a defined number of points have been taken. The minimum number of points for each type of feature can be changed.

Once the feature has been measured, the number of points can be increased and the positions corrected, using the Make function. Values such as plunge, approach, contact and rise can also be adjusted to ensure the probe finds the surface and unwanted collisions are avoided.

Easy manual input of master part actuals

Simply input the actual values for features on the master part, which does not need to be a 'perfect part'. Required features are measured on a certified device, like a calibrated manual gauge or CMM. The values from this master part inspection report can be manually added to a table in Organiser or to the corresponding field in INTUO.

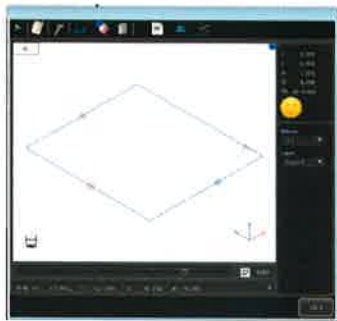


INTUO software



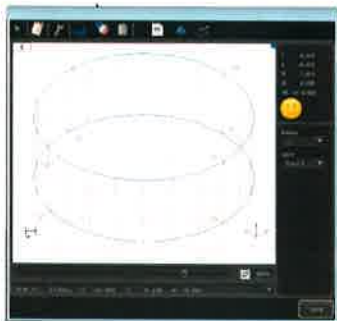
Feature Predict

The INTUO process



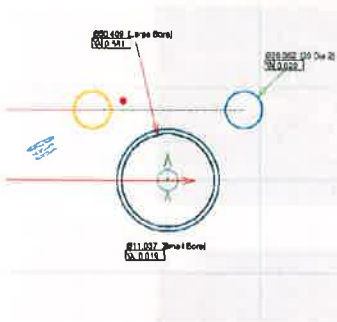
Align

Set up the alignment of the part in three simple steps e.g. Plane-Line-Point.



Measure

The Feature Predict function recognises each feature from the points you take, including circles, lines, planes, spheres, cylinders and cones.



Dimension

Adjust and add nominals and tolerances from the engineering drawing; create constructed dimensions between multiple measured features. Colours indicate the status of a dimensioned feature.



Report

Run and report on INTUO programs using Organiser, showing Pass/Fail for each part. Use Process Monitor to display instant status of feature tolerances, history of gauging on each feature and to control the re-mastering process.



Gauging designed for the shop floor



INTUO measurement types - GD&Ts

Equator with INTUO is perfectly suited to gauging a range of GD&T features with high levels of repeatability. These include:

- | | |
|----------------|--------------------|
| ∅ Diameter | — Straightness |
| ⊘ Cylindricity | ○ Circularity |
| ▭ Flatness | ◎ Concentricity |
| ∠ Angularity | ⊥ Perpendicularity |
| ⊕ Position | |

Production, end of line tests and life testing

Equator is manufactured in state of the art production facilities. The assembly process is carefully structured with quality control built in at every stage, including a comprehensive final test on every machine. Renishaw has also conducted extensive life testing to verify Equator's ability to run in full 24/7 operation for many years.



Production



End of line tests



Life testing

System elements

Equator Button Interface

The Equator Button Interface, with simple push-button controls for the shop-floor operators, removes the need for a mouse and keyboard.



TP20 probe kit

Equator 300 touch-trigger systems are supplied with the industry standard TP20 3-axis kinematic touch-trigger probe.



EQR-6 stylus changing rack

The Equator is supplied with an EQR-6 auto change rack with six positions, for the ability to change tools automatically while retaining full repeatability.



MCUlite-2 joystick

Easily moves the probe within the working volume. Functionality includes speed override and the ability to lock movement in x, y or z directions.



Stop button

The stop button is an alternative configuration to the joystick. It is easily attached to the front of the Equator.



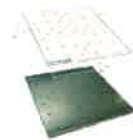
Cleaning kit

The Equator 300 cleaning kit helps ensure the clean and reliable running of an Equator system, and includes replacement dust filters and tested cleaning products.



Fixture plates

The Equator 300 and Equator 300 Extended Height gauging systems include either M8, M6 or 1/4"-20 plates based on customer requirements. Additional fixture plates for different parts, mastering or calibration can be ordered as accessories.



Fixture plate spacer

The fixture plate spacer raises the kinematic location of the fixture plate by 55 mm or 150 mm – ideal if gauging small parts or using short styli.



Modular fixture kits

The modular fixturing range for Equator offers specifically designed grid fixture plates with a repeatable and secure 3-point kinematic system for quick part loading and unloading.



Equator enclosure

The optional Equator enclosure provides a self-contained gauging station with an optimised footprint, configurable to individual customer requirements.

Enclosure modules available:

- top unit – with high level access door for cleaning;
- base unit – with levelling feet and controller shelf;
- joystick bracket;
- monitor bracket – height adjustable on left or right



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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

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