



SURFCOM NEX

ENGLISH

Surface Texture and Contour Integrated Measuring Instrument

SURFCOM NEX

Linear Technology

Newly Developed Dual Sensor Technology
Highest-Accuracy Integrated Measuring Instrument
In Its Class







ALL in the Document!

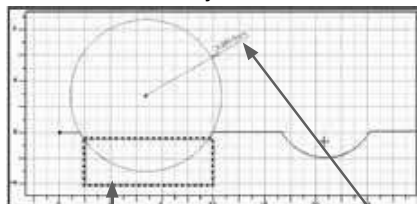
ACCTee

Contour Profile Measurement and Analysis system

Calculation Result Preview Function Patent pending

Calculation results can be displayed before output. As a calculation range is changed, a result can be previewed timely. Try & Error analysis is available as many times as necessary while viewing calculation results, which enhances operational efficiency.

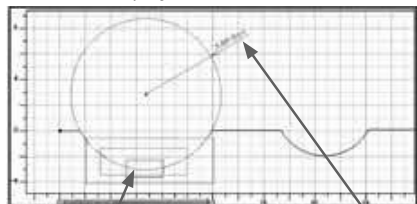
Execute element analysis



① Set analysis area

② Temporary dimension line is displayed

Preview is displayed

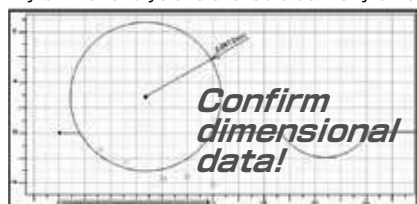


③ Execute re-calculation after changing the area

④ Re-calculation result is displayed

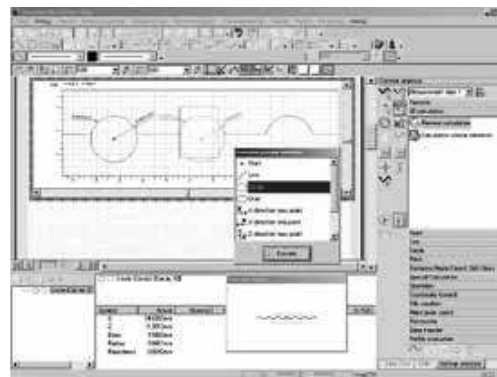
Try & Error

Try & Error analysis is available as many times as necessary



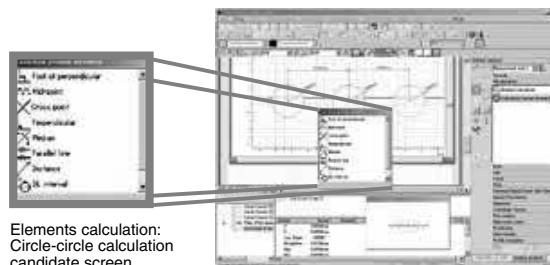
AI Function (automatic element judgment) Patented

The points, straight lines, and circles of the basic elements are automatically extracted by turning on the AI function and by selecting the specified area of the measurement data. This eliminates the specification of the menu and icon in each case, which significantly reduce the operation procedure.



Element Calculation with Icon Guidance

When making a new calculation from any of the multiple elements already created, all possible choices are displayed. Multiple inter element calculations can also be selected to suit your requirements.



Elements calculation:
Circle-circle calculation
candidate screen

Peak and Valley Function

There are two modes in this function: Auto mode, in which the minimum point is automatically detected; and Manual mode, in which you turn the knob of the adjustment platform or the tracing driver and changes in color and sound alert you when the level mark on the screen.



Manual mode detection start



Manual mode maximum point detection

Work Trace Function

As this function displays a manually traced profile, it is ideal for determining the measurement limit point when measuring to the edges of a wall or valley with reference to the trace start or end points. It is also useful in situations where a visual check is difficult, such as the inside of a hole. As the start point and the end point can be specified in the profile traced on the screen, the measurement will never fail. The screen changes to show the real-time status of the profile being measured when measurement starts.



Work trace measurement area setting



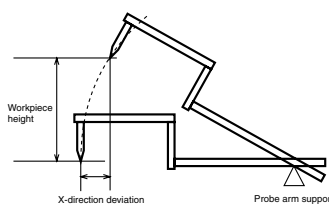
Real-time display

Contour Profile Measurement and Analysis system

Master Ball Calibration Function **Patented**

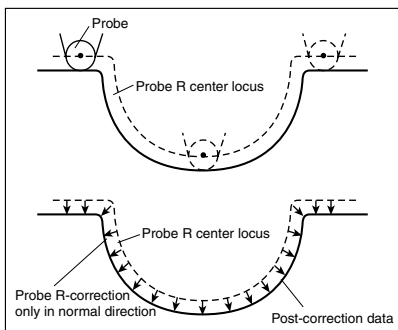
Circle correction calculation

Since the probe moves in a circular motion vertically around the support on the contour measuring instrument's probe arm, X-axis data also has errors because the probe tip position also moves in the X-axis direction. These error elements must be corrected in order to achieve high measuring accuracy. The ACCRETECH contour measuring system performs calibration using a master ball calibration unit which enables simple circle error as well as tip R error calibration.

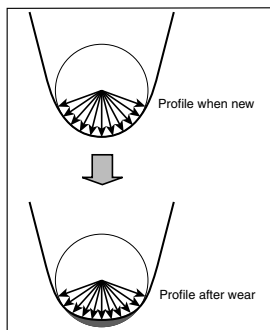


Tip R-correction

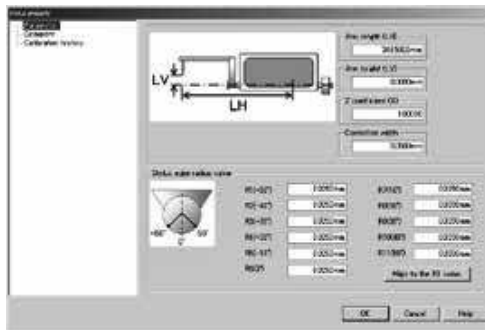
Although the contour measuring instrument's probe tip is R-shaped, tip R-correction is an indispensable factor for high measuring accuracy. Measurements are taken from the center of probe tip R and correction is performed by offsetting in the normal direction at 11 dividing points on the tip (Figure a). Though there is no problem with fixed quantity correction when probe tip R is near maximal generalized roundness zero, large errors occur in the correction amount due to tip R processing tolerance error or wear after long term use (Figure b). In order to make it possible to quickly detect errors, ACCRETECH calculates tip R for every 10° and generates correction values. More than simple R-correction, an original algorithm monitors the status of the probe tip. The operator is alerted by an error indicator whenever the correction value is outside preset limits.



(Figure a)



(Figure b)



Master ball correction screen

Stylus Calibration Wizard

Stylus calibration is performed by the master ball calibration unit. During masterball measurement and level difference measurement, tip R correction and arc error correction can be executed automatically or manually. The wizard takes you through all necessary steps in the following order: calibration condition (inputting reference value) setting, placement of the calibration unit, confirmation of measurement start point, and execution of calibration.



Calibration Alert

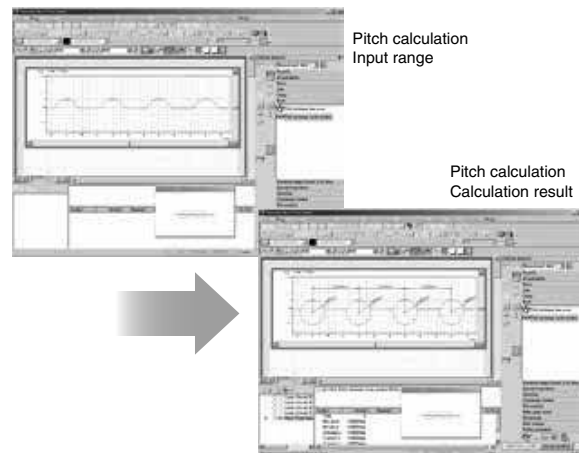
Calibration can be specified at any time. In addition to the stylus replacement time, a calibration alert based on measurement frequencies or elapsed time is displayed periodically, ensuring accurate, stable measurement on a continuous basis.

Calculation Point Manual Input

When analyzing the same profile repeatedly, it is possible to switch from manual operation to targeted analysis during CNC execution by setting the condition for recalculation, enabling detailed analysis.

Pitch Calculation Function

For the same multiple profiles composed of circles and straight lines, the pitch between line intersections or the pitch between circle centers can be automatically output just by specifying the arc with the mouse. Analysis efficiency can be improved by using the dimension line auto output function at the same time.



Profile Synthesis Function

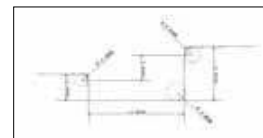
Even for a workpiece that requires measurement for multiple times because of the limitation of the stylus angle, the analysis can be made by combining the data into one using the profile synthesis function.



Profile



Analysis



Measurement

Edge Detection Measurement Patent pending

You can set the instrument to detect edges during measurement and automatically complete measurement. This is useful when you want to measure the far end of the edge.

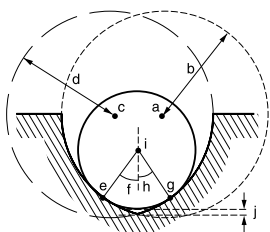
Import External Data

CAD IGES/DXF data and Calypso Curve measurement data* are read and evaluated with contour analysis.

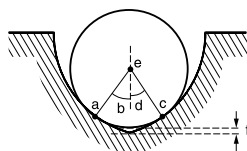
* Nominal value data output by Calypso optional Form data ASCII input/output program.

Ball Screw Calculation Function (Option)

Two calculation methods are supported: approximation for a round ball screw groove part, and a method that calculates the groove profile as-is. A lead angle projection function makes it possible to analyze and project data measured in the edge direction in groove and line directions.



Ball Circle Calculation



Ball Screw Probe Calculation

Best Fit Function (Option)

Best fit function calculates points that are symmetrical to the curve, providing measured data for a non-spherical surface and shifting the origin so these points are the vertices. The origin shift can be configured so X and Z rotation are performed independently, or in combination.

Non-spherical Surface Nominal Value Generation Function (Option)

This function generates non-spherical surface nominal values using a non-spherical surface calculation formula. After inputting the conic constant, circle radius, number of expression terms, non-spherical surface coefficient value, and other parameters as calculation expression variables, the software generates nominal value point data for a non-spherical surface profile.

Contour Profile Measurement and Analysis Program		
AI function		Automatic distinction of point, straight line, circle
		Automatic distinction of the combination executable of calculation between two elements (point-point, point-straight line, point-circle, point-oval, straight line-straight line, straight line-circle, straight line-oval, circle-circle, circle-oval, oval-oval)
Arithmetic processing	Point	Point, maximum point, foot of perpendicular, mid-point, intersection, contact point, point on straight line, point on circle, inflection point
	Straight line	Straight, perpendicular, median, contact, parallel, bisector, virtual
	Circle	Circle, partial circle, contact circle, virtual circle, oval
	Pitch	Pitch between line cross, pitch between circle centers
	Distance	Distance, path
	Angle	Intersection angle, complementary angle, supplementary angle
	Coordinate	X coordinate difference, Z coordinate difference, angular difference, radius vector difference
	Step difference	Average step, max. step, min. step
	Area	Area
	Arithmetic	Addition, subtraction, multiplication, division, power operation, surplus, absolute value, square root
	Statistics	Average, max. value, min. value, standard deviation, total sum
	Special calculation	Over-pin calculation
Coordinate control		Origin setting, parallel move, rotary move, each axis setting
Measurement support function		Re-measurement function, AI function, wizard functions, self-diagnosis function, CNC function, peak and valley function, work trace function, dimension line display function, profile synthesis function, collation function with form and nominal value, coordinate system automatic setting function
Calculation support function		Infinite cursor, cursor form vertical/horizontal switch, one point micro motion, setting of error band
Data file input and output		Input of point sequence, text, CSV, IGES, DXF data and Calypso data
Stylus calibration		Automatic and manual calibration by master ball calibration unit.
		Maximum 20 units of stylus calibration information can be registered (deadline for the calibration time can be specified)
Measure pitch		0.01 μm to 1000 μm
Number of data points		300,000 points max.
Magnification display	Vertical	Arbitrary value (unit: 0.01), automatic and 0.01 to 10,000,000 times
	Horizontal	Arbitrary value (unit: 0.01), automatic and 0.01 to 10,000,000 times