



LaserControl Series

FIELDS OF APPLICATION & TECHNOLOGY CYCLES

BLUM
focus on productivity

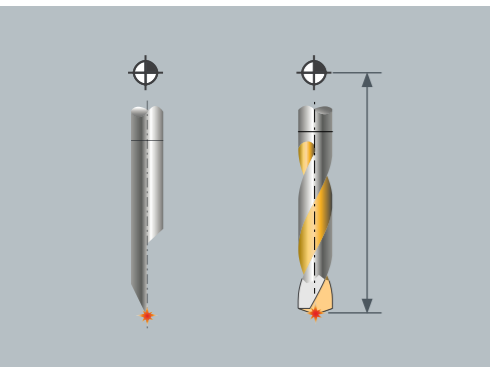


01 STANDARD FUNCTIONS

THE RIGHT SOLUTION FOR EACH TOOL

BLUM measuring cycles are subroutines of the machine control, by which over 90 % of the conventional cutting tools can be measured and monitored. The intelligent software is the result of decades of experience in the laser measuring technology for machine tools. In combination with the proven hardware, the cycles guarantee the highest reliability and precision, also under adverse working conditions.

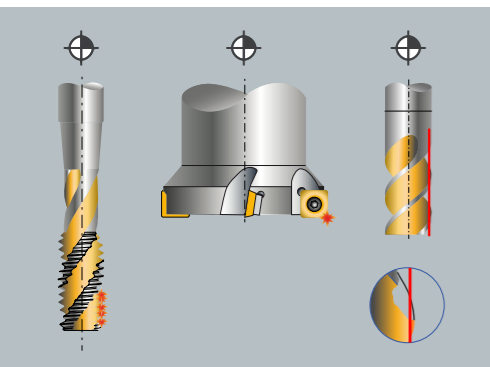
The measuring cycles are available for many conventional controls. Your local BLUM representative will gladly inform you about the range of features for your control.



TOOL BREAKAGE DETECTION

Non-contact breakage detection of centric tools

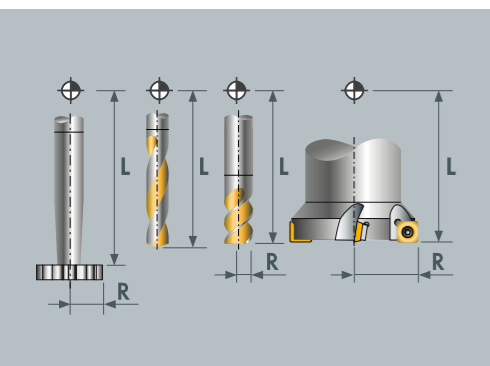
- Tools like drills, milling cutters, engraving tools, taps and reamers can be monitored under cutting rotation speed
- Option to issue an error message to the machine control or exchanging a sister tool
- Reliable monitoring, also of through coolant tools



SINGLE CUTTING EDGE MONITORING

Monitoring of tools for broken or missing cutting edges

- Each individual tool cutting edge is tested under cutting spindle speed (V6)
- Monitoring of straight edge and rounded edge cutting geometries
- Thread mill: Recognition of faulty threads without external control process



TOOL SETTING

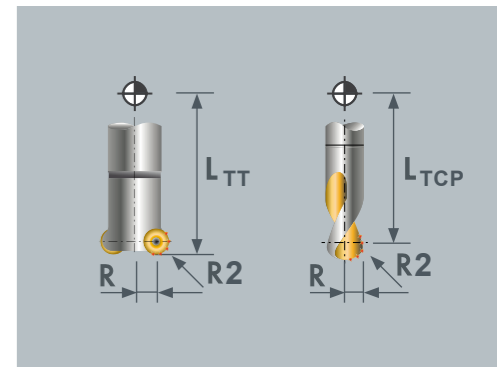
High precision tool setting in length and radius

- Tools are measured in the real clamping condition and under cutting spindle speed
- Compensation of spindle drift and detection of concentricity errors of the tool cutting edges
- Measurement of multi-staged tools and special tools

MEASUREMENT OF CIRCULAR CUTTING EDGE GEOMETRIES

Tool setting and monitoring in

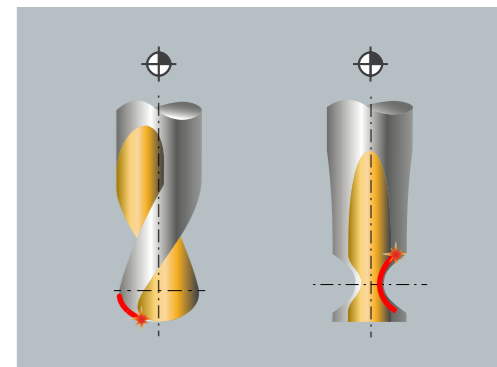
- Length (TT or TCP)
- Radius
- Cutting edge radius



TOOL FORM MONITORING

Tool monitoring of cracks or wear

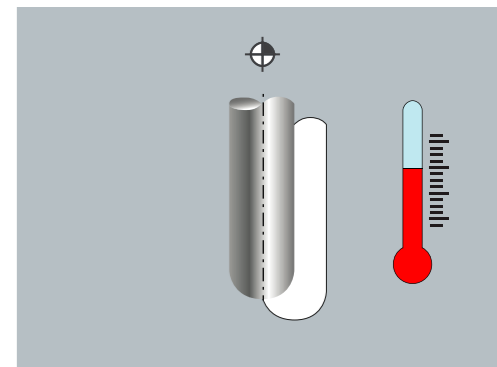
- Cutting edge monitoring on tools with straight or rounded cutting edge geometry
- Usage of the tools until a wear limit is reached



TEMPERATURE COMPENSATION

Compensation of thermal changes within the machine

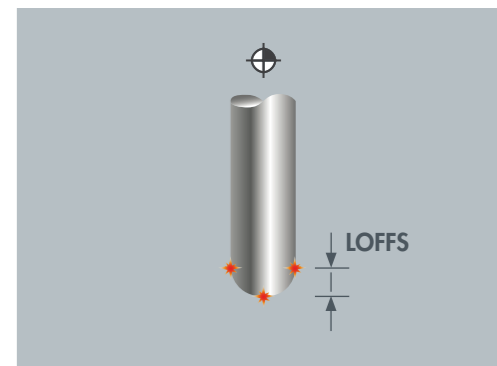
- Determination of the deviation by measuring the reference tool with known dimensions in the X/Y and Z-axis
- Calculation of the difference as additive zero offset or through position correction of the axes



CALIBRATION

Calibration cycle for referencing of the switching points of the laser measuring system in the machine coordinate system

- Measuring cycle for the standard calibration of the system
- The tool geometry data is calculated on the basis of the determined calibration data



02 EXTENDED FUNCTIONS

LEARN FROM THE EXPERTS



In the development of the high performance software, BLUM places great value on a simple and user-friendly operation. To benefit from the complete service portfolio of LaserControl, we recommend to use our world-wide training and range of services. Our specialists train you on the use of the equipment and assist in finding solutions for specific measuring tasks.

FAST TOOL BREAKAGE DETECTION

With optimised approach and retract strategies, the cycle time for a shaft breakage detection or single cutting edge monitoring can be reduced significantly. In case of extreme time demands, additional cycles are available, which can be customised.

OVERSIZED TOOL DIAMETERS

If the tool diameter is bigger than the measuring width of the laser system, the tool can still be measured collision-free up to certain limit values (see data sheet). Condition: The tool radius must be defined in the tool table.

TOOLS IN 90° ANGLE HEAD OR SWIVEL HEAD

Tools in angle head kinematics can be measured in length and radius, if the tool axis is positioned perpendicular to the laser beam and parallel to the machine axis.

Tools in swivel head kinematics (B-axis) can be measured in length and radius, also at an inclined tool axis, if the tool axis is tilted perpendicular to the laser beam and $\pm 45^\circ$ to the initial tool axis (e.g. Z-axis).

SPECIAL TOOLS

With the BLUM measuring cycles, a number of special tools such as grinding discs, moulding tools and saw blades can be measured and monitored.



Become a measureXpert!

measureXpert makes the use of your BLUM measuring system even simpler. This new app guides you step by step from the measuring task to the right cycle call for your CNC control. Download now!



Introducing
the new
BLUM App!

Available on the
App Store

ANDROID APP ON
Google play

03 TECHNOLOGY CYCLES

INTELLIGENT SOLUTIONS FOR EXTRAORDINARY TASKS

For measurement and monitoring tasks, which can not be covered by the standard cycles, BLUM offers special cycles which are adjusted to specific customer's requirements. The technology cycles are available for many conventional controls. Further information can be obtained from your local BLUM office.

3D ToolControl *

Detection of errors of complex tool geometries

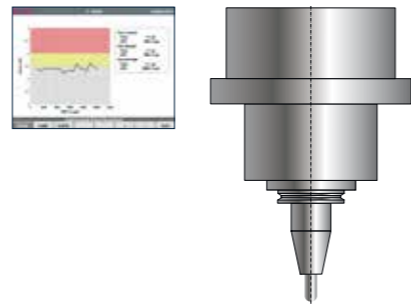
- Deviations from the ideal form via DIGILOG measurement
- Evaluation of the tool contour with correction of the tool table
- Visualisation of the form deviation on the control screen
- Technology cycle available with LC-VISION software



SpindleControl *

Monitoring the condition of machine tool spindles

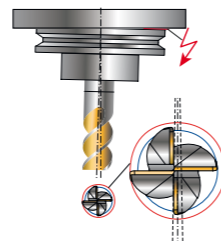
- DIGILOG concentricity monitoring under varying speeds
- Logging and statistical evaluation
- Preventive maintenance through the early detection of bearing damage
- Visualisation of the deviation on the control screen
- Technology cycle available with LC-VISION software



RunoutControl

Fast run-out monitoring for high production machining centres

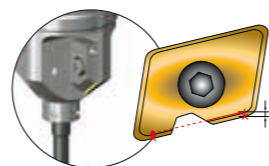
- Detection of errors caused by dirt, chips or wear-out of the tool holder/machine spindle
- Detection of poorly balanced tools
- Enables a preventive maintenance of the machine spindle
- Application: Monitoring of reamers, valve seat tools, etc.



MicroWearControl

Fast detection of micro cracks in a high production environment

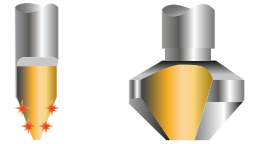
- Detection of abrasive wear and micro disruption with different tool-nose directions
- Process-safe operation in the serial production by integrated thermal compensation
- Application: Monitoring e.g. of valve seat tools



ChamferControl

Length, radius, and angle measurement on tools with bevelled edges

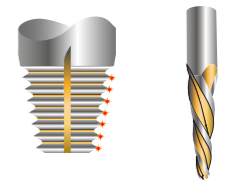
- Tool data will be defined by means of the theoretical intersection point of axial and radial measuring points
- Application: Centric/acentric tools as countersink, gravers, etc.



ConicalToolControl

Monitoring of conical cutting tools

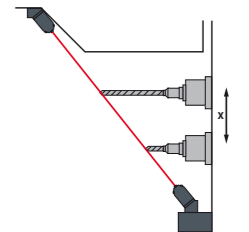
- Single cutting edge monitoring and wear monitoring
- Detection of micro disruption on conical arranged rows of teeth
- Application: Conical thread milling cutter/-former, chamfer cutter, end mills, etc.



DiagonalBreakageControl

Fast tool breakage detection at diagonal laser beam

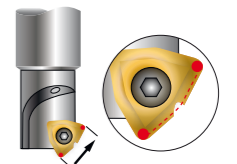
- Indirect control of the tool length is possible
- Application: Horizontal machining centre with length axis at the table



ProfileControl

Cutting edge monitoring on free definable tool geometry

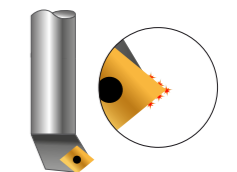
- Radial contour check at finishing tools, form and torus mills, etc.
- Application: Freeform-profile tools, tree cutter, etc.



ToolTipControl

Radial high point search at turning- and milling tools

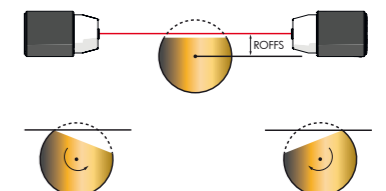
- Indirect control of the tool length is possible
- Wear compensation by updating the highest point in the tool memory
- Highest level of precision and short measuring time due to intelligent algorithm



OrientateTool

Alignment and orientation of tools

- Determination of the spindle indexing of single-edged tools parallel to the beam
- Adjustment of the correct cutting direction or angle position
- Application: Compensation of tool change errors at turning tools, ultrasonic cutters, slotting tools, etc.



* Measuring cycles based on DIGILOG Technology can only be used from software version V6 and higher.

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