

# ActiveEdge

Micron Accurate Cutting Edge  
Adjustments Using Wireless  
Technology

# Zenith

Rigibore's Total Automation  
Solution For Producing Micron  
Accurate Bores

Rigibore® The Most Accurately Adjustable Boring Tools in the World



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# ActiveEdge

## The ActiveEdge Tool



ActiveEdge Boring tools use **wireless technology** to remotely adjust up to **seven cutting edges** on a single tool with **micron accuracy**...

### Tool Summary

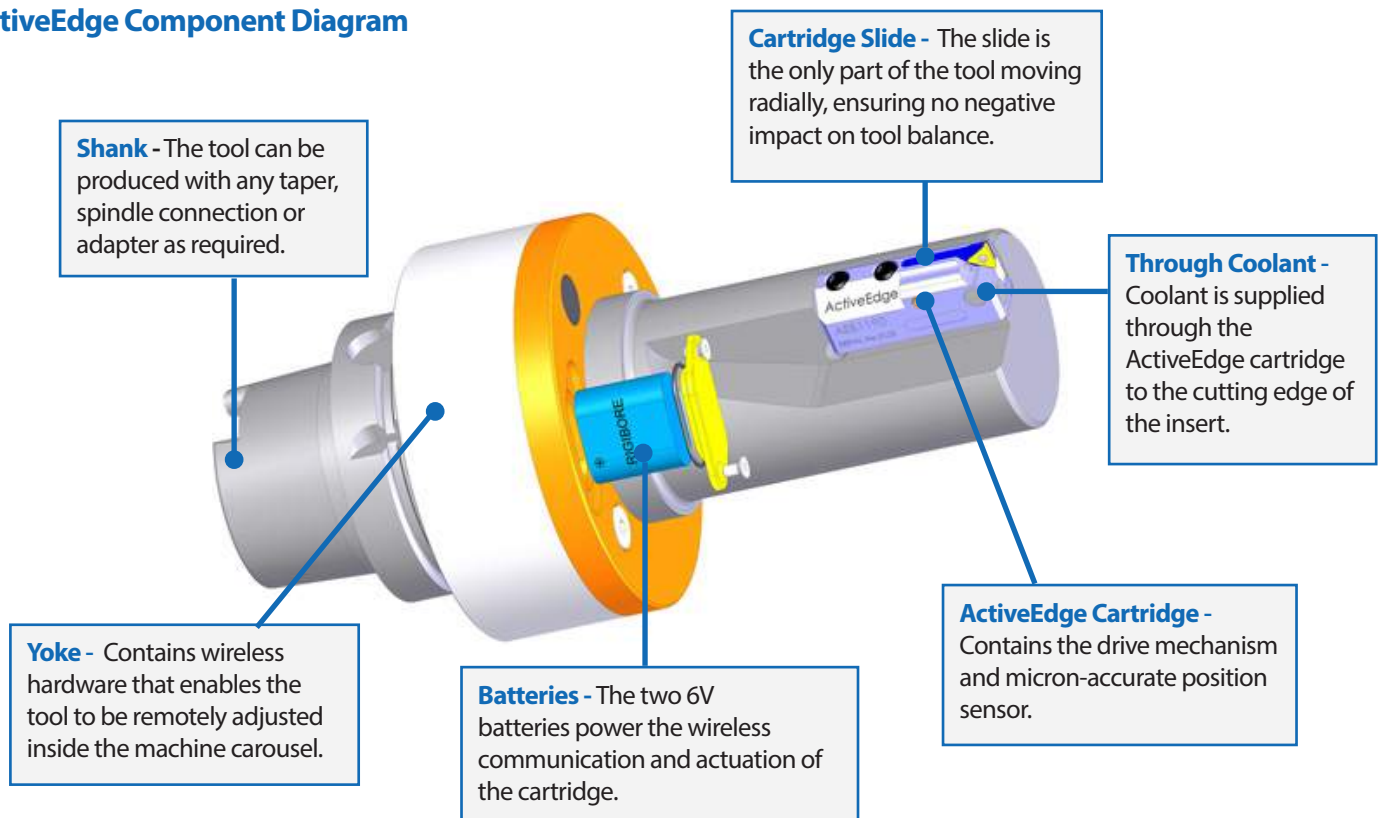
The ActiveEdge tool is a custom designed boring bar with the capability to adjust its cutting edges with micron accuracy using wireless transmission.

This cartridge-based solution allows up to **seven ActiveEdge cartridges** to be mounted on a **single tool**. ActiveEdge cartridges are user replaceable.

ActiveEdge tools enable multiple critical diameters to be machined simultaneously, significantly **reducing cycle time** and **increasing process efficiency**.



### ActiveEdge Component Diagram





# ActiveEdge

## ActiveEdge Cartridge Data

| Cartridge Image   | Part Number | Minimum Bore | "F" Dimension | Insert      | Approach Angle | Notes   |
|---|-------------|--------------|---------------|-------------|----------------|---|
|   |             | mm           | mm            | Part Number | °              | Additional information                                |
|    | AEC0490     | 25           | 17.9          | CP..04T104  | 90             |   |
|   | AEC0690     | 36           | 25            | CC..060204  | 90             |   |
|  | AEC1190     | 38           | 25            | TC..110204  | 90             |   |
|  | AEE0650     | 36           | 17            | CC..060204  | 50             | Through coolant from base of the cartridge pocket     |
|  | AEE0690     | 38           | 17            | CC..060204  | 90             | Through coolant from base of the cartridge pocket     |
|  | AEF09T390   | 38           | 25            | CC..09T304  | 90             | Thicker Insert for large boring applications          |
|  | AEF110390   | 38           | 25            | TC..110304  | 90             | Thicker Insert for large boring applications          |
|  | AEF0690     | 38           | 25            | CC..060204  | 90             | Integral coarse adjust with replaceable insert holder |
|  | AEF1190     | 38           | 25            | TC..110204  | 90             | Integral coarse adjust with replaceable insert holder |

## ActiveEdge Options Overview

Rigibore's ActiveEdge tooling gives precision performance, adjusting multiple cutting edges with micron accuracy using wireless technology.

The ActiveEdge tool allows for a faster, simpler and more accurate boring operation.

**ActiveEdge tooling can be used in the following ways:**



### Option 1 - Remote Controlled (Manual) Adjustment

Precise cutting edge changes are made using the ActiveEdge Remote Control handset. Entering the tool's unique ID and required diameter change into the Remote Control initiates a compensation of the ActiveEdge cartridge.

This option allows remote adjustments to be made to the tool's cutting edges without removal from the machine, **reducing cycle time** and **maximising spindle efficiency without risking operator safety**.

### Option 2 - Rigibore's Zenith Solution

The Zenith solution is Rigibore's **total automation solution** for producing micron accurate bores.

Zenith integrates in-process measurement with ActiveEdge boring tools to enable a machine controller to automatically compensate for insert wear, temperature variation and material inconsistency **without manual intervention** and **without stopping the manufacturing process**.

This option provides a speedy and continuous **Return On Investment (ROI)**, reducing machining downtime and eliminating scrap.

| Benefit                             | Option 1- Remote Adjustment | Option 2- Rigibore's Zenith Solution |
|-------------------------------------|-----------------------------|--------------------------------------|
| Micron Accuracy In Adjustment       | ✓                           | ✓                                    |
| Reduction In Skill Requirements     | ✓                           | ✓                                    |
| Health and Safety Improvements      | ✓                           | ✓                                    |
| Adjustments In The Machine Carousel | ✓                           | ✓                                    |
| Reduction In Scrap and Re-work      | ✓                           | ✓                                    |
| Improve Process Control (Cpk)       | ✗                           | ✓                                    |
| Removed Operator Intervention       | ✗                           | ✓                                    |
| Automatic Cutting Edge Adjustments  | ✗                           | ✓                                    |
| Lights Out Manufacturing Capability | ✗                           | ✓                                    |

# ActiveEdge

## Remote Controlled Adjustment



**Precision manufacturing at your fingertips** - Unrivalled simplicity and accuracy in adjustment....

Rigibore's pioneering ActiveEdge boring tools use wireless technology to **remotely adjust up to seven cutting edges** on a single tool with micron accuracy.

Entering the unique tool ID and required adjustment into the ActiveEdge Remote Control initiates a cutting edge compensation and each ActiveEdge Cartridge is independently adjustable.

Precision tolerances are met without removal from the machining envelope, **reducing cycle time and improving operator safety.**



### Remote Adjustment With ActiveEdge

1



2



3



### Adjustment Process

- 1 - Enter adjustment value in microns into the Remote Control.
- 2 - Adjustment data transmitted to the tool's cutting edge.
- 3 - ActiveEdge cartridge adjusts to the required diameter.

### Key Benefits



#### Micron Accuracy

Calibrated position sensing of the cutting edge ensures perfect tool sizing.

#### Health and Safety



Tool adjustments can be made without the operator entering the machine.



#### Reduce Reliance On Skilled Operators

Precision adjustments can be made simply.



#### Minimise Cycle Time

Micron accurate adjustments are made without having to stop the manufacturing process.

# Zenith

## Rigibore's Zenith Solution



Unlock unparalleled savings by reducing labour costs, removing scrap and supporting 24 hour production through lights-out manufacturing...

### What is Zenith?

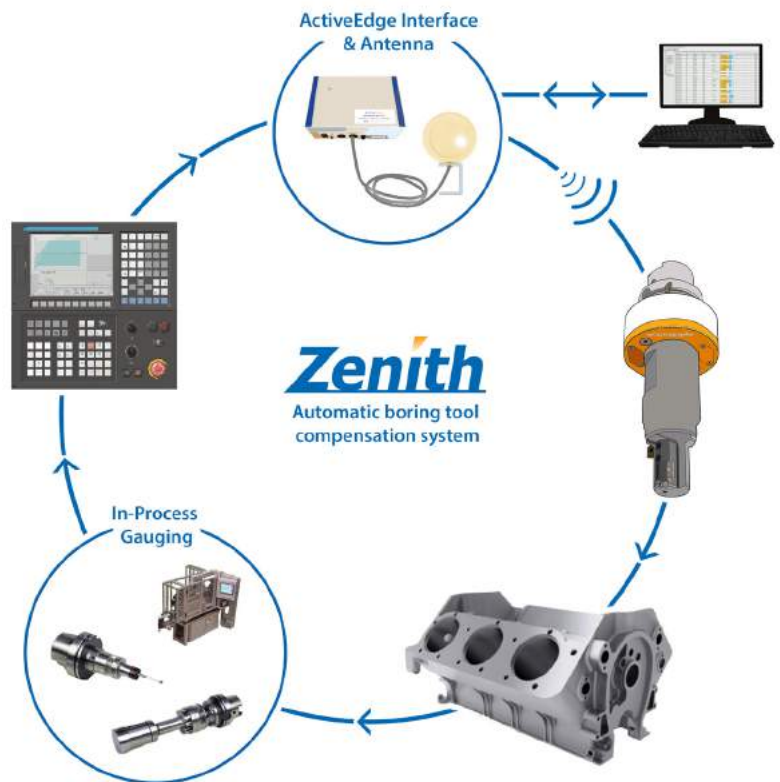
**Zenith** is Rigibore's **total automation solution** for producing micron-accurate bores.

Modern CNC machines, regardless of their sophistication, cannot automatically compensate a boring tool's cutting edges. Rigibore's ActiveEdge tooling in combination with in-process measurement has overcome this problem.

The Zenith system integrates ActiveEdge tools with in-process gauging to enable a machine controller to automatically compensate for **insert wear, temperature change and material inconsistency**.

### Closed-Loop Manufacturing

- 1. Initial Bore** — A hole is bored using the ActiveEdge tool.
- 2. Measurement** — The bore is measured using in-process gauging and the measured diameter is placed in a variable in the CNC control.
- 3. Calculation** — This measured diameter is assessed against user defined limits. If necessary a compensation value is calculated.
- 4. Compensation** — If compensation is needed, an automatic compensation request is sent directly to the ActiveEdge tool, which adjusts to ensure the next machined bore achieves nominal size.
- 5. Process Monitoring** — *ActiveNet* PC software captures a chronological record of all tool operations and provides easy data retrieval for analysis and optimisation.



Whether **high-value** or **high-volume** production is your objective, Rigibore's Zenith solution creates and sustains an accurate and repeatable process to revolutionise your boring operations.

ActiveEdge

# Zenith

## Rigibore's Zenith Solution



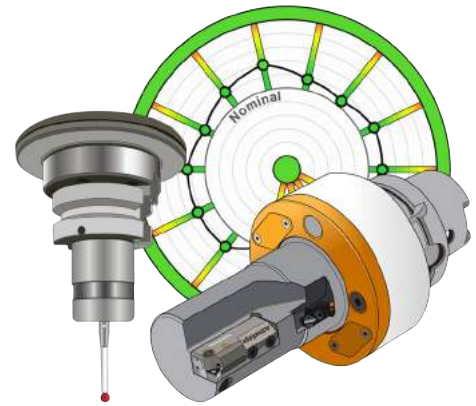
Unlock unparalleled savings by reducing labour costs, removing scrap and supporting 24 hour production through lights-out manufacturing...

### The Importance Of Accurate Bore Measurements

ActiveEdge tool sizing can only produce micron-accurate bores if micron accurate measurements are provided by in-process gauging.

In order to maximise benefit from the Zenith solution, it is essential that the measurement process is accurate and repeatable.

Rigibore's partnership with metrology experts **Metrology Software Products (MSP)**, a Renishaw associated company guarantees precision probing data for the production of perfect bores in an automated and traceable process.



**msp** metrology software products ltd

a **RENISHAW** associate company

### Key Benefits - All the benefits from Remote Controlled Adjustment, plus :-



#### Lights-Out Manufacturing

The Zenith solution supports 24-hour production through lights-out manufacturing, accelerating output.



#### Remove Operator Intervention

Removing operator intervention reduces cost whilst ensuring precision tolerances are met on boring operations.



#### Automatic Cutting Edge Adjustment

Micron accurate adjustments are triggered automatically from measurement data.



#### Eliminating Scrap and Re-Work

This automated solution delivers supreme consistency and repeatability.



# Zenith

## Return On Investment



Zenith's precision performance and repeatability provides tangible and continued savings, **reducing machine downtime** and **eliminating scrap...**

### Eliminate Scrap

Zenith can provide a speedy and continuous **Return On Investment (ROI)**, far outweighing the cost of the initial outlay, especially on high value components.

This automated solution ensures micron-accurate manufacturing, **removing the risk of scrap** and **maximising production**.

### Adjustment In The Carousel

This automated solution adjusts the tool anywhere in the machine envelope, minimising the time which the tool spends idle and maximising spindle utilisation.

| Manual Adjustment  | Automatic Adjustment (Zenith)  |
|--|--|
| <p>✗ Stopped for several minutes while operators make adjustments.</p>                             | <p>✓ Adjustment in a matter of seconds, minimal spindle downtime.</p>                  |
| <p>✗ If operators are occupied with other tasks, the manufacturing operation halts altogether.</p> | <p>✓ No operator intervention, staff are available for other shopfloor activities.</p> |
| <p>✗ Relies on skilled operators to make accurate adjustments.</p>                                 | <p>✓ Reliable, micron-accuracy in adjustment.</p>                                      |
| <p>✗ Difficulty in adjusting in the machine spindle, risk of errors and oversized bores.</p>       | <p>✓ A streamlined and efficient process, reducing cycle time significantly.</p>       |

### Increase Productivity

Automating the bore sizing process facilitates accelerated productivity without increasing variable costs associated with production.

- Lights-out manufacturing allows production to run 24/7.
- Rigibore macros set an upper and lower warning limit on bore sizes to ensure the bore specification is not exceeded.
- Automation eliminates reliance on a skilled operator being present to carry out precise manual adjustments.

