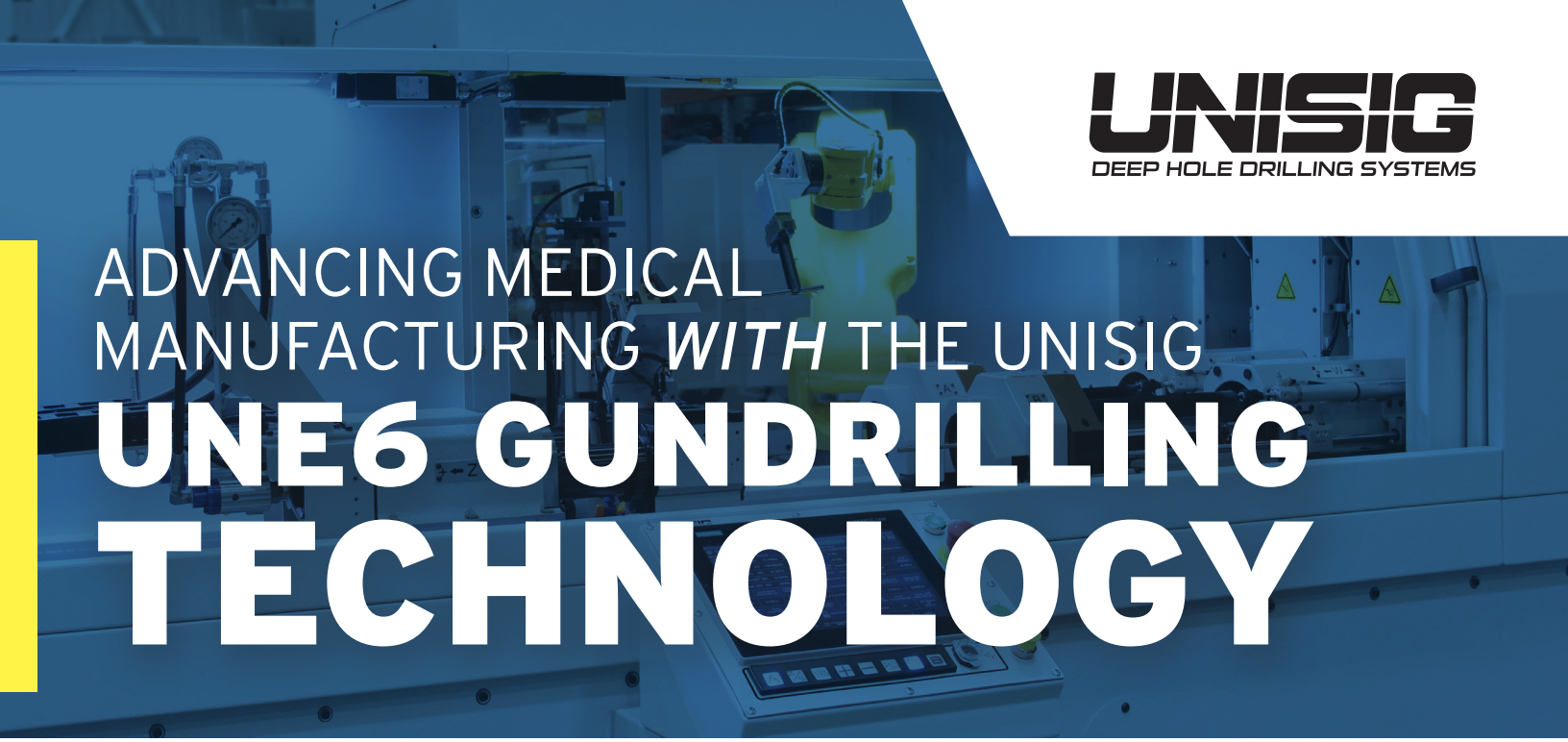
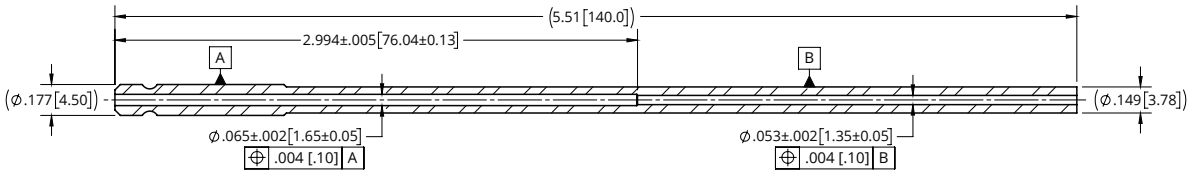


UNISIG
DEEP HOLE DRILLING SYSTEMS

# ADVANCING MEDICAL MANUFACTURING *WITH* THE UNISIG UNE6 GUNDRILLING TECHNOLOGY

## Background

In medical instrument manufacturing, producing components with uncompromising accuracy, especially at small diameters, is essential. These parts often require hole depth-to-diameter ratios of up to 100:1 and involve thin walls or non-uniform sections with extreme precision requirements. This complexity often leads companies to outsource the work, increasing costs and reducing control. To stay competitive, many are turning to deep hole drilling machines with embedded robots to support advanced automation. Implementing an in-house gundrilling system offers a strategic way to boost efficiency, enhance quality control, and lower long-term production costs.




## Challenges

Medical tools and similar surgical components with extremely small diameters are on the edge of what is possible with small diameter deep hole drilling. An effective gundrilling machine with built-in automation must address several key challenges:

- Achieving precision drilling at diameters as small as 0.8 mm (0.03 in)
- Depth-to-diameter ratios from 20:1 to more than 100:1
- Hole straightness with concentricity to external diameter features
- Thin-walled workpieces and difficult materials
- Complex features such as stepped holes
- Reducing operator dependency while maintaining consistency and part quality

# THE UNISIG UNE6

Manufacturers of surgical instruments can rely on UNISIG's decades of experience collaborating to solve complex problems and providing the confidence to use their newly installed system to its fullest capabilities.

After working with UNISIG's engineering and technical teams, a uniquely configured UNE6 gundrilling machine is typically recommended. The UNE6 is compact, accurate, and intuitive to operate—designed for parts requiring holes up to 6 mm (0.25 in) in diameter using the counter-rotating gundrilling process.

To maintain optimal drill speeds and feeds, the machine features a high-speed integral motor spindle reaching 24,000 rpm, providing ample power while reducing vibrations. A high-pressure coolant system manages the 3,000-psi (200 bar) needed for an extremely small tool. Application-specific supports and fixtures stabilize short drills and clamp on the part's OD for high repeatability.

The UNE6 is designed for integration with embedded robotics, enabling automatic gundrilling of complex, extremely precise surgical instruments. Its process reliability opens the door to fully automated, lights-out production of even the most complex components. Robotic automation services both spindles, and transfers workpieces between them. Interchangeable tray systems accommodate different workpiece types, including irregular OD Swiss-turned blanks.

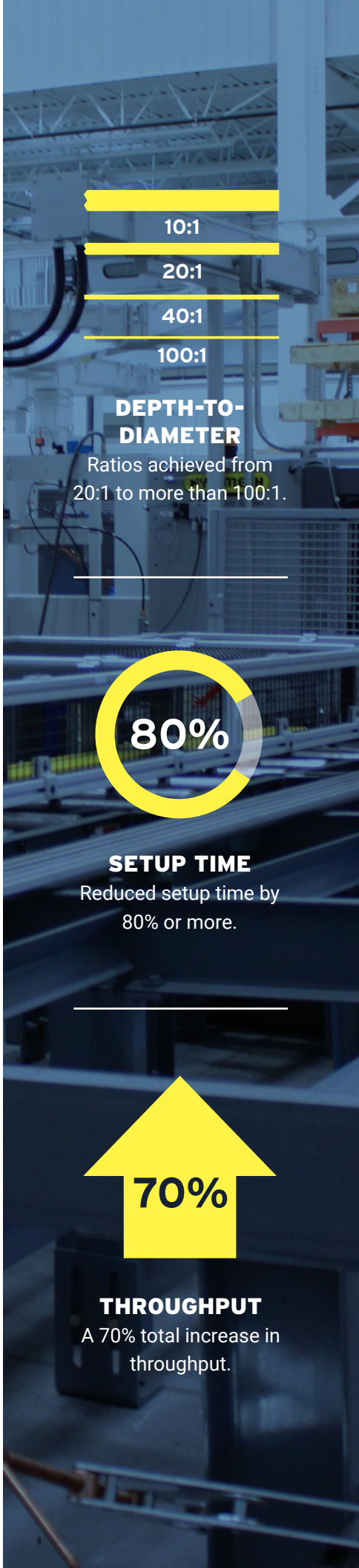
A new operating system streamlines setup across dozens of part handling combinations, reducing setup time by 80% or more. The system improves communication between the HMI and robotic controller, enabling centralized data storage where both gundrilling and part handling programs are stored together for easy recall. Rear-mounted automation allows unobstructed setup and operation from the front of the machine.

## Results

The transition to UNISIG's UNE6 automated gundrilling system has delivered substantial improvements across the manufacturing process. The machine consistently holds the required tolerances and provides the precise control needed for high-accuracy part manufacturing. Cycle times are cut in half, significantly reducing production costs while offering a stable, repeatable solution.

***"IT'S SO EASY FOR OUR OPERATORS TO USE," ONE CUSTOMER NOTED, "THE MACHINE BASICALLY RUNS ITSELF."***

The integration of automation has also driven major gains in labor utilization, with lights-out production generating parts daily without operator intervention. Beyond the technology, UNISIG is committed to customer support and continuous improvement, which has strengthened the partnership. Their receptiveness to customer-driven enhancements and relentless focus on market leadership help manufacturers remain competitive and confident in their investment.

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