



## LASER SWISS

The Benefits of CNC Laser Cutting  
with Swiss Machining.

- Fully Integrated Laser Cutting System
- Full Swiss Machining Capability
- Through-Part Coolant
- Automatic Part Handling Options
- Rock Solid Fanuc 32I-B Control

**NEW  
ARRIVAL!**



**LASERAGE**

- New Capability: CNC Machining Laser-Swiss
- Installing in Waukegan, IL facility
- When available: Q2 2022

**CRITICAL CAPABILITIES:**

- Fully Integrated Laser cutting System
- Full Swiss Machining Capability
- Maximum machine thru diameter – 20 mm
- Tool Positions – 38
- Laser – 300 w Fiber
- Focal Length – 100 mm
- 6 Ft tube/bar feeder system (1mm - 20 mm)
- Main and Back Spindle synchronization capable
- Multiple assist gas capable
- Laser welding as well as cutting

This new capability at Laserage, a brand of Paragon Medical, will be available for laser cutting and CNC machining precision tube and rod components from 1mm – 20 mm in diameter. Lengths can vary because the back spindle can bring material out of the main

spindle then machining can continue. Practically speaking we are targeting 24 inches maximum. Unique CNC machined features will require purchase of dedicated tooling. ID work as well as OD work will be capable of being done on both ends of the tube/rod component.



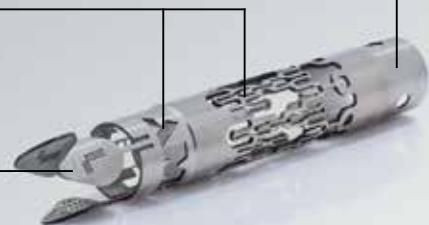
Brass rod precision CNC machined.

**CAPABILITIES:**

- 1) ID Expansion / Increase
- 2) Laser Cut Pattern
- 3) OD Reduction
- 4) CNC drilling

**FOR THE STAINLESS TUBE SAMPLE THE OPERATIONS WERE:**

Laser cut the entire pattern  
- peddles through holes



Decrease the OD  
on the peddle end

Engage the secondary spindle

Engage the secondary spindle

Laser cut the entire pattern  
- peddles through holes



Decrease the OD  
on the hole end

Bore larger ID on the hole end

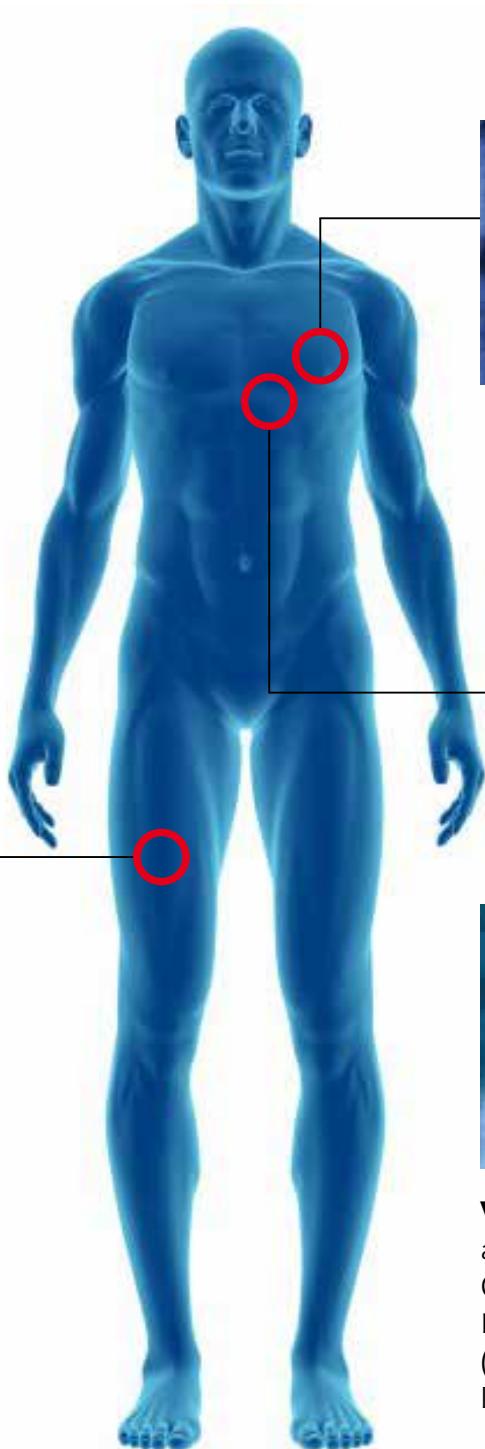
*Stainless tubular implant with ID increase & OD reduction. Laser cut precision patterned with cross hole drilling.*

**MEDICAL MARKETS:**

This equipment can be utilized for unlimited medical fields. However, Laserage is targeting four (4) medical markets:



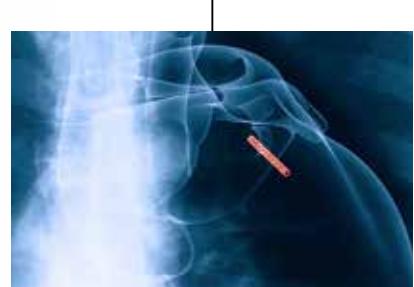
**Surgical & Medical Instruments** including robotic surgical instruments. Intuitive Surgical, Stryker, J&J (Ethicon), Siemens (Corindus) and Medtronic (Mazor, Covidien) are leaders.



**Structural Heart** including delivery systems for heart valve replacement and repair. Edwards Lifesciences, Medtronic, Boston Scientific are our leaders.



**Orthopedics** market including orthopedic surgical tools and implants: J&J (Depuy Synthes), Avalsion, Alphatec, Globus Medical, Smith & Nephew, Stryker, Zimmer Biomet, Medtronic, and Wright Medical are market leaders.



**Vascular** market including atherectomy catheters. Straub, Cardinal Health (Cordis), Medtronic, BD, Boston Scientific, Abbott (vascular) and Terumo are industry leaders.

**IMAGINE THE POSSIBILITIES!**

The ability to combine 6-axis Swiss machining and laser cutting in one machine eliminates many manufacturing constraints. It frees your design considerations. You'll have up to 36 tools, plus the laser. Use whatever mix of methods produces the features needed at the fastest times.

**REDUCE MANPOWER MEANS REDUCTION OF COST**

The Laser Swiss comes with an automatic bar feeder modified to deliver through-part coolant for the kinds of thin-walled tubing ideal for medical components. You can also automate the handling of finished parts as necessary. We even have a database of proven feeds, speeds, power setting, etc. for commonly used materials to speed time to market.



*Creating these part features requires threading, chamfering, and laser cutting, all of which were accomplished in under fifteen seconds.*

**FREE FLOOR SPACE MEANS SMART INVESTMENTS AND BETTER VALUE PROPOSITION**

Multitasking capability allows reduction of single purpose machines. Plus the LaserSwiss itself occupies only 31 sq ft (excluding bar feeder and gas tank).

It all adds up to higher quality product with better manufacturing value. Provide a design for a free manufacturing estimate.

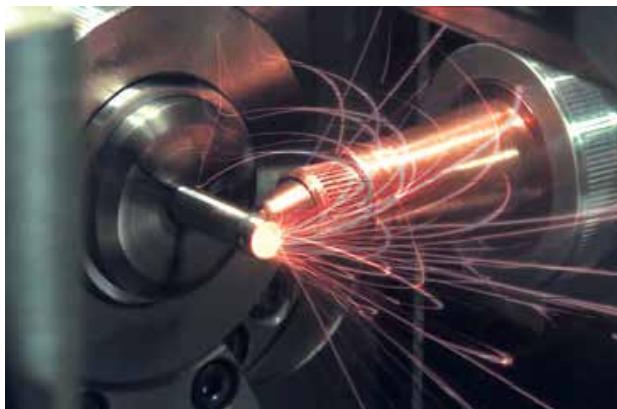


*Laser cut flex patterns with other attachment forms for laser welded assemblies.*

## WHAT DOES COMBINING LASER CUTTING & SWISS MACHINING ON ONE MACHINE DO FOR OUR CUSTOMERS?

### WORLD'S FIRST AND A DREAM COME TRUE

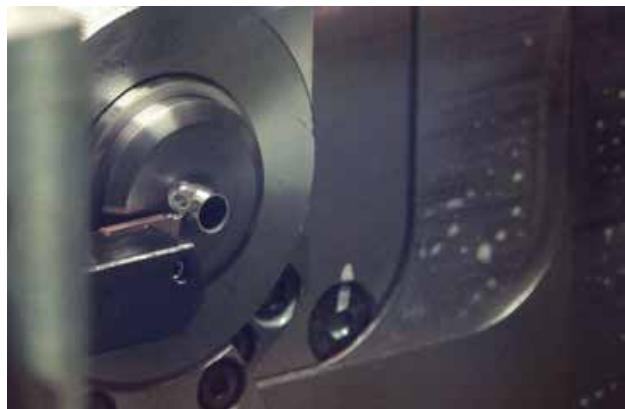
CNC Swiss machining is astonishingly productive. But the delicacy of some parts makes it difficult to apply traditional metal cutting techniques. And some features simply can't be cut effectively with a mill or a turning tool, no matter how small. For those challenges, you'd typically move the part to a laser cutting machine, or you'd live with inferior cuts, poor cycle times, and lots of post-processing. No more. Paragon Medical has combined Swiss turning machine with a complete precision laser cutting system. We've dreamt of this possibility for years and now it's here.



Combine CNC Laser Cutting and...

### TRIPLE YOUR THROUGHPUT— OR MORE

We've seen cases in which the LaserSwiss is FIVE times more productive than the current approach. Naturally every situation is different, but productivity by eliminating multiple setups and deburring operations is our goal.



Traditional Swiss Machining in Seconds

**MACHINE SPECIFICATIONS**

	ITEMS	Installed Capability
Laser System	Model	Fiber laser
	Power Setting Range	30 - 300 W
	Wavelength	1,070 nm
	Frequency Range	2 - 20 kHz
	Pulse Width	0-CW
	Focal Length	100 mm with 10 mm servo controlled focus adjustment
	Interface	IMG engineered interface enables "on the fly" adjustment of power, pulse width, frequency, lens focus, and nozzle standoff from the CNC part program
	Maximum Cutting Speed	20 IPS (500 mm/sec)
Conventional Machining	Maximum Wall Thickness for Laser Cutting	0.06" (1.5 mm)
	Maximum Machining Diameter	0.787" (20 mm)
	Maximum Machining Length	8.26" (210 mm) per chucking
	Main Spindle Speed	200 - 10,000 RPM
	Rotary Tool Spindle Speed	200 - 8,000 RPM
	Back Spindle Max. Diameter	0.787" (20 mm)
	Back Spindle Front Ejection Maximum Length	3.2" (80 mm)
	Back Spindle Speed	200 - 10,000 RPM
	Rapid Traverse Rate: X2, Z1, Z2	1,260 IPM (32 m/min)
	Rapid Traverse Rate: X1, Y1	945 IPM (24 m/min)
Motors	Rapid Traverse Rate: Y2	590 IPM (15 m/min)
	Center Height	39.37" (1,000 mm)
	Main Spindle	5 HP (2.3 / 3.7 kW)
	Back Spindle	3 HP (1.5 / 2.3 kW)
	Rotary Tool	1.0 HP (0.7 kW)
	Coolant Pump	0.5 HP (0.3 kW)

**MACHINE SPECIFICATIONS**

	ITEMS	Installed Capability
Mountable Tools	Total Tools (Excluding Laser)	36
	Gang Tool Post (Turning)	5
	Gang Tool Post (Live)	5
	Front Rotary Tools	0 to 4
	Front Drills, Standard	5
	Front Drills, Deep Hole	2 (100 mm)
	Back Tools	8 to 17 (back 8 + front drill 5 + double face 4)
Tooling Size	Turning Size	1/2" Sq
	Main Spindle Collet Holders	22 mm
	Sub Spindle Collet Holders	20 mm
Collets / Bushings	Main Spindle Collet	TF 25
	Back Spindle Collet	TF 25
	Electric Guide Bushing	TD 26
	Cage Type Guide Bushing	TD 25
	Rotary Tool Collet	ER 16 / ER 11
	Chuck Sleeve Collet	ER 16 / ER 11
Bar Feeder	FMB-2-20 - 0.8-20	FMB Turbo 0.8-20 12' bar feeder with through-part coolant interface. Capacity 0.8 to 20 mm (0.030 to 0.787")
General	Control	FANUC 32i-B
	Mist Extractor	3Nine Clara model, 700 CFM with HEPA filter
	Coolant System	MP Systems 1,000 PSI pump with through-part interface to the bar feeder. Includes M Function control
	Input Power	6 kVA
	Weight	7,260 lbs (3,290 kg)
	Footprint: Base Machine	53 x 83" (135 x 221 cm)
	Footprint: Assist Gas Tank (not required with central system)	30" diameter (76 cm)
	Footprint: Bar Feeder	20 x 209" (51 x 531 cm)



## PARAGON MEDICAL AT A GLANCE

Paragon Medical is a market leader in delivering optimal solutions for the medical device industry. With three expert brands Avicenna, Technical Services for Electronics, and Laserage, Paragon Medical has been serving the medical device industry for more than 40 years.

Each brand is a leader in its respective field of expertise, and is well established in delivering state-of-the-art technology solutions with experience in: product design and development, precision engineering, pre-production to commercialized manufacturing, supply chain management, and quality assurance for cable assemblies and custom interconnects, laser processed polymers, catheter assemblies and sub-components, laser processed metals including NiTi and metal post processing.

Paragon Medical is a business of AMETEK Inc., a leading global provider of industrial technology solutions serving a diverse set of attractive niche markets.



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