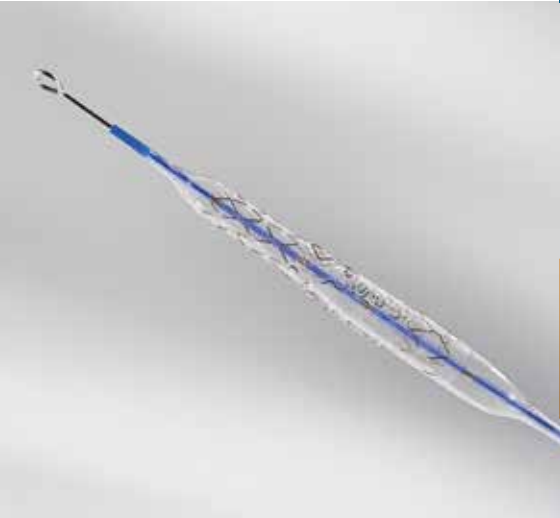




LASER ENGINEERING REFERENCE GUIDE



TE CONNECTIVITY (TE) EXPANDED ITS LASER CAPABILITIES THROUGH THE ACQUISITION OF LSA LASER. NOW JOINED TOGETHER, WE PROVIDE PRODUCT DEVELOPMENT AND MANUFACTURING SOLUTIONS TO OUR CUSTOMERS, OEMS AND OTHER CONTRACTORS IN THE MEDICAL DEVICE INDUSTRY. WE DEVELOP TECHNOLOGY AND APPLICATIONS THAT HAVE A BARRIER TO ENTRY BECAUSE OF COMPLEXITY OR COST. WE USE THESE TECHNOLOGIES TO SUPPORT OUR CUSTOMERS THROUGHOUT THEIR DESIGN, DEVELOPMENT AND PRODUCTION CYCLE.

TE LASER CAPABILITIES

Stent



Laser Ablated Shaft



Medical Capabilities

- Guidewires
- Defibrillation Leads
- Surgical Instruments
- Tubular Devices
- Laparoscopic Instruments
- Catheter Subassemblies
- Catheter Porting
- Pacing Leads
- Endodontics
- Ophthalmology
- Feed-Throughs
- Stents
- Coil Termination
- Guide Catheters
- Drug Delivery Ports
- Fabric Cutting
- Many Others

Micro Welding



Targeted Laser Ablation



Material Capabilities

Metals

- Stainless Steels
- Platinum
- Platinum Alloys
- Nitinol
- Aluminum
- Copper
- Nickel
- Many others

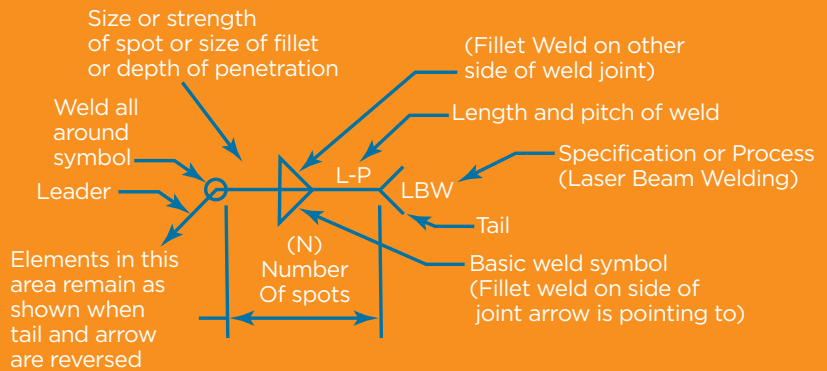
Plastics

- Silicone
- PTFE
- ETFE
- Polyurethane
- PVAX
- PEBA
- PET
- PI
- Many others

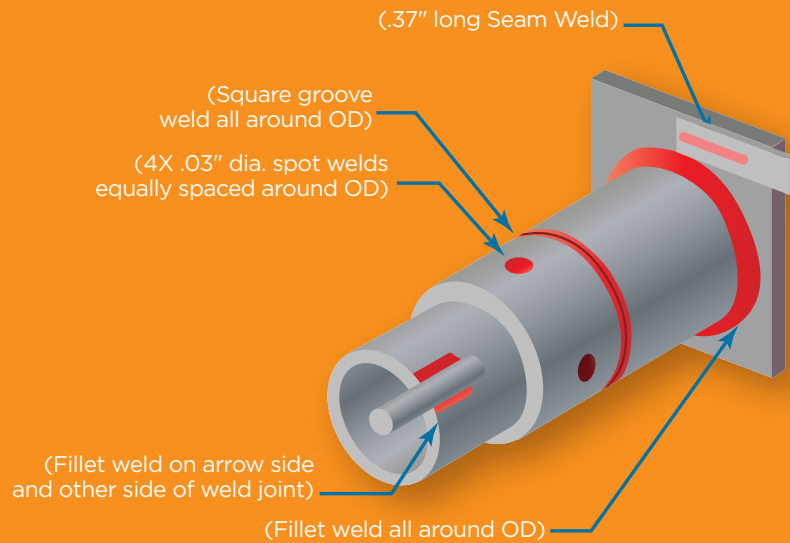


COMMON WELD SYMBOLS PER ANSI/AWS

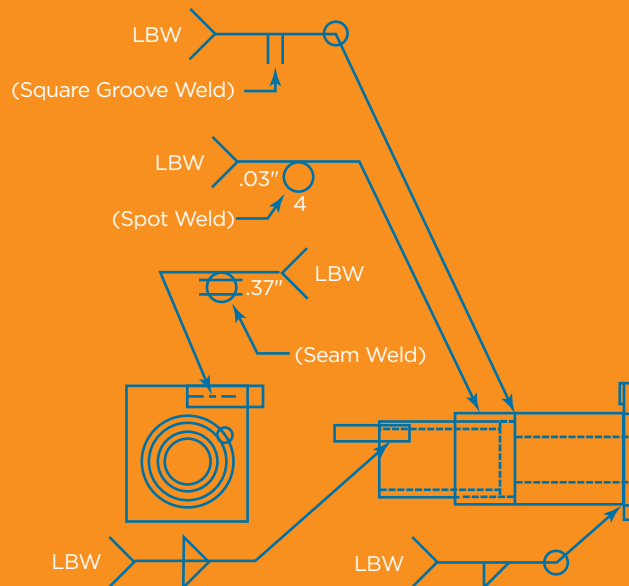
Weld Symbol Configuration



Part as Welded



Part as Drawn



TE IS DEDICATED TO MAKING YOUR PROGRAMS SUCCESSFUL

Our engineering, manufacturing, and sales personnel are prepared with a variety of innovative solutions to meet your next challenge. We look forward to discussing and helping you to develop your applications.

Laser Welding

Good manufacturing practices and tight process controls are applied to all of our customers' applications. No filler materials are added during the laser process which minimizes biocompatibility issues for medical submissions.

- Minimal heat-affected zone around weld site
- Fast, repeatable processes for consistent quality
- Contact free prevents stress on materials
- Dissimilar metals can be welded together
- Laser beam can be positioned into tight geometry

Laser Weld



Laser Weld



Laser Cutting

Our precision cutting of materials such as plastic or metal tubing is one of our strengths. Our knowledgeable sales personnel are available to discuss your next cutting application.

- Tolerances within 0.0005" or less
- Kerf width as small as 0.0007"
- Process small wall thicknesses as thin as 0.002" up to 0.030"
- Process diameter tubing (i.e. 0.012" x 0.009")
- Fast, repeatable processes
- Processes generally cost less than machining or EDM methods

Laser Cut Pattern Tube



Laser Cut



Laser Cutting/Ablation (Polymers)

- Requires little or no secondary cleaning processes
- Tolerances within 0.001" or less
- Drill holes as small as 0.002" or less
- OD reduction on polymer components and assemblies

Silicone Laser Cut



Plastic Laser Cut



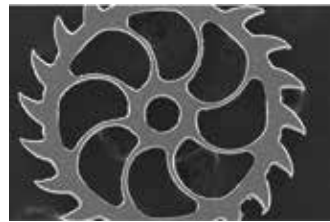
ASSEMBLY

WE SAVE OUR CUSTOMERS TIME AND MONEY BY PERFORMING MEDICAL ASSEMBLY AND SUBASSEMBLY AT OUR FACILITY. OUR CONTROLLED ENVIRONMENT IS AVAILABLE TO APPLY OUR MANUFACTURING METHODS TO YOUR SPECIFIC PROGRAM NEEDS. OUR EXPERIENCED STAFF WILL PROVIDE AN INNOVATIVE, COST-EFFECTIVE SOLUTION TO YOUR ASSEMBLY REQUIREMENTS.

TE FEMTOSECOND LASER CAPABILITIES

Used for micromachining and allows single step laser processing of multiple materials in medical device applications.

- Good for cutting or drilling of multiple materials at one time (metal and polymer)
- Drill and cut micro shapes
- OD reduction on metal and polymer components and assemblies
- Materials and composites including polymers, platinum, stainless steel, nitinol and more
- Custom designed system for on or off axis work
- Used for R&D or volume applications
- Handles flat stock and tubular shapes on same system with minimal setup
- Cuts through all materials used to manufacture a catheter
- Galvo beam delivery for ultra-fast processing



TE FEMTOSECOND LASERS ARE ULTRAFAST LASER SYSTEMS WHICH ESSENTIALLY VAPORIZE MATTER WITHOUT CREATING A HEAT AFFECTED ZONE. THIS CAPABILITY CREATES NEW OPPORTUNITIES FOR ADVANCED MICRO DESIGNS, PARTICULARLY FOR DIFFICULT TO PROCESS METALS, DRILLING AND CUTTING HIGH-PRECISION HOLES AND SHAPES FREE FROM THERMAL DAMAGE. THESE RESULTS ARE NOT FEASIBLE WITH CONVENTIONAL LASERS.

To order product samples, please visit www.te.com/medical.



Equipment & Facility Overview

- 26,000 square feet housing medical device development processes
- Laser systems
- Testing equipment
- Finishing/Processing
- Inspection
- Machining/Toolmaking

TE's MEDICAL GLOBAL SUPPORT

te.com/medical

USA/Canada:	1-866-251-3352
Mexico:	1-855-864-0621
Latin/South America:	54 11 4733 2200
Germany/Switzerland/ Austria:	49 6151 607 1999
UK/Ireland:	49 896 089 184
Europe/Middle East/ Africa:	44 800 267 666
China:	86 400 860 6670
Japan:	81 44 844 8041
Korea:	82 2 3415 4542
Singapore:	86 512 6255 4384

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TE's MEDICAL BUSINESS

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