



Medical & Life Science

Materials and Technology Solutions



ENGINEERING YOUR SUCCESS.



Solving the World's Greatest Engineering Challenges

Parker Medical Systems Business Unit (MSBU) is your single source solution provider. Our experience in a wide range of medical devices allows a quick and cost effective product launch process. We are dedicated to servicing OEMs in the global **medical device**, **diagnostic**, and **pharmaceutical** markets. From components to sub-assemblies to finished devices, leverage the power of Parker Medical Systems' broad capabilities to streamline your supply chain and bring your products to market on-time and with world class manufacturing.

From Breakthrough Idea to Market Launch



Value Statement

Parker Medical Systems is your single source solution provider. Our experience in a wide range of medical devices allows a quick and cost effective product launch process. We are dedicated to servicing OEMs in the global medical device, diagnostic, and pharmaceutical markets with world-class medical grade materials and technology solutions that improve patient outcomes.

Product Design & Development

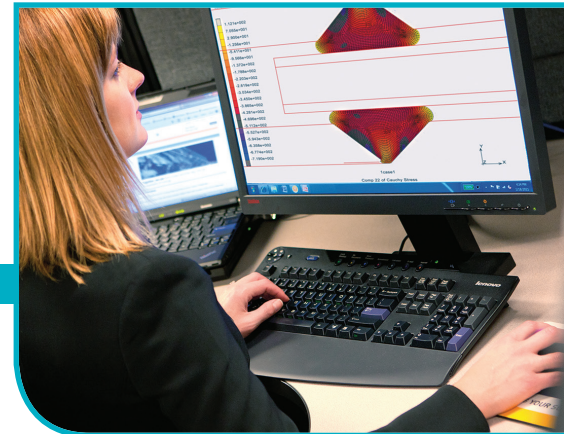
We offer front-end design support, process development and validation to ensure your devices meet your specifications.

Design Assistance

- Manufacturability analysis
- Plastic part design
- Material selection
- Functional analysis using Finite Element Analysis (FEA)
- Rapid prototyping
- Prototype injection molds for low cost design verification
- Sterile package design
- Shipping box design and configuration

Process Development & Validation

- Assembly and test process definition & design
- Tooling and fixture design and fabrication
- Equipment validations including I/Q, O/Q & P/Q
- Validation protocol development
- Sterilization validation
- Accelerated age studies
- Transit testing
- Biocompatibility testing



Assembly & Process Capabilities

In addition to our ISO certifications, complete device manufacturing documentation and process development and validation procedures, Parker offers additional ways to help you bring your product to market quickly and more efficiently than your competitors.

Our facilities provide rapid prototyping and production tooling capabilities. We can quickly turn around 3D printing and 3D printed injection molding. We can also design advanced cast urethane, as well as perform acrylic, high temperature aluminum, and steel prototype tooling. These capabilities allow us to keep your development process on schedule. We offer highly responsive assembly and testing of medical instrumentation ranging from relatively simple electromechanical devices to highly complex multi-technology integrated systems.

Our range of secondary operations include:

- Annealing
- Custom packaging
- Mechanical assembly
- Milling
- Pad printing
- Silk screening
- Ultrasonic welding
- Custom packaging



3D Printing

Responding to the need to improve design time for medical devices is critical and Parker's 3D laser printing capability enables shortened design cycles and lower up-front costs. Our Engineering and Design team can provide components and assemblies that facilitate proof of concept, reduce up-front tooling costs and time to market.



Medical Devices & Instrumentation

Class I, II and III Medical Devices and Assembly Processes



Parker's Medical System Business Unit is a single source FDA registered and ISO 13485 certified finished medical device contract manufacturing firm.

We offer single use devices, reusable devices, instrumentation and in vitro diagnostic assembly, testing, packaging and sterilization.

Class I, II and III Medical Devices:

- Critical Care
- Cardiology
- Operating Room
- Cardiac Cath Lab
- Respiratory Therapy
- Emergency Room
- Neurology
- Oncology
- Labor and Delivery
- Chronic Care
- Clinical Laboratory
- Sleep Labs
- Audiology
- Drug Delivery and Infusion

Medical Instrumentation:

Parker also offers highly responsive assembly and testing of medical instrumentation from relatively simple electro-mechanical devices to highly complex multi-technology integrated systems.



Device Assembly

Our engineering and quality assurance teams work closely with OEM medical device engineers to optimize manufacturability, quality, cost-effectiveness and overall product-to-market timelines of newly designed components and devices. Parker offers packaging and outsourced product sterilization services.

We manufacture various single-use, as well as short term implantable silicone medical devices for cardiovascular, nutritional, orthopedic, respiratory, urological and other general surgery applications. With in-house mold design and mold building capabilities, we can provide rapid prototypes of new components or devices so that OEM engineers can conduct functional clinical tests during the ongoing development of a device or component.



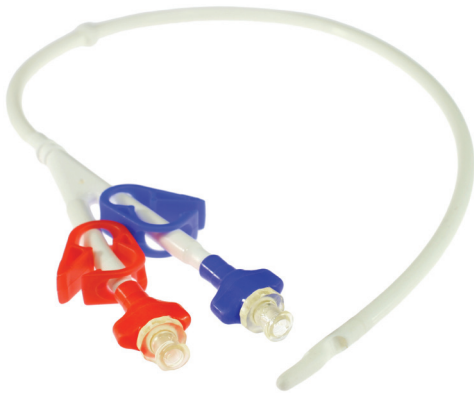
Silicone Devices and Assemblies

Parker manufactures a variety of single-use and short term implantable silicone medical devices for cardiovascular, nutritional orthopedic, respiratory, urological and other general surgery OEM's. Our engineering and quality assurance team's work closely with medical device engineers to optimize manufacturability, quality, cost-effectiveness and overall product-to-market timeline of newly designed components and devices.

- All materials meet ISO-10993 tests for biocompatibility
- ISO Class 7 & 8 cleanroom manufacturing and FDA registered facility
- All silicone devices are autoclave, EtO and radiation sterilization compatible

With in-house mold design and mold building capabilities, Parker's Medical Systems Business Unit can provide rapid prototypes of new components or devices enabling OEM engineers to conduct early functional validation tests during the ongoing development of a device or component.

Final products include respiratory airway management devices, cardiovascular access catheters, dual port catheters, vascular shunts, and custom silicone, thermoplastic components and devices.



Medical Markets Served:

- Cardiovascular
- Anesthesiology
- Bariatric surgery
- Endoscopy
- Nutritional
- Orthopedics
- Reconstructive surgery
- Urology
- General surgery
- Wound management

Silicone Tubing and Extrusions

Parker offers a wide range of medical grade tubing, available in single or multi-lumen configurations as well as with radiopaque striping. Our Merrillville, Indiana Medical Systems Business Unit location specializes in both medical grade silicone and non-occluding wire-reinforced (spring encapsulated) silicone tubing used in a variety of applications.

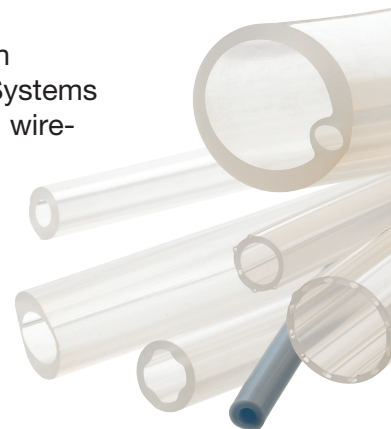
Tubing and extruded profiles are manufactured to your dimensional specifications. The most commonly used medical grade tubing sizes as well as custom sized tubing with ID's ranging from 0.012" to 1.0" are available with desired wall thickness. Tubing can be extruded and cut to length to your specific application needs.

Product Benefits:

- Extrusions are provided in either peroxide & platinum-cured formulations
- Materials meet USP Class VI standards & ISO 10993 biocompatibility
- All extrusions are manufactured in ISO Class 8 cleanrooms
- Materials are compatible with autoclave, ethylene oxide, or gamma radiation sterilization methods

Recommended for use in:


- Peristaltic pumps
- Multi-lumen catheters
- Wound drainage tubes
- Enteral feeding catheters
- Spring reinforced catheters
- Tracheostomy tubes
- Foley catheters and cuffs
- Vascular loops and shunts
- Infusion catheters
- Pharmaceutical bioprocess manifolds



Custom Molded Elastomers

Parker MSBU specializes in medium to high volume liquid silicone injection molding, conventional high consistency silicone rubber and organic rubber injection molding and compression molding. Our liquid injection molding (LIM/LSR) presses range in size from 28 tons to 300 tons with semi-automatic, automatic cold-runner and conventional runner capabilities.

Anti-Microbials



Parker elastomers with select antimicrobial additives have shown excellent efficacy & biocompatibility while maintaining mechanical properties and process stability. Leverage Parker's material expertise by working with our R&D team to assist your development of HAI-resistant medical devices.

Find out more at
www.parker.com/antimicrobials

We also perform high volume organic rubber "flashless" vacuum transfer molding with proprietary high-cavitation tooling. We offer a wide range of medical grade molded, insert-molded and over-molded components that are manufactured in either a clean environment or in ISO Class 8 Cleanrooms.

All silicone medical components will pass ISO 10993 tests and we follow a strict mold validation protocol. We can also provide customers with custom compounding using silicone, EPDM, Nitrile, Organics and USP <381> compliant and standard Polyisoprene formulations.



Thermoplastic Injection Molding

With horizontal and vertical molding presses ranging from 28 tons to 500 tons, Parker MSBU is capable of medium to high volume injection and insert molding of precision components with a range of commercially available engineered materials. Parker offers OEMs medium to high volume insert and overmolding capabilities including plastic inserts, metal inserts (wire, tubing, needles), organic rubber, silicone and suture thread.

We offer a wide range of materials including:

- ABS
- Acrylic
- EVA
- Nylon
- Polycarbonate
- PE
- PPE
- PPSU
- PEEK
- PVC
- TPE
- TPU



RFID

Comply with the machine-readable requirement of the U.S. FDA's Unique Device Identifier (UDI) Final Rule with Parker's proven and patented techniques for embedding RFID technology into molded components during fabrication.

Find out more at
www.parker.com/rfid

The Markets We Serve

The Medical Systems Business Unit of Parker's CSS Division provides a wide range of products for a variety of medical, diagnostic and pharmaceutical markets including applications in the following areas:

Medical



**Cardiovascular
Patient Care
Patient Monitoring
Patient Therapy
Respiratory & Anesthesia
Surgical**

Diagnostic



**Clinical Chemistry
Analyzers
Portable & Clinical
Ultrasound
Point of Care Diagnostics
Oncology Biopsy Devices**

Pharmaceutical



**Pharmaceutical Packaging
Drug Delivery Devices
Biopharmaceutical**

Why Parker?

From breakthrough idea to product launch and sustaining production, our engineering, design and development teams help streamline the product development cycle. We provide an engineering, manufacturing and support team that you can depend on for the long-term. Whether simple components or complex assemblies, we the quality you need to deliver safe and reliable products that ensure better patient outcomes while also helping you improve your productivity and profitability.

One Partner. Multiple Options

Contact us to learn more by visiting our website at www.parker.com/css and allow us to help you streamline your supply chain.



Our Locations

Leverage Parker-Hannifin's global reach, technical expertise and manufacturing capabilities to streamline the supply chain and bring your ideas from initial concept to finished product.

Parker CSS Division, Headquarters
San Diego, CA

Parker CSS Division
Medical Systems Business Unit, Merrillville Operations
Merrillville, IN

Parker CSS Division
Medical Systems Business Unit, Baja Operations
Tijuana, B.C. Mexico

