Engineered Seals Division

Catalog ESD 5600 USA

Solutions, Service and Support

Parker Engineered Seals Division (ESD), an operating unit of the Parker Hannifin Corporation's Seal Group, is a leading manufacturer of engineered elastomeric shapes (both homogeneous and inserted) for sealing systems and isolation applications. Headquartered at a 115,000 square-foot manufacturing facility in Syracuse, IN, we supply precision components to a broad range of industries, from automotive to agriculture, semiconductor processing to heavy-duty diesel and beyond.

Additional manufacturing facilities throughout the world enable us to meet customer needs quickly and cost-effectively. These satellite plants also allow us to develop new products that answer – and often anticipate – global market demands.

Parker Engineered Seals Division Headquarters - Syracuse, IN

Parker Engineered Seals Division Manufacturing Facility - Baja, Mexico

An All-In-One Supplier

Operations at Parker ESD are "vertically integrated," so they work together by design. As a self-contained solutions provider, we are capable of taking a product through development, material formulation, tooling, custom mixing, molding, assembly and packaging processes, while closely controlling each and every step. This integration allows us to orchestrate design and production cycles, resulting in unmatched product quality and fast delivery.

Equipped to Assist

Engineers at Parker ESD apply their experience and know-how, along with a powerful array of state-of-the-art design tools, to help customers find the ideal sealing solution. Before a tool is made or a single part is manufactured, we can simulate performance, optimize design and suggest several material choices for your specific application.

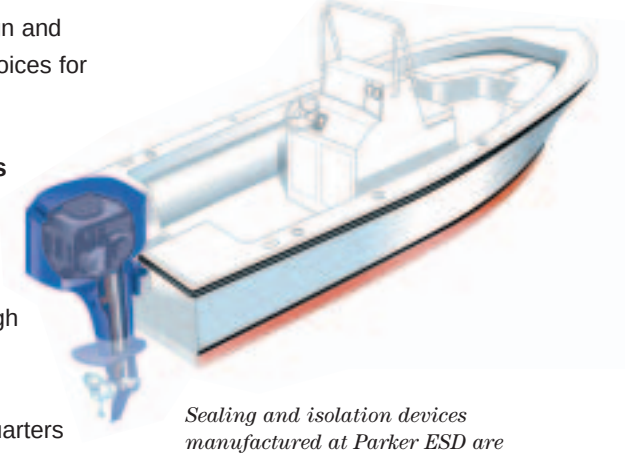
Everywhere You Need Us

Around the corner or around the globe, Parker ESD is there to provide engineered solutions to tough sealing problems.

Our North American headquarters is the hub of an established worldwide network of over 200 distributor and service center locations in nine countries. This network – and the global sales and engineering support it provides – means that customers can always get quality products when and where they need them. It also means that sound advice from Parker sealing experts is never far away.

Products That Perform

The many products manufactured at Parker ESD have been field-tested in demanding hydraulic and pneumatic, fuel, coolant and many other applications. These products, which include a vast selection of custom-molded seals, grommets and isolating devices, are proven performers, designed to help keep equipment running safely and reliably. In our on-site research and development laboratories, we are constantly developing new products to meet future sealing challenges.



Sealing and isolation devices manufactured at Parker ESD are at work in marine engines, as well as in tractors, front-end loaders and other heavy-duty off-highway equipment. The division's broad product lines also extend into semiconductor processing, agriculture and other industries.

Product Selection

Using a variety of established and cutting-edge molding technologies, Parker ESD manufactures products that function as sealing and/or isolation devices. These products can consist of elastomeric or metal/plastic retained elastomeric combinations, and are offered in materials that meet a broad range of fluid and temperature compatibility requirements.

Sealing Product Families	Other Product Families
• Fuel Cell Seals	• Grommets
• Axial and Radial Seals	• Bumpers
• Fuel System Seals	• Fuel System Isolating Components
• Oil Seals	• Valve Components
• Diaphragms	• Agricultural Components
• Radiator and Coolant Seals	• Poultry Picking Fingers
• Appliance Seals	• Miscellaneous Isolating Components

Homogeneous Rubber

Typically the lowest-cost sealing solution, homogeneous rubber shapes can be manufactured to fit virtually any application. Depending on customer requirements, these products may incorporate redundant sealing beads and/or retention features. Engineered shapes offer design flexibility and functional advantages over traditional flat or round cross-section sealing products.

Sub-Assemblies & Finishes

Parker ESD provides partial or complete assemblies of sealing, isolation and other applications. In addition, various coatings can be added to improve performance in low-friction applications. From a simple two-piece assembly to a multi-part kit, we manufacture these products in a wide range of configurations.

Rubber-to-Plastic Bonded Shapes

Whether mechanically or chemically bonded, rubber-to-plastic products offer many advantages including shape retention, integration of features, part number consolidation, simplified assembly and leak-path reduction. These products can often be used as a substitute for expensive elastomeric compounds, resulting in reduced total assembly cost.

Rubber-to-Metal Bonded Shapes

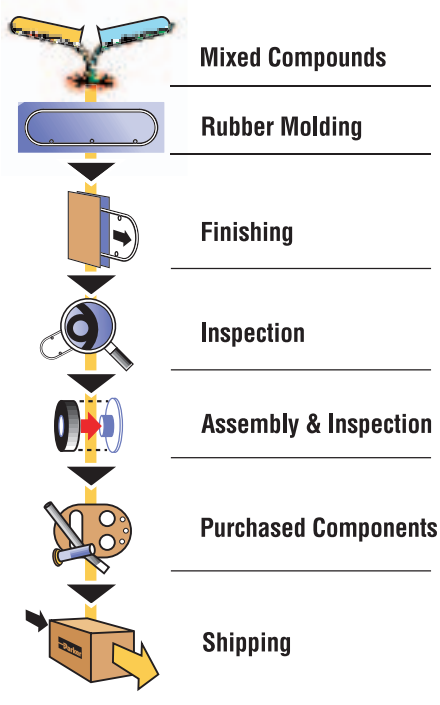
Rubber-to-metal bonded shapes are ideal for use in applications requiring improved shape retention, structural rigidity and load carrying capacity. These products offer many of the same advantages as rubber-to-plastic bonded shapes, and they can be molded into complex, three-dimensional configurations.

Streamlined Processes

A Cellular Concept

Through the use of defined work cells that are based on a “one-piece flow” model, Parker ESD has streamlined its manufacturing operations and increased product throughput without compromising quality. In addition to yield advantages, the cellular manufacturing model enables us to minimize work-in-process, increase inventory turns and reduce costs.

Automated work cells improve quality and delivery by reducing scrap and increasing productivity.



A vertically integrated work flow speeds Parker ESD’s products from concept to completion.

We offer a variety of molding processes to meet application specific design and cost requirements:

	Process Description	Benefits
	**COMPRESSION MOLDING** An individual preform is placed in or near a cavity. The tool plates are clamped together, forcing the elastomer to fill the cavity. The elastomer is vulcanized and removed from the tool.	• Cost Effective Tooling • Maximized Cavity Count • Economical Process for Medium Precision
	**TRANSFER MOLDING** A slab preform is placed into a well in the tool above the cavity. The tool plates are clamped together, forcing the elastomer to flow through sprues and into the cavity. The elastomer is vulcanized and removed from the tool.	• Cost Effective Tooling • High Cavity Count • Economical Process for Medium to High Precision Components • Capable of Producing Overmolded Components
	**INJECTION MOLDING** A continuous strip preform is drawn into the barrel of the press by a screw. The tool plates are clamped together, then the screw forces the elastomer to flow through a runner system and into the cavity. The elastomer is vulcanized and removed from the tool.	• Reduced Cycle Time • Flashless Tooling • Economical Process for High Volumes of Medium to High Precision Components • Capable of Producing Overmolded Components • Minimal Material Waste
	**LIQUID INJECTION MOLDING** A two-part component is pushed into the barrel of the press by plungers and mixed. The tool plates are clamped together, then a pump forces the elastomer to flow through a runner system and into the cavity. The elastomer is vulcanized and removed from the tool.	• Specialized Products • Shortest Cycle Time • Flashless Tooling • Economical Process for High Volumes, High Precision Components • Capable of Producing Overmolded Components • Least Material Waste

Problem-Solving ... Down to a Science

Evolving industrial technologies bring new sealing challenges. At Parker ESD, we're equipped to meet these challenges head-on with a proven problem-solving process that combines state-of-the-art material development, analytical tools and compounding facilities.

Materials Development/ Research Group

A team of experienced chemists, engineers and technicians make up our Materials Development/Research Group. These professionals offer assistance with:

- Compound selection
- Material development to print specifications and/or functional requirements
- Feasibility and process development support
- Advanced Product Quality Planning (APQP) support

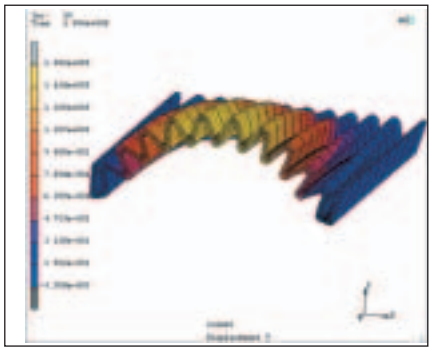
Elastomers	ASTM
• Natural Rubber	NR
• Polyisoprene	IR
• Butadiene	BR
• Styrene Butadiene	SBR
• Butyl	IIR
• Ethylene Propylene Diene	EPDM
• Chloroprene	CR
• Ethylene Acrylic	AEM
• Polyacrylate	ACM
• Acrylonitrile Butadiene	NBR
• Hydrogenated Nitrile	HNBR
• Epichlorohydrin	ECO
• Silicone	VMQ
• Fluorosilicone	FVMQ
• Fluorocarbon	FKM
• Liquid Silicone Rubber	LSR

With one or more of these base compounds, Parker ESD can create a custom formulation to meet application-specific sealing requirements.

Advanced Computer Simulation

Using advanced finite element analysis (FEA) software, our engineers can perform accurate "virtual" simulations of material performance based on actual physical test data. These simulations eliminate the need for multiple iterations of costly prototype tooling and reduce development lead times. They also ensure first-time selection of the right material for your application. FEA allows us to predict and analyze:

- Stress and strain distribution
- Pressure
- Load
- Stability
- Deformity
- Installation and removal forces



FEA simulates material performance and dramatically reduces development costs.

Physical Testing

Once a compound has been selected, its suitability for a specific application can be evaluated in our world-class test labs. ESD engineers, using a wide range of physical and environmental test equipment, can perform:

- Complete specification testing
- Long-term environmental testing
- Fluid compatibility testing
- Material characterization
- Fuel permeation testing
- Seal performance evaluation
- Load/deflection testing
- Custom test procedures to customer/standards requirements

In-house fuel permeation testing paves the way for production of next-generation fuel system sealing components.

In-House Mixing

A clean, precise mixing process is essential to the production of quality seals and sealing systems. Our in-house mixing capabilities, which employ the latest in advanced computer control technology, allow us to combine standard and custom elastomeric compounds with unparalleled speed and consistency.

From powder to polymer, computer-controlled mixing eliminates batch-to-batch material variations, and keeps Parker ESD product quality consistently high.

More Than Manufacturing

Our commitment to customer satisfaction doesn't end with the manufacture and supply of superior engineered sealing products and materials. It extends to the development of special services and support tools that are designed to simplify seal design and specification.

Applications Assistance

Parker ESD's development engineers can help you find the most reliable, cost-effective sealing solution for your application. These engineers are trained sealing experts, combining decades of experience in real world applications with a full complement of technology-driven design tools to provide:

- Volume fill analysis
- Compression tolerance stack-up analysis
- Lateral tolerance stack-up analysis
- Design Failure Mode and Effects Analysis (DFMEA)
- Multiple 3D CAD platform readability/writeability and data exchange

Documentation

When customers need supporting documentation for product design, testing and other related data, we can provide it fast – in a presentation-quality proposal format. Our standard proposal includes:

- Statement of assumptions
- Tolerance stack-ups
- Part prints
- FEA results
- Overall recommendations
- Costing estimates

Fast Samples and Prototypes

Whether you're developing a new product or looking for a solution to a sealing problem in an existing one, it helps to have fast access to prototypes and samples. Our in-house prototyping and tooling capabilities allow us to provide prototypes and samples quickly – within hours, in some cases.

Quality Certification

Quality isn't just a buzzword at Parker ESD, it's a culture based on employee empowerment and continuous improvement. Our facilities are ISO 9001/QS-9000 Registered, and we constantly strive to improve customer satisfaction and product quality through the implementation of:

- Kaizen/Lean manufacturing initiatives
- TQM methodology
- APQP/Feasibility management
- Six Sigma scrap reduction programs

Part of the Parker Family

The Engineered Seals Division is an operating unit of the Parker Hannifin Corporation, a leading supplier of seals and sealing systems to industry worldwide.

For over 50 years, Parker has been manufacturing quality sealing products for use in aerospace, automotive, healthcare, semiconductor fabrication, water systems and other applications.

AEROSPACE
CONSUMER
ENERGY/OIL FIELD
FLUID POWER
GENERAL INDUSTRIAL
MEDICAL
MILITARY
SEMICONDUCTOR
TRANSPORTATION

These products play an important role in the safe and reliable operation of hydraulic and pneumatic cylinders, hose fittings, high-pressure pumps and filtration units, engines, transmissions, cooling systems and many other types of equipment.

In addition, Parker shielding/grounding products protect cellular telephones, personal computers, cable TV switchgear and other electronic equipment from the effects of electromagnetic interference (EMI). And Parker thermal interface materials cool hot microprocessors and power supplies.

For more information about Parker's broad range of seals and sealing systems, call 1-800-C-PARKER. Or visit www.parkerseals.com.

Sealing for Every Application

Agriculture
- Farm Equipment Seals
- Poultry Fingers

Consumer
- Appliance Components
- Elastomeric Springs
- Plumbing Seals
- Small Engine Components

Fuel Cell
- Misc. Componentry
- Plate Seals

Fuel Systems
- Cap Seals
- Injector Seals
- Module Seals
- Sender Seals
- Valve Seals

General Automotive
- Brake Seals
- Diaphragms
- Grommets
- Radiator Gaskets

General Industrial
- Diaphragms
- Face Seals
- Vibration Isolators

Heavy-Duty/Diesel
- Cap Seals
- Engine Seals
- Fuel Delivery Seals
- Injector Seals

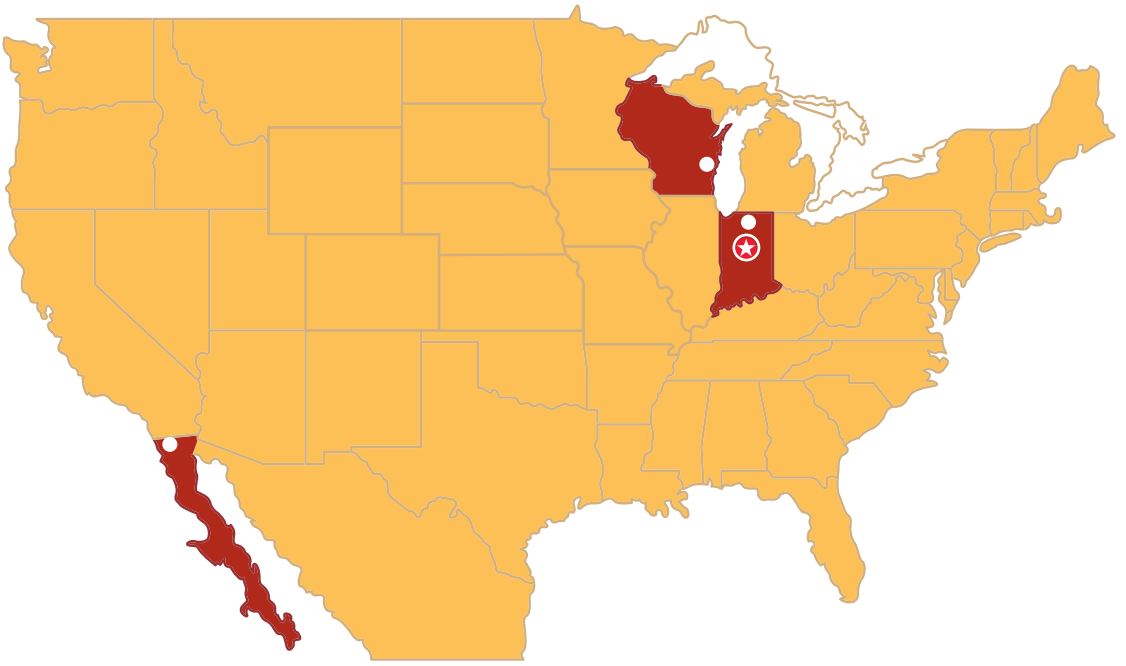
Marine Engine
- Engine Seals
- Fuel Delivery Seals
- Sub-Assemblies

Medical
- Disposable Seals
- Medical Device Bladders
- Medical Device Diaphragms
- Sub-Assemblies

Military
- Bellows
- Face Seals
- Wiper Seals

Semiconductor
- Bellows
- Face Seals
- Membrane Seals

Engineered Seals Division–Locations



Parker Hannifin Corporation
Engineered Seals Division
501 South Sycamore Street
Syracuse, IN 46567
Phone (574) 457-3141
Fax (574) 457-5009

- Custom-molded components, isolation components, seals and assemblies
- Custom-molded fuel system seals and components

Parker Hannifin Corporation
Engineered Seals Division
324 W. College Avenue
Waukesha, WI 53187
Phone (262) 547-2311
Fax (262) 547-5610

- Custom-molded short-run seals and consumer oriented components
- Agricultural components

Parker Hannifin Corporation
Engineered Seals Division
1525 South 10th Street
Goshen, IN 46526
Phone (574) 533-1111
Fax (574) 537-6300

- Custom-molded components
- Custom-molded fuel system seals and components

Parker Hannifin Corporation
Engineered Seals Division
Calle Siete Norte 111
Ciudad Industrial Nueva
Tijuana, BC 22550, Mexico
Phone 011-52-664-623-3066
Fax 011-52-664-623-3061

- Custom-molded heavy equipment, diesel and thermal system seals

www.parker.com/esd