

CRL

Central Research Laboratories

a **DESTACO** company



LIFE SCIENCE

Isolation, Transfer, and Containment Solutions



A Legacy of Innovative Experience

In 1945, at the dawn of the Atomic Age, three scientists from the Massachusetts Institute of Technology founded Central Research Laboratories (CRL) and pioneered early development of safer methods for handling hazardous and toxic products produced by this industry. With a legacy of over 70 years of innovative experience, CRL has continued to develop and build a full line of remote handling and containment solutions including Telemanipulators, Transfer Systems, Glove Ports, and Waste Drum Transfer Systems. These products allow operators to safely and efficiently perform various tasks in Nuclear and Life Science industries across the world.

The CRL team has the experience, expertise, and technologies to help with all your remote handling needs and strives to continually improve and develop innovative technology that help its customers achieve the highest level of performance. CRL is committed to its customers' needs and developing the best solutions for every project. Every product manufactured is created with those specific needs in mind to deliver the most customized solution available for every application.

crlsolutions.com

Central Research
laboratories

RED WING, MINN.

Proven Technology. Customized Solutions.

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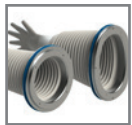
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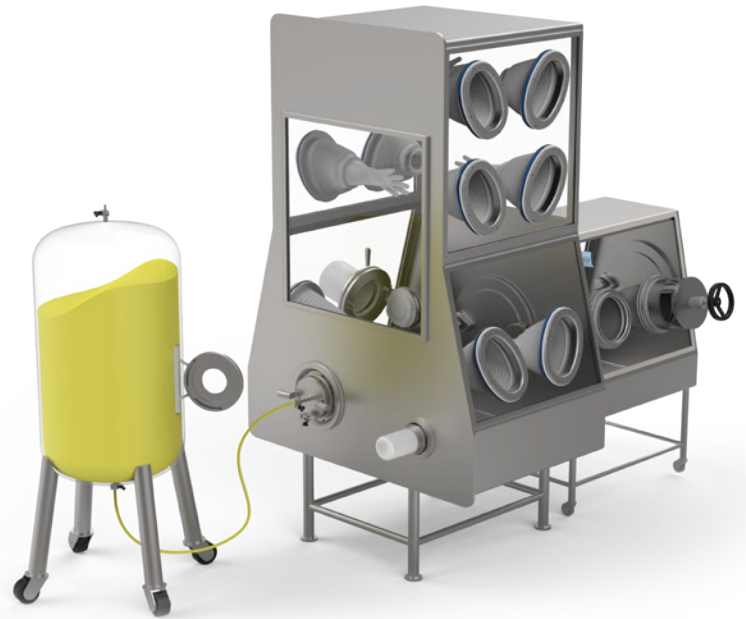
Proven Technology. Customized Solutions.

Isolation, Transfer, and Containment Solutions

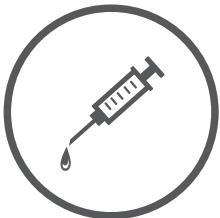
A safe and secure working environment for your operators and your products is of the utmost importance in the Life Science industry.

Since 1945, CRL has been developing innovative technologies for the safe and efficient handling of hazardous materials. Our solutions span the globe; providing safer working environments and higher quality isolated environments for aseptic and potent processing by reducing the risk of product contamination and operator exposure.

Every application has unique requirements to ensure the quality and safety of these critical environments. CRL solutions offer flexibility and customization to provide the best solution possible for safe and confident handling – for every application need.



Application Solutions for:



ASEPTIC

Maintain sterile environment



POTENT

Contain your concentrated products



ASEPTIC/POTENT

Protect the product and operator

ASEPTIC

Keeping your products free from contaminants is paramount in any aseptic process. From sterile API production to formulation to sterile liquid transfer to aseptic filling, sterility must be maintained throughout each step to ensure contaminants never reach the product. CRL offers an innovative line of solutions to maintain the highest aseptic quality to protect your valuable products.

Aseptic Solutions for:

- Formulation
- Active Pharmaceutical Ingredients (API) Production
- Filling & Packaging
 - Sterile Liquid Transfer
 - Sterile Component Transfer



POTENT

Ensuring product containment is essential when working with toxic materials, not only for the operator, but also the surrounding environment. CRL has proven longevity in potent containment solutions, with industry-leading quality that is never compromised. Our solutions are designed to keep operators safe from exposure with flexible and customized options.

Potent Solutions for:

- High Potency Active Pharmaceutical Ingredients (HPAPI) Production
- Packaging & Transport
- Potent Oral Solid Dose (POSD)



ASEPTIC/POTENT

Complete containment is critical when working with toxic products, but maintaining aseptic quality is sometimes also necessary for injectable products. CRL offers aseptic/potent solutions to help maintain sterile product quality, while simultaneously protecting operators from exposure to toxic materials.

Aseptic/Potent Solutions for:

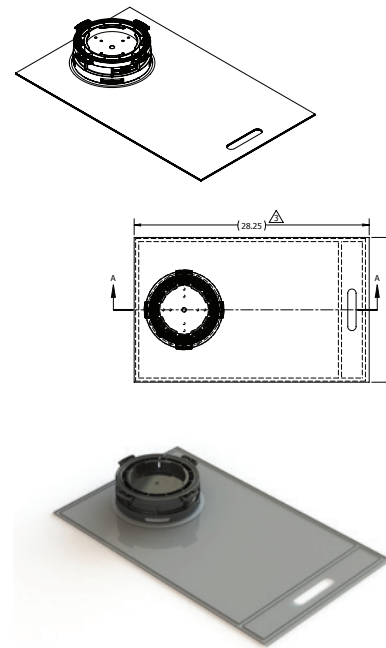
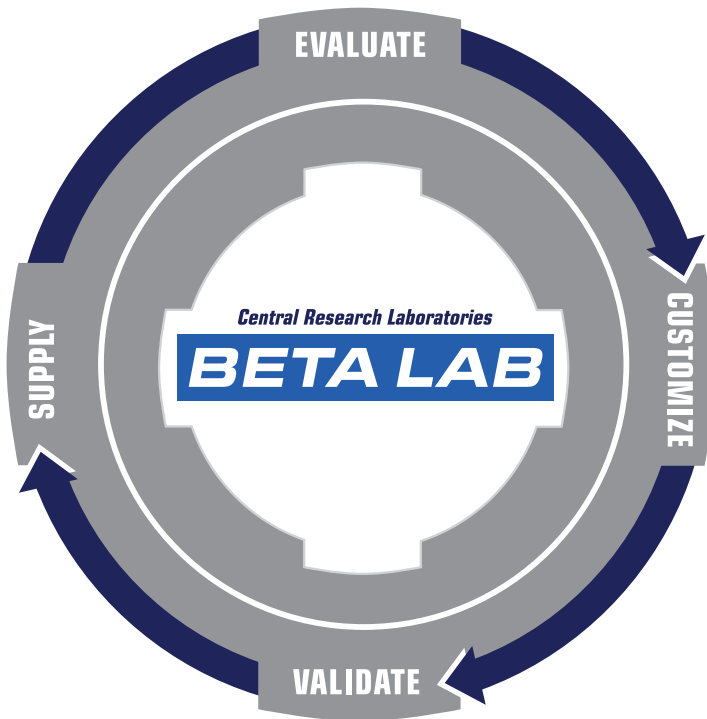
- Sterile High Potency Active Pharmaceutical Ingredients (HPAPI) and Biologic Manufacturing
- Highly Concentrated Formulations
- Radiopharmaceuticals



Central Research Laboratories

BETA LAB

Right Solutions. Right Partner. Exceptional Value.



Beta Lab is a customizable service for all your transfer needs. When off-the-shelf or standard product offerings don't cut it, Beta Lab works with you to develop the perfect solution for your application. Offering exceptional value and endless possibilities.

EVALUATE

To provide the best solutions, we must first understand your needs. We'll work with you to understand your process and determine what transfer solution best suits your needs and budget.

CUSTOMIZE

After requirements are established, we utilize our proven technologies and expertise to customize the perfect solution for your application.

VALIDATE

A first-run product is provided to test the functionality and assist in the validation process needed to move forward with use in your process.

SUPPLY

After validation, we provide the final solution for use in your application. Multiple material vendors are sourced for an uninterrupted, readily available supply.

TRANSFER SYSTEMS

CRL Transfer Systems provide safe, contained transfer into or out of isolation; consisting of two main components, the alpha assembly and the beta assembly. The alpha assembly is normally mounted to the cell wall of a contained environment and the beta assembly is mobile and connected to a container, bag, or process component. When the two assemblies are mated, toxic or sterile materials can be rapidly transferred in and out of isolation without breaking containment, while maintaining the safety of the product and/or operators.

Clean Rapid Transfer Ports (CRTP)

For clean, rapid and repeatable transfer into or out of isolation

Designed for ease of cleaning and minimized glove issues due to new, improved handle design

- Rapid repeatable transfers without breaking containment
- Mechanical interlocks to prevent improper port operation
- 316L Stainless Steel with multiple door options available
- Available in 105, 190, 270, 350 sizes



Available Options



Polypropylene Door



Stainless Steel Door



Liquid Transfer Door

Standard Beta Containers

For safe and contained transport or storage of product, components, samples, and waste

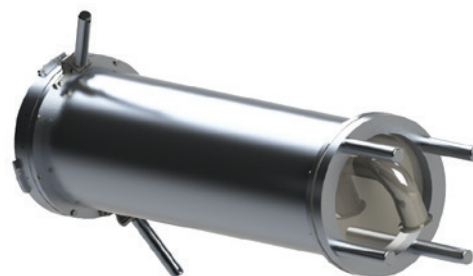
- Gas tight design
- Multiple materials, sizes and lengths available



Autoclaveable Beta Containers

For moist heat sterilization of tools and components to be aseptically transferred into isolation

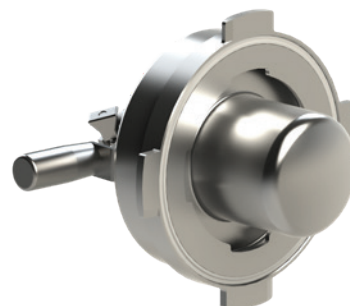
- 1.5 in. Tri-Clamp vent port for use with with 0.2 μm filter and housing
- Available in 316L Stainless Steel and anodized Aluminum
- Stainless Steel perforated baskets available to ease unloading and improve sterilization process



Sterile Liquid Transfer Ports (SLTP)

For safe, aseptic, cost-effective transfer of sterile liquid from bulk tank into isolation

- Tank and SLTP SIP sterilized together
- Cost-effective, multiple use system
- Safe for aseptic and aseptic/potent liquid transfer



Beta Flange with Tri-Clamp Fitting

For connection of large tanks and process equipment to isolation

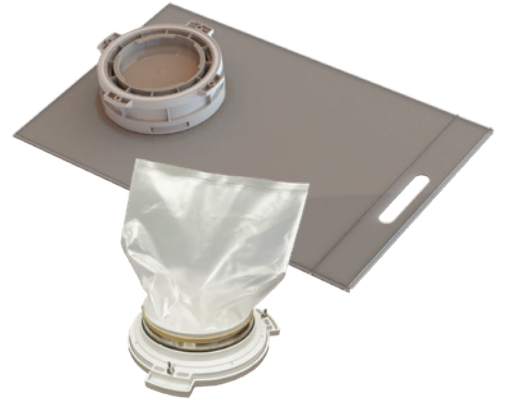
- Charging of formulation tanks and reactors
- Discharging from dryers
- Charging of a mill



Beta Bags

For sterilization and transfer of components into isolation

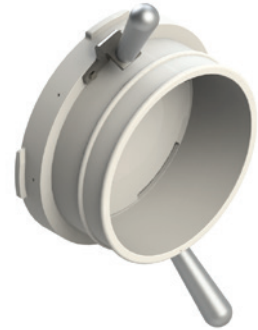
- Tyvek®, HDPE, PVC and other materials available
- Gas tight design
- Available in multiple port and bag sizes
- Produced in Class 7 Clean Room
- Autoclave and gamma sterilizable versions



Beta Bag Flange

For product and component transfer into or out of isolation in potent applications

- Beta Bag Flange used with disposable bags
- Safe transfer of products, components or tools into or out of toxic containment



Beta Couplers

For interconnection of isolators or specialty equipment to a fixed alpha flange on another isolator

- Multiple sizes available
- For temporary connection of two process isolators



Custom Beta Options

Solutions for Every Application

We specialize in customizing our current products and developing new products to meet the specific needs of our customers. If your project requires a custom Beta assembly, we can develop a cost effective solution to help maximize your productivity.

DRUM TRANSFER SYSTEM

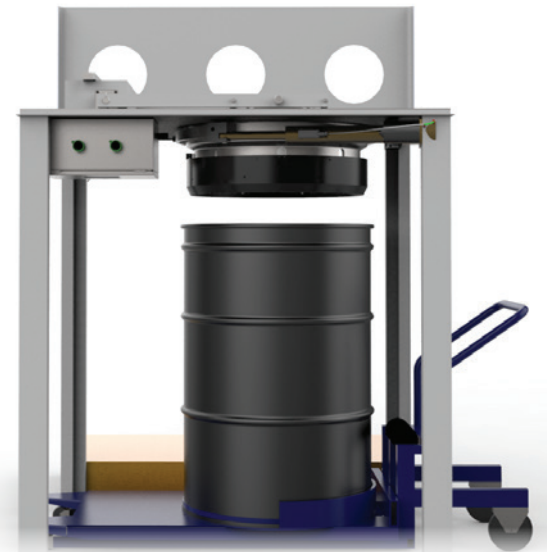
Waste and Bulk Packaging Solutions

CRL's Drum Transfer System was developed to address the need for a safer method of transferring waste or products from isolators.

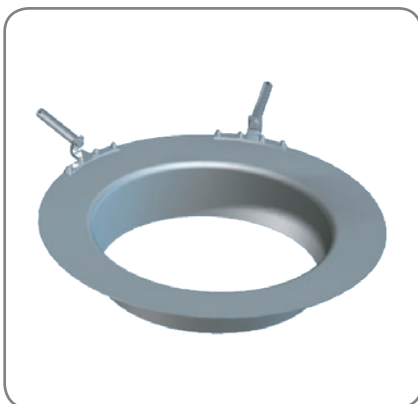
The system offers the ability to mitigate dangerous bag-out processes from the transfer and packaging of highly potent products and waste.

This patented system has been engineered to allow rapid and repeatable transfers without breaking cell containment.

- Built-in safety interlocks eliminates accidental breach of containment
- Actuated docking for fast, safe drum connect/disconnect operation
- Drum liner capable of multiple filling cycles
- Bagless RTP transfer system eliminates breach of containment while improving ergonomic safety for the operator
- 30G, 55G, or custom size drum liners available in PE or SST materials



Accessories



Funnel Systems



Drum & Liner Assembly



PE or SST Drum Liners Available

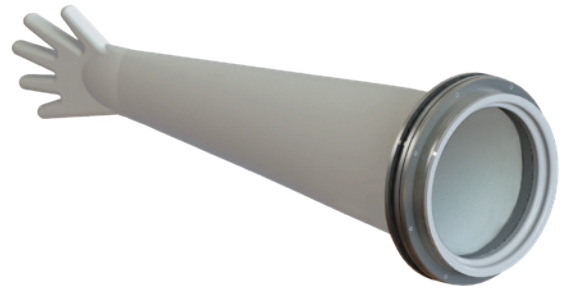
GLOVE PORT SYSTEMS

CRL Glove Port Systems are designed as efficient, cost-effective solutions for maintaining contained conditions during operations and glove change.

Push-Through Glove Ports

A safe, fast-change glove port solution with multiple accessories to expand operational capabilities of the isolator or RABS

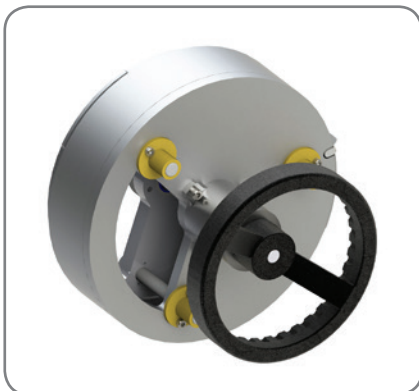
The CRL Push-Through Glove Port System allows for the interchangeability between gloves and accessories without losing containment or risking the spread of contamination. The two main components of the system are the glove ring, which mounts to the wall or window and the support ring or accessory that creates a leak-tight compression seal inside the glove ring.



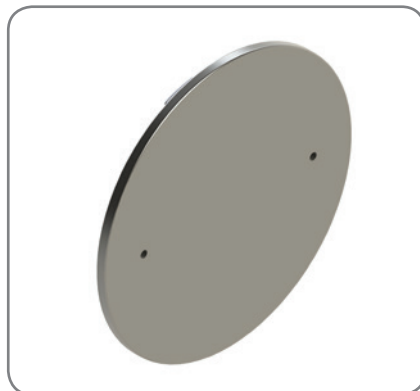
- Multiple sizes available; Round (4, 6, 8, 12 and 15 in.) and Oval (8 and 12 in.)
- Push-through accessories: viewing windows, bag-out bags, plugs, and utility panels
- Safety covers available; sensors added as customizable option
- Clamp-in or weld-in glove rings available
- Push-through ejection tools available for safe, fast glove or accessory change



Accessories



Short Ejection Tool



Safety Cover

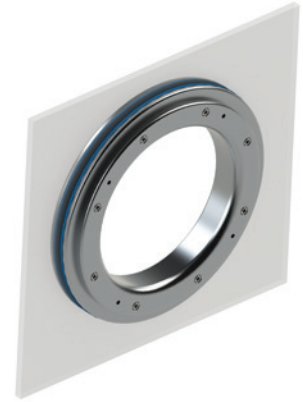


Ejectable Plug Assembly

Fixed Glove Ports

Clean, high quality compression fit glove port

- Available in round and oval configurations
- 316L Stainless Steel and Aluminum versions available
- For use with long gloves or Durable Glove Sleeve Systems

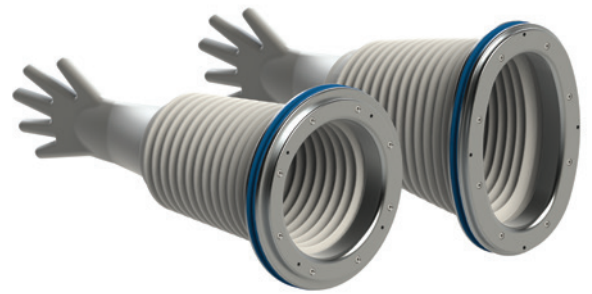


Durable™ Glove Sleeve Systems

DURABLE™ Accordion Sleeve

A DURABLE™ Glove Sleeve System designed to minimize down time and maximize cost savings for life sciences applications.

- Available in round and oval configurations
- For use with Fixed Glove Ports
- Available with push-through wrist cuff ring for safe, fast short glove change or compression fit wrist cuff ring
- Made of polyurethane and CSM for high durability and puncture and chemical resistance
- Can also be customized to fit any current port configurations



Accessories



4 in. Ejection Tool



4 in. Support Ring (for short gloves)





Comfort Ring



The Benefit of Using CRL DURABLE™ Accordion Sleeves With Short Gloves INSTEAD OF LONG GLOVES




CRL DURABLE™ ACCORDION SLEEVE with Push-Through Short Glove


STANDARD LONG GLOVE in Fixed Glove Port

Cost	Change Time
 Short Glove	 1 MIN.

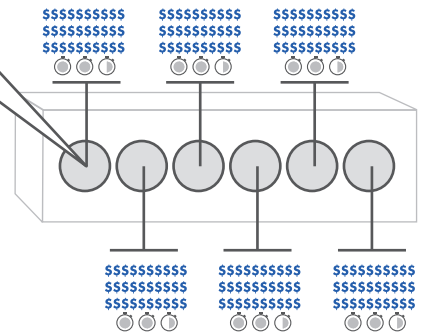
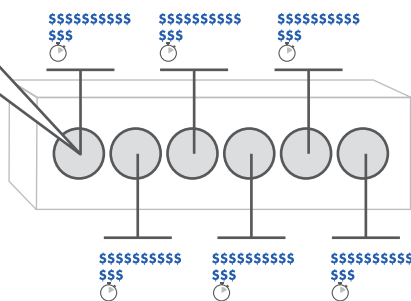
Cost	Change Time
 Long Glove	 15 MIN.*

Cost/Change Process Comparison


 $1 \text{ DURABLE™ Accordion Sleeve (lifespan of up to 2 years)} + 10 \text{ short gloves} =$


 $10 \text{ long gloves} =$


 $10 \text{ long gloves} =$



SAVE TIME. SAVE MONEY.

* Source: Energy System News, "New Design for Glove Changeout Safer, Saves Money", March 1994

ONE-PIECE TELEMANIPULATORS

Cost-effective solution for remote manipulation in small to medium hot cells

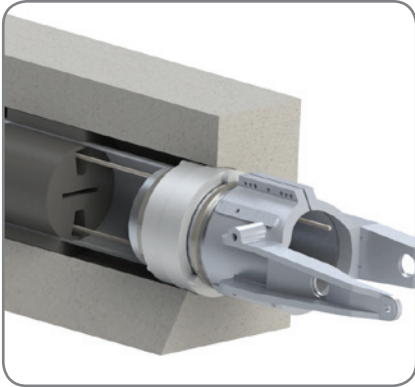
The one-piece telemanipulator is the most widely used and consists of a command (master) arm, remote (slave) arm, and through-the-wall tube assembled as one unit. CRL offers a full range of light and medium duty manipulators for small to medium size cells allowing operators to safely and efficiently manipulate high activity, low energy Gamma and Beta emitting materials.

- Sealed and unsealed options available
- Optional radiation shielding thickness and booting available
- Customizable for specific application use



Options and Accessories

All models are customizable with unique options and accessories to fit your specific application needs. See our Telemanipulator Visual Selection Guide for all available options.



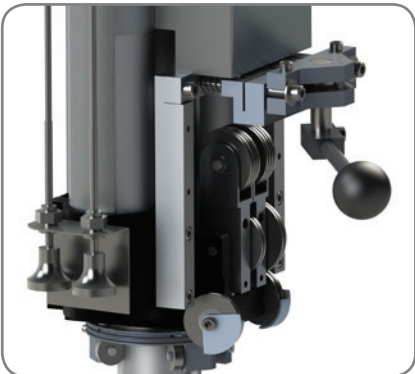
Radiation Shielding and Thru-Tube



Tong/Jaws



Handles



Locks



Booting



Installation/Removal Carts



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