



SWANSON[®]
INDUSTRIES



Hydraulic Cylinder Remanufacturing
to OEM Specs for Rigorous Applications in the
Mining, Mobile, Industrial, and Marine Markets



Swanson is a quality-certified worldwide supplier of remanufactured hydraulic cylinders.

With extensive engineering capabilities and decades of hands-on experience, Swanson leads the industry in restoring severely damaged hydraulic cylinders to prime working condition at a lower cost.

Cylinder Remanufacturing To OEM Specs

Heavy industrial applications expose hydraulic cylinders to harsh, intensive conditions, resulting in severe wear that impacts performance. Replacing compromised cylinders with new units can be costly.

Our global support system is well-positioned to take all types and sizes of worn, abused hydraulic cylinders and return the units to original equipment manufacturer specifications, or "like new" condition, at a cost that compares favorably to "new " cylinder replacement.

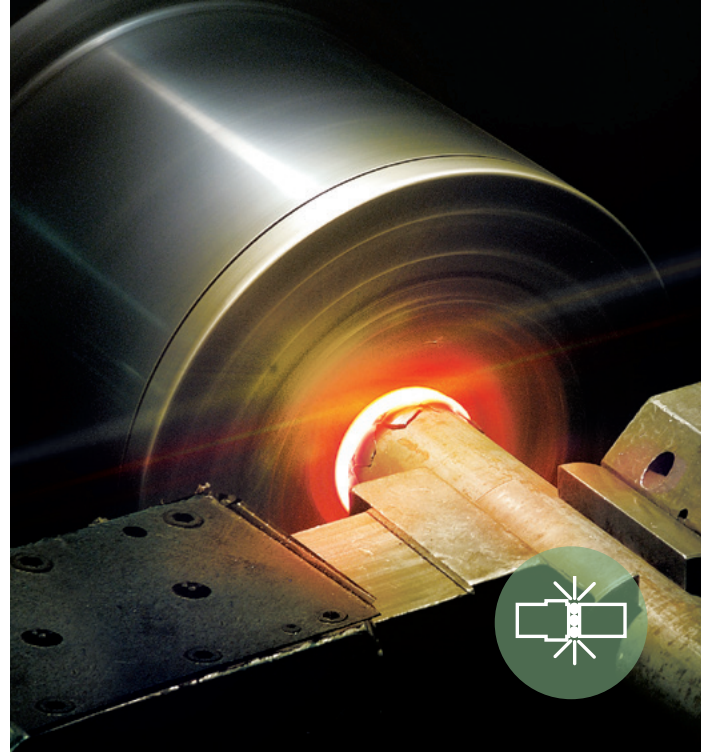
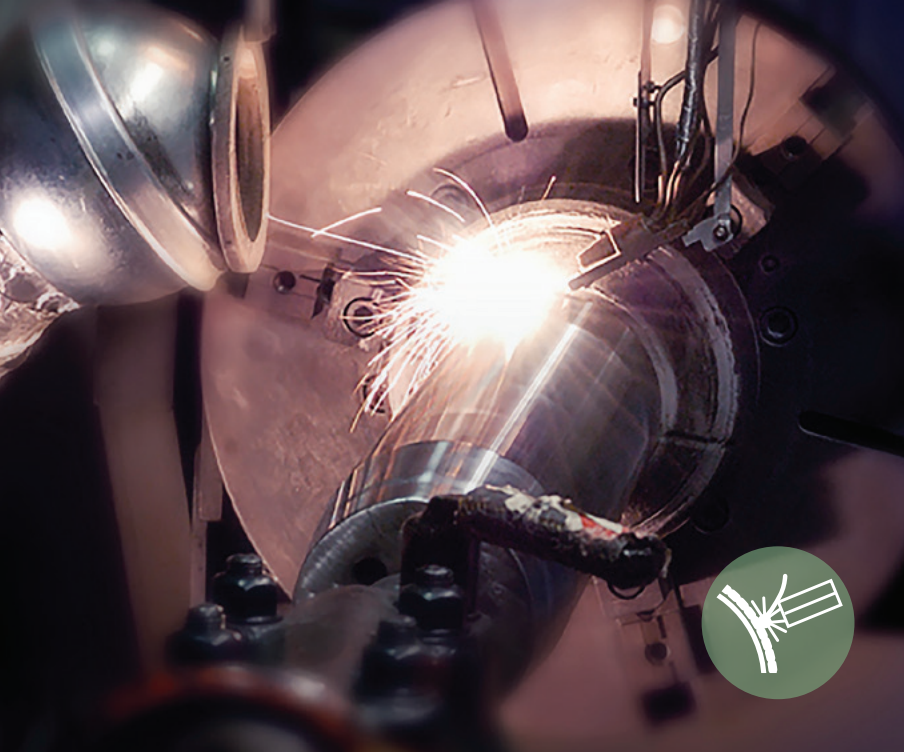
All cylinder remanufacturing is performed in-house at Swanson's state-of-the-art facilities:

- Single Acting
- Double Acting
- Welded Rod Cylinders
- Telescopic Cylinders
- Threaded or Bolted Head
- Long Stroke / Large Bore
- Position Feedback

QUALITY ASSURANCE



- ✓ ISO - 9001:2015
- ✓ Controlled Environment for Testing and Assembly
- ✓ Test Equipment Oil Cleanliness Maintained to 16/13 (ISO 4406) or Better
- ✓ Every Cylinder is Pressure and Function Tested Before Shipment
- ✓ Certified Welders and Qualified Weld Procedures



Specialized Machinery To Restore Severely Damaged Cylinders

Swanson houses the specialized machinery needed to remanufacture cylinders to OEM specifications:

- Conventional and CNC machine tools
- 33-inch diameter by 30-foot-long horizontal power hone
- 30-foot cylinder assembly machine
- Laser processing and welding technologies
- Proven testing facilities, including cylinder load testing by a 500-ton computerized test unit

Our World Class Remanufacturing Process Includes:

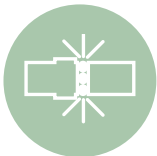
- Complete disassembly and inspection of all components
- Verification of components using the most recent OEM specifications or in-house engineering specifications
- Remanufacture component per approved specifications
- Thorough cleaning of each component
- Induction hardening for increased strength and wear resistance of hydraulic rods, rolls and pins
- Submerged arc welding to build up damaged components or total welding to build up excessively worn surfaces as part of the remanufacturing process
- Reassembly and testing components at normal working pressures to ensure OEM-caliber performance



Industrial Chrome Plating to enhance the mechanical and physical properties of hydraulic cylinder components, such as rods and internal cylinder tubes. Swanson's hard chrome plating tanks accommodate components up to 25-ft. long | 36-in. diameter | 6,000 lbs.



Laser Cladding to resurface worn or damaged cylinders, rolls and pistons to prime working condition. This high-density process can accommodate a 1-inch-diameter pump piston to a 56-foot-long hydraulic piston rod. Diameter range is 25 to 48 inches; maximum weight is 40,000 lbs.



Friction Welding a low-cost alternative for:

- **Rod Assembly:** bar to eye or three-piece rods made from tube to reduce weight, or
- **Cylinder Body Fabrication:** joining gland rings to tubes or welding end caps to tubes

Forged quality joints with 100% butt joint weld through the contact area yield joint strength equal to or stronger than parent materials. Swanson's MH700 is one of the largest friction welders in the world.



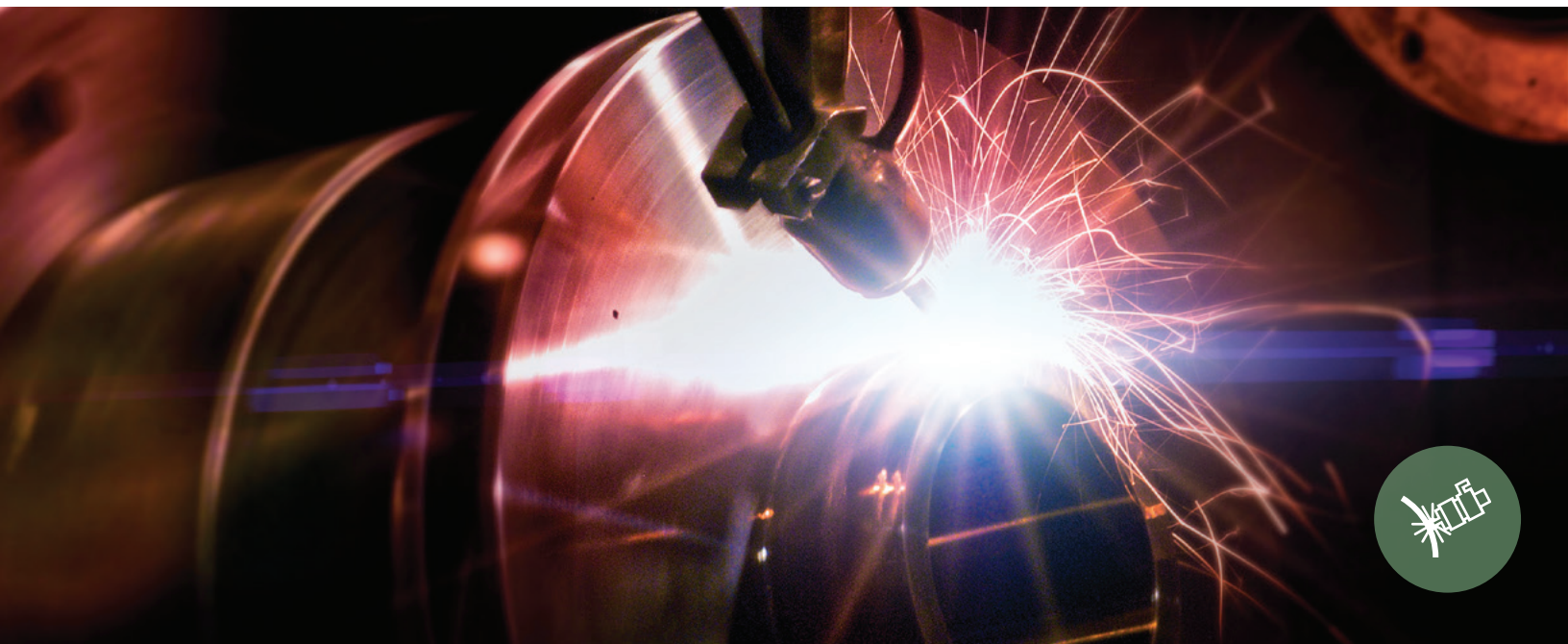
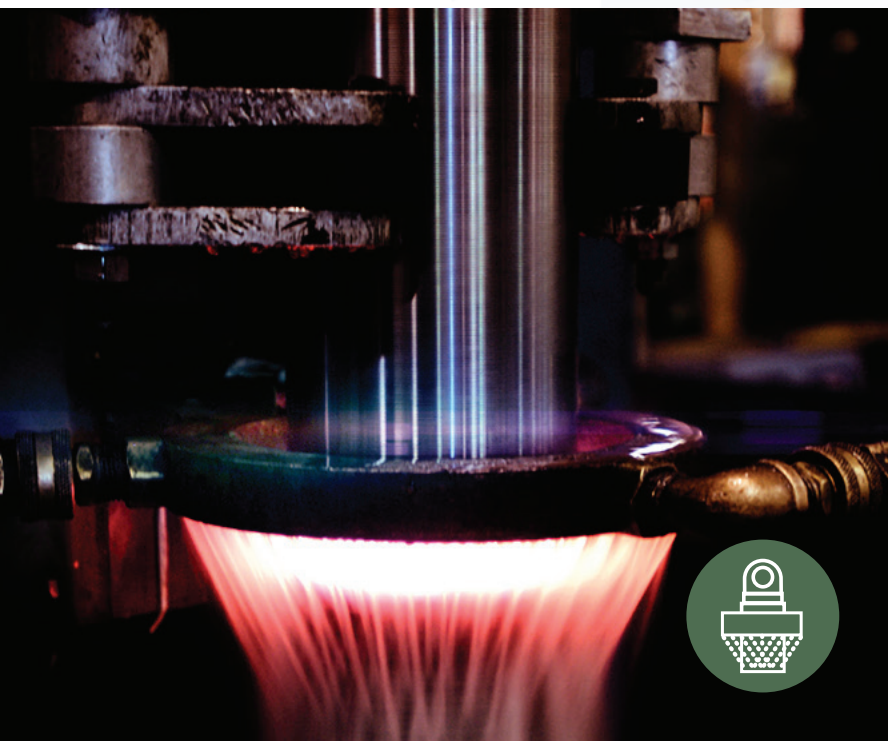
Induction Hardening for increased strength and wear resistance of hydraulic rods, rolls and pins.



Submerged Arc Welding to build up damaged components and total welding to build up excessively worn surfaces.



Laser Welding to join dissimilar materials.



Hydraulic Cylinder Reman Specifications

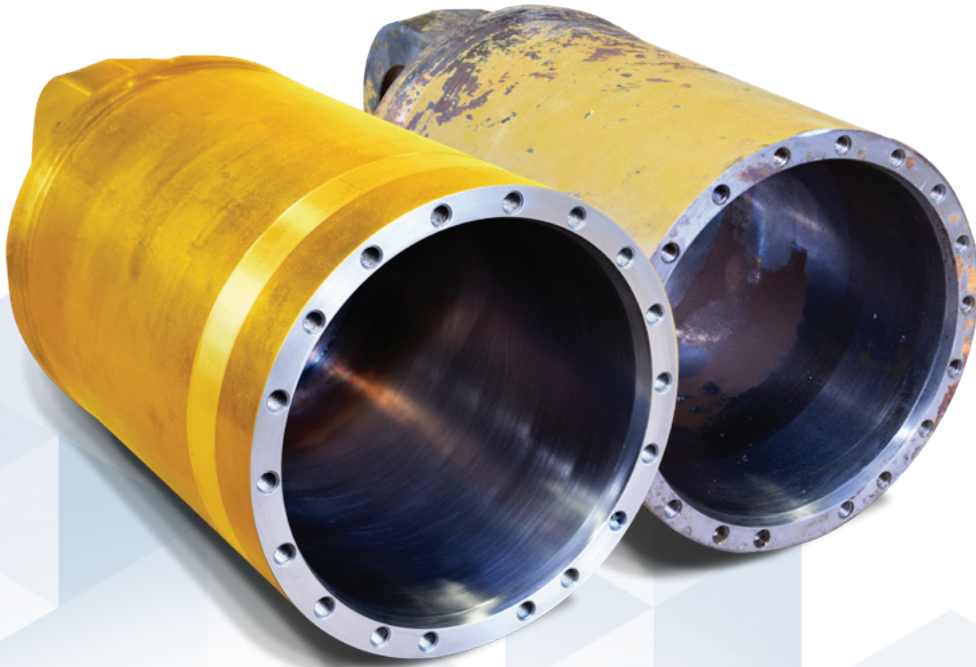
In an increasingly complex and competitive market, value for money is a priority. At Swanson, our extensive machining and welding expertise is used to remanufacture high-quality components that meet—and exceed—OEM specifications:

- Cylinders up to 42 inches (106.68 centimeters) in diameter
- Horizontal power hone: 33-inch (83.82 centimeters) diameter by 30-foot (9.144 meters) long
- Cylinder assembly machine: 30-foot (9.144 meters)
- Stroke up to 60 feet (18.288 meters)
- Porting as required. NPT, S.A.E. O-Ring BSP, Tube lines and Specials
- Operating pressures of up to 10,000 psi
- Rods up to 120 feet (36.576 meters) long
- Steel construction standard (aluminum, cast iron and stainless steel options available)
- Mounting: Cross tube, clevis, flange, trunnion, spade, pin or custom designs
- Rod materials and coatings that include chrome, stainless steels and nickel over chrome
- Advanced seal options: low, medium and high pressures
- Valve Blocks: Machined for specified cavities and mounting configuration
- Integrated position sensing options
- Cushioning on both ends of the stroke
- Fully equipped for machining and building to metric dimensions
- Certified Inertia Welding on Rods 1" to 8.5" in diameter for single-piece manufacturing that adds strength and durability

Swanson engineers use their unrivaled experience in cylinder design to evaluate component wear and tear, and can make design recommendations that will improve cylinder life and performance.

Swanson Is Your Source For High-Quality Reliable Repair Services

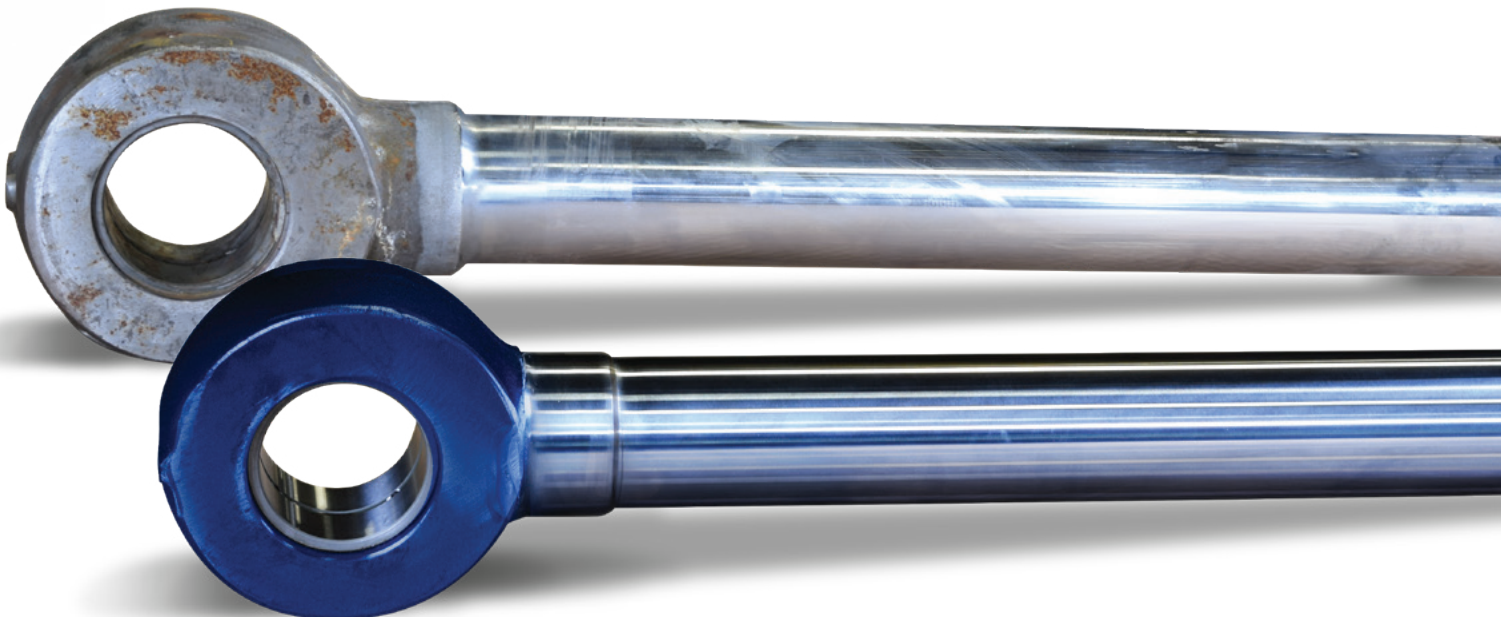
- Expertly trained and experienced technicians
- Free quotes for repairs
- Flexible repair options
- Service most component manufacturers
- Stringent quality control procedures
- Equipped with state-of-the-art contamination control
- In-house performance testing capabilities of all component brands
- All repairs are backed by an industry leading warranty



In An Increasingly Complex And Competitive Market, Value For Money Is A Priority

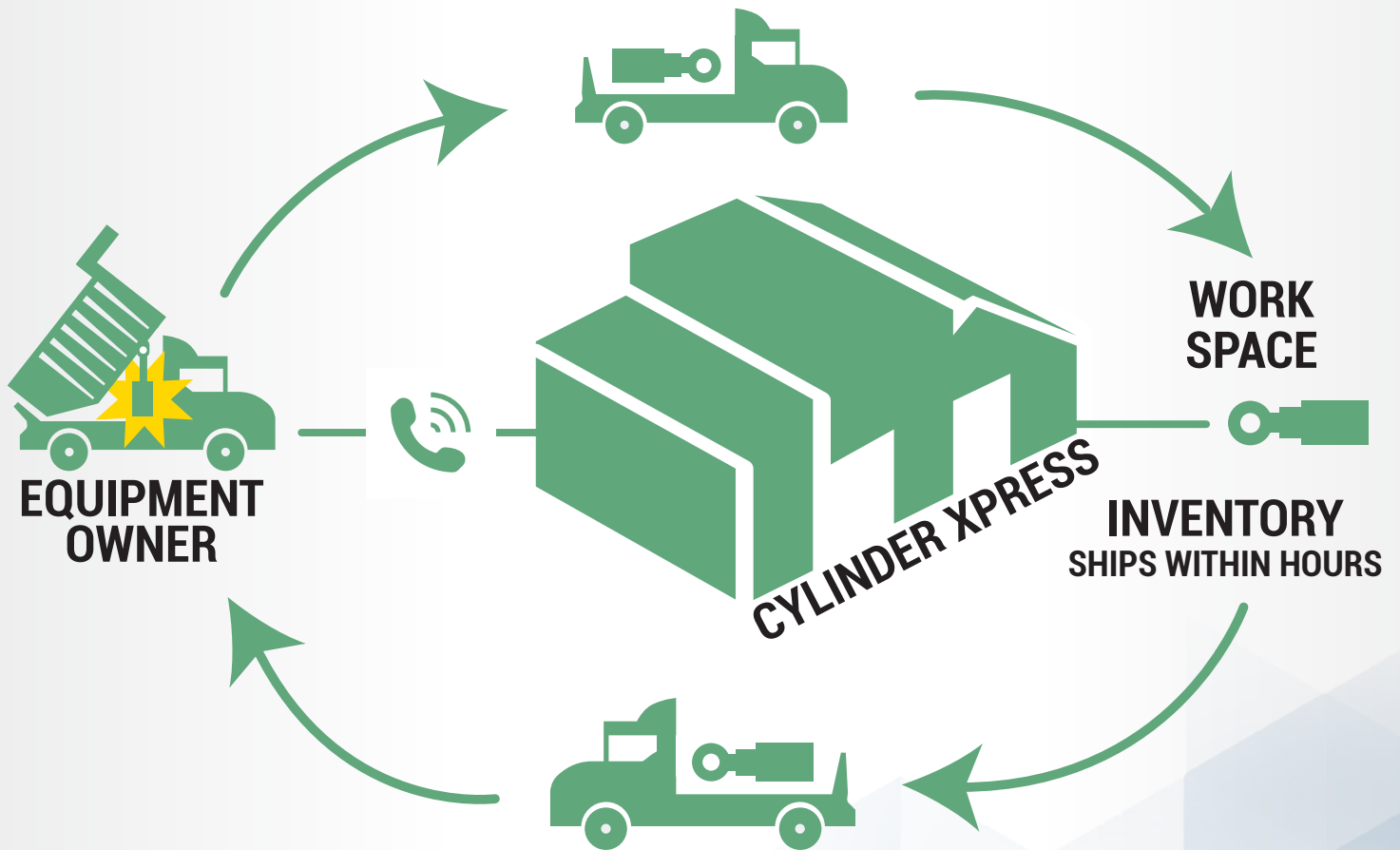
Severely worn or badly damaged hydraulic components mean lost productivity and machine downtime. Our Cylinder Xpress Exchange Program puts equipment back to work in days rather than weeks at a cost that compares favorably to replacing with "new" cylinders.

With extensive engineering capabilities and decades of hands-on experience, Swanson is a worldwide leader in custom design, manufacturing, remanufacturing and repair of highly engineered hydraulic cylinders with rigorous application requirements and challenging operating environments.



Cylinder Xpress Exchange Program Process

1. Customer contacts Cylinder Xpress about broken component.
2. Cylinder Xpress ships remanufactured part from inventory to customer.
3. Customer ships broken component to Cylinder Xpress work facility, which is later remanufactured and sent to inventory.
4. Customer assurance that remanufactured component is at OEM specs, or better, for less than cost of new a component.



Positive Environmental Impact

- ✓ Proper disposal of used parts
- ✓ Less energy consumed than in new product manufacturing process



Our expertise is with you from concept, through design, prototypes and testing, to production and on-time delivery.

Facilities

With more than 385,000 square feet of manufacturing space between three production facilities in the United States and China, Swanson is able to respond quickly to any inquiry or situation.

A flexible workforce allows Swanson to maximize production to meet the current demands of the marketplace.

- Small enough to be innovative and flexible
- Large enough for volume production





100%

**Assembled product that is
100% functional tested**





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