HUDSON DEEP DRAW

A PRECISION GROUP Company

Deep Drawn Stamped Components for the Medical Industry

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In the medical industry, tools, devices, and equipment are constantly evolving due to further advancements in the industry's technologies and techniques. Whether they are used for analyzing, monitoring, or treating patients, they rely on precise and accurate components to perform as intended.

For this reason, medical device manufacturers rely on **metal stamping** to produce the components they need for assembling their finished products. Metal stamped components find application in everything from surgical instruments to orthopedic implants.

The following eBook provides an overview of the role deep drawn stamping plays in the medical industry and discusses how to choose a deep drawn stamping partner that can meet your medical device component needs.

Importance of Deep Drawn Stamping in the Medical Industry

Metal stamping—also sometimes referred to as metal pressing—is a cold forming process that utilizes presses and dies to create components from sheet metal. Deep drawn stamping is a form of metal stamping used to create parts and products with depths that exceed their widths. It is highly suitable for manufacturing medical device components as it creates pieces that are precise and accurate in high volumes. As a result, medical device manufacturers have peace of mind that their products will meet their specifications and standards and, consequently, perform as required.

Medical component manufacturers, including metal stamping companies, are under constant pressure to meet increasingly strict quality and safety standards. For example, many medical devices and equipment require components that are easy to sterilize, resistant to corrosion and wear, dimensionally stable, and biologically inert. By accommodating a wide range of materials, metal stamping allows manufacturers to meet these industry-specific requirements since component designers and engineers can easily choose whichever metal best suits the application.

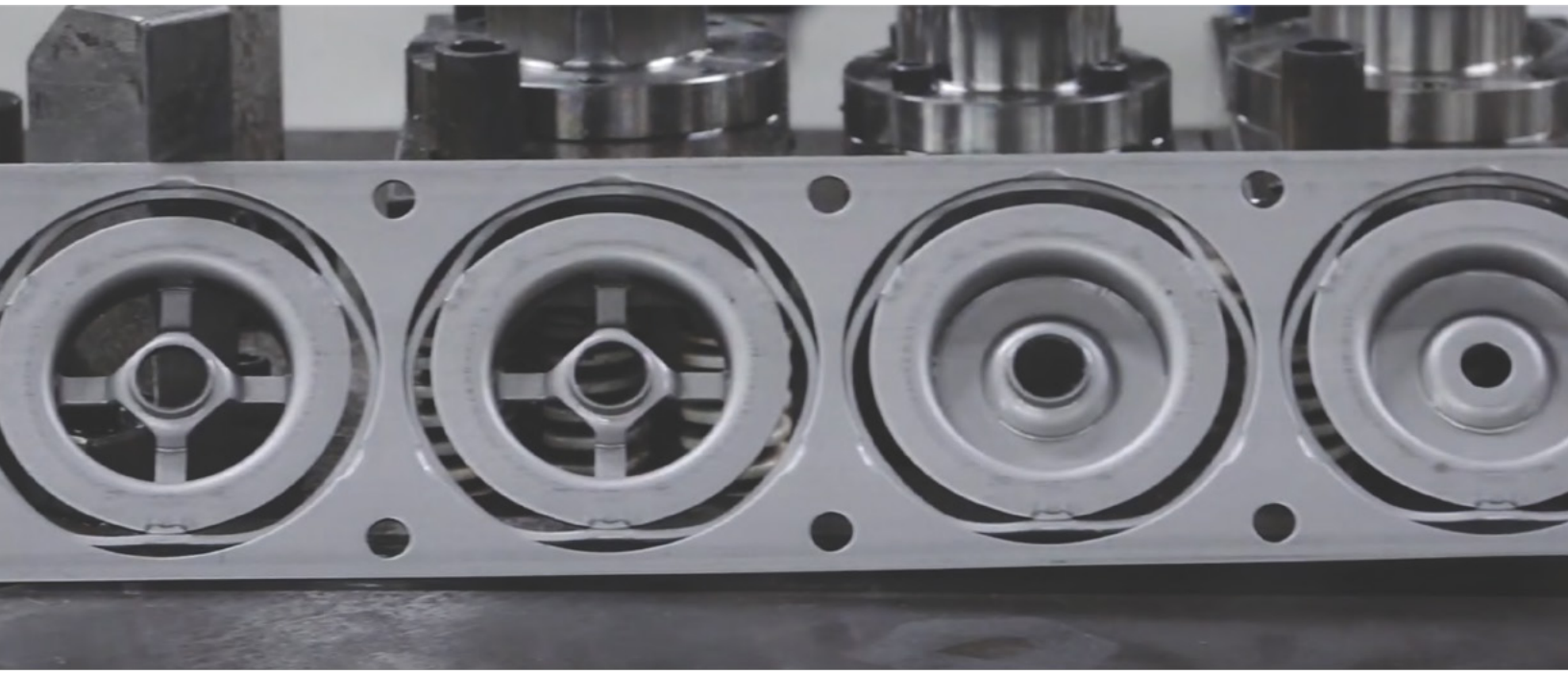
Considerations for Medical Component Manufacturing

The quality, toughness, and biocompatibility of the materials used to construct medical devices and equipment must be carefully considered to ensure the safety and efficacy of the final product. Titanium and stainless steel are two of the most commonly used materials for metal stamping due to their high tensile strength, corrosion resistance, and amenability to the stamping and forming process.

The fabrication of deep drawn titanium and stainless steel components is commonly used in the construction of medical devices for active stimulation and surgical procedures. Some key priorities when manufacturing these components are:

1. **Keeping medical components clean and hygienic**
2. **Working with cutting-edge precision equipment**
3. **Producing high-quality surface finishes**

Forming presses are a common choice for these components, and some companies (including Hudson Technologies) also choose to avoid the use of chlorinated lubricants, solvents, and other harsh chemicals that could interfere with product quality.



Common Medical Industry Applications and Components

A wide range of components for medical tools, devices, and equipment can be manufactured, such as:

- **Housings and casings**
- **Shields and half-shells**
- **Battery cases and enclosures**
- **Stamped and machined covers, headers, and lids**

Some typical medical products our components become a part of include:

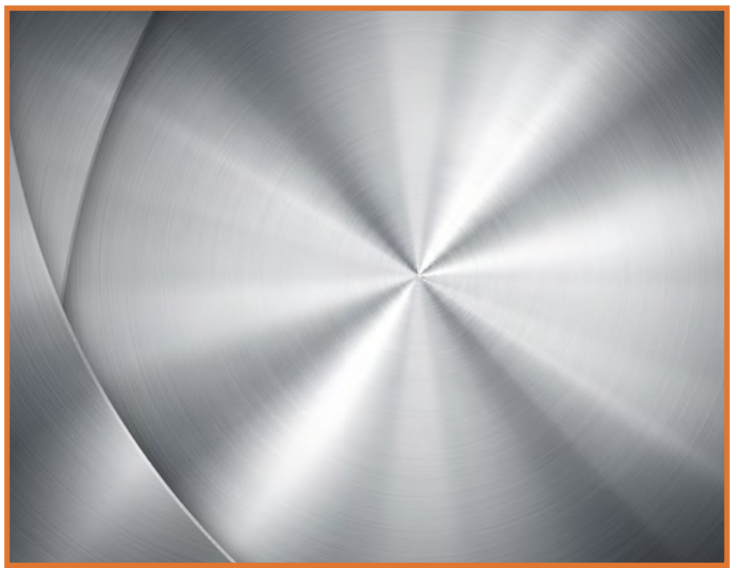
- **Implantable cardiac pacemakers**
- **Implantable cardioverter defibrillators (ICDs)**
- **Implantable drug infusion pumps**
- **Implantable hearing devices**
- **Implantable loop recorders (ILRs)**
- **Neuromodulation products**
- **Ventricular assist devices**

Choosing a Medical Component Manufacturer

Many medical manufacturers rely on deep drawn stamping to produce components for their tools, devices, and equipment due to the process's ability to generate precision parts in high volumes at low cost. Some considerations when seeking an experienced and knowledgeable supplier for your stamped metal component needs include:

Titanium Stamping Expertise

Due to its formability, corrosion resistance, and high tensile strength, titanium has become a staple material in the medical industry. It also has the unique ability to integrate safely with human bone and tissue. This property makes it well-suited for the manufacture of implantable tools and devices.



Look for a supplier that works with titanium grades 1, 2, 4, 5, 7, 9, 11, and 23, all of which demonstrate properties that make them suitable for medical applications. In particular, titanium grade 9 is a top choice for implantable medical device manufacturing due to the following qualities:

- **Good weldability and fabricability**
- **Great corrosion resistance**
- **Excellent electrical properties**
- **Superior MRI performance**
- **Better telemetry than commercially pure titanium**

Design Assistance Capabilities

A company's design and engineering expertise can be critical when seeking to take your product from concept ideation to product completion. An experienced supplier can provide material suggestions and design recommendations to optimize the manufacturability, quality, affordability, and performance of the medical component.

In-House Facilities and Capabilities

The flexibility of the deep drawn stamping process enables many companies to accommodate a wide range of part and product modifications, meaning customers have a greater degree of design freedom. Additional manufacturing capabilities and services such as coining, embossing, and hole forming services help to ensure the final component has all of the required features. Finishing and treatment services also allow for broader customization, all with minimal lead times and tight quality control.

High Production Run Sizes

Look for a company with the manufacturing capacity and flexibility to accommodate a wide range of production volumes. Since the metal stamping readily accepts automation, many high-tech shops can easily fulfill high-volume orders at a low cost per part without sacrificing part quality or consistency.

Medical Device Components From Hudson Technologies

At Hudson Technologies, we are one of the leading manufacturers of deep drawn metal stampings in the United States. Our state-of-the-art deep drawn stamping techniques enable us to produce high-quality parts and products for a wide range of industries, including the medical industry. Equipped with over 80 years of industry experience, we have the knowledge and skills to produce precise and accurate components that ensure reliable and safe performance in medical equipment.

Our stamping capabilities include:

- **Size:** 1/8 inch to 12 inches (3.1 mm to 305 mm) in diameter and 12 inches (305 mm) in length; .200 inches to 18 inches in diameter for flat and corrugated metal diaphragms
- **Thickness:** .002 inches to .187 inches (.005 mm to 4.75 mm); .0005 inches to .001 inches for flat and corrugated metal diaphragms
- **Shape:** Round, square, rectangular, and asymmetrical shapes
- **Precision:** Tolerances as low as +/- .002 inches (.05 mm) on custom cases; Tolerances as low as +/- .0005 inches (.0127 mm) on precision headers; Drawn corner radii as small as .005 inches (0.127 mm)
- **Volume** Single prototype to 5,000,000 pieces

At Hudson Technologies, we have what it takes to produce stamped components that meet and/or exceed the rigorous specifications and standards of the medical industry. Throughout our over 80 years designing, engineering, and manufacturing standard and custom stampings, we've garnered the knowledge and skills needed to meet some of the most specific and/or unique customer needs. As a result, we can produce precise, reliable, and safe components for various medical tools, devices, and equipment.

To learn more about our capabilities, check out our medical products page or contact us today. To discuss your project requirements, request a quote. One of our metal stamping experts will get in touch with you shortly.