



Precision And Efficiency CNC Machining In Medical Device Prototype Development

Our Product Introduction

Basic Information

- Place of Origin: China Shenzhen
- Brand Name: ABS, PC, PMMA, POM, PA, PTFE, PEEK
- Certification: Polishing, Anodizing, Painting, Chrome Plating, Silkscreen
- Model Number: Medical Device Prototype
- Minimum Order Quantity: 1 piece
- Price: USD 30 piece
- Packaging Details: Carton, Plywood box
- Delivery Time: 3 - 5 work days
- Payment Terms: T/T, Paypal
- Supply Ability: 1 piece per day



Product Specification

- Product Type: Medical Device Prototype
- Material: Plastic, Metal, Electronics
- Compatibility: Can Be Used With Various Medical Devices
- File Format: 3D IGS, X-T, STEP, STP
- Timeframe: Rapid Production For Quick Testing And Feedback
- Ease Of Use: Simple And Intuitive Design
- Prototype Type: Functional/Appearance
- Quality Control: 100% Inspection
- Highlight: precision medical prototype development, precision medical device prototype development, efficiency medical prototype development



Product Description

examples of how plastic CNC machining prototypes have improved the development of specific medical devices

Surgical Instruments: Prototypes created through plastic CNC machining are instrumental in the development and refinement of surgical tools, including laparoscopic and orthopedic instruments. These prototypes, which closely match the final products, enable designers and surgeons to evaluate the ergonomics, functionality, and user-friendliness of the instruments. The iterative design process ensures the instruments are optimized for precision and efficiency in surgical procedures.

Prosthetic Limbs: In the realm of prosthetic limb development, plastic CNC machining prototypes are crucial. Manufacturers use these prototypes, tailored to individual patient measurements and designs, to produce functional limbs that replicate the final product. This allows for the adjustment and testing of fit, alignment, and motion range, culminating in prosthetic limbs that provide enhanced comfort, mobility, and functionality to users.



Plastic CNC machining prototypes are vital in developing housings and enclosures for medical devices. They allow designers to assess the fit, finish, and aesthetic appeal. Moreover, they provide an opportunity to test the placement and accessibility of buttons, switches, and interfaces, crucial for intuitive and user-friendly designs. Through ongoing refinement, manufacturers can create devices that not only function well but are also visually appealing and easy to use.



Diagnostic Equipment Components: Prototypes produced via plastic CNC machining play a pivotal role in the development of parts for diagnostic devices such as MRI and ultrasound machines. These prototypes are vital for evaluating the functionality and accuracy of different components, including sensor housings, probe connectors, and patient interfaces. Prototype validation enables manufacturers to improve the accuracy, reliability, and quality of the diagnostic equipment.



Drug Delivery Devices: Plastic CNC machining prototypes have been used to refine drug delivery devices, such as inhalers or

injection pens. Prototypes allow for the evaluation of factors like ergonomics, ease of use, and dose accuracy. By incorporating user feedback and conducting usability studies with prototypes, manufacturers can optimize the design and functionality of these devices, ensuring effective and convenient drug delivery for patients.



The examples illustrate the crucial role of plastic CNC machining prototypes in advancing the development of diverse medical devices. They facilitate iterative design enhancements, functional testing, the integration of user feedback, and the overall improvement of device functionality and user-friendliness.

Materials for Vacuum Casting	
You can choose a wide range of vacuum casting materials depending on the peculiarities of your project. Here are some choices for you:	
Process	Description
Step 1. Master Pattern Creation	The procedure starts with the development of a master pattern, which acts as the prototype for duplication. This master pattern can be crafted through several techniques, including 3D printing, CNC machining, or conventional manufacturing methods.
Step 2. Mold Preparation	A silicone mold is formed around the master pattern, usually in two halves, to facilitate the easy removal of the pattern and subsequent casting. Once created, the mold is secured inside a casting frame.
Step 3. Mold Release and Preparation	Prior to casting, a mold release agent is applied to ensure the easy removal of the final casted part from the mold. The mold is then preheated to a specific temperature to enhance material flow and reduce curing time.

Step 4. Material Mixing and Vacuum Degassing	The selected casting material, typically a two-part polyurethane (PU) resin, is mixed thoroughly to ensure uniform consistency. Once mixed, the material is placed in a vacuum chamber to eliminate any air bubbles or voids that might compromise the quality of the final product.
Step 5. Casting Process	Polycarbonate (PC) is a type of amorphous thermoplastic celebrated for its outstanding transparency and impact resistance. Additionally, it has robust electrical insulation properties and a moderate level of chemical resistance.
Step 6. Curing and Solidification	Once the mold is filled, the casting remains undisturbed to cure and harden. The duration of curing depends on the type of resin, the thickness of the part, and the surrounding conditions. If needed, heat or additional post-curing can be used to expedite the curing process.
Step 7. Mold Opening and Part Extraction	After the resin solidifies, the mold is opened, and the cast component is gently extracted. The mold can be repeatedly used to create more parts.
Step 8. Finishing and surface treatment	To attain the required aesthetics and functionality, the cast part may necessitate finishing and surface treatments, including trimming off excess material, sanding, painting, or applying other surface enhancements.

Our firm provides a wide array of professional finishing services that improve the look, functionality, and longevity of components. The key finishing services we offer include:

Anodizing: This electrochemical procedure, mainly applied to aluminum parts, forms a protective oxide coating that enhances corrosion resistance and offers a decorative appearance. Additionally, anodizing can be paired with dyeing to introduce various color choices.



Painting: Our painting services enable the application of diverse paint types to attain the preferred colors, textures, or protective coatings. Methods such as spray painting and powder coating are frequently utilized to improve the aesthetic and surface properties of components.



Pad and Silk Screen Printing: These techniques are utilized to apply bespoke designs, logos, or labels onto various parts. They serve to promote branding, product identification, and the inclusion of instructional information, thereby augmenting the aesthetic appeal.



Sanding and Polishing: Our services employ abrasive materials to smooth out roughness and imperfections on surfaces, achieving a finer and more polished finish. This method not only improves the parts' appearance but also their tactile quality.



Vapor Polishing: This process involves using solvents or chemicals to smooth the surface of plastic parts, removing imperfections and yielding a shiny, clear finish. Vapor polishing improves the aesthetic and functional quality of plastic components.



Powder Coating: This is a dry finishing technique in which a fine powder is electrostatically charged and applied to a part's surface. After application, the part is heated, causing the powder to melt and solidify into a tough, protective coating. Powder coating offers superior resistance to corrosion, chemicals, and ultraviolet radiation.



Blasting refers to the process of propelling high-velocity particles or beads at the surface of components. This method efficiently eliminates imperfections, burrs, and sharp edges, achieving a uniform and matte surface finish. Blasting enhances the overall surface condition and readies the components for further treatments or uses.



By taking advantage of our comprehensive finishing services, you can be confident that your parts will not only fulfill functional specifications but will also exhibit an improved appearance, enhanced performance, and greater longevity. Our experienced team will collaborate with you to identify the finishing techniques that best align with your unique needs.



Inspections and Review for Every Stage of Production

Barana Rapid ensures quality throughout the entire process by offering these inspection and review services:

Thorough verification of incoming materials

Design for manufacturing assessments for all provided quotes

Contract evaluations upon purchase order receipt

First article and ongoing process inspections

Comprehensive final inspections and tests, complete with necessary reports and certifications



Visual inspection



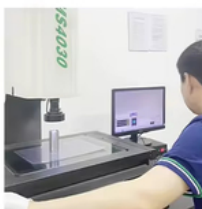
Touch test



Dimension inspection



High gauge



2D image
measuring equipment



Hardness
tester

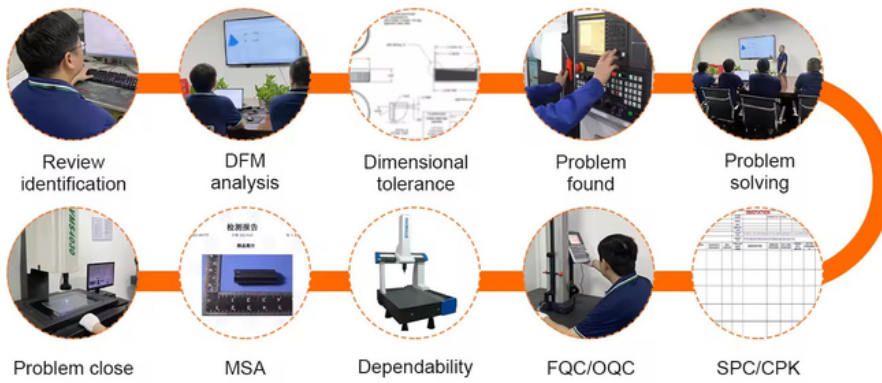


Tensile
tester



Salt-spray
testing machine

Quality Inspection



Packing



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