



## Smooth Prototype Aluminium Fabrication Driving Success Rapid Prototyping In Automotive Industry

### Our Product Introduction

#### Basic Information

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



#### Product Specification

- Customized: Race Car Rapid Prototyping Mockup
- Surface Finish: Smooth
- Feature: Mechanical Metal Model
- Cnc Machining: Aluminium Rapid Prototyping
- Material: Metal/Plastic
- Service: OEM/ODM/Customized Design
- Application: Automotive Rapid Prototyping
- Speed: Fast
- Highlight: **smooth prototype aluminium fabrication , smooth rapid prototyping in automotive industry , odm prototype aluminium fabrication**



## Product Description

### Automotive Rapid Prototyping: Driving Innovation and Speed to Market

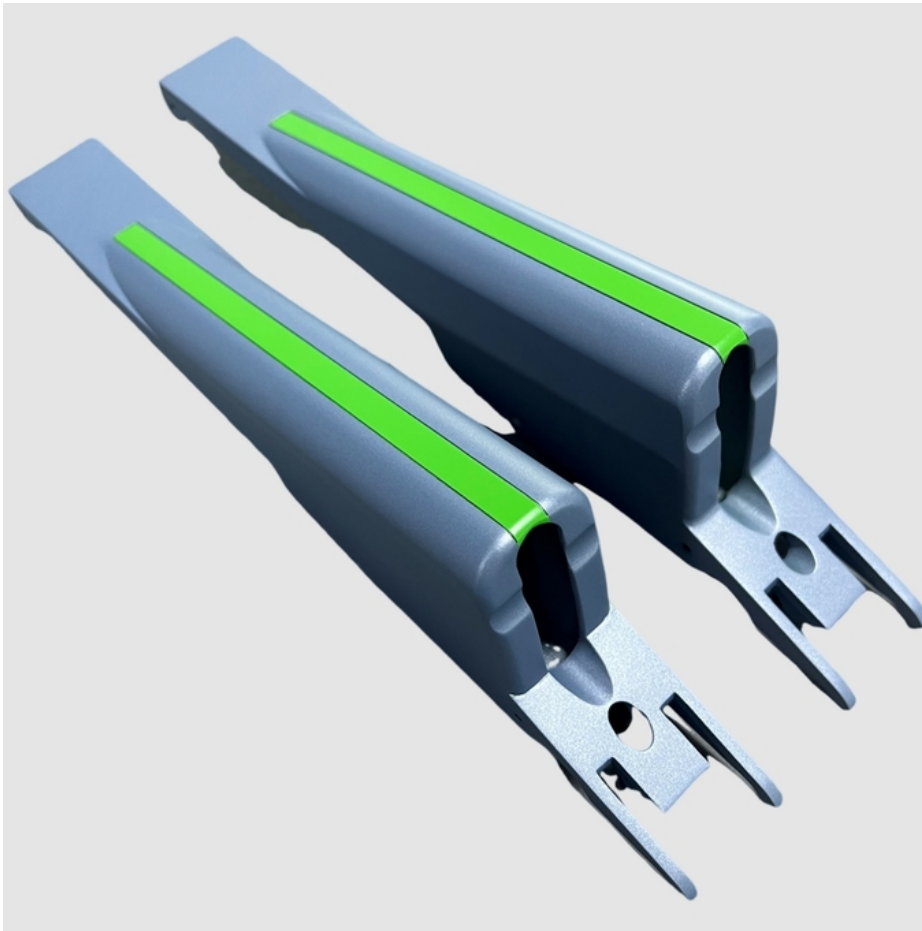
In the rapidly advancing automotive manufacturing sector, sustaining a competitive advantage requires innovative designs and the ability to rapidly convert these ideas into tangible prototypes. Our company, a leader in CNC manufacturing based in China, specializes in automotive rapid prototyping, transforming design concepts into functional prototypes with exceptional speed. Discover the attributes, advantages, and expertise that make our services indispensable to worldwide automotive manufacturers.

### Our Capabilities

**1. Comprehensive Prototyping Technologies:** Our facility boasts state-of-the-art CNC machining, 3D printing, and injection molding technologies, which empower us to create superior prototypes using diverse materials such as plastics, metals, and composites. This capability ensures that we can replicate the precise attributes of the end products, guaranteeing that each prototype closely mirrors the final production model.



**2. Full-Scale Development:** Our expertise encompasses the entire range of automotive parts, from minor elements such as knobs and switches to major components like body panels and chassis parts. We are equipped to manage all aspects, from individual prototypes to small-scale production batches for testing and validation.



**3. Advanced Material Options:** We work with a wide range of materials specifically suited for automotive applications, ensuring properties such as durability, heat resistance, and aesthetic finish meet the stringent demands of the industry.



#### **Our Advantages**

**4. Speed to Market:** Our rapid prototyping services substantially cut down the development time of new automotive products.

By hastening the prototype stage, we assist our clients in reaching the market more swiftly, providing a crucial edge in the automotive sector where timing is often the key to market triumph.



**5. Precision and Quality:** Our skilled application of CNC and additive manufacturing technologies guarantees high precision in each prototype. This rigorous attention to detail ensures that the prototypes not only appear but also perform as designed, minimizing the necessity for expensive revisions and iterations.



**6. Cost-Effective Solutions:** Rapid prototyping facilitates the cost-effective testing and development of automotive components. It enables the early detection of design issues and the swift trialing of various iterations, allowing our clients to reduce development expenses and curtail waste prior to commencing mass production.



#### Global Service, Local Expertise

**7. Worldwide Collaboration:** We serve a global clientele, providing tailored solutions that adhere to international standards and regulations. Our expertise in addressing the varied requirements of different markets uniquely qualifies us to support automotive companies worldwide.

**8. Dedicated Support Team:** Our engineers and technical specialists deliver extensive support during the prototyping phase. We offer professional guidance and regular updates, guaranteeing that our clients are actively involved and well-informed at each stage. Rapid prototyping plays a crucial role in the development of automotive parts by offering several benefits to manufacturers. Here are some specific applications of rapid prototyping in the automotive industry:

**Concept Development:** Rapid prototyping allows designers and engineers to quickly transform their ideas into physical models. It assists in visualizing the design and evaluating its functionality, aesthetic, and ergonomic qualities. This iterative process facilitates the early identification of design flaws and encourages continuous improvement of the design.

CNC Machining Tolerances and Standards		
With precision CNC machining services, Barana Rapid is your ideal partner to create precision machined prototypes and parts. Our standard CNC machining tolerances for metals is ISO 2768-f and for plastics is ISO 2768-m. We can also achieve special tolerances as long as you indicate your requirements for your drawing.		
Standards	CNC Milling	CNC Turning
Maximum Part Size	2000x1500x600 mm	200x500 mm
Minimum Part Size	4x4 mm 0.1*0.4 in	2x2 mm 0.079x0.079 in
Minimum Feature Size	Φ 0. 50 mm Φ 0. 00197 in	Φ 0. 50 mm Φ 0. 00197 in
Standar Tolerances	Metals: ISO 2768-f Plastics: ISO 2768-m	Metals: ISO 2768-f Plastics: ISO 2768-m
Hole Diameters	+/- 0. 025 mm +/- 0. 001 in.	+/- 0. 025 mm +/- 0. 001 in.

Linear Dimension	+/- 0.025 mm +/- 0.001 in	+/- 0.025 mm +/- 0.001 in
Edge Condition	Sharp corner will be removed in the form of a chamfer or radius. The size of the chamfer, or resulting radii, must be indicated on the drawing.	
Shaft Diameters	+/- 0.025 mm +/- 0.001 in.	+/- 0.025 mm +/- 0.001 in.
Threads and Tapped Holes	Diameter: $\Phi$ 1.5-5 mm, depth: 3×diameter Diameter: $\Phi$ 5 mm or more, depth: 4-6×diameter	Diameter: $\Phi$ 1.5-5 mm, depth: 3×diameter Diameter: $\Phi$ 5 mm or more, depth: 4-6×diameter
Types of Thread	Barana Rapid can produce threads of any specification and size required by our customers.	
Text	Minimum width of 0.5 mm, depth of 0.1 mm	Barana Rapid can use laser marking to create standard text for CNC turned parts.
Lead Time	3 business days	3 business days

**Functional Prototyping:** Functional prototypes are developed to evaluate the performance and functionality of automotive parts. These prototypes are constructed using rapid prototyping techniques like 3D printing, CNC machining, or vacuum casting. They undergo a series of tests such as fitment, assembly, and mechanical tests to verify they conform to the necessary specifications.

**Customization and Personalization:** Rapid prototyping facilitates the creation of customized automotive components. Manufacturers can swiftly alter designs and produce prototypes that are customized to meet specific customer needs. This results in personalized features, distinctive designs, and tailor-made components, which increase customer satisfaction and offer a competitive advantage.

CNC Turning Tolerances	
we machine CNC turning lathe parts to meet tight tolerance requirements. Based on your design, our CNC lattes can reach tolerances of up to $\pm 0.005"$ . Our standard tolerances for CNC milled metals is ISO 2768-m and ISO 2768-c for plastics.	
Type	CNC Turning Tolerances
Linear dimension	$\pm 0.025$ mm- $\pm 0.001$ inch
Hole diameters	$\pm 0.025$ mm- $\pm 0.001$ inch
Shaft diameters	$\pm 0.025$ mm- $\pm 0.001$ inch
Part size limit	950 * 550 * 480 mm-37.0 * 21.5 * 18.5 inch







**Tooling and Manufacturing Aid:** Rapid prototyping plays a crucial role in the development of tooling and manufacturing processes for automotive components. It offers reference prototypes for the creation of molds, dies, and other vital production tools necessary for mass production. Rapid prototyping techniques facilitate the validation of tool designs, enhance manufacturing procedures, and decrease the time and expenses associated with traditional tooling.

**Performance Testing and Validation:** Prototypes are rigorously tested to evaluate the performance and durability of automotive parts. They undergo mechanical stress tests, exposure to various environmental conditions, and performance simulations to identify problems, improve designs, and ensure they meet safety and performance standards.

**Supply Chain Optimization:** Rapid prototyping enhances the supply chain of automotive parts by enabling swift design iterations and shortening lead times. It allows for efficient design validation and modifications, decreasing the duration for design approvals and part production. Such efficiency in prototyping can result in quicker development cycles and better market introduction times.

In summary, rapid prototyping expedites the automotive parts development process, improves design verification, fosters customization, and aids in efficient manufacturing. By adopting rapid prototyping, manufacturers can elevate product quality, cut expenses, and secure a competitive edge in the automotive industry.

Surface Finishes for CNC Machining
CNC machining often results in visible tool marks as it removes material from the block's surface to shape the desired forms. To avoid as-machined appearances, choose a surface finish for your custom components. Barana Rapid provides a variety of popular surface finishes that enhance both functionality and aesthetics.

	Name	Description	Materials	Color	Texture
	Anodizing	Anodizing improves corrosion resistance, enhancing wear resistance and hardness, and protecting the metal surface. Widely used in mechanical parts, aircraft, and automobile parts, precision instruments, etc.	Aluminum	Clear, black, grey, red, blue, gold.	Smooth, matte finish
	Sand Blasting	Sand blasting results in parts with a smooth surface with a matte texture. Used mainly for visual applications and can be followed by other surface treatments.	ABS, Aluminum, Brass	N/A	matte
	Powder Coating	Powder coating is a type of coating that is applied as a free-flowing, dry powder. Unlike conventional liquid paint which is delivered via an evaporating solvent, powder coating is typically applied electrostatically and then cured under heat or with ultraviolet light.	Aluminum, Stainless Steel, Steel	Black, any RAL code or Pantone number	Gloss or semi-gloss
	Electroplating	Electroplating can be functional, decorative or corrosion-related. Many industries use the process, including the automotive sector, in which chrome-plating of steel automobile parts is common.	Aluminum, steel, Stainless Steel	N/A	Smooth, Glossy finish
	Polishing	Polishing is the process of creating a smooth and shiny surface, either through physical rubbing of the part or by chemical interference. The process produces a surface with significant specular reflection, but in some materials is able to reduce diffuse reflection.	Aluminum, Brass, Stainless Steel, Steel	N/A	Glossy
	Brushing	Brushing is a surface treatment process in which abrasive belts are used to draw traces on the surface of a material, usually for aesthetic purposes.	ABS, Aluminum, Brass, Stainless Steel, Steel	N/A	Satin



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