



Prototyping And Small Batch Production Low Volume Prototyping Lathe Milling Turning

Our Product Introduction

Basic Information

- Place of Origin: China Shenzhen
- Brand Name: Aluminum, Stainless Steel, Brass, Titanium, Plastic
- Certification: Low Volume CNC Machining
- Model Number: Polishing, Anodizing, Painting, Chrome Plating, Silkscreen
- Minimum Order Quantity: 1 piece
- Price: USD 30 piece
- Packaging Details: Carton, Plywood Box
- Delivery Time: 2 - 5 Days
- Payment Terms: T/T, Paypal
- Supply Ability: 1 piece per day



Product Specification

- Machining Processes: CNC Milling, CNC Turning, Drilling, Tapping, Threading
- Machining Type: Low Volume CNC Machining
- Color: As Client's Requested
- Material: Aluminum, Steel, Stainless Steel, Brass, Copper, Titanium, Plastic
- Process Way: CNC Machining/Lathe/milling/Turning
- Delivery Way: Fedex And DHL , UPS And So On
- Leadtime: 3-7 Business Days
- Surface Finish: Anodization, Chrome Plating, Power Coating, Silkscreen, Laser Etching
- Highlight: **Lathe low volume prototyping, milling low volume prototyping, Turning low volume prototyping**



Product Description

Low-Volume Manufacturing The Ideal Solution for Prototyping and Small Batch Production

What is CNC Low-Volume Manufacturing

CNC low-volume manufacturing involves producing a modest number of items, usually from several dozen to several thousand units. It serves as a middle ground between prototype development and large-scale mass production. This manufacturing approach is utilized for various purposes such as market testing, limited production runs, specialized or niche items, and the introduction of new products.

Key characteristics of low-volume manufacturing include:

Quantity: Low-volume manufacturing typically involves producing a limited quantity of units, usually in the range of dozens to thousands. The exact quantity can vary depending on the specific industry, product, and market demand.



Flexibility: Low-volume manufacturing offers greater flexibility compared to high-volume production. It allows for adjustments, iterations, and improvements based on feedback and market response. Manufacturers can respond quickly to changes in design, specifications, or customer requirements.

Cost-wise, low-volume manufacturing might incur higher per-unit expenses than mass production; however, it typically proves more economical than prototyping or bespoke one-off manufacturing. Some economies of scale can still be realized, which can lead to lower costs than when producing units on an individual basis.

Speed: Low-volume manufacturing offers faster production times compared to high-volume manufacturing. With a smaller quantity to produce, manufacturers can often complete the production process more quickly, reducing lead times and allowing for faster product launches.

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	$\pm 0.025 \text{ mm} - \pm 0.001 \text{ inch}$
Hole diameters	$\pm 0.025 \text{ mm} - \pm 0.001 \text{ inch}$

Shaft diameters	±0.025 mm-±0.001 inch
Part size limit	950 * 550 * 480 mm-37.0 * 21.5 * 18.5 inch

Customization: Low-volume manufacturing is well-suited for custom or niche products that require tailored features or specifications. It allows for customization and personalization according to individual customer needs or market segments.

Manufacturing Technologies: Various manufacturing technologies can be utilized in low-volume manufacturing, including CNC machining, 3D printing, vacuum casting, and small-scale injection molding. These technologies offer flexibility, accuracy, and cost-efficiency for producing small batches of parts or products.

In terms of cost, low-volume manufacturing typically has higher per-unit costs compared to high-volume manufacturing. There are several factors that contribute to this cost difference:






Economies of scale are advantageous in high-volume manufacturing, as the cost per unit tends to decrease when production volume increases. This is due to the distribution of fixed costs like tooling, setup, and equipment over a larger number of units, which diminishes the cost for each unit. Conversely, low-volume manufacturing doesn't enjoy these economies of scale, leading to elevated costs per unit.


Tooling and Equipment Costs: High-volume manufacturing often involves the use of specialized tooling and equipment that may require significant upfront investment. These costs are distributed over a large production volume, reducing the cost per unit. In low-volume manufacturing, the cost of tooling and equipment is spread over a smaller quantity of units, leading to higher per-unit costs.

Material Costs: Material costs can also differ between low-volume and high-volume manufacturing. In high-volume production, manufacturers may have the advantage of bulk purchasing, negotiating better material prices, and taking advantage of long-term contracts with suppliers. These factors can help reduce material costs per unit compared to low-volume manufacturing.

Surface Finishes for CNC Machining

CNC machining leaves visible tool marks during the process of removing portions of the block's surface to create desired shapes. If you don't want as-machined parts, select a surface finishing for your custom parts. At Barana Rapid, we offer several common surface finishes that help improve functionality and aesthetics.

Picture	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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Efficiency and Automation: High-volume manufacturing often involves greater automation and optimized production processes, leading to higher efficiency and reduced labor costs per unit. Low-volume manufacturing may require more manual labor, setup time, and customization, leading to higher labor costs per unit.

It is essential to recognize that comparing costs between low-volume and high-volume manufacturing isn't always clear-cut. Factors such as the particular product, industry, manufacturing techniques, and market forces can affect the cost disparity. Occasionally, low-volume manufacturing may be the more economical choice for producing small quantities of specialized or bespoke products, even with greater costs per unit. Companies must meticulously assess their production needs and weigh the trade-offs among cost, quantity, adaptability, and market needs when choosing between low-volume and high-volume manufacturing strategies.



What Separates Barana Rapid's Inspection Processes from the Rest?

Careful measurement, inspection and testing are necessary to ensure the conformance of your parts. We perform multiple inspections at every step of the product development journey, from incoming material verification to final 3D scanning. You will receive complete digital files and Certificates of Compliance so you can meet your own regulatory and performance goals.

An International Team with Unparalleled Experience

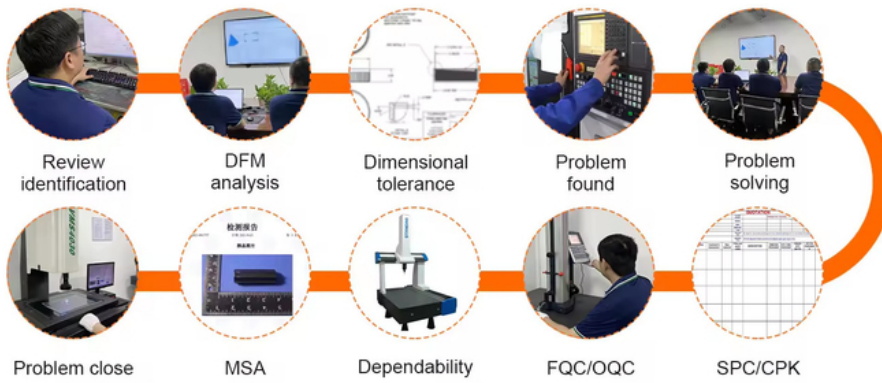
Quality inspection relies not only upon using advanced digital equipment but also having highly trained personnel with years of experience. As parts become more complex and tolerances more demanding for advanced applications, precision measurements conducted by professionals are the only way to ensure perfection.

Inspections and Review for Every Stage of Production

To ensure quality from start to finish, Star Rapid provides the following inspection and review services:

- Extensive incoming materials verification
- Design for manufacturing reviews for all quotes provided
- Contract reviews upon receipt of POs
- First article and in-process inspections
- Final inspections and testing with reports and certifications as required

Quality Inspection



Visual inspection



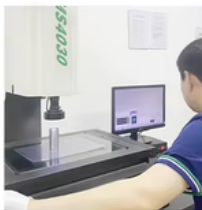
Touch test



Dimension inspection



High gauge



2D image measuring equipment



Hardness tester



Tensile tester



Salt-spray testing machine

Packing



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