

Genmitsu SN07A

Genmitsu SN07A 7-Piece 3-Flute End Mill Set for Aluminum Instruction Manual

Model: SN07A (CNC61S-SN)

1. INTRODUCTION

This manual provides essential information for the safe and effective use of your Genmitsu SN07A 7-Piece 3-Flute End Mill Set. These end mills are designed for precision machining of aluminum and copper alloys, featuring a Nano Blue coating for enhanced durability and performance. Please read this manual thoroughly before operation.

2. PRODUCT FEATURES

- **High-Quality Construction:** Manufactured from tungsten carbide steel with a 0.2µm ultrafine tungsten carbide alloy. The Nano Blue coating provides superior hardness and heat resistance, ensuring prolonged tool life and consistent cutting performance.
- **Cost-Effective Set:** Includes 7 square end mills with 3 flutes. Shank diameter: 4 mm. Cutting diameters: 1 mm, 1.5 mm, 2 mm, 2.5 mm, 3 mm, 3.5 mm, 4 mm. Cutting lengths: 4 mm, 4 mm, 5 mm, 6 mm, 8 mm, 10 mm, 12 mm. Overall length for all bits: 50 mm.
- **Versatile Application:** Optimized for efficient chip removal, suitable for both roughing and finishing operations. Achieves a high Material Removal Rate (MRRR), particularly effective for slotting.
- **Material Compatibility:** The U-shaped flute design makes these end mills ideal for working with aluminum and copper alloys. Features a strong tooth design with double relief angles for excellent production efficiency.
- **Wide Compatibility:** Compatible with most desktop CNC machines, including the Genmitsu 3018 series, as well as various industrial CNC machines. Ensure the correct collet is used for your equipment.

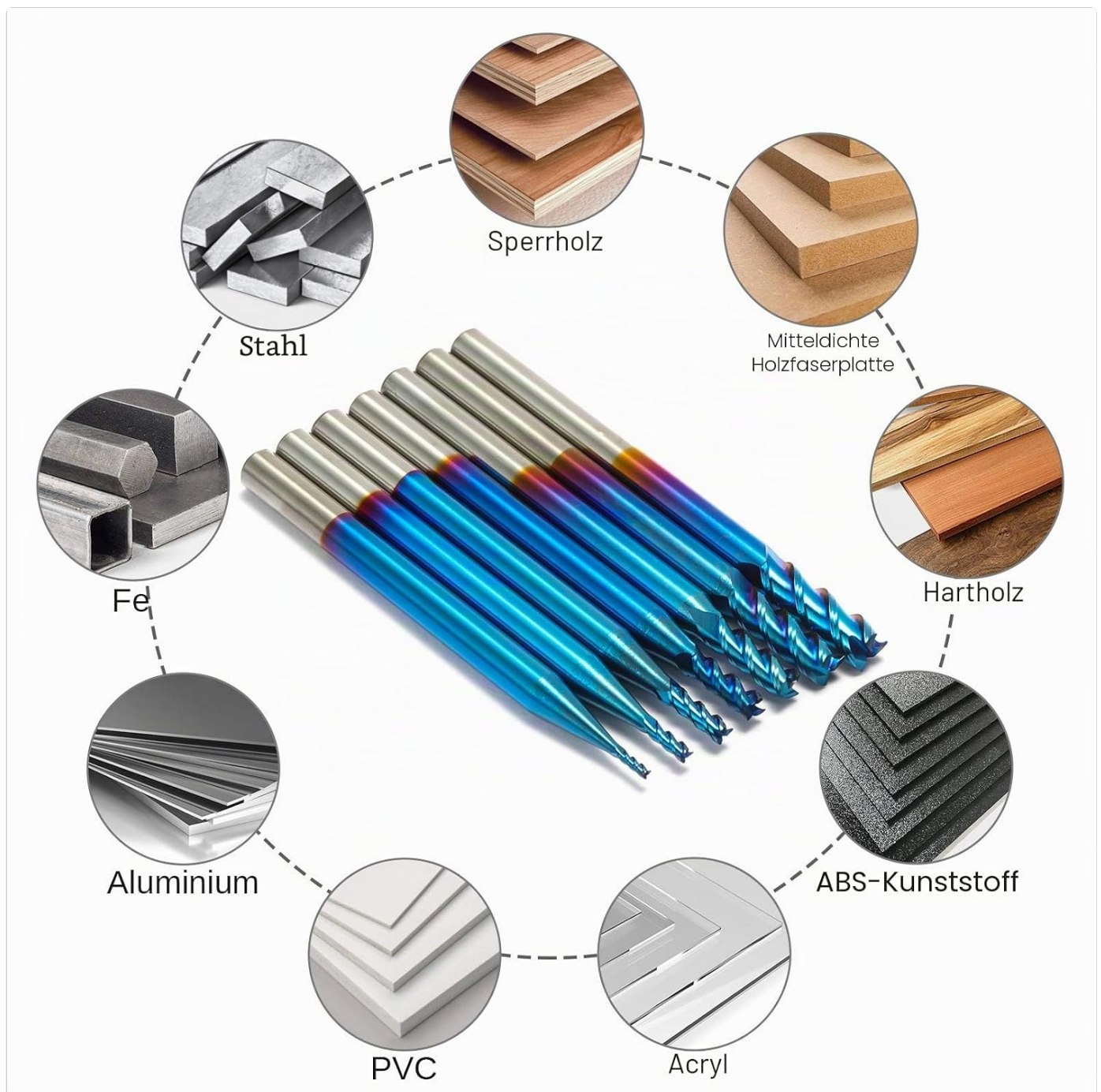


Image: Close-up of the end mills, highlighting the Nano Blue coating and flute design.

3. PACKAGE CONTENTS

The Genmitsu SN07A set includes the following 7 end mills, each individually packaged in a protective case:

- 1x End Mill D1.0 (1.0 mm cutting diameter)
- 1x End Mill D1.5 (1.5 mm cutting diameter)
- 1x End Mill D2.0 (2.0 mm cutting diameter)
- 1x End Mill D2.5 (2.5 mm cutting diameter)
- 1x End Mill D3.0 (3.0 mm cutting diameter)
- 1x End Mill D3.5 (3.5 mm cutting diameter)
- 1x End Mill D4.0 (4.0 mm cutting diameter)

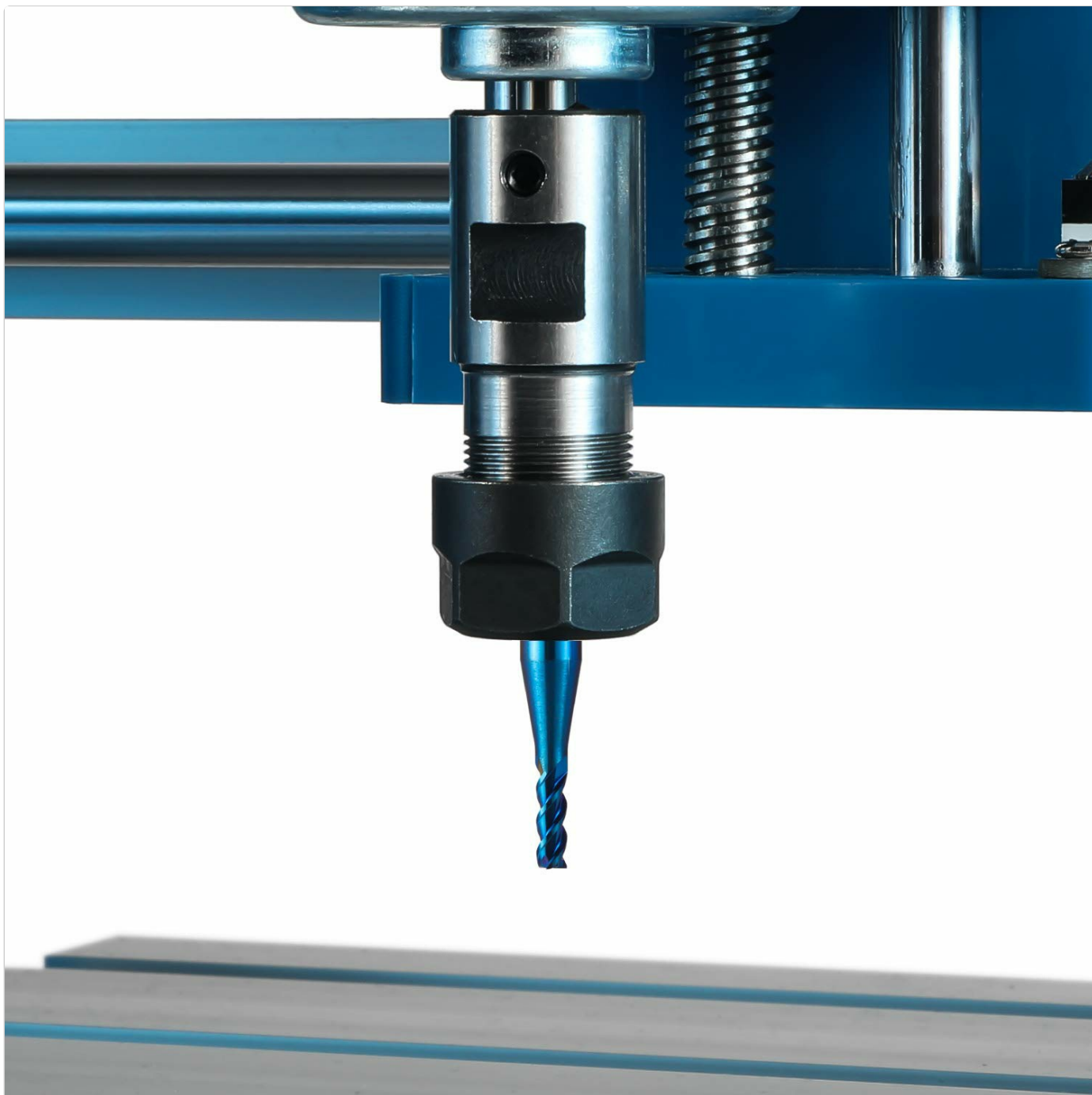


Image: The 7 end mills, each stored in its protective plastic case.

4. SPECIFICATIONS

Specification	Value
Model Number	CNC61S-SN
Material	Tungsten Carbide
Number of Flutes	3
Shank Diameter	4 mm
Cutting Diameters	1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0 mm
Cutting Lengths	4, 4, 5, 6, 8, 10, 12 mm

Specification	Value
Overall Length	50 mm
Coating	Nano Blue
Cut Type	Square End Mill
Country of Origin	China



Image: Overview of the 7 end mills with their respective cutting diameters and overall dimensions.



Image: Detailed dimension table for each end mill in the set.

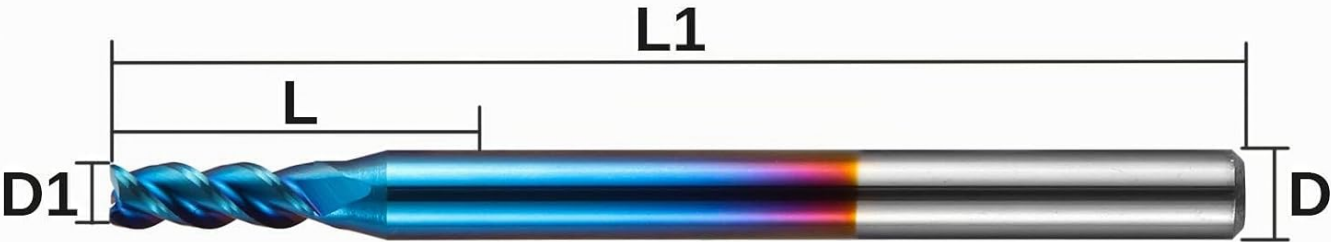
5. COMPATIBILITY

These end mills are compatible with a wide range of CNC machines that can accommodate a 4mm shank diameter. This includes popular desktop CNC models like the Genmitsu 3018 series, as well as various industrial CNC systems. Always ensure your machine's collet size matches the 4mm shank diameter of these tools.

Applicable Materials:

- Aluminum
- Copper Alloys
- Steel (for light passes)
- Plywood
- Medium Density Fiberboard (MDF)
- Hardwood

- ABS Plastic
- PVC
- Acrylic



7-tlg. 3-Schneiden Schaftfräser				
Gr.	D1(mm)	L(mm)	D(mm)	L1(mm)
D1.0-3-50L	1.0	3.0	4.0	50.0
D1.5-5-50L	1.5	5.0	4.0	50.0
D2.0-7-50L	2.0	7.0	4.0	50.0
D2.5-8-50L	2.5	8.0	4.0	50.0
D3.0-11-50L	3.0	11.0	4.0	50.0
D3.5-12-50L	3.5	12.0	4.0	50.0
D4.0-13-50L	4.0	13.0	4.0	50.0



Image: Visual representation of materials suitable for use with these end mills.

6. SAFETY INFORMATION

- Always prioritize safety when operating CNC machinery and using cutting tools. Failure to follow safety guidelines can result in serious injury or damage to equipment.
- **Eye Protection:** Always wear safety glasses or a face shield to protect against flying debris.
 - **Hand Protection:** Use appropriate gloves when handling end mills to prevent cuts. Remove gloves before operating machinery.
 - **Machine Safety:** Ensure your CNC machine is properly grounded and all safety guards are in place. Never operate the machine with guards removed.

- **Workpiece Securement:** Always securely clamp your workpiece to the machine bed to prevent movement during cutting.
- **Proper Collet:** Use the correct collet size (4mm) and ensure the end mill is inserted deeply and tightened securely. An improperly seated tool can fly out during operation.
- **Ventilation:** Ensure adequate ventilation in your workspace, especially when cutting materials that produce fine dust or fumes.
- **Emergency Stop:** Know the location and function of your machine's emergency stop button.
- **Unattended Operation:** Never leave a running CNC machine unattended.

7. SETUP AND INSTALLATION

Proper installation of the end mill is crucial for safe operation and optimal cutting results.

1. **Select the Correct End Mill:** Choose the appropriate end mill from the set based on your desired cutting diameter and material.
2. **Prepare the Collet:** Ensure your CNC machine has a 4mm collet installed in the spindle. If not, replace it with the correct size.
3. **Insert the End Mill:** Carefully insert the shank of the end mill into the collet. Push it in as far as possible, typically until it bottoms out, then pull it back out slightly (about 1-2mm) to allow for proper gripping. This prevents the tool from being pushed further into the collet during cutting.
4. **Tighten the Collet Nut:** Using the appropriate wrench, tighten the collet nut firmly. Do not overtighten, as this can damage the collet or the end mill shank. Ensure the end mill is held securely and does not wobble.
5. **Verify Runout:** Before starting any job, manually check for excessive runout (wobble) of the end mill. Minimal runout is essential for precision and tool longevity.



Image: An end mill properly installed in a CNC machine's collet.

8. OPERATING INSTRUCTIONS

Optimal performance and tool life depend on correct operating parameters. Always refer to your CNC machine's manual for specific operational guidelines.

General Guidelines:

- **Spindle Speed (RPM):** For aluminum and copper alloys, generally use higher spindle speeds. Start with recommended speeds for your material and machine, then adjust as needed.
- **Feed Rate:** The feed rate (how fast the tool moves through the material) should be balanced with the spindle speed. Too slow a feed rate can cause rubbing and heat buildup, while too fast can lead to tool breakage or poor surface finish. These 3-flute end mills are designed for high feed rates.
- **Depth of Cut (DOC):** For roughing, you can take deeper cuts, but always stay within the tool's capabilities and your machine's rigidity. For finishing, use shallower depths of cut to achieve a smooth surface.

- **Chip Evacuation:** The U-shaped flute design enhances chip evacuation. Ensure chips are being cleared effectively to prevent re-cutting and heat buildup. Use air blast or vacuum if necessary.
- **Coolant/Lubrication:** When machining metals like aluminum, using a suitable coolant or lubricant is highly recommended to reduce heat, prevent chip welding, and improve surface finish and tool life.
- **Roughing vs. Finishing:** Use larger diameter end mills for roughing to remove bulk material quickly. Switch to smaller diameter end mills for detailed finishing passes to achieve desired precision and surface quality.



Images: Examples of intricate carvings possible with CNC end mills.

9. MAINTENANCE AND STORAGE

Proper maintenance and storage will extend the life of your end mills and ensure consistent performance.

- **Cleaning:** After each use, clean the end mills to remove any accumulated chips, debris, or coolant residue. Use a soft brush and appropriate cleaning solution if necessary.
- **Inspection:** Regularly inspect the cutting edges for signs of wear, chipping, or damage. A dull or damaged tool can lead to poor cuts and increased risk of breakage.
- **Lubrication (Optional):** For long-term storage, a light coat of rust preventative oil can be applied, especially if storing in a humid environment.
- **Storage:** Store each end mill in its individual protective case to prevent damage to the cutting edges and to keep them organized. Store in a dry, cool place away from direct sunlight and corrosive materials.

10. TROUBLESHOOTING

If you encounter issues during operation, consider the following common problems and solutions:

Problem	Possible Cause	Solution
Poor Surface Finish	Incorrect feed/speed, dull tool, excessive vibration, insufficient chip evacuation.	Adjust feed/speed, replace tool, check machine rigidity, improve chip clearing, use coolant.

Problem	Possible Cause	Solution
Tool Breakage	Excessive depth of cut, too high feed rate, insufficient spindle speed, workpiece not secure, tool runout, material too hard.	Reduce DOC/feed rate, increase RPM, secure workpiece, check tool installation, verify material suitability.
Excessive Heat/Melting	Insufficient coolant, too low feed rate, chip re-cutting, dull tool.	Apply coolant, increase feed rate, improve chip evacuation, replace tool.
Tool Pulling Out of Collet	Collet not tightened sufficiently, incorrect collet size, tool not inserted deep enough.	Ensure collet is tightened, use correct 4mm collet, insert tool fully then pull back slightly.

11. WARRANTY AND SUPPORT

Genmitsu products are manufactured to high standards. For any questions, technical assistance, or warranty inquiries, please contact Genmitsu customer support through their official website or your purchase platform. Please have your model number (SN07A or CNC61S-SN) and purchase details ready.

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Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

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