

# MACHINING CASE STUDY



Complex 3D contouring.  
High speed machining.  
Successful results.

**mna**  
INSIGHTS



## CNC MACHINING

# Low Quantity, High Quality

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### CHALLENGE

Our client needed a plastic housing cover created. Traditionally this type of part would be created using injection molding, but due to the low quantity needed and the price of creating a mold it was decided to have the housing machined on a CNC machine.

### APPROACH

Determining the right CNC machining approach can result in both time and cost savings, and a higher quality end product. The part complexity appeared to require a 5-axis CNC, but after careful review we concluded that using a 3-axis would be sufficient and complete the process in a reasonable amount of time.

### CNC MACHINE

We used our Haas VF-5 machine with the high speed machining add on. HSM optimizes feed rates and reads

ahead of the current line of code to process the next move before it happens. This is ideal for parts with long 3D contour operations.



*The Haas VF-5 CNC Machine.*

**Determining the right CNC approach can result in both time and cost savings, and a higher quality end product.**





## CNC MACHINING

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### PROCESS

#### STANDARD TOOLING

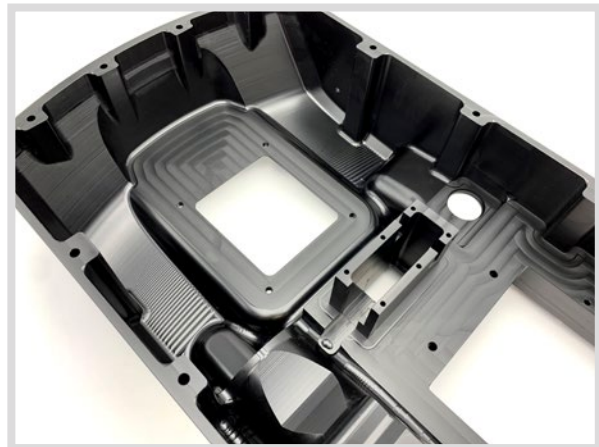
We used standard tooling to rough out the major cavities of the housing cover in order to save on time and costs.

#### COMPLEX 3D CONTOUR TOOLING

Standard tooling was followed with an extremely complex 3D contour tool path using a few different styles of ball end mills and incremental step overs until we reached the desired surface finish.

### RESULTS

Our high-speed machining process resulted in a run time of approximately 30 hours. Normal run time is estimated to be 50-70 hours. Our client immediately ordered two additional housing covers to be created in the same manner, which we think speaks to the quality of the results.





## CNC MACHINING

# Getting started.

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When CNC machining is the best option for a part, choosing the right company is crucial. Experienced engineers and machinists can give ideas and approaches that reduce production times, increase quality, and create value. At MNA we think the following list is a good way to evaluate a potential provider for your CNC parts:

### **MACHINE TOOL CAPABILITIES**

What types of CNC machines are available? Are they adequate for your machining needs? Is the shop staffed with experienced machinists?

### **PROCESSING APPROACH/STRATEGIES**

Does the machine shop have up-to-date processing tools to optimize cycle time, quality and price? You should expect a high level of engagement to determine the best strategy for your requirements.

### **PART AND TIME TRACKING**

What tools does the shop use to schedule, track and cost jobs? Most well managed facilities will run their jobs through an ERP system.

### **QUALITY**

Many machine shops are ISO9001 certified. Verify that your CNC provider is correctly following their quality system.

### **CONTINUOUS IMPROVEMENT**

Look for Lean, Six Sigma, Kaizen, or similar. If a shop is not practicing continuous improvement, it will be obvious the moment you walk in the door.

### **BACKGROUND INFORMATION**

Is the machine shop recommended by others? How long have they been in business? What is their credit score?

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Reach out today to see what we can do for you.

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