

Aluminium Component Machining with Millstar tools



Machining Summary

Aluminium alloy material cover was machined in a 3D NC program to demonstrate the high-speed, high volume capabilities of Millstar insert type and Moldstar solid carbide cutting tools.

The size of the Aluminium alloy block was 140mm X 75mm X 40mm.

The machine used was Makino KE 55 milling machine with 6000 RPM spindle and 5000mm / min feedrate.

The component was completely machined in 40 Minutes (Profile Milling and 2D milling operation) in 3 settings.

The finish achieved and the accuracies on the component were excellent owing to the superior geometric accuracies on Millstar tools and the high speed machining process implemented by HSMcil.

The chip breaker geometry in the insert for non ferrous material machining proved to be a winner by cutting at very high cutting feed rates of **5 meters/min even on a relatively slow speed machine. The total number of tools used was just 4 No.s. Unique among the tools was the Toroid tool with a diameter of 10mm and a corner radius of 2.5mm.** This eliminated 2 tools and the problem of cutting with a slender tool of Dia 5mm at higher depth.

This implementation proves that Millstar technology can be very well used on Non ferrous material machining and increase the level of productivity by a very big margin. It also gives the customer more flexibility to use the machine to produce more number of components in the same available time.

With today's competitive market forces at work can you afford not to have Millstar tooling and technology at work for you?

Process Chart

SN	Process	Tool	Time
1ST Setting			
1	Rough 1	Dia 16 Flat Bot (FB 16 R 1.3 NA)	5 mins
2	Semifinish 1	Dia 10 Toroid (TOM 10.0 EX)	4 mins
3	Roughing 2	Dia 8 Ballnose (BM 8.0 EX)	2 mins
4	Finish 1	Dia 8 EndMill (EMS 8.0 EX)	5 mins
5	Finish 2	Dia 10 Toroid (TOM 10.0 EX)	5 mins
Outer profile machining			
1	Rough Outer	Dia 10 Toroid (TOM 10.0 EX)	7 mins
2	Finish Outer	Dia 8 EndMill (TOM 10.0 EX)	2 mins
2nd Setting			
1	Roughing 1	Dia 10 Toroid (TOM 10.0 EX)	2 mins
3rd Setting			
1	Roughing 1	Dia 10 Toroid (TOM 10.0 EX)	2 mins
2	Finish 1	Dia 8 Ballnose (BM 8.0 EX)	2 mins
3	Finish 2	Dia 10 Toroid (TOM 10.0 EX)	2 mins