

Handle Cavity Machining with Millstar Tools

Objective

The demo was conducted to demonstrate the high-speed, high volume machining capabilities of Millstar insert type and Solid carbide cutting tools.



Handle Cavity after completion of Machining

Machining Summary

A handle mold cavity was machined from a P20 block of 38-40 HRC using Millstar Insert type and Solid carbide cutting tools. Cavity size was 310 X 160 X 100.

HSMcil / Millstar machined the cavity using HSM process and Millstar tools cutting at very high cutting parameters resulting in high volume of material removal. The total machining time for the die was **5 hours and 39 minutes** which was a record time considering the volume of material removed and the high quality surface finish achieved. Machine used was Makino S33.

The highlight of the cut was the high volume of material removed in roughing process using Millstar Round insert type bullnose cutter with a feed rate of **4.2 meters/min**, **Depth of cut 0.6mm** and **Step over of 60%**. The finishing operation was done with **Dia 20mm** Ballnose insert type tool at **6 meters/min** feed rate.

Process Sheet:

SL. NO	PROCESS	TOOL	RPM	FEED	TIME	MACHINING REMARKS
1	ROUGHING	FM 32/3-180-32 (BULL32 R6)	3000	4200	98min.	AD 0.6mm ,RD 60% stock 0.2mm

2	ROUGHING REST MATERIAL.	RB 20 N FS-TLN (DIA20 Ball Nose)	4770	2862	28min.	AD 6% , RD 40% stock 0.2mm
3	FINISH BEARING	RB 20 N FS-TLN (DIA20 Ball Nose)	12000	6000	34min.	4 Micron Scallop (Cusp)
4	FINISH BEARING BOTTOM FILLET	RB 16 N FS-TLN (DIA16 Ball Nose)	7000	3000	16min.	4 Micron Scallop (Cusp)
5	ROUGHING (COMPONENT AREA)	RB 20 N FS-TLN (DIA20 Ball Nose)	4770	2862	16min.	AD 6% , RD 40% stock 0.15mm
6	ROUGHING REST-1 (COMPONENT AREA)	RB 10 N FS-TLN (DIA 10 Ball Nose)	7000	2500	30min.	AD 6% , RD 40% stock 0.15mm
7	ROUGHING REST-2 (COMPONENT AREA)	BM 6.0 EX (DIA 6 Ball Nose)	12000	3000	40min.	AD 6% , RD 40% stock 0.15mm
8	FINISH. (COMPONENT AREA)	BM 6.0 EX (DIA 6 Ball Nose)	12000	3000	77 min	1 Micron Scallop (Cusp)
TOTAL CUT TIME = 5 HRS 39 MIN.						