Aluminum Milling Tests

Faster CIM metal removal rates in aluminum depend more on IPM feed rates, horsepower and the cutter geometry than RPM.

You'll get higher CIM with smaller cutters, (assuming you're rough milling with cutters about 1-1/4" diameter and larger). On tests with full diameter cuts, the 1-1/4" diameter cutter gets 42 CIM and the 2" diameter cutter gets 37 CIM.

You'll get higher CIM with a cut width that is about 3/4 of the cutter diameter than with a full diameter cut width, (a long accepted machinist's rule).

Cutter Ø Cut Depth Cut Vidth

Compare tests below You can get greater CIM with fewer flutes, plus reduced insert costs; see Test 3.

Test	Cutter	Cutter	RPM	Cut	Cut	IPM	No.	IPT	CIM
No.		Ø		Width	Depth	Feed	Flutes	Chip	
1.	SH125	1.25	6500	1.25	.125	275	2	.027	42
2.	SH125	1.25	6500	1.0	.250	375	2	.037	47
3.	SH200	2.0	6500	2.0	.250	75	3	.004	37

See Page 71 for all shank style Shear-Hogs.

All tests were run on a recent model Haas VF1 based on the highest Inches **P**er **M**inute possible with the load meter showing 100%. Haas estimates 7.5 actual spindle HP at 6500 RPM.

When calculating speeds and feeds for Shear-Hogs we aim for 6 CIM per horse power at the spindle. Please see the sample calulation below.

Given: 10 HP at the spindle, 6,500 RPM, Cut width 3.5", (4) flutes, and Cut depth of .100"

Stock Removal (CIM)	HP X 6	.10 X 6	60 CIM
SFM	RPM X .262 X Tool Dia	.6,500 X .262 X 3.5	5,960 SFM
IPM	CIM / (Cut Width X Cut Depth)	.60 / (3.5 X .100)	171 IPM
IPT	IPM / (RPM X No. of Teeth)	171 / (6,500 X 4)	.0066 IPT



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