

## Record – Shoulder milling

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Author	Date	Archive time
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### 199. Test 2 Vc 220 fz 0.17



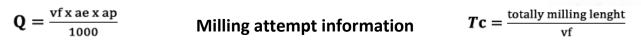
Materialdata	Toolox 33	Date of tool test: 2011-11-07			
Thickness		68	mm		
Hardness in Brine	·II	275-325	HBW		
Hardness in Rock	well	33	HRC		
Sträckgräns (Yiel	ld strength )	850	MPa		
Brottgräns (Ter	nsile strength )	980	MPa		
Chargenr. 088	3248	Löpnr. 7905061			

#### **Machine info**

Type of machine		CNC Fadal VMC 4020			
Location for machining		LAB			
Type of toolholder		Mandrel attachment			
Attachment in the machine	ISO 40	Effect on the spindle motor	16,8 kw	Coolant mix	%

#### Info about the tool

Manufacturer / D	nufacturer / Distributors		Sandvik Coromant					
Name on the tool			Coromill 490		_			
Type of milling to	Type of milling tool		Shoulder/face mill					
Article number			490-050Q22-14M		490-050Q22-14M			9
Diameter	Q	<b>50</b>	Number of teeth on the cutter 4					
Insert code geom	etry ar	nd grade	le 490R-140408M-PM 1					
Type of coating			PVD ( Physical Vapour Depostition ) TiAll			N+ TiN		
Kr= Cutting edge	angle		90	( Round inserts = depends on ap )				
Range		Ø 20-25	0 mm	TIP: Avoid positioning of cutter in the center of the work piece,				
Maximal depth of	cut	10 mm		position instead the cutter a bit from the center, 75-80 % of the cutter should be in engagement. (SEE PHOTO)				



Cutting speed (Vc)	220	m/min	Comment: TEST- 2 (Size work piece 500 x 180)		
Speed (n)	1401	rpm	The setup was made in double vices.		
Table feed ( vf )	952	mm/min	After <b>42</b> passes with a milled length of 48216 mm		
Feed per tooth (fz)	0,17	mm/tooth	is the wear very slight. After <b>70</b> passes and with a		
Axial depth of cut ( ap )	4	mm	run-time on <b>76,75</b> min. is the wear still very		
Radial depth of cut ( ae )	13	mm	slight ( See photo ). After 98 passes is the wear		
Effective cutting diameter ( De )	50	mm	Slightly bigger than after 70 passes. I stopped the		
Maximum chip thickness ( hex )	0,15	mm	attempt after 112 passes and with a total		
Runtime (Tc)	115,29	min	run-time on 115,29 min. (see photos)		
Totally milling length	109760	mm	49,5 cm³/min = 3,67 cm in square		
Nr. of cutting edges on the insert	4	st	3,67 cm		
Metal removal rate ( Q )	49,5	cm³/min	3,67 cm		
Cost of the milling tool	3500	SEK	hex		
Cost for one insert	129	SEK	$3,67 \text{ cm} \qquad \qquad fz = \frac{k}{\sin kr}$		

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# 4 photos after 70 passes (run-time 76,75 min)









4 photos after 112 passes (run-time 115,29 min)







