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198. Test 1 Vc 180 fz 0.17



Materialdata	Toolox 33	Date of tool test: 2011-11-04	
Thickness		68	mm
Hardness in Brinell		275-325	HBW
Hardness in Rockwell		33	HRC
Sträckgräns (Yield strength)		850	MPa
Brottgräns (Tensile strength)		980	MPa
Chargenr. 088248		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 / Distributors		Sandvik Coromant		
Name on the tool		Coromill 490		
Type of milling tool		Shoulder/face mill		
Article number		490-050Q22-14M		
Diameter	∅ 50	Number of teeth on the cutter	4	
Insert code geometry and grade		490R-140408M-PM 1030		
Type of coating		PVD (Physical Vapour Deposition) TiAlN+ TiN		
Kr= Cutting edge angle		90 ° (Round inserts = depends on ap)		
Range	∅ 20-250 mm	TIP : Avoid positioning of cutter in the center of the work piece, position instead the cutter a bit from the center, 75-80 % of the cutter should be in engagement. (SEE PHOTO)		
Maximal depth of cut	10 mm			

$$Q = \frac{vf \times ae \times ap}{1000}$$

Milling attempt information

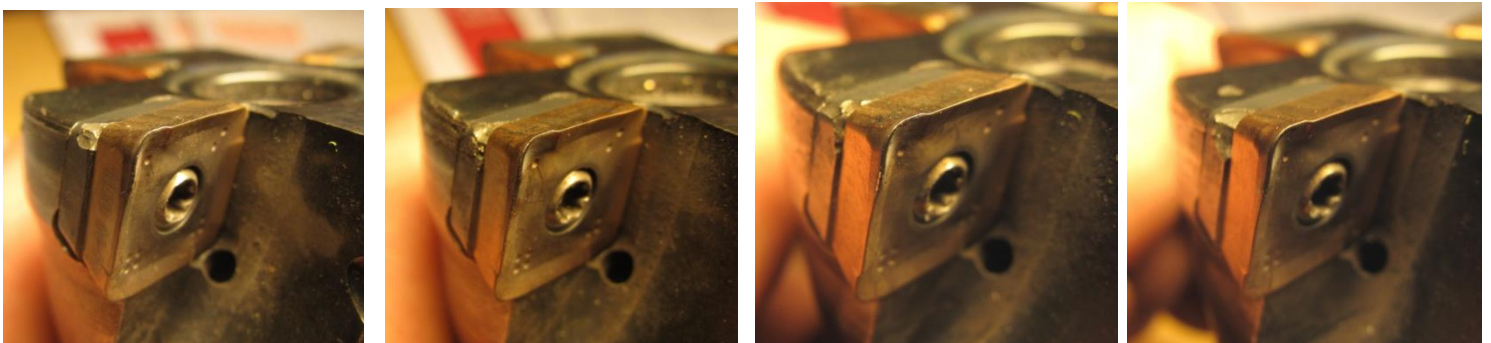
$$Tc = \frac{\text{totally milling length}}{vf}$$

Cutting speed (Vc)	180	m/min	Comment: TEST- 1 (Size work piece L 498 x 180 W)
Speed (n)	1146	rpm	The setup was made in double vices.
Table feed (vf)	779	mm/min	After 36 passes with a milled length of 37440 mm
Feed per tooth (fz)	0,17	mm/tooth	is the wear very slight. After 60 passes and with a
Axial depth of cut (ap)	4	mm	run-time on 72,06 min. is the wear still very
Radial depth of cut (ae)	13	mm	slight (See photo). After 112 passes is the wear
Effective cutting diameter (De)	50	mm	just about the same as after 60 passes, see the
Maximum chip thickness (hex)	0,15	mm	photo. I stopped the attempt after 168 passes
Runtime (Tc)	195,94	min	due to that big chip on 1 of the insert, see photos
Totally milling length	152640	mm	40,5 cm³/min = 3,43 cm in square
Nr. of cutting edges on the insert	4	st	
Metal removal rate (Q)	40,5	cm ³ /min	$fz = \frac{hex}{\sin kr}$
Cost of the milling tool	3500	SEK	
Cost for one insert	129	SEK	

4 photos after 60 passes (runtime 72,06 min)



4 photos after 112 passes (runtime 132,35 min)



4 photos after 168 passes (runtime 195,94 min)

