
CERATIZIT

Aerospace

Roughing of structural aerospace components

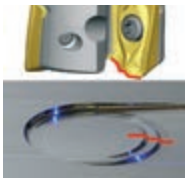
In the modern aerospace industry, complex structural assemblies are increasingly being replaced by integral elements. Instead of multiple steel components held together by fasteners, they are machined from a single block of titanium alloy. Integral elements are lighter and have superior mechanical properties. However they have complex geometries and require high metal removal in roughing, up to 90% of the raw material weight.
The use of CERATIZIT shoulder milling systems and of porcupine cutters – based on MaxiMill 211 – are on the rise to achieve high metal removal rates. CERATIZIT has a wide selection of such cutters as standard in the MaxiMill 211 and MaxiMill 211-K family.
In combination with the insert XDKT 15 and XDKT 20 in geometry -F40 and grade CTC5240 we achieve the highest metal removal rates and long reliable tool life at high cutting data.

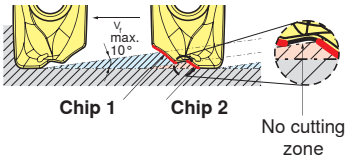
Facts		Data	
Material	TiAl6V4	v_c	= 247,7 sfm
Tool	M211.80.R.05K9-15-AD-145	v_f f_z	= 9,4 ipm = 0.006 ipt
Insert	XDKT 150508ER-F40	d.o.c. a_e	= 4 inch = 1,4 inch
Grade	CTC5240		= yes

Success factors

- Grade CTC5240 has extraordinary heat resistance, high wear resistance and tough coating with low friction surface
- The geometry -F40 was developed to machine difficult materials such as titanium, superalloys and heat resistant stainless steels
- The positive geometry causes a consistent removal of chips and a reduction in temperature in the tool
- Very stable with moderate noise and vibration levels compared to competitor

The Notch:

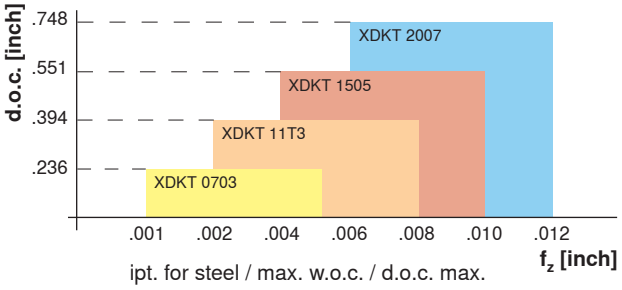




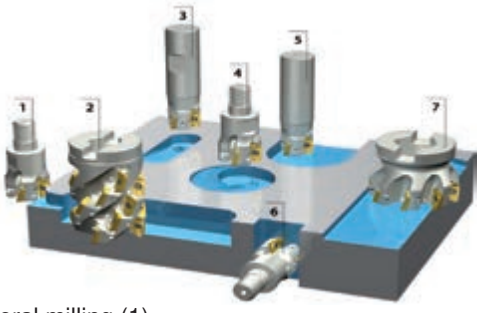
Radial force compensation through „the notch“ at plunging

- Reduced machining noise without vibrations
- Additional stability at plunging
- Increased cutting performance

Overview: Shoulder milling system MM211 d.o.c.



Overview: Application range



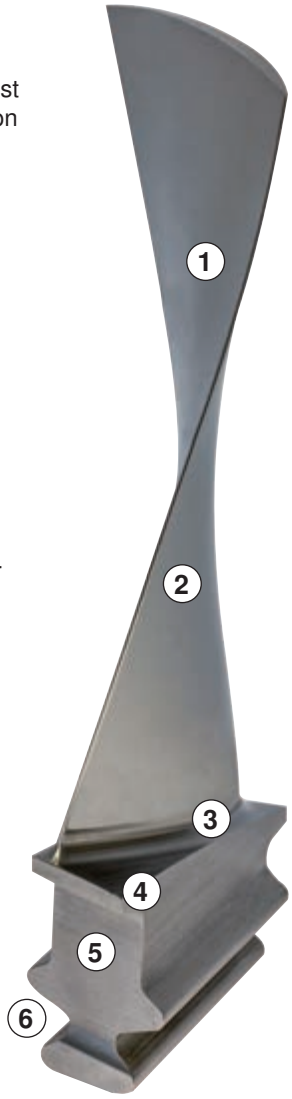
Peripheral milling (1)
Shoulder milling (2)
Angled ramping (3)
Pocket milling (3)
Axial plunging (4)
Helical plunging (4)
Trochoidal slot milling (5)
Slot milling (6)
Shoulder & face milling (7)

Aerospace

High performance tools for high performance engines

Difficult to machine materials such as titanium alloys and heat resistant super alloys like nickel based, iron based or cobalt based alloys – are used in jet engines. The good construction characteristics of these alloys make them difficult to machine. These challenging characteristics require high-performance cutting solutions.

The huge CERATIZIT program range of indexable tools combined with high performance grades – CTC5235 and CTC5240 – guarantee the best and most reliable cutting conditions for your machining process.
With the special CERATIZIT solid carbide tools in grade SCPS240 we round off the program for your high-performance process.



1

MaxiMill 251-RS

Button milling cutter for prefinishing of the blade.
The compact tool bodies with positive mounting position, in combination with the inserts, for lowest cutting forces and vibrations. Can also be used on machines with low spindle power.

2

MaxiMill 251 E-Type

For roughing the blade and root.
E-Type – the evolution of the button milling cutter for tough and rough machining with high metal removal on stable machine.
More clearance for better copying with less heat.

3

W0476

HPC ball nose cutter for roughing the transition areas.
Special radius geometry for high metal removals at hard to machine materials.

4

MaxiMill 252

Double sided button milling cutter for premilling the rhomboidal blade block.
Double the number of cutting edges for double efficiency.
Stable and compact milling system with optimized chip space even for long chipping materials.

5

MaxiMill 274

45° Milling cutter for Finishing the root.
Highly positive mounting position and inserts geometries for the smooth running, lowest cutting forces and best surface quality.

6

W0456

HPC shank mill for machining connection slots and premilling fir-tree profiles.
Special geometry combined extraordinary coating and prefinishing of the chip flutes especially for hard to machine materials.