

# CERAMIC<sup>S</sup>PEED MILL

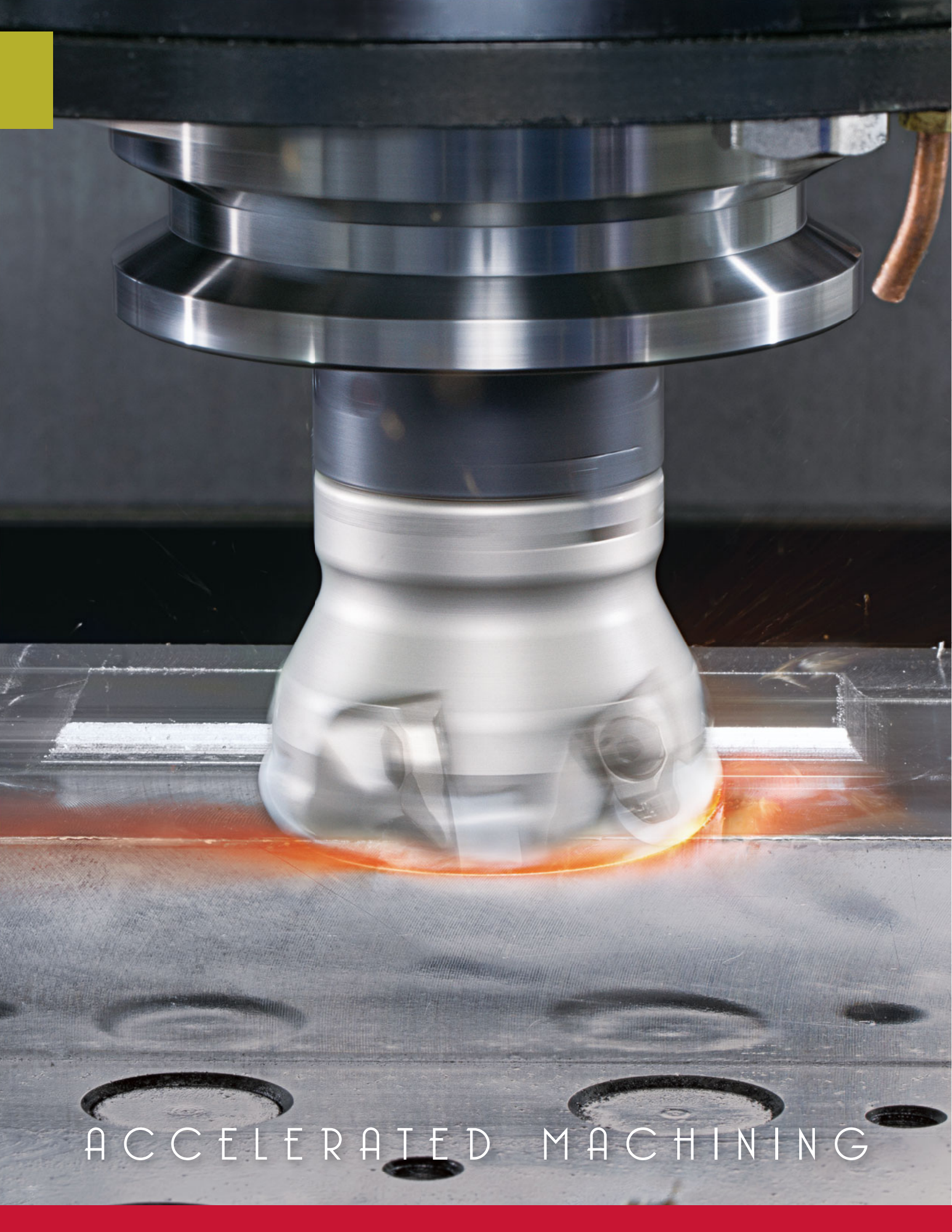
[www.tungaloy.com/us](http://www.tungaloy.com/us)

Tungaloy Report No. 527-US

**High efficiency milling cutter** with ceramic inserts for high temperature alloy machining



**INDUSTRY 4.0**  
*FEED the SPEED!*



ACCELERATED MACHINING

MillLine

**CERAMIC<sup>5</sup>MILL**  
TUNGALOY

**TUNG** ACCELERATED MACHINING **FORCE** **MILL**



Milling cutter with round negative insert  
for high utilization in face milling operations

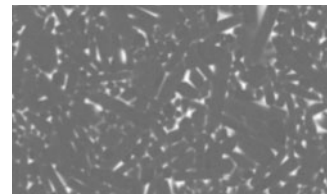
# Highly reliable face mill and SiAlON inserts for high temperature alloy machining

## New SiAlON grade inserts for high reliability

These two new ceramic grades are characterized by their excellent toughness and anti-chipping capabilities

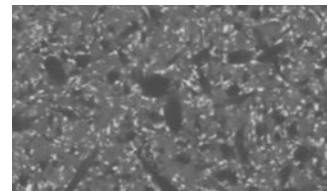
### TS200

- Superior wear resistance due to high chemical stability
- Superior flank and notch wear resistance



### TS300

- Extreme toughness allows for higher feed and greater depth of cut machining
- Suitable for scaling and roughing applications



## High efficiency milling cutter with ceramic inserts

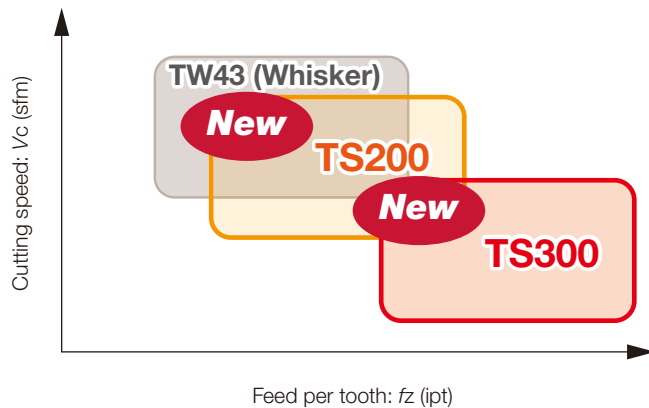
Tungaloy offers the most dense cutter in the market for diameters of 2.5"

### Close pitch cutter design for high efficiency milling

$z = 5$  for cutter diameter  $\phi 2.5''$  (Existing  $z = 4$  for the same  $\phi$ )

Cutter diameter (Inch)	Number of teeth		
	Tungaloy	Competitor A	Competitor B
2.5	<b>5</b>	4	4
3.0	5	5	5

## APPLICATION RANGE (high temperature alloys)



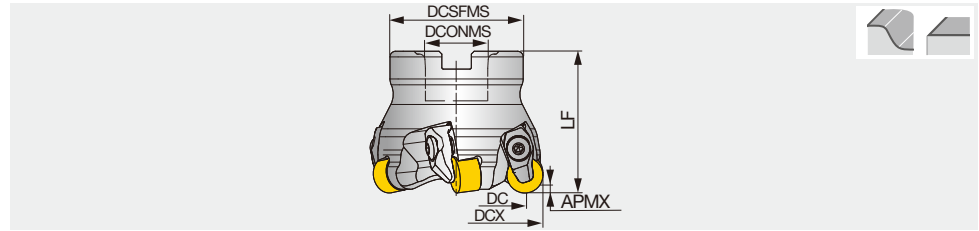
**TS200:** High speed finishing  
**TS300:** Scaling and roughing

## STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Grades	Cutting speed $V_c$ (sfm)	Feed per tooth $f_z$ (ipt)	Depth of cut $a_p$ (Inch)
<b>S</b>	Ni-based super alloys	TS200	1804 - 4265	0.002 - 0.008	0.004 - 0.079
		TS300	886 - 1804	0.002 - 0.008	0.004 - 0.079
	Co-based super alloys	TS200	1804 - 4921	0.002 - 0.008	0.004 - 0.079
		TS300	886 - 1804	0.002 - 0.008	0.004 - 0.079

## TFMRN

Face milling cutter for high temperature alloy applications, Tool dia.  $\phi 2.0''$  -  $\phi 3.0''$



Inch	APMX	DC	DCX	CICT	DCONMS	LF	DCSFMS	WT(lb)	Insert
TFMRND2.00-12-4Z-FL	0.080	1.528	2.000	4	0.750	2.000	1.770	0.88	RNGN120700...
TFMRND2.50-12-5Z-FL	0.080	2.000	2.500	5	1.570	1.969	0.750	0.99	RNGN120700...
TFMRND3.00-12-5Z-FL	0.080	2.500	3.000	5	1.750	1.969	1.000	2.07	RNGN120700...

Metric	APMX	DC	DCX	CICT	DCONMS	LF	DCSFMS	WT(kg)	Insert
TFMRN563-22R-12FL	2	50.35	63	5	22	50	47	0.6	RNGN120700...
TFMRN580-27R-12FL	2	67.37	80	5	27	50	58	0.9	RNGN120700...

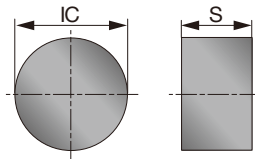
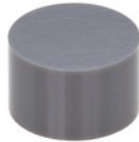
## SPARE PARTS



Designation	Clamp	Screw	Snap ring
TPYD06M063B22.0R10	CCL-5S-F	CLS3C	CSR2

## INSERT

### RNGN120700



<b>P</b> Steel								
<b>M</b> Stainless								
<b>K</b> Cast iron								
<b>N</b> Non-ferrous								
<b>S</b> Superalloys	★	★						
<b>H</b> Hard materials								

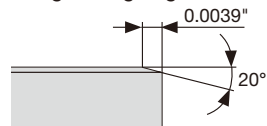
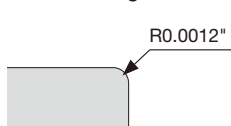
★ : First choice

Designation	APMX (Inch)	Edge prep.*	Ceramic								IC (Inch)	S (Inch)	
			TS200	TS300									
RNGN120700-E	0.080	E	●									0.500	0.3125
RNGN120700-T1	0.080	T1	●									0.500	0.3125
RNGN120700-E	0.080	E		●								0.500	0.3125
RNGN120700-T1	0.080	T1		●								0.500	0.3125

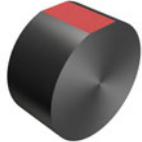

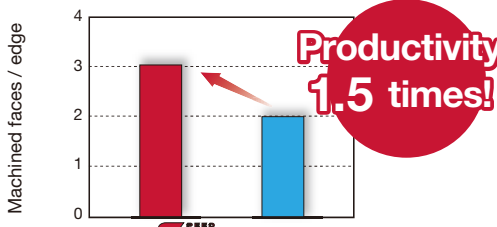
\* Types of cutting edge preparations

**E:** Low cutting force

**T1:** Strong cutting edge



## PRACTICAL EXAMPLES

Workpiece type	Aircraft parts	
Cutter	TFMRND2.50-12-5Z-FL (ø2.5", z = 5)	
Insert	RNGN120700E	
Grade	TS300	
Workpiece material	INCONEL718	
	 	
Cutting conditions	Cutting speed: $V_c$ (sfm)	1640
	Feed per tooth: $f_z$ (ipt)	3.937
	Feed speed: $V_f$ (ipm)	49.4
	Depth of cut: $a_p$ (Inch)	0.020
	Machining	Face milling
	Coolant	Dry
	Machine	Vertical M/C
Results	 Machined faces / edge	
	<b>CERAMICSMILL</b> Competitor The TS300, which is excellent in fracture resistance, was able to machine at a high DOC, making it possible to reduce the machining pass.	

# Tungaloy America, Inc.

3726 N Ventura Drive, Arlington Heights, IL 60004, U.S.A.

Inside Sales: +1-888-554-8394

Technical Support: +1-888-554-8391

Fax: +1-888-554-8392

[www.tungaloy.com/us](http://www.tungaloy.com/us)

## Tungaloy Canada

432 Elgin St. Unit 3, Brantford, Ontario N3S 7P7, Canada

Phone: +1-519-758-5779 Fax: +1-519-758-5791

[www.tungaloy.com/ca](http://www.tungaloy.com/ca)

## Tungaloy de Mexico S.A.

C Los Arellano 113, Parque Industrial Siglo XXI

Aguascalientes, AGS, Mexico 20290

Phone: +52-449-929-5410 Fax: +52-449-929-5411

[www.tungaloy.com/mx](http://www.tungaloy.com/mx)



Scan for instant  
web access



[www.tungaloy.com/us](http://www.tungaloy.com/us)

follow us at:

[facebook.com/tungaloyamerica](https://facebook.com/tungaloyamerica)

[twitter.com/tungaloy](https://twitter.com/tungaloy)

[instagram.com/tungaloyamerica](https://instagram.com/tungaloyamerica)

To see this product in action visit:

## Tung-TV

[www.youtube.com/tungaloycorporation](http://www.youtube.com/tungaloycorporation)

Distributed by:



FIND US ON THE CLOUD!  
[machiningcloud.com](http://machiningcloud.com)

