

MillLine

DOMINIMILL

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Tungaloy Report No. 508-US

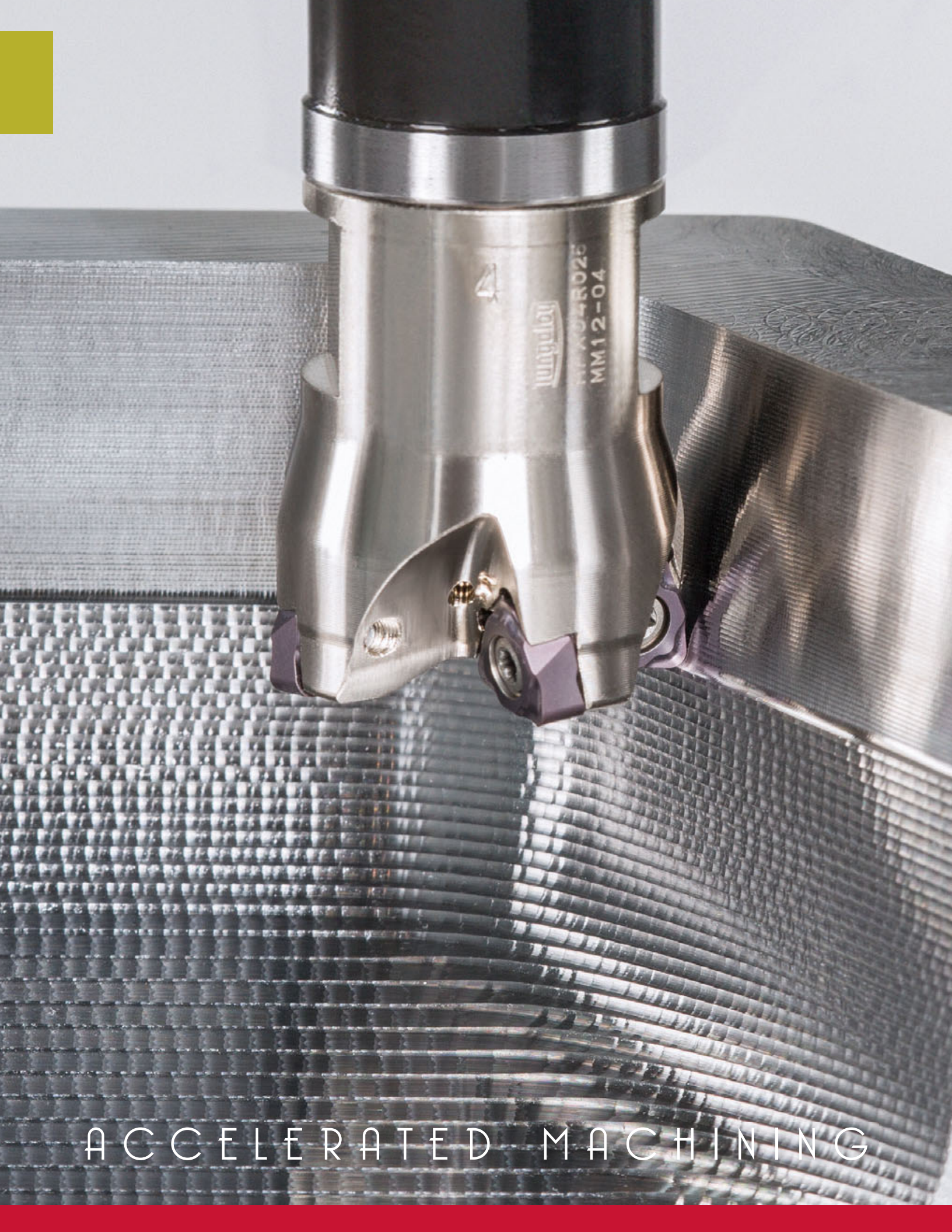
DOMINI-MILL

Double-sided positive insert

for semi-finishing to finishing



Member IMC Group
Tungaloy



ACCELERATED MACHINING

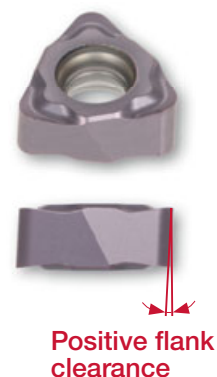
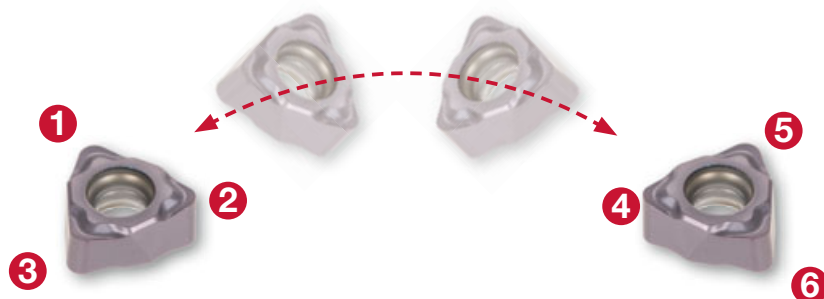


DoMini-Mill features the advantage of an economical **6-cornered double-sided insert with positive cutting edges** for profile milling of die & mold.

Multifunctional endmills for semi-finish or finishing operation with profile milling or plunging

Double sided with positive edge - innovative geometry

- The unique twisted peripheral shape provides positive flank clearance for double sided insert.
- Positive insert positioning and sharper cutting edge improves cutting action and surface finish.
- Highly economical insert with 6 cutting edges.

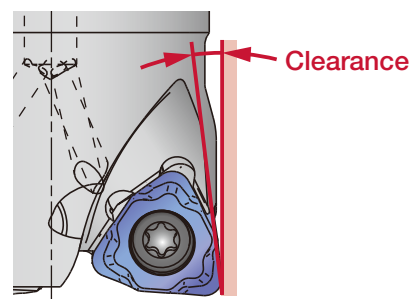


High stability

- Dove-tail clamping system maintains the rigidity for accurate 3 dimensional machining.
 - Improves reliability in plunging operations.
- Back clearance angle with wall surface avoids chip packing allowing smooth cutting even in machining of square wall.
- Optimized geometry of cutting edge offers resistance to chipping in machining of steel and hardened material.

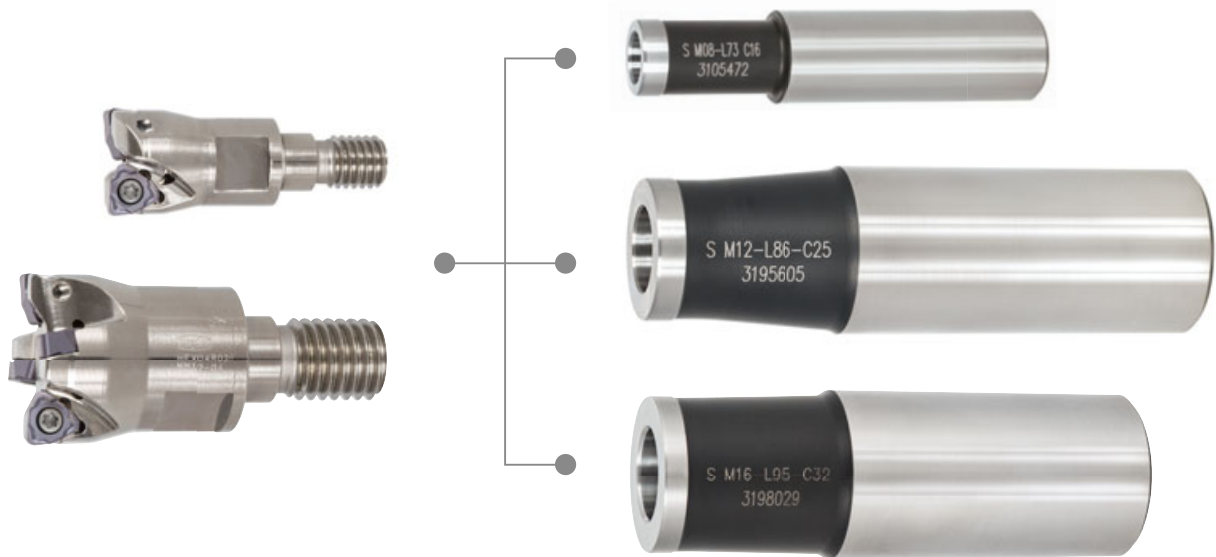


Dove-tail clamping system



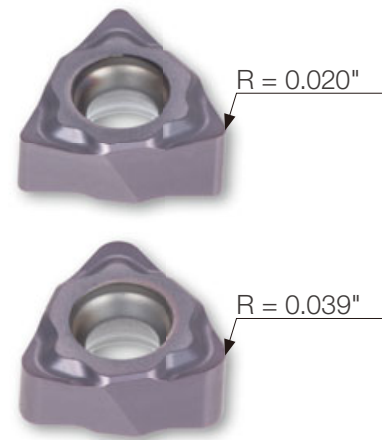
High versatility

- Modular style endmills with metric and TungMeister thread allows flexibility to be used with various type of shanks or holder in TungHold and TungMeister series.
- Combinations of shank lengths and shank material guarantees versatility in machining operations.



Inserts

- H-class insert with high accuracy provides minimized runout.
- 2 sizes of corner radii available for various type of machining.
 - R = 0.020" : Suitable for general purpose with low depth and width of cut
 - R = 0.039" : Ideal for hardened steel machining due to improved corner strength
- AH110 grade with PremiumGTec and high wear resistance is ideal for hardened material machining.



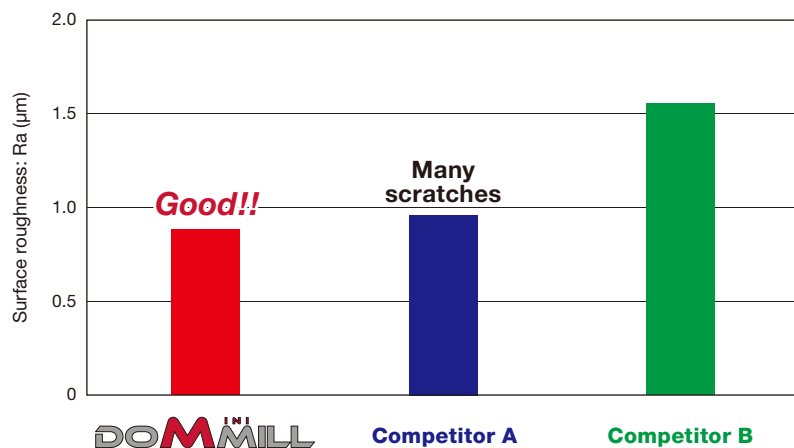
WXHU04-MJ



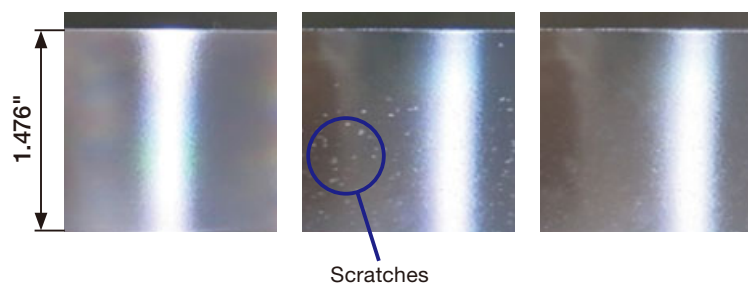
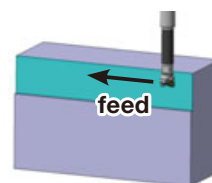
CUTTING PERFORMANCE

Surface finish

P Carbon steel

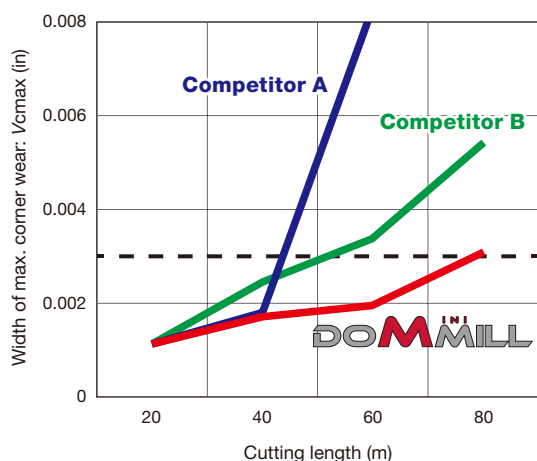


Cutter : HFWX04M016M08R02
 $(\phi D_c = 16.0 \text{ mm } (0.630"), z = 2)$
 Insert : WXHU040305R-MJ
 Workpiece material : 4140 (302HB)
 Cutting speed : $V_c = 980 \text{ sfm}$
 Feed per tooth : $f_z = 0.006 \text{ ipt}$
 Depth of cut : $a_p = 0.006"$
 Width of cut : $a_e = 0.02"$

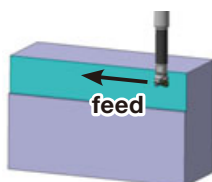


Tool life

H Hardened steel



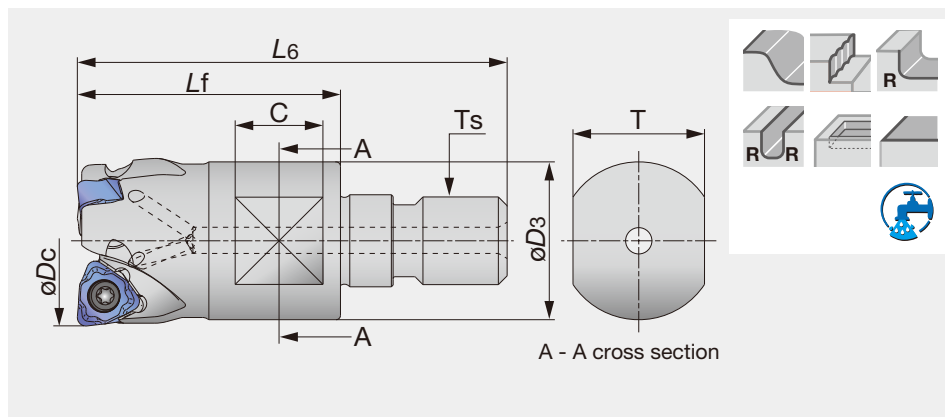
Cutter : HFWX04M016M08R02 $(\phi D_c = 16 \text{ mm } (0.630"), z = 2)$
 Insert : WXHU040305R-MJ
 Workpiece material : D2 (58.5HRC)
 Cutting speed : $V_c = 330 \text{ sfm}$
 Feed per tooth : $f_z = 0.006 \text{ ipt}$
 Depth of cut : $a_p = 0.006"$
 Width of cut : $a_e = 0.008"$



Small-radius cutter for finishing operation

MODULAR HEAD - METRIC THREAD

DoMini-Mill HFWX04***M



Designation	ϕD_c	z	L6	Lf	C	T	ϕD_3	Ts	Kg	Insert
HFWX04M016M08R02	16.00	2	42.0	30.0	8.0	10.0	12.8	M8	0.03	WXHU04**
HFWX04M020M10R03	20.00	3	49.0	30.0	10.0	15.0	17.8	M10	0.05	WXHU04**
HFWX04M025M12R04	25.00	4	52.0	35.0	12.0	17.0	20.8	M12	0.09	WXHU04**

For details of metric shank, please refer to TungFlex series in TR413 TungHold

(Unit: mm)

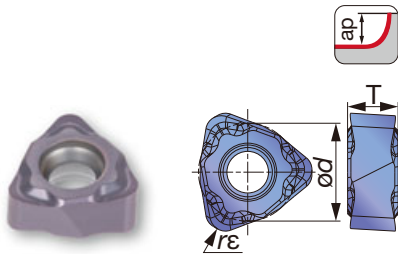
SPARE PARTS



Clamping screw	Wrench
SR34-514	T-7F

INSERT

WXHU-MJ



Designation	Max. ap	IC dia	T	rε	AH110	
WXHU040305R-MJ	0.020	0.250	0.125	0.020	●	●
WXHU040310R-MJ	0.039	0.250	0.125	0.039	●	●

(Unit: inch)

P	H
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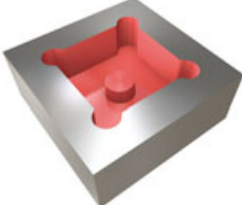
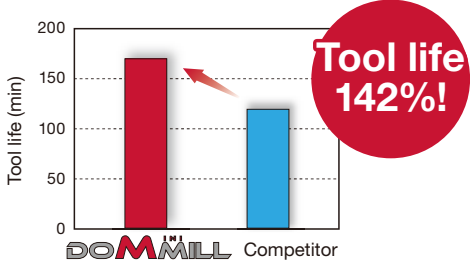
* For plunging, depth up to 0.079" is possible.

● First choice

STANDARD CUTTING CONDITIONS

ISO	Workpiece materials		Hardness (HB)	Grades	Cutting speed Vc (sfm)	Feed per tooth fz (ipt)
P	High carbon steel (1045, 1055, etc.)		200 - 300	AH110	328 - 984	0.004 - 0.012
	Alloy steel (4140, etc.)		150 - 300	AH110	328 - 984	0.004 - 0.012
	Prehardened steel (NAK80, PX5, etc.)		-	AH110	328 - 984	0.002 - 0.012
H	Hardened steel	(H13, etc.)	-	AH110	262 - 427	0.004 - 0.012
		(D2, etc.)	-	AH110	164 - 328	0.002 - 0.006

PRACTICAL EXAMPLES

Workpiece type		Mold	Mold
Cutter		HFWX04M020M10R03 (ø20 mm, z = 3)	HFWX04M025M12R04 (ø25 mm, z = 4)
Insert		WXHU040310R-MJ	WXHU040310R-MJ
Grade		AH110	AH110
Workpiece material		Die steel (28 – 32 HRC) 	Die steel (50 – 52HRC) 
Cutting conditions	Cutting speed : V_c (sfm)	640	900
	Feed per tooth: f_z (ipt)	0.006	0.006
	Feed speed : V_f (ipm)	59.1	78.7
	Depth of cut : a_p (inch)	0.010	0.004
	Width of cut : a_e (inch)	0.014	-
	Machining	Profiling	Profiling
	Coolant	Wet (internal, 40bar)	Dry
	Machine	Vertical M/C	Vertical M/C
Results		 DoMini-Mill increased tool life by 42% because of lower cutting force compared to competitor's tool and grade with high wear resistance. 5 hours machining! New PremiumGTec grade with improved wear resistance achieved long tool life.	

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