

AHU

Advanced Design End Mills and Face Mills Radically Reduce Cutting Forces



**MODULAR
STYLE**



**FACE MILL
STYLE**



FEATURES

Unique high rake geometry reduces cutting forces

30% increased rigidity thanks to special steel material and chip pocket geometry

TH & JX Coated Inserts improve efficiency and tool life

All tools feature coolant-thru the tool

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INTRODUCTION

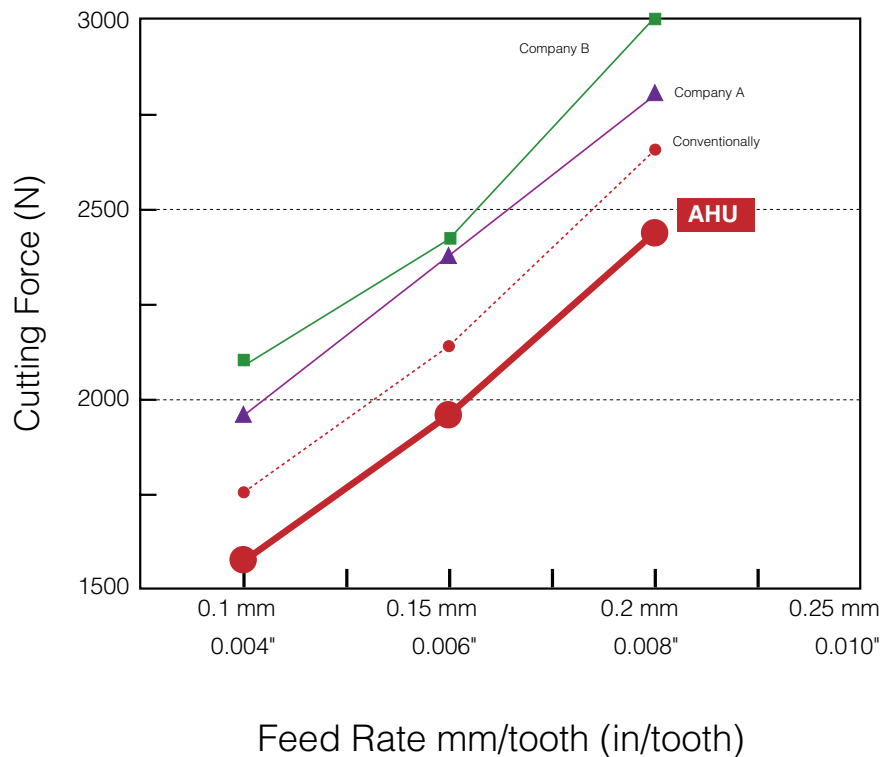
The AHU High Feed Ultra Series Indexable Tools incorporate unique body design, advanced insert geometries and technologically advanced coatings to create an exceptionally tough line-up. AHU tools are available in End Mill styles ranging from 25mm to 40mm (0.984" to 1.575") in diameter and Face Mill styles of 50mm to 100mm, (1.969" to 3.937").

Ideal for shoulder milling, the AHU Series can also perform direct ramping and slotting operations. All tools feature coolant-thru the tool, improving both tool life and cutting performance.

FEATURES

1. Reduced Cutting Force

As shown in the chart, the unique high rake angle helps to create a reduction in cutting force compared to conventional mills. Reduced cutting force has a multitude of benefits, including decreased spindle load, increased tool life and faster production times.



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2. Special Insert Coatings Improve Efficiency and Tool Life

TH-Coating (TiSiN): The new “Nano-Composite” coating material offers extraordinary heat resistance and hardness due to its’ new composite layer consisting of nano-crystal material.

JX-Coating: This revolutionary coating utilizes the world’s first hybrid coating technology to vastly improve lubricating characteristics as well as hardness, heat-resistance and chipping resistance.

3. Application Data

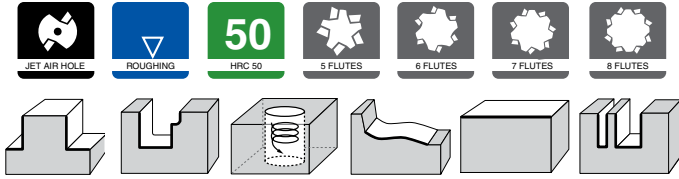
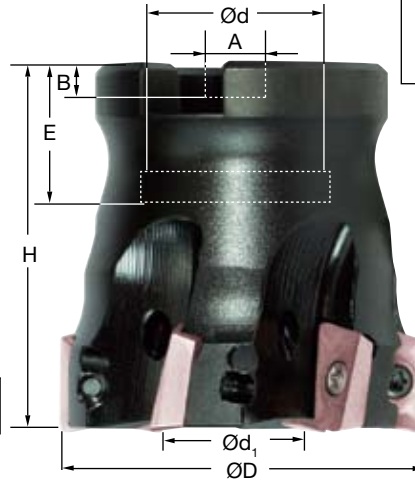
As shown in the chart below, AHU Series Indexable Tools can improve cutting performance in a wide variety of applications.

Docplication	Material	Cutting Tools	Cutting Conditions	Reults
Aircraft Parts	SNCM (38HRC)	32mm AHU End Mill (AHU1532R-3) TH Coated Inserts (JDMT150508R PTH30E)	Vc=100m/min (328.1 sfm) Vf=600mm/min (23.62 ipm) doc=5mm (0.197") Slotting	Reduction in spindle load compared to other manufacturers’ tools
Machine Parts	SUS410	40mm AHU End Mill (AHUL1540R-5) TH Coated Inserts (JDMT150508R PTH30E)	Vc=110m/min (360.9 sfm) Vf=525mm/min (20.67 ipm) doc x woc = 4x3mm (0.158" x 0.118")	Tool life doubled Metal removal rate increased 1.2 times
Mold Parts	S55C	32mm AHU End Mill (AHU1532R-3) TH Coated Inserts (JDMT150508R PTH30E)	Vc=120m/min (393.7 sfm) Vf=2000mm/min (78.74 ipm) doc x woc = 1.5 x 30mm (0.060" x 1.181")	No chatter even on a 40-taper machining center
Turbine Blade	13Cr Steel Blade Machining	32mm AHU End Mill (AHU1532R-3) TH Coated Inserts (JDMT150508R PTH30E)	Vc=80m/min (wet) (262.5 sfm) Vf=480mm/min (18.9 ipm) doc=2-3mm (0.079"-0.118") woc=5.5mm (0.217")	Tool life increased five times
Machine Parts	SUS630	80mm AHUB Face Mill (AHU1580R-7) JX Coated Inserts (JDMT150508R JX1045)	Vc=125m/min (410.1 sfm) Vf=400mm/min (15.75 ipm) doc=3mm (0.118") Dry Slotting	Good surface finish Tool life increased 1.5 times

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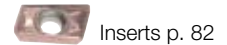
Face Mill Style



D 0/-0.2

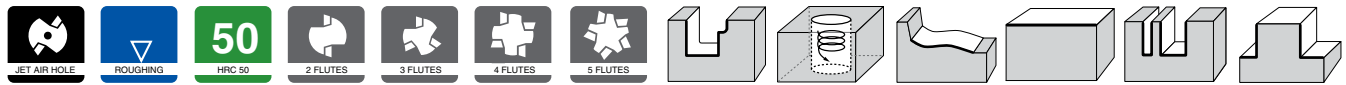
AHUB - METRIC

Part No.	Flutes	ØD	Ød	H	Ød ₁	E	A	B	Insert
AHUB1550RM-5	5	50	22.00	50	17	20	10.4	6.3	JDMT1505
AHUB1563RM-6	6	63	22.00	50	17	20	10.4	6.3	JDMT1505
AHUB1580R-7	7	80	25.40	50	20	26	9.5	6.0	JDMT1505
AHUB15100R-8	8	100	31.75	50	45	32	12.7	8.0	JDMT1505



AHU ULTRA SERIES

Shank Style



ØD -0.05/-0.2
CR +0.08/-0.08

AHU - METRIC

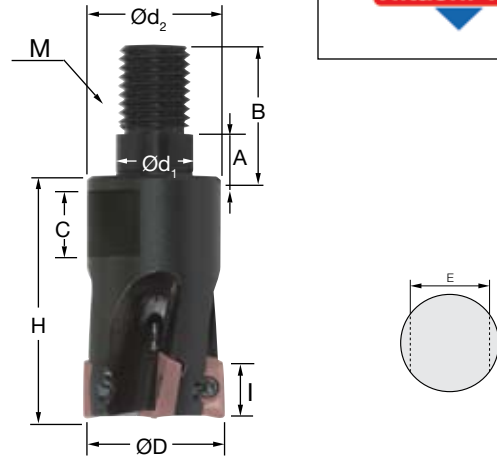
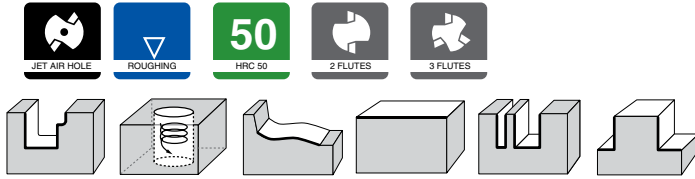
Part No.	Flutes	ØD	L	l	l ₁	l _s	Ød	Insert
AHU1525R-2	2	25	100	14	40	85	25	JDMT1505
AHU1532R-3	3	32	140	14	45	85	25	JDMT1505
AHU1540R-4	4	40	140	14	45	95	32	JDMT1505
AHUL1525R-2	2	25	180	14	75	105	25	JDMT1505
AHUL1532R-3	3	32	200	14	90	110	32	JDMT1505
AHUL1540R-5	5	40	220	14	45	175	32	JDMT1505



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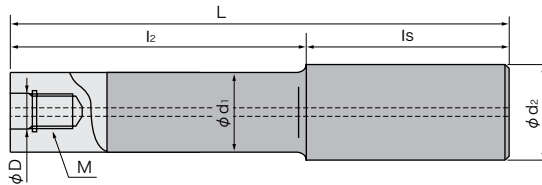
Modular Style



D 0/-0.2

AHUM - METRIC

Part No.	Flutes	ØD	H	I	Ød ₁	M	Ød ₂	A	B	C	E	Insert
AHUM1525R-2	2	25	35	14	12.5	M12	21	5.5	22	10.0	17	JDMT1505
AHUM1532R-3	3	32	40	14	17.0	M16	29	6.0	23	12.0	22	JDMT1505



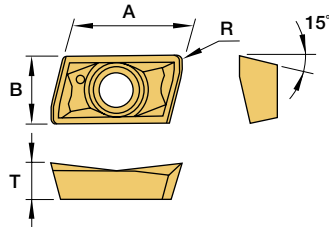
CARBIDE SHANK - METRIC

Part No.	ØD	M	L	l ₂	l ₁	Ød ₁	Ød ₂	Cutter Body
ASC25-12.5-215-115	12.5	M12	215	115	100	23	25	Ø25
ASC25-12.5-265-145			265	145	120	23	25	Ø25
ASC32-17-210-110	17	M16	210	110	100	28	32	Ø30
ASC32-17-260-140			260	140	120	28	32	Ø30

Part No.	Clamp Screw	Wrench	Arbor Screw
AHU(L)15xxR-x	412-141	104-T15	
AHUB1550RM-5	412-141	105-T15	100-175
AHUB1563RM-6	412-141	105-T15	100-175
AHUB1580R-7	412-141	105-T15	100-212
AHUB15100R-8	412-141	105-T15	

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Inserts



Part No.	Coating		R	A	B	T
	PTH30E	JX1045				
JDMT150504R		•	0.4	16.0	9.12	5.0
JDMT150508R	•	•	0.8	16.0	9.12	5.0
JDMT150520R		•	2.0	16.0	9.12	5.0
JDMT150530R	•	•	3.0	16.0	9.12	5.0

All Inserts have two effective cutting edges

COATING MATERIALS FOR INSERTS

Material Name ISO Classification	Coating Name Coating Type	Application	Features
PTH30E K30	TH Coating (TiSiN) PVD	General purpose for steel	Uses nanocomposite coating, excellent for high-speed cutting and finishing
JX1045 P30-M30-K30	JX Coating PVD	General purpose for steel	Uses moderate substrate, Multi purpose grade

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Cutting Conditions Shank + Modular Style Inch



	Ø (Flutes)	Side milling			Slotting			
		25mm (2)	32mm (3)	40mm (4)	25mm (2)	32mm (3)	40mm (4)	
		Ø Inch	0.984"	1.260"	1.575"	0.984"	1.260"	1.575"
Carbon Steel Alloy Steel 30HRC	N(rpm)	2540	1990	1590	2030	1590	1270	
	Vc(sfm)	656	656	656	525	525	525	
	Vf(in/min)	50	59	63	29	33	36	
	fz(in/t)	0.010	0.010	0.010	0.007	0.007	0.007	
	PTH30E	doc(in)	0.551	0.551	0.551	0.394	0.394	0.394
	JX1045	woc(in)	0.236	0.315	0.394	0.984	1.260	1.575
Tool Steel Alloy Steel 30-40HRC	N(rpm)	1910	1490	1190	1520	1190	950	
	Vc(sfm)	492	492	492	394	394	394	
	Vf(in/min)	30	35	37	18	21	22	
	fz(in/t)	0.008	0.008	0.008	0.006	0.006	0.006	
	JX1045	doc(in)	0.551	0.551	0.551	0.315	0.315	0.315
	woc(in)	0.236	0.315	0.394	0.984	1.260	1.575	
Tool Steel Pre-hardened 40-50HRC	N(rpm)	1270	990	790	1010	790	630	
	Vc(sfm)	328	328	328	262	262	262	
	Vf(in/min)	12	14	15	8	9	10	
	fz(in/t)	0.005	0.005	0.005	0.004	0.004	0.004	
	JX1045	doc(in)	0.394	0.394	0.394	0.197	0.197	0.197
	woc(in)	0.236	0.315	0.394	0.984	1.260	1.575	
Stainless Steel (Dry condition)	N(rpm)	3180	2480	1990	2540	1990	1590	
	Vc(sfm)	820	820	820	656	656	656	
	Vf(in/min)	63	73	78	30	35	37	
	fz(in/t)	0.010	0.010	0.010	0.006	0.006	0.006	
	JX1045	doc(in)	0.197	0.197	0.197	0.118	0.118	0.118
	woc(in)	0.236	0.315	0.394	0.984	1.260	1.575	
Stainless Steel (Wet condition)	N(rpm)	1910	1490	1190	1520	1190	950	
	Vc(sfm)	492	492	492	394	394	394	
	Vf(in/min)	37	44	47	18	21	22	
	fz(in/t)	0.010	0.010	0.010	0.006	0.006	0.006	
	PTH30E	doc(in)	0.197	0.197	0.197	0.118	0.118	0.118
	woc(in)	0.236	0.315	0.394	0.984	1.260	1.575	
Cast Iron	N(rpm)	2290	1800	1440	1920	1500	1200	
	Vc(sfm)	591	591	591	492	492	492	
	Vf(in/min)	45	53	57	28	32	34	
	fz(in/t)	0.010	0.010	0.010	0.007	0.007	0.007	
	JX1045	doc(in)	0.551	0.551	0.551	0.394	0.394	0.394
	woc(in)	0.236	0.315	0.394	0.984	1.260	1.575	
Titanium Alloy (Ti-6Al-4V)	N(rpm)	760	590	470	630	490	390	
	Vc(sfm)	197	197	197	164	164	164	
	Vf(in/min)	12	14	15	7	9	9	
	fz(in/t)	0.008	0.008	0.008	0.006	0.006	0.006	
	PTH30E	doc(in)	0.118	0.118	0.118	0.079	0.079	0.079
	woc(in)	0.236	0.315	0.394	0.984	1.260	1.575	

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Cutting Conditions Face Mill + Modular Style Inch



	Ø (Flutes)	Side milling				Slotting			
		50 (5)	63 (6)	80 (7)	100 (8)	50 (5)	63 (6)	80 (7)	100 (8)
		Ø Inch	0.969"	2.480"	3.150"	3.937"	0.969"	2.480"	3.150"
Carbon Steel Alloy Steel <30HRC	N(rpm)	1270	1010	790	630	1010	800	630	500
	Vc(sfm)	656	656	656	656	525	525	525	525
	Vf(in/min)	62	59	54	50	35	34	31	28
	fz(in/t)	0.010	0.010	0.010	0.010	0.007	0.007	0.007	0.007
	PTH30E doc(in)	0.551	0.551	0.551	0.551	0.394	0.394	0.394	0.394
	TB6045 woc(in)	0.669	0.787	0.984	1.378	1.969	2.480	3.150	3.937
Tool Steel Alloy Steel 30-40HRC	N(rpm)	950	750	590	470	760	600	470	380
	Vc(sfm)	492	492	492	492	394	394	394	394
	Vf(in/min)	37	35	32	30	22	21	19	18
	fz(in/t)	0.008	0.008	0.008	0.008	0.006	0.006	0.006	0.006
	TB6045 doc(in)	0.551	0.551	0.551	0.551	0.315	0.315	0.315	0.315
	woc(in)	0.669	0.787	0.984	1.378	1.969	2.480	3.150	3.937
Tool Steel Pre-hardened 40-50HRC	N(rpm)	630	500	390	310	500	400	310	250
	Vc(sfm)	328	328	328	328	262	262	262	262
	Vf(in/min)	15	14	13	11	10	9	8	8
	fz(in/t)	0.005	0.005	0.005	0.005	0.004	0.004	0.004	0.004
	TB6045 doc(in)	0.394	0.394	0.394	0.394	0.197	0.197	0.197	0.197
	woc(in)	0.669	0.787	0.984	1.378	1.969	2.480	3.150	3.937
Stainless Steel (Dry condition)	N(rpm)	1590	1260	990	790	1270	1260	790	630
	Vc(sfm)	820	820	820	820	656	820	656	656
	Vf(in/min)	78	74	68	62	37	44	32	30
	fz(in/t)	0.010	0.010	0.010	0.010	0.006	0.006	0.006	0.006
	TB6045 doc(in)	0.197	0.197	0.197	0.197	0.118	0.118	0.118	0.118
	woc(in)	0.669	0.787	0.984	1.378	1.969	2.480	3.150	3.937
Stainless Steel (Wet condition)	N(rpm)	950	750	590	470	760	750	470	380
	Vc(sfm)	492	492	492	492	394	492	394	394
	Vf(in/min)	46	44	41	37	22	26	19	18
	fz(in/t)	0.010	0.010	0.010	0.010	0.006	0.006	0.006	0.006
	PTH30E doc(in)	0.197	0.197	0.197	0.197	0.118	0.118	0.118	0.118
	woc(in)	0.669	0.787	0.984	1.378	1.969	2.480	3.150	3.937
Cast Iron	N(rpm)	1140	900	710	570	950	900	590	470
	Vc(sfm)	591	591	591	591	492	591	492	492
	Vf(in/min)	56	53	49	45	33	38	29	26
	fz(in/t)	0.010	0.010	0.010	0.010	0.007	0.007	0.007	0.007
	TB6045 doc(in)	0.551	0.551	0.551	0.551	0.394	0.394	0.394	0.394
	woc(in)	0.669	0.787	0.984	1.378	1.969	2.480	3.150	3.937
Titanium Alloy (Ti-6Al-4V)	N(rpm)	380	300	230	190	310	250	190	150
	Vc(sfm)	197	197	197	197	164	164	164	164
	Vf(in/min)	15	14	13	12	9	9	7	7
	fz(in/t)	0.008	0.008	0.008	0.008	0.006	0.006	0.006	0.006
	PTH30E doc(in)	0.118	0.118	0.118	0.118	0.079	0.079	0.079	0.079
	woc(in)	0.669	0.787	0.984	1.378	1.969	2.480	3.150	3.937

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Cutting Conditions
Shank + Modular Style
Metric



	Ø (Flutes)	Side milling			Slotting		
		25mm (2)	32mm (3)	40mm (4)	25mm (2)	32mm (3)	40mm (4)
		Ø Inch	0.984"	1.260"	1.575"	0.984"	1.260"
Carbon Steel Alloy Steel 30HRC	N(rpm)	2540	1990	1590	2030	1590	1270
	Vc(m/min)	200	200	200	160	160	160
	Vf(mm/min)	1270	1490	1590	730	850	910
	fz(mm/t)	0.25	0.25	0.25	0.18	0.18	0.18
	PTH30E	doc(mm)	14	14	14	10	10
TB6045	woc(mm)	6	8	10	25	32	40
Tool Steel Alloy Steel 30-40HRC	N(rpm)	1910	1490	1190	1520	1190	950
	Vc(m/min)	150	150	150	120	120	120
	Vf(mm/min)	760	890	950	450	530	570
	fz(mm/t)	0.20	0.20	0.20	0.15	0.15	0.15
	TB6045	doc(mm)	14	14	14	8	8
TB6045	woc(mm)	6	8	10	25	32	40
Tool Steel Pre-hardened 40-50HRC	N(rpm)	1270	990	790	1010	790	630
	Vc(m/min)	100	100	100	80	80	80
	Vf(mm/min)	300	350	370	200	230	250
	fz(mm/t)	0.12	0.12	0.12	0.10	0.10	0.10
	TB6045	doc(mm)	10	10	10	5	5
TB6045	woc(mm)	6	8	10	25	32	40
Stainless Steel (Dry condition)	N(rpm)	3180	2480	1990	2540	1990	1590
	Vc(m/min)	250	250	250	200	200	200
	Vf(mm/min)	1590	1860	1990	760	890	950
	fz(mm/t)	0.25	0.25	0.25	0.15	0.15	0.15
	TB6045	doc(mm)	5	5	5	3	3
TB6045	woc(mm)	6	8	10	25	32	40
Stainless Steel (Wet condition)	N(rpm)	1910	1490	1190	1520	1190	950
	Vc(m/min)	150	150	150	120	120	120
	Vf(mm/min)	950	1110	1190	450	530	570
	fz(mm/t)	0.25	0.25	0.25	0.15	0.15	0.15
	PTH30E	doc(mm)	5	5	5	3	3
PTH30E	woc(mm)	6	8	10	25	32	40
Cast Iron	N(rpm)	2290	1800	1440	1920	1500	1200
	Vc(m/min)	180	180	180	150	150	150
	Vf(mm/min)	1140	1350	1440	700	810	870
	fz(mm/t)	0.25	0.25	0.25	0.18	0.18	0.18
	TB6045	doc(mm)	14	14	14	10	10
TB6045	woc(mm)	6	8	10	25	32	40
Titanium Alloy (Ti-6Al-4V)	N(rpm)	760	590	470	630	490	390
	Vc(m/min)	60	60	60	50	50	50
	Vf(mm/min)	300	350	370	180	220	230
	fz(mm/t)	0.20	0.20	0.20	0.15	0.15	0.15
	PTH30E	doc(mm)	3	3	3	2	2
PTH30E	woc(mm)	6	8	10	25	32	40

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Cutting Conditions Face Mill + Modular Style Metric



	Ø (Flutes)	Side milling				Slotting			
		50 (5)	63 (6)	80 (7)	100 (8)	50 (5)	63 (6)	80 (7)	100 (8)
		Ø Inch	0.969"	2.480"	3.150"	3.937"	0.969"	2.480"	3.150"
Carbon Steel Alloy Steel <30HRC	N(rpm)	1600	1270	1000	800	1280	1020	800	640
	Vc(m/min)	250	250	250	250	200	200	200	200
	Vf(mm/min)	2000	1910	1750	1600	1160	1110	1010	930
	fz(mm/t)	0.25	0.25	0.25	0.25	0.18	0.18	0.18	0.18
	PTH30E doc(mm)	5	5	5	5	5	5	5	5
	TB6045 woc(mm)	25	30	40	50	50	63	80	100
Tool Steel Alloy Steel 30-40HRC	N(rpm)	1280	1020	800	640	1150	1020	720	580
	Vc(m/min)	200	200	200	200	180	200	180	180
	Vf(mm/min)	1280	1230	1120	1030	870	920	760	700
	fz(mm/t)	0.2	0.2	0.2	0.2	0.15	0.15	0.15	0.15
	PTH30E doc(mm)	5	5	5	5	5	5	5	5
	TB6045 woc(mm)	25	30	40	50	50	63	80	100
Tool Steel Pre-hardened 40-50HRC	N(rpm)	640	510	400	320	510	510	320	260
	Vc(m/min)	100	100	100	100	80	100	80	80
	Vf(mm/min)	390	370	340	310	260	310	230	210
	fz(mm/t)	0.12	0.12	0.12	0.12	0.1	0.1	0.1	0.1
	PTH30E doc(mm)	4	4	4	4	3	3	3	3
	TB6045 woc(mm)	25	30	40	50	50	63	80	100
Stainless Steel (Dry condition)	N(rpm)	1600	1270	1000	800	1280	1270	800	640
	Vc(m/min)	250	250	250	250	200	250	200	200
	Vf(mm/min)	2000	1910	1750	1600	960	1150	840	770
	fz(mm/t)	0.25	0.25	0.25	0.25	0.15	0.15	0.15	0.15
	PTH30E doc(mm)	5	5	5	5	3	3	3	3
	TB6045 woc(mm)	25	30	40	50	50	63	80	100
Stainless Steel (Wet condition)	N(rpm)	960	760	600	480	770	760	480	390
	Vc(m/min)	150	150	150	150	120	150	120	120
	Vf(mm/min)	1200	1140	1050	960	580	690	510	470
	fz(mm/t)	0.25	0.25	0.25	0.25	0.15	0.15	0.15	0.15
	PTH30E doc(mm)	5	5	5	5	3	3	3	3
	TB6045 woc(mm)	25	30	40	50	50	63	80	100
Cast Iron	N(rpm)	1150	910	720	580	960	910	600	480
	Vc(m/min)	180	180	180	180	150	180	150	150
	Vf(mm/min)	1440	1370	1260	1160	870	990	760	700
	fz(mm/t)	0.25	0.25	0.25	0.25	0.18	0.18	0.18	0.18
	PTH30E doc(mm)	5	5	5	5	5	5	5	5
	TB6045 woc(mm)	25	30	40	50	50	63	80	100
Titanium Alloy (Ti-6Al-4V)	N(rpm)	390	310	240	200	320	260	200	160
	Vc(m/min)	60	60	60	60	50	50	50	50
	Vf(mm/min)	390	380	340	320	240	240	210	200
	fz(mm/t)	0.2	0.2	0.2	0.2	0.15	0.15	0.15	0.15
	PTH30E doc(mm)	3	3	3	3	2	2	2	2
	TB6045 woc(mm)	17	20	25	35	50	63	80	100