

# **AME/AMU Roughing End Mill**

**AME** – Side Lock Shank, MT Shank & Bore Type

**AMU** – Modular, Weldon Shank & Bore Type

**AME D32~D63mm**

**AMU D32~D80mm**

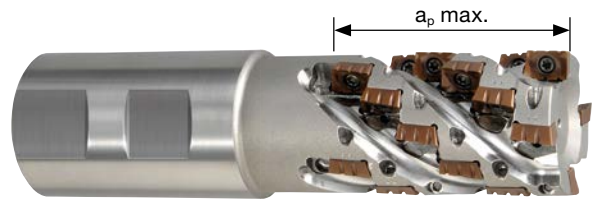
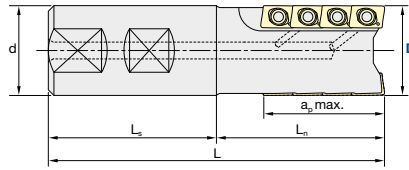
**3 Insert Types:**

- **Wave-edged Inserts**  
FT Breaker
- **Nick Type Inserts**  
N2/N3 Breaker
- **Sharp-edged Inserts**  
For Titanium · RS Breaker



## AME | Roughing End Mill | Side Lock Shank

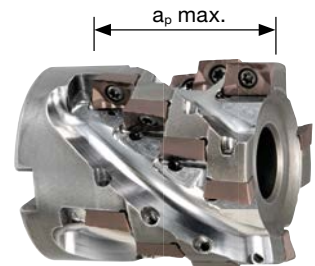
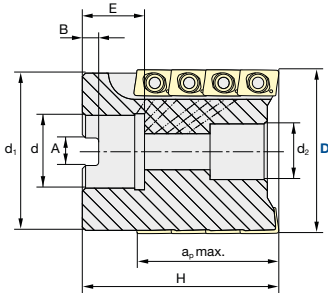
<b>Q max</b> High Efficient	<b>Jet</b> Air Hole	<b>▽</b> Roughing	<b>HRC</b> 40	<b>No. of Teeth</b> 3-6
--------------------------------	------------------------	----------------------	------------------	----------------------------



Diameter Holder only [mm]	Fastening Torque [Nm]
<b>-0.1/-0.3mm</b>	<b>2Nm</b>

ID Code	Item Code	Z	Inserts in Z-direction	Size (mm)					
				D	L	d	ap max.	Ln	Ls
FH550	<b>AME-1232S32-42-3NT</b>	3	4	32	120	32	42	60	60
FH547	<b>AME-1240S32-63-4NT</b>	4	6	40	150	32	63	80	70

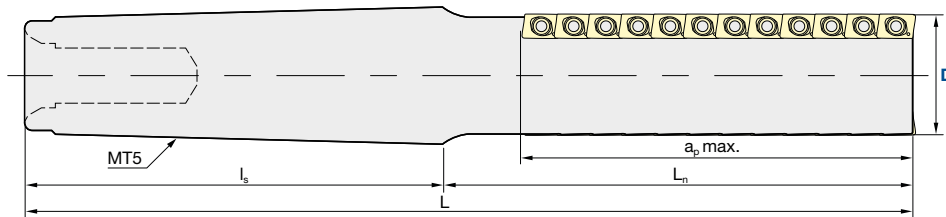
## AMEB | Roughing End Mill | Bore Type



Diameter Holder only [mm]	Fastening Torque [Nm]
<b>-0.1/-0.3mm</b>	<b>2Nm</b>

			Inserts in Z-direction	Size (mm)								
ID Code	Item Code	Z		D	a <sub>p</sub> max.	d <sub>1</sub>	H	E	A	B	d	d <sub>2</sub>
FH548	AMEB-1250RM-42-4NT	4	4	50	42	48	60	20	10	6.3	22	17
FH551	AMEB-1263RM-42-6NT	6		63		61		22	12.4	7	27	19
FH549	AMEB-1263RM-42-6NT-27											

## AME | Roughing End Mill | MT Shank Type



Diameter Holder only [mm]	Fastening Torque [Nm]
<b>-0.1/-0.3mm</b>	<b>2Nm</b>

ID Code	Item Code	Z	Inserts in Z-direction	Size (mm)					
				D	ap max.	Ln	Ls	L	Shank
FH276 *	<b>AME-1240MT5-126-4NT-F</b>	4	11	40	126	154	136	290	MT5

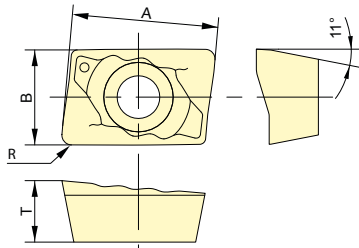
\* no stock item – longer delivery time

Type	Cutter body	Parts Shape		Clamp Screw		Screw Driver		Arbor Screw			
		Shape		Screw		Screw		Screw			
Shank Type	AME-...	ET152	265-141	ET011	104-T10	-	-	ET063	100-182	M10x1.5	16
Bore Type	AMEB-1250RM-...	-	-	-	-	-	-	-	-	-	-

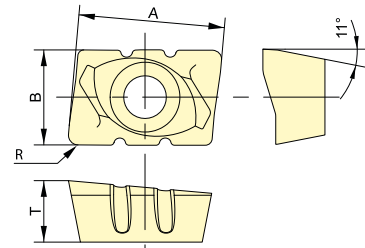
## INSERTS AME/AMEB | Roughing End Mill

**FT**

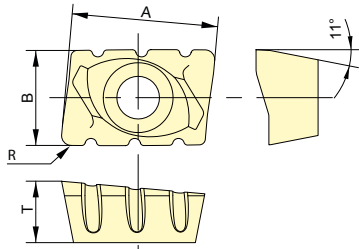
**Fig.1**  
Wave-edged insert


**N2**

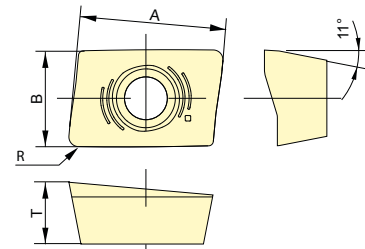
**Fig.2**  
2 Nick type


**N3**

**Fig.3**  
3 Nick type


**RS**

**Fig.4**  
Sharp-edged insert

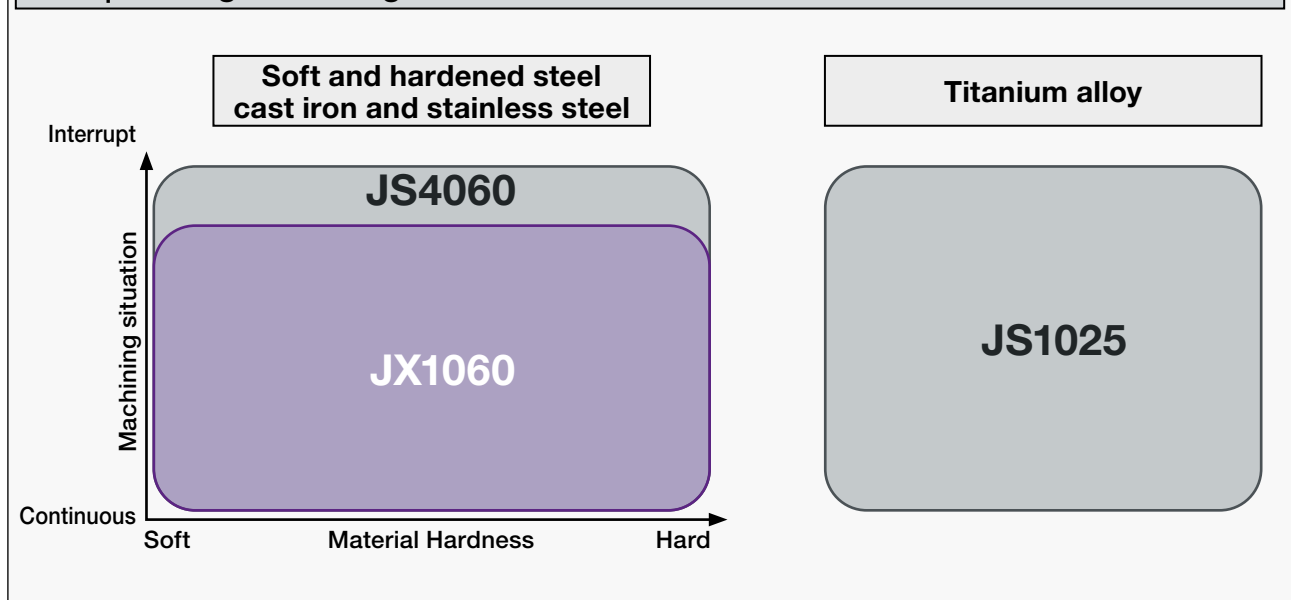


Type	Item Code	Tolerance Class	Grade			Size (mm)					
			JS1025	JS4060	JX1060	Corner-R	A	B	T	Shape	
			ID-Code								
Wave-edged insert	APMT-120508R-FT	M		WF256	WF688	0.8	12	7.89	5	Fig.1	
	APMT-120530R-FT*			WF257	WF253	3.0					
2 Nick Type	APMT-120508R-N2**			WF258	WF254	0.8				Fig.2	
3 Nick Type	APMT-120508R-N3**			WF259	WF255						Fig.3
Sharp-edged inserts	APMT-120508R-RS		WF260								
	APMT-120520R-RS*		WF261			2.0					
	APMT-120530R-RS*		WF262			3.0					

\* = only for tip

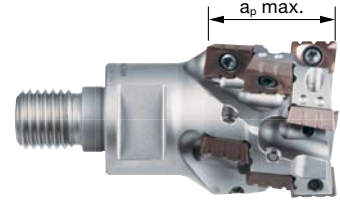
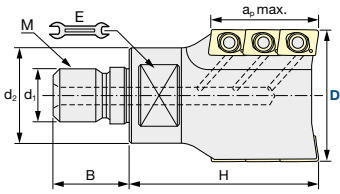
\*\* = please check page 9 for correct clamping

### AME | Insert grade – target material



## AMUM | Roughing End Mill | Modular Type

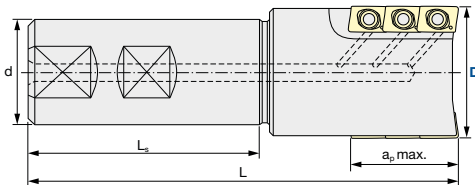
<b>Q max</b> High Efficient	<b>Jet</b> Air Hole	<b>▽</b> Roughing	<b>HRC</b> 40	<b>No. of Teeth</b> 3-6
--------------------------------	------------------------	----------------------	------------------	----------------------------



Diameter Holder only [mm]	Fastening Torque [Nm]
<b>-0.1/-0.3mm</b>	<b>2 Nm</b>

ID Code	Item Code	Z	Inserts in Z-direction	Flute Pitch / pocket size	Size (mm)						
					D	a <sub>p</sub> max.	H	B	d <sub>1</sub>	d <sub>2</sub>	M
FH586	AMUM-1232R-21-3NT-M16	3	2	coarse	32	21	45	23	17	28.8	M16
FH587	AMUM-1232R-31-3NT-M16	3	3	standard		31	57				
FH588	AMUM-1240R-21-3NT-M16	3	2	coarse	40	21	45				
FH589	AMUM-1240R-31-4NT-M16	4	3	standard		31	57				

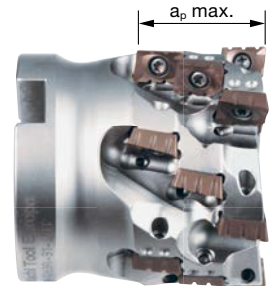
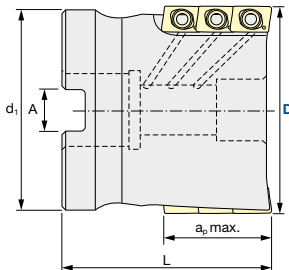
## AMUS | Roughing End Mill | Weldon Shank Type



Diameter Holder only [mm]	Fastening Torque [Nm]
<b>-0.1/-0.3mm</b>	<b>2 Nm</b>

		Z	Inserts in Z-direction	Flute Pitch / pocket size	Size (mm)				
ID Code	Item Code				D	a <sub>p</sub> max.	L	L <sub>s</sub>	d
FH590	AMUS-1232S32-21-3NT	3	2	coarse	32	21	120	60	32
FH591	AMUS-1232S32-31-3NT	3	3	standard		31			
FH592	AMUS-1240S32-21-3NT	3	2	coarse	40	21	130	70	
FH593	AMUS-1240S32-31-4NT	4	3	standard		31			

## AMUB | Roughing End Mill | Bore Type

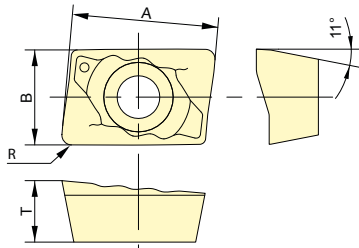
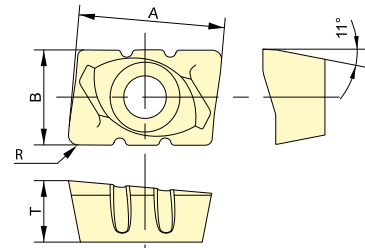
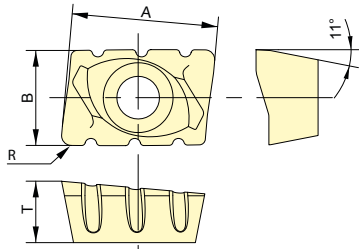
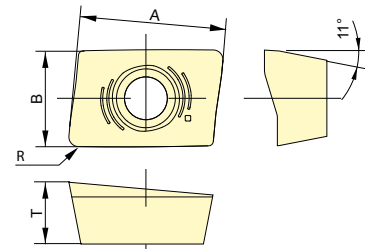


Diameter Holder only [mm]	Fastening Torque [Nm]
<b>-0.1/-0.3mm</b>	<b>2 Nm</b>

ID Code	Item Code	Z	Inserts in Z-direction	Flute Pitch / pocket size	Size (mm)				
					D	a <sub>p</sub> max.	L	A	d <sub>1</sub>
FH594	AMUB-1250R-21-3NT	3	2	coarse	50	21	50	22	47
FH595	AMUB-1250R-31-4NT	4	3	standard		31	63		
FH596	AMUB-1263R-21-5NT	5	2	coarse	63	21	50	27	60
FH597	AMUB-1263R-31-6NT	6	3	standard		31	63		
FH598	AMUB-1280R-21-5NT	5	2	coarse	80	21	50		76
FH599	AMUB-1280R-31-6NT	6	3	standard		31	63		

		Parts Shape		Clamp Screw		Screw Driver		Arbor Screw			
Type	Cutter body										
Modular Type	AMUM-...	ET152	265-141	ET011	104-T10	-	-	-	-	-	-
Shank Type	AMUS-...										
Bore Type	AMUB-...										
						ET063	100-182	M10x1.5	16	10	35

## INSERTS AMU | Roughing End Mill

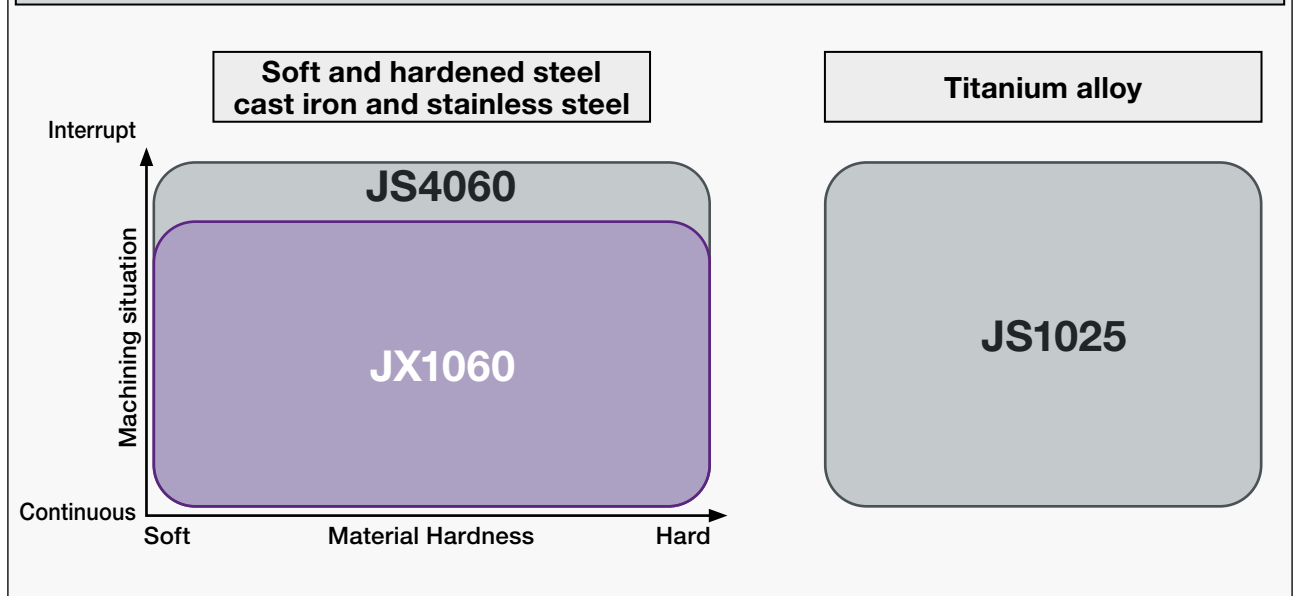
**FT**
**Fig.1**  
 Wave-edged insert

**N2**
**Fig.2**  
 2 Nick type

**N3**
**Fig.3**  
 3 Nick type

**RS**
**Fig.4**  
 Sharp-edged insert


Type	Item Code	Tolerance Class	Grade			Size (mm)					
			JS1025	JS4060	JX1060	Corner-R	A	B	T	Shape	
			ID-Code								
Wave-edged insert	APMT-120508R-FT	M		WF256	WF688	0.8	12	7.89	5	Fig.1	
	APMT-120530R-FT*			WF257	WF253	3.0					
2 Nick Type	APMT-120508R-N2**			WF258	WF254	0.8				Fig.2	
3 Nick Type	APMT-120508R-N3**			WF259	WF255						Fig.3
Sharp-edged inserts	APMT-120508R-RS		WF260								
	APMT-120520R-RS*		WF261		2.0						
	APMT-120530R-RS*		WF262		3.0						

\* = only for tip

\*\* = please check page 9 for correct clamping

### AMU | Insert grade – target material








## AME | Recommended Cutting Conditions | Standard Pitch

Work piece material	Recommended grade & Target hardness (HRC)					Emulsion	Mist	Air	D	32			40			50			63			
									Z	3			4			4			6			
	30	40	50							OH/Dia. ratio	3-5D	5-7D	> 7D	3-5D	5-7D	> 7D	3-5D	5-7D	> 7D	3-5D	5-7D	> 7D
Carbon-Steel Alloy-Steel < 200HB									V <sub>c</sub>	m/min	140	130	110	140	130	110	140	130	110	140	130	110
	JX1060					•	•	•	n	min <sup>-1</sup>	1390	1290	1090	1110	1030	880	890	830	700	710	660	560
	JS4060					•	•	•	f <sub>z</sub>	feed/tooth	0.25	0.21	0.17	0.19	0.16	0.13	0.19	0.16	0.13	0.21	0.17	0.14
									V <sub>f</sub>	mm/min	1040	810	560	840	660	460	680	530	360	890	670	470
									a <sub>p</sub>	mm	41	41	41	62	62	62	41	41	41	41	41	41
									a <sub>e</sub>	mm	6	4	3	4	3	2	7	5	4	9	7	4
Carbon steel Alloy steel < 30HRC									Q	mm/min	255.8	132.8	68.9	208.3	122.8	57.0	195.2	108.7	59.0	328.4	192.3	77.1
									V <sub>c</sub>	m/min	130	110	100	130	110	100	130	110	100	130	110	100
	JX1060					•	•	•	n	min <sup>-1</sup>	1290	1090	990	1030	880	800	830	700	640	660	560	510
	JS4060					•	•	•	f <sub>z</sub>	feed/tooth	0.20	0.18	0.15	0.15	0.14	0.11	0.15	0.13	0.11	0.17	0.15	0.13
									V <sub>f</sub>	mm/min	770	590	450	620	490	350	500	360	280	670	500	400
									a <sub>p</sub>	mm	41	41	41	62	62	62	41	41	41	41	41	41
Pre-Hardened Steel 30 - 40HRC									a <sub>e</sub>	mm	6	4	3	4	3	2	7	5	4	9	7	4
									Q	mm/min	189.4	96.8	55.4	153.8	91.1	43.4	143.5	73.8	45.9	247.2	143.5	65.6
									V <sub>c</sub>	m/min	100	80	60	100	80	60	100	80	60	100	80	60
	JS4060					•	•	•	n	min <sup>-1</sup>	990	800	600	800	640	480	640	510	380	510	400	300
									V <sub>f</sub>	mm/min	480	310	180	380	260	130	310	200	110	400	260	140
									a <sub>p</sub>	mm	41	41	41	62	62	62	41	41	41	41	41	41
Stainless Steels SUS									a <sub>e</sub>	mm	6	4	3	4	3	2	7	5	4	9	7	4
									Q	mm/min	118.1	50.8	22.1	94.2	48.4	16.1	89.0	41.0	18.0	147.6	74.6	23.0
									V <sub>c</sub>	m/min	100	80	60	100	80	60	100	80	60	100	80	60
	JX1060					•	•	•	n	min <sup>-1</sup>	990	800	600	800	640	480	640	510	380	510	400	300
	JS4060					•	•	•	f <sub>z</sub>	feed/tooth	0.16	0.13	0.10	0.12	0.10	0.07	0.12	0.10	0.07	0.13	0.11	0.08
									V <sub>f</sub>	mm/min	480	310	180	380	260	130	310	200	110	400	260	140
Cast-Iron GG EN-JL10** EN-GJL-***									a <sub>p</sub>	mm	41	41	41	62	62	62	41	41	41	41	41	41
									a <sub>e</sub>	mm	6	4	3	4	3	2	7	5	4	9	7	4
									Q	mm/min	255.8	132.8	68.9	208.3	122.8	57.0	195.2	108.7	59.0	328.4	192.3	77.1
									V <sub>c</sub>	m/min	140	130	110	140	130	110	140	130	110	140	130	110
	JX1060					•	•	•	n	min <sup>-1</sup>	1390	1290	1090	1110	1030	880	890	830	700	710	660	560
	JS4060					•	•	•	f <sub>z</sub>	feed/tooth	0.25	0.21	0.17	0.19	0.16	0.13	0.19	0.16	0.13	0.21	0.17	0.14
Cast-Iron GGG EN-JS10** EN-GJS-***									V <sub>f</sub>	mm/min	1040	810	560	840	660	460	680	530	360	890	670	470
									a <sub>p</sub>	mm	41	41	41	62	62	62	41	41	41	41	41	41
									a <sub>e</sub>	mm	6	4	3	4	3	2	7	5	4	9	7	4
									Q	mm/min	159.9	86.9	44.3	131.4	78.1	34.7	120.5	67.7	36.1	210.3	132.0	47.6
									V <sub>c</sub>	m/min	40	30	30	40	40	30	40	40	30	40	40	30
									n	min <sup>-1</sup>	400	300	300	320	320	240	250	190	200	200	150	
Titanium									f <sub>z</sub>	feed/tooth	0.12	0.10	0.08	0.11	0.09	0.08	0.10	0.09	0.08	0.12	0.10	0.08
									V <sub>f</sub>	mm/min	140	90	70	140	120	80	100	90	60	140	120	70
									a <sub>p</sub>	mm	41	41	41	62	62	62	41	41	41	41	41	41
									a <sub>e</sub>	mm	4	4	2	4	3	2	7	6	4	10	8	6
									Q	mm/min	23.0	14.8	5.7	34.7	22.3	9.9	28.7	22.1	9.8	57.4	39.4	17.2

 **NOTE: NOT RECOMMENDED FOR FULL SLOTTING!**  
 **ACHTUNG: NICHT FÜR DIREKTES VOLLNUTEN GEEIGNET!**  
 **NOTA: È SCONSIGLIATO L'UTILIZZO IN CAVA DAL PIENO!**

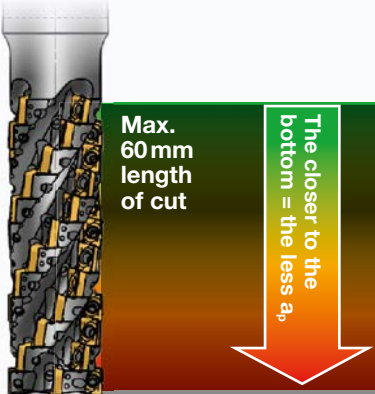
 **NOTA: NO SE RECOMIENDA PARA EL RANURADO!**  
 **N.B.: NON RECOMMANDÉ EN RAINURE PLEINE MATIÈRE**  
 **NÃO RECOMENDADO PARA CORTE RANHURAS!**

**For AME-1240MT5-126-4NT(-F) – Due to the length of body, parameters are recommended as follows:**

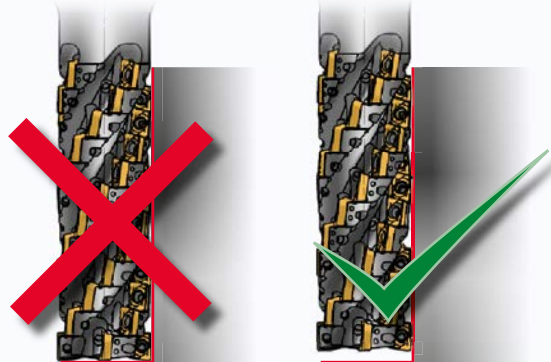
$V_c$  &  $f_z$  : Please start with lower parameters of standard D40.  $a_p$  max : 4mm (0.1 x D)

### 1. Max. $a_p$ recommendation

To decrease cutting force and vibration, gradually reduce the depth of cut ( $a_p$ ) when approaching the bottom.









### 2. Caution: This cutter is recommended for side milling. Please adjust the tool path to avoid contact with the side and bottom at the same time.









## AMU | Recommended Cutting Conditions | Standard Pitch

Work piece material	Recommended grade & Target hardness (HRC)			Emulsion	Mist	Air	D	32			40			50			63			80		
	30	40	50				Z	3			4			4			6			6		
							OH/Dia. ratio	3-5D	5-7D	>7D	3-5D	5-7D	>7D	3-5D	5-7D	>7D	3-5D	5-7D	>7D	3-5D	5-7D	>7D
Carbon Steel Alloy Steel <200HB							V <sub>c</sub> m/min	180	160	140	180	160	140	180	160	140	180	160	140	180	160	140
	JX1060				•	•	n min <sup>-1</sup>	1790	1590	1390	1430	1270	1110	1150	1020	890	910	810	710	720	640	560
	JS4060				•	•	f <sub>z</sub> feed/tooth	0.25	0.21	0.17	0.19	0.16	0.13	0.19	0.16	0.13	0.21	0.17	0.14	0.21	0.17	0.14
							V <sub>f</sub> mm/min	1340	1000	710	1070	800	570	860	640	450	1140	850	600	900	670	480
							a <sub>p</sub> mm	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
							a <sub>e</sub> mm	8	6	4	8	6	4	10	7	5	12	9	6	16	12	8
							Q mm/min	321.6	180.0	85.2	256.8	144.0	68.4	258.0	134.4	67.5	410.4	229.5	108.0	432.0	241.2	115.2
Carbon Steel Alloy Steel <30HRC							V <sub>c</sub> m/min	160	140	120	160	140	120	160	140	120	160	140	120	160	140	120
	JX1060				•	•	n min <sup>-1</sup>	1590	1390	1190	1270	1110	950	1020	890	760	810	710	610	640	560	480
	JS4060				•	•	f <sub>z</sub> feed/tooth	0.2	0.18	0.15	0.15	0.14	0.11	0.15	0.13	0.11	0.17	0.15	0.13	0.17	0.15	0.13
							V <sub>f</sub> mm/min	950	750	540	760	600	430	610	480	340	810	640	460	640	500	360
							a <sub>p</sub> mm	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
							a <sub>e</sub> mm	8	6	4	8	6	4	10	7	5	12	9	6	16	12	8
							Q mm/min	228.0	135.0	64.8	182.4	108.0	51.6	183.0	100.8	51.0	291.6	172.8	82.8	307.2	180.0	86.4
Pre-Hardened Steel 30 - 40 HRC							V <sub>c</sub> m/min	120	100	80	120	100	80	120	100	80	120	100	80	120	100	80
							n min <sup>-1</sup>	1190	990	800	950	800	640	760	640	510	610	510	400	480	400	320
	JS4060				•	•	f <sub>z</sub> feed/tooth	0.16	0.13	0.1	0.12	0.1	0.07	0.12	0.1	0.07	0.13	0.11	0.08	0.13	0.11	0.08
							V <sub>f</sub> mm/min	570	390	240	460	310	190	360	250	150	490	330	200	380	260	160
							a <sub>p</sub> mm	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
							a <sub>e</sub> mm	8	6	4	8	6	4	10	7	5	12	9	6	16	12	8
							Q mm/min	136.8	70.2	28.8	110.4	55.8	22.8	108.0	52.5	22.5	176.4	89.1	36.0	182.4	93.6	38.4
Stainless Steels SUS							V <sub>c</sub> m/min	120	100	80	120	100	80	120	100	80	120	100	80	120	100	80
	JX1060				•	•	n min <sup>-1</sup>	1190	990	800	950	800	640	760	640	510	610	510	400	480	400	320
	JS4060				•	•	f <sub>z</sub> feed/tooth	0.16	0.13	0.1	0.12	0.1	0.07	0.12	0.1	0.07	0.13	0.11	0.08	0.13	0.11	0.08
							V <sub>f</sub> mm/min	570	390	240	460	310	190	360	250	150	490	330	200	380	260	160
							a <sub>p</sub> mm	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
							a <sub>e</sub> mm	8	6	4	8	6	4	10	7	5	12	9	6	16	12	8
							Q mm/min	136.8	70.2	28.8	110.4	55.8	22.8	108.0	52.5	22.5	176.4	89.1	36.0	182.4	93.6	38.4
Cast Iron GG EN-JL10** EN-GJL-***							V <sub>c</sub> m/min	180	160	140	180	160	140	180	160	140	180	160	140	180	160	140
	JX1060				•	•	n min <sup>-1</sup>	1790	1590	1390	1430	1270	1110	1150	1020	890	910	810	710	720	640	560
	JS4060				•	•	f <sub>z</sub> feed/tooth	0.25	0.21	0.17	0.19	0.16	0.13	0.19	0.16	0.13	0.21	0.17	0.14	0.21	0.17	0.14
							V <sub>f</sub> mm/min	1340	1000	710	1070	800	570	860	640	450	1140	850	600	900	670	480
							a <sub>p</sub> mm	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
							a <sub>e</sub> mm	8	6	4	8	6	4	10	7	5	12	9	6	16	12	8
							Q mm/min	321.6	180.0	85.2	256.8	144.0	68.4	258.0	134.4	67.5	410.4	229.5	108.0	432.0	241.2	115.2
Cast Iron GGG EN-JS10** EN-GJS-***							V <sub>c</sub> m/min	140	120	100	140	120	100	140	120	100	140	120	100	140	120	100
	JX1060				•	•	n min <sup>-1</sup>	1390	1190	990	1110	950	800	890	760	640	710	610	510	560	480	400
	JS4060				•	•	f <sub>z</sub> feed/tooth	0.2	0.18	0.15	0.15	0.13	0.11	0.15	0.13	0.11	0.17	0.15	0.12	0.17	0.15	0.13
							V <sub>f</sub> mm/min	830	640	450	670	510	360	530	410	290	710	550	380	560	430	300
							a <sub>p</sub> mm	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
							a <sub>e</sub> mm	8	6	4	8	6	4	10	7	5	12	9	6	16	12	8
							Q mm/min	199.2	115.2	54.0	160.8	91.8	43.2	159.0	86.1	43.5	255.6	148.5	68.4	268.8	154.8	72.0
Titanium							V <sub>c</sub> m/min	45	40	35	50	45	40	50	45	40	50	45	40	50	45	40
							n min <sup>-1</sup>	450	400	350	400	360	320	320	290	250	250	230	200	200	180	160
							f <sub>z</sub> feed/tooth	0.12	0.1	0.08	0.11	0.09	0.08	0.1	0.09	0.08	0.12	0.1	0.08	0.12	0.1	0.08
	JS1025				•	•	V <sub>f</sub> mm/min	160	120	80	170	130	100	130	100	80	180	140	100	140	110	80
							a <sub>p</sub> mm	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
							a <sub>e</sub> mm	6	5	3	8	7	5	10	8	5	14	11	8	18	14	10
							Q mm/min	28.8	18.0	7.2	40.8	27.3	15.0	39.0	24.0	12.0	75.6	46.2	24.0	75.6	46.2	24.0

-  **Please note:** The values of  $a_p$  are maximum depth of each Diameter. Please adjust them as necessary.
-  **Zur Beachtung:** Die  $a_p$  -Werte entsprechen dem Maximum für den jeweiligen Durchmesser – bitte entsprechend anpassen.
-  **Nota bene:** Il valore della massima profondità di passata è riferito ad ogni diametro. Si prega di adattarli secondo necessità.
-  **Tenga en cuenta:** Los valores de  $a_p$  son la profundidad máxima de cada diámetro. Por favor, ajústelos si es necesario.
-  **A noter:** Les valeurs des  $a_p$  correspondent aux profondeurs maximums pour chaque diamètre. Veuillez les adapter en conséquence.
-  **Nota:** Os valores de  $a_p$  correspondem à profundidade máxima de cada Diâmetro. Ajuste-os conforme necessário.

## AMU | Recommended Cutting Conditions | Coarse Pitch

Work piece material	Recommended grade & Target hardness (HRC)			Emulsion	Mist	Air	D	32			40			50			63			80			
							Z	3			4			4			6			6			
	30	40	50				OH/Dia. ratio	3-5D	5-7D	>7D	3-5D	5-7D	>7D	3-5D	5-7D	>7D	3-5D	5-7D	>7D	3-5D	5-7D	>7D	
Carbon Steel Alloy Steel <200HB							V <sub>c</sub> m/min	180	160	140	180	160	140	180	160	140	180	160	140	180	160	140	
	JX1060				•	•	•	n min <sup>-1</sup>	1790	1590	1390	1430	1270	1110	1150	1020	890	910	810	710	720	640	560
	JS4060				•	•	•	f <sub>z</sub> feed/tooth	0.25	0.21	0.17	0.25	0.21	0.17	0.25	0.21	0.17	0.25	0.21	0.17	0.25	0.21	0.17
							V <sub>f</sub> mm/min	1340	1000	710	1070	800	570	860	640	450	1140	850	600	900	670	480	
							a <sub>p</sub> mm	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
							a <sub>e</sub> mm	8	6	4	8	6	4	10	7	5	12	9	6	16	12	8	
							Q mm/min	214.4	120.0	56.8	171.2	96.0	45.6	172.0	89.6	45.0	273.6	153.0	72.0	288.0	160.8	76.8	
Carbon Steel Alloy Steel <30HRC							V <sub>c</sub> m/min	160	140	120	160	140	120	160	140	120	160	140	120	160	140	120	
	JX1060				•	•	•	n min <sup>-1</sup>	1590	1390	1190	1270	1110	950	1020	890	760	810	710	610	640	560	480
	JS4060				•	•	•	f <sub>z</sub> feed/tooth	0.2	0.18	0.15	0.2	0.18	0.15	0.2	0.18	0.15	0.2	0.18	0.15	0.2	0.18	0.15
							V <sub>f</sub> mm/min	950	750	540	760	600	430	610	480	340	810	640	460	640	500	360	
							a <sub>p</sub> mm	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
							a <sub>e</sub> mm	8	6	4	8	6	4	10	7	5	12	9	6	16	12	8	
							Q mm/min	152.0	90.0	43.2	121.6	72.0	34.4	122.0	67.2	34.0	194.4	115.2	55.2	204.8	120.0	57.6	
Pre-Hardened Steel 30 - 40 HRC							V <sub>c</sub> m/min	120	100	80	120	100	80	120	100	80	120	100	80	120	100	80	
							n min <sup>-1</sup>	1190	990	800	950	800	640	760	640	510	610	510	400	480	400	320	
	JS4060				•	•	•	f <sub>z</sub> feed/tooth	0.16	0.13	0.1	0.16	0.13	0.1	0.16	0.13	0.1	0.16	0.13	0.1	0.16	0.13	0.1
							V <sub>f</sub> mm/min	570	390	240	460	310	190	360	250	150	490	330	200	380	260	160	
							a <sub>p</sub> mm	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
							a <sub>e</sub> mm	8	6	4	8	6	4	10	7	5	12	9	6	16	12	8	
							Q mm/min	91.2	46.8	19.2	73.6	37.2	15.2	72.0	35.0	15.0	117.6	59.4	24.0	121.6	62.4	25.6	
Stainless Steels SUS							V <sub>c</sub> m/min	120	100	80	120	100	80	120	100	80	120	100	80	120	100	80	
	JX1060				•	•	•	n min <sup>-1</sup>	1190	990	800	950	800	640	760	640	510	610	510	400	480	400	320
	JS4060				•	•	•	f <sub>z</sub> feed/tooth	0.16	0.13	0.1	0.16	0.13	0.1	0.16	0.13	0.1	0.16	0.13	0.1	0.16	0.13	0.1
							V <sub>f</sub> mm/min	570	390	240	460	310	190	360	250	150	490	330	200	380	260	160	
							a <sub>p</sub> mm	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
							a <sub>e</sub> mm	8	6	4	8	6	4	10	7	5	12	9	6	16	12	8	
							Q mm/min	91.2	46.8	19.2	73.6	37.2	15.2	72.0	35.0	15.0	117.6	59.4	24.0	121.6	62.4	25.6	
Cast Iron GG EN-JL10** EN-GJL-***							V <sub>c</sub> m/min	180	160	140	180	160	140	180	160	140	180	160	140	180	160	140	
	JX1060				•	•	•	n min <sup>-1</sup>	1790	1590	1390	1430	1270	1110	1150	1020	890	910	810	710	720	640	560
	JS4060				•	•	•	f <sub>z</sub> feed/tooth	0.25	0.21	0.17	0.25	0.21	0.17	0.25	0.21	0.17	0.25	0.21	0.17	0.25	0.21	0.17
							V <sub>f</sub> mm/min	1340	1000	710	1070	800	570	860	640	450	1140	850	600	900	670	480	
							a <sub>p</sub> mm	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
							a <sub>e</sub> mm	8	6	4	8	6	4	10	7	5	12	9	6	16	12	8	
							Q mm/min	214.4	120.0	56.8	171.2	96.0	45.6	172.0	89.6	45.0	273.6	153.0	72.0	288.0	160.8	76.8	
Cast Iron GGG EN-JS10** EN-GJS-***							V <sub>c</sub> m/min	140	120	100	140	120	100	140	120	100	140	120	100	140	120	100	
	JX1060				•	•	•	n min <sup>-1</sup>	1390	1190	990	1110	950	800	890	760	640	710	610	510	560	480	400
	JS4060				•	•	•	f <sub>z</sub> feed/tooth	0.2	0.18	0.15	0.2	0.18	0.15	0.2	0.18	0.15	0.2	0.18	0.15	0.2	0.18	0.15
							V <sub>f</sub> mm/min	830	640	450	670	510	360	530	410	290	710	550	380	560	430	300	
							a <sub>p</sub> mm	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
							a <sub>e</sub> mm	8	6	4	8	6	4	10	7	5	12	9	6	16	12	8	
							Q mm/min	132.8	76.8	36.0	107.2	61.2	28.8	106.0	57.4	29.0	170.4	99.0	45.6	179.2	103.2	48.0	
Titanium							V <sub>c</sub> m/min	45	40	35	50	45	40	50	45	40	50	45	40	50	45	40	
							n min <sup>-1</sup>	450	400	350	400	360	320	320	290	250	250	230	200	200	180	160	
							f <sub>z</sub> feed/tooth	0.12	0.1	0.08	0.14	0.12	0.1	0.14	0.12	0.1	0.14	0.12	0.1	0.14	0.12	0.1	
	JS1025				•	•	•	V <sub>f</sub> mm/min	160	120	80	170	130	100	130	100	80	180	140	100	140	110	80
							a <sub>p</sub> mm	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
							a <sub>e</sub> mm	6	5	3	8	7	5	10	8	5	14	11	8	18	14	10	
							Q mm/min	19.2	12.0	4.8	27.2	18.2	10.0	26.0	16.0	8.0	50.4	30.8	16.0	50.4	30.8	16.0	

-  **Please note:** The values of  $a_p$  are maximum depth of each Diameter. Please adjust them as necessary.
-  **Zur Beachtung:** Die  $a_p$  -Werte entsprechen dem Maximum für den jeweiligen Durchmesser – bitte entsprechend anpassen.
-  **Nota bene:** Il valore della massima profondità di passata è riferito ad ogni diametro. Si prega di adattarli secondo necessità.
-  **Tenga en cuenta:** Los valores de  $a_p$  son la profundidad máxima de cada diámetro. Por favor, ajústelos si es necesario.
-  **A noter:** Les valeurs des  $a_p$  correspondent aux profondeurs maximums pour chaque diamètre. Veuillez les adapter en conséquence.
-  **Nota:** Os valores de  $a_p$  correspondem à profundidade máxima de cada Diâmetro. Ajuste-os conforme necessário.

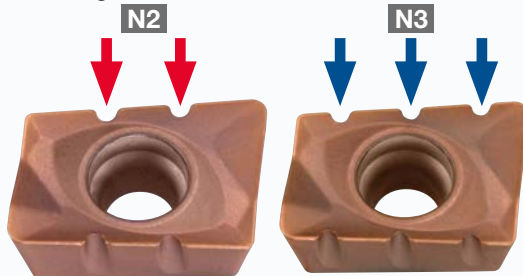


## Features and Applications of Inserts & Cutter Body

### 1. Nick Type Inserts:

Low cutting force, general-purpose type  
First recommended

- Provides low resistance machining
- Suppresses chatter vibration even in deep cutting



### 2. Wave-edged inserts:

**FT** – For semi finishing

- Enables shallow-depth, high-feed-rate machining.
- Use of a wave-edged flute shape improves insert tip strength.



### 3. Sharp-edged inserts:

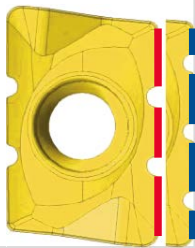
**RS** – For titanium cutting

- The sharp-edged insert is suited for high-efficiency machining of titanium.
- Sharp cutting edge enables machining to be performed with low resistance



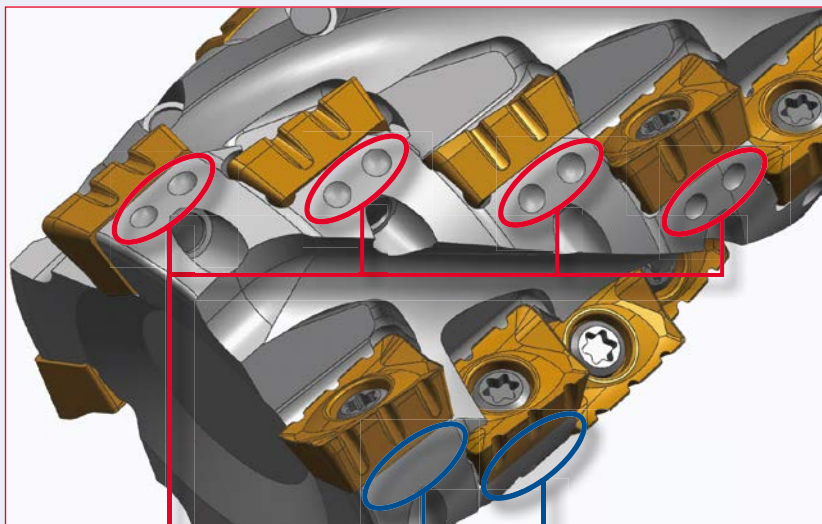
### 4. Nick Type Inserts:

- N2 / N3 cut wall alternately:  
Shorter contact length reduces cutting force



### 5. How to install the nick type inserts:

1. Install N2 type inserts on insert rows with holder mark.
2. Install N3 type inserts on insert rows without holder mark.



**Marked pocket: For N2**

**No mark pocket: For N3**

**NOTE: NOT RECOMMENDED FOR FULL SLOTTING!**

### 6. Please note:

When using nick type inserts, always install 2 types of inserts: **N2 type and N3 type** on the holder and in the designated insert row.  
Installing only N2 type inserts or only N3 type inserts on the holder will cause tool damage.  
Installing nick type inserts in the wrong position will cause tool damage. Be sure to exercise sufficient care.

## Besonderheiten und Anwendungen von Schneidplatten & Halter

### 1. Schneidplatten mit Einkerbungen „Nick Type“:

Geringere Schnittkräfte, die erste Empfehlung für die meisten Anwendungen

- Ermöglicht die Bearbeitung mit niedrigen Schnittkräften
- Reduziert Rattern auch bei Bearbeitungen mit großer Eingriffstiefe

### 2. Schneidplatten mit wellenförmiger Schneidkante:

**FT** – Für das Vorschlichten

- Ermöglicht Oberflächen-Bearbeitungen mit hohem Vorschub
- Die Wellenform erhöht die Stabilität der Schneidkante

### 3. Scharfkantige Schneidplatten:

**RS** – Für Titan-Bearbeitungen

- Für die hocheffiziente Bearbeitung von Titan
- Die scharfe Schneidkante reduziert die Schnittkräfte

### 4. Schneidplatten mit Einkerbungen „Nick Type“:

- N2 / N3 schneiden alternierend: Verringerter Kontakt zum Werkstück reduziert die Schnittkräfte

### 5. Einsetzen der „Nick Type“-Schneidplatten:

1. Schneidplatten des Typs **N2** in die Aufnahmereihen **mit Markierung** einsetzen.
2. Schneidplatten des Typs **N3** in die Aufnahmereihen **ohne Markierung** einsetzen.

**Markierte Aufnahmen: Für N2 | Unmarkierte Aufnahmen: Für N3**

### 6. Zur Beachtung:

Bei Verwendung der „NickType“-Schneidplatten, immer die 2 verschiedenen Plattentypen **N2 und N3** in den Halter und die dafür vorgesehenen Aufnahmereihen einsetzen.

Die ausschließliche Verwendung von Platten des Typs N2 oder N3 alleine beschädigt das Werkzeug, ebenso wie die falsche Positionierung der N2 / N3-Schneidplatten in den jeweils dafür gekennzeichneten Aufnahmereihen. Bitte achten Sie sorgfältig auf die korrekte Positionierung der Schneidplatten.

**ACHTUNG: NICHT FÜR DIREKTES NUTENFRÄSEN GEEIGNET!**

## AME/AMU | Roughing End Mill | Features and Applications

### Caratteristiche ed applicazioni degli inserti e corpo fresa

#### 1. Inserti tipo Nick:

Bassa forza di taglio, applicazioni generali

- Fornisce lavorazioni a bassa resistenza
- Elimina vibrazioni anche in lavorazioni profonde

#### 2. Inserti a profilo ondulato:

FT – Per semi-finitura

- Permette lavorazioni ad alto avanzamento per basse profondità.
- L'utilizzo del profilo ondulato rinforza il profilo stesso.

#### 3. Inserti a profilo affilato:

RS – per lavorazioni su titanio

- Il profilo affilato è adatto per lavorazioni ad alta efficienza sul titanio.
- Le caratteristiche del tagliente permettono lavorazioni a bassa resistenza.

#### 4. Inserti tipo Nick:

- N2 / N3 lavorano alternativamente:  
La minore lunghezza di contatto riduce le forze di taglio

#### 5. Come montare gli inserti tipo Nick:

1. Montare gli inserti tipo **N2** sulla riga di sedi inserti **con contrassegno**.
2. Montare gli inserti tipo **N3** sulla riga di sedi inserti **senza contrassegno**.

**Sede con contrassegno: per N2 | Sede senza contrassegno: per N3**

#### 6. Prego notare:

Se si utilizzano gli inserti di tipo nick montarne sempre di due tipi: tipo N2 e tipo N3 facendo attenzione a montarli sulle sedi inserti designate (con o senza contrassegno) come precedentemente indicato.

Il montaggio di solo inserti di tipo N2 o di tipo N3 provocherà dei danni. Il montaggio degli inserti nelle sedi non appropriate causerà dei danni. Assicurarsi di prestare la massima attenzione.

**NOTA: È SCONSIGLIATO L'UTILIZZO IN CAVA DAL PIENO!**

### Particularités et Applications des plaquettes & du corps de fraise

#### 1. Plaquettes avec arrête à encoches :

Réduction des efforts de coupe, pour usage général

Notre première recommandation

- Permet un usinage à résistance réduite
- Supprime ou diminue considérablement les phénomènes vibratoires en usinage profond

#### 2. Plaquettes avec arrête en forme de vague :

FT – Pour semi-finition

- Permet l'usinage avec de fortes avances, sur de faibles profondeurs.
- L'utilisation d'une géométrie en forme de vague améliore la résistance en bout de plaquette.

#### 3. Plaquette à arrête affûtée :

RS – Pour l'usinage du titane

- La plaquette affûtée est adaptée à l'usinage haut rendement du titane.
- L'arrête affûtée permet de réduire les efforts d'usinage.

#### 4. Plaquettes avec arrête à encoches :

- Les plaquettes N2 / N3 usinent les parois alternativement:  
Une zone de contact réduite minimise les efforts de coupe

#### 5. Comment monter les plaquettes avec encoches :

1. Monter les plaquettes de type **N2** dans les logements **marqués** du corps de fraise.
2. Monter les plaquettes de type **N3** dans les logements **sans marques** du corps de fraise.

**Logements marqués: Pour N2 | Logements non marqués: Pour N3**

#### 6. Veuillez noter:

Lors de l'utilisation de plaquettes à encoches, toujours monter les 2 types de plaquettes: N2 et N3 aux emplacements désignés.

Le montage de plaquettes de type N2 ou N3 uniquement causera des dommages sur l'outil.

Le montage des plaquettes dans des logements non dédiés causeront des dommages à l'outil. Merci de prêter une attention toute particulière au montage de ces plaquettes de type N2 et N3.

**N.B.: NON RECOMMANDÉ EN RAINURE PLEINE MATIÈRE**

### Características y aplicaciones de la herramienta

#### 1. Placas tipo Nick:

Bajo esfuerzo de corte, de uso general. Primera opción recomendada

- Permite un mecanizado de baja resistencia
- Suprime vibraciones incluso trabajando con grandes voladizos

#### 2. Placas con filo ondulado:

FT - Para el semi-acabado

- Permite el mecanizado de alto avance en superficies profundas.
- El uso de un filo ondulado incrementa su robustez.

#### 3. Placas con arista viva:

RS – Para el mecanizado de titanio

- La placa es ideal para el mecanizado de alta eficiencia de titanio.
- El filo vivo permite un mecanizado de baja resistencia

#### 4. Placas tipo Nick:

- N2/N3 corte alterno:  
Una superficie de contacto menor reduce el esfuerzo de corte.

#### 5. Cómo montar las placas tipo Nick:

1. Sitúe las placas tipo **N2** en los alojamientos **marcados** en el soporte.
2. Sitúe las placas tipo **N3** en los alojamientos **sin marca** en el soporte.

**Alojamiento marcado: Para N2 | Alojamiento sin marca: Para N3**

#### 6. Tenga en cuenta:

Al utilizar las placas tipo Nick, instale siempre los 2 tipos de placas: N2 y N3 en la fila de placas correspondiente.

Instalar sólo placas de tipo N2 o sólo placas de tipo N3 en el soporte puede dañar la herramienta.

Instalar placas tipo Nick en la posición incorrecta puede dañar la herramienta. Asegúrese de tener suficiente cuidado.

**NOTA: NO SE RECOMIENDA PARA EL RANURADO!**

### Características e aplicações plaquetes & ferramenta

#### 1. Plaquetes tipo Nick:

Baixas forças de corte, para uso geral. Primeira recomendação

- Proporciona pouco esforço maquinação
- Suprime a vibração mesmo no caso de corte profundo

#### 2. Plaquetes com aresta ondulada:

FT – Para semi acabamento

- Permite profundidade e alto avanço maquinação
- Utilização de uma aresta ondulada melhora robustez da plaquete

#### 3. Plaquetes com aresta afiada:

RS – Para corte Titânio

- Plaquete com aresta afiada é adequada para alta eficiência da maquinação em titânio.
- Afiamento da aresta corte permite executar maquinação com baixo esforço.

#### 4. Plaquetes tipo Nick:

- N2 / N3 corte alternado na parede: Menor área de contacto reduz força de corte

#### 5. Onde colocar plaquetes Tipo "Nick":

1. Montar plaquetes tipo **N2** nos alojamentos **com marca** na ferramenta.
2. Montar plaquetes tipo **N3** nos alojamentos **sem marca** na ferramenta.

**Com marca no alojamento: Para N2 | Sem Marca alojamento: Para N3**

#### 6. Por favor note:

Ao usar as plaquetes Tipo (Nick) montar sempre 2 tipos de plaquetes: Tipo N2 e N3 no alojamento para plaquetes N2 e N3.

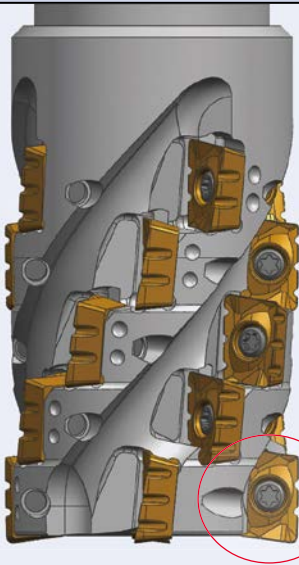
Usar apenas plaquetes do tipo N2 ou plaquetes tipo N3 unicamente no suporte causa danos à ferramenta.

Usar plaquetes tipo NICK na posição errada causa danos da ferramenta. Certifique-se de que está a ter o cuidado suficiente.

**NÃO RECOMENDADO PARA CORTE RANHURAS!**

## AME/AMU | Roughing End Mill | Features and Applications

### Features and Applications of Inserts & Cutter Body



#### 1. Optimized flutes pitch:

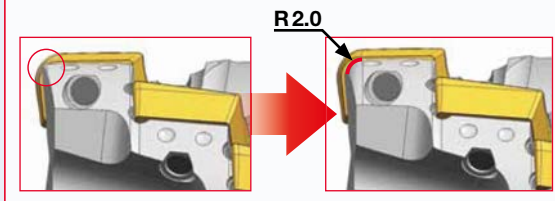
- Reduces vibration
- Enables deeper  $a_p$

#### 2. High rigid body:

- Bottom insert also has axial clamp face for secure clamping

#### 3. Cautions during use:

- Corner R 2.0 and R 3.0 can be used only for tip inserts.
- When using corner R3.0 it is necessary to perform additional machining of body corner areas as indicated below.



#### 1. Optimisierte Abstände der Schneidplatten:

- Reduziert Vibrationen
- Ermöglicht höhere Schnitttiefe  $a_p$

#### 2. Hochstabiler Fräshalter:

- Die untersten Schneidplatten verfügen zusätzlich über eine axiale Fläche für eine sichere Klemmung

#### 3. Zur Beachtung:

- Schneidplatten mit den Eckenradien R 2.0 & R 3.0 sind ausschließlich für die Fräerspitz vorgesehen.
- Die Verwendung von Schneidplatten mit R3.0 erfordert eine zusätzliche Bearbeitung der Ecken an den vorderen Aufnahmeflächen des Fräshalters (R 2.0).

#### 1. Passo ottimizzato del tagliente:

- Riduzione delle vibrazioni
- Permette maggiori asportazioni assiali  $a_p$

#### 2. Corpo fresa ad alta rigidità:

- Gli inserti sul fondo hanno anche un lato per bloccaggio assiale al fine di ottimizzare il bloccaggio stesso.

#### 3. Precauzioni durante l'uso:

- Inserti con raggio torico R 2.0 e R 3.0 possono essere usati solo come inserti da montare in punta fresa.
- Se si utilizza il raggio torico R3.0 è necessario modificare opportunamente il corpo fresa come indicato (R2.0).

#### 1. Paso optimizado:

- Reduce la vibración
- Permite mayor profundidad ( $a_p$ )

#### 2. Soporte de alta rigidez:

- La placa frontal apoya también axialmente para asegurar su fijación.

#### 3. Precauciones durante el uso:

- Las placas tóricas R 2.0 y R 3.0 solo deben utilizarse en la punta de la herramienta.
- Cuando utilice radio tórico R 3.0 es necesario modificar el soporte en las áreas indicadas a continuación (R 2.0).

#### 1. Le pas optimisé:

- Réduit les vibrations
- Permet de plus grandes  $a_p$

#### 2. Le corps haute rigidité:

- La plaquette du bas est dotée d'une assise axiale pour un serrage sécurisé

#### 3. Précautions d'usage:

- Les rayons R 2.0 et R 3.0 ne se montent que sur les logements en bout d'outil.
- Pour l'utilisation de plaquettes R3.0, il est nécessaire de retoucher le corps de fraise au niveau des rayons comme indiqué. (R 2.0).

#### 1. Passo navalhas Optimizado:

- Reduz a vibração
- Permite um  $a_p$  maior

#### 2. Suporte alta rigidez:

- A plaquete frontal apoia também axialmente para assegurar a sua fixação

#### 3. Precações durante o uso:

- Raio R2.0 e R3.0 só devem ser usados na ponta da ferramenta.
- Quando usando o raio R 3.0 é necessário modificar o suporte nas áreas de canto indicadas abaixo.

➔ For more information about Modular Tools and available Shanks please check our brochures:

Indexable Modular No. 328.x



AS/ASC Shanks No. 708



## ⚠ Attention on Safety

### 1. Cautions regarding handling

- (1) When removing the tool from its case (packaging), be careful that the tool does not pop out or is dropped. Be particularly careful regarding contact with the tool flutes.
- (2) When handling tools with sharp cutting flutes, be careful not to touch the cutting flutes directly with your bare hands.

### 2. Cautions regarding mounting

- (1) Before use, check the outside appearance of the tool for scratches, cracks, etc. and that it is firmly mounted in the collet chuck, etc.
- (2) When preparing for use, be sure that the inserts are firmly mounted in place and that they are firmly mounted on the arbor, etc.
- (3) If abnormal chattering, etc. occurs during use, stop the machine immediately and remove the cause of the chattering.

### 3. Cautions during use

- (1) Before use, confirm the dimensions and direction of rotation of the tool and milling work material.
- (2) The numerical values in the standard cutting conditions table should be used as criteria when starting new work. The cutting conditions should be adjusted as appropriate when the cutting depth is large, the rigidity of the machine being used is low, or according to the conditions of the work material.
- (3) Cutting tools are made of a hard material. During use, they may break and fly off. In addition, cutting chips may also fly off. Since there is a danger of injury to workers, fire, or eye damage from such flying pieces, a safety cover should be attached when work is performed and safety equipment such as safety goggles should be worn to create a safe environment for work.
- (4) There is a risk of fire or inflammation due to sparks, heat due to breakage, and cutting chips. Do not use where there is a risk of fire or explosion. Please caution of fire while using oil base coolant, fire prevention is necessary.
- (5) Do not use the tool for any purpose other than that for which it is intended.

### 4. Cautions regarding regrinding

- (1) If regrinding is not performed at the proper time, there is a risk of the tool breaking. Replace the tool with one in good condition, or perform regrinding.
- (2) Grinding dust will be created when regrinding a tool. When regrinding, be sure to attach a safety cover over the work area and wear safety clothes such as safety goggles, etc.
- (3) This product contains the specified chemical substance cobalt and its inorganic compounds. When performing regrinding or similar processing, be sure to handle the processing in accordance with the local laws and regulations regarding prevention of hazards due to specified chemical substances.

“Epoch” and “MOLDINO” are registered trademarks of MOLDINO Tool Engineering, Ltd. in Japan.

Specifications for the products listed in this catalog are subject to change without notice due to replacement or modification.

**Always up to date: Please check our P50 QuickFinder**

**P50 F PRODUCTION50®**  
**QuickFinder** [www.moldino.eu/quickfinder](http://www.moldino.eu/quickfinder)

**MOLDINO Tool Engineering Europe GmbH**

Itterpark 12 · 40724 Hilden · Germany · Phone +49 (0) 21 03-24 82-0 · Fax +49 (0) 21 03-24 82-30

E-Mail [info@moldino.eu](mailto:info@moldino.eu) · Internet [www.moldino.eu](http://www.moldino.eu)

© 2020 by MOLDINO Tool Engineering Europe GmbH · 4th Edition · Printed in Germany