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FOR A BETTER US





## CODE KEY

**NGP E 06 04**

**CATEGORY**

**GP** GENERAL PURPOSE

**TOOL DIAMETER**

**FLUTE NO**

### SERIES OVERVIEW

**TiAlN** **0.6  $\mu$ m** **SHANK h6**

WORKPIECE MATERIAL

**P** **M** **K** **N** **S** **H**

**NMD ES 06 04**

**CATEGORY**

**NMD** MICRO DIAMETER & LONG NECK

**TOOL DIAMETER**

**FLUTE NO**

### SERIES OVERVIEW

**CA** **0.2  $\mu$ m** **TiAlN** **0.4  $\mu$ m**  
**AlTiSiN** **0.4  $\mu$ m** **SHANK h6**

WORKPIECE MATERIAL

**P** **M** **K** **N** **S** **H**

**NHS E 06 04**

**CATEGORY**

**NHS** HIGH SPEED

**TOOL DIAMETER**

**FLUTE NO**

### SERIES OVERVIEW

**AlTiSiN** **0.4  $\mu$ m** **SHANK h6**

WORKPIECE MATERIAL

**P** **M** **K** **N** **S** **H**

**NHH E 06 04**

**CATEGORY**

**NHH** HIGH HARDNESS

**TOOL DIAMETER**

**FLUTE NO**

### SERIES OVERVIEW

**CA** **0.2  $\mu$ m** **SHANK h6**

WORKPIECE MATERIAL

**P** **M** **K** **N** **S** **H**

**NAL E 06 04**

**CATEGORY**

**NAL** ALUMINUM

**TOOL DIAMETER**

**FLUTE NO**

### SERIES OVERVIEW

**0.6  $\mu$ m** **SHANK h6**

WORKPIECE MATERIAL

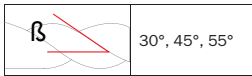
**P** **M** **K** **N** **S** **H**



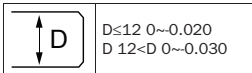
**END MILL TYPE**

	SHARP FLATENDED	<b>E</b>
	BALL NOSE	<b>B</b>
	RADIUS	<b>R</b>
	CORRUGATED EDGE	<b>W</b>

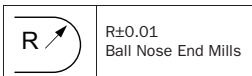
**HELICAL ANGLE**



**DIAMETER TOLERANCE**



**RADIUS TOLERANCE**



**FLUTE TYPE**

	2-flute Square
	2-flute Ball Nose
	2-flute Radius
	3-flute Square
	3-flute Radius
	4-flute Square
	4-flute Ball Nose
	4-flute Radius
	6-flute Square

**MACHINING OPERATION**

<b>Flattened End Mills</b>		Side face machining
		Shoulder machining
		Straight slot machining
		Deep slot machining
<b>Ball Nose</b>		Profile machining
		Cavity machining
		Slot machining (round)
<b>R End Mills</b>		Deep slot machining (deep, round)
		Side machining with radius
		Slot machining with radius
		Profile machining

	FINISHING
	SEMI-FINISHING
	ROUGHING
	DRY MACHINING
	MQL (MIST)
	EMULTION MACHINING
	OIL MACHINING





**NGP General Purpose Series**

EDGE PREPARATION	NUMBER OF FLUTES	PART NO	DESCRIPTION	SIZE RANGE (D = mm)	GRINDING TOLERANCE ( $\mu$ m)	WORKPIECE MATERIAL (● EXCELLEN (○ SUITABLE))										PAGE NO
						P	M	K	N	S	H					
						Carbon steel, alloy steel	Pre-hardened steel	Stainless steel	Cast Iron	Copper alloy	Aluminum alloy	Heat resistant alloy, Titanium alloy	Below 55HRC	Above 55HRC		
SHARP	2	NGP-E	Micrograin 2 Flute End Mill – Standard	D1-3 D3.5-6 D7-20	0-0.012 $\mu$ m 0-0.015 $\mu$ m 0-0.018 $\mu$ m	●	●	○		○	○					14
	2	NGP-EH	Micrograin 2 Flute End Mill (75mm) – Long	D3-6 D8-20	0-0.015 $\mu$ m 0-0.018 $\mu$ m	●	●	○		○	○					15
		NPG-EI	Micrograin 2 Flute End Mill (100mm) – Long			●	●	○		○	○					
		NGP-EJ	Micrograin 2 Flute End Mill (150mm) – Long			●	●	○		○	○					
CORNER RADIUS	2	NGP-RA	Micrograin 2 Flute End Mill – Corner Radius	D1-3 D4-6 D8-20	0-0.012 $\mu$ m 0-0.015 $\mu$ m 0-0.018 $\mu$ m	●	●	○		○	○				16 17	
	2	NPG-RAH	Micrograin 2 Flute Corner Radius End Mill (75mm) – Long	D4-6 D8-12	0-0.015 $\mu$ m 0-0.018 $\mu$ m	●	●	○		○	○				18	
		NPG-RAI	Micrograin 2 Flute Corner Radius End Mill (100mm) – Long			●	●	○		○	○					
	2	NPG-RAJ	Micrograin 2 Flute Corner Radius End Mill (150mm) – Long	D6-20	0-0.018 $\mu$ m	●	●	○		○	○				19	
SHARP	4	NGP-E	Micrograin 4 Flute End Mill – Standard	D1-3 D3.5-6 D7-20	0-0.012 $\mu$ m 0-0.015 $\mu$ m 0-0.018 $\mu$ m	●	●	○		○	○					20
	4	NGP-EH	Micrograin 4 Flute End Mill (75mm) – Long	D3-6 D8-20	0-0.015 $\mu$ m 0-0.018 $\mu$ m	●	●	○		○	○				21	
		NGP-EI	Micrograin 4 Flute End Mill (100mm) – Long			●	●	○		○	○					
		NGP-EJ	Micrograin 4 Flute End Mill (150mm) – Long			●	●	○		○	○					
4	NGP-EL	Micrograin 4 Flute End Mill – Standard	D2-3 D4-6 D8-20	0-0.012 $\mu$ m 0-0.015 $\mu$ m 0-0.018 $\mu$ m	●	●	○		○	○				22		



# NGP General Purpose Series

EDGE PREPARATION		NUMBER OF FLUTES	PART NO	DESCRIPTION	SIZE RANGE (Ø = mm)	GRINDING TOLERANCE (µm)	WORKPIECE MATERIAL (● EXCELLENT ○ SUITABLE)						HIGH HARDNESS STEEL	PAGE NO
							P	M	K	N	S	H		
							Carbon steel, alloy steel	Pre-hardened steel	Stainless steel	Cast iron	Copper alloy	Aluminum alloy		
CORNER RADIUS	4	NGP-RB	Micrograin 4 Flute End Mill – Corner Radius	D1-3 D4-6 D8-20	0-0.012µm 0-0.015µm 0-0.018µm	●	●	○		○	○			23 24
	4		NGP-RBH	Micrograin 4 Flute Corner Radius End Mill (75mm) – Long	D4-6 D8-20	0-0.015µm 0-0.018µm	●	●	○		○	○		
		NGP-RBI	Micrograin 4 Flute Corner Radius End Mill (100mm) – Long			●	●	○		○	○			
4	NGP-RBJ	Micrograin 4 Flute End Mill – Corner Radius	D6-20	0-0.018µm	●	●	○		○	○			26	
BALL NOSE	2	NGP-B	Micrograin 2 Flute Ball Nose – Standard	D1-3 D3.5-6 D8-20	0-0.012µm 0-0.015µm 0-0.018µm	●	●	○		○	○			27
	2	NGP-BH	Micrograin 2 Flute Ball Nose (75mm) – Long			●	●	○		○	○			28
		NGP-BI	Micrograin 2 Flute Ball Nose (100mm) – Long	D2-3 D3.5-6 D8-20	0-0.012µm 0-0.015µm 0-0.018µm	●	●	○		○	○			
NGP-BJ		Micrograin 2 Flute Ball Nose (150mm) – Long			●	●	○		○	○				
SERRATED	3	NGP-W	Micrograin 3 Flute Ripping End Mill	D6-20	0-0.05µm	●	●	○		○	○			29
	4	NGP-W	Micrograin 4 Flute Ripping End Mill	D6-20	0-0.05µm	●	●	○		○	○			30



## NMD Micro Diameter, Long Neck Series

EDGE PREPARATION	NUMBER OF FLUTES	PART NO	DESCRIPTION	SIZE RANGE (D = mm)	GRINDING TOLERANCE (µm)	WORKPIECE MATERIAL (● EXCELLENT ○ SUITABLE)							HIGH HARDNESS STEEL	PAGE NO
						P	M	K	N	S	H			
						Carbon steel, alloy steel	Pre-hardened steel	Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Heat resistant alloy, Titanium alloy		
<b>SHARP</b>	2	<b>NMD-DES</b>	Ultragrain 2 Flute Micro Diameter – Standard	D0.2–0.5 D0.5–0.9	0–0.008µm 0–0.01µm							○	●	<b>32</b>
	2	<b>NMD-HES</b>	Ultragrain 2 Flute Micro Diameter – Standard	D0.2–0.5 D0.6–0.9	0–0.008µm 0–0.01µm							○	●	<b>33</b>
	2	<b>NMD-TES</b>	Supergrain 2 Flute Micro Diameter – Standard	D0.1–0.5 D0.6–0.9	0–0.008µm 0–0.01µm							○	●	<b>34</b>
	2	<b>NMD-DEMA</b>	Ultragrain 2 Flute Micro Diameter Long Neck End Mill	D0.2–0.5 D0.6–0.8 D1–4	0–0.008µm 0–0.01µm 0–0.012µm							○	●	<b>35</b> <b>36</b>
	2	<b>NMD-HEMA</b>	Ultragrain 2 Flute Micro Diameter Long Neck End Mill	D0.2–0.5 D0.6–0.8 D1–4	0–0.008µm 0–0.01µm 0–0.012µm							○	●	<b>37</b> <b>38</b>
	2	<b>NMD-TEMA</b>	Supergrain 2 Flute Micro Diameter Long Neck End Mill	D0.2–0.5 D0.6–0.8 D1–4	0–0.008µm 0–0.01µm 0–0.012µm							○	●	<b>39</b> <b>40</b>
<b>CORNER RADIUS</b>	2	<b>NMD-DRMA</b>	Ultragrain 2 Flute Micro Diameter Long Neck End Mill – Corner Radius	D1–4	0–0.012µm							○	●	<b>41</b> <b>42</b>
	2	<b>NMD-HRMA</b>	Ultragrain 2 Flute Micro Diameter Long Neck End Mill – Corner Radius	D1–4	0–0.012µm							○	●	<b>43</b> <b>44</b>
	2	<b>NMD-TRMA</b>	Supergrain 2 Flute Micro Diameter Long Neck End Mill – Corner Radius	D1–4	0–0.012µm							○	●	<b>45</b> <b>46</b>





# NMD Micro Diameter, Long Neck Series

		WORKPIECE MATERIAL (● EXCELLENT ○ SUITABLE)												
		P	M	K	N	S	H							
EDGE PREPARATION	NUMBER OF FLUTES	PART NO	DESCRIPTION	SIZE RANGE (D = mm)	GRINDING TOLERANCE (µm)	Carbon steel, alloy steel	Pre-hardened steel	Stainless steel	Cast Iron	Copper alloy	Aluminum alloy	Heat resistant alloy, Titanium alloy	HIGH HARDNESS STEEL	PAGE NO
												Below 55HRC	Above 55HRC	
SHARP	4	<b>NMD-DEMB</b>	Ultragrain 4 Flute Micro Diameter Long Neck End Mill	D1~4	0~0.012µm							○	●	47
	4	<b>NMD-HEMB</b>	Ultragrain 4 Flute Micro Diameter Long Neck End Mill	D1~4	0~0.012µm							○	●	48
	4	<b>NMD-TEMB</b>	Supergrain 4Flute Micro Diameter Long Neck End Mill	D1~4	0~0.012µm							○	●	49
CORNER RADIUS	4	<b>NMD-DRMB</b>	Ultragrain 4 Flute Micro Diameter Long Neck End Mill – Corner Radius	D1~4	0~0.012µm							○	●	50 51
	4	<b>NMD-HRMB</b>	Ultragrain 4 Flute Micro Diameter Long Neck End Mill – Corner Radius	D1~4	0~0.012µm							○	●	52 53
	4	<b>NMD-TRMB</b>	Ultragrain 4 Flute Micro Diameter Long Neck End Mill – Corner Radius	D1~4	0~0.012µm							○	●	54 55
BALL NOSE	2	<b>NMD-DBS</b>	Ultragrain 2 Flute Micro Diameter Ball Nose	D0.2~0.5 D0.6~0.9	0~0.008µm 0~0.01µm							○	●	56
	2	<b>NMD-HBS</b>	Ultragrain 2 Flute Micro Diameter Ball Nose	D0.2~0.5 D0.6~0.9	0~0.008µm 0~0.01µm							○	●	57
	2	<b>NMD-TBS</b>	Supergrain 2 Flute Micro Diameter Ball Nose	D0.1~0.5 D0.6~0.9	0~0.008µm 0~0.01µm							○	●	58
	2	<b>NMD-DBM</b>	Ultragrain 2 Flute Micro Diameter Long Neck Ball Nose	D0.2~0.5 D0.6~0.8 D1~4	0~0.008µm 0~0.01µm 0~0.012µm							○	●	59 61
	2	<b>NMD-HBM</b>	Ultragrain 2 Flute Micro Diameter Long Neck Ball Nose	D0.2~0.5 D0.6~0.8 D1~4	0~0.008µm 0~0.01µm 0~0.012µm							○	●	61 62
	2	<b>NMD-TBM</b>	Supergrain 2 Flute Micro Diameter Long Neck Ball Nose	D0.2~0.5 D0.6~0.8 D1~4	0~0.008µm 0~0.01µm 0~0.012µm							○	●	63 64



## NHS High Speed & High Hardness Series

EDGE PREPARATION	NUMBER OF FLUTES	PART NO	DESCRIPTION	SIZE RANGE (D = mm)	GRINDING TOLERANCE (µm)	WORKPIECE MATERIAL (● EXCELLENT ○ SUITABLE)										PAGE NO
						P	M	K	N	S	H	HIGH HARDNESS STEEL				
						Carbon steel, alloy steel	Pre-hardened steel	Stainless steel	Cast Iron	Copper alloy	Aluminum alloy	Heat resistant alloy, Titanium alloy	Below 55HRC	Above 55HRC		
SHARP	2	NHS-E	Ultra-grain 2 Flute End Mill – Standard	D1~3 D3.5-6 D8~20	0~0.012µm 0~0.015µm 0~0.018µm	○	●	○		○		●	○	●	66	
	2	NHS-EH	Ultra-grain 2 Flute End Mill (75mm) – Long	D3~6 D8~20	0~0.015µm 0~0.018µm	○	●	○		○		●	○	●	67	
	2	NHS-EI	Ultra-grain 2 Flute End Mill (100mm) – Long			○	●	○		○		●	○	●		
	2	NHS-EJ	Ultra-grain 2 Flute End Mill (150mm) – Long			○	●	○		○		●	○	●		
CORNER RADIUS	2	NHS-RA	Ultra-grain 2 Flute End Mill – Corner Radius	D1~3 D4~5	0~0.012µm 0~0.015µm	○	●	○		○		●	○	●		68
	2	NHS-RA	Ultra-grain 2 Flute End Mill – Corner Radius	D6 D8~20	0~0.015µm 0~0.018µm	○	●	○		○		●	○	●	69	
SHARP	4	NHS-E	Ultra-grain 4 Flute End Mill – Standard	D1~3 D3.5-6 D8~20	0~0.012µm 0~0.015µm 0~0.018µm	○	●	○		○		●	○	●	70	
	4	NHS-EH	Ultra-grain 4 Flute End Mill (75mm) – Long	D3~6 D8~20	0~0.015µm 0~0.018µm	○	●	○		○		●	○	●		
	4	NHS-EI	Ultra-grain 4 Flute End Mill (100mm) – Long			○	●	○		○		●	○	●		
	4	NHS-EJ	Ultra-grain 4 Flute End Mill (150mm) – Long			○	●	○		○		●	○	●		
CORNER RADIUS	4	NHS-RB	Ultra-grain 4 Flute End Mill – Standard	D1~3 D4~5	0~0.012µm 0~0.015µm	○	●	○		○		●	○	●	72	
	4	NHS-RB	Ultra-grain 4 Flute End Mill – Standard	D6 D8~20	0~0.015µm 0~0.018µm	○	●	○		○		●	○	●	73	
	4	NHS-RBH	Ultra-grain 4 Flute End Mill (75mm) – Long	D4~6 D8~12	0~0.015µm 0~0.018µm	○	●	○		○		●	○	●	74	
	4	NHS-RBI	Ultra-grain 4 Flute End Mill (100mm) – Long			○	●	○		○		●	○	●		
	4	NHS-RBJ	Ultra-grain 4 Flute End Mill (150mm) – Long	D6 D8~20	0~0.015µm 0~0.018µm	○	●	○		○		●	○	●	75	
BALL NOSE	2	NHS-B	Ultra-grain 2 Flute Ball Nose End Mill	D1~3 D3.5-6 D8~20	0~0.012µm 0~0.015µm 0~0.018µm	○	●	○		○		●	○	●	76	
	2	NHS-BH	Ultra-grain 2 Flute Ball Nose (75mm-150mm) – Long	D2~3 D3.5-6 D8~20	0~0.012µm 0~0.015µm 0~0.018µm	○	●	○		○		●	○	●	77	
	2	NHS-BI				○	●	○		○		●	○	●		
	2	NHS-BJ				○	●	○		○		●	○	●		



## NHH High Hardness Series

EDGE PREPARATION	NUMBER OF FLUTES	PART NO	DESCRIPTION	SIZE RANGE (D = mm)	GRINDING TOLERANCE (µm)	WORKPIECE MATERIAL (● EXCELLENT ○ SUITABLE)						HIGH HARDNESS STEEL		PAGE NO
						P	M	K	N	S	H	Below 55HRC	Above 55HRC	
						Carbon steel, alloy steel	Pre-hardened steel	Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Heat resistant alloy, Titanium alloy		
SHARP	4	NHH-E	Supergrain 4 Flute End Mill – Standard	D1-3 D3.5-6 D8-20	0-0.012 0-0.015 0-0.018			○			○	○	●	79
	4	NHH-EH	Supergrain 4 Flute End Mill (75mm) – Long					○			○	○	●	80
	4	NHH-EI	Supergrain 4 Flute End Mill (100mm) – Long	D3 D3.5-6 D8-20	0-0.012 0-0.015 0-0.018			○			○	○	●	
	4	NHH-EJ	Supergrain 4 Flute End Mill (150mm) – Long					○			○	○	●	
CORNER RADIUS	4	NHH-RB	Supergrain 4 Flute Corner Radius End Mill – Standard	D1-3 D4-6 D8-20	0-0.012 0-0.015 0-0.018			○			○	○	●	81 82
	4	NHH-RBH	Supergrain 4 Flute Corner Radius End Mill (75mm) – Long	D4-6 D8-12	0-0.015 0-0.018			○			○	○	●	83
	4	NHH-RBI	Supergrain 4 Flute Corner Radius End Mill (100mm) – Long					○			○	○	●	
	4	NHH-RBJ	Supergrain 4 Flute Corner Radius End Mill (150mm) – Long	D6 D8-20	0-0.015 0-0.018			○			○	○	●	84
SHARP	6	NHH-E	Supergrain 6 Flute End Mill – Standard	D6-20	0-0.018			○			○	○	●	85
BALL NOSE	2	NHH-B	Supergrain 2 Flute Ball Nose – Standard	D1-3 D3.5-6 D8-20	0-0.012 0-0.015 0-0.018			○			○	○	●	86
	2	NHH-BH	Supergrain 2 Flute Ball Nose (75mm) – Long					○			○	○	●	87
	2	NHH-BI	Supergrain 2 Flute Ball Nose (100mm) – Long	D2-3 D3.5-6 D8-20	0-0.012 0-0.015 0-0.018			○			○	○	●	
	2	NHH-BJ	Supergrain 2 Flute Ball Nose (150mm) – Long					○			○	○	●	
	4	NHH-B NHH-BH NHH-BI NHH-BJ	Supergrain 4 Flute Ball Nose End Mill	D6 D8-20	0-0.015 0-0.018			○			○	○	●	88



# OVERVIEW

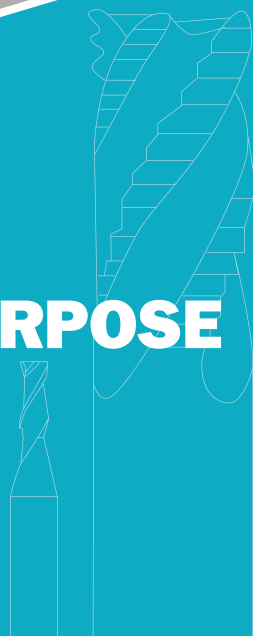
## NAL Aluminum Series

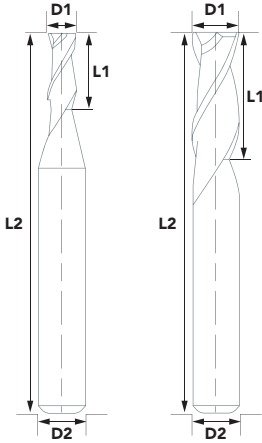
EDGE PREPARATION	NUMBER OF FLUTES	PART NO	DESCRIPTION	SIZE RANGE (D = mm)	GRINDING TOLERANCE ( $\mu\text{m}$ )	WORKPIECE MATERIAL (● EXCELLENT ○ SUITABLE)								PAGE NO		
						P	M	K	N	S	HIGH HARDNESS STEEL					
						Carbon steel, alloy steel	Pre-hardened steel	Stainless steel	Cast Iron	Copper alloy	Aluminum alloy	Heat resistant alloy, Titanium alloy	Below 55HRC		Above 55HRC	
SHARP	2	<b>NAL-E</b>	Micrograin 2 Flute End Mill – Standard	D0.5~3 D4~6 D8~20	0~0.012 $\mu\text{m}$ 0~0.015 $\mu\text{m}$ 0~0.018 $\mu\text{m}$						●					<b>90</b>
	3	<b>NAL-E</b>	Micrograin 3 Flute End Mill – Standard	D0.5~3 D3.5~6 D6.5~20	0~0.012 $\mu\text{m}$ 0~0.015 $\mu\text{m}$ 0~0.018 $\mu\text{m}$						●					<b>91</b>
	3	<b>NAL-EH</b>	Micrograin 3 Flute End Mill (75mm) – Long	D3 D4~6 D8~20	0~0.012 $\mu\text{m}$ 0~0.015 $\mu\text{m}$ 0~0.018 $\mu\text{m}$						●					<b>92</b>
	3	<b>NAL-EI</b>	Micrograin 3 Flute End Mill (100mm) – Long								●					
	3	<b>NAL-EJ</b>	Micrograin 3 Flute End Mill (150mm) – Long								●					
	3	<b>NAL-ES</b>	Ultragrain 3 Flute End Mill	D1~3 D4~6 D8~20	0~0.012 $\mu\text{m}$ 0~0.015 $\mu\text{m}$ 0~0.018 $\mu\text{m}$						●				<b>93</b>	
CORNER RADIUS	3	<b>NAL-RS</b>	Ultragrain 3 Flute Corner Radius End Mill – Standard	D3 D4~6 D8~20	0~0.012 $\mu\text{m}$ 0~0.015 $\mu\text{m}$ 0~0.018 $\mu\text{m}$						●				<b>94</b>	
	3	<b>NAL-R</b>	Micrograin 3 Flute Corner Radius End Mill – Standard	D1~3 D4~6 D8~20	0~0.012 $\mu\text{m}$ 0~0.015 $\mu\text{m}$ 0~0.018 $\mu\text{m}$						●				<b>95</b>	
BALL NOSE	2	<b>NAL-B</b>	Micrograin 2 Flute Ball Nose – Standard	D1~3 D4~6 D8~12	0~0.012 $\mu\text{m}$ 0~0.015 $\mu\text{m}$ 0~0.018 $\mu\text{m}$						●				<b>96</b>	
		<b>NAL-BH</b>														
		<b>NAL-BJ</b>														
		<b>NAL-BK</b>														
SERRATED	3	<b>NAL-W</b>	Micrograin 3 Flute Ripping End Mill	D6~20	0~0.05 $\mu\text{m}$						●			<b>97</b>		



# NGP

## GENERAL PURPOSE SERIES





## NGP-E

Micrograin 2 Flute End Mill – Standard



D1-D3	0~0.012μm
D3.5-D6	0~0.015μm
D7-D20	0~0.018μm

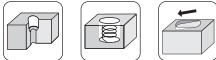
PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NGP-E0102A	1.0	3	50	4
NGP-E0102	1.0	3	50	6
NGP-E0152A	1.5	4	50	4
NGP-E0152	1.5	4	50	6
NGP-E0202A	2.0	6	50	4
NGP-E0202	2.0	6	50	6
NGP-E0252A	2.5	6	50	4
NGP-E0252	2.5	6	50	6
NGP-E0302Z	3.0	8	50	3
NGP-E0302A	3.0	8	50	4
NGP-E0302	3.0	8	50	6
NGP-E0352A	3.5	10	50	4
NGP-E0352	3.5	10	50	6
NGP-E0402A	4.0	10	50	4
NGP-E0402	4.0	10	50	6
NGP-E0452	4.5	11	50	6
NGP-E0502Z	5.0	13	50	5
NGP-E0502	5.0	13	50	6
NGP-E0552	5.5	15	50	6
NGP-E0602	6.0	15	50	6
NGP-E0702	7.0	18	60	8
NGP-E0802	8.0	20	60	8
NGP-E0902	9.0	23	75	10
NGP-E1002	10.0	25	75	10
NGP-E1102	11.0	30	75	12
NGP-E1202	12.0	30	75	12
NGP-E1402	14.0	35	100	14
NGP-E1602	16.0	45	100	16
NGP-E1802	18.0	45	100	18
NGP-E2002	20.0	50	100	20

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
<input checked="" type="radio"/>		SEMI-FINISHING
<input type="radio"/>		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
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EXCELLENT  GOOD

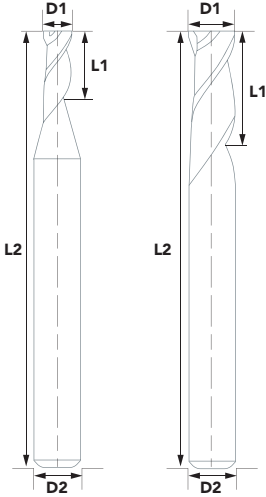
### MACHINING OPERATION



### WORKPIECE MATERIAL

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(~22HRC) S50C/HT250/Q235	(25~35HRC) P20/H13/D2	(35~45HRC) NAK80/718H/FD4C	(45~55HRC) SKD61/1.2343/ESR	(55~65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C1.1000
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



## NGP-EH|EI|EJ

Micrograin 2 Flute End Mill (75mm-150mm) – Long

<b>TIAlN</b>	<b>0.6 μM</b>	<b>35°</b>	<b>HRC &lt;55</b>	<b>SHANK h6</b>	<b>D3-D6</b> 0-0.015μm <b>D8-D20</b> 0-0.018μm
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PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NGP-EH0302A	3.0	8	75	4
NGP-EH0302	3.0	8	75	6
NGP-EH0352A	3.5	10	75	4
NGP-EH0352	3.5	10	75	6
NGP-EH0402A	4.0	10	75	4
NGP-EH0402	4.0	10	75	6
NGP-EH0502Z	5.0	13	75	5
NGP-EH0502	5.0	13	75	6
NGP-EH0602	6.0	15	75	6
NGP-EH0802	8.0	20	75	8
NGP-EI0402	4.0	10	100	6
NGP-EI0502Z	5.0	13	100	5
NGP-EI0502	5.0	13	100	6
NGP-EI0602	6.0	15	100	6
NGP-EI0802	8.0	20	100	8
NGP-EI1002	10.0	30	100	10
NGP-EI1202	12.0	30	100	12
NGP-EJ0602	6.0	15	150	6
NGP-EJ0802	8.0	20	150	8
NGP-EJ1002	10.0	30	150	10
NGP-EJ1202	12.0	40	150	12
NGP-EJ1602	16.0	45	150	16
NGP-EJ2002	20.0	50	150	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

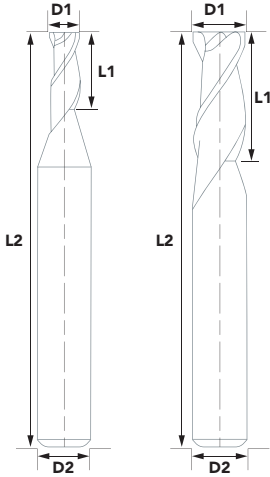
### MACHINING OPERATION



### WORKPIECE MATERIAL

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(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI3/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



## NGP-RA

Micrograin 2 Flute End Mill – Corner Radius

TiAlN	0.6 μM	35°		HRC <55	SHANK h6	D1-D3 0~0.012μm D4-D6 0~0.015μm D8-D20 0~0.018μm
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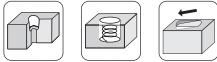
PART NO.	D1 DIA.	R CORNER RADIUS	L1 FLUTE ENPTH	L2 OAL	D2 SHANK DIA.
NGP-RA0102A	1.0	0.2	3	50	4
NGP-RA0102	1.0	0.2	3	50	6
NGP-RA0152A	1.5	0.2	4	50	4
NGP-RA0152	1.5	0.2	4	50	6
NGP-RA0202A	2.0	0.2	6	50	4
NGP-RA0202	2.0	0.2	6	50	6
NGP-RA0205A	2.0	0.5	6	50	4
NGP-RA0205	2.0	0.5	6	50	6
NGP-RA0302Z	3.0	0.2	8	50	3
NGP-RA0302A	3.0	0.2	8	50	4
NGP-RA0302	3.0	0.2	8	50	6
NGP-RA0305Z	3.0	0.5	8	50	3
NGP-RA0305A	3.0	0.5	8	50	4
NGP-RA0305	3.0	0.5	8	50	6
NGP-RA0402A	4.0	0.2	10	50	4
NGP-RA0402	4.0	0.2	10	50	6
NGP-RA0405A	4.0	0.5	10	50	4
NGP-RA0405	4.0	0.5	10	50	6
NGP-RA0410A	4.0	1.0	10	50	4
NGP-RA0410	4.0	1.0	10	50	6
NGP-RA0505Z	5.0	0.5	13	50	5
NGP-RA0505	5.0	0.5	13	50	6
NGP-RA0510Z	5.0	1.0	13	50	5
NGP-RA0510	5.0	1.0	13	50	6
NGP-RA0602	6.0	0.2	16	50	6
NGP-RA0605	6.0	0.5	16	50	6
NGP-RA0610	6.0	1.0	16	50	6
NGP-RA0802	8.0	0.2	20	60	8
NGP-RA0803	8.0	0.3	20	60	8
NGP-RA0805	8.0	0.5	20	60	8
NGP-RA0810	8.0	1.0	20	60	8

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

### MACHINING OPERATION

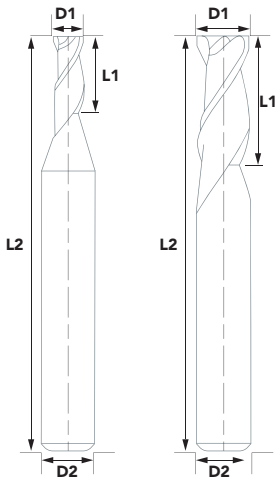


### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25~35HRC) P20/H13/D2	(35~45HRC) NAK80/T18H/FD4C	(45~55HRC) SKD61/L2343ESR	(55~65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000





## NGP-RA

Micrograin 2 Flute End Mill – Corner Radius

TiAlN	0.6 μM	35°		HRC <55	SHANK h6	<table border="1"> <tr> <td>D1-D3</td> <td>0-0.012μm</td> </tr> <tr> <td>D4-D6</td> <td>0-0.015μm</td> </tr> <tr> <td>D8-D20</td> <td>0-0.018μm</td> </tr> </table>	D1-D3	0-0.012μm	D4-D6	0-0.015μm	D8-D20	0-0.018μm
D1-D3	0-0.012μm											
D4-D6	0-0.015μm											
D8-D20	0-0.018μm											

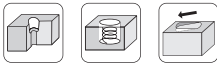
PART NO.	D1 DIA.	R CORNER RADIUS	L1 FUTE ENGT	L2 OAL	D2 SHANK DIA.
NGP-RA1002	10.0	0.2	25	75	10
NGP-RA1003	10.0	0.3	25	75	10
NGP-RA1005	10.0	0.5	25	75	10
NGP-RA1010	10.0	1.0	25	75	10
NGP-RA1020	10.0	2.0	25	75	10
NGP-RAI030	10.0	3.0	25	75	10
NGP-RA1205	12.0	0.5	30	75	12
NGP-RA1210	12.0	1.0	30	75	12
NGP-AA1220	12.0	2.0	30	75	12
NGP-RA1230	12.0	3.0	30	75	12
NGP-RA1610	16.0	1.0	45	100	16
NGP-RA1620	16.0	2.0	45	100	16
NGP-RA1630	16.0	3.0	45	100	16
NGP-AA2010	20.0	1.0	50	100	20
NGP-RA2020	20.0	2.0	50	100	20
NGP-RA2030	20.0	3.0	50	100	20
NGP-RA2030	20.0	3.0	50	100	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

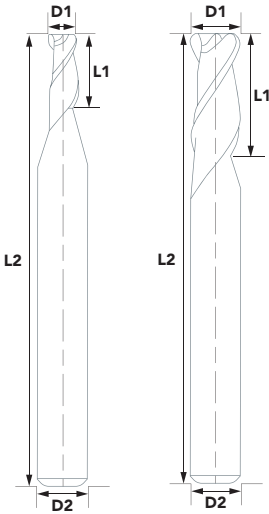
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C/11000
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



## NGP-RAH/RAI

Micrograin 2 Flute End Mill (75mm-100mm) – Long

TiAIN	0.6 μM	35°		HRC <55	SHANK h6	D4-D6 D8-D12	0-0.015μm 0-0.018μm
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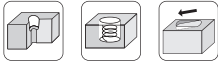
PART NO.	D1 DIA.	R CORNER RADIUS	L1 FUTE ENPTH	L2 OAL	D2 SHANK DIA.
NGP-RAH0402A	4.0	0.2	10	75	4
NGP-RAH0402	4.0	0.2	10	75	6
NGP-RAH0405A	4.0	0.5	10	75	4
NGP-RAH0405	4.0	0.5	10	75	6
NGP-RAH0505Z	5.0	0.5	13	75	5
NGP-RAH0505	5.0	0.5	13	75	6
NGP-RAH0510Z	5.0	1.0	13	75	5
NGP-RAH0510	5.0	1.0	13	75	6
NGP-RAH0602	6.0	0.2	16	75	6
NGP-RAH0603	6.0	0.3	16	75	6
NGP-RAH0605	6.0	0.5	16	75	6
NGP-RAH0610	6.0	1.0	16	75	6
NGP-RAH0802	8.0	0.2	20	75	8
NGP-RAH0803	8.0	0.3	20	75	8
NGP-RAH0805	8.0	0.5	20	75	8
NGP-RAH0810	8.0	1.0	20	75	8
NGP-RAI0602	6.0	0.2	16	100	6
NGP-RAI0605	6.0	0.5	16	100	6
NGP-RAI0610	6.0	1.0	16	100	6
NGP-RAI0802	8.0	0.2	20	100	8
NGP-RAI0803	8.0	0.3	20	100	8
NGP-RAI0805	8.0	0.5	20	100	8
NGP-RAI0810	8.0	1.0	20	100	8
NGP-RAI0820	8.0	2.0	20	100	8
NGP-RAI1002	10.0	0.2	25	100	10
NGP-RAI1003	10.0	0.3	25	100	10
NGP-RAI1005	10.0	0.5	25	100	10
NGP-RAI1010	10.0	1.0	25	100	10
NGP-RAI1020	10.0	2.0	25	100	10
NGP-RAI1030	10.0	3.0	25	100	10
NGP-RAI1205	12.0	0.5	30	100	12
NGP-RAI1210	12.0	1.0	30	100	12
NGP-RAI1220	12.0	2.0	30	100	12
NGP-RAI1230	12.0	3.0	30	100	12

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
<input checked="" type="radio"/>		SEMI-FINISHING
<input type="radio"/>		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULTION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

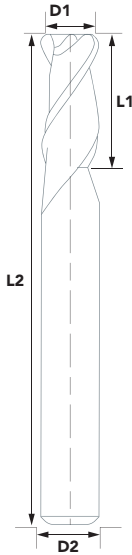
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FD4C	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C1/1000
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



## NGP-RAJ

Micrograin 2 Flute Corner Radius End Mill (150mm) – Long

TiAIN	0.6 μM	35°		HRC <55	SHANK h6	D6-D20   0-0.018μm
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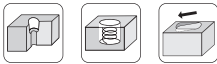
PART NO.	D1 DIA.	R CORNER RADIUS	L1 FLUTE ENPTH	L2 OAL	D2 SHANK DIA.
NGP-RAJ0602	6.0	0.2	16	150	6
NGP-RAJ0603	6.0	0.3	16	150	6
NGP-RAJ0605	6.0	0.5	16	150	6
NGP-RAJ0610	6.0	1.0	16	150	6
NGP-RAJ0802	8.0	0.2	20	150	8
NGP-RAJ0803	8.0	0.3	20	150	8
NGP-RAJ0805	8.0	0.5	20	150	8
NGP-RAJ0810	8.0	1.0	20	150	8
NGP-RAJ1002	10.0	0.2	25	150	10
NGP-RAJ1003	10.0	0.3	25	150	10
NGP-RAJ1005	10.0	0.5	25	150	10
NGP-RAJ1010	10.0	1.0	25	150	10
NGP-RAJ1020	10.0	2.0	25	150	10
NGP-RAJ1030	10.0	3.0	25	150	10
NGP-RAJ1205	12.0	0.5	30	150	12
NGP-RAJ1210	12.0	1.0	30	150	12
NGP-RAJ1220	12.0	2.0	30	150	12
NGP-RAJ1230	12.0	3.0	30	150	12
NGP-RAJ1610	16.0	1.0	45	150	16
NGP-RAJ1620	16.0	2.0	45	150	16
NGP-RAJ1630	16.0	3.0	45	150	16
NGP-RAJ2010	20.0	1.0	50	150	20
NGP-RAJ2020	20.0	2.0	50	150	20
NGP-RAJ2030	20.0	3.0	50	150	20

### AT A GLANCE

●		FINISHING
●		SEMI-FINISHING
○		ROUGHING
○		DRY MACHINING
●		MQL (MIST)
●		EMULSION MACHINING
●		OIL MACHINING

● EXCELLENT ○ GOOD

### MACHINING OPERATION



### WORKPIECE MATERIAL

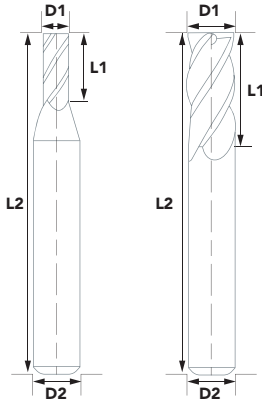
P	M	K	N	S	H
☑	☑	☑	☐	☐	☑

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI13/D2	(35-45HRC) NAK80/718H/FD4C	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
●	●	●	●	●	○	●	○	○



## NGP-E

Micrograin 4 Flute End Mill – Standard



<b>TiAlN</b>	<b>0.6 μM</b>	<b>45°</b>	<b>HRC &lt;55</b>	<b>SHANK h6</b>	<b>D</b>	<b>D1-D3 0~0.012μm</b>	<b>D3.5-D6 0~0.015μm</b>	<b>D7-D20 0~0.018μm</b>
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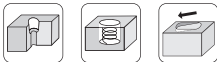
PART NO.	D1 DIA.	L1 FLUTE ENPTH	L2 OAL	D2 SHANK DIA.
NGP-E0104A	1.0	3	50	4
NGP-E0104	1.0	3	50	6
NGP-E0154A	1.5	4	50	4
NGP-E0154	1.5	4	50	6
NGP-E0204A	2.0	6	50	4
NGP-E0204	2.0	6	50	6
NGP-E0254A	2.5	6	50	4
NGP-E0254	2.5	6	50	6
NGP-E0304Z	3.0	8	50	3
NGP-E0304A	3.0	8	50	4
NGP-E0304	3.0	8	50	6
NGP-E0354A	3.5	10	50	4
NGP-E0354	3.5	10	50	6
NGP-E0404A	4.0	10	50	4
NGP-E0404	4.0	10	50	6
NGP-E0454	4.5	11	50	6
NGP-E0504Z	5.0	13	50	5
NGP-E0504	5.0	13	50	6
NGP-E0554	5.5	15	50	6
NGP-E0604	6.0	15	50	6
NGP-E0704	7.0	18	60	8
NGP-E0804	8.0	20	60	8
NGP-E0904	9.0	23	75	10
NGP-E1004	10.0	25	75	10
NGP-E1004L	10.0	30	75	10
NGP-E1104	11.0	30	75	12
NGP-E1204	12.0	30	75	12
NGP-E1404	14.0	35	100	14
NGP-E1604	16.0	45	100	16
NGP-E1804	18.0	45	100	18
NGP-E2004	20.0	50	100	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

### MACHINING OPERATION



### WORKPIECE MATERIAL

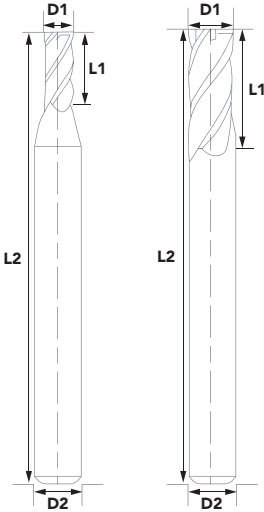
<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
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(~22HRC) S50C/HI250/Q235	(25~35HRC) P20/H13/D2	(35~45HRC) NAK80/718H/EDAC	(45~55HRC) SKD61/L2343ESR	(55~65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



## NGP-EH|E|EJ

Micrograin 4 Flute End Mill (75mm-150mm) – Long



<b>TIAlN</b>	<b>0.6 μM</b>	<b>45°</b>	<b>HRC &lt;55</b>	<b>SHANK h6</b>	<b>D3-D6</b> 0-0.015μm	<b>D8-D20</b> 0-0.018μm
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PART NO.	D1 DIA.	L1 FLUTE ENPTH	L2 OAL	D2 SHANK DIA.
NGP-EH0304A	3.0	8	75	4
NGP-EH0304	3.0	8	75	6
NGP-EH0354A	3.5	10	75	4
NGP-EH0354	3.5	10	75	6
NGP-EH0404A	4.0	10	75	4
NGP-EH0404	4.0	10	75	6
NGP-EH0504Z	5.0	13	75	5
NGP-EH0504	5.0	13	75	6
NGP-EH0604	6.0	15	75	6
NGP-EH0804	8.0	20	75	8
NGP-EI0404A	4.0	10	100	4
NGP-EI0404	4.0	10	100	6
NGP-EI0504Z	5.0	13	100	5
NGP-EI0504	5.0	13	100	6
NGP-EI0604	6.0	15	100	6
NGP-EI0804	8.0	20	100	8
NGP-E1004	10.0	30	100	10
NGP-E1204	12.0	30	100	12
NGP-EJ0604	6.0	15	150	6
NGP-EJ0804	8.0	20	150	8
NGP-EJ1004	10.0	30	150	10
NGP-EJ1204	12.0	40	150	12
NGP-EJ1604	16.0	45	150	16
NGP-EJ2004	20.0	50	150	20

### AT A GLANCE

●		FINISHING
●		SEMI-FINISHING
○		ROUGHING
○		DRY MACHINING
●		MQL (MIST)
●		EMULSION MACHINING
●		OIL MACHINING

● EXCELLENT ○ GOOD

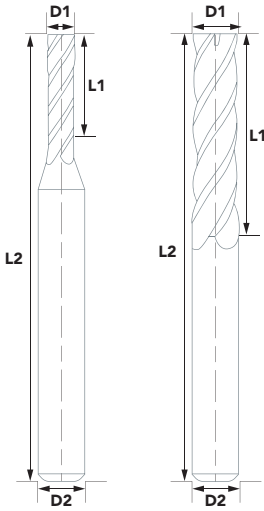
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
☑	☑	☑	☐	☐	☑

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
●	●	●	●	●	○	●	○	



## NGP-EL

Micrograin 4 Flute End Mill – Standard

<b>TiAlN</b>	<b>0.6 μM</b>	<b>35°</b>	<b>HRC &lt;55</b>	<b>SHANK h6</b>	<b>D</b>	<b>D2-D3</b> 0~0.012μm	<b>D4-D6</b> 0~0.015μm
						<b>D8-D20</b> 0~0.018μm	

PART NO.	D1 RADIUS.	L1 FLUTE ENPTH	L2 OAL	D2 SHANK DIA.
NGP-EL0204A	2.0	12	50	4
NGP-EL0204	2.0	12	50	6
NGP-EL0304A	3.0	15	50	4
NGP-EL0304	3.0	15	50	6
NGP-EL0404A	4.0	20	75	4
NGP-EL0404	4.0	20	75	6
NGP-EL0504Z	5.0	25	75	5
NGP-EL0504	5.0	25	75	6
NGP-EL0604	6.0	30	75	6
NGP-EL0804	8.0	40	100	8
NGP-EL1004	10.0	40	100	10
NGP-EL1004L	10.0	50	100	10
NGP-EL1204L	12.0	50	100	12
NGP-EL1604	16.0	70	100	16
NGP-EL2004	20.0	75	100	20

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
<input checked="" type="radio"/>		SEMI-FINISHING
<input type="radio"/>		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

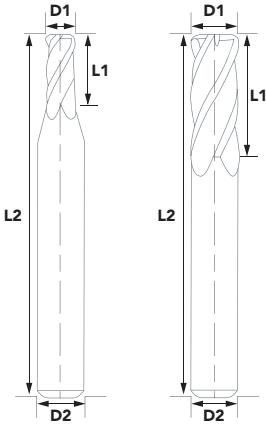
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25~35HRC) P20/H13/D2	(35~45HRC) NAK80/718H/FDAC	(45~55HRC) SKD61/1.2343ESR	(55~65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



## NGP-RB

Micrograin 4 Flute End Mill – Corner Radius

TiAlN

0.6  $\mu\text{M}$

35°

HRC <55

SHANK h6

D	D1-D3	0-0.012 $\mu\text{m}$
	D4-D6	0-0.015 $\mu\text{m}$
	D8-D20	0-0.018 $\mu\text{m}$

PART NO.	D1 DIA.	R CORNER RADIUS	L1 FUTE ENPTH	L2 OAL	D2 SHANK DIA.
NGP-RB0102A	1.0	0.2	3	50	4
NGP-RB0102	1.0	0.2	3	50	6
NGP-RB0152A	1.5	0.2	4	50	4
NGP-RB0152	1.5	0.2	4	50	6
NGP-RB0202A	2.0	0.2	6	50	4
NGP-RB0202	2.0	0.2	6	50	6
NGP-RB0205A	2.0	0.5	6	50	4
NGP-RB0205	2.0	0.5	6	50	6
NGP-RB0302Z	3.0	0.2	8	50	3
NGP-RB0302A	3.0	0.2	8	50	4
NGP-RB0302	3.0	0.2	8	50	6
NGP-RB0305Z	3.0	0.5	8	50	3
NGP-RB0305A	3.0	0.5	8	50	4
NGP-RB0305	3.0	0.5	8	50	6
NGP-RB0402A	4.0	0.2	10	50	4
NGP-RB0402	4.0	0.2	10	50	6
NGP-RB0405A	4.0	0.5	10	50	4
NGP-RB0405	4.0	0.5	10	50	6
NGP-RB0410A	4.0	1.0	10	50	4
NGP-RB0410	4.0	1.0	10	50	6
NGP-RB0505Z	5.0	0.5	13	50	5
NGP-RB0505	5.0	0.5	13	50	6
NGP-RB0510Z	5.0	1.0	13	50	5
NGP-RB0510	5.0	1.0	13	50	6
NGP-RB0602	6.0	0.2	16	50	6
NGP-RB0605	6.0	0.5	16	50	6
NGP-RB1002	10.0	0.2	25	75	10
NGP-RB1003	10.0	0.3	25	75	10
NGP-RB1005	10.0	0.5	25	75	10

### AT A GLANCE

●		FINISHING
●		SEMI-FINISHING
○		ROUGHING
○		DRY MACHINING
●		MQL (MIST)
●		EMULSION MACHINING
●		OIL MACHINING

● EXCELLENT ○ GOOD

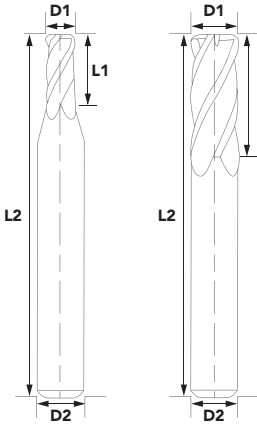
### MACHINING OPERATION



### WORKPIECE MATERIAL

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
●	●	●	●	●	○	●	○	



## NGP-RB

Micrograin 4 Flute End Mill – Corner Radius

TiAlN

0.6  
μM

35°

HRC  
<55

SHANK  
h6

D	D1-D3	0-0.012μm
	D4-D6	0-0.015μm
	D8-D20	0-0.018μm

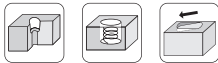
PART NO.	D1 DIA.	R CORNER RADIUS	L1 FLUTE ENPTH	L2 OAL	D2 SHANK DIA.
NGP-RB1010	10.0	1.0	25	75	10
NGP-RB1020	10.0	2.0	25	75	10
NGP-RB1030	10.0	3.0	25	75	10
NGP-RB1205	12.0	0.5	30	75	12
NGP-RB1210	12.0	1.0	30	75	12
NGP-RB1220	12.0	2.0	30	75	12
NGP-RB1230	12.0	3.0	30	75	12
NGP-RB1610	16.0	1.0	45	100	16
NGP-RB1620	16.0	2.0	45	100	16
NGP-RB1630	16.0	3.0	45	100	16
NGP-RB2010	20.0	1.0	50	100	20
NGP-RB2020	20.0	2.0	50	100	20
NGP-RB2030	20.0	3.0	50	100	20

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
<input checked="" type="radio"/>		SEMI-FINISHING
<input type="radio"/>		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

### MACHINING OPERATION

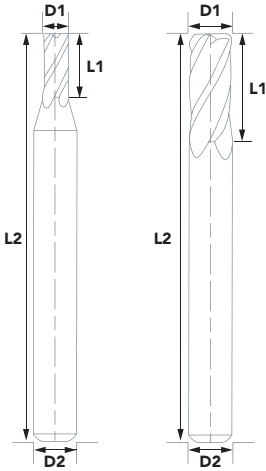


### WORKPIECE MATERIAL

P	M	K	N	S	H
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

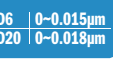
(~22HRC) S50C/HT250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>





## NGP-RBH/RBI

Micrograin 4 Flute Corner Radius End Mill (75mm-100mm) – Long



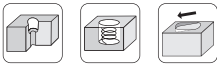
PART NO.	D1 DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NGP-RBH0402A	4.0	0.2	10	75	4
NGP-RBH0402	4.0	0.2	10	75	6
NGP-RBH0405A	4.0	0.5	10	75	4
NGP-RBH0405	4.0	0.5	10	75	6
NGP-RBH0505Z	5.0	0.5	13	75	5
NGP-RBH0505	5.0	0.5	13	75	6
NGP-RBH0510Z	5.0	1.0	13	75	5
NGP-RBH0510	5.0	1.0	13	75	6
NGP-RBH0602	6.0	0.2	16	75	6
NGP-RBH0603	6.0	0.3	16	75	6
NGP-RBH0605	6.0	0.5	16	75	6
NGP-RBH0610	6.0	1.0	16	75	6
NGP-RBH0802	8.0	0.2	20	75	8
NGP-RBH0803	8.0	0.3	20	75	8
NGP-RBH0805	8.0	0.5	20	75	8
NGP-RBH0810	8.0	1.0	20	75	8
NGP-RBI0405A	4.0	0.5	10	100	4
NGP-RBI0602	6.0	0.2	16	100	6
NGP-RBI0605	6.0	0.5	16	100	6
NGP-RBI0610	6.0	1.0	16	100	6
NGP-RBI0802	8.0	0.2	20	100	8
NGP-RBI0803	8.0	0.3	20	100	8
NGP-RBI0805	8.0	0.5	20	100	8
NGP-RBI0810	8.0	1.0	20	100	8
NGP-RBI0820	8.0	2.0	20	100	8
NGP-RBI1002	10.0	0.2	25	100	10
NGP-RBI1003	10.0	0.3	25	100	10
NGP-RBI1005	10.0	0.5	25	100	10
NGP-RBI1010	10.0	1.0	25	100	10
NGP-RBI1020	10.0	2.0	25	100	10
NGP-RBI1030	10.0	3.0	25	100	10
NGP-RBI1205	12.0	0.5	30	100	12
NGP-RBI1210	12.0	1.0	30	100	12
NGP-RBI1220	12.0	2.0	30	100	12
NGP-RBI1230	12.0	3.0	30	100	12

### AT A GLANCE

●		FINISHING
●		SEMI-FINISHING
○		ROUGHING
○		DRY MACHINING
●		MQL (MIST)
●		EMULSION MACHINING
●		OIL MACHINING

● EXCELLENT ○ GOOD

### MACHINING OPERATION



### WORKPIECE MATERIAL

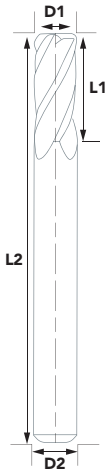


(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C1/1000
●	●	●	●		○		●	○



## NGP-RBJ

Micrograin 4 Flute Corner Radius End Mill (150mm) – Long



TiAlN	0.6 μM	35°		HRC <55	SHANK h6	D6-D20   0~-0.018μm
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PART NO.	D1 DIA.	R CORNER RADIUS	L1 FLUTE ENPTH	L2 OAL	D2 SHANK DIA.
NGP-RBJ0602	6.0	0.2	16	150	6
NGP-RBJ0603	6.0	0.3	16	150	6
NGP-RBJ0605	6.0	0.5	16	150	6
NGP-RBJ0610	6.0	1.0	16	150	6
NGP-RBJ0802	8.0	0.2	20	150	8
NGP-RBJ0803	8.0	0.3	20	150	8
NGP-RBJ0805	8.0	0.5	20	150	8
NGP-RBJ0810	8.0	1.0	20	150	8
NGP-RBJ1002	10.0	0.2	25	150	10
NGP-RBJ1003	10.0	0.3	25	150	10
NGP-RBJ1005	10.0	0.5	25	150	10
NGP-RBJ1010	10.0	1.0	25	150	10
NGP-RBJ1020	10.0	2.0	25	150	10
NGP-RBJ1030	10.0	3.0	25	150	10
NGP-RBJ1205	12.0	0.5	30	150	12
NGP-RBJ1210	12.0	1.0	30	150	12
NGP-RBJ1220	12.0	2.0	30	150	12
NGP-RBJ1230	12.0	3.0	30	150	12
NGP-RBJ1610	16.0	1.0	45	150	16
NGP-RBJ1620	16.0	2.0	45	150	16
NGP-RBJ1630	16.0	3.0	45	150	16
NGP-RBJ2010	20.0	1.0	50	150	20
NGP-RBJ2020	20.0	2.0	50	150	20
NGP-RBJ2030	20.0	3.0	50	150	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

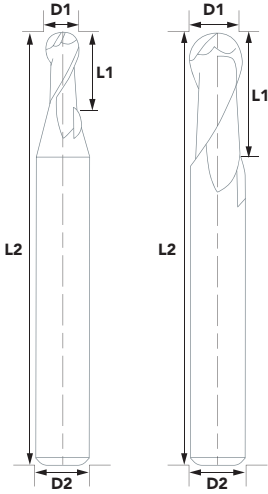
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



## NGP-B

Micrograin 2 Flute Ball Nose – Standard

TiAlN	0.6 μM	30°	HRC <55	SHANK h6	D ↓	D1-D3 0~0.012μm D3.5-D6 0~0.015μm D8-D20 0~0.018μm
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PART NO.	D1 RADIUS.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NGP-B0102A	R0.5	2	50	4
NGP-B0102	R0.5	2	50	6
NGP-B0152A	R0.75	3	50	4
NGP-B0152	R0.75	3	50	6
NGP-B0202A	R1	4	50	4
NGP-B0202	R1	4	50	6
NGP-B0252A	R1.25	5	50	4
NGP-B0252	R1.25	5	50	6
NGP-B0302Z	R1.5	6	50	3
NGP-B0302A	R1.5	6	50	4
NGP-B0302	R1.5	6	50	6
NGP-B0352A	R1.75	8	50	4
NGP-B0352	R1.75	8	50	6
NGP-B0402A	R2	8	50	4
NGP-B0402	R2	8	50	6
NGP-B0502Z	R2.5	10	50	5
NGP-B0502	R2.5	10	50	6
NGP-B0602	R3	12	50	6
NGP-B0802	R4	16	60	8
NGP-B1002	R5	20	75	10
NGP-B1202	R6	24	75	12
NGP-B1602	R8	40	100	16
NGP-B2002	R10	40	100	20

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
<input checked="" type="radio"/>		SEMI-FINISHING
<input type="radio"/>		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

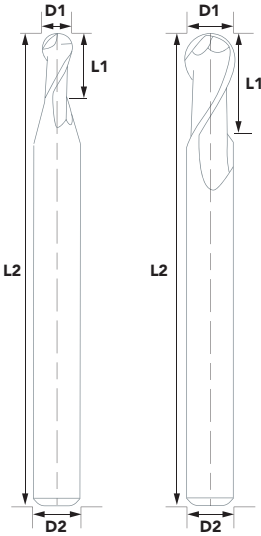
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25~35HRC) P20/HI3/D2	(35~45HRC) NAK80/718H/FDAC	(45~55HRC) SKD61/L2343ESR	(55~65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



## NGP-BH|BI|BJ

Micrograin 2 Flute Ball Nose (75mm-150mm) – Long

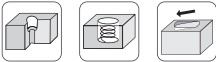
<b>TIAlN</b>	<b>0.6 μM</b>	<b>30°</b>	<b>HRC &lt;55</b>	<b>SHANK h6</b>	<b>D</b>	<b>D2-D3</b> 0~0.012μm	<b>D3.5-D6</b> 0~0.015μm	<b>D8-D20</b> 0~0.018μm
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### AT A GLANCE

<input checked="" type="checkbox"/>		FINISHING
<input checked="" type="checkbox"/>		SEMI-FINISHING
<input type="checkbox"/>		ROUGHING
<input type="checkbox"/>		DRY MACHINING
<input checked="" type="checkbox"/>		MQL (MIST)
<input checked="" type="checkbox"/>		EMULSION MACHINING
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EXCELLENT  GOOD

### MACHINING OPERATION

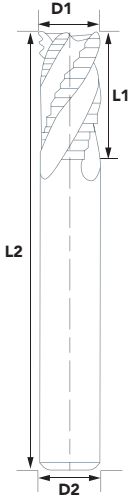


### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

PART NO.	D1 RADIUS.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NGP-BH0202A	R1	4	75	4
NGP-BH0202	R1	4	75	6
NGP-BH0252A	R1.25	5	75	4
NGP-BH0252	R1.25	5	75	6
NGP-BH0302	R1.5	6	75	6
NGP-BH0302A	R1.5	6	75	4
NGP-BH0352A	R1.75	8	75	4
NGP-BH0352	R1.75	8	75	6
NGP-BH0402A	R2	8	75	4
NGP-BH0402	R2	8	75	6
NGP-BH0502Z	R2.5	10	75	5
NGP-BH0502	R2.5	10	75	6
NGP-BH0602	R3	12	75	6
NGP-BH0802	R4	16	75	8
NGP-BI0202	R1	4	100	6
NGP-BI0252	R1.25	5	100	6
NGP-BI0302	R1.5	6	100	6
NGP-BI0352	R1.75	8	100	6
NGP-BI0402A	R2	8	100	4
NGP-BI0402	R2	8	100	6
NGP-BI0502Z	R2.5	10	100	5
NGP-BI0502	R2.5	10	100	6
NGP-BI0602	R3	12	100	6
NGP-BI0802	R4	16	100	8
NGP-BI1002	R5	20	100	10
NGP-BI1202	R6	24	100	12
NGP-BJ0602	R3	12	150	6
NGP-BJ0802	R4	16	150	8
NGP-BJ1002	R5	20	150	10
NGP-BJ1202	R6	24	150	12
NGP-BJ1602	R8	32	150	16
NGP-BJ2002	R10	40	150	20

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FD4C	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



## NGP-W

Micrograin 3 Flute Ripping End Mill

TiAlN	0.6 μM	30°		HRC <55	SHANK h6	D6-D20   0~-0.05μm
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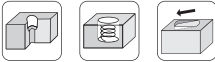
PART NO.	D1 DIA.	L1 FLUTE ENPTH	L2 OAL	D2 SHANK DIA.
NGP-W0603	6.0	16	50	6
NGP-W0803	8.0	20	60	8
NGP-W1003	10.0	25	75	10
NGP-W1203	12.0	30	75	12
NGP-W1403	14.0	35	100	14
NGP-W1603	16.0	45	100	16
NGP-W1803	18.0	45	100	18
NGP-W2003	20.0	45	100	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

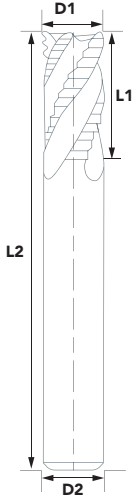
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HT250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C1.1000



## NGP-W

Micrograin 4 Flute Ripping End Mill

TiAlN	0.6 μM	30°		HRC <55	SHANK h6	D6-D20   0~-0.05μm
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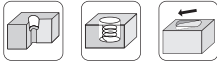
PART NO.	D1 DIA.	L1 FLUTE ENPTH	L2 OAL	D2 SHANK DIA.
NGP-W0604	6.0	16	50	6
NGP-W0804	8.0	20	60	8
NGP-W1004	10.0	25	75	10
NGP-W1204	12.0	30	75	12
NGP-W1404	14.0	35	100	14
NGP-W1604	16.0	45	100	16
NGP-W1804	18.0	45	100	18
NGP-W2004	20.0	45	100	20

### AT A GLANCE

<input type="checkbox"/>	<input type="checkbox"/>	FINISHING
<input type="checkbox"/>	<input type="checkbox"/>	SEMI-FINISHING
<input checked="" type="checkbox"/>	<input type="checkbox"/>	ROUGHING
<input type="checkbox"/>		DRY MACHINING
<input checked="" type="checkbox"/>		MQL (MIST)
<input checked="" type="checkbox"/>		EMULSION MACHINING
<input checked="" type="checkbox"/>		OIL MACHINING

EXCELLENT  GOOD

### MACHINING OPERATION



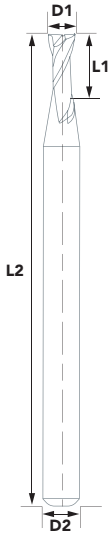
### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
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**NMD**  
**MICRO DIAMETER**  
**SERIES**



# NMD-DES

Ultrafine 2 Flute Micro Diameter End Mill – Standard

TiAlN	0.4 $\mu\text{m}$	35°		HRC <55	SHANK h6	$\downarrow$ D D0.2-D0.5   0-0.008 $\mu\text{m}$ D0.6-D0.9   0-0.01 $\mu\text{m}$
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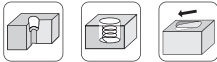
PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NMD-DES0022	0.2	0.4	50	4
NMD-DES0032	0.3	0.6	50	4
NMD-DES0042	0.4	0.8	50	4
NMD-DES0052	0.5	1.0	50	4
NMD-DES0062	0.6	1.2	50	4
NMD-DES0072	0.7	1.4	50	4
NMD-DES0082	0.8	1.6	50	4
NMD-DES0092	0.9	1.8	50	4

## AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

## MACHINING OPERATION

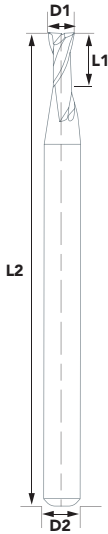


## WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/H1250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FD4C	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>





## NMD-HES

Ultrafine 2 Flute Micro Diameter End Mill – Standard

AITISIN	0.4 $\mu\text{m}$	30°		HRC <65	SHANK h6	$\frac{D}{d}$	D0.2-D0.5   0-0.008 $\mu\text{m}$ D0.6-D0.9   0-0.01 $\mu\text{m}$
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PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NMD-HES0022	0.2	0.4	50	4
NMD-HES0032	0.3	0.6	50	4
NMD-HES0042	0.4	0.8	50	4
NMD-HES0052	0.5	1.0	50	4
NMD-HES0062	0.6	1.2	50	4
NMD-HES0072	0.7	1.4	50	4
NMD-HES0082	0.8	1.6	50	4
NMD-HES0092	0.9	1.8	50	4

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

### MACHINING OPERATION

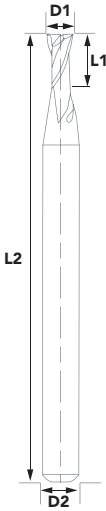


### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
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(~22HRC) S50C/H1250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>			<input checked="" type="radio"/>

MICRO DIAMETER & LONG NECK SERIES



## NMD-TES

Supergrain 2 Flute Micro Diameter End Mill – Standard

CA	0.2 $\mu\text{m}$	35°	HRC <70	SHANK h6	D	D0.1-D0.5 D0.6-D0.9	0-0.008 $\mu\text{m}$ 0-0.01 $\mu\text{m}$
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PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NMD-TES0012	0.1	0.2	50	4
NMD-TES0022	0.2	0.4	50	4
NMD-TES0032	0.3	0.6	50	4
NMD-TES0042	0.4	0.8	50	4
NMD-TES0052	0.5	1.0	50	4
NMD-TES0062	0.6	1.2	50	4
NMD-TES0072	0.7	1.4	50	4
NMD-TES0082	0.8	1.6	50	4
NMD-TES0092	0.9	1.8	50	4

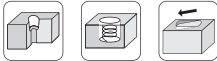
MICRO DIAMETER & LONG NECK SERIES

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT    GOOD

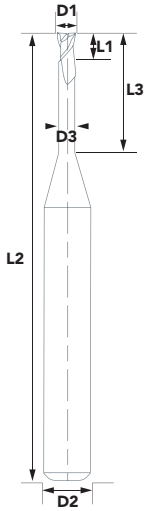
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI3/D2	(35-45HRC) NAK80/TI8H/FD4C	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



## NMD-DEMA

Ultragrain 2 Flute Micro Diameter Long Neck End Mill

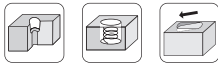
TiAlN	0.4 $\mu\text{m}$	35°		HRC <55	SHANK h6	<table border="1"> <tr> <td>D0.2-D0.5</td> <td>0-0.008<math>\mu\text{m}</math></td> </tr> <tr> <td>D0.6-D0.8</td> <td>0-0.01<math>\mu\text{m}</math></td> </tr> <tr> <td>D1-D4</td> <td>0-0.012<math>\mu\text{m}</math></td> </tr> </table>	D0.2-D0.5	0-0.008 $\mu\text{m}$	D0.6-D0.8	0-0.01 $\mu\text{m}$	D1-D4	0-0.012 $\mu\text{m}$
D0.2-D0.5	0-0.008 $\mu\text{m}$											
D0.6-D0.8	0-0.01 $\mu\text{m}$											
D1-D4	0-0.012 $\mu\text{m}$											

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

### MACHINING OPERATION

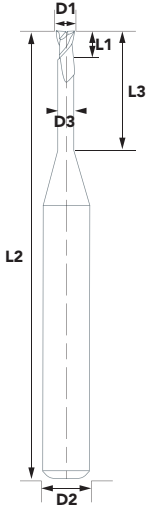


### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

PART NO.	D1 DIA.	D3 NECK DIA.	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-DEMA0201A	0.2	0.18	0.3	1	50	4
NMD-DEMA0202A	0.2	0.18	0.3	2	50	4
NMD-DEMA0301A	0.3	0.27	0.5	1	50	4
NMD-DEMA0302A	0.3	0.27	0.5	2	50	4
NMD-DEMA0402A	0.4	0.37	0.6	2	50	4
NMD-DEMA0404A	0.4	0.37	0.6	4	50	4
NMD-DEMA0502A	0.5	0.45	0.7	2	50	4
NMD-DEMA0504A	0.5	0.45	0.7	4	50	4
NMD-DEMA0506A	0.5	0.45	0.7	6	50	4
NMD-DEMA0602A	0.6	0.55	0.9	2	50	4
NMD-DEMA0604A	0.6	0.55	0.9	4	50	4
NMD-DEMA0606A	0.6	0.55	0.9	6	50	4
NMD-DEMA0608A	0.6	0.55	0.9	8	50	4
NMD-DEMA0804A	0.8	0.75	1.2	4	50	4
NMD-DEMA0806A	0.8	0.75	1.2	6	50	4
NMD-DEMA0808A	0.8	0.75	1.2	8	50	4
NMD-DEMA0810A	0.8	0.75	1.2	10	50	4
NMD-DEMA1004A	1.0	0.95	1.5	4	50	4
NMD-DEMA1006A	1.0	0.95	1.5	6	50	4
NMD-DEMA1008A	1.0	0.95	1.5	8	50	4
NMD-DEMA1010A	1.0	0.95	1.5	10	50	4
NMD-DEMA1012A	1.0	0.95	1.5	12	50	4
NMD-DEMA1016A	1.0	0.95	1.5	16	50	4
NMD-DEMA1506A	1.5	1.45	2.3	6	50	4
NMD-DEMA1508A	1.5	1.45	2.3	8	50	4
NMD-DEMA1510A	1.5	1.45	2.3	10	50	4
NMD-DEMA1512A	1.5	1.45	2.3	12	50	4
NMD-DEMA1516A	1.5	1.45	2.3	16	50	4
NMD-DEMA1518A	1.5	1.45	2.3	18	50	4
NMD-DEMA1520A	1.5	1.45	2.3	20	50	4

(~22HRC) S50C/HT250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FD4C	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



## NMD-DEMA

Ultrafine 2 Flute Micro Diameter Long Neck End Mill

TiAlN

0.4  $\mu\text{m}$

35°

HRC <55

SHANK h6

D

D0.2-D0.5	0-0.008 $\mu\text{m}$
D0.6-D0.8	0-0.010 $\mu\text{m}$
D1-D4	0-0.012 $\mu\text{m}$

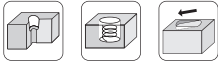
PART NO.	D1 DIA.	D3 NECK DIA.	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-DEMA2008A	2.0	1.95	3	8	50	4
NMD-DEMA2010A	2.0	1.95	3	10	50	4
NMD-DEMA2012A	2.0	1.95	3	12	50	4
NMD-DEMA2016A	2.0	1.95	3	16	50	4
NMD-DEMA2018A	2.0	1.95	3	18	50	4
NMD-DEMA2020A	2.0	1.95	3	20	50	4
NMD-DEMA3010A	3.0	2.85	4.5	10	50	4
NMD-DEMA3012A	3.0	2.85	4.5	12	50	4
NMD-DEMA3016A	3.0	2.85	4.5	16	50	4
NMD-DEMA3020	3.0	2.85	4.5	20	75	6
NMD-DEMA3026	3.0	2.85	4.5	26	75	6
NMD-DEMA3030	3.0	2.85	4.5	30	75	6
NMD-DEMA4016	4.0	3.85	6	16	75	6
NMD-DEMA4020	4.0	3.85	6	20	75	6
NMD-DEMA4026	4.0	3.85	6	26	75	6
NMD-DEMA4030	4.0	3.85	6	30	75	6

### AT A GLANCE

<input checked="" type="checkbox"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="checkbox"/>		DRY MACHINING
<input checked="" type="checkbox"/>		MQL (MIST)
<input checked="" type="checkbox"/>		EMULSION MACHINING
<input checked="" type="checkbox"/>		OIL MACHINING

EXCELLENT  GOOD

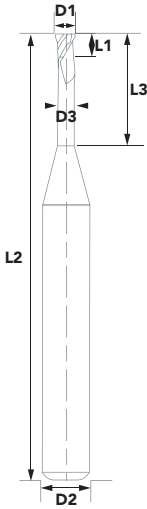
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/H1250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FD4C	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



## NMD-HEMA

Ultragrain 2 Flute Micro Diameter Long Neck End Mill

AITISiN

0.4  $\mu\text{m}$

30°

HRC <65

SHANK h6

D

D0.2-D0.5 0-0.008 $\mu\text{m}$   
D0.6-D0.8 0-0.010 $\mu\text{m}$   
D1-D4 0-0.012 $\mu\text{m}$

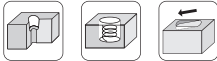
PART NO.	D1 DIA.	D3 NECK DIA.	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-HEMA0201A	0.2	0.18	0.3	1	50	4
NMD-HEMA0202A	0.2	0.18	0.3	2	50	4
NMD-HEMA0301A	0.3	0.27	0.5	1	50	4
NMD-HEMA0302A	0.3	0.27	0.5	2	50	4
NMD-HEMA0402A	0.4	0.37	0.6	2	50	4
NMD-HEMA0404A	0.4	0.37	0.6	4	50	4
NMD-HEMA0502A	0.5	0.45	0.7	2	50	4
NMD-HEMA0504A	0.5	0.45	0.7	4	50	4
NMD-HEMA0506A	0.5	0.45	0.7	6	50	4
NMD-HEMA0602A	0.6	0.55	0.9	2	50	4
NMD-HEMA0604A	0.6	0.55	0.9	4	50	4
NMD-HEMA0606A	0.6	0.55	0.9	6	50	4
NMD-HEMA0608A	0.6	0.55	0.9	8	50	4
NMD-HEMA0804A	0.8	0.75	1.2	4	50	4
NMD-HEMA0806A	0.8	0.75	1.2	6	50	4
NMD-HEMA0808A	0.8	0.75	1.2	8	50	4
NMD-HEMA0810A	0.8	0.75	1.2	10	50	4
NMD-HEMA1004A	1.0	0.95	1.5	4	50	4
NMD-HEMA 1006A	1.0	0.95	1.5	6	50	4
NMD-HEMA1008A	1.0	0.95	1.5	8	50	4
NMD-HEMA1010A	1.0	0.95	1.5	10	50	4
NMD-HEMA1012A	1.0	0.95	1.5	12	50	4
NMD-HEMA1016A	1.0	0.95	1.5	16	50	4
NMD-HEMA1506A	1.5	1.45	2.3	6	50	4
NMD-HEMA1508A	1.5	1.45	2.3	8	50	4
NMD-HEMA1510A	1.5	1.45	2.3	10	50	4
NMD-HEMA1512A	1.5	1.45	2.3	12	50	4
NMD-HEMA1516A	1.5	1.45	2.3	16	50	4
NMD-HEMA1518A	1.5	1.45	2.3	18	50	4
NMD-HEMA1520A	1.5	1.45	2.3	20	50	4

### AT A GLANCE

<input checked="" type="checkbox"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="checkbox"/>		DRY MACHINING
<input checked="" type="checkbox"/>		MQL (MIST)
<input checked="" type="checkbox"/>		EMULSION MACHINING
<input checked="" type="checkbox"/>		OIL MACHINING

EXCELLENT  GOOD

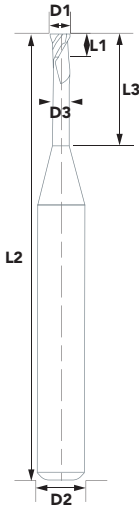
### MACHINING OPERATION



### WORKPIECE MATERIAL

<input checked="" type="checkbox"/> P	<input checked="" type="checkbox"/> M	<input checked="" type="checkbox"/> K	<input checked="" type="checkbox"/> N	<input type="checkbox"/> S	<input checked="" type="checkbox"/> H
---------------------------------------	---------------------------------------	---------------------------------------	---------------------------------------	----------------------------	---------------------------------------

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI3/D2	(35-45HRC) NAK80/T18H/FD4C	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C1/1000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



## NMD-HEMA

Ultrafines 2 Flute Micro Diameter Long Neck End Mill

AITiSiN

0.4  $\mu\text{m}$

30°

HRC <65

SHANK h6

D

D0.2-D0.5 0-0.008 $\mu\text{m}$   
D0.6-D0.8 0-0.010 $\mu\text{m}$   
D1-D4 0-0.012 $\mu\text{m}$

PART NO.	D1 DIA.	D3 NECK DIA.	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-HEMA2008A	2.0	1.95	3	8	50	4
NMD-HEMA2010A	2.0	1.95	3	10	50	4
NMD-HEMA2012A	2.0	1.95	3	12	50	4
NMD-HEMA2016A	2.0	1.95	3	16	50	4
NMD-HEMA2018A	2.0	1.95	3	18	50	4
NMD-HEMA2020A	2.0	1.95	3	20	50	4
NMD-HEMA3010A	3.0	2.85	4.5	10	50	4
NMD-HEMA3012A	3.0	2.85	4.5	12	50	4
NMD-HEMA3016A	3.0	2.85	4.5	16	50	4
NMD-HEMA3020	3.0	2.85	4.5	20	75	6
NMD-HEMA3026	3.0	2.85	4.5	26	75	6
NMD-HEMA3030	3.0	2.85	4.5	30	75	6
NMD-HEMA4016	4.0	3.85	6	16	75	6
NMD-HEMA4020	4.0	3.85	6	20	75	6
NMD-HEMA4026	4.0	3.85	6	26	75	6
NMD-HEMA4030	4.0	3.85	6	30	75	6

### AT A GLANCE

<input checked="" type="checkbox"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="checkbox"/>		DRY MACHINING
<input checked="" type="checkbox"/>		MQL (MIST)
<input checked="" type="checkbox"/>		EMULSION MACHINING
<input checked="" type="checkbox"/>		OIL MACHINING

EXCELLENT  GOOD

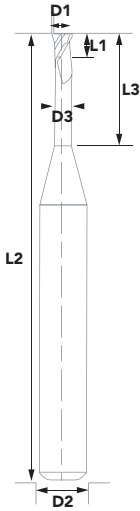
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



## NMD-TEMA

Supergrain 2 Flute Micro Diameter Long Neck End Mill

CA	0.2 $\mu\text{m}$	35°	HRC <70	SHANK h6	<table border="1"> <tr> <td>D0.2-D0.5</td> <td>0-0.008<math>\mu\text{m}</math></td> </tr> <tr> <td>D0.6-D0.8</td> <td>0-0.010<math>\mu\text{m}</math></td> </tr> <tr> <td>D1-D4</td> <td>0-0.012<math>\mu\text{m}</math></td> </tr> </table>	D0.2-D0.5	0-0.008 $\mu\text{m}$	D0.6-D0.8	0-0.010 $\mu\text{m}$	D1-D4	0-0.012 $\mu\text{m}$
D0.2-D0.5	0-0.008 $\mu\text{m}$										
D0.6-D0.8	0-0.010 $\mu\text{m}$										
D1-D4	0-0.012 $\mu\text{m}$										

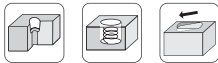
PART NO.	D1 DIA.	D3 NECK DIA.	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-TEMA0201A	0.2	0.18	0.3	1	50	4
NMD-TEMA0202A	0.2	0.18	0.3	2	50	4
NMD-TEMA0301A	0.3	0.27	0.5	1	50	4
NMD-TEMA0302A	0.3	0.27	0.5	2	50	4
NMD-TEMA0402A	0.4	0.37	0.6	2	50	4
NMD-TEMA0404A	0.4	0.37	0.6	4	50	4
NMD-TEMA0502A	0.5	0.45	0.7	2	50	4
NMD-TEMA0504A	0.5	0.45	0.7	4	50	4
NMD-TEMA0506A	0.5	0.45	0.7	6	50	4
NMD-TEMA0602A	0.6	0.55	0.9	2	50	4
NMD-TEMA0604A	0.6	0.55	0.9	4	50	4
NMD-TEMA0606A	0.6	0.55	0.9	6	50	4
NMD-TEMA0608A	0.6	0.55	0.9	8	50	4
NMD-TEMA0804A	0.8	0.75	1.2	4	50	4
NMD-TEMA0806A	0.8	0.75	1.2	6	50	4
NMD-TEMA0808A	0.8	0.75	1.2	8	50	4
NMD-TEMA0810A	0.8	0.75	1.2	10	50	4
NMD-TEMA1004A	1.0	0.95	1.5	4	50	4
NMD-TEMA1006A	1.0	0.95	1.5	6	50	4
NMD-TEMA1008A	1.0	0.95	1.5	8	50	4
NMD-TEMA1010A	1.0	0.95	1.5	10	50	4
NMD-TEMA1012A	1.0	0.95	1.5	12	50	4
NMD-TEMA1016A	1.0	0.95	1.5	16	50	4
NMD-TEMA1506A	1.5	1.45	2.3	6	50	4
NMD-TEMA1508A	1.5	1.45	2.3	8	50	4
NMD-TEMA1510A	1.5	1.45	2.3	10	50	4
NMD-TEMA1512A	1.5	1.45	2.3	12	50	4
NMD-TEMA1516A	1.5	1.45	2.3	16	50	4
NMD-TEMA1518A	1.5	1.45	2.3	18	50	4
NMD-TEMA1520A	1.5	1.45	2.3	20	50	4

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

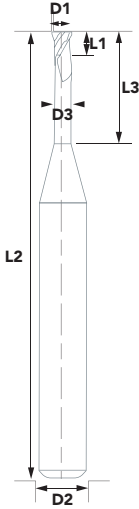
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI13/D2	(35-45HRC) NAK80/T18H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



## NMD-TEMA

Supergrain 2 Flute Micro Diameter Long Neck End Mill

CA	0.2 $\mu\text{m}$	35°		HRC <70	SHANK h6	<table border="1"> <tr> <td>D0.2-D0.5</td> <td>0-0.008<math>\mu\text{m}</math></td> </tr> <tr> <td>D0.6-D0.8</td> <td>0-0.010<math>\mu\text{m}</math></td> </tr> <tr> <td>D1-D4</td> <td>0-0.012<math>\mu\text{m}</math></td> </tr> </table>	D0.2-D0.5	0-0.008 $\mu\text{m}$	D0.6-D0.8	0-0.010 $\mu\text{m}$	D1-D4	0-0.012 $\mu\text{m}$
D0.2-D0.5	0-0.008 $\mu\text{m}$											
D0.6-D0.8	0-0.010 $\mu\text{m}$											
D1-D4	0-0.012 $\mu\text{m}$											

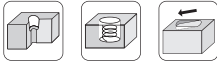
PART NO.	D1 DIA.	D3 NECK DIA.	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-TEMA2008A	2.0	1.95	3	8	50	4
NMD-TEMA2010A	2.0	1.95	3	10	50	4
NMD-TEMA2012A	2.0	1.95	3	12	50	4
NMD-TEMA2016A	2.0	1.95	3	16	50	4
NMD-TEMA2018A	2.0	1.95	3	18	50	4
NMD-TEMA2020A	2.0	1.95	3	20	50	4
NMD-TEMA3010A	3.0	2.85	4.5	10	50	4
NMD-TEMA3012A	3.0	2.85	4.5	12	50	4
NMD-TEMA3016A	3.0	2.85	4.5	16	50	4
NMD-TEMA3020	3.0	2.85	4.5	20	75	6
NMD-TEMA3026	3.0	2.85	4.5	26	75	6
NMD-TEMA3030	3.0	2.85	4.5	30	75	6
NMD-TEMA4016	4.0	3.85	6	16	75	6
NMD-TEMA4020	4.0	3.85	6	20	75	6
NMD-TEMA4026	4.0	3.85	6	26	75	6
NMD-TEMA4030	4.0	3.85	6	30	75	6

### AT A GLANCE

<input checked="" type="checkbox"/>		FINISHING
<input type="checkbox"/>		SEMI-FINISHING
<input type="checkbox"/>		ROUGHING
<input type="checkbox"/>		DRY MACHINING
<input checked="" type="checkbox"/>		MQL (MIST)
<input checked="" type="checkbox"/>		EMULSION MACHINING
<input checked="" type="checkbox"/>		OIL MACHINING

EXCELLENT  GOOD

### MACHINING OPERATION

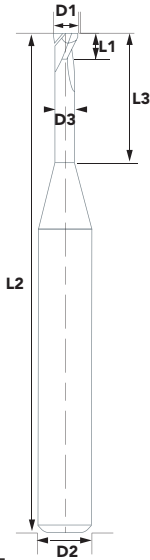


### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI13/D2	(35-45HRC) NAK80/T18H/FD4C	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>





## NMD-DRMA

Ultrafine 2 Flute Micro Diameter Long Neck End Mill – Corner Radius

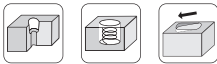
TiAlN	0.4 $\mu\text{m}$	35°	HRC <55	SHANK h6	D1-D4   0-0.012 $\mu\text{m}$
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### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

### MACHINING OPERATION

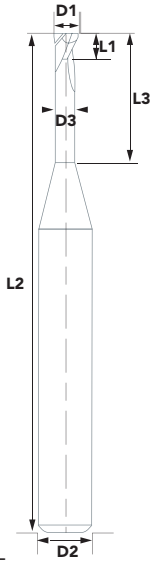


### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

PART NO.	D1 DIA.	D3 NECK DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-DRMA100402A	1.0	0.95	0.2	1.5	4	50	4
NMD-DRMA100602A	1.0	0.95	0.2	1.5	6	50	4
NMD-DRMA100802A	1.0	0.95	0.2	1.5	8	50	4
NMD-DRMA101002A	1.0	0.95	0.2	1.5	10	50	4
NMD-DRMA101202A	1.0	0.95	0.2	1.5	12	50	4
NMD-DRMA101602A	1.0	0.95	0.2	1.5	16	50	4
NMD-DRMA150602A	1.5	1.45	0.2	2.3	6	50	4
NMD-DRMA150802A	1.5	1.45	0.2	2.3	8	50	4
NMD-DRMA151002A	1.5	1.45	0.2	2.3	10	50	4
NMD-DRMA151202A	1.5	1.45	0.2	2.3	12	50	4
NMD-DRMA151602A	1.5	1.45	0.2	2.3	16	50	4
NMD-DRMA151802A	1.5	1.45	0.2	2.3	18	50	4
NMD-DRMA152002A	1.5	1.45	0.2	2.3	20	50	4
NMD-DRMA200802A	2.0	1.95	0.2	3	8	50	4
NMD-DRMA201002A	2.0	1.95	0.2	3	10	50	4
NMD-DRMA201202A	2.0	1.95	0.2	3	12	50	4
NMD-DRMA201602A	2.0	1.95	0.2	3	16	50	4
NMD-DRMA201802A	2.0	1.95	0.2	3	18	50	4
NMD-DRMA202002A	2.0	1.95	0.2	3	20	50	4
NMD-DRMA301002A	3.0	2.85	0.2	4.5	10	50	4
NMD-DRMA301202A	3.0	2.85	0.2	4.5	12	50	4
NMD-DRMA301602A	3.0	2.85	0.2	4.5	16	50	4
NMD-DRMA302002	3.0	2.85	0.2	4.5	20	50	6
NMD-DRMA302602	3.0	2.85	0.2	4.5	26	75	6
NMD-DRMA303002	3.0	2.85	0.2	4.5	30	75	6
NMD-DRMA301005A	3.0	2.85	0.5	4.5	10	50	4
NMD-DRMA301205A	3.0	2.85	0.5	4.5	12	50	4
NMD-DRMA301605A	3.0	2.85	0.5	4.5	16	50	4

(~22HRC) S50C/HT250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



## NMD-DRMA

Ultrafine 2 Flute Micro Diameter Long Neck End Mill – Corner Radius

TiAlN	0.4 $\mu\text{m}$	35°		HRC <55	SHANK h6	D1-D4   0-0.012 $\mu\text{m}$
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PART NO.	D1 DIA.	D3 NECK DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-DRMA302005	3.0	2.85	0.5	4.5	20	50	6
NMD-DRMA302605	3.0	2.85	0.5	4.5	26	75	6
NMD-DRMA303005	3.0	2.85	0.5	4.5	30	75	6
NMD-DRMA401602	4.0	3.85	0.2	6	16	75	6
NMD-DRMA402002	4.0	3.85	0.2	6	20	75	6
NMD-DRMA402602	4.0	3.85	0.2	6	26	75	6
NMD-DRMA403002	4.0	3.85	0.2	6	30	75	6
NMD-DRMA401605	4.0	3.85	0.5	6	16	75	6
NMD-DRMA402005	4.0	3.85	0.5	6	20	75	6
NMD-DRMA402605	4.0	3.85	0.5	6	26	75	6
NMD-DRMA403005	4.0	3.85	0.5	6	30	75	6

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

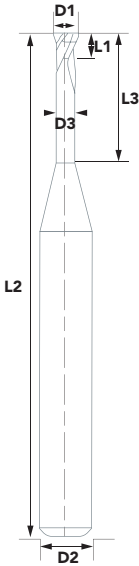
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>



## NMD-HRMA

Ultrafines 2 Flute Micro Diameter Long Neck End Mill – Corner Radius

AI TiSiN	0.4 $\mu\text{m}$	30°		HRC <65	SHANK h6	D1-D4   0-0.012 $\mu\text{m}$
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### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING
EXCELLENT  GOOD		

### MACHINING OPERATION



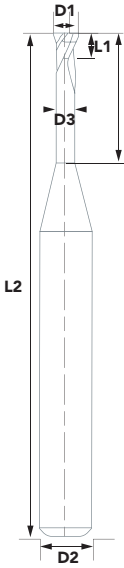
### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

PART NO.	D1 DIA.	D3 NECK DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-HRMA1004021A	1.0	0.95	0.2	1.5	4	50	4
NMD-HRMA100602A	1.0	0.95	0.2	1.5	6	50	4
NMD-HRMA100802A	1.0	0.95	0.2	1.5	8	50	4
NMD-HRMA101002A	1.0	0.95	0.2	1.5	10	50	4
NMD-HRMA101202A	1.0	0.95	0.2	1.5	12	50	4
NMD-HRMA101602A	1.0	0.95	0.2	1.5	16	50	4
NMD-HRMA150602A	1.5	1.45	0.2	2.3	6	50	4
NMD-HRMA150802A	1.5	1.45	0.2	2.3	8	50	4
NMD-HRMA151002A	1.5	1.45	0.2	2.3	10	50	4
NMD-HRMA151202A	1.5	1.45	0.2	2.3	12	50	4
NMD-HRMA151602A	1.5	1.45	0.2	2.3	16	50	4
NMD-HRMA151802A	1.5	1.45	0.2	2.3	18	50	4
NMD-HRMA152002A	1.5	1.45	0.2	2.3	20	50	4
NMD-HRMA200802A	2.0	1.95	0.2	3	8	50	4
NMD-HRMA201002A	2.0	1.95	0.2	3	10	50	4
NMD-HRMA201202A	2.0	1.95	0.2	3	12	50	4
NMD-HRMA201602A	2.0	1.95	0.2	3	16	50	4
NMD-HRMA201802A	2.0	1.95	0.2	3	18	50	4
NMD-HRMA202002A	2.0	1.95	0.2	3	20	50	4
NMD-HRMA301002A	3.0	2.85	0.2	4.5	10	50	4
NMD-HRMA301202A	3.0	2.85	0.2	4.5	12	50	4
NMD-HRMA301602A	3.0	2.85	0.2	4.5	16	50	4
NMD-HRMA302002	3.0	2.85	0.2	4.5	20	50	6
NMD-HRMA302602	3.0	2.85	0.2	4.5	26	75	6
NMD-HRMA303002	3.0	2.85	0.2	4.5	30	75	6

MICRO DIAMETER & LONG NECK SERIES

(~22HRC) S50C/HT250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



## NMD-HRMA

Ultrafine 2 Flute Micro Diameter Long Neck End Mill – Corner Radius

AITiSiN	0.4 $\mu\text{m}$	30°		HRC <65	SHANK h6	$\downarrow$ D	D1-D4   0-0.012 $\mu\text{m}$
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PART NO.	D1 DIA.	D3 NECK DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-HRMA301005A	3.0	2.85	0.5	4.5	10	50	4
NMD-HRMA301205A	3.0	2.85	0.5	4.5	12	50	4
NMD-HRMA301605A	3.0	2.85	0.5	4.5	16	50	4
NMD-HRMA302005	3.0	2.85	0.5	4.5	20	50	6
NMD-HRMA302605	3.0	2.85	0.5	4.5	26	75	6
NMD-HRMA303005	3.0	2.85	0.5	4.5	30	75	6
NMD-HRMA401602	4.0	3.85	0.2	6	16	75	6
NMD-HRMA402002	4.0	3.85	0.2	6	20	75	6
NMD-HRMA402602	4.0	3.85	0.2	6	26	75	6
NMD-HRMA403002	4.0	3.85	0.2	6	30	75	6
NMD-HRMA401605	4.0	3.85	0.5	6	16	75	6
NMD-HRMA402005	4.0	3.85	0.5	6	20	75	6
NMD-HRMA402605	4.0	3.85	0.5	6	26	75	6
NMD-HRMA403005	4.0	3.85	0.5	6	30	75	6

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

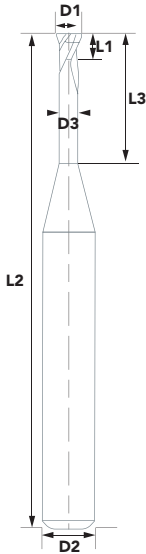
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/H1250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C/11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



## NMD-TRMA

Supergrain 2 Flute Micro Diameter Long Neck End Mill – Corner Radius

CA	0.2 μm	30°		HRC <70	SHANK h6		D1-D4   0-0.012μm
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PART NO.	D1 DIA.	D3 NECK DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-TRMA100402A	1.0	0.95	0.2	1.5	4	50	4
NMD-TRMA100602A	1.0	0.95	0.2	1.5	6	50	4
NMD-TRMA100802A	1.0	0.95	0.2	1.5	8	50	4
NMD-TRMA101002A	1.0	0.95	0.2	1.5	10	50	4
NMD-TRMA101202A	1.0	0.95	0.2	1.5	12	50	4
NMD-TRMA101602A	1.0	0.95	0.2	1.5	16	50	4
NMD-TRMA150602A	1.5	1.45	0.2	2.3	6	50	4
NMD-TRMA150802A	1.5	1.45	0.2	2.3	8	50	4
NMD-TRMA151002A	1.5	1.45	0.2	2.3	10	50	4
NMD-TRMA151202A	1.5	1.45	0.2	2.3	12	50	4
NMD-TRMA151602A	1.5	1.45	0.2	2.3	16	50	4
NMD-TRMA151802A	1.5	1.45	0.2	2.3	18	50	4
NMD-TRMA152002A	1.5	1.45	0.2	2.3	20	50	4
NMD-TRMA200802A	2.0	1.95	0.2	3	8	50	4
NMD-TRMA201002A	2.0	1.95	0.2	3	10	50	4
NMD-TRMA201202A	2.0	1.95	0.2	3	12	50	4
NMD-TRMA201602A	2.0	1.95	0.2	3	16	50	4
NMD-TRMA201802A	2.0	1.95	0.2	3	18	50	4
NMD-TRMA202002A	2.0	1.95	0.2	3	20	50	4
NMD-TRMA301002A	3.0	2.85	0.2	4.5	10	50	4
NMD-TRMA301202A	3.0	2.85	0.2	4.5	12	50	4
NMD-TRMA301602A	3.0	2.85	0.2	4.5	16	50	4
NMD-TRMA302002	3.0	2.85	0.2	4.5	20	50	4
NMD-TRMA302602	3.0	2.85	0.2	4.5	26	75	4
NMD-TRMA303002	3.0	2.85	0.2	4.5	30	75	4

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

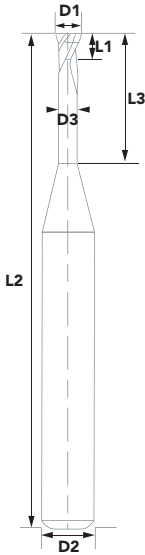
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HT250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FD4C	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



## NMD-TRMA

Supergrain 2 Flute Micro Diameter Long Neck End Mill – Corner Radius

CA	0.2 $\mu\text{m}$	30°	HRC <70	SHANK h6	D1-D4   0-0.012 $\mu\text{m}$
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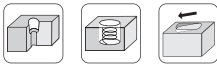
PART NO.	D1 DIA.	D3 NECK DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-TRMA301005A	3.0	2.85	0.5	4.5	10	50	6
NMD-TRMA301205A	3.0	2.85	0.5	4.5	12	50	6
NMD-TRMA301605A	3.0	2.85	0.5	4.5	16	50	6
NMD-TRMA302005	3.0	2.85	0.5	4.5	20	50	4
NMD-TRMA302605	3.0	2.85	0.5	4.5	26	75	4
NMD-TRMA303005	3.0	2.85	0.5	4.5	30	75	4
NMD-TRMA401602	4.0	3.85	0.2	6	16	75	6
NMD-TRMA402002	4.0	3.85	0.2	6	20	75	6
NMD-TRMA402602	4.0	3.85	0.2	6	26	75	6
NMD-TRMA403002	4.0	3.85	0.2	6	30	75	6
NMD-TRMA401605	4.0	3.85	0.5	6	16	75	6
NMD-TRMA402005	4.0	3.85	0.5	6	20	75	6
NMD-TRMA402605	4.0	3.85	0.5	6	26	75	6
NMD-TRMA403005	4.0	3.85	0.5	6	30	75	6

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

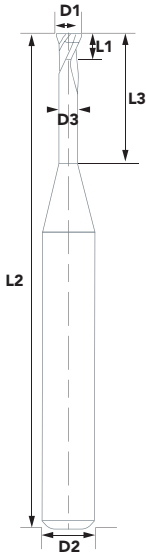
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



## NMD-DEMB

Ultrafines 4 Flute Micro Diameter Long Neck End Mill

TiAIN

0.4  $\mu$ m

35°

HRC <55

SHANK h6

D1-D4 | 0-0.012 $\mu$ m

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

### MACHINING OPERATION

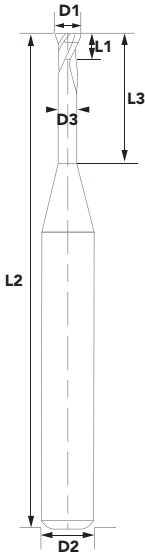


### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

PART NO.	D1 DIA.	D3 NECK DIA.	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-DEMB1004A	1.0	0.95	1.5	4	50	4
NMD-DEMB1006A	1.0	0.95	1.5	6	50	4
NMD-DEMB1008A	1.0	0.95	1.5	8	50	4
NMD-DEMB1010A	1.0	0.95	1.5	10	50	4
NMD-DEMB1012A	1.0	0.95	1.5	12	60	4
NMD-DEMB1016A	1.0	0.95	1.5	16	50	4
NMD-DEMB1506A	1.5	1.45	2.3	6	60	4
NMD-DEMB1508A	1.5	1.45	2.3	8	50	4
NMD-DEMB1510A	1.5	1.45	2.3	10	50	4
NMD-DEMB1512A	1.5	1.45	2.3	12	50	4
NMD-DEMB1516A	1.5	1.45	2.3	16	50	4
NMD-DEMB1518A	1.5	1.45	2.3	18	50	4
NMD-DEMB1520A	1.5	1.45	2.3	20	50	4
NMD-DEMB2008A	2.0	1.95	3	8	50	4
NMD-DEMB2010A	2.0	1.95	3	10	50	4
NMD-DEMB2012A	2.0	1.95	3	12	50	4
NMD-DEMB2016A	2.0	1.95	3	16	50	4
NMD-DEMB2018A	2.0	1.95	3	18	50	4
NMD-DEMB2020A	2.0	1.95	3	20	50	4
NMD-DEMB3010A	3.0	2.85	4.5	10	50	4
NMD-DEMB3012A	3.0	2.85	4.5	12	50	4
NMD-DEMB3016A	3.0	2.85	4.5	16	50	4
NMD-DEMB3020	3.0	2.85	4.5	20	75	6
NMD-DEMB3026	3.0	2.85	4.5	26	75	6
NMD-DEMB3030	3.0	2.85	4.5	30	75	6
NMD-DEMB4016	4.0	3.85	6	16	75	6
NMD-DEMB4020	4.0	3.85	6	20	75	6
NMD-DEMB4026	4.0	3.85	6	26	75	6
NMD-DEMB4030	4.0	3.85	6	30	75	6

(~22HRC) S50C/H1250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>			<input checked="" type="radio"/>



## NMD-HEMB

Ultra Grain 4 Flute Micro Diameter Long Neck End Mill

AITISIN	0.4 $\mu\text{m}$	30°		HRC <65	SHANK h6	D1-D4   0-0.012 $\mu\text{m}$
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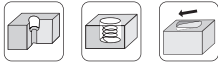
MICRO DIAMETER & LONG NECK SERIES

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

### MACHINING OPERATION



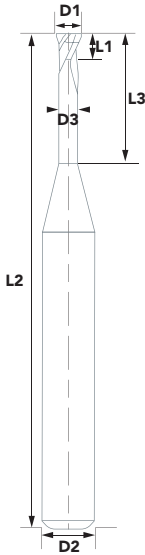
### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

PART NO.	D1 DIA.	D3 NECK DIA.	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-HEMB1004A	1.0	0.95	1.5	4	50	4
NMD-HEMB1006A	1.0	0.95	1.5	6	50	4
NMD-HEMB1008A	1.0	0.95	1.5	8	50	4
NMD-HEMB1010A	1.0	0.95	1.5	10	50	4
NMD-HEMB1012A	1.0	0.95	1.5	12	50	4
NMD-HEMB1016A	1.0	0.95	1.5	16	50	4
NMD-HEMB1506A	1.5	1.45	2.3	6	50	4
NMD-HEMB1508A	1.5	1.45	2.3	8	50	4
NMD-HEMB1510A	1.5	1.45	2.3	10	50	4
NMD-HEMB1512A	1.5	1.45	2.3	12	50	4
NMD-HEMB1516A	1.5	1.45	2.3	16	50	4
NMD-HEMB1518A	1.5	1.45	2.3	18	50	4
NMD-HEMB1520A	1.5	1.45	2.3	20	50	4
NMD-HEMB2008A	2.0	1.95	3	8	50	4
NMD-HEMB2010A	2.0	1.95	3	10	50	4
NMD-HEMB2012A	2.0	1.95	3	12	50	4
NMD-HEMB2016A	2.0	1.95	3	16	50	4
NMD-HEMB2018A	2.0	1.95	3	18	50	4
NMD-HEMB2020A	2.0	1.95	3	20	50	4
NMD-HEMB3010A	3.0	2.85	4.5	10	50	4
NMD-HEMB3012A	3.0	2.85	4.5	12	50	4
NMD-HEMB3016A	3.0	2.85	4.5	16	50	4
NMD-HEMB3020	3.0	2.85	4.5	20	75	6
NMD-HEMB3026	3.0	2.85	4.5	26	75	6
NMD-HEMB3030	3.0	2.85	4.5	30	75	6
NMD-HEMB4016	4.0	3.85	6	16	75	6
NMD-HEMB4020	4.0	3.85	6	20	75	6
NMD-HEMB4026	4.0	3.85	6	26	75	6
NMD-HEMB4030	4.0	3.85	6	30	75	6

(~22HRC) S50C/HT250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/VDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C1/1000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>





## NMD-TEMB

Supergrain 4 Flute Micro Diameter Long Neck End Mill

CA	0.2 μm	35°		HRC <70	SHANK h6	D1-D4   0-0.012μm
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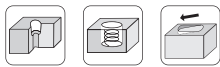
PART NO.	D1 DIA.	D3 NECK DIA.	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-TEMB1004A	1.0	0.95	1.5	4	50	4
NMD-TEMB1006A	1.0	0.95	1.5	6	50	4
NMD-TEMB1008A	1.0	0.95	1.5	8	50	4
NMD-TEMB1010A	1.0	0.95	1.5	10	50	4
NMD-TEMB1012A	1.0	0.95	1.5	12	50	4
NMD-TEMB1016A	1.0	0.95	1.5	16	50	4
NMD-TEMB1506A	1.5	1.45	2.3	6	50	4
NMD-TEMB1508A	1.5	1.45	2.3	8	50	4
NMD-TEMB1510A	1.5	1.45	2.3	10	50	4
NMD-TEMB1512A	1.5	1.45	2.3	12	50	4
NMD-TEMB1516A	1.5	1.45	2.3	16	50	4
NMD-TEMB1518A	1.5	1.45	2.3	18	50	4
NMD-TEMB1520A	1.5	1.45	2.3	20	50	4
NMD-TEMB2008A	2.0	1.95	3	8	50	4
NMD-TEMB2010A	2.0	1.95	3	10	50	4
NMD-TEMB2012A	2.0	1.95	3	12	50	4
NMD-TEMB2016A	2.0	1.95	3	16	50	4
NMD-TEMB2018A	2.0	1.95	3	18	50	4
NMD-TEMB2020A	2.0	1.95	3	20	50	4
NMD-TEMB30J0A	3.0	2.85	4.5	10	50	4
NMD-TEMB3012A	3.0	2.85	4.5	12	50	4
NMD-TEMB3016A	3.0	2.85	4.5	16	50	4
NMD-TEMB3020	3.0	2.85	4.5	20	75	6
NMD-TEMB3026	3.0	2.85	4.5	26	75	6
NMD-TEMB3030	3.0	2.85	4.5	30	75	6
NMD-TEMB4016	4.0	3.85	6	16	75	6
NMD-TEMB4020	4.0	3.85	6	20	75	6
NMD-TEMB4026	4.0	3.85	6	26	75	6
NMD-TEMB4030	4.0	3.85	6	30	75	6

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

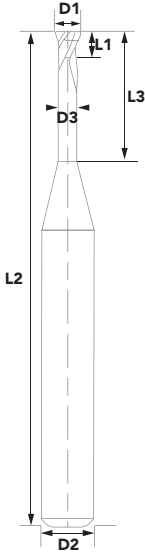
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>			<input checked="" type="radio"/>



## NMD-DRMB

Ultrafines 4 Flute Micro Diameter End Mill – Corner Radius

TiAlN	0.4 $\mu\text{m}$	35°		HRC <55	SHANK h6	D   D1-D4   0-0.012 $\mu\text{m}$
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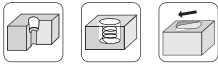
MICRO DIAMETER & LONG NECK SERIES

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

### MACHINING OPERATION

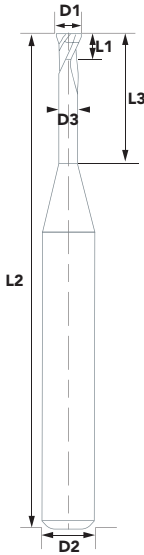


### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

PART NO.	D1 DIA.	D3 NECK DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-RMB100402A	1.0	0.95	0.2	1.5	4	50	4
NMD-RMB100602A	1.0	0.95	0.2	1.5	6	50	4
NMD-RMB100802A	1.0	0.95	0.2	1.5	8	50	4
NMD-RMB101002A	1.0	0.95	0.2	1.5	10	50	4
NMD-RMB101202A	1.0	0.95	0.2	1.5	12	50	4
NMD-RMB101602A	1.0	0.95	0.2	1.5	16	50	4
NMD-RMB150602A	1.5	1.45	0.2	2.3	6	50	4
NMD-RMB150802A	1.5	1.45	0.2	2.3	8	50	4
NMD-RMB151002A	1.5	1.45	0.2	2.3	10	50	4
NMD-RMB151202A	1.5	1.45	0.2	2.3	12	50	4
NMD-RMB151602A	1.5	1.45	0.2	2.3	16	50	4
NMD-RMB151802A	1.5	1.45	0.2	2.3	18	50	4
NMD-RMB152002A	1.5	1.45	0.2	2.3	20	50	4
NMD-RMB200802A	2.0	1.95	0.2	3	8	50	4
NMD-RMB201002A	2.0	1.95	0.2	3	10	50	4
NMD-RMB201202A	2.0	1.95	0.2	3	12	50	4
NMD-RMB201602A	2.0	1.95	0.2	3	16	50	4
NMD-RMB201802A	2.0	1.95	0.2	3	18	50	4
NMD-RMB202002A	2.0	1.95	0.2	3	20	50	4
NMD-RMB301002A	3.0	2.85	0.2	4.5	10	50	4
NMD-RMB301202A	3.0	2.85	0.2	4.5	12	50	4
NMD-RMB301602A	3.0	2.85	0.2	4.5	16	50	4

(~22HRC) S50C/H1250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FD4C	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



## NMD-DRMB

Ultrafines 4 Flute Micro Diameter Long Neck End Mill – Corner Radius

TiAlN	0.4 $\mu\text{m}$	35°		HRC <55	SHANK h6	$\downarrow$ D	D1-D4   0-0.012 $\mu\text{m}$
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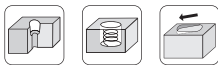
PART NO.	D1 DIA.	D3 NECK DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-RMB302002	3.0	2.85	0.2	4.5	20	50	6
NMD-RMB302602	3.0	2.85	0.2	4.5	26	75	6
NMD-RMB303002	3.0	2.85	0.2	4.5	30	75	6
NMD-RMB301005A	3.0	2.85	0.5	4.5	10	50	4
NMD-RMB301205A	3.0	2.85	0.5	4.5	12	50	4
NMD-RMB301605A	3.0	2.85	0.5	4.5	16	50	4
NMD-RMB302005	3.0	2.85	0.5	4.5	20	50	6
NMD-RMB302605	3.0	2.85	0.5	4.5	26	75	6
NMD-RMB303005	3.0	2.85	0.5	4.5	30	75	6
NMD-RMB401602	4.0	3.85	0.2	6	16	75	6
NMD-RMB402002	4.0	3.85	0.2	6	20	75	6
NMD-RMB402602	4.0	3.85	0.2	6	26	75	6
NMD-RMB403002	4.0	3.85	0.2	6	30	75	6
NMD-RMB401605	4.0	3.85	0.5	6	16	75	6
NMD-RMB402005	4.0	3.85	0.5	6	20	75	6
NMD-RMB402605	4.0	3.85	0.5	6	26	75	6
NMD-RMB403005	4.0	3.85	0.5	6	30	75	6

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
<input type="radio"/>		SEMI-FINISHING
<input type="radio"/>		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

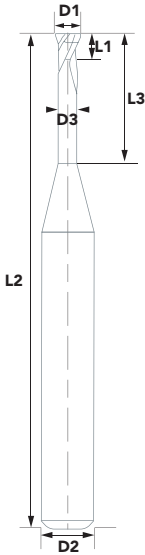
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>



## NMD-HRMB

Ultrafine 4 Flute Micro Diameter Long Neck End Mill – Corner Radius

AI TiSiN	0.4 μm	30°		HRC <65	SHANK h6	D   D1-D4   0-0.012μm
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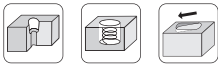
MICRO DIAMETER & LONG NECK SERIES

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

### MACHINING OPERATION

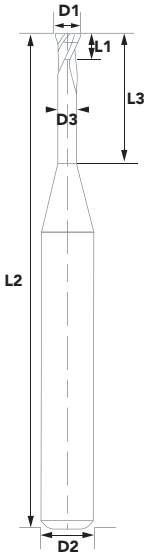


### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

PART NO.	D1 DIA.	D3 NECK DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-HRMB100402A	1.0	0.95	0.2	1.5	4	50	4
NMD-HAMB100602A	1.0	0.95	0.2	1.5	6	50	4
NMD-HRMB100802A	1.0	0.95	0.2	1.5	8	50	4
NMD-HRMB10 1002A	1.0	0.95	0.2	1.5	10	50	4
NMD-HRMB101202A	1.0	0.95	0.2	1.5	12	50	4
NMD-HRMB101602A	1.0	0.95	0.2	1.5	16	50	4
NMD-HRMB1 50602A	1.5	1.45	0.2	2.3	6	50	4
NMD-HRMB150802A	1.5	1.45	0.2	2.3	8	50	4
NMD-HRMB151002A	1.5	1.45	0.2	2.3	10	50	4
NMD-HRMB151202A	1.5	1.45	0.2	2.3	12	50	4
NMD-HRMB151602A	1.5	1.45	0.2	2.3	16	50	4
NMD-HRMB151802A	1.5	1.45	0.2	2.3	18	50	4
NMD-HRMB152002A	1.5	1.45	0.2	2.3	20	50	4
NMD-HRMB200802A	2.0	1.95	0.2	3	8	50	4
NMD-HRMB201002A	2.0	1.95	0.2	3	10	50	4
NMD-HRMB201202A	2.0	1.95	0.2	3	12	50	4
NMD-HRMB201602A	2.0	1.95	0.2	3	16	50	4
NMD-HRMB201802A	2.0	1.95	0.2	3	18	50	4
NMD-HRMB202002A	2.0	1.95	0.2	3	20	50	4
NMD-HRMB301002A	3.0	2.85	0.2	4.5	10	50	4
NMD-HRMB301202A	3.0	2.85	0.2	4.5	12	50	4
NMD-HRMB301602A	3.0	2.85	0.2	4.5	16	50	4
NMD-HRMB302002	3.0	2.85	0.2	4.5	20	50	6
NMD-HRMB302602	3.0	2.85	0.2	4.5	26	75	6
NMD-HRMB303002	3.0	2.85	0.2	4.5	30	75	6

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



## NMD-HRMB

Ultrafine 4 Flute Micro Diameter Long Neck End Mill – Corner Radius

AITiSiN	0.4 $\mu\text{m}$	30°		HRC <65	SHANK h6	$\downarrow$ D	D1-D4   0-0.012 $\mu\text{m}$
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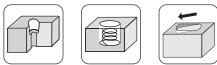
PART NO.	D1 DIA.	D3 NECK DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-HRMB301005A	3.0	2.85	0.5	4.5	10	50	4
NMD-HRMB301205A	3.0	2.85	0.5	4.5	12	50	4
NMD-HRMB301605A	3.0	2.85	0.5	4.5	16	50	4
NMD-HRMB302005	3.0	2.85	0.5	4.5	20	50	6
NMD-HRMB302605	3.0	2.85	0.5	4.5	26	75	6
NMD-HRMB303005	3.0	2.85	0.5	4.5	30	75	6
NMD-HRMB401602	4.0	3.85	0.2	6	16	75	6
NMD-HRMB402002	4.0	3.85	0.2	6	20	75	6
NMD-HRMB402602	4.0	3.85	0.2	6	26	75	6
NMD-HRMB403002	4.0	3.85	0.2	6	30	75	6
NMD-HRMB401605	4.0	3.85	0.5	6	16	75	6
NMD-HRMB402005	4.0	3.85	0.5	6	20	75	6
NMD-HRMB402605	4.0	3.85	0.5	6	26	75	6
NMD-HRMB403005	4.0	3.85	0.5	6	30	75	6

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

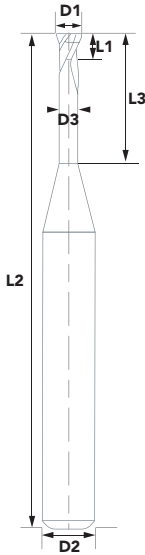
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) SS0C/H1250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>



## NMD-TRMB

Supergrain 4 Flute Micro Diameter Long Neck End Mill – Corner Radius

CA	0.2 μm	30°		HRC <70	SHANK h6	D1-D4   0-0.012μm
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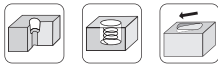
PART NO.	D1 DIA.	D3 NECK DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-TRMB100402A	1.0	0.95	0.2	1.5	4	50	4
NMD-TRMB100602A	1.0	0.95	0.2	1.5	6	50	4
NMD-TRMB100802A	1.0	0.95	0.2	1.5	8	50	4
NMD-TRMB101002A	1.0	0.95	0.2	1.5	10	50	4
NMD-TRMB101202A	1.0	0.95	0.2	1.5	12	50	4
NMD-TRMB101602A	1.0	0.95	0.2	1.5	16	50	4
NMD-TRMB150602A	1.5	0.95	0.2	2.3	6	50	4
NMD-TRMB150802A	1.5	1.45	0.2	2.3	8	50	4
NMD-TRMB151002A	1.5	1.45	0.2	2.3	10	50	4
NMD-TRMB151202A	1.5	1.45	0.2	2.3	12	50	4
NMD-TRMB151602A	1.5	1.45	0.2	2.3	16	50	4
NMD-TRMB151802A	1.5	1.45	0.2	2	18	50	4
NMD-TRMB152002A	1.5	1.45	0.2	2.3	20	50	4
NMD-TRMB200802A	2.0	1.45	0.2	3	8	50	4
NMD-TRMB201002A	2.0	1.95	0.2	3	10	50	4
NMD-TRMB201202A	2.0	1.95	0.2	3	12	50	4
NMD-TRMB201602A	2.0	1.95	0.2	3	16	50	4
NMD-TRMB201802A	2.0	1.95	0.2	3	18	50	4
NMD-TRMB202002A	2.0	1.95	0.2	3	20	50	4
NMD-TRMB301002A	3.0	2.85	0.2	4.5	10	50	4
NMD-TRMB301202A	3.0	2.85	0.2	4.5	12	50	4
NMD-TRMB301602A	3.0	2.85	0.2	4.5	16	50	4
NMD-TRMB302002	3.0	2.85	0.2	4.5	20	50	6
NMD-TRMB302602	3.0	2.85	0.2	4.5	26	75	6
NMD-TRMB303002	3.0	2.85	0.2	4.5	30	75	6

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

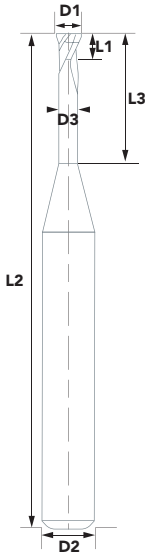
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HT250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FD4C	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



## NMD-TRMB

Supergrain 4 Flute Micro Diameter Long Neck End Mill – Corner Radius

CA	0.2 μm	30°		HRC <70	SHANK h6	D1-D4   0-0.012μm
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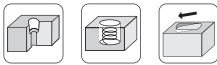
PART NO.	D1 DIA.	D3 NECK DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-TRMB301005A	3.0	2.85	0.5	4.5	10	50	4
NMD-TRMB301205A	3.0	2.85	0.5	4.5	12	50	4
NMD-TRMB301605A	3.0	2.85	0.5	4.5	16	50	4
NMD-TRMB302005	3.0	2.85	0.5	4.5	20	50	6
NMD-TRMB302605	3.0	2.85	0.5	4.5	26	75	6
NMD-TRMB303005	3.0	2.85	0.5	4.5	30	75	6
NMD-TRMB401602	4.0	3.85	0.2	6	16	75	6
NMD-TRMB402002	4.0	3.85	0.2	6	20	75	6
NMD-TRMB402602	4.0	3.85	0.2	6	26	75	6
NMD-TRMB403002	4.0	3.85	0.2	6	30	75	6
NMD-TRMB401605	4.0	3.85	0.2	6	16	75	6
NMD-TRMB402005	4.0	3.85	0.5	6	20	75	6
NMD-TRMB402605	4.0	3.85	0.5	6	26	75	6
NMD-TRMB403005	4.0	3.85	0.5	6	30	75	6

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

### MACHINING OPERATION

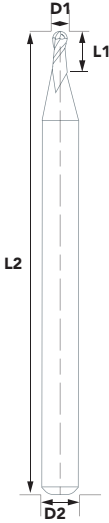


### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

MICRO DIAMETER & LONG NECK SERIES



## NMD-DBS

Ultrafine 2 Flute Micro Diameter Ball Nose

TiAlN

0.4  $\mu\text{m}$

30°

HRC <55

SHANK h6

D0.2-D0.5 0-0.008 $\mu\text{m}$   
D0.6-D0.9 0-0.01 $\mu\text{m}$

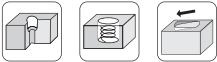
PART NO.	D1 RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NMD-DBS0022	R0.1	0.4	50	4
NMD-DBS0032	R0.15	0.6	50	4
NMD-DBS0042	R0.2	0.8	50	4
NMD-DBS0052	R0.25	1.0	50	4
NMD-DBS0062	R0.3	1.2	50	4
NMD-DBS0072	R0.35	1.4	50	4
NMD-DBS0082	R0.4	1.6	50	4
NMD-DBS0092	R0.45	1.8	50	4

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

### MACHINING OPERATION

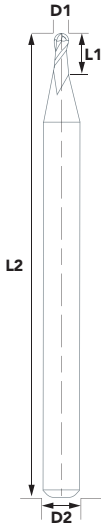


### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/H1250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NA80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C1.1000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>





## NMD-HBS

Ultrafine 2 Flute Micro Diameter Ball Nose

AITISIN	0.4 $\mu\text{m}$	30°		HRC <65	SHANK h6	$\frac{D}{d}$	D0.2-D0.5   0-0.008 $\mu\text{m}$ D0.6-D0.9   0-0.01 $\mu\text{m}$
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PART NO.	D1 RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NMD-HBS0022	R0.1	0.4	50	4
NMD-HBS0032	R0.15	0.6	50	4
NMD-HBS0042	R0.2	0.8	50	4
NMD-HBS0052	R0.25	1.0	50	4
NMD-HBS0062	R0.3	1.2	50	4
NMD-HBS0072	R0.35	1.4	50	4
NMD-HBS0082	R0.4	1.6	50	4
NMD-HBS0092	R0.45	1.8	50	4

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

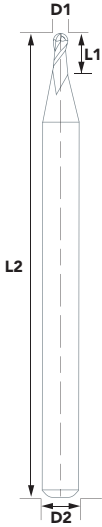
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HT250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>			<input checked="" type="radio"/>



## NMD-TBS

Supergrain 2 Flute Micro Diameter Ball Nose – Standard

CA	0.2 $\mu\text{m}$	30°	HRC <70	SHANK h6	D	D0.1-D0.5 D0.6-D0.9	0-0.008 $\mu\text{m}$ 0-0.01 $\mu\text{m}$
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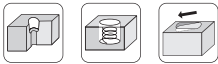
PART NO.	D1 RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NMD-TBS0012	R0.05	0.2	50	4
NMD-TBS0022	R0.1	0.4	50	4
NMD-TBS0032	R0.15	0.6	50	4
NMD-TBS0042	R0.2	0.8	50	4
NMD-TBS0052	R0.25	1.0	50	4
NMD-TBS0062	R0.3	1.2	50	4
NMD-TBS0072	R0.35	1.4	50	4
NMD-TBS0082	R0.4	1.6	50	4
NMD-TBS0092	R0.45	1.8	50	4

### AT A GLANCE

<input checked="" type="checkbox"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="checkbox"/>		DRY MACHINING
<input checked="" type="checkbox"/>		MQL (MIST)
<input checked="" type="checkbox"/>		EMULSION MACHINING
<input checked="" type="checkbox"/>		OIL MACHINING

EXCELLENT  GOOD

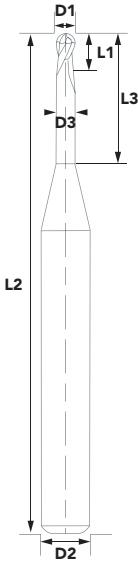
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>



## NMD-DBM

Ultra Grain 2 Flute Micro Diameter Long Neck Ball Nose

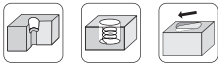
TiAIN	0.4 $\mu$ m	30°		HRC <55	SHANK h6	<table border="1"> <tr> <td>D0.2-D0.5</td> <td>0-0.008<math>\mu</math>m</td> </tr> <tr> <td>D0.6-D0.8</td> <td>0-0.010<math>\mu</math>m</td> </tr> <tr> <td>D1-D4</td> <td>0-0.012<math>\mu</math>m</td> </tr> </table>	D0.2-D0.5	0-0.008 $\mu$ m	D0.6-D0.8	0-0.010 $\mu$ m	D1-D4	0-0.012 $\mu$ m
D0.2-D0.5	0-0.008 $\mu$ m											
D0.6-D0.8	0-0.010 $\mu$ m											
D1-D4	0-0.012 $\mu$ m											

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

### MACHINING OPERATION

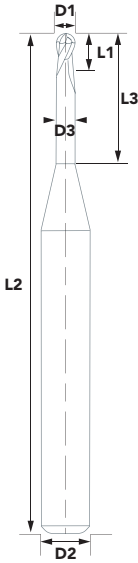


### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

PART NO.	D1 RADIUS	D3 NECK DIA.	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-DBM0201A	R0.1	0.18	0.2	1	50	4
NMD-DBM0202A	R0.1	0.18	0.2	2	50	4
NMD-DBM0301A	R0.15	0.27	0.3	1	50	4
NMD-DBM0302A	R0.15	0.27	0.3	2	50	4
NMD-DBM0402A	R0.2	0.37	0.4	2	50	4
NMD-DBM0404A	R0.2	0.37	0.4	4	50	4
NMD-DBM0502A	R0.25	0.46	0.5	2	50	4
NMD-DBM0504A	R0.25	0.46	0.5	4	50	4
NMD-DBM0506A	R0.25	0.46	0.5	6	50	4
NMD-DBM0602A	R0.3	0.55	0.6	2	50	4
NMD-DBM0604A	R0.3	0.55	0.6	4	50	4
NMD-DBM0606A	R0.3	0.55	0.6	6	50	4
NMD-DBM0608A	R0.3	0.55	0.6	8	50	4
NMD-DBM0804A	R0.4	0.75	0.8	4	50	4
NMD-DBM0806A	R0.4	0.75	0.8	6	50	4
NMD-DBM0808A	R0.4	0.75	0.8	8	50	4
NMD-DBM0810A	R0.4	0.75	0.8	10	50	4
NMD-DBM1004A	R0.5	0.95	1	4	50	4
NMD-DBM1006A	R0.5	0.95	1	6	50	4
NMD-DBM1008A	R0.5	0.95	1	8	50	4
NMD-DBM1010A	R0.5	0.95	1	10	50	4
NMD-DBM1012A	R0.5	0.95	1	12	50	4
NMD-DBM1016A	R0.5	0.95	1	16	50	4
NMD-DBM1506A	R0.75	1.45	1.5	6	50	4
NMD-DBM1508A	R0.75	1.45	1.5	8	50	4
NMD-DBM1510A	R0.75	1.45	1.5	10	50	4
NMD-DBM1512A	R0.75	1.45	1.5	12	50	4
NMD-DBM1516A	R0.75	1.45	1.5	16	50	4
NMD-DBM1518A	R0.75	1.45	1.5	18	50	4
NMD-DBM1520A	R0.75	1.45	1.5	20	50	4

(~22HRC) S50C/HT250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>			<input checked="" type="radio"/>



## NMD-DBM

Ultrafine 2 Flute Micro Diameter Long Neck Ball Nose

TiAlN	0.4 $\mu\text{m}$	30°		HRC <55	SHANK h6	<table border="1"> <tr> <td>D0.2-D0.5</td> <td>0-0.008<math>\mu\text{m}</math></td> </tr> <tr> <td>D0.6-D0.8</td> <td>0-0.010<math>\mu\text{m}</math></td> </tr> <tr> <td>D1-D4</td> <td>0-0.012<math>\mu\text{m}</math></td> </tr> </table>	D0.2-D0.5	0-0.008 $\mu\text{m}$	D0.6-D0.8	0-0.010 $\mu\text{m}$	D1-D4	0-0.012 $\mu\text{m}$
D0.2-D0.5	0-0.008 $\mu\text{m}$											
D0.6-D0.8	0-0.010 $\mu\text{m}$											
D1-D4	0-0.012 $\mu\text{m}$											

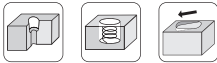
PART NO.	D1 DIA.	D3 NECK DIA.	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-DBM2008A	R1.0	1.95	2	8	50	4
NMD-DBM2010A	R1.0	1.95	2	10	50	4
NMD-DBM2012A	R1.0	1.95	2	12	50	4
NMD-DBM2016A	R1.0	1.95	2	16	50	4
NMD-DBM2018A	R1.0	1.95	2	18	50	4
NMD-DBM2020A	R1.0	1.95	2	20	50	4
NMD-DBM3010A	R1.5	2.85	3	10	50	4
NMD-DBM3012A	R1.5	2.85	3	12	50	4
NMD-DBM3016A	R1.5	2.85	3	16	50	4
NMD-DBM3020	R1.5	2.85	3	20	75	6
NMD-DBM3026	R1.5	2.85	3	26	75	6
NMD-DBM3030	R1.5	2.85	3	30	75	6
NMD-DBM4016	R2.0	3.85	4	16	75	6
NMD-DBM4020	R2.0	3.85	4	20	75	6
NMD-DBM4026	R2.0	3.85	4	26	75	6
NMD-DBM4030	R2.0	3.85	4	30	75	6

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT    GOOD

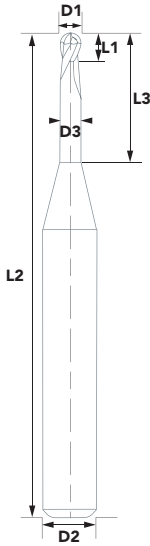
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/H1250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FD4C	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



## NMD-HBM

Ultrafines 2 Flute Micro Diameter Long Neck Ball Nose – Standard

AITISIN

0.4  $\mu\text{m}$

30°

HRC <65

SHANK h6

D

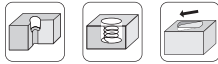
D1~D4 0~0.012 $\mu\text{m}$

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

### MACHINING OPERATION

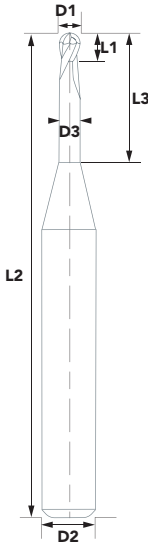


### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

PART NO.	D1 RADIUS	D3 NECK DIA.	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-HBM0201A	R0.1	0.18	0.2	1	50	4
NMD-HBM0202A	R0.1	0.18	0.2	2	50	4
NMD-HBM0301A	R0.15	0.27	0.3	1	50	4
NMD-HBM0302A	R0.15	0.27	0.3	2	50	4
NMD-HBM0402A	R0.2	0.37	0.4	2	50	4
NMD-HBM0404A	R0.2	0.37	0.4	4	50	4
NMD-HBM0502A	R0.25	0.46	0.5	2	50	4
NMD-HBM0504A	R0.25	0.46	0.5	4	50	4
NMD-HBM0506A	R0.25	0.46	0.5	6	50	4
NMD-HBM0602A	R0.3	0.55	0.6	2	50	4
NMD-HBM0604A	R0.3	0.55	0.6	4	50	4
NMD-HBM0606A	R0.3	0.55	0.6	6	50	4
NMD-HBM0608A	R0.3	0.55	0.6	8	50	4
NMD-HBM0804A	R0.4	0.75	0.8	4	50	4
NMD-HBM0806A	R0.4	0.75	0.8	6	50	4
NMD-HBM0808A	R0.4	0.75	0.8	8	50	4
NMD-HBM0810A	R0.4	0.75	0.8	10	50	4
NMD-HBM1004A	R0.5	0.95	1	4	50	4
NMD-HBM1006A	R0.5	0.95	1	6	50	4
NMD-HBM1008A	R0.5	0.95	1	8	50	4
NMD-HBM1010A	R0.5	0.95	1	10	50	4
NMD-HBM1012A	R0.5	0.95	1	12	50	4
NMD-HBM1016A	R0.5	0.95	1	16	50	4
NMD-HBM1506A	R0.75	1.45	1.5	6	50	4
NMD-HBM1508A	R0.75	1.45	1.5	8	50	4
NMD-HBM1510A	R0.75	1.45	1.5	10	50	4
NMD-HBM1512A	R0.75	1.45	1.5	12	50	4
NMD-HBM1516A	R0.75	1.45	1.5	16	50	4
NMD-HBM1518A	R0.75	1.45	1.5	18	50	4
NMD-HBM1520A	R0.75	1.45	1.5	20	50	4

(~22HRC) S50C/HT250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) TF-64-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



## NMD-HBM

Ultra Grain 2 Flute Micro Diameter Long Neck Ball Nose

AITiSiN	0.4 $\mu\text{m}$	30°		HRC <65	SHANK h6		D1~D4 0~0.012 $\mu\text{m}$
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PART NO.	D1 RADIUS	D3 NECK DIA.	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-HBM2008A	R1.0	1.95	2	8	50	4
NMD-HBM2010A	R1.0	1.95	2	10	50	4
NMD-HBM2012A	R1.0	1.95	2	12	50	4
NMD-HBM2016A	R1.0	1.95	2	16	50	4
NMD-HBM2018A	R1.0	1.95	2	18	50	4
NMD-HBM2020A	R1.0	1.95	2	20	50	4
NMD-HBM3010A	R1.5	2.85	3	10	50	4
NMD-HBM3012A	R1.5	2.85	3	12	50	4
NMD-HBM3016A	R1.5	2.85	3	16	50	4
NMD-HBM3020	R1.5	2.85	3	20	75	6
NMD-HBM3026	R1.5	2.85	3	26	75	6
NMD-HBM3030	R1.5	2.85	3	30	75	6
NMD-HBM4016	R2.0	3.85	4	16	75	6
NMD-HBM4020	R2.0	3.85	4	20	75	6
NMD-HBM4026	R2.0	3.85	4	26	75	6
NMD-HBM4030	R2.0	3.85	4	30	75	6

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
<input type="radio"/>		SEMI-FINISHING
<input type="radio"/>		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

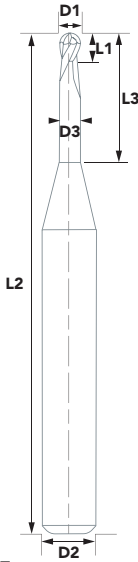
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25~35HRC) P20/H13/D2	(35~45HRC) NAK80/718H/FDAC	(45~55HRC) SKD61/1.2343ESR	(55~65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



## NMD-TBM

Supergrain 2 Flute Micro Diameter Long Neck Ball Nose

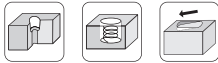
CA	0.2 $\mu\text{m}$	30°		HRC <70	SHANK h6	<table border="1"> <tr> <td>D0.2-D0.5</td> <td>0-0.008<math>\mu\text{m}</math></td> </tr> <tr> <td>D0.6-D0.8</td> <td>0-0.010<math>\mu\text{m}</math></td> </tr> <tr> <td>D1-D4</td> <td>0-0.012<math>\mu\text{m}</math></td> </tr> </table>	D0.2-D0.5	0-0.008 $\mu\text{m}$	D0.6-D0.8	0-0.010 $\mu\text{m}$	D1-D4	0-0.012 $\mu\text{m}$
D0.2-D0.5	0-0.008 $\mu\text{m}$											
D0.6-D0.8	0-0.010 $\mu\text{m}$											
D1-D4	0-0.012 $\mu\text{m}$											

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

### MACHINING OPERATION

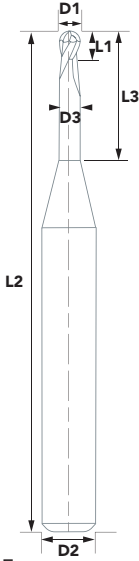


### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

PAT NO.	D1 RADIUS	D3 NECK DIA.	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-TBM0201A	R0.1	0.18	0.2	1	50	4
NMD-TBM0202A	R0.1	0.18	0.2	2	50	4
NMD-TBM0301A	R0.15	0.27	0.3	1	50	4
NMD-TBM0302A	R0.15	0.27	0.3	2	50	4
NMD-TBM0402A	R0.2	0.37	0.4	2	50	4
NMD-TBM0404A	R0.2	0.37	0.4	4	50	4
NMD-TBM0502A	R0.25	0.46	0.5	2	50	4
NMD-TBM0504A	R0.25	0.46	0.5	4	50	4
NMD-TBM0506A	R0.25	0.46	0.5	6	50	4
NMD-TBM0602A	R0.3	0.55	0.6	2	50	4
NMD-TBM0604A	R0.3	0.55	0.6	4	50	4
NMD-TBM0606A	R0.3	0.55	0.6	6	50	4
NMD-TBM0608A	R0.3	0.55	0.6	8	50	4
NMD-TBM0804A	R0.4	0.75	0.8	4	50	4
NMD-TBM0806A	R0.4	0.75	0.8	6	50	4
NMD-TBM0808A	R0.4	0.75	0.8	8	50	4
NMD-TBM0810A	R0.4	0.75	0.8	10	50	4
NMD-TBM1004A	R0.5	0.95	1	4	50	4
NMD-TBM1006A	R0.5	0.95	1	6	50	4
NMD-TBM1008A	R0.5	0.95	1	8	50	4
NMD-TBM1010A	R0.5	0.95	1	10	50	4
NMD-TBM1012A	R0.5	0.95	1	12	50	4
NMD-TBM1016A	R0.5	0.95	1	16	50	4
NMD-TBM1506A	R0.75	1.45	1.5	6	50	4
NMD-TBM1508A	R0.75	1.45	1.5	8	50	4
NMD-TBM1510A	R0.75	1.45	1.5	10	50	4
NMD-TBM1512A	R0.75	1.45	1.5	12	50	4
NMD-TBM1516A	R0.75	1.45	1.5	16	50	4
NMD-TBM1518A	R0.75	1.45	1.5	18	50	4
NMD-TBM1520A	R0.75	1.45	1.5	20	50	4

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>			<input checked="" type="radio"/>



## NMD-TBM

Supergrain 2 Flute Micro Diameter Long Neck Ball Nose

CA	0.2 $\mu\text{m}$	30°	HRC <70	SHANK h6	D D0.2-D0.5   0-0.008 $\mu\text{m}$ D0.6-D0.8   0-0.010 $\mu\text{m}$ D1-D4   0-0.012 $\mu\text{m}$

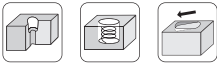
PAT NO.	D1 RADIUS	D3 NECK DIA.	L1 FLUTE LENGTH	L3 EFFECT LENGTH	L2 OAL	D2 SHANK DIA.
NMD-TBM2008A	R1.0	1.95	2	8	50	4
NMD-TBM2010A	R1.0	1.95	2	10	50	4
NMD-TBM2012A	R1.0	1.95	2	12	50	4
NMD-TBM2016A	R1.0	1.95	2	16	50	4
NMD-TBM2018A	R1.0	1.95	2	18	50	4
NMD-TBM2020A	R1.0	1.95	2	20	50	4
NMD-TBM3010A	R1.5	2.85	3	10	50	4
NMD-TBM3012A	R1.5	2.85	3	12	50	4
NMD-TBM3016A	R1.5	2.85	3	16	50	4
NMD-TBM3020	R1.5	2.85	3	20	75	6
NMD-TBM3026	R1.5	2.85	3	26	75	6
NMD-TBM3030	R1.5	2.85	3	30	75	6
NMD-TBM4016	R2.0	3.85	4	16	75	6
NMD-TBM4020	R2.0	3.85	4	20	75	6
NMD-TBM4026	R2.0	3.85	4	26	75	6
NMD-TBM4030	R2.0	3.85	4	30	75	6

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
		SEMI-FINISHING
		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

### MACHINING OPERATION



### WORKPIECE MATERIAL

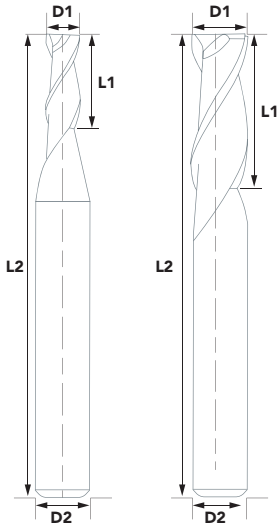
<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/H1250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>





**NHS**  
**HIGH SPEED**  
**SERIES**



## NHS-E

Ultra Grain 2 Flute End Mill – Standard

AITISIN	0.4 μm	35°	HRC <65	SHANK h6	D	D1-D3	0~0.012μm
						D3.5-D6	0~0.015μm
						D8-D20	0~0.018μm

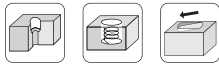
PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHS-E0102A	1.0	3	50	4
NHS-E0102	1.0	3	50	6
NHS-E0152A	1.5	4	50	4
NHS-E0152	1.5	4	50	6
NHS-E0202A	2.0	6	50	4
NHS-E0202	2.0	6	50	6
NHS-E0252A	2.5	6	50	4
NHS-E0252	2.5	6	50	6
NHS-E0302Z	3.0	8	50	3
NHS-E0302A	3.0	8	50	4
NHS-E0302	3.0	8	50	6
NHS-E0352A	3.5	10	50	4
NHS-E0352	3.5	10	50	6
NHS-E0402A	4.0	10	50	4
NHS-E0402	4.0	10	50	6
NHS-E0502Z	5.0	13	50	5
NHS-E0502	5.0	13	50	6
NHS-E0602	6.0	15	60	6
NHS-E0802	8.0	20	60	8
NHS-E1002	10.0	25	75	10
NHS-E1202	12.0	30	75	12
NHS-E1602	16.0	45	100	16
NHS-E2002	20.0	45	100	20

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
<input checked="" type="radio"/>		SEMI-FINISHING
<input type="radio"/>		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

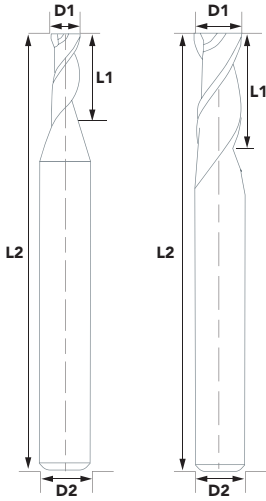
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/H1250/Q235	(25~35HRC) P20/H13/D2	(35~45HRC) NAK80/718H/FDAC	(45~55HRC) SKD61/1.2343ESR	(55~65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>



## NHS-EH|EI|EJ

Ultrafine 2 Flute End Mill (75mm-150mm) – Long

AI TiSiN	0.4 $\mu\text{m}$	$35^\circ$		HRC <65	SHANK h6	$\uparrow$ D	D3-D6 D8-D20	0~-0.015 $\mu\text{m}$ 0~-0.018 $\mu\text{m}$
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PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHS-EH0302A	3.0	8	75	4
NHS-EH0302	3.0	8	75	6
NHS-EH0352A	3.5	10	75	4
NHS-EH0352	3.5	10	75	6
NHS-EH0402A	4.0	10	75	4
NHS-EH0402	4.0	10	75	6
NHS-EH0502Z	5.0	13	75	5
NHS-EH0502	5.0	13	75	6
NHS-EH0602	6.0	15	75	6
NHS-EH0802	8.0	20	75	8
NHS-EI0402	4.0	10	100	6
NHS-EI0502Z	5.0	13	100	5
NHS-EI0502	5.0	13	100	6
NHS-EI0602	6.0	15	100	6
NHS-EI0802	8.0	20	100	8
NHS-EI1002	10.0	25	100	10
NHS-EI1202	12.0	30	100	12
NHS-EJ0602	6.0	15	150	6
NHS-EJ0802	8.0	20	150	8
NHS-EJ1002	10.0	30	150	10
NHS-EJ1202	12.0	40	150	12
NHS-EJ1602	16.0	45	150	16
NHS-EJ2002	20.0	50	150	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

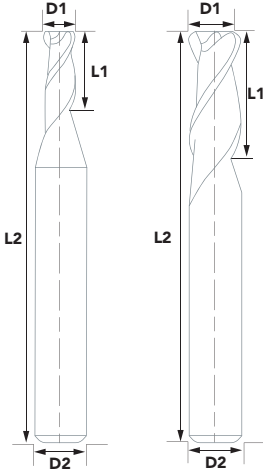
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/H1250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>



## NHS-RA

Ultrafines 2 Flute End Mill – Standard

AITISIN	0.4 $\mu\text{m}$	45°	HRC <65	SHANK h6	D	D1-D3 0~0.012 $\mu\text{m}$ D4-D5 0~0.015 $\mu\text{m}$
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PART NO.	D1 DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHS-RA0102A	1.0	0.2	3	50	4
NHS-RA0102	1.0	0.2	3	50	6
NHS-RA0152A	1.5	0.2	4	50	4
NHS-RA0152	1.5	0.2	4	50	6
NHS-RA0202A	2.0	0.2	6	50	4
NHS-RA0202	2.0	0.2	6	50	6
NHS-RA0205A	2.0	0.5	6	50	4
NHS-RA0205	2.0	0.5	6	50	6
NHS-RA0302Z	3.0	0.2	8	50	3
NHS-RA0302A	3.0	0.2	8	50	4
NHS-RA0302	3.0	0.2	8	50	6
NHS-RA0305Z	3.0	0.5	8	50	3
NHS-RA0305A	3.0	0.5	8	50	4
NHS-RA0305	3.0	0.5	8	50	6
NHS-RA0402A	4.0	0.2	10	50	4
NHS-RA0402	4.0	0.2	10	50	6
NHS-RA0405A	4.0	0.5	10	50	4
NHS-RA0405	4.0	0.5	10	50	6
NHS-RA0410A	4.0	1.0	10	50	4
NHS-RA0410	4.0	1.0	10	50	6
NHS-RA0505Z	5.0	0.5	13	50	5
NHS-RA0505	5.0	0.5	13	50	6
NHS-RA0510Z	5.0	1.0	13	50	5
NHS-RA0510	5.0	1.0	13	50	6
NHS-RA0602	6.0	0.2	16	60	6
NHS-RA0605	6.0	0.5	16	60	6
NHS-RA0610	6.0	1.0	16	60	6
NHS-RA0802	8.0	0.2	20	60	8
NHS-RA0803	8.0	0.3	20	60	8

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

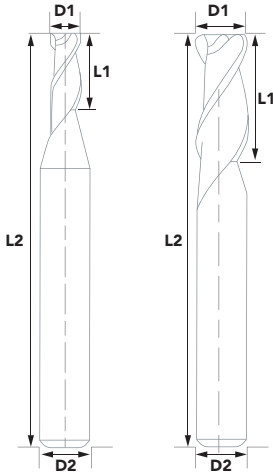
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/H1250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>



## NHS-RA

Ultrafine 2 Flute End Mill – Standard

AITISIN	0.4 $\mu\text{m}$	45°		HRC <65	SHANK h6	$\uparrow$ D	D6 D8-D20	0-0.015 $\mu\text{m}$ 0-0.018 $\mu\text{m}$
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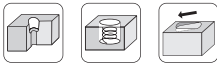
PART NO.	D1 DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHS-RA0805	8.0	0.5	20	60	8
NHS-RA0810	8.0	1.0	20	60	8
NHS-RA1002	10.0	0.2	25	75	10
NHS-RA1003	10.0	0.3	25	75	10
NHS-RA1005	10.0	0.5	25	75	10
NHS-RA1010	10.0	1.0	25	75	10
NHS-RA1020	10.0	2.0	25	75	10
NHS-RA1030	10.0	3.0	25	75	10
NHS-RA1205	12.0	0.5	30	75	12
NHS-RA1210	12.0	1.0	30	75	12
NHS-RA1220	12.0	2.0	30	75	12
NHS-RA1230	12.0	3.0	30	75	12
NHS-RA1610	16.0	1.0	45	100	16
NHS-RA1620	16.0	2.0	45	100	16
NHS-RA1630	16.0	3.0	45	100	16
NHS-RA2010	20.0	1.0	50	100	20
NHS-RA2020	20.0	2.0	50	100	20
NHS-RA2030	20.0	3.0	50	100	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

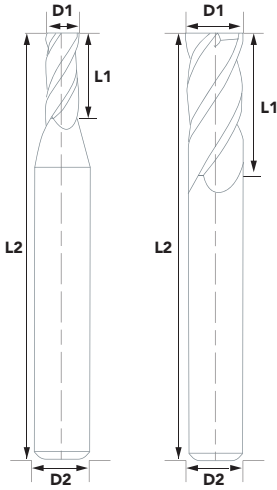
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000



## NHS-E

Ultrafin 4 Flute End Mill – Standard

<b>AITISIN</b>	<b>0.4 μM</b>	<b>45°</b>	<b>HRC &lt;65</b>	<b>SHANK h6</b>	<b>D</b>	<b>D1-D3 0-0.012μm</b> <b>D3.5-D6 0-0.015μm</b> <b>D8-D20 0-0.018μm</b>
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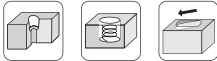
PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHS-E0104A	1.0	3	50	4
NHS-E0104	1.0	3	50	6
NHS-E0154A	1.5	4	50	4
NHS-E0154	1.5	4	50	6
NHS-E0204A	2.0	6	50	4
NHS-E0204	2.0	6	50	6
NHS-E0254A	2.5	6	50	4
NHS-E0254	2.5	6	50	6
NHS-E0304Z	3.0	8	50	3
NHS-E0304A	3.0	8	50	4
NHS-E0304	3.0	8	50	6
NHS-E0354A	3.5	10	50	4
NHS-E0354	3.5	10	50	6
NHS-E0404A	4.0	10	50	4
NHS-E0404	4.0	10	50	6
NHS-E0504Z	5.0	13	50	5
NHS-E0504	5.0	13	50	6
NHS-E0604	6.0	15	60	6
NHS-E0804	8.0	20	60	8
NHS-E1004	10.0	25	75	10
NHS-E1204	12.0	30	75	12
NHS-E1604	16.0	45	100	16
NHS-E2004	20.0	45	100	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

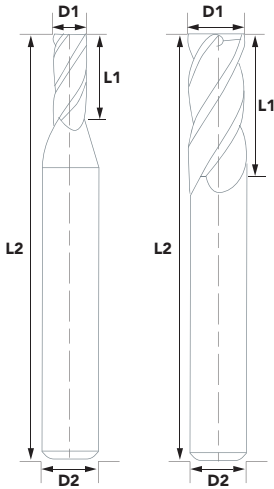
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI3/D2	(35-45HRC) NAK80/718H/FD4C	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>



## NHS-EH|EI|EJ

Ultrafine 4 Flute End Mill (75mm-150mm) – Long

AITISIN	0.4 $\mu\text{m}$	45°	HRC <65	SHANK h6	D D3-D6 D8-D20	0~-0.015 $\mu\text{m}$ 0~-0.018 $\mu\text{m}$
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PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHS-EH0304A	3.0	8	75	4
NHS-EH0304	3.0	8	75	6
NHS-EH0354A	3.5	10	75	4
NHS-EH0354	3.5	10	75	6
NHS-EH0404A	4.0	10	75	4
NHS-EH0404	4.0	10	75	6
NHS-EH0504Z	5.0	13	75	5
NHS-EH0504	5.0	13	75	6
NHS-EH0604	6.0	15	75	6
NHS-EH0804	8.0	20	75	8
NHS-EI0404A	4.0	10	100	4
NHS-EI0404	4.0	10	100	6
NHS-EI0504Z	5.0	13	100	5
NHS-EI0504	5.0	13	100	6
NHS-EI0604	6.0	15	100	6
NHS-EI0804	8.0	20	100	8
NHS-EI1004	10.0	30	100	10
NHS-EI1204	12.0	30	100	12
NHS-EJ0604	6.0	15	150	6
NHS-EJ0804	8.0	20	150	8
NHS-EJ1004	10.0	30	150	10
NHS-EJ1204	12.0	40	150	12
NHS-EJ1604	16.0	45	150	16
NHS-EJ2004	20.0	50	150	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

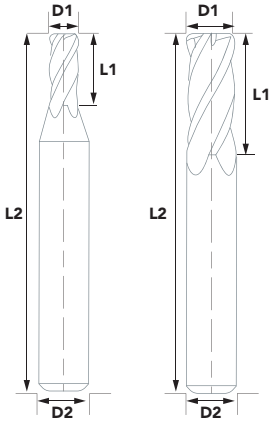
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI3/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD51/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>



## NHS-RB

Ultra Grain 4 Flute End Mill – Standard

<b>AITISIN</b>	<b>0.4 μM</b>	<b>45°</b>		<b>HRC &lt;65</b>	<b>SHANK h6</b>	<b>D</b> <b>D1-D3</b> 0--0.012μm <b>3.5-D6</b> 0--0.015μm <b>D8-D20</b> 0--0.018μm
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PART NO.	D1 DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHS-RB0102A	1.0	0.2	3	50	4
NHS-RB0102	1.0	0.2	3	50	6
NHS-RB0152A	1.5	0.2	4	50	4
NHS-RB0152	1.5	0.2	4	50	6
NHS-RB0202A	2.0	0.2	6	50	4
NHS-RB0202	2.0	0.2	6	50	6
NHS-RB0205A	2.0	0.5	6	50	4
NHS-RB0205	2.0	0.5	6	50	6
NHS-RB0302Z	3.0	0.2	8	50	3
NHS-RB0302A	3.0	0.2	8	50	4
NHS-RB0302	3.0	0.2	8	50	6
NHS-RB0305Z	3.0	0.5	8	50	3
NHS-RB0305A	3.0	0.5	8	50	4
NHS-RB0305	3.0	0.5	8	50	6
NHS-RB0402A	4.0	0.2	10	50	4
NHS-RB0402	4.0	0.2	10	50	6
NHS-RB0405A	4.0	0.5	10	50	4
NHS-RB0405	4.0	0.5	10	50	6
NHS-RB0410A	4.0	1.0	10	50	4
NHS-RB0410	4.0	1.0	10	50	6
NHS-RB0505Z	5.0	0.5	13	50	5
NHS-RB0505	5.0	0.5	13	50	6
NHS-RB0510Z	5.0	1.0	13	50	5
NHS-RB0510	5.0	1.0	13	50	6

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

### MACHINING OPERATION

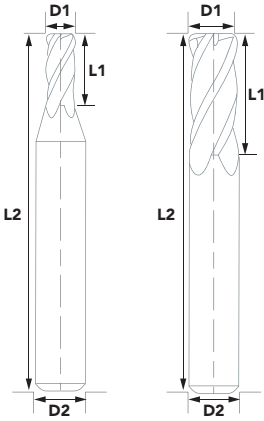


### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/H1250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>





## NHS-RB

Ultrafine 4 Flute End Mill – Standard

AITISIN	0.4 $\mu\text{m}$	45°		HRC <65	SHANK h6	$\uparrow$ D	D6 D8-D20	0--0.015 $\mu\text{m}$ 0--0.018 $\mu\text{m}$
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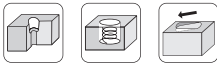
PART NO.	D1 DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHS-RB0602	6.0	0.2	16	60	6
NHS-RB0605	6.0	0.5	16	60	6
NHS-RB0610	6.0	1.0	16	60	6
NHS-RB0802	8.0	0.2	20	60	8
NHS-RB0803	8.0	0.3	20	60	8
NHS-RB0805	8.0	0.5	20	60	8
NHS-RB0810	8.0	1.0	20	60	8
NHS-RB1002	10.0	0.2	25	75	10
NHS-RB1003	10.0	0.3	25	75	10
NHS-RB1005	10.0	0.5	25	75	10
NHS-RB1010	10.0	1.0	25	75	10
NHS-RB1020	10.0	2.0	25	75	10
NHS-RB1030	10.0	3.0	25	75	10
NHS-RB1205	12.0	0.5	30	75	12
NHS-RB1210	12.0	1.0	30	75	12
NHS-RB1220	12.0	2.0	30	75	12
NHS-RB1230	12.0	3.0	30	75	12
NHS-RB1610	16.0	1.0	45	100	16
NHS-RB1620	16.0	2.0	45	100	16
NHS-RB1630	16.0	3.0	45	100	16
NHS-RB2010	20.0	1.0	50	100	20
NHS-RB2020	20.0	2.0	50	100	20
NHS-RB2030	20.0	3.0	50	100	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

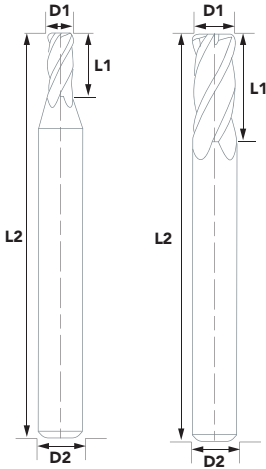
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
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(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000



## NHS-RBH/RBI

Ultrafines 4 Flute End Mill (75mm-100mm) – Long

AITISIN	0.4 $\mu\text{m}$	45°	HRC <65	SHANK h6	D	D4-D6 D8-D20	0--0.015 $\mu\text{m}$ 0--0.018 $\mu\text{m}$
---------	-------------------	-----	---------	----------	---	-----------------	--

PART NO.	D1 DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHS-RBH0402A	4.0	0.2	10	75	4
NHS-RBH0402	4.0	0.2	10	75	6
NHS-RBH0405A	4.0	0.5	10	75	4
NHS-RBH0405	4.0	0.5	10	75	6
NHS-RBH0505Z	5.0	0.5	13	75	5
NHS-RBH0505	5.0	0.5	13	75	6
NHS-RBH0510Z	5.0	1.0	13	75	5
NHS-RBH0510	5.0	1.0	13	75	6
NHS-RBH0602	6.0	0.2	16	75	6
NHS-RBH0603	6.0	0.3	16	75	6
NHS-RBH0605	6.0	0.5	16	75	6
NHS-RBH0610	6.0	1.0	16	75	6
NHS-RBH0802	6.0	0.2	20	75	8
NHS-RBH0803	8.0	0.3	20	75	8
NHS-RBH0806	8.0	0.5	20	75	8
NHS-RBH0810	8.0	1.0	20	75	8
NHS-RBI0602	6.0	0.2	16	100	6
NHS-RBI0605	6.0	0.5	16	100	6
NHS-RBI0610	6.0	1.0	16	100	6
NHS-RBI0802	5.0	0.2	20	100	8
NHS-RBI0803	8.0	0.3	20	100	8
NHS-RBI0805	8.0	0.5	20	100	8
NHS-RBI0810	8.0	1.0	20	100	8
NHS-RBI0820	8.0	0.2	20	100	8
NHS-RBI1002	10.0	0.2	25	100	10
NHS-RBI1003	10.0	0.3	25	100	10
NHS-RBI1005	10.0	0.5	25	100	10
NHS-RBI1010	10.0	1.0	25	100	10
NHS-RBI1020	10.0	2.0	25	100	10
NHS-RBI1030	10.0	3.0	25	100	10
NHS-RBI1205	12.0	0.5	30	100	12
NHS-RBI1210	12.0	1.0	30	100	12
NHS-RBI1220	12.0	2.0	30	100	12
NHS-RBI1230	12.0	3.0	30	100	12

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
<input checked="" type="radio"/>		SEMI-FINISHING
<input type="radio"/>		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

### MACHINING OPERATION



### WORKPIECE MATERIAL

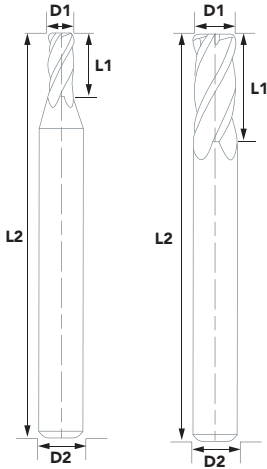
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(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>



## NHS-RBJ

Ultrafine 4 Flute End Mill (150mm) – Long



ATISIN	0.4 $\mu\text{m}$	45°		HRC <65	SHANK h6	$\uparrow$ D	D6 D8-D20	0-0.015 $\mu\text{m}$ 0-0.018 $\mu\text{m}$
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PART NO.	D1 DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHS-RBJ0602	6.0	0.2	16	150	6
NHS-RBJ0603	6.0	0.3	16	150	6
NHS-RBJ0605	6.0	0.5	16	150	6
NHS-RBJ0610	6.0	1.0	16	150	6
NHS-RBJ0802	8.0	0.2	20	150	8
NHS-RBJ0803	8.0	0.3	20	150	8
NHS-RBJ0805	8.0	0.5	20	150	8
NHS-RBJ0810	8.0	1.0	20	150	8
NHS-RBJ1002	10.0	0.2	25	150	10
NHS-RBJ1003	10.0	0.3	25	150	10
NHS-RBJ1005	10.0	0.5	25	150	10
NHS-RBJ1010	10.0	1.0	25	150	10
NHS-RBJ1020	10.0	2.0	25	150	10
NHS-RBJ1030	10.0	3.0	25	150	10
NHS-RBJ1205	12.0	0.5	30	150	12
NHS-RBJ1210	12.0	1.0	30	150	12
NHS-RBJ1220	12.0	2.0	30	150	12
NHS-RBJ1230	12.0	3.0	30	150	12
NHS-RBJ1610	16.0	1.0	45	150	16
NHS-RBJ1620	16.0	2.0	45	150	16
NHS-RBJ1630	16.0	3.0	45	150	16
NHS-RBJ2010	20.0	1.0	50	150	20
NHS-RBJ2020	20.0	2.0	50	150	20
NHS-RBJ2030	20.0	3.0	50	150	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

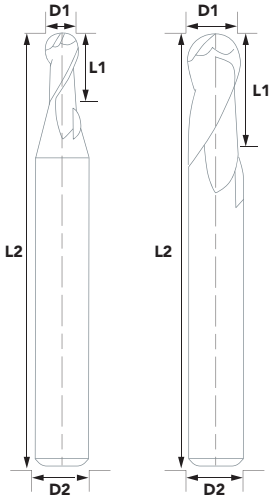
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
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(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI3/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD51/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000



## NHS-B

Ultrafines 2 Flute Ball Nose – Standard

<b>AITISIN</b>	<b>0.4 μm</b>	<b>30°</b>	<b>HRC &lt;65</b>	<b>SHANK h6</b>	<b>D1-D3</b> 0-0.012μm <b>D3.5-D6</b> 0-0.015μm <b>D8-D20</b> 0-0.018μm
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PART NO.	D1 RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHS-B0102A	R0.5	2	50	4
NHS-B0102	R0.5	2	50	6
NHS-B0152A	R0.75	3	50	4
NHS-B0152	R0.75	3	50	6
NHS-B0202A	R1	4	50	4
NHS-B0202	R1	4	50	6
NHS-B0252A	R1.25	5	50	4
NHS-B0252	R1.25	5	50	6
NHS-B0302Z	R1.5	6	50	3
NHS-B0302A	R1.5	6	50	4
NHS-B0302	R1.5	6	50	6
NHS-B0352A	R1.75	8	50	4
NHS-B0352	R1.75	8	50	6
NHS-B0402A	R2	8	50	4
NHS-B0402	R2	8	50	6
NHS-B0502Z	R2.5	10	50	5
NHS-B0502	R2.5	10	50	6
NHS-B0602	R3	12	60	6
NHS-B0802	R4	16	60	8
NHS-B1002	R5	20	75	10
NHS-B1202	R6	24	75	12
NHS-B1602	R8	32	100	16
NHS-B2002	R10	40	100	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

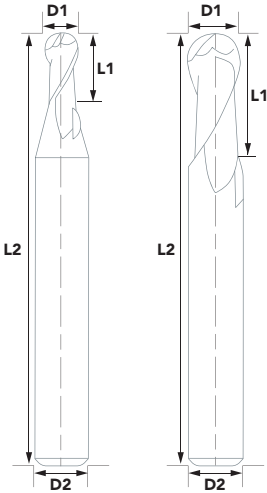
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI3/D2	(35-45HRC) NAK80/718H/FD4C	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>



## NHS-BH|B|BJ

Ultrafine 2 Flute Ball Nose (75mm-150mm) – Long



D2-D3	0-0.012μm
D3.5-D6	0-0.015μm
D8-D20	0-0.018μm

PART NO.	D1 RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHS-BH0202A	R1	4	75	4
NHS-BH0202	R1	4	75	6
NHS-BH0252A	R1.25	5	75	4
NHS-BH0252	R1.25	5	75	6
NHS-BH0302A	R1.5	6	75	4
NHS-BH0302	R1.5	6	75	6
NHS-BH0352A	R1.75	8	75	4
NHS-BH0352	R1.75	8	75	6
NHS-BH0402A	R2	8	75	4
NHS-BH0402	R2	8	75	6
NHS-BH0502Z	R2.5	10	75	5
NHS-BH0502	R2.5	10	75	6
NHS-BH0602	R3	12	75	6
NHS-BH0802	R4	16	75	8
NHS-BI0202	R1	4	100	6
NHS-BI0252	R1.25	5	100	6
NHS-BI0302	R1.5	6	100	6
NHS-BI0352	R1.75	8	100	6
NHS-BI0402	R2	8	100	6
NHS-BI0502Z	R2.5	10	100	5
NHS-BI0502	R2.5	10	100	6
NHS-BI0602	R3	12	100	6
NHS-BI0802	R4	16	100	8
NHS-BI1002	R5	20	100	10
NHS-BI1202	R6	24	100	12
NHS-BJ0602	R3	12	150	6
NHS-BJ0802	R4	16	150	8
NHS-BJ1002	R5	20	150	10
NHS-BJ1202	R6	24	150	12
NHS-BJ1602	R8	32	150	16
NHS-BJ2002	R10	40	150	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

### MACHINING OPERATION



### WORKPIECE MATERIAL

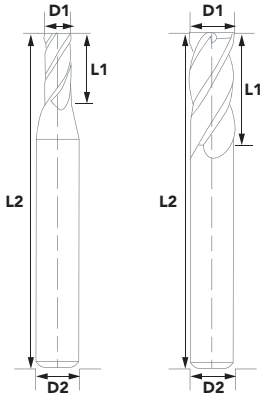
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<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C/11000
		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>



# **NHH** **HIGH HARDNESS** **SERIES**





## NHH-E

Supergrain 4 Flute End Mill – Standard

CA	0.2 $\mu\text{m}$	35°		HRC <70	SHANK h6	D D1-D3 0-0.012 $\mu\text{m}$ D3.5-D6 0-0.015 $\mu\text{m}$ D8-D20 0-0.018 $\mu\text{m}$
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PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHH-E0104A	1.0	3	50	4
NHH-E0104	1.0	3	50	6
NHH-E0154A	1.5	4	50	4
NHH-E0154	1.5	4	50	6
NHH-E0204A	2.0	6	50	4
NHH-E0204	2.0	6	50	6
NHH-E0254A	2.5	6	50	4
NHH-E0254	2.5	6	50	6
NHH-E0304Z	3.0	8	50	3
NHH-E0304A	3.0	8	50	4
NHH-E0304	3.0	8	50	6
NHH-E0354A	3.5	10	50	4
NHH-E0354	3.5	10	50	6
NHH-E0404A	4.0	10	50	4
NHH-E0404	4.0	10	60	6
NHH-E0504Z	5.0	13	50	6
NHH-E0504	5.0	13	50	6
NHH-E0604	6.0	15	60	6
NHH-E0804	8.0	20	60	8
NHH-E 1004	10.0	25	75	10
NHH-E1204	12.0	30	75	12
NHH-E1604	16.0	45	100	16
NHH-E2004	20.0	50	100	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

### MACHINING OPERATION



### WORKPIECE MATERIAL

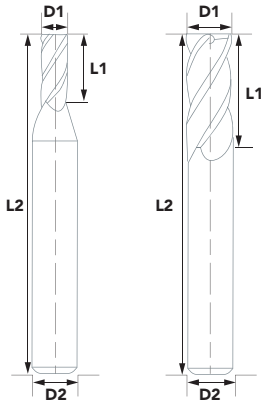
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(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI3/D2	(35-45HRC) NAK80/T18H/FD4C	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000



## NHH-EH|EI|EJ

Supergrain 4 Flute End Mill (75mm-150mm) – Long



CA	0.2 $\mu\text{m}$	35°	HRC <70	SHANK h6	D	D1-D3 0~-0.012 $\mu\text{m}$ D3.5-D6 0~-0.015 $\mu\text{m}$ D8-D20 0~-0.018 $\mu\text{m}$
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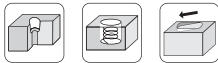
PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHH-EH0304A	3.0	8	75	4
NHH-EH0304	3.0	8	75	6
NHH-EH0354A	3.5	10	75	4
NHH-EH0354	3.5	10	75	6
NHH-EH0404A	4.0	10	75	4
NHH-EH0404	4.0	10	75	6
NHH-EH0504Z	5.0	13	75	5
NHH-EH0504	5.0	13	75	6
NHH-EH0604	6.0	15	75	6
NHH-EH0804	8.0	20	75	8
NHH-EI0404A	4.0	10	100	4
NHH-EI0404	4.0	10	100	6
NHH-EI0504Z	5.0	13	100	5
NHH-EI0504	5.0	13	100	6
NHH-EI0604	6.0	15	100	6
NHH-EI0804	8.0	20	100	8
NHH-EI1004	10.0	30	100	10
NHH-EI1204	12.0	30	100	12
NHH-EJ0604	6.0	15	150	6
NHH-EJ0804	8.0	20	150	8
NHH-EJ1004	10.0	30	150	10
NHH-EJ1204	12.0	40	150	12
NHH-EJ1604	16.0	45	150	16
NHH-EJ2004	20.0	50	150	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
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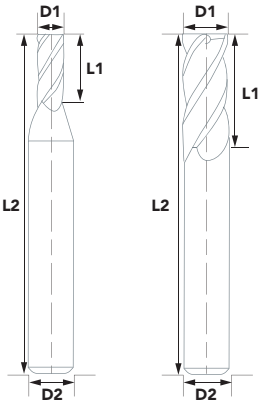
(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI3/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD11/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000





## NHH-RB

Supergrain 4 Flute Corner Radius End Mill – Standard



CA	0.2 μm	30°		HRC <70	SHANK h6	<table border="1"> <tr> <td>D1-D3</td> <td>0--0.012μm</td> </tr> <tr> <td>D3.5-D6</td> <td>0--0.015μm</td> </tr> <tr> <td>D8-D20</td> <td>0--0.018μm</td> </tr> </table>	D1-D3	0--0.012μm	D3.5-D6	0--0.015μm	D8-D20	0--0.018μm
D1-D3	0--0.012μm											
D3.5-D6	0--0.015μm											
D8-D20	0--0.018μm											

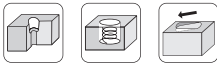
PART NO.	D1 DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHH-RB0102A	1.0	0.2	3	50	4
NHH-RB0102	1.0	0.2	3	50	6
NHH-RB0152A	1.5	0.2	4	50	4
NHH-RB0152	1.5	0.2	4	50	6
NHH-RB0202A	2.0	0.2	6	50	4
NHH-RB0202	2.0	0.2	6	50	6
NHH-RB0205A	2.0	0.5	6	50	4
NHH-RB0205	2.0	0.5	6	50	6
NHH-RB0302Z	3.0	0.2	8	50	3
NHH-RB0302A	3.0	0.2	8	50	4
NHH-RB0302	3.0	0.2	8	50	6
NHH-RB0305Z	3.0	0.5	8	50	3
NHH-RB0305A	3.0	0.5	8	50	4
NHH-RB0305	3.0	0.5	8	50	6
NHH-RB0402A	4.0	0.2	10	50	4
NHH-RB0402	4.0	0.2	10	50	6
NHH-RB0405A	4.0	0.5	10	50	4
NHH-RB0405	4.0	0.5	10	50	6
NHH-RB0410A	4.0	1.0	10	50	4
NHH-RB0410	4.0	1.0	10	50	6
NHH-RB0505Z	5.0	0.5	13	50	5
NHH-RB0505	5.0	0.5	13	50	6
NHH-RB0510Z	5.0	1.0	13	50	5
NHH-RB0510	5.0	1.0	13	50	6
NHH-RB0602	6.0	0.2	16	60	6
NHH-RB0605	6.0	0.5	16	60	6
NHH-RB0610	6.0	1.0	16	60	6
NHH-RB0802	8.0	0.2	20	60	8
NHH-RB0803	8.0	0.3	20	60	8
NHH-RB0805	8.0	0.5	20	60	8
NHH-RB0810	8.0	1.0	20	60	8

### AT A GLANCE

●		FINISHING
○		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
●		MQL (MIST)
●		EMULSION MACHINING
●		OIL MACHINING

● EXCELLENT ○ GOOD

### MACHINING OPERATION



### WORKPIECE MATERIAL

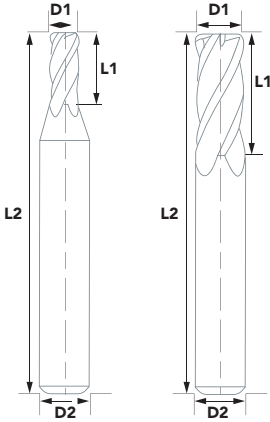
P	M	K	N	S	H
☑	☑	☑	☐	☑	☑

(~22HRC) S50C/HT250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FDAC	(45-55HRC) SKD11/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C/11000
			●	●	○			



## NHH-RB

Supergrain 4 Flute Corner Radius End Mill – Standard



CA	0.2 $\mu\text{m}$	30°	HRC <70	SHANK h6	D	D1-D3 0~-0.012 $\mu\text{m}$ D3.5-D6 0~-0.015 $\mu\text{m}$ D8-D20 0~-0.018 $\mu\text{m}$
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PART NO.	D1 DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHH-RB1002	10.0	0.2	25	75	10
NHH-RB1003	10.0	0.3	25	75	10
NHH-RB1005	10.0	0.5	25	75	10
NHH-RB1010	10.0	1.0	25	75	10
NHH-RB1020	10.0	2.0	25	75	10
NHH-RB1030	10.0	3.0	25	75	10
NHH-RB1205	12.0	0.5	30	75	12
NHH-RB1210	12.0	1.0	30	75	12
NHH-RB1220	12.0	2.0	30	75	12
NHH-RB1230	12.0	3.0	30	75	12
NHH-RB1610	16.0	1.0	45	100	16
NHH-RB1620	16.0	2.0	45	100	16
NHH-RB1630	16.0	3.0	45	100	16
NHH-RB2010	20.0	1.0	50	100	20
NHH-RB2020	20.0	2.0	50	100	20
NHH-RB2030	20.0	3.0	50	100	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

### MACHINING OPERATION



### WORKPIECE MATERIAL

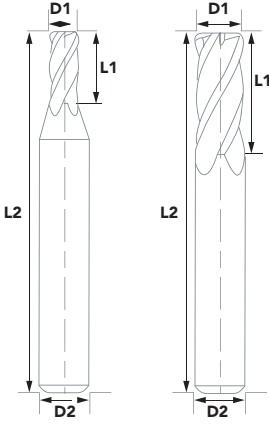
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(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C/11000



## NHH-RBH|RBI

Supergrain 4 Flute Corner Radius End Mill (75mm-100mm)– Long



CA	0.2 $\mu\text{m}$	30°		HRC <70	SHANK h6	D4-D6 D8-D12	0-0.015 $\mu\text{m}$ 0-0.018 $\mu\text{m}$
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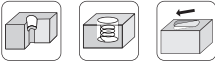
PART NO.	D1 DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHH-RBH0402A	4.0	0.2	10	75	4
NHH-RBH0402	4.0	0.2	10	75	6
NHH-RBH0405A	4.0	0.5	10	75	4
NHH-RBH0405	4.0	0.5	10	75	6
NHH-RBH0505Z	5.0	0.5	13	75	5
NHH-RBH0505	5.0	0.5	13	75	6
NHH-RBH0510Z	5.0	1.0	13	75	5
NHH-RBH0510	5.0	1.0	13	75	6
NHH-RBH0602	6.0	0.2	16	75	6
NHH-RBH0603	6.0	0.3	16	75	6
NHH-RBH0605	6.0	0.5	16	75	6
NHH-RBH0610	6.0	1.0	16	75	6
NHH-RBH0802	8.0	0.2	20	75	8
NHH-RBH0803	8.0	0.3	20	75	8
NHH-RBH0805	8.0	0.5	20	75	8
NHH-RBH0810	8.0	1.0	20	75	8
NHH-RBI0405A	4.0	0.5	10	100	4
NHH-RBI0602	6.0	0.2	16	100	6
NHH-RBI0605	6.0	0.5	16	100	6
NHH-RBI0610	6.0	1.0	16	100	6
NHH-RBI0802	8.0	0.2	20	100	8
NHH-RBI0803	8.0	0.3	20	100	8
NHH-RBI0805	8.0	0.5	20	100	8
NHH-RBI0810	8.0	1.0	20	100	8
NHH-RBI0820	8.0	2.0	20	100	8
NHH-RBI1002	10.0	0.2	25	100	10
NHH-RBI1003	10.0	0.3	25	100	10
NHH-RBI1005	10.0	0.5	25	100	10
NHH-RBI1010	10.0	1.0	25	100	10
NHH-RBI1020	10.0	2.0	25	100	10
NHH-RBI1030	10.0	3.0	25	100	10
NHH-RBI1205	12.0	0.5	30	100	12
NHH-RBI1210	12.0	1.0	30	100	12
NHH-RBI1220	12.0	2.0	30	100	12
NHH-RBI1230	12.0	3.0	30	100	12

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

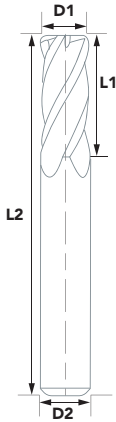
### MACHINING OPERATION



### WORKPIECE MATERIAL

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(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C/11000



## NHH-RBJ

Supergrain 4 Flute Corner Radius End Mill (150mm) – Long

CA	0.2 $\mu\text{m}$	30°		HRC <70	SHANK h6	D6 D8-D20	0-0.015 $\mu\text{m}$ 0-0.018 $\mu\text{m}$
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PART NO.	D1 DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHH-RBJ0602	6.0	0.2	16	150	6
NHH-RBJ0603	6.0	0.3	16	150	6
NHH-RBJ0605	6.0	0.5	16	150	6
NHH-RBJ0610	6.0	1.0	16	150	6
NHH-RBJ0802	8.0	0.2	20	150	8
NHH-RBJ0803	8.0	0.3	20	150	8
NHH-RBJ0805	8.0	0.5	20	150	8
NHH-RBJ0810	8.0	1.0	20	150	8
NHH-RBJ1002	10.0	0.2	25	150	10
NHH-RBJ1003	10.0	0.3	25	150	10
NHH-RBJ1005	10.0	0.5	25	150	10
NHH-RBJ1010	10.0	1.0	25	150	10
NHH-RBJ1020	10.0	0.2	25	150	10
NHH-RBJ1030	10.0	0.3	25	150	10
NHH-RBJ1205	12.0	0.5	30	150	12
NHH-RBJ1210	12.0	1.0	30	150	12
NHH-RBJ1220	12.0	2.0	30	150	12
NHH-RBJ1230	12.0	3.0	30	150	12
NHH-RBJ1610	16.0	1.0	45	150	16
NHH-RBJ1620	16.0	2.0	45	150	16
NHH-RBJ1630	16.0	3.0	45	150	16
NHH-RBJ2010	20.0	1.0	50	150	20
NHH-RBJ2020	20.0	2.0	50	150	20
NHH-RBJ2030	20.0	3.0	50	150	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

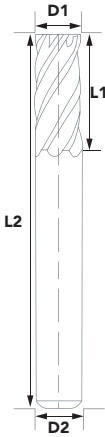
### MACHINING OPERATION



### WORKPIECE MATERIAL

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(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD51/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C/11000



## NHH-E

Supergrain 6 Flute End Mill – Standard

CA	0.2 $\mu\text{m}$	55°		HRC <70	SHANK h6	D6-D20   0-0.018 $\mu\text{m}$
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PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHH-E0606	6.0	18	60	6
NHH-E0806	8.0	20	60	8
NHH-E1006	10.0	30	75	10
NHH-E1206	12.0	30	75	12
NHH-E1406	14.0	35	100	14
NHH-E1606	16.0	45	100	16
NHH-E1806	18.0	45	100	18
NHH-E2006	20.0	45	100	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

### MACHINING OPERATION



### WORKPIECE MATERIAL

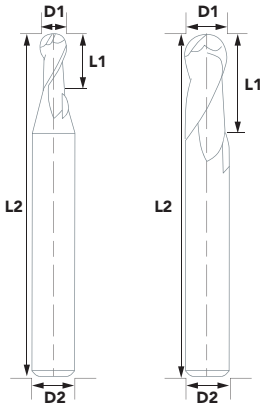
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(~22HRC) S50C/H1250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C/11000



## NHH-B

Supergrain 2 Flute Ball Nose – Standard



CA	0.2 $\mu\text{m}$	30°	HRC <70	SHANK h6	D	D1-D3 0--0.012 $\mu\text{m}$ D3.5-D6 0--0.015 $\mu\text{m}$ D8-D20 0--0.018 $\mu\text{m}$
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PART NO.	D1 RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHH-B0102A	R0.5	2	50	4
NHH-B0102	R0.5	2	50	6
NHH-B0152A	R0.75	3	50	4
NHH-B0152	R0.75	3	50	6
NHH-B0202A	R1	4	50	4
NHH-B0202	R1	4	50	6
NHH-B0252A	R1.25	5	50	4
NHH-B0252	R1.25	5	50	6
NHH-B0302Z	R1.5	6	50	3
NHH-B0302A	R1.5	6	50	4
NHH-B0302	R1.5	6	50	6
NHH-B0352A	R1.75	8	50	4
NHH-B0352	R1.75	8	50	6
NHH-B0402A	R2	8	50	4
NHH-B0402	R2	8	50	6
NHH-B0502Z	R2.5	10	50	5
NHH-B0502	R2.5	10	50	6
NHH-B0602	R3	12	60	6
NHH-B0802	R4	16	60	8
NHH-B1002	R5	20	75	10
NHH-B1202	R6	24	75	12
NHH-B1602	R8	32	100	16
NHH-B2002	R10	40	100	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

### MACHINING OPERATION



### WORKPIECE MATERIAL

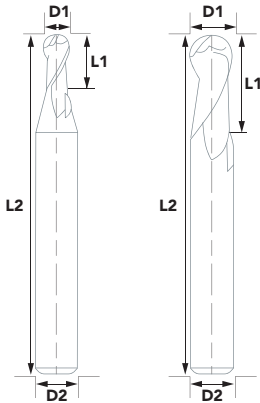
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(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C/11000



## NHH-BH|BI|BJ

Supergrain 2 Flute Ball Nose (75mmx150mm) – Long



CA	0.2 $\mu\text{m}$	30°	HRC <70	SHANK h6	D	D2-D3 0-0.012 $\mu\text{m}$ D3.5-D6 0-0.015 $\mu\text{m}$ D8-D20 0-0.018 $\mu\text{m}$
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PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHH-BH0202A	R1	4	75	4
NHH-BH0202	R1	4	75	6
NHH-BH0252A	R1.25	5	75	4
NHH-BH0252	R1.25	5	75	6
NHH-BH0302A	R1.5	6	75	4
NHH-BH0302	R1.5	6	75	6
NHH-BH0352A	R1.75	8	75	4
NHH-BH0352	R1.75	8	75	6
NHH-BH0402A	R2	8	75	4
NHH-BH0402	R2	8	75	6
NHH-BH0502Z	R2.5	10	75	5
NHH-BH0502	R2.5	10	75	6
NHH-BH0602	R3	12	75	6
NHH-BH0802	R4	16	75	8
NHH-BI0202	R1	4	100	6
NHH-BI0252	R1.25	5	100	6
NHH-BI0302	R1.5	6	100	6
NHH-BI0352	R1.75	8	100	6
NHH-BI0402	R2	8	100	6
NHH-BI0502Z	R2.5	10	100	5
NHH-BI0502	R2.5	10	100	6
NHH-BI0602	R3	12	100	6
NHH-BI0802	R4	16	100	8
NHH-BI1002	R5	20	100	10
NHH-BI1202	R6	24	100	12
NHH-BJ0602	R3	12	150	6
NHH-BJ0802	R4	16	150	8
NHH-BJ1002	R5	20	150	10
NHH-BJ1202	R6	24	150	12
NHH-BJ1602	R8	32	150	16
NHH-BJ2002	R10	40	150	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

### MACHINING OPERATION



### WORKPIECE MATERIAL

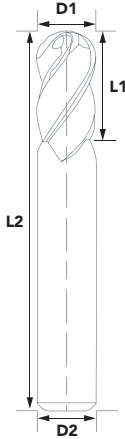
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(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/1.2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000



## NHH-B|BH|BI|BJ

Supergrain 4 Flute Ball Nose – Standard



CA	0.2 $\mu\text{m}$	30°		HRC <70	SHANK h6	D6 D8-D20	0-0.015 $\mu\text{m}$ 0-0.018 $\mu\text{m}$
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PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NHH-B0604	R3	12	60	6
NHH-B0804	R4	16	60	7
NHH-B1004	R5	20	75	10
NHH-B1204	R6	24	75	12
NHH-B1604	R8	32	100	16
NHH-B2004	R10	40	100	20
NHH-BH0604	R3	12	75	6
NHH-BH0804	R4	16	75	8
NHH-BI0604	R3	12	100	6
NHH-BI0804	R4	16	100	8
NHH-BI1004	R5	20	100	10
NHH-BI1204	R6	24	100	12
NHH-BJ0604	R3	12	150	6
NHH-BJ0804	R4	16	150	8
NHH-BJ1004	R5	20	150	10
NHH-BJ1204	R6	24	150	12
NHH-BJ1604	R8	32	150	16
NHH-BJ2004	R10	40	150	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
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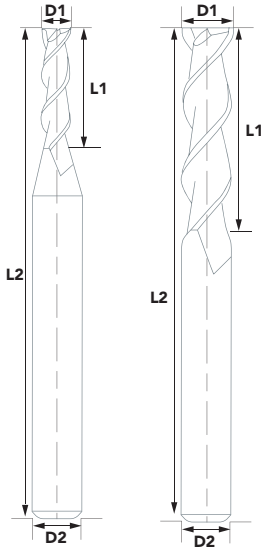
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**NAL**  
**ALUMINUM**  
**SERIES**





## NAL-E

Micrograin 2 Flute End Mill – Standard

0.6 μm	45°	SHANK h6	D D0.5-D3 0-0.012μm D4-D6 0-0.015μm D8-D20 0-0.018μm
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PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NAL-E0052A	0.5	1.5	50	4
NAL-E0102A	1.0	3.0	50	4
NAL-E0152A	1.5	4.0	50	4
NAL-E0202A	2.0	6.0	50	4
NAL-E0302A	3.0	8.0	50	4
NAL-E0302	3.0	8.0	50	6
NAL-E0402A	4.0	12.0	50	4
NAL-E0402	4.0	12.0	50	6
NAL-E0502Z	5.0	15.0	50	5
NAL-E0502	5.0	15.0	50	6
NAL-E0602	6.0	18.0	50	6
NAL-E0802	8.0	20.0	60	8
NAL-E1002	10.0	30.0	75	10
NAL-E1202	12.0	30.0	75	12
NAL-E1602	16.0	45.0	100	16
NAL-E2002	20.0	45.0	100	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULTION MACHINING
		OIL MACHINING

EXCELLENT GOOD

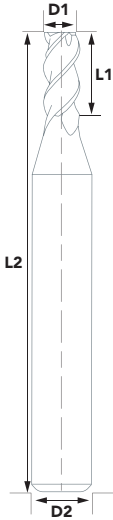
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(~22HRC) S50C/H1250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000



## NAL-E

Micrograin 3 Flute End Mill – Standard

0.6  
μm

45°



SHANK  
h6



D0.5-D3 0-0.012μm  
D3.5-D6 0-0.015μm  
D6.5-D20 0-0.018μm

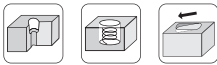
PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NAL-E0053A	0.5	1.5	50	4
NAL-E0103A	1.0	3.0	50	4
NAL-E0153A	1.5	4.0	50	4
NAL-E0203A	2.0	6.0	50	4
NAL-E0303A	3.0	8.0	50	4
NAL-E0303	3.0	8.0	50	6
NAL-E0403A	4.0	12.0	50	4
NAL-E0403	4.0	12.0	50	6
NAL-E0503Z	5.0	15.0	50	5
NAL-E0503	5.0	15.0	50	6
NAL-E0603	6.0	18.0	50	6
NAL-E0803	8.0	20.0	60	8
NAL-E1003	10.0	30.0	75	10
NAL-E1203	12.0	30.0	75	12
NAL-E1603	16.0	45.0	100	16
NAL-E2003	20.0	45.0	100	20

### AT A GLANCE

●		FINISHING
●		SEMI-FINISHING
○		ROUGHING
○		DRY MACHINING
●		MQL (MIST)
●		EMULTION MACHINING
●		OIL MACHINING

● EXCELLENT ○ GOOD

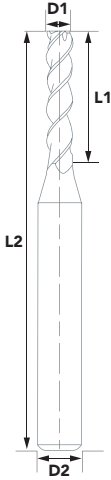
### MACHINING OPERATION



### WORKPIECE MATERIAL



(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
						●		



## NAL-EH|EI|EJ

Micrograin 3 Flute End Mill (75mm-150mm) – Long

0.6  
μm

45°



SHANK  
h6



D3 0~-0.012μm  
D4-D6 0~-0.015μm  
D8-D20 0~-0.018μm

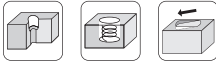
PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NAL-EH0303A	3.0	12.0	75	4
NAL-EH0303	3.0	12.0	75	6
NAL-EH0403A	4.0	16.0	75	4
NAL-EH0403	4.0	16.0	75	6
NAL-EH0503Z	5.0	20.0	75	5
NAL-EH0503	5.0	20.0	75	6
NAL-EH0603	6.0	25.0	75	6
NAL-EH0803	8.0	32.0	75	8
NAL-EI0603	6.0	25.0	100	6
NAL-EI0803	8.0	32.0	100	8
NAL-EI1003	10.0	45.0	100	10
NAL-EI1203	12.0	45.0	100	12
NAL-EJ0603	6.0	30.0	150	6
NAL-EJ0803	8.0	40.0	150	8
NAL-EJ1003	10.0	45.0	150	10
NAL-EJ1203	12.0	50.0	150	12
NAL-EJ1603	16.0	65.0	150	16
NAL-EJ2003	20.0	75.0	150	20

### AT A GLANCE

●		FINISHING
●		SEMI-FINISHING
○		ROUGHING
○		DRY MACHINING
●		MQL (MIST)
●		EMULSION MACHINING
●		OIL MACHINING

● EXCELLENT ○ GOOD

### MACHINING OPERATION



### WORKPIECE MATERIAL

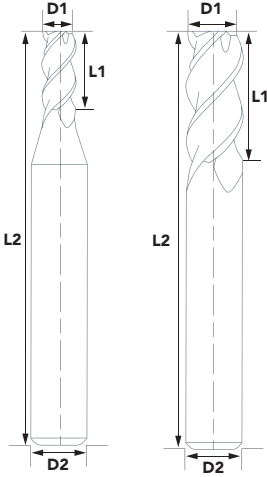


(~22HRC) S50C/H1250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C/11000
						●		



## NAL-ES

Ultrafine 3 Flute End Mill – Standard



0.4 µm	40°		SHANK h6	D	D1-D3 0-0.012µm D4-D6 0-0.015µm D8-D20 0-0.018µm
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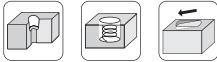
PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NAL-ES0303A	3.0	8.0	50	4
NAL-ES0303	3.0	8.0	50	6
NAL-ES0403A	4.0	12.0	50	4
NAL-ES0403	4.0	12.0	50	6
NAL-ES0503	5.0	15.0	50	6
NAL-ES0603	6.0	18.0	50	6
NAL-ES0803	8.0	20.0	60	8
NAL-ES1003	10.0	25.0	75	10
NAL-ES1203	12.0	30.0	75	12
NAL-ES1603	16.0	45.0	100	16
NAL-ES2003	20.0	45.0	100	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

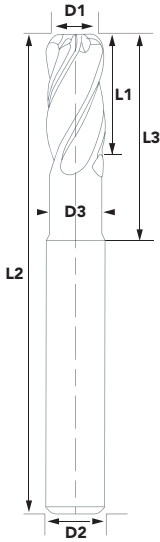
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000



## NAL-RS

Ultrafine 3 Flute Corner Radius End Mill – Standard

0.4 μm	40°		SHANK h6	<table border="1"> <tr> <td>D3</td> <td>0~0.012μm</td> </tr> <tr> <td>D4-D6</td> <td>0~0.015μm</td> </tr> <tr> <td>D8-D20</td> <td>0~0.018μm</td> </tr> </table>	D3	0~0.012μm	D4-D6	0~0.015μm	D8-D20	0~0.018μm
D3	0~0.012μm									
D4-D6	0~0.015μm									
D8-D20	0~0.018μm									

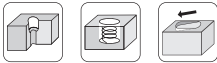
PART NO.	D1 DIA.	D3 NECK DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L3 EFFECTIVE LENGTH	L2 OAL	D2 SHANK DIA.
NAL-RS0305	3.0	2.9	0.5	4.5	9.0	50	6
NAL-RS0405	4.0	3.9	0.5	6.0	12.0	50	6
NAL-RS0605	6.0	5.8	0.5	9.0	18.0	50	6
NAL-RS0610	6.0	5.8	1.0	9.0	18.0	50	6
NAL-RS0805	8.0	7.7	0.5	12.0	24.0	60	8
NAL-RS0810	8.0	7.7	1.0	12.0	24.0	60	8
NAL-RS1005	10.0	9.6	0.5	15.0	30.0	75	10
NAL-RS1010	10.0	9.6	1.0	15.0	30.0	75	10
NAL-RS1205	12.0	11.5	0.5	18.0	36.0	75	12
NAL-RS1210	12.0	11.5	1.0	18.0	36.0	75	12
NAL-RS1605	16.0	15.5	0.5	24.0	40.0	100	16
NAL-RS1610	16.0	15.5	1.0	24.0	40.0	100	16
NAL-RS1630	16.0	15.5	3.0	24.0	40.0	100	16
NAL-RS2005	20.0	19	0.5	30.0	50.0	100	20
NAL-RS2010	20.0	19	1.0	30.0	50.0	100	20
NAL-RS2030	20.0	19	3.0	30.0	50.0	100	20

### AT A GLANCE

<input checked="" type="radio"/>		FINISHING
<input checked="" type="radio"/>		SEMI-FINISHING
<input type="radio"/>		ROUGHING
<input type="radio"/>		DRY MACHINING
<input checked="" type="radio"/>		MQL (MIST)
<input checked="" type="radio"/>		EMULSION MACHINING
<input checked="" type="radio"/>		OIL MACHINING

EXCELLENT  GOOD

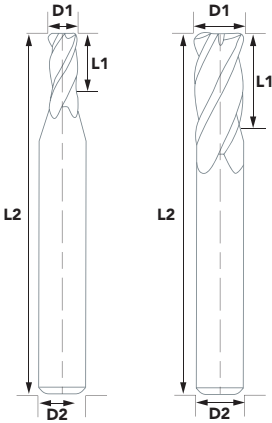
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(~22HRC) S50C/H1250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
						<input checked="" type="checkbox"/>		



## NAL-R

Micrograin 3 Flute Corner Radius End Mill – Standard

0.6 $\mu\text{m}$	45°		SHANK h6		D1-D3 0-0.012 $\mu\text{m}$ D4-D6 0-0.015 $\mu\text{m}$ D8-D20 0-0.018 $\mu\text{m}$
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PART NO.	D1 DIA.	R CORNER RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NAL-R0102A	1.0	0.2	3	50	4
NAL-R0202A	2.0	0.2	6	50	4
NAL-R0305A	3.0	0.5	8	50	4
NAL-R0305	3.0	0.5	8	50	6
NAL-R0405A	4.0	0.5	10	50	4
NAL-R0405	4.0	0.5	10	50	6
NAL-R0605	6.0	0.5	16	50	6
NAL-R0610	6.0	1.0	16	50	6
NAL-R0850	8.0	0.5	19	60	8
NAL-R0810	8.0	1.0	19	60	8
NAL-R1005	10.0	0.5	25	75	10
NAL-R1010	10.0	1.0	25	75	10
NAL-R1205	12.0	0.5	30	75	12
NAL-R1210	12.0	1.0	30	75	12
NAL-R1605	16.0	0.6	40	100	16
NAL-R1610	16.0	1.0	40	100	16
NAL-R1630	16.0	3.0	40	100	16
NAL-R2005	20.0	0.5	45	100	20
NAL-R2010	20.0	1.0	45	100	20
NAL-R2030	20.0	3.0	45	100	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

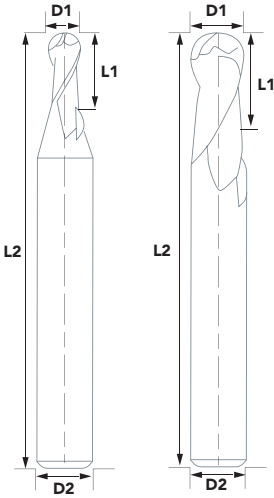
### MACHINING OPERATION



### WORKPIECE MATERIAL

<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>	<b>S</b>	<b>H</b>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/T18H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000



## NAL-B|BH|BI|BJ

Micrograin 2 Flute Ball Nose

0.6 μm	30°	SHANK h6	D	D1-D3 0-0.012μm D4-D6 0-0.015μm D8-D12 0-0.018μm
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PART NO.	D1 RADIUS	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NAL-B0102A	R0.5	2.0	50	4
NAL-B0152A	R0.75	3.0	50	4
NAL-B0202A	R1.0	4.0	50	4
NAL-B0202	R1.0	4.0	50	6
NAL-B0302Z	R1.5	6.0	50	3
NAL-B0302A	R1.5	6.0	50	4
NAL-B0302	R1.5	6.0	50	6
NAL-B0402A	R2.0	8.0	50	4
NAL-B0402	R2.0	8.0	50	6
NAL-B0602	R3.0	12.0	50	6
NAL-B0802	R4.0	16.0	60	8
NAL-B1002	R5.0	20.0	75	10
NAL-B1202	R6.0	24.0	75	12
NAL-BH0202A	R1.0	4.0	75	4
NAL-BH0402A	R2.0	8.0	75	4
NAL-BH0602	R3.0	12.0	75	6
NAL-BH0802	R4.0	16.0	75	8
NAL-BI0402A	R2.0	8.0	100	4
NAL-BI0402	R2.0	8.0	100	6
NAL-BI0602	R3.0	12.0	100	6
NAL-BI0802	R4.0	16.0	100	8
NAL-BI1002	R5.0	20.0	100	10
NAL-BI1202	R6.0	24.0	100	12
NAL-BJ0602	R3.0	12.0	150	6
NAL-BJ0802	R4.0	16.0	150	8
NAL-BJ1002	R5.0	20.0	150	10
NAL-BJ1202	R6.0	24.0	150	12

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
		ROUGHING
		DRY MACHINING
		MQL (MIST)
		EMULSION MACHINING
		OIL MACHINING

EXCELLENT GOOD

### MACHINING OPERATION

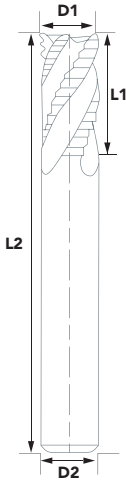


### WORKPIECE MATERIAL

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/H13/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000





## NAL-W

Micrograin 3 Flute Ripping End Mill

0.6  $\mu\text{m}$

35°



SHANK  
h6

D6-D20 | 0-0.05 $\mu\text{m}$

PART NO.	D1 DIA.	L1 FLUTE LENGTH	L2 OAL	D2 SHANK DIA.
NAL-W0603	6.0	15	50	6
NAL-W0803	8.0	20	60	8
NAL-W1003	10.0	25	75	10
NAL-W1203	12.0	30	75	12
NAL-W1403	14.0	35	100	14
NAL-W1603	16.0	45	100	16
NAL-W1803	18.0	45	100	18
NAL-W2003	20.0	45	100	20

### AT A GLANCE

		FINISHING
		SEMI-FINISHING
●		ROUGHING
○		DRY MACHINING
●		MQL (MIST)
●		EMULSION MACHINING
●		OIL MACHINING

● EXCELLENT ○ GOOD

### MACHINING OPERATION



### WORKPIECE MATERIAL



(~22HRC) S50C/HI250/Q235	(25-35HRC) P20/HI3/D2	(35-45HRC) NAK80/718H/FDAC	(45-55HRC) SKD61/L2343ESR	(55-65HRC) SKD11/SKH51	(~30HRC) SUS304/316/316L	(~150HB) 5052/6061/7075	(~32HRC) Ti-6Al-4V	C11000 B152C11000
						●		



**TECHNICAL  
INFORMATION**



## FLUTE TYPES

Flutes feature grooves or valleys that are cut into the body of the tool. A higher number of flutes increases the strength of the tool and reduces space or chip flow. End mills with less flutes on the cutting edge will have more chip space, while end mills with more flutes will be able to be used on harder cutting materials.

### SINGLE FLUTE

Single Flute designs are used for high-speed machining and high-volume material removal.

### TWO FLUTE

Two Flute designs have the most amount of flute space. They allow for more chip carrying capacity and are used primarily in slotting and pocketing nonferrous materials.

### THREE FLUTE

Three Flute designs have the same flute space as two flutes, but also have a larger cross-section for greater strength. They are used for pocketing and slotting ferrous and nonferrous materials.

### FOUR FLUTE

Four Flute designs allow for faster feed rates, but due to the reduced flute space, chip removal may be a problem. They produce a much finer finish than two and three flute tools. Ideal for peripheral and finish milling.

## BALL END

Used to mill die cavities and fillets, round bottom holes and slots.

## CARBIDE

This tool material combines increased stiffness with the ability to operate at higher SFPM. Carbide tools are best suited for shops operating newer milling machines or machines with minimal spindle wear. Rigidity is critical when using carbide tools. Carbide end mills may require a premium price over the cobalt end mills, but they can also be run at speeds 2.5 faster than HSS end mills. For best results mount in a hydraulic type holder.

## COATINGS

The use of Titanium coated tools will increase the surface hardness of the tool to near 85 Rc. This will allow for greater tool life at increased cutting speeds & feeds (15–25%). Melin offers Titanium Nitride (TiN), Aluminum Titanium Nitride (AlTiN), and Titanium Carbonitride (TiCN).

## COBALT

Type of high speed steel tool which has a 8% cobalt content (M42). This material has excellent abrasion resistance for improved tool life over standard high speed steel (M7).

## CORNER RADIUS

Conventional end mill with radius ground on the tips of the flutes to help reduce chipping on the tip. For mold applications, radius tools can remove more material faster than ball ends.

## HIGH HELIX

Usually a 40–60° spiral on the tool's flutes. Effective for rapid chip ejection in milling of aluminum and other materials.

## HSS

A baseline tool steel. In the past, a majority of end mills were made from standard High Speed Steel (M7). Usually inexpensive, but do not offer the tool life or speed and feed advantages of Cobalt and Carbide end mills.

## LEFT-HAND SPIRAL

Used for milling multiple layers of thin sheets where chip flow is directed away from work.

## ROUGHER

End mill with interrupted shape on outside diameter to remove large amounts of material quickly. Typically can remove material up to three times the rate of conventional end mills with different types available to achieve the desired finish on the material. Melin offers roughers in Coarse Pitch, Fine Pitch, Rougher/Finisher, and 3-Flute for Aluminum styles.

## STUB LENGTH

Used for milling of shallow slots in all types of materials where heavy feeds are required and tool deflection is minimized.



# TROUBLE SHOOTING

PROBLEM	CAUSE	SOLUTION
<b>Chip packing</b>	Too great a cutting amount	Adjust feed or speed
	Not enough chip room	Use end mill fewer flutes
	Not enough coolant	Apply more coolant. Use air pressure
<b>Rough surface finish</b>	Feed too fast	Slow down to correct feed
	Slow speed	Use higher speed
	Too much wear	Regrind earlier stage
	Chip biting	Cut less amount per pass
	No end tooth concavity	Add margin (touch primary with oilstone)
<b>Burr</b>	Too much wear on primary relief	Regrind sooner
	Incorrect condition	Correct milling condition
	Improper cutting angle	Change to correct cutting angle
<b>No dimensional accuracy</b>	Too tough condition	Change to easier condition
	Lack of accuracy (machine & holder)	Repair machine or holder
	Not enough rigidity (machine & holder)	Change machine or holder or condition
	Not sufficient number of flutes	Use end mill with greater number of flutes
<b>No perpendicular side</b>	Feed too fast	Slow down to correct feed
	Too great a cutting amount	Reduce cutting amount
	Too long a flute length or long overall length	Use proper length tool. Hold shank deeper
	Not sufficient number of flutes	Use end mill with greater number of flutes
<b>Chipping</b>	Feed too fast	Slow down to proper feed
	Feed too fast on first cut	Slow down on first bite
	Not enough rigidity of machine tool & holder	Change rigid machine tool or holder
	Loose holder	Tighten tool holder
	Loose holder (workpiece)	Tighten workpiece fixture
	Lack of rigidity (tool)	Use shortest end mill available. Hold shank deeper. Try down cut
	Teeth too sharp	Change to lower cutting angle, primary relief



PROBLEM	CAUSE	SOLUTION
<b>Wear</b>	Speed too fast	Slow down, use more coolant
	Hard material	Use higher grade, tool material, add surface treatment
	Biting chips	Change feed speed to change chip size or clear chips with coolant or air pressure
	Improper feed speed (too slow)	Increase feed speed. Try down cut
	Improper cutting angle	Change to correct cutting angle
	Too low a primary relief angle	Change to larger relief angle
<b>Breakage</b>	Feed too fast	Slow down feed
	Too large cutting amount	Adjust to smaller cutting amount per teeth
	Too long flute length or long overall length	Hold shank deeper, use shorter end mill
	Too much wear	Regrind at earlier stage
<b>Chattering</b>	Feed and speed too fast	Correct feed and speed
	Not enough rigidity (machine & holder)	Use better machine tool or holder or change condition
	Too much relief angle	Change to smaller relief angle. Add margin (touch primary with oil stone)
	Loose holder (workpiece)	Hold workpiece tighter
	Cutting too deep	Correct to smaller cutting depth
	Too long flute length or long overall length	Hold shank deeper, use shorter end mill or down cut
<b>Short tool life (dull teeth)</b>	Too much cutting friction	Regrind at earlier stage
	Tough work material	Select premium tool
	Improper cutting angle	Change cutting angle & primary



## NGP-E|EH|E|EJ|EL|W SLOTTING



WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (~22HRC)				P20/H13/D2 (25-35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NGP-E0102A	9000-10000	600-800	0.03-0.05	1	8000-9000	500-800	0.03-0.05	1	10000-12000	800-1000	0.05-0.08	1
NGP-E0202A	8700-9200	800-1200	0.05-0.08	2	7500-8000	700-1000	0.05-0.08	2	9000-10000	1000-1400	0.08-0.10	2
NGP-E0302A	7500-8000	1000-1400	0.08-0.10	3	7000-7500	800-1200	0.08-0.10	3	8500-9000	1400-1800	0.10-0.12	3
NGP-E0402A	5700-6200	1200-1600	0.10-0.15	4	5000-5500	1000-1400	0.10-0.15	4	7000-8500	1600-1800	0.15-0.20	4
NGP-E0602	4000-4500	1400-1800	0.15-0.20	6	4000-4500	1400-1600	0.15-0.20	6	5000-5500	1800-2000	0.20-0.25	6
NGP-E0802	2700-3200	1800-2000	0.25-0.35	8	2700-3200	1600-1800	0.20-0.25	8	4500-5000	2000-2200	0.30-0.45	8
NGP-E1002	2500-3000	2000-2200	0.40-0.50	10	2200-2700	1800-2000	0.20-0.25	10	3500-4500	2200-2500	0.50-0.60	10
NGP-E1202	2200-2800	2200-2500	0.50-0.65	12	2000-2200	2000-2200	0.35-0.45	12	3000-3500	1800-2000	0.60-0.75	12
NGP-E1602	1800-2300	800-1000	0.65-0.80	16	1500-2000	600-800	0.45-0.55	16	2500-2800	1000-1500	0.75-0.90	16
NGP-E2002	1300-1800	500-800	0.80-1.00	20	1300-1800	400-600	0.55-0.65	20	2000-2500	800-1000	1.00-1.20	20
NGP-W0603	5000-5200	600-800	0.50-1.00	6	4800-5000	550-600	0.50-1.00	6	5500-6000	800-1000	0.50-1.00	6
NGP-W0803	4000-4200	500-700	1.00-1.50	8	3800-4000	450-500	1.00-1.50	8	4500-5500	700-800	1.00-1.50	8
NGP-W1003	2800-3000	450-650	1.50-2.00	10	2500-2800	350-450	1.50-2.00	10	3000-3500	500-700	1.50-2.00	10
NGP-W1203	1800-2200	350-450	2.50-3.50	12	1800-2000	300-400	2.00-3.00	12	2200-2500	400-500	2.50-3.50	12
NGP-W1603	1500-1800	250-300	3.00-4.00	16	1500-1800	150-250	2.50-3.50	16	1800-2200	350-400	3.00-4.00	16
NGP-W2003	1200-1500	150-250	4.00-5.00	20	1200-1500	100-200	3.50-4.50	20	1500-1800	300-350	4.00-5.00	20

## NGP-E|EH|E|EJ|EL|W SIDE MILLING



WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (~22HRC)				P20/H13/D2 (25-35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NGP-E0104A	18000-20000	600-800	1.0-1.5	0.03-0.05	15000-18000	600-800	1.0-1.5	0.03-0.05	20000-22000	800-1000	1.0-1.5	0.05-0.08
NGP-E0204A	13000-15000	800-1000	2.0-3.0	0.04-0.06	12000-13000	650-850	2.0-3.0	0.04-0.06	15000-18000	1000-1200	2.0-3.0	0.08-0.10
NGP-E0304A	10000-12000	800-1000	3.0-4.5	0.08-0.12	8000-10000	700-900	3.0-4.5	0.08-0.12	12000-14000	1200-1400	3.0-4.5	0.10-0.15
NGP-E0404A	8000-10000	900-1200	4.0-6.0	0.15-0.20	7000-8000	800-1000	4.0-6.0	0.15-0.20	10000-12000	1400-1600	4.0-6.0	0.15-0.20
NGP-E0604	5000-6000	1300-1500	6.0-9.0	0.30-0.50	4500-5500	1000-1200	6.0-9.0	0.25-0.35	6500-8000	1600-1800	6.0-9.0	0.30-0.50
NGP-E0804	4200-4500	1400-1600	8.0-12.0	0.50-0.80	4000-4200	1200-1400	8.0-12.0	0.35-0.45	5200-6500	1800-2000	8.0-12.0	0.50-0.80
NGP-E1004	3000-3500	1600-1800	10	0.80-1.00	3000-3200	1400-1600	10	0.45-0.60	3800-4200	2000-2500	10	0.80-1.00
NGP-E1204	2500-3000	1000-1400	12	1.00-1.20	2200-2600	800-1200	12	0.60-0.70	3000-3500	1800-2000	12	1.00-1.20
NGP-E1604	2000-2200	600-800	16	1.00-1.50	1800-2000	500-600	16	0.70-0.80	2200-2500	800-1000	16	1.00-1.50
NGP-E2004	1500-2000	500-600	20	1.00-1.50	1300-1800	400-500	20	0.80-1.00	2000-2200	600-800	20	1.00-1.50
NGP-W0604	4700-5000	600-800	6	0.50-1.00	4500-4800	500-600	6	0.50-1.00	5500-6000	800-1000	6	0.50-1.00
NGP-W0804	3800-4000	450-600	8	1.00-1.50	3500-3800	400-500	8	1.00-1.50	4500-5500	700-800	8	1.00-1.50
NGP-W1004	2800-3000	400-500	10	1.50-2.00	2500-2800	300-400	10	1.50-2.00	3000-3500	500-700	10	1.50-2.00
NGP-W1204	2300-2600	300-400	12	2.50-3.50	2000-2300	200-350	12	2.50-3.50	2200-2500	400-500	12	2.50-3.50
NGP-W1604	1800-2000	250-300	16	3.00-4.00	1600-1800	200-250	16	3.00-4.00	1800-2200	350-400	16	3.00-4.00
NGP-W2004	1500-1800	150-250	20	4.00-5.00	1300-1600	100-180	20	4.00-5.00	1500-1800	300-350	20	4.00-5.00



## NGP-B|BH|BI|BJ 3D MILLING



### WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (~22HRC)				P20/H13/D2 (25~35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED ʒ/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED ʒ/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED ʒ/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NGP-B0102A	18000-20000	1000-1200	0.02-0.03	0.03-0.05	15000-18000	800-1000	0.02-0.03	0.03-0.04	20000-22000	1200-1400	0.02-0.03	0.03-0.05
NGP-B0202A	16000-18000	1200-1400	0.03-0.05	0.05-0.08	13000-15000	1000-1200	0.03-0.04	0.03-0.05	18000-20000	1400-1600	0.03-0.05	0.05-0.08
NGP-B0402A	12000-15000	1400-1600	0.05-0.08	0.08-0.15	10000-12000	1200-1400	0.04-0.05	0.05-0.08	14000-16000	1600-1800	0.05-0.08	0.08-0.15
NGP-B0602	10000-12000	1600-2000	0.05-0.10	0.10-0.15	8000-10000	1500-1800	0.05-0.08	0.08-0.10	12000-14000	1800-2000	0.05-0.10	0.10-0.15
NGP-B0802	8000-10000	2200-2500	0.05-0.12	0.12-0.20	6500-8500	2000-2200	0.05-0.10	0.10-0.12	10000-12000	2200-2500	0.05-0.12	0.12-0.20
NGP-B1002	6500-8000	2500-2800	0.08-0.15	0.15-0.22	6000-7000	2200-2500	0.08-0.12	0.12-0.15	7500-8500	2500-2800	0.08-0.15	0.15-0.22
NGP-B1202	6000-7000	2800-3000	0.10-0.15	0.20-0.25	5500-6500	2500-2800	0.08-0.15	0.15-0.20	6500-7500	2800-3000	0.10-0.15	0.20-0.25
NGP-B1602	5000-6000	2000-2500	0.12-0.18	0.20-0.30	4500-5500	1800-2200	0.10-0.15	0.20-0.25	5500-6500	2200-2500	0.12-0.18	0.20-0.30
NGP-B2002	4000-5000	1800-2200	0.15-0.20	0.30-0.40	4000-5000	1800-2000	0.10-0.20	0.25-0.30	4500-5500	2000-2200	0.15-0.20	0.30-0.40



## NGP-RA|RAH|RAJ SLOTTING



WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (~22HRC)				P20/H13/D2 (25~35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED f/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED f/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED f/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NGB-RA0102A	12500-15000	800-1200	0.03-0.05	1	10000-12500	600-1000	0.03-0.05	1	15000-18000	1000-1200	0.05-0.08	1
NGB-RA0202A	10000-12500	1000-1400	0.05-0.08	2	8500-10000	800-1200	0.05-0.08	2	13000-15000	1200-1400	0.08-0.10	2
NGB-RA0302A	8500-10000	1200-1600	0.08-0.10	3	7500-8500	1000-1400	0.08-0.10	3	10000-12000	1400-1600	0.10-0.12	3
NGB-RA0405A	8000-8500	1600-1800	0.10-0.15	4	6500-7500	1400-1600	0.10-0.13	4	8500-10000	1600-2000	0.15-0.20	4
NGB-RA0605	5500-6500	1800-2000	0.15-0.20	6	5000-6000	1600-1800	0.13-0.15	6	6500-8000	2000-2200	0.20-0.25	6
NGB-RA0805	5000-5500	2000-2200	0.25-0.35	8	4500-5000	1800-2000	0.15-0.20	8	5500-6500	2200-2500	0.30-0.45	8
NGB-RA1005	4000-4500	2200-2400	0.40-0.50	10	3500-4000	2000-2200	0.25-0.35	10	4500-5500	2500-2800	0.50-0.60	10
NGB-RA1210	3000-3500	2400-2500	0.50-0.65	12	2800-3200	2200-2400	0.35-0.50	12	3500-4000	2600-3000	0.60-0.75	12
NGB-RA1620	2500-2800	800-1000	0.65-0.80	16	2200-2500	650-850	0.50-0.65	16	2800-3200	1000-1200	0.75-0.90	16
NGB-RA2030	2000-2500	500-800	0.80-1.00	20	2000-2200	400-600	0.65-0.80	20	2500-2800	800-1000	1.00-1.20	20

## NGP-RB|RBH|RBJ 3D MILLING



WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (~22HRC)				P20/H13/D2 (25~35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED f/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED f/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED f/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NGB-RB0102A	18000-20000	800-1000	0.02-0.03	0.02-0.03	16000-18000	650-850	0.02-0.03	0.02-0.03	20000-22000	1000-1200	0.02-0.03	0.02-0.03
NGB-RB0202A	15000-18000	1000-1200	0.03-0.04	0.03-0.04	13000-15000	850-1000	0.03-0.04	0.03-0.04	18000-20000	1200-1400	0.03-0.04	0.03-0.04
NGB-RB0302A	13000-15000	1200-1400	0.03-0.05	0.03-0.05	11000-13000	1000-1200	0.04-0.05	0.04-0.05	15000-18000	1400-1600	0.04-0.05	0.04-0.05
NGB-RB0405A	10000-12000	1500-1800	0.05-0.08	0.05-0.08	8500-10000	1200-1500	0.05-0.08	0.05-0.08	12000-15000	1600-1800	0.05-0.08	0.05-0.08
NGB-RB0605	7000-8000	1800-2000	0.05-0.10	0.05-0.10	6000-7000	1500-1800	0.05-0.10	0.05-0.10	8500-10000	2000-2200	0.05-0.10	0.05-0.10
NGB-RB0805	6500-7500	1800-2200	0.05-0.12	0.05-0.12	5500-6000	1800-2000	0.08-0.15	0.08-0.12	7000-7500	2200-2500	0.08-0.15	0.08-0.12
NGB-RB1005	5500-6500	2200-2500	0.05-0.15	0.05-0.15	5000-6000	2000-2300	0.10-0.15	0.08-0.15	6000-7000	2500-2800	0.10-0.15	0.08-0.15
NGB-RB1210	4500-5500	2500-2800	0.08-0.20	0.08-0.20	4000-5000	2300-2500	0.10-0.20	0.10-0.15	5000-6000	2800-3000	0.10-0.20	0.10-0.15
NGB-RB1620	3800-4200	2000-2200	0.10-0.25	0.10-0.25	3200-3500	1800-2000	0.15-0.30	0.10-0.20	4000-4500	2200-2500	0.15-0.30	0.10-0.20
NGB-RB2030	3200-3800	1800-2000	0.10-0.30	0.10-0.30	3000-3200	1600-1800	0.20-0.35	0.15-0.30	4000-4200	2000-2200	0.20-0.35	0.15-0.30





## NMD-DES SLOTTING

PART NO.	WORKPIECE MATERIAL											
	S50C/HT250/Q235 (~22HRC)				P20/H13/D2 (25-35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NMD-DES0022	18000-20000	200-250	0.005-0.01	0.2	15000-18000	150-200	0.005-0.01	0.2	20000-22000	250-300	0.01-0.02	0.2
NMD-DES0032	18000-20000	250-300	0.01-0.015	0.3	15000-18000	200-250	0.01-0.015	0.3	20000-22000	300-400	0.02-0.03	0.3
NMD-DES0042	15000-18000	300-350	0.015-0.02	0.4	12000-15000	250-300	0.015-0.02	0.4	18000-20000	400-500	0.03-0.04	0.4
NMD-DES0052	15000-18000	350-450	0.02-0.025	0.5	12000-15000	300-400	0.02-0.025	0.5	18000-20000	500-700	0.04-0.05	0.5
NMD-DES0062	12000-15000	450-500	0.025-0.03	0.6	10000-12000	400-450	0.025-0.03	0.6	15000-18000	500-700	0.05-0.06	0.6
NMD-DES0072	12000-15000	500-550	0.03-0.035	0.7	10000-12000	450-500	0.03-0.035	0.7	15000-18000	600-800	0.05-0.07	0.7
NMD-DES0082	10000-12000	600-650	0.03-0.04	0.8	8000-10000	500-600	0.03-0.04	0.8	12000-15000	600-800	0.05-0.08	0.8
NMD-DES0092	10000-12000	600-700	0.03-0.05	0.9	8000-10000	500-650	0.03-0.05	0.9	12000-15000	650-850	0.05-0.08	0.9

## NMD-DBS 3D MILLING

PART NO.	WORKPIECE MATERIAL											
	S50C/HT250/Q235 (~22HRC)				P20/H13/D2 (25-35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NMD-DBS0022	20000-22000	220-280	0.005-0.01	0.01-0.015	18000-20000	200-260	0.005-0.01	0.01-0.015	22000-24000	300-350	0.005-0.01	0.01-0.015
NMD-DBS0032	18000-20000	280-320	0.01-0.015	0.01-0.02	16000-18000	200-280	0.01-0.015	0.01-0.02	20000-22000	350-400	0.01-0.015	0.01-0.02
NMD-DBS0042	18000-20000	320-400	0.015-0.02	0.02-0.025	16000-18000	280-320	0.015-0.02	0.02-0.025	20000-22000	400-500	0.015-0.02	0.02-0.025
NMD-DBS0052	18000-20000	400-500	0.015-0.02	0.02-0.03	16000-18000	300-350	0.015-0.02	0.02-0.03	20000-22000	500-650	0.015-0.02	0.02-0.03
NMD-DBS0062	18000-20000	500-680	0.02-0.03	0.02-0.035	16000-18000	350-450	0.02-0.03	0.02-0.035	20000-22000	650-800	0.02-0.03	0.02-0.035
NMD-DBS0072	18000-20000	680-800	0.02-0.03	0.03-0.04	16000-18000	450-550	0.02-0.03	0.03-0.04	20000-22000	800-1000	0.02-0.03	0.03-0.04
NMD-DBS0082	18000-20000	800-1000	0.02-0.03	0.03-0.04	16000-18000	550-650	0.02-0.03	0.03-0.04	20000-22000	1000-1200	0.02-0.03	0.03-0.04
NMD-DBS0092	18000-20000	1000-1200	0.02-0.03	0.03-0.05	16000-18000	650-800	0.02-0.03	0.03-0.04	20000-22000	1200-1400	0.02-0.03	0.03-0.05



## NMD-TES SLOTTING



WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (~22HRC)				P20/H13/D2 (25-35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NMD-TES0012	22000-24000	100-150	0.003-0.005	0.1	22000-24000	100-150	0.003-0.005	0.1	20000-22000	100-120	0.003-0.005	0.1
NMD-TES0022	22000-24000	150-220	0.005-0.008	0.2	20000-22000	150-200	0.005-0.008	0.2	18000-20000	150-200	0.005-0.008	0.2
NMD-TES0032	22000-24000	220-300	0.005-0.01	0.3	20000-22000	200-260	0.005-0.01	0.3	18000-20000	150-200	0.005-0.01	0.3
NMD-TES0042	22000-24000	320-380	0.008-0.015	0.4	20000-22000	260-320	0.008-0.015	0.4	18000-20000	200-260	0.008-0.015	0.4
NMD-TES0052	22000-24000	350-380	0.01-0.02	0.5	20000-22000	320-350	0.01-0.02	0.5	18000-20000	260-300	0.01-0.02	0.5
NMD-TES0062	20000-22000	380-420	0.015-0.025	0.6	18000-20000	320-400	0.015-0.025	0.6	16000-18000	260-350	0.015-0.025	0.6
NMD-TES0072	20000-22000	500-600	0.02-0.025	0.7	18000-20000	400-500	0.02-0.025	0.7	16000-18000	350-450	0.02-0.025	0.7
NMD-TES0082	20000-22000	650-800	0.02-0.03	0.8	18000-20000	450-550	0.02-0.03	0.8	16000-18000	400-500	0.02-0.025	0.8
NMD-TES0092	20000-22000	800-1000	0.03-0.04	0.9	18000-20000	600-800	0.03-0.04	0.9	15000-18000	400-500	0.02-0.03	0.9

## NMD-TBS 3D MILLING



WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (~22HRC)				P20/H13/D2 (25-35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED r/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NMD-TBS0012	22000-24000	260-320	0.008-0.015	0.01-0.015	22000-24000	260-320	0.008-0.015	0.01-0.015	20000-22000	260-300	0.008-0.015	0.01-0.015
NMD-TBS0022	22000-23000	320-350	0.008-0.015	0.01-0.015	20000-22000	260-350	0.008-0.015	0.01-0.015	18000-20000	260-300	0.008-0.015	0.01-0.015
NMD-TBS0032	22000-23000	350-450	0.01-0.015	0.01-0.02	20000-22000	350-450	0.01-0.015	0.01-0.02	18000-20000	300-400	0.01-0.015	0.01-0.02
NMD-TBS0042	22000-23000	500-650	0.01-0.02	0.015-0.025	20000-22000	450-550	0.01-0.02	0.015-0.025	18000-20000	400-500	0.01-0.02	0.015-0.025
NMD-TBS0052	22000-23000	650-700	0.02-0.03	0.02-0.03	20000-22000	550-600	0.02-0.03	0.02-0.03	18000-20000	500-550	0.02-0.03	0.02-0.03
NMD-TBS0062	22000-23000	700-750	0.02-0.03	0.03-0.04	20000-22000	600-650	0.02-0.03	0.02-0.03	18000-20000	550-600	0.02-0.03	0.02-0.03
NMD-TBS0072	22000-23000	750-850	0.02-0.04	0.03-0.04	20000-22000	650-750	0.02-0.03	0.02-0.03	18000-20000	600-700	0.02-0.03	0.02-0.03
NMD-TBS0082	22000-23000	850-1000	0.03-0.05	0.04-0.05	20000-22000	750-850	0.02-0.03	0.03-0.04	18000-20000	650-750	0.02-0.03	0.02-0.04
NMD-TBS0092	20000-22000	1000-1200	0.03-0.05	0.04-0.05	18000-20000	800-1000	0.02-0.03	0.03-0.04	16000-18000	600-800	0.02-0.03	0.02-0.04



## NMD-DEMA | DEMB SLOTTING



### WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (~22HRC)				P20/H13/D2 (25-35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED f/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED f/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED f/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NMD-DEMA0201A	18000-20000	150-200	0.005-0.01	0.2	18000-20000	100-150	0.005-0.01	0.2	20000-22000	200-260	0.01-0.02	0.2
NMD-DEMA0301A	18000-20000	200-260	0.005-0.01	0.3	18000-20000	150-200	0.005-0.01	0.3	20000-22000	220-280	0.01-0.02	0.3
NMD-DEMA0402A	18000-20000	200-300	0.01-0.015	0.4	18000-20000	150-260	0.01-0.015	0.4	20000-22000	260-350	0.01-0.025	0.4
NMD-DEMA0502A	16000-18000	200-400	0.015-0.02	0.5	16000-18000	200-300	0.015-0.02	0.5	18000-20000	260-400	0.02-0.025	0.5
NMD-DEMA0504A	16000-18000	150-300	0.015-0.02	0.5	16000-18000	150-250	0.015-0.02	0.5	18000-20000	220-280	0.015-0.02	0.5
NMD-DEMA0506A	16000-18000	150-300	0.01-0.015	0.5	16000-18000	150-220	0.01-0.015	0.5	18000-20000	200-260	0.015-0.02	0.5
NMD-DEMA0602A	16000-18000	260-450	0.02-0.03	0.6	16000-18000	260-350	0.02-0.03	0.6	18000-20000	300-450	0.03-0.04	0.6
NMD-DEMA0608A	16000-18000	150-300	0.02-0.03	0.6	16000-18000	150-220	0.02-0.03	0.6	18000-20000	200-300	0.02-0.03	0.6
NMD-DEMA0804A	16000-18000	300-450	0.03-0.04	0.8	16000-18000	300-400	0.03-0.04	0.8	18000-20000	350-500	0.03-0.04	0.8
NMD-DEMA0810A	16000-18000	260-350	0.02-0.03	0.8	16000-18000	200-300	0.02-0.03	0.8	18000-20000	300-400	0.02-0.03	0.8
NMD-DEMA1006A	16000-18000	400-600	0.03-0.05	1	16000-18000	400-500	0.03-0.05	1	16000-18000	500-600	0.04-0.05	1
NMD-DEMA1008A	16000-18000	400-600	0.03-0.05	1	16000-18000	400-450	0.03-0.05	1	16000-18000	500-600	0.04-0.05	1
NMD-DEMA1010A	16000-18000	300-500	0.02-0.03	1	16000-18000	300-400	0.02-0.03	1	16000-18000	400-500	0.02-0.04	1
NMD-DEMA1012A	16000-18000	300-500	0.02-0.03	01	16000-18000	300-400	0.02-0.03	1	16000-18000	400-500	0.02-0.04	01
NMD-DEMA1016A	16000-18000	200-400	0.02-0.03	1	16000-18000	200-300	0.02-0.03	1	16000-18000	300-400	0.02-0.03	1
NMD-DEMA1508A	15000-17000	600-800	0.06-0.08	1.5	15000-17000	500-700	0.06-0.08	1.5	15000-17000	800-1000	0.06-0.10	1.5
NMD-DEMA1510A	15000-17000	600-800	0.05-0.07	1.5	15000-17000	300-500	0.05-0.07	1.5	15000-17000	800-1000	0.05-0.08	1.5
NMD-DEMA1512A	15000-17000	500-700	0.04-0.06	1.5	15000-17000	300-500	0.04-0.06	1.5	15000-17000	600-800	0.05-0.06	1.5
NMD-DEMA1516A	15000-17000	400-600	0.04-0.06	1.5	15000-17000	200-400	0.04-0.06	1.5	15000-17000	500-800	0.05-0.06	1.5
NMD-DEMA1520A	15000-17000	300-400	0.03-0.05	1.5	15000-17000	200-300	0.03-0.05	1.5	15000-17000	300-500	0.04-0.05	1.5
NMD-DEMA2008A	14000-16000	700-900	0.10-0.12	2	14000-16000	600-800	0.10-0.12	2	14000-16000	800-1000	0.12-0.15	2
NMD-DEMA2010A	14000-16000	700-900	0.08-0.10	2	14000-16000	600-800	0.08-0.10	2	14000-16000	800-1000	0.10-0.12	2
NMD-DEMA2012A	14000-16000	500-700	0.06-0.08	2	14000-16000	400-600	0.06-0.08	2	14000-16000	600-800	0.08-0.10	2
NMD-DEMA2016A	14000-16000	500-600	0.04-0.05	2	14000-16000	300-500	0.04-0.05	2	14000-16000	500-800	0.06-0.08	2
NMD-DEMA2020A	14000-16000	400-600	0.03-0.05	2	14000-16000	300-500	0.03-0.05	2	14000-16000	500-800	0.05-0.06	2
NMD-DEMA3010A	12000-14000	800-1000	0.12-0.14	3	12000-14000	700-900	0.12-0.14	3	12000-14000	1000-1200	0.15-0.18	3
NMD-DEMA3012A	12000-14000	700-900	0.10-0.12	3	12000-14000	600-800	0.10-0.12	3	12000-14000	800-1000	0.12-0.15	3
NMD-DEMA3016A	12000-14000	700-900	0.08-0.10	3	12000-14000	600-800	0.08-0.10	3	12000-14000	800-1000	0.10-0.12	3
NMD-DEMA3020	12000-14000	600-800	0.06-0.08	3	12000-14000	500-700	0.06-0.08	3	12000-14000	700-900	0.08-0.10	3
NMD-DEMA3026	12000-14000	500-800	0.04-0.06	3	12000-14000	400-600	0.04-0.06	3	12000-14000	600-800	0.05-0.08	3
NMD-DEMA3030	12000-14000	400-600	0.03-0.05	3	12000-14000	300-500	0.03-0.05	3	12000-14000	500-700	0.05-0.06	3
NMD-DEMA4016	10000-12000	1000-1200	0.10-0.12	4	10000-12000	800-1000	0.10-0.12	4	10000-12000	1200-1400	0.12-0.15	4
NMD-DEMA4020	10000-12000	800-1000	0.08-0.10	4	10000-12000	700-900	0.08-0.10	4	10000-12000	1000-1200	0.10-0.12	4
NMD-DEMA4026	10000-12000	700-900	0.08-0.10	4	10000-12000	600-800	0.08-0.10	4	10000-12000	800-1000	0.10-0.12	4
NMD-DEMA4030	10000-12000	500-700	0.05-0.08	4	10000-12000	400-600	0.05-0.08	4	10000-12000	600-800	0.08-0.10	4

MICRO DIAMETER & LONG NECK SERIES | SPEEDS & FEEDS



## NMD-DBM 3D MILLING



### WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (-22HRC)				P20/H13/D2 (25-35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED r/ min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED r/ min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED r/ min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NMD-DBM0201A	2000-2000	150-200	0.005-0.01	0.01-0.015	1800-2000	120-180	0.005-0.01	0.01-0.015	2200-2400	180-220	0.005-0.01	0.01-0.015
NMD-DBM0301A	1800-2000	180-260	0.01-0.015	0.01-0.02	1600-1800	150-220	0.01-0.015	0.01-0.02	2000-2200	200-300	0.01-0.015	0.01-0.02
NMD-DBM0402A	1800-2000	220-300	0.015-0.02	0.02-0.025	1600-1800	200-260	0.015-0.02	0.02-0.025	2000-2200	260-350	0.015-0.02	0.02-0.025
NMD-DBM0502A	1800-2000	300-450	0.015-0.02	0.02-0.03	1600-1800	260-320	0.015-0.02	0.02-0.03	2000-2200	350-500	0.015-0.02	0.02-0.03
NMD-DBM0504A	1800-2000	260-350	0.015-0.02	0.02-0.03	1600-1800	200-260	0.015-0.02	0.02-0.03	2000-2200	300-350	0.015-0.02	0.02-0.03
NMD-DBM0506A	1800-2000	200-260	0.01-0.02	0.01-0.02	1600-1800	150-200	0.01-0.02	0.01-0.02	2000-2200	260-300	0.01-0.02	0.01-0.02
NMD-DBM0602A	1800-2000	400-500	0.02-0.03	0.02-0.035	1600-1800	300-500	0.02-0.03	0.02-0.035	2000-2200	400-600	0.02-0.03	0.02-0.035
NMD-DBM0606A	1800-2000	200-260	0.01-0.02	0.02-0.03	1600-1800	150-220	0.01-0.02	0.02-0.03	2000-2200	260-300	0.01-0.02	0.02-0.03
NMD-DBM0804A	1800-2000	500-700	0.02-0.03	0.03-0.04	1600-1800	400-600	0.02-0.03	0.03-0.04	2000-2200	800-1000	0.02-0.03	0.03-0.04
NMD-DBM0808A	1800-2000	300-500	0.01-0.02	0.02-0.03	1600-1800	260-400	0.01-0.02	0.02-0.03	2000-2200	350-550	0.01-0.02	0.02-0.03
NMD-DBM1004A	1700-1800	900-1100	0.01-0.03	0.02-0.05	1500-1600	800-1000	0.01-0.03	0.02-0.05	1800-2000	1000-1200	0.02-0.03	0.03-0.05
NMD-DBM1006A	1700-1800	700-900	0.01-0.03	0.02-0.05	1500-1600	600-800	0.01-0.03	0.02-0.05	1800-2000	800-1000	0.02-0.03	0.03-0.05
NMD-DBM1008A	1700-1800	700-900	0.01-0.03	0.02-0.05	1500-1600	600-800	0.01-0.03	0.02-0.05	1800-2000	800-1000	0.02-0.03	0.03-0.05
NMD-DBM1010A	1700-1800	500-800	0.01-0.03	0.02-0.05	1500-1600	400-600	0.01-0.03	0.02-0.05	1800-2000	600-900	0.02-0.03	0.03-0.05
NMD-DBM1012A	1700-1800	400-600	0.01-0.03	0.02-0.05	1500-1600	300-500	0.01-0.03	0.02-0.05	1800-2000	500-800	0.01-0.03	0.02-0.05
NMD-DBM1016A	1700-1800	400-600	0.01-0.02	0.02-0.04	1500-1600	300-500	0.01-0.02	0.02-0.04	1800-2000	500-800	0.01-0.02	0.02-0.04
NMD-DBM1506A	1600-1700	1300-1500	0.02-0.04	0.04-0.06	1300-1500	1200-1400	0.02-0.04	0.04-0.06	1600-1800	1400-1600	0.02-0.05	0.05-0.08
NMD-DBM1508A	1600-1700	1200-1400	0.02-0.04	0.04-0.06	1300-1500	1000-1200	0.02-0.04	0.04-0.06	1600-1800	1300-1500	0.02-0.05	0.05-0.08
NMD-DBM1510A	1600-1700	1000-1200	0.02-0.04	0.03-0.05	1300-1500	800-1000	0.02-0.04	0.03-0.05	1600-1800	1200-1400	0.02-0.05	0.05-0.08
NMD-DBM1512A	1600-1700	1000-1200	0.02-0.04	0.03-0.05	1300-1500	800-1000	0.02-0.04	0.03-0.05	1600-1800	1200-1400	0.02-0.05	0.03-0.05
NMD-DBM1516A	1600-1700	800-1000	0.01-0.03	0.02-0.05	1300-1500	700-900	0.01-0.03	0.02-0.05	1600-1800	1000-1200	0.02-0.04	0.03-0.05
NMD-DBM1518A	1600-1700	700-900	0.01-0.03	0.02-0.05	1300-1500	600-800	0.01-0.03	0.02-0.05	1600-1800	900-1100	0.02-0.04	0.03-0.05
NMD-DBM1520A	1600-1700	600-900	0.01-0.03	0.02-0.05	1300-1500	500-800	0.01-0.03	0.02-0.05	1600-1800	800-1000	0.02-0.04	0.03-0.05
NMD-DBM2008A	1500-1600	1400-1600	0.02-0.05	0.04-0.08	1200-1500	1300-1500	0.02-0.05	0.04-0.06	1500-1700	1500-1800	0.02-0.05	0.05-0.08
NMD-DBM2010A	1500-1600	1300-1500	0.02-0.05	0.04-0.08	1200-1500	1200-1400	0.02-0.05	0.04-0.06	1500-1700	1400-1600	0.02-0.05	0.05-0.08
NMD-DBM2012A	1500-1600	1100-1300	0.02-0.05	0.03-0.08	1200-1500	1000-1200	0.02-0.05	0.03-0.06	1500-1700	1200-1400	0.02-0.05	0.04-0.08
NMD-DBM2016A	1500-1600	1000-1200	0.02-0.05	0.03-0.08	1200-1500	900-1100	0.02-0.05	0.03-0.06	1500-1700	1100-1300	0.02-0.05	0.04-0.08
NMD-DBM2018A	1500-1600	1000-1200	0.02-0.04	0.03-0.05	1200-1500	900-1100	0.02-0.04	0.03-0.06	1500-1700	1100-1300	0.02-0.05	0.03-0.06
NMD-DBM2020A	1500-1600	900-1100	0.02-0.04	0.03-0.05	1200-1500	800-1000	0.02-0.04	0.03-0.05	1500-1700	1000-1200	0.02-0.05	0.03-0.06
NMD-DBM3010A	1400-1500	1600-1800	0.03-0.06	0.05-0.10	1100-1300	1500-1700	0.03-0.05	0.05-0.10	1400-1600	1800-2000	0.03-0.06	0.05-0.10
NMD-DBM3012A	1400-1500	1500-1700	0.03-0.05	0.05-0.10	1100-1300	1300-1500	0.03-0.05	0.05-0.08	1400-1600	1700-1900	0.03-0.05	0.05-0.10
NMD-DBM3016A	1400-1500	1300-1500	0.03-0.05	0.05-0.10	1100-1300	1100-1300	0.03-0.05	0.05-0.08	1400-1600	1400-1600	0.03-0.05	0.05-0.10
NMD-DBM3020	1400-1500	1200-1400	0.02-0.05	0.04-0.08	1100-1300	1000-1200	0.02-0.05	0.04-0.06	1400-1600	1300-1500	0.02-0.05	0.04-0.08
NMD-DBM3026	1400-1500	1100-1300	0.02-0.04	0.03-0.05	1100-1300	1000-1200	0.02-0.04	0.03-0.05	1400-1600	1200-1400	0.02-0.04	0.03-0.06
NMD-DBM3030	1400-1500	1100-1300	0.01-0.03	0.02-0.04	1100-1300	1000-1200	0.01-0.03	0.02-0.04	1400-1600	1200-1400	0.01-0.03	0.02-0.05
NMD-DBM4016	1200-1300	2000-2200	0.04-0.08	0.05-0.10	1000-1200	1800-2000	0.04-0.06	0.05-0.10	1300-1500	2200-2500	0.04-0.08	0.05-0.10
NMD-DBM4020	1200-1300	1800-2000	0.04-0.08	0.05-0.10	1000-1200	1700-1900	0.04-0.06	0.05-0.10	1300-1500	2000-2200	0.04-0.08	0.05-0.10
NMD-DBM4026	1200-1300	1700-1900	0.04-0.06	0.05-0.10	1000-1200	1500-1800	0.04-0.05	0.05-0.08	1300-1500	1800-2000	0.04-0.06	0.05-0.08
NMD-DBM4030	1200-1300	1600-1800	0.03-0.05	0.05-0.10	1000-1200	1200-1500	0.03-0.05	0.03-0.05	1300-1500	1700-1900	0.03-0.06	0.05-0.08



## NMD-DRMA | DRMB SLOTTING



### WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (~22HRC)				P20/H13/D2 (25-35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED r/min	FEED mm/v/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED r/min	FEED mm/v/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED r/min	FEED mm/v/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NMD-DRMA100402A	17000-18000	400-500	0.03-0.05	1	17000-18000	350-450	0.03-0.05	1	17000-18000	500-600	0.04-0.05	1
NMD-DRMA100602A	17000-18000	350-500	0.03-0.05	1	17000-18000	300-500	0.03-0.05	1	17000-18000	400-500	0.04-0.05	1
NMD-DRMA100802A	17000-18000	300-500	0.03-0.05	1	17000-18000	200-400	0.03-0.05	1	17000-18000	350-450	0.04-0.05	1
NMD-DRMA101002A	17000-18000	300-500	0.02-0.04	1	17000-18000	200-400	0.02-0.04	1	17000-18000	350-450	0.02-0.05	1
NMD-DRMA101202A	17000-18000	300-500	0.02-0.03	1	17000-18000	200-400	0.02-0.03	1	17000-18000	350-450	0.02-0.04	1
NMD-DRMA101602A	17000-18000	200-400	0.01-0.03	1	17000-18000	200-300	0.01-0.03	1	17000-18000	300-400	0.02-0.03	1
NMD-DRMA150602A	16000-17000	600-800	0.05-0.08	1.5	16000-17000	500-600	0.04-0.06	1.5	16000-17000	800-1000	0.06-0.10	1.5
NMD-DRMA150802A	16000-17000	600-800	0.05-0.08	1.5	16000-17000	400-600	0.04-0.06	1.5	16000-17000	800-1000	0.06-0.10	1.5
NMD-DRMA151002A	16000-17000	600-800	0.05-0.07	1.5	16000-17000	300-500	0.04-0.06	1.5	16000-17000	800-1000	0.06-0.08	1.5
NMD-DRMA151202A	16000-17000	500-700	0.04-0.06	1.5	16000-17000	300-500	0.03-0.05	1.5	16000-17000	600-800	0.05-0.06	1.5
NMD-DRMA151602A	16000-17000	400-600	0.03-0.05	1.5	16000-17000	200-400	0.02-0.04	1.5	16000-17000	500-800	0.04-0.06	1.5
NMD-DRMA151802A	16000-17000	300-500	0.03-0.05	1.5	16000-17000	200-400	0.02-0.03	1.5	16000-17000	400-600	0.05-0.06	1.5
NMD-DRMA152002A	16000-17000	300-400	0.02-0.04	1.5	16000-17000	200-300	0.01-0.03	1.5	16000-17000	300-500	0.03-0.05	1.5
NMD-DRMA200802A	14000-16000	600-800	0.08-0.10	2	14000-16000	500-700	0.05-0.07	2	14000-16000	800-1000	0.08-0.12	2
NMD-DRMA201002A	14000-16000	600-800	0.05-0.08	2	14000-16000	500-700	0.04-0.06	2	14000-16000	800-1000	0.06-0.08	2
NMD-DRMA201202A	14000-16000	500-700	0.05-0.08	2	14000-16000	400-600	0.04-0.06	2	14000-16000	600-800	0.06-0.08	2
NMD-DRMA201602A	14000-16000	500-600	0.04-0.05	2	14000-16000	300-500	0.03-0.05	2	14000-16000	500-800	0.05-0.08	2
NMD-DRMA201802A	14000-16000	400-600	0.03-0.05	2	14000-16000	300-500	0.02-0.05	2	14000-16000	500-800	0.05-0.06	2
NMD-DRMA202002A	14000-16000	400-600	0.03-0.05	2	14000-16000	300-500	0.02-0.04	2	14000-16000	500-800	0.05-0.06	2
NMD-DRMA301002A	11000-13000	800-1000	0.12-0.14	3	11000-13000	700-900	0.10-0.12	3	11000-13000	1000-1200	0.13-0.15	3
NMD-DRMA301202A	11000-13000	700-900	0.10-0.12	3	11000-13000	600-800	0.10-0.12	3	11000-13000	800-1000	0.12-0.14	3
NMD-DRMA301602A	11000-13000	700-900	0.08-0.10	3	11000-13000	600-800	0.08-0.10	3	11000-13000	800-1000	0.10-0.12	3
NMD-DRMA302002A	11000-13000	600-800	0.06-0.08	3	11000-13000	500-700	0.06-0.08	3	11000-13000	700-900	0.08-0.10	3
NMD-DRMA302602	11000-13000	500-800	0.04-0.06	3	11000-13000	400-600	0.05-0.07	3	11000-13000	600-800	0.05-0.08	3
NMD-DRMA303002	11000-13000	400-600	0.03-0.05	3	11000-13000	300-500	0.03-0.05	3	11000-13000	500-700	0.04-0.06	3
NMD-DRMA401602	10000-12000	1000-1200	0.10-0.12	4	10000-12000	800-1000	0.10-0.12	4	10000-12000	1200-1400	0.12-0.15	4
NMD-DRMA402002	10000-12000	800-1000	0.08-0.10	4	10000-12000	700-900	0.08-0.10	4	10000-12000	1000-1200	0.10-0.12	4
NMD-DRMA402602	10000-12000	700-900	0.08-0.10	4	10000-12000	600-800	0.08-0.10	4	10000-12000	800-1000	0.10-0.12	4
NMD-DRMA403002	10000-12000	500-700	0.05-0.08	4	10000-12000	400-600	0.05-0.08	4	10000-12000	600-800	0.08-0.10	4

MICRO DIAMETER & LONG NECK SERIES | SPEEDS & FEEDS



## NMD-TEMA|TEMB SLOTTING



WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (-22HRC)				P20/H13/D2 (25-35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED $f_r$ min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED $f_r$ min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED $f_r$ min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NMD-TEMA201A	1800-2000	100-150	0.005-0.01	0.2	17000-19000	100-150	0.005-0.008	0.2	17000-19000	100-150	0.003-0.005	0.2
NMD-TEMA301A	1800-2000	150-200	0.005-0.01	0.3	17000-19000	150-200	0.005-0.008	0.3	17000-19000	100-150	0.005-0.008	0.3
NMD-TEMA402A	18000-20000	150-260	0.01-0.015	0.4	17000-19000	150-260	0.008-0.012	0.4	17000-19000	100-200	0.008-0.012	0.4
NMD-TEMA502A	16000-18000	200-300	0.015-0.02	0.5	15000-17000	200-300	0.008-0.015	0.5	15000-17000	150-250	0.008-0.015	0.5
NMD-TEMA0504A	16000-18000	150-250	0.015-0.02	0.5	15000-17000	150-250	0.008-0.015	0.5	15000-17000	100-200	0.008-0.015	0.5
NMD-TEMA0506A	16000-18000	150-220	0.01-0.015	0.5	15000-17000	150-220	0.008-0.015	0.5	15000-17000	100-200	0.008-0.015	0.5
NMD-TEMA0602A	16000-18000	260-350	0.02-0.03	0.6	15000-17000	260-350	0.01-0.015	0.6	15000-17000	200-300	0.01-0.015	0.6
NMD-TEMA0608A	16000-18000	150-220	0.02-0.03	0.6	15000-17000	150-220	0.008-0.012	0.6	15000-17000	100-150	0.008-0.012	0.6
NMD-TEMA0804A	16000-18000	300-400	0.03-0.04	0.8	15000-17000	300-400	0.01-0.02	0.8	15000-17000	250-300	0.01-0.02	0.8
NMD-TEMA0810A	16000-18000	200-300	0.02-0.03	0.8	15000-17000	200-300	0.008-0.015	0.8	15000-17000	100-150	0.008-0.015	0.8
NMD-TEMA1006A	16000-18000	400-500	0.03-0.05	1	15000-17000	400-500	0.02-0.04	1	15000-17000	350-450	0.02-0.04	1
NMD-TEMA1008A	16000-18000	400-450	0.03-0.05	1	15000-17000	400-450	0.02-0.04	1	15000-17000	300-400	0.02-0.04	1
NMD-TEMA1010A	16000-18000	300-400	0.02-0.03	1	15000-17000	300-400	0.01-0.03	1	15000-17000	260-350	0.01-0.03	1
NMD-TEMA1012A	16000-18000	300-400	0.02-0.03	1	15000-17000	300-400	0.01-0.03	1	15000-17000	260-350	0.01-0.03	1
NMD-TEMA1016A	16000-18000	200-300	0.02-0.03	1	15000-17000	200-300	0.01-0.03	1	15000-17000	150-260	0.01-0.03	1
NMD-TEMA1508A	15000-17000	500-700	0.06-0.08	1.5	14000-16000	500-700	0.04-0.06	1.5	14000-16000	400-600	0.04-0.06	1.5
NMD-TEMA1510A	15000-17000	300-500	0.05-0.07	1.5	14000-16000	300-500	0.03-0.05	1.5	14000-16000	300-500	0.03-0.05	1.5
NMD-TEMA1512A	15000-17000	300-500	0.04-0.06	1.5	14000-16000	300-500	0.02-0.04	1.5	14000-16000	300-500	0.02-0.04	1.5
NMD-TEMA1516A	15000-17000	200-400	0.04-0.06	1.5	14000-16000	200-400	0.02-0.04	1.5	14000-16000	200-400	0.02-0.04	1.5
NMD-TEMA1520A	15000-17000	200-300	0.03-0.05	1.5	14000-16000	200-300	0.01-0.03	1.5	14000-16000	200-300	0.01-0.03	1.5
NMD-TEMA2008A	14000-16000	600-800	0.10-0.12	2	13000-15000	600-800	0.06-0.08	2	13000-15000	500-700	0.06-0.08	2
NMD-TEMA2010A	14000-16000	600-800	0.08-0.10	2	13000-15000	600-800	0.05-0.07	2	13000-15000	500-700	0.05-0.07	2
NMD-TEMA2012A	14000-16000	400-600	0.06-0.08	2	13000-15000	400-600	0.04-0.06	2	13000-15000	300-500	0.04-0.06	2
NMD-TEMA2016A	14000-16000	300-500	0.04-0.05	2	13000-15000	300-500	0.03-0.05	2	13000-15000	300-500	0.03-0.05	2
NMD-TEMA2020A	14000-16000	300-500	0.03-0.05	2	13000-15000	300-500	0.02-0.04	2	13000-15000	200-300	0.02-0.04	2
NMD-TEMA3010A	12000-14000	700-900	0.12-0.14	3	11000-13000	700-900	0.10-0.12	3	11000-13000	600-800	0.10-0.12	3
NMD-TEMA3012A	12000-14000	600-800	0.10-0.12	3	11000-13000	600-800	0.08-0.10	3	11000-13000	500-700	0.08-0.10	3
NMD-TEMA3016A	12000-14000	600-800	0.08-0.10	3	11000-13000	600-800	0.06-0.08	3	11000-13000	500-700	0.06-0.08	3
NMD-TEMA3020	12000-14000	500-700	0.06-0.08	3	11000-13000	500-700	0.05-0.08	3	11000-13000	400-600	0.05-0.08	3
NMD-TEMA3026	12000-14000	400-600	0.04-0.06	3	11000-13000	400-600	0.03-0.06	3	11000-13000	300-500	0.03-0.06	3
NMD-TEMA3030	12000-14000	300-500	0.03-0.05	3	11000-13000	300-500	0.03-0.05	3	11000-13000	200-400	0.03-0.05	3
NMD-TEMA4016	10000-12000	800-1000	0.10-0.12	4	8000-10000	800-1000	0.08-0.10	4	8000-10000	600-800	0.08-0.10	4
NMD-TEMA4020	10000-12000	700-900	0.08-0.10	4	8000-10000	700-900	0.06-0.08	4	8000-10000	500-700	0.06-0.08	4
NMD-TEMA4026	10000-12000	600-800	0.08-0.10	4	8000-10000	600-800	0.06-0.08	4	8000-10000	400-600	0.06-0.08	4
NMD-TEMA4030	10000-12000	400-600	0.05-0.08	4	8000-10000	400-600	0.04-0.06	4	8000-10000	300-500	0.04-0.06	4



## NMD-TBM 3D MILLING



### WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (-22HRC)				P20/H13/D2 (25-35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED <i>r/min</i>	FEED <i>mm/min</i>	DEPTH OF CUT <i>mm</i>	WIDTH OF CUT <i>mm</i>	ROTATION SPEED <i>r/min</i>	FEED <i>mm/min</i>	DEPTH OF CUT <i>mm</i>	WIDTH OF CUT <i>mm</i>	ROTATION SPEED <i>r/min</i>	FEED <i>mm/min</i>	DEPTH OF CUT <i>mm</i>	WIDTH OF CUT <i>mm</i>
NMD-TBM0201A	18000-20000	120-180	0.005-0.01	0.01-0.015	17000-19000	120-180	0.005-0.008	0.005-0.008	17000-19000	100-150	0.005-0.008	0.005-0.008
NMD-TBM0301A	16000-18000	150-220	0.01-0.015	0.01-0.02	15000-18000	150-220	0.005-0.008	0.008-0.01	15000-18000	100-200	0.005-0.008	0.008-0.01
NMD-TBM0402A	16000-18000	200-260	0.015-0.02	0.02-0.025	15000-18000	200-260	0.008-0.012	0.008-0.01	15000-18000	150-220	0.008-0.012	0.008-0.01
NMD-TBM0502A	16000-18000	260-320	0.015-0.02	0.02-0.03	15000-18000	260-320	0.005-0.008	0.008-0.01	15000-18000	200-300	0.005-0.008	0.008-0.01
NMD-TBM0504A	16000-18000	200-260	0.015-0.02	0.02-0.03	15000-18000	200-260	0.005-0.008	0.008-0.01	15000-18000	150-220	0.005-0.008	0.008-0.01
NMD-TBM0506A	16000-18000	150-200	0.01-0.02	0.01-0.02	15000-18000	150-200	0.003-0.005	0.005-0.008	15000-18000	100-200	0.003-0.005	0.005-0.008
NMD-TBM0602A	16000-18000	300-500	0.02-0.03	0.02-0.035	15000-18000	300-500	0.01-0.012	0.12-0.015	15000-18000	200-400	0.01-0.012	0.12-0.015
NMD-TBM0606A	16000-18000	150-220	0.01-0.02	0.02-0.03	15000-18000	150-220	0.005-0.01	0.01-0.015	15000-18000	100-200	0.005-0.01	0.01-0.015
NMD-TBM0804A	16000-18000	400-600	0.02-0.03	0.03-0.04	15000-18000	400-600	0.01-0.015	0.015-0.02	15000-18000	300-500	0.01-0.015	0.015-0.02
NMD-TBM0808A	16000-18000	260-400	0.01-0.02	0.02-0.03	15000-18000	260-400	0.005-0.01	0.01-0.015	15000-18000	200-300	0.005-0.01	0.01-0.015
NMD-TBM1004A	15000-16000	800-1000	0.01-0.03	0.02-0.05	13000-15000	800-1000	0.01-0.03	0.02-0.04	13000-15000	500-800	0.01-0.03	0.02-0.04
NMD-TBM1006A	15000-16000	600-800	0.01-0.03	0.02-0.05	13000-15000	600-800	0.01-0.03	0.02-0.03	13000-15000	400-700	0.01-0.03	0.02-0.03
NMD-TBM1008A	15000-16000	600-800	0.01-0.03	0.02-0.05	13000-15000	600-800	0.01-0.02	0.02-0.03	13000-15000	400-600	0.01-0.02	0.02-0.03
NMD-TBM1010A	15000-16000	400-600	0.01-0.03	0.02-0.05	13000-15000	400-600	0.01-0.02	0.02-0.03	13000-15000	300-400	0.01-0.02	0.02-0.03
NMD-TBM1012A	15000-16000	300-500	0.01-0.03	0.02-0.05	13000-15000	300-500	0.01-0.02	0.02-0.03	13000-15000	300-400	0.01-0.02	0.02-0.03
NMD-TBM1016A	15000-16000	300-500	0.01-0.02	0.02-0.04	13000-15000	300-500	0.01-0.02	0.01-0.02	13000-15000	200-400	0.01-0.02	0.01-0.02
NMD-TBM1506A	13000-15000	1200-1400	0.02-0.04	0.04-0.06	13000-15000	1200-1400	0.02-0.04	0.03-0.05	13000-15000	1000-1200	0.02-0.04	0.03-0.05
NMD-TBM1508A	13000-15000	1000-1200	0.02-0.04	0.04-0.06	13000-15000	1000-1200	0.015-0.035	0.03-0.05	13000-15000	800-1000	0.015-0.035	0.03-0.05
NMD-TBM1510A	13000-15000	800-1000	0.02-0.04	0.03-0.05	13000-15000	800-1000	0.015-0.035	0.03-0.05	13000-15000	700-900	0.015-0.035	0.03-0.05
NMD-TBM1512A	13000-15000	800-1000	0.02-0.04	0.03-0.05	13000-15000	800-1000	0.015-0.035	0.03-0.05	13000-15000	600-800	0.015-0.035	0.03-0.05
NMD-TBM1516A	13000-15000	700-900	0.01-0.03	0.02-0.05	13000-15000	700-900	0.01-0.02	0.02-0.04	13000-15000	500-700	0.01-0.02	0.02-0.04
NMD-TBM1518A	13000-15000	600-800	0.01-0.03	0.02-0.05	13000-15000	600-800	0.01-0.02	0.015-0.04	13000-15000	500-600	0.01-0.02	0.015-0.04
NMD-TBM1520A	13000-15000	500-800	0.01-0.03	0.02-0.05	13000-15000	500-800	0.005-0.015	0.012-0.03	13000-15000	400-600	0.005-0.015	0.012-0.03
NMD-TBM2006A	12000-15000	1300-1500	0.02-0.05	0.04-0.06	12000-13000	1300-1500	0.015-0.035	0.03-0.05	12000-13000	1100-1300	0.015-0.035	0.03-0.05
NMD-TBM2010A	12000-15000	1200-1400	0.02-0.05	0.04-0.06	12000-13000	1200-1400	0.015-0.035	0.03-0.05	12000-13000	1000-1200	0.015-0.035	0.03-0.05
NMD-TBM2012A	12000-15000	1000-1200	0.02-0.05	0.03-0.06	12000-13000	1000-1200	0.015-0.035	0.02-0.05	12000-13000	800-1000	0.015-0.035	0.02-0.05
NMD-TBM2016A	12000-15000	900-1100	0.02-0.05	0.03-0.06	12000-13000	900-1100	0.015-0.035	0.02-0.05	12000-13000	700-900	0.015-0.035	0.02-0.05
NMD-TBM2018A	12000-15000	900-1100	0.02-0.04	0.03-0.05	12000-13000	900-1100	0.01-0.03	0.02-0.04	12000-13000	600-800	0.01-0.03	0.02-0.04
NMD-TBM2020A	12000-15000	800-1000	0.02-0.04	0.03-0.05	12000-13000	800-1000	0.01-0.03	0.02-0.04	12000-13000	500-800	0.01-0.03	0.02-0.04
NMD-TBM3010A	11000-13000	1500-1700	0.03-0.05	0.05-0.10	10000-11000	1500-1700	0.02-0.05	0.05-0.08	10000-11000	1300-1500	0.02-0.05	0.05-0.08
NMD-TBM3012A	11000-13000	1300-1500	0.03-0.05	0.05-0.08	10000-11000	1300-1500	0.02-0.05	0.05-0.08	10000-11000	1100-1300	0.02-0.05	0.05-0.08
NMD-TBM3016A	11000-13000	1100-1300	0.03-0.05	0.05-0.08	10000-11000	1100-1300	0.02-0.05	0.04-0.08	10000-11000	1000-1200	0.02-0.05	0.04-0.08
NMD-TBM3020	11000-13000	1000-1200	0.02-0.05	0.04-0.06	10000-11000	1000-1200	0.02-0.04	0.03-0.05	10000-11000	900-1100	0.02-0.04	0.03-0.05
NMD-TBM3026	11000-13000	1000-1200	0.02-0.04	0.03-0.05	10000-11000	1000-1200	0.02-0.03	0.02-0.05	10000-11000	800-1000	0.02-0.03	0.02-0.05
NMD-TBM3030	11000-13000	1000-1200	0.01-0.03	0.02-0.04	10000-11000	1000-1200	0.01-0.03	0.02-0.04	10000-11000	800-1000	0.01-0.03	0.02-0.04
NMD-TBM4016	10000-12000	1800-2000	0.04-0.08	0.05-0.10	8000-9000	1800-2000	0.03-0.05	0.05-0.10	8000-9000	1500-1800	0.03-0.05	0.05-0.10
NMD-TBM4020	10000-12000	1700-1900	0.04-0.08	0.05-0.10	8000-9000	1700-1900	0.03-0.05	0.05-0.08	8000-9000	1300-1500	0.03-0.05	0.05-0.08
NMD-TBM4026	10000-12000	1500-1800	0.04-0.06	0.03-0.08	8000-9000	1500-1800	0.03-0.05	0.05-0.08	8000-9000	1100-1300	0.03-0.05	0.05-0.08
NMD-TBM4030	10000-12000	1200-1500	0.03-0.05	0.03-0.08	8000-9000	1200-1500	0.02-0.04	0.03-0.05	8000-9000	1000-1200	0.02-0.04	0.03-0.05



## NMD-TRMA | TRMB SLOTTING



### WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (~22HRC)					P20/H13/D2 (25~35HRC)				C11000/B152 (C11000)				
	ROTATION SPEED #/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm		ROTATION SPEED #/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm		ROTATION SPEED #/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NMD-TRMA100402A	17000-18000	350-450	0.03-0.05	1		14000-15000	350-450	0.02-0.04	1		14000-15000	300-400	0.02-0.04	1
NMD-TRMA100602A	17000-18000	300-500	0.03-0.05	1		14000-15000	300-500	0.02-0.04	1		14000-15000	260-400	0.02-0.04	1
NMD-TRMA100802A	17000-18000	200-400	0.03-0.05	1		14000-15000	200-400	0.01-0.03	1		14000-15000	150-300	0.01-0.03	1
NMD-TRMA101002A	17000-18000	200-400	0.02-0.04	1		14000-15000	200-400	0.01-0.02	1		14000-15000	150-300	0.01-0.02	1
NMD-TRMA101202A	17000-18000	200-400	0.02-0.03	1		14000-15000	200-400	0.008-0.015	1		14000-15000	150-300	0.008-0.015	1
NMD-TRMA101602A	17000-18000	200-300	0.01-0.03	1		14000-15000	200-300	0.008-0.01	1		14000-15000	100-260	0.008-0.010	1
NMD-TRMA150602A	16000-17000	500-600	0.04-0.06	1.5		13000-14000	500-600	0.03-0.05	1.5		13000-14000	300-500	0.03-0.05	1.5
NMD-TRMA150802A	16000-17000	400-600	0.04-0.06	1.5		13000-14000	400-600	0.03-0.05	1.5		13000-14000	300-500	0.03-0.05	1.5
NMD-TRMA151002A	16000-17000	300-500	0.04-0.06	1.5		13000-14000	300-500	0.02-0.05	1.5		13000-14000	200-400	0.02-0.05	1.5
NMD-TRMA151202A	16000-17000	300-500	0.03-0.05	1.5		13000-14000	300-500	0.02-0.05	1.5		13000-14000	200-400	0.02-0.05	1.5
NMD-TRMA151602A	16000-17000	200-400	0.02-0.04	1.5		13000-14000	200-400	0.01-0.03	1.5		13000-14000	150-300	0.01-0.03	1.5
NMD-TRMA151802A	16000-17000	200-400	0.02-0.03	1.5		13000-14000	200-400	0.01-0.03	1.5		13000-14000	150-300	0.01-0.03	1.5
NMD-TRMA152002A	16000-17000	200-300	0.01-0.03	1.5		13000-14000	200-300	0.01-0.02	1.5		13000-14000	100-260	0.01-0.02	1.5
NMD-TRMA200802A	14000-16000	500-700	0.05-0.07	2		12000-13000	500-700	0.03-0.05	2		12000-13000	400-600	0.03-0.05	2
NMD-TRMA201002A	14000-16000	500-700	0.04-0.06	2		12000-13000	500-700	0.03-0.05	2		12000-13000	300-500	0.03-0.05	2
NMD-TRMA201202A	14000-16000	400-600	0.04-0.06	2		12000-13000	400-600	0.02-0.04	2		12000-13000	300-500	0.02-0.04	2
NMD-TRMA201602A	14000-16000	300-500	0.03-0.05	2		12000-13000	300-500	0.02-0.04	2		12000-13000	200-400	0.02-0.04	2
NMD-TRMA201802A	14000-16000	300-500	0.02-0.05	2		12000-13000	300-500	0.01-0.03	2		12000-13000	200-400	0.01-0.03	2
NMD-TRMA202002A	14000-16000	300-500	0.02-0.04	2		12000-13000	300-500	0.01-0.03	2		12000-13000	200-400	0.01-0.03	2
NMD-TRMA301002A	11000-13000	700-900	0.01-0.12	3		10000-12000	700-900	0.05-0.08	3		10000-12000	500-700	0.05-0.08	3
NMD-TRMA301202A	11000-13000	600-800	0.01-0.12	3		10000-12000	600-800	0.05-0.08	3		10000-12000	400-600	0.05-0.08	3
NMD-TRMA301602A	11000-13000	600-800	0.08-0.01	3		10000-12000	600-800	0.04-0.06	3		10000-12000	400-600	0.04-0.06	3
NMD-TRMA302002	11000-13000	500-700	0.06-0.08	3		10000-12000	500-700	0.03-0.05	3		10000-12000	300-500	0.03-0.05	3
NMD-TRMA302602	11000-13000	400-600	0.05-0.07	3		10000-12000	400-600	0.03-0.04	3		10000-12000	200-400	0.03-0.04	3
NMD-TRMA303002	11000-13000	300-500	0.03-0.05	3		10000-12000	300-500	0.02-0.04	3		10000-12000	200-300	0.02-0.04	3
NMD-TRMA401602	10000-12000	800-1000	0.01-0.12	4		8000-10000	800-1000	0.06-0.10	4		8000-10000	600-800	0.06-0.10	4
NMD-TRMA402002	10000-12000	700-900	0.08-0.1	4		8000-10000	700-900	0.05-0.08	4		8000-10000	500-700	0.05-0.08	4
NMD-TRMA402602	10000-12000	600-800	0.08-0.1	4		8000-10000	600-800	0.04-0.06	4		8000-10000	400-600	0.04-0.06	4
NMD-TRMA403002	10000-12000	400-600	0.05-0.08	4		8000-10000	400-600	0.03-0.05	4		8000-10000	300-500	0.03-0.05	4





## NHS-E|EH|EI|EJ SLOTTING

PART NO.	S50C/HT250/Q235 (~22HRC)				P20/H13/D2 (25-35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED /f min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED /f min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED /f min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NHS-E0102A	18000-20000	800-1000	0.03-0.05	1	18000-20000	600-800	0.03-0.05	1	15000-18000	400-600	0.02-0.03	1
NHS-E0202A	16000-18000	1000-1200	0.05-0.08	2	16000-18000	800-1000	0.05-0.08	2	12000-13000	600-800	0.03-0.05	2
NHS-E0302A	12000-14000	1200-1300	0.08-0.10	3	12000-14000	1000-1200	0.08-0.10	3	8000-9000	800-1000	0.05-0.08	3
NHS-E0402A	8000-10000	1300-1500	0.12-0.15	4	8000-10000	1200-1300	0.12-0.15	4	6500-7000	1000-1200	0.08-0.10	4
NHS-E0602	6000-6500	1500-1800	0.15-0.20	6	6000-6500	1300-1500	0.15-0.20	6	4500-5000	1200-1300	0.10-0.15	6
NHS-E0802	4500-5000	1800-2000	0.25-0.30	8	4000-4500	1500-1800	0.25-0.30	8	3000-3500	1300-1500	0.15-0.20	8
NHS-E1002	3500-4000	2000-2200	0.30-0.40	10	3000-3500	1800-2000	0.30-0.35	10	2500-3000	1500-1800	0.20-0.25	10
NHS-E1202	2800-3300	2200-2500	0.40-0.50	12	2500-3000	2000-2200	0.35-0.40	12	2000-2500	1800-2000	0.25-0.30	12
NHS-E1602	1800-2200	600-800	0.50-0.60	16	1600-2000	400-600	0.45-0.50	16	1500-1800	300-500	0.30-0.35	16
NHS-E2002	1500-1800	400-600	0.60-0.80	20	1300-1600	250-400	0.50-0.60	20	1300-1600	200-350	0.30-0.35	20

## NHS-E|EH|EI|EJ SIDE MILLING

PART NO.	S50C/HT250/Q235 (~22HRC)				P20/H13/D2 (25-35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED /f min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED /f min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED /f min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NHS-E0104A	16000-18000	700-900	1.0-1.5	0.03-0.05	16000-18000	600-800	1.0-1.5	0.03-0.05	15000-16000	500-600	1.0-1.5	0.02-0.03
NHS-E0204A	14000-16000	800-1000	2.0-3.0	0.04-0.06	12000-14000	800-900	2.0-3.0	0.04-0.06	10000-11000	600-800	2.0-3.0	0.03-0.05
NHS-E0304A	10000-12000	900-1100	3.0-4.5	0.08-0.12	10000-12000	900-1000	3.0-4.5	0.08-0.12	7000-8000	800-900	3.0-4.5	0.05-0.08
NHS-E0404A	8000-10000	1000-1200	4.0-6.0	0.15-0.20	7000-8000	1000-1200	4.0-6.0	0.15-0.20	5500-6000	900-1000	4.0-6.0	0.08-0.10
NHS-E0604	5500-6000	1200-1400	6.0-9.0	0.25-0.35	4500-5000	1200-1300	6.0-9.0	0.25-0.30	3500-4000	1000-1200	6.0-9.0	0.10-0.12
NHS-E0804	4500-5000	1300-1500	8.0-12.0	0.35-0.45	3800-4300	1300-1400	8.0-12.0	0.30-0.35	2800-3200	1200-1400	8.0-12.0	0.12-0.15
NHS-E1004	3000-3500	1500-1600	10.0-15.0	0.45-0.60	2500-2800	1400-1500	10.0-15.0	0.35-0.50	2200-2500	1400-1500	10.0-15.0	0.15-0.20
NHS-E1204	2200-2600	1000-1200	12.0-18.0	0.60-0.70	2000-2500	1000-1200	12.0-18.0	0.50-0.60	1800-2200	800-1000	12.0-18.0	0.20-0.30
NHS-E1604	2000-2200	300-500	16.0-20.0	0.70-0.80	1800-2000	200-400	16.0-20.0	0.60-0.70	1500-1800	200-300	16.0-20.0	0.30-0.40
NHS-E2004	1500-1800	200-400	20.0-25.0	0.80-1.00	1300-1500	200-400	20.0-25.0	0.70-0.80	1000-1200	200-300	20.0-25.0	0.40-0.50



## NHS-B|BH|BI|BJ 3D MILLING



### WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (~22HRC)					P20/H13/D2 (25~35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED /r min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm		ROTATION SPEED /r min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED /r min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NHS-B0102A	18000-20000	1000-1200	0.02-0.03	0.03-0.04		18000-20000	800-1000	0.02-0.03	0.03-0.04	16000-18000	600-800	0.02-0.03	0.02-0.03
NHS-B0202A	16000-18000	1200-1400	0.03-0.04	0.03-0.05		16000-18000	1000-1200	0.03-0.04	0.03-0.05	13000-15000	800-1000	0.03-0.04	0.03-0.04
NHS-B0402A	14000-16000	1500-2000	0.04-0.05	0.05-0.08		14000-16000	1200-1800	0.04-0.05	0.05-0.08	12000-15000	1200-1500	0.04-0.05	0.05-0.06
NHS-B0602	12000-14000	2200-2800	0.05-0.08	0.08-0.10		12000-14000	2000-2500	0.05-0.08	0.08-0.10	9000-11000	1800-2200	0.05-0.08	0.06-0.10
NHS-B0802	10000-12000	2800-3000	0.05-0.10	0.10-0.12		10000-12000	2500-2800	0.05-0.10	0.10-0.12	8000-10000	2200-2500	0.05-0.10	0.08-0.12
NHS-B1002	8000-10000	3000-3200	0.08-0.12	0.12-0.15		8000-10000	2800-3000	0.08-0.12	0.12-0.15	7000-8000	2500-2800	0.08-0.12	0.10-0.15
NHS-B1202	6500-8000	3200-3500	0.08-0.15	0.15-0.20		6500-8000	3000-3200	0.08-0.15	0.15-0.20	6800-7200	2800-3000	0.10-0.15	0.12-0.18
NHS-B1602	5000-6000	2200-2400	0.10-0.15	0.20-0.25		5000-6000	2200-2400	0.10-0.15	0.20-0.25	4500-5000	2000-2200	0.10-0.20	0.15-0.20
NHS-B2002	4000-5000	2000-2200	0.10-0.20	0.20-0.30		4000-5000	2000-2200	0.10-0.20	0.25-0.30	4000-4500	1800-2000	0.10-0.20	0.20-0.30

## NHS-RA|RAH|RAI|RAJ SLOTTING



### WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (~22HRC)					P20/H13/D2 (25~35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED /r min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm		ROTATION SPEED /r min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED /r min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NHS-RA0102A	16000-18000	800-1100	0.03-0.05	1		16000-18000	600-800	0.03-0.05	1	13000-15000	450-600	0.02-0.03	1
NHS-RA0202A	14000-16000	1200-1300	0.05-0.08	2		14000-16000	800-1000	0.05-0.08	2	12000-14000	600-800	0.03-0.05	2
NHS-RA0302A	13000-15000	1400-1600	0.08-0.10	3		13000-15000	1200-1500	0.08-0.10	3	10000-12000	800-1000	0.05-0.08	3
NHS-RA0405A	11000-13000	1600-1800	0.10-0.13	4		11000-13000	1500-1700	0.10-0.13	4	9000-11000	1000-1200	0.08-0.10	4
NHS-RA0605	9000-11000	2000-2200	0.13-0.15	6		9000-11000	1800-2000	0.13-0.15	6	8000-10000	1200-1500	0.10-0.12	6
NHS-RA0805	8000-10000	2200-2400	0.15-0.20	8		8000-10000	2000-2200	0.15-0.20	8	6500-8000	1500-1800	0.12-0.15	8
NHS-RA1005	6500-8000	2300-2500	0.25-0.35	10		6500-8000	2200-2400	0.25-0.30	10	5500-6500	1800-2000	0.15-0.20	10
NHS-RA1210	5000-6000	2600-2800	0.35-0.50	12		5000-6000	2400-2600	0.30-0.40	12	4000-5000	2000-2200	0.20-0.30	12
NHS-RA1620	2800-3200	850-1000	0.50-0.65	16		2800-3200	650-800	0.40-0.50	16	2500-2800	450-600	0.30-0.40	16
NHS-RA2030	2500-3000	600-850	0.65-0.80	20		2500-3000	450-600	0.50-0.60	20	2000-2500	350-500	0.40-0.50	20



## NHS-RB | RBH | RBI | RBJ 3D MILLING



### WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (~22HRC)				P20/H13/D2 (25~35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED #/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED #/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED #/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NHS-RB0102A	16000-18000	800-1000	0.02-0.03	0.02-0.03	16000-18000	800-1000	0.02-0.03	0.02-0.03	15000-16000	600-800	0.02-0.03	0.02-0.03
NHS-RB0202A	14000-16000	1000-1200	0.03-0.04	0.03-0.04	14000-16000	1000-1200	0.03-0.04	0.03-0.04	13000-15000	800-1000	0.03-0.04	0.03-0.04
NHS-RB0302A	13000-15000	1200-1500	0.03-0.05	0.03-0.05	13000-15000	1200-1500	0.03-0.05	0.03-0.05	10000-11000	1000-1200	0.03-0.05	0.03-0.05
NHS-RB0405A	10000-12000	1500-2000	0.05-0.08	0.05-0.08	10000-12000	1500-1800	0.05-0.08	0.05-0.08	7500-8200	1200-1500	0.05-0.08	0.05-0.08
NHS-RB0605	8000-8500	2000-2500	0.05-0.10	0.05-0.10	7800-8200	1800-2200	0.05-0.10	0.05-0.10	6500-7000	1500-1800	0.05-0.10	0.05-0.10
NHS-RB0805	6500-7500	2500-2800	0.05-0.12	0.05-0.12	6200-6800	2200-2500	0.05-0.10	0.05-0.10	6000-6500	1800-2200	0.05-0.12	0.05-0.12
NHS-RB1005	5800-6200	2800-3000	0.05-0.15	0.05-0.15	5800-6200	2500-2800	0.05-0.12	0.05-0.12	5800-6200	2200-2800	0.05-0.15	0.05-0.15
NHS-RB1210	4500-5000	3000-3200	0.08-0.20	0.08-0.20	4200-4500	2800-3000	0.08-0.15	0.08-0.18	3800-4200	2500-2800	0.08-0.15	0.08-0.15
NHS-RB1620	3200-3800	2000-2200	0.10-0.25	0.10-0.25	3000-3200	1800-2000	0.10-0.20	0.10-0.20	2800-3000	1500-1800	0.10-0.20	0.10-0.20
NHS-RB2030	3000-3200	1800-2000	0.10-0.30	0.10-0.30	2800-3000	1500-1800	0.10-0.20	0.10-0.20	2500-2800	1200-1500	0.10-0.20	0.10-0.20

HIGH SPEED SERIES



## NHH-E|EH|E|EJ SLOTTING

HIGH HARDNESS SERIES | SPEEDS & FEEDS



WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (-22HRC)				P20/H13/D2 (25-35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED <i>v<sub>f</sub></i> /min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED <i>v<sub>f</sub></i> /min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED <i>v<sub>f</sub></i> /min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NHH-E0104A	18000-20000	600-800	0.03-0.05	1	15000-18000	400-600	0.02-0.03	1	13000-15000	400-500	0.02-0.03	1
TNHH-E0204A	16000-18000	800-1000	0.05-0.08	2	12000-13000	600-800	0.03-0.05	2	10000-12000	500-600	0.02-0.04	2
NHH-E0304A	12000-14000	1000-1200	0.08-0.10	3	8000-9000	800-1000	0.05-0.08	3	7500-8500	600-700	0.03-0.05	3
NHH-E0404A	8000-10000	1200-1300	0.12-0.15	4	6500-7000	1000-1200	0.08-0.10	4	6000-6500	600-800	0.04-0.05	4
NHH-E0604	6000-6500	1300-1500	0.15-0.20	6	4500-5000	1200-1300	0.10-0.15	6	4000-4500	600-800	0.05-0.08	6
NHH-E0804	4000-4500	1500-1800	0.25-0.30	8	3000-3500	1300-1500	0.15-0.20	8	3000-3500	500-700	0.05-0.08	8
NHH-E1004	3000-3500	1800-2000	0.30-0.35	10	2500-3000	1500-1800	0.20-0.25	10	2500-2800	500-700	0.05-0.10	10
NHH-E1204	2500-3000	2000-2200	0.35-0.40	12	2000-2500	1800-2000	0.25-0.30	12	2000-2300	600-800	0.08-0.15	12
NHH-E1604	1600-2000	400-600	0.45-0.50	16	1500-1800	300-500	0.30-0.35	16	1500-1700	400-500	0.05-0.15	16
NHH-E2004	1300-1600	250-400	0.50-0.60	20	1300-1600	200-350	0.30-0.35	20	1200-1400	300-400	0.10-0.20	20

## NHH-E|EH|E|REJ SIDE MILLING



WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (-22HRC)				P20/H13/D2 (25-35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED <i>v<sub>f</sub></i> /min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED <i>v<sub>f</sub></i> /min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED <i>v<sub>f</sub></i> /min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NHH-E0104A	16000-18000	600-800	1.0-1.5	0.03-0.05	15000-16000	500-600	1.0-1.5	0.02-0.03	13000-15000	400-500	1.0-1.5	0.02-0.03
NHH-E0204A	12000-14000	800-900	2.0-3.0	0.04-0.06	10000-11000	600-800	2.0-3.0	0.03-0.05	7500-8500	400-600	2.0-3.0	0.03-0.05
NHH-E0304A	10000-12000	900-1000	3.0-4.5	0.08-0.12	7000-8000	800-900	3.0-4.5	0.05-0.08	5000-5500	500-600	3.0-4.5	0.05-0.06
NHH-E0404A	7000-8000	1000-1200	4.0-6.0	0.15-0.20	5500-6000	900-1000	4.0-6.0	0.08-0.10	4000-4500	500-600	4.0-6.0	0.05-0.08
NHH-E0604	4500-5000	1200-1300	6.0-9.0	0.25-0.30	3500-4000	1000-1200	6.0-9.0	0.10-0.12	2000-2500	300-500	6.0-9.0	0.05-0.10
NHH-E0804	3800-4300	1300-1400	8.0-12.0	0.30-0.35	2800-3200	1200-1400	8.0-12.0	0.12-0.15	2200-2500	450-700	8.0-12.0	0.08-0.12
NHH-E1004	2500-2800	1400-1500	10.0-15.0	0.35-0.50	2200-2500	1400-1500	10.0-15.0	0.15-0.20	1800-2000	400-600	10.0-15.0	0.10-0.15
NHH-E1204	2000-2500	1000-1200	12.0-18.0	0.50-0.60	1800-2200	800-1000	12.0-18.0	0.20-0.30	1500-1800	300-500	12.0-18.0	0.10-0.20
NHH-E1604	1800-2000	200-400	16.0-20.0	0.60-0.70	1500-1800	200-300	16.0-20.0	0.30-0.40	1200-1500	250-450	16.0-20.0	0.15-0.25
NHH-E2004	1300-1500	200-400	20.0-25.0	0.70-0.80	1000-1200	200-300	20.0-25.0	0.40-0.50	900-1050	200-350	20.0-25.0	0.20-0.30
NHH-E0606	4300-4500	1000-1200	6.0-9.0	0.15-0.25	4000-4200	900-1200	6.0-9.0	0.10-0.20	3000-3200	500-700	6.0-9.0	0.10-0.15
NHH-E0606	4300-4500	600-800	6.0-12.0	0.05-0.12	4000-4200	600-800	6.0-12.0	0.05-0.10	3400-3600	400-600	6.0-12.0	0.05-0.10
NHH-E0806	3200-3500	1200-1500	8.0-12.0	0.20-0.30	3000-3200	1000-1400	8.0-12.0	0.15-0.30	3000-3200	600-800	8.0-12.0	0.10-0.20
NHH-E0806	3200-3500	700-900	8.0-16.0	0.05-0.15	3200-3500	600-850	8.0-16.0	0.05-0.15	3200-3500	500-750	8.0-16.0	0.05-0.10
NHH-E1006	2500-3000	1100-1400	10.0-15.0	0.20-0.30	2400-2600	1000-1400	10.0-15.0	0.20-0.30	2400-2600	600-800	10.0-15.0	0.15-0.30
NHH-E1006	2500-3000	650-850	10.0-20.0	0.05-0.15	2500-2800	600-850	10.0-20.0	0.05-0.15	2400-2600	500-700	10.0-20.0	0.05-0.15
NHH-E1206	2000-2500	900-1200	12.0-18.0	0.20-0.30	1700-1900	900-1100	12.0-18.0	0.20-0.30	1700-1900	450-650	12.0-18.0	0.15-0.30
NHH-E1206	2000-2500	600-800	12.0-24.0	0.05-0.15	2000-2300	500-700	12.0-24.0	0.05-0.15	2000-2300	400-550	12.0-24.0	0.05-0.15
NHH-TE1606	1500-2000	800-1000	16.0-20.0	0.20-0.40	1300-1500	700-900	16.0-20.0	0.20-0.40	1300-1500	300-450	16.0-20.0	0.15-0.30
NHH-E1606	1500-2000	500-700	16.0-32.0	0.05-0.20	1500-1700	350-550	16.0-32.0	0.05-0.20	1500-1700	300-450	16.0-32.0	0.05-0.15
NHH-E2006	1300-1500	600-800	20.0-25.0	0.30-0.50	1000-1300	600-800	20.0-25.0	0.30-0.50	1000-1200	250-350	20.0-25.0	0.20-0.35
NHH-E2006	1300-1500	300-450	20.0-40.0	0.05-0.20	1200-1400	300-450	20.0-40.0	0.05-0.20	1200-1400	250-350	20.0-30.0	0.05-0.20



## NHH-B|BH|BI|BJ 3D MILLING

HIGH HARDNESS SERIES | SPEEDS & FEEDS



WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (~22HRC)				P20/H13/D2 (25~35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED #/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED #/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED #/min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NHH-B0102A	18000-20000	800-1000	0.02-0.03	0.03-0.04	16000-18000	600-800	0.02-0.03	0.02-0.03	16000-18000	400-600	0.02-0.03	0.02-0.03
NHH-B0202A	16000-18000	1000-1200	0.03-0.04	0.03-0.05	13000-15000	800-1000	0.03-0.04	0.03-0.04	13000-15000	600-800	0.03-0.04	0.03-0.04
NHH-B0402A	14000-16000	1200-1800	0.04-0.05	0.05-0.08	10000-12000	1200-1500	0.04-0.05	0.05-0.06	10000-12000	1200-1500	0.04-0.05	0.05-0.06
NHH-B0602	12000-14000	2000-2500	0.05-0.08	0.08-0.10	9000-11000	1800-2200	0.05-0.08	0.06-0.10	9000-1100	1500-1800	0.05-0.08	0.05-0.08
NHH-B0802	10000-12000	2500-2800	0.05-0.10	0.10-0.12	8000-10000	2200-2500	0.05-0.10	0.08-0.12	7500-8500	1800-2200	0.05-0.10	0.08-0.12
NHH-B1002	8000-10000	2800-3000	0.08-0.12	0.12-0.15	7000-8000	2500-2800	0.08-0.12	0.10-0.15	6800-7200	2200-2500	0.08-0.12	0.10-0.15
NHH-B1202	6500-8000	3000-3200	0.08-0.15	0.15-0.20	6800-7200	2800-3000	0.10-0.15	0.12-0.18	5800-6200	2500-2800	0.08-0.15	0.10-0.18
NHH-B1602	5000-6000	2200-2400	0.10-0.15	0.20-0.25	4500-5000	2000-2200	0.10-0.20	0.15-0.20	3500-4000	1800-2000	0.10-0.20	0.10-0.20
NHH-B2002	4000-5000	2000-2200	0.10-0.20	0.20-0.30	4000-4500	1800-2000	0.10-0.20	0.20-0.30	2500-3000	1600-1800	0.10-0.20	0.10-0.30
NHH-B0604	12000-14000	3000-3200	0.05-0.08	0.05-0.10	9000-11000	2800-3000	0.05-0.08	0.05-0.10	8500-9000	2500-2800	0.05-0.06	0.05-0.10
NHH-B0804	10000-12000	3200-3500	0.05-0.10	0.05-0.12	8000-10000	3000-3200	0.05-0.10	0.05-0.12	7500-8500	2800-3000	0.05-0.10	0.05-0.12
NHH-B1004	8000-10000	3500-3800	0.05-0.12	0.08-0.15	7000-8000	3200-3500	0.08-0.12	0.08-0.15	6500-7500	3000-3200	0.08-0.12	0.08-0.15
NHH-B1204	6500-8000	3500-3800	0.05-0.15	0.08-0.20	6800-7200	3200-3500	0.08-0.15	0.08-0.18	4500-5000	2800-3000	0.08-0.15	0.08-0.18
NHH-B1604	5000-6000	2800-3000	0.08-0.15	0.10-0.25	4500-5000	2500-2800	0.10-0.20	0.10-0.20	3500-4500	2200-2500	0.10-0.20	0.10-0.20
NHH-B2004	4000-5000	2200-2500	0.08-0.20	0.10-0.30	4000-4500	2000-2200	0.10-0.20	0.10-0.30	3000-3500	2000-2200	0.10-0.20	0.10-0.30



## NHH-RB|RBH|RBI|RBJ SLOTTING

HIGH HARDNESS SERIES | SPEEDS & FEEDS

WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (-22HRC)				P20/H13/D2 (25-35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED <i>f</i> /min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED <i>f</i> /min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED <i>f</i> /min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NHH-RB0102A	16000-18000	600-800	0.03-0.05	1	13000-15000	450-600	0.02-0.03	1	12000-13000	300-500	0.02-0.03	1
NHH-RB0202A	14000-16000	800-1000	0.05-0.08	2	12000-14000	600-800	0.03-0.05	2	10000-12000	400-600	0.03-0.04	2
NHH-RB0302A	13000-15000	1200-1500	0.08-0.10	3	10000-12000	800-1000	0.05-0.08	3	7000-7500	400-600	0.03-0.05	3
NHH-RB0405A	11000-13000	1500-1700	0.12-0.15	4	9000-11000	1000-1200	0.08-0.10	4	5500-6000	600-800	0.05-0.08	4
NHH-RB0605	9000-11000	1800-2000	0.15-0.20	6	8000-10000	1200-1500	0.10-0.12	6	4500-5000	600-800	0.05-0.08	6
NHH-RB0805	8000-10000	2000-2200	0.25-0.30	8	6500-8000	1500-1800	0.12-0.15	8	3000-3500	500-700	0.05-0.10	8
NHH-RB1005	6500-8000	2200-2400	0.30-0.35	10	5500-6500	1800-2000	0.15-0.20	10	2500-3000	400-600	0.05-0.10	10
NHH-RB1210	5000-6000	2400-2600	0.35-0.40	12	4000-5000	2000-2200	0.20-0.30	12	2500-3000	600-800	0.08-0.12	12
NHH-RB1620	2800-3200	650-800	0.45-0.50	16	2500-2800	450-500	0.30-0.40	16	1900-2300	600-800	0.08-0.12	16
NHH-RB2030	2500-3000	450-600	0.50-0.60	20	2000-2500	350-500	0.40-0.50	20	1500-2000	450-600	0.15-0.20	20

## NHH-RB|RBH|RBI|RBJ 3D MILLING

WORKPIECE MATERIAL

PART NO.	S50C/HT250/Q235 (-22HRC)				P20/H13/D2 (25-35HRC)				C11000/B152 (C11000)			
	ROTATION SPEED <i>f</i> /min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED <i>f</i> /min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED <i>f</i> /min	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NHH-RB0102A	16000-18000	800-1000	0.02-0.03	0.02-0.03	15000-16000	600-800	0.02-0.03	0.02-0.03	12000-14000	500-600	0.02-0.03	0.02-0.03
NHH-RB0202A	14000-16000	1000-1200	0.03-0.04	0.03-0.04	13000-15000	800-1000	0.03-0.04	0.03-0.04	10000-12000	600-800	0.03-0.04	0.03-0.04
NHH-RB0302A	13000-15000	1200-1500	0.03-0.05	0.03-0.05	10000-11000	1000-1200	0.03-0.05	0.03-0.05	7500-8000	800-1000	0.03-0.05	0.03-0.05
NHH-RB0405A	10000-12000	1500-1800	0.05-0.08	0.05-0.08	7500-8200	1200-1500	0.05-0.08	0.05-0.08	5500-6000	1000-1200	0.05-0.08	0.05-0.08
NHH-RB0605	7800-8200	1800-2200	0.05-0.01	0.05-0.01	6500-7000	1500-1800	0.05-0.10	0.05-0.01	4500-4800	1200-1500	0.05-0.08	0.05-0.08
NHH-RB0805	6200-6800	2200-2500	0.05-0.10	0.05-0.10	6000-65000	1800-2200	0.05-0.12	0.05-0.10	3500-4000	1500-1800	0.05-0.10	0.05-0.10
NHH-RB1005	5800-6200	2500-2800	0.05-0.12	0.05-0.12	5800-6200	2200-2800	0.05-0.15	0.05-0.12	3000-3500	1800-2200	0.05-0.10	0.05-0.10
NHH-RB1210	4200-4500	2800-3000	0.08-0.15	0.08-0.18	3800-4200	2500-2800	0.08-0.15	0.08-0.18	2800-3200	2200-2500	0.05-0.12	0.05-0.12
NHH-RB1620	3000-3200	1800-2000	0.10-0.20	0.10-0.20	2800-3000	1500-1800	0.10-0.20	0.10-0.20	2000-2500	1000-1500	0.08-0.15	0.08-0.15
NHH-RB2030	2800-3000	1500-1800	0.10-0.20	0.10-0.20	2500-2800	1200-1500	0.10-0.20	0.10-0.20	1600-2000	800-1000	0.10-0.20	0.10-0.20



## NAL-E|EH|EI|EJ SLOTTING

WORKPIECE MATERIAL

PART NO.	5052/6061/7075 (~150HB) (10000RPM)				5052/6061/7075 (~150HB) (24000RPM)			
	ROTATION SPEED $r/min$	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED $r/min$	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NAL-E0053A	9500-10000	500-800	0.04-0.07	0.5	23000-24000	700-1000	0.04-0.07	0.5
NAL-E0103A	9500-10000	900-1200	0.10-0.2	1	23000-24000	1200-1500	0.1-0.2	1
NAL-E0153A	9000-9500	1000-1300	0.2-0.4	1.5	21000-22000	1600-1900	0.2-0.4	1.5
NAL-E0203A	9000-9500	1100-1400	0.2-0.5	2	19000-20000	1400-1800	0.2-0.5	2
NAL-E0303	8500-9000	1200-1600	0.4-0.8	3	18000-19000	1800-2000	0.4-0.8	3
NAL-E0403	8500-9000	1200-1600	0.5-1	4	17000-18000	1800-2200	0.5-1	4
NAL-E0503	8500-9000	1400-1900	0.6-1.2	5	15000-16000	2000-2500	0.6-1.2	5
NAL-E0603	8500-9000	1500-2000	0.8-2	6	11500-12500	2200-2600	0.8-2	6
NAL-E0803	7800-8300	1600-2200	1-3	8	11000-12000	2500-2800	1-3	8
NAL-E1003	7800-8300	2000-2500	2-4	10	9000-9500	2600-3000	2-4	10
NAL-E1203	5800-6300	2200-2800	3-5	12	7800-8300	2600-3200	3-5	12
NAL-E1603	4800-5300	2000-2200	4-6	16	5800-6300	2200-2500	4-6	16
NAL-E2003	3800-4300	1800-2000	4-6	20	4800-5300	2000-2200	4-6	20

## NAL-E|EH|EI|EJ SIDE MILLING

WORKPIECE MATERIAL

PART NO.	5052/6061/7075 (~150HB) (10000RPM)				5052/6061/7075 (~150HB) (24000RPM)			
	ROTATION SPEED $r/min$	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm	ROTATION SPEED $r/min$	FEED mm/min	DEPTH OF CUT mm	WIDTH OF CUT mm
NAL-E0053A	9500-10000	500-800	1	0.04-0.07	23000-24000	700-1000	1	0.04-0.07
NAL-E0103A	9500-10000	800-1000	2	0.1-0.2	23000-24000	1200-1500	2	0.1-0.2
NAL-E0153A	9000-9500	1000-1200	2	0.2-0.4	21000-22000	1600-1900	2	0.2-0.4
NAL-E0203A	9000-9500	1100-1400	2	0.2-0.05	19000-20000	1400-1800	2	0.2-0.5
NAL-E0303	8500-9000	1200-1600	3	0.4-0.8	18000-19000	1600-2000	3	0.4-0.8
NAL-E0403	8500-9000	1200-1600	4	0.5-1	17000-18000	1800-2200	4	0.5-1.0
NAL-E0503	8500-9000	1400-1900	5	0.6-1.2	15000-16000	2000-2400	5	0.6-1.2
NAL-E0603	8500-9000	1500-2000	6	0.8-2	11500-12500	2200-2600	6	0.8-2.0
NAL-E0803	7800-8300	1600-2200	8	1-3	11000-12000	2500-2800	8	1-3
NAL-E1003	7800-8300	2000-2500	10	2-4	9000-9500	2600-3000	10	2-4
NAL-E1203	5800-6300	2200-2800	12	3-5	7800-8300	2600-3200	12	3-5
NAL-E1603	4800-5300	2000-2200	16	4-6	5800-6300	2200-2500	16	4-6
NAL-E2003	3800-4300	1800-2000	20	4-6	4800-5300	2000-2200	20	4-6



## NAL-ES SLOTTING

WORKPIECE MATERIAL

PART NO.	5052/6061/7075 (~150HB) (10000RPM)				5052/6061/7075 (~150HB) (24000RPM)			
	ROTATION SPEED <i>r/min</i>	FEED <i>mm/min</i>	DEPTH OF CUT <i>mm</i>	WIDTH OF CUT <i>mm</i>	ROTATION SPEED <i>r/min</i>	FEED <i>mm/min</i>	DEPTH OF CUT <i>mm</i>	WIDTH OF CUT <i>mm</i>
NAL-ES0303	9500-10000	1200-1600	0.6-1	3	17000-18000	2400-2800	0.6-1	3
NAL-ES0403	9500-10000	1500-2000	0.8-1.5	4	12000-13000	2200-2700	0.8-1.5	4
NAL-ES0503	9500-10000	1500-2000	1-2.5	5	12000-13000	2500-3000	1-2.5	5
NAL-ES0603	9500-10000	3000-3500	1.5-4	6	15000-16000	3800-4300	1.5-4	6
NAL-ES0803	8500-9000	2500-3000	2-5	8	14000-15000	3000-3500	2-5	8
NAL-ES1003	7800-8300	2500-3000	3-6	10	10000-11000	3000-3500	3-6	10
NAL-ES1203	7800-8300	2800-3200	4-8	12	7800-8300	2800-3200	4-8	12
NAL-ES1603	6200-6700	1700-2200	4-8	16	6200-6700	1700-2200	4-8	16
NAL-ES2003	5000-5500	1200-1700	4-6	20	5000-5500	1200-1700	4-6	20

## NAL-ES SIDE MILLING

WORKPIECE MATERIAL

PART NO.	5052/6061/7075 (~150HB) (10000RPM)				5052/6061/7075 (~150HB) (24000RPM)			
	ROTATION SPEED <i>r/min</i>	FEED <i>mm/min</i>	DEPTH OF CUT <i>mm</i>	WIDTH OF CUT <i>mm</i>	ROTATION SPEED <i>r/min</i>	FEED <i>mm/min</i>	DEPTH OF CUT <i>mm</i>	WIDTH OF CUT <i>mm</i>
NAL-ES0303	9500-10000	1200-1600	4.5	0.6-1	17000-18000	2000-2400	4.5	0.6-1
NAL-ES0403	9500-10000	1500-2000	6	0.8-1.5	12000-13000	2200-2700	6	0.8-1.5
NAL-ES0503	9500-10000	1500-2000	7.5	1-2.5	12000-13000	2500-3000	7.5	1-2.5
NAL-ES0603	9000-9500	2400-2800	9	1.5-4	15000-16000	3000-3500	9	1.5-4
NAL-ES0803	8500-9000	2500-3000	12	2-5	13000-14000	3000-3500	12	2-5
NAL-ES1003	7800-8300	2500-3000	15	3-6	10000-11000	3000-3500	15	3-6
NAL-ES1203	7800-8300	2800-3200	18	4-8	7800-8300	2800-3200	18	4-8
NAL-ES1603	6200-6700	1400-1800	24	4-8	6200-6700	1400-1800	24	4-8
NAL-ES2003	5000-5500	800-1100	30	4-6	5000-5500	800-1100	30	4-6





## NAL-B|BH|BI|BJ 3D MILLING

### WORKPIECE MATERIAL



PART NO.	5052/6061/7075 (~150HB) (10000RPM)				5052/6061/7075 (~150HB) (24000RPM)			
	ROTATION SPEED $r/min$	FEED $mm/min$	DEPTH OF CUT $mm$	WIDTH OF CUT $mm$	ROTATION SPEED $r/min$	FEED $mm/min$	DEPTH OF CUT $mm$	WIDTH OF CUT $mm$
NAL-B0102A	9500-10000	1400-1800	0.03-0.05	0.05-0.08	23000-24000	1800-2200	0.03-0.05	0.05-0.08
NAL-B0152A	9500-10000	1800-2200	0.03-0.05	0.05-0.08	22000-23000	2200-2600	0.03-0.05	0.05-0.08
NAL-B0202A	9000-9500	2200-2600	0.04-0.06	0.06-0.10	20000-22000	2600-3000	0.04-0.06	0.06-0.1
NAL-B0302	9000-9500	2400-2800	0.05-0.07	0.08-0.12	17000-19000	2800-3200	0.05-0.07	0.08-0.12
NAL-B0402	9000-9500	2600-3000	0.06-0.08	0.10-0.13	16000-17000	3000-3400	0.06-0.08	0.1-0.13
NAL-B0602	9000-9500	3000-3400	0.08-0.1	0.12-0.15	15000-16000	3400-3800	0.08-0.1	0.12-0.15
NAL-B0802	9000-9500	3200-3600	0.08-0.13	0.15-0.20	13000-14000	4200-4600	0.08-0.13	0.15-0.2
NAL-B1002	9000-9500	3200-3600	0.1-0.15	0.18-0.23	12000-13000	4200-4600	0.1-0.15	0.18-0.23
NAL-B1202	7700-8200	3800-4200	0.13-0.16	0.20-0.25	11000-12000	4200-4600	0.13-0.16	0.2-0.25

## NAL-R SLOTTING

### WORKPIECE MATERIAL



PART NO.	5052/6061/7075 (~150HB) (10000RPM)				5052/6061/7075 (~150HB) (24000RPM)			
	ROTATION SPEED $r/min$	FEED $mm/min$	DEPTH OF CUT $mm$	WIDTH OF CUT $mm$	ROTATION SPEED $r/min$	FEED $mm/min$	DEPTH OF CUT $mm$	WIDTH OF CUT $mm$
NAL-R0102A	9500-10000	900-1200	0.1-0.2	1	23000-24000	1200-1500	0.1-0.2	1
NAL-R0202A	9500-10000	1400-1800	0.2-0.5	2	18000-20000	1700-2000	0.2-0.5	2
NAL-R0305	9000-9500	1600-2000	0.4-0.8	3	17000-18000	2000-2400	0.4-0.8	3
NAL-R0405	8500-9000	1800-2200	0.5-1	4	14000-15000	2100-2500	0.5-1	4
NAL-R0605	8500-9000	1700-2200	0.8-2	6	14000-15000	2400-2800	0.8-2	6
NAL-R0805	7800-8300	3000-3500	1-3	8	12000-13000	3500-4000	1-3	8
NAL-R1005	7800-8300	3000-3500	2-4	10	10000-11000	3500-4000	2-4	10
NAL-R1205	7800-8300	2800-3200	4-8	12	7800-8300	2800-3200	4-8	12
NAL-R1605	6200-6700	1700-2200	4-8	16	6200-6700	1700-2200	4-8	16
NAL-R2005	5000-5500	1200-1700	4-6	20	5000-5500	1200-1700	4-6	20



## NAL-RS SLOTTING

WORKPIECE MATERIAL



PART NO.	5052/6061/7075 (~150HB) (10000RPM)				5052/6061/7075 (~150HB) (24000RPM)			
	ROTATION SPEED $r/min$	FEED $mm/min$	DEPTH OF CUT $mm$	WIDTH OF CUT $mm$	ROTATION SPEED $r/min$	FEED $mm/min$	DEPTH OF CUT $mm$	WIDTH OF CUT $mm$
NAL-RS0305	9500-10000	1600-2000	0.5-0.8	3	17000-18000	2000-2400	0.5-0.8	3
NAL-RS0405	8500-9000	1800-2200	0.8-1.5	4	14000-15000	2100-2500	0.8-1.5	4
NAL-RS0605	8500-9000	1700-2200	1-2.5	6	14000-15000	2400-2800	1-2.5	6
NAL-RS0805	7800-8300	3000-3500	2-4	8	12000-13000	3500-4000	2-4	8
NAL-RS1005	7800-8300	3000-3500	3-6	10	10000-11000	3500-4000	3-6	10
NAL-RS1205	7800-8300	2800-3200	5-8	12	7800-8300	2800-3200	5-8	12
NAL-RS1605	6200-6700	1700-2200	5-8	16	6200-6700	1700-2200	5-8	16
NAL-RS2005	5000-5500	1200-1700	4-6	20	5000-5500	1200-1700	4-6	20





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