NTS-HPC End mill

DEEPER AND STABLE CUTS

Solid carbide end mill for semi finishing and finishing

Z4 unequally divided cutting edges and quad-helical flute design interrupt chatter frequencies – a significant factor in premature edge failure. This allows deeper and more stable cuts.

Cutting data

Slot milling	Ap × Cutting D	Ae × Cutting D	Vc (m/min)	Fz × Cutting D
Heat resisting stainless steels	≤1	1	60 (50-70)	0.003
Nickel based alloys	≤1	1	18 (16-20)	0.002
Titanium alloys	≤1	1	60 (50-70)	0.004
Shoulder milling	**Ap × Cutting D**	**Ae × Cutting D**	**Vc (m/min)**	**Fz × Cutting D**
Heat resisting stainless steels	≤1.5	≤0.5	70 (60-80)	0.005
Nickel based alloys	≤1.5	≤0.5	25 (20-30)	0.003
Titanium alloys	≤1.5	≤0.5	65 (60-70)	0.005

Water soluble coolant is recommended for stainless steels, titanium alloys and super alloys.

Features

- We customize the tools in this semistandard range to meet your individual needs
- Diameters between Ø5 and Ø32mm
- Tough, Sub-µm grain, chip resistant carbide with Kyocera PVD coating
- Tool geometries designed for high performance machining of Stainless; Titanium and Nickel alloys
- Unequal cutting-edge divide gives very high stability and eliminates chatter
- The ideal solution for slot milling and heavy roughing
- Can also be used for finish machining.

Technical specifications

Item number	Diameter	Length of cut	Shank diameter	Corner radius	Overall length
258850.0600	6.00	13.00	6.00	0.50	57.00
258850.0800	8.00	19.00	8.00	0.50	63.00
258850.1000	10.00	22.00	10.00	0.50	72.00
258850.1200	12.00	26.00	12.00	0.50	83.00
258850.1400	14.00	28.00	14.00	0.50	88.00
258850.1600	16.00	32.00	16.00	0.50	92.00
258850.1800	18.00	36.00	18.00	0.50	96.00
258850.2000	20.00	38.00	20.00	0.50	104.00

All semi-standard tools are coated with our exclusive super-hard X22, 3µ Duplex coating for maximising performance. Further details available on request.

NTS-FIN

SPECIFICALLY FOR FINISHING

Solid Carbide High performance finishing cutter

Unequally divided cutting edges and quad-helical flute design interrupts chatter frequencies – a significant factor in premature edge failure. The finishing cutter specifically built for finishing difficult to cut, materials.

Features

- We customize the tools in this semistandard range to meet your individual needs
- Diameters between Ø6 and Ø32mm
- Tough, Sub-µm grain, chip resistant carbide with Kyocera PVD coating
- Multi-flute tools for profile finish machining
- Suitable for conventional speeds or high-speed machining
- New corner radius geometry gives longer life and improved surface finish.

Z / Diameter

- < Ø8 mm diameter = Z4
- ≥ Ø8 mm diameter = Z6
- ≥ Ø16 mm diameter = Z8

Cutting data

Finish milling	Ap × Cutting D	Ae × Cutting D	Vc (m/min)	Fz × Cutting D
Heat resisting stainless steels	≤2	≤0.015	85 (70-100)	0.003
Nickel based alloys	≤2	≤0.003	30 (25-35)	0.002
Titanium alloys	≤2	≤0.015	80 (70-90)	0.003

Water soluble coolant is recommended for stainless steels, titanium alloys and super alloys.

Technical specifications

Item number	Diameter	Length of cut	Shank diameter	Corner radius	Overall length
258854.0600	6.00	13.00	6.00	0.50	57.00
258854.0800	8.00	19.00	8.00	0.50	63.00
258854.1200	12.00	26.00	12.00	0.50	83.00
258854.1600	16.00	32.00	16.00	0.50	92.00

NTS-Ball

ROUGHING AND FINISHING RADII

Solid Carbide radius finishing cutter

Z4 unequally divided cutting edges and quad-helical flute design interrupts chatter frequencies – a significant factor in premature edge failure. Brilliant for roughing and finishing radii, as well as High speed surface milling/copy milling.

Features

- 1st choice for finishing blending radius in shallow corners
- We customize the tools in this semistandard range to meet your individual needs
- Diameters between Ø5 and Ø32 mm
- Tough, sub-µm grain, chip resistant carbide with Kyocera PVD coating
- Multi-flute tools for profile finish machining
- Suitable for conventional speeds or high-speed machining
- New corner radius geometry gives longer life and improved surface finish.

Cutting data

Ball Nose milling	Ap × Cutting D	Ae × Cutting D	Vc (m/min)	Fz × Cutting D
Heat resisting stainless steels	≤0.05	≤0.02	70 (60-80)	0.005
Nickel based alloys	≤0.05	≤0.02	30 (25-35)	0.004
Titanium alloys	≤0.05	≤0.02	65 (60-70)	0.005

Water soluble coolant is recommended for stainless steels, titanium alloys and super alloys.

Technical specifications

Item number	Diameter	Length of cut	Shank diameter	Corner radius	Overall length
258857.0800	8.00	19.00	8.00	4.00	63.00
258857.1200	12.00	26.00	12.00	6.00	83.00
258857.1600	16.00	32.00	16.00	8.00	92.00
258857.2000	20.00	38.00	20.00	10.00	104.00

NTS-Taper Ball

TAPER AND RADIUS CUTTER

Solid Carbide taper+radius finishing cutter

Z4 unequally divided cutting edges and quad-helical flute design interrupts chatter frequencies – a significant factor in premature edge failure. Optimal for 3D semi - / finishing.

Features

- 1st choice for finishing blending radius in deep corners + impeller machining
- We customize the tools in this semistandard range to meet your individual needs
- Diameters between Ø5 and Ø32 mm
- Tough, Sub-µm grain, chip resistant carbide with Kyocera PVD coating
- Multi-flute tools for profile finish machining
- Suitable for conventional speeds or high-speed machining.

Cutting data

Taper Ball Nose milling	Ap × Cutting D	Ae × Cutting D	Vc (m/min)	Fz × Cutting D
Heat resisting stainless steels	≤0.05	≤0.05	70 (60-80)	0.01
Nickel based alloys	≤0.05	≤0.05	30 (25-35)	0.01
Titanium alloys	≤0.05	≤0.05	50 (40-60)	0.015

Water soluble coolant is recommended for stainless steels, titanium alloys and super alloys.

Vc on Taper Ball Nose tools: Defined on average.

Technical specifications

Item number	α/2	Radius	Z	Length of cut	Shank Dia.	Diameter	OAL
258851.0600	4°	1.00	4	30.00	6.00	6.00	74.00
258851.0800	4°	2.00	4	30.00	8.00	8.00	77.00
258851.1000	6°	3.00	4	22.00	10.00	10.00	75.00
258851.1200	6°	3.00	4	31.00	12.00	12.00	90.00
258851.1600	8°	3.00	4	38.00	16.00	16.00	101.00

NTS-Torus

FOR FINISHING CURVED SURFACES

Solid Carbide Ap finishing cutter

The economically unrivalled tool for finishing curved surfaces, such as airfoils. Several Re•New™ services are possible, without additional readjustments of diameter.

Standard through tool coolant hole.

Features

- ±10 µm profile tolerance on effective radius
- Tough, sub-µm grain, chip resistant carbide with Kyocera PVD coating
- We customize the tools in this semi-standard range to meet your individual needs
- Diameters between Ø5 and Ø32 mm
- Up to 12 times more productive than point milling with same tool diameter on low curvature surfaces
- Uses full surface speed of the cutter
- Easily reground – therefore very economical - no loss of diameter when reground.

Cutting data

Torus milling	Ap × Cutting D	Ae × Cutting D	Vc (m/min)	Fz × Cutting D
Heat resisting stainless steels	≤0.05	≤0.10	50 (40-60)	0.003
Nickel based alloys	≤0.05	≤0.08	30 (25-35)	0.004
Titanium alloys	≤0.05	≤0.1	65 (50-80)	0.005

Water soluble coolant is recommended for stainless steels, titanium alloys and super alloys.

Taper radius end mills (Torus cutter) were conventionally used for turbine blade finishing.

Technical specifications

Item number	α/2	Radius	Z	Length of cut	Shank Dia.	Diameter	OAL
258852.1000	8°	1.00	6	7.00	12.00	10.00	80.00
258852.1100	8°	1.00	8	3.50	12.00	11.00	80.00
258852.1400	8°	1.00	8	7.00	16.00	14.00	90.00
258852.1800	8°	1.00	10	7.00	20.00	18.00	100.00

NTS-Radial

LARGER STEP-OVER LENGTH

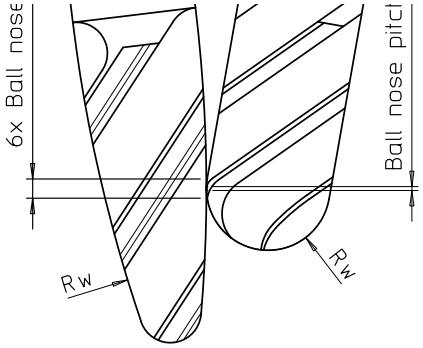
Solid Carbide radial tangent finishing cutter

For high-speed finishing on 5-axis machines. This shape produces lower cusp height than Ball Nose, which enables larger step-over length.

Features

- h5 shank diameter
- ±5 µm profile tolerance on effective radius
- 1st for tangential finishing of hard to reach, surfaces. The faster alternative to ball-nose copy milling
- High Surface Generation Ratio, due to the elliptical form combined with HSC (High Speed Cutting)
- Tough, sub-µm grain, chip resistant carbide with Kyocera PVD coating
- We customize this tool type to meet your individual needs - diameters between Ø5 and Ø20 mm.

Comparison vs. ballnose



Cutting data

NTS Radial tangent cutting	Ap × Cutting D	Ae × Cutting D	Vc (m/min)	Fz × Cutting D
Heat resisting stainless steels	≤0.05	≤0.01	70 (60-80)	0.002
Nickel based alloys	≤0.05	≤0.01	30 (25-35)	0.003
Titanium alloys	≤0.05	≤0.01	65 (60-70)	0.004

Water soluble coolant is recommended for stainless steels, titanium alloys and super alloys.

Watch video

Technical specifications

Item number	α/2	Radius 1 (Nose)	Radius work	Z	Length of cut	D1 Cutting Ø	Shank h5	OAL
258853.0800	7°	2.00	80.00	6	18.00	8.00	8.00	80.00
258853.1000	7°	2.50	100.00	6	22.00	10.00	10.00	85.00
258853.1200	7°	3.00	120.00	6	27.00	12.00	12.00	95.00
258853.1600	7°	4.00	160.00	8	36.00	16.00	16.00	110.00

NTS-Axial-arc

HIGH-SPEED FINISHING

Solid Carbide axial tangent finishing cutter

For high-speed finishing on 5-axis machines. This shape produces lower cusp height than Ball Nose, which enables larger step-over length.

Features

- h5 shank diameter
- ±5µm profile tolerance on effective radius
- 1st for tangential finishing of hard to reach, surfaces. The faster alternative to ball-nose copy milling
- High Surface Generation Ratio, due to the arc-shaped end cuts combined with HSC (High Speed Cutting)
- Tough, Sub-µm grain, chip resistant carbide with Kyocera PVD coating
- We customize this tool type to meet your individual needs - diameters between Ø5 and Ø20 mm.

Cutting data

NTS Axial tangent cutting	Ap × Cutting D	Ae × Cutting D	Vc (m/min)	Fz × Cutting D
Heat resisting stainless steels	≤0.01	≤0.05	70 (60-80)	0.003
Nickel based alloys	≤0.01	≤0.05	30 (25-35)	0.003
Titanium alloys	≤0.01	≤0.05	80 (70-90)	0.004

Water soluble coolant is recommended for stainless steels, titanium alloys and super alloys.

Technical specifications

Item number	α/2	Radius 1 (Corner)	Radius work (Nose)	Z	Length of cut	Shank h5	OAL
258855.0800	84°	0.50	16.00	3	6.00	8.00	65.00
258855.1000	84°	0.75	20.00	3	8.00	10.00	70.00
258855.1200	84°	1.00	24.00	3	10.00	12.00	80.00
258855.1600	84°	1.25	32.00	3	12.00	16.00	90.00

NTS-Ni

CUTTING INCONEL

Solid Carbide semi-finishing and finishing

Your reliable cutter for dynamic machining Nickel alloys and HRSA in general!

Dimensions can be designed to *your* application.

Customizing features

- Corner radius/chamfer, cutting length, chip divider, neck reduction, oversize shank
- Available from Ø6 mm to Ø20 mm

Slot milling	Ap × Cutting D	Ae × Cutting D	Vc (m/min)	Fz × Cutting D
Nickel based alloys	≤0.06	1	30	0.003

Dynamic milling (Trochoidal)	Ap × Cutting D	Ae × Cutting D	Vc (m/min)	Fz × Cutting D
Nickel based alloys	≤2	≤0.01	50	0.006

Water soluble coolant is recommended for stainless steels, titanium alloys and super alloys.

Technical specifications

Item number	ØD	Z	Chamfer	Length of cut	Shank	OAL
258858.0800	8	4	0.15x45°	31	8	72
258858.1000	10	4	0.2x45°	37	10	84
258858.1200	12	4	0.2x45°	44	12	97
258858.1600	16	4	0.2x45°	53	16	108