KYOCERA

METAL DIVISION | HRSA

Milling Heat Resistant Super Alloys

Efficient machining of complex parts in HRSA alloys

Optimum equipment

Kyocera Unimerco industrial tooling solutions provide maximum material removal and highest surface generation rate with following advantages:

- Reliable
- Accurate
- Cost efficient

KEEPS YOU AHEAD

HEAT RESISTANT SUPER ALLOYS

MFH SERIES

INDEXABLE MILLING CUTTERS

SOLID CARBIDE MILLING CUTTERS

MEV

NEW GENERATION MILLING CUTTERS

Watch video

Low cutting force with high performance indexable end mill

New generation of high performance, economical, multifunctional milling cutters. Newly developed triangular inserts for provide low cutting forces and increased rigidity. Increased durability of the cutter body through larger web diameter combined with higher hardness.

Cutting data

PR1535 • GM	Ap	Ae	Vc (m/min)	Fz
Heat resisting stainless steels	≤6	≤1	120 (90-150)	0.12 (0.08-0.20)
Nickel based alloys	≤4	≤1	30 (20-50)	0.12 (0.08-0.15)
Titanium alloys	≤6	≤1	60 (40-80)	0.15 (0.08-0.20)
PR1535 • SM	**Ap**	**Ae**	**Vc (m/min)**	**Fz**
Heat resisting stainless steels	≤6	≤1	120 (90-150)	0.10 (0.08-0.15)
Nickel based alloys	≤4	≤1	30 (20-50)	0.10 (0.08-0.12)
Titanium alloys	≤6	≤1	60 (40-80)	0.12 (0.08-0.15)

CA6535 • GM	Ap	Ae	Vc (m/min)	Fz
Nickel based alloys	≤4	≤1	30 (20-50)	0.12 (0.08-0.15)
CA6535 • SM	**Ap**	**Ae**	**Vc (m/min)**	**Fz**
Nickel based alloys	≤4	≤1	30 (20-50)	0.10 (0.08-0.12)

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

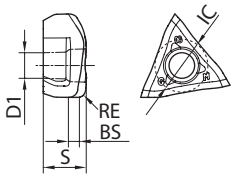
Features

- MEV (Ø20 to Ø100) - chatter free milling
- High Performance - Low cutting forces and higher rigidity for excellent chatter resistance
- Economical - Longer insert and holder tool life
- End mill (Long Shank Type), Face mill added to lineup
- Multifunctional - Face milling, shouldering, slotting, ramping, pocketing, helical milling.

See brochure

★: Roughing / 1st Choice
☆: Roughing / 2nd Choice
(In case Hardness is Under 45 HRC)

S	Heat Resistant Alloy	☆	★
	Titanium Alloy	★	
H	Hard Materials		

Insert		Description	Dimensions (mm)					MEGACOAT NANO	CVD Coated Carbide
			IC	S	D1	BS	RE	PR1535	CA6535
 General Purpose		TOMT 060504ER-GM	7.2	5.7	3.4	1.9	0.4	●	●
		TOMT 060508ER-GM				1.5	0.8	●	●
 Low Cutting Force		TOMT 060508ER-SM	7.2	5.7	3.4	1.5	0.8	●	●

●: Standard Stock

MECHT

SPECIFICALLY FOR MACHINING TITANIUM

Watch video

Durable roughing cutter for titanium

Helical MECHT end mill is designed specifically for machining titanium.

Insert size combination improves roughing capabilities, and maintains stable machining and extended tool life.

Cutting data

PR1535 • JS • Slotting	Ap	Ae	Vc (m/min)	Fz
Titanium alloys	≤0.5	≤1	40 (30-50)	0.07 (0.05-0.09)
PR1535 • JS • Shouldering	**Ap**	**Ae**	**Vc (m/min)**	**Fz**
Titanium alloys	≤1	≤0.5	40 (30-50)	0.12 (0.10-0.16)

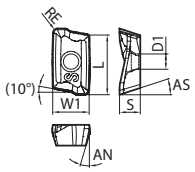
Water soluble coolant is recommended for titanium alloys.

See brochure

Features

- MECHT (Ø32 to Ø80) - reduced chatter and excellent chip evacuation
- Unique design for stable titanium alloy milling
- Insert combination for increased stability - insert size combination improves roughing capabilities
- Special holder design for increased reliability includes internal coolant to ALL cutting edges
- Excellent chip evacuation
- Longer tool life with low-resistance JS chipbreaker and tough PVD coating.

Applicable Inserts

Shape (Handed Insert shows Right-hand)		Description		Dimensions (mm)					Angle		MEGACOAT NANO
				W1	S	D1	L	RE	AS	AN	PR1535
 Low Cutting Force		BDMT	11T302ER-JS	6.7	3.8	2.8	11.0	0.2	18°	13°	●
			11T304ER-JS					0.4			●
			11T308ER-JS					0.8			●
		BDMT	170404ER-JS	9.6	4.9	4.4	17.0	0.4	18°	13°	●
			170408ER-JS					0.8			●

●: Standard Stock

MFH Series

EFFICIENT HIGH FEED MILLING

Stable roughing with greater chatter resistance

Convex design of the cutting edge reduces chatter for high-efficiency rough machining.

Large tooling lineup from Ø8 to Ø160 to cover a wide application range for multiple part configurations.

Features

- Stable machining with excellent chattering resistance
- MFH Harrier (Ø25 to Ø160): Various application with 3 types of inserts
- MFH Mini (Ø16 to Ø50): Economical double-sided 4-edge insert
- MFH Micro (Ø8 to Ø16): Replaces solid end mill to reduce machining cost
- Applicable for variety of work pieces from titanium to heat-resistant alloy
- Multifunctional: Face milling, shouldering, slotting, ramping, pocketing, helical milling, contouring.

MFH Micro

- Ø8 - Ø16 mm
- Screw on type available

MFH Mini

- Ø16 - Ø50 mm
- Face mill available

MFH Harrier

- Ø25 - Ø160 mm
- SOMT14 Ø50 face mill available

MFH MICRO

Applicable Inserts

Insert		Description	Dimension (mm)					MEGACOAT NANO	CVD Coated Carbide
			W1	S	D1	INSL	RE	PR1535	CA6535
General purpose		LPGT 010210ER-GM	4.19	2.19	2.1	6.26	1.0	●	●

●: Standard Stock

Cutting data

PR1535 • GM	Ap	Ae	Vc (m/min)	Fz
Heat resisting stainless steels	≤0.3	≤1	120 (90-150)	0.30 (0.20-0.60)
Nickel based alloys	≤0.3	≤1	30 (20-50)	0.25 (0.20-0.40)
Titanium alloys	≤0.3	≤1	60 (40-80)	0.25 (0.20-0.40)

CA6535 • GM	Ap	Ae	Vc (m/min)	Fz
Nickel based alloys	≤0.3	≤1	30 (20-50)	0.25 (0.20-0.40)

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

MFH MINI

Applicable Inserts

Insert		Description	Dimension (mm)					MEGACOAT NANO	CVD Coated Carbide
			W1	S	D1	INSL	RE	PR1535	CA6536
General purpose		LPGT 010210ER-GM	4.19	2.19	2.1	6.26	1.0	●	●

●: Standard Stock

Cutting data

PR1535 • GM	Ap	Ae	Vc (m/min)	Fz
Heat resisting stainless steels	≤0.5	≤1	120 (90-150)	0.40 (0.30-0.60)
Nickel based alloys	≤0.5	≤1	30 (20-50)	0.25 (0.20-0.60)
Titanium alloys	≤0.5	≤1	60 (40-80)	0.25 (0.20-0.60)

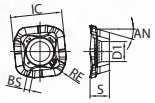
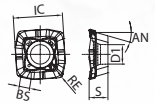
CA6535 • GM	Ap	Ae	Vc (m/min)	Fz
Nickel based alloys	≤0.5	≤1	30 (20-50)	0.25 (0.20-0.60)

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

MFH Series continued on next page >

MFH HARRIER

Applicable Inserts

Insert (Handed Insert shows Right-hand)		Description		Dimension (mm)					Angle	CVD Coated Carbide	MEGACOAT NANO
				IC	S	D1	BS	RE	AN	CA6535	PR1535
 Large D.O.C.		SOMT	100420ER-LD	10.45	4.58	4.6	0.9	2.0	16°	●	●
			140520ER-LD	14.76	5.56	5.8	1.6			●	●
 With Wiper Edge		SOMT	100420ER-FL	10.44	4.58	4.6	1.4	2.0	16°	●	●
			140514ER-FL	14.57	5.56	5.8	3.1	1.4		●	●

●: Standard Stock

Cutting data

PR1535 • GM / GH	Ap	Ae	Vc (m/min)	Fz
Heat resisting stainless steels	≤1.0	≤1	120 (90-150)	0.80 (0.50-1.60)
	≤1.5	≤1	120 (90-150)	0.60 (0.20-1.20)
Nickel based alloys	≤1.0	≤1	30 (20-50)	0.50 (0.20-1.00)
	≤1.5	≤1	30 (20-50)	0.40 (0.15-0.80)
Titanium alloys	≤1.0	≤1	60 (40-80)	0.50 (0.20-1.00)
	≤1.5	≤1	60 (40-80)	0.40 (0.15-0.80)

CA6535 • GM / GH	Ap	Ae	Vc (m/min)	Fz
Nickel based alloys	≤1.0	≤1	30 (20-50)	0.50 (0.20-1.00)
	≤1.5	≤1	30 (20-50)	0.40 (0.15-0.80)

PR1535 • LD	Ap	Ae	Vc (m/min)	Fz
Heat resisting stainless steels	≤1.0	≤1	120 (90-150)	0.80 (0.50-1.60)
	≤3.5	≤1	120 (90-150)	0.60 (0.20-1.20)
Nickel based alloys	≤1.0	≤1	30 (20-50)	0.50 (0.20-1.00)
	≤3.5	≤1	30 (20-50)	0.40 (0.15-0.80)
Titanium alloys	≤1.0	≤1	60 (40-80)	0.50 (0.20-1.00)
	≤3.5	≤1	60 (40-80)	0.40 (0.15-0.80)

CA6535 • LD	Ap	Ae	Vc (m/min)	Fz
Nickel based alloys	≤1.0	≤1	30 (20-50)	0.50 (0.20-1.00)
	≤3.5	≤1	30 (20-50)	0.40 (0.15-0.80)

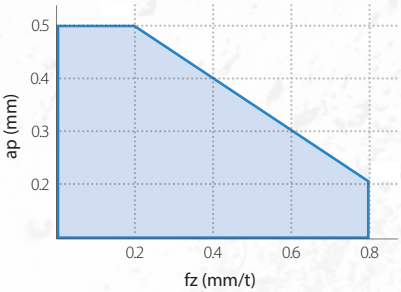
PR1535 • FL	Ap	Ae	Vc (m/min)	Fz
Heat resisting stainless steels	≤1.0	≤1	120 (90-150)	0.80 (0.50-1.60)
	≤1.5	≤1	120 (90-150)	0.60 (0.20-1.20)
Nickel based alloys	≤1.0	≤1	30 (20-50)	0.50 (0.20-1.00)
	≤1.5	≤1	30 (20-50)	0.40 (0.15-0.80)
Titanium alloys	≤1.0	≤1	60 (40-80)	0.50 (0.20-1.00)
	≤1.5	≤1	60 (40-80)	0.40 (0.15-0.80)

CA6535 • FL	Ap	Ae	Vc (m/min)	Fz
Nickel based alloys	≤1.0	≤1	30 (20-50)	0.50 (0.20-1.00)
	≤1.5	≤1	30 (20-50)	0.40 (0.15-0.80)

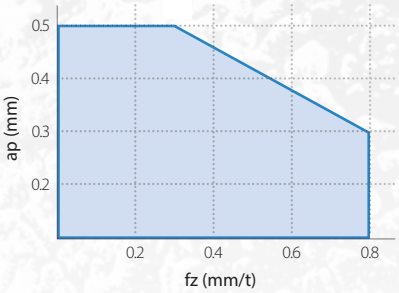
Water soluble coolant is recommended for stainless steels, titanium alloys and super alloys.

MFH MICRO • Cutting performance

Cutting dia. ø 8 mm – ø 12 mm

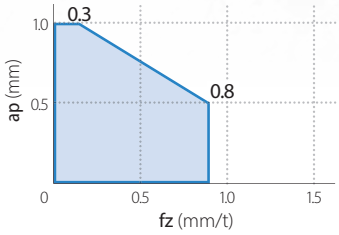


Cutting dia. ø 14 mm – ø 16 mm



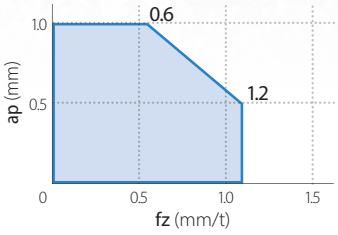
MFH MINI • Cutting performance

Fine pitch



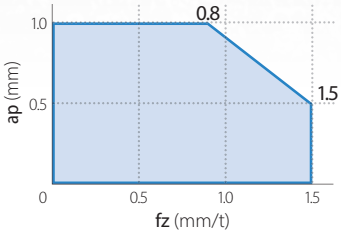
MFH20-…-4T, MFH22-…-4T,
MFH25-…-5T, MFH28-…-5T,
MF32-…-6T

Standard (ø 16 mm – ø 22 mm)



MFH16-…-2T, MFH17-…-2T,
MFH18-…-2T, MFH20-…-3T,
MFH22-…-3T

Face mill (ø 40 mm – ø 50 mm)
Standard (ø 25 mm– ø 32 mm)

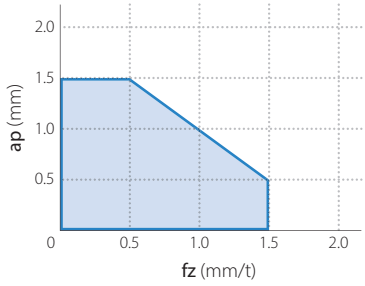


MFH25-…-4T, MFH28-…-4T,
MFH32-…-5T, MFH040R-…,
MFH050R-…

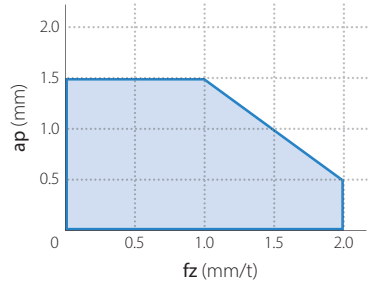
Caution:
Recommended cutting conditions for fine pitch cutters need to be lower than the condition for standard pitch cutters.

MFH HARRIER • Cutting performance

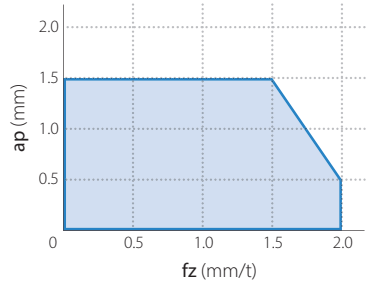
MFH25-S25-10-2T



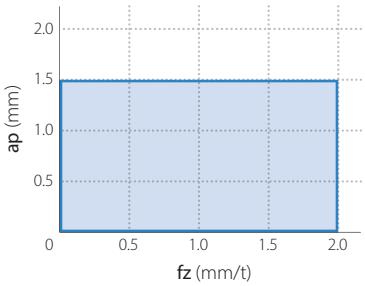
MFH32-S32-10-○T



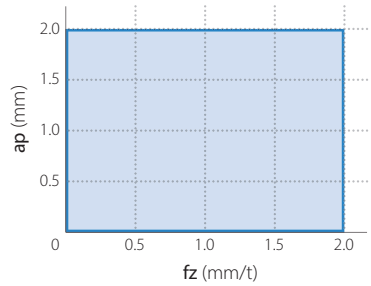
MFH40-S32-10-○T



MFH050R~080R-10-○T



MFH···-14-○T



- MAX D.O.C. for LD chipbreaker is 5 mm (3.5 mm for SOMT10 type)
  Please refer to page 20 for feed rate
- End mill:
  Please refer to the application map above
- Face mill:
  Maximum feed rate (feed per tooth) fz = 2.0 mm/t

MFH Boost

EXCELLENT HIGH FEED PERFORMANCE

Versatile, large depth of cut - High-Feed-Milling

Efficient addition to the MFH series - High feed plus large D.O.C. for greater milling capabilities. Excellent performance in a wide range of applications, including structural aerospace parts, difficult-to-cut materials, and moulds.

Features

- Available in cutting diameters from Ø22 to Ø80 - 1-insert size!
- Large depth of cut capabilities, up to 2,5 mm/Ap - largest in the MFH range
- Economical double-sided 4-edge insert
- Reduction of wall level variation in multi-pass machining with wiper on outer periphery
- Applicable for variety of work pieces from titanium to heat-resistant alloy
- Versatile cutting strategies: Face milling, shouldering, slotting, ramping, pocketing, helical milling, contouring.

Insert grades

- **PR1535** For steel machining (Stable machining oriented), titanium alloy, austenitic/precipitation hardening stainless steel etc.
- **CA6535** For martensitic stainless steel, Ni-base heat resistant alloy etc.

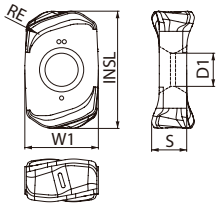
See brochure

Cutting data

PR1535 • FL	Ap	Ae	Vc (m/min)	Fz
Heat resisting stainless steels	≤0.5	≤1	120 (90-150)	0.30 (0.10-0.50)
	≤1.0	≤1	120 (90-150)	0.25 (0.10-0.45)
	≤1.5	≤1	120 (90-150)	0.15 (0.10-0.25)
Nickel based alloys	≤0.5	≤1	30 (20-50)	0.30 (0.10-0.45)
	≤1.0	≤1	30 (20-50)	0.25 (0.10-0.40)
	≤1.5	≤1	30 (20-50)	0.15 (0.10-0.20)
Titanium alloys	≤0.5	≤1	60 (40-80)	0.30 (0.10-0.50)
	≤1.0	≤1	60 (40-80)	0.25 (0.10-0.45)
	≤1.5	≤1	60 (40-80)	0.15 (0.10-0.25)

CA6535 • FL	Ap	Ae	Vc (m/min)	Fz
Nickel based alloys	≤0.5	≤1	30 (20-50)	0.30 (0.10-0.45)
	≤1.0	≤1	30 (20-50)	0.25 (0.10-0.40)
	≤1.5	≤1	120 (90-150)	0.15 (0.10-0.20)

Applicable Inserts

Shape		Description	Dimensions (mm)					MEGACOAT NANO	CVD Coating
			W1	S	D1	INSL	RE	PR1535	CA6535
 4-edge, double-sided insert		LOMU040410ER-GM	9.1	4.4	4.1	14.5	1.0	●	●

●: Standard Stock

HEAT RESISTANT SUPER ALLOYS

MRX SERIES

MRW

ECONOMICAL RADIUS CUTTER

Watch video

High-Efficiency radius cutter with multiple cutting edges includes various grades and chip breakers

MRW Radius Cutter lowers cutting costs and increases efficiency! Double-faced inserts improve the milling of a wide variety of materials.

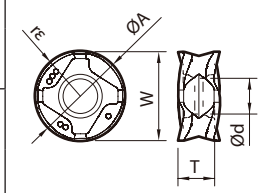
The MRW wide insert lineup includes 4 grades and 3 Chip breakers which enables extended tool life of your cutters. Applicable to titanium, stainless steel and heat-resistant alloys machining.

Features

- Economical 8-edge insert
- MRW Face mill (Ø50 to Ø125): Varies from Z5 to Z10
- MRW End mill (Ø32 to Ø63): Standard lengths and long shank lengths
- Helical design of cutting edge with maximum axial rake angle of 12°
- Dedicated carbide-/coating grade for difficult-to-cut-materials - CA6535

See brochure

★: Roughing / 1st Choice ☆: Roughing / 2nd Choice (In case Hardness is Under 45 HRC)				
S	Heat Resistant Alloy	★	☆	
	Titanium Alloy	★		
H	Hard Materials			

Insert		Description		Dimensions (mm)					MEGACOAT NANO	CVD Coated Carbide
				ϕA	T	ϕd	W	r	PR1535	CA6535
General Purpose		ROMU	1204M0ER-GM	12	4.75	4.6	11.8	6	●	●
			1605M0ER-GM	16	5.48	6.2	15.8	8	●	●
Low Cutting Force		ROMU	1204M0ER-SM	12	4.75	4.6	11.8	6	●	●
			1605M0ER-SM	16	5.48	6.2	15.8	8	●	●

●: Standard Stock

Cutting data

- Milling with coolant is recommended for Ni-base Heat Resistant Alloy and Titanium Alloy

ROMU12-type, PR1535, GM/SM	Ap	Ae*	Vc (m/min)	Fz
Heat resisting stainless steels	≤0.5	≤1	120 (90-150)	0.25 (0.13-0.42)
	≤1.0	≤1	120 (90-150)	0.18 (0.09-0.30)
	≤3.0	≤1	120 (90-150)	0.12 (0.06-0.20)
Nickel based alloys	≤0.5	≤1	30 (20-50)	0.21 (0.17-0.32)
	≤1.0	≤1	30 (20-50)	0.15 (0.09-0.23)
	≤3.0	≤1	30 (20-50)	0.10 (0.08-0.15)
Titanium alloys	≤0.5	≤1	60 (40-80)	0.21 (0.17-0.32)
	≤1.0	≤1	60 (40-80)	0.15 (0.09-0.23)
	≤3.0	≤1	60 (40-80)	0.10 (0.08-0.15)

ROMU16-type, PR1535, GM/SM	Ap	Ae*	Vc (m/min)	Fz
Heat resisting stainless steels	≤0.5	≤1	120 (90-150)	0.29 (0.14-0.48)
	≤1.0	≤1	120 (90-150)	0.20 (0.10-0.34)
	≤4.0	≤1	120 (90-150)	0.12 (0.06-0.20)
Nickel based alloys	≤0.5	≤1	30 (20-50)	0.24 (0.14-0.36)
	≤1.0	≤1	30 (20-50)	0.17 (0.10-0.26)
	≤4.0	≤1	30 (20-50)	0.10 (0.08-0.15)
Titanium alloys	≤0.5	≤1	60 (40-80)	0.24 (0.14-0.36)
	≤1.0	≤1	60 (40-80)	0.17 (0.10-0.26)
	≤4.0	≤1	60 (40-80)	0.10 (0.08-0.15)

ROMU12-type, CA6535, GM/SM	Ap	Ae*	Vc (m/min)	Fz
Nickel based alloys	≤0.5	≤1	40 (20-50)	0.21 (0.17-0.32)
	≤1.0	≤1	40 (20-50)	0.15 (0.09-0.23)
	≤3.0	≤1	40 (20-50)	0.10 (0.08-0.15)

ROMU16-type, CA6535, GM/SM	Ap	Ae*	Vc (m/min)	Fz
Nickel based alloys	≤0.5	≤1	40 (20-50)	0.24 (0.14-0.36)
	≤1.0	≤1	40 (20-50)	0.17 (0.10-0.26)
	≤4.0	≤1	40 (20-50)	0.10 (0.08-0.15)

* Ae × Cutting D.

MRX

LOW CUTTING FORCE

Watch video

Radius cutter designed for low cutting force

R4, R5, R6 and R8 lineup. The MRX's wide lineup includes 4 grades and 3 Chip breakers and extends the life of your cutters!

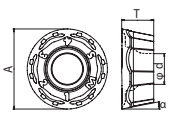
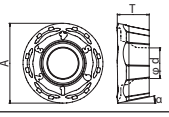
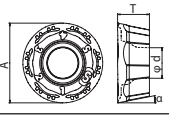
Available for Titanium, Stainless Steel, and heat-resistant alloys machining.

Features

- Low cutting force with Kyocera helical design, cutting edge
- MRX Face mill (Ø40 to Ø125): Varies from Z5 to Z9
- MRX End mill (Ø16 to Ø63), standard lengths and long shank lengths
- Flat Lock Structure holds the insert firmly, prevents insert rotation during machining
- Multifunctional: Face Milling, shouldering, slotting, ramping, pocketing, helical milling, contouring
- Dedicated carbide-/coating grade for difficult-to-cut-materials - CA6535

See brochure

★: Roughing / 1st Choice ☆: Roughing / 2nd Choice (In case Hardness is Under 45 HRC)				
S	Heat Resistant Alloy	☆	★
	Titanium Alloy	★	
H	Hard Materials		

Insert		Description		Dimensions (mm)				Angle (°)	MEGACOAT NANO	CVD Coated Carbide
				ϕA	T	ϕd	r	a	PR1535	CA6535
General Purpose (M-class)		RDMT	0803M0ER-GM	8	3.18	3.0	4	15	●	●
		RPMT	10T3M0ER-GM	10	3.97	3.5	5	11	●	●
			1204M0ER-GM	12	4.76	4.6	6		●	●
			1605M0ER-GM	16	5.56	5.8	8		●	●
General Purpose (G-class)		RDGT	0803M0ER-GM	8	3.18	3.0	4	15	●	●
		RPGT	10T3M0ER-GM	10	3.97	3.5	5	11	●	●
			1204M0ER-GM	12	4.76	4.6	6		●	●
			1605M0ER-GM	16	5.56	5.8	8		●	●
For stainless steel (Low cutting force)		RDGT	0803M0ER-SM	8	3.18	3.0	4	15	●	●
		RPGT	10T3M0ER-SM	10	3.97	3.5	5	11	●	●
			1204M0ER-SM	12	4.76	4.6	6		●	●
			1605M0ER-SM	16	5.56	5.8	8		●	●

●: Standard Stock

Cutting data

- Milling with coolant is recommended for Ni-base Heat Resistant Alloy and Titanium Alloy

RDGT/RPGT-08-type PR1535 • GM/SM	Ap	Ae*	Vc (m/min)	Fz
Heat resisting stainless steels	≤0.5	≤1	120 (90-150)	0.20 (0.10-0.34)
	≤1.0	≤1	120 (90-150)	0.16 (0.080-0.26)
	≤2.0	≤1	120 (90-150)	0.12 (0.06-0.20)
Nickel based alloys	≤0.5	≤1	30 (20-50)	0.17 (0.10-0.26)
	≤1.0	≤1	30 (20-50)	0.13 (0.08-0.20)
	≤2.0	≤1	30 (20-50)	0.10 (0.06-0.15)
Titanium alloys	≤0.5	≤1	60 (40-80)	0.17 (0.10-0.26)
	≤1.0	≤1	60 (40-80)	0.13 (0.08-0.20)
	≤2.0	≤1	60 (40-80)	0.10 (0.06-0.15)

RDGT/RPGT-12-type PR1535 • GM/SM	Ap	Ae*	Vc (m/min)	Fz
Heat resisting stainless steels	≤0.5	≤1	120 (90-150)	0.25 (0.13-0.42)
	≤1.0	≤1	120 (90-150)	0.18 (0.09-0.30)
	≤3.0	≤1	120 (90-150)	0.12 (0.06-0.20)
Nickel based alloys	≤0.5	≤1	30 (20-50)	0.21 (0.13-0.32)
	≤1.0	≤1	30 (20-50)	0.15 (0.09-0.23)
	≤3.0	≤1	30 (20-50)	0.10 (0.06-0.15)
Titanium alloys	≤0.5	≤1	60 (40-80)	0.21 (0.13-0.32)
	≤1.0	≤1	60 (40-80)	0.15 (0.09-0.23)
	≤3.0	≤1	60 (40-80)	0.10 (0.06-0.15)

RDGT/RPGT-08-type CA6535 • GM/SM	Ap	Ae*	Vc (m/min)	Fz
Nickel based alloys	≤0.5	≤1	40 (20-50)	0.17 (0.10-0.26)
	≤1.0	≤1	40 (20-50)	0.13 (0.08-0.20)
	≤2.0	≤1	40 (20-50)	0.10 (0.06-0.15)

RDGT/RPGT-12-type CA6535 • GM/SM	Ap	Ae*	Vc (m/min)	Fz
Nickel based alloys	≤0.5	≤1	40 (20-50)	0.21 (0.13-0.32)
	≤1.0	≤1	40 (20-50)	0.15 (0.09-0.23)
	≤3.0	≤1	40 (20-50)	0.10 (0.06-0.15)

RDGT/RPGT-10-type PR1535 • GM/SM	Ap	Ae*	Vc (m/min)	Fz
Heat resisting stainless steels	≤0.5	≤1	120 (90-150)	0.23 (0.11-0.38)
	≤1.0	≤1	120 (90-150)	0.17 (0.08-0.28)
	≤2.5	≤1	120 (90-150)	0.12 (0.06-0.20)
Nickel based alloys	≤0.5	≤1	30 (20-50)	0.19 (0.11-0.29)
	≤1.0	≤1	30 (20-50)	0.14 (0.08-0.21)
	≤2.5	≤1	30 (20-50)	0.10 (0.06-0.15)
Titanium alloys	≤0.5	≤1	60 (40-80)	0.19 (0.11-0.29)
	≤1.0	≤1	60 (40-80)	0.14 (0.08-0.21)
	≤2.5	≤1	60 (40-80)	0.10 (0.06-0.15)

RDGT/RPGT-16-type PR1535 • GM/SM	Ap	Ae*	Vc (m/min)	Fz
Heat resisting stainless steels	≤0.5	≤1	120 (90-150)	0.29 (0.14-0.48)
	≤1.0	≤1	120 (90-150)	0.20 (0.10-0.34)
	≤4.0	≤1	120 (90-150)	0.12 (0.06-0.20)
Nickel based alloys	≤0.5	≤1	30 (20-50)	0.24 (0.14-0.36)
	≤1.0	≤1	30 (20-50)	0.17 (0.10-0.26)
	≤4.0	≤1	30 (20-50)	0.10 (0.06-0.15)
Titanium alloys	≤0.5	≤1	60 (40-80)	0.24 (0.14-0.36)
	≤1.0	≤1	60 (40-80)	0.17 (0.10-0.26)
	≤4.0	≤1	60 (40-80)	0.10 (0.06-0.15)

RDGT/RPGT-10-type CA6535 • GM/SM	Ap	Ae*	Vc (m/min)	Fz
Nickel based alloys	≤0.5	≤1	40 (20-50)	0.19 (0.11-0.29)
	≤1.0	≤1	40 (20-50)	0.14 (0.08-0.21)
	≤2.5	≤1	40 (20-50)	0.10 (0.06-0.15)

RDGT/RPGT-16-type CA6535 • GM/SM	Ap	Ae*	Vc (m/min)	Fz
Nickel based alloys	≤0.5	≤1	40 (20-50)	0.24 (0.14-0.36)
	≤1.0	≤1	40 (20-50)	0.17 (0.10-0.26)
	≤4.0	≤1	40 (20-50)	0.10 (0.06-0.15)

* Ae × Cutting D.

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

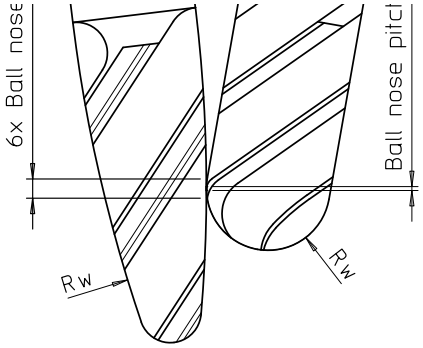
Solid Carbide radial tangent finishing cutter

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

Industrial tooling solutions

Kyocera Unimerco is a global manufacturer and distributor, providing standard and customised cutting tool solutions as well as know-how and optimisation guidance for the manufacturing industry.

The company was founded in 1964 and has since expanded into 17 countries, with more than 700 employees.

Today the company is part of the Japan-based Kyocera Corporation.

KYOCERA

www.kyocera-unimerco.com