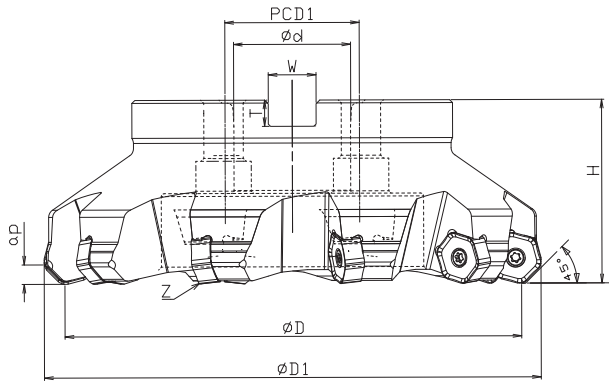


THN45 SERIES

45° Face Mill with High Economical and 12 Cutting Edge Insert for Higher Productivity

- ★ Enhanced cutting edge for cutting stability and high feed machining.
- ★ Acute cutter pocket design and inclined screw clamping enables robust clamping.
- ★ High helical cutting edges for smooth machining double-sided 12 corner insert.




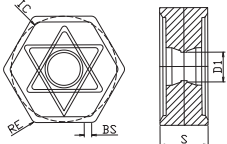
Designation	Size(mm)									Clamping Screw	Wrench
	D	D1	d	H	W	T	Z	PCD1	Max.ap		
THN45-50R04HN09M22	50	61.4	22	40	10.4	6.3	4	-	5	TH3009	THP09
THN45-63R06HN09M22	63	74.4	22	40	10.4	6.3	6	-	5		
THN45-80R06HN09M27	80	91.4	27	50	12.4	7.0	6	-	5		
THN45-100R06HN09M32	100	111.4	32	50	14.4	8.0	6	-	5		
THN45-125R08HN09M40	125	136.4	40	63	16.4	9.0	8	-	5		
THN45-160R10HN09M40	160	171.4	40	63	16.4	9.0	10	66.7	5	TH3009	TTL15P

THN45 SERIES

45° Face Mill with High Economical and 12 Cutting Edge Insert for Higher Productivity

● Applicable Inserts

Usage Classification	P	Steel	★											
★ 1st Choice ☆ 2nd Choice	M	Stainless	★											
	K	Cast iron	★											
	N	Non-ferrous												
	S	Superalloys												
	H	Hard materials												

Insert	Insert No.	Size(mm)					Coated Carbide			Carbide			
		IC	S	D1	BS	RE	TY602	TY622	TY625	TI960	HC200		
 	HNMU0906ANSN-GR	16.5	6.36	5	1.5	1.2	●						

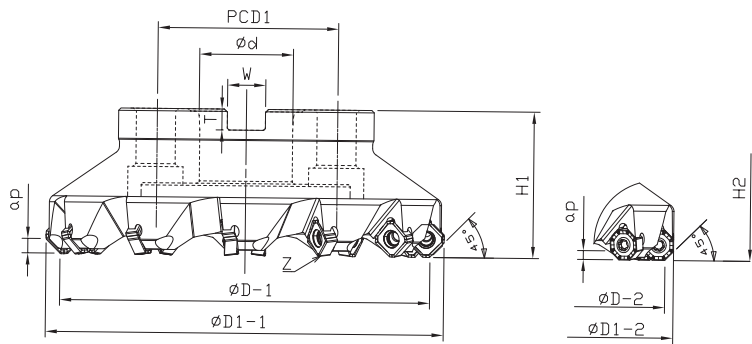
● Recommended Cutting Conditions

ISO	Workpiece material	Hardness	Grade	Cutting Speed	
				Vc (m/min)	fz (mm/t)
P	Low Carbon Steel	≤HB180	TY602	200-300	0.20-0.40
	High Carbon and Alloy Steel	HB180-280		100-250	0.15-0.25
	Alloy Steel	HB280-350		100-180	0.20-0.40
M	Stainless Steel	≤HB200		100-200	0.10-0.30
K	Gray Cast Iron	HB150-250		130-230	0.20-0.40
	Ductile Cast Iron	HB150-250		120-220	0.10-0.30

TSO45 SERIES

45° Face Mill Offers Advantage of Using Square, Octagonal Inserts in the Same Pocket

- ★SNMU inserts offers double-sided, square inserts with eight cutting edges.
- ★Most suitable for a large depth of cut and free cutting inserts with excellent chip control.
- ★ONMU inserts offers double-sided, octagonal insert with 16 cutting edges – high economy inserts.
- ★Light cutting force due to excellent chip control.
- ★The optimized cutting edge creates barrel-formed chips for easy removal, allowing an operation at higher feed rate.



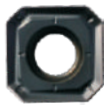
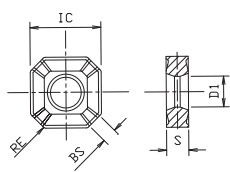

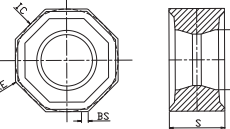
Designation	Size (mm)											Clamping Screw	Wrench
	D-1	D-2	D1-1	D1-2	d	H1	H2	W	T	Z	PCD1		
TSO45-50R04S13O05M22	50	52.3	62.5	62	22	40	38.77	10.4	6.3	4	-	TSO1013	TSOP1305
TSO45-63R06S13O05M22	63	65.3	75.5	75	22	40	38.77	10.4	6.3	6	-		
TSO45-80R06S13O05M27	80	82.3	92.5	92	27	50	48.77	12.4	7.0	6	-		
TSO45-100R08S13O05M32	100	102.3	112.5	112	32	50	48.77	14.4	8.0	8	-		
TSO45-125R10S13O05M40	125	127.3	137.5	137	40	63	61.77	16.4	9.0	10	-	TSO1013	TTL20
TSO45-160R12S13O05M40	160	162.3	172.5	172	40	63	61.77	16.4	9.0	12	66.7		

TS0N45 SERIES

45° Face Mill Offers Advantage of Using Square, Octagonal Inserts in the Same Pocket

● Applicable Inserts

Usage Classification	P	Steel	★											
★ 1st Choice ☆ 2nd Choice	M	Stainless	★											
	K	Cast iron	★											
	N	Non-ferrous												
	S	Superalloys												
	H	Hard materials												

Insert	Insert No.	Size(mm)							Coated Carbide			Carbide				
		IC	S	D1	BS	RE	Max.ap	TY602	TY622	TY625	TI960	HC200				
 	SNMU1305ANTR-PR	13	5.5	5.6	3	0.8	4.5	●								
 	ONMU050505-PR	13	5.5	5.6	5	0.5	2.5	●								

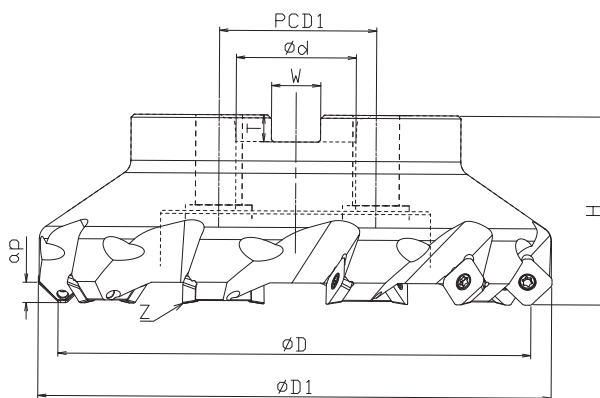
● Recommended Cutting Conditions

ISO	Workpiece material	Hardness	Grade	Cutting Speed	
				Vc (m/min)	fz (mm/t)
P	Low Carbon Steel	≤HB180	TY602	120-250	0.10-0.50
	High Carbon and Alloy Steel	HB180-280		100-180	0.15-0.40
	Alloy Steel	HB280-350		70-150	0.15-0.40
M	Stainless Steel	≤HB200		100-200	0.10-0.30
K	Gray Cast Iron	HB150-250		100-180	0.10-0.50
	Ductile Cast Iron	HB150-250		100-180	0.10-0.30

TSE45 SERIES

45° Face Mill with High Precision and 4 Cuttig Edge Insert for Higher Productivity

- ★ 4 cutting edges on one insert for highly economical machining.
- ★ Optimized relief geometry on the positive insert ensures low cutting force and minimal chattering.
- ★ Helical cutting edges and optimized positioning on cutter provide high wall accuracy and surface quality.
- ★ Sharp yet tough rake geometry reduces fracture of cutting edges.




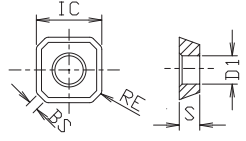

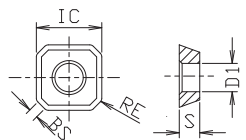
Designation	Size(mm)									Clamping Screw	Wrench
	D	D1	d	H	W	T	Z	PCD1	Max.ap		
TSE45-50R04SE12M22	50	62.9	22	40	10.4	6.3	4	-	6.5	TS2012	TSP12
TSE45-63R05SE12M22	63	75.9	22	40	10.4	6.3	5	-	6.5		
TSE45-80R06SE12M27	80	92.9	27	50	12.4	7.0	6	-	6.5		
TSE45-100R07SE12M32	100	112.9	32	50	14.4	8.0	7	-	6.5		
TSE45-125R08SE12M40	125	137.9	40	63	16.4	9.0	8	-	6.5		
TSE45-160R10SE12M40	160	172.8	40	63	16.4	9.0	10	66.7	6.5	TS3512	TTL15

TSE45 SERIES

45° Face Mill with High Precision and 4 Cuttign Edge Insert for Higher Productivity

● Applicable Inserts

Usage Classification	P	Steel	★							
★ 1st Choice ☆ 2nd Choice	M	Stainless	★							
	K	Cast iron	★							
	N	Non-ferrous							★	
	S	Superalloys								
	H	Hard materials								

Insert	Insert No.	Size(mm)					Coated Carbide				Carbide		
		IC	S	D1	BS	RE	TY602	TY622	TY625	TI960	HC200		
 	SEKT12T3AGTN	13.4	4	5.5	1.3	1.5	●						
 	SEHT12T3-HL	13.4	4	5.5	1.3	1.5					●		

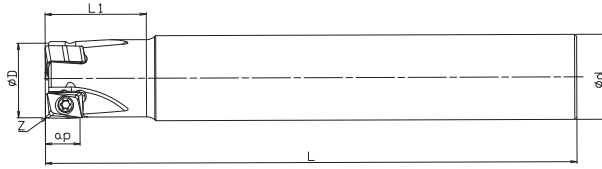
● Recommended Cutting Conditions

ISO	Workpiece material	Hardness	Grade	Cutting Speed		Feed	
				Vc (m/min)	fz (mm/t)		
P	Low Carbon Steel	≤ HB180	TY602	120-220	0.15-0.30		
	High Carbon and Alloy Steel	HB180-280		70-150	0.15-0.30		
	Alloy Steel	HB280-350		70-150	0.15-0.30		
M	Stainless Steel	≤ HB200		120-200	0.15-0.30		
K	Gray Cast Iron	HB150-250		140-220	0.15-0.30		
	Ductile Cast Iron	HB150-250		150-240	0.15-0.30		
N	Aluminum	—	HC200	300-800	0.07-0.55		

TAN90 SERIES

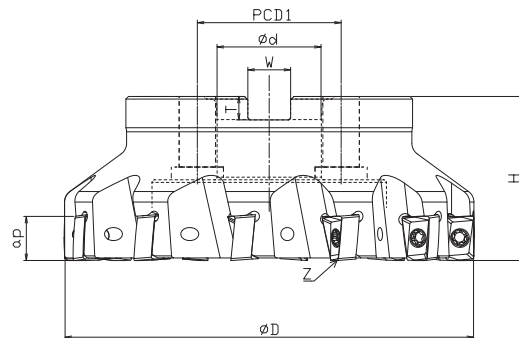
Shoulder Milling with 4 Cutting-Edge Double-Sided Insert for High-Feed Machining

- ★ Double sided insert with 4 sharp and tough cutting edges.
- ★ Available in 3 sizes and wiper edge for excellent surface finish.
- ★ Low cutting force due to large rake angle.
- ★ Positive rake face for smooth machining and reduced vibration.
- ★ Highly rigid cutter body.



● Endmills

Designation	Size(mm)						Insert	Clamping Screw	Wrench
	D	d	L1	L	Z	Max.ap			
TANE90-16R02D16AN09L125	16	16	26	125	2	8	ANKT090408	TA4009	TEP09
TANE90-20R03D20AN09L125	20	20	26	125	3	8	ANKT090408		
TANE90-25R04D25AN09L125	25	25	26	125	4	8	ANKT090408		
TANE90-32R05D32AN09L160	32	32	26	160	5	8	ANKT090408		
TANE90-25R02D25AN12L125	25	25	26	125	2	12	ANKT120508	TA4012	TEP12
TANE90-32R03D32AN12L160	32	32	26	160	3	12	ANKT120508		
TANE90-40R04D32AN12L200	40	32	26	200	4	12	ANKT120508		



● Milling Cutters


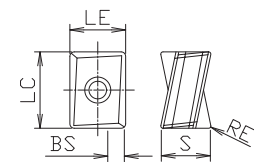
Designation	Size (mm)								Insert	Clamping Screw	Wrench
	D	d	H	W	T	Z	PCD1	Max.ap			
TANF90-50R04AN17M22	50	22	50	10.4	6.3	4	-	16.3	ANKT170608	TA4017	TFP17
TANF90-63R06AN17M27	63	22	50	10.4	6.3	6	-	16.3	ANKT170608		
TANF90-80R07AN17M27	80	27	50	12.4	7.0	7	-	16.3	ANKT170608		
TANF90-100R08AN17M32	100	32	50	14.4	8.0	8	-	16.3	ANKT170608		
TANF90-125R10AN17M40	125	40	63	16.4	9.0	10	-	16.3	ANKT170608	TA4017	TTL20
TANF90-160R12AN17M40	160	40	63	16.4	9.0	12	66.7	16.3	ANKT170608		

TAN90 SERIES

Shoulder Milling with 4 Cutting-Edge Double-Sided Insert for High-Feed Machining

Applicable Inserts

Usage Classification	P	Steel																
★ 1st Choice ☆ 2nd Choice	M	Stainless																
	K	Cast iron																
	N	Non-ferrous																
	S	Superalloys																
	H	Hard materials																

Insert	Insert No.	Size(mm)					Coated Carbide				Carbide							
		LC	LE	S	BS	RE	TY602	TY622	TY625	TI960	HC200							
 	ANKT090408-MT	8.6	6.6	5.20	2.5	0.8			●									
	ANKT120508-MT	13.7	10.0	9.15	3.8	0.8			●									
	ANKT170608-MT	16.7	11.2	10.40	4.7	0.8			●									

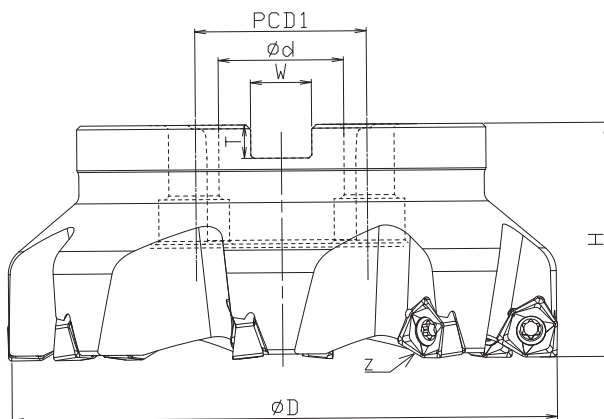
Recommended Cutting Conditions

ISO	Workpiece material	Hardness	Grade	Cutting Speed	Feed
				Vc (m/min)	fz (mm/t)
P	Low Carbon Steel	≤HB180	TY625	120-180	0.05-0.15
	High Carbon and Alloy Steel	HB200-300		100-160	0.05-0.10
	Mold Steel	≤HB300		80-120	0.05-0.10
M	Stainless Steel	≤HB200		80-100	0.10-0.25
K	Gray Cast Iron	HB150-250		150-200	0.10-0.20
	Ductile Cast Iron	HB150-250		120-150	0.05-0.15

TWN90 SERIES

Shoulder Milling Cutter with 6 Double-Sided Cutting Edge and Low Cutting Forces for Reduced Chattering and Superior Fracture Resistance

- ★ Sharp cutting due to lower cutting forces.
- ★ Reduced chattering even with extended milling adapters.
- ★ Superior fracture resistance with thick edge design.

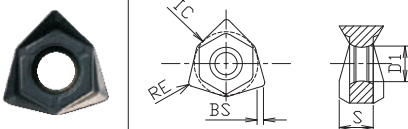


Designation	Size(mm)								Clamping Screw	Wrench
	D	d	H	W	T	Z	PCD1	Max.ap		
TWN90-63R03WN08M22	63	22	40	10.4	6.3	3	-	6.5	TW1008	TWP1008
TWN90-80R04WN08M27	80	27	50	12.4	7.0	4	-	6.5		
TWN90-100R05WN08M32	100	32	50	14.4	8.0	5	-	6.5		
TWN90-125R06WN08M40	125	40	63	16.4	9.0	6	-	6.5	TW1008	TTL20
TWN90-160R08WN08M40	160	40	63	16.4	9.0	8	66.7	6.5		

TWN90 SERIES

Shoulder Milling Cutter with 6 Double-Sided Cutting Edge and Low Cutting Forces for Reduced Chattering and Superior Fracture Resistance

● Applicable Inserts

Insert		Insert No.	Size(mm)					Coated Carbide		Carbide				
			IC	S	D1	BS	RE	TY602	TY622	TY625	TI960	HC200		
		WNMU080608PTN-CR	14	6.65	6.2	1.3	0.8	●						

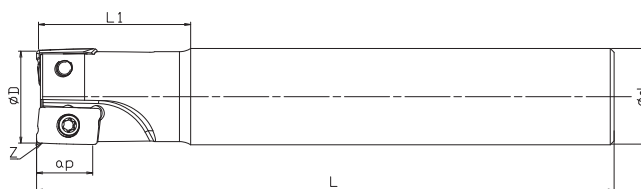
● Recommended Cutting Conditions

ISO	Workpiece material	Hardness	Grade	Cutting Speed		Feed	
				Vc (m/min)	fz (mm/t)		
P	Carbon Steel	≤HB300	TY602	120-250	0.05-0.15		
	Alloy Steel	HB200-300		100-220	0.05-0.10		
	Mold Steel	≤HB300		80-180	0.05-0.10		
M	Stainless Steel	≤HB200		80-150	0.10-0.25		
K	Gray Cast Iron	HB150-250		120-250	0.10-0.20		
	Ductile Cast Iron	HB150-250		100-200	0.05-0.15		

TAP90 SERIES

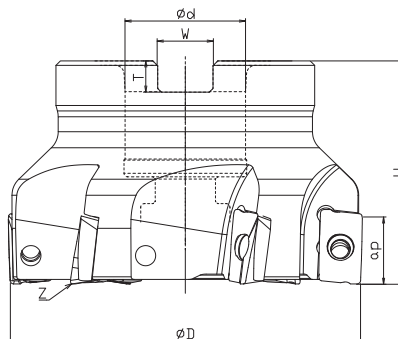
Shoulder Milling with High Precision Cutting Edge and Low Cutting Forces for Reduced Chattering

- ★ Suitable for 11° positive angle insert, applicable to alloy steel, hardened steel and aluminium alloy.
- ★ Sharp cutting due to lower cutting forces.
- ★ Reduced chattering even with extended milling adapters.



● Endmills

Designation	Size(mm)						Insert	Clamping Screw	Wrench
	D	d	L1	L	Z	Max.ap			
TAPE90-16R02D16AP10L150	16	16	28	150	2	9	APKT1003..	TK1000	TKP10
TAPE90-16R02D16AP10L200				200	2	9	APKT1003..		
TAPE90-20R02D20AP10L150	20	20	30	150	2	9	APKT1003..		
TAPE90-20R02D20AP10L200				200	2	9	APKT1003..		
TAPE90-25R02D25AP16L150	25	25	40	150	2	15	APKT1604..	TK1600	TKP16
TAPE90-25R02D25AP16L200				200	2	15	APKT1604..		
TAPE90-32R03D32AP16L150	32	32	45	150	3	15	APKT1604..		
TAPE90-32R03D32AP16L200				200	3	15	APKT1604..		



● Milling Cutters


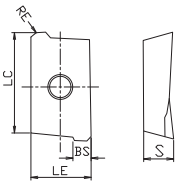

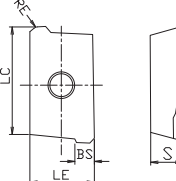








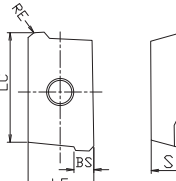
Designation	Size (mm)							Insert	Clamping Screw	Wrench
	D	d	H	W	T	Z	Max.ap			
TAPF90-50R04AP16M22	50	22	50	10.4	6.3	4	15	APKT1604..	TK1600	TKP16
TAPF90-63R05AP16M22	63	22	50	10.4	6.3	5	15	APKT1604..		
TAPF90-80R06AP16M27	80	27	50	12.4	7.0	6	15	APKT1604..		
TAPF90-100R08AP16M32	100	32	50	14.4	8.0	8	15	APKT1604..		

TAP90 SERIES

Shoulder Milling with High Precision Cutting Edge and Low Cutting Forces for Reduced Chattering

● **Applicable Inserts**

Usage Classification	P	Steel	★										
★ 1st Choice ☆ 2nd Choice	M	Stainless	★										
	K	Cast iron	★										
	N	Non-ferrous							★				
	S	Superalloys											
	H	Hard materials		★									

Insert	Insert No.	Size(mm)					Coated Carbide				Carbide		
		LC	LE	S	BS	RE	TY602	TY622	TY625	TI960	HC200		
 	APKT100305PDTR	9.9	6.7	3.6	0.86	0.5	●						
	APKT100308PDTR	9.9	6.7	3.6	0.9	0.8	●						
	APKT160404PDTR	15.2	9.4	5.3	1.11	0.4	●						
	APKT160408PDTR	15.2	9.4	5.3	1.32	0.8	●						
	APKT160412PDTR	15.2	9.4	5.3	1.13	1.2	●						
	APKT160416PDTR	15.2	9.4	5.3	1.13	1.6	●						
	APKT160424PDTR	15.2	9.4	5.3	—	2.4	●						
 	APKT160404-TR	15.2	9.4	5.3	1.11	0.4	●						
	APKT160408-TR	15.2	9.4	5.3	1.32	0.8	●						
	APKT160412-TR	15.2	9.4	5.3	1.13	1.2	●						
	APKT160416-TR	15.2	9.4	5.3	1.13	1.6	●						
	APKT160424-TR	15.2	9.4	5.3	—	2.4	●						
        	APKT100305	9.9	6.7	3.6	0.86	0.5					●		
	APKT100308	9.9	6.7	3.6	0.9	0.8					●		
	APKT160402PDER-AK	15.2	9.4	5.3	1.11	0.2					●		
	APKT160404PDER-AK	15.2	9.4	5.3	1.11	0.4					●		
	APKT160408PDER-AK	15.2	9.4	5.3	1.32	0.8					●		
	APKT160412PDER-AK	15.2	9.4	5.3	1.13	1.2					●		
	APKT160416PDER-AK	15.2	9.4	5.3	1.13	1.6					●		
	APKT160420PDER-GW	15.2	9.4	5.3	—	2.0					●		

Face Milling
M-FN66 Series

High-Fed Milling
M-FH-Series

Shoulder Milling
TAN90 Series

Profile Milling

Multi-Functional Milling
Modular Bapm Series

TAP90 SERIES

Shoulder Milling with High Precision Cutting Edge and Low Cutting Forces for Reduced Chattering

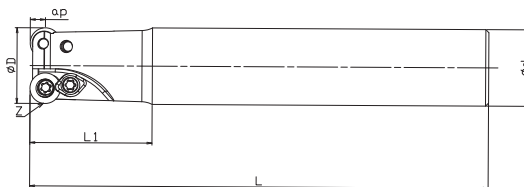
● Recommended Cutting Conditions

ISO	Workpiece material	Hardness	Grade	Cutting Speed		Feed	
				Vc (m/min)	fz (mm/t)		
P	Low Carbon Steel	≤HB180	TY602	120-220	0.15-0.30		
	High Carbon and Alloy Steel	HB180-280		70-150	0.15-0.30		
	Alloy Steel	HB280-350		70-150	0.15-0.30		
M	Stainless Steel	≤HB200		120-200	0.08-0.25		
K	Gray Cast Iron	HB150-250		140-220	0.15-0.30		
	Ductile Cast Iron	HB150-250		150-240	0.15-0.30		
N	Aluminum	—	HC200	300-800	0.07-0.50		
H	Hardened Material	<HRC55	TY622	40-80	0.26-0.40		

TRD SERIES

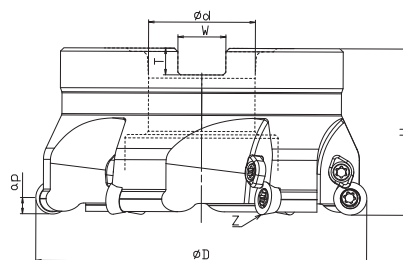
Radius Milling with Lower Cutting Costs and Increases Efficiency

- ★ Low cutting forces with helical cutting edge design .
- ★ Suitable for 11°positive angle insert, applicable to alloy steel , hardened steel and aluminium alloy.
- ★ Reduced chattering even with extended milling adapters .



● Endmills

Designation	Size(mm)						Insert	Clamping Screw	Wrench	Clamping Piece
	D	d	L1	L	Z	Max.ap				
TRDE4R-16R02D16RD08L150	16	16	28	150	2	4	RDKT0802M0	TR1008	TRP08	TRS08
TRDE4R-16R02D16RD08L200				200	2	4	RDKT0802M0			
TRDE4R-20R02D20RD08L150	20	20	30	150	2	4	RDKT0802M0			
TRDE4R-20R02D20RD08L200				200	2	4	RDKT0802M0			
TRDE5R-20R02D20RD10L150	20	20	30	150	2	5	RDKT10T3M0	TR1010	TRP10	TRS10
TRDE5R-20R02D20RD10L200				200	2	5	RDKT10T3M0			
TRDE5R-25R02D25RD10L150	25	25	40	150	2	5	RDKT10T3M0			
TRDE5R-25R02D25RD10L200				200	2	5	RDKT10T3M0			
TRDE6R-32R03D32RD12L150	32	32	45	150	3	6	RDKT1204M0	TR1012	TRP12	TRS12
TRDE6R-32R03D32RD12L200				200	3	6	RDKT1204M0			



● Milling Cutters





Designation	Size (mm)							Insert	Clamping Screw	Wrench	Clamping Piece
	D	d	H	W	T	Z	Max.ap				
TRDF5R-50R04RD10M22	50	22	50	10.4	6.3	4	5	RDKT10T3M0	TR1010	TRP10	TRS10
TRDF5R-63R04RD10M22	63	22	50	10.4	6.3	4	5	RDKT10T3M0			
TRDF5R-80R06RD10M27	80	27	50	12.4	7.0	6	5	RDKT10T3M0			
TRDF5R-100R06RD10M32	100	32	50	14.4	8.0	6	5	RDKT10T3M0			
TRDF6R-50R04RD12M22	50	22	50	10.4	6.3	4	6	RDKT1204M0	TR1012	TRP12	TRS12
TRDF6R-63R04RD12M22	63	22	50	10.4	6.3	4	6	RDKT1204M0			
TRDF6R-80R06RD12M27	80	27	50	12.4	7.0	6	6	RDKT1204M0			
TRDF6R-100R06RD12M32	100	32	50	14.4	8.0	6	6	RDKT1204M0			

TRD SERIES

Radius Milling with Lowers Cutting Costs and Increases Efficiency

● Applicable Inserts

Usage Classification	P	Steel	★												
★1st Choice ☆2nd Choice	M	Stainless	★												
	K	Cast iron	★												
	N	Non-ferrous							★						
	S	Superalloys													
	H	Hard materials		★											

Insert	Insert No.	Size(mm)			Coated Carbide				Carbide						
		IC	S	RE	TY602	TY622	TY625	T1960	HC200						
 General Chipbreaker	RDKT0802M0	8	2.4	4	●										
	RDKT10T3M0	10	4.0	5	●										
	RDKT1204M0	12	4.8	6	●										
	RDMT0802M0	8	2.4	4	●										
	RDMT10T3M0	10	4.0	5	●										
	RDMT1204M0	12	4.8	6	●										
 Stainless Steel Chipbreaker	RDKT0802M0-ST	8	2.4	4	●										
	RDKT10T3M0-ST	10	4.0	5	●										
	RDKT1204M0-ST	12	4.8	6	●										
 	RDKT0802M0-TR	8	2.4	4		●									
	RDKT10T3M0-TR	10	4.0	5		●									
	RDKT1204M0-TR	12	4.8	6		●									
 	RDKT0802M0	8	2.4	4						●					
	RDKT10T3M0	10	4.0	5						●					
	RDKT1204M0	12	4.8	6						●					

Face Milling
MFPN6 Series

High-Fed Milling
MFR-Series

Shoulder Milling
TAN90 Series

Profile Milling
TDR Series

Multi-Functional Milling
Modular Bapm Series

TRD SERIES

Radius Milling with Lowers Cutting Costs and Increases Efficiency

● Recommended Cutting Conditions

ISO	Workpiece material	Hardness	Grade	Cutting Speed		Feed	
				Vc (m/min)	fz (mm/t)		
P	Low Carbon Steel	≤ HB180	TY602	120-220	0.15-0.30		
	High Carbon and Alloy Steel	HB180-280		70-150	0.15-0.30		
	Alloy Steel	HB280-350		70-150	0.15-0.30		
M	Stainless Steel	≤ HB200		120-200	0.10-0.25		
K	Gray Cast Iron	HB150-250		140-220	0.15-0.30		
	Ductile Cast Iron	HB150-250		150-240	0.15-0.30		
N	Aluminum	—	HC200	300-800	0.07-0.55		
H	Hardened Material	≤ HRC55	TY622	40-80	0.22-0.40		