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NEW PRODUCT NEWS

FINEBALL

new

Accurate Profile Machining

TaeguTec
Member IMC Group

FINEBALL

Accurate profile machining

FEATURES

- High helix cutting edges guarantee smooth and stable cutting
- The FINEBALL demonstrates excellent run-out and precision due to its optimised design
- Internal coolant system promotes excellent chip evacuation and prolongs tool life
- Enhanced contact area between insert and cutter body improves clamping and rigidity
- A symmetric structure of insert and holder enables accurate clamping

TaeguTec has launched its new finishing end mill, the FINEBALL for Mold & Die and aerospace machining. The newly launched line delivers smooth and stable machining performance with excellent runout and precision.

These benefits are directly due to the unique new insert and holder features, with inserts available as either Ball type or Corner R types; the ball type diameter from 8-32 mm while the Corner R typeincluding a corner radii from 0.3-3.0mm-has a range of 8-25 mm for more effective finishing.

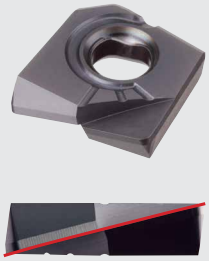
The TNF holder can accommodate both the ball and corner R type inserts while the TNFR cutter is designed specifically for R type inserts only. Our customers now have a wider range of options for an end mill body in a steel, carbide or modular type.

The FINEBALL line is characterized by more rigid and secure clamping while its internal coolant system permits excellent chip evacuation and prolonged tool life.

Insert shape

NFB□□□-SM

NFB □□□-FM



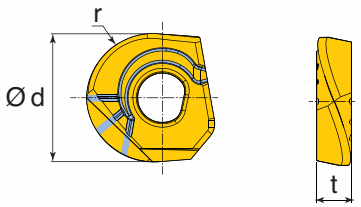
NFR □□□A-R□□

For high speed machining of high hardened metal, we recommend the “SM” high helix insert for its smooth cutting edge.

NFB
Ball nose insert

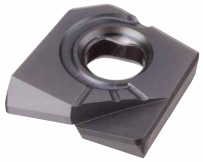
FM

SM

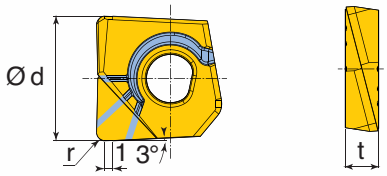


Designation	Dimension (mm)			Grade		Application
	D	t	r	TT9030	TT1040	End Mill
NFB 080-FM	8	2.2	4	●	●	TNF □□□-□□ TNF □□□-M□□ TNF □□□-CT
NFB 080-SM	8	2.2	4	●	●	
NFB 100-FM	10	2.7	5	●	●	
NFB 100-SM	10	2.7	5	●	●	
NFB 120-FM	12	3.2	6	●	●	
NFB 120-SM	12	3.2	6	●	●	
NFB 160-FM	16	4.2	8	●	●	
NFB 160-SM	16	4.2	8	●	●	
NFB 200-FM	20	5.2	10	●	●	
NFB 200-SM	20	5.2	10	●	●	
NFB 250-FM	25	6.2	12.5	●	●	
NFB 250-SM	25	6.2	12.5	●	●	
NFB 300-FM	30	7.2	15	●	●	
NFB 300-SM	30	7.2	15	●	●	
NFB 320-FM	32	7.2	16	●	●	
NFB 320-SM	32	7.2	16	●	●	

NFR
Corner radius insert



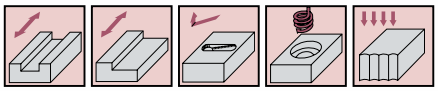
NFR-R□□



Designation	Dimension (mm)			Grade		Application
	d	t	r	TT9030	TT1040	End Mill
NFR 080A-R03	8	2.2	0.3	●	●	
NFR 080A-R05	8	2.2	0.5	●	●	
NFR 080A-R06	8	2.2	0.6		●	
NFR 080A-R10	8	2.2	1.0	●	●	
NFR 100A-R03	10	2.7	0.3	●	●	
NFR 100A-R05	10	2.7	0.5	●	●	
NFR 100A-R08	10	2.7	0.8		●	
NFR 100A-R10	10	2.7	1.0	●	●	
NFR 100A-R15	10	2.7	1.5	●	●	
NFR 100A-R20	10	2.7	2.0	●	●	
NFR 120A-R03	12	3.2	0.3	●	●	
NFR 120A-R05	12	3.2	0.5	●	●	
NFR 120A-R10	12	3.2	1.0	●	●	
NFR 120A-R15	12	3.2	1.5	●	●	
NFR 120A-R20	12	3.2	2.0	●	●	
NFR 160A-R03	16	4.2	0.3	●	●	TNF □□□-□□ TNF □□□-M□□ TNF □□□-CT TNFR □□□-□□ TNFR □□□-M□□ TNFR □□□-CT
NFR 160A-R05	16	4.2	0.5	●	●	
NFR 160A-R10	16	4.2	1.0	●	●	
NFR 160A-R13	16	4.2	1.3		●	
NFR 160A-R15	16	4.2	1.5	●	●	
NFR 160A-R20	16	4.2	2.0	●	●	
NFR 160A-R30	16	4.2	3.0	●	●	
NFR 200A-R03	20	5.2	0.3	●	●	
NFR 200A-R05	20	5.2	0.5	●	●	
NFR 200A-R10	20	5.2	1.0	●	●	
NFR 200A-R15	20	5.2	1.5	●	●	
NFR 200A-R16	20	5.2	1.6		●	
NFR 200A-R20	20	5.2	2.0	●	●	
NFR 200A-R30	20	5.2	3.0	●	●	
NFR 250A-R03	25	6.2	0.3	●	●	
NFR 250A-R05	25	6.2	0.5	●	●	
NFR 250A-R10	25	6.2	1.0	●	●	
NFR 250A-R15	25	6.2	1.5	●	●	
NFR 250A-R20	25	6.2	2.0	●	●	
NFR 250A-R30	25	6.2	3.0	●	●	

TNF □□□-□□□

Steel shank type



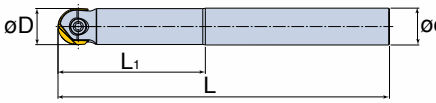


Fig.1

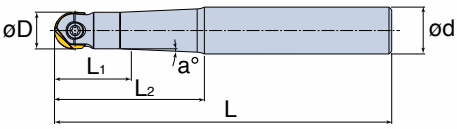
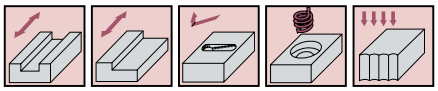


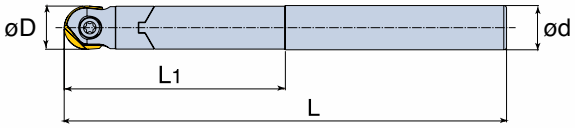
Fig.2

Designation	Insert	Dimension(mm)						Fig.
		D	d	L	L1	L2	a°	
TNF 080-08S	NFB 080 –SM NFB 080 –FM NFR 080A–R□□	8	8	90	20	-	-	1
TNF 080-12S			12	100	10	20	9.5	2
TNF 080-12M			12	130	10	50	3	2
TNF 100-10S	NFB 100 –SM NFB 100 –FM NFR 100A–R□□	10	10	90	30	-	-	1
TNF 100-12S			12	110	15	25	5°	2
TNF 100-16M			16	130	15	60	3.5°	2
TNF 120-12S	NFB 120 –SM NFB 120 –FM NFR 120A–R□□	12	12	110	30	-	-	1
TNF 120-16M			16	140	25	60	2.4°	2
TNF 120-20L			20	180	40	80	5°	2
TNF 160-16M	NFB 160 –SM NFB 160 –FM NFR 160A–R□□	16	16	130	40	-	-	1
TNF 160-20M			20	160	25	60	2.5°	2
TNF 160-25L			25	220	55	100	5°	2
TNF 200-20S	NFB 200 –SM NFB 200 –FM NFR 200A-R□□	20	20	110	40	-	-	1
TNF 200-20M			20	150	50	-	-	1
TNF 200-20L			20	220	70	-	-	1
TNF 200-25M			25	180	40	80	2.5°	2
TNF 200-25L			25	220	45	110	1.5°	2
TNF 250-25S	NFB 250 –SM NFB 250 –FM NFR 250A–R□□	25	25	125	40	-	-	1
TNF 250-25M			25	170	70	-	-	1
TNF 250-32M			32	200	32	90	3°	2
TNF 250-32L			32	250	40	130	1.5°	2
TNF 300-32S	NFB 300 –SM NFB 300 –FM	30	32	140	55	-	-	1
TNF 300-32M			32	190	75	-	-	1
TNF 300-32L			32	250	65	100	1°	2
TNF 300-32XL			32	300	150	-	-	1
TNF 320-32L	NFB 320 –SM NFB 320 –FM	32	32	250	60	-	-	1

TNF □□□-□□□-CT-L□□□

Tungsten carbide shank type

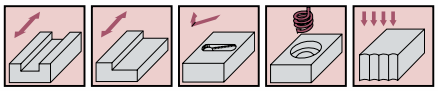


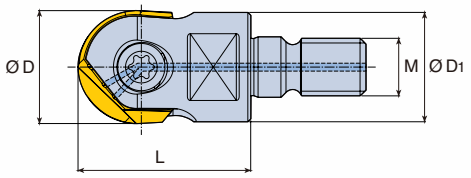


Designation	Insert	Dimension(mm)			
		D	d	L	L1
TNF 080-08-CT-L100	NFB 080 –SM NFB 080 –FM NFR 080A–R□□	8	8	100	30
TNF 080-10-CT-L140			10	140	75
TNF 100-10-CT-L100	NFB 100 –SM NFB 100 –FM NFR 100A–R□□	10	10	100	35
TNF 100-10-CT-L140			10	140	75
TNF 100-10-CT-L220			10	220	140
TNF 120-12-CT-L120	NFB 120 –SM NFB 120 –FM NFR 120A–R□□	12	12	120	50
TNF 120-12-CT-L160			12	160	90
TNF 120-12-CT-L220			12	220	150
TNF 160-16-CT-L120	NFB 160 –SM NFB 160 –FM NFR 160A–R□□	16	16	120	60
TNF 160-16-CT-L160			16	160	80
TNF 160-16-CT-L220			16	220	150
TNF 200-20-CT-L220	NFB 200 –SM NFB 200 –FM NFR 200A–R□□	20	20	220	120
TNF 200-20-CT-L300			20	300	220
TNF 250-25-CT-L220	NFB 250 –SM NFB 250 –FM NFR 250A–R□□	25	25	220	120
TNF 250-25-CT-L300			25	300	220
TNF 300-32-CT-L250	NFB 300 -SM NFB 300 -FM	30	32	250	150
TNF 300-32-CT-L350			32	350	230
TNF 320-32-CT-L300	NFB 320 -SM NFB 320 -FM	32	32	300	220

TNF □□□-M □□

Modular head type

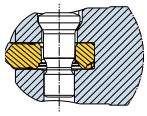
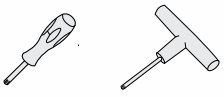




Designation	Insert	Dimension(mm)			
		D	L	M	D1
TNF 100-M06	NFB 100–SM NFB 100 –FM NFR 100A–R□□	10	20	6	9.7
TNF 120-M06	NFB 120 –SM NFB 120 –FM NFR 120A–R□□	12	23	6	11.5
TNF 120-M08			23	8	13
TNF 160-M08	NFB 160 –SM NFB 160 –FM NFR 160A–R□□	16	30	8	13
TNF 200-M10	NFB 200 –SM NFB 200 –FM NFR 200A–R□□	20	30	10	19
TNF 250-M12	NFB 250 –SM NFB 250 –FM NFR 250A–R□□	25	35	12	24
TNF 300-M16	NFB 300 -SM NFB 300 -FM	30	43	16	29
TNF 320-M16	NFB 320-SM NFB 320-FM	32	43	16	29.5

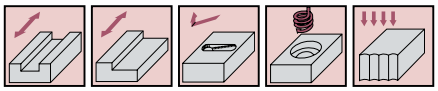
• Coolant through type

Components

Designation	Screw	Wrench
		
TNF 080	TS 25F080A	TD 8P
TNF 100	TS 30F100A	TD 10P
TNF 120	TS 40F120A	TD 15P
TNF 160	TS 50F160A	T-T20
TNF 200	TS 60F200A	T-T25
TNF 250	TS 70F250A	T-T25
TNF 300, TNF 320	TS 80F300A	T-T30

TNFR □□□-□□□

Corner radius type with steel shank



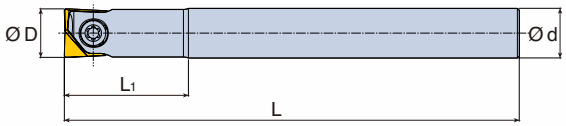


Fig.1

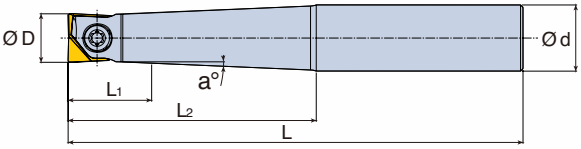
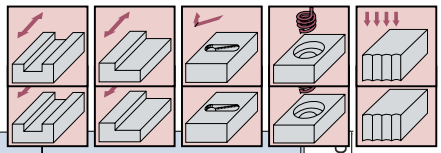


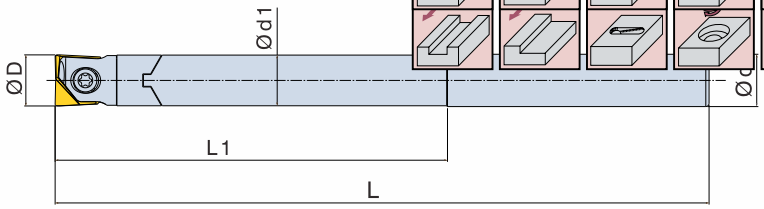
Fig.2

Designation	Insert	Dimension(mm)						Fig.
		D	d	L	L_1	L_2	a°	
TNFR 080-12S	NFR 080A–R□□	8	12	100	10	22	9	2
TNFR 080-12M			12	130	10	50	2.8	2
TNFR 100-12S	NFR 100A–R□□	10	12	110	15	25	5	2
TNFR 100-16M			16	150	15	50	3.5	2
TNFR 120-12S	NFR 120A–R□□	12	12	110	30	-	-	1
TNFR 120-16M			16	160	18	60	2.5	2
TNFR 160-16S	NFR 160A–R□□	16	16	130	50	-	-	1
TNFR 160-16M			16	170	70	-	-	1
TNFR 160-16L			16	200	100	-	-	1
TNFR 200-20S	NFR 200A-R□□	20	20	140	60	-	-	1
TNFR 200-20M			20	180	80	-	-	1
TNFR 200-20L			20	250	120	-	-	1
TNFR 250-25S	NFR 250A–R□□	25	25	150	70	-	-	1
TNFR 250-25M			25	200	100	-	-	1
TNFR 250-25L			25	250	120	-	-	1

TNFR □□□-□□□-CT-L□□□

Corner radius type with tungsten carbide shank

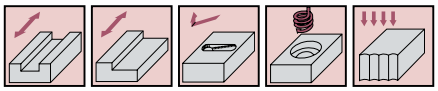


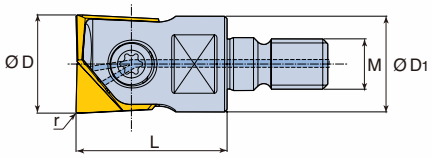


Designation	Insert	Dimension(mm)				
		D	d	d_1	L	L_1
TNFR 080-08-CT-L140	NFR 080A–R□□	8	8	7.8	140	75
TNFR 100-10-CT-L140	NFR 100A–R□□	10	10	9.7	140	75
TNFR 120-12-CT-L160	NFR 120A–R□□	12	12	11.7	160	95
TNFR 160-16-CT-L200	NFR 160A–R□□	16	16	15.5	200	120
TNFR 200-20-CT-L250	NFR 200A–R□□	20	20	19.5	250	160
TNFR 250-25-CT-L300	NFR 250A–R□□	25	25	24.5	300	200

TNFR □□□-□□□

Corner radius type with modular head

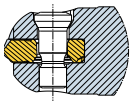
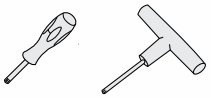




Designation	Insert	Dimension(mm)			
		D	D_1	L	M
TNFR 100-M06	NFR 100A–R□□	10	9.7	20	6
TNFR 120-M06	NFR 120A–R□□	12	11.5	23	6
TNFR 120-M08			13	23	8
TNFR 160-M08	NFR 160A–R□□	16	13	30	8
TNFR 200-M10	NFR 200A–R□□	20	19	30	10
TNFR 250-M12	NFR 250A–R□□	25	24	35	12

• Coolant through type

Components

Designation	Screw	Wrench
		
TNFR 080	TS 25F080A	TD 8P
TNFR 100	TS 30F100A	TD 10P
TNFR 120	TS 40F120A	TD 15P
TNFR 160	TS 50F160A	T-T20
TNFR 200	TS 60F200A	T-T25
TNFR 250	TS 70F250A	T-T25

Operating guidelines for FINEBALL using NFB □□□ & NFR □□□

Material	Hardness	Grade	Max Axial D.O.C.(mm)	Cutting Speed (m/min)	D08	D10	D12	D16	D20	D25	D30(32)
					F(mm/tooth)						
Low Carbon Steels Alloy Steels	85-180	TT1040, TT9030	≤ 0.04D	180 - 260	0.2	0.2	0.2	0.25	0.25	0.3	0.35
High Carbon Steel Alloy Steel	180-280	TT1040, TT9030	≤ 0.03D	150 - 230	0.15	0.2	0.2	0.25	0.25	0.3	0.35
Prehardend Steel for Mold & Die Tool Steel	400-480	TT1040, TT9030	≤ 0.03D	180 - 300	0.15	0.15	0.2	0.2	0.25	0.25	0.3
High Hardened	480-830	TT1040	≤ 0.02D	100 - 350	0.08	0.08	0.1	0.125	0.15	0.2	0.25
Stainless Steel	135-200	TT9030	≤ 0.03D	100 - 250	0.05	0.15	0.2	0.2	0.25	0.25	0.3
Cast Iron	150-240	TT1040, TT9030	≤ 0.04D	90 - 350	0.2	0.2	0.25	0.3	0.3	0.35	0.4
Aluminum	_	TT9030	≤ 0.03D	200 - 400	0.25	0.25	0.35	0.35	0.35	0.4	0.45

• Recommended cutting conditions are just for reference in general machining.
• For carbide shank the feed rate & D.O.C. can be increased 20 - 30% compared to steel shank.