

# NEW PRODUCT NEWS

## *FINEBALL*

**expansion**

### Insert and Holder Line Expansion



# FINEBALL

## Insert and Holder Line Expansion

TaeguTec has expanded its standard line of FINEBALL inserts and holders with a variety of steel shanks, carbide shanks as well as modular head types. The expansion of the FINEBALL line not only provides the same optimal solution as before but can now perform more cost effective machining solutions on a wider range of applications.

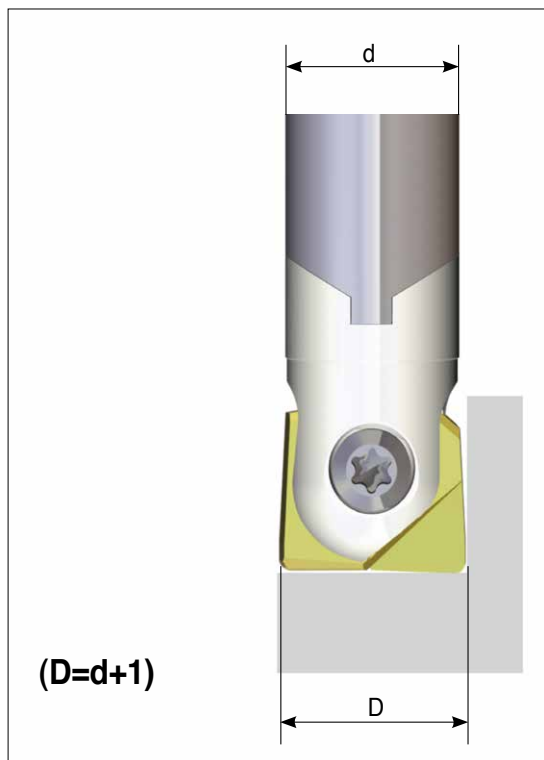
Corner radius insert diameters have been expanded and now available in 11, 13, 17, 21, 26, 30 and 32 mm. Corner radius inserts of size 11, 13, 17, 21 and 26 mm can be mounted in the corresponding standard holders smaller by 1 mm. This provides additional clearance between insert and tool shank and thus prevents interference between the tool and the workpiece.

Furthermore, the TNF holders have been expanded to include various neck lengths and overall lengths while the TNFR holders have been expanded to include 30 and 32 mm diameters.

The FINEBALL expansion of standard inserts and holders is the perfect solution on a widened range of finishing applications for the aerospace as well as die and mold industries.

## Insert line expansion features

- **Insert line expansion 1: addition of d+1 diameter inserts prevents interference**



New inserts: NFR 110, NFR 130, NFR 170, NFR 210, NFR 260  
Compatible with the current TNF/TNFR  
Ex) NFR 170 insert is compatible with TNF/TNFR 160 holders

- **Insert line expansion 2**

New inserts: NFR 300, 320  
Bigger insert, shorter machining time

## Insert shape



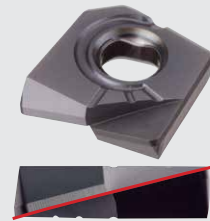
**NFB 080-SM**

For high-speed machining of high hardened metal and general machining



**NFB 080-FM**

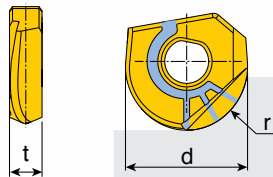
For general







**NFR 080A-R080**

For general

## NFB Insert

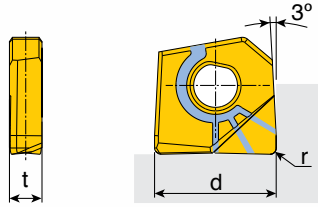


Size	Dimension (mm)				
	d	t	r		
<b>080</b>	8	2.2	4.0		
<b>100</b>	10	2.7	5.0		
<b>120</b>	12	3.2	6.0		
<b>160</b>	16	4.2	8.0		
<b>200</b>	20	5.2	10.0		
<b>250</b>	25	6.2	12.5		
<b>300</b>	30	7.2	15.0		
<b>320</b>	32	7.2	16.0		

Insert	Designation	Recommended Machining Conditions		Coated							Uncoated		
		Fz (mm/tooth)	ap (mm)	TT9080	TT8080	TT7800	TT7080	TT6800	TT6080	TT5525	TT5515	TT2510	K10
  Straight cutting edge	<b>NFB 080-FM</b>	0.05-0.20	0.05-0.3							●	●		
	<b>100-FM</b>	0.05-0.20	0.05-0.3							●	●		
	<b>120-FM</b>	0.08-0.30	0.05-0.5							●	●		
	<b>160-FM</b>	0.08-0.30	0.05-0.5							●	●		
	<b>200-FM</b>	0.08-0.30	0.10-1.0							●	●		
	<b>250-FM</b>	0.08-0.40	0.15-1.0							●	●		
	<b>300-FM</b>	0.08-0.40	0.15-1.0							●	●		
  Helical cutting edge	<b>NFB 080-SM</b>	0.05-0.25	1.20-3.2							●	●	●	
	<b>100-SM</b>	0.05-0.25	1.50-4.0							●	●	●	
	<b>120-SM</b>	0.08-0.35	1.80-4.8							●	●	●	
	<b>160-SM</b>	0.08-0.35	2.40-6.4							●	●	●	
	<b>200-SM</b>	0.08-0.35	3.00-8.0							●	●	●	
	<b>250-SM</b>	0.08-0.45	3.75-10.0							●	●	●	
	<b>300-SM</b>	0.08-0.45	4.50-12.0							●	●	●	
<b>320-SM</b>	0.08-0.45	4.80-12.8							●	●	●		

●: Standard Item

# NFR Insert

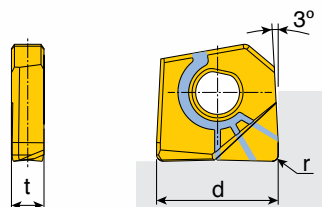


Size	Dimension (mm)				
	d	t	r		
<b>080</b>	8	2.2	0.3-1.0		
<b>100</b>	10	2.7	0.3-2.0		
<b>110</b>	11	2.7	0.3-2.0		
<b>120</b>	12	3.2	0.3-2.0		
<b>130</b>	13	3.2	0.3-2.0		
<b>160</b>	16	4.2	0.3-3.0		
<b>170</b>	17	4.2	1.0-2.0		

Insert	Designation	Recommended Machining Conditions		Coated									Uncoated	
		Fz (mm/tooth)	ap (mm)	TT9080	TT8080	TT7800	TT7080	TT6800	TT6080	TT5525	TT5515	TT2510	K10	
	<b>NFR 080A-R03</b>	0.05-0.12	0.05-0.2							●	●	●		
	<b>080A-R05</b>	0.05-0.12	0.05-0.2							●	●	●		
	<b>080A-R06</b>	0.05-0.12	0.05-0.2							●	●	●		
	<b>080A-R10</b>	0.05-0.12	0.05-0.2							●	●	●		
	<b>100A-R03</b>	0.05-0.12	0.05-0.3							●	●	●		
	<b>100A-R05</b>	0.05-0.12	0.05-0.3							●	●	●		
	<b>100A-R08</b>	0.05-0.12	0.05-0.3							●	●	●		
	<b>100A-R10</b>	0.05-0.12	0.05-0.3							●	●	●		
	<b>100A-R15</b>	0.05-0.12	0.05-0.3							●	●	●		
	<b>100A-R20</b>	0.05-0.12	0.05-0.3							●	●	●		
	<b>110A-R10 <span style="color:red">new</span></b>	0.05-0.12	0.05-0.3							●	●	●		
	<b>110A-R20 <span style="color:red">new</span></b>	0.05-0.12	0.05-0.3							●	●	●		
	<b>120A-R03</b>	0.08-0.15	0.07-0.3							●	●	●		
	<b>120A-R05</b>	0.08-0.15	0.07-0.3							●	●	●		
	<b>120A-R10</b>	0.08-0.15	0.07-0.3							●	●	●		
	<b>120A-R15</b>	0.08-0.15	0.07-0.3							●	●	●		
	<b>120A-R20</b>	0.08-0.15	0.07-0.3							●	●	●		
	<b>130A-R10 <span style="color:red">new</span></b>	0.08-0.15	0.07-0.3							●	●	●		
	<b>130A-R20 <span style="color:red">new</span></b>	0.08-0.15	0.07-0.3							●	●	●		
	<b>160A-R03</b>	0.08-0.15	0.08-0.5							●	●	●		
	<b>160A-R05</b>	0.08-0.15	0.08-0.5							●	●	●		
	<b>160A-R10</b>	0.08-0.15	0.08-0.5							●	●	●		
	<b>160A-R13</b>	0.08-0.15	0.08-0.5							●	●	●		
	<b>160A-R15</b>	0.08-0.15	0.08-0.5							●	●	●		
	<b>160A-R20</b>	0.08-0.15	0.08-0.5							●	●	●		
	<b>160A-R30</b>	0.08-0.15	0.08-0.5							●	●	●		
	<b>170A-R10 <span style="color:red">new</span></b>	0.08-0.15	0.08-0.5							●	●	●		
	<b>170A-R20 <span style="color:red">new</span></b>	0.08-0.15	0.08-0.5							●	●	●		

●: Standard Item

# NFR Insert



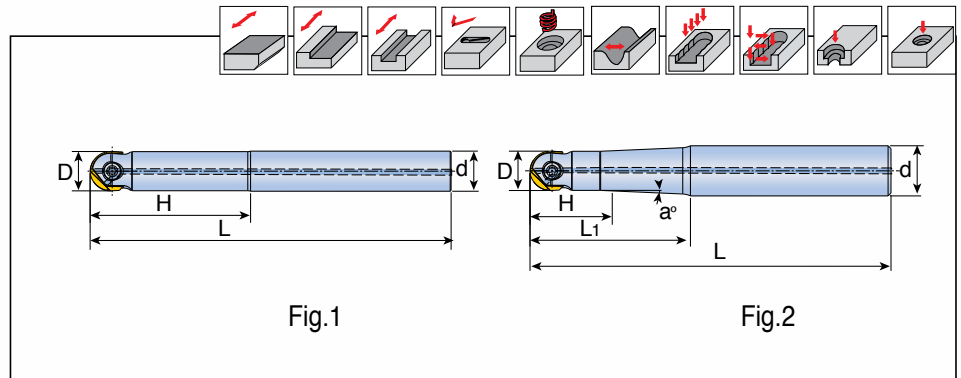
Size	Dimension (mm)				
	d	t	r		
<b>200</b>	20	5.2	0.3-3.0		
<b>210</b>	21	5.2	1.0-2.0		
<b>250</b>	25	6.2	0.3-3.0		
<b>260</b>	26	6.2	1.0-2.0		
<b>300</b>	30	7.1	1.0-2.0		
<b>320</b>	32	7.1	1.0-2.0		

Insert	Designation	Recommended Machining Conditions		Coated							Uncoated			
		Fz (mm/tooth)	ap (mm)	TT9080	TT8080	TT7800	TT7080	TT6800	TT6080	TT5525	TT5515	TT2510	K10	
	<b>NFR 200A-R03</b>	0.08-0.15	0.1-0.7							●	●	●		
	<b>200A-R05</b>	0.08-0.15	0.1-0.7							●	●	●		
	<b>200A-R10</b>	0.08-0.15	0.1-0.7							●	●	●		
	<b>200A-R15</b>	0.08-0.15	0.1-0.7							●	●	●		
	<b>200A-R16</b>	0.08-0.15	0.1-0.7							●	●	●		
	<b>200A-R20</b>	0.08-0.15	0.1-0.7							●	●	●		
	<b>200A-R30</b>	0.08-0.15	0.1-0.7							●	●	●		
	<b>210A-R10 <span style="color:red">new</span></b>	0.08-0.15	0.1-0.7							●	●	●		
	<b>210A-R20 <span style="color:red">new</span></b>	0.08-0.15	0.1-0.7							●	●	●		
	<b>250A-R03</b>	0.08-0.15	0.1-1.0							●	●	●		
	<b>250A-R05</b>	0.08-0.15	0.1-1.0							●	●	●		
	<b>250A-R10</b>	0.08-0.15	0.1-1.0							●	●	●		
	<b>250A-R15</b>	0.08-0.15	0.1-1.0							●	●	●		
	<b>250A-R20</b>	0.08-0.15	0.1-1.0							●	●	●		
	<b>250A-R30</b>	0.08-0.15	0.1-1.0							●	●	●		
	<b>260A-R10 <span style="color:red">new</span></b>	0.08-0.15	0.1-1.0							●	●	●		
	<b>260A-R20 <span style="color:red">new</span></b>	0.08-0.15	0.1-1.0							●	●	●		
	<b>300A-R05</b>	0.08-0.20	0.1-1.0							●	●	●		
	<b>300A-R10 <span style="color:red">new</span></b>	0.08-0.20	0.1-1.0							●	●	●		
	<b>300A-R20 <span style="color:red">new</span></b>	0.08-0.20	0.1-1.0							●	●	●		
<b>320A-R10 <span style="color:red">new</span></b>	0.08-0.20	0.1-1.0							●	●	●			
<b>320A-R20 <span style="color:red">new</span></b>	0.08-0.20	0.1-1.0							●	●	●			

●: Standard Item

# TNF □□□-□□□

## Steel shank type

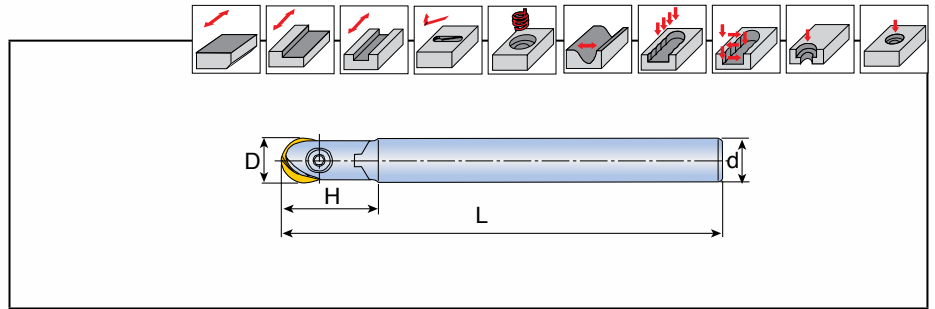


Designation	Dimension (mm)						Fig.	Insert
	D	d	L	H	L1	a°		
<b>TNF 080-08S</b>	8	8	90	20	-	-	1	NFB 080
<b>080-12S</b>	8	12	100	10	20	9.5°	2	NFR 080A
<b>080-12M</b>	8	12	130	10	50	3°	2	
<b>100-10S</b>	10	10	90	30	-	-	1	NFB 100
<b>100-12S</b>	10	12	110	15	25	5°	2	NFR 100A
<b>100-16M</b>	10	16	130	15	60	3.5°	2	NFR 110A
<b>120-12S</b>	12	12	110	30	-	-	1	NFB 120
<b>120-12M (new)</b>	12	12	180	60	-	-	1	NFR 120A
<b>120-16M</b>	12	16	140	25	60	2.4°	2	NFR 130A
<b>120-20L</b>	12	20	180	40	80	5°	2	
<b>160-16M</b>	16	16	130	40	-	-	1	NFB 160
<b>160-16L (new)</b>	16	16	200	100	-	-	1	NFR 160A
<b>160-20M</b>	16	20	160	25	60	2.5°	2	NFR 170A
<b>160-25L</b>	16	25	220	55	100	5°	2	
<b>200-20S</b>	20	20	110	40	-	-	1	NFB 200
<b>200-20M</b>	20	20	150	50	-	-	1	NFR 200A
<b>200-20L</b>	20	20	220	70	-	-	1	NFR 210A
<b>200-25M</b>	20	25	180	40	80	2.5°	2	
<b>200-25L</b>	20	25	220	45	110	1.5°	2	
<b>250-25S</b>	25	25	125	40	-	-	1	NFB 250
<b>250-25M</b>	25	25	170	70	-	-	1	NFR 250A
<b>250-32M</b>	25	32	200	32	90	3°	2	NFR 260A
<b>250-32L</b>	25	32	250	40	130	1.5°	2	
<b>300-32S</b>	30	32	140	55	-	-	1	NFB 300
<b>300-32M</b>	30	32	190	75	-	-	1	NFB 320
<b>300-32L</b>	30	32	250	65	100	1°	2	NFR 300A
<b>300-32XL</b>	30	32	300	150	-	-	1	NFR 320A
<b>300-32-L220 (new)</b>	30	32	220	55	100	1°	2	
<b>320-32L</b>	32	32	250	60	-	-	1	NFB 320
								NFR 320A

• Coolant through type

# TNF □□□-□□□-CT-L□□□

Tungsten carbide shank type

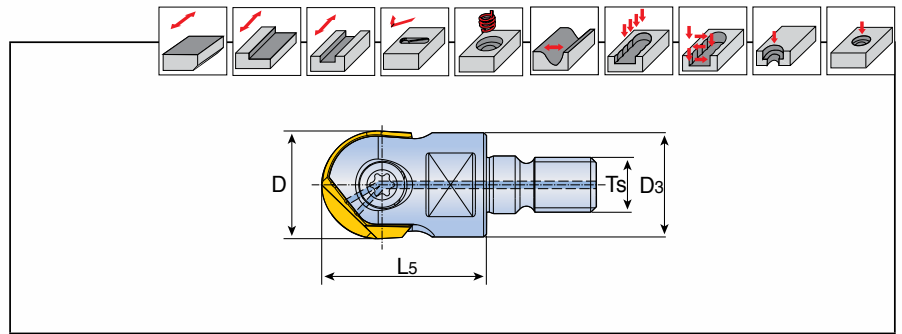


Designation	Dimension (mm)				Insert
	D	d	L	H	
<b>TNF 080-08-CT-L100</b>	8	8	100	30	NFB 080 NFR 080A
<b>080-10-CT-L140</b>	8	10	140	75	
<b>080-08-CT-L160</b> <small>new</small>	8	8	160	80	NFB 100 NFR 100A NFR 110A
<b>100-10-CT-L100</b>	10	10	100	35	
<b>100-10-CT-L140</b>	10	10	140	75	
<b>100-10-CT-L200</b> <small>new</small>	10	10	200	70	
<b>100-10-CT-L220</b>	10	10	220	140	NFB 120 NFR 120A NFR 130A
<b>120-12-CT-L120</b>	12	12	120	50	
<b>120-12-CT-L160</b>	12	12	160	90	
<b>120-12-CT-L160-S</b> <small>new</small>	12	12	160	70	
<b>120-12-CT-L200</b> <small>new</small>	12	12	200	70	
<b>120-12-CT-L220</b>	12	12	220	150	NFB 160 NFR 160A NFR 170A
<b>160-16-CT-L120</b>	16	16	120	60	
<b>160-16-CT-L160</b>	16	16	160	80	
<b>160-16-CT-L160-S</b> <small>new</small>	16	16	160	60	
<b>160-16-CT-L200</b> <small>new</small>	16	16	200	70	
<b>160-16-CT-L220</b>	16	16	220	150	NFB 200 NFR 200A NFR 210A
<b>200-20-CT-L200</b> <small>new</small>	20	20	200	70	
<b>200-20-CT-L220</b>	20	20	220	120	
<b>200-20-CT-L300</b>	20	20	300	220	NFB 250 NFR 250A NFR 260A
<b>250-25-CT-L200</b> <small>new</small>	25	25	200	70	
<b>250-25-CT-L220-S</b> <small>new</small>	25	25	220	80	
<b>250-25-CT-L220</b>	25	25	220	120	
<b>250-25-CT-L300</b>	25	25	300	220	NFB 300 NFB 320 NFR 300A NFR 320A
<b>300-32-CT-L200</b> <small>new</small>	30	32	200	70	
<b>300-32-CT-L250-S</b> <small>new</small>	30	32	250	80	
<b>300-32-CT-L250</b>	30	32	250	150	
<b>300-32-CT-L350-S</b> <small>new</small>	30	32	350	80	
<b>300-32-CT-L350</b>	30	32	350	230	NFB 320 NFR 320A
<b>320-32-CT-L300</b>	32	32	300	220	



# TNF □□□-M□□


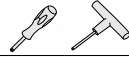
## Modular



Designation	Dimension (mm)				Insert
	D	D <sub>3</sub>	L <sub>5</sub>	T <sub>s</sub>	
<b>TNF 100-M06</b>	10	9.7	20	6	NFB 100 NFR 100A NFR 110A
<b>120-M06</b>	12	11.5	23	6	NFB 120 NFR 120A
<b>120-M08</b>	12	13	23	8	NFR 130A
<b>160-M08</b>	16	13	30	8	NFB 160 NFR 160A NFR 170A
<b>200-M10</b>	20	19	30	10	NFB 200 NFR 200A NFR 210A
<b>250-M12</b>	25	24	35	12	NFB 250 NFR 250A
<b>250-M16</b> <span style="color: red;">new</span>	25	29	43	16	NFR 260A
<b>300-M16</b>	30	29	43	16	NFB 300 NFB 320 NFR 300A NFR 320A
<b>320-M16</b>	32	29.5	43	16	NFB 320 NFR 320A

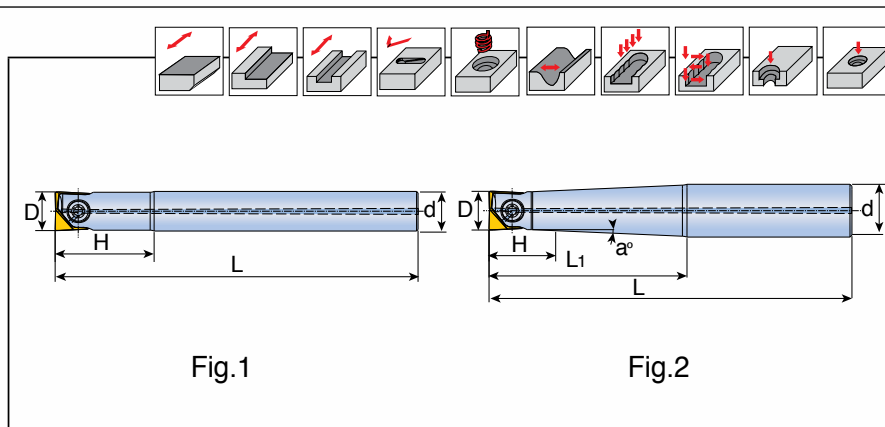
- Coolant through type

## Spare parts

Designation	Screw	Wrench			
					
<b>TNF 080</b>	TS 25F080A	TD 8			
<b>TNF 100</b>	TS 30F100A	TD 10			
<b>TNF 120</b>	TS 40F120A	TD 15			
<b>TNF 160</b>	TS 50F160A	T-T20			
<b>TNF 200</b>	TS 60F200A	SW6-T, BLD T25/M7			
<b>TNF 250</b>	TS 70F250A	SW6-T, BLD T25/M7			
<b>TNF 300, TNF 320</b>	TS 80F300A	T-T30			

# TNFR □□□-□□□

Steel shank type

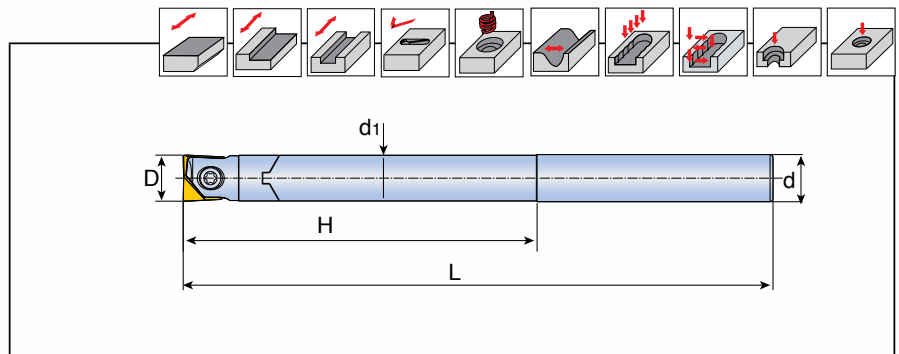


Designation	Dimension (mm)						Fig.	Insert
	D	d	L	H	L <sub>1</sub>	a°		
<b>TNFR 080-12S</b>	8	12	100	10	22	9°	2	NFR 080A
<b>080-12M</b>	8	12	130	10	50	2.8°	2	
<b>100-12S</b>	10	12	110	15	25	5°	2	NFR 100A
<b>100-16M</b>	10	16	150	15	50	3.5°	2	NFR 110A
<b>120-12S</b>	12	12	110	30	-	-	1	NFR 120A
<b>120-16M</b>	12	16	160	18	60	2.5°	2	NFR 130A
<b>160-16S</b>	16	16	130	50	-	-	1	NFR 160A
<b>160-16M</b>	16	16	170	70	-	-	1	NFR 170A
<b>160-16L</b>	16	16	200	100	-	-	1	
<b>200-20S</b>	20	20	140	60	-	-	1	NFR 200A
<b>200-20M</b>	20	20	180	80	-	-	1	NFR 210A
<b>200-20L</b>	20	20	250	120	-	-	1	
<b>250-25S</b>	25	25	150	70	-	-	1	NFR 250A
<b>250-25M</b>	25	25	200	100	-	-	1	NFR 260A
<b>250-25L</b>	25	25	250	120	-	-	1	
<b>300-32S <span style="color:red">new</span></b>	30	32	140	55	-	-	1	NFR 300A
<b>300-32M <span style="color:red">new</span></b>	30	32	190	75	-	-	1	NFR 320A
<b>300-32L <span style="color:red">new</span></b>	30	32	250	65	100	1	2	
<b>320-32L <span style="color:red">new</span></b>	32	32	250	60	-	-	1	NFR 320A

• Coolant through type

# TNFR □□□-□□□-CT-L□□□

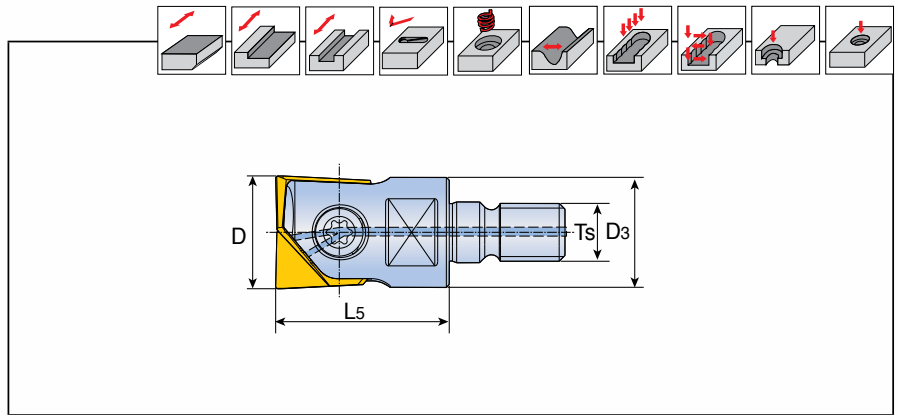
Tungsten carbide shank type



Designation	Dimension (mm)					Insert
	D	d	d <sub>1</sub>	L	H	
<b>TNFR 080-08-CT-L140</b>	8	8	7.8	140	75	NFR 080A
<b>100-10-CT-L140</b>	10	10	9.5	140	75	NFR 100A NFR 110A
<b>120-12-CT-L160</b>	12	12	11.5	160	95	NFR 120A NFR 130A
<b>160-16-CT-L200</b>	16	16	15.5	200	120	NFR 160A NFR 170A
<b>200-20-CT-L250</b>	20	20	19.5	250	160	NFR 200A NFR 210A
<b>250-25-CT-L300</b>	25	25	24.5	300	200	NFR 250A NFR 260A
<b>300-32-CT-L350 <span style="color:red">new</span></b>	30	32	29.5	350	230	NFR 300A NFR 320A
<b>320-32-CT-L350 <span style="color:red">new</span></b>	32	32	31.5	350	230	NFR 320A

# TNFR □□□-M□□


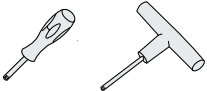
## Modular



Designation	Dimension (mm)				Insert
	D	D <sub>3</sub>	L <sub>5</sub>	T <sub>s</sub>	
<b>TNFR 100-M06</b>	10	9.7	20	6	NFR 100A NFR 110A
<b>120-M06</b>	12	11.5	23	6	NFR 120A NFR 130A
<b>120-M08</b>	12	13	23	8	
<b>160-M08</b>	16	13	30	8	NFR 160A NFR 170A
<b>200-M10</b>	20	19	30	10	NFR 200A NFR 210A
<b>250-M12</b>	25	24	35	12	NFR 250A NFR 260A
<b>300-M16 <span style="color:red">new</span></b>	30	29	43	16	NFR 300A NFR 320A
<b>320-M16 <span style="color:red">new</span></b>	32	29.5	43	16	NFR 320A

• Coolant through type

## Components

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

## Operating guidelines for *FINEBALL* using NFB & NFR inserts

Material	Hardness (HB)	Max axial D.O.C.(mm)	Speed (m/min)	Best grades	Feed (mm/tooth)						
					D8	D10	D12	D16	D20	D25	D30(32)
High carbon steel alloy steel	180-280	≤0.03D	180-270	TT5515 TT5525	0.15	0.20	0.20	0.25	0.25	0.30	0.35
Prehardened steel	400-480	≤0.03D	150-250	TT5515	0.15	0.15	0.20	0.20	0.25	0.25	0.30
High hardened steel	480-830	≤0.02D	100-230	TT5515	0.08	0.08	0.10	0.125	0.15	0.20	0.25
Stainless steel	135-200	≤0.035D	100-250	TT5525	0.10	0.15	0.20	0.20	0.25	0.25	0.30
High temp. super alloy	-	≤0.03D	30-100	TT5525	0.08	0.08	0.10	0.12	0.15	0.18	0.20
Titanium alloy	-	≤0.03D	30-80	TT5515	0.08	0.08	0.10	0.12	0.15	0.18	0.20
Cast iron	140-220	≤0.05D	150-400	TT5515	0.20	0.20	0.25	0.30	0.30	0.35	0.40
Aluminum, copper alloy	-	≤0.05D	200-500	TT5515	0.25	0.25	0.35	0.35	0.35	0.40	0.45

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