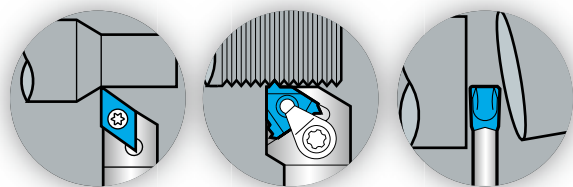


THE NEW VALUE FRONTIER



For small parts machining

KTKF

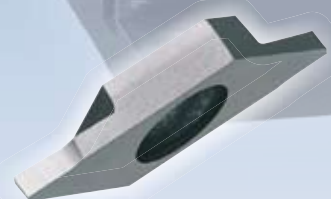
- Back turning and threading tool are now available
- PR1025 (for general purpose) and KW10 (for non-ferrous)
- KTKFS available for micro-diameter cut-off on sub-spindle operations



Back turning
TKFB type



Threading
TKFT type



Cut-off
TKF type

ADVANCING PRODUCTIVITY

For small parts machining

KTKF

Back turning / Threading Lineup

Back turning

For back turning

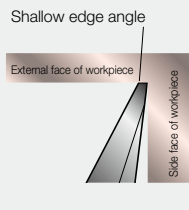
TKFB

NEW



- Minimal deflection due to lower cutting force
- Smooth chip control
- Excellent surface finish due to optimum wiper edge angle

TKFB edge shape



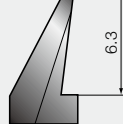
For small D.O.C



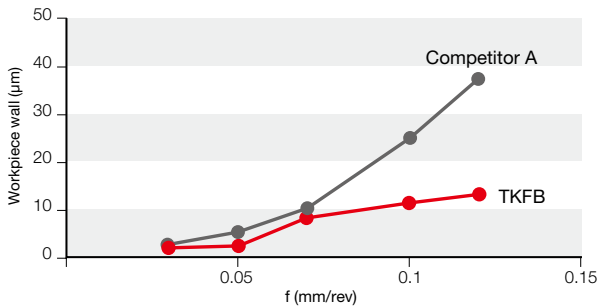
For general cutting



For large D.O.C

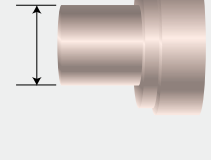


Surface Roughness



Cutting conditions: Vc=80m/min ap=1mm f=0.03-0.12mm/rev WET S45C

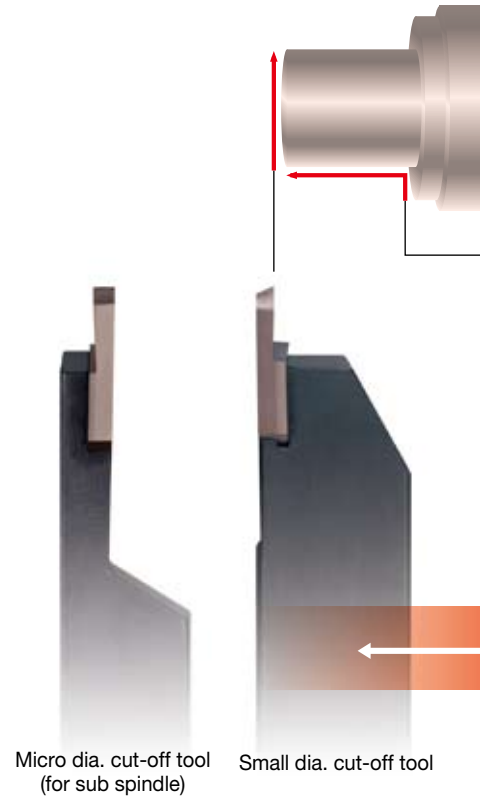
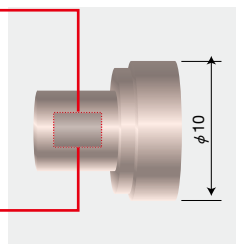
Cutting diameter



Surface finish comparison

	TKFB	Competitor B
f=0.05	 Rz=3.3µm	 Rz=11.2µm
f=0.07	 Rz=4.6µm	 Rz=14.2µm

Cutting conditions: Vc=80m/min ap=1mm WET S45C



For small lathe

Fracture Resistant PVD

PR1025

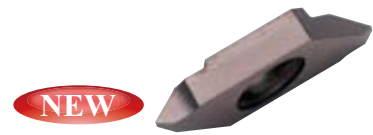
- Fracture resistant substrate reduces chipping
- TiCN PVD Coating improves wear resistance and adhesion resistance

Work Material	Steel			
	P01	P10	P20	P30
Classification				
Applicable Range		PR1025		

PR1025 is the first choice for steel and stainless steel machining.

Threading

For threading
TKFT

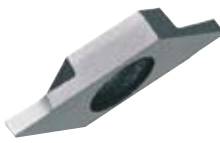


- Applicable for various types of thread
- | | |
|---------------------|----------------------|
| Metric screw thread | Parallel pipe thread |
| Unified thread | Taper pipe thread |

Expansion!!

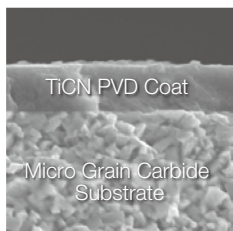


Cut-off



- For Small Dia. Cut-off
KTKF
- Both 5-12mm diameter and small diameter (16mm) toolholders are available. (TKF12/TKF16)
 - Minimum cut-off width of 0.5mm...
 - Sharp cutting due to low cutting force chipbreakers
 - Sharp corner radius of 0.0 available on inserts without chipbreakers
- 

Coated Grade

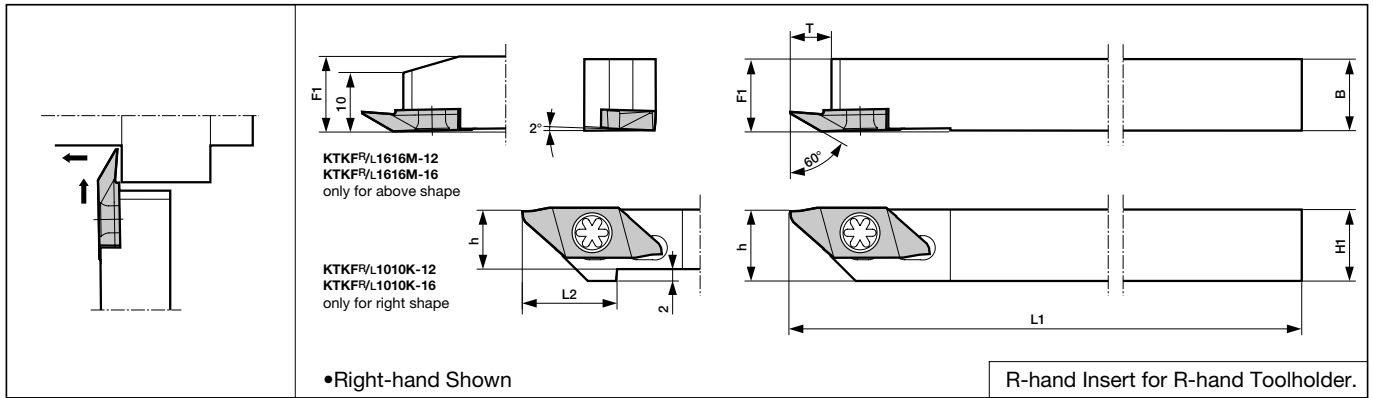


Work Material	Stainless steel			
Classification	M01	M10	M20	M30
Applicable Range		PR1025		

- Micro Diameter. Cut-off for Sub-Spindle
KTKFS
- *New Micro-Diameter Cut-off...
 - Recommended for very small diameter workpieces, or when clearance between...
 - Chipbreaker designed for low cutting resistance
- 
- KTKFS type is specially designed for cut-off. There is no compatibility with back turning / threading inserts.

Turning (Back Turning)

KTKF type



Toolholder Dimension

Description	Stock	Dimension (mm)						Spare Parts		Applicable Insert
		H1=h	B	L1	L2	F1	T	Clamp Screw	Wrench	
KTKFR 1010K-12 1212F-12 1212M-12 1616M-12	●	10	10	125	15	10	6			TKFB12R...
	●	12	12	85	-	12				
	●	12	12	150	-	12				
	●	16	16	150	-	16				
KTKFR 1010K-16 1212F-16 1212M-16 1616M-16	●	10	10	125	20	10	8			TKFB16R...
	●	12	12	85	-	12				
	●	12	12	150	-	12				
	●	16	16	150	-	16				

· Dimension T shows the distance from the toolholder to the cutting edge.

●Standard Stock

· When using back turning insert, only right hand toolholder (R) is applicable.

Applicable Insert

Shape	Description	Dimension (mm)							Stock Grades		Applicable Toolholder
		W	a	B	R(rε)	T	H	φd	PVD Coated	Carbide	
									PR1025	KW10	
	TKFB 12R15005M	1.5	0.25	2.6	<0.05				●	●	KTKFR...12
	TKFB 12R28005M	2.8	0.3	4.6	<0.05	3.0	8.7	5.2	●	●	
	TKFB 12R28010M				<0.1				●	●	
	TKFB 16R38005M	3.8	0.3	6.3	<0.05	4.0	9.5	5.2	●	●	KTKFR...16
	TKFB 16R38010M				<0.1				●	●	

●Standard Stock

Insert Description (See Fig. 1)

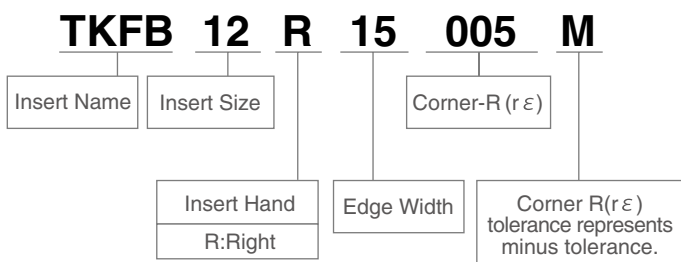
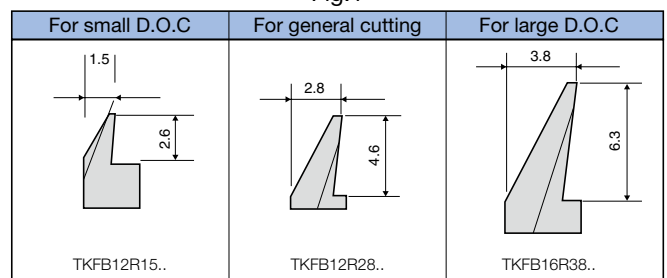


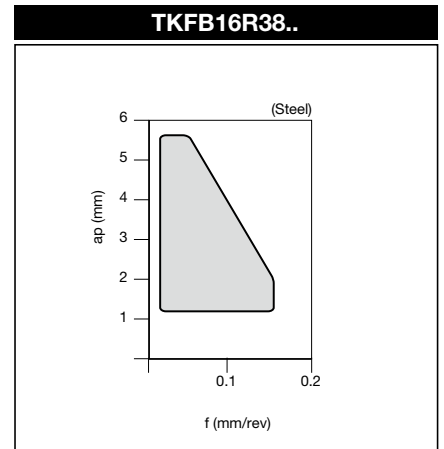
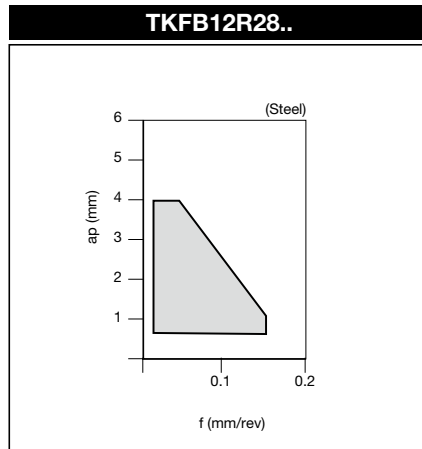
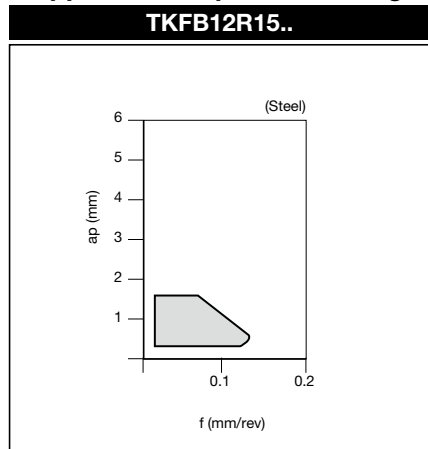
Fig.1



● Recommended Cutting Conditions

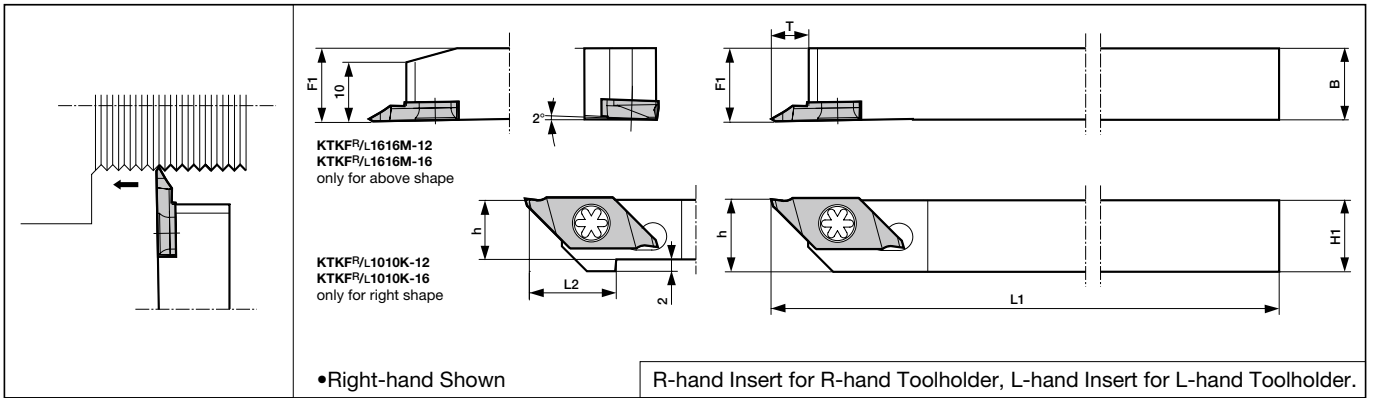
Workpiece Material		Recommended Insert Grade				Remarks
		PVD Coated		Carbide		
		PR1025		KW10		
		Grooving	Traversing	Grooving	Traversing	
Carbon Steel	Vc (m/min)	60-150		-		Coolant
	f (mm/rev)	0.01-0.03	0.02-0.15	-		
Alloy Steel	Vc (m/min)	60-150		-		
	f (mm/rev)	0.01-0.03	0.02-0.15	-		
Stainless Steel	Vc (m/min)	50-120		-		
	f (mm/rev)	0.01-0.02	0.0-20.1	-		
Cast Iron	Vc (m/min)	-		50-100		
	f (mm/rev)	-	-	0.01-0.02	0.02-0.15	
Non-ferrous Material	Vc (m/min)	-		200-450		
	f (mm/rev)	-	-	0.01-0.03	0.02-0.15	
Brass	Vc (m/min)	-		100-200		
	f (mm/rev)	-	-	0.01-0.05	0.02-0.2	

● Applicable Chipbreaker Range



Threading

KTKF type



Toolholder Dimension

Description	Stock		Dimension (mm)						Spare Parts		Applicable Insert
	R	L	H1=h	B	L1	L2	F1	T	Clamp Screw	Wrench	
KTKFR/L 1010K-12 1212F-12 1212M-12 1616M-12	●	●	10	10	125	15	10	6			TKFT12 ^{R/L} ...
	●		12	12	85	-	12				
	●	●			150		16				
	●	●	16	16							

• Dimension T shows the distance from the toolholder to the cutting edge.

●:Standard Stock

Applicable Insert

Shape	Description	Applicable Thread	Pitch		Dimension (mm)							Angle	Stock Grades		Applicable Toolholder	
			mm	inch TPI	T	W	H	φd	R(rε)	S1	S2	θ	PVD Coated	Carbide		
													PR1025	KW10		
	TKFT 12RA6000 12RB6000 12RA60005 12RB60005 12RN6001 12RA55005 12RB55005	M UN	0.2-0.6	64-48	3.0	2.5	8.7	5.2	Max 0.05 Flat	0.4	2.1	60°	▲	▲	KTKFR ...12	
										2.1	0.4		▲	▲		
			0.8	1.7						▲	▲					
			1.7	0.8						▲	▲					
			0.1	1.25						1.25	▲		▲			
			0.05	0.8						1.7	▲		▲			
	TKFT 12LA6000 12LB6000 12LA60005 12LB60005 12LN6001 12LA55005 12LB55005	M UN	0.2-0.6	64-48	3.0	2.5	8.7	5.2	Max 0.05 Flat	2.1	0.4	60°	▲	▲		KTKFL ...12
										0.4	2.1		▲	▲		
			1.7	0.8						▲	▲					
			0.8	1.7						▲	▲					
			0.1	1.25						1.25	▲		▲			
			0.05	1.7						0.8	▲		▲			
		G,R W	-	40-16					0.05	1.7	0.8	55°	▲	▲		
										0.8	1.7		▲	▲		

▲ :Stocked in January 2009

Insert Description (See Fig. 1)

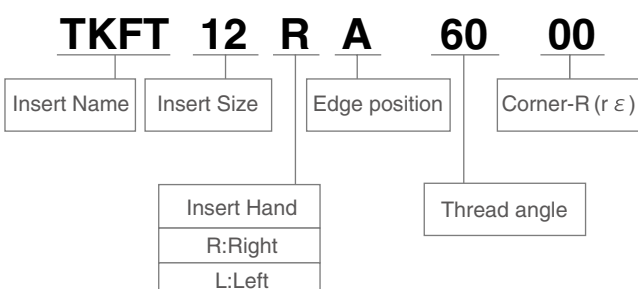
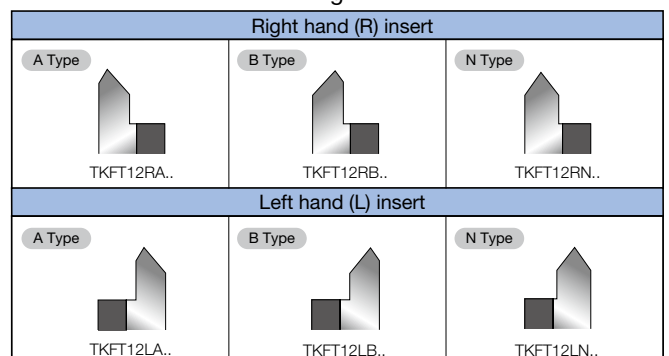


Fig.1



● Recommended Cutting Conditions

Workpiece Material	Recommended Insert Grade (Vc: m/min)		
	PVD Coated		Carbide
	PR1025		KW10
Carbon Steel	60-150		-
	First ap (Radial)	under 0.2mm	
Alloy Steel	60-150		-
	First ap (Radial)	under 0.2mm	
Stainless Steel	50-80		-
	First ap (Radial)	under 0.15mm	
Cast Iron	-		100
	First ap (Radial)	under 0.2mm	
Non-ferrous Material	-		150-400
	First ap (Radial)	under 0.2mm	
Brass	-		150-300
	First ap (Radial)	under 0.15mm	

- Coolant is recommended.
- When threading stainless steel...

● Depth of Cut & Number of Passes

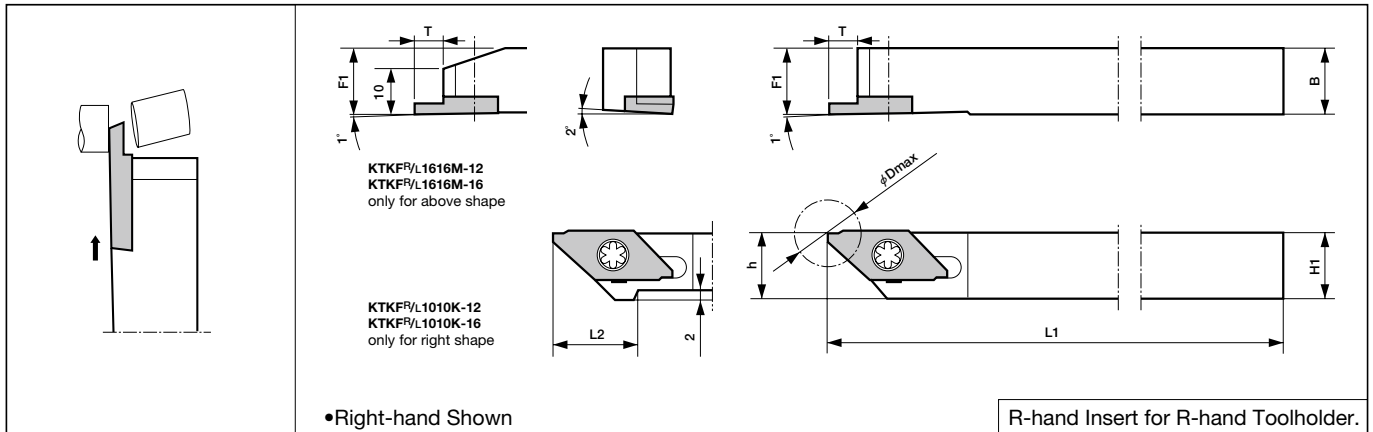
TKFT Type

60°/55° No wiper edge







ap shows the value of radial ap.

Thread Type	Pitch	Description	R (rε)	Total ap	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12			
						mm-inch														
Metric screw thread	External thread	TKFT 12 ^R /L A/B6000	0.20mm	0.00	0.15	4	0.06	0.04	0.03	0.02										
			0.25mm	0.00	0.19	4	0.07	0.06	0.04	0.02										
			0.30mm	0.00	0.23	4	0.08	0.07	0.06	0.02										
			0.35mm	0.00	0.27	5	0.08	0.07	0.06	0.04	0.02									
			0.40mm	0.00	0.30	5	0.10	0.08	0.06	0.04	0.02									
			0.45mm	0.00	0.34	6	0.10	0.08	0.06	0.04	0.04	0.02								
		TKFT 12 ^R /L A/B6000 12 ^R /L A/B60005	0.50mm	0.00	0.38	6	0.10	0.10	0.07	0.05	0.04	0.02								
			0.60mm	0.00	0.45	7	0.10	0.10	0.08	0.06	0.05	0.04	0.02							
				0.05	0.40	6	0.10	0.10	0.08	0.06	0.04	0.02								
			TKFT 12 ^R /L A/B60005	0.70mm	0.05	0.48	6	0.10	0.10	0.10	0.10	0.06	0.02							
				0.75mm	0.05	0.52	7	0.10	0.10	0.10	0.08	0.07	0.05	0.02						
			TKFT 12 ^R /L A/B60005 12 ^R /L N6001	0.80mm	0.05	0.56	7	0.10	0.10	0.10	0.10	0.08	0.06	0.02						
				1.00mm	0.05	0.71	8	0.15	0.15	0.12	0.10	0.08	0.06	0.03	0.02					
0.10	0.66	7			0.18	0.15	0.12	0.10	0.06	0.03	0.02									
TKFT 12 ^R /L N6001	1.25mm	0.05	0.90	9	0.20	0.18	0.13	0.10	0.10	0.07	0.05	0.05	0.02							
	0.10	0.85	8	0.20	0.18	0.13	0.10	0.10	0.07	0.05	0.02									
TKFT 12 ^R /L N6001	1.50mm	0.10	1.04	10	0.20	0.18	0.14	0.12	0.10	0.10	0.08	0.05	0.05	0.02						
Parallel pipe thread	External thread	TKFT 12 ^R /L A/B55005	28 /inch	0.05	0.67	7	0.18	0.15	0.12	0.10	0.06	0.04	0.02							
			19 /inch	0.05	1.01	9	0.20	0.18	0.14	0.12	0.12	0.10	0.08	0.05	0.02					
Whitworth screw thread	External thread	TKFT 12 ^R /L A/B55005	24 /inch	0.05	0.79	8	0.18	0.18	0.12	0.10	0.08	0.07	0.04	0.02						
			20 /inch	0.05	0.96	9	0.20	0.20	0.15	0.10	0.10	0.08	0.06	0.05	0.02					
			18 /inch	0.05	1.07	10	0.20	0.18	0.15	0.12	0.10	0.10	0.08	0.07	0.05	0.02				
			16 /inch	0.05	1.21	11	0.20	0.18	0.15	0.15	0.12	0.10	0.10	0.08	0.07	0.04	0.02			

KTKF type



Toolholder Dimension

Description	Stock	Cutting Dia.	Dimension (mm)							Spare Parts		Applicable Insert		
			R	L	ϕ Dmax*	H1=h	B	L1	L2	F1	T		Clamp Screw	Wrench
														
KTKF^R/L 1010K-12 1212F-12 1212M-12 1616M-12	●	●	5-12	10	10	125	15	10	6			TKFT12^R/L ...		
	●	●		12	12	85	-	12						
	●	●		16	16	150	-	16						
	●	●		10	10	125	20	10						
KTKF^R/L 1010K-16 1212F-16 1212M-16 1616M-16	●	●	16	10	10	125	20	10	8			TKFT16^R/L ...		
	●	●		12	12	85	-	12						
	●	●		16	16	150	-	16						
	●	●		10	10	125	20	10						

*Cutting dia. of -12 type toolholder (Dmax) depends on the insert groove width.

●Standard Stock

Insert Cutting Diameter Dmax

When Using Main Spindle Only

Workpiece max, $D1=Dmax$. Even if the cutting edge runs beyond the center line, the insert does not contact the workpiece, since the workpiece falls off. (The clearance between the insert and the work is 0.2mm)

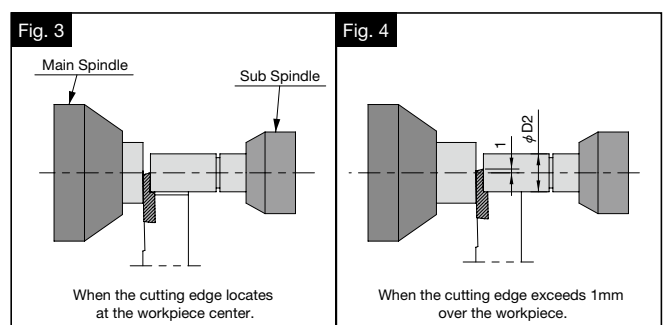
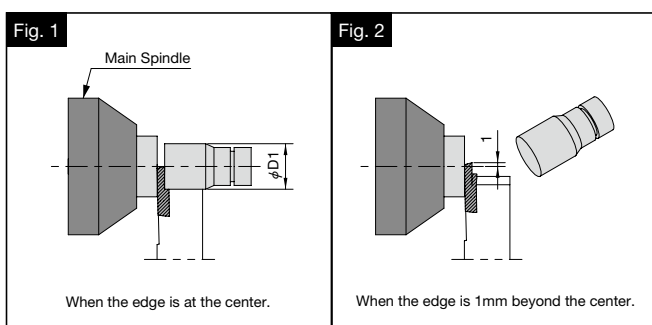
When using both Main and Sub Spindle

Workpiece max, $D2=Dmax-(\text{Programmed distance beyond the center}) \times 2$





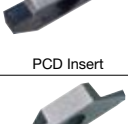




In this case, when the cutting edge runs beyond the center line, the insert will contact the workpiece, since the workpiece does not fall off. Therefore the programmed distance beyond the center must be considered.

When the cutting edge is programmed to run 1mm beyond the center, $[D2=Dmax-1\text{mm} \times 2]$.

(Max. clearance between insert and workpiece is 0.2mm in radius.)



● Applicable Insert

Shape	Description	Dimension (mm)							Angle θ^{*1}	Stock Grades			Applicable Toolholder
		W	ϕD_{max}	R	T	H	ϕd	S2		PVD Coated	Carbide	PCD	
										PR1025	KW10	KPD001*2	
Right-hand Shown													
 Lead Angle	TKF12 ^{R/L} 050-S-16DR	0.5	5							●	●		KTKF ^{R/L} ...12
	TKF12 ^{R/L} 070-S-16DR	0.7	8							●	●		
	TKF12 ^{R/L} 100-S-16DR	1.0		0.03	3	8.7	5	-	16°	●	●		
	TKF12 ^{R/L} 150-S-16DR	1.5	12							●	●		
	TKF12 ^{R/L} 200-S-16DR	2.0								●	●		
 	TKF12 ^{R/L} 050-S	0.5	5							●	●		
	TKF12 ^{R/L} 070-S	0.7	8							●	●		
	TKF12 ^{R/L} 100-S	1.0		0.03	3	8.7	5	-	0°	●	●		
	TKF12 ^{R/L} 150-S	1.5	12							●	●		
	TKF12 ^{R/L} 200-S	2.0								●	●		
 Lead Angle	TKF12 ^{R/L} 050-NB-20DR	0.5	5							●	●		
	TKF12 ^{R/L} 070-NB-20DR	0.7	8							●	●		
	TKF12 ^{R/L} 100-NB-20DR	1.0		0.03	3	8.7	5	-	20°	●	●		
	TKF12 ^{R/L} 150-NB-20DR	1.5	12							●	●		
	TKF12 ^{R/L} 200-NB-20DR	2.0								●	●		
 Without Chipbreaker	TKF12 ^{R/L} 050-NB	0.5	5							●	●		
	TKF12 ^{R/L} 070-NB	0.7	8							●	●		
	TKF12 ^{R/L} 100-NB	1.0		0.03	3	8.7	5	-	0°	●	●		
	TKF12 ^{R/L} 150-NB	1.5	12							●	●		
	TKF12 ^{R/L} 200-NB	2.0								●	●		
 PCD Insert	TKF12 ^{R/L} 150-NB	1.5	7.0					2.0			●		
	TKF12 ^{R/L} 200-NB	2.0	8.0					3.0			●		
	TKF12 ^{R/L} 250-NB	2.5	8.0	0.1	3	8.7	5	3.0	0°			●	
	TKF12 ^{R/L} 250-NB4.5	2.5	10.0					4.5				●	
 Lead Angle	TKF16 ^{R/L} 150-S-16DR	1.5								●	●		KTKF ^{R/L} ...16
	TKF16 ^{R/L} 200-S-16DR	2.0	16	0.05	4	9.5	5	-	16°	●	●		
 	TKF16 ^{R/L} 150-S	1.5								●	●		
	TKF16 ^{R/L} 200-S	2.0	16	0.05	4	9.5	5	-	0°	●	●		
 Lead Angle/Without Chipbreaker	TKF16 ^{R/L} 150-NB-20DR	1.5								●	●		
	TKF16 ^{R/L} 200-NB-20DR	2.0	16	0.00	4	9.5	5	-	20°	●	●		
 Without Chipbreaker	TKF16 ^{R/L} 150-NB	1.5								●	●		
	TKF16 ^{R/L} 200-NB	2.0	16	0.00	4	9.5	5	-	0°	●	●		

*1 Lead angle indicates the angle when installed in toolholder.

●:Standard Stock

*2 Please use PCD Inserts for turning.

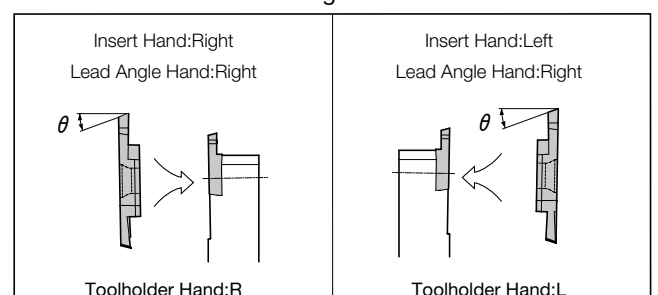
Carbide inserts are packaged in quantities of 10.

PCD is sold in 1-pc box.

■ Insert Description (See Fig. 1)

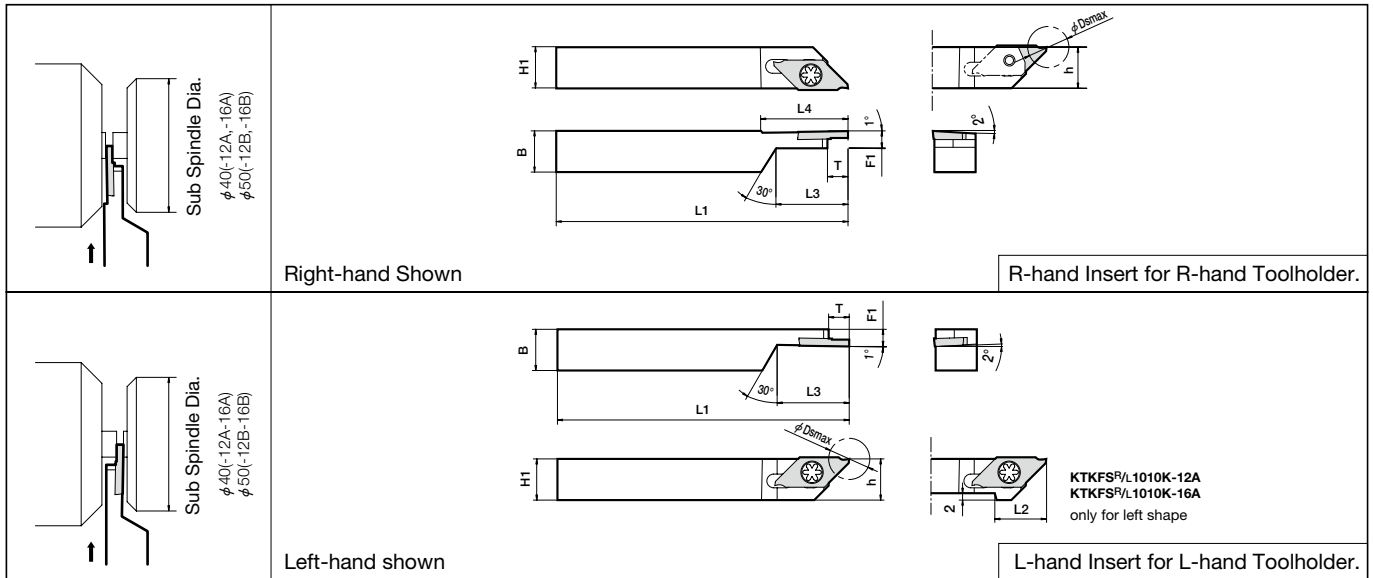
TKF	12	R	050	S	16D	R
Insert Name	Insert Size	Groove Width	Lead Angle			
	Insert Hand	Chipbreaker Name	Lead Angle Hand			
	R:Right	S:S type	R:Right			
	L:Left	NB:No Chipbreaker	L:Left			

Fig.1



Cut-Off

For Micro Diameter Cutt-off at Sub Spindle



● Toolholder Dimension

Description	Stock		Cutting Dia. φDmax*	Dimension (mm)								Spare Parts		Applicable Insert
	R	L		H1=h	B	L1	L2	L3	L4	F1	T	Clamp Screw	Wrench	
	KTKFS ^{R/L} 1010K-12A	●	●	6-12	10	10	120	15	22	26	5	6	SB-4050TRN	
KTKFS ^{R/L} 1212F-12A	●	●	12		12	85	-	26						
KTKFS ^{R/L} 1212K-12B	●	●	12		12	120	-	26						
KTKFS ^{R/L} 1010K-16A	●	●	14-16	10	10	120	20	22	30	5	8	SB-4050TRN	LTW-10S	TKFS16 ^{R/L} ...
KTKFS ^{R/L} 1212F-16A	●	●		12	12	85	-							
KTKFS ^{R/L} 1212K-16B	●	●		12	12	120	-	26						

*Cutting dia. of -12 type toolholder (Dmax) depends on the insert groove width.

●:Standard Stock

*KTKFSL1212M-12B will be replaced with KTKFSL1212K-12B.

● Applicable Insert

Shape	Description	Dimension (mm)							Stock Grades						Applicable Toolholder
		W	φDmax	R	H	L2	φd	θ	PVD Coated		Carbide		PCD		
									PR1025	KW10	KPD001	R	L	R	
	TKFS12 ^{R/L} 100-S	1.0	6	0.05	2.2	8.7	4.4	0°	●	●	●	●			KTKFS ^{R/L} ...12
	TKFS12 ^{R/L} 150-S	1.5	9						●	●	●	●			
	TKFS12 ^{R/L} 200-S	2.0	12						●	●	●	●			
	TKFS16 ^{R/L} 150-S	1.5	14	0.05	2.2	9.5	4.4	0°	●	●	●	●		KTKFS ^{R/L} ...16	
	TKFS16 ^{R/L} 200-S	2.0	16						●	●	●	●			

*As Fig. 1 shows, cutting diameter of Insert indicates the cutting diameter when the top of the cutting edge progressed 1mm from the center.

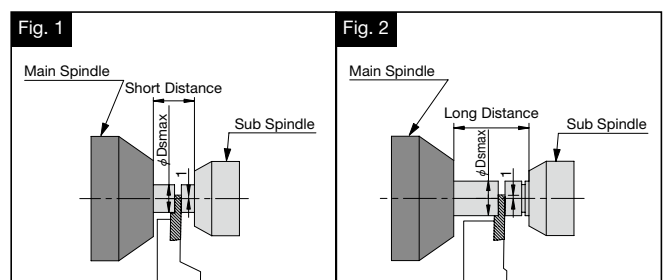
●:Standard Stock

*Lead angle (front cutting edge angle: θ) indicates the angle when a holder is attached.

Inserts are sold in 10 piece per 1 box.

Holder Selections

- As Fig.1 shows, KTKFS is applicable when minimal main spindle and sub spindle clearance exists between the main spindle and sub spindle.
- As Fig. 2 shows, please use KTKFL when additional clearance is available. This will offer improved rigidity.



● Recommended Cutting Conditions

● TKF12 insert

Workpiece Material	Recommended Insert Grade (Vc: m/min)		Width (mm)					Remarks
	PVD Coated	Carbide	0.5	0.7	1.0	1.5	2.0	
	PR1025	KW10	f (mm/rev)					
Carbon Steel	60-130	-	0.01-0.02	0.01-0.03	0.01-0.04	0.01-0.04	0.01-0.04	Coolant
Alloy Steel	60-130	-	0.01-0.02	0.01-0.03	0.01-0.04	0.01-0.04	0.01-0.04	
Stainless Steel	50-100	-	0.005-0.015	0.01-0.02	0.01-0.02	0.01-0.02	0.01-0.02	
Cast Iron	-	50-100	0.01-0.03	0.01-0.04	0.01-0.05	0.01-0.05	0.01-0.05	
Non-ferrous Material	-	200-450	0.01-0.03	0.01-0.04	0.01-0.05	0.01-0.05	0.01-0.05	
Brass	-	100-200	0.01-0.03	0.01-0.04	0.01-0.06	0.01-0.06	0.01-0.06	

● TKF16 insert

Workpiece Material	Recommended Insert Grade (Vc: m/min)		Width (mm)		Remarks
	PVD Coated	Carbide	1.5	2.0	
	PR1025	KW10	f (mm/rev)		
Carbon Steel	60-130	-	0.02-0.07	0.02-0.07	Coolant
Alloy Steel	60-130	-	0.02-0.07	0.02-0.07	
Stainless Steel	50-100	-	0.01-0.04	0.01-0.04	
Cast Iron	-	50-100	0.02-0.08	0.02-0.08	
Non-ferrous Material	-	200-450	0.02-0.08	0.02-0.08	
Brass	-	100-200	0.02-0.1	0.02-0.1	

● TKFS12 insert

Workpiece Material	Recommended Insert Grade (Vc: m/min)		Width (mm)			Remarks
	PVD Coated	Carbide	1.0	1.5	2.0	
	PR1025	KW10	f (mm/rev)			
Carbon Steel	60-130	-	0.01-0.03	0.01-0.03	0.01-0.03	Coolant
Alloy Steel	60-130	-	0.01-0.03	0.01-0.03	0.01-0.03	
Stainless Steel	50-100	-	0.01-0.02	0.01-0.02	0.01-0.03	
Cast Iron	-	50-100	0.01-0.03	0.01-0.03	0.01-0.03	
Non-ferrous Material	-	200-450	0.01-0.03	0.01-0.03	0.01-0.03	
Brass	-	100-200	0.01-0.04	0.01-0.04	0.01-0.04	

● TKFS16 insert

Workpiece Material	Recommended Insert Grade (Vc: m/min)		Width (mm)		Remarks
	PVD Coated	Carbide	1.5	2.0	
	PR1025	KW10	f (mm/rev)		
Carbon Steel	60-130	-	0.01-0.03	0.01-0.03	Coolant
Alloy Steel	60-130	-	0.01-0.03	0.01-0.03	
Stainless Steel	50-100	-	0.01-0.02	0.01-0.03	
Cast Iron	-	50-100	0.01-0.03	0.01-0.03	
Non-ferrous Material	-	200-450	0.01-0.03	0.01-0.03	
Brass	-	100-200	0.01-0.04	0.01-0.04	

Case Studies

S45C	
<ul style="list-style-type: none"> • $n=4,500\text{min}^{-1}$ Constant revolution • $f=0.03\text{mm/rev}$ • Wet • TKFS12L150-S (PR1025) 	<p style="text-align: right;">Unit : mm</p>
PR1025	10,000 pcs/edge
Competitor B	5,000 pcs/edge
<ul style="list-style-type: none"> • TKFS (PR1025) doubled competitor B tool life and the surface finish is better. <p style="text-align: right;">(Evaluations from Users)</p>	

SUS304L	
<ul style="list-style-type: none"> • $n=2,500\text{min}^{-1}$ Constant revolution • $f=0.015\text{mm/rev}$ • Wet • TKF12R150-S-16DR (PR1025) 	<p style="text-align: right;">Unit : mm</p>
PR1025	8,000 pcs/edge
Competitor C	less than 4,000 pcs/edge
<ul style="list-style-type: none"> • Competitor C shows chipping at less than 4000 pcs/edge, but TKF (PR1025) maintains its edge after 8000 pcs. <p style="text-align: right;">(Evaluations from Users)</p>	

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