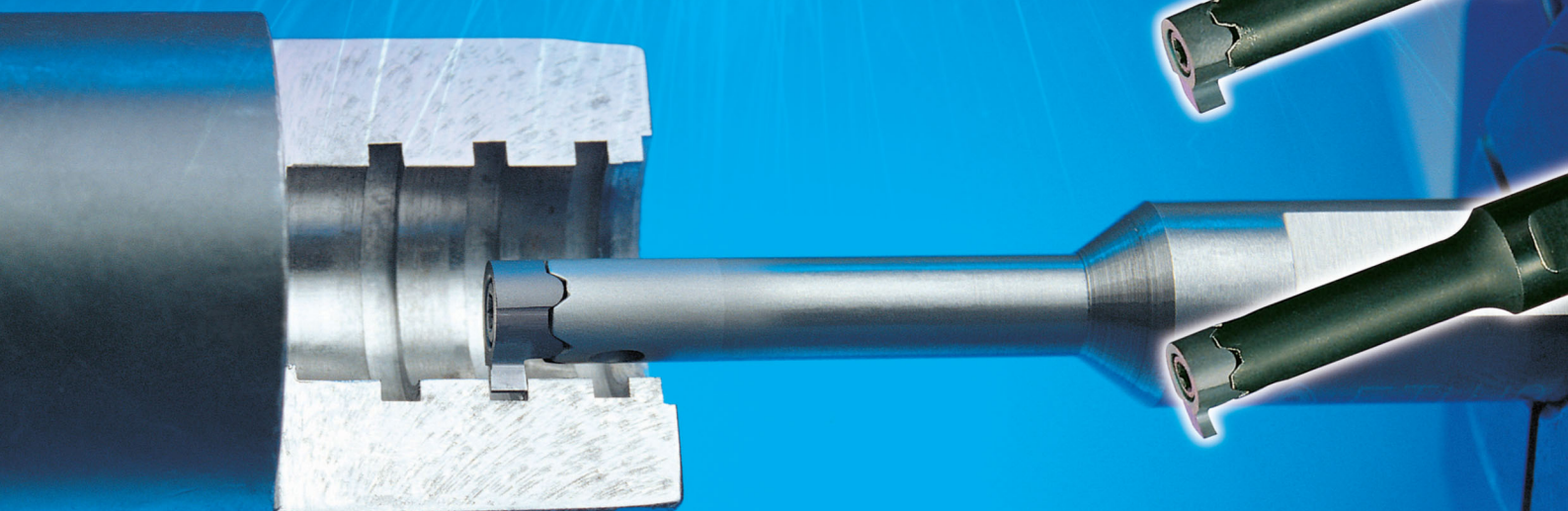




Innovative Internal Machining Tool

FINE-TOOL



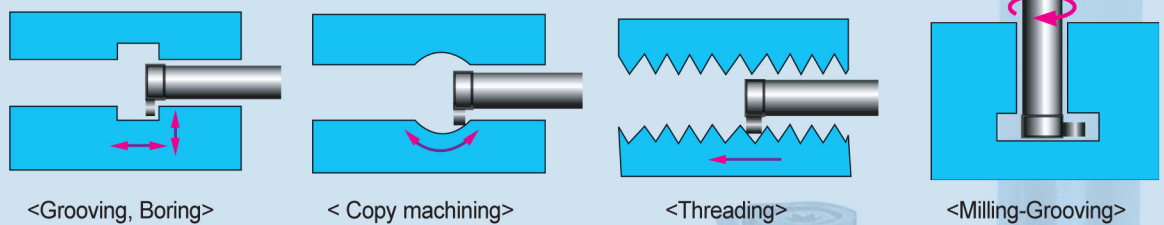
● Applications

Internal Grooving, Copying, Threading and Boring at $\varnothing 8 \sim \varnothing 20$

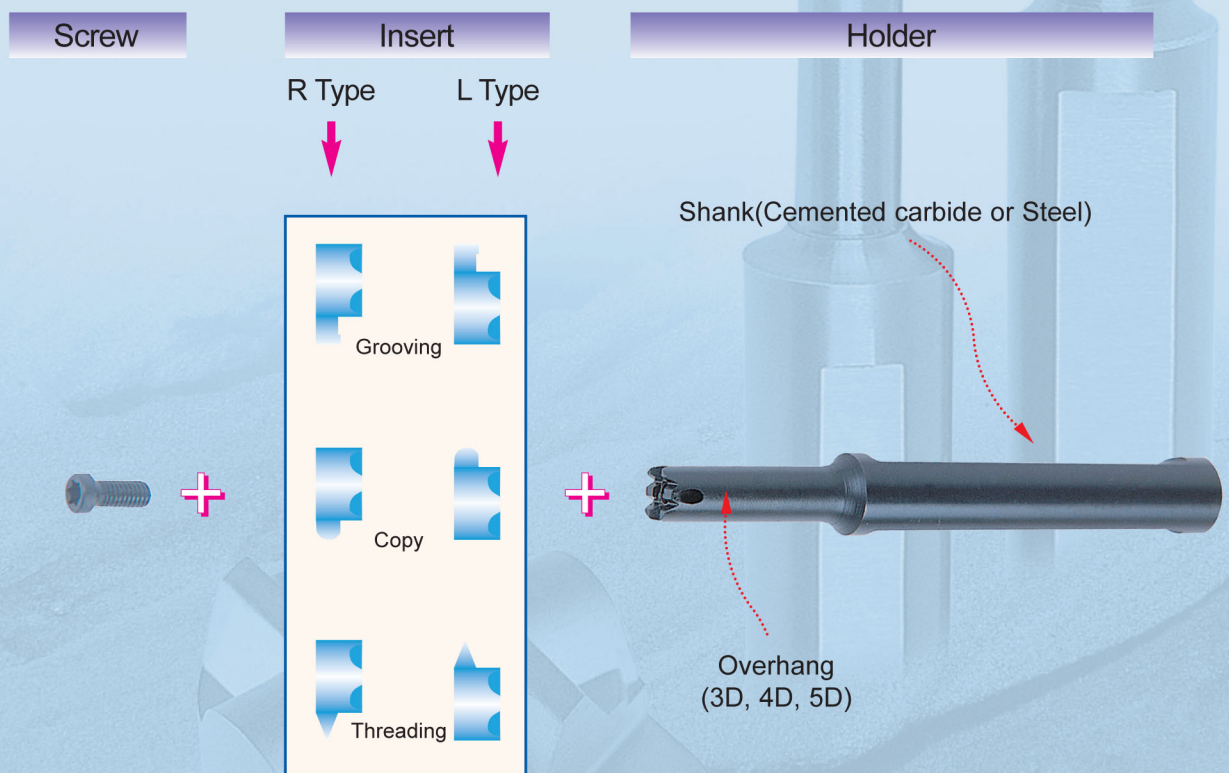
● Features

1. Adopting Strong Clamping Structure and Special Insert Shape for Small Diameter Internal Operations.
2. Various Cutting Operations are possible because one holder can have 6 kinds of inserts.
3. Adopting TiAlN coating layer and Good Toughness substrate.
4. High Precision Cutting Operations are ensured by High Precision Ground Class Inserts.

● Application Examples

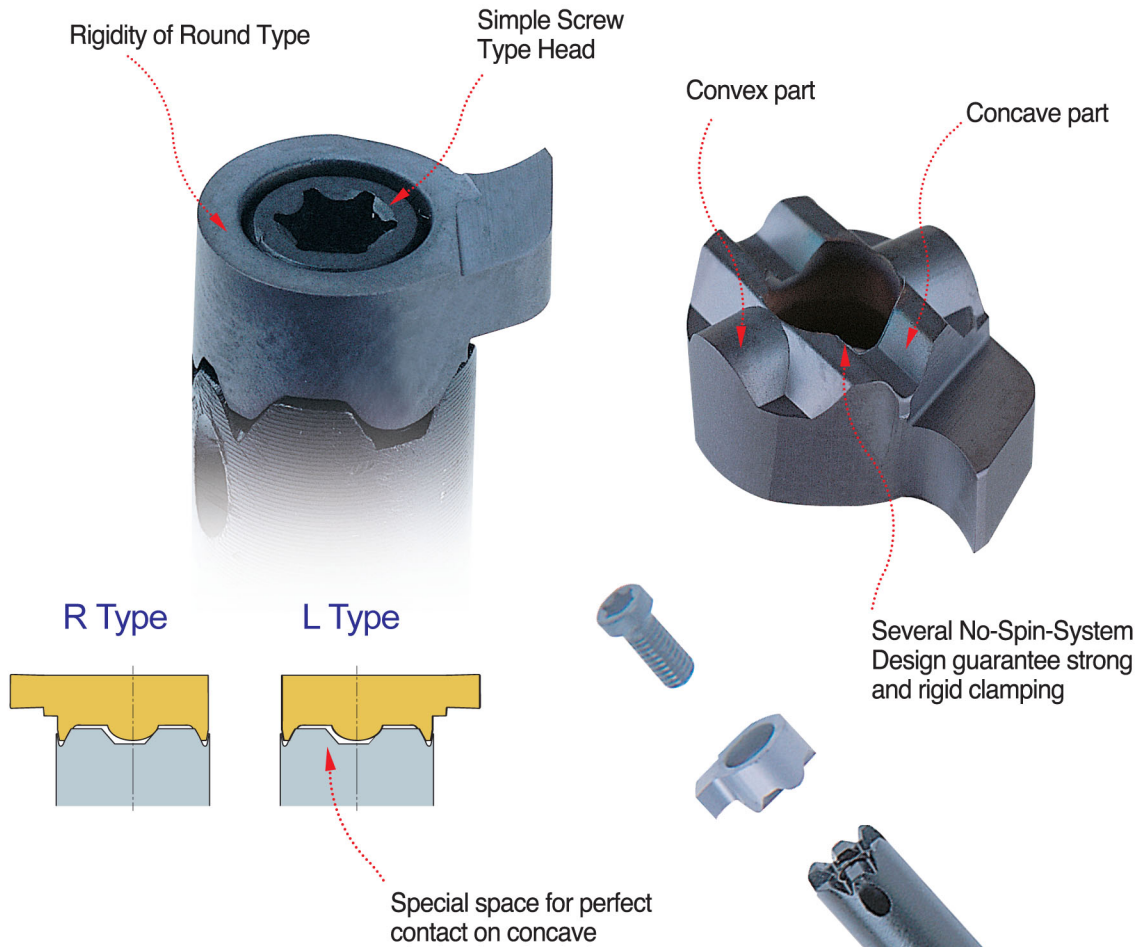


● FINE TOOL Assembling

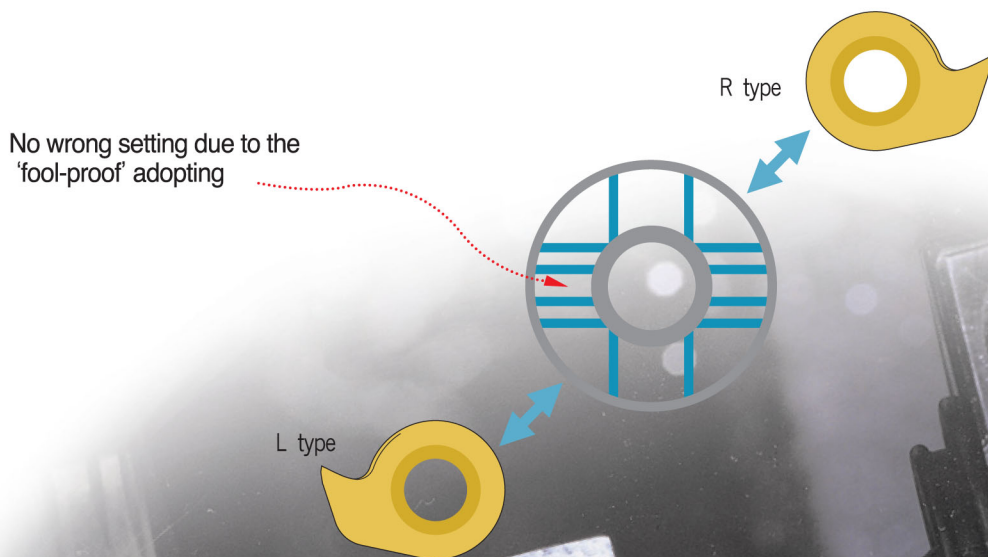




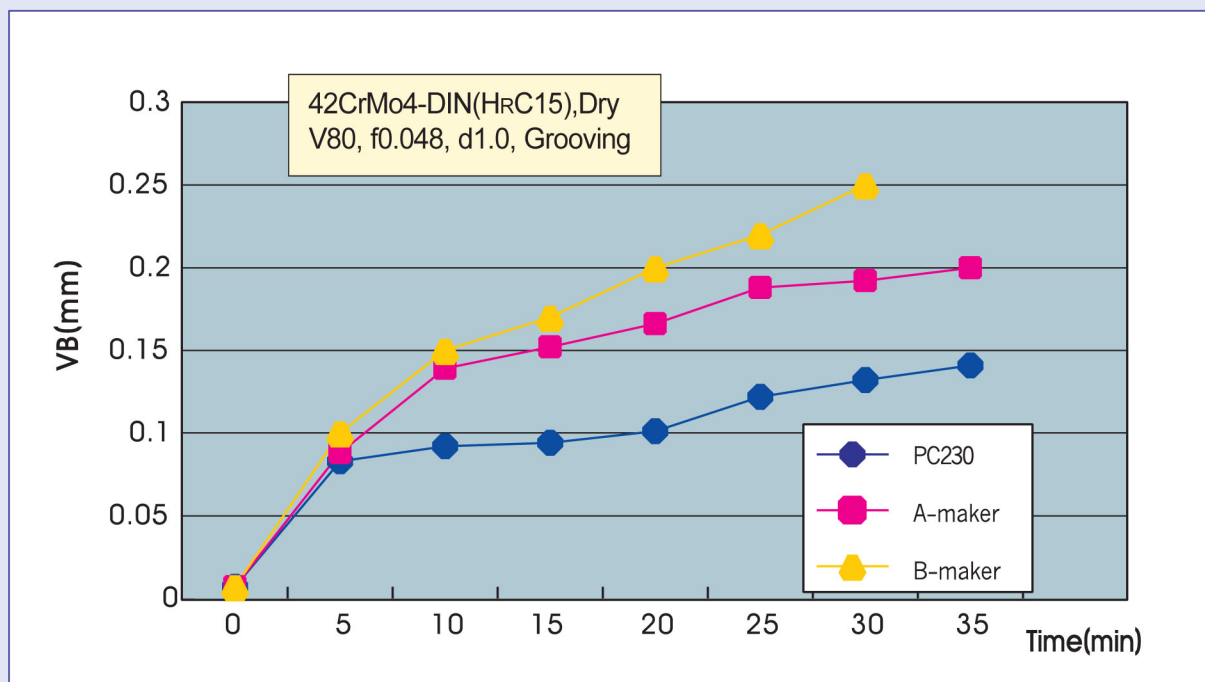
● Clamping System & Features



● Inserts setting method



● Tool Life Comparison



● Recommendation

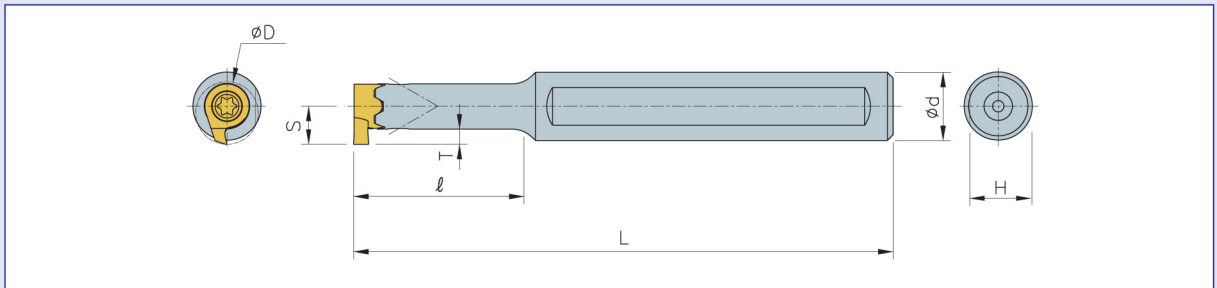
(V:m/min, f:mm/rev)

Work-piece Material	Grade		Cutting Conditions				
	PC230	PC215K	Minimum Cutting Diameter				
				Ø 8	Ø 11	Ø 14	Ø 16
Carbon Steels	◎	△	V	30~80	30~100	30~100	30~100
			f	0.01~0.04	0.01~0.05	0.02~0.05	0.02~0.06
Alloy Steels	◎	△	V	30~80	30~100	30~100	30~100
			f	0.01~0.02	0.01~0.04	0.02~0.04	0.02~0.05
Cast irons	△	◎	V	30~80	30~100	30~100	30~100
			f	0.01~0.05	0.01~0.05	0.02~0.05	0.02~0.05
Non-ferrous Alloys	△	◎	V	Over 70	Over 100	Over 100	Over 100
			f	0.02~0.06	0.02~0.06	0.02~0.06	0.02~0.06

* NOTE

1. In case of chattering, decrease the cutting speed and feed.
2. The optimal conditions can be found when you increase gradually from the lowest conditions of the above V and f.

Boring bars



unit(mm)

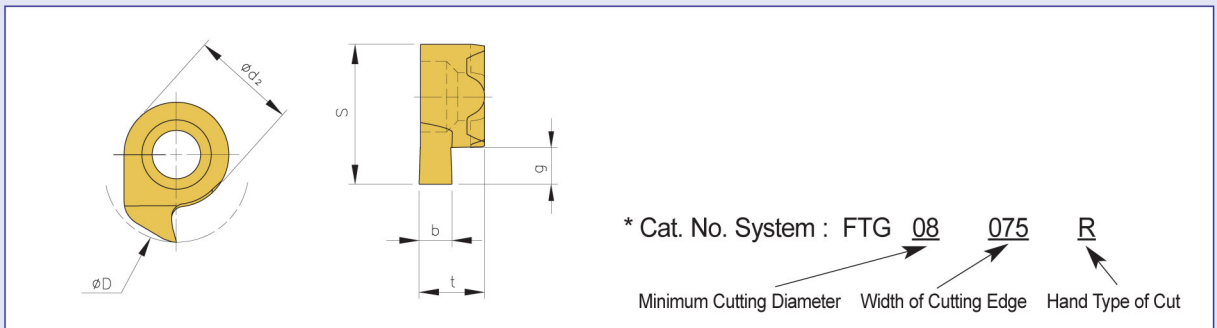
Cat. No	Stock	Minimum Cutting Diameter Ø D	Ø d	H	L	S	l	T	
FTIH 08312S	●	8	12	11	80	4.8	24	1.5 ~ 1.8	
FTIH 08312C	●				80		24		
FTIH 08412C	●				90		32		
FTIH 08512C	●				100		40		
FTIH 11312S	●	11	12	11	95	6.7	33	2 ~ 2.8	
FTIH 11312C	●				95		33		
FTIH 11412C	●				110		44		
FTIH 11512C	●				120		55		
FTIH 14312S	●	14	12	11	100	9	42	2 ~ 4.3	
FTIH 14312C	●				100		42		
FTIH 14412C	●				110		56		
FTIH 14512C	●		130	70					
FTIH 14316C	●		16	15	15		100		42
FTIH 14416C	●						110		56
FTIH 14516C	●	130				70			
FTIH 16312S	●	16	12	12	130	10.2	48	2 ~ 4.6	
FTIH 16312C	●		12	12	130		48		
FTIH 16412C	●		12	12	130		64		
FTIH 16512C	●		12	12	150		80		
FTIH 16316C	●		16	16	130		48		
FTIH 16416C	●		16	16	130		64		
FTIH 16516C	●		16	16	150		80		

* Cat. No. System : FTIH 08 3 12 S
 Minimum Cutting Diameter Entering Depth Shank Diameter Shank type
 (S : Steel, C : Cemented-Carbide)

Inserts & Parts per each Boring bar

Boring Bars	Inserts			Screws	Wrench
	for Grooving	for Threading	for Copy		
FTIH 08000S	FTG 08000 R/L	FTT 08000 R/L	FTF 08000 R/L	PTKA02508	TW08P
FTIH 08000C					
FTIH 11000S	FTG 11000 R/L	FTT 11000 R/L	FTF 11000 R/L	PTKA03510	TW15P
FTIH 11000C					
FTIH 14000S	FTG 14000 R/L	FTT 14000 R/L	FTF 14000 R/L	PTKA0412	TW15P
FTIH 14000C					
FTIH 16000S	FTG 16000 R/L	FTT 16000 R/L	FTF 16000 R/L	PTKA0512	TW20P
FTIH 16000C					

Internal Grooving Inserts(FTG)

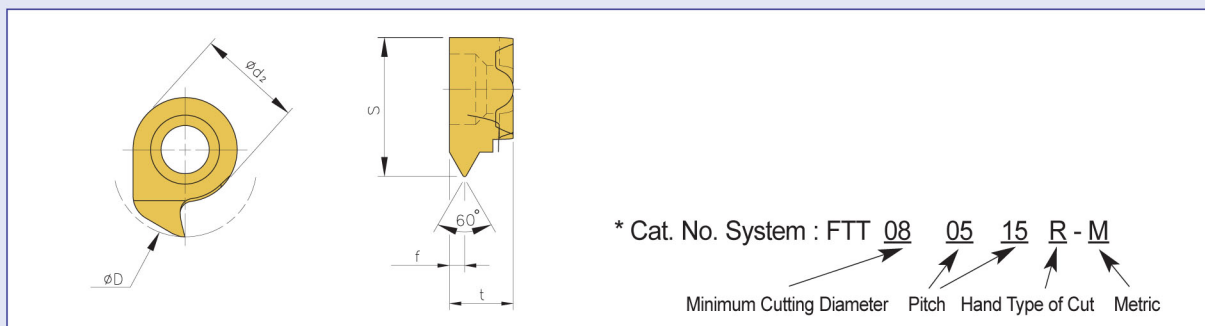


unit(mm)

Cat. No	Grade				Dimensions									
	PC230		PC215K		Ø D	S	b	g	Ø d ₂	t				
	R	L	R	L										
FTG 08075R/L	●		●		Ø 8	7.8	0.75	1.5	6	3.9				
FTG 08085R/L	●						0.85	1.5						
FTG 08095R/L	●						0.95	1.5						
FTG 08121R/L	●						1.21	1.8						
FTG 08141R/L	●		●				1.41	1.8						
FTG 08152R/L							1.52	1.8						
* FTG 08171R/L	●						1.71	1.8						
* FTG 08202R/L	●						2.02	1.8						
FTG 11075R/L	●		●				Ø 11	10.7			0.75	2.0	8	5
FTG 11085R/L	●				0.85	2.0								
FTG 11095R/L	●				0.95	2.0								
FTG 11121R/L	●				1.21	2.8								
FTG 11141R/L	●				1.41	2.8								
FTG 11152R/L	●		●		1.52	2.8								
* FTG 11171R/L	●				1.71	2.8								
* FTG 11202R/L	●				2.02	2.8								
* FTG 11252R/L	●				2.52	2.8								
* FTG 11302R/L	●				3.02	2.8								
FTG 14075R/L					Ø 14	13.5			0.75	2.0	9	6		
FTG 14085R/L									0.85	2.0				
FTG 14095R/L									0.95	2.0				
FTG 14121R/L	●						1.21	4.3						
FTG 14141R/L	●						1.41	4.3						
FTG 14152R/L							1.52	4.3						
FTG 14171R/L	●						1.71	4.3						
* FTG 14202R/L	●						2.02	4.3						
* FTG 14252R/L	●						2.52	4.3						
* FTG 14302R/L							3.02	4.3						
FTG 16075R/L							Ø 16	15.7	0.75	2.0			11	6
FTG 16085R/L					0.85	2.0								
FTG 16095R/L					0.95	2.0								
FTG 16121R/L	●				1.21	4.6								
FTG 16141R/L	●				1.41	4.6								
FTG 16171R/L	●				1.71	4.6								
* FTG 16202R/L	●				2.02	4.6								
* FTG 16252R/L					2.52	4.6								
* FTG 16302R/L	●				3.02	4.6								
* FTG 16352R/L					3.52	4.6								
* FTG 16402R/L	●				4.02	4.6								

* It can be used at Boring Operation as well as Internal Grooving

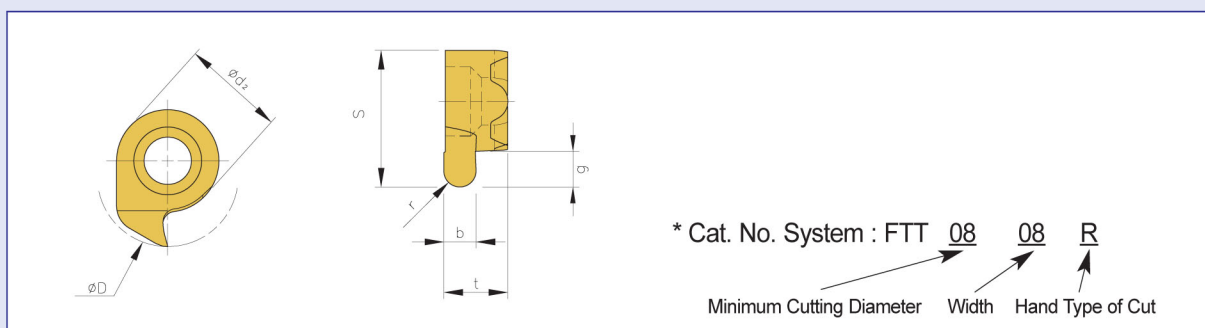
● Internal Threading Inserts(FTT)



unit(mm)

Cat. No	Grade				Dimensions					
	PC230		PC215K		Ø D	Pitch	s	Ø d ₂	f	t
	R	L	R	L						
FTT 080515R/L-M					Ø 8	0.5-1.5	7.8	6	1.0	3.85
FTT 110525R/L-M					Ø 11	0.5-2.5	10.7	8	1.6	4.9
FTT 141025R/L-M					Ø 14	1.0-2.5	13.5	9	1.6	5.8
FTT 161025R/L-M					Ø 16	1.0-2.5	15.7	11	1.6	5.8

● Internal Copy Inserts(FTF)



unit(mm)

Cat. No	Grade				Dimensions						
	PC230		PC215K		Ø D	b	r	S	g	Ø d ₂	t
	R	L	R	L							
FTF 0808R/L					Ø 8	0.8	0.4	7.8	1.5	6	3.9
FTF 0812R/L				1.2		0.6					
FTF 0818R/L				1.8		0.9					
FTF 1108R/L					Ø 11	0.8	0.4	10.7	2.8	8	5.0
FTF 1112R/L				1.2		0.6					
FTF 1118R/L				1.8		0.9					
FTF 1120R/L				2.0		1.0					
FTF 1130R/L				3.0		1.5					
FTF 1412R/L					Ø 14	1.2	0.6	13.5	4.3	9	6.0
FTF 1418R/L				1.8		0.9					
FTF 1420R/L				2.0		1.0					
FTF 1422R/L				2.2		1.1					
FTF 1430R/L				3.0		1.5					
FTF 1618R/L					Ø 16	1.8	0.9	15.7	4.6	11	6.0
FTF 1622R/L				2.2		1.1					
FTF 1630R/L				3.0		1.5					
FTF 1640R/L				4.0		2.0					



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