



Fine Tool Internal Machining System

Applications

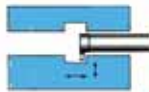
Internal grooving, Copying, Threading and Boring at $\phi 8$ – $\phi 20$.

Features

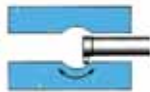
1. A strong clamping structure and the special insert shape are suitable for internal operations with a small diameter.
2. Various cutting operations are possible because one holder can be used with 6 kinds of insert for cutting purposes.
3. Guaranteed optimal tool life due to the combination of TiAlN coating layer and tough substrates.
4. High precision cutting operations are achieved with the high quality grinding inserts.



Application Examples



<Grooving, Boring>



<Copying>



<Threading>



<Milling-Grooving>

Application Examples

Work-piece Material	Grade		Cutting Conditions (V:m/min, f:min/rev)				
	PC230	PC215K	Minimum Cutting Diameter				
			$\phi 8$	$\phi 11$	$\phi 14$	$\phi 16$	
Carbon Steel	○	△	V	30-60	30-80	30-80	30-80
			f	0.01-0.03	0.01-0.04	0.01-0.04	0.01-0.04
Alloy Steel	○	△	V	30-60	30-80	30-80	30-80
			f	0.01-0.03	0.01-0.04	0.01-0.04	0.01-0.04
Cast Iron	△	○	V	30-60	30-80	30-80	30-80
			f	0.01-0.03	0.01-0.04	0.01-0.04	0.01-0.04
Non-ferrous Alloy	△	○	V	Over 70	Over 100	Over 100	Over 100
			f	0.01-0.03	0.01-0.04	0.01-0.04	0.01-0.04

- Notice
1. If the tool vibrates, reduce the cutting speeds and feeds.
 2. It is best to start with the lowest cutting conditions (above), and increase the conditions step by step.
 3. Use step feeding, if the grooving depth exceeds 1mm.



FINE TOOL



FTT For threading



■ USE
Internal Threading

■ Geometry



Available Holder	Designation	2007 £	Coated Carbide				Cermet		Uncoated Carbide		(mm)					
			PC219K	PC230			CN30	CN35	ST30A	G10	øD	Pitch	S	ødz	f	t
FTIH0800S FTIH0800C	FTT 080515R-M	6.73	●								ø8	"0.5 ~1.5"	7.8	6	1.0	3.85
FTIH1100S FTIH1100C	110525R-M	7.16	○								ø11	"0.5 ~2.5"	10.7	8	1.6	4.9
FTIH1400S FTIH1400C	141025R-M	7.80	●								ø14	"1.0 ~2.5"	13.5	9	1.6	5.85
FTIH1600S FTIH1600C	161025R-M	8.40	○	●							ø16	"1.0 ~2.5"	15.7	11	1.6	5.8

FTF For copying



■ USE
Internal Copying



Available Holder	Designation	2007 £	Coated Carbide				Cermet		Uncoated Carbide		(mm)						
			PC219K	PC230			CN30	CN35	ST30A	G10	øD	b	r	S	g	ødz	t
FTIH0800S FTIH0800C	FTF 0808R	6.73	●							ø8	0.8	0.4	7.8	1.5	6	4.0	
	0812R	6.73	●							ø8	1.2	0.6	7.8	1.5	6	4.0	
	0818R	6.73	●							ø8	1.8	0.9	7.8	1.5	6	4.0	
FTIH1100S FTIH1100C	1108R	7.16	●							ø11	0.8	0.4	10.7	2.8	8	5.05	
	1112R	7.16	●							ø11	1.2	0.6	10.7	2.8	8	5.055	
	1118R	7.16	●							ø11	1.8	0.9	10.7	2.8	8	.05	
	1120R	7.16	●							ø11	2.0	1.0	10.7	2.8	8	5.05	
	1130R	7.16	●							ø11	3.0	1.5	10.7	2.8	8	5.05	
FTIH1400S FTIH1400C	1412R	7.80	●							ø14	1.2	0.6	13.5	4.3	9	6.0	
	1418R	7.80	●							ø14	1.8	0.9	13.5	4.3	9	6.0	
	1420R	7.80	●							ø14	2.0	1.0	13.5	4.3	9	6.0	
	1422R	7.80	●							ø14	2.2	1.1	13.5	4.3	9	6.0	
	1430R	7.80	●							ø14	3.0	1.5	13.5	4.3	9	6.0	
FTIH1600S FTIH1600C	1618R	8.40	●							ø16	1.8	0.9	15.7	4.6	11	6.0	
	1622R	8.40	●							ø16	2.2	1.1	15.7	4.6	11	6.0	
	1630R	8.40	●							ø16	3.0	1.5	15.7	4.6	11	6.0	
	1640R	8.40	●							ø16	4.0	2.0	15.7	4.6	11	6.0	

For holders see page 183



FINE TOOL





Fine Tool Internal Machining System

Grooving Inserts



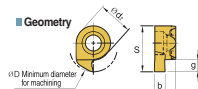
PARTING + GROOVING

FTG For grooving



■ USE
Internal Grooving

■ Geometry

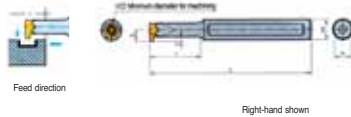


Available Holder	Designation	2007 £	Coated Carbide				Cermet		Uncoated Carbide			(mm)				
			PC230K R220				CN20 CN30		ST30A G10	H01	øD	S	b	g	ødz	t
FTIH0800S FTIH0800C	FTG 08075R	6.73	•	•	•	•				ø8	7.8	0.75	1.5	6	4.0	
	08085R	6.73	•	•	•	•				ø8	7.8	0.85	1.5	6	4.0	
	08095R	6.73	•	•	•	•				ø8	7.8	0.95	1.5	6	4.0	
	08100R	6.73	•	•	•	•				ø8	7.8	1.00	1.8	6	4.0	
	08121R	6.73	•	•	•	•				ø8	7.8	1.21	1.8	6	4.0	
	08141R	6.73	•	•	•	•				ø8	7.8	1.41	1.8	6	4.0	
	08152R	6.73	•	•	•	•				ø8	7.8	1.52	1.8	6	4.0	
	* FTG 08171R	6.73	•	•	•	•				ø8	7.8	1.71	1.8	6	4.0	
	* FTG 08200R	6.73	•	•	•	•				ø8	7.8	2.00	1.8	6	4.0	
	* FTG 08202R	6.73	•	•	•	•				ø8	7.8	2.02	1.8	6	4.0	
	FTIH1100S FTIH1100C	FTG 11075R	7.16	•	•	•	•				ø11	10.7	0.75	2	8	5.05
		11085R	7.16	•	•	•	•				ø11	10.7	0.85	2	8	5.05
11095R		7.16	•	•	•	•				ø11	10.7	0.95	2	8	5.05	
11100R		7.16	•	•	•	•				ø11	10.7	1.00	2	8	5.05	
11115R		7.16	•	•	•	•				ø11	10.7	1.15	2.8	8	5.05	
11121R		7.16	•	•	•	•				ø11	10.7	1.21	2.8	8	5.05	
11135R		7.16	•	•	•	•				ø11	10.7	1.35	2.8	8	5.05	
11141R		7.16	•	•	•	•				ø11	10.7	1.41	2.8	8	5.05	
11152R		7.16	•	•	•	•				ø11	10.7	1.52	2.8	8	5.05	
11165R		7.16	•	•	•	•				ø11	10.7	1.65	2.8	8	5.05	
* FTG 11171R		7.16	•	•	•	•				ø11	10.7	1.71	2.8	8	5.05	
* FTG 11200R		7.16	•	•	•	•				ø11	10.7	2.00	2.8	8	5.05	
* FTG 11252R	7.16	•	•	•	•				ø11	10.7	2.52	2.8	8	5.05		
* FTG 11302R	7.16	•	•	•	•				ø11	10.7	3.02	2.8	8	5.05		
FTIH1400S FTIH1400C	FTG 14075R	7.86								ø14	13.5	0.75	2	9	6.0	
	14085R	7.86								ø14	13.5	0.85	2	9	6.0	
	14095R	7.86								ø14	13.5	0.95	2	9	6.0	
	14100R	7.86	•							ø14	13.5	1.00	2	9	6.0	
	14115R	7.86	•							ø14	13.5	1.15	4.3	9	6.0	
	14121R	7.86	•							ø14	13.5	1.21	4.3	9	6.0	
	14141R	7.86	•							ø14	13.5	1.41	4.3	9	6.0	
	14152R	7.86	•							ø14	13.5	1.52	4.3	9	6.0	
	14165R	7.86	•							ø14	13.5	1.65	4.3	9	6.0	
	14171R	7.86	•							ø14	13.5	1.71	4.3	9	6.0	
	14190R	7.86	•							ø14	13.5	1.90	4.3	9	6.0	
	14200R	7.86	•							ø14	13.5	2.00	4.3	9	6.0	
* FTG 14252R	7.86	•							ø14	13.5	2.52	4.3	9	6.0		
* FTG 14252R	7.86	•							ø14	13.5	2.52	4.3	9	6.0		
* FTG 14302R	7.86	•							ø14	13.5	3.02	4.3	9	6.0		
FTIH1600S FTIH1600C	FTG 16075R	8.40								ø16	15.7	0.75	2	11	6.0	
	16085R	8.40								ø16	15.7	0.85	2	11	6.0	
	16095R	8.40								ø16	15.7	0.95	2	11	6.0	
	16100R	8.40	•							ø16	15.7	1.00	2	11	6.0	
	16115R	8.40	•							ø16	15.7	1.15	4.6	11	6.0	
	16121R	8.40	•							ø16	15.7	1.21	4.6	11	6.0	
	16141R	8.40	•							ø16	15.7	1.41	4.6	11	6.0	
	16165R	8.40	•							ø16	15.7	1.65	4.6	11	6.0	
	16171R	8.40	•							ø16	15.7	1.71	4.6	11	6.0	
	16190R	8.40	•							ø16	15.7	1.90	4.6	11	6.0	
	16200R	8.40	•							ø16	15.7	2.00	4.6	11	6.0	
	* FTG 16202R	8.40	•							ø16	15.7	2.02	4.6	11	6.0	
* FTG 16220R	8.40	•							ø16	15.7	2.20	4.6	11	6.0		
* FTG 16252R	8.40	•							ø16	15.7	2.52	4.6	11	6.0		
* FTG 16270R	8.40	•							ø16	15.7	2.70	4.6	11	6.0		
16300R	8.40								ø16	15.7	3.00	4.6	11	6.0		
* FTG 16302R	8.40	•							ø16	15.7	3.02	4.6	11	6.0		
* FTG 16320R	8.40	•							ø16	15.7	3.20	4.6	11	6.0		
* FTG 16352R	8.40	•							ø16	15.7	3.52	4.6	11	6.0		
* FTG 16402R	8.40	•							ø16	15.7	4.02	4.6	11	6.0		

*Tool for outer diameter & inner diameter machining.

PARTING + GROOVING Fine Tool

FTIH



Ref	Holder Style	Application							Available Inserts			Parts		
Comment	Internal	Internal grooving, threading, forming												
(mm)														
Designation	2007 S	oD	oD	L	ℓ	T _{max}	H	S	Grooving	Threading	Forming	Screw	Wrench	
FTIH	08312S	39.00	8	12	80	24	1.5	11	4.8	FTG0800R/L	FTT08000R/L	FTF08000R/L	PTKA02508	TW08P
	08312C	59.00	8	12	80	24	~	11	4.8					
	08412C	59.00	8	12	90	32	~	11	4.8					
	08512C	59.00	8	12	100	40	1.8	11	4.8					
	11312S	39.00	11	12	95	33	2	11	6.7	FTG11000R/L	FTT11000R/L	FTF11000R/L	PTKA03510	TW15P
	11312C	59.00	11	12	95	33	~	11	6.7					
	11412C	59.00	11	12	110	44	~	11	6.7					
	11512C	59.00	11	12	120	55	2.8	11	6.7					
	14312S	39.00	14	12	100	42		11	9	FTG14000R/L	FTT14000R/L	FTF14000R/L	PTKA0412	TW15P
	14312C	59.00	14	12	100	42		11	9					
	14412C	59.00	14	12	110	56	2	11	9					
	14512C	59.00	14	12	130	70	~	11	9					
	14316C	59.00	14	16	100	42	2.8	15	9					
	14416C	59.00	14	16	110	56		15	9					
	14516C	59.00	14	16	130	70		15	9					
	16312S	39.00	16	12	130	48		11	10.2	FTG16000R/L	FTT16000R/L	FTF16000R/L	PTKA0512	TW20P
	16312C	79.00	16	12	130	48		11	10.2					
	16412C	79.00	16	12	130	64	2	11	10.2					
	16512C	79.00	16	12	150	80	~	11	10.2					
	16316C	79.00	16	16	130	48	4.6	15	10.2					
	16416C	79.00	16	16	130	64		15	10.2					
	16516C	79.00	16	16	150	80		15	10.2					

For inserts see pages 181 to 182

* How to Read Designation : FTIH **08** **3** **12** **S**



Shank Material (S:Steel, C:Carbide)
Shank Diameter
Entering Depth i.e. 3 x D, 4 x D, 5 x D
Minimum Machining Diameter

Application Examples

