TOTURN™

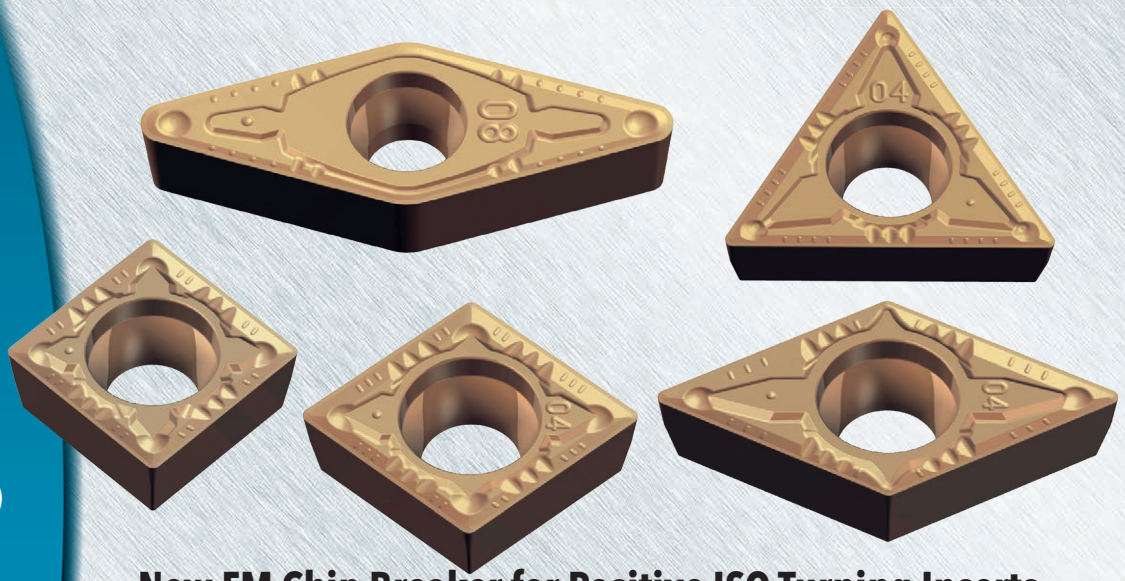
Insert Shapes
- CCMT
- DCMT
- SCMT
- TCMT
- VBMT / VCMT

Corner Radii
- .008", .016", .031", .047"

Grades
- Cermet (CT3000, PV3010)
- CVD Coated (TT8115, TT8125, TT8135)
- PVD Coated (TT5080, TT8020)

Feed Rate Range
- .003-.010 ipr

Depth of Cut Range
- .020" - .100" (per side)



New FM Chip Breaker for Positive ISO Turning Inserts

Ingersoll is pleased to introduce a new chip breaker for positive ISO turning inserts. The FM chip breaker series targets steel and stainless steel applications where semi-finish to medium machining is required.

All inserts within this series feature positive rake face geometry, with a 5° angle at the cutting edge and the nose. This optimized design reduces cutting forces during machining, and effectively breaks chips at a wide range of feed rates and cutting depths, making it an ideal general purpose solution in these materials.

FM chip breaker inserts are all single-sided, and are available in five different shapes and multiple insert sizes, providing the user with a wide selection of inserts that can be applied in either internal boring or external turning applications.

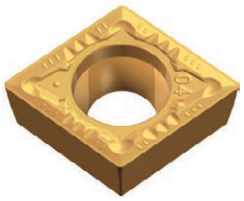
FEATURES

- Medium and semi-finish machining for steel and stainless steel
- Low cutting force chip breaker geometry with wide chip breaking range
- Pressed to size inserts provide high durability and excellent economy
- Five different insert shapes, and multiple insert sizes.
- Over 200 unique inserts to choose from.

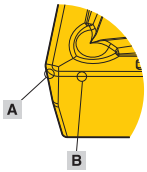
Member IMC Group
Ingersoll Cutting Tools

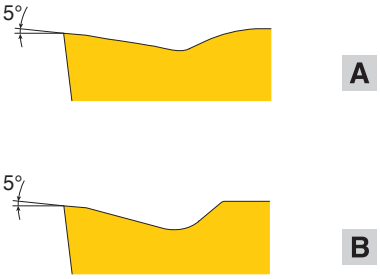
FM CHIP BREAKER'S EDGE GEOMETRY

CHIP BREAKER	EDGE GEOMETRY

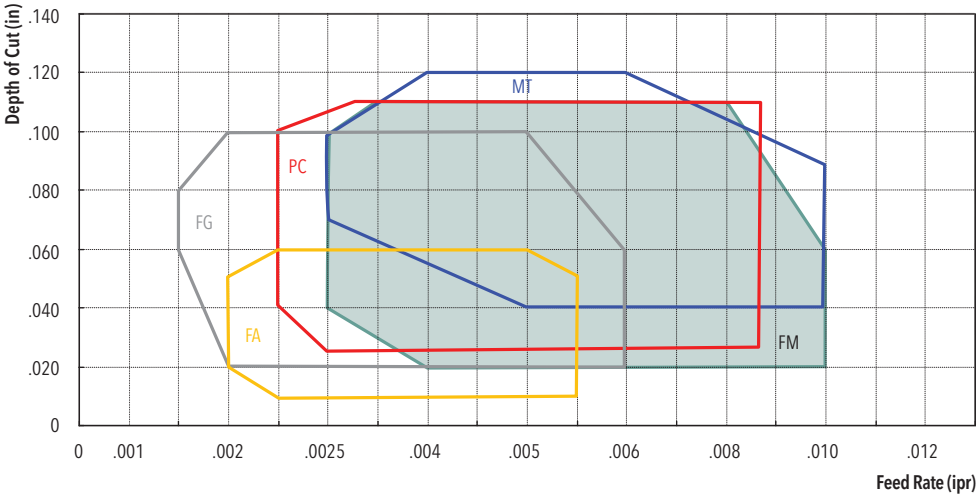


CCMT FM



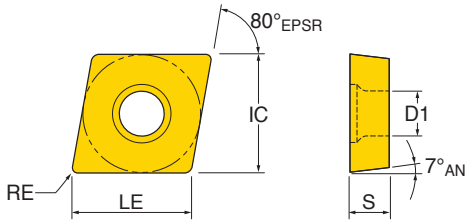


FM CHIP BREAKER RANGE



- Insert: CCMT32.51
- Cutting Speed: 650sfm
- Material: 0.45% Carbon Steel (HB 200-230)

CCMT Positive 7° Clearance 80° Rhombic Inserts

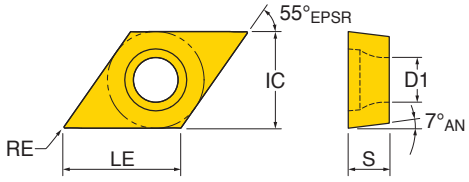


Size	Dimension (inch)				
	IC	RE	S	LE	D1
CCMT21.50.5	0.250	0.008	0.094	0.252	0.110
CCMT21.51	0.250	0.016	0.094	0.251	0.110
CCMT32.50.5	0.375	0.008	0.156	0.379	0.173
CCMT32.51	0.375	0.016	0.156	0.378	0.173
CCMT32.52	0.375	0.031	0.156	0.374	0.173

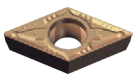
Insert	Designation		FDMN Min Feed (ipr)	FDMX Max Feed (ipr)	APMN Min Depth of Cut (in)	APMX Max Depth of Cut (in)	Cermet		CVD coated			PVD coated	
	ANSI Part Number	ISO Part Number					PV3010	CT3000	TT8115	TT8125	TT8135	TT5080	TT8020
	CCMT21.50.5FM	CCMT060202FM	0.003	0.006	0.020	0.059	•	•	•	•	•	•	•
	CCMT21.51FM	CCMT060204FM	0.003	0.006	0.020	0.059	•	•	•	•	•	•	•
	CCMT32.50.5FM	CCMT09T302FM	0.003	0.008	0.020	0.079	•	•	•	•	•	•	•
	CCMT32.51FM	CCMT09T304FM	0.003	0.010	0.020	0.098	•	•	•	•	•	•	•
	CCMT32.52FM	CCMT09T308FM	0.004	0.010	0.031	0.098	•	•	•	•	•	•	•

• : Standard item

DCMT Positive 7° Clearance 55° Rhombic Inserts

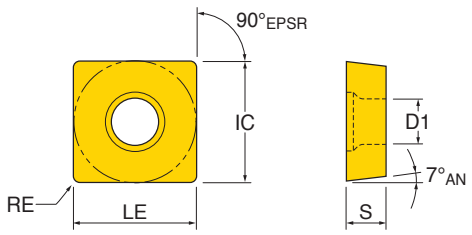


Size	Dimension (inch)				
	IC	RE	S	LE	D1
DCMT21.50.5	0.250	0.008	0.094	0.298	0.110
DCMT21.51	0.250	0.016	0.094	0.291	0.110
DCMT21.52	0.250	0.031	0.094	0.276	0.110
DCMT32.50.5	0.375	0.008	0.156	0.451	0.173
DCMT32.51	0.375	0.016	0.156	0.434	0.173
DCMT32.52	0.375	0.031	0.156	0.429	0.173

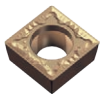
Insert	Designation		FDMN Min Feed (ipr)	FDMX Max Feed (ipr)	APMN Min Depth of Cut (in)	APMX Max Depth of Cut (in)	Cermet		CVD coated			PVD coated	
	ANSI Part Number	ISO Part Number					PV3010	CT3000	TT8115	TT8125	TT8135	TT5080	TT8020
	DCMT21.50.5FM	DCMT070202FM	0.003	0.008	0.020	0.059	•	•	•	•	•	•	•
	DCMT21.51FM	DCMT070204FM	0.003	0.008	0.020	0.059	•	•	•	•	•	•	•
	DCMT21.52FM	DCMT070208FM	0.004	0.008	0.031	0.059	•	•	•	•	•	•	•
	DCMT32.50.5FM	DCMT11T302FM	0.003	0.008	0.020	0.079	•	•	•	•	•	•	•
	DCMT32.51FM	DCMT11T304FM	0.003	0.008	0.020	0.079	•	•	•	•	•	•	•
	DCMT32.52FM	DCMT11T308FM	0.004	0.010	0.031	0.098	•	•	•	•	•	•	•

• : Standard item

SCMT Positive 7° Clearance Square Inserts

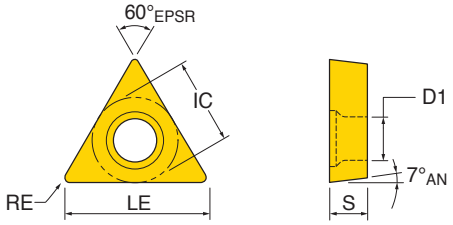


Size	Dimension (inch)				
	IC	RE	S	LE	D1
SCMT32.51	0.375	0.016	0.156	0.375	0.173
SCMT32.52	0.375	0.031	0.156	0.375	0.173

Insert	Designation		FDMN Min Feed (ipr)	FDMX Max Feed (ipr)	APMN Min Depth of Cut (in)	APMX Max Depth of Cut (in)	Cermet		CVD coated			PVD coated	
	ANSI Part Number	ISO Part Number					PV3010	CT3000	TT8115	TT8125	TT8135	TT5080	TT8020
	SCMT32.51FM	SCMT09T304FM	0.003	0.010	0.020	0.098	•	•	•	•	•	•	•
	SCMT32.52FM	SCMT09T308FM	0.004	0.010	0.031	0.098	•	•	•	•	•	•	•

• : Standard item

TCMT Positive 7° Clearance Triangular Inserts

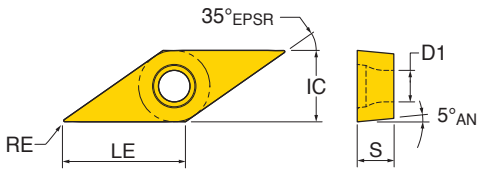


Size	Dimension (inch)				
	IC	RE	S	LE	D1
TCMT730.5	0.219	0.008	0.094	0.373	0.098
TCMT731	0.219	0.016	0.094	0.367	0.098
TCMT21.50.5	0.250	0.008	0.094	0.427	0.110
TCMT21.51	0.250	0.016	0.094	0.422	0.110
TCMT21.52	0.250	0.031	0.094	0.410	0.110
TCMT32.51	0.375	0.016	0.156	0.638	0.173
TCMT32.52	0.375	0.031	0.156	0.627	0.173
TCMT32.53	0.375	0.047	0.156	0.615	0.173

Insert	Designation		FDMN Min Feed (ipr)	FDMX Max Feed (ipr)	APMN Min Depth of Cut (in)	APMX Max Depth of Cut (in)	Cermet		CVD coated			PVD coated	
	ANSI Part Number	ISO Part Number					PV3010	CT3000	TT8115	TT8125	TT8135	TT5080	TT8020
	TCMT730.5FM	TCMT090202FM	0.003	0.008	0.020	0.059	•	•	•	•	•	•	•
	TCMT731FM	TCMT090204FM	0.003	0.008	0.020	0.059	•	•	•	•	•	•	•
	TCMT21.50.5FM	TCMT110202FM	0.003	0.008	0.020	0.059	•	•	•	•	•	•	•
	TCMT21.51FM	TCMT110204FM	0.003	0.008	0.020	0.059	•	•	•	•	•	•	•
	TCMT21.52FM	TCMT110208FM	0.004	0.008	0.031	0.059	•	•	•	•	•	•	•
	TCMT32.51FM	TCMT16T304FM	0.003	0.008	0.020	0.079	•	•	•	•	•	•	•
	TCMT32.52FM	TCMT16T308FM	0.004	0.008	0.031	0.079	•	•	•	•	•	•	•
	TCMT32.53FM	TCMT16T312FM	0.004	0.010	0.039	0.098	•	•	•	•	•	•	•

• : Standard item

VBMT Positive 5° Clearance 35° Rhombic Inserts

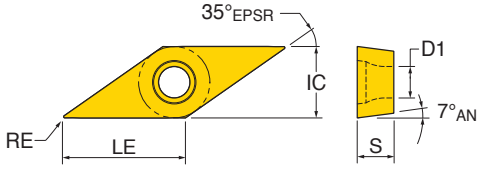


Size	Dimension (inch)				
	IC	RE	S	LE	D1
VBMT221	0.250	0.016	0.125	0.402	0.110
VBMT222	0.250	0.031	0.125	0.368	0.110
VBMT331	0.375	0.016	0.187	0.620	0.173
VBMT332	0.375	0.031	0.187	0.586	0.173
VBMT333	0.375	0.047	0.187	0.552	0.173

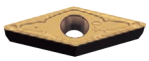
Insert	Designation		FDMN Min Feed (ipr)	FDMX Max Feed (ipr)	APMN Min Depth of Cut (in)	APMX Max Depth of Cut (in)	Cermet		CVD coated			PVD coated	
	ANSI Part Number	ISO Part Number					PV3010	CT3000	TT8115	TT8125	TT8135	TT5080	TT8020
	VBMT221FM	VBMT110304FM	0.003	0.008	0.020	0.059	•	•	•	•	•	•	•
	VBMT222FM	VBMT110308FM	0.004	0.008	0.020	0.059	•	•	•	•	•	•	•
	VBMT331FM	VBMT160404FM	0.003	0.008	0.020	0.079	•	•	•	•	•	•	•
	VBMT332FM	VBMT160408FM	0.004	0.008	0.031	0.079	•	•	•	•	•	•	•
	VBMT333FM	VBMT160412FM	0.004	0.010	0.039	0.098	•	•	•	•	•	•	•

• : Standard item

VCMT Positive 7° Clearance 35° Rhombic Inserts



Size	Dimension (inch)				
	IC	RE	S	LE	D1
VCMT1.51.50.5	0.187	0.008	0.094	0.310	0.094
VCMT1.51.51	0.187	0.016	0.094	0.293	0.094
VCMT221	0.250	0.016	0.125	0.402	0.110
VCMT331	0.375	0.016	0.187	0.620	0.173
VCMT332	0.375	0.031	0.187	0.586	0.173

Insert	Designation		FDMN Min Feed (ipr)	FDMX Max Feed (ipr)	APMN Min Depth of Cut (in)	APMX Max Depth of Cut (in)	Cermet		CVD coated			PVD coated	
	ANSI Part Number	ISO Part Number					PV3010	CT3000	TT8115	TT8125	TT8135	TT5080	TT8020
	VCMT1.51.50.5FM	VCMT080202FM	0.003	0.006	0.020	0.059	•	•	•	•	•	•	•
	VCMT1.51.51FM	VCMT080204FM	0.003	0.006	0.020	0.059	•	•	•	•	•	•	•
	VCMT221FM	VCMT110304FM	0.003	0.008	0.020	0.059	•	•	•	•	•	•	•
	VCMT331FM	VCMT160404FM	0.003	0.008	0.020	0.079	•	•	•	•	•	•	•
	VCMT332FM	VCMT160408FM	0.004	0.008	0.031	0.079	•	•	•	•	•	•	•

• : Standard item

RECOMMENDED CUTTING CONDITIONS

ISO	Material		Condition	Tensile strength (N/mm²)	Hardness HB	Mat'l No.	Cutting speed Vc (sfm)													
							Cermet				CVD coated						PVD coated			
							PV3010		CT3000		TT8115		TT8125		TT8135		TT5080		TT8020	
							low	high	low	high	low	high	low	high	low	high	low	high	low	high
P	Non-alloy steel, cast steel, free cutting steel	< 0.25%C	Annealed	420	125	1	1150	2130	985	1870	920	1740	755	1575	655	1475			330	985
		>= 0.25%C	Annealed	650	190	2	885	1705	820	1640	785	1575	655	1380	560	1280			330	885
		< 0.55%C	Quenched/tempered	850	250	3	785	1575	720	1510	655	1445	525	1245	425	1115			260	655
		>= 0.55%C	Annealed	750	220	4	855	1640	785	1540	720	1475	625	1310	525	1215			295	690
			Quenched/tempered	1000	300	5	785	1510	720	1445	590	1380	490	1150	395	1050			260	590
	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	200	6	785	1770	720	1705	655	1640	560	1310	460	1215			260	655
			Quenched/tempered	930	275	7	625	1080	560	985	490	920	460	820	360	720			130	395
				1000	300	8	560	985	490	885	425	820	395	755	295	655			130	295
				1200	350	9	460	885	425	820	395	755	360	655	260	560			100	295
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	855	1330	820	1295	625	1245	460	920	360	820			195	525
			Quenched/tempered	1100	325	11	460	670	425	640	295	590	230	425	130	330			130	260
M	Stainless steel and cast steel		Ferritic / martensitic	680	200	12	655	985	590	885							525	1280	330	820
			Martensitic	820	240	13	655	885	560	820							525	920	330	755
			Austenitic	600	180	14	560	855	490	785							330	820	260	655
K	Gray cast iron (GG)		Ferritic		160	15	755	1080	720	1050										
			Pearlitic		250	16	705	950	670	920										
	Cast iron nodular (GGG)		Ferritic		180	17	560	870	525	835										
			Pearlitic		260	18	590	785	560	755										
	Malleable cast iron		Ferritic		130	19	475	720	445	655										
			Pearlitic		230	20	345	490	310	460										
N	Aluminum - wrought alloy		Not cureable		60	21														
			Cured		100	22														
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23														
			Cured		90	24														
		>12% Si	High temp.		130	25														
	Copper alloys	>1% Pb	Free cutting		110	26														
			Brass		90	27														
			Electrolitic copper		100	28														
	Non-metallic		Duroplastics, fiber plastics			29														
			Hard rubber			30														
S	High temp. alloys	Fe based	Annealed		200	31											165	590	65	230
			Cured		280	32											130	525	35	165
		Ni or Co based	Annealed		250	33											150	330	35	130
			Cured		350	34											115	295	35	100
			Cast		320	35											100	260	35	65
	Titanium, Ti alloys			Rm 400		36											360	655	230	490
			Alpha+beta alloys cured	Rm 1050		37											165	330	65	130
H	Hardened steel		Hardened		55HRC	38														
			Hardened		60HRC	39														
	Chilled cast iron		Cast		400	40														
	Cast iron nodular		Hardened		55HRC	41														

P: Steel M: Stainless Steel K: Cast Iron N: Nonferrous S: High Temp. Alloys H: Hardened Steel