

# PHH Negative & Positive Inserts

The Cutting Edge Technology for Turning of Superalloys

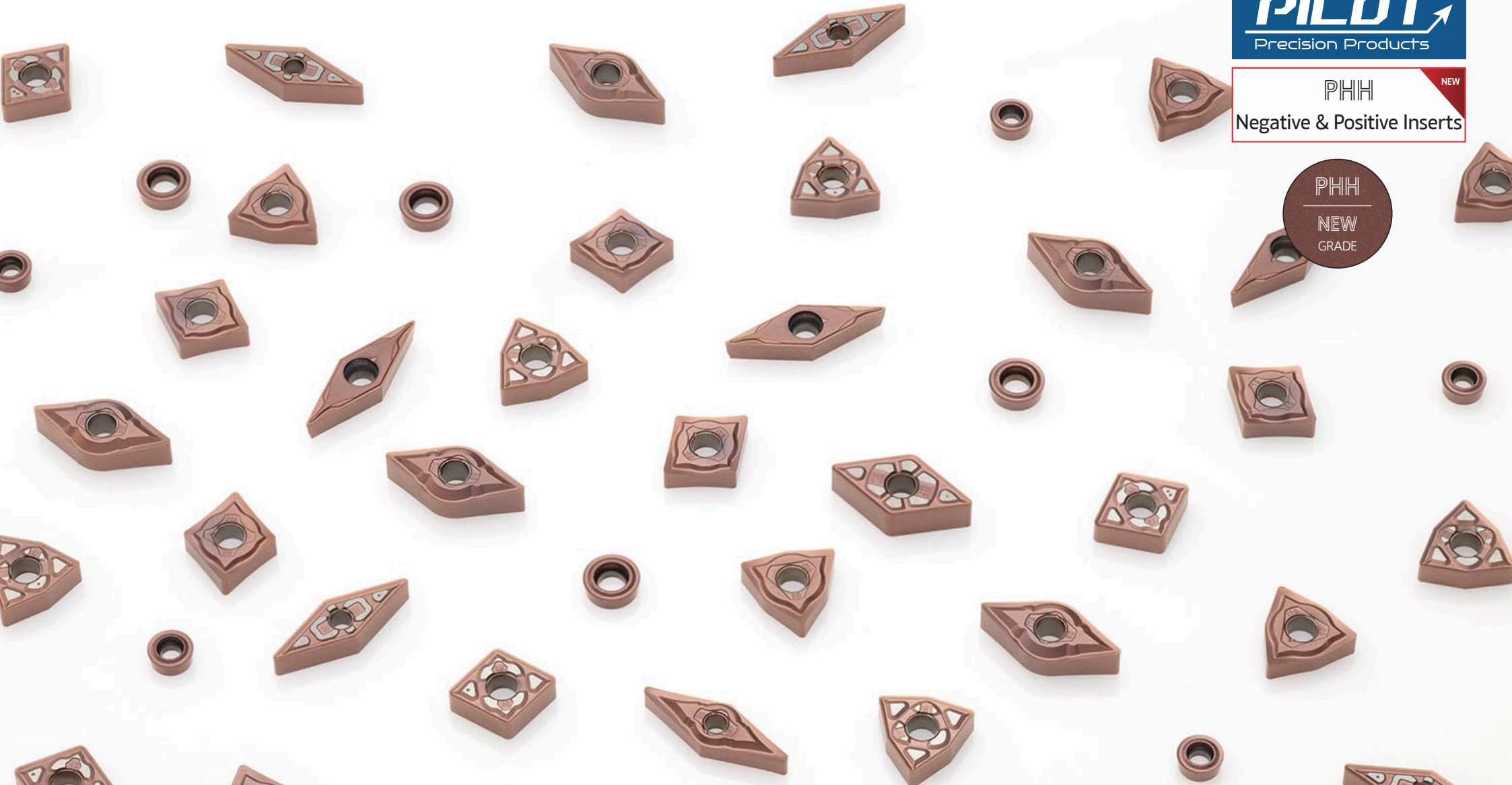
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TOOLING SOLUTIONS EXPERTS  
SINCE 1916

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**PILOT**  
Precision Products

PHH  
Negative & Positive Inserts

PHH  
NEW  
GRADE



A New Turn for **Stainless Steel and HRSA Turning**



**PHH910**  
M05-M10  
S05-S15

An hard micro grain substrate combined with a thin optimized nanostructure PVD coating with excellent heat dissipation

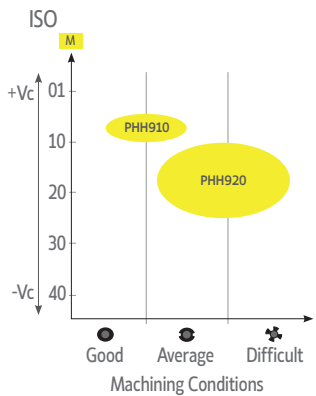
The solution for Stainless Steels and HRSA from medium turning to finishing. For continuous to semi-interrupted turning. First choice for HRSA.

**PHH920**  
M10-M25  
S15-S30

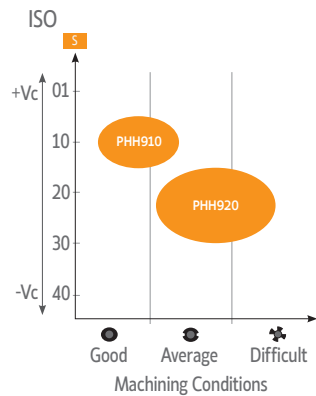
A micro grain substrate combined with a thin optimized nanostructure PVD coating with excellent heat dissipation

Solution for general turning of Stainless Steels and HRSA.

**M - STAINLESS STEEL**



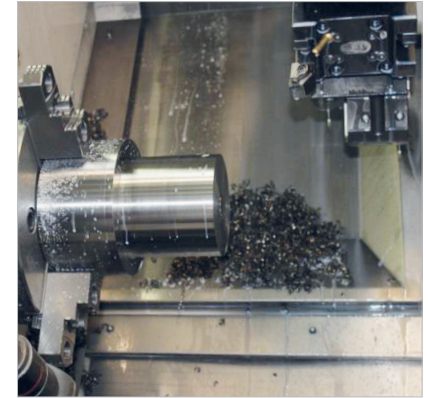
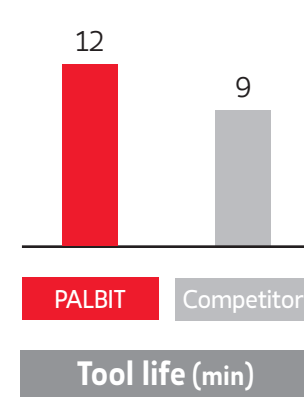
**S - HEAT RESISTANT / TITANIUM ALLOYS**



## TEST REPORT

Insert: CCGT 060202-FS (ISO) | CCGT 21.50.5-FS (ANSI) vs Competitor Equivalent Insert


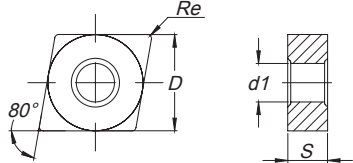

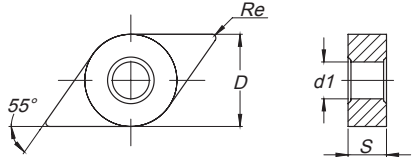

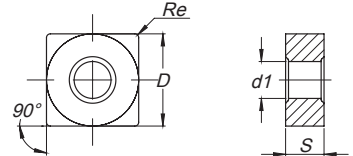

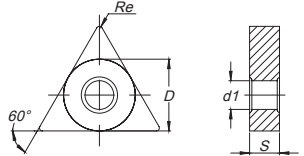
Grade: PHH910 vs Competitor Equivalent




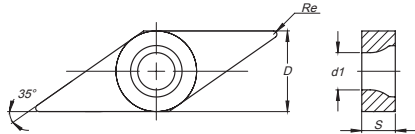

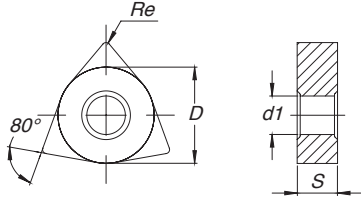
Workpiece material: Inconel 718

Cutting speed: $V_c$	70 m/min	230 sfm
Feed per rev: $f_n$	0,07 mm/r	0.003 in/r
Depth of cut: $a_p$	0,5 mm	0.039 in
Operation	Continuous Turning	
Coolant	Emulsion	

# PHH GRADES = NEGATIVE TURNING INSERTS


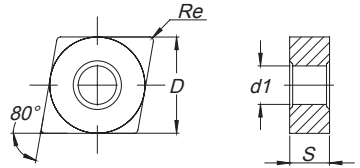

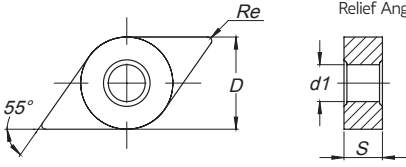

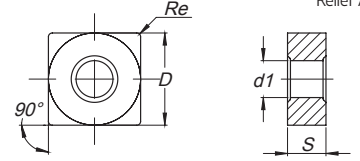
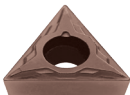
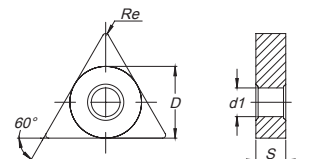
SF Chip Breaker				M		S		Dimensions (mm)				Cutting Conditions				Technical Drawings		
		(2) Grade Code		PVD		PVD												
Inserts	(1) Chip Geometry Code	ISO Reference	ANSI Reference	X6	Y3	X6	Y3	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max	
				PHH910	PHH920	PHH910	PHH920											
 Medium to Finishing	1123747	CNMG 120404-SF	CNMG 431-SF	⊗	⊗	⊗	⊗	12.700	4.76	0.40	5.16	1.50	0.60	3.00	0.15	0.10	0.23	
	1123717	CNMG 120408-SF	CNMG 432-SF	⊗	⊗	⊗	⊗	12.700	4.76	0.80	5.16	1.50	0.60	3.00	0.25	0.12	0.38	
	1123748	CNMG 120412-SF	CNMG 433-SF	⊗	⊗	⊗	⊗	12.700	4.76	1.20	5.16	1.50	0.60	3.00	0.35	0.15	0.55	
 Medium to Finishing	1123749	DNMG 110404-SF	DNMG 331-SF	○	○	○	○	9.525	4.76	0.40	3.81	1.50	0.60	3.00	0.15	0.10	0.23	
	1123750	DNMG 110408-SF	DNMG 332-SF	⊗	⊗	⊗	⊗	9.525	4.76	0.80	3.81	1.50	0.60	3.00	0.25	0.12	0.38	
	1123751	DNMG 150404-SF	DNMG 431-SF	○	○	○	○	12.700	4.76	0.40	5.16	1.50	0.60	3.00	0.15	0.10	0.23	
	1123752	DNMG 150408-SF	DNMG 432-SF	○	○	○	○	12.700	4.76	0.80	5.16	1.50	0.60	3.00	0.25	0.12	0.38	
	1123753	DNMG 150412-SF	DNMG 433-SF	○	○	○	○	12.700	4.76	1.20	5.16	1.50	0.60	3.00	0.35	0.15	0.55	
	1123754	DNMG 150604-SF	DNMG 441-SF	⊗	⊗	⊗	⊗	12.700	6.35	0.40	5.16	1.50	0.60	3.00	0.15	0.10	0.23	
	1123755	DNMG 150608-SF	DNMG 442-SF	⊗	⊗	⊗	⊗	12.700	6.35	0.80	5.16	1.50	0.60	3.00	0.25	0.12	0.38	
1123756	DNMG 150612-SF	DNMG 443-SF	○	○	○	○	12.700	6.35	1.20	5.16	1.50	0.60	3.00	0.35	0.15	0.55		
 Medium to Finishing	1123874	SNMG 120404-SF	SNMG 431-SF	○	○	○	○	12.700	4.76	0.40	5.16	2.00	1.00	4.00	0.15	0.10	0.23	
	1123875	SNMG 120408-SF	SNMG 432-SF	○	○	○	○	12.700	4.76	0.80	5.16	2.00	1.00	4.00	0.20	0.12	0.38	
	1123876	SNMG 120412-SF	SNMG 433-SF	○	○	○	○	12.700	4.76	1.20	5.16	2.50	1.00	4.00	0.25	0.15	0.55	
 Medium to Finishing	1123757	TNMG 160404-SF	TNMG 331-SF	⊗	⊗	⊗	⊗	9.525	4.76	0.40	3.81	1.50	0.60	3.00	0.15	0.10	0.23	
	1123719	TNMG 160408-SF	TNMG 332-SF	⊗	⊗	⊗	⊗	9.525	4.76	0.80	3.81	1.50	0.60	3.00	0.25	0.12	0.38	
	1123758	TNMG 160412-SF	TNMG 333-SF	⊗	⊗	⊗	⊗	9.525	4.76	1.20	3.81	1.50	0.60	3.00	0.35	0.15	0.55	
	1124070	TNMG 220404-SF	TNMG 431-SF	○	○	○	○	12.700	4.76	0.40	5.16	1.50	0.60	3.00	0.20	0.10	0.35	
	1123759	TNMG 220408-SF	TNMG 432-SF	○	○	○	○	12.700	4.76	0.80	5.16	1.50	0.60	3.00	0.25	0.12	0.40	
1124028	TNMG 220412-SF	TNMG 433-SF	○	○	○	○	12.700	4.76	1.20	5.16	1.50	0.60	3.00	0.35	0.15	0.55		

# PHH GRADES = NEGATIVE TURNING INSERTS

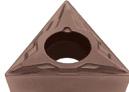
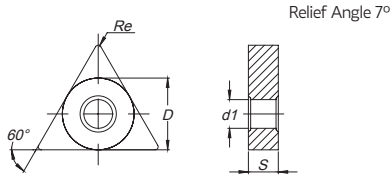

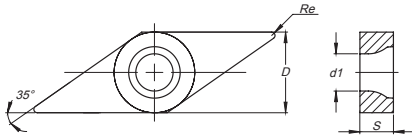

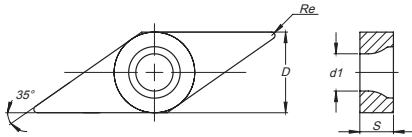
SF Chip Breaker				M		S		Dimensions (mm)				Cutting Conditions				Technical Drawings			
		(2) Grade Code		PVD		PVD													
Inserts	(1) Chip Geometry Code	ISO Reference	ANSI Reference	X6	Y3	X6	Y3	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max		
				PHH910	PHH920	PHH910	PHH920												
 VNMG-SF Medium to Finishing	1123760	VNMG 160404-SF	VNMG 331-SF	⊗	⊗	⊗	○	9.525	4.76	0.40	3.81	1.50	0.60	3.00	0.15	0.10	0.23		
	1123761	VNMG 160408-SF	VNMG 332-SF	⊗	⊗	⊗	⊗	9.525	4.76	0.80	3.81	1.50	0.60	3.00	0.25	0.12	0.38		
	1123762	VNMG 160412-SF	VNMG 333-SF	VNMG 333-SF	⊗	⊗	⊗	⊗	9.525	4.76	1.20	3.81	1.50	0.60	3.00	0.35	0.15		0.55
 WNMG-SF Medium to Finishing	1123763	WNMG 060404-SF	WNMG 331-SF	○	○	○	○	9.525	3.18	0.40	3.81	2.00	0.50	2.50	0.20	0.10	0.25		
	1123764	WNMG 060408-SF	WNMG 332-SF	○	○	○	○	9.525	3.18	0.80	3.81	2.00	0.50	2.50	0.25	0.12	0.45		
	1123765	WNMG 060412-SF	WNMG 333-SF	WNMG 333-SF	○	○	○	○	12.700	4.76	0.40	5.16	3.00	0.50	5.70	0.20	0.10		0.25
	1123766	WNMG 080404-SF	WNMG 431-SF	WNMG 431-SF	⊗	⊗	⊗	⊗	12.700	4.76	0.80	5.16	3.00	0.50	5.70	0.25	0.12		0.45
	1123721	WNMG 080408-SF	WNMG 432-SF	WNMG 432-SF	⊗	⊗	⊗	⊗	12.700	4.76	1.20	5.16	3.00	0.50	5.70	0.30	0.15		0.60
1123767	WNMG 080412-SF	WNMG 433-SF	WNMG 433-SF	⊗	⊗	⊗	⊗	12.700	4.76	1.60	5.16	3.00	0.50	5.70	0.37	0.18	0.65		




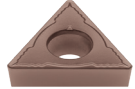


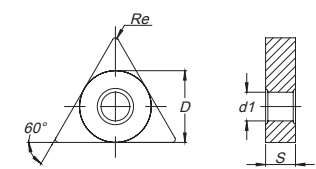
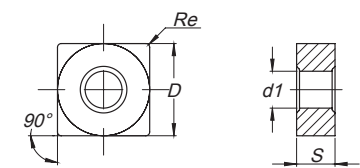
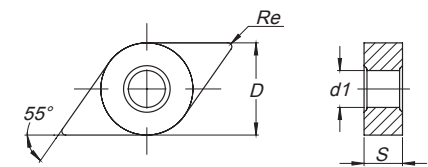
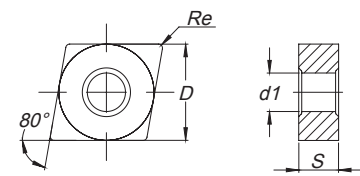
# PHH GRADES = POSITIVE TURNING INSERTS

FM Chip Breaker				M		S		Dimensions (mm)				Cutting Conditions				Technical Drawings		
		(2) Grade Code		PVD		PVD												
Inserts	(1) Chip Geometry Code	ISO Reference	ANSI Reference	X6	Y3	X6	Y3	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max	
				PHH910	PHH920	PHH910	PHH920											
 CCMT-FM Finishing	1121654	CCMT 060202-FM	CCMT 21.50.5-FM	⊗	⊗	⊗	⊗	6.350	2.38	0.20	2.80	0.30	0.06	1.70	0.06	0.03	0.11	 Relief Angle 7°
	1121657	CCMT 060204-FM	CCMT 21.51-FM	⊗	⊗	⊗	⊗	6.350	2.38	0.40	2.80	0.30	0.10	1.70	0.08	0.05	0.17	
	1121689	CCMT 09T302-FM	CCMT 32.50.5-FM	⊗	⊗	⊗	⊗	9.525	3.97	0.20	4.40	0.35	0.08	2.00	0.08	0.04	0.13	
	1121692	CCMT 09T304-FM	CCMT 32.51-FM	⊗	⊗	⊗	⊗	9.525	3.97	0.40	4.40	0.35	0.11	2.00	0.11	0.06	0.23	
	1121651	CCMT 09T308-FM	CCMT 32.52-FM	⊗	⊗	⊗	⊗	9.525	3.97	0.80	4.40	0.35	0.15	2.00	0.20	0.08	0.45	
	1121664	CCMT 120404-FM	CCMT 431-FM	○	○	○	○	12.700	4.76	0.40	5.50	0.42	0.14	2.40	0.14	0.07	0.27	
 DCMT-FM Finishing	1121674	DCMT 070202-FM	DCMT 21.50.5-FM	⊗	⊗	⊗	⊗	6.350	2.38	0.20	2.80	0.26	0.06	1.50	0.06	0.03	0.11	 Relief Angle 7°
	1121677	DCMT 070204-FM	DCMT 21.51-FM	⊗	⊗	⊗	⊗	6.350	2.38	0.40	2.80	0.26	0.08	1.50	0.08	0.05	0.17	
	1121667	DCMT 11T302-FM	DCMT 32.50.5-FM	⊗	⊗	⊗	⊗	9.525	3.97	0.20	4.40	0.35	0.08	2.00	0.08	0.04	0.15	
	1121710	DCMT 11T304-FM	DCMT 32.51-FM	⊗	⊗	⊗	⊗	9.525	3.97	0.40	4.40	0.35	0.11	2.00	0.11	0.06	0.23	
	1121712	DCMT 11T308-FM	DCMT 32.52-FM	⊗	⊗	⊗	⊗	9.525	3.97	0.80	4.40	0.35	0.15	2.00	0.15	0.08	0.30	
 SCMT-FM Finishing	1121758	SCMT 09T304-FM	SCMT 32.51-FM	○	○	○	○	9.525	3.97	0.40	4.40	0.35	0.11	2.00	0.11	0.06	0.23	 Relief Angle 7°
	1121764	SCMT 09T308-FM	SCMT 32.52-FM	○	○	○	○	9.525	3.97	0.80	4.40	0.35	0.15	2.00	0.15	0.08	0.30	
 TCMT-FM Finishing	1121787	TCMT 06T102-FM	TCMT 1.21.20.5-FM	○	○	○	○	3.970	1.98	0.20	2.15	0.26	0.06	1.50	0.06	0.03	0.11	 Relief Angle 7°
	1121797	TCMT 06T104-FM	TCMT 1.21.21-FM	○	○	○	○	3.970	1.98	0.40	2.15	0.26	0.08	1.50	0.08	0.05	0.17	
	1123637	TCMT 06T108-FM	TCMT 1.21.22-FM	○	○	○	○	3.970	1.98	0.80	2.15	0.26	0.11	1.50	0.11	0.06	0.23	
	1121803	TCMT 090202-FM	TCMT 1.81.50.5-FM	⊗	⊗	⊗	⊗	5.560	2.38	0.20	2.50	0.30	0.06	1.70	0.06	0.03	0.13	
	1121806	TCMT 090204-FM	TCMT 1.81.51-FM	⊗	⊗	⊗	⊗	5.560	2.38	0.40	2.50	0.30	0.10	1.70	0.10	0.05	0.19	
	1121960	TCMT 110202-FM	TCMT 21.50.5-FM	⊗	⊗	⊗	⊗	6.350	2.38	0.20	2.80	0.30	0.06	1.70	0.06	0.03	0.13	
	1121958	TCMT 110204-FM	TCMT 21.51-FM	⊗	⊗	⊗	⊗	6.350	2.38	0.40	2.80	0.30	0.10	1.70	0.10	0.05	0.19	
	1121959	TCMT 110208-FM	TCMT 21.52-FM	○	○	○	○	6.350	2.38	0.80	2.80	0.30	0.13	1.70	0.13	0.07	0.26	


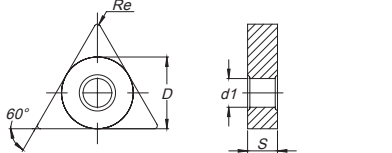

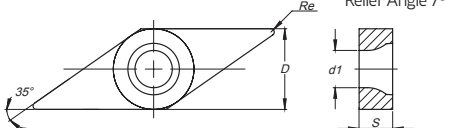

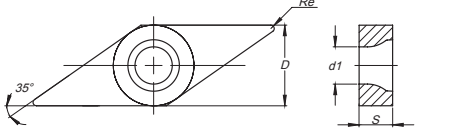
# PHH GRADES = POSITIVE TURNING INSERTS

FM Chip Breaker				M		S		Dimensions (mm)				Cutting Conditions				Technical Drawings			
		(2) Grade Code		PVD		PVD													
Inserts	(1) Chip Geometry Code	ISO Reference	ANSI Reference	X6	Y3	X6	Y3	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max		
				PHH910	PHH920	PHH910	PHH920												
 TCMT-FM	1121881	TCMT 110302-FM	TCMT 220.5-FM	○	○	○	○	6.350	3.18	0.20	2.80	0.30	0.06	1.70	0.06	0.03	0.13	 Relief Angle 7°	
	1121815	TCMT 110304-FM	TCMT 221-FM	○	○	○	○	6.350	3.18	0.40	2.80	0.30	0.10	1.70	0.10	0.05	0.19		
	1121822	TCMT 110308-FM	TCMT 222-FM	○	○	○	○	6.350	3.18	0.80	2.80	0.30	0.13	1.70	0.13	0.07	0.26		
Finishing	1121831	TCMT 16T304-FM	TCMT 32.51-FM	⊗	⊗	⊗	⊗	9.525	3.97	0.40	4.40	0.35	0.11	2.00	0.11	0.06	0.23		
 VBMT-FM	1121851	VBMT 110302-FM	VBMT 220.5-FM	⊗	⊗	⊗	⊗	6.350	3.18	0.20	2.80	0.30	0.06	1.70	0.06	0.03	0.13	 Relief Angle 7°	
	1121854	VBMT 110304-FM	VBMT 221-FM	⊗	⊗	⊗	⊗	6.350	3.18	0.40	2.80	0.30	0.10	1.70	0.10	0.05	0.19		
	1121857	VBMT 110308-FM	VBMT 222-FM	⊗	⊗	⊗	⊗	6.350	3.18	0.80	2.80	0.30	0.13	1.70	0.13	0.07	0.26		
	1121861	VBMT 160402-FM	VBMT 330.5-FM	⊗	⊗	⊗	⊗	9.525	4.76	0.20	4.40	0.32	0.07	1.80	0.07	0.04	0.14		
	Finishing	1121864	VBMT 160404-FM	VBMT 331-FM	⊗	⊗	⊗	⊗	9.525	4.76	0.40	4.40	0.32	0.10	1.80	0.10	0.05		0.20
	1121870	VBMT 160408-FM	VBMT 332-FM	⊗	⊗	⊗	⊗	9.525	4.76	0.80	4.40	0.32	0.14	1.80	0.14	0.07	0.27		
 VCMT-FM	1121775	VCMT 110302-FM	VCMT 220.5-FM	⊗	⊗	⊗	⊗	6.350	3.18	0.20	2.80	0.30	0.07	1.50	0.07	0.03	0.13		
	1121778	VCMT 110304-FM	VCMT 221-FM	⊗	⊗	⊗	⊗	6.350	3.18	0.40	2.80	0.30	0.10	1.50	0.10	0.05	0.20		
	Finishing	1121981	VCMT 160402-FM	VCMT 330.5-FM	⊗	⊗	⊗	⊗	9.525	4.76	0.20	4.40	0.32	0.07	1.80	0.07	0.04		0.14
	1121982	VCMT 160404-FM	VCMT 331-FM	⊗	⊗	⊗	⊗	9.525	4.76	0.40	4.40	0.32	0.10	1.80	0.10	0.05	0.20		
	1121983	VCMT 160408-FM	VCMT 332-FM	⊗	⊗	⊗	⊗	9.525	4.76	0.80	4.40	0.32	0.14	1.80	0.14	0.07	0.27		
1121984	VCMT 160412-FM	VCMT 333-FM	⊗	⊗	⊗	⊗	9.525	4.76	1.20	4.40	0.32	0.14	1.80	0.16	0.09	0.32			

MM Chip Breaker				M		S		Dimensions (mm)				Cutting Conditions				Technical Drawings	
		(2) Grade Code		PVD		PVD											
Inserts	(1) Chip Geometry Code	ISO Reference	ANSI Reference	X6	Y3	X6	Y3	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max
				PHH910	PHH920	PHH910	PHH920										
 CCMT-MM Medium	1121696	CCMT 060204-MM	CCMT 21.51-MM	⊗	⊗	⊗	⊗	6.350	2.38	0.40	2.80	0.64	0.20	2.40	0.11	0.06	0.17
	1121660	CCMT 060208-MM	CCMT 21.52-MM	⊗	⊗	⊗	⊗	6.350	2.38	0.80	2.80	0.64	0.40	2.40	0.18	0.08	0.35
	1121699	CCMT 09T304-MM	CCMT 32.51-MM	⊗	○	⊗	○	9.525	3.97	0.40	4.40	0.64	0.25	3.00	0.15	0.08	0.23
	1121686	CCMT 09T308-MM	CCMT 32.52-MM	⊗	⊗	⊗	⊗	9.525	3.97	0.80	4.40	0.80	0.50	3.00	0.20	0.10	0.40
	1121718	CCMT 120404-MM	CCMT 431-MM	⊗	⊗	⊗	⊗	12.700	4.76	0.40	5.50	0.96	0.30	3.60	0.18	0.09	0.27
	1121721	CCMT 120408-MM	CCMT 432-MM	⊗	⊗	⊗	⊗	12.700	4.76	0.80	5.50	0.96	0.60	3.60	0.24	0.12	0.45
 DCMT-MM Medium	1121723	CCMT 120412-MM	CCMT 433-MM	⊗	⊗	⊗	⊗	12.700	4.76	1.20	5.50	0.96	0.72	3.60	0.35	0.14	0.60
	1121680	DCMT 070204-MM	DCMT 21.51-MM	⊗	⊗	⊗	⊗	6.350	2.38	0.40	2.80	0.60	0.19	2.25	0.11	0.06	0.17
	1121683	DCMT 070208-MM	DCMT 21.52-MM	⊗	⊗	⊗	⊗	6.350	2.38	0.80	2.80	0.60	0.38	2.25	0.20	0.08	0.35
	1121647	DCMT 11T304-MM	DCMT 32.51-MM	⊗	⊗	⊗	⊗	9.525	3.97	0.40	4.40	0.80	0.25	3.00	0.15	0.08	0.23
	1121705	DCMT 11T308-MM	DCMT 32.52-MM	⊗	⊗	⊗	⊗	9.525	3.97	0.80	4.40	0.80	0.50	3.00	0.25	0.10	0.40
 SCMT-MM Medium	1121707	DCMT 11T312-MM	DCMT 32.53-MM	⊗	⊗	⊗	⊗	9.525	3.97	1.20	4.40	0.80	0.60	3.00	0.35	0.12	0.60
	1121761	SCMT 09T304-MM	SCMT 32.51-MM	○	○	○	○	9.525	3.97	0.40	4.40	0.80	0.25	3.00	0.15	0.08	0.23
	1121767	SCMT 09T308-MM	SCMT 32.52-MM	○	○	○	○	9.525	3.97	0.80	4.40	0.80	0.50	3.00	0.25	0.10	0.40
	1121769	SCMT 120404-MM	SCMT 431-MM	○	○	○	○	12.700	4.76	0.40	5.50	0.96	0.30	3.60	0.18	0.09	0.27
	1121782	SCMT 120408-MM	SCMT 432-MM	○	○	○	○	12.700	4.76	0.80	5.50	0.96	0.60	3.60	0.25	0.12	0.45
 TCMT-MM Medium	1121784	SCMT 120412-MM	SCMT 433-MM	○	○	○	○	12.700	4.76	1.20	5.50	0.96	0.72	3.60	0.35	0.14	0.60
	1121702	TCMT 090204-MM	TCMT 1.81.51-MM	⊗	⊗	⊗	⊗	5.560	2.38	0.40	2.50	0.60	0.19	2.25	0.11	0.06	0.17
	1121811	TCMT 090208-MM	TCMT 1.81.52-MM	⊗	⊗	⊗	⊗	5.560	2.38	0.80	2.50	0.60	0.38	2.25	0.15	0.08	0.23
	1121968	TCMT 110204-MM	TCMT 21.51-MM	⊗	⊗	⊗	⊗	6.350	2.38	0.40	2.80	0.67	0.21	2.50	0.13	0.06	0.19
	1121969	TCMT 110208-MM	TCMT 21.52-MM	⊗	⊗	⊗	⊗	6.350	2.38	0.80	2.80	0.67	0.42	2.50	0.17	0.09	0.26
	1121819	TCMT 110304-MM	TCMT 221-MM	○	○	○	○	6.350	3.18	0.40	2.80	0.67	0.21	2.50	0.13	0.06	0.19
1121826	TCMT 110308-MM	TCMT 222-MM	○	○	○	○	6.350	3.18	0.80	2.80	0.67	0.42	2.50	0.20	0.09	0.40	


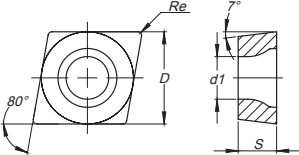

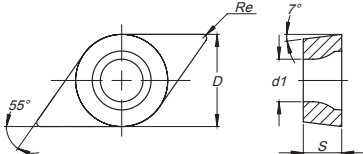


# PHH GRADES = POSITIVE TURNING INSERTS

MM Chip Breaker				M		S		Dimensions (mm)				Cutting Conditions				Technical Drawings		
		(2) Grade Code		PVD		PVD												
Inserts	(1) Chip Geometry Code	ISO Reference	ANSI Reference	X6	Y3	X6	Y3	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max	
				PHH910	PHH920	PHH910	PHH920											
 TCMT-MM Medium	1121835	TCMT 16T304-MM	TCMT 32.51-MM					9.525	3.97	0.40	4.40	0.80	0.25	3.00	0.15	0.08	0.23	 Relief Angle 5°
	1121839	TCMT 16T308-MM	TCMT 32.52-MM					9.525	3.97	0.80	4.40	0.80	0.50	3.00	0.22	0.10	0.45	
	1121843	TCMT 16T312-MM	TCMT 32.53-MM					9.525	3.97	1.20	4.40	0.80	0.60	3.00	0.35	0.12	0.60	
1121848	TCMT 220408-MM	TCMT 432-MM					12.700	4.76	0.80	5.50	0.96	0.60	3.60	0.25	0.12	0.45		
 VBMT-MM Medium	1121867	VBMT 160404-MM	VBMT 331-MM					9.525	4.76	0.40	4.40	0.72	0.23	2.70	0.14	0.07	0.20	 Relief Angle 7°
	1121790	VBMT 160408-MM	VBMT 332-MM					9.525	4.76	0.80	4.40	0.72	0.45	2.70	0.18	0.09	0.27	
	1121795	VBMT 160412-MM	VBMT 333-MM					9.525	4.76	1.20	4.40	0.72	0.54	2.70	0.22	0.11	0.32	
 VCMT-MM Medium	1121780	VCMT 110304-MM	VCMT 221-MM					6.35	3.18	0.40	2.80	0.77	0.31	2.55	0.15	0.10	0.20	 Relief Angle 7°
	1121751	VCMT 110308-MM	VCMT 222-MM					6.35	3.18	0.80	2.80	0.77	0.61	2.55	0.20	0.13	0.33	
	1121991	VCMT 160404-MM	VCMT 331-MM					9.53	4.76	0.40	4.40	0.72	0.23	2.70	0.14	0.07	0.20	
	1121992	VCMT 160408-MM	VCMT 332-MM					9.53	4.76	0.80	4.40	0.72	0.45	2.70	0.18	0.09	0.27	
	1121993	VCMT 160412-MM	VCMT 333-MM					9.53	4.76	1.20	4.40	0.72	0.54	2.70	0.22	0.11	0.32	



# PHH GRADES = POSITIVE TURNING INSERTS

LM Chip Breaker				M		S		Dimensions (mm)				Cutting Conditions				Technical Drawings		
		(2) Grade Code		PVD		PVD												
Inserts	(1) Chip Geometry Code	ISO Reference	ANSI Reference	X6	Y3	X6	Y3	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max	
				PHH910	PHH920	PHH910	PHH920											
 Medium to Finishing	1123801	CCMT 060204-LM	CCMT 21.51-LM	⊗	⊗	⊗	⊗	6.350	2.38	0.40	2.80	0.50	0.20	2.00	0.10	0.08	0.20	 Relief Angle 7°
	1123773	CCMT 09T304-LM	CCMT 32.51-LM	⊗	⊗	⊗	⊗	9.525	3.97	0.40	4.40	0.50	0.25	2.50	0.15	0.10	0.30	
	1123804	CCMT 120404-LM	CCMT 431-LM	⊗	⊗	⊗	⊗	12.700	4.76	0.40	5.50	0.80	0.30	3.00	0.18	0.12	0.35	
 Finishing to Medium	1123802	DCMT 11T304-LM	DCMT 32.51-LM	⊗	⊗	⊗	⊗	9.525	3.97	0.40	4.40	0.50	0.15	2.50	0.15	0.08	0.25	 Relief Angle 7°
	1123803	DCMT 11T308-LM	DCMT 32.52-LM	⊗	⊗	⊗	⊗	9.525	3.97	0.80	4.40	0.50	0.20	2.50	0.20	0.10	0.35	



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