

TURNLINE PVD coated grade for Superalloy turning

AH905

Extended version

PREMIUMTEC
TUNGALOY

Maximize productivity in Superalloy machining!



Extended positive insert range to improve Superalloy machining capabilities!

Features

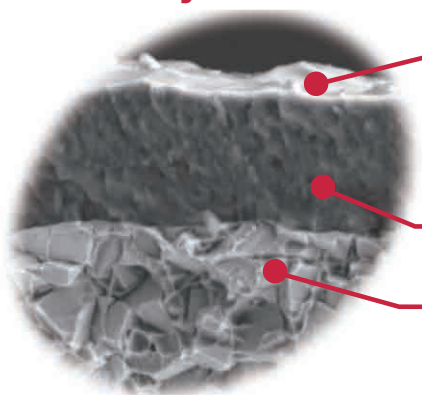
AH905 - The ideal grade for Superalloy turning

Long tool life

Highest level of reliability!

Specified grade for Superalloy machining

New (Al,Ti)N layer has very high oxidation resistance. This provides excellent wear resistance when cutting Superalloy.




Special Surface Technology
PREMIUMTEC
TUNGALOY

Smooth insert surface prevents chip adhesion and improves chip flow.

New (Al,Ti)N coating

Fine grain cemented carbide
Provides high impact resistance

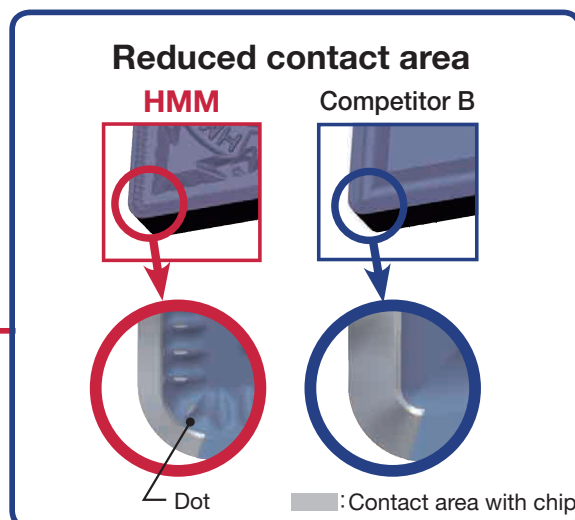
Application	Grade	Substrate			Coating layer		Features
	Application code	Specific gravity	Hardness (HRA)	T.R.S (GPa)	Main Composition	Thickness (μm)	
 Superalloy	AH905	15.0	93.0	2.9	(Al,Ti)N	1.5	For turning of Superalloy New coating improves the adhesion and wear resistance.
	S01 - S15						

HMM chipbreaker for Superalloy turning

Uniquely designed chipbreaker with 3-dimensional shape

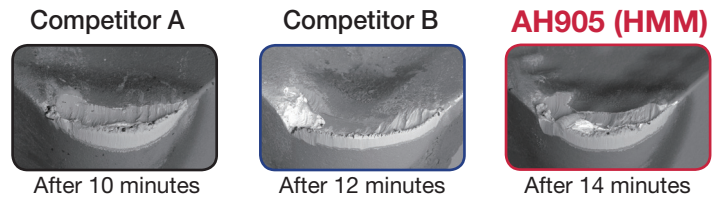
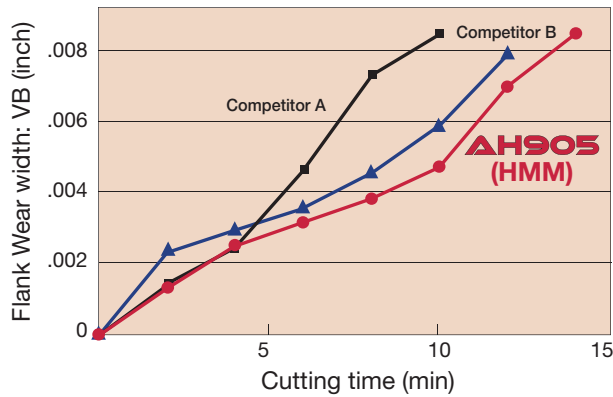


Reduced chip adhesion and improved chip control



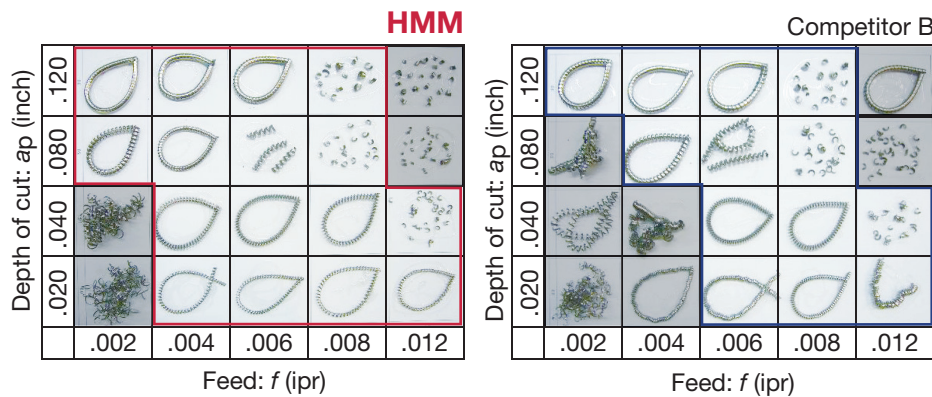
Cutting performance

- New grade provides remarkable tool life in Superalloy cutting.



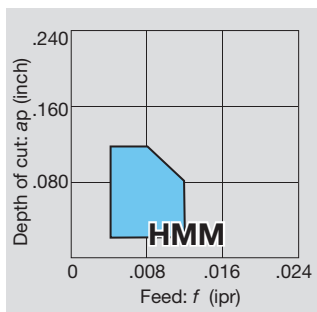
Work material : Inconel 718-T6 (40 ~ 44 HRC)
 Insert : CNMG432-**
 Toolholder : ACLNL164-A
 Cutting speed : $V_c = 180$ sfm
 Depth of cut : $a_p = .028$ "
 Feed : $f = .008$ ipr

- HMM chipbreaker offers highly stable chip control.



Work material : Inconel 718-T6 (40 ~ 44 HRC)
 Insert : CNMG432-**
 Toolholder : ACLNL164-A
 Cutting Speed : $V_c = 180$ sfm

Chipbreaker (Negative type insert)



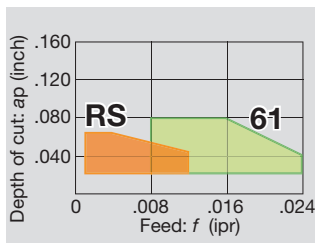
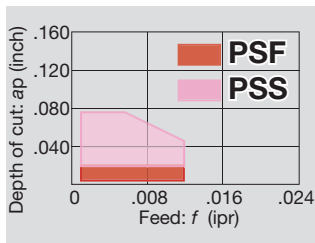
Application	Chip-breaker	Shape	Features
Medium cutting	HMM		Sharp cutting edge and unique dots on rake face significantly reduce the cutting forces and the contact area with the chips.

Standard cutting conditions

Work material	Application	Chipbreaker	Grade	Cutting speed V_c (sfm)	Depth of cut a_p (inch)	Feed f (ipr)
Ni-base alloys (Inconel 718 etc)	Medium cutting	HMM	AH905	160 (70-330)	.060 (.020 - .120)	.008 (.004 - .012)

Chipbreakers (Positive type insert)

NEW



Application	Chip-breaker	Shape		Features
Finishing	PSF			Highly recommended chipbreaker for finishing with low cutting forces. This offers excellent chip control at small depths of cut.
Finishing to light cutting	PSS			Uniquely designed chipbreaker reduces the cutting forces and delivers exceptional chip control in a wide range of cutting conditions.
Finishing to medium cutting	PS			Versatile chipbreaker for medium cutting. Sharp cutting edge and special chipbreaker provides outstanding chip control.
Medium cutting	All-round			Suitable for a wide range of applications from continuous to interrupted cutting. This chipbreaker combines sharpness with high fracture resistance.
Finishing to light cutting	RS			Chipbreaker for round inserts. RS chipbreaker allows excellent chip control with large rake angle to curl chips smoothly.
Medium cutting	61			Chipbreaker for round insert. Suitable for medium cutting with small depth of cut and high feed.

Standard cutting conditions

Work material	Application	Chipbreaker	Grade	Cutting speed Vc (sfm)	Depth of cut ap (inch)	Feed f (ipr)
Ni-base alloys (Inconel 718 etc)	Finishing	PSF	AH905	160 (70-330)	.012 (.002 - .020)	.006 (.001 - .012)
	Finishing to light cutting	PSS			.040 (.002 - .080)	.006 (.001 - .012)
	Finishing to medium cutting	PS			.040 (.020 - .100)	.006 (.001 - .012)
	Medium cutting	All-round			.060 (.020 - .120)	.007 (.003 - .012)
	Finishing to light cutting	RS			.040 (.020 - .060)	.006 (.001 - .012)
	Medium cutting	61			.040 (.020 - .060)	.016 (.008 - .024)

Inserts

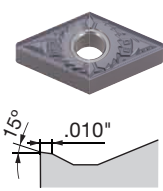
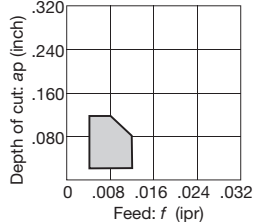
Rhombic, 80° Negative type

Appli- cation	Chipbreaker	f - ap	Cat. No.	Stocked grades	Dimensions (inch)			
	Appearance (Cross section)			Coated	I.C.dia	Thick- ness	Hole dia	Corner radius
				AH905	ød	s	ød1	rε
Medium cutting	 		CNMG431-HMM	●	.500	.187	.203	.016
			* CNMG432-HMM	●				.031
			CNMG433-HMM	●				.047
			CNMG542-HMM	●	.625	.250	.250	.031
			CNMG543-HMM	●				.047
			CNMG544-HMM	●				.063

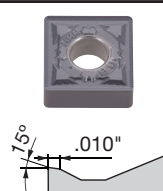
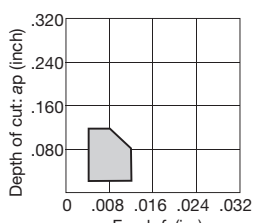
*Note: Chipbreaker cross sections are of insert marked *

● : Stocked items

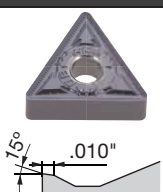
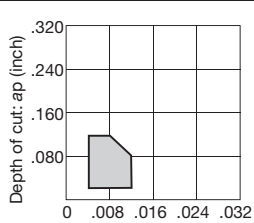
Rhombic, 55° Negative type

Application	Chipbreaker	$f - ap$	Cat. No.	Stocked grades	Dimensions (inch)			
	Appearance (Cross section)			Coated	I.C.dia	Thick-ness	Hole dia	Corner radius
				AH905	ød	s	ød1	$r\epsilon$
Medium cutting	HMM 		DNMG431-HMM	●	.500	.187	.203	.016
			* DNMG432-HMM	●				.031
			DNMG433-HMM	●				.047

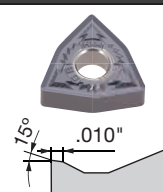
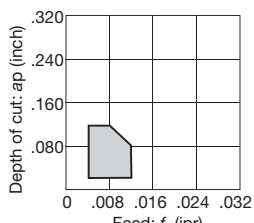
Square, 90° Negative type

Application	Chipbreaker	$f - ap$	Cat. No.	Stocked grades	Dimensions (inch)			
	Appearance (Cross section)			Coated	I.C.dia	Thick-ness	Hole dia	Corner radius
				AH905	ød	s	ød1	$r\epsilon$
Medium cutting	HMM 		* SNMG432-HMM	●	.500	.187	.203	.031
			SNMG433-HMM	●				.047

Triangular, 60° Negative type

Application	Chipbreaker	$f - ap$	Cat. No.	Stocked grades	Dimensions (inch)			
	Appearance (Cross section)			Coated	I.C.dia	Thick-ness	Hole dia	Corner radius
				AH905	ød	s	ød1	$r\epsilon$
Medium cutting	HMM 		TNMG331-HMM	●	.375	.187	.150	.016
			* TNMG332-HMM	●				.031
			TNMG333-HMM	●				.047

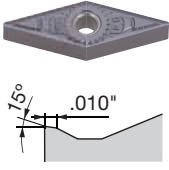
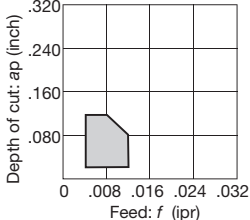
Rhombic, 80° Negative type

Application	Chipbreaker	$f - ap$	Cat. No.	Stocked grades	Dimensions (inch)			
	Appearance (Cross section)			Coated	I.C.dia	Thick-ness	Hole dia	Corner radius
				AH905	ød	s	ød1	$r\epsilon$
Medium cutting	HMM 		WNMG431-HMM	●	.500	.187	.203	.016
			* WNMG432-HMM	●				.031
			WNMG433-HMM	●				.047

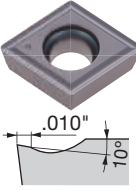
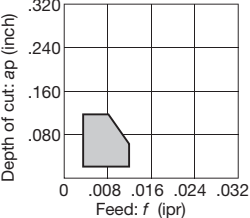
*Note: Chipbreaker cross sections are of insert marked *

● : Stocked items

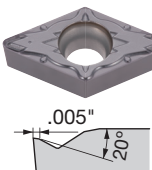
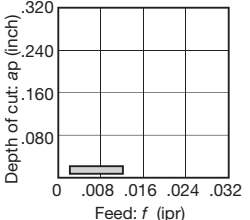
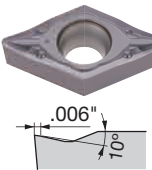
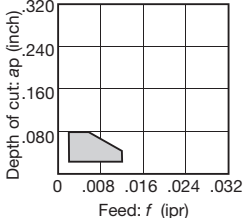
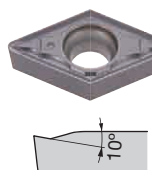
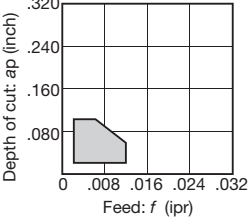
Rhombic, 35° Negative type

Application	Chipbreaker	$f - ap$	Cat. No.	Stocked grades	Dimensions (inch)			
	Appearance (Cross section)			Coated	I.C.dia	Thick-ness	Hole dia	Corner radius
				AH905	ød	s	ød1	r_E
Medium cutting	HMM 		VNMG331-HMM	●	.375	.187	.150	.016
			*VNMG332-HMM	●				.031
			VNMG333-HMM	●				.047

Rhombic, 80° Positive type 11°

Application	Chipbreaker	$f - ap$	Cat. No.	Stocked grades	Dimensions (inch)			
	Appearance (Cross section)			Coated	I.C.dia	Thick-ness	Hole dia	Corner radius
				AH905	ød	s	ød1	r_E
Medium cutting	All-round 		*CPMT432	●	.500	.187	.217	.031

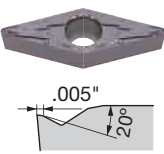
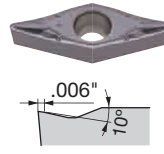
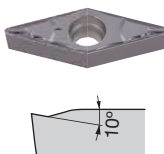
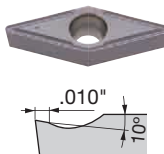
Rhombic, 55° Positive type 7°

Application	Chipbreaker	$f - ap$	Cat. No.	Stocked grades	Dimensions (inch)			
	Appearance (Cross section)			Coated	I.C.dia	Thick-ness	Hole dia	Corner radius
				AH905	ød	s	ød1	r_E
Finishing	PSF 		DCMT32.51-PSF	●	.375	.156	.173	.016
			*DCMT32.52-PSF	●				.031
Finishing to light cutting	PSS 		DCMT32.51-PSS	●	.375	.156	.173	.016
			*DCMT32.52-PSS	●				.031
			DCMT32.53-PSS	●				.047
Finishing to medium cutting	PS 		DCMT32.51-PS	●	.375	.156	.173	.016
			*DCMT32.52-PS	●				.031
			DCMT32.53-PS	●				.047



*Note: Chipbreaker cross sections are of insert marked *

● : Stocked items

Rhombic, 35° Positive type 7°

Application	Chipbreaker	$f - ap$	Cat. No.	Stocked grades	Dimensions (inch)			
	Appearance (Cross section)			Coated	I.C.dia ød	Thick- ness s	Hole dia ød1	Corner radius r _E
				AH905				
NEW	PSF		VCMT331-PSF	●	.375	.187	.173	.016
			*VCMT332-PSF	●				.031
Finishing								
NEW	PSS		VCMT331-PSS	●	.375	.187	.173	.016
			*VCMT332-PSS	●				.031
Finishing to light cutting								
NEW	PS		VCMT331-PS	●	.375	.187	.173	.016
			*VCMT332-PS	●				.031
Finishing to medium cutting								
NEW	All-round		VCMT331	●	.375	.187	.173	.016
			*VCMT332	●				.031
			VCMT333	●				.047
Medium cutting								

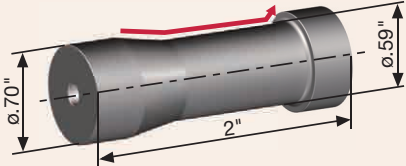
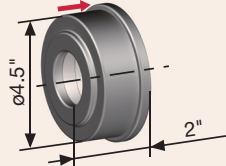
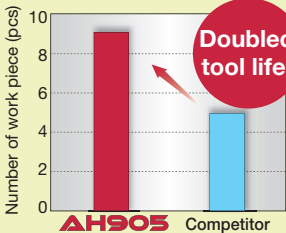
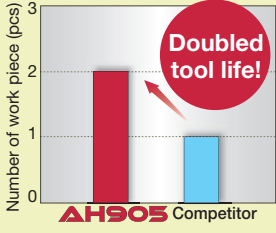
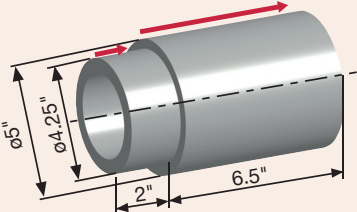
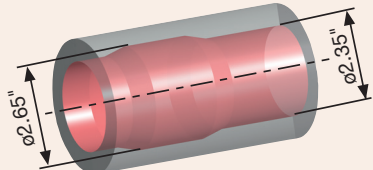
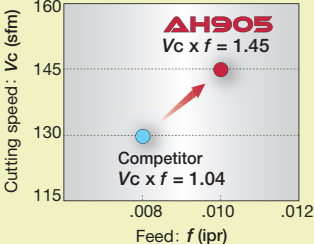
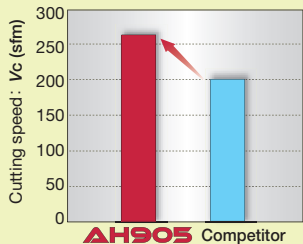
Round with hole, Positive type 7°

Application	Chipbreaker	$f - ap$	Cat. No.	Stocked grades	Dimensions (inch)			
	Appearance (Cross section)			Coated	I.C.dia ød	Thick- ness s	Hole dia ød1	Corner radius r _E
				AH905				
NEW	RS		RCMT10T3M0-RS	●	.394	.156	.173	-
			*RCMT1204M0-RS	●	.472	.187	.173	-
Finishing to light cutting								
NEW	61		RCMM1003M0-61	●	.394	.124	.142	-
			*RCMM1204M0-61	●	.472	.187	.165	-
Medium cutting								

*Note: Chipbreaker cross sections are of insert marked *

● : Stocked items

Practical examples

Workpiece type		Nozzle	Engine component
Insert		DNMG432-HMM	CNMG432-HMM
Work material		Hastelloy	Inconel 718
			
Cutting conditions	Cutting speed: V_c (sfm)	330	150
	Feed: f (ipr)	.005	.010
	Depth of cut: ap (inch)	.080	.040
	Coolant	Wet	Wet
Results		 <p>Machining is very stable and the longer tool life can be provided due to high wear resistance.</p>	 <p>Even with 50% higher feed, there is no chipping on the cutting edge credit to the excellent toughness.</p>
Workpiece type		Belt	Aerospace component
Insert		CNMG432-HMM	DCMT32.52-PSF
Work material		Inconel 718	High strength steel alloy
			
Cutting conditions	Cutting speed: V_c (sfm)	150	260
	Feed: f (ipr)	.010	.004 ~ .006
	Depth of cut: ap (inch)	.100	.060 ~ .080
	Coolant	Wet	Wet
Results		 <p>Both cutting speed and feed can be increased to drastically improve productivity.</p>	 <p>Even at higher cutting speeds, the edge wear is minimal with remarkable wear resistance.</p>



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