



5th Floor, Everest Enclave, Opp. Sun City, Sadhu
Vaswani Main Road, Rajkot 360005. Gujarat, INDIA.

+91 99413 13499 • +91 93286 82413
sales@asphaltsyndicate.com • asphaltssyndicate.com



Turning
2026

a cut above

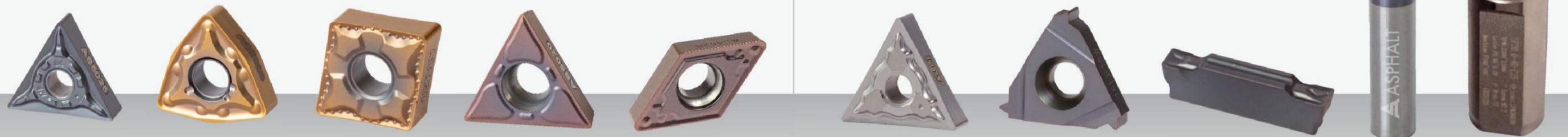


About Asphalt

We, **ASPHALT SYNDICATE LLP**. Specialise In Tools Application Engineering. We Are Mainly Focused In Solid Carbide Endmill & Ballnose, Carbide Drills, Carbide Inserts & Circular Saw Blade. We Are One Of The Pioneers In Tool Engineering And With The Practical Experience In Metal Cutting Tools & Its Various Applications, We Are In A Position To Render Our Technical Services & Bring Down Your Tool Cost Per Component.

Choose **Asphalt Syndicate LLP**. For Carbide Tools That Combine Innovative Engineering Unmatched Quality, And Affordability. Join The Ranks Of Satisfied Customers Who Have Elevated Their Machining Capabilities With Our Top-notch Products. Experience The **Asphalt Syndicate LLP**. Advantage And Witness The Difference In Your Manufacturing Operations.

ASPHALT SYNDICATE LLP. Is Bound To Share Their Expertise And Support With Customers To Built A Greater INDIA.



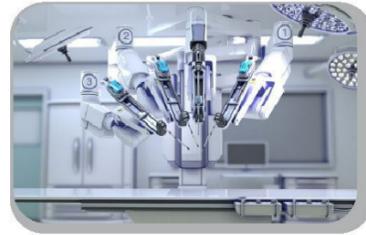
INDUSTRIES WE SERVE



Aerospace



Automotive



Surgical



Oil & Gas



Metal Fabrication



Railway



Heavy Machinery

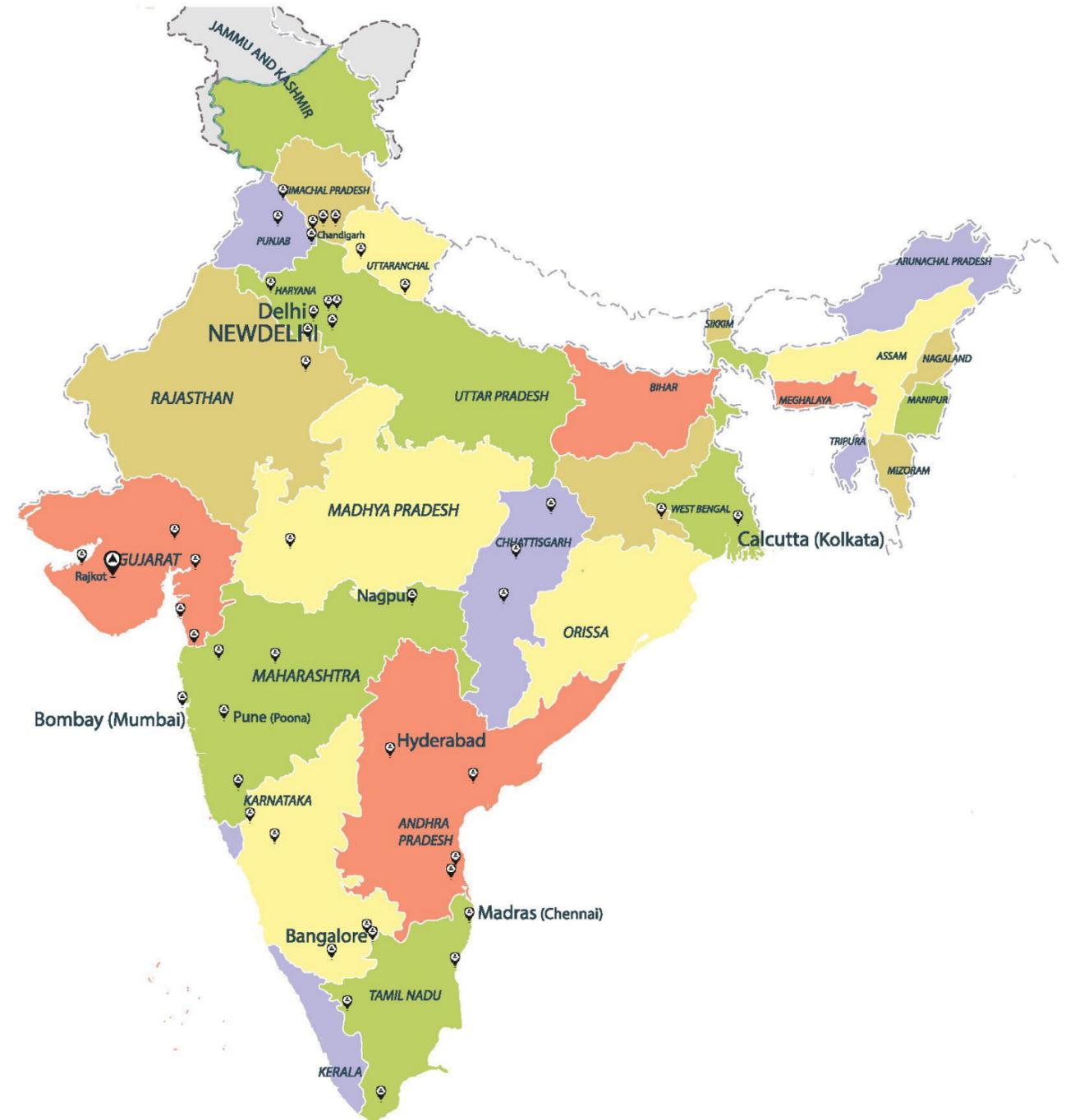


Marine



Construction

IMPACTFUL PRESENCE



INDEX

Annexure - I

Insert Specification	Insert Identification System	2
	Insert Grade	3
	Insert Geometry	5
Turning Insert	TNMG	8
	TNMA	10
	WNMG	11
	WNMA	12
	CNMG	13
	CNMA	14
	SNMG / SNMA	15
	VNMG	16
	CCMT	17
	DNMG	18
	DCMT	19
	TCMT	20
	VBMT	21
Non-Ferrous Insert	CNMG	24
	CCGT	24
	DCGT	24
	TCGT	25
	TNMG	25
	VBGT	25
	VNMG	26
Cermet Insert	Insert Grade	28
	CCMT	29
	TNMG	30
	VNMG	30
	VBMT	30

INDEX

Annexure - II

Parting & Grooving Insert	MGMN	32
	MRMN	33
	TDC	34
Hole Making (Solid Carbide)	Drill 3D/5D	36
Hole Making (Indexable)	SPMG	38
	WCMX	39
Threading Insert	Insert Identification System	42
	Partial Profile 60°	43
	Partial Profile 55°	43
	ISO Metric Full Profile	44
	UN 60° American UN Full Profile	45
	W 55° Whitworth Full Profile	46
	NPT 60° National Pipe Threads	47
	NPTF (Dry Seal)	47
	BSPT 55° British	48
Troubleshooting	Cutting Edge Wear - Causes and It's Solutions	49
Machining App.	ASPHALT OPTIMAX	53

Turning Insert



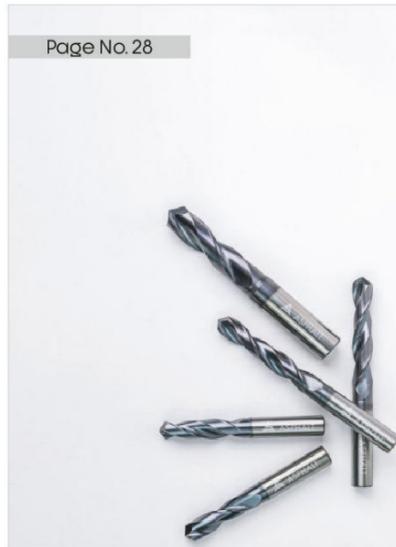
Non-Ferrous Insert



Parting & Grooving Insert



Hole Making Solid Carbide



Hole Making Indexable



Threading Insert



Inserts Identification System

Symbol	Shape
H	Hexagon
O	Octagon
P	Pentagon
S	Square
T	Triangle
C	80° Rhombic
D	55° Rhombic
E	75° Rhombic
F	50° Rhombic
M	86° Rhombic
V	35° Rhombic
W	80° Trigon
L	Rectangle
A	85° Parallelogram
B	82° Parallelogram
K	55° Parallelogram
R	Round

Symbol	Relief angle
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°

Symbol Class	Tolerance (mm)			
	Corner Height	Thickness	I.C. Size	
A	±0.005	±0.025	±0.025	
F	±0.013		±0.013	
C	±0.013		±0.025	
H	±0.013	±0.13	±0.013	
E	±0.025		±0.025	
G	±0.025	±0.13	±0.025	
J	±0.005		±0.05 - ±0.15	±0.05 - ±0.15
K*	±0.013			
L*	±0.025			
M*	±0.08 - ±0.18	±0.13	±0.08 - ±0.25	
N*	±0.08 - ±0.18	±0.025		
U*	±0.13 - ±0.38	±0.13		

* Insert's periphery is as fired. Tolerance difference is depending on insert size.

Symbol	Hole	Hole shape	Chipbreaker	Shape
N	No	-	No	
R			Single sided	
F			Double sided	
A	With hole	-	No	
M			Single sided	
G	Double sided			
W	With hole and one countersink 40° - 60°	-	No	
T			Single sided	
Q	With hole and two countersink 40° - 60°	-	No	
U			Double sided	
B	With hole and one countersink 70° - 90°	-	No	
H			Single sided	
C	With hole and two countersink 70° - 90°	-	No	
J			Double sided	
X	-	-	-	-



5 Edge length symbol							I.C. size (mm)
C	D	R	S	T	V	W	
03	04		03	06			3.97
04	05		04	08	08		4.76
		05					5
05	06		05	09		03	5.56
		06					6
06	07		06	11	11	04	6.35
08	09		07	13		05	7.94
		08					8
09	11	09	09	16	16	06	9.525
	12	10					10
		12					12
12	15	12	12	22	22	08	12.7
16	19	15	15	27	27	10	15.875
		16					16
19	23	19	19	33	33	13	19.05
		20					20
22	27		22	38			22.225
		25					25
25	31	25	25	44	44	17	25.4
32	38	31	31	54	54	21	31.75
		32					32

6 Thickness symbol	
Thickness (mm)	Symbol
1.59	01
1.98	T1
2.38	02
2.78	T2
3.18	03
3.97	T3
4.76	04
5.56	05
6.35	06
7.94	07
9.525	09

Thickness displayed as the distance between bottom surface and highest point on cutting edge.

7 Corner-R (RE) symbol	
Corner-R(RE) (mm)	Symbol
Sharp corner	00
0.03	003
0.05	005
0.1	01
0.2	02
0.4	04
0.8	08
1.2	12
1.6	16
2.0	20
2.4	24
2.8	28
3.2	32
Round insert	00 (inch) or M0 (metric)

8 Manufacturer's option
chipbreaker symbol

9 Manufacturer's option
grade symbol

Turning Insert

Grades

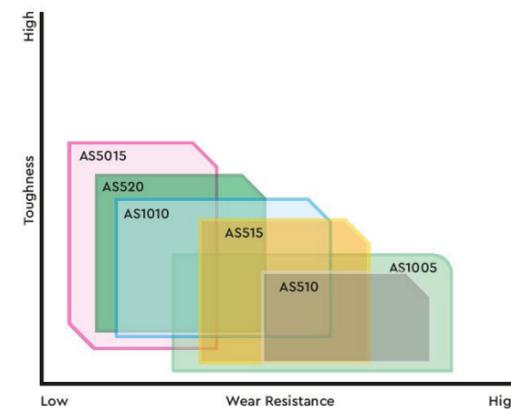
AS1005	ASPHALT Superior CVD Coated Grade, Featuring A Micro Grain Fine Subtracts And An Additional Ultra Thin Post Treatment Layer, Exhibits Exceptional Wear Resistance. This Enhanced Wear Resistance Makes It Well Suited For Machining Graded Steel, Alloy Steel And Forged Steel Materials In Both Rough And Finish Machining Applications.
AS1010	ASPHALT Superior CVD Coated Grade With Fine Cemented Carbide Subtracts Ensures Excellent Wear Resistance, Because Of Its Wide Working Range Recommended For General Machining Of Steel And Cast Iron.
AS5010	PVD Coated Cemented Carbide With Balanced Cobalt Subtracts And Post Treatment Technology Improves Wear Resistance And Toughness. Because Of Its Wear Resistance And Toughness Balance, Recommended For Graded Steel And Stainless Steel General Application.
AS5015	Compact CVD Coating With Fine Cemented Carbide Subtracts Gives Flexibility For Semi Finish And Roughing Application. Recommended For Hard Alloy Steel And Stainless Steel Machining For Various Semi Finish And Roughing Application.
AS5020	New PVD Coating Is Perfectly Matched For Toughness Subtracts With Excellent Heat Resistance And Mechanical Properties. Recommended For Steel, Stainless Steel And Super Alloy Steel For Wide Range Of Application.
AS5025	ASPHALT PVD Coated Grade, Featuring A Micro Carbide Grain Subtracts And A Toughened Subtracts, Provides Excellent Wear Resistance And Edge Retention Properties. These Properties Make It Particularly Suitable For Machining Austenitic And Ferritic Stainless Steel, As Well As Graded Steel, Across A Wide Range Of Applications.
AS5030	ASPHALT NEW PVD Coated Grade, Featuring A Super Micro Fine Subtracts, Enhanced Heat Resistance And Increased Edge Toughness, Offers Versatility And Durability Across Multiple Materials And Applications. Its Compatibility With Austenitic, Martensitic, Ferritic Stainless Steel, And Exotic Materials Makes It Ideal For Both Roughing And Finishing Tasks.
AS510	CVD-Coated Asphalt Grade Featuring Very Fine Carbide Grains Engineered For Excellent Wear Resistance And Enhanced Edge Toughness, Optimized For Machining Cast Iron And Spheroidal Graphite (sg) Iron. Designed To Deliver High Edge Security During Semi-finishing And Roughing Operations."
AS515	CVD Coated ASPHALT Grade With Extreme Fine Carbide Grains Provide Outstanding Wear Resistance And Good Edge Toughness For Cast Iron And SG Iron, With High Edge Security Recommended For Semi-finish And Rough Operations.
AS520	Tough CVD-Coated ASPHALT Grade With Ultra-fine Carbide Structure, Designed For Excellent Wear Resistance And Edge Toughness Also Enhanced Thermal Stability. Optimized For Machining Cast Iron And Sg Iron, Including Interrupted And Unstable Cutting Conditions. Ideal For Semi-finishing To Roughing Operations Requiring High Reliability And Extended Tool Life.
A01	Uncoated Non-Ferrous Insert Grades Are Optimized For Machining Aluminum And Its Alloys. Featuring Sharp Edges And Tailored Geometry, They Ensure Superior Chip Control, High Thermal Conductivity, And Low Friction, Resulting In Enhanced Surface Finish And Achieve Good Tool Life.

Turning Insert

Grades

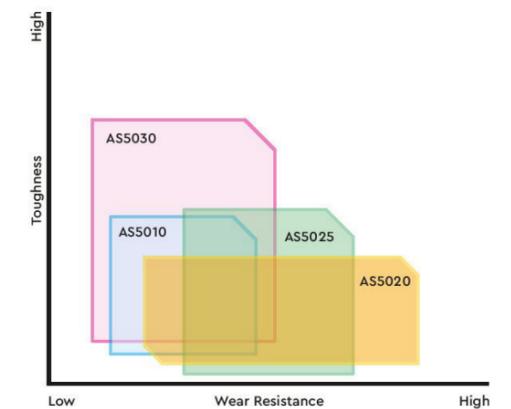
Turning Grades	P Steel					M Stainless Steel					K Cast Iron					N Non-Ferrous			S Superalloys				H Hardened Steel				
	P01	P10	P20	P30	P40	P50	M01	M10	M20	M30	M40	K01	K10	K20	K30	K40	N01	N10	N20	S01	S10	S20	S30	H01	H10	H20	H30
CVD	AS1005	1005										1005															
	AS1010	1010										1010															
	AS5015		5015				5015					5015															
	AS510											510															
	AS515											515															
	AS520											520															
PVD	AS5010	5010					5010												5010								
	AS5020	5020					5020												5020								
	AS5025						5025												5025				5025				
	AS5030						5030												5030				5030				
Uncoated	A01																A01										

Grade Map



CVD

Grade Map



PVD

Turning Insert

Geometry

	PR	A Strong Roughing Geometry, Paired With AS1010 Grade Material, Is Well-suited For Heavy Roughing To Roughing Applications, Providing Excellent Edge Strength For Demanding Machining Tasks. A Chip Breaking Geometry, Combined With AS1005 Grade Material, Is Ideally Suited For Heavy Roughing To Roughing Applications, Particularly In Scenarios Where Effective Chip Breaking Is Necessary To Enhance Machining Efficiency And Tool Longevity.
	PQ	A Medium To Sharp Cutting Geometry Featuring A Small Chip Breaker Bump Is Well-matched For Semi Roughing To Semi-finishing Applications, Ensuring Optimal Performance Across A Range Of Machining Tasks With Improved Chip Control And Surface Finish Quality.
	NF	A Medium To Finish Cutting Geometry Featuring Sharp Edges Is Highly Effective For Semi Finishing To Finishing Applications, Ensuring Excellent Chip Evacuation And Superior Surface Quality.
	MT	Versatile Chip-Breaker For CVD-Coated Grades Like AS1005. Ensures Excellent Chip Control, Low Cutting Forces, And Stable Performance In Steel, Cast Iron, And Sg Iron. Ideal For Semi-Finishing To Roughing Under Continuous Or Mildly Interrupted Cuts.
	MF	A Medium To Finish Cutting Geometry Featuring Sharp Edges Is Well Suited For Semi Finish To Finish Applications, Providing Good Edge Strength For Interrupted Cuts And Ensuring Optimal Machining Performance Across A Variety Of Workpieces.
	MF1	A Tough Cutting Geometry Designed For Semi Finish To Finish Applications Excels In Boring Operations, Offering Improved Chip Flow Due To Its Large Rake Angle. This Feature Enhances Machining Efficiency And Tool Longevity, Particularly In Challenging Machining Scenarios.
	MR1	A Roughing To Semi Roughing Geometry, Designed For General Machining Applications, Offers Versatility Across Various Workpieces And Materials, Ensuring Consistent Performance And Reliability In Diverse Machining Scenarios.
	MR2	A Roughing Geometry Featuring Strong Edge Strength And Sharpness, Tailored For Roughing To Semi Roughing Applications, Including Machining In Sticky Materials.
	MR3	A Heavy Roughing To Roughing Geometry, Featuring An Extra-tough Edge, Is Engineered To Excel In Both Interrupted And Continuous Cuts, Making It Ideal For Machining Exotic Materials And Super Alloys With Precision And Durability.
	HQ	High-precision Finishing Geometry With A Sharp Cutting Edge And Optimized Rake Angle. Designed For Low Cutting Forces And Superior Chip Evacuation, It Delivers Exceptional Surface Finish, Especially In Steel And Stainless Steel. Ideal For Light Cutting Applications Where High Surface Integrity, Tight Tolerances, And Tool Stability Are Critical.
	FG	Finishing Geometry For Cermet Inserts, Designed For Stable Chip Control And Reliable Edge Strength. Ideal For General Turning And Finishing In Steel. Ensures Consistent Surface Quality With Reduced Built-up Edge Formation, Contributing To Excellent Dimensional Accuracy And Extended Tool Life In Continuous Cutting Conditions.

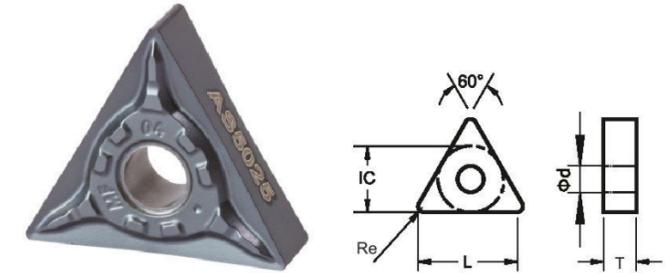
Turning Insert

Geometry

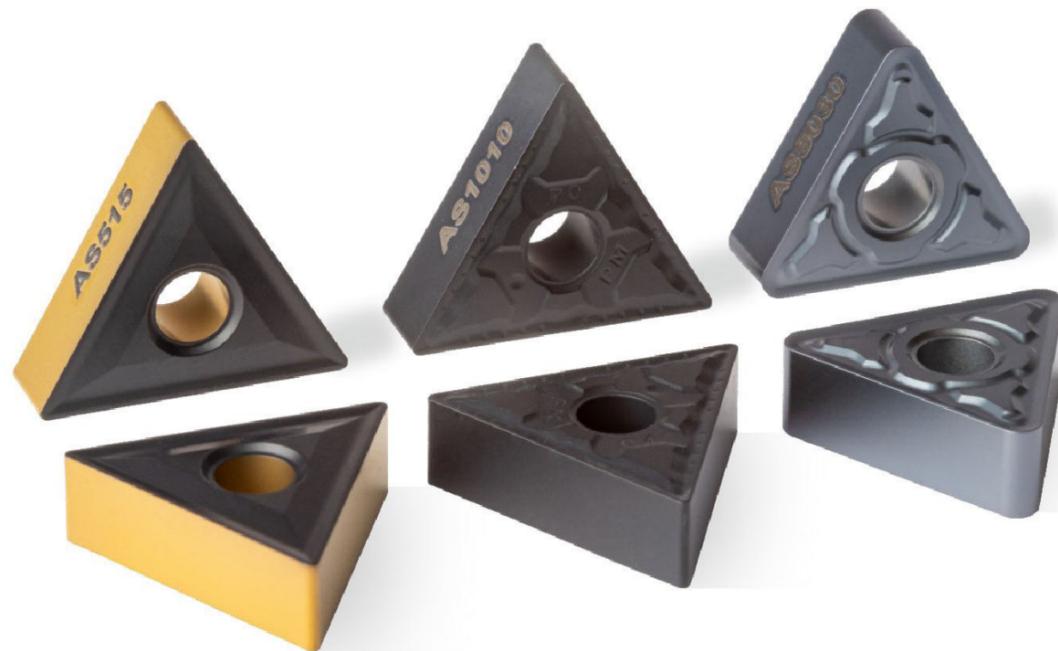
	UK	A Roughing To Semi Roughing Geometry, Equipped With An Extra Tough Edge, Is Well Suited For Handling Both Interrupted And Continuous Cuts, Making It An Excellent Choice For Machining Applications Involving Cast Iron (CI) And Spheroidal Graphite Iron (SGI) Materials.
	DM	Medium To Roughing Geometry For PVD-Coated Grades. Optimized For Stainless Steel, Super Alloys, And Steel. Combines Strong, Sharp Edges With Excellent Chip Control And Thermal Resistance For Reliable Performance In Tough Conditions.
	PM	A Medium Roughing To Semi Finish Geometry, Incorporating A Wide Land, Is Optimally Suited For Semi Roughing To Finishing Applications, Providing Versatility And Stability Throughout The Machining Process.
	DR	A Heavy Roughing To Roughing Geometry, Engineered With A Robust Edge, Is Specifically Designed To Tackle With Stand Heavy Depth Of Cut (DOC) Operations, Ensuring Superior Performance And Longevity In Demanding Machining Environments.
	SR	A Heavy Roughing To Roughing Geometry, Boasting A Robust Edge, Is Adept At Handling Interrupted And Plain Cuts, Particularly In Heavy Depth Of Cut (DOC) Operations.
	VF	A Semi Finish Geometry, Suitable For General Applications Across A Wide Range Of Materials, Ensures Versatility And Consistent Performance In Diverse Machining Tasks, Enhancing Efficiency And Quality Across Various Workpieces.
	FF	A Semi Finish To Finish Geometry, Characterized By Sharp Edges, Is Versatile And Well Suited For A Wide Range Of General Machining Applications.
	SF	A Polished Geometry, Featuring Sharp Edges, Offers Excellent Surface Finish And Exceptional Performance In High Speed Machining Across Various Types Of Non-ferrous Materials, Guaranteeing Superior Results And Efficiency.
	AF	A Semi Finish To Finish Geometry, Boasting An Ultra-sharp Edge And Effective Chip Control, Is Specifically Optimized For Machining Non-ferrous Materials, Ensuring Precise Results And Enhanced Productivity Throughout The Machining Process.
	M	The Optimal Roughing To Semi Roughing Geometry, Equipped With A Sturdy Edge, Is Well Suited For Grooving And Parting Operations Across All Types Of Materials, Ensuring Efficient Machining And High-quality Results In Various Applications.
	T	Precision Geometry For Finishing To Semi-finishing. Features A Sharp Edge For Low Cutting Forces, Ideal For Grooving And Parting In Low To Medium Hardness Materials Also Used In Groove-Turning Also. Delivers Excellent Surface Finish, Accuracy, And Chip Evacuation.
	UD	A Universal Tough Geometry With Excellent Edge Strength, Specifically Designed For Drilling Applications, Is Highly Versatile And Suitable For All Types Of Drilling Operations. This Specialized Design Ensures Consistent Performance And Reliability Across Various Drilling Tasks.

Turning

ISO | TNMG



Insert	L	IC	T	d	Re
TNMG16	16	9.525	4.76	3.81	0.2/0.4/0.8/1.2



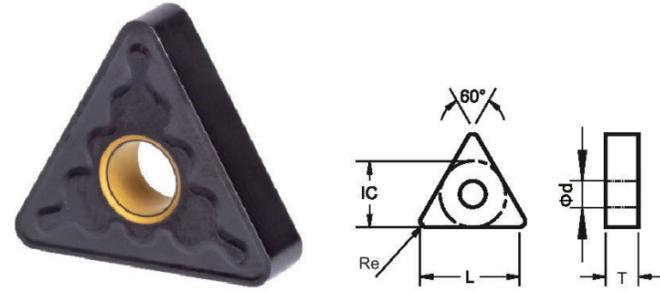
Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed (fz/rev)
TNMG160402	PQ	AS1005	●		○				180 - 350	0.1 - 0.4	0.04 - 0.10
TNMG160404	PQ	AS1005	●		○				180 - 350	0.3 - 1.0	0.05 - 0.25
TNMG160408	PQ	AS1005	●		○				180 - 350	0.4 - 2.0	0.05 - 0.35
TNMG160412	PQ	AS1005	●		○				180 - 350	0.8 - 2.5	0.08 - 0.45
TNMG160404	PR	AS1005	●		○				180 - 350	0.3 - 1.0	0.05 - 0.25
TNMG160408	PR	AS1005	●		○				180 - 350	0.6 - 2.0	0.05 - 0.35
TNMG160412	PR	AS1005	●		○				180 - 350	0.8 - 3.0	0.08 - 0.45
TNMG160408	PR	AS1010	●		○				160 - 320	0.6 - 2.0	0.05 - 0.35
TNMG160412	PR	AS1010	●		○				160 - 320	1.0 - 3.5	0.08 - 0.45
TNMG160408	MSR	AS5015	●	○	○				70 - 300	0.6 - 1.5	0.05 - 0.30
TNMG160404	MF1	AS5020	○	●			○		70 - 180	0.2 - 0.8	0.05 - 0.25
TNMG160408	MF1	AS5020	○	●			○		70 - 180	0.4 - 1.5	0.05 - 0.35
TNMG160412	MR2	AS5020	○	●			○		70 - 180	0.8 - 2.5	0.08 - 0.40
TNMG160404	MF	AS5025		●			●	○	70 - 160	0.2 - 0.8	0.04 - 0.25
TNMG160408	MR3	AS5025		●			●	○	70 - 160	0.4 - 1.5	0.05 - 0.30
TNMG160412	MR3	AS5025		●			●	○	70 - 160	0.6 - 2.5	0.08 - 0.35
TNMG160408	MR3	AS5030		●			●	○	70 - 160	0.4 - 2.0	0.05 - 0.30
TNMG160412	MR3	AS5030		●			●	○	70 - 160	0.6 - 3.5	0.08 - 0.35
TNMG160404	UK	AS515			●				150 - 380	0.3 - 0.8	0.07 - 0.25
TNMG160408	UK	AS515			●				150 - 380	0.6 - 2.0	0.07 - 0.35
TNMG160412	UK	AS515			●				150 - 380	0.8 - 3.0	0.08 - 0.40

Case Study

Factors	Case - 1	Case - 2
Model	TNMG160408-PR-AS1005	TNMG160412-MR3-AS5025
Material	M.S.(52100)	S.S.316 (CF8M)
Component Name	Bearing	TP Body
Operation	Rough OD & Face	Rough OD & Face
Vc	320	100
RPM	2200 Lims	500 Lims
Feed(mm/tooth)	0.25 - 0.35	0.25
Ap	0.5 - 1	1 mm (4 Pass)
Component Size	Dia 140/Od L 17mm/Face L15mm	Dia 105 / L 150mm
Tool Life Av.(Per Corner)	184 Pieces	5 Pieces
Tool Life(Contact Time)	55.2 Min	50 Min

Turning

ISO | TNMG

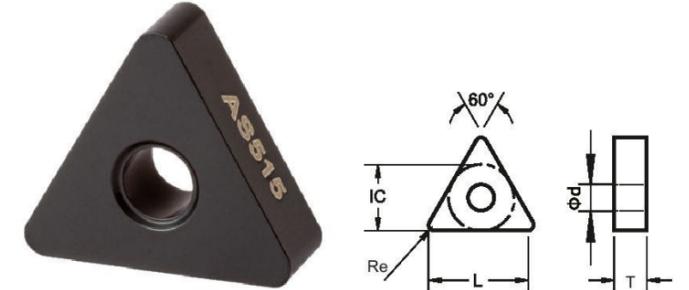


Insert	L	IC	T	d	Re
TNMG22	22	9.525	4.76	3.81	0.8/1.2/1.6

Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
TNMG220408	PR	AS1010	●		○				160 - 320	0.8 - 2.5	0.05 - 0.35
TNMG220412	PR	AS1010	●		○				160 - 320	1.0 - 5.0	0.06 - 0.45
TNMG220416	PR	AS1010	●		○				160 - 320	1.5 - 7.0	0.10 - 0.50

Turning

ISO | TNMA



Insert	L	IC	T	d	Re
TNMA160404	16	9.525	4.76	3.81	0.4
TNMA160408	16	9.525	4.76	3.81	0.8
TNMA160412	16	9.525	4.76	3.81	1.2

Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
TNMA160408	-	AS510			●				150 - 380	0.6 - 2.5	0.07 - 0.30
TNMA160412	-	AS510			●				150 - 380	0.8 - 3.5	0.07 - 0.30
TNMA160404	-	AS515			●				150 - 380	0.3 - 1.0	0.08 - 0.25
TNMA160408		AS515			●				150 - 380	0.6 - 2.5	0.08 - 0.35
TNMA160412	-	AS515			●				150 - 380	0.8 - 3.5	0.08 - 0.40
TNMA160408		AS520			●				150 - 380	0.6 - 2.5	0.10 - 0.45
TNMA160412	-	AS520			●				150 - 380	0.8 - 3.5	0.10 - 0.45

Case Study

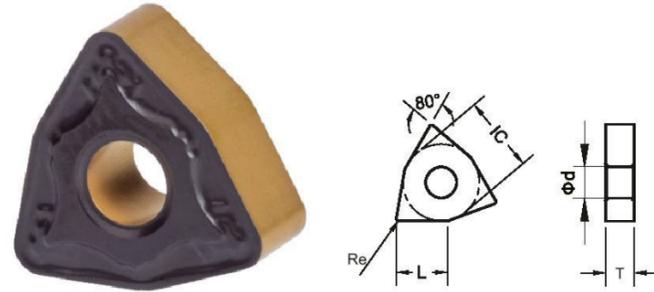
Factors	Case -1	Case -2
Model	TNMG220416-PR-AS1010	TNMG220412-PR-AS1010
Material	En19	50CrMo4
Component Name	Hollow Pipe	Drive Shaft
Operation	Rough OD & Face	Rough OD
Vc	300	250
RPM	500 Lims	662
Feed(mm/tooth)	0.25	0.23
Ap	6.0 (4 Pass)	4.0 (4 Pass)
Component Size	Dia 300/Od L 980mm	Dia 140 / L 750mm
Tool Life Av.(Per Corner)	5 Pieces	7 Pieces
Tool Life(Contact Time)	2 hour 2 Min	2 hour 48 Min

Case Study

Factors	Case -1	Case -2
Model	TNMA160412-AS515	TNMA160408-AS515
Material	S.G.Iron	S.G.Iron
Component Name	Liner	Cam Shaft
Operation	Rough OD	Finish OD
Vc	329	218
RPM	1309 Fix	2800 Lims
Feed(mm/Revolution)	0.22	0.15
Ap	0.8	0.75
Component Size	Dia 80 / L 190mm	Dia 24.8 / L 80mm
Tool Life Av.(Per Corner)	52 Pieces	150 Pieces
Tool Life(Contact Time)	36 Min	38 Min

Turning

ISO WNMG



Insert	L	IC	T	d	Re
WNMG06	6	9.525	4.76	3.81	0.8/1.2

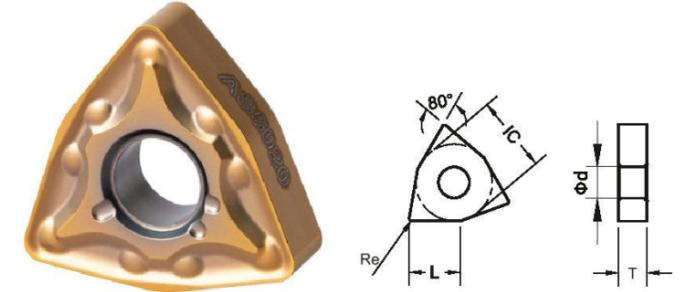
Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
WNMG060404	MT	AS1005	●		○				180 - 350	0.3 - 1.0	0.05 - 0.20
WNMG060408	MT	AS1005	●		○				180 - 350	0.8 - 2.5	0.08 - 0.35
WNMG060412	MT	AS1005	●		○				180 - 350	0.8 - 3.5	0.10 - 0.45
WNMG060404	PM	AS1005	●		○				180 - 350	0.4 - 1.0	0.05 - 0.25
WNMG060408	PM	AS1005	●		○				180 - 350	0.8 - 1.5	0.08 - 0.30
WNMG060412	PM	AS1005	●		○				180 - 350	0.8 - 3.0	0.10 - 0.35
WNMG060404	MF	AS5020	○	●			○		70 - 180	0.4 - 1.0	0.05 - 0.25
WNMG060408	MF	AS5020	○	●			○		70 - 180	0.8 - 1.5	0.08 - 0.30
WNMG060412	MR2	AS5020	○	●			○		70 - 180	0.8 - 2.5	0.10 - 0.35

Case Study

Factors	Case-1	Case-2
Model	WNMG060408-PM-AS1005	WNMG060404-MF-AS5020
Material	En31	S.S.316
Component Name	M.S. Tube (Pre-Machined)	ELBOW
Operation	Rough OD & Face	Finish ID
Vc	153	120
RPM	2000	1200 Lims.
Feed(mm/Revolution)	0.1	0.12
DOC	0.5 (2 pass)	0.6 (1 Pass)
Component Size	OD 24.5, /L 30 mm	OD 35 / L 25 mm
Tool Life Av.(Per Corner)	520 Pieces	140 Pieces
Tool Life(Contact Time)	2 hour 36 min	58 min

Turning

ISO WNMG
WNMA



Insert	L	IC	T	d	Re
WNMG08	8	12.7	4.76	5.16	0.8/1.2
WNMA08	8	12.7	4.76	5.16	0.8/1.2

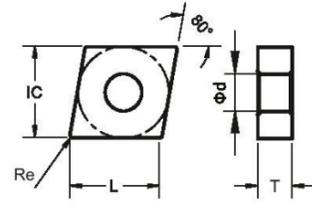
Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
WNMG080404	PR	AS1005	●		○				180 - 350	0.4 - 1.0	0.05 - 0.25
WNMG080408	PR	AS1005	●		○				180 - 350	0.6 - 2.5	0.08 - 0.35
WNMG080412	PR	AS1005	●		○				180 - 350	1.0 - 4.0	0.10 - 0.45
WNMG080408	PR	AS1010	●		○				160 - 320	1.0 - 2.5	0.08 - 0.35
WNMG080412	PR	AS1010	●		○				160 - 320	1.0 - 5.0	0.10 - 0.45
WNMG080404	UK	AS1010	●		○				160 - 320	0.4 - 1.5	0.05 - 0.20
WNMG080408	UK	AS1010	●		○				160 - 320	0.6 - 2.0	0.06 - 0.30
WNMG080408	MF1	AS5020	○	●			○		70 - 180	0.8 - 2.5	0.08 - 0.25
WNMG080412	MR1	AS5020	○	●			○		70 - 180	0.5 - 4.0	0.10 - 0.35
WNMG080412	MR3	AS5030		●			●	○	70 - 160	0.8 - 4.0	0.10 - 0.35
WNMA080408	-	AS510			●				150 - 380	0.8 - 2.5	0.07 - 0.30
WNMA080412	-	AS510			●				150 - 380	0.8 - 5.0	0.08 - 0.40
WNMA080408	-	AS515			●				150 - 380	0.8 - 2.5	0.08 - 0.30
WNMA080412	-	AS515			●				150 - 380	0.8 - 5.0	0.10 - 0.45

Case Study

Factors	Case-1	Case-2
Model	WNMG080412-PR-AS1010	WNMG080412-MR1-AS5020
Material	EN19	S.S.316L
Component Name	Spin Wheel	Turbo Charger
Operation	Rough OD & Face	Rough Face Type OD
Vc	160	80
RPM	950	800 Lims.
Feed(mm/Revolution)	0.25 - 0.35	0.23
DOC	0.5 - 1.5 (15 pass)	1.25 mm (12 Pass)
Component Size	OD 184.5, 37/L 70.45 mm	OD 84 / L 7 mm
Tool Life Av.(Per Corner)	20 Pieces	8 Pieces
Tool Life(Contact Time)	1 hour 21 min	26 Min

Turning

ISO CNMG



Insert	L	IC	T	d	Re
CNMG12	12	12.7	4.76	5.16	0.4/0.8/1.2

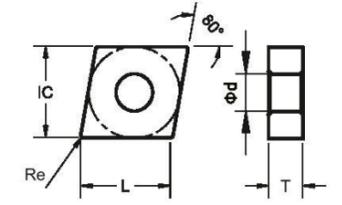
Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
CNMG120408	MT	AS1005	●		○				180 - 350	0.8 - 2.5	0.06 - 0.25
CNMG120412	MT	AS1005	●		○				180 - 350	1.0 - 3.5	0.08 - 0.35
CNMG120404	UK	AS1010	●		○				160 - 320	0.6 - 1.5	0.04 - 0.20
CNMG120408	UK	AS1010	●		○				160 - 320	0.8 - 2.5	0.06 - 0.30
CNMG120408	DR	AS1010	●		○				160 - 320	1.0 - 3.5	0.08 - 0.40
CNMG120412	DR	AS1010	●		○				160 - 320	1.0 - 4.5	0.10 - 0.40
CNMG120408	PR	AS1010	●		○				160 - 320	1.0 - 3.5	0.08 - 0.35
CNMG120412	PR	AS1010	●		○				160 - 320	1.0 - 4.5	0.10 - 0.40
CNMG120404	MF1	AS5020	○	●			○		70 - 180	0.5 - 1.5	0.05 - 0.25
CNMG120408	MF1	AS5020	○	●			○		70 - 180	0.8 - 2.5	0.08 - 0.35
CNMG120412	MF1	AS5020	○	●			○		70 - 180	0.8 - 3.5	0.08 - 0.35
CNMG120412	MR3	AS5020	○	●			○		70 - 180	1.0 - 3.5	0.10 - 0.35
CNMG120408	MR3	AS5025		●			●	○	70 - 160	0.8 - 3.5	0.08 - 0.35
CNMG120408	UK	AS515			●				160 - 350	0.8 - 2.5	0.08 - 0.30
CNMG120412	UK	AS515			●				160 - 350	1.0 - 4.0	0.10 - 0.45

Case Study

Factors	Case - 1	Case - 2
Model	CNMG120408-MR3-AS5025	CNMG120412-DR-AS1010
Material	S.S.304	S.G.Iron
Component Name	Elbow	Knucle
Operation	Rough Face	Rough Boring
Vc	120	130
RPM	1200 Lims	600 Lims
Feed(mm/Revolution)	0.25	0.18
Ap	3 mm	4 mm
Component Size	Dia 77 / L 15mm	Dia 82 / L 76 mm
Tool Life Av.(Per Corner)	58 Pieces	60 Pieces
Tool Life(Contact Time)	46 Min	42 Min

Turning

ISO CNMG
CNMA



Insert	L	IC	T	d	Re
CNMG19	19	19.05	6.35	7.94	0.8/1.2/1.6
CNMA12	12	12.7	4.76	5.16	0.8/1.2

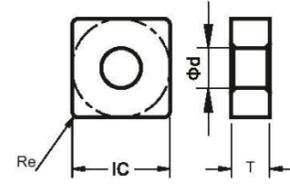
Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
CNMG190608	PM	AS1010	●		○				160 - 320	1.5 - 6.0	0.10 - 0.40
CNMG190612	DR	AS1010	●		○				160 - 320	2.0 - 8.0	0.10 - 0.45
CNMG190616	DR	AS1010	●		○				160 - 320	2.0 - 10	0.10 - 0.50
CNMG190608	DM	AS5020	○	●			○		90 - 180	1.0 - 4.0	0.10 - 0.40
CNMG190612	DM	AS5020	○	●			○		90 - 180	1.5 - 6.0	0.12 - 0.55
CNMG190616	DM	AS5020	○	●			○		90 - 180	2.0 - 8.0	0.15 - 0.60
CNMA120408	-	AS510							150 - 380	0.8 - 2.5	0.07 - 0.30
CNMA120412	-	AS510							150 - 380	0.8 - 5.0	0.10 - 0.35
CNMA120408	-	AS515							150 - 380	0.8 - 2.5	0.08 - 0.30
CNMA120412	-	AS515							150 - 380	0.8 - 5.0	0.10 - 0.40

Case Study

Factors	Case - 1	Case - 2
Model	CNMG120408-MR3-AS5025	CNMG120412-DR-AS1010
Material	S.S.304	S.G.Iron
Component Name	Elbow	Knucle
Operation	Rough Face	Rough Boring
Vc	120	130
RPM	1200 Lims	600 Lims
Feed(mm/Revolution)	0.25	0.18
Ap	3 mm	4 mm
Component Size	Dia 77 / L 15mm	Dia 82 / L 76 mm
Tool Life Av.(Per Corner)	58 Pieces	60 Pieces
Tool Life(Contact Time)	46 Min	42 Min

Turning

ISO | SNMG
SNMA



Insert	IC	T	d	Re
SNMG12	12.7	4.76	5.16	0.8/1.2
SNMG19	19.05	6.35	7.93	1.2/1.6
SNMA12	12.7	4.76	5.16	0.8/1.2

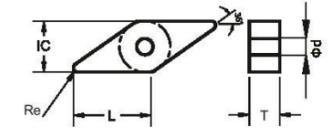
Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
SNMG120408	SR	AS1010	●		○				160 - 320	1.0 - 3.5	0.08 - 0.35
SNMG120412	SR	AS1010	●		○				160 - 320	1.0 - 5.0	0.10 - 0.45
SNMG120408	MSF	AS5020	○	●			○		90 - 180	0.8 - 3.5	0.8 - 0.35
SNMG120412	MR1	AS5020	○	●			○		90 - 180	1.0 - 5.0	0.10 - 0.45
SNMG190612	MR	AS5020	○	●			○		90 - 180	1.5 - 5.0	0.10 - 0.45
SNMG190616	MR	AS5020	○	●			○		90 - 180	2.0 - 8.0	0.12 - 0.45
SNMA120408	-	AS515			●				150 - 380	1.0 - 4.0	0.10 - 0.40
SNMA120412	-	AS515			●				150 - 380	1.0 - 6.0	0.10 - 0.45

Case Study

Factors	Case - 1	Case - 2
Model	SNMG120408-SR-AS1010	SNMA120412-AS515
Material	C45	S.G.Iron
Component Name	Shaft Pin	Liner
Operation	Rough OD	Rough ID
Vc	250	220
RPM	2000 Lims	438
Feed(mm/Revolution)	0.25	0.18
Ap	1.5 mm (2 Pass)	2 mm
Component Size	Dia 45 / L 180 mm	Dia 160 / L 80 mm
Tool Life Av.(Per Corner)	97 Pieces	27 Pieces
Tool Life(Contact Time)	1 Hr. 37 Min	1 Hr. 7 Min

Turning

ISO | VNMG



Insert	L	IC	T	d	Re
VNMG12	12.4	7.15	3.97	3.40	0.4/0.8
VNMG16	16.6	9.525	4.76	3.81	0.4/0.8

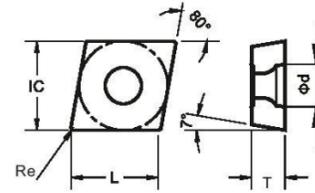
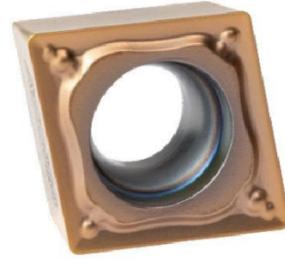
Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
VNMG12T302	NF	AS1010	●		○				180 - 350	0.1 - 0.4	0.04 - 0.15
VNMG12T304	PM	AS1010	●		○				180 - 350	0.3 - 1.0	0.06 - 0.20
VNMG12T308	PM	AS1010	●		○				160 - 320	0.4 - 1.5	0.08 - 0.25
VNMG160404	VF	AS1005	●		○				180 - 350	0.3 - 1.5	0.06 - 0.20
VNMG160408	VF	AS1005	●		○				180 - 350	0.4 - 2.0	0.08 - 0.20
VNMG160404	PM	AS1005(P15)	●		○				180 - 350	0.3 - 1.0	0.06 - 0.20
VNMG160408	PM	AS1005(P15)	●		○				160 - 320	0.4 - 1.5	0.08 - 0.25
VNMG160404	PM	AS1005(P25)	●		○				180 - 350	0.3 - 1.0	0.06 - 0.20
VNMG160408	PM	AS1005(P25)	●		○				160 - 320	0.4 - 1.5	0.08 - 0.25
VNMG160404	SF	AS5015	●	○	○				70 - 280	0.3 - 1.5	0.06 - 0.25
VNMG160408	SF	AS5015	●	○	○				70 - 280	0.4 - 2.0	0.08 - 0.25
VNMG160404	MF1	AS5020	○	●			○		70 - 180	0.3 - 1.5	0.06 - 0.20
VNMG160408	MF1	AS5020	○	●			○		70 - 180	0.4 - 1.5	0.08 - 0.25

Case Study

Factors	Case - 1	Case - 2
Model	VNMG12T308-PM-AS1010	VNMG160408-MF1-AS5020
Material	Bearing Steel	Sheetmetal Nsk10
Component Name	Bearing	Cap
Operation	Rough Track	Turning Groove
Vc	350	160
RPM	1600 Lims	2800 Lims
Feed(mm/Revolution)	0.18	0.15
Ap	1 mm	1 mm
Component Size	Dia 110 / L 20 mm	Dia 47 / L 8 mm
Tool Life Av.(Per Corner)	247 Pieces	1500 Pieces
Tool Life(Contact Time)	28 Min	1 Hr. 15 Min

Turning

ISO CCMT



Insert	L	IC	T	d	Re
CCMT06	6.4	6.35	2.38	2.8	0.4/0.8
CCMT09	9.7	9.525	3.97	4.4	0.4/0.8

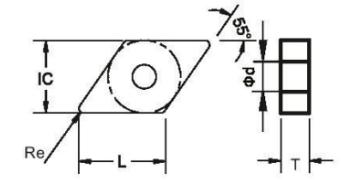
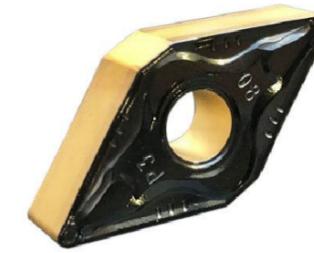
Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
CCMT060204	PF	AS1010	●		○				160 - 320	0.2 - 1.0	0.04 - 0.20
CCMT060208	PF	AS1010	●		○				160 - 320	0.3 - 1.5	0.06 - 0.25
CCMT060204	MF1	AS5010	●	●	○				70 - 180	0.2 - 1.0	0.04 - 0.20
CCMT060208	MF1	AS5010	●	●	○				70 - 180	0.3 - 1.0	0.06 - 0.25
CCMT060204	FF	AS5020	○	●			○		70 - 180	0.2 - 1.0	0.04 - 0.20
CCMT060208	SR	AS5020	○	●			○		70 - 180	0.4 - 1.5	0.06 - 0.25
CCMT09T304	PF	AS1010	●		○				160 - 320	0.3 - 1.5	0.06 - 0.20
CCMT09T308	PF	AS1010	●		○				160 - 320	0.4 - 2.0	0.08 - 0.25
CCMT09T304	MF1	AS5010	●	●	○				70 - 180	0.3 - 1.5	0.04 - 0.20
CCMT09T308	MF1	AS5010	●	●	○				70 - 180	0.4 - 1.5	0.06 - 0.25
CCMT09T304	MF	AS5020	○	●			○		70 - 180	0.4 - 1.5	0.06 - 0.20
CCMT09T308	SR	AS5020	○	●			○		70 - 180	0.4 - 2.0	0.08 - 0.25

Case Study

Factors	Case - 1	Case - 2
Model	CCMT060208-MF-AS5010	CCMT09T308-SR-AS5020
Material	EN8D	S.S.304
Component Name	Hub	Valve Body
Operation	Finish Bore	Rough ID
Vc	125	140
RPM	2000 Lims	2500 Lims
Feed(mm/Revolution)	0.15	0.18
Ap	0.5 mm	0.75 (2 Pass)
Component Size	Dia 20 / L 30 mm	Dia 22 / L 35 mm
Tool Life Av.(Per Corner)	190 Pieces	163 Pieces
Tool Life(Contact Time)	22 Min	31 Min

Turning

ISO DNMG



Insert	L	IC	T	d	Re
DNMG15	15.5	12.7	6.35	5.16	0.4/0.8/1.2

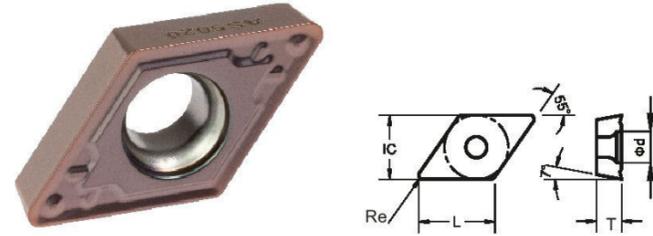
Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
DNMG150608	SR	AS1010	●		○				160 - 320	0.6 - 2.5	0.10 - 0.35
DNMG150612	SR	AS1010	●		○				160 - 320	1.0 - 4.0	0.12 - 0.45
DNMG150604	MT	AS1010	●		○				160 - 320	0.1 - 1.5	0.05 - 0.30
DNMG150608	MT	AS1010	●		○				160 - 320	0.6 - 2.5	0.10 - 0.35
DNMG150612	MT	AS1010	●		○				160 - 320	1.0 - 4.0	0.12 - 0.40
DNMG150608	PMK	AS1010	●		○				160 - 320	0.6 - 2.5	0.10 - 0.35
DNMG150612	PMK	AS1010	●		○				160 - 320	1.0 - 4.0	0.12 - 0.40
DNMG150604	MR1	AS5010	●	●	○				70 - 180	0.3 - 1.5	0.05 - 0.25
DNMG150608	MR1	AS5010	●	●	○				70 - 180	0.5 - 2.5	0.10 - 0.35

Case Study

Factors	Case - 1	Case - 2
Model	DNMG150608-SR-AS1010	DNMG150612-SR-AS1010
Material	M.S. (Forging)	M.S. (C45)
Component Name	Flange	Shaft
Operation	Rough Od & Face	Rough Od & Step
Vc	210	230
RPM	477	800 Lims.
Feed(mm/Revolution)	0.35	0.2
Ap	2 mm / 1 mm	2.5 mm
Component Size	Dia 140 / L 100 mm	Dia 160, 130 / L 1200 mm
Tool Life Av.(Per Corner)	114 Pcs.	8 Pcs.
Tool Life(Contact Time)	1 Hr. 8 Min.	1 Hr. 45 Min.

Turning

ISO | DCMT



Insert	L	IC	T	d	Re
DCMT07	7.8	6.35	2.38	2.8	0.4/0.8
DCMT11	11.6	9.525	3.97	4.4	0.4/0.8

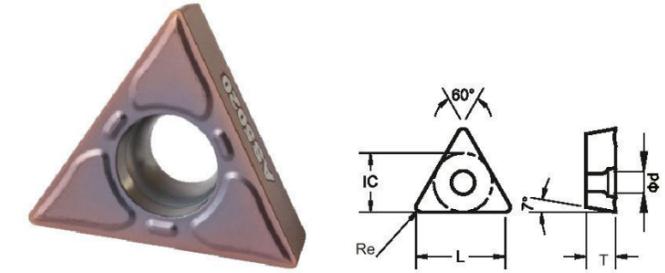
Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
DCMT070204	FF	AS5020	●	●			○		70 - 180	0.2 - 1.0	0.06 - 0.20
DCMT070208	FF	AS5020	●	●			○		70 - 180	0.3 - 1.0	0.08 - 0.25
DCMT11T304	FF	AS5020	●	●			○		70 - 180	0.3 - 1.5	0.06 - 0.20
DCMT11T308	FF	AS5020	●	●			○		70 - 180	0.6 - 2.0	0.08 - 0.25

Case Study

Factors	Case - 1	Case - 2
Model	DCMT070208-FF-AS5020	DCMT11T308-FF-AS5020
Material	En31	En19
Component Name	Control Valve	Flow Control Valve
Operation	Rough Bore	Finish Bore
Vc	160	180
RPM	2800 Lims.	3000 Lims.
Feed(mm/Revolution)	0.16	0.12
Ap	0.75 mm	0.6 mm
Component Size	Dia 22 / L 40 mm	Dia 32 / L 25 mm
Tool Life Av.(Per Corner)	230 Pcs.	507 Pcs.
Tool Life(Contact Time)	25 Min.	25 Min.

Turning

ISO | TCMT



Insert	L	IC	T	d	Re
TCMT11	11	6.35	2.38	2.8	0.4/0.8
TCMT16	16.5	9.525	3.97	4.4	0.4/0.8

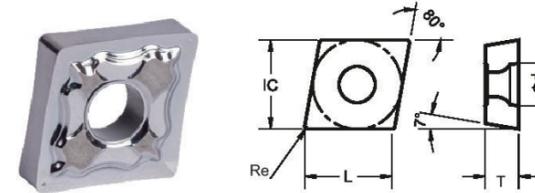
Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
TCMT110204	PF	AS1020	●		○				140 - 280	0.2 - 1.2	0.04 - 0.20
TCMT110208	PF	AS1020	●		○				140 - 280	0.3 - 2.0	0.06 - 0.20
TCMT110204	MF	AS5020	●	●			○		70 - 180	0.2 - 1.0	0.04 - 0.15
TCMT110208	MF	AS5020	●	●			○		70 - 180	0.4 - 1.5	0.06 - 0.15
TCMT16T304	MF	AS1020	●		○				140 - 280	0.3 - 1.5	0.04 - 0.20
TCMT16T308	MF	AS1020	●		○				140 - 280	0.4 - 2.0	0.06 - 0.20
TCMT16T304	MF	AS5020	●	●			○		70 - 180	0.3 - 1.5	0.06 - 0.20
TCMT16T308	MF	AS5020	●	●			○		70 - 180	0.6 - 2.0	0.08 - 0.20

Case Study

Factors	Case - 1	Case - 2
Model	TCMT11T308-MF-AS5020	TCMT16T308-MF-AS5020
Material	S.S.316L	S.S.304
Component Name	Manifold	Housing
Operation	Rough Id	Rough Id
Vc	120	140
RPM	800 Lims	800 Lims
Feed(mm/Revolution)	0.18	0.20
Ap	0.8 mm	1 mm
Component Size	Dia 60 / L 150 mm	Dia 80, 60 / L 30,45 mm
Tool Life Av.(Per Corner)	17 Pieces	24 Pieces
Tool Life(Contact Time)	23 Min	33 Min

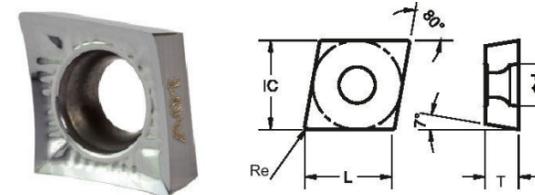
Turning (Non-Ferrous)

ISO | CNMG / CCGT / DCGT



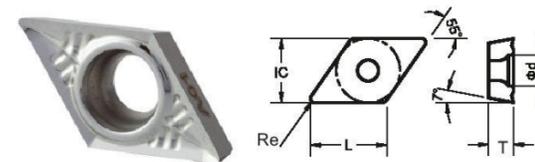
Insert	L	IC	T	d	Re
CNMG12	12	12.7	4.76	5.16	0.4/0.8/1.2

Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
CNMG120404	AF	A01				●			160 - 500	0.3 - 1.2	0.06 - 0.20
CNMG120408	AF	A01				●			160 - 500	0.5 - 2.5	0.06 - 0.30
CNMG120412	AF	A01				●			160 - 500	0.8 - 3.5	0.08 - 0.45



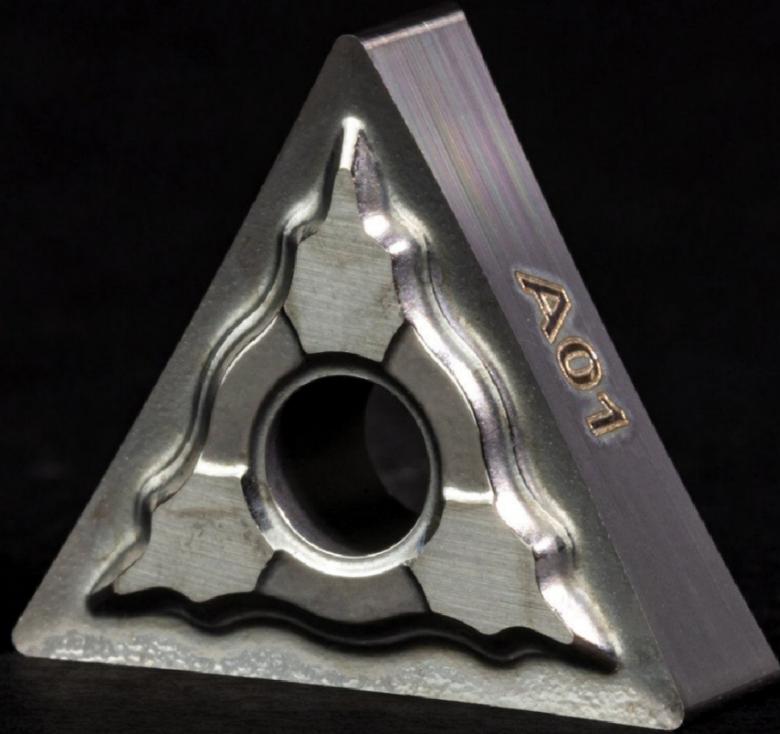
Insert	L	IC	T	d	Re
CCGT06	6.4	6.35	2.38	2.8	0.4/0.8
CCGT09	9.7	9.525	3.97	4.4	0.4/0.8

Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
CCGT060204	SF	A01				●			160 - 500	0.3 - 0.8	0.05 - 0.10
CCGT060208	SF	A01				●			160 - 500	0.3 - 1.0	0.05 - 0.15
CCGT09T304	SF	A01				●			160 - 500	0.3 - 1.0	0.05 - 0.10
CCGT09T308	SF	A01				●			160 - 500	0.6 - 1.5	0.05 - 0.20



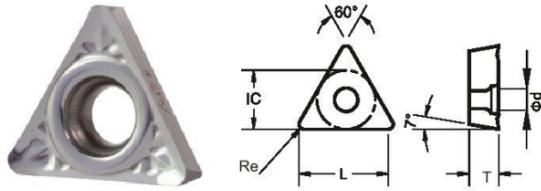
Insert	L	IC	T	d	Re
DCGT07	7.8	6.35	2.38	2.8	0.4/0.8
DCGT11	11.6	9.525	3.97	4.4	0.4/0.8

Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
DCGT070202	SF	A01				●			160 - 500	0.1 - 0.6	0.03 - 0.06
DCGT070204	SF	A01				●			160 - 500	0.3 - 1.0	0.05 - 0.08
DCGT070208	SF	A01				●			160 - 500	0.4 - 1.5	0.05 - 0.12
DCGT11T304	SF	A01				●			160 - 500	0.3 - 1.0	0.05 - 0.15
DCGT11T308	SF	A01				●			160 - 500	0.6 - 1.5	0.05 - 0.20



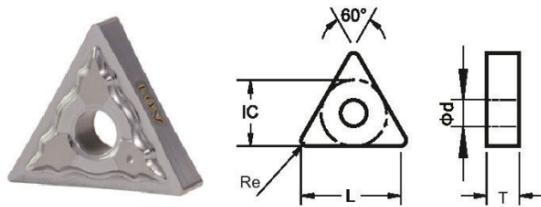
Turning (Non-Ferrous)

ISO TCGT / TNMG / VBGT



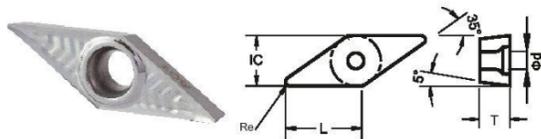
Insert	L	IC	T	d	Re
TCGT11	11	6.35	2.38	2.8	0.4/0.8
TCGT16	16.5	9.525	3.97	4.4	0.4/0.8

Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
TCGT110202	SF	A01				●			160 - 500	0.2 - 0.6	0.03 - 0.08
TCGT110204	SF	A01				●			160 - 500	0.4 - 1.0	0.05 - 0.12
TCGT110208	SF	A01				●			160 - 500	0.6 - 1.5	0.05 - 0.15
TCGT16T304	SF	A01				●			160 - 500	0.6 - 1.2	0.06 - 0.20
TCGT16T308	SF	A01				●			160 - 500	0.6 - 3.0	0.06 - 0.25



Insert	L	IC	T	d	Re
TNMG16	16	9.525	4.76	3.81	0.4/0.8

Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
TNMG160404	AF	A01				●			160 - 500	0.6 - 1.5	0.06 - 0.25
TNMG160408	AF	A01				●			160 - 500	0.8 - 3.0	0.08 - 0.40

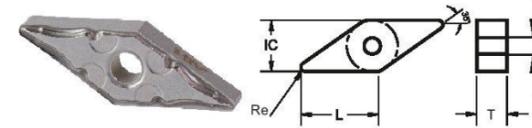


Insert	L	IC	T	d	Re
VBGT16	16	9.525	4.76	4.4	0.4/0.8

Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
VBGT160404	SF	A01				●			160 - 500	0.3 - 1.0	0.02 - 0.12
VBGT160408	SF	A01				●			160 - 500	0.5 - 1.5	0.04 - 0.15

Turning (Non-Ferrous)

ISO VNMG

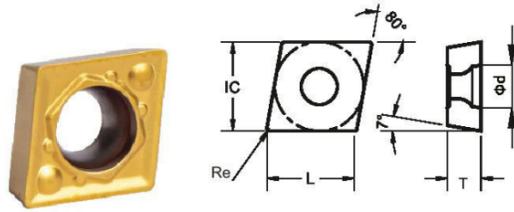


Insert	L	IC	T	d	Re
VNMG16	16.6	9.525	4.76	3.81	0.4/0.8

Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
VNMG160404	SF	A01				●			160 - 500	0.3 - 1.0	0.04 - 0.20
VNMG160408	SF	A01				●			160 - 500	0.6 - 2.0	0.06 - 0.25

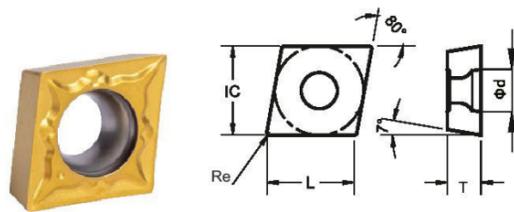
Turning (Cermet)

ISO CCMT



Insert	L	IC	T	d	Re
CCMT06	6.4	6.35	2.38	2.8	0.4/0.8

Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
CCMT060204	FG	AC45	●		●				120 - 300	0.2 - 1.0	0.03 - 0.20
CCMT060204	FG	AC50	●		●				130 - 320	0.2 - 1.0	0.03 - 0.20
CCMT060204	HQ	AC50	●		●				130 - 320	0.2 - 1.0	0.02 - 0.20
CCMT060208	FG	AC45	●		●				120 - 300	0.3 - 1.5	0.03 - 0.25
CCMT060208	FG	AC50	●		●				130 - 320	0.3 - 1.5	0.03 - 0.25
CCMT060208	HQ	AC50	●		●				130 - 320	0.3 - 1.5	0.03 - 0.25

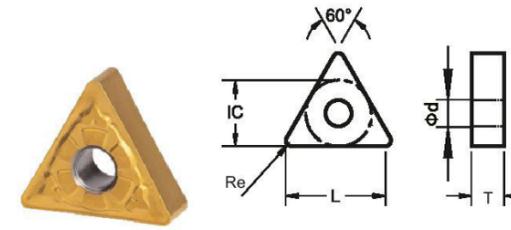


Insert	L	IC	T	d	Re
CCMT09	9.7	9.525	3.97	4.4	0.4/0.8

Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
CCMT09T304	FG	AC45	●		●				120 - 300	0.3 - 1.0	0.04 - 0.25
CCMT09T304	FG	AC50	●		●				130 - 350	0.3 - 1.0	0.04 - 0.25
CCMT09T304	HQ	AC50	●		●				130 - 350	0.3 - 1.0	0.03 - 0.20
CCMT09T308	FG	AC45	●		●				130 - 400	0.3 - 1.5	0.04 - 0.25
CCMT09T308	FG	AC50	●		●				130 - 400	0.3 - 1.5	0.04 - 0.25
CCMT09T308	HQ	AC50	●		●				130 - 400	0.3 - 1.5	0.03 - 0.25

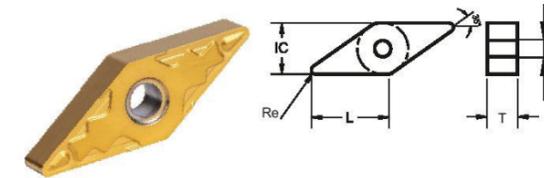
Turning (Cermet)

ISO TNMG / VNMG / VBMT



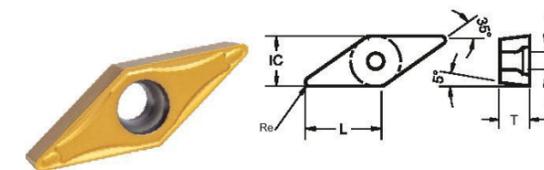
Insert	L	IC	T	d	Re
TNMG16	16	9.525	4.76	3.81	0.2/0.4/0.8/1.2

Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
TNMG160404	FG	AC45	●		●				150 - 350	0.3 - 1.0	0.03 - 0.25
TNMG160404	FG	AC50	●		●				130 - 400	0.3 - 1.0	0.03 - 0.25
TNMG160404	HQ	AC50	●		●				130 - 400	0.3 - 1.0	0.03 - 0.20
TNMG160408	FG	AC45	●		●				150 - 350	0.3 - 2.0	0.04 - 0.30
TNMG160408	FG	AC50	●		●				130 - 400	0.3 - 2.0	0.04 - 0.30
TNMG160408	HQ	AC50	●		●				130 - 400	0.3 - 2.0	0.03 - 0.25



Insert	L	IC	T	d	Re
VNMG12	12.4	7.15	3.97	3.40	0.4/0.8

Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
VNMG160404	HQ	AC45	●		●				130 - 350	0.3 - 1.0	0.02 - 0.15
VNMG160404	FG	AC50	●		●				150 - 400	0.3 - 1.0	0.02 - 0.25
VNMG160408	HQ	AC45	●		●				130 - 350	0.4 - 1.5	0.03 - 0.20
VNMG160408	FG	AC50	●		●				150 - 400	0.4 - 1.5	0.04 - 0.30

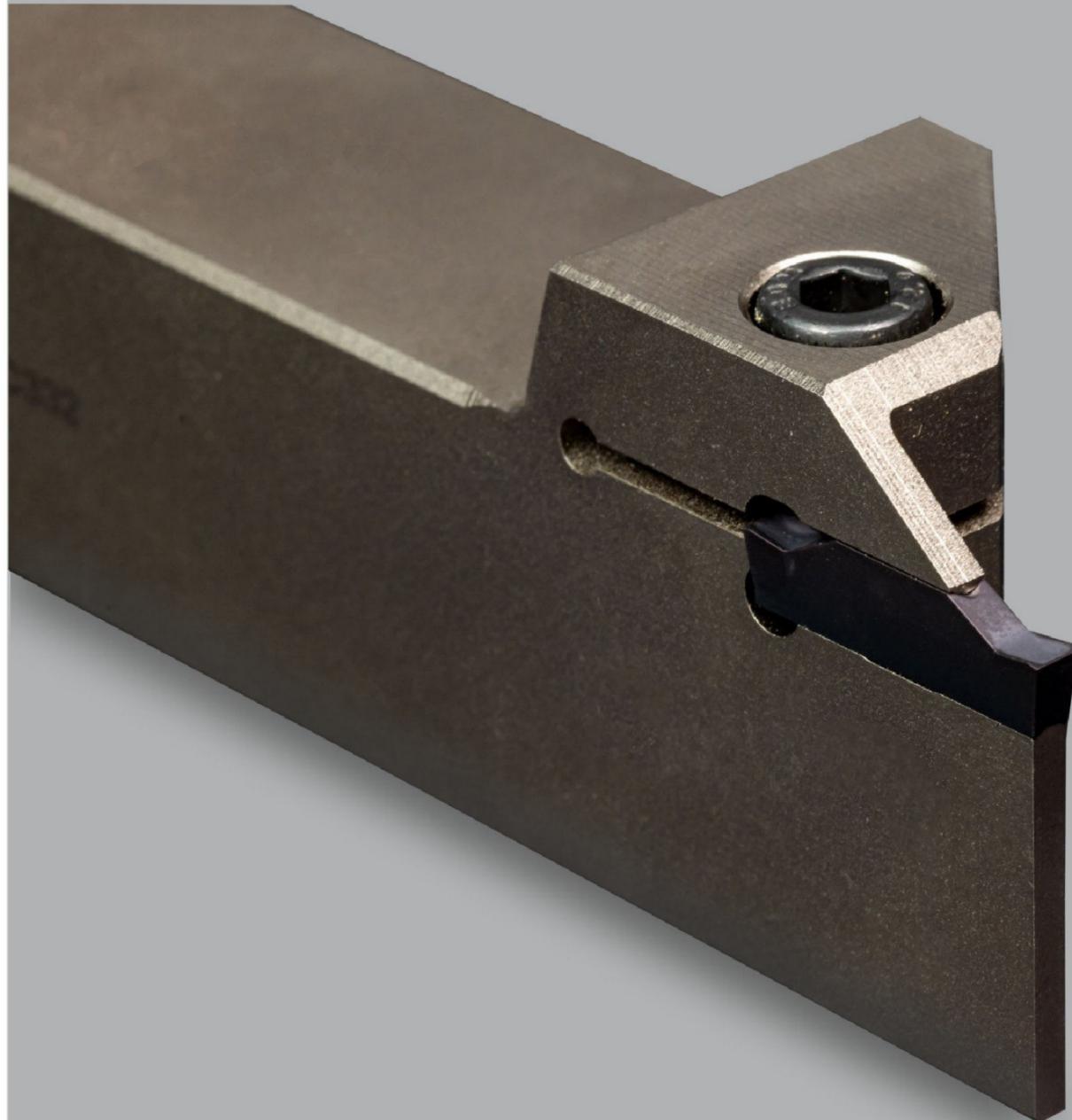
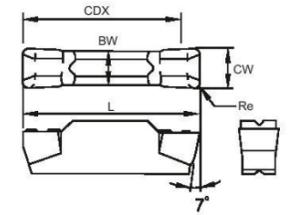


Insert	L	IC	T	d	Re
VBMT16	16.5	9.525	4.76	4.4	0.4/0.8

Insert	Geometry	Grade	P	M	K	N	S	H	Vc	Ap (mm)	Feed(fz/rev)
VBMT160404	HQ	AC45	●		●				130 - 350	0.3 - 1.0	0.02 - 0.15
VBMT160404	FG	AC50	●		●				150 - 400	0.3 - 1.0	0.02 - 0.20
VBMT160408	HQ	AC45	●		●				130 - 350	0.4 - 1.5	0.03 - 0.20
VBMT160408	FG	AC50	●		●				150 - 400	0.4 - 1.5	0.04 - 0.25

Parting & Grooving

ISO | MGMN



Insert	CW	Re	BW	L	CDX
MGMN150	1.50	0.2	1.20	16	15
MGMN200	2.00	0.2	1.60	16	15
MGMN250	2.50	0.2	2.00	18.5	17.5
MGMN300	3.00	0.2	2.35	21	20
MGMN400	4.00	0.3	3.30	21	20
MGMN500	5.00	0.3	4.10	26	25
MGMN600	6.00	0.3	5.00	26	25

Insert	Geometry	Grade	P	M	K	N	S	H	Feed(fz/rev)	Vc
MGMN150	M / T	AS1005	●		○				0.01 - 0.08	50 - 140
MGMN200	M / T	AS1005	●		○				0.02 - 0.10	50 - 140
MGMN250	M / T	AS1005	●		○				0.02 - 0.10	50 - 140
MGMN300	M / T	AS1005	●		○				0.02 - 0.12	50 - 140
MGMN400	M / T	AS1005	●		○				0.02 - 0.12	50 - 140
MGMN500	M / T	AS1005	●		○				0.02 - 0.15	50 - 140
MGMN600	M / T	AS1005	●		○				0.02 - 0.15	50 - 140

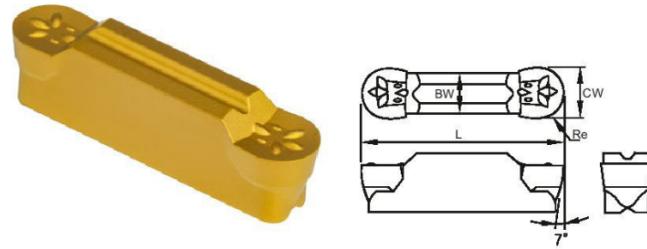
MGMN150	M / T	AS5030		●				●	○	0.01 - 0.08	40 - 120
MGMN200	M / T	AS5030		●				●	○	0.02 - 0.10	40 - 120
MGMN250	M / T	AS5030		●				●	○	0.02 - 0.10	40 - 120
MGMN300	M / T	AS5030		●				●	○	0.02 - 0.12	40 - 120
MGMN400	M / T	AS5030		●				●	○	0.02 - 0.12	40 - 120
MGMN500	M / T	AS5030		●				●	○	0.02 - 0.15	40 - 120
MGMN600	M / T	AS5030		●				●	○	0.02 - 0.15	40 - 120

Case Study

Factors	Case-1	Case-2
Model	MGMN200-M-AS1010	MGMN300-M-AS5010
Material	Forged Steel	S.S.304
Component Name	Ring	Hex Bar
Operation	Grooving	Parting
Vc	80	55
RPM	170	796
Feed(mm/tooth)	0.06	0.02
Depth	9 mm/Side	11 mm/Side
Plunge	3 mm	4 mm
Component Size	OD:150 mm / ID:40 mm	22 mm
Tool Life Av.(Per Corner)	72 Pcs.	60 Pcs.
Tool Life(Contact Time)	1 Hr. 18 Min.	1 Hr. 2 Min.

Parting & Grooving

ISO | MRMN



Insert	CW	Re	BW	L
MRMN200	2.0	1.0	1.50	16
MRMN300	3.0	1.5	2.35	21
MRMN400	4.0	2.0	3.30	21
MRMN500	5.0	2.5	4.10	26
MRMN600	6.0	3.0	5.00	26

Insert	Geometry	Grade	P	M	K	N	S	H	Feed(fz/rev)	Vc
MRMN200	M	AS1010	●	●	○		○		0.01 - 0.06	40 - 120
MRMN300	M	AS1010	●	●	○		○		0.01 - 0.08	40 - 120
MRMN400	M	AS1010	●	●	○		○		0.01 - 0.08	40 - 120
MRMN500	M	AS1010	●	●	○		○		0.02 - 0.10	40 - 120
MRMN600	M	AS1010	●	●	○		○		0.02 - 0.12	40 - 120

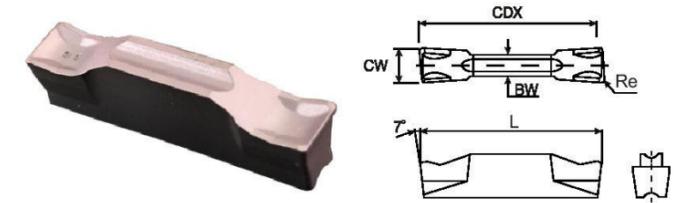
MRMN200	M	AS5010	●	●	○				0.01 - 0.06	50 - 160
MRMN300	M	AS5010	●	●	○				0.01 - 0.08	50 - 160
MRMN400	M	AS5010	●	●	○				0.01 - 0.08	50 - 160
MRMN500	M	AS5010	●	●	○				0.02 - 0.10	50 - 160
MRMN600	M	AS5010	●	●	○				0.02 - 0.12	50 - 160

Case Study

Factors	Case
Model	MRMN500-M-AS5010
Material	EN 19
Component Name	Cam Shaft
Operation	Radius Groove
Vc	90
RPM	716
Feed(mm/tooth)	0.03
Depth	3 mm/Side
Plunge	-
Component Size	40 mm
Tool Life Av.(Per Corner)	367 Pcs.
Tool Life(Contact Time)	1 Hr. 7 Min.

Parting & Grooving

ISO | TDC



Insert	CW	Re	BW	L	CDX
TDC200	2.0	0.2	1.7	20	19
TDC300	3.0	0.2	2.4	20	19
TDC400	4.0	0.3	3.0	20	19
TDC500	5.0	0.3	4.0	25	24
TDC600	6.0	0.3	5.0	25	24

Insert	Geometry	Grade	P	M	K	N	S	H	Feed(fz/rev)	Vc
TDC200	M	AS5015	●	●			○	○	0.02 - 0.08	40 - 160
TDC300	M	AS5015	●	●			○	○	0.02 - 0.10	40 - 160
TDC400	M	AS5015	●	●			○	○	0.02 - 0.12	40 - 160
TDC500	M	AS5015	●	●			○	○	0.04 - 0.15	40 - 160
TDC600	M	AS5015	●	●			○	○	0.04 - 0.15	40 - 160

Case Study

Factors	Case
Model	TDC300-M-AS5015
Material	M.S. (4140)
Component Name	Cam Shaft
Operation	Radius Groove
Vc	90
RPM	716
Feed(mm/tooth)	0.03
Depth	3 mm/Side
Plunge	-
Component Size	40 mm
Tool Life Av.(Per Corner)	367 Pcs.
Tool Life(Contact Time)	1 Hr. 7 Min.

Hole Making Solid Carbide

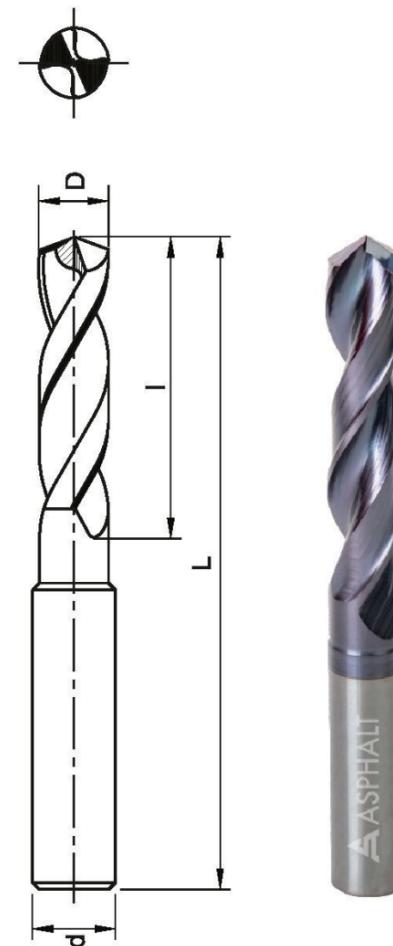
TiCN Coated
 130° Tip Angle
 Non - Through Coolant
 DIN 6535 Form HA



Carbide Drill 55 HRC

Recommended For

Steel 30-55 HRC
 P20
 Hot Die Steel(H13, H11, H21)
 D2
 Aluminium



Dia (D)	Flute Length (l)	Total Length (L)	Shank Dia (d)
0.5 ~ 0.9	5	50	3
1.0 ~ 1.5	8	50	3
1.6 ~ 2.0	11	50	3
2.1 ~ 2.5	13	50	3
2.6 ~ 3.0	16	50	3
3.1 ~ 3.5	18	50	4
3.6 ~ 4.0	20	50	4
4.1 ~ 4.5	20	50	6
4.6 ~ 5.0	24	60	6
5.1 ~ 6.0	26	60	6
6.1 ~ 7.0	28	60	8
7.1 ~ 8.0	30	60	8
8.1 ~ 9.0	34	75	10
9.1 ~ 9.5	38	75	10
9.6 ~ 10.0	40	75	10
10.1 ~ 11.0	42	75	12
11.1 ~ 12.0	45	75	12
12.5	52	100	14
13	52	100	14

3D Drill

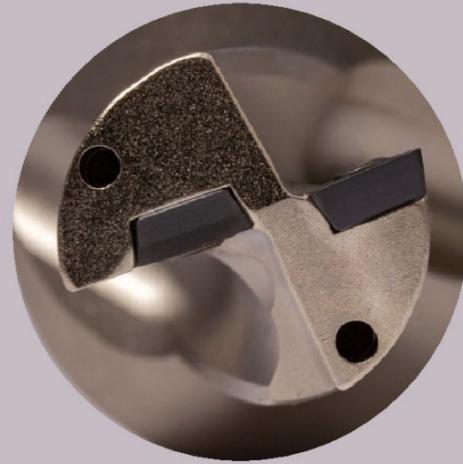
1.5	13	50	3
1.6 ~ 2.0	20	50	3
2.1 ~ 2.5	22	75	3
2.6 ~ 3.0	26	75	3
3.1 ~ 3.5	28	75	4
3.6 ~ 4.0	32	75	4
4.1 ~ 5.0	36	75	6
5.1 ~ 6.0	40	75	6
6.1 ~ 7.0	48	100	8
7.1 ~ 8.0	50	100	8
8.1 ~ 9.0	56	100	10
9.1 ~ 10.0	58	100	10
10.1 ~ 11.0	60	100	12
11.1 ~ 12.0	65	100	12
12.5	70	120	14

5D Drill

*All Size Are Available In O1 Difference

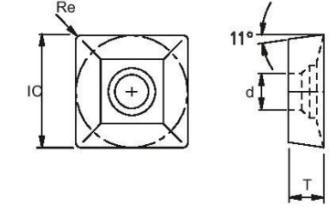
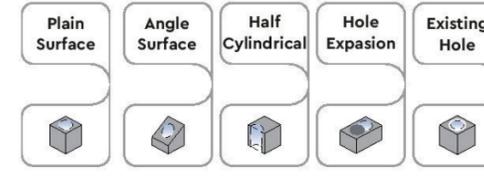
Hole Making Indexable

Through Coolant
Electroplated
6:4 Groove Ratio,
For Better Chip Removal



Hole Making

ISO | SPMG



Insert	IC	T	d	Re
SPMG050204	5	2.38	2.25	0.4
SPMG060204	6	2.38	2.61	0.4
SPMG07T308	7.94	3.97	2.85	0.8
SPMG090408	9.80	4.30	4.05	0.8
SPMG110408	11.50	4.80	4.45	0.8
SPMG140512	14.30	5.20	5.75	1.2

Insert	Geometry	Grade	P	M	K	N	S	H	Vc
SPMG050204	UD	AS5015	●	●	○		●	○	50 - 280
SPMG060204	UD	AS5015	●	●	○		●	○	50 - 280
SPMG07T308	UD	AS5015	●	●	○		●	○	50 - 280
SPMG090408	UD	AS5015	●	●	○		●	○	50 - 280
SPMG110408	UD	AS5015	●	●	○		●	○	50 - 280
SPMG140512	UD	AS5015	●	●	○		●	○	50 - 280



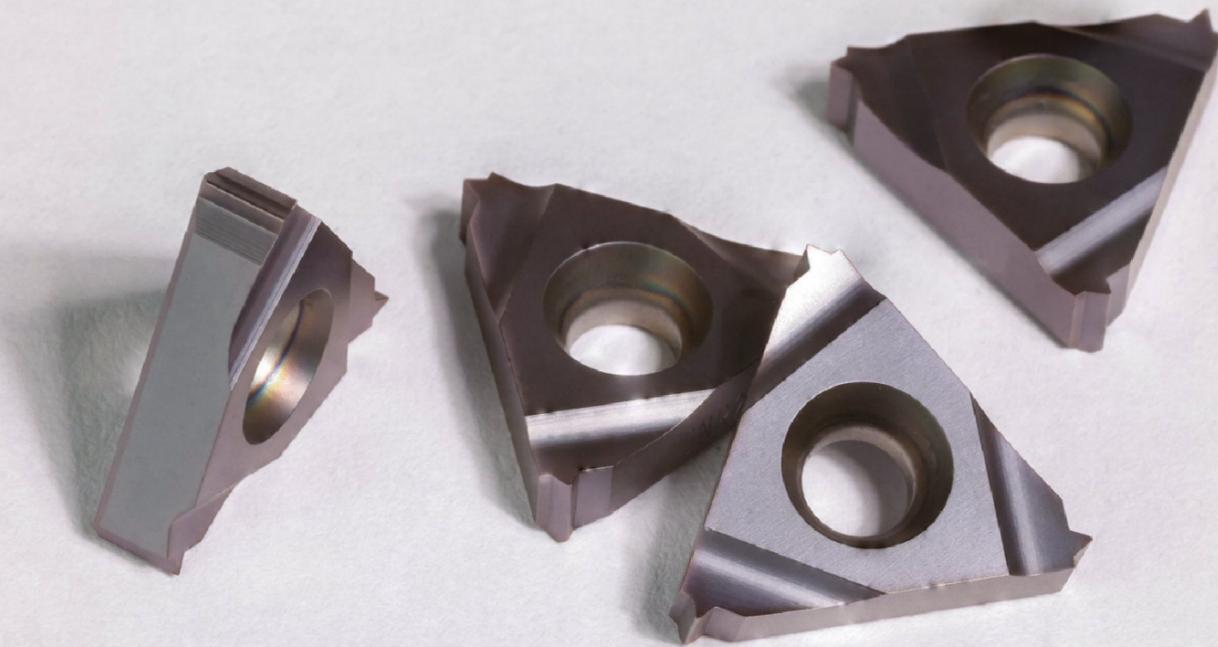
U - Drill

Code	Insert	Screw	Spanner	Size	L/D=2	L/D=3	L/D=4	L/D=5
ASUD	SPMG05	S2250	T06P	12.5 - 15.5	✓	✓	✓	
ASUD	SPMG06	S2255	T07P	16 - 21.5	✓	✓	✓	✓
ASUD	SPMG07	S2580	T08P	22 - 27.5	✓	✓	✓	✓
ASUD	SPMG09	S3590	T15P	28 - 33.5	✓	✓	✓	✓
ASUD	SPMG11	S4010	T15P	34 - 41	✓	✓	✓	✓
ASUD	SPMG14	S5011	T20P	42 - 50	✓	✓	✓	✓

* All Size Are Available In 0.5 Difference
* Other Sizes Available On Request.

Inserts Identification System

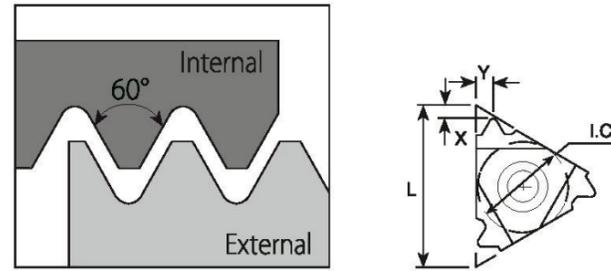
Thread Turning Insert Ordering Codes



16	E	R		12	UN		AS5015																												
1	2	3	4	5	6	7	8																												
 <table border="1"> <thead> <tr> <th>L</th> <th>I.C.</th> </tr> </thead> <tbody> <tr><td>06</td><td>5/32"</td></tr> <tr><td>08</td><td>3/16"</td></tr> <tr><td>08U</td><td>3/16"U</td></tr> <tr><td>11</td><td>1/4"</td></tr> <tr><td>16</td><td>3/8"</td></tr> <tr><td>16V</td><td>3/8"</td></tr> <tr><td>22</td><td>1/2"</td></tr> <tr><td>22U</td><td>1/2"U</td></tr> <tr><td>22V</td><td>1/2"</td></tr> <tr><td>27</td><td>5/8"</td></tr> <tr><td>27U</td><td>5/8"U</td></tr> <tr><td>27V</td><td>5/8"</td></tr> <tr><td>33U</td><td>3/4"U</td></tr> </tbody> </table>	L	I.C.	06	5/32"	08	3/16"	08U	3/16"U	11	1/4"	16	3/8"	16V	3/8"	22	1/2"	22U	1/2"U	22V	1/2"	27	5/8"	27U	5/8"U	27V	5/8"	33U	3/4"U	E = External I = Internal	R = Right Hand L = Left Hand	B = Type B	Pitch in mm: 0.35-12 or TPI (Threads per Inch) 72-2	Full Profiles: ISO UN WHIT NPT NPTF BSPT DIN 477 ACME ST.ACME TRAPEZ ROUND UNJ MJ PG AM. BUTT. SAGE API VAM Partial Profiles: A G AG N Q U	Multitooth style & number of teeth API size & taper	Carbide Grade: AS5015 AS5010 AS5020
L	I.C.																																		
06	5/32"																																		
08	3/16"																																		
08U	3/16"U																																		
11	1/4"																																		
16	3/8"																																		
16V	3/8"																																		
22	1/2"																																		
22U	1/2"U																																		
22V	1/2"																																		
27	5/8"																																		
27U	5/8"U																																		
27V	5/8"																																		
33U	3/4"U																																		

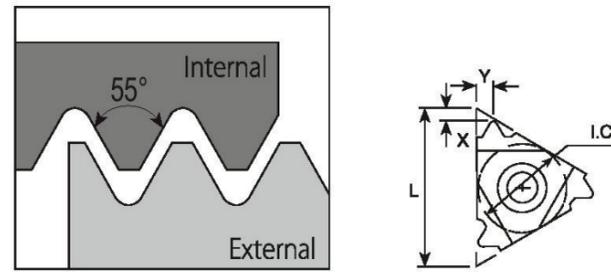
Threading

Partial Profile 60°
Partial Profile 55°



Pitch		L	IC	External			Internal		
mm	TPI			Right Hand	X	Y	Right Hand	X	Y
0.5 - 1.5	48 - 16	11	1/4"	11ER A60	0.80	0.90	11IR A60	0.80	0.90
0.5 - 1.5	48 - 16	16	3/8"	16ER A60	0.80	0.90	16IR A60	0.80	0.90
0.5 - 3.0	48 - 8	16	3/8"	16ER AG60	1.20	1.70	16IR AG60	1.20	1.70
1.75 - 3.0	14 - 8	16	3/8"	16ER G60	1.20	1.70	16IR G60	1.20	1.70

* Left Hand Insert Available On Request In All Sizes
* Order Code : 16ER A60 - AS5015

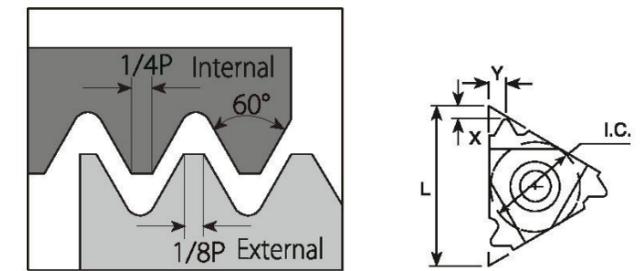


Pitch		L	IC	External			Internal		
mm	TPI			Right Hand	X	Y	Right Hand	X	Y
0.5 - 1.5	48 - 16	11	1/4"	11ER A55	0.80	0.90	11IR A55	0.80	0.90
0.5 - 1.5	48 - 16	16	3/8"	16ER A55	0.80	0.90	16IR A55	0.80	0.90
0.5 - 3.0	48 - 8	16	3/8"	16ER AG55	1.20	1.70	16IR AG55	1.20	1.70
1.75 - 3.0	14 - 8	16	3/8"	16ER G55	1.20	1.70	16IR G55	1.20	1.70

* Left Hand Insert Available On Request In All Sizes
* Order Code : 16ER A55 - AS5015

Threading

ISO Metric Full Profile



Defined By : R262 (DIN 13)
Tolerance Class : 6g/6H

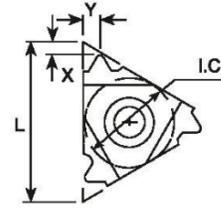
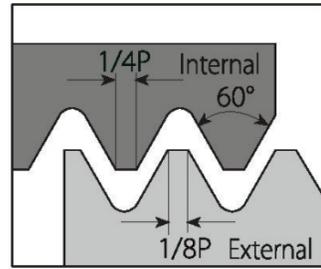
Pitch	L	IC	External			Internal		
			Right Hand	X	Y	Right Hand	X	Y
0.5	11	1/4"	11ER0.50 ISO	0.60	0.60	11IR0.50 ISO	0.60	0.60
0.75	11	1/4"	11ER0.75 ISO	0.60	0.60	11IR0.75 ISO	0.60	0.60
1	11	1/4"	11ER1.00 ISO	0.70	0.70	11IR1.00 ISO	0.60	0.70
1.25	11	1/4"	11ER1.25 ISO	0.80	0.90	11IR1.25 ISO	0.80	0.90
1.5	11	1/4"	11ER1.50 ISO	0.80	1.00	11IR1.50 ISO	0.80	1.00
1.75	11	1/4"	11ER1.75 ISO	0.80	1.10	11IR1.75 ISO	0.90	1.10
2.00	11	1/4"	-	-	-	11IR2.00 ISO	1.00	1.30

0.5	16	3/8"	16ER0.50 ISO	0.60	0.60	16IR0.50 ISO	0.60	0.60
0.75	16	3/8"	16ER0.75 ISO	0.60	0.60	16IR0.75 ISO	0.60	0.60
1	16	3/8"	16ER1.00 ISO	0.70	0.70	16IR1.00 ISO	0.60	0.70
1.25	16	3/8"	16ER1.25 ISO	0.80	0.90	16IR1.25 ISO	0.80	0.90
1.5	16	3/8"	16ER1.50 ISO	0.80	1.00	16IR1.50 ISO	0.80	1.00
1.75	16	3/8"	16ER1.75 ISO	0.90	1.20	16IR1.75 ISO	0.90	1.20
2	16	3/8"	16ER2.00 ISO	1.00	1.30	16IR2.00 ISO	1.00	1.30
2.5	16	3/8"	16ER2.50 ISO	1.10	1.50	16IR2.50 ISO	1.10	1.50
3	16	3/8"	16ER3.00 ISO	1.20	1.60	16IR3.00 ISO	1.10	1.50

* Left Hand Insert Available On Request In All Sizes
* Order Code : 16ER0.50 ISO - AS5015

Threading

UN-60° American UN Full Profile
(UNC / UNF / UNEF / UNS)



Defined By : ANSI B1. 1:74
Tolerance Class : 2A/2B

Pitch	L	IC	External			Internal		
			Right Hand	X	Y	Right Hand	X	Y
32	11	1/4"	11ER32 UN	0.60	0.60	11IR32 UN	0.60	0.60
28	11	1/4"	11ER28 UN	0.60	0.70	11IR28 UN	0.60	0.70
24	11	1/4"	11ER24 UN	0.70	0.80	11IR24 UN	0.70	0.80
20	11	1/4"	11ER20 UN	0.80	0.90	11IR20 UN	0.80	0.90
18	11	1/4"	11ER18 UN	0.80	1.00	11IR18 UN	0.80	1.00
16	11	1/4"	11ER16 UN	0.90	1.10	11IR16 UN	0.90	1.10

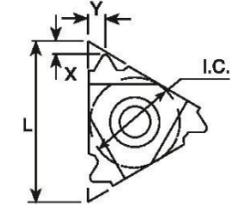
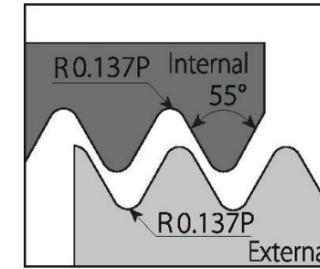
32	16	3/8"	16ER32 UN	0.60	0.60	16IR32 UN	0.60	0.60
28	16	3/8"	16ER28 UN	0.60	0.70	16IR28 UN	0.60	0.70
24	16	3/8"	16ER24 UN	0.70	0.80	16IR24 UN	0.70	0.80
20	16	3/8"	16ER20 UN	0.80	0.90	16IR20 UN	0.80	0.90
18	16	3/8"	16ER18 UN	0.80	1.00	16IR18 UN	0.80	1.00
16	16	3/8"	16ER16 UN	0.90	1.10	16IR16 UN	0.90	1.10
14	16	3/8"	16ER14 UN	1.00	1.20	16IR14 UN	1.00	1.20
13	16	3/8"	16ER13 UN	1.10	1.30	16IR13 UN	1.00	1.30
12	16	3/8"	16ER12 UN	1.10	1.40	16IR12 UN	1.10	1.40
11.5	16	3/8"	16ER11.5 UN	1.10	1.40	-	-	-
11	16	3/8"	16ER11 UN	1.10	1.50	16IR11 UN	1.10	1.50
10	16	3/8"	16ER10 UN	1.10	1.50	16IR10 UN	1.10	1.50
9	16	3/8"	16ER9 UN	1.20	1.70	16IR9 UN	1.20	1.70
8	16	3/8"	16ER8 UN	1.20	2.00	16IR8 UN	1.20	2.00

* Left Hand Insert Available On Request In All Sizes

* Order Code : 16ER 32UN - AS5015

Threading

W-55° Whitworth Full Profile
(BSW / BSF / BSP / BSB)



Defined By : B.S.84:1956, DIN 259, ISO228/1:1982
Tolerance Class : Medium Class A

Pitch	L	IC	External			Internal		
			Right Hand	X	Y	Right Hand	X	Y
28	11	1/4"	11ER28 W	0.60	0.70	11IR28 W	0.60	0.60
26	11	1/4"	11ER26 W	0.70	0.80	11IR26 W	0.60	0.70
20	11	1/4"	11ER20 W	0.80	0.90	11IR20 W	0.70	0.90
19	11	1/4"	11ER19 W	0.80	1.00	11IR19 W	0.80	1.00
18	11	1/4"	11ER18 W	0.80	1.00	11IR18 W	0.80	1.00
16	11	1/4"	11ER16 W	0.90	1.10	11IR16 W	0.90	1.10
14	11	1/4"	11ER14 W	1.00	1.20	11IR14 W	1.00	1.20

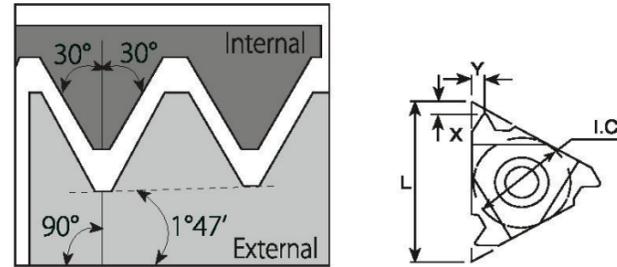
28	16	3/8"	16ER28 W	0.60	0.70	16IR28 W	0.60	0.70
26	16	3/8"	16ER26 W	0.70	0.80	16IR26 W	0.70	0.80
20	16	3/8"	16ER20 W	0.80	0.90	16IR20 W	0.80	0.90
19	16	3/8"	16ER19 W	0.80	1.00	16IR19 W	0.80	1.00
18	16	3/8"	16ER18 W	0.80	0.90	16IR18 W	0.80	1.00
16	16	3/8"	16ER16 W	0.90	1.10	16IR16 W	0.90	1.10
14	16	3/8"	16ER14 W	1.00	1.20	16IR14 W	1.00	1.20
12	16	3/8"	16ER12 W	1.10	1.40	16IR12 W	1.10	1.40
11	16	3/8"	16ER11 W	1.10	1.50	16IR11 W	1.10	1.50
10	16	3/8"	16ER10 W	1.10	1.50	16IR10 W	1.10	1.50
9	16	3/8"	16ER9 W	1.20	1.50	16IR9 W	1.20	1.50
8	16	3/8"	16ER8 W	1.20	1.70	16IR8 W	1.20	1.70

* Left Hand Insert Available On Request In All Sizes

* Order Code : 16ER 28W - AS5015

Threading

NPT - 60° National Pipe Threads
NPTF (Dry Seal)



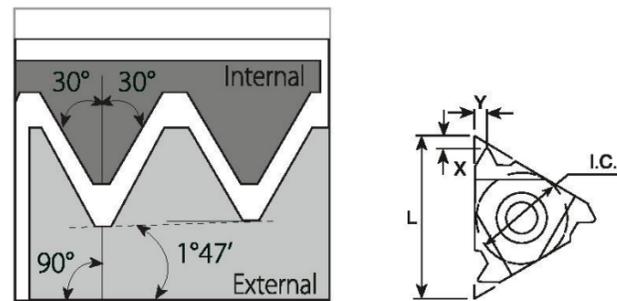
Defined By : USAS B2.1:1968
Tolerance Class : Standard NPT

Pitch	L	IC	External			Internal		
			Right Hand	X	Y	Right Hand	X	Y
27	11	1/4"	11ER27 NPT	0.70	0.80	11IR27 NPT	0.70	0.80
18	11	1/4"	11ER18 NPT	0.80	1.00	11IR18 NPT	0.80	1.00
14	11	1/4"	11ER14 NPT	0.80	1.00	11IR14 NPT	0.80	1.00

27	16	3/8"	16ER27 NPT	0.70	0.80	16IR27 NPT	0.70	0.80
18	16	3/8"	16ER18 NPT	0.80	1.00	16IR18 NPT	0.80	1.00
14	16	3/8"	16ER14 NPT	0.80	1.00	16IR14 NPT	0.80	1.00
11.5	16	3/8"	16ER11.5 NPT	1.10	1.50	16IR11.5 NPT	1.10	1.50
8	16	3/8"	16ER8 NPT	1.20	1.80	16IR8 NPT	1.20	1.80

* Left Hand Insert Available On Request In All Sizes

* Order Code : 16ER 27NPT - AS5015



Defined By : ANSI B1.20.3-1976
Tolerance Class : Standard NPTF

Pitch	L	IC	External			Internal		
			Right Hand	X	Y	Right Hand	X	Y
27	11	1/4"	11ER27 NPTF	0.70	0.80	11IR27 NPTF	0.70	0.80
18	11	1/4"	11ER18 NPTF	0.80	1.00	11IR18 NPTF	0.80	1.00
14	11	1/4"	11ER14 NPTF	0.80	1.00	11IR14 NPTF	0.80	1.00

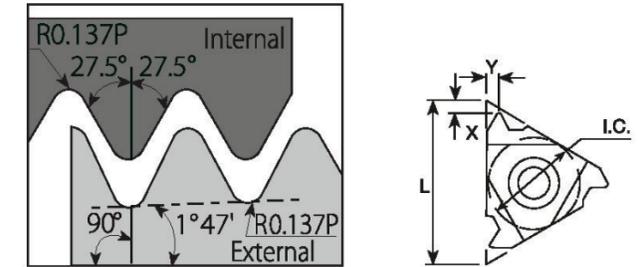
27	16	3/8"	16ER27 NPTF	0.70	0.80	16IR27 NPTF	0.70	0.80
18	16	3/8"	16ER18 NPTF	0.80	1.00	16IR18 NPTF	0.80	1.00
14	16	3/8"	16ER14 NPTF	0.90	1.20	16IR14 NPTF	0.90	1.20
11.5	16	3/8"	16ER11.5 NPTF	1.10	1.50	16IR11.5 NPTF	1.10	1.50
8	16	3/8"	16ER8 NPTF	1.30	1.80	16IR8 NPTF	1.30	1.80

* Left Hand Insert Available On Request In All Sizes

* Order Code : 16ER 27NPTF - AS5015

Threading

BSPT - 55° British



Defined By : B.S.21:1985
Tolerance Class : Standard BSPT

Pitch	L	IC	External			Internal		
			Right Hand	X	Y	Right Hand	X	Y
28	11	1/4"	11ER28 BSPT	0.60	0.60	11IR28 BSPT	0.60	0.80
19	11	1/4"	11ER19 BSPT	0.80	0.90	11IR19 BSPT	0.80	0.90
14	11	1/4"	11ER14 BSPT	0.90	1.00	11IR14 BSPT	0.90	1.00

28	16	3/8"	16ER28 BSPT	0.60	0.60	16IR28 BSPT	0.60	0.60
19	16	3/8"	16ER19 BSPT	0.80	0.90	16IR19 BSPT	0.80	0.90
14	16	3/8"	16ER14 BSPT	1.00	1.20	16IR14 BSPT	1.00	1.20
11	16	3/8"	16ER11 BSPT	1.10	1.50	16IR11 BSPT	1.10	1.50

* Left Hand Insert Available On Request In All Sizes

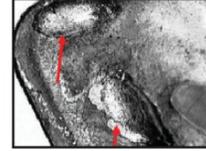
* Order Code : 16ER 28BSPT - AS5015

Troubleshooting

Crater Wear

Cause

A Combination Of Chemical Diffusion, Decomposition And Abrasion Wear Causes Cratering. Classically, The Heat From Abrasion Causes Cobalt To Migrate, Reducing Adhesion Of The Carbide Substrate, And Then Eventually Carbide Decomposes Leaving Craters. Increasing The Cutting Speed, Feeding Rates Or Higher Machining Temperature Will Increase Crater Wear. With Longer Tool Life, The Craters Increase In Size On The Surface Or Rake Face Of The Insert. The Crater Will Eventually Grow Through The Cutting Edge And Lead To Insert Failure By Edge Breakage And/or Flank Wear. Modern Coating Technology With Crater-resistant Cvd Coatings Has Reduced The Extent Of This Failure Mode, But When Trying To Improve The Productivity, Using Higher Cutting Data, It Invariably Appears Again.



What to Look For

- Craters Or Pits On The Rake/top Or Rake Face Of The Inserts
- Chipping/fraying And Change In Borders Or Wear After Cleaning Started

When to Expect It

- More In Carbon-based Alloys

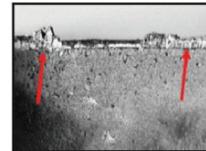
Corrective Actions

- Use More Wear Resistant Grades And If Needed Try Another Grade With Other Coating Design
- Use Thicker Coatings
- Increase Feedrate
- Using An Insert Cutting Geometry
- Reducing The Cutting Speed (or Rpm)
- Changing Insert Edge

Built Up Edge

Cause

Material Adhesion. Built-up Edge (BUE) Is A Result Of The Workpiece Material Being Pressed And Stuck To The Cutting Edge. This Results In An Alteration Of Workpiece Finish And In Extreme Working Conditions High Mechanical Activity, High Temperature And Discontinuous Material Transfer Between Workpiece And Insert Rake Face Will Take Place. Built-up Edge Causes Uneven Load Transfer To The Tool Tip, But The Consequence Of Disturbing The Cutting Edge Details Of Radius And Also Forces Pointing In Different Directions Acting As An Initiator Of Chipping, Notching Or Other Discontinuous Wear Modes, Makes It Important.



What to Look For

- Extra Material Built On Top Or Flank Of The Insert Edge
- Erratic Changes In Part Or Surface Finish

When to Expect It

- High Temps In Low Alloyed Stainless Steel And Other Workpiece Materials Appearing 'gummy'
- Austenitic Low Grades, Especially If Aimed Into Clogs In Boring Contexts Parting-off And Even More Apparent In The Centre Of Drill Inserts

Corrective Actions

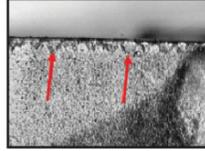
- Use Positive Sharp Clear Cutting Edges Minimizing Built-up Edge
- Apply Sufficient Coolant Correctly And At Right Place, As Well As Check The Emulsion Concentration
- Use Correct Edge Preparation And Optimized Geometry

Troubleshooting

Chipping

Cause

Mechanically/thermally Or Metallurgical Adhesion. Chipping Of The Insert Edge Could Be A Result Of Vibrations In The Workpiece Set-up/clamp. Largely Hard Inclusions In The Workpiece Material Can Act As Interrupted Cut In A Softer Base. Higher Loads And Temperature Gradients Than The Tool Edge Can Resist Lead To Edge Chipping. Irrespective Of Cause Chipping Is Not A Wear Mode, But An Edge Failure. Including Adhesion Influenced Wear Morphology May Transfer Into A Smaller Break-out Of The Normal Volume Of Parts Of An Insert.



What to Look For

- Chipping Along The Edge Of The Insert

When to Expect It

- Intermittent Cut Workpiece Materials With Larger Inclusions (oxides, Carbides Etc.)
- Demanding Operations And Set Conditions
- Hard Part Steel - Heat Treated Workpieces
- Short Interruptions And Forging-like Materials

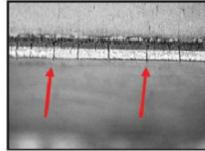
Corrective actions

- Apply Coolant Correctly And Properly
- Choose An Insert With Tougher Grade Or Stronger Cutting Edge Geometry
- Use Negative Cutting Edge Geometry
- Use Lower Cutting Speed (or Rpm)

Thermal Cracks

Cause

A Combination Of Thermal Cycling (frequency Changing The Working Temperature For The Insert Rapidly), Thermal Load (insert Gets Hot) And Mechanical Shock (temperature Difference) When In And Out Of Cut (short Time Thermal Load And Release). At Increased Cutting Speeds, This Cycling Of Temperature In Combination With Absence Of Cooling Fluid Causes Extreme Mechanical Stress. In Combination With An Abrasive Crater Type Wear, Chemical Wear, And Mechanical Wear It Leads To Breakdown. Seen Most Commonly In Milling.



What to Look For

- Multiple Cracks Perpendicular To Cutting Edge
- Irregular Chipping On Edges Or Wear Until Entire Face

When to Expect It

- Intermittent Cutting, Especially In Milling, But Also Tool Paths When Machining
- A Large Number Of Parts Creating The Thermal Cycling Or Interference In Coolant Flow

Corrective Actions

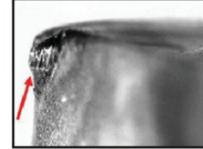
- Apply Coolant (flooded) Or Not At All
- Select A Tougher Carbide Grade
- Reduce The Cutting Speed (or Rpm) Or Machining Feed Rates
- Use A New Cutting Geometry Or Chipbreaker To Reduce Heat

Troubleshooting

Edge Deformation

Cause

Heat Softening. Excessive Heat Softens The Carbide Binder (cobalt) To Soften. If Cooled Some In Combination With Mechanical Overload Along The Edge This Leads To Plastic Deformation Of The Insert Cutting Edge. It Is Not A Wear Mode In Itself, But Usually An Initiator Of Later Edge Breakage Or Leading To Irregular Flank Wear.



What to Look For

- Deformation Of The Cutting Edge Or Excessive Irregular Flank Wear
- Thin Deformations Often Reappearing By Change Of Colour/Clarity

When to Expect It

- High Strength Steels And High Feed Rates
- Heat Resistant Super Alloys, Stainless Steels, Hardened Steels
- High Temperature Alloys (austenitic) Or Stainless Steels

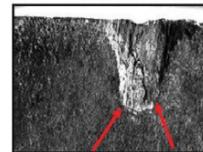
Corrective Actions

- Apply Coolant Correctly
- Use Tougher, More Wear Resistant Grades
- Reduce The Cutting Speed (or Rpm) If Possible
- Select An Insert With Other Geometrical Features

Notching

Cause

A Combination Of Local Properties In Workpiece Materials And Cutting Conditions. Notching Is Often Caused By The Conditions At The Surface Of The Workpiece, Surface Hardening From Previous Cuts, Hardness Variations, Scale, Oxide Layers, Edges Of Forgings, Weld Overlays Etc. The Workpiece Variations, Combined With Unsuitable Cutting Conditions, Create A Concentrated Wear Zone In A Narrow Band In Proximity Of The Depth-of-cut Line. Local Stress Concentration From Notch Formation Is A Cause Of Compressive Stress At Both The Cutting Edge And Side Of The Insert To Be Lost Due To Cutting Edge The Insert Is Particularly Affected At The Depth Of Cut.



What to Look For

- Notching Or Clusters Of Chipping For Example At The Depth Of Cut Area On The Tool
- Break-outs And Build-up Notching, Inaccuracy Within Inclined New Chemical/Abrasive Interaction Or By Irregular More Mechanical/adhesion Extensive Chipping

When to Expect It

- Metals With Surface Scales Or Oxidisation
- Work Hardening Materials
- Cast Or Other Process Affected Surfaces

Corrective Actions

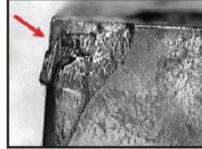
- Change Depth Of Cut
- Altering The Feed Rate Increasing Or Equal Depth Of Cut Passes
(this Will Generate More Flank Wear)
- Select A Tougher Insert Grade
- Exchange Chipbreaker Design Drastically
- Prevent Built-up Edge

Troubleshooting

Mechanical Fracture

Cause

Excessive Load (also Caused By Other Wear Modes Than Flank) Can Cause Mechanical Fracture. Mechanical Overload, As Well As Excessive Vibration In The Workpiece Set-up/clamping, Interrupted Cut Or Other Irregular Interaction Of The Workpiece Leads To Breakage. To Be Considered Are Also Surrounding Cutting Conditions Such As The Conditions Of The Set-up, Workpiece Clamping Or Machining Condition.



What to Look For

- Fracture Of Insert Edge (fast Appearing As Irregular Flank Wear Along With The Insert Radius)
- Sudden Occurrence Of Fracture By Edge Itself

When to Expect It

- Intermittent/poor Workpieces With Large Grain Inclusions, Pores Or Design Features That Cause Heavy Impact Or Load Release
- Low Cutting Edge Capability (cutting Speed)

Corrective Actions

- Increase Toughness Of Insert Grade
- Select Tougher Grade
- Reduce Cutting Speed (or Rpm)
- Avoid Concentrated Stress
- Exchange Cutting Geometry To A Stronger Design
- Select Insert With Stronger/robust Radius Or Inclined Geometrical Features

MACHINING APPLICATION

ASPHALT OPTIMAX

Asphalt Personalize App Your Smart Machining Assistant Designed To Help You Select The Perfect Cutting Tool Based On Material, Application, And Operating Conditions.

Key Highlights:

- Intuitive And Easy-to-use Interface Suitable For All Machine Shop Personnel
- Instant Access To Recommended Machining Parameters With Optimized Ranges
- Accurate, Material-specific Calculations For Enhanced Performance And Productivity
- Ensures Consistent Results With Verified Tooling And Application Data



Optimized For Machining Excellence

- This Application Delivers Precise Machining Parameters Tailored To Your Selected Cutting Tool And Operation, Ensuring Improved Efficiency, Reliability, And Component Quality.

Continuous Innovation We Are Actively Developing

Additional Productivity Tools Such As:

- Cost Per Component Calculator
- Application Based Tool Selection Assistant
- And many more to enhance your machining experience

Stay Updated - Download And Explore The Next Generation Of Machining Intelligence.