

# ARCH<sup>®</sup>

## Cutting Tools








- Milling
- Drilling
- Finishing
- Contouring
- Slotting
- Turning
- Boring
- Tool Holding
- Custom Solutions

THE  
COLLECTION

THE COMPLETE TOOL MAKING AUTHORITY<sup>®</sup>

2023

INSCRIBE CIRCLE SIZE

INCH	Diameter of Inscribed Circle (Inch)	METRIC						
								
1.2 (5)	0.156		02		04	03	03	06
1.28	0.160							07
1.5 (6)	0.187		L3	08	05	04	04	08
1.8 (7)	0.219		03	09	06	05	05	09
2	0.250		04	11	07	06	06	11
2.5	0.313		05	13	09	08	07	13
3	0.375	09	06	16	11	09	09	16
4	0.500	12	08	22	15	12	12	22
5	0.625		10		19	16	15	27
6	0.750	19	13		23	19	19	33
08	8.00mm	08						
10	10.00mm	10						
12	12.00mm	12						
16	16.00mm	16						

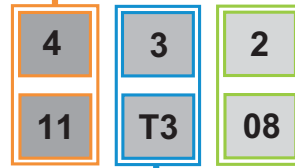
\*Exact tolerance is determined by the size of the insert

Shape	
A	Rectangle
C	80° Diamond
D	55° Diamond
S	Square
T	Triangle
V	35° Diamond
W	80° Trigon
R	Round

TOLERANCE	
Insert I.C.	Thickness
F = ± .002 to ± .004	± .002
G = ± .001	± .005
H = ± .005	± .001
K = ± .005	± .001
M = ± .002 to ± .007*	± .005



INCH	CORNER RADIUS	METRIC
0	.004	01
0.1	.002	--
0.5	.008	02
1	.015 (1/64)	04
2	.031 (1/32)	08
3	.046 (3/64)	12
4	.062 (1/16)	16



INCH	THICKNESS	METRIC
0.6	0.040	T0
0.75	0.046	-
1	1/16	01
1.2	5/64	T1
1.5	3/32	02
2	1/8	03
2.5	5/32	T3
3	3/16	04
4	1/4	06

CLEARANCE ANGLE	
B	5° Positive
C	7° Positive
D	15° Positive
N	0° Negative
P	11° Positive

TYPE	
A	With hole, without chipbreaker
B	Countersink on one side, with hole
G	Chipbreaker on both sides, with hole
T	Chipbreaker & ISO countersink one side, with hole
W	ISO Countersink on one side, with hole
X	Special Design

**INSERT SPEEDS & FEEDS**

Material	TURNING		MILLING		DRILLING	
	SFM	Inch/ Rev	SFM	Inch/ Rev	SFM	Inch/ Rev
<b>P</b> Mild Steel Annealed Alloy Steel Hardened Alloy Steel Cast Steel	490-1200	.004-.031	250-800	.003-.015	225-650	.0022-.006
	490-980		200-725		200-650	
	180-500		200-600		100-300	
	180-650		200-600		150-550	
<b>M</b> Stainless Steel	280-810	.004-.015	200-600	.003-.015	250-430	.002-.006
<b>K</b> Low Cast Iron High Cast Iron Cast Iron (CBN INSERTS)	590-1240	.004-.024	325-600	.004-.016	300-600	.0025-.009
	360-700		325-600		300-600	
	400-600	.002-.020				
<b>N</b> Alum. Alloy Un-heat Treated Alum. Alloy Heat Treated Cast Alum. & Copper Alloy	850-1980	.004-.018	860-1800	.007-.018	600-1100	.0038-.011
	550-1650		575-1230		315-790	
	360-950		280-930		250-760	
<b>H</b> Hardened Material (CBN INSERTS)	450-950	.002-.011				
<b>S</b> Heat Resistant Steels	100-300	.002-.006	100-300	.0024-.008	60-150	.0028-.008

**CHIPBREAKER DESIGNATION**

ISO	FINISHING	MEDIUM	ROUGHING
<b>P</b>	CX2, LX6, SP1, SP2, SX1, ZX3 CM1, CM3, CX2, LX6, ZM1	CX1, LX3, ZP1 CM1, CM2, LX3	CP2, LX2 LX2
<b>M</b>			
<b>K</b>	ZX3	ZK1, ZK2 CS1	
<b>N</b>	SX1, ZN1	CN1, LX2, LX3	
<b>S</b>	ZX3	ZK1, ZK2 CS1	

- Good
- ◐ Better
- Best

**\*HIGH PERFORMANCE GRADES**

Grade	Description	Steel	Stainless Steel	Cast Iron	Ferrite Materials	Heat-Resistant	Steel Hardened Metal
		P	M	K	N	S	H
UD51	General purpose TiN (CVD) coated steel grade - used for roughing and semi-finishing of carbon alloy and stainless steel.	●	○	○		◐	
UD52	Tough general purpose steel grade with multi-layer titanium aluminum nitride coating for alloy steel, aluminum alloys, austenitic stainless and carbon steels, copper alloys and exotic alloys.	●	○			●	
HP230*	Productive steel turning grade under stable conditions.	●	○	◐			
HP250*	Universal steel turning grade-The best in efficiency and productivity.	●	○	◐			
UD21	Multi-layer titanium aluminum nitride grade. Excellent for machining cast iron.		◐	●			
HM240*	Stainless steel turning grade. Finishing to light roughing.	○	●		○		
HM250*	Turning grade for wide application in the stainless steel range. Finishing to roughing.	◐	●			○	
HS220*	Excellent for heat resistance and titanium alloys		○			●	
UD2	Uncoated - Used to cut cast iron, aluminum, non-ferrous alloys, non-metals and most high temp alloys. Provides excellent wear resistance.			○	◐		
HN432*	Ideal grade for aluminum. Low tendency for adhesion.			◐	●		
UD22	TiN coated insert. Suitable for semi-finishing and finishing of high temp alloys. Intended for cast iron machining.			●		◐	
UD32	TiAlN coated insert. Used in high speed medium load applications of stainless steel and finishing to semi-finishing of high temperature alloys.	◐	●	○	○	●	
HK036*	Stability in a wide range of applications with long tool life. First choice for turning cast iron.			●			
UD5C	Uncoated cermet grade for semi-finishing and finishing applications at medium to high cutting speeds on carbon and alloyed steels. Also used on stainless. Normally used without coolant.		○	○			
UD5CT	TiAlN coated cermet grade performs extremely well for semi-finish and finish applications in alloyed steels, stainless and high carbon steels.	●	◐	◐			
UD1	Uncoated – Designed with a polished surface and large rake angle, Intended for machining aluminum and other non-ferrous alloys. Also works well for semi machining on cast iron.		◐		●		
HP470*	Suitable for demanding steel milling applications, interrupted cut.	●	◐				
HM470*	Stainless steel milling grade. PVD, TiAlN coating.	◐	●				
HS470*	First choice for milling heat-resistant alloys.		○			●	
HS480*	Extremely heat-resistant tough grade for milling titanium.					●	
HK430*	Milling grade for cast iron.			●			
HP600*	Super tough substrate with PVD coating. Excellent for drilling steel and stainless steel.	●	◐	○	○	○	
HK356*	Stable cutting performance for drilling cast iron. Suitable for aluminum. Recommended for mild structural steel, difficult chip controlled steel.	◐	●	●	◐	◐	
HN300*	Drilling Grade for Aluminum				●		
UD2CBN	A Polycrystalline Cubic Boron Nitride (PCBN) Insert for cast iron, gray cast iron, chilled cast, and powder metal with long tool life. Coolant not recommended for use.			●			◐
UD5CBN	A Polycrystalline Cubic Boron Nitride (PCBN) Insert for precision finishing of hardened steels 50-65 rockwell. Coolant not recommended for use.			◐			●
UD2PCD	Polycrystalline Diamond with Carbide Reinforced Diamond, Sharpness and Low Cutting Pressure allowing tight tolerances. Finishing of all non-ferrous metals and non-metallics.				●		
UD25	Uncoated - Used to cut aluminum, brass, copper, nickel base alloys, titanium and non-ferrous materials.			○	○		
UD204	A PVD TiAlN coated fine grain substrate. Excellent for light to medium feeds on cast iron and semi-finishing to finishing of high temperature alloys. Excellent for high SFM.	◐		●		◐	
UD404	A PVD TiAlN coated tough general purpose grade. Well suited for milling alloy steels, stainless steel, high temperature alloy steels and hardened steels up to 60 Rc.	●	●	◐		●	
UD602	A CVD coating of Ti A1 <sub>2</sub> O <sub>3</sub> & TiN on a tough substrate. It is suitable for light to heavy milling of alloy steel and non alloy steel, even under unfavorable condition.	◐	◐			◐	



PRODUCT #	DESIGNATION	Grade															
		HP230	HP250	HM240	HM250	HS220	HN432	HK036	UD51	UD52	UD21	UD2	UD22	UD32	UD5C	UD5CT	UD1
914-000-036	CNMG 321-CM2				•												
914-000-037	CNMG 322-CM2				•												
914-000-038	CNMG 431-CM2				•												
914-000-042	CNMG 432-CM2				•												
914-000-030	CNGP 431-CM3			•													
914-000-031	CNGP 432-CM3			•													
914-000-047	CNMG 543-CP2		•														
914-000-048	CNMG 643-CP2		•														
914-000-039	CNMG 431-CS1					•											
914-000-040	CNMG 431-CX1	•															
914-000-041	CNMG 432-CX1		•														
914-000-044	CNMG 432-CX1	•															
914-000-045	CNMG 432-CX1		•														
914-000-043	CNMG 433-CX1							•									
914-000-046	CNMG 433-CX1							•									
913-000-177	CNMG 321-ZK1										•						
913-000-181	CNMG 322-ZK1										•						
913-000-185	CNMG 431-ZK1										•						
913-000-189	CNMG 432-ZK1										•						
913-000-193	CNMG 542-ZK1										•						
913-000-196	CNMG 543-ZK1										•						
913-000-199	CNMG 642-ZK1										•						
913-000-202	CNMG 643-ZK1										•						
913-000-178	CNMG 321-ZM1													•			
913-000-182	CNMG 322-ZM1													•			
913-000-186	CNMG 431-ZM1													•			
913-000-190	CNMG 432-ZM1													•			
913-000-179	CNMG 321-ZP1							•									
913-000-180	CNMG 322-ZP1							•		•							
913-000-183	CNMG 322-ZP1							•									
913-000-184	CNMG 322-ZP1								•								
913-000-187	CNMG 431-ZP1							•									
913-000-188	CNMG 431-ZP1								•								
913-000-191	CNMG 432-ZP1							•									
913-000-192	CNMG 432-ZP1								•								
913-000-194	CNMG 542-ZP1							•									
913-000-195	CNMG 542-ZP1								•								
913-000-197	CNMG 543-ZP1							•									
913-000-198	CNMG 543-ZP1								•								
913-000-200	CNMG 642-ZP1							•									
913-000-201	CNMG 642-ZP1								•								
913-000-203	CNMG 643-ZP1							•									
913-000-204	CNMG 643-ZP1								•								
914-000-032	CNMA 432								•								
914-000-033	CNMA 433								•								
914-000-034	CNMA 543								•								
914-000-035	CNMA 643								•								

PACKAGE SIZE OF 10