

# Hole Making

## B7 SPADE DRILL

Insert series

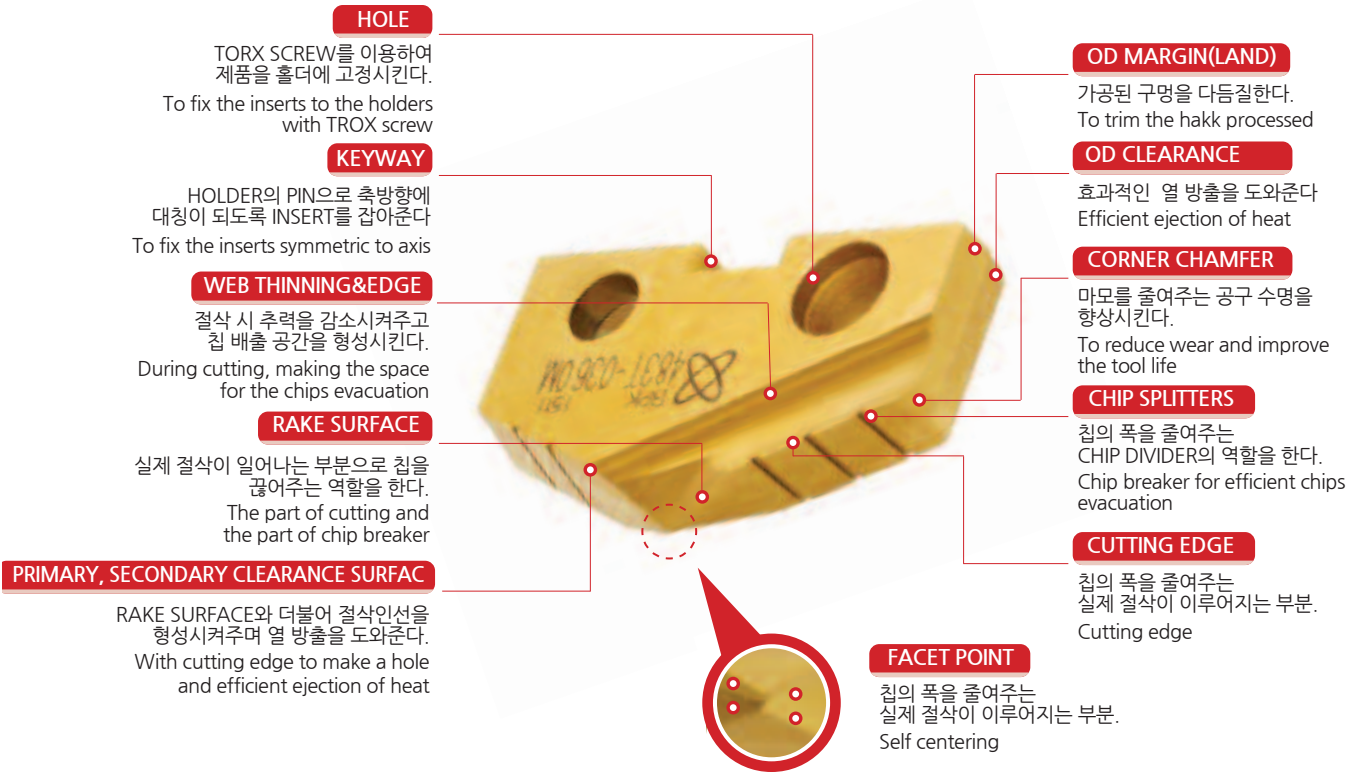
B7S, B7K, B7H, B7M drill

B7X, MUE, MUB, modular

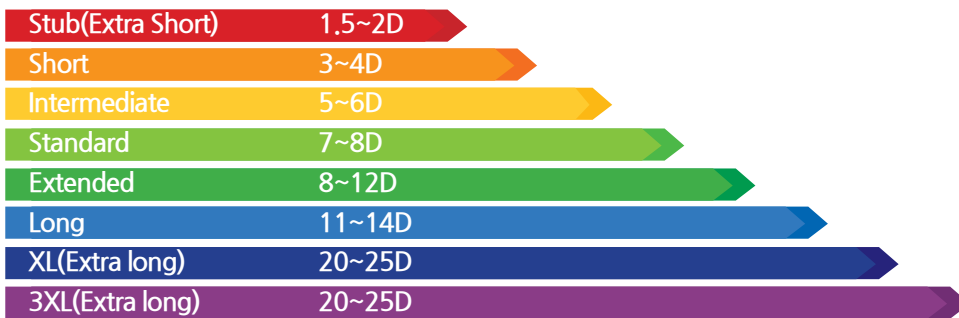
Collant oil supplier modular

## 인서트 각부 명칭 및 기능

The name and function of the part of insert



- 인서트형으로 9.5mm~114mm까지 표준형으로 제작되어 있어 사용이 편리합니다.  
As indexable type of drill, composed of a various range of diameters from 9.5mm to 114mm, it is very convenient to use.
- 칩 분할 홈이 있어서 칩 처리가 용이하고 파워가 약한 기계에서도 대구경 드릴작업이 가능합니다.  
Chip splitters is able to be used for chip evacuation and the weak-powered machine.
- 다양한 드릴홀더를 보유하고 있어 1.5D~3D까지 홀 가공이 용이합니다.  
Possible to make a hole 1.5D to 30D with a various range of drills.



- 재고 관리가 용이, 홀더9개(Y,Z,0,1,2,3,4,5~6,7~8)로 9.5mm~114mm까지의 드릴작업이 가능.  
Efficient management for the stock levels, Only nine holders can make holes 9.5mm to 114mm

Y	Z	0	1	2	3	4	5,6	7,8
9.5~11.0	11.5~12.5	13.0~17.54	18.0~24.0	25.0~35.0	36.0~47.0	48.0~65.0	64.0~88.0	90.0~114.0

- Solid type 드릴에 비해 진원도 및 가공치수 정도가 우수하며 수명도 탁월함.  
Good performance and great tool life compared with solid type drill.
- 인선에 절삭유 공급이 용이.  
Easy to supply the coolant inside of the hole processing
- 모듈라 시스템 드릴은 길이를 자유자재로 조정할수 있습니다.  
A variety of length of drills with modular systems.

# Insert Series B7 spade drill

48

3

A

-

460

소재 Material		시리즈 Series			코팅 Coating		가공경 Diameter	
04-M4	HSS	Y	∅9.5~∅11.0	4	∅48.0~∅65.0	A	TiALN	Inch
15-T15	Super HSS	Z	∅11.5~∅12.5	5	∅63.5~∅76.0	C	TiCN	Decimal
48-M48	Premium HSS	0	∅13.0~∅17.5	6	∅78.0~∅88.0	T	TiN	Metric
P2-P25	Carbide	1	∅18.0~∅24.0	7	∅90.0~∅100.0	i	ALTiN	
		2	∅25.0~∅35.0	8	∅102.0~∅114.0			
		3	∅36.0~∅47.0					



**TiN**

범용 코팅  
General purpose coating  
공구 수명 향상  
Improved tool life over a noncoated insert  
알루미늄 작업에 탁월  
Excellent choice for Aluminium  
Color : Gold / Yellow



**TiCN**

고속 가공시 발생하는 마모 저항에 탁월한 성능  
Excellent choice for wear resistance over low surface speeds  
고강도 / 마모방지  
High hardness / wear resistance  
400℃까지 작업가능  
Maximum working temperature 400  
경도 HV3500  
Hardness HV3500  
Color : Blue / Grey



**TiALN**

고속 가공시 발생하는 마모 저항에 탁월한 성능  
Excellent choice for wear resistance over low surface speeds  
산화 저항 우수  
Excellent oxidation resistance  
800℃까지 작업가능  
Maximum working temperature 800  
경도 HV3000  
Hardness HV3000  
Color : Violet / Black



**Alpha**

작업시 발생하는 열 저항이 Tin, TiCN 보다 우수  
First choice for increased heat resistance over TiN, TiCN  
타 코팅보다 우수한 공구 수명과 시장 진입의 우수성  
Allows for improved tool life and higher penetration rates of the market  
TiALN 코팅보다 20% 이상 공구수명 연장  
Over 20% increased tool life over TiAN  
Color : Copper / Bronze

### HSS(M4) standard

일반강 및 주철에 사용.  
Applied for steels and cast Iron.

### Super HSS(T15) standard

니켈합금 및 경도 280Bhn(HRC29) 이상의 재질에 사용  
Applied for Alloy Nikel and 280Bhn(HRC29) and harder.

### Premium HSS(M48) standard stock

고경도합금 및 경도 재질에 350~500Bhn(HRC37~49)의 사용.  
Applied for high temp Alloy and 350~500Bhn(HRC37~49) and harder  
9.5mm to 114.00mm

### Carbide(P25) standard stock

일반탄소강, 합금강 및 난삭재에 사용.  
Applied for Carbon Steel, Alloy Steel and Hard to Machine Material (Titanium and Stainless Steel)  
13.00mm to 47.00mm

B7

S

-

115

125

134

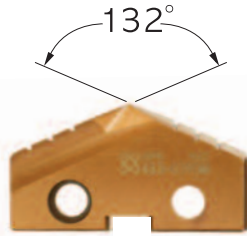
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스페이드 드릴 B7(Spade drill)	드릴종류 Drill type	체결 최소경 Min. fitting diameter	체결 최대경 Max. fitting diameter	드릴 전장 Total length	샹크 종류 Shank type
		B7K(Flange shank / Straight Flute Type)			
		B7S(Flange shank / Sprial Flute Type)			
		B7H(Taper shank / Straight Flute Type)			
		B7M(Taper shank / Sprial Flute Type)			
		B7X(Modular head Type)			

- 적용가능한 가장 짧은 드릴을 선택.  
Select the shortest holder possible for the application
- B7 drill이 경중앙 라인에서 0.08mm(0.03")이내로 안정적으로 고정되어 있는지 확인(HSS/Carbide)  
Ensure the B7 drills are held securely and are with within 0.08(0.03") of lenth in 0.03(HSS/Carbide)

## Y Series

9.5mm(.3740")-11mm(.4331")

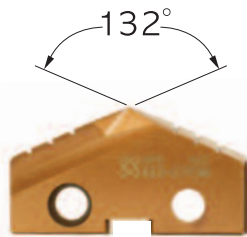


**Y Series**





Diameter			 TiN		 TiCN		 TiALN		 Alpha	
Inch (inch)	Metric (mm)	Decimal (inch)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)
	9.5	.3740"	15YT-0095M	48YT-0095M	15YC-0095M	48YC-0095M	15YA-0095M	48YA-0095M	15Yi-0095M	48Yi-0095M
3/8"	9.53	.3750"	15YT-03750	48YT-03750	15YC-03750	48YC-03750	15YA-03750	48YA-03750	15Yi-03750	48Yi-03750
	9.80	.3860"	15YT-03860	48YT-03860	15YC-03860	48YC-03860	15YA-03860	48YA-03860	15Yi-03860	48Yi-03860
25/64"	9.92	.3906"	15YT-03906	48YT-03906	15YC-03906	48YC-03906	15YA-03906	48YA-03906	15Yi-03906	48Yi-03906
	10.00	.3937"	15YT-0100M	48YT-0100M	15YC-0100M	48YC-0100M	15YA-0100M	48YA-0100M	15Yi-0100M	48Yi-0100M
	10.20	.4016"	15YT-04016	48YT-04016	15YC-04016	48YC-04016	15YA-04016	48YA-04016	15Yi-04016	48Yi-04016
13/32"	10.32	.4063"	15YT-04063	48YT-04063	15YC-04063	48YC-04063	15YA-04063	48YA-04063	15Yi-04063	48Yi-04063
	10.50	.4134"	15YT-0105M	48YT-0105M	15YC-0105M	48YC-0105M	15YA-0105M	48YA-0105M	15Yi-0105M	48Yi-0105M
27/64"	10.72	.4219"	15YT-04219	48YT-04219	15YC-04219	48YC-04219	15YA-04219	48YA-04219	15Yi-04219	48Yi-04219
	10.08	.4252"	15YT-04252	48YT-04252	15YC-04252	48YC-04252	15YA-04252	48YA-04252	15Yi-04252	48Yi-04252
	11.00	.4331"	15YT-0110M	48YT-0110M	15YC-0110M	48YC-0110M	15YA-0110M	48YA-0110M	15Yi-0110M	48Yi-0110M

## Z Series

11.11mm(.4375")-12.70mm(.5000")

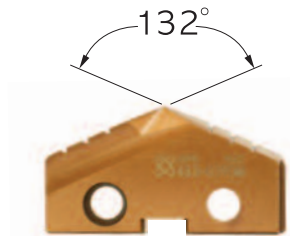


**Z Series**





Diameter			 TiN		 TiCN		 TiALN		 Alpha	
Inch (inch)	Metric (mm)	Decimal (inch)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)
7/16"	11.11	.4375"	15ZT-04375	48ZT-04375	15ZC-04375	48ZC-04375	15ZA-04375	48ZA-04375	15Zi-04375	48Zi-04375
	11.50	.4528"	15ZT-0115M	48ZT-0115M	15ZC-0115M	48ZC-0115M	15ZA-0115M	48ZA-0115M	15Zi-0115M	48Zi-0115M
29/64"	11.51	.4531"	15ZT-04531	48ZT-04531	15ZC-04531	48ZC-04531	15ZA-04531	48ZA-04531	15Zi-04531	48Zi-04531
15/32"	11.91	.4688"	15ZT-04688	48ZT-04688	15ZC-04688	48ZC-04688	15ZA-04688	48ZA-04688	15Zi-04688	48Zi-04688
	12.00	.4724"	15ZT-0120M	48ZT-0120M	15ZC-0120M	48ZC-0120M	15ZA-0120M	48ZA-0120M	15Zi-0120M	48Zi-0120M
31/64"	12.30	.4844"	15ZT-04844	48ZT-04844	15ZC-04844	48ZC-04844	15ZA-04844	48ZA-04844	15Zi-04844	48Zi-04844
	12.50	.4921"	15ZT-0125M	48ZT-0125M	15ZC-0125M	48ZC-0125M	15ZA-0125M	48ZA-0125M	15Zi-0125M	48Zi-0125M
1/2"	12.70	.5000"	15ZT-05000	48ZT-05000	15ZC-05000	48ZC-05000	15ZA-05000	48ZA-05000	15Zi-05000	48Zi-05000

# 0 Series

13mm(.5118")-17.5mm(.6890")

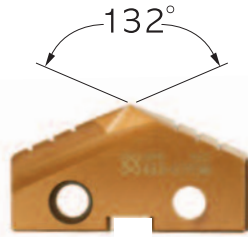


**0 Series**





Diameter			 TIN		 TICN		 TIALN		 Alpha		
Inch (inch)	Metric (mm)	Decimal (inch)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Carbide (P25)
33/64"	13.00	.5118"	150T-0130M	480T-0130M	150C-0130M	480C-0130M	150A-0130M	480A-0130M	150i-0130M	480i-0130M	P20i-0130M
	13.10	.5156"	150T-05156	480T-05156	150C-05156	480C-05156	150A-05156	480A-05156	150i-05156	480i-05156	P20i-05156
17/32"	13.49	.5313"	150T-05313	480T-05313	150C-05313	480C-05313	150A-05313	480A-05313	150i-05313	480i-05313	P20i-05313
	13.50	.5315"	150T-0135M	480T-0135M	150C-0135M	480C-0135M	150A-0135M	480A-0135M	150i-0135M	480i-0135M	P20i-0135M
35/64"	13.89	.5469"	150T-05469	480T-05469	150C-05469	480C-05469	150A-05469	480A-05469	150i-05469	480i-05469	P20i-05469
	14.00	.5512"	150T-0140M	480T-0140M	150C-0140M	480C-0140M	150A-0140M	480A-0140M	150i-0140M	480i-0140M	P20i-0140M
9/16"	14.29	.5625"	150T-05625	480T-05625	150C-05625	480C-05625	150A-05625	480A-05625	150i-05625	480i-05625	P20i-05625
	14.50	.5709"	150T-0145M	480T-0145M	150C-0145M	480C-0145M	150A-0145M	480A-0145M	150i-0145M	480i-0145M	P20i-0145M
37/64"	14.68	.5781"	150T-05781	480T-05781	150C-05781	480C-05781	150A-05781	480A-05781	150i-05781	480i-05781	P20i-05781
	15.00	.5906"	150T-0150M	480T-0150M	150C-0150M	480C-0150M	150A-0150M	480A-0150M	150i-0150M	480i-0150M	P20i-0150M
19/32"	15.08	.5938"	150T-05938	480T-05938	150C-05938	480C-05938	150A-05938	480A-05938	150i-05938	480i-05469	P20i-05469
39/64"	15.48	.6094"	150T-06094	480T-06094	150C-06094	480C-06094	150A-06094	480A-06094	150i-06094	480i-06094	P20i-06094
	15.50	.6102"	150T-0155M	480T-0155M	150C-0155M	480C-0155M	150A-0155M	480A-0155M	150i-0155M	480i-0155M	P20i-0155M
5/8"	15.88	.6250"	150T-06250	480T-06250	150C-06250	480C-06250	150A-06250	480A-06250	150i-06250	480i-06250	P20i-06250
	16.00	.6299"	150T-0160M	480T-0160M	150C-0160M	480C-0160M	150A-0160M	480A-0160M	150i-0160M	480i-0160M	P20i-0160M
41/64"	16.27	.6406"	150T-06406	480T-06406	150C-06406	480C-06406	150A-06406	480A-06406	150i-06406	480i-06406	P20i-06406
	16.50	.6496"	150T-0165M	480T-0165M	150C-0165M	480C-0165M	150A-0165M	480A-0165M	150i-0165M	480i-0165M	P20i-0165M
21/32"	16.67	.6563"	150T-06563	480T-06563	150C-06563	480C-06563	150A-06563	480A-06563	150i-06563	480i-06563	P20i-06563
	17.00	.6693"	150T-0170M	480T-0170M	150C-0170M	480C-0170M	150A-0170M	480A-0170M	150i-0170M	480i-0170M	P20i-0170M
11/16"	17.46	.6875"	150T-06875	480T-06875	150C-06875	480C-06875	150A-06875	480A-06875	150i-06875	480i-06875	P20i-06875
43/64"	17.70	.6719"	150T-06719	480T-06719	150C-06719	480C-06719	150A-06719	480A-06719	150i-06719	480i-06719	P20i-06719
	17.50	.6890"	150T-0175M	480T-0175M	150C-0175M	480C-0175M	150A-0175M	480A-0175M	150i-0175M	480i-0175M	P20i-0175M

# 1 Series

17.86mm(.7031")-24mm(.9449")

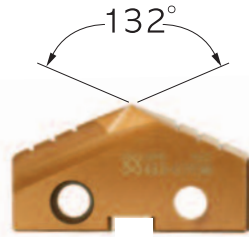


**1 Series**





Diameter			 TIN		 TiCN		 TiAlN		 Alpha		
Inch (inch)	Metric (mm)	Decimal (inch)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Carbide (P25)
45/64"	17.86	.7031"	151T-07031	481T-07031	151C-07031	481C-07031	151A-07031	481A-07031	151i-07031	481i-07031	P21i-07031
	18.00	.7087"	151T-0180M	481T-0180M	151C-0180M	481C-0180M	151A-0180M	481A-0180M	151i-0180M	481i-0180M	P21i0180M
23/32"	18.26	.7188"	151T-07188	481T-07188	151C-07188	481C-07188	151A-07188	481A-07188	151i-07188	481i-07188	P21i-07188
	18.50	.7283"	151T-0185M	481T-0185M	151C-0185M	481C-0185M	151A-0185M	481A-0185M	151i-0185M	481i-0185M	P21i-0185M
47/64"	18.65	.7344"	151T-07344	481T-07344	151C-07344	481C-07344	151A-07344	481A-07344	151i-07344	481i-07344	P21i-07344
	19.00	.7480"	151T-0190M	481T-0190M	151C-0190M	481C-0190M	151A-0190M	481A-0190M	151i-0190M	481i-0190M	P21i-0190M
3/4"	19.05	.7500"	151T-07500	481T-07500	151C-07500	481C-07500	151A-07500	481A-07500	151i-07500	481i-07500	P21i-07500
49/64"	19.45	.7656"	151T-07656	481T-07656	151C-07656	481C-07656	151A-07656	481A-07656	151i-07656	481i-07656	P21i-07656
	19.50	.7677"	151T-0195M	481T-0195M	151C-0195M	481C-0195M	151A-0195M	481A-0195M	151i-0195M	481i-0195M	P21i-0195M
25/32"	19.84	.7813"	151T-07813	481T-07813	151C-07813	481C-07813	151A-07813	481A-07813	151i-07813	481i-07813	P21i-07813
	20.00	.7874"	151T-0200M	481T-0200M	151C-0200M	481C-0200M	151A-0200M	481A-0200M	151i-0200M	481i-0200M	P21i-0200M
51/64"	20.24	.7969"	151T-07969	481T-07969	151C-07969	481C-07969	151A-07969	481A-07969	151i-07969	481i-07969	P21i-07969
	20.50	.8071"	151T-0205M	481T-0205M	151C-0205M	481C-0205M	151A-0205M	481A-0205M	151i-0205M	481i-0205M	P21i-0205M
13/16"	20.64	.8125"	151T-08125	481T-08125	151C-08125	481C-08125	151A-08125	481A-08125	151i-08125	481i-08125	P21i-08125
	21.00	.8268"	151T-0210M	481T-0210M	151C-0210M	481C-0210M	151A-0210M	481A-0210M	151i-0210M	481i-0210M	P21i-0210M
27/32"	21.43	.8438"	151T-08438	481T-08438	151C-08438	481C-08438	151A-08438	481A-08438	151i-08438	481i-08438	P21i-08438
	21.50	.8465"	151T-0215M	481T-0215M	151C-0215M	481C-0215M	151A-0215M	481A-0215M	151i-0215M	481i-0215M	P21i-0215M
55/64"	21.83	.8594"	151T-08594	481T-08594	151C-08594	481C-08594	151A-08594	481A-08594	151i-08594	481i-08594	P21i-08594
	22.00	.8661"	151T-0220M	481T-0220M	151C-0220M	481C-0220M	151A-0220M	481A-0220M	151i-0220M	481i-0220M	P21i-0220M
7/8"	22.23	.8750"	151T-08750	481T-08750	151C-08750	481C-08750	151A-08750	481A-08750	151i-08750	481i-08750	P21i-08750
	22.50	.8858"	151T-0225M	481T-0225M	151C-0225M	481C-0225M	151A-0225M	481A-0225M	151i-0225M	481i-0225M	P21i-0225M
57/64"	22.62	.8906"	151T-08906	481T-08906	151C-08906	481C-08906	151A-08906	481A-08906	151i-08906	481i-08906	P21i-08906
	23.00	.9055"	151T-0230M	481T-0230M	151C-0230M	481C-0230M	151A-0230M	481A-0230M	151i-0230M	481i-0230M	P21i-0230M
29/32"	23.02	.9063"	151T-09063	481T-09063	151C-09063	481C-09063	151A-09063	481A-0235M	151i-0235M	481i-0235M	P21i-0235M
59/64"	23.42	.9219"	151T-09219	481T-09219	151C-09219	481C-09219	151A-09219	481A-09219	151i-09219	481i-09219	P21i-09219
	23.50	.9252"	151T-0235M	481T-0235M	151C-0235M	481C-0235M	151A-0235M	481A-0235M	151i-0235M	481i-0235M	P21i-0235M
15/16"	23.81	.9375"	151T-09375	481T-09375	151C-09375	481C-09375	151A-09375	481A-09375	151i-09375	481i-09375	P21i-09375
	24.00	.9449"	151T-0240M	481T-0240M	151C-0240M	481C-0240M	151A-0240M	481A-0240M	151i-0240M	481i-0240M	P21i-0240M

## 2 Series

21.5mm(.0688")-35.0mm(1.3780")

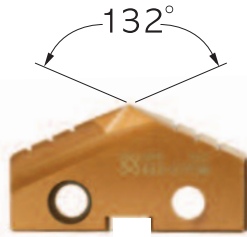


2 Series





Diameter			 TIN		 TICN		 TIALN		 Alpha		
Inch (inch)	Metric (mm)	Decimal (inch)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Carbide (P25)
31/32"	24.50	.9646"	152T-0245M	482T-0245M	152C-0245M	482C-0245M	152A-0245M	482A-0245M	152i-0245M	482i-0245M	P22i-0245M
	24.61	.9688"	152T-09688	482T-09688	152C-09688	482C-09688	152A-09688	482A-09688	152i-09688	482i-09688	P22i-09688
63/64"	24.85	.9783"	152T-02485	482T-02485	152C-02485	482C-02485	152A-02485	482A-02485	152i-02485	482i-02485	P22i-02485
	25.00	.9843"	152T-0250M	482T-0250M	152C-0250M	482C-0250M	152A-0250M	482A-0250M	152i-0250M	482i-0250M	P22i-0250M
1"	25.40	1.0000"	152T-10000	482T-10000	152C-10000	482C-10000	152A-10000	482A-10000	152i-10000	482i-10000	P22i-10000
	25.50	1.0039"	152T-0255M	482T-0255M	152C-0255M	482C-0255M	152A-0255M	482A-0255M	152i-0255M	482i-0255M	P22i-0255M
1-1/64"	25.80	1.0156"	152T-10156	482T-10156	152C-10156	482C-10156	152A-10156	482A-10156	152i-10156	482i-10156	P22i-10156
	26.00	1.0236"	152T-0260M	482T-0260M	152C-0260M	482C-0260M	152A-0260M	482A-0260M	152i-0260M	482i-0260M	P22i-0260M
1-1/32"	26.19	1.0313"	152T-10313	482T-10313	152C-10313	482C-10313	152A-10313	482A-10313	152i-10313	482i-10313	P22i-10313
	26.50	1.0431"	152T-0265M	482T-0265M	152C-0265M	482C-0265M	152A-0265M	482A-0265M	152i-0265M	482i-0265M	P22i-0265M
1-3/64"	26.59	1.0469"	152T-10469	482T-10469	152C-10469	482C-10469	152A-10469	482A-10469	152i-10469	482i-10469	P22i-10469
1-1/16"	26.99	1.0625"	152T-10625	482T-10625	152C-10625	482C-10625	152A-10625	482A-10625	152i-10625	482i-10625	P22i-10625
	27.00	1.0630"	152T-0270M	482T-0270M	152C-0270M	482C-0270M	152A-0270M	482A-0270M	152i-0270M	482i-0270M	P22i-0270M
1-3/32"	27.50	1.0827"	152T-0275M	482T-0275M	152C-0275M	482C-0275M	152A-0275M	482A-0275M	152i-0275M	482i-0275M	P22i-0275M
	27.78	1.0938"	152T-10938	482T-10938	152C-10938	482C-10938	152A-10938	482A-10938	152i-10938	482i-10938	P22i-10938
1-7/64"	28.00	1.1024"	152T-0280M	482T-0280M	152C-0280M	482C-0280M	152A-0280M	482A-0280M	152i-0280M	482i-0280M	P22i-0280M
	28.18	1.1094"	152T-11094	482T-11094	152C-11094	482C-11094	152A-11094	482A-11094	152i-11094	482i-11094	P22i-11094
1-1/8"	28.50	1.1220"	152T-0285M	482T-0285M	152C-0285M	482C-0285M	152A-0285M	482A-0285M	152i-0285M	482i-0285M	P22i-0285M
	28.58	1.1250"	152T-11250	482T-11250	152C-11250	482C-11250	152A-11250	482A-11250	152i-11250	482i-11250	P22i-11250
1-5/32"	29.00	1.1417"	152T-0290M	482T-0290M	152C-0290M	482C-0290M	152A-0290M	482A-0290M	152i-0290M	482i-0290M	P22i-0290M
	29.37	1.1563"	152T-11563	482T-11563	152C-11563	482C-11563	152A-11563	482A-11563	152i-11563	482i-11563	P22i-11563
1-3/16"	29.50	1.1614"	152T-0295M	482T-0295M	152C-0295M	482C-0295M	152A-0295M	482A-0295M	152i-0295M	482i-0295M	P22i-0295M
	30.00	1.1811"	152T-0300M	482T-0300M	152C-0300M	482C-0300M	152A-0300M	482A-0300M	152i-0300M	482i-0300M	P22i-0300M
1-7/32"	30.16	1.1875"	152T-11875	482T-11875	152C-11875	482C-11875	152A-11875	482A-11875	152i-11875	482i-11875	P22i-11875
	30.50	1.2008"	152T-0305M	482T-0305M	152C-0305M	482C-0305M	152A-0305M	482A-0305M	152i-0305M	482i-0305M	P22i-0305M
1-1/4"	30.96	1.2188"	152T-12188	482T-12188	152C-12188	482C-12188	152A-12188	482A-12188	152i-12188	482i-12188	P22i-12188
	31.00	1.2205"	152T-0310M	482T-0310M	152C-0310M	482C-0310M	152A-0310M	482A-0310M	152i-0310M	482i-0310M	P22i-0310M
1-9/32"	31.50	1.2402"	152T-0315M	482T-0315M	152C-0315M	482C-0315M	152A-0315M	482A-0315M	152i-0315M	482i-0315M	P22i-0315M
	31.75	1.2500"	152T-12500	482T-12500	152C-12500	482C-12500	152A-12500	482A-12500	152i-12500	482i-12500	P22i-12500
1-5/16"	32.00	1.2598"	152T-0320M	482T-0320M	152C-0320M	482C-0320M	152A-0320M	482A-0320M	152i-0320M	482i-0320M	P22i-0320M
	32.50	1.2795"	152T-0325M	482T-0325M	152C-0325M	482C-0325M	152A-0325M	482A-0325M	152i-0325M	482i-0325M	P22i-0325M
1-11/32"	32.54	1.2813"	152T-12813	482T-12813	152C-12813	482C-12813	152A-12813	482A-12813	152i-12813	482i-12813	P22i-12813
	33.00	1.2992"	152T-0330M	482T-0330M	152C-0330M	482C-0330M	152A-0330M	482A-0330M	152i-0330M	482i-0330M	P22i-0330M
1-3/8"	33.34	1.3125"	152T-13125	482T-13125	152C-13125	482C-13125	152A-13125	482A-13125	152i-13125	482i-13125	P22i-13125
	33.50	1.3187"	152T-0335M	482T-0335M	152C-0335M	482C-0335M	152A-0335M	482A-0335M	152i-0335M	482i-0335M	P22i-0335M
1-5/8"	34.00	1.3386"	152T-0340M	482T-0340M	152C-0340M	482C-0340M	152A-0340M	482A-0340M	152i-0340M	482i-0340M	P22i-0340M
	34.13	1.3438"	152T-13438	482T-13438	152C-13438	482C-13438	152A-13438	482A-13438	152i-13438	482i-13438	P22i-13438
1-3/4"	34.50	1.3583"	152T-0345M	482T-0345M	152C-0345M	482C-0345M	152A-0345M	482A-0345M	152i-0345M	482i-0345M	P22i-0345M
	34.93	1.3750"	152T-137550	482T-137550	152C-137550	482C-137550	152A-137550	482A-137550	152i-137550	482i-137550	P22i-137550
35.00	1.3780"	152T-0350M	482T-0350M	152C-0350M	482C-0350M	152A-0350M	482A-0350M	152i-0350M	482i-0350M	P22i-0350M	

# 3 Series

35.5mm-47.63mm(1.8750")



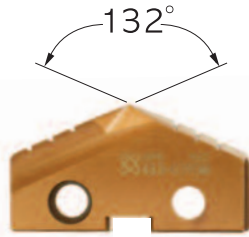
**3 Series**

Diameter			 TIN		 TiCN		 TiAlN		 Alpha		
Inch (inch)	Metric (mm)	Decimal (inch)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Carbide (P25)
1-13/32"	35.50	1.3976"	153T-0355M	483T-0355M	153C-0355M	483C-0355M	153A-0355M	483A-0355M	153i-0355M	483i-0355M	P23i-0355M
	35.72	1.4063"	153T-14063	483T-14063	153C-14063	483C-14063	153A-14063	483A-14063	153i-14063	483i-14063	P23i-14063
	36.00	1.4173"	153T-0360M	483T-0360M	153C-0360M	483C-0360M	153A-0360M	483A-0360M	153i-0360M	483i-0360M	P23i-0360M
1-7/16"	36.50	1.4370"	153T-0365M	483T-0365M	153C-0365M	483C-0365M	153A-0365M	483A-0365M	153i-0365M	483i-0365M	P23i-0365M
	36.51	1.4375"	153T-14375	483T-14375	153C-14375	483C-14375	153A-14375	483A-14375	153i-14375	483i-14375	P23i-14375
	37.00	1.4567"	153T-0370M	483T-0370M	153C-0370M	483C-0370M	153A-0370M	483A-0370M	153i-0370M	483i-0370M	P23i-0370M
1-15/32"	37.31	1.4688"	153T-14688	483T-14688	153C-14688	483C-14688	153A-14688	483A-14688	153i-14688	483i-14688	P23i-14688
	38.00	1.4961"	153T-0380M	483T-0380M	153C-0380M	483C-0380M	153A-0380M	483A-0380M	153i-0380M	483i-0380M	P23i-0380M
1-1/2"	38.10	1.5000"	153T-15000	483T-15000	153C-15000	483C-15000	153A-15000	483A-15000	153i-15000	483i-15000	P23i-15000
1-17/32"	38.89	1.5313"	153T-15313	483T-15313	153C-15313	483C-15313	153A-15313	483A-15313	153i-15313	483i-15313	P23i-15313
	39.00	1.5354"	153T-0390M	483T-0390M	153C-0390M	483C-0390M	153A-0390M	483A-0390M	153i-0390M	483i-0390M	P23i-0390M
	39.69	1.5625"	153T-15625	483T-15625	153C-15625	483C-15625	153A-15625	483A-15625	153i-15625	483i-15625	P23i-15625
1-9/16"	40.00	1.5748"	153T-0400M	483T-0400M	153C-0400M	483C-0400M	153A-0400M	483A-0400M	153i-0400M	483i-0400M	P23i-0400M
	40.48	1.5938"	153T-15938	483T-15938	153C-15938	483C-15938	153A-15938	483A-15938	153i-15938	483i-15938	P23i-15938
	41.00	1.6142"	153T-0410M	483T-0410M	153C-0410M	483C-0410M	153A-0410M	483A-0410M	153i-0410M	483i-0410M	P23i-0410M
1-5/8"	41.28	1.6250"	153T-16250	483T-16250	153C-16250	483C-16250	153A-16250	483A-16250	153i-16250	483i-16250	P23i-16250
	42.00	1.6535"	153T-0420M	483T-0420M	153C-0420M	483C-0420M	153A-0420M	483A-0420M	153i-0420M	483i-0420M	P23i-0420M
1-21/32"	42.07	1.6563"	153T-16563	483T-16563	153C-16563	483C-16563	153A-16563	483A-16563	153i-16563	483i-16563	P23i-16563
1-11/16"	42.86	1.6875"	153T-16875	483T-16875	153C-16875	483C-16875	153A-16875	483A-16875	153i-16875	483i-16875	P23i-16875
	43.00	1.6929"	153T-0430M	483T-0430M	153C-0430M	483C-0430M	153A-0430M	483A-0430M	153i-0430M	483i-0430M	P23i-0430M
1-23/32"	43.66	1.7188"	153T-17188	483T-17188	153C-17188	483C-17188	153A-17188	483A-17188	153i-17188	483i-17188	P23i-17188
	44.00	1.7323"	153T-0440M	483T-0440M	153C-0440M	483C-0440M	153A-0440M	483A-0440M	153i-0440M	483i-0440M	P23i-0440M
1-3/4"	44.45	1.7500"	153T-17500	483T-17500	153C-17500	483C-17500	153A-17500	483A-17500	153i-17500	483i-17500	P23i-17500
	45.00	1.7717"	153T-0450M	483T-0450M	153C-0450M	483C-0450M	153A-0450M	483A-0450M	153i-0450M	483i-0450M	P23i-0450M
1-25/32"	45.24	1.7813"	153T-17813	483T-17813	153C-17813	483C-17813	153A-17813	483A-17813	153i-17813	483i-17813	P23i-17813
	46.00	1.8110"	153T-0460M	483T-0460M	153C-0460M	483C-0460M	153A-0460M	483A-0460M	153i-0460M	483i-0460M	P23i-0460M
1-13/16"	46.04	1.8125"	153T-18125	483T-18125	153C-18125	483C-18125	153A-18125	483A-18125	153i-18125	483i-18125	P23i-18125
1-27/32"	46.83	1.8438"	153T-18438	483T-18438	153C-18438	483C-18438	153A-18438	483A-18438	153i-18438	483i-18438	P23i-18438
	47.00	1.8504"	153T-0470M	483T-0470M	153C-0470M	483C-0470M	153A-0470M	483A-0470M	153i-0470M	483i-0470M	P23i-0470M
1-7/8"	47.63	1.8750"	153T-18750	483T-18750	153C-18750	483C-18750	153A-18750	483A-18750	153i-18750	483i-18750	P23i-18750







# 4 Series

48mm(1.8898")-65.09mm(2.5625")

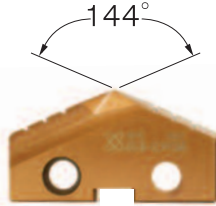


**4 Series**





Diameter			 TiN		 TiCN		 TiAlN		 Alpha	
Inch (inch)	Metric (mm)	Decimal (inch)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)	Super HSS (T-15)	Premium HSS(M48)
1-29/32"	48.00	1.8898"	154T-0480M	484T-0480M	154C-0480M	484C-0480M	154A-0480M	484A-0480M	154i-0480M	484i-0480M
	48.42	1.9063"	154T-19063	484T-19063	154C-19063	484C-19063	154A-19063	484A-19063	154i-19063	484i-19063
	49.00	1.9291"	154T-0490M	484T-0490M	154C-0490M	484C-0490M	154A-0490M	484A-0490M	154i-0490M	484i-0490M
1-15/16"	49.21	1.9375"	154T-19375	484T-19375	154C-19375	484C-19375	154A-19375	484A-19375	154i-19375	484i-19375
	50.00	1.9685"	154T-0500M	484T-0500M	154C-0500M	484C-0500M	154A-0500M	484A-0500M	154i-0500M	484i-0500M
1-31/32"	50.01	1.9688"	154T-19688	484T-19688	154C-19688	484C-19688	154A-19688	484A-19688	154i-19688	484i-19688
	2"	50.80	2.0000"	154T-20000	484T-20000	154C-20000	484C-20000	154A-20000	484A-20000	154i-20000
21.00		2.0078"	154T-0510M	484T-0510M	154C-0510M	484C-0510M	154A-0510M	484A-0510M	154i-0510M	484i-0510M
2-1/32"	51.19	2.0313"	154T-20313	484T-20313	154C-20313	484C-20313	154A-20313	484A-20313	154i-20313	484i-20313
2-3/64"	52.00	2.0472"	154T-20472	484T-20472	154C-20472	484C-20472	154A-20472	484A-20472	154i-20472	484i-20472
2-1/16"	52.39	2.0625"	154T-20625	484T-20625	154C-20625	484C-20625	154A-20625	484A-20625	154i-20625	484i-20625
	53.00	2.0866"	154T-0530M	484T-0530M	154C-0530M	484C-0530M	154A-0530M	484A-0530M	154i-0530M	484i-0530M
2-3/32"	53.18	2.0938"	154T-20938	484T-20938	154C-20938	484C-20938	154A-20938	484A-20938	154i-20938	484i-20938
2-1/8"	53.98	2.1250"	154T-21250	484T-21250	154C-21250	484C-21250	154A-21250	484A-21250	154i-21250	484i-21250
	54.00	2.1260"	154T-0540M	484T-0540M	154C-0540M	484C-0540M	154A-0540M	484A-0540M	154i-0540M	484i-0540M
2-5/32"	54.79	2.1563"	154T-21563	484T-21563	154C-21563	484C-21563	154A-21563	484A-21563	154i-21563	484i-21563
	55.00	2.1654"	154T-0550M	484T-0550M	154C-0550M	484C-0550M	154A-0550M	484A-0550M	154i-0550M	484i-0550M
2-3/16"	55.56	2.1875"	154T-21875	484T-21875	154C-21875	484C-21875	154A-21875	484A-21875	154i-21875	484i-21875
	56.00	2.2047"	154T-0560M	484T-0560M	154C-0560M	484C-0560M	154A-0560M	484A-0560M	154i-0560M	484i-0560M
2-7/32"	56.36	2.2188"	154T-22188	484T-22188	154C-22188	484C-22188	154A-22188	484A-22188	154i-22188	484i-22188
	57.00	2.2441"	154T-0570M	484T-0570M	154C-0570M	484C-0570M	154A-0570M	484A-0570M	154i-0570M	484i-0570M
2-1/4"	57.15	2.2500"	154T-22500	484T-22500	154C-22500	484C-22500	154A-22500	484A-22500	154i-22500	484i-22500
2-9/32"	57.94	2.2813"	154T-22813	484T-22813	154C-22813	484C-22813	154A-22813	484A-22813	154i-22813	484i-22813
	58.00	2.2835"	154T-0580M	484T-0580M	154C-0580M	484C-0580M	154A-0580M	484A-0580M	154i-0580M	484i-0580M
2-5/16"	58.74	2.3125"	154T-23125	484T-23125	154C-23125	484C-23125	154A-23125	484A-23125	154i-23125	484i-23125
	59.00	2.3228"	154T-0590M	484T-0590M	154C-0590M	484C-0590M	154A-0590M	484A-0590M	154i-0590M	484i-0590M
2-11/32"	59.53	2.3438"	154T-23438	484T-23438	154C-23438	484C-23438	154A-23438	484A-23438	154i-23438	484i-23438
	60.00	2.3662"	154T-0600M	484T-0600M	154C-0600M	484C-0600M	154A-0600M	484A-0600M	154i-0600M	484i-0600M
2-3/8"	60.33	2.3750"	154T-23750	484T-23750	154C-23750	484C-23750	154A-23750	484A-23750	154i-23750	484i-23750
	61.00	2.4016"	154T-0610M	484T-0610M	154C-0610M	484C-0610M	154A-0610M	484A-0610M	154i-0610M	484i-0610M
2-13/32"	61.12	2.1063"	154T-24063	484T-24063	154C-24063	484C-24063	154A-24063	484A-24063	154i-24063	484i-24063
2-7/16"	61.91	2.4375"	154T-24375	484T-24375	154C-24375	484C-24375	154A-24375	484A-24375	154i-24375	484i-24375
	62.00	2.4409"	154T-0620M	484T-0620M	154C-0620M	484C-0620M	154A-0620M	484A-0620M	154i-0620M	484i-0620M
2-15/32"	62.71	2.4688"	154T-24688	484T-24688	154C-24688	484C-24688	154A-24688	484A-24688	154i-24688	484i-24688
	63.00	2.4803"	154T-0630M	484T-0630M	154C-0630M	484C-0630M	154A-0630M	484A-0630M	154i-0630M	484i-0630M
2-1/2"	63.50	2.5000"	154T-0635M	484T-0635M	154C-0635M	484C-0635M	154A-0635M	484A-0635M	154i-0635M	484i-0635M
	64.00	2.5197"	154T-0640M	484T-0640M	154C-0640M	484C-0640M	154A-0640M	484A-0640M	154i-0640M	484i-0640M
2-17/32"	64.29	2.5313"	154T-25313	484T-25313	154C-25313	484C-25313	154A-25313	484A-25313	154i-25313	484i-25313
	65.00	2.5591"	154T-0650M	484T-0650M	154C-0650M	484C-0650M	154A-0650M	484A-0650M	154i-0650M	484i-0650M
2-9/16"	65.09	2.5625"	154T-25625	484T-25625	154C-25625	484C-25625	154A-25625	484A-25625	154i-25625	484i-25625

## 5,6 Series





63.5mm(2.2500")-76.2mm(3.0000") / 76.99mm(3.0313")-88.9mm(3.5000")



### 5 Series

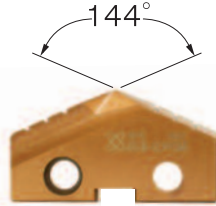
Diameter						
Inch (inch)	Metric (mm)	Decimal (inch)	HSS (M04)	HSS (M04)	HSS (M04)	HSS (M04)
2-1/2"	63.50	2.2500"	045T-0635M	045C-0635M	045A-0635M	045i-0635M
	64.00	2.5197"	045T-0640M	045C-0640M	045A-0640M	045i-0640M
2-17/32"	64.29	2.5313"	045T-25313	045C-25313	045A-25313	045i-25313
2-9/16"	65.09	2.5625"	045T-25625	045C-25625	045A-25625	045i-25625
2-19/32"	65.88	2.5938"	045T-25938	045C-25938	045A-25938	045i-25938
	66.00	2.5984"	045T-0660M	045C-0660M	045A-0660M	045i-0660M
2-5/8"	66.68	2.6250"	045T-26250	045C-26250	045A-26250	045i-26250
2-21/32"	67.47	2.6563"	045T-26563	045C-26563	045A-26563	045i-26563
	68.00	2.6772"	045T-0680M	045C-0680M	045A-0680M	045i-0680M
2-11/16"	68.26	2.6875"	045T-26875	045C-26875	045A-26875	045i-26875
2-23/32"	69.05	2.7188"	045T-27188	045C-27188	045A-27188	045i-27188
2-3/4"	69.85	2.7500"	045T-27500	045C-27500	045A-27500	045i-27500
	70.00	2.7559"	045T-0700M	045C-0700M	045A-0700M	045i-0700M
2-25/32"	70.64	2.7813"	045T-27813	045C-27813	045A-27813	045i-27813
2-13/16"	71.44	2.8125"	045T-28125	045C-28125	045A-28125	045i-28125
	72.00	2.8346"	045T-0720M	045C-0720M	045A-0720M	045i-0720M
2-27/32"	72.23	2.8438"	045T-28438	045C-28438	045A-28438	045i-28438
2-7/8"	73.03	2.8750"	045T-28750	045C-28750	045A-28750	045i-28750
2-29/32"	73.82	2.9063"	045T-29063	045C-29063	045A-29063	045i-29063
	74.00	2.9134"	045T-0740M	045C-0740M	045A-0740M	045i-0740M
2-15/16"	74.61	2.9375"	045T-29375	045C-29375	045A-29375	045i-29375
2-31/32"	75.41	2.9688"	045T-29688	045C-29688	045A-29688	045i-29688
	76.00	2.9921"	045T-0760M	045C-0760M	045A-0760M	045i-0760M
3"	76.20	3.0000"	045T-30000	045C-30000	045A-30000	045i-30000

### 6 Series





Diameter						
Inch (inch)	Metric (mm)	Decimal (inch)	HSS (M04)	HSS (M04)	HSS (M04)	HSS (M04)
3-1/32"	76.99	3.0313"	046T-30313	046C-30313	046A-30313	046i-30313
3-1/16"	77.79	3.0625"	046T-30625	046C-30625	046A-30625	046i-30625
	78.00	3.0709"	046T-0780M	046C-0780M	046A-0780M	046i-0780M
3-3/32"	78.58	3.0938"	046T-30938	046C-30938	046A-30938	046i-30938
3-1/8"	79.38	3.1250"	046T-31250	046C-31250	046A-31250	046i-31250
	80.00	3.1496"	046T-0800M	046C-0800M	046A-0800M	046i-0800M
3-5/32"	80.17	3.1563"	046T-31563	046C-31563	046A-31563	046i-31563
3-3/16"	80.96	3.1875"	046T-31875	046C-31875	046A-31875	046i-31875
3-7/32"	81.76	3.2188"	046T-32188	046C-32188	046A-32188	046i-32188
	82.00	3.2283"	046T-0820M	046C-0820M	046A-0820M	046i-0820M
3-1/4"	82.55	3.2500"	046T-32500	046C-32500	046A-32500	046i-32500
3-9/32"	83.34	3.2813"	046T-32813	046C-32813	046A-32813	046i-32813
	84.00	3.3071"	046T-0840M	046C-0840M	046A-0840M	046i-0840M
3-5/16"	84.14	3.3125"	046T-33125	046C-33125	046A-33125	046i-33125
3-11/32"	84.93	3.3438"	046T-33438	046C-33438	046A-33438	046i-33438
3-3/8"	85.73	3.3750"	046T-33750	046C-33750	046A-33750	046i-33750
	86.00	3.3858"	046T-0860M	046C-0860M	046A-0860M	046i-0860M
3-13/32"	86.52	3.4063"	046T-34063	046C-34063	046A-34063	046i-34063
3-7/16"	87.31	3.4375"	046T-34375	046C-34375	046A-34375	046i-34375
	88.00	3.4646"	046T-0880M	046C-0880M	046A-0880M	046i-0880M
3-15/32"	88.11	3.4688"	046T-34688	046C-34688	046A-34688	046i-34688
3-1/2"	88.90	3.5000"	046T-35000	046C-35000	046A-35000	046i-35000

## 7,8 Series





89.69mm(3.5313")-101.60mm(4.0000") / 102mm(4.0157")-114.30mm(4.5000")



### 7 Series

Diameter						
Inch (inch)	Metric (mm)	Decimal (inch)	TiN HSS (M04)	TiCN HSS (M04)	TiAlN HSS (M04)	Alpha HSS (M04)
3-17/32"	89.69	3.5313"	047T-35313	047C-35313	047A-35313	047i-35313
	90.00	3.5433"	047T-0900M	047C-0900M	047A-0900M	047i-0900M
3-9/16"	90.49	3.5625"	047T-35625	047C-35625	047A-35625	047i-35625
3-19/32"	91.28	3.5938"	047T-35938	047C-35938	047A-35938	047i-35938
	92.00	3.6221"	047T-0920M	047C-0920M	047A-0920M	047i-0920M
3-5/8"	92.08	3.6250"	047T-36250	047C-36250	047A-36250	047i-36250
3-21/32"	92.87	3.6563"	047T-36563	047C-36563	047A-36563	047i-36563
3-11/16"	93.66	3.6875"	047T-36875	047C-36875	047A-36875	047i-36875
	94.00	3.7008"	047T-0940M	047C-0940M	047A-0940M	047i-0940M
3-23/32"	94.46	3.7188"	047T-37188	047C-37188	047A-37188	047i-37188
3-3/4"	95.25	3.7500"	047T-37500	047C-37500	047A-37500	047i-37500
	96.00	3.7795"	047T-0960M	047C-0960M	047A-0960M	047i-0960M
3-25/32"	96.04	3.7813"	047T-37813	047C-37813	047A-37813	047i-37813
3-13/16"	96.84	3.8125"	047T-38125	047C-38125	047A-38125	047i-38125
3-27/32"	97.63	3.8438"	047T-38438	047C-38438	047A-38438	047i-38438
	98.00	3.8583"	047T-0980M	047C-0980M	047A-0980M	047i-0980M
3-7/8"	98.43	3.8750"	047T-38750	047C-38750	047A-38750	047i-38750
3-29/32"	99.22	3.9063"	047T-39063	047C-39063	047A-39063	047i-39063
	100.00	3.9370"	047T-1000M	047C-1000M	047A-1000M	047i-1000M
3-15/16"	100.01	3.9375"	047T-39375	047C-39375	047A-39375	047i-39375
3-31/32"	100.81	3.9688"	047T-39688	047C-39688	047A-39688	047i-39688
	4"	101.60	4.0000"	047T-40000	047C-40000	047A-40000

### 8 Series

Diameter						
Inch (inch)	Metric (mm)	Decimal (inch)	TiN HSS (M04)	TiCN HSS (M04)	TiAlN HSS (M04)	Alpha HSS (M04)
4-1/64"	102.00	4.0157"	048T-40157	048C-40157	048A-40157	048i-40157
4-1/16"	103.19	4.0625"	048T-40625	048C-40625	048A-40625	048i-40625
4-3/32"	103.98	4.0938"	048T-40938	048C-40938	048A-40938	048i-40938
	104.00	4.0945"	048T-1040M	048C-1040M	048A-1040M	048i-1040M
4-1/8"	104.78	4.1250"	048T-41250	048C-41250	048A-41250	048i-41250
	106.00	4.1732"	048T-1060M	048C-1060M	048A-1060M	048i-1060M
4-3/16"	106.36	4.1875"	048T-41875	048C-41875	048A-41875	048i-41875
4-1/4"	107.95	4.2500"	048T-42500	048C-42500	048A-42500	048i-42500
	108.00	4.2520"	048T-1082M	048C-1082M	048A-1082M	048i-1082M
4-5/16"	109.54	4.3125"	048T-43125	048C-43125	048A-43125	048i-43125
	110.00	4.3307"	048T-1100M	048C-1100M	048A-1100M	048i-1100M
4-3/8"	111.13	4.3750"	048T-43750	048C-43750	048A-43750	048i-43750
	112.00	4.4094"	048T-1120M	048C-1120M	048A-1120M	048i-1120M
4-7/16"	112.71	4.4375"	048T-44375	048C-44375	048A-44375	048i-44375
	114.00	4.4482"	048T-1140M	048C-1140M	048A-1140M	048i-1140M
4-1/2"	114.30	4.5000"	048T-45000	048C-45000	048A-45000	048i-45000