



World Leaders in  
Tools Manufacturing

CARMET TOOLS & INSERTS Ltd.



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# Solid carbide tools



**SOLID CARBIDE DRILLS**



## Carbide Reamers ,Hole mills,Core drills

Finishing reamers,Burnishing reamers, Step combination reamers & Hole mills.



## FORM & PROFILE CUTTERS

Profile cutters & tools , Step form drills & Reamers ,  
Furrtree cutters , Flat & Circular form tools , Form Inserts.



Carbide Side & Face Cutters ,Shell end mills, Slitting Saws





## SOLID CARBIDE 5XD COOLANT COATED DRILLS

**APPLICATIONS** for high performance drilling in a broad range of materials

**FEATURES** 142° drill point angle. 30° helix angle. TiAlN coated..



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>SHANK DIAMETER</u>	<u>FLUTE LENGTH</u>	<u>OVERALL LENGTH</u>
Metric	3mm	3mm	24mm	75mm
Number	#31	1/8"	1-1/8"	3"
Metric	3.10mm	4mm	32mm	80mm
Fractional	1/8"	1/8"	1-1/8"	3"
Metric	3.20mm	4mm	32mm	80mm
Number	#30	5/32"	1.260"	3.150"
Metric	3.30mm	4mm	32mm	80mm
Metric	3.40mm	4mm	32mm	80mm
Number	#29	5/32"	1.260"	3.150"
Metric	3.50mm	4mm	32mm	80mm

Fractional	9/64"	5/32"	1.260"	3.150"
Metric	3.60mm	4mm	32mm	80mm
Metric	3.70mm	4mm	32mm	80mm
Metric	3.80mm	4mm	32mm	80mm
Number	#24	5/32"	1.260"	3.150"
Metric	3.90mm	4mm	32mm	80mm
Fractional	5/32"	5/32"	1.260"	3.150"
Metric	4mm	4mm	32mm	80mm
Number	#21	3/16"	1-1/2"	3.230"
Metric	4.10mm	5mm	38mm	82mm
Metric	4.20mm	5mm	38mm	82mm
Metric	4.30mm	5mm	38mm	82mm
Fractional	11/64"	3/16"	1-1/2"	3.230"
Metric	4.40mm	5mm	38mm	82mm
Metric	4.50mm	5mm	38mm	82mm
Metric	4.60mm	5mm	38mm	82mm
Metric	4.70mm	5mm	38mm	82mm
Fractional	3/16"	3/16"	1-1/2"	3.230"
Metric	4.80mm	5mm	38mm	82mm
Metric	4.90mm	5mm	38mm	82mm
Metric	5mm	5mm	38mm	82mm
Metric	5.10mm	6mm	40mm	82mm
Fractional	13/64"	15/64"	1.580"	3.230"
Metric	5.20mm	6mm	40mm	82mm
Metric	5.30mm	6mm	40mm	82mm
Metric	5.40mm	6mm	40mm	82mm
Metric	5.50mm	6mm	40mm	82mm
Fractional	7/32"	15/64"	1.580"	3.230"
Number	#2	15/64"	1.580"	3.230"
Metric	5.70mm	6mm	40mm	82mm
Metric	5.80mm	6mm	40mm	82mm
Metric	5.90mm	6mm	40mm	82mm
Fractional	15/64"	15/64"	1.580"	3.230"
Metric	6mm	6mm	40mm	82mm
Metric	6.10mm	8mm	48mm	91mm
Letter	C	1/4"	1.740"	3.300"

Metric	6.20mm	8mm	48mm	91mm
Letter	D	1/4"	1.740"	3.300"
Metric	6.30mm	8mm	48mm	91mm
Fractional	1/4"	1/4"	1.740"	3.300"
Metric	6.40mm	8mm	48mm	91mm
Metric	6.50mm	8mm	48mm	91mm
Letter	F	5/16"	1- 57/64"	3.580"
Metric	6.60mm	8mm	48mm	91mm
Letter	G	5/16"	1- 57/64"	3.580"
Metric	6.70mm	8mm	48mm	91mm
Fractional	17/64"	5/16"	1- 57/64"	3.580"
Metric	6.80mm	8mm	48mm	91mm
Metric	6.90mm	8mm	48mm	91mm
Metric	7mm	8mm	48mm	91mm
Metric	7.10mm	8mm	48mm	91mm
Fractional	9/32"	5/16"	1- 57/64"	3.580"
Metric	7.20mm	8mm	48mm	91mm
Metric	7.30mm	8mm	48mm	91mm
Metric	7.40mm	8mm	48mm	91mm
Metric	7.50mm	8mm	48mm	91mm
Fractional	19/64"	5/16"	1- 57/64"	3.580"
Metric	7.60mm	8mm	48mm	91mm
Metric	7.70mm	8mm	48mm	91mm
Metric	7.80mm	8mm	48mm	91mm
Metric	7.90mm	8mm	48mm	91mm
Fractional	5/16"	5/16"	1- 57/64"	3.580"
Metric	8mm	8mm	48mm	91mm
Metric	8.10mm	10mm	55mm	103mm
Metric	8.20mm	10mm	55mm	103mm
Metric	8.30mm	10mm	55mm	103mm
Fractional	21/64"	25/64"	2.170"	4.060"
Metric	8.40mm	10mm	55mm	103mm
Letter	Q	25/64"	2.170"	4.060"
Metric	8.50mm	10mm	55mm	103mm
Metric	8.60mm	10mm	55mm	103mm

Metric	8.70mm	10mm	55mm	103mm
Fractional	11/32"	25/64"	2.170"	4.060"
Metric	8.80mm	10mm	55mm	103mm
Metric	8.90mm	10mm	55mm	103mm
Metric	9mm	10mm	55mm	103mm
Metric	9.10mm	10mm	55mm	103mm
Fractional	23/64"	25/64"	2.170"	4.060"
Metric	9.20mm	10mm	55mm	103mm
Metric	9.25mm	10mm	55mm	103mm
Metric	9.30mm	10mm	55mm	103mm
Metric	9.40mm	10mm	55mm	103mm
Metric	9.50mm	10mm	55mm	103mm
Fractional	3/8"	25/64"	2.170"	4.060"
Metric	9.60mm	10mm	55mm	103mm
Metric	9.70mm	10mm	55mm	103mm

Metric	9.80mm	10mm	55mm	103mm
Metric	9.90mm	10mm	55mm	103mm
Fractional	25/64"	25/64"	2.170"	4.060"
Metric	10mm	10mm	55mm	103mm
Metric	10.10mm	12mm	60mm	120mm
Metric	10.20mm	12mm	60mm	120mm
Metric	10.30mm	12mm	60mm	120mm
Fractional	13/32"	15/32"	2- 23/64"	4.720"
Metric	10.40mm	12mm	60mm	120mm
Metric	10.50mm	12mm	60mm	120mm
Metric	10.60mm	12mm	60mm	120mm
Metric	10.70mm	12mm	60mm	120mm
Fractional	27/64"	15/32"	2- 23/64"	4.720"
Metric	10.80mm	12mm	60mm	120mm
Metric	10.90mm	12mm	60mm	120mm
Metric	11mm	12mm	60mm	120mm
Metric	11.10mm	12mm	66mm	120mm
Fractional	7/16"	15/32"	2.600"	4.720"
Metric	11.20mm	12mm	66mm	120mm
Metric	11.30mm	12mm	66mm	120mm

Metric	11.40mm	12mm	66mm	120mm
Metric	11.50mm	12mm	66mm	120mm
Metric	11.60mm	12mm	66mm	120mm
Metric	11.70mm	12mm	66mm	120mm
Metric	11.80mm	12mm	66mm	120mm
Metric	11.90mm	12mm	66mm	120mm
Fractional	15/32"	15/32"	2.600"	4.720"
Metric	12mm	12mm	66mm	120mm
Metric	12.10mm	14mm	72mm	126mm
Fractional	31/64"	1/2"	2.830"	4-3/4"
Metric	12.50mm	14mm	72mm	126mm
Fractional	1/2"	1/2"	2.830"	4-3/4"
Metric	12.80mm	14mm	72mm	126mm
Metric	12.83mm	14mm	72mm	126mm
Metric	12.90mm	14mm	72mm	126mm
Metric	13mm	14mm	72mm	126mm
Fractional	33/64"	35/64"	3.030"	5.280"
Fractional	17/32"	35/64"	3.030"	5.280"
Metric	13.50mm	14mm	77mm	134mm
Metric	13.70mm	14mm	77mm	134mm
Fractional	35/64"	35/64"	3.030"	5.280"
Metric	14mm	14mm	77mm	134mm
Fractional	9/16"	5/8"	3.150"	5.510"
Metric	14.50mm	16mm	80mm	140mm
Metric	14.70mm	16mm	80mm	140mm
Metric	15mm	16mm	80mm	140mm
Fractional	19/32"	5/8"	3.230"	5-3/4"
Metric	15.30mm	16mm	82mm	146mm
Metric	15.50mm	16mm	82mm	146mm
Metric	15.70mm	16mm	82mm	146mm
Fractional	5/8"	5/8"	3.230"	5-3/4"
Metric	16mm	16mm	82mm	146mm
Metric	16.08mm	18mm	90mm	158mm
Metric	16.30mm	18mm	90mm	158mm
Metric	16.50mm	18mm	90mm	158mm
Fractional	21/32"	45/64"	3.540"	6.220"

Metric	17mm	18mm	90mm	158mm
Fractional	11/16"	45/64"	3.740"	6.220"
Metric	17.50mm	18mm	95mm	158mm
Metric	18mm	18mm	95mm	158mm
Metric	18.50mm	20mm	100mm	160mm
Fractional	3/4"	3/4"	3.940"	6.300"
Metric	19.16mm	20mm	100mm	160mm
Metric	19.25mm	20mm	100mm	160mm
Metric	19.30mm	20mm	100mm	160mm
Metric	19.50mm	20mm	100mm	160mm
Metric	20mm	20mm	100mm	160mm



## NON COOLANT THROUGH 140 DEGREE CARBIDE DRILLS

**APPLICATIONS** For drilling steels, stainless steels, high temp alloys & cast iron.

**FEATURES** Drilling depth of 5 times drill diameter. 30° helix angle. TiAlN coated.



### 5XD NON COOLANT THROUGH 140 DEGREE CARBIDE DRILLS.

<u>SIZE TYPE</u>	<u>SIZE</u>	<u>DRILL POINT ANGLE</u>
Metric	3.20mm	140-142°

Metric	3.60mm	140-142°
Metric	4mm	140-142°
Metric	4.40mm	140-142°
Metric	4.80mm	140-142°
Metric	5.20mm	140-142°
Metric	5.60mm	140-142°
Metric	6mm	140-142°
Metric	6.40mm	140-142°
Metric	6.80mm	140-142°
Metric	7.20mm	140-142°
Metric	7.60mm	140-142°
Metric	8mm	140-142°
Metric	8.40mm	140-142°
Metric	8.80mm	140-142°
Metric	9.20mm	140-142°
Metric	9.50mm	140-142°
Metric	9.90mm	140-142°
Metric	10.30mm	140-142°
Metric	10.70mm	140-142°
Metric	11.10mm	140-142°
Metric	11.50mm	140-142°
Metric	12mm	140-142°
Metric	12.83mm	140-142°
Metric	13.70mm	140-142°
Metric	15mm	140-142°

Metric	16mm	140-142°
Fractional	9/64"	140-142°
Fractional	11/64"	140-142°
Number	#2	140-142°
Fractional	1/4"	140-142°
Fractional	9/32"	140-142°
Fractional	5/16"	140-142°
Letter	Q	140-142°
Fractional	25/64"	140-142°
Fractional	15/32"	140-142°
Fractional	17/32"	140-142°
Fractional	5/8"	140-142°



## SOLID CARBIDE 3XD COOLANT FED TIALN COATED DRILLS

**APPLICATIONS** Designed for high performance drilling in a broad range of materials.

**FEATURES** 142° drill point angle 30° helix angle Metric sizes >5mm DIN 6537K.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>SHANK DIAMETER</u>	<u>FLUTE LENGTH</u>	<u>OVERALL LENGTH</u>
Metric	3mm	3mm	16mm	57mm
Number	#31	1/8"	3/4"	2-1/4"
Metric	3.10mm	4mm	22mm	63mm
Fractional	1/8"	1/8"	3/4"	2-1/4"
Metric	3.20mm	4mm	22mm	63mm
Number	#30	5/32"	7/8"	2-1/2"
Metric	3.30mm	4mm	22mm	63mm
Metric	3.40mm	4mm	22mm	63mm
Number	#29	5/32"	7/8"	2-1/2"
Metric	3.50mm	4mm	22mm	63mm

Fractional	9/64"	5/32"	7/8"	2-1/2"
Metric	3.60mm	4mm	22mm	63mm
Metric	3.70mm	4mm	22mm	63mm
Metric	3.80mm	4mm	22mm	63mm
Number	#24	5/32"	7/8"	2-1/2"
Metric	3.90mm	4mm	22mm	63mm
Fractional	5/32"	5/32"	7/8"	2-1/2"
Metric	4mm	4mm	22mm	63mm
Number	#21	3/16"	1"	2-1/2"
Metric	4.10mm	5mm	26mm	63mm
Metric	4.20mm	5mm	26mm	63mm
Metric	4.30mm	5mm	26mm	63mm
Fractional	11/64"	3/16"	1"	2-1/2"
Metric	4.40mm	5mm	26mm	63mm
Metric	4.50mm	5mm	26mm	63mm
Metric	4.60mm	5mm	26mm	63mm
Metric	4.70mm	5mm	26mm	63mm
Fractional	3/16"	3/16"	1"	2-1/2"
Metric	4.80mm	5mm	26mm	63mm
Metric	4.90mm	5mm	26mm	63mm
Metric	5mm	5mm	26mm	63mm
Metric	5.10mm	6mm	28mm	66mm
Fractional	13/64"	15/64"	1.102"	2.600"
Metric	5.20mm	6mm	28mm	66mm
Metric	5.30mm	6mm	28mm	66mm
Metric	5.40mm	6mm	28mm	66mm
Metric	5.50mm	6mm	28mm	66mm
Fractional	7/32"	15/64"	1.102"	2.600"
Number	#2	15/64"	1.102"	2.600"
Metric	5.70mm	6mm	28mm	66mm
Metric	5.80mm	6mm	28mm	66mm
Metric	5.90mm	6mm	28mm	66mm
Fractional	15/64"	15/64"	1.102"	2.600"
Metric	6mm	6mm	28mm	66mm
Metric	6.10mm	8mm	34mm	79mm

Letter	C	1/4"	1.339"	3.110"
Metric	6.20mm	8mm	34mm	79mm
Letter	D	1/4"	1.339"	3.110"
Metric	6.30mm	8mm	34mm	79mm
Fractional	1/4"	1/4"	1.339"	3.110"
Metric	6.40mm	8mm	34mm	79mm
Metric	6.50mm	8mm	34mm	79mm
Letter	F	5/16"	1.339"	3.110"
Metric	6.60mm	8mm	34mm	79mm
Letter	G	5/16"	1.339"	3.110"
Metric	6.70mm	8mm	34mm	79mm
Fractional	17/64"	5/16"	1.339"	3.110"
Metric	6.80mm	8mm	34mm	79mm
Metric	6.90mm	8mm	34mm	79mm
Metric	7mm	8mm	34mm	79mm
Metric	7.10mm	8mm	41mm	79mm
Fractional	9/32"	5/16"	1.614"	3.110"
Metric	7.20mm	8mm	41mm	79mm
Metric	7.30mm	8mm	41mm	79mm
Metric	7.40mm	8mm	41mm	79mm
Metric	7.50mm	8mm	41mm	79mm
Fractional	19/64"	5/16"	1.614"	3.110"
Metric	7.60mm	8mm	41mm	79mm
Metric	7.70mm	8mm	41mm	79mm
Metric	7.80mm	8mm	41mm	79mm
Metric	7.90mm	8mm	41mm	79mm
Fractional	5/16"	5/16"	1.614"	3.110"
Metric	8.10mm	10mm	47mm	89mm
Metric	8.20mm	10mm	47mm	89mm
Metric	8.30mm	10mm	47mm	89mm
Fractional	21/64"	25/64"	1.850"	3.504"
Metric	8.40mm	10mm	47mm	89mm
Letter	Q	25/64"	1.850"	3.504"
Metric	8.50mm	10mm	47mm	89mm
Metric	8.60mm	10mm	47mm	89mm
Metric	8.70mm	10mm	47mm	89mm

Fractional	11/32"	25/64"	1.850"	3.504"
Metric	8.80mm	10mm	47mm	89mm
Metric	8.90mm	10mm	47mm	89mm
Metric	9mm	10mm	47mm	89mm
Metric	9.10mm	10mm	47mm	89mm
Fractional	23/64"	25/64"	1.850"	3.504"
Metric	9.20mm	10mm	47mm	89mm
Metric	9.25mm	10mm	47mm	89mm
Metric	9.30mm	10mm	47mm	89mm
Metric	9.40mm	10mm	47mm	89mm
Metric	9.50mm	10mm	47mm	89mm
Fractional	3/8"	25/64"	1.850"	3.504"
Metric	9.60mm	10mm	47mm	89mm
Metric	9.70mm	10mm	47mm	89mm
Metric	9.80mm	10mm	47mm	89mm
96 Metric	9.90mm	10mm	47mm	89mm
Fractional	25/64"	25/64"	1.850"	3.504"
Metric	10mm	10mm	47mm	89mm
Metric	10.10mm	12mm	55mm	102mm
Metric	10.20mm	12mm	55mm	102mm
Metric	10.30mm	12mm	55mm	102mm
Fractional	13/32"	15/32"	2.165"	4.016"
Metric	10.40mm	12mm	55mm	102mm
Metric	10.50mm	12mm	55mm	102mm
Metric	10.60mm	12mm	55mm	102mm
Metric	10.70mm	12mm	55mm	102mm
Fractional	27/64"	15/32"	2.165"	4.016"
Metric	10.80mm	12mm	55mm	102mm

Metric	10.90mm	12mm	55mm	102mm
Metric	11mm	12mm	55mm	102mm
Metric	11.10mm	12mm	55mm	102mm
Fractional	7/16"	15/32"	2.165"	4.016"
Metric	11.20mm	12mm	55mm	102mm
Metric	11.30mm	12mm	55mm	102mm
Metric	11.40mm	12mm	55mm	102mm
Metric	11.50mm	12mm	55mm	102mm
Metric	11.60mm	12mm	55mm	102mm
Metric	11.70mm	12mm	55mm	102mm
Metric	11.80mm	12mm	55mm	102mm
Metric	11.90mm	12mm	55mm	102mm
Fractional	15/32"	15/32"	2.165"	4.016"
Metric	12mm	12mm	55mm	102mm
Metric	12.10mm	14mm	60mm	107mm
Fractional	31/64"	1/2"	2.362"	4.213"
Metric	12.50mm	14mm	60mm	107mm
Fractional	1/2"	1/2"	2.362"	4.213"
Metric	12.80mm	14mm	60mm	107mm
Metric	12.83mm	14mm	60mm	107mm
Metric	12.90mm	14mm	60mm	107mm
Metric	13mm	14mm	60mm	107mm
Fractional	33/64"	35/64"	2.362"	4.213"
Metric	13.50mm	14mm	60mm	107mm

Metric	13.70mm	14mm	60mm	107mm
Fractional	35/64"	35/64"	2.362"	4.213"
Metric	14mm	14mm	60mm	107mm
Fractional	9/16"	5/8"	2.559"	4.528"
Metric	14.50mm	16mm	65mm	115mm
Metric	14.70mm	16mm	65mm	115mm
Metric	15mm	16mm	65mm	115mm
Fractional	19/32"	5/8"	2.559"	4.528"
Metric	15.30mm	16mm	65mm	115mm
Metric	15.50mm	16mm	65mm	115mm
Metric	15.70mm	16mm	65mm	115mm
Fractional	5/8"	5/8"	2.559"	4.528"
Metric	16mm	16mm	65mm	115mm



## SOLID CARBIDE 5XD TIALN COATED DRILLS

**APPLICATION** Designed for high performance drilling in a broad range of materials

**FEATURES** 142° drill point angle 30° helix angle.



Fractional	1/64"	142°	Solid Carbide
Metric	.50mm	142°	Solid Carbide
Metric	.60mm	142°	Solid Carbide
Metric	.65mm	142°	Solid Carbide
Fractional	1/32"	142°	Solid Carbide
Metric	.95mm	142°	Solid Carbide
Metric	1mm	142°	Solid Carbide
Metric	1.05mm	142°	Solid Carbide

Fractional	3/64"	142°	Solid Carbide
Metric	1.25mm	142°	Solid Carbide
Metric	1.50mm	142°	Solid Carbide
Fractional	1/16"	142°	Solid Carbide
Metric	1.60mm	142°	Solid Carbide
Metric	1.80mm	142°	Solid Carbide
Metric	1.90mm	142°	Solid Carbide
Fractional	5/64"	142°	Solid Carbide
Metric	2mm	142°	Solid Carbide
Metric	2.05mm	142°	Solid Carbide
Metric	2.30mm	142°	Solid Carbide
Fractional	3/32"	142°	Solid Carbide
Metric	2.40mm	142°	Solid Carbide
Metric	2.50mm	142°	Solid Carbide
Fractional	7/64"	142°	Solid Carbide
Metric	2.90mm	142°	Solid Carbide
Metric	3mm	142°	Solid Carbide
Number	#31	142°	Solid Carbide
Metric	3.10mm	142°	Solid Carbide
Fractional	1/8"	142°	Solid Carbide
Metric	3.20mm	142°	Solid Carbide

Number	#30	142°	Solid Carbide
Metric	3.30mm	142°	Solid Carbide
Metric	3.40mm	142°	Solid Carbide
Number	#29	142°	Solid Carbide
Metric	3.50mm	142°	Solid Carbide
Fractional	9/64"	142°	Solid Carbide
Metric	3.60mm	142°	Solid Carbide
Metric	3.70mm	142°	Solid Carbide
Metric	3.80mm	142°	Solid Carbide
Number	#24	142°	Solid Carbide
Metric	3.90mm	142°	Solid Carbide
Fractional	5/32"	142°	Solid Carbide
Metric	4mm	142°	Solid Carbide
Number	#21	142°	Solid Carbide
Metric	4.10mm	142°	Solid Carbide
Metric	4.20mm	142°	Solid Carbide
Metric	4.30mm	142°	Solid Carbide
Fractional	11/64"	142°	Solid Carbide
Metric	4.40mm	142°	Solid Carbide
Metric	4.50mm	142°	Solid Carbide
Metric	4.60mm	142°	Solid Carbide

Metric	4.70mm	142°	Solid Carbide
Fractional	3/16"	142°	Solid Carbide
Metric	4.80mm	142°	Solid Carbide
Metric	4.90mm	142°	Solid Carbide
Metric	5mm	142°	Solid Carbide
Metric	5.10mm	142°	Solid Carbide
Fractional	13/64"	142°	Solid Carbide
Metric	5.20mm	142°	Solid Carbide
Metric	5.30mm	142°	Solid Carbide
Metric	5.40mm	142°	Solid Carbide
Metric	5.50mm	142°	Solid Carbide
Fractional	7/32"	142°	Solid Carbide
Number	#2	142°	Solid Carbide
Metric	5.70mm	142°	Solid Carbide
Metric	5.80mm	142°	Solid Carbide
Metric	5.90mm	142°	Solid Carbide
Fractional	15/64"	142°	Solid Carbide
Metric	6mm	142°	Solid Carbide
Metric	6.10mm	142°	Solid Carbide
Letter	C	142°	Solid Carbide
Metric	6.20mm	142°	Solid Carbide

Letter	D	142°	Solid Carbide
Metric	6.30mm	142°	Solid Carbide
Fractional	1/4"	142°	Solid Carbide
Metric	6.40mm	142°	Solid Carbide
Metric	6.50mm	142°	Solid Carbide
Letter	F	142°	Solid Carbide
Metric	6.60mm	142°	Solid Carbide
Letter	G	142°	Solid Carbide
Metric	6.70mm	142°	Solid Carbide
Fractional	17/64"	142°	Solid Carbide
Metric	6.80mm	142°	Solid Carbide
Metric	6.90mm	142°	Solid Carbide
Metric	7mm	142°	Solid Carbide
Metric	7.10mm	142°	Solid Carbide
Fractional	9/32"	142°	Solid Carbide
Metric	7.20mm	142°	Solid Carbide
Metric	7.30mm	142°	Solid Carbide
Metric	7.40mm	142°	Solid Carbide
Metric	7.50mm	142°	Solid Carbide
Fractional	19/64"	142°	Solid Carbide
Metric	7.60mm	142°	Solid Carbide

Metric	7.70mm	142°	Solid Carbide
Metric	7.80mm	142°	Solid Carbide
Metric	7.90mm	142°	Solid Carbide
Fractional	5/16"	142°	Solid Carbide
Metric	8mm	142°	Solid Carbide
Metric	8.10mm	142°	Solid Carbide
Metric	8.20mm	142°	Solid Carbide
Metric	8.30mm	142°	Solid Carbide
Fractional	21/64"	142°	Solid Carbide
Metric	8.40mm	142°	Solid Carbide
Letter	Q	142°	Solid Carbide
Metric	8.50mm	142°	Solid Carbide
Metric	8.60mm	142°	Solid Carbide
Metric	8.70mm	142°	Solid Carbide
Fractional	11/32"	142°	Solid Carbide
Metric	8.80mm	142°	Solid Carbide
Metric	8.90mm	142°	Solid Carbide
Metric	9mm	142°	Solid Carbide
Metric	9.10mm	142°	Solid Carbide
Fractional	23/64"	142°	Solid Carbide
Metric	9.20mm	142°	Solid Carbide
Metric	9.25mm	142°	Solid Carbide
Metric	9.30mm	142°	Solid Carbide
Metric	9.40mm	142°	Solid Carbide

Metric	9.50mm	142°	Solid Carbide
Fractional	3/8"	142°	Solid Carbide
Metric	9.60mm	142°	Solid Carbide
Metric	9.70mm	142°	Solid Carbide
Metric	9.80mm	142°	Solid Carbide
Metric	9.90mm	142°	Solid Carbide
Fractional	25/64"	142°	Solid Carbide
Metric	10mm	142°	Solid Carbide
Metric	10.10mm	142°	Solid Carbide
Metric	10.20mm	142°	Solid Carbide
Metric	10.30mm	142°	Solid Carbide
Fractional	13/32"	142°	Solid Carbide
Metric	10.40mm	142°	Solid Carbide
Metric	10.50mm	142°	Solid Carbide
Metric	10.60mm	142°	Solid Carbide
Metric	10.70mm	142°	Solid Carbide
Fractional	27/64"	142°	Solid Carbide
Metric	10.80mm	142°	Solid Carbide
Metric	10.90mm	142°	Solid Carbide
Metric	11mm	142°	Solid Carbide
Metric	11.10mm	142°	Solid Carbide
Fractional	7/16"	142°	Solid Carbide
Metric	11.20mm	142°	Solid Carbide
Metric	11.30mm	142°	Solid Carbide
Metric	11.40mm	142°	Solid Carbide

Metric	11.50mm	142°	Solid Carbide
Metric	11.60mm	142°	Solid Carbide
Metric	11.70mm	142°	Solid Carbide
Metric	11.80mm	142°	Solid Carbide
Metric	11.90mm	142°	Solid Carbide
Fractional	15/32"	142°	Solid Carbide
Metric	12mm	142°	Solid Carbide
Metric	12.10mm	142°	Solid Carbide
Fractional	31/64"	142°	Solid Carbide
Metric	12.50mm	142°	Solid Carbide
Fractional	1/2"	142°	Solid Carbide
Metric	12.80mm	142°	Solid Carbide
Metric	12.83mm	142°	Solid Carbide
Metric	12.90mm	142°	Solid Carbide
Metric	13mm	142°	Solid Carbide
Fractional	33/64"	142°	Solid Carbide
Fractional	17/32"	142°	Solid Carbide
Metric	13.50mm	142°	Solid Carbide
Metric	13.70mm	142°	Solid Carbide
Fractional	35/64"	142°	Solid Carbide
Metric	14mm	142°	Solid Carbide
Fractional	9/16"	142°	Solid Carbide
Metric	14.50mm	142°	Solid Carbide
Metric	14.70mm	142°	Solid Carbide

Metric	15mm	142°	Solid Carbide
Fractional	19/32"	142°	Solid Carbide
Metric	15.30mm	142°	Solid Carbide
Metric	15.50mm	142°	Solid Carbide
Metric	15.70mm	142°	Solid Carbide
Fractional	5/8"	142°	Solid Carbide
Metric	16mm	142°	Solid Carbide



## SOLID CARBIDE 3XD TIALN COATED DRILLS

**APPLICATION** Designed for high performance drilling in a broad range of materials

**FEATURES** 142° drill point angle. 30° helix angle.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>DRILL POINT ANGLE</u>
Metric	2.50mm	142°
Metric	2.90mm	142°
Metric	3mm	142°
Number	#31	142°
Metric	3.10mm	142°
Fractional	1/8"	142°
Metric	3.20mm	142°
Number	#30	142°
Metric	3.30mm	142°

Metric	3.40mm	142°
Number	#29	142°
Metric	3.50mm	142°
Fractional	9/64"	142°
Metric	3.60mm	142°
Metric	3.70mm	142°
Metric	3.80mm	142°
Number	#24	142°
Metric	3.90mm	142°
Fractional	5/32"	142°
Metric	4mm	142°
Number	#21	142°
Metric	4.10mm	142°
Metric	4.20mm	142°
Metric	4.30mm	142°
Fractional	11/64"	142°
Metric	4.40mm	142°
Metric	4.50mm	142°
Metric	4.60mm	142°
Metric	4.70mm	142°
Fractional	3/16"	142°

Metric	4.80mm	142°
Metric	4.90mm	142°
Metric	5mm	142°
Metric	5.10mm	142°
Fractional	13/64"	142°
Metric	5.20mm	142°
Metric	5.30mm	142°
Metric	5.40mm	142°
Metric	5.50mm	142°
Fractional	7/32"	142°
Number	#2	142°
Metric	5.70mm	142°
Metric	5.80mm	142°
Metric	5.90mm	142°
Fractional	15/64"	142°
Metric	6mm	142°
Metric	6.10mm	142°
Letter	C	142°
Metric	6.20mm	142°
Letter	D	142°
Metric	6.30mm	142°

Fractional	1/4"	142°
Metric	6.40mm	142°
Metric	6.50mm	142°
Letter	F	142°
Metric	6.60mm	142°
Letter	G	142°
Metric	6.70mm	142°
Fractional	17/64"	142°
Metric	6.80mm	142°
Metric	6.90mm	142°
Metric	7mm	142°
Metric	7.10mm	142°
Fractional	9/32"	142°
Metric	7.20mm	142°
Metric	7.30mm	142°
Metric	7.40mm	142°
Metric	7.50mm	142°
Fractional	19/64"	142°
Metric	7.60mm	142°
Metric	7.70mm	142°
Metric	7.80mm	142°

Metric	7.90mm	142°
Fractional	5/16"	142°
Metric	8mm	142°
Metric	8.10mm	142°
Metric	8.20mm	142°
Metric	8.30mm	142°
Fractional	21/64"	142°
Metric	8.40mm	142°
Letter	Q	142°
Metric	8.50mm	142°
Metric	8.60mm	142°
Metric	8.70mm	142°
Fractional	11/32"	142°
Metric	8.80mm	142°
Metric	8.90mm	142°
Metric	9mm	142°
Metric	9.10mm	142°
Fractional	23/64"	142°
Metric	9.20mm	142°
Metric	9.25mm	142°
Metric	9.30mm	142°

Metric	9.40mm	142°	
Metric	9.50mm	142°	
Fractional	3/8"	142°	
Metric	9.60mm	142°	Solid Carbide
Metric	9.70mm	142°	Solid Carbide
Metric	9.80mm	142°	Solid Carbide
Metric	9.90mm	142°	Solid Carbide
Fractional	25/64"	142°	Solid Carbide
Metric	10mm	142°	Solid Carbide
Metric	10.10mm	142°	Solid Carbide
Metric	10.20mm	142°	Solid Carbide
Metric	10.30mm	142°	Solid Carbide
Fractional	13/32"	142°	Solid Carbide
Metric	10.40mm	142°	Solid Carbide
Metric	10.50mm	142°	Solid Carbide
Metric	10.60mm	142°	Solid Carbide
Metric	10.70mm	142°	Solid Carbide
Fractional	27/64"	142°	Solid Carbide
Metric	10.80mm	142°	Solid Carbide
Metric	10.90mm	142°	Solid Carbide
Metric	11mm	142°	Solid Carbide
Metric	11.10mm	142°	Solid Carbide
Fractional	7/16"	142°	Solid Carbide
Metric	11.20mm	142°	Solid Carbide

Metric	11.30mm	142°	Solid Carbide
Metric	11.40mm	142°	Solid Carbide
Metric	11.50mm	142°	Solid Carbide
Metric	11.60mm	142°	Solid Carbide
Metric	11.70mm	142°	Solid Carbide
Metric	11.80mm	142°	Solid Carbide
Metric	11.90mm	142°	Solid Carbide
Fractional	15/32"	142°	Solid Carbide
Metric	12mm	142°	Solid Carbide
Metric	12.10mm	142°	Solid Carbide
Fractional	31/64"	142°	Solid Carbide
Metric	12.50mm	142°	Solid Carbide
Fractional	1/2"	142°	Solid Carbide
Metric	12.80mm	142°	Solid Carbide
Metric	12.83mm	142°	Solid Carbide
Metric	12.90mm	142°	Solid Carbide
Metric	13mm	142°	Solid Carbide
Fractional	33/64"	142°	Solid Carbide
Fractional	17/32"	142°	Solid Carbide
Metric	13.50mm	142°	Solid Carbide
Metric	13.70mm	142°	Solid Carbide
Fractional	35/64"	142°	Solid Carbide
Metric	14mm	142°	Solid Carbide
Fractional	9/16"	142°	Solid Carbide
Metric	14.50mm	142°	Solid Carbide

Metric	14.70mm	142°	Solid Carbide
Metric	15mm	142°	Solid Carbide
Fractional	19/32"	142°	Solid Carbide
Metric	15.30mm	142°	Solid Carbide
Metric	15.50mm	142°	Solid Carbide
Metric	15.70mm	142°	Solid Carbide
Fractional	5/8"	142°	Solid Carbide
Metric	16mm	142°	Solid Carbide
Metric	16.08mm	142°	Solid Carbide
Metric	16.30mm	142°	Solid Carbide
Metric	16.50mm	142°	Solid Carbide
Fractional	21/32"	142°	Solid Carbide
Metric	17mm	142°	Solid Carbide
Fractional	11/16"	142°	Solid Carbide
Metric	17.50mm	142°	Solid Carbide
Metric	18mm	142°	Solid Carbide
Metric	18.50mm	142°	Solid Carbide
Fractional	3/4"	142°	Solid Carbide
Metric	19.16mm	142°	Solid Carbide
Metric	19.25mm	142°	Solid Carbide
Metric	19.30mm	142°	Solid Carbide
Metric	19.50mm	142°	Solid Carbide
Metric	20mm	142°	Solid Carbide



## SOLID CARBIDE PARABOLIC 5XD DRILLS

**Special 3 flute parabolic flute form for increased chip evacuation.**

**APPLICATIONS** recommended for increased speeds and feeds when drilling aluminum, cast iron and other easy to machine materials.

**FEATURES** Metric sizes 3mm and above manufactured to DIN 6537L. Coolant fed style available as a special. 150° drill point angle. 30° helix angle



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>DRILL POINT ANGLE</u>	<u>FLUTE LENGTH</u>	<u>OVERALL LENGTH</u>
Fractional	3/64"	150°	3/4"	1-1/2"
Fractional	1/16"	150°	3/4"	1-1/2"
Metric	2mm	150°	16mm	38mm
Number	#43	150°	1"	2"
Fractional	3/32"	150°	1"	2"
Number	#41	150°	1"	2"
Number	#40	150°	1"	2"

Metric	2.5mm	150°	20.50mm	43mm
Number	#38	150°	1-1/4"	2-1/4"
Number	#36	150°	1-1/4"	2-1/4"
Number	#33	150°	1-1/4"	2-1/4"
Metric	2.9mm	150°	25mm	46mm
Metric	6mm	150°	28mm	66mm
Number	#31	150°	1-1/4"	2-1/4"
Fractional	1/8"	150°	1-1/4"	2-1/4"
Metric	6mm	150°	28mm	66mm
Number	#30	150°	1-1/4"	2-1/4"
Metric	6mm	150°	28mm	66mm
Metric	6mm	150°	28mm	66mm
Number	#29	150°	1-3/8"	2-1/2"
Metric	6mm	150°	28mm	66mm
Fractional	9/64"	150°	1-3/8"	2-1/2"
Metric	6mm	150°	28mm	66mm
Number	#27	150°	1-3/8"	2-1/2"
Metric	6mm	150°	28mm	66mm
Number	#25	150°	1-3/8"	2-1/2"
Metric	6mm	150°	36mm	74mm
Metric	6mm	150°	36mm	74mm
Fractional	5/32"	150°	1-3/8"	2-1/2"
Metric	6mm	150°	36mm	74mm
Number	#21	150°	1-3/8"	2-1/2"
Number	#20	150°	1-3/8"	2-1/2"
Metric	6mm	150°	36mm	74mm
Metric	6mm	150°	36mm	74mm
Number	#19	150°	1-3/8"	2-1/2"
Number	#18	150°	1-5/8"	2-3/4"
Fractional	11/64"	150°	1-5/8"	2-3/4"
Number	#17	150°	1-5/8"	2-3/4"
Metric	6mm	150°	36mm	74mm
Number	#16	150°	1-5/8"	2-3/4"
Metric	6mm	150°	36mm	74mm
Metric	6mm	150°	36mm	74mm
Number	#13	150°	1-5/8"	2-3/4"

Fractional	3/16"	150°	1-5/8"	2-3/4"
Metric	6mm	150°	44mm	82mm
Number	#12	150°	1-5/8"	2-3/4"
Number	#11	150°	1-5/8"	2-3/4"
Metric	6mm	150°	44mm	82mm
Number	#10	150°	1-5/8"	2-3/4"
Metric	6mm	150°	44mm	82mm
Number	#7	150°	1-3/4"	3"
Metric	6mm	150°	44mm	82mm
Number	#3	150°	1-3/4"	3"
Metric	6mm	150°	44mm	82mm
Fractional	7/32"	150°	1-3/4"	3"
Metric	6mm	150°	44mm	82mm
Number	#1	150°	1-3/4"	3"
Letter	0.234	150°	2"	3-1/4"
Metric	6mm	150°	44mm	82mm
Metric	8mm	150°	53mm	91mm
Fractional	1/4"	150°	2"	3-1/4"
Metric	8mm	150°	53mm	91mm
Letter	.257"	150°	2"	3-1/4"
Metric	8mm	150°	53mm	91mm
Fractional	17/64"	150°	2-1/8"	3-1/2"
Metric	8mm	150°	53mm	91mm
Letter	l	150°	2-1/8"	3-1/2"
Metric	8mm	150°	53mm	91mm
Fractional	9/32"	150°	2-1/8"	3-1/2"
Metric	8mm	150°	53mm	91mm
Metric	8mm	150°	53mm	91mm
Metric	8mm	150°	53mm	91mm
Metric	8mm	150°	53mm	91mm
Fractional	19/64"	150°	2-3/8"	3-3/4"
Metric	8mm	150°	53mm	91mm
Fractional	5/16"	150°	2-3/8"	3-3/4"
Metric	8mm	150°	53mm	91mm
Metric	10mm	150°	61mm	103mm

Fractional	21/64"	150°	2-1/2"	4"
Metric	10mm	150°	61mm	103mm
Letter	Q	150°	2-1/2"	4"
Metric	10mm	150°	61mm	103mm
Fractional	11/32"	150°	2-1/2"	4"
Metric	10mm	150°	61mm	103mm
Fractional	23/64"	150°	2-3/4"	4-1/4"
Letter	U	150°	2-3/4"	4-1/4"
Metric	10mm	150°	61mm	103mm
Fractional	3/8"	150°	2-3/4"	4-1/4"
Metric	10mm	150°	61mm	103mm
Fractional	25/64"	150°	2-7/8"	4-1/2"
Metric	10mm	150°	61mm	103mm
Metric	12mm	150°	71mm	118mm
Fractional	13/32"	150°	2-7/8"	4-1/2"
Metric	12mm	150°	71mm	118mm
Metric	12mm	150°	71mm	118mm
Metric	12mm	150°	71mm	118mm
Fractional	27/64"	150°	2-7/8"	4-1/2"
Metric	12mm	150°	71mm	118mm
Fractional	7/16"	150°	2-7/8"	4-1/2"
Metric	12mm	150°	71mm	118mm
Fractional	29/64"	150°	3"	4-3/4"
Fractional	15/32"	150°	3"	4-3/4"
Metric	12mm	150°	71mm	118mm
Fractional	31/64"	150°	3"	4-3/4"
Metric	14mm	150°	77mm	124mm
Fractional	1/2"	150°	3"	4-3/4"
Metric	14mm	150°	77mm	124mm
Fractional	33/64"	150°	3-1/4"	5"

Fractional	17/32"	150°	3-1/4"	5"
Metric	14mm	150°	77mm	124mm
Fractional	35/64"	150°	3-1/4"	5"
Metric	14mm	150°	77mm	124mm
Fractional	9/16"	150°	3-1/4"	5"
Metric	16mm	150°	83mm	133mm
Metric	16mm	150°	83mm	133mm
Metric	16mm	150°	83mm	133mm
Metric	16mm	150°	83mm	133mm
Fractional	5/8"	150°	3-1/2"	5-1/4"
Metric	16mm	150°	83mm	133mm
Fractional	21/32"	150°	3-5/8"	5-1/2"
Fractional	11/16"	150°	3-5/8"	5-1/2"
Fractional	3/4"	150°	3-7/8"	5-3/4"
Number	.0550"	150°	3/4"	1-1/2"
Number	.0595"	150°	3/4"	1-1/2"
Number	.0670"	150°	3/4"	1-1/2"
Number	.0700"	150°	7/8"	1-3/4"
Number	.0730"	150°	7/8"	1-3/4"
Number	.0820"	150°	7/8"	1-3/4"
Metric	2.3mm	150°	20.50mm	43mm
Number	.0995"	150°	1-1/4"	2-1/4"
Number	.1040"	150°	1-1/4"	2-1/4"
Number	.1100"	150°	1-1/4"	2-1/4"
Metric	6mm	150°	28mm	66mm

Number	.1520"	150°	1-3/8"	2-1/2"
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## METRIC SOLID CARBIDE 10XD COOLANT FED DRILLS

**APPLICATIONS** Designed for high performance drilling in a broad range of materials

**FEATURES** 140° drill point angle. 15° helix angle.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>SHANK DIAMETER</u>	<u>FLUTE LENGTH</u>	<u>OVERALL LENGTH</u>
Metric	2mm	3mm	24mm	68mm
Metric	2.05mm	3mm	28mm	74mm
Metric	2.10mm	3mm	28mm	74mm

Metric	2.15mm	3mm	28mm	74mm
Metric	2.20mm	3mm	28mm	74mm
Metric	2.25mm	3mm	28mm	74mm
Metric	2.30mm	3mm	28mm	74mm
Metric	2.35mm	3mm	28mm	74mm
Metric	2.40mm	3mm	28mm	74mm
Metric	2.45mm	3mm	28mm	74mm
Metric	2.50mm	3mm	28mm	74mm
Metric	2.55mm	3mm	34mm	81mm
Metric	2.60mm	3mm	34mm	81mm
Metric	2.65mm	3mm	34mm	81mm
Metric	2.70mm	3mm	34mm	81mm
Metric	2.75mm	3mm	34mm	81mm
Metric	2.80mm	3mm	34mm	81mm
Metric	2.85mm	3mm	34mm	81mm
Metric	2.90mm	3mm	34mm	81mm
Metric	2.95mm	3mm	34mm	81mm



## SOLID CARBIDE COOLANT ALTiN COATED DRILLS

deep hole drilling applications.

FEATURES 142° drill point angle. 30° helix angle.

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<u>SIZE TYPE</u>	<u>SIZE</u>	<u>SHANK DIAMETER</u>	<u>FLUTE LENGTH</u>	<u>OVERALL LENGTH</u>
Metric	5mm	5mm	105mm	163mm
Metric	5.20mm	6mm	110mm	163mm
Metric	5.40mm	6mm	110mm	163mm

Metric	5.60mm	6mm	110mm	163mm
Metric	5.80mm	6mm	110mm	163mm
Metric	6mm	6mm	110mm	163mm
Metric	6.20mm	8mm	110mm	163mm
Metric	6.30mm	8mm	110mm	163mm
Fractional	1/4"	8mm	110mm	163mm
Metric	6.80mm	8mm	110mm	163mm
Metric	7mm	8mm	110mm	163mm
Metric	7.60mm	8mm	120mm	163mm
Metric	7.80mm	8mm	120mm	163mm
Fractional	5/16"	8mm	120mm	163mm
Metric	8mm	8mm	120mm	163mm
Metric	8.20mm	10mm	135mm	180mm
Metric	8.50mm	10mm	135mm	180mm
Metric	8.70mm	10mm	135mm	180mm
Metric	9mm	10mm	135mm	180mm
Metric	9.40mm	10mm	150mm	195mm
Fractional	3/8"	10mm	150mm	195mm
Metric	9.80mm	10mm	150mm	195mm
Metric	10mm	10mm	150mm	195mm
Metric	10.30mm	12mm	160mm	210mm
Metric	10.50mm	12mm	160mm	210mm
Metric	10.80mm	12mm	160mm	210mm

Metric	11mm	12mm	160mm	210mm
Fractional	7/16"	12mm	160mm	210mm
Metric	11.50mm	12mm	160mm	210mm
Metric	11.80mm	12mm	160mm	210mm
Metric	12mm	12mm	160mm	210mm
Fractional	1/2"	14mm	160mm	230mm



## SOLID CARBIDE 7XD COOLANT FED ALTiN COATED DRILLS

**APPLICATIONS** for high performance drilling in a broad range of materials

**FEATURES** 142° drill point angle. 30° helix angle



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>SHANK DIAMETER</u>	<u>MORSE TAPER</u>	<u>FLUTE LENGTH</u>	<u>OVERALL LENGTH</u>
Metric	3mm	3mm	None	33mm	81mm
Number	#31	1/8"	None	1-1/2"	3-1/2"
Metric	3.10mm	4mm	None	44mm	92mm
Fractional	1/8"	1/8"	None	1-1/2"	3-1/2"

Metric	3.20mm	4mm	None	44mm	92mm
Number	#30	5/32"	None	1-3/4"	3-5/8"
Metric	3.30mm	4mm	None	44mm	92mm
Metric	3.40mm	4mm	None	44mm	92mm
Number	#29	5/32"	None	1-3/4"	3-5/8"
Metric	3.50mm	4mm	None	44mm	92mm
Fractional	9/64"	5/32"	None	1-3/4"	3-5/8"
Metric	3.60mm	4mm	None	44mm	92mm
Metric	3.70mm	4mm	None	44mm	92mm
Metric	3.80mm	4mm	None	44mm	92mm
Number	#24	5/32"	None	1-3/4"	3-5/8"
Metric	3.90mm	4mm	None	44mm	92mm
Fractional	5/32"	5/32"	None	1-3/4"	3-5/8"
Metric	4mm	4mm	None	44mm	92mm
Number	#21	3/16"	None	1-3/4"	3.940"
Metric	4.10mm	5mm	None	45mm	100mm
Metric	4.20mm	5mm	None	45mm	100mm
Metric	4.30mm	5mm	None	45mm	100mm
Fractional	11/64"	3/16"	None	1-3/4"	3.940"
Metric	4.40mm	5mm	None	45mm	100mm
Metric	4.50mm	5mm	None	45mm	100mm

Metric	4.60mm	5mm	None	45mm	100mm
Metric	4.70mm	5mm	None	45mm	100mm
Fractional	3/16"	3/16"	None	1-3/4"	3.940"
Metric	4.80mm	5mm	None	45mm	100mm
Metric	4.90mm	5mm	None	45mm	100mm
Metric	5mm	5mm	None	45mm	100mm
Metric	5.10mm	6mm	None	51mm	100mm
Fractional	13/64"	15/64"	None	2"	3.940"
Metric	5.20mm	6mm	None	51mm	100mm
Metric	5.30mm	6mm	None	51mm	100mm
Metric	5.40mm	6mm	None	51mm	100mm
Metric	5.50mm	6mm	None	51mm	100mm
Fractional	7/32"	15/64"	None	2"	3.940"
Number	#2	15/64"	None	2"	3.940"
Metric	5.70mm	6mm	None	51mm	100mm
Metric	5.80mm	6mm	None	51mm	100mm
Metric	5.90mm	6mm	None	51mm	100mm
Fractional	15/64"	15/64"	None	2"	3.940"
Metric	6mm	6mm	None	51mm	100mm
Metric	6.10mm	8mm	None	60mm	109mm
Letter	C	1/4"	None	2-1/4"	4.310"

Metric	6.20mm	8mm	None	60mm	109mm
Letter	D	1/4"	None	2-1/4"	4.310"
Metric	6.30mm	8mm	None	60mm	109mm
Fractional	1/4"	1/4"	None	2-1/4"	4.310"
Metric	6.40mm	8mm	None	60mm	109mm
Metric	6.50mm	8mm	None	60mm	109mm
Letter	F	5/16"	None	2-3/8"	4.310"
Metric	6.60mm	8mm	None	60mm	109mm
Letter	G	5/16"	None	2-3/8"	4.310"
Metric	6.70mm	8mm	None	60mm	109mm
Fractional	17/64"	5/16"	None	2-3/8"	4.310"
Metric	6.80mm	8mm	None	60mm	109mm
Metric	6.90mm	8mm	None	60mm	109mm
Metric	7mm	8mm	None	60mm	109mm
Metric	7.10mm	8mm	None	70mm	118mm
Fractional	9/32"	5/16"	None	2-3/4"	4-5/8"
Metric	7.20mm	8mm	None	70mm	118mm
Metric	7.30mm	8mm	None	70mm	118mm
Metric	7.40mm	8mm	None	70mm	118mm
Metric	7.50mm	8mm	None	70mm	118mm
Fractional	19/64"	5/16"	None	2-3/4"	4-5/8"

Metric	7.60mm	8mm	None	70mm	118mm
Metric	7.70mm	8mm	None	70mm	118mm
Metric	7.80mm	8mm	None	70mm	118mm
Metric	7.90mm	8mm	None	70mm	118mm
Fractional	5/16"	5/16"	None	2-3/4"	4-5/8"
Metric	8mm	8mm	None	70mm	118mm
Metric	8.10mm	10mm	None	80mm	127mm
Metric	8.20mm	10mm	None	80mm	127mm
Metric	8.30mm	10mm	None	80mm	127mm
Fractional	21/64"	25/64"	None	3.150"	5"
Metric	8.40mm	10mm	None	80mm	127mm
Letter	Q	25/64"	None	3.150"	5"
Metric	8.50mm	10mm	None	80mm	127mm
Metric	8.60mm	10mm	None	80mm	127mm
Metric	8.70mm	10mm	None	80mm	127mm
Fractional	11/32"	25/64"	None	3.150"	5"
Metric	8.80mm	10mm	None	80mm	127mm
Metric	8.90mm	10mm	None	80mm	127mm
Metric	9mm	10mm	None	80mm	127mm
Metric	9.10mm	10mm	None	85mm	136mm
Fractional	23/64"	25/64"	None	3.340"	5-5/16"

Metric	9.20mm	10mm	None	85mm	136mm
Metric	9.25mm	10mm	None	85mm	136mm
Metric	9.30mm	10mm	None	85mm	136mm
Metric	9.40mm	10mm	None	85mm	136mm
Metric	9.50mm	10mm	None	85mm	136mm
Fractional	3/8"	25/64"	None	3.340"	5-5/16"
Metric	9.60mm	10mm	None	85mm	136mm
Metric	9.70mm	10mm	None	85mm	136mm
Metric	9.70mm	10mm	None	85mm	136mm
Metric	9.80mm	10mm	None	85mm	136mm
Metric	9.90mm	10mm	None	85mm	136mm
Fractional	25/64"	25/64"	None	3.340"	5-5/16"
Metric	10mm	10mm	None	85mm	136mm
Metric	10.10mm	12mm	None	93mm	149mm
Metric	10.20mm	12mm	None	93mm	149mm
Metric	10.30mm	12mm	None	93mm	149mm
Fractional	13/32"	15/32"	None	3-5/8"	5-7/8"
Metric	10.40mm	12mm	None	93mm	149mm
Metric	10.50mm	12mm	None	93mm	149mm
Metric	10.60mm	12mm	None	93mm	149mm
Metric	10.70mm	12mm	None	93mm	149mm

Fractional	27/64"	15/32"	None	3-5/8"	5-7/8"
Metric	10.80mm	12mm	None	93mm	149mm
Metric	10.90mm	12mm	None	93mm	149mm
Metric	11mm	12mm	None	93mm	149mm
Metric	11.10mm	12mm	None	102mm	155mm
Fractional	7/16"	15/32"	None	4"	6.100"
Metric	11.20mm	12mm	None	102mm	155mm
Metric	11.30mm	12mm	None	102mm	155mm
Metric	11.40mm	12mm	None	102mm	155mm
Metric	11.50mm	12mm	None	102mm	155mm
Metric	11.60mm	12mm	None	102mm	155mm
Metric	11.70mm	12mm	None	102mm	155mm
Metric	11.80mm	12mm	None	102mm	155mm
Metric	11.90mm	12mm	None	102mm	155mm
Fractional	15/32"	15/32"	None	4"	6.100"
Metric	12mm	12mm	None	102mm	155mm
Fractional	31/64"	1/2"	None	4-5/16"	6.299"
Fractional	1/2"	1/2"	None	4-5/16"	6.299"



## SOLID CARBIDE DRILLS

### SCREW MACHINE LENGTH STUB DRILLS

APPLICATIONS For 3XD drilling depths.

FEATURES 118° drill point angle 21° helix angle. •Designed to allow high feed rates with good chip flow. Four facet drill point minimizes drill wander and assures accurately sized holes.



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<u>SIZE TYPE</u>	<u>SIZE</u>	<u>DRILL POINT ANGLE</u>
Fractional	33/64"	118°
Fractional	17/32"	118°
Fractional	35/64"	118°
Fractional	9/16"	118°
Fractional	37/64"	118°
Fractional	19/32"	118°
Fractional	39/64"	118°

Fractional	5/8"	118°
Fractional	41/64"	118°
Fractional	21/32"	118°
Fractional	43/64"	118°
Fractional	11/16"	118°
Fractional	45/64"	118°
Fractional	23/32"	118°
Fractional	47/64"	118°
Fractional	3/4"	118°
Fractional	49/64"	118°
Fractional	25/32"	118°

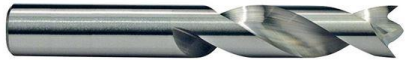


## SOLID CARBIDE BRAD & SPUR POINT DRILLS

**BENEFITS** Eliminate fuzz or "Fray" at exit.

**APPLICATIONS** for drilling Carbon Fiber Reinforced Polymer (CFRP), graphite and aramid fiber (Kevlar) reinforced composite materials.

**FEATURES** No delamination. Brad and spur point.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>DRILL POINT ANGLE</u>
Number	#42	"W" Shape Brad Point
Fractional	3/32"	"W" Shape Brad Point

Metric	2.40mm	"W" Shape Brad Point
Number	#41	"W" Shape Brad Point
Number	#40	"W" Shape Brad Point
Metric	2.50mm	"W" Shape Brad Point
Number	#39	"W" Shape Brad Point
Number	#38	"W" Shape Brad Point
Metric	2.60mm	"W" Shape Brad Point
Number	#37	"W" Shape Brad Point
Metric	2.70mm	"W" Shape Brad Point
Number	#36	"W" Shape Brad Point
Fractional	7/64"	"W" Shape

		Brad Point
Number	#35	"W" Shape Brad Point
Metric	2.80mm	"W" Shape Brad Point
Number	#34	"W" Shape Brad Point
Number	#33	"W" Shape Brad Point
Metric	2.90mm	"W" Shape Brad Point
Number	#32	"W" Shape Brad Point
Metric	3mm	"W" Shape Brad Point
Number	#31	"W" Shape Brad Point
Metric	3.10mm	"W" Shape Brad Point
Fractional	1/8"	"W" Shape Brad Point

Metric	3.20mm	"W" Shape Brad Point
Number	#30	"W" Shape Brad Point
Metric	3.30mm	"W" Shape Brad Point
Metric	3.40mm	"W" Shape Brad Point
Number	#29	"W" Shape Brad Point
Metric	3.50mm	"W" Shape Brad Point
Number	#28	"W" Shape Brad Point
Fractional	9/64"	"W" Shape Brad Point
Metric	3.60mm	"W" Shape Brad Point
Number	#27	"W" Shape Brad Point
Metric	3.70mm	"W" Shape

		Brad Point
Number	#26	"W" Shape Brad Point
Number	#25	"W" Shape Brad Point
Metric	3.80mm	"W" Shape Brad Point
Number	#24	"W" Shape Brad Point
Metric	3.90mm	"W" Shape Brad Point
Number	#23	"W" Shape Brad Point
Fractional	5/32"	"W" Shape Brad Point
Number	#22	"W" Shape Brad Point
Metric	4mm	"W" Shape Brad Point
Number	#21	"W" Shape Brad Point

Number	#20	"W" Shape Brad Point
Metric	4.10mm	"W" Shape Brad Point
Metric	4.20mm	"W" Shape Brad Point
Number	#19	"W" Shape Brad Point
Metric	4.30mm	"W" Shape Brad Point
Number	#18	"W" Shape Brad Point
Fractional	11/64"	"W" Shape Brad Point
Number	#17	"W" Shape Brad Point
Metric	4.40mm	"W" Shape Brad Point
Number	#16	"W" Shape Brad Point
Metric	4.50mm	"W" Shape

		Brad Point
Number	#15	"W" Shape Brad Point
Metric	4.60mm	"W" Shape Brad Point
Number	#14	"W" Shape Brad Point
Number	#13	"W" Shape Brad Point
Fractional	3/16"	"W" Shape Brad Point
Metric	4.80mm	"W" Shape Brad Point
Number	#12	"W" Shape Brad Point
Number	#11	"W" Shape Brad Point
Metric	4.90mm	"W" Shape Brad Point
Number	#10	"W" Shape Brad Point

Number	#9	"W" Shape Brad Point
Metric	5mm	"W" Shape Brad Point
Number	#8	"W" Shape Brad Point
Metric	5.10mm	"W" Shape Brad Point
Number	#7	"W" Shape Brad Point
Fractional	13/64"	"W" Shape Brad Point
Number	#6	"W" Shape Brad Point
Metric	5.20mm	"W" Shape Brad Point
Number	#5	"W" Shape Brad Point
Metric	5.30mm	"W" Shape Brad Point
Number	#4	"W" Shape

		Brad Point
Metric	5.40mm	"W" Shape Brad Point
Number	#3	"W" Shape Brad Point
Metric	5.50mm	"W" Shape Brad Point
Fractional	7/32"	"W" Shape Brad Point
Metric	5.60mm	"W" Shape Brad Point
Number	#2	"W" Shape Brad Point
Metric	5.70mm	"W" Shape Brad Point
Number	#1	"W" Shape Brad Point
Metric	5.80mm	"W" Shape Brad Point
Metric	5.90mm	"W" Shape Brad Point

Letter	A	"W" Shape Brad Point
Fractional	15/64"	"W" Shape Brad Point
Metric	6mm	"W" Shape Brad Point
Letter	B	"W" Shape Brad Point
Metric	6.10mm	"W" Shape Brad Point
Letter	C	"W" Shape Brad Point
Metric	6.20mm	"W" Shape Brad Point
Letter	D	"W" Shape Brad Point
Metric	6.30mm	"W" Shape Brad Point
Fractional	1/4"	"W" Shape Brad Point

Metric	6.40mm	"W" Shape Brad Point
Metric	6.50mm	"W" Shape Brad Point
Letter	F	"W" Shape Brad Point
Letter	G	"W" Shape Brad Point
Fractional	17/64"	"W" Shape Brad Point
Letter	H	"W" Shape Brad Point
Letter	I	"W" Shape Brad Point
Metric	7mm	"W" Shape Brad Point
Letter	J	"W" Shape Brad Point
Letter	K	"W" Shape Brad Point
Fractional	9/32"	"W" Shape Brad Point

Letter	L	"W" Shape Brad Point
Letter	M	"W" Shape Brad Point
Metric	7.50mm	"W" Shape Brad Point
Fractional	19/64"	"W" Shape Brad Point
Letter	N	"W" Shape Brad Point
Fractional	5/16"	"W" Shape Brad Point
Metric	8mm	"W" Shape Brad Point
Letter	O	"W" Shape Brad Point
Letter	P	"W" Shape Brad Point
Fractional	21/64"	"W" Shape Brad Point
Letter	Q	"W" Shape Brad Point
Metric	8.50mm	"W" Shape

		Brad Point
Letter	R	"W" Shape Brad Point
Fractional	11/32"	"W" Shape Brad Point
Letter	S	"W" Shape Brad Point
Metric	9mm	"W" Shape Brad Point
Letter	T	"W" Shape Brad Point
Fractional	23/64"	"W" Shape Brad Point
Letter	U	"W" Shape Brad Point
Metric	9.50mm	"W" Shape Brad Point
Fractional	3/8"	"W" Shape Brad Point
Letter	V	"W" Shape Brad Point
Letter	W	"W" Shape Brad Point

Fractional	25/64"	"W" Shape Brad Point
Metric	10mm	"W" Shape Brad Point
Letter	X	"W" Shape Brad Point
Letter	Y	"W" Shape Brad Point
Fractional	13/32"	"W" Shape Brad Point
Letter	Z	"W" Shape Brad Point
Metric	10.50mm	"W" Shape Brad Point
Fractional	27/64"	"W" Shape Brad Point
Metric	11mm	"W" Shape Brad Point
Fractional	7/16"	"W" Shape Brad Point
Metric	11.50mm	"W" Shape Brad Point
Fractional	29/64"	"W" Shape

		Brad Point
Fractional	15/32"	"W" Shape Brad Point
Metric	12mm	"W" Shape Brad Point
Fractional	31/64"	"W" Shape Brad Point
Fractional	1/2"	"W" Shape Brad Point
Fractional	3/32"	"W" Shape Brad Point
Number	#40	"W" Shape Brad Point
Number	#38	"W" Shape Brad Point
Fractional	1/8"	"W" Shape Brad Point
Metric	3.20mm	"W" Shape Brad Point
Number	#30	"W" Shape Brad Point
Metric	3.30mm	"W" Shape Brad Point

Number	#29	"W" Shape Brad Point
Number	#28	"W" Shape Brad Point
Fractional	5/32"	"W" Shape Brad Point
Number	#21	"W" Shape Brad Point
Number	#20	"W" Shape Brad Point
Number	#19	"W" Shape Brad Point
Number	#15	"W" Shape Brad Point
Fractional	3/16"	"W" Shape Brad Point
Number	#11	"W" Shape Brad Point
Number	#10	"W" Shape Brad Point
Number	#9	"W" Shape Brad Point
Number	#7	"W" Shape

		Brad Point
Fractional	13/64"	"W" Shape Brad Point
Number	#4	"W" Shape Brad Point
Number	#3	"W" Shape Brad Point
Fractional	7/32"	"W" Shape Brad Point
Number	#2	"W" Shape Brad Point
Number	#1	"W" Shape Brad Point
Metric	6mm	"W" Shape Brad Point
Fractional	1/4"	"W" Shape Brad Point
Metric	6.40mm	"W" Shape Brad Point
Letter	F	"W" Shape Brad Point
Letter	G	"W" Shape Brad Point

Fractional	17/64"	"W" Shape Brad Point
Letter	H	"W" Shape Brad Point
Metric	7mm	"W" Shape Brad Point
Letter	K	"W" Shape Brad Point
Fractional	9/32"	"W" Shape Brad Point
Letter	L	"W" Shape Brad Point
Letter	M	"W" Shape Brad Point
Fractional	5/16"	"W" Shape Brad Point
Metric	8mm	"W" Shape Brad Point
Fractional	3/8"	"W" Shape Brad Point
Fractional	25/64"	"W" Shape Brad Point
Letter	Y	"W" Shape

		Brad Point
Fractional	7/16"	"W" Shape Brad Point
Fractional	1/2"	"W" Shape Brad Point

## SOLID CARBIDE DRILL



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>DRILL POINT ANGLE</u>
Metric	.30mm	118°
Metric	.35mm	118°
Metric	.40mm	118°
Metric	.45mm	118°
Metric	.50mm	118°
Metric	.55mm	118°
Metric	.60mm	118°
Metric	.65mm	118°
Metric	.70mm	118°
Metric	.75mm	118°
Metric	.80mm	118°
Metric	.85mm	118°

Metric	.90mm	118°
Metric	.95mm	118°
Metric	1.05mm	118°
Metric	1.10mm	118°
Metric	1.15mm	118°
Metric	1.20mm	118°
Metric	1.25mm	118°
Metric	1.30mm	118°
Metric	1.35mm	118°
Metric	1.40mm	118°
Metric	1.45mm	118°
Metric	1.50mm	118°
Metric	1.60mm	118°
Metric	1.70mm	118°
Metric	1.80mm	118°
Metric	1.90mm	118°
Metric	2.10mm	118°
Metric	2.20mm	118°
Metric	2.30mm	118°
Metric	2.40mm	118°
Metric	2.60mm	118°

Metric	2.70mm	118°
Metric	2.80mm	118°
Metric	2.90mm	118°
Metric	3.10mm	118°
Metric	3.20mm	118°
Metric	3.30mm	118°
Metric	3.40mm	118°
Metric	3.60mm	118°
Metric	3.70mm	118°
Metric	3.80mm	118°
Metric	3.90mm	118°
Metric	4.10mm	118°
Metric	4.20mm	118°
Metric	4.30mm	118°
Metric	4.40mm	118°
Metric	4.60mm	118°
Metric	4.70mm	118°
Metric	4.80mm	118°
Metric	4.90mm	118°
Metric	5.10mm	118°
Metric	5.20mm	118°

Metric	5.30mm	118°
Metric	5.40mm	118°
Metric	5.60mm	118°
Metric	5.70mm	118°
Metric	5.80mm	118°
Metric	5.90mm	118°
Metric	6.10mm	118°
Metric	6.20mm	118°
Metric	6.30mm	118°
Metric	6.40mm	118°
Metric	6.60mm	118°
Metric	6.70mm	118°
Metric	6.80mm	118°
Metric	6.90mm	118°
Metric	7.10mm	118°
Metric	7.20mm	118°
Metric	7.30mm	118°
Metric	7.40mm	118°
Metric	7.60mm	118°
Metric	7.70mm	118°
Metric	7.80mm	118°

Metric	7.90mm	118°
Metric	8.10mm	118°
Metric	8.20mm	118°
Metric	8.30mm	118°
Metric	8.40mm	118°
Metric	8.60mm	118°
Metric	8.70mm	118°
Metric	8.80mm	118°
Metric	8.90mm	118°
Metric	9.10mm	118°
Metric	9.20mm	118°
Metric	9.30mm	118°
Metric	9.40mm	118°
Metric	9.60mm	118°
Metric	9.70mm	118°
Metric	9.80mm	118°
Metric	9.90mm	118°
Metric	10.10mm	118°
Metric	10.20mm	118°
Metric	10.30mm	118°
Metric	10.40mm	118°

Metric	10.50mm	118°
Metric	10.60mm	118°
Metric	10.70mm	118°
Metric	10.80mm	118°
Metric	10.90mm	118°
Metric	11mm	118°
Metric	11.10mm	118°
Metric	11.20mm	118°
Metric	11.30mm	118°
Metric	11.40mm	118°
Metric	11.50mm	118°
Metric	11.60mm	118°
Metric	11.70mm	118°
Metric	11.80mm	118°
Metric	11.90mm	118°
Metric	12mm	118°
Metric	12.50mm	118°
Metric	13mm	118°
Metric	13.50mm	118°
Metric	14mm	118°

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## METRIC SOLID CARBIDE 3XD DRILLS

**APPLICATIONS** Recommended for drilling cast iron, aluminum, bronze and magnesium alloys and other abrasive, but easily machined materials.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>DRILL POINT ANGLE</u>
Metric	1.05mm	118°
Metric	1.10mm	118°
Metric	1.15mm	118°
Metric	1.20mm	118°
Metric	1.25mm	118°
Metric	1.30mm	118°

Metric	1.35mm	118°
Metric	1.40mm	118°
Metric	1.45mm	118°
Metric	1.60mm	118°
Metric	1.70mm	118°
Metric	1.80mm	118°
Metric	1.90mm	118°
Metric	2.10mm	118°
Metric	2.20mm	118°
Metric	2.30mm	118°
Metric	2.40mm	118°
Metric	2.60mm	118°
Metric	2.70mm	118°
Metric	2.80mm	118°
Metric	2.90mm	118°
Metric	3.10mm	118°
Metric	3.20mm	118°
Metric	3.30mm	118°
Metric	3.40mm	118°
Metric	3.60mm	118°
Metric	3.70mm	118°

Metric	3.80mm	118°
Metric	3.90mm	118°
Metric	4.10mm	118°
Metric	4.20mm	118°
Metric	4.30mm	118°
Metric	4.40mm	118°
Metric	4.60mm	118°
Metric	4.70mm	118°
Metric	4.80mm	118°
Metric	4.90mm	118°
Metric	5.10mm	118°
Metric	5.20mm	118°
Metric	5.30mm	118°
Metric	5.40mm	118°
Metric	5.60mm	118°
Metric	5.70mm	118°
Metric	5.80mm	118°
Metric	5.90mm	118°
Metric	6.10mm	118°
Metric	6.20mm	118°
Metric	6.30mm	118°

Metric	6.40mm	118°
Metric	6.60mm	118°
Metric	6.70mm	118°
Metric	6.80mm	118°
Metric	6.90mm	118°
Metric	7.10mm	118°
Metric	7.20mm	118°
Metric	7.30mm	118°
Metric	7.40mm	118°
Metric	7.60mm	118°
Metric	7.70mm	118°
Metric	7.80mm	118°
Metric	7.90mm	118°
Metric	8.10mm	118°
Metric	8.20mm	118°
Metric	8.30mm	118°
Metric	8.40mm	118°
Metric	8.60mm	118°
Metric	8.70mm	118°
Metric	8.80mm	118°
Metric	8.90mm	118°

Metric	9.10mm	118°
Metric	9.20mm	118°
Metric	9.30mm	118°
Metric	9.40mm	118°
Metric	9.60mm	118°
Metric	9.70mm	118°
Metric	9.80mm	118°
Metric	9.90mm	118°
Metric	10.10mm	118°
Metric	10.20mm	118°
Metric	10.30mm	118°
Metric	10.40mm	118°
Metric	10.60mm	118°
Metric	10.70mm	118°
Metric	10.80mm	118°
Metric	10.90mm	118°
Metric	11.10mm	118°
Metric	11.20mm	118°
Metric	11.30mm	118°
Metric	11.40mm	118°
Metric	11.60mm	118°

Metric	11.70mm	118°
Metric	11.80mm	118°
Metric	11.90mm	118°

## SOLID CARBIDE ST FLUTE DRILLS



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>DRILL POINT ANGLE</u>	<u>OVERALL LENGTH</u>	<u>TYPE</u>
Metric	3mm	145°	38mm	Straight Flute
Fractional	1/8"	145°	1-1/2"	Straight Flute
Metric	6mm	145°	51mm	Straight Flute
Fractional	1/4"	145°	2"	Straight Flute
Fractional	5/16"	145°	2-1/2"	Straight Flute
Metric	8mm	145°	64mm	Straight Flute
Fractional	3/8"	145°	2-1/2"	Straight Flute
Metric	10mm	145°	70mm	Straight Flute
Metric	12mm	145°	76mm	Straight Flute
Fractional	1/2"	145°	3"	Straight Flute

Fractional	5/8"	145°	3-1/2"	Straight Flute
Metric	16mm	145°	89mm	Straight Flute



## SOLID CARBIDE SCREW MACHINE LENGTH DRILLS

**APPLICATIONS** for drilling stainless steel, tool steels, titanium, nickel based alloys and other high strength ferrous materials.

**FEATURES** Slow spiral. 135° drill point angle. 12° helix angle.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>DRILL POINT ANGLE</u>
Metric	.30mm	135°
Number	#80	135°
Metric	.35mm	135°
Number	#79	135°
Metric	.40mm	135°
Number	#78	135°

Metric	.45mm	135°
Number	#77	135°
Metric	.50mm	135°
Number	#76	135°
Metric	.55mm	135°
Number	#74	135°
Metric	.60mm	135°
Number	#73	135°
Number	#72	135°
Metric	.65mm	135°
Metric	.70mm	135°
Number	#70	135°
Number	#69	135°
Metric	.75mm	135°
Number	#68	135°
Fractional	1/32"	135°
Metric	.80mm	135°
Number	#67	135°
Number	#66	135°
Metric	.85mm	135°
Metric	.90mm	135°

Number	#63	135°
Metric	.95mm	135°
Number	#62	135°
Number	#61	135°
Metric	1mm	135°
Number	#59	135°
Metric	1.05mm	135°
Number	#58	135°
Number	#57	135°
Metric	1.10mm	135°
Metric	1.15mm	135°
Number	#56	135°
Fractional	3/64"	135°
Metric	1.20mm	135°
Metric	1.25mm	135°
Metric	1.30mm	135°
Number	#55	135°
Metric	1.35mm	135°
Number	#54	135°
Metric	1.40mm	135°
Metric	1.45mm	135°

Metric	1.50mm	135°
Fractional	1/16"	135°
Metric	1.60mm	135°
Number	#52	135°
Metric	1.70mm	135°
Number	#51	135°
Number	#50	135°
Metric	1.80mm	135°
Number	#49	135°
Metric	1.90mm	135°
Number	#48	135°
Fractional	5/64"	135°
Number	#47	135°
Metric	2mm	135°
Number	#46	135°
Number	#45	135°
Metric	2.10mm	135°
Number	#44	135°
Metric	2.20mm	135°
Number	#43	135°
Number	#43	135°

Metric	2.30mm	135°
Number	#42	135°
Fractional	3/32"	135°
Metric	2.40mm	135°
Number	#41	135°
Number	#40	135°
Metric	2.50mm	135°
Number	#38	135°
Metric	2.60mm	135°
Number	#37	135°
Metric	2.70mm	135°
Number	#36	135°
Fractional	7/64"	135°
Number	#35	135°
Metric	2.80mm	135°
Number	#34	135°
Number	#33	135°
Metric	2.90mm	135°
Number	#32	135°
Metric	3mm	135°
Number	#31	135°

Number	#31	135°
Metric	3.10mm	135°
Fractional	1/8"	135°
Metric	3.20mm	135°
Number	#30	135°
Metric	3.30mm	135°
Metric	3.50mm	135°
Number	#28	135°
Fractional	9/64"	135°
Metric	3.60mm	135°
Number	#27	135°
Metric	3.70mm	135°
Number	#26	135°
Number	#25	135°
Metric	3.80mm	135°
Metric	3.90mm	135°
Number	#23	135°
Fractional	5/32"	135°
Metric	4mm	135°
Number	#21	135°
Metric	4.10mm	135°

Metric	4.20mm	135°
Metric	4.30mm	135°
Number	#18	135°
Fractional	11/64"	135°
Number	#17	135°
Metric	4.40mm	135°
Number	#16	135°
Metric	4.50mm	135°
Number	#15	135°
Metric	4.60mm	135°
Number	#14	135°
Number	#13	135°
Fractional	3/16"	135°
Metric	4.80mm	135°
Number	#12	135°
Number	#11	135°
Metric	4.90mm	135°
Number	#9	135°
Metric	5mm	135°
Number	#8	135°
Metric	5.10mm	135°

Number	#7	135°
Fractional	13/64"	135°
Number	#6	135°
Metric	5.20mm	135°
Number	#5	135°
Metric	5.30mm	135°
Metric	5.40mm	135°
Number	#3	135°
Metric	5.50mm	135°
Fractional	7/32"	135°
Metric	5.60mm	135°
Number	#2	135°
Metric	5.70mm	135°
Number	#1	135°
Metric	5.80mm	135°
Metric	5.90mm	135°
Letter	A	135°
Fractional	15/64"	135°
Metric	6mm	135°
Letter	B	135°
Metric	6.10mm	135°

Letter	C	135°
Metric	6.20mm	135°
Letter	D	135°
Metric	6.30mm	135°
Fractional	1/4"	135°
Metric	6.40mm	135°
Metric	6.50mm	135°
Letter	F	135°
Metric	6.60mm	135°
Letter	G	135°
Metric	6.70mm	135°
Fractional	17/64"	135°
Letter	H	135°
Metric	6.80mm	135°
Metric	6.90mm	135°
Letter	I	135°
Metric	7mm	135°
Letter	J	135°
Metric	7.10mm	135°
Letter	K	135°
Fractional	9/32"	135°

Metric	7.20mm	135°
Metric	7.30mm	135°
Letter	L	135°
Metric	7.40mm	135°
Letter	M	135°
Metric	7.50mm	135°
Fractional	19/64"	135°
Metric	7.60mm	135°
Letter	N	135°
Metric	7.70mm	135°
Metric	7.80mm	135°
Metric	7.90mm	135°
Fractional	5/16"	135°
Metric	8mm	135°
Letter	O	135°
Metric	8.10mm	135°
Metric	8.20mm	135°
Letter	P	135°
Metric	8.30mm	135°
Fractional	21/64"	135°
Metric	8.40mm	135°

Letter	Q	135°
Metric	8.50mm	135°
Metric	8.60mm	135°
Letter	R	135°
Metric	8.70mm	135°
Fractional	11/32"	135°
Metric	8.80mm	135°
Letter	S	135°
Metric	8.90mm	135°
Metric	9mm	135°
Letter	T	135°
Metric	9.10mm	135°
Fractional	23/64"	135°
Metric	9.20mm	135°
Metric	9.30mm	135°
Letter	U	135°
Metric	9.40mm	135°
Metric	9.50mm	135°
Fractional	3/8"	135°
Letter	V	135°
Metric	9.60mm	135°

Metric	9.70mm	135°
Metric	9.80mm	135°
Letter	W	135°
Metric	9.90mm	135°
Fractional	25/64"	135°
Metric	10mm	135°
Letter	X	135°
Metric	10.10mm	135°
Metric	10.20mm	135°
Letter	Y	135°
Metric	10.30mm	135°
Fractional	13/32"	135°
Metric	10.40mm	135°
Letter	Z	135°
Metric	10.50mm	135°
Metric	10.50mm	135°
Metric	10.60mm	135°
Metric	10.70mm	135°
Fractional	27/64"	135°
Metric	10.80mm	135°
Metric	10.90mm	135°

Metric	11mm	135°
Metric	11mm	135°
Metric	11.10mm	135°
Fractional	7/16"	135°
Metric	11.20mm	135°
Metric	11.30mm	135°
Metric	11.40mm	135°
Metric	11.50mm	135°
Metric	11.50mm	135°
Fractional	29/64"	135°
Fractional	29/64"	135°
Metric	11.60mm	135°
Metric	11.70mm	135°
Metric	11.80mm	135°
Metric	11.90mm	135°
Fractional	15/32"	135°
Metric	12mm	135°
Metric	12mm	135°
Fractional	31/64"	135°
Metric	12.50mm	135°
Fractional	1/2"	135°

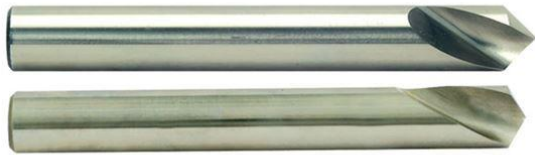
Metric	13mm	135°
Metric	13mm	135°
Metric	13.50mm	135°
Metric	14mm	135°
Metric	14mm	135°
Fractional	9/16"	135°
Metric	14.50mm	135°
Metric	15mm	135°
Metric	15mm	135°
Fractional	39/64"	135°
Metric	15.50mm	135°
Fractional	5/8"	135°
Metric	16mm	135°
Metric	16mm	135°
Fractional	41/64"	135°
Metric	16.50mm	135°
Fractional	21/32"	135°
Metric	17mm	135°
Metric	17mm	135°
Fractional	43/64"	135°
Fractional	11/16"	135°

Fractional	11/16"	135°
Metric	17.50mm	135°
Fractional	45/64"	135°
Metric	18mm	135°
Metric	18mm	135°
Fractional	23/32"	135°
Metric	18.50mm	135°
Fractional	47/64"	135°
Metric	19mm	135°
Metric	19mm	135°
Fractional	3/4"	135°
Fractional	3/4"	135°
Fractional	49/64"	135°
Fractional	25/32"	135°
Metric	20mm	135°
Metric	20mm	135°



## SOLID CARBIDE NC SPOTTING DRILLS

**APPLICATIONS** For accurate spotting on NC machines



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>DRILL POINT ANGLE</u>	<u>FLUTE LENGTH</u>	<u>OVERALL LENGTH</u>
Fractional	3/16"	120°	1"	2"
Metric	5mm	120°	26mm	51mm
Metric	6mm	120°	26mm	51mm
Fractional	1/4"	120°	1"	2"
Fractional	5/16"	120°	1"	2-1/2"
Metric	8mm	120°	26mm	64mm
Fractional	3/8"	120°	1"	2-1/2"
Metric	12mm	120°	39.50mm	76mm
Fractional	1/2"	120°	1-9/16"	3"
Fractional	3/16"	90°	1"	2"
Metric	5mm	90°	26mm	51mm

Metric	6mm	90°	26mm	51mm
Fractional	1/4"	90°	1"	2"
Fractional	5/16"	90°	1"	2-1/2"
Metric	8mm	90°	26mm	64mm
Fractional	3/8"	90°	1"	2-1/2"
Metric	10mm	90°	30mm	70mm
Metric	12mm	90°	39.50mm	76mm
Fractional	1/2"	90°	1-9/16"	3"

## SOLID CARBIDE METRIC SCREW MACHINE LENGTH TWIST DRILLS

APPLICATIONS for drilling mild steel, cast iron, aluminum, bronze and magnesium



<u>SIZE</u>	<u>DRILL POINT ANGLE</u>
1mm	118°
1.50mm	118°
2mm	118°
2.50mm	118°
3mm	118°
3.50mm	118°
4mm	118°
4.50mm	118°

5mm	118°
5.50mm	118°
6mm	118°
6.50mm	118°
7mm	118°
7.50mm	118°
8mm	118°
8.50mm	118°
9mm	118°
9.50mm	118°
10mm	118°
10.50mm	118°
11mm	118°
11.50mm	118°
12mm	118°
12.50mm	118°
13mm	118°
13.50mm	118°
14mm	118°



## SOLID CARBIDE TWIST DRILLS



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>DRILL POINT ANGLE</u>
Fractional	1/64"	118°
Metric	.50mm	118°
Metric	.55mm	118°
Metric	.60mm	118°
Number	#73	118°

Metric	.65mm	118°
Metric	.70mm	118°
Metric	.75mm	118°
Metric	.80mm	118°
Metric	.85mm	118°
Metric	.90mm	118°
Metric	.95mm	118°
Metric	1mm	118°
Metric	1.05mm	118°
Metric	1.10mm	118°
Metric	1.15mm	118°
Metric	1.20mm	118°
Metric	1.25mm	118°
Metric	1.30mm	118°
Metric	1.35mm	118°
Metric	1.40mm	118°
Metric	1.45mm	118°
Metric	1.50mm	118°
Metric	1.55mm	118°
Metric	1.60mm	118°
Metric	1.65mm	118°

Metric	1.70mm	118°
Metric	1.75mm	118°
Metric	1.80mm	118°
Metric	1.85mm	118°
Metric	1.90mm	118°
Metric	1.95mm	118°
Metric	2mm	118°
Metric	2.05mm	118°
Metric	2.10mm	118°
Metric	2.15mm	118°
Metric	2.20mm	118°
Metric	2.25mm	118°
Metric	2.30mm	118°
Metric	2.35mm	118°
Metric	2.40mm	118°
Metric	2.45mm	118°
Metric	2.50mm	118°
Metric	2.55mm	118°
Metric	2.60mm	118°
Metric	2.65mm	118°
Metric	2.70mm	118°

Metric	2.75mm	118°
Metric	2.80mm	118°
Metric	2.85mm	118°
Metric	2.90mm	118°
Metric	2.95mm	118°
Metric	3mm	118°
Metric	3.05mm	118°
Metric	3.10mm	118°
Metric	3.15mm	118°
Letter	A	118°
Letter	B	118°
Letter	C	118°
Letter	D	118°



## SOLID CARBIDE JOBBERS LENGTH TWIST DRILLS

APPLICATION drilling in cast iron, aluminum, magnesium, bronze, masonite and resin-fiberglass laminates., cast iron, aluminum, bronze and magnesium alloys and other abrasive but easily machined material



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>DRILL POINT ANGLE</u>
Letter	A	118°
Letter	B	118°
Letter	C	118°
Letter	D	118°
Letter	E	118°

Letter	F	118°
Letter	G	118°
Letter	H	118°
Letter	I	118°
Letter	J	118°
Letter	K	118°
Letter	L	118°
Letter	M	118°
Letter	N	118°
Letter	O	118°
Letter	P	118°
Letter	Q	118°
Letter	R	118°
Letter	S	118°
Letter	T	118°
Letter	U	118°
Letter	V	118°
Letter	W	118°
Letter	X	118°
Letter	Y	118°
Letter	Z	118°

Letter	C	118°
Letter	D	118°
Fractional	1/4"	118°
Letter	F	118°
Letter	G	118°
Letter	H	118°
Letter	I	118°
Letter	J	118°
Letter	K	118°
Letter	L	118°
Letter	N	118°
Letter	O	118°
Letter	Q	118°
Letter	R	118°
Letter	S	118°
Letter	T	118°
Letter	U	118°
Letter	Y	118°



## SOLID CARBIDE COMBINED DRILLS & COUNTERSINKS

**APPLICATIONS** Maintains accurate center holes on long production runs or when precise centering is required.



<u>TYPE</u>	<u>INDUSTRY STANDARD TYPE</u>	<u>INDUSTRY STANDARD</u>	<u>INCLUDED ANGLE</u>
Plain	Metric	.50mm	60°
Plain	Number	#00	60°

Plain	Number	#0	60°
Plain	Metric	.80mm	60°
Plain	Metric	1mm	60°
Plain	Number	#1	60°
Plain	Metric	1.25mm	60°
Plain	Metric	1.60mm	60°
Plain	Number	#2	60°
Plain	Metric	2mm	60°
Plain	Metric	2.50mm	60°
Plain	Number	#3	60°
Plain	Number	#4	60°
Plain	Metric	4mm	60°
Plain	Number	#5	60°
Plain	Number	#6	60°



# SOLID CARBIDE RANGE REAMER

APPLICATIONS Recommended for general purpose reaming. for ferrous metals and many non ferrous and non-metallic materials



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>TOOL MATERIAL</u>	<u>FLUTE SHAPE</u>
Decimal	.0130"	Solid Carbide	Straight Flute
Metric	.35mm	Solid Carbide	Straight Flute
Decimal	.0140"	Solid Carbide	Straight Flute
Decimal	.0150"	Solid Carbide	Straight Flute
Decimal	.0155"	Solid Carbide	Straight Flute
Metric	.40mm	Solid Carbide	Straight Flute

Decimal	.0165"	Solid Carbide	Straight Flute
Decimal	.0170"	Solid Carbide	Straight Flute
Decimal	.0175"	Solid Carbide	Straight Flute
Metric	.45mm	Solid Carbide	Straight Flute
Decimal	.0185"	Solid Carbide	Straight Flute
Decimal	.0205"	Solid Carbide	Straight Flute
Decimal	.0215"	Solid Carbide	Straight Flute
Metric	.55mm	Solid Carbide	Straight Flute
Decimal	.0220"	Solid Carbide	Straight Flute
Decimal	.0230"	Solid Carbide	Straight Flute
Decimal	.0235"	Solid Carbide	Straight Flute
Decimal	.0255"	Solid Carbide	Straight Flute
Metric	.65mm	Solid Carbide	Straight Flute
Decimal	.0265"	Solid Carbide	Straight Flute
Decimal	.0270"	Solid Carbide	Straight Flute
Decimal	.0275"	Solid Carbide	Straight Flute
Decimal	.0285"	Solid Carbide	Straight Flute
Decimal	.0290"	Solid Carbide	Straight Flute
Metric	.75mm	Solid Carbide	Straight Flute
Decimal	.0295"	Solid Carbide	Straight Flute
Decimal	.0300"	Solid Carbide	Straight Flute

Decimal	.0305"	Solid Carbide	Straight Flute
Decimal	.0315"	Solid Carbide	Straight Flute
Decimal	.0325"	Solid Carbide	Straight Flute
Metric	.85mm	Solid Carbide	Straight Flute
Decimal	.0335"	Solid Carbide	Straight Flute
Decimal	.0340"	Solid Carbide	Straight Flute
Decimal	.0345"	Solid Carbide	Straight Flute
Decimal	.0355"	Solid Carbide	Straight Flute
Decimal	.0365"	Solid Carbide	Straight Flute
Metric	.95mm	Solid Carbide	Straight Flute
Decimal	.0375"	Solid Carbide	Straight Flute
Decimal	.0385"	Solid Carbide	Straight Flute
Decimal	.0395"	Solid Carbide	Straight Flute
Metric	1.05mm	Solid Carbide	Straight Flute
Decimal	.0415"	Solid Carbide	Straight Flute
Decimal	.0425"	Solid Carbide	Straight Flute
Decimal	.0435"	Solid Carbide	Straight Flute
Decimal	.0440"	Solid Carbide	Straight Flute
Decimal	.0445"	Solid Carbide	Straight Flute
Decimal	.0450"	Solid Carbide	Straight Flute
Metric	1.15mm	Solid Carbide	Straight Flute

Decimal	.0455"	Solid Carbide	Straight Flute
Decimal	.0460"	Solid Carbide	Straight Flute
Decimal	.0475"	Solid Carbide	Straight Flute
Decimal	.0480"	Solid Carbide	Straight Flute
Decimal	.0485"	Solid Carbide	Straight Flute
Metric	1.25mm	Solid Carbide	Straight Flute
Decimal	.0495"	Solid Carbide	Straight Flute
Decimal	.0500"	Solid Carbide	Straight Flute
Decimal	.0510"	Solid Carbide	Straight Flute
Decimal	.0525"	Solid Carbide	Straight Flute
Metric	1.35mm	Solid Carbide	Straight Flute
Decimal	.0535"	Solid Carbide	Straight Flute
Decimal	.0540"	Solid Carbide	Straight Flute
Decimal	.0545"	Solid Carbide	Straight Flute
Decimal	.0555"	Solid Carbide	Straight Flute
Decimal	.0565"	Solid Carbide	Straight Flute
Decimal	.0570"	Solid Carbide	Straight Flute
Metric	1.45mm	Solid Carbide	Straight Flute
Decimal	.0575"	Solid Carbide	Straight Flute
Decimal	.0585"	Solid Carbide	Straight Flute
Decimal	.0590"	Solid Carbide	Straight Flute

Decimal	.0600"	Solid Carbide	Straight Flute
Decimal	.0605"	Solid Carbide	Straight Flute
Decimal	.0610"	Solid Carbide	Straight Flute
Decimal	.0630"	Solid Carbide	Straight Flute
Decimal	.0645"	Solid Carbide	Straight Flute
Metric	1.65mm	Solid Carbide	Straight Flute
Decimal	.0650"	Solid Carbide	Straight Flute
Decimal	.0655"	Solid Carbide	Straight Flute
Decimal	.0660"	Solid Carbide	Straight Flute
Decimal	.0665"	Solid Carbide	Straight Flute
Decimal	.0675"	Solid Carbide	Straight Flute
Decimal	.0685"	Solid Carbide	Straight Flute
Metric	1.75mm	Solid Carbide	Straight Flute
Decimal	.0690"	Solid Carbide	Straight Flute
Decimal	.0695"	Solid Carbide	Straight Flute
Decimal	.0705"	Solid Carbide	Straight Flute
Decimal	.0710"	Solid Carbide	Straight Flute
Decimal	.0715"	Solid Carbide	Straight Flute
Decimal	.0720"	Solid Carbide	Straight Flute
Decimal	.0725"	Solid Carbide	Straight Flute
Metric	1.85mm	Solid Carbide	Straight Flute

Decimal	.0735"	Solid Carbide	Straight Flute
Decimal	.0740"	Solid Carbide	Straight Flute
Decimal	.0745"	Solid Carbide	Straight Flute
Decimal	.0750"	Solid Carbide	Straight Flute
Decimal	.0755"	Solid Carbide	Straight Flute
Decimal	.0765"	Solid Carbide	Straight Flute
Metric	1.95mm	Solid Carbide	Straight Flute
Decimal	.0770"	Solid Carbide	Straight Flute
Decimal	.0775"	Solid Carbide	Straight Flute
Decimal	.0780"	Solid Carbide	Straight Flute
Decimal	.0790"	Solid Carbide	Straight Flute
Decimal	.0795"	Solid Carbide	Straight Flute
Decimal	.0805"	Solid Carbide	Straight Flute
Metric	2.05mm	Solid Carbide	Straight Flute
Decimal	.0815"	Solid Carbide	Straight Flute
Decimal	.0825"	Solid Carbide	Straight Flute
Decimal	.0835"	Solid Carbide	Straight Flute
Decimal	.0840"	Solid Carbide	Straight Flute
Decimal	.0845"	Solid Carbide	Straight Flute
Metric	2.15mm	Solid Carbide	Straight Flute
Decimal	.0850"	Solid Carbide	Straight Flute

Decimal	.0855"	Solid Carbide	Straight Flute
Decimal	.0865"	Solid Carbide	Straight Flute
Decimal	.0875"	Solid Carbide	Straight Flute
Decimal	.0880"	Solid Carbide	Straight Flute
Decimal	.0885"	Solid Carbide	Straight Flute
Decimal	.0895"	Solid Carbide	Straight Flute
Decimal	.0900"	Solid Carbide	Straight Flute
Decimal	.0905"	Solid Carbide	Straight Flute
Decimal	.0910"	Solid Carbide	Straight Flute
Decimal	.0915"	Solid Carbide	Straight Flute
Metric	2.35mm	Solid Carbide	Straight Flute
Decimal	.0925"	Solid Carbide	Straight Flute
Decimal	.0940"	Solid Carbide	Straight Flute
Decimal	.0945"	Solid Carbide	Straight Flute
Decimal	.0955"	Solid Carbide	Straight Flute
Decimal	.0965"	Solid Carbide	Straight Flute
Decimal	.0970"	Solid Carbide	Straight Flute
Decimal	.0975"	Solid Carbide	Straight Flute
Decimal	.0985"	Solid Carbide	Straight Flute
Decimal	.0990"	Solid Carbide	Straight Flute
Metric	2.55mm	Solid Carbide	Straight Flute

Decimal	.1005"	Solid Carbide	Straight Flute
Decimal	.1010"	Solid Carbide	Straight Flute
Decimal	.1020"	Solid Carbide	Straight Flute
Decimal	.1025"	Solid Carbide	Straight Flute
Decimal	.1030"	Solid Carbide	Straight Flute
Decimal	.1035"	Solid Carbide	Straight Flute
Metric	2.65mm	Solid Carbide	Straight Flute
Decimal	.1045"	Solid Carbide	Straight Flute
Decimal	.1050"	Solid Carbide	Straight Flute
Decimal	.1055"	Solid Carbide	Straight Flute
Decimal	.1060"	Solid Carbide	Straight Flute
Decimal	.1070"	Solid Carbide	Straight Flute
Decimal	.1075"	Solid Carbide	Straight Flute
Decimal	.1080"	Solid Carbide	Straight Flute
Metric	2.75mm	Solid Carbide	Straight Flute
Decimal	.1085"	Solid Carbide	Straight Flute
Decimal	.1090"	Solid Carbide	Straight Flute
Decimal	.1095"	Solid Carbide	Straight Flute
Decimal	.1105"	Solid Carbide	Straight Flute
Decimal	.1115"	Solid Carbide	Straight Flute
Decimal	.1120"	Solid Carbide	Straight Flute

Metric	2.85mm	Solid Carbide	Straight Flute
Decimal	.1125"	Solid Carbide	Straight Flute
Decimal	.1135"	Solid Carbide	Straight Flute
Decimal	.1140"	Solid Carbide	Straight Flute
Decimal	.1145"	Solid Carbide	Straight Flute
Decimal	.1150"	Solid Carbide	Straight Flute
Decimal	.1155"	Solid Carbide	Straight Flute
Metric	2.95mm	Solid Carbide	Straight Flute
Decimal	.1165"	Solid Carbide	Straight Flute
Decimal	.1170"	Solid Carbide	Straight Flute
Decimal	.1175"	Solid Carbide	Straight Flute
Decimal	.1180"	Solid Carbide	Straight Flute
Decimal	.1185"	Solid Carbide	Straight Flute
Decimal	.1190"	Solid Carbide	Straight Flute
Decimal	.1195"	Solid Carbide	Straight Flute
Metric	3.05mm	Solid Carbide	Straight Flute
Decimal	.1205"	Solid Carbide	Straight Flute
Decimal	.1215"	Solid Carbide	Straight Flute
Decimal	.1220"	Solid Carbide	Straight Flute
Decimal	.1225"	Solid Carbide	Straight Flute
Decimal	.1230"	Solid Carbide	Straight Flute

Decimal	.1235"	Solid Carbide	Straight Flute
Metric	3.15mm	Solid Carbide	Straight Flute
Decimal	.1247"	Solid Carbide	Straight Flute
Decimal	.1255"	Solid Carbide	Straight Flute
Decimal	.1260"	Solid Carbide	Straight Flute
Decimal	.1275"	Solid Carbide	Straight Flute
Decimal	.1280"	Solid Carbide	Straight Flute
Decimal	.1290"	Solid Carbide	Straight Flute
Decimal	.1295"	Solid Carbide	Straight Flute
Decimal	.1305"	Solid Carbide	Straight Flute
Decimal	.1315"	Solid Carbide	Straight Flute
Metric	3.35mm	Solid Carbide	Straight Flute
Decimal	.1320"	Solid Carbide	Straight Flute
Decimal	.1325"	Solid Carbide	Straight Flute
Decimal	.1330"	Solid Carbide	Straight Flute
Decimal	.1340"	Solid Carbide	Straight Flute
Decimal	.1345"	Solid Carbide	Straight Flute
Decimal	.1350"	Solid Carbide	Straight Flute
Decimal	.1355"	Solid Carbide	Straight Flute
Decimal	.1365"	Solid Carbide	Straight Flute
Decimal	.1370"	Solid Carbide	Straight Flute

Decimal	.1375"	Solid Carbide	Straight Flute
Decimal	.1380"	Solid Carbide	Straight Flute
Decimal	.1385"	Solid Carbide	Straight Flute
Decimal	.1395"	Solid Carbide	Straight Flute
Metric	3.55mm	Solid Carbide	Straight Flute
Decimal	.1400"	Solid Carbide	Straight Flute
Decimal	.1410"	Solid Carbide	Straight Flute
Decimal	.1415"	Solid Carbide	Straight Flute
Decimal	.1420"	Solid Carbide	Straight Flute
Decimal	.1425"	Solid Carbide	Straight Flute
Decimal	.1430"	Solid Carbide	Straight Flute
Decimal	.1435"	Solid Carbide	Straight Flute
Metric	3.65mm	Solid Carbide	Straight Flute
Decimal	.1445"	Solid Carbide	Straight Flute
Decimal	.1450"	Solid Carbide	Straight Flute
Decimal	.1455"	Solid Carbide	Straight Flute
Decimal	.1465"	Solid Carbide	Straight Flute
Decimal	.1475"	Solid Carbide	Straight Flute
Metric	3.75mm	Solid Carbide	Straight Flute
Decimal	.1480"	Solid Carbide	Straight Flute
Decimal	.1485"	Solid Carbide	Straight Flute

Decimal	.1500"	Solid Carbide	Straight Flute
Decimal	.1505"	Solid Carbide	Straight Flute
Decimal	.1510"	Solid Carbide	Straight Flute
Decimal	.1515"	Solid Carbide	Straight Flute
Metric	3.85mm	Solid Carbide	Straight Flute
Decimal	.1525"	Solid Carbide	Straight Flute
Decimal	.1530"	Solid Carbide	Straight Flute
Decimal	.1535"	Solid Carbide	Straight Flute
Decimal	.1545"	Solid Carbide	Straight Flute
Decimal	.1550"	Solid Carbide	Straight Flute
Metric	3.95mm	Solid Carbide	Straight Flute
Decimal	.1555"	Solid Carbide	Straight Flute
Decimal	.1560"	Solid Carbide	Straight Flute
Decimal	.1565"	Solid Carbide	Straight Flute
Decimal	.1575"	Solid Carbide	Straight Flute
Decimal	.1585"	Solid Carbide	Straight Flute
Metric	4.05mm	Solid Carbide	Straight Flute
Decimal	.1595"	Solid Carbide	Straight Flute
Decimal	.1600"	Solid Carbide	Straight Flute
Decimal	.1605"	Solid Carbide	Straight Flute
Metric	4.10mm	Solid Carbide	Straight Flute

Decimal	.1615"	Solid Carbide	Straight Flute
Decimal	.1620"	Solid Carbide	Straight Flute
Decimal	.1625"	Solid Carbide	Straight Flute
Decimal	.1630"	Solid Carbide	Straight Flute
Metric	4.15mm	Solid Carbide	Straight Flute
Decimal	.1635"	Solid Carbide	Straight Flute
Decimal	.1640"	Solid Carbide	Straight Flute
Decimal	.1645"	Solid Carbide	Straight Flute
Decimal	.1650"	Solid Carbide	Straight Flute
Metric	4.20mm	Solid Carbide	Straight Flute
Decimal	.1655"	Solid Carbide	Straight Flute
Decimal	.1665"	Solid Carbide	Straight Flute
Decimal	.1670"	Solid Carbide	Straight Flute
Metric	4.25mm	Solid Carbide	Straight Flute
Decimal	.1675"	Solid Carbide	Straight Flute
Decimal	.1680"	Solid Carbide	Straight Flute
Decimal	.1685"	Solid Carbide	Straight Flute
Decimal	.1690"	Solid Carbide	Straight Flute
Metric	4.30mm	Solid Carbide	Straight Flute
Decimal	.1700"	Solid Carbide	Straight Flute
Decimal	.1705"	Solid Carbide	Straight Flute

Decimal	.1710"	Solid Carbide	Straight Flute
Metric	4.35mm	Solid Carbide	Straight Flute
Decimal	.1715"	Solid Carbide	Straight Flute
Decimal	.1720"	Solid Carbide	Straight Flute
Decimal	.1725"	Solid Carbide	Straight Flute
Metric	4.40mm	Solid Carbide	Straight Flute
Decimal	.1735"	Solid Carbide	Straight Flute
Decimal	.1740"	Solid Carbide	Straight Flute
Decimal	.1745"	Solid Carbide	Straight Flute
Decimal	.1750"	Solid Carbide	Straight Flute
Metric	4.45mm	Solid Carbide	Straight Flute
Decimal	.1755"	Solid Carbide	Straight Flute
Decimal	.1760"	Solid Carbide	Straight Flute
Decimal	.1765"	Solid Carbide	Straight Flute
Decimal	.1775"	Solid Carbide	Straight Flute
Decimal	.1780"	Solid Carbide	Straight Flute
Decimal	.1785"	Solid Carbide	Straight Flute
Decimal	.1790"	Solid Carbide	Straight Flute
Metric	4.55mm	Solid Carbide	Straight Flute
Decimal	.1795"	Solid Carbide	Straight Flute
Decimal	.1805"	Solid Carbide	Straight Flute

Decimal	.1810"	Solid Carbide	Straight Flute
Metric	4.60mm	Solid Carbide	Straight Flute
Decimal	.1815"	Solid Carbide	Straight Flute
Decimal	.1825"	Solid Carbide	Straight Flute
Decimal	.1830"	Solid Carbide	Straight Flute
Metric	4.65mm	Solid Carbide	Straight Flute
Decimal	.1835"	Solid Carbide	Straight Flute
Decimal	.1840"	Solid Carbide	Straight Flute
Decimal	.1845"	Solid Carbide	Straight Flute
Decimal	.1855"	Solid Carbide	Straight Flute
Decimal	.1860"	Solid Carbide	Straight Flute
Decimal	.1865"	Solid Carbide	Straight Flute
Decimal	.1870"	Solid Carbide	Straight Flute
Decimal	.1895"	Solid Carbide	Straight Flute
Decimal	.1905"	Solid Carbide	Straight Flute
Decimal	.1915"	Solid Carbide	Straight Flute
Decimal	.1920"	Solid Carbide	Straight Flute
Decimal	.1925"	Solid Carbide	Straight Flute
Decimal	.1930"	Solid Carbide	Straight Flute
Decimal	.1940"	Solid Carbide	Straight Flute
Decimal	.1945"	Solid Carbide	Straight Flute

Metric	4.95mm	Solid Carbide	Straight Flute
Decimal	.1950"	Solid Carbide	Straight Flute
Decimal	.1955"	Solid Carbide	Straight Flute
Decimal	.1965"	Solid Carbide	Straight Flute
Decimal	.1970"	Solid Carbide	Straight Flute
Decimal	.1975"	Solid Carbide	Straight Flute
Decimal	.1980"	Solid Carbide	Straight Flute
Decimal	.1985"	Solid Carbide	Straight Flute
Metric	5.05mm	Solid Carbide	Straight Flute
Decimal	.1995"	Solid Carbide	Straight Flute
Decimal	.2000"	Solid Carbide	Straight Flute
Decimal	.2005"	Solid Carbide	Straight Flute
Metric	5.10mm	Solid Carbide	Straight Flute
Decimal	.2015"	Solid Carbide	Straight Flute
Decimal	.2020"	Solid Carbide	Straight Flute
Decimal	.2025"	Solid Carbide	Straight Flute
Metric	5.15mm	Solid Carbide	Straight Flute
Decimal	.2030"	Solid Carbide	Straight Flute
Decimal	.2035"	Solid Carbide	Straight Flute
Decimal	.2045"	Solid Carbide	Straight Flute
Metric	5.20mm	Solid Carbide	Straight Flute

Decimal	.2050"	Solid Carbide	Straight Flute
Decimal	.2060"	Solid Carbide	Straight Flute
Decimal	.2065"	Solid Carbide	Straight Flute
Metric	5.25mm	Solid Carbide	Straight Flute
Decimal	.2070"	Solid Carbide	Straight Flute
Decimal	.2075"	Solid Carbide	Straight Flute
Decimal	.2080"	Solid Carbide	Straight Flute
Decimal	.2085"	Solid Carbide	Straight Flute
Metric	5.30mm	Solid Carbide	Straight Flute
Decimal	.2095"	Solid Carbide	Straight Flute
Decimal	.2100"	Solid Carbide	Straight Flute
Decimal	.2105"	Solid Carbide	Straight Flute
Metric	5.35mm	Solid Carbide	Straight Flute
Decimal	.2110"	Solid Carbide	Straight Flute
Decimal	.2115"	Solid Carbide	Straight Flute
Decimal	.2120"	Solid Carbide	Straight Flute
Decimal	.2125"	Solid Carbide	Straight Flute
Metric	5.40mm	Solid Carbide	Straight Flute
Decimal	.2135"	Solid Carbide	Straight Flute
Decimal	.2140"	Solid Carbide	Straight Flute
Decimal	.2145"	Solid Carbide	Straight Flute

Metric	5.45mm	Solid Carbide	Straight Flute
Decimal	.2150"	Solid Carbide	Straight Flute
Decimal	.2155"	Solid Carbide	Straight Flute
Decimal	.2160"	Solid Carbide	Straight Flute
Decimal	.2165"	Solid Carbide	Straight Flute
Decimal	.2170"	Solid Carbide	Straight Flute
Decimal	.2175"	Solid Carbide	Straight Flute
Decimal	.2180"	Solid Carbide	Straight Flute
Metric	5.55mm	Solid Carbide	Straight Flute
Decimal	.2185"	Solid Carbide	Straight Flute
Decimal	.2190"	Solid Carbide	Straight Flute
Decimal	.2195"	Solid Carbide	Straight Flute
Decimal	.2200"	Solid Carbide	Straight Flute
Metric	5.60mm	Solid Carbide	Straight Flute
Decimal	.2205"	Solid Carbide	Straight Flute
Decimal	.2215"	Solid Carbide	Straight Flute
Decimal	.2220"	Solid Carbide	Straight Flute
Metric	5.65mm	Solid Carbide	Straight Flute
Decimal	.2225"	Solid Carbide	Straight Flute
Decimal	.2230"	Solid Carbide	Straight Flute
Decimal	.2235"	Solid Carbide	Straight Flute

Decimal	.2240"	Solid Carbide	Straight Flute
Metric	5.70mm	Solid Carbide	Straight Flute
Decimal	.2245"	Solid Carbide	Straight Flute
Decimal	.2250"	Solid Carbide	Straight Flute
Decimal	.2255"	Solid Carbide	Straight Flute
Decimal	.2260"	Solid Carbide	Straight Flute
Metric	5.75mm	Solid Carbide	Straight Flute
Decimal	.2265"	Solid Carbide	Straight Flute
Decimal	.2270"	Solid Carbide	Straight Flute
Decimal	.2275"	Solid Carbide	Straight Flute
Metric	5.80mm	Solid Carbide	Straight Flute
Decimal	.2285"	Solid Carbide	Straight Flute
Decimal	.2290"	Solid Carbide	Straight Flute
Decimal	.2295"	Solid Carbide	Straight Flute
Decimal	.2300"	Solid Carbide	Straight Flute
Metric	5.85mm	Solid Carbide	Straight Flute
Decimal	.2305"	Solid Carbide	Straight Flute
Decimal	.2310"	Solid Carbide	Straight Flute
Decimal	.2320"	Solid Carbide	Straight Flute
Decimal	.2330"	Solid Carbide	Straight Flute
Metric	5.90mm	Solid Carbide	Straight Flute

Decimal	.2320"	Solid Carbide	Straight Flute
Decimal	.2330"	Solid Carbide	Straight Flute
Decimal	.2335"	Solid Carbide	Straight Flute
Metric	5.95mm	Solid Carbide	Straight Flute
Decimal	.2345"	Solid Carbide	Straight Flute
Decimal	.2350"	Solid Carbide	Straight Flute
Decimal	.2360"	Solid Carbide	Straight Flute
Decimal	.2370"	Solid Carbide	Straight Flute
Decimal	.2390"	Solid Carbide	Straight Flute
Decimal	.2400"	Solid Carbide	Straight Flute
Decimal	.2410"	Solid Carbide	Straight Flute
Metric	6.05mm	Solid Carbide	Straight Flute
Decimal	.2440"	Solid Carbide	Straight Flute
Decimal	.2450"	Solid Carbide	Straight Flute
Decimal	.2470"	Solid Carbide	Straight Flute
Decimal	.2490"	Solid Carbide	Straight Flute
Metric	6.10mm	Solid Carbide	Straight Flute
Decimal	.2530"	Solid Carbide	Straight Flute
Decimal	.2540"	Solid Carbide	Straight Flute
Decimal	.2550"	Solid Carbide	Straight Flute
Metric	6.15mm	Solid Carbide	Straight Flute

Decimal	.2350"	Solid Carbide	Straight Flute
Decimal	.2360"	Solid Carbide	Straight Flute
Decimal	.2370"	Solid Carbide	Straight Flute
Decimal	.2380"	Solid Carbide	Straight Flute
Metric	6.20mm	Solid Carbide	Straight Flute
Decimal	.2445"	Solid Carbide	Straight Flute
Decimal	.2410"	Solid Carbide	Straight Flute
Decimal	.2420"	Solid Carbide	Straight Flute
Metric	6.25mm	Solid Carbide	Straight Flute
Decimal	.2440"	Solid Carbide	Straight Flute
Decimal	.2450"	Solid Carbide	Straight Flute
Decimal	.2460"	Solid Carbide	Straight Flute
Decimal	.2470"	Solid Carbide	Straight Flute
Decimal	.2480"	Solid Carbide	Straight Flute
Decimal	.2490"	Solid Carbide	Straight Flute
Metric	6.35mm	Solid Carbide	Straight Flute
Decimal	.2520"	Solid Carbide	Straight Flute
Decimal	.2530"	Solid Carbide	Straight Flute
Decimal	.2540"	Solid Carbide	Straight Flute
Decimal	.2550"	Solid Carbide	Straight Flute
Metric	6.45mm	Solid Carbide	Straight Flute

Decimal	.2540"	Solid Carbide	Straight Flute
Decimal	.2550"	Solid Carbide	Straight Flute
Decimal	.2340"	Solid Carbide	Straight Flute
Decimal	.2350"	Solid Carbide	Straight Flute
Decimal	.2360"	Solid Carbide	Straight Flute
Decimal	.2370"	Solid Carbide	Straight Flute
Decimal	.2380"	Solid Carbide	Straight Flute
Decimal	.2390"	Solid Carbide	Straight Flute
Decimal	.2650"	Solid Carbide	Straight Flute
Decimal	.2410"	Solid Carbide	Straight Flute
Decimal	.2420"	Solid Carbide	Straight Flute
Decimal	.2430"	Solid Carbide	Straight Flute
Decimal	.2440"	Solid Carbide	Straight Flute
Decimal	.2450"	Solid Carbide	Straight Flute
Decimal	.2460"	Solid Carbide	Straight Flute
Decimal	.2470"	Solid Carbide	Straight Flute
Decimal	.2480"	Solid Carbide	Straight Flute
Decimal	.2490"	Solid Carbide	Straight Flute
Decimal	.2510"	Solid Carbide	Straight Flute
Decimal	.2520"	Solid Carbide	Straight Flute
Decimal	.2530"	Solid Carbide	Straight Flute

Decimal	.2540"	Solid Carbide	Straight Flute
Decimal	.2550"	Solid Carbide	Straight Flute
Decimal	.2840"	Solid Carbide	Straight Flute
Decimal	.2850"	Solid Carbide	Straight Flute
Decimal	.2860"	Solid Carbide	Straight Flute
Decimal	.2870"	Solid Carbide	Straight Flute
Decimal	.2880"	Solid Carbide	Straight Flute
Decimal	.2890"	Solid Carbide	Straight Flute
Decimal	.2910"	Solid Carbide	Straight Flute
Decimal	.2920"	Solid Carbide	Straight Flute
Decimal	.2930"	Solid Carbide	Straight Flute
Decimal	.2940"	Solid Carbide	Straight Flute
Decimal	.2960"	Solid Carbide	Straight Flute
Decimal	.2970"	Solid Carbide	Straight Flute
Decimal	.2980"	Solid Carbide	Straight Flute
Decimal	.2990"	Solid Carbide	Straight Flute
Decimal	.3000"	Solid Carbide	Straight Flute
Decimal	.3010"	Solid Carbide	Straight Flute
Decimal	.3030"	Solid Carbide	Straight Flute
Decimal	.3040"	Solid Carbide	Straight Flute
Decimal	.3050"	Solid Carbide	Straight Flute

Decimal	.3060"	Solid Carbide	Straight Flute
Decimal	.3070"	Solid Carbide	Straight Flute
Decimal	.3080"	Solid Carbide	Straight Flute
Decimal	.3090"	Solid Carbide	Straight Flute
Decimal	.3100"	Solid Carbide	Straight Flute
Decimal	.3105"	Solid Carbide	Straight Flute
Decimal	.3110"	Solid Carbide	Straight Flute
Decimal	.3115"	Solid Carbide	Straight Flute
Decimal	.3140"	Solid Carbide	Straight Flute
Decimal	.3150"	Solid Carbide	Straight Flute
Decimal	.3170"	Solid Carbide	Straight Flute
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Decimal	.3190"	Solid Carbide	Straight Flute
Decimal	.3200"	Solid Carbide	Straight Flute
Decimal	.3210"	Solid Carbide	Straight Flute
Decimal	.3220"	Solid Carbide	Straight Flute
Decimal	.3240"	Solid Carbide	Straight Flute
Decimal	.3250"	Solid Carbide	Straight Flute
Decimal	.3260"	Solid Carbide	Straight Flute
Decimal	.3270"	Solid Carbide	Straight Flute

Decimal	.3280"	Solid Carbide	Straight Flute
Decimal	.3290"	Solid Carbide	Straight Flute
Decimal	.3300"	Solid Carbide	Straight Flute
Decimal	.3310"	Solid Carbide	Straight Flute
Decimal	.3330"	Solid Carbide	Straight Flute
Decimal	.3340"	Solid Carbide	Straight Flute
Decimal	.3350"	Solid Carbide	Straight Flute
Decimal	.3360"	Solid Carbide	Straight Flute
Decimal	.3370"	Solid Carbide	Straight Flute
Decimal	.3380"	Solid Carbide	Straight Flute
Decimal	.3400"	Solid Carbide	Straight Flute
Decimal	.3410"	Solid Carbide	Straight Flute
Decimal	.3420"	Solid Carbide	Straight Flute
Decimal	.3430"	Solid Carbide	Straight Flute
Decimal	.3440"	Solid Carbide	Straight Flute
Decimal	.3450"	Solid Carbide	Straight Flute
Decimal	.3460"	Solid Carbide	Straight Flute
Decimal	.3470"	Solid Carbide	Straight Flute
Decimal	.3490"	Solid Carbide	Straight Flute
Decimal	.3500"	Solid Carbide	Straight Flute
Decimal	.3510"	Solid Carbide	Straight Flute

Decimal	.3520"	Solid Carbide	Straight Flute
Decimal	.3530"	Solid Carbide	Straight Flute
Decimal	.3540"	Solid Carbide	Straight Flute
Decimal	.3550"	Solid Carbide	Straight Flute
Decimal	.3560"	Solid Carbide	Straight Flute
Decimal	.3570"	Solid Carbide	Straight Flute
Decimal	.3590"	Solid Carbide	Straight Flute
Decimal	.3600"	Solid Carbide	Straight Flute
Decimal	.3610"	Solid Carbide	Straight Flute
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Decimal	.3630"	Solid Carbide	Straight Flute
Decimal	.3640"	Solid Carbide	Straight Flute
Decimal	.3650"	Solid Carbide	Straight Flute
Decimal	.3660"	Solid Carbide	Straight Flute
Decimal	.3670"	Solid Carbide	Straight Flute
Decimal	.3690"	Solid Carbide	Straight Flute
Decimal	.3700"	Solid Carbide	Straight Flute
Decimal	.3710"	Solid Carbide	Straight Flute
Decimal	.3720"	Solid Carbide	Straight Flute
Decimal	.3730"	Solid Carbide	Straight Flute
Decimal	.3740"	Solid Carbide	Straight Flute

Decimal	.3780"	Solid Carbide	Straight Flute
Decimal	.3790"	Solid Carbide	Straight Flute
Decimal	.3810"	Solid Carbide	Straight Flute
Decimal	.3820"	Solid Carbide	Straight Flute
Decimal	.3830"	Solid Carbide	Straight Flute
Decimal	.3840"	Solid Carbide	Straight Flute
Decimal	.3850"	Solid Carbide	Straight Flute
Decimal	.3870"	Solid Carbide	Straight Flute
Decimal	.3880"	Solid Carbide	Straight Flute
Decimal	.3890"	Solid Carbide	Straight Flute
Decimal	.3900"	Solid Carbide	Straight Flute
Decimal	.3910"	Solid Carbide	Straight Flute
Decimal	.3920"	Solid Carbide	Straight Flute
Decimal	.3930"	Solid Carbide	Straight Flute
Decimal	.3940"	Solid Carbide	Straight Flute
Decimal	.3950"	Solid Carbide	Straight Flute
Decimal	.3960"	Solid Carbide	Straight Flute
Decimal	.3980"	Solid Carbide	Straight Flute
Decimal	.3990"	Solid Carbide	Straight Flute
Decimal	.4000"	Solid Carbide	Straight Flute
Decimal	.4010"	Solid Carbide	Straight Flute

Decimal	.4020"	Solid Carbide	Straight Flute
Decimal	.4030"	Solid Carbide	Straight Flute
Decimal	.4050"	Solid Carbide	Straight Flute
Decimal	.4060"	Solid Carbide	Straight Flute
Decimal	.4070"	Solid Carbide	Straight Flute
Decimal	.4080"	Solid Carbide	Straight Flute
Decimal	.4090"	Solid Carbide	Straight Flute
Decimal	.4100"	Solid Carbide	Straight Flute
Decimal	.4110"	Solid Carbide	Straight Flute
Decimal	.4120"	Solid Carbide	Straight Flute
Metric	10.50mm	Solid Carbide	Straight Flute
Decimal	.4140"	Solid Carbide	Straight Flute
Decimal	.4150"	Solid Carbide	Straight Flute
Decimal	.4160"	Solid Carbide	Straight Flute
Decimal	.4170"	Solid Carbide	Straight Flute
Decimal	.4180"	Solid Carbide	Straight Flute
Decimal	.4190"	Solid Carbide	Straight Flute
Decimal	.4200"	Solid Carbide	Straight Flute
Decimal	.4210"	Solid Carbide	Straight Flute
Decimal	.4220"	Solid Carbide	Straight Flute
Decimal	.4230"	Solid Carbide	Straight Flute

Decimal	.4240"	Solid Carbide	Straight Flute
Decimal	.4250"	Solid Carbide	Straight Flute
Decimal	.4260"	Solid Carbide	Straight Flute
Decimal	.4270"	Solid Carbide	Straight Flute
Decimal	.4280"	Solid Carbide	Straight Flute
Decimal	.4290"	Solid Carbide	Straight Flute
Decimal	.4300"	Solid Carbide	Straight Flute
Decimal	.4310"	Solid Carbide	Straight Flute
Decimal	.4320"	Solid Carbide	Straight Flute
Decimal	.4330"	Solid Carbide	Straight Flute
Decimal	.4340"	Solid Carbide	Straight Flute
Decimal	.4350"	Solid Carbide	Straight Flute
Decimal	.4360"	Solid Carbide	Straight Flute
Decimal	.4380"	Solid Carbide	Straight Flute
Decimal	.4390"	Solid Carbide	Straight Flute
Decimal	.4400"	Solid Carbide	Straight Flute
Decimal	.4410"	Solid Carbide	Straight Flute
Decimal	.4420"	Solid Carbide	Straight Flute
Decimal	.4430"	Solid Carbide	Straight Flute
Decimal	.4440"	Solid Carbide	Straight Flute

Decimal	.4450"	Solid Carbide	Straight Flute
Decimal	.4460"	Solid Carbide	Straight Flute
Decimal	.4470"	Solid Carbide	Straight Flute
Decimal	.4480"	Solid Carbide	Straight Flute
Decimal	.4490"	Solid Carbide	Straight Flute
Decimal	.4500"	Solid Carbide	Straight Flute
Decimal	.4510"	Solid Carbide	Straight Flute
Decimal	.4520"	Solid Carbide	Straight Flute
Metric	11.50mm	Solid Carbide	Straight Flute
Decimal	.4530"	Solid Carbide	Straight Flute
Decimal	.4540"	Solid Carbide	Straight Flute
Decimal	.4550"	Solid Carbide	Straight Flute
Decimal	.4560"	Solid Carbide	Straight Flute
Decimal	.4570"	Solid Carbide	Straight Flute
Decimal	.4580"	Solid Carbide	Straight Flute
Decimal	.4590"	Solid Carbide	Straight Flute
Decimal	.4600"	Solid Carbide	Straight Flute
Decimal	.4610"	Solid Carbide	Straight Flute
Decimal	.4620"	Solid Carbide	Straight Flute
Decimal	.4630"	Solid Carbide	Straight Flute
Decimal	.4640"	Solid Carbide	Straight Flute

Decimal	.4650"	Solid Carbide	Straight Flute
Decimal	.4660"	Solid Carbide	Straight Flute
Decimal	.4670"	Solid Carbide	Straight Flute
Decimal	.4680"	Solid Carbide	Straight Flute
Decimal	.4690"	Solid Carbide	Straight Flute
Decimal	.4700"	Solid Carbide	Straight Flute
Decimal	.4710"	Solid Carbide	Straight Flute
Decimal	.4720"	Solid Carbide	Straight Flute
Decimal	.4730"	Solid Carbide	Straight Flute
Decimal	.4740"	Solid Carbide	Straight Flute
Decimal	.4750"	Solid Carbide	Straight Flute
Decimal	.4760"	Solid Carbide	Straight Flute
Decimal	.4770"	Solid Carbide	Straight Flute
Decimal	.4780"	Solid Carbide	Straight Flute
Decimal	.4790"	Solid Carbide	Straight Flute
Decimal	.4800"	Solid Carbide	Straight Flute
Decimal	.4810"	Solid Carbide	Straight Flute
Decimal	.4820"	Solid Carbide	Straight Flute
Decimal	.4830"	Solid Carbide	Straight Flute
Decimal	.4840"	Solid Carbide	Straight Flute
Decimal	.4850"	Solid Carbide	Straight Flute

Decimal	.4860"	Solid Carbide	Straight Flute
Decimal	.4870"	Solid Carbide	Straight Flute
Decimal	.4880"	Solid Carbide	Straight Flute
Decimal	.4890"	Solid Carbide	Straight Flute
Decimal	.4900"	Solid Carbide	Straight Flute
Decimal	.4910"	Solid Carbide	Straight Flute
Decimal	.4920"	Solid Carbide	Straight Flute
Decimal	.4930"	Solid Carbide	Straight Flute
Decimal	.4940"	Solid Carbide	Straight Flute
Decimal	.4950"	Solid Carbide	Straight Flute
Decimal	.4960"	Solid Carbide	Straight Flute
Decimal	.4970"	Solid Carbide	Straight Flute
Decimal	.4980"	Solid Carbide	Straight Flute
Decimal	.4990"	Solid Carbide	Straight Flute
Fractional	33/64"	Solid Carbide	Straight Flute
Fractional	17/32"	Solid Carbide	Straight Flute
Fractional	35/64"	Solid Carbide	Straight Flute
Fractional	9/16"	Solid Carbide	Straight Flute
Fractional	37/64"	Solid Carbide	Straight Flute
Fractional	19/32"	Solid Carbide	Straight Flute
Fractional	39/64"	Solid Carbide	Straight Flute

Fractional	5/8"	Solid Carbide	Straight Flute
Metric	16mm	Solid Carbide	Straight Flute

## DECIMAL SOLID CARBIDE STRAIGHT FLUTE CHUCKING REAMERS

**APPLICATIONS** for ferrous metals and for many non-ferrous and non-metal materials.



<u>SIZE</u> <u>TYPE</u>	<u>SIZE</u>
Decimal	.0190"
Decimal	.0195"
Decimal	.0197"
Decimal	.0245"
Decimal	.0276"
Decimal	.0315"
Decimal	.0354"

Decimal	.0394"
Decimal	.0433"
Decimal	.0472"
Decimal	.0505"
Decimal	.0515"
Decimal	.0551"
Decimal	.0560"
Decimal	.0580"
Decimal	.0590"
Decimal	.0610"
Decimal	.0615"
Decimal	.0620"
Decimal	.0630"
Decimal	.0640"
Decimal	.0669"
Decimal	.0680"

Decimal	.0708"
Decimal	.0748"
Decimal	.0787"
Decimal	.0800"
Decimal	.0827"
Decimal	.0830"
Decimal	.0866"
Decimal	.0920"
Decimal	.0930"
Decimal	.0945"
Decimal	.0950"
Decimal	.0965"
Decimal	.0984"
Decimal	.1000"
Decimal	.1181"
Decimal	.1210"
Decimal	.1220"

Decimal	.1240"
Decimal	.1245"
Decimal	.1248"
Decimal	.1249"
Decimal	.1260"
Decimal	.1265"
Decimal	.1270"
Decimal	.1280"
Decimal	.1299"
Decimal	.1300"
Decimal	.1310"
Decimal	.1335"
Decimal	.1339"
Decimal	.1358"
Decimal	.1378"
Decimal	.1390"
Decimal	.1490"
Decimal	.1496"

Decimal	.1575"
Decimal	.1580"
Decimal	.1772"
Decimal	.1870"
Decimal	.1873"
Decimal	.1874"
Decimal	.1880"
Decimal	.1885"
Decimal	.1889"
Decimal	.1900"
Decimal	.1909"
Decimal	.1929"
Decimal	.1969"
Decimal	.2165"
Decimal	.2362"
Decimal	.2480"
Decimal	.2495"
Decimal	.2498"
Decimal	.2499"
Decimal	.2505"
Decimal	.2510"

Decimal	.2519"
Decimal	.2559"
Decimal	.2600"
Decimal	.2756"
Decimal	.2953"
Decimal	.3120"
Decimal	.3123"
Decimal	.3124"
Decimal	.3130"
Decimal	.3135"
Decimal	.3150"
Decimal	.3740"
Decimal	.3745"
Decimal	.3748"
Decimal	.3749"
Decimal	.3760"
Decimal	.3800"
Decimal	.3937"

Decimal	.4373"
Decimal	.4724"
Decimal	.4995"
Decimal	.4998"
Decimal	.4999"
Decimal	.5010"
Decimal	.5118"
Decimal	.5512"
Decimal	.5905"



## SOLID CARBIDE 165° DRILL

APPLICATION for wide range of materials.

FEATURES 165° drill point angle.35° helix angle.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>DRILL POINT ANGLE</u>	<u>SHANK DIAMETER</u>
Metric	3.20mm	165°	3.18mm
Metric	3.25mm	165°	3.18mm
Metric	3.30mm	165°	3.18mm
Metric	3.35mm	165°	3.18mm
Metric	3.40mm	165°	3.18mm
Metric	3.45mm	165°	3.18mm
Metric	3.50mm	165°	3.18mm
Metric	3.55mm	165°	3.18mm

Metric	3.60mm	165°	3.18mm
Metric	3.65mm	165°	3.18mm
Metric	3.70mm	165°	3.18mm
Metric	3.75mm	165°	3.18mm
Metric	3.80mm	165°	3.18mm
Metric	3.85mm	165°	3.18mm
Metric	3.90mm	165°	3.18mm
Metric	3.95mm	165°	3.18mm
Metric	4mm	165°	3.18mm
Metric	4.05mm	165°	3.18mm
Metric	4.10mm	165°	3.18mm
Metric	4.15mm	165°	3.18mm
Metric	4.20mm	165°	3.18mm
Metric	4.25mm	165°	3.18mm
Metric	4.30mm	165°	3.18mm
Metric	4.35mm	165°	3.18mm
Metric	4.40mm	165°	3.18mm
Metric	4.45mm	165°	3.18mm
Metric	4.50mm	165°	3.18mm
Metric	4.55mm	165°	3.18mm
Metric	4.60mm	165°	3.18mm

Metric	4.65mm	165°	3.18mm
Metric	4.75mm	165°	3.18mm
Metric	4.85mm	165°	3.18mm
Metric	4.90mm	165°	3.18mm
Metric	4.95mm	165°	3.18mm
Metric	5mm	165°	3.18mm
Metric	5.05mm	165°	3.18mm
Metric	5.10mm	165°	3.18mm
Metric	5.15mm	165°	3.18mm
Metric	5.20mm	165°	3.18mm
Metric	5.25mm	165°	3.18mm
Metric	5.30mm	165°	3.18mm
Metric	5.35mm	165°	3.18mm
Metric	5.40mm	165°	3.18mm
Metric	5.45mm	165°	3.18mm
Metric	5.50mm	165°	3.18mm
Metric	5.55mm	165°	3.18mm
Metric	5.60mm	165°	3.18mm
Metric	5.65mm	165°	3.18mm
Metric	5.70mm	165°	3.18mm
Metric	5.75mm	165°	3.18mm

Metric	5.80mm	165°	3.18mm
Metric	5.85mm	165°	3.18mm
Metric	5.90mm	165°	3.18mm
Letter	A	165°	1/8"
Metric	5.95mm	165°	3.18mm
Metric	6mm	165°	3.18mm
Letter	B	165°	1/8"
Metric	6.05mm	165°	3.18mm
Metric	6.10mm	165°	3.18mm
Letter	C	165°	1/8"
Metric	6.15mm	165°	3.18mm
Metric	6.20mm	165°	3.18mm
Letter	D	165°	1/8"
Metric	6.25mm	165°	3.18mm
Metric	6.30mm	165°	3.18mm
Letter	F	165°	1/8"
Metric	7.30mm	165°	3.18mm



## 2 FLUTE EXTENDED LENGTH 45° SOLID CARBIDE SINGLE FINISHING END MILL FOR ALUMINUM

APPLICATION finish milling of aluminium materials.

FEATURES 45° helix provides maximum flute engagement and stability., Extended length for long lengths of cut.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1/4"	2	3/4"	1/4"
Fractional	3/8"	2	3/4"	3/8"
Fractional	1/2"	2	1-1/4"	1/2"
Fractional	3/4"	2	1-5/8"	3/4"



## MULTIPLE FLUTE SOLID CARBIDE ALTiN COATED ROUGHING SINGLE END MILLS

**BENEFITS** very high volumetric metal removal rates.

**APPLICATIONS** for hogging steels, cast iron and stainless materials. Slow 20° helix provide maximum edge strength.

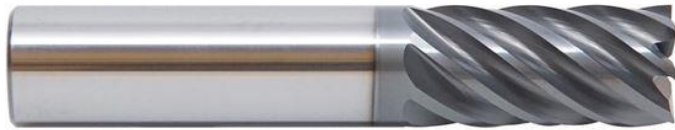


<u>SIZE TYPE</u>	<u>SIZE</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1/4"	3/4"	1/4"
Fractional	3/8"	7/8"	3/8"
Fractional	1/2"	1"	1/2"
Fractional	3/4"	1-1/2"	3/4"



## 7 FLUTE SOLID CARBIDE COATED SINGLE END MILLS

APPLICATIONS for titanium, inconel & other similar materials.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1/4"	7	3/8"	1/4"
Fractional	1/4"	7	3/4"	1/4"
Fractional	3/8"	7	1/2"	3/8"
Fractional	3/8"	7	1"	3/8"
Fractional	1/2"	7	5/8"	1/2"

Fractional	1/2"	7	5/8"	1/2"
Fractional	1/2"	7	5/8"	1/2"
Fractional	1/2"	7	1-1/4"	1/2"
Fractional	1/2"	7	1-1/4"	1/2"
Fractional	1/2"	7	1-1/4"	1/2"
Fractional	1/2"	7	1-1/4"	1/2"
Fractional	5/8"	7	3/4"	5/8"
Fractional	5/8"	7	3/4"	5/8"
Fractional	5/8"	7	3/4"	5/8"
Fractional	5/8"	7	1-1/4"	5/8"
Fractional	5/8"	7	1-1/4"	5/8"
Fractional	5/8"	7	1-1/4"	5/8"
Fractional	3/4"	7	1"	3/4"
Fractional	3/4"	7	1"	3/4"
Fractional	3/4"	7	1"	3/4"
Fractional	3/4"	7	1-1/2"	3/4"
Fractional	3/4"	7	1-1/2"	3/4"
Fractional	3/4"	7	1-1/2"	3/4"
Fractional	3/4"	7	1-7/8"	3/4"
Fractional	1"	7	1"	1"

Fractional	1"	7	1"	1"
Fractional	1"	7	1"	1"
Fractional	1"	7	1-1/2"	1"
Fractional	1"	7	1-1/2"	1"
Fractional	1"	7	1-1/2"	1"
Fractional	1"	7	3"	1"



## 3 FLUTE TICN COATED SINGLE END MILLS FOR EVERY JOB SHOP

APPLICATIONS for all materials including stainless steel, Inconel and stellite

FEATURES .01", .02" and .03" corner radii. 30° helix for maximum strength



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1/8"	3	1/4"	1/8"
Fractional	1/8"	3	1/2"	1/8"
Fractional	3/16"	3	3/8"	3/16"
Fractional	3/16"	3	9/16"	3/16"
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	3/4"	1/4"

Fractional	5/16"	3	13/16"	5/16"
Fractional	3/8"	3	9/16"	3/8"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	1-1/4"	1/2"
Fractional	3/4"	3	1-1/2"	3/4"



## FLUTE CARBIDE SINGLE BALL END MILLS

APPLICATIONS • EFFECTIVE ON A WIDE RANGE OF MATERIALS INCLUDING: STEELS, STAINLESS STEELS, HIGH TEMP ALLOYS & CAST IR



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Metric	1.50mm	4	3mm	3mm
Fractional	1/16"	4	1/8"	1/8"
Fractional	5/64"	4	5/32"	1/8"
Metric	2mm	4	4mm	3mm
Fractional	3/32"	4	3/16"	1/8"
Metric	2.50mm	4	5mm	3mm
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/4"	1"
Metric	3mm	4	8mm	6mm

Metric	3mm	4	6mm	3mm
Fractional	1/8"	4	1/4"	1/8"
Fractional	1/8"	4	3/8"	1/8"
Metric	3.50mm	4	7mm	6mm
Metric	4mm	4	11mm	6mm
Metric	4.50mm	4	9mm	6mm
Fractional	3/16"	4	3/8"	3/16"
Fractional	3/16"	4	5/8"	3/16"
Metric	5mm	4	13mm	6mm
Metric	6mm	4	13mm	6mm
Fractional	1/4"	4	3/8"	1/4"
Fractional	1/4"	4	3/4"	1/4"
Fractional	1/4"	4	1/2"	1/4"
Metric	8mm	4	19mm	8mm
Fractional	5/16"	4	13/16"	3/16"
Metric	8mm	4	19mm	8mm
Fractional	3/8"	4	1/2"	3/8"
Fractional	3/8"	4	7/8"	3/8"
Metric	12mm	4	26mm	12mm
Metric	10mm	4	22mm	10mm
Metric	12mm	4	26mm	12mm

Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Metric	16mm	4	32mm	16mm
Fractional	3/4"	4	1-1/2"	3/4"
Fractional	3/4"	4	1"	3/4"
Metric	6mm	4	4.50mm	6mm
Metric	4mm	4	6mm	6mm
Metric	5mm	4	7.50mm	6mm
Metric	6mm	4	9mm	6mm
Metric	8mm	4	12mm	8mm
Metric	10mm	4	15mm	10mm
Metric	12mm	4	18mm	12mm
Metric	16mm	4	24mm	16mm

## 5 FLUTE CARBIDE COATED NECKED SINGLE END MILLS

**Reduced neck allows for greater depths of machining**

APPLICATIONS For deeper machining access. piece materials including: steels, stainless steels, high temp alloys and cast iron.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1"	5	3/4"	1/4"
Fractional	1"	5	3/4"	1/4"
Fractional	1"	5	1"	5/16"
Fractional	1"	5	1"	5/16"
Fractional	1"	5	1"	3/8"
Fractional	1"	5	1"	3/8"
Fractional	1/4"	5	1-1/4"	3/8"
Fractional	1/4"	5	1-1/4"	3/8"

Fractional	5/16"	5	1-1/4"	7/16"
Fractional	5/16"	5	1-1/4"	7/16"
Fractional	3/8"	5	1-1/2"	7/16"
Fractional	3/8"	5	1-1/2"	7/16"
Fractional	3/8"	5	1-1/4"	1/2"
Fractional	3/8"	5	1-1/4"	1/2"
Fractional	7/16"	5	1-3/8"	1/2"
Fractional	7/16"	5	1-3/8"	1/2"
Fractional	7/16"	5	1-1/2"	1/2"
Fractional	7/16"	5	1-1/2"	1/2"
Fractional	1/2"	5	1-1/2"	5/8"
Fractional	1/2"	5	1-1/2"	5/8"
Fractional	1/2"	5	1-1/2"	5/8"
Fractional	1/2"	5	1-3/4"	5/8"
Fractional	1/2"	5	1-3/4"	5/8"
Fractional	5/8"	5	1-3/4"	5/8"
Fractional	5/8"	5	2"	5/8"
Fractional	5/8"	5	2"	5/8"
Fractional	5/8"	5	1-7/8"	3/4"
Fractional	5/8"	5	1-7/8"	3/4"
Fractional	5/8"	5	1-7/8"	3/4"

Fractional	5/8"	5	2-1/4"	3/4"
Fractional	5/8"	5	2-1/4"	3/4"
Fractional	5/8"	5	2-1/4"	3/4"
Fractional	3/4"	5	2-1/4"	1"
Fractional	3/4"	5	2-1/4"	1"
Fractional	3/4"	5	2-1/4"	1"
Fractional	3/4"	5	3"	1"
Fractional	3/4"	5	3"	1"
Fractional	3/4"	5	3"	1"



## 4 FLUTE MICROGRAIN SOLID CARBIDE SINGLE END MILLS

APPLICATIONS for milling ferrous metals.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1/64"	4	.040"	1/8"
Fractional	9/16"	4	1-1/8"	9/16"
Fractional	7/32"	4	5/8"	1/4"
Fractional	1/32"	4	5/64"	1/8"
Fractional	7/64"	4	21/64"	1/8"
Fractional	3/4"	4	1-1/2"	3/4"
Fractional	5/32"	4	1/2"	3/16"
Fractional	3/32"	4	9/32"	1/8"
Fractional	1/4"	4	3/4"	1/4"
Fractional	3/64"	4	7/64"	1/8"
Fractional	7/16"	4	1"	7/16"

Fractional	7/8"	4	1-1/2"	7/8"
Fractional	3/8"	4	1"	3/8"
Fractional	1/16"	4	3/16"	1/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	1"	4	1-1/2"	1"
Fractional	1/8"	4	3/8"	1/8"
Fractional	5/16"	4	13/16"	5/16"
Fractional	5/64"	4	15/64"	1/8"
Fractional	3/16"	4	9/16"	3/16"
Fractional	1/2"	4	1"	1/2"



## 5 FLUTE MICROGRAIN SOLID CARBIDE MILLS



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>
Fractional	1"	5	1-1/2"
Fractional	1"	5	1-1/2"
Fractional	1"	5	1-1/2"
Fractional	1"	5	1-1/2"
Fractional	1"	5	1-1/2"
Fractional	1"	5	1-1/2"
Fractional	1"	5	1-1/2"
Fractional	1"	5	1-1/2"
Fractional	1"	5	1-1/2"
Fractional	1"	5	1-1/2"

Fractional	1"	5	1-1/2"
Fractional	1"	5	1-3/4"
Fractional	1"	5	1-3/4"
Fractional	1"	5	1-3/4"
Fractional	1"	5	1-3/4"
Fractional	1"	5	1-3/4"
Fractional	1"	5	1-3/4"
Fractional	1"	5	1-3/4"
Fractional	1"	5	1-3/4"
Fractional	1"	5	1-3/4"
Fractional	1"	5	1-3/4"
Fractional	1"	5	1-3/4"
Fractional	1"	5	2-5/8"
Fractional	1"	5	2-5/8"
Fractional	1"	5	2-5/8"
Fractional	1"	5	2-5/8"
Fractional	1"	5	2-5/8"
Fractional	1"	5	2-5/8"
Fractional	1"	5	2-5/8"
Fractional	1"	5	2-5/8"
Fractional	1"	5	2-5/8"
Fractional	1"	5	2-5/8"
Fractional	1"	5	2-5/8"

Fractional	1"	5	3-1/4"
Fractional	1"	5	3-1/4"
Fractional	1"	5	3-1/4"
Fractional	1"	5	3-1/4"
Fractional	1"	5	3-1/4"
Fractional	1"	5	3-1/4"
Fractional	1"	5	3-1/4"
Fractional	1"	5	3-1/4"
Fractional	1"	5	3-1/4"
Fractional	1"	5	3-1/4"
Fractional	1"	5	4-1/4"
Fractional	1"	5	4-1/4"
Fractional	1"	5	4-1/4"
Fractional	1"	5	4-1/4"
Fractional	1"	5	4-1/4"
Fractional	1"	5	4-1/4"
Fractional	1"	5	4-1/4"
Fractional	1"	5	4-1/4"
Fractional	1"	5	4-1/4"
Fractional	1"	5	4-1/4"
Fractional	1"	5	4-1/4"
Fractional	1/8"	5	1/4"

Fractional	1/8"	5	1/4"
Fractional	1/8"	5	1/4"
Fractional	1/8"	5	3/8"
Fractional	1/8"	5	1/2"
Fractional	1/8"	5	1/2"
Fractional	1/8"	5	1/2"
Fractional	1/8"	5	3/4"
Fractional	1/8"	5	3/4"
Fractional	1/8"	5	3/4"
Fractional	5/32"	5	3/16"
Fractional	5/32"	5	7/16"
Fractional	3/16"	5	5/16"
Fractional	3/16"	5	5/16"
Fractional	3/16"	5	5/16"
Fractional	3/16"	5	7/16"
Fractional	3/16"	5	9/16"
Fractional	3/16"	5	9/16"
Fractional	3/16"	5	9/16"
Fractional	3/16"	5	3/4"
Fractional	3/16"	5	3/4"
Fractional	3/16"	5	3/4"

Fractional	7/32"	5	1/4"
Fractional	7/32"	5	7/16"
Fractional	1/4"	5	3/8"
Fractional	1/4"	5	3/8"
Fractional	1/4"	5	3/8"
Fractional	1/4"	5	3/8"
Fractional	1/4"	5	3/8"
Fractional	1/4"	5	3/4"
Fractional	1/4"	5	3/4"
Fractional	1/4"	5	3/4"
Fractional	1/4"	5	3/4"
Fractional	1/4"	5	3/4"
Fractional	5/16"	5	7/16"
Fractional	5/16"	5	7/16"
Fractional	5/16"	5	7/16"
Fractional	5/16"	5	7/16"
Fractional	5/16"	5	7/16"
Fractional	5/16"	5	13/16"
Fractional	5/16"	5	13/16"
Fractional	5/16"	5	13/16"
Fractional	5/16"	5	13/16"

Fractional	5/16"	5	13/16"	
Fractional	5/16"	5	1-1/4"	
Fractional	5/16"	5	1-1/4"	
Fractional	5/16"	5	1-1/4"	5/16"
Fractional	5/16"	5	1-1/4"	5/16"
Fractional	5/16"	5	1-1/4"	5/16"
Fractional	5/16"	5	2-1/8"	5/16"
Fractional	5/16"	5	2-1/8"	5/16"
Fractional	5/16"	5	2-1/8"	5/16"
Fractional	5/16"	5	2-1/8"	5/16"
Fractional	5/16"	5	2-1/8"	5/16"
Fractional	3/8"	5	1/2"	3/8"
Fractional	3/8"	5	1/2"	3/8"
Fractional	3/8"	5	1/2"	3/8"
Fractional	3/8"	5	1/2"	3/8"
Fractional	3/8"	5	1/2"	3/8"
Fractional	3/8"	5	1/2"	3/8"
Fractional	3/8"	5	1/2"	3/8"
Fractional	3/8"	5	1"	3/8"
Fractional	3/8"	5	1"	3/8"
Fractional	3/8"	5	1"	3/8"

Fractional	3/8"	5	1"	3/8"
Fractional	3/8"	5	1"	3/8"
Fractional	3/8"	5	1"	3/8"
Fractional	3/8"	5	1"	3/8"
Fractional	3/8"	5	1-1/4"	3/8"
Fractional	3/8"	5	1-1/4"	3/8"
Fractional	3/8"	5	1-1/4"	3/8"
Fractional	3/8"	5	1-1/4"	3/8"
Fractional	3/8"	5	1-1/4"	3/8"
Fractional	3/8"	5	1-1/4"	3/8"
Fractional	3/8"	5	1-1/4"	3/8"
Fractional	3/8"	5	1-1/4"	3/8"
Fractional	3/8"	5	1-5/8"	3/8"
Fractional	3/8"	5	1-5/8"	3/8"
Fractional	3/8"	5	1-5/8"	3/8"
Fractional	3/8"	5	1-5/8"	3/8"
Fractional	3/8"	5	1-5/8"	3/8"
Fractional	3/8"	5	1-5/8"	3/8"
Fractional	3/8"	5	1-5/8"	3/8"
Fractional	3/8"	5	1-5/8"	3/8"
Fractional	3/8"	5	1-5/8"	3/8"
Fractional	3/8"	5	1-5/8"	3/8"

Fractional	3/8"	5	1-5/8"	3/8"
Fractional	3/8"	5	1-5/8"	3/8"
Fractional	3/8"	5	1-5/8"	3/8"
Fractional	3/8"	5	1-5/8"	3/8"
Fractional	3/8"	5	2"	3/8"
Fractional	3/8"	5	2"	3/8"
Fractional	3/8"	5	2"	3/8"
Fractional	3/8"	5	2"	3/8"
Fractional	3/8"	5	2"	3/8"
Fractional	3/8"	5	2"	3/8"
Fractional	3/8"	5	2"	3/8"
Fractional	3/8"	5	2-1/2"	3/8"
Fractional	3/8"	5	2-1/2"	3/8"
Fractional	3/8"	5	2-1/2"	3/8"
Fractional	3/8"	5	2-1/2"	3/8"
Fractional	3/8"	5	2-1/2"	3/8"
Fractional	3/8"	5	2-1/2"	3/8"
Fractional	3/8"	5	2-1/2"	3/8"
Fractional	7/16"	5	5/8"	7/16"
Fractional	7/16"	5	5/8"	7/16"
Fractional	7/16"	5	5/8"	7/16"

Fractional	7/16"	5	5/8"	7/16"
Fractional	7/16"	5	5/8"	7/16"
Fractional	7/16"	5	5/8"	7/16"
Fractional	7/16"	5	5/8"	7/16"
Fractional	7/16"	5	1"	7/16"
Fractional	7/16"	5	1"	7/16"
Fractional	7/16"	5	1"	7/16"
Fractional	7/16"	5	1"	7/16"
Fractional	7/16"	5	1"	7/16"
Fractional	7/16"	5	1"	7/16"
Fractional	7/16"	5	1"	7/16"
Fractional	7/16"	5	2"	7/16"
Fractional	7/16"	5	2"	7/16"
Fractional	7/16"	5	2"	7/16"
Fractional	7/16"	5	2"	7/16"
Fractional	7/16"	5	2"	7/16"
Fractional	7/16"	5	2"	7/16"
Fractional	7/16"	5	2"	7/16"
Fractional	7/16"	5	2"	7/16"
Fractional	1/2"	5	5/8"	1/2"
Fractional	1/2"	5	5/8"	1/2"
Fractional	1/2"	5	5/8"	1/2"

Fractional	1/2"	5	5/8"	1/2"
Fractional	1/2"	5	5/8"	1/2"
Fractional	1/2"	5	5/8"	1/2"
Fractional	1/2"	5	5/8"	1/2"
Fractional	1/2"	5	5/8"	1/2"
Fractional	1/2"	5	5/8"	1/2"
Fractional	1/2"	5	5/8"	1/2"
Fractional	1/2"	5	5/8"	1/2"
Fractional	1/2"	5	1"	1/2"
Fractional	1/2"	5	1"	1/2"
Fractional	1/2"	5	1"	1/2"
Fractional	1/2"	5	1"	1/2"
Fractional	1/2"	5	1"	1/2"
Fractional	1/2"	5	1"	1/2"
Fractional	1/2"	5	1"	1/2"

Fractional	1/2"	5	1"	1/2"
Fractional	1/2"	5	1-1/4"	1/2"
Fractional	1/2"	5	1-1/4"	1/2"
Fractional	1/2"	5	1-1/4"	1/2"
Fractional	1/2"	5	1-1/4"	1/2"
Fractional	1/2"	5	1-1/4"	1/2"

Fractional	1/2"	5	1-1/4"	1/2"
Fractional	1/2"	5	1-1/4"	1/2"
Fractional	1/2"	5	1-1/4"	1/2"
Fractional	1/2"	5	1-1/4"	1/2"
Fractional	1/2"	5	1-1/4"	1/2"
Fractional	1/2"	5	1-1/4"	1/2"
Fractional	1/2"	5	1-1/4"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	2-1/8"	1/2"
Fractional	1/2"	5	2-1/8"	1/2"
Fractional	1/2"	5	2-1/8"	1/2"
Fractional	1/2"	5	2-1/8"	1/2"
Fractional	1/2"	5	2-1/8"	1/2"
Fractional	1/2"	5	2-1/8"	1/2"

Fractional	1/2"	5	2-1/8"	1/2"
Fractional	1/2"	5	2-1/8"	1/2"
Fractional	1/2"	5	2-5/8"	1/2"
Fractional	1/2"	5	2-5/8"	1/2"
Fractional	1/2"	5	2-5/8"	1/2"
Fractional	1/2"	5	2-5/8"	1/2"
Fractional	1/2"	5	2-5/8"	1/2"
Fractional	1/2"	5	2-5/8"	1/2"
Fractional	1/2"	5	2-5/8"	1/2"
Fractional	1/2"	5	2-5/8"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	1-5/8"	1/2"
Fractional	1/2"	5	3-1/4"	1/2"
Fractional	1/2"	5	3-1/4"	1/2"
Fractional	1/2"	5	3-1/4"	1/2"

Fractional	1/2"	5	3-1/4"	1/2"
Fractional	1/2"	5	3-1/4"	1/2"
Fractional	1/2"	5	3-1/4"	1/2"
Fractional	1/2"	5	3-1/4"	1/2"
Fractional	1/2"	5	3-1/4"	1/2"
Fractional	5/8"	5	3/4"	5/8"
Fractional	5/8"	5	3/4"	5/8"
Fractional	5/8"	5	3/4"	5/8"
Fractional	5/8"	5	3/4"	5/8"
Fractional	5/8"	5	3/4"	5/8"
Fractional	5/8"	5	3/4"	5/8"
Fractional	5/8"	5	3/4"	5/8"
Fractional	5/8"	5	3/4"	5/8"
Fractional	5/8"	5	3/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"

Fractional	5/8"	5	1-1/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"
Fractional	5/8"	5	1-5/8"	5/8"
Fractional	5/8"	5	1-5/8"	5/8"
Fractional	5/8"	5	1-5/8"	5/8"
Fractional	5/8"	5	1-5/8"	5/8"
Fractional	5/8"	5	1-5/8"	5/8"
Fractional	5/8"	5	1-5/8"	5/8"
Fractional	5/8"	5	1-5/8"	5/8"
Fractional	5/8"	5	1-5/8"	5/8"
Fractional	5/8"	5	1-5/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"

Fractional	5/8"	5	2-5/8"	5/8"
Fractional	5/8"	5	2-5/8"	5/8"
Fractional	5/8"	5	2-5/8"	5/8"
Fractional	5/8"	5	2-5/8"	5/8"
Fractional	5/8"	5	2-5/8"	5/8"
Fractional	5/8"	5	2-5/8"	5/8"

Fractional	5/8"	5	2-5/8"	5/8"
Fractional	5/8"	5	2-5/8"	5/8"
Fractional	5/8"	5	2-5/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	2-1/8"	5/8"
Fractional	5/8"	5	3-1/4"	5/8"
Fractional	5/8"	5	3-1/4"	5/8"

Fractional	5/8"	5	3-1/4"	5/8"
Fractional	5/8"	5	3-1/4"	5/8"
Fractional	5/8"	5	3-1/4"	5/8"
Fractional	5/8"	5	3-1/4"	5/8"
Fractional	5/8"	5	3-1/4"	5/8"
Fractional	5/8"	5	3-1/4"	5/8"
Fractional	5/8"	5	3-1/4"	5/8"
Fractional	5/8"	5	4"	5/8"
Fractional	5/8"	5	4"	5/8"
Fractional	5/8"	5	4"	5/8"
Fractional	5/8"	5	4"	5/8"
Fractional	5/8"	5	4"	5/8"
Fractional	5/8"	5	4"	5/8"
Fractional	5/8"	5	4"	5/8"
Fractional	5/8"	5	4"	5/8"
Fractional	5/8"	5	4"	5/8"
Fractional	3/4"	5	1"	3/4"
Fractional	3/4"	5	1"	3/4"
Fractional	3/4"	5	1"	3/4"
Fractional	3/4"	5	1"	3/4"
Fractional	3/4"	5	1"	3/4"

Fractional	3/4"	5	1"	3/4"
Fractional	3/4"	5	1"	3/4"
Fractional	3/4"	5	1"	3/4"
Fractional	3/4"	5	1"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-5/8"	3/4"
Fractional	3/4"	5	1-5/8"	3/4"
Fractional	3/4"	5	1-5/8"	3/4"
Fractional	3/4"	5	1-5/8"	3/4"
Fractional	3/4"	5	1-5/8"	3/4"



Fractional	3/4"	5	2-3/8"	3/4"
Fractional	3/4"	5	3-1/4"	3/4"
Fractional	3/4"	5	3-1/4"	3/4"
Fractional	3/4"	5	3-1/4"	3/4"
Fractional	3/4"	5	3-1/4"	3/4"
Fractional	3/4"	5	3-1/4"	3/4"
Fractional	3/4"	5	3-1/4"	3/4"
Fractional	3/4"	5	3-1/4"	3/4"
Fractional	3/4"	5	3-1/4"	3/4"
Fractional	3/4"	5	3-1/4"	3/4"
Fractional	3/4"	5	4-1/8"	3/4"
Fractional	3/4"	5	4-1/8"	3/4"
Fractional	3/4"	5	4-1/8"	3/4"
Fractional	3/4"	5	4-1/8"	3/4"
Fractional	3/4"	5	4-1/8"	3/4"
Fractional	3/4"	5	4-1/8"	3/4"
Fractional	3/4"	5	4-1/8"	3/4"
Fractional	3/4"	5	4-1/8"	3/4"
Fractional	3/4"	5	4-1/8"	3/4"

## 5 FLUTE SOLID CARBIDE END MILLS

FEATURES 40° helix Enhanced corner protection.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Metric	3mm	5	8mm	6mm
Metric	3mm	5	8mm	6mm
Metric	4mm	5	11mm	6mm
Metric	4mm	5	11mm	6mm
Metric	5mm	5	13mm	6mm
Metric	5mm	5	13mm	6mm
Metric	6mm	5	13mm	6mm
Metric	6mm	5	13mm	6mm
Metric	6mm	5	13mm	6mm

Metric	8mm	5	19mm	8mm
Metric	8mm	5	19mm	8mm
Metric	8mm	5	19mm	8mm
Metric	8mm	5	19mm	8mm
Metric	10mm	5	22mm	10mm
Metric	10mm	5	22mm	10mm
Metric	10mm	5	22mm	10mm
Metric	12mm	5	26mm	12mm
Metric	12mm	5	26mm	12mm
Metric	12mm	5	26mm	12mm
Metric	12mm	5	26mm	12mm
Metric	12mm	5	26mm	12mm
Metric	12mm	5	26mm	12mm
Metric	12mm	5	26mm	12mm
Metric	16mm	5	35mm	16mm
Metric	16mm	5	35mm	16mm
Metric	16mm	5	35mm	16mm
Metric	16mm	5	35mm	16mm
Metric	16mm	5	35mm	16mm
Metric	16mm	5	35mm	16mm
Metric	16mm	5	35mm	16mm
Metric	16mm	5	35mm	16mm
Metric	16mm	5	35mm	16mm

Metric	16mm	5	35mm	16mm
Metric	16mm	5	35mm	16mm
Metric	20mm	5	40mm	20mm
Metric	20mm	5	40mm	20mm
Metric	20mm	5	40mm	20mm
Metric	20mm	5	40mm	20mm
Metric	20mm	5	40mm	20mm
Metric	20mm	5	40mm	20mm
Metric	20mm	5	40mm	20mm
Metric	20mm	5	40mm	20mm
Metric	25mm	5	40mm	25mm
Metric	25mm	5	40mm	25mm
Metric	25mm	5	40mm	25mm
Metric	25mm	5	40mm	25mm
Metric	25mm	5	40mm	25mm
Metric	25mm	5	40mm	25mm
Metric	25mm	5	40mm	25mm
Fractional	1/4"	5	3/4"	1/4"
Fractional	1/4"	5	3/4"	1/4"
Fractional	3/8"	5	1"	3/8"
Fractional	3/8"	5	1"	3/8"

Fractional	1/2"	5	1-1/4"	1/2"
Fractional	1/2"	5	1-1/4"	1/2"
Fractional	5/8"	5	1-1/2"	5/8"
Fractional	5/8"	5	1-1/2"	5/8"
Fractional	3/4"	5	1-7/8"	3/4"
Fractional	3/4"	5	1-7/8"	3/4"



## 4 FLUTE SOLID CARBIDE END MILLS

Unique flute geometry reduces harmonics at increased feeds and speed



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1"	4	1"	1"
Fractional	1"	4	1"	1"
Fractional	1"	4	1"	1"
Fractional	1"	4	1"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"

Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1/2"	4	1/2"	1/2"
Fractional	1/2"	4	1/2"	1/2"
Fractional	1/2"	4	1/2"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	5/8"	4	5/8"	5/8"

Fractional	5/8"	4	5/8"	5/8"
Fractional	5/8"	4	5/8"	5/8"
Fractional	5/8"	4	5/8"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	3/4"	4	3/4"	3/4"
Fractional	3/4"	4	3/4"	3/4"
Fractional	3/4"	4	3/4"	3/4"
Fractional	3/4"	4	3/4"	3/4"
Fractional	3/4"	4	1-1/2"	3/4"
Fractional	3/4"	4	1-1/2"	3/4"
Fractional	3/4"	4	1-1/2"	3/4"
Fractional	3/4"	4	1-1/2"	3/4"
Fractional	3/4"	4	1-1/2"	3/4"
Fractional	3/4"	4	1-1/2"	3/4"
Fractional	3/4"	4	1-1/2"	3/4"
Fractional	3/4"	4	1-1/2"	3/4"



## 5 FLUTE SOLID CARBIDE END MILLS

APPLICATIONS for EXTREME Productivity. Smooth cutting action to eliminate vibration.

FEATURES 5 Flute 38° helix.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1"	5	1"	1"
Fractional	1"	5	1-1/2"	1"
Fractional	1"	5	1-1/2"	1"

Fractional	1"	5	1-1/2"	1"
Fractional	1"	5	1-1/2"	1"
Fractional	1"	5	1-1/2"	1"
Fractional	1"	5	1-1/2"	1"
Fractional	1"	5	1-1/2"	1"
Fractional	1/4"	5	3/4"	1/4"
Fractional	1/2"	5	5/8"	1/2"
Fractional	1/2"	5	5/8"	1/2"
Fractional	1/2"	5	5/8"	1/2"
Fractional	1/2"	5	1"	1/2"
Fractional	1/2"	5	1"	1/2"
Fractional	1/2"	5	1"	1/2"
Fractional	1/2"	5	1"	1/2"
Fractional	1/2"	5	1"	1/2"
Fractional	1/2"	5	1"	1/2"
Fractional	9/16"	5	1-1/8"	9/16"
Fractional	9/16"	5	1-1/8"	9/16"
Fractional	9/16"	5	1-1/8"	9/16"
Fractional	5/8"	5	3/4"	5/8"
Fractional	5/8"	5	3/4"	5/8"

Fractional	5/8"	5	3/4"	5/8"
Fractional	5/8"	5	3/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"
Fractional	5/8"	5	1-1/4"	5/8"
Fractional	3/4"	5	1"	3/4"
Fractional	3/4"	5	1"	3/4"
Fractional	3/4"	5	1"	3/4"
Fractional	3/4"	5	1"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"
Fractional	3/4"	5	1-1/2"	3/4"

## 2 FLUTE SOLID CARBIDE AL END MILLS



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1"	2	1-1/4"	1"
Fractional	1"	2	1-1/4"	1"
Fractional	1"	2	1-1/4"	1"
Metric	3mm	2	3.50mm	3mm
Metric	4mm	2	4.80mm	4mm
Fractional	3/16"	2	1/4"	3/16"
Fractional	3/16"	2	1/4"	3/16"
Metric	5mm	2	6mm	5mm

Metric	6mm	2	7mm	6mm
Fractional	1/4"	2	5/16"	1/4"
Fractional	1/4"	2	5/16"	1/4"
Metric	8mm	2	9.50mm	8mm
Fractional	3/8"	2	1/2"	3/8"
Fractional	3/8"	2	1/2"	3/8"
Fractional	3/8"	2	1/2"	3/8"
Metric	10mm	2	12mm	10mm
Metric	10mm	2	12mm	10mm
Metric	10mm	2	12mm	10mm
Metric	12mm	2	14mm	12mm
Metric	12mm	2	14mm	12mm
Metric	12mm	2	14mm	12mm
Fractional	1/2"	2	5/8"	1/2"
Fractional	1/2"	2	5/8"	1/2"
Fractional	1/2"	2	5/8"	1/2"
Metric	14mm	2	16mm	14mm
Metric	14mm	2	16mm	14mm
Metric	14mm	2	16mm	14mm
Fractional	5/8"	2	3/4"	5/8"
Fractional	5/8"	2	3/4"	5/8"

Fractional	5/8"	2	3/4"	5/8"
Metric	16mm	2	18mm	16mm
Metric	16mm	2	18mm	16mm
Metric	16mm	2	18mm	16mm
Metric	18mm	2	20mm	18mm
Metric	18mm	2	20mm	18mm
Metric	18mm	2	20mm	18mm
Fractional	3/4"	2	1"	3/4"
Fractional	3/4"	2	1"	3/4"
Fractional	3/4"	2	1"	3/4"
Metric	20mm	2	22mm	20mm
Metric	20mm	2	22mm	20mm
Metric	20mm	2	22mm	20mm
Metric	25mm	2	25mm	25mm
Metric	25mm	2	25mm	25mm
Metric	25mm	2	25mm	25mm



## 2 FLUTE SOLID CARBIDE AL END MILLS



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1"	2	1-1/4"	1"
Fractional	1"	2	1-1/4"	1"
Fractional	1"	2	1-1/4"	1"
Metric	3mm	2	3.50mm	3mm
Metric	3mm	2	3.50mm	3mm
Metric	3mm	2	3.50mm	3mm
Metric	3mm	2	3.50mm	3mm
Metric	3mm	2	3.50mm	3mm
Metric	3mm	2	3.50mm	3mm

Metric	3mm	2	3.50mm	3mm
Metric	4mm	2	4.80mm	4mm
Metric	4mm	2	4.80mm	4mm
Metric	4mm	2	4.80mm	4mm
Metric	4mm	2	4.80mm	4mm
Metric	4mm	2	4.80mm	4mm
Metric	4mm	2	4.80mm	4mm
Metric	4mm	2	4.80mm	4mm
Metric	4mm	2	4.80mm	4mm
Fractional	3/16"	2	1/4"	3/16"
Fractional	3/16"	2	1/4"	3/16"
Metric	5mm	2	6mm	6mm
Metric	5mm	2	6mm	6mm
Metric	5mm	2	6mm	6mm
Metric	5mm	2	6mm	6mm
Metric	5mm	2	6mm	6mm
Metric	5mm	2	6mm	6mm
Metric	5mm	2	6mm	5mm
Metric	6mm	2	7mm	6mm
Metric	6mm	2	7mm	6mm
Metric	6mm	2	7mm	6mm
Metric	6mm	2	7mm	6mm



Metric	8mm	2	9.50mm	8mm
Fractional	3/8"	2	1/2"	3/8"
Fractional	3/8"	2	1/2"	3/8"
Fractional	3/8"	2	1/2"	3/8"
Metric	10mm	2	12mm	10mm
Metric	10mm	2	12mm	10mm
Metric	10mm	2	12mm	10mm
Metric	10mm	2	12mm	10mm
Metric	10mm	2	12mm	10mm
Metric	10mm	2	12mm	10mm
Metric	10mm	2	12mm	10mm
Metric	10mm	2	12mm	10mm
Metric	10mm	2	12mm	10mm
Metric	10mm	2	12mm	10mm
Metric	10mm	2	12mm	10mm
Metric	10mm	2	12mm	10mm
Metric	10mm	2	12mm	10mm
Metric	10mm	2	12mm	10mm
Metric	10mm	2	12mm	10mm
Metric	10mm	2	12mm	10mm
Metric	12mm	2	14mm	12mm
Metric	12mm	2	14mm	12mm
Metric	12mm	2	14mm	12mm
Metric	12mm	2	14mm	12mm

Metric	12mm	2	14mm	12mm
Metric	12mm	2	14mm	12mm
Metric	12mm	2	14mm	12mm
Metric	12mm	2	14mm	12mm
Metric	12mm	2	14mm	12mm
Metric	12mm	2	14mm	12mm
Metric	12mm	2	14mm	12mm
Metric	12mm	2	14mm	12mm
Metric	12mm	2	14mm	12mm
Metric	12mm	2	14mm	12mm
Metric	12mm	2	14mm	12mm
Metric	12mm	2	15mm	12mm
Metric	12mm	2	14mm	12mm
Metric	12mm	2	14mm	12mm
Metric	12mm	2	14mm	12mm
Fractional	1/2"	2	5/8"	1/2"
Fractional	1/2"	2	5/8"	1/2"
Fractional	1/2"	2	5/8"	1/2"
Metric	14mm	2	16mm	14mm
Metric	14mm	2	16mm	14mm
Metric	14mm	2	16mm	14mm
Fractional	5/8"	2	3/4"	5/8"

Fractional	5/8"	2	3/4"	5/8"
Fractional	5/8"	2	3/4"	5/8"
Metric	16mm	2	18mm	16mm



## 2 FLUTE SOLID CARBIDE AL END MILLS

High performance aluminum finisher



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1"	2	1-1/4"	1"
Fractional	1"	2	2"	1"

Fractional	1"	2	4"	1"
Fractional	1"	2	3"	1"
Fractional	1"	2	5-1/2"	1"
Metric	3mm	2	8mm	6mm
Fractional	1/8"	2	1/4"	1/8"
Fractional	1/8"	2	1/2"	1/8"
Fractional	1/8"	2	1"	1/8"
Fractional	1/8"	2	3/8"	1/8"
Fractional	1/8"	2	3/4"	1/8"
Fractional	5/32"	2	5/16"	5/32"
Fractional	5/32"	2	9/16"	5/32"
Metric	4mm	2	11mm	6mm
Fractional	3/16"	2	5/16"	3/16"
Fractional	3/16"	2	5/8"	3/16"
Fractional	3/16"	2	1"	3/16"
Fractional	3/16"	2	3/8"	3/16"
Fractional	3/16"	2	3/4"	3/16"
Metric	5mm	2	13mm	6mm
Metric	6mm	2	13mm	6mm
Fractional	1/4"	2	1-1/4"	1/4"
Fractional	1/4"	2	1-3/4"	1/4"

Fractional	1/4"	2	3/8"	1/4"
Fractional	1/4"	2	1/2"	1/4"
Fractional	1/4"	2	5/8"	1/4"
Fractional	1/4"	2	1"	1/4"
Fractional	1/4"	2	1-1/2"	1/4"
Fractional	1/4"	2	2"	1/4"
Fractional	5/16"	2	1/2"	5/16"
Fractional	5/16"	2	1-3/8"	5/16"
Fractional	5/16"	2	1-3/4"	5/16"
Fractional	5/16"	2	7/16"	5/16"
Fractional	5/16"	2	13/16"	5/16"
Metric	8mm	2	19mm	8mm
Fractional	3/8"	2	1-1/2"	3/8"
Fractional	3/8"	2	2-1/2"	3/8"
Fractional	3/8"	2	1/2"	3/8"
Fractional	3/8"	2	5/8"	3/8"
Fractional	3/8"	2	1"	3/8"
Fractional	3/8"	2	1-1/4"	3/8"
Fractional	3/8"	2	2"	3/8"
Metric	10mm	2	22mm	10mm
Metric	12mm	2	26mm	12mm

Fractional	1/2"	2	2"	1/2"
Fractional	1/2"	2	3"	1/2"
Fractional	1/2"	2	5/8"	1/2"
Fractional	1/2"	2	3/4"	1/2"
Fractional	1/2"	2	1"	1/2"
Fractional	1/2"	2	1-1/2"	1/2"
Fractional	1/2"	2	2-1/2"	1/2"
Metric	14mm	2	26mm	14mm
Fractional	5/8"	2	3/4"	5/8"
Fractional	5/8"	2	1-5/8"	5/8"
Fractional	5/8"	2	2-1/2"	5/8"
Fractional	5/8"	2	1-1/4"	5/8"
Fractional	5/8"	2	2"	5/8"
Metric	16mm	2	32mm	16mm
Metric	18mm	2	32mm	18mm
Fractional	3/4"	2	3"	3/4"
Fractional	3/4"	2	4"	3/4"
Fractional	3/4"	2	1"	3/4"
Fractional	3/4"	2	2"	3/4"
Fractional	3/4"	2	2-1/2"	3/4"
Metric	20mm	2	38mm	20mm



## 3 FLUTE SOLID CARBIDE X-AL BALL END MILL



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Metric	2mm	3	4mm	6mm
Fractional	1"	3	1-1/2"	1"
Fractional	1"	3	1-1/2"	1"

Fractional	1"	3	2-1/4"	1"
Metric	3mm	3	12mm	3mm
Metric	3mm	3	5mm	6mm
Fractional	1/8"	3	3/8"	1/8"
Fractional	1/8"	3	1/2"	1/8"
Metric	4mm	3	15mm	4mm
Metric	4mm	3	6mm	6mm
Fractional	3/16"	3	3/8"	3/16"
Fractional	3/16"	3	5/8"	3/16"
Metric	5mm	3	20mm	5mm
Metric	5mm	3	7mm	6mm
Metric	6mm	3	20mm	6mm
Metric	6mm	3	8mm	6mm
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	3/4"	1/4"
Fractional	1/4"	3	3/4"	1/4"
Fractional	5/16"	3	1/2"	5/16"
Fractional	5/16"	3	13/16"	5/16"
Fractional	5/16"	3	13/16"	5/16"
Metric	8mm	3	20mm	8mm
Metric	8mm	3	10mm	8mm

Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	1"	3/8"
Fractional	3/8"	3	1"	3/8"
Metric	10mm	3	25mm	10mm
Metric	10mm	3	12mm	10mm
Fractional	7/16"	3	9/16"	7/16"
Fractional	7/16"	3	1"	7/16"
Metric	12mm	3	25mm	12mm
Metric	12mm	3	16mm	12mm
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	1-1/4"	1/2"
Fractional	1/2"	3	1-1/4"	1/2"
Fractional	1/2"	3	1-1/4"	1/2"
Fractional	5/8"	3	1-1/4"	5/8"
Fractional	5/8"	3	1-5/8"	5/8"
Fractional	5/8"	3	1-5/8"	5/8"
Metric	16mm	3	35mm	16mm
Metric	16mm	3	20mm	16mm
Fractional	3/4"	3	1"	3/4"
Fractional	3/4"	3	1-5/8"	3/4"
Fractional	3/4"	3	1-5/8"	3/4"



## 2 FLUTE SOLID CARBIDE DM BALL END MILLS

APPLICATIONS for high-productivity milling of hard and difficult to cut materials Rc 45-60.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1/64"	2	1/64"	1/4"
Metric	.50mm	2	.50mm	6mm
Fractional	1/32"	2	1/32"	1/4"
Fractional	1/32"	2	1/32"	1/4"
Fractional	1/32"	2	1/32"	1/4"
Fractional	1/32"	2	1/32"	1/4"
Fractional	1/32"	2	1/32"	1/4"
Fractional	1/32"	2	1/32"	1/4"
Metric	1mm	2	1mm	6mm

Metric	1mm	2	1mm	6mm
Metric	1mm	2	1mm	6mm
Metric	1mm	2	1mm	6mm
Metric	1mm	2	1mm	6mm
Metric	1mm	2	1mm	6mm
Metric	1.50mm	2	1.50mm	6mm
Fractional	1/16"	2	1/16"	1/4"
Metric	2mm	2	2mm	6mm
Metric	2mm	2	2mm	6mm
Metric	2mm	2	2mm	6mm
Metric	2mm	2	2mm	6mm
Fractional	3/32"	2	3/32"	1/4"
Fractional	3/32"	2	3/32"	1/4"
Fractional	3/32"	2	3/32"	1/4"
Fractional	3/32"	2	3/32"	1/4"
Metric	3mm	2	3mm	6mm
Metric	3mm	2	3mm	6mm
Metric	3mm	2	3mm	6mm
Fractional	1/8"	2	1/8"	1/4"
Fractional	1/8"	2	1/8"	1/4"
Fractional	5/32"	2	5/32"	1/4"

Metric	4mm	2	4mm	6mm
Metric	4mm	2	4mm	6mm
Metric	4mm	2	4mm	6mm
Fractional	3/16"	2	3/16"	1/4"
Metric	5mm	2	5mm	6mm
Metric	5mm	2	5mm	6mm
Metric	5mm	2	5mm	6mm
Metric	6mm	2	6mm	6mm
Metric	6mm	2	6mm	6mm
Metric	6mm	2	6mm	6mm
Fractional	1/4"	2	1/4"	1/4"
Fractional	5/16"	2	5/16"	5/16"
Metric	8mm	2	8mm	8mm
Fractional	3/8"	2	3/8"	3/8"
Metric	10mm	2	10mm	10mm
Metric	12mm	2	12mm	12mm
Fractional	1/2"	2	1/2"	1/2"
Metric	.50mm	2	.35mm	4mm
Metric	.50mm	2	.35mm	4mm
Metric	.50mm	2	.35mm	4mm
Metric	.50mm	2	.35mm	4mm

Metric	.50mm	2	.35mm	4mm
Metric	.50mm	2	.35mm	4mm
Metric	.60mm	2	.40mm	4mm
Metric	.60mm	2	.40mm	4mm
Metric	.60mm	2	.40mm	4mm
Metric	.60mm	2	.40mm	4mm
Metric	.60mm	2	.40mm	4mm
Metric	.80mm	2	.50mm	4mm
Metric	.80mm	2	.50mm	4mm
Metric	.80mm	2	.50mm	4mm
Metric	.80mm	2	.50mm	4mm
Metric	.80mm	2	.50mm	4mm
Metric	1mm	2	.80mm	4mm
Metric	1mm	2	.80mm	4mm
Metric	1mm	2	.80mm	4mm
Metric	1mm	2	.80mm	4mm
Metric	1mm	2	.80mm	4mm
Metric	1mm	2	.80mm	4mm
Metric	1mm	2	.80mm	4mm
Metric	1mm	2	.80mm	4mm
Metric	1mm	2	.80mm	4mm
Metric	1mm	2	.80mm	4mm
Metric	1mm	2	.80mm	4mm
Metric	1mm	2	.80mm	4mm
Metric	1mm	2	.80mm	4mm

Metric	1mm	2	.80mm	4mm
Metric	1.20mm	2	1.10mm	4mm
Metric	1.20mm	2	1.10mm	4mm
Metric	1.40mm	2	1.30mm	4mm
Metric	1.40mm	2	1.30mm	4mm
Metric	1.40mm	2	1.30mm	4mm
Metric	1.50mm	2	1.35mm	4mm
Metric	1.50mm	2	1.35mm	4mm
Metric	1.50mm	2	1.35mm	4mm
Metric	1.50mm	2	1.35mm	4mm
Metric	1.60mm	2	1.40mm	4mm
Metric	1.60mm	2	1.40mm	4mm
Metric	1.60mm	2	1.40mm	4mm
Metric	1.60mm	2	1.40mm	4mm
Metric	1.80mm	2	1.60mm	4mm
Metric	1.80mm	2	1.60mm	4mm
Metric	1.80mm	2	1.60mm	4mm
Metric	1.80mm	2	1.60mm	4mm
Metric	2mm	2	1.70mm	4mm
Metric	2mm	2	1.70mm	4mm
Metric	2mm	2	1.70mm	4mm

Metric	2mm	2	1.70mm	4mm
Metric	2mm	2	1.70mm	4mm
Metric	2mm	2	1.70mm	4mm



## 4 FLUTE SOLID CARBIDE DM END MILLS

APPLICATIONS for die and mold steels and hard to machine materials Reduced neck diameter for longer reach



SIZE	NO. OF FLUTES	LENGTH OF CUT	SHANK DIAMETER
3mm	4	5mm	6mm
3mm	4	5mm	6mm

3mm	4	5mm	6mm
3mm	4	5mm	6mm
3mm	4	5mm	6mm
6mm	4	9mm	6mm
6mm	4	9mm	6mm
6mm	4	9mm	6mm
6mm	4	9mm	6mm
6mm	4	9mm	6mm
6mm	4	9mm	6mm
8mm	4	12mm	8mm
8mm	4	12mm	8mm
8mm	4	12mm	8mm
8mm	4	12mm	8mm
8mm	4	12mm	8mm
8mm	4	12mm	8mm
10mm	4	15mm	10mm
10mm	4	15mm	10mm
10mm	4	15mm	10mm
10mm	4	15mm	10mm
10mm	4	15mm	10mm
12mm	4	18mm	12mm
12mm	4	18mm	12mm
12mm	4	18mm	12mm

12mm	4	18mm	12mm
12mm	4	18mm	12mm
16mm	4	24mm	16mm
16mm	4	24mm	16mm
16mm	4	24mm	16mm
16mm	4	24mm	16mm
16mm	4	24mm	16mm
20mm	4	30mm	20mm
20mm	4	30mm	20mm
20mm	4	30mm	20mm



## MULTI-FLUTE SOLID CARBIDE DM END MILLS

**For hardened materials Rc 50-65**

APPLICATION Multi-Flute designed for hardened materials Rc 50-65.

FEATURES Available as a Square End and in 7 standard corner radii. Multi-Flute. 45° helix.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Metric	3mm	4	9mm	6mm
Metric	3mm	4	9mm	6mm
Fractional	1/8"	4	3/8"	1/4"
Fractional	1/8"	4	3/8"	1/4"
Fractional	1/8"	4	3/8"	1/4"
Fractional	5/32"	4	15/32"	1/4"
Fractional	5/32"	4	15/32"	1/4"
Fractional	5/32"	4	15/32"	1/4"

Metric	4mm	4	12mm	6mm
Metric	4mm	4	12mm	6mm
Metric	4mm	4	12mm	6mm
Fractional	3/16"	4	9/16"	1/4"
Fractional	3/16"	4	9/16"	1/4"
Fractional	3/16"	4	9/16"	1/4"
Fractional	3/16"	4	9/16"	1/4"
Metric	5mm	4	15mm	6mm
Metric	5mm	4	15mm	6mm
Metric	5mm	4	15mm	6mm
Metric	5mm	4	15mm	6mm
Metric	6mm	6	15mm	6mm
Metric	6mm	6	15mm	6mm
Metric	6mm	6	15mm	6mm
Metric	6mm	6	15mm	6mm
Fractional	1/4"	6	5/8"	1/4"
Fractional	1/4"	6	5/8"	1/4"
Fractional	1/4"	6	5/8"	1/4"
Fractional	1/4"	6	5/8"	1/4"
Fractional	1/4"	6	5/8"	1/4"
Fractional	5/16"	6	3/4"	5/16"

Fractional	5/16"	6	3/4"	5/16"
Fractional	5/16"	6	3/4"	5/16"
Fractional	5/16"	6	3/4"	5/16"
Fractional	5/16"	6	3/4"	5/16"
Metric	8mm	6	20mm	8mm
Metric	8mm	6	20mm	8mm
Metric	8mm	6	20mm	8mm
Metric	8mm	6	20mm	8mm
Metric	8mm	6	20mm	8mm
Metric	8mm	6	20mm	8mm
Fractional	3/8"	6	1"	3/8"
Fractional	3/8"	6	1"	3/8"
Fractional	3/8"	6	1"	3/8"
Fractional	3/8"	6	1"	3/8"
Fractional	3/8"	6	1"	3/8"
Metric	10mm	6	25mm	10mm
Metric	10mm	6	25mm	10mm
Metric	10mm	6	25mm	10mm
Metric	10mm	6	25mm	10mm
Metric	10mm	6	25mm	10mm
Metric	10mm	6	25mm	10mm

Metric	12mm	6	30mm	12mm
Metric	12mm	6	30mm	12mm
Metric	12mm	6	30mm	12mm
Metric	12mm	6	30mm	12mm
Metric	12mm	6	30mm	12mm
Metric	12mm	6	30mm	12mm
Metric	12mm	6	30mm	12mm
Metric	12mm	6	30mm	12mm
Fractional	1/2"	6	1-1/4"	1/2"
Fractional	1/2"	6	1-1/4"	1/2"
Fractional	1/2"	6	1-1/4"	1/2"
Fractional	1/2"	6	1-1/4"	1/2"
Fractional	1/2"	6	1-1/4"	1/2"
Fractional	1/2"	6	1-1/4"	1/2"
Fractional	1/2"	6	1-1/4"	1/2"
Fractional	5/8"	6	1-9/16"	5/8"
Fractional	5/8"	6	1-9/16"	5/8"
Fractional	5/8"	6	1-9/16"	5/8"
Fractional	5/8"	6	1-9/16"	5/8"
Fractional	5/8"	6	1-9/16"	5/8"
Fractional	5/8"	6	1-9/16"	5/8"
Fractional	5/8"	6	1-9/16"	5/8"
Metric	16mm	6	40mm	16mm

Metric	16mm	6	40mm	16mm
Metric	16mm	6	40mm	16mm
Metric	16mm	6	40mm	16mm
Metric	16mm	6	40mm	16mm
Metric	16mm	6	40mm	16mm
Metric	16mm	6	40mm	16mm
Metric	16mm	6	40mm	16mm



## 4 FLUTE SOLID CARBIDE END MILL



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Decimal	.0050"	4	.015"	1/8"
Metric	.20mm	4	.60mm	3mm
Decimal	.0100"	4	.030"	1/8"
Metric	.30mm	4	.90mm	3mm
Decimal	.0150"	4	.045"	1/8"
Metric	.40mm	4	1.20mm	3mm
Metric	.50mm	4	1.50mm	3mm
Decimal	.0200"	4	.060"	1/8"
Metric	.60mm	4	1.80mm	3mm

Decimal	.0250"	4	.075"	1/8"
Metric	.70mm	4	2.10mm	3mm
Decimal	.0300"	4	.090"	1/8"
Metric	.80mm	4	2.40mm	3mm
Decimal	.0350"	4	.105"	1/8"
Metric	.90mm	4	2.70mm	3mm
Metric	1mm	4	3mm	3mm
Metric	1mm	4	3mm	3mm
Decimal	.0400"	4	.120"	1/8"
Metric	1.10mm	4	3.30mm	3mm
Decimal	.0450"	4	.135"	1/8"
Metric	1.20mm	4	3.60mm	3mm
Decimal	.0500"	4	.150"	1/8"
Metric	1.20mm	4	3.90mm	3mm
Decimal	.0550"	4	.165"	1/8"
Metric	1.40mm	4	4.20mm	3mm
Metric	1.50mm	4	6mm	3mm
Metric	1.50mm	4	6mm	3mm
Metric	1.50mm	4	4.50mm	3mm
Decimal	.0600"	4	.180"	1/8"
Metric	1.60mm	4	4.80mm	3mm

Decimal	.0650"	4	.195"	1/8"
Metric	1.70mm	4	5.10mm	3mm
Decimal	.0700"	4	.210"	1/8"
Metric	1.80mm	4	5.40mm	3mm
Metric	1.90mm	4	5.70mm	3mm
Decimal	.0750"	4	.225"	1/8"
Metric	2mm	4	9mm	3mm
Metric	2mm	4	6mm	3mm
Decimal	.0800"	4	.240"	1/8"
Decimal	.0850"	4	.255"	1/8"
Decimal	.0900"	4	.270"	1/8"
Decimal	.0950"	4	.285"	1/8"
Metric	2.50mm	4	12mm	3mm
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Decimal	.1000"	4	.300"	1/8"

Metric	3mm	4	12mm	3mm
Metric	3mm	4	12mm	3mm
Metric	3mm	4	12mm	3mm
Metric	3mm	4	12mm	3mm
Fractional	1/8"	4	1/2"	1/8"
Fractional	1/8"	4	3/8"	1/8"
Fractional	1/8"	4	3/8"	1/8"
Metric	3.50mm	4	12mm	4mm
Fractional	9/64"	4	1/2"	3/16"
Metric	4mm	4	14mm	4mm
Metric	4mm	4	14mm	4mm
Metric	4mm	4	14mm	4mm
Metric	4mm	4	14mm	4mm
Metric	4mm	4	14mm	4mm
Fractional	11/64"	4	5/8"	3/16"
Fractional	3/16"	4	5/8"	3/16"
Fractional	3/16"	4	5/8"	3/16"
Fractional	3/16"	4	5/8"	3/16"
Metric	5mm	4	20mm	5mm
Metric	5mm	4	20mm	5mm
Metric	5mm	4	20mm	5mm

Metric	5mm	4	20mm	5mm
Metric	5mm	4	20mm	5mm
Metric	5mm	4	20mm	5mm
Fractional	13/64"	4	5/8"	1/4"
Metric	5.50mm	4	20mm	6mm
Fractional	15/64"	4	3/4"	1/4"
Metric	6mm	4	20mm	6mm
Metric	6mm	4	20mm	6mm
Metric	6mm	4	20mm	6mm
Metric	6mm	4	20mm	6mm
Metric	6mm	4	20mm	6mm
Metric	6mm	4	20mm	6mm
Metric	6mm	4	20mm	6mm
Fractional	1/4"	4	3/4"	1/4"
Fractional	1/4"	4	3/4"	1/4"
Fractional	1/4"	4	3/4"	1/4"
Fractional	1/4"	4	3/4"	1/4"
Fractional	5/16"	4	13/16"	5/16"
Fractional	5/16"	4	13/16"	5/16"
Fractional	5/16"	4	13/16"	5/16"
Fractional	5/16"	4	13/16"	5/16"
Metric	8mm	4	20mm	8mm

Metric	8mm	4	20mm	8mm
Metric	8mm	4	20mm	8mm
Metric	8mm	4	20mm	8mm



## 4 FLUTE SOLID CARBIDE END MILLS

Recommended for use on close tolerance milling



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1/64"	4	.040"	1/8"
Fractional	1/32"	4	5/64"	1/8"
Metric	1mm	4	3mm	3mm

Fractional	3/64"	4	7/64"	1/8"
Metric	1.50mm	4	6mm	3mm
Metric	2mm	4	9mm	3mm
Metric	2.50mm	4	12mm	3mm
Metric	3mm	4	12mm	3mm
Metric	3.50mm	4	12mm	4mm
Metric	4mm	4	14mm	4mm
Metric	4.50mm	4	14mm	5mm
Metric	5mm	4	20mm	5mm
Metric	5.50mm	4	20mm	6mm
Metric	6mm	4	20mm	6mm
Metric	7mm	4	20mm	8mm
Metric	8mm	4	20mm	8mm
Metric	9mm	4	20mm	9mm
Metric	10mm	4	25mm	10mm
Metric	11mm	4	25mm	11mm
Metric	12mm	4	25mm	12mm
Metric	14mm	4	30mm	14mm
Metric	16mm	4	30mm	16mm
Metric	18mm	4	35mm	18mm
Metric	20mm	4	38mm	20mm

Metric	22mm	4	40mm	22mm
Metric	25mm	4	40mm	25mm



## 4 FLUTE SOLID CARBIDE END MILLS



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Decimal	.005"	2	.010"	1/8"
Decimal	.006"	2	.012"	1/8"
Decimal	.007"	2	.014"	1/8"
Metric	.20mm	2	.40mm	3mm

Decimal	.008"	2	.016"	1/8"
Decimal	.009"	2	.018"	1/8"
Decimal	.010"	2	.020"	1/8"
Decimal	.011"	2	.022"	1/8"
Metric	.30mm	2	.60mm	3mm
Decimal	.012"	2	.024"	1/8"
Decimal	.013"	2	.026"	1/8"
Decimal	.014"	2	.028"	1/8"
Decimal	.015"	2	.030"	1/8"
Metric	.40mm	2	.80mm	3mm
Decimal	.016"	2	.032"	1/8"
Decimal	.017"	2	.034"	1/8"
Decimal	.018"	2	.036"	1/8"
Decimal	.019"	2	.038"	1/8"
Metric	.50mm	2	1mm	3mm
Decimal	.020"	2	.040"	1/8"
Decimal	.021"	2	.042"	1/8"
Decimal	.022"	2	.044"	1/8"
Decimal	.023"	2	.046"	1/8"
Metric	.60mm	2	1.20mm	3mm
Decimal	.024"	2	.048"	1/8"

Decimal	.025"	2	.050"	1/8"
Decimal	.026"	2	.052"	1/8"
Decimal	.027"	2	.054"	1/8"
Metric	.70mm	2	1.40mm	3mm
Decimal	.028"	2	.056"	1/8"
Decimal	.029"	2	.058"	1/8"
Decimal	.030"	2	.060"	1/8"
Decimal	.031"	2	.062"	1/8"
Metric	.80mm	2	1.60mm	3mm
Decimal	.032"	2	.064"	1/8"
Decimal	.033"	2	.066"	1/8"
Decimal	.034"	2	.067"	1/8"
Decimal	.035"	2	.070"	1/8"
Metric	.90mm	2	1.80mm	3mm
Decimal	.036"	2	.072"	1/8"
Decimal	.037"	2	.074"	1/8"
Decimal	.038"	2	.076"	1/8"
Decimal	.039"	2	.078"	1/8"
Decimal	.040"	2	.080"	1/8"
Decimal	.041"	2	.082"	1/8"
Decimal	.042"	2	.084"	1/8"

Decimal	.043"	2	.086"	1/8"
Metric	1.10mm	2	2.20mm	3mm
Decimal	.044"	2	.088"	1/8"
Decimal	.045"	2	.090"	1/8"
Decimal	.046"	2	.092"	1/8"
Decimal	.047"	2	.094"	1/8"
Metric	1.20mm	2	2.40mm	3mm
Decimal	.048"	2	.096"	1/8"
Decimal	.049"	2	.098"	1/8"
Decimal	.050"	2	.100"	1/8"
Decimal	.051"	2	.102"	1/8"
Metric	1.30mm	2	2.60mm	3mm
Decimal	.052"	2	.104"	1/8"
Decimal	.053"	2	.106"	1/8"
Decimal	.054"	2	.108"	1/8"
Decimal	.055"	2	.110"	1/8"
Metric	1.40mm	2	2.80mm	3mm
Decimal	.056"	2	.112"	1/8"
Decimal	.057"	2	.114"	1/8"
Decimal	.058"	2	.116"	1/8"
Decimal	.059"	2	.118"	1/8"

Decimal	.060"	2	.120"	1/8"
Metric	1.60mm	2	3.20mm	3mm
Metric	1.70mm	2	3.40mm	3mm
Metric	1.80mm	2	3.60mm	3mm
Metric	1.90mm	2	3.80mm	3mm
Metric	3mm	2	6mm	3mm
Metric	3mm	2	6mm	3mm
Metric	3mm	2	6mm	3mm
Metric	3.50mm	2	7mm	4mm
Fractional	9/64"	2	5/16"	3/16"
Metric	4mm	2	8mm	4mm
Metric	4mm	2	8mm	4mm
Metric	4mm	2	8mm	4mm
Fractional	11/64"	2	3/8"	3/16"
Metric	5mm	2	11mm	5mm
Metric	5mm	2	11mm	5mm
Metric	5mm	2	11mm	5mm
Fractional	13/64"	2	1/2"	1/4"
Metric	5.50mm	2	12mm	6mm
Fractional	15/64"	2	1/2"	1/4"
Metric	6mm	2	13mm	6mm

Metric	6mm	2	13mm	6mm
Metric	6mm	2	13mm	6mm
Fractional	9/32"	2	1/2"	5/16"
Metric	8mm	2	13mm	8mm
Metric	8mm	2	13mm	8mm
Metric	8mm	2	13mm	8mm
Metric	10mm	2	14mm	10mm
Metric	10mm	2	14mm	10mm
Metric	10mm	2	14mm	10mm
Metric	12mm	2	16mm	12mm
Metric	12mm	2	16mm	12mm
Metric	12mm	2	16mm	12mm
Metric	16mm	2	20mm	16mm
Metric	16mm	2	20mm	16mm
Metric	16mm	2	20mm	16mm
Metric	20mm	2	25mm	20mm
Metric	20mm	2	25mm	20mm
Metric	20mm	2	25mm	20mm
Metric	20mm	2	25mm	20mm



## FLUTE SOLID CARBIDE ROUGHING END MILLS

Chipbreakers are designed to minimize cutting forces, reduce or eliminate chatter and prolong tool life and deep pocket milling and other applications where standard flute lengths are too short.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1"	3"	1"
Metric	3mm	25mm	3mm
Fractional	1/8"	1"	1/8"
Fractional	3/16"	1-1/8"	3/16"
Metric	6mm	30mm	6mm

Fractional	1/4"	1-1/4"	1/4"
Fractional	5/16"	1-3/8"	5/16"
Metric	8mm	35mm	8mm
Fractional	3/8"	1-1/2"	3/8"
Metric	10mm	40mm	10mm
Fractional	7/16"	1-3/4"	7/16"
Metric	12mm	50mm	12mm
Fractional	1/2"	2"	1/2"
Fractional	5/8"	2-1/2"	5/8"
Metric	16mm	65mm	16mm
Fractional	3/4"	3"	3/4"
Metric	20mm	80mm	20mm
Metric	25mm	80mm	25mm



## FLUTE SOLID CARBIDE END MILLS

APPLICATIONS for aggressive milling of most materials.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Decimal	.005"	2	.015"	1/8"
Decimal	.006"	2	.018"	1/8"
Decimal	.007"	2	.021"	1/8"
Metric	.20mm	2	.60mm	3mm
Decimal	.008"	2	.024"	1/8"
Decimal	.009"	2	.027"	1/8"
Decimal	.010"	2	.030"	1/8"

Decimal	.011"	2	.033"	1/8"
Metric	.30mm	2	.90mm	3mm
Decimal	.012"	2	.036"	1/8"
Decimal	.013"	2	.039"	1/8"
Decimal	.014"	2	.042"	1/8"
Decimal	.015"	2	.045"	1/8"
Metric	.40mm	2	1.20mm	3mm
Decimal	.016"	2	.048"	1/8"
Decimal	.017"	2	.051"	1/8"
Decimal	.018"	2	.054"	1/8"
Decimal	.019"	2	.057"	1/8"
Metric	.50mm	2	1.50mm	3mm
Decimal	.020"	2	.060"	1/8"
Decimal	.021"	2	.063"	1/8"
Decimal	.022"	2	.066"	1/8"
Decimal	.023"	2	.069"	1/8"
Metric	.60mm	2	1.80mm	3mm
Decimal	.024"	2	.072"	1/8"
Decimal	.025"	2	.075"	1/8"
Decimal	.026"	2	.078"	1/8"
Decimal	.027"	2	.081"	1/8"

Metric	.70mm	2	2.10mm	3mm
Decimal	.028"	2	.084"	1/8"
Decimal	.029"	2	.087"	1/8"
Decimal	.030"	2	.090"	1/8"
Metric	.80mm	2	2.40mm	3mm
Decimal	.035"	2	.105"	1/8"
Metric	.90mm	2	2.70mm	3mm
Metric	1mm	2	3mm	3mm
Metric	1mm	2	3mm	3mm
Decimal	.040"	2	.120"	1/8"
Metric	1.10mm	2	3.30mm	3mm
Decimal	.045"	2	.135"	1/8"
Metric	1.20mm	2	3.60mm	3mm
Decimal	.050"	2	.150"	1/8"
Metric	1.30mm	2	3.90mm	3mm
Decimal	.055"	2	.165"	1/8"
Metric	1.40mm	2	4.20mm	3mm
Metric	1.50mm	2	6mm	3mm
Metric	1.50mm	2	6mm	3mm
Metric	1.50mm	2	4.50mm	3mm
Decimal	.060"	2	.180"	1/8"

Metric	1.60mm	2	4.80mm	3mm
Decimal	.065"	2	.195"	1/8"
Metric	1.70mm	2	5.10mm	3mm
Decimal	.070"	2	.210"	1/8"
Metric	1.80mm	2	5.40mm	3mm
Metric	1.90mm	2	5.70mm	3mm
Decimal	.075"	2	.225"	1/8"
Metric	2mm	2	9mm	3mm
Metric	2mm	2	6mm	3mm
Decimal	.080"	2	.240"	1/8"
Decimal	.085"	2	.255"	1/8"
Decimal	.090"	2	.270"	1/8"
Decimal	.095"	2	.285"	1/8"
Metric	2.50mm	2	12mm	3mm
Fractional	1"	2	1-1/2"	1"
Fractional	1"	2	1-1/2"	1"
Fractional	1"	2	1-1/2"	1"
Fractional	1"	2	1-1/2"	1"
Fractional	1"	2	1-1/2"	1"
Fractional	1"	2	1-1/2"	1"
Fractional	1"	2	1-1/2"	1"
Fractional	1"	2	1-1/2"	1"

Fractional	1"	2	1-1/2"	1"
Fractional	1"	2	1-1/2"	1"
Fractional	1"	2	1-1/2"	1"
Decimal	.100"	2	.300"	1/8"
Metric	3mm	2	12mm	3mm
Metric	3mm	2	12mm	3mm
Metric	3mm	2	12mm	3mm
Metric	3mm	2	12mm	3mm
Fractional	1/8"	2	3/8"	1/8"
Fractional	1/8"	2	3/8"	1/8"
Fractional	1/8"	2	3/8"	1/8"
Fractional	1/8"	2	1/2"	1/8"
Fractional	1/8"	2	3/8"	1/8"
Fractional	1/8"	2	3/8"	1/8"
Metric	3.50mm	2	12mm	4mm
Fractional	9/64"	2	1/2"	3/16"
Metric	4mm	2	14mm	4mm
Metric	4mm	2	14mm	4mm
Metric	4mm	2	14mm	4mm
Metric	4mm	2	14mm	4mm
Metric	4mm	2	14mm	4mm

Fractional	11/64"	2	5/8"	3/16"
Fractional	3/16"	2	5/8"	3/16"
Fractional	3/16"	2	5/8"	3/16"
Fractional	3/16"	2	5/8"	3/16"
Fractional	3/16"	2	5/8"	3/16"

Fractional	3/16"	2	5/8"	3/16"
Fractional	3/16"	2	5/8"	3/16"
Metric	5mm	2	20mm	5mm
Metric	5mm	2	20mm	5mm
Metric	5mm	2	20mm	5mm
Metric	5mm	2	20mm	5mm
Metric	5mm	2	20mm	5mm
Metric	5mm	2	20mm	5mm
Fractional	13/64"	2	5/8"	1/4"
Metric	5.50mm	2	20mm	6mm
Fractional	15/64"	2	3/4"	1/4"
Metric	6mm	2	20mm	6mm
Metric	6mm	2	20mm	6mm
Metric	6mm	2	20mm	6mm

Metric	6mm	2	20mm	6mm
Metric	6mm	2	20mm	6mm
Metric	6mm	2	20mm	6mm
Fractional	1/4"	2	3/4"	1/4"
Fractional	1/4"	2	3/4"	1/4"
Fractional	1/4"	2	3/4"	1/4"
Fractional	1/4"	2	3/4"	1/4"
Fractional	1/4"	2	3/4"	1/4"
Fractional	1/4"	2	3/4"	1/4"
Fractional	1/4"	2	3/4"	1/4"
Fractional	5/16"	2	13/16"	5/16"
Fractional	5/16"	2	13/16"	5/16"
Fractional	5/16"	2	13/16"	5/16"
Fractional	5/16"	2	13/16"	5/16"
Fractional	5/16"	2	13/16"	5/16"
Fractional	5/16"	2	13/16"	5/16"
Fractional	5/16"	2	13/16"	5/16"
Metric	8mm	2	20mm	8mm
Metric	8mm	2	20mm	8mm
Metric	8mm	2	20mm	8mm
Metric	8mm	2	20mm	8mm

Metric	8mm	2	20mm	8mm
Metric	8mm	2	20mm	8mm
Metric	8mm	2	20mm	8mm
Fractional	3/8"	2	1"	3/8"
Fractional	3/8"	2	1"	3/8"
Fractional	3/8"	2	1"	3/8"
Fractional	3/8"	2	1"	3/8"
Fractional	3/8"	2	1"	3/8"
Fractional	3/8"	2	1"	3/8"
Fractional	3/8"	2	1"	3/8"
Metric	10mm	2	25mm	10mm
Metric	10mm	2	25mm	10mm
Metric	10mm	2	25mm	10mm
Metric	10mm	2	25mm	10mm
Metric	10mm	2	25mm	10mm
Metric	10mm	2	25mm	10mm
Metric	10mm	2	25mm	10mm
Metric	10mm	2	25mm	10mm
Fractional	7/16"	2	1"	7/16"
Fractional	7/16"	2	1"	7/16"
Fractional	7/16"	2	1"	7/16"
Metric	12mm	2	25mm	12mm

Metric	12mm	2	25mm	12mm
Metric	12mm	2	25mm	12mm
Metric	12mm	2	25mm	12mm
Metric	12mm	2	25mm	12mm
Metric	12mm	2	25mm	12mm
Metric	12mm	2	25mm	12mm
Metric	12mm	2	25mm	12mm
Metric	12mm	2	25mm	12mm
Fractional	1/2"	2	1"	1/2"
Fractional	1/2"	2	1"	1/2"
Fractional	1/2"	2	1"	1/2"
Fractional	1/2"	2	1"	1/2"
Fractional	1/2"	2	1"	1/2"
Fractional	1/2"	2	1"	1/2"
Fractional	1/2"	2	1"	1/2"
Fractional	1/2"	2	1"	1/2"
Fractional	1/2"	2	1"	1/2"
Fractional	1/2"	2	1"	1/2"
Fractional	5/8"	2	1-1/4"	5/8"
Fractional	5/8"	2	1-1/4"	5/8"
Fractional	5/8"	2	1-1/4"	5/8"
Fractional	5/8"	2	1-1/4"	5/8"
Fractional	5/8"	2	1-1/4"	5/8"
Fractional	5/8"	2	1-1/4"	5/8"

Fractional	5/8"	2	1-1/4"	5/8"
Fractional	5/8"	2	1-1/4"	5/8"
Fractional	5/8"	2	1-1/4"	5/8"
Metric	16mm	2	30mm	16mm
Metric	16mm	2	30mm	16mm
Metric	16mm	2	30mm	16mm
Metric	16mm	2	30mm	16mm
Metric	16mm	2	30mm	16mm
Metric	16mm	2	30mm	16mm
Metric	16mm	2	30mm	16mm
Metric	16mm	2	30mm	16mm
Metric	16mm	2	30mm	16mm
Metric	16mm	2	30mm	16mm
Metric	16mm	2	30mm	16mm
Metric	16mm	2	30mm	16mm
Fractional	3/4"	2	1-1/2"	3/4"
Fractional	3/4"	2	1-1/2"	3/4"
Fractional	3/4"	2	1-1/2"	3/4"
Fractional	3/4"	2	1-1/2"	3/4"
Fractional	3/4"	2	1-1/2"	3/4"
Fractional	3/4"	2	1-1/2"	3/4"

Fractional	3/4"	2	1-1/2"	3/4"
Fractional	3/4"	2	1-1/2"	3/4"
Fractional	3/4"	2	1-1/2"	3/4"
Fractional	3/4"	2	1-1/2"	3/4"
Metric	20mm	2	38mm	20mm
Metric	20mm	2	38mm	20mm
Metric	20mm	2	38mm	20mm
Metric	20mm	2	38mm	20mm
Metric	20mm	2	38mm	20mm
Metric	20mm	2	38mm	20mm
Metric	20mm	2	38mm	20mm
Metric	20mm	2	38mm	20mm
Metric	20mm	2	38mm	20mm
Metric	20mm	2	38mm	20mm
Metric	20mm	2	38mm	20mm
Metric	20mm	2	38mm	20mm
Metric	22mm	2	40mm	22mm
Metric	25mm	2	40mm	25mm
Metric	25mm	2	40mm	25mm
Metric	25mm	2	40mm	25mm
Metric	25mm	2	40mm	25mm
Metric	25mm	2	40mm	25mm

Metric	25mm	2	40mm	25mm
Metric	25mm	2	40mm	25mm
Metric	25mm	2	40mm	25mm
Metric	25mm	2	40mm	25mm
Metric	25mm	2	40mm	25mm
Metric	25mm	2	40mm	25mm



## 2 FLUTE SOLID CARBIDE END MILLS SHORT LENGTH



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
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Decimal	.005"	2	.010"	1/8"
Decimal	.006"	2	.012"	1/8"
Decimal	.007"	2	.014"	1/8"
Metric	.20mm	2	.40mm	3mm
Decimal	.008"	2	.016"	1/8"
Decimal	.009"	2	.018"	1/8"
Decimal	.010"	2	.020"	1/8"
Decimal	.011"	2	.022"	1/8"
Metric	.30mm	2	.60mm	3mm
Decimal	.012"	2	.024"	1/8"
Decimal	.013"	2	.026"	1/8"
Decimal	.014"	2	.028"	1/8"
Decimal	.015"	2	.030"	1/8"
Metric	.40mm	2	.80mm	3mm
Decimal	.016"	2	.032"	1/8"
Decimal	.017"	2	.034"	1/8"
Decimal	.018"	2	.036"	1/8"
Decimal	.019"	2	.038"	1/8"
Metric	.50mm	2	1mm	3mm
Decimal	.020"	2	.040"	1/8"
Decimal	.021"	2	.042"	1/8"

Decimal	.022"	2	.044"	1/8"
Decimal	.023"	2	.046"	1/8"
Metric	.60mm	2	1.20mm	3mm
Decimal	.024"	2	.048"	1/8"
Decimal	.025"	2	.050"	1/8"
Decimal	.026"	2	.052"	1/8"
Decimal	.027"	2	.054"	1/8"
Metric	.70mm	2	1.40mm	3mm
Decimal	.028"	2	.056"	1/8"
Decimal	.029"	2	.058"	1/8"
Decimal	.030"	2	.060"	1/8"
Decimal	.031"	2	.062"	1/8"
Metric	.80mm	2	1.60mm	3mm
Decimal	.032"	2	.064"	1/8"
Decimal	.033"	2	.066"	1/8"
Decimal	.034"	2	.067"	1/8"
Decimal	.035"	2	.070"	1/8"
Metric	.90mm	2	1.80mm	3mm
Decimal	.036"	2	.072"	1/8"
Decimal	.037"	2	.074"	1/8"
Decimal	.038"	2	.076"	1/8"

Decimal	.039"	2	.078"	1/8"
Decimal	.040"	2	.080"	1/8"
Decimal	.041"	2	.082"	1/8"
Decimal	.042"	2	.084"	1/8"
Decimal	.043"	2	.086"	1/8"
Metric	1.10mm	2	2.20mm	3mm
Decimal	.044"	2	.088"	1/8"
Decimal	.045"	2	.090"	1/8"
Decimal	.046"	2	.092"	1/8"
Decimal	.047"	2	.094"	1/8"
Metric	1.20mm	2	2.40mm	3mm
Decimal	.048"	2	.096"	1/8"
Decimal	.049"	2	.098"	1/8"
Decimal	.050"	2	.100"	1/8"
Decimal	.051"	2	.102"	1/8"
Metric	1.30mm	2	2.60mm	3mm
Decimal	.052"	2	.104"	1/8"
Decimal	.053"	2	.106"	1/8"
Decimal	.054"	2	.108"	1/8"
Decimal	.055"	2	.110"	1/8"
Metric	1.40mm	2	2.80mm	3mm

Decimal	.056"	2	.112"	1/8"
Decimal	.057"	2	.114"	1/8"
Decimal	.058"	2	.116"	1/8"
Decimal	.059"	2	.118"	1/8"
Decimal	.060"	2	.120"	1/8"
Metric	1.60mm	2	3.20mm	3mm
Metric	1.70mm	2	3.40mm	3mm
Metric	1.80mm	2	3.60mm	3mm
Metric	1.90mm	2	3.80mm	3mm
Metric	3mm	2	6mm	3mm
Metric	3mm	2	6mm	3mm
Metric	3mm	2	6mm	3mm
Metric	3.50mm	2	7mm	4mm
Fractional	9/64"	2	5/16"	3/16"
Metric	4mm	2	8mm	4mm
Metric	4mm	2	8mm	4mm
Metric	4mm	2	8mm	4mm
Fractional	11/64"	2	3/8"	3/16"
Metric	5mm	2	11mm	5mm
Metric	5mm	2	11mm	5mm
Metric	5mm	2	11mm	5mm

Fractional	13/64"	2	1/2"	1/4"
Metric	5.50mm	2	12mm	6mm
Fractional	15/64"	2	1/2"	1/4"
Metric	6mm	2	13mm	6mm
Metric	6mm	2	13mm	6mm
Metric	6mm	2	13mm	6mm
Fractional	9/32"	2	1/2"	5/16"
Metric	8mm	2	13mm	8mm
Metric	8mm	2	13mm	8mm
Metric	8mm	2	13mm	8mm
Metric	10mm	2	14mm	10mm
Metric	10mm	2	14mm	10mm

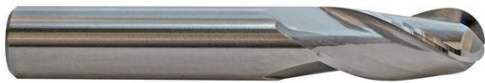
Metric	10mm	2	14mm	10mm
Metric	12mm	2	16mm	12mm
Metric	12mm	2	16mm	12mm
Metric	12mm	2	16mm	12mm
Metric	16mm	2	20mm	16mm
Metric	16mm	2	20mm	16mm
Metric	16mm	2	20mm	16mm
Metric	20mm	2	25mm	20mm
Metric	20mm	2	25mm	20mm

Metric	20mm	2	25mm	20mm
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## 4 FLUTE SOLID CARBIDE BALL END MILLS

APPLICATIONS Manufactured with full ball radius end. for most ferrous metal applications



SIZE TYPE	SIZE	NO. OF FLUTES	LENGTH OF CUT	SHANK DIAMETER
Fractional	1/64"	4	.023"	1/8"
Fractional	1/32"	4	1/16"	1/8"
Metric	1mm	4	2mm	3mm
Fractional	3/64"	4	3/32"	1/8"
Metric	1.50mm	4	3mm	3mm
Fractional	1/16"	4	1/8"	1/8"
Fractional	5/64"	4	5/32"	1/8"

Metric	2mm	4	4mm	3mm
Fractional	3/32"	4	3/16"	1/8"
Metric	2.50mm	4	5mm	3mm
Fractional	7/64"	4	7/32"	1/8"
Metric	3mm	4	6mm	3mm
Metric	3mm	4	6mm	3mm
Metric	3mm	4	6mm	3mm
Metric	3mm	4	6mm	3mm
Fractional	1/8"	4	1/4"	1/8"
Fractional	1/8"	4	1/4"	1/8"
Fractional	1/8"	4	1/4"	1/8"
Fractional	1/8"	4	1/4"	1/8"
Metric	3.50mm	4	7mm	4mm
Fractional	9/64"	4	5/16"	3/16"
Fractional	5/32"	4	5/16"	3/16"
Metric	4mm	4	8mm	4mm
Metric	4mm	4	8mm	4mm
Metric	4mm	4	8mm	4mm
Metric	4mm	4	8mm	4mm
Fractional	11/64"	4	3/8"	3/16"
Metric	4.50mm	4	9mm	5mm

Fractional	3/16"	4	3/8"	3/16"
Fractional	3/16"	4	3/8"	3/16"
Fractional	3/16"	4	3/8"	3/16"
Fractional	3/16"	4	3/8"	3/16"
Metric	5mm	4	11mm	5mm
Metric	5mm	4	11mm	5mm
Metric	5mm	4	11mm	5mm
Metric	5mm	4	11mm	5mm
Fractional	13/64"	4	1/2"	1/4"
Metric	5.50mm	4	12mm	6mm
Fractional	7/32"	4	1/2"	1/4"
Fractional	15/64"	4	1/2"	1/4"
Metric	6mm	4	13mm	6mm
Metric	6mm	4	13mm	6mm
Metric	6mm	4	13mm	6mm
Metric	6mm	4	13mm	6mm
Fractional	1/4"	4	1/2"	1/4"
Fractional	1/4"	4	1/2"	1/4"
Fractional	1/4"	4	1/2"	1/4"
Fractional	1/4"	4	1/2"	1/4"
Metric	7mm	4	13mm	8mm

Fractional	9/32"	4	1/2"	5/16"
Fractional	5/16"	4	1/2"	5/16"
Fractional	5/16"	4	1/2"	5/16"
Fractional	5/16"	4	1/2"	5/16"
Fractional	5/16"	4	1/2"	5/16"
Metric	8mm	4	13mm	8mm
Metric	8mm	4	13mm	8mm
Metric	8mm	4	13mm	8mm
Metric	8mm	4	13mm	8mm
Metric	9mm	4	14mm	9mm
Fractional	3/8"	4	5/8"	3/8"
Fractional	3/8"	4	5/8"	3/8"
Fractional	3/8"	4	5/8"	3/8"
Fractional	3/8"	4	5/8"	3/8"
Metric	10mm	4	14mm	10mm
Metric	10mm	4	14mm	10mm
Metric	10mm	4	14mm	10mm
Metric	10mm	4	14mm	10mm
Metric	11mm	4	16mm	11mm
Fractional	7/16"	4	5/8"	7/16"
Fractional	7/16"	4	5/8"	7/16"

Fractional	7/16"	4	5/8"	7/16"
Fractional	7/16"	4	5/8"	7/16"
Metric	12mm	4	16mm	12mm
Metric	12mm	4	16mm	12mm
Metric	12mm	4	16mm	12mm
Metric	12mm	4	16mm	12mm
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Metric	14mm	4	18mm	14mm
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Metric	16mm	4	20mm	16mm
Metric	16mm	4	20mm	16mm
Metric	16mm	4	20mm	16mm
Metric	16mm	4	20mm	16mm
Metric	18mm	4	25mm	18mm
Fractional	3/4"	4	1"	3/4"

Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Metric	20mm	4	25mm	20mm
Metric	20mm	4	25mm	20mm

Metric	20mm	4	25mm	20mm
Metric	20mm	4	25mm	20mm



## FLUTE SOLID CARBIDE BALL END MILLS

APPLICATIONS with a full ball radius end. for milling fillets or similar rounded corners in the bottom of a cut. Ideal for most ferrous metal applications.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Decimal	.0150"	2	.045"	1/8"
Metric	.40mm	2	1.20mm	3mm
Metric	.50mm	2	1.50mm	3mm
Decimal	.0200"	2	.060"	1/8"
Metric	.60mm	2	1.80mm	3mm
Fractional	1/4"	2	.075"	1/8"
Metric	.70mm	2	2.10mm	3mm
Decimal	.0300"	2	.090"	1/8"

Metric	.80mm	2	2.40mm	3mm
Decimal	.0350"	2	.105"	1/8"
Metric	.90mm	2	2.70mm	3mm
Metric	1mm	2	3mm	3mm
Metric	1mm	2	3mm	3mm
Decimal	.0400"	2	.120"	1/8"
Metric	1.10mm	2	3.30mm	3mm
Decimal	.0450"	2	.135"	1/8"
Metric	1.20mm	2	3.60mm	3mm
Decimal	.0500"	2	.150"	1/8"
Metric	1.30mm	2	3.90mm	3mm
Decimal	.0550"	2	.165"	1/8"
Metric	1.40mm	2	4.20mm	3mm
Metric	1.50mm	2	6mm	3mm
Metric	1.50mm	2	6mm	3mm
Metric	1.50mm	2	4.50mm	3mm
Decimal	.0600"	2	.180"	1/8"
Metric	1.60mm	2	4.8mm	3mm
Decimal	.0650"	2	.195"	1/8"
Metric	1.70mm	2	5.10mm	3mm
Decimal	.0700"	2	.210"	1/8"

Metric	1.80mm	2	5.40mm	3mm
Metric	1.90mm	2	5.70mm	3mm
Decimal	.0750"	2	.225"	1/8"
Metric	2mm	2	9mm	3mm
Metric	2mm	2	6mm	3mm
Decimal	.0800"	2	.240"	1/8"
Decimal	.0950"	2	.285"	1/8"
Metric	2.50mm	2	12mm	3mm
Fractional	1"	2	1-1/2"	1"
Decimal	.1000"	2	.300"	1/8"
Metric	3mm	2	12mm	3mm
Metric	3mm	2	12mm	3mm
Metric	3mm	2	12mm	3mm
Fractional	1/8"	2	3/8"	1/8"
Metric	3.50mm	2	12mm	4mm
Metric	4mm	2	14mm	4mm
Metric	4mm	2	14mm	4mm
Metric	4mm	2	14mm	4mm
Fractional	3/16"	2	5/8"	3/16"
Metric	5mm	2	20mm	5mm
Metric	5mm	2	20mm	5mm

Metric	5mm	2	20mm	5mm
Metric	6mm	2	20mm	6mm
Metric	6mm	2	20mm	6mm
Metric	6mm	2	20mm	6mm
Fractional	1/4"	2	3/4"	1/4"
Fractional	5/16"	2	13/16"	5/16"
Metric	8mm	2	20mm	8mm
Metric	8mm	2	20mm	8mm
Metric	8mm	2	20mm	8mm
Fractional	3/8"	2	1"	3/8"
Metric	10mm	2	25mm	10mm
Metric	10mm	2	25mm	10mm
Metric	10mm	2	25mm	10mm
Fractional	7/16"	2	1"	7/16"
Metric	12mm	2	25mm	12mm
Metric	12mm	2	25mm	12mm
Metric	12mm	2	25mm	12mm
Fractional	1/2"	2	1"	1/2"
Fractional	5/8"	2	1-1/4"	5/8"
Metric	16mm	2	30mm	16mm
Metric	16mm	2	30mm	16mm

Metric	16mm	2	30mm	16mm
Fractional	11/16"	2	1-3/8"	3/4"
Fractional	3/4"	2	1-1/2"	3/4"
Metric	20mm	2	38mm	20mm
Metric	20mm	2	38mm	20mm
Metric	20mm	2	38mm	20mm
Metric	22mm	2	40mm	22mm
Metric	25mm	2	40mm	25mm
Metric	25mm	2	40mm	25mm
Metric	25mm	2	40mm	25mm
Metric	25mm	2	40mm	25mm



## FLUTE SOLID CARBIDE BALL END MILLS

APPLICATIONS with a full ball radius end. for milling fillets or similar rounded corners in the bottom of a cut.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1/64"	2	.023"	1/8"
Fractional	1/32"	2	1/16"	1/8"
Metric	1mm	2	2mm	3mm
Fractional	3/64"	2	3/32"	1/8"
Metric	1.50mm	2	3mm	3mm
Fractional	1/16"	2	1/8"	1/8"
Fractional	5/64"	2	5/32"	1/8"
Metric	2mm	2	4mm	3mm
Fractional	3/32"	2	3/16"	1/8"
Metric	2.50mm	2	5mm	3mm
Fractional	7/64"	2	7/32"	1/8"
Metric	3mm	2	6mm	3mm
Metric	3mm	2	6mm	3mm

Metric	3mm	2	6mm	3mm
Metric	3mm	2	6mm	3mm
Fractional	1/8"	2	1/4"	1/8"
Fractional	1/8"	2	1/4"	1/8"
Fractional	1/8"	2	1/4"	1/8"
Fractional	1/8"	2	1/4"	1/8"
Metric	3.50mm	2	7mm	4mm
Fractional	9/64"	2	5/16"	3/16"
Fractional	5/32"	2	5/16"	3/16"
Metric	4mm	2	8mm	4mm
Metric	4mm	2	8mm	4mm
Metric	4mm	2	8mm	4mm
Metric	4mm	2	8mm	4mm
Fractional	11/64"	2	3/8"	3/16"
Metric	4.50mm	2	9mm	5mm
Fractional	3/16"	2	3/8"	3/16"
Fractional	3/16"	2	3/8"	3/16"
Fractional	3/16"	2	3/8"	3/16"
Fractional	3/16"	2	3/8"	3/16"
Metric	5mm	2	11mm	5mm
Metric	5mm	2	11mm	5mm

Metric	5mm	2	11mm	5mm
Metric	5mm	2	11mm	5mm
Fractional	13/64"	2	1/2"	1/4"
Metric	5.50mm	2	12mm	6mm
Fractional	7/32"	2	1/2"	1/4"
Fractional	15/64"	2	1/2"	1/4"
Metric	6mm	2	13mm	6mm
Metric	6mm	2	13mm	6mm
Metric	6mm	2	13mm	6mm
Metric	6mm	2	13mm	6mm
Fractional	1/4"	2	1/2"	1/4"
Fractional	1/4"	2	1/2"	1/4"
Fractional	1/4"	2	1/2"	1/4"
Fractional	1/4"	2	1/2"	1/4"
Metric	7mm	2	13mm	8mm
Fractional	9/32"	2	1/2"	5/16"
Fractional	5/16"	2	1/2"	5/16"
Fractional	5/16"	2	1/2"	5/16"
Fractional	5/16"	2	1/2"	5/16"
Fractional	5/16"	2	1/2"	5/16"
Metric	8mm	2	13mm	8mm

Metric	8mm	2	13mm	8mm
Metric	8mm	2	13mm	8mm
Metric	8mm	2	13mm	8mm
Metric	9mm	2	14mm	9mm
Fractional	3/8"	2	5/8"	3/8"
Fractional	3/8"	2	5/8"	3/8"
Fractional	3/8"	2	5/8"	3/8"
Fractional	3/8"	2	5/8"	3/8"
Metric	10mm	2	14mm	10mm
Metric	10mm	2	14mm	10mm
Metric	10mm	2	14mm	10mm
Metric	10mm	2	14mm	10mm
Metric	11mm	2	16mm	11mm
Fractional	7/16"	2	5/8"	7/16"
Fractional	7/16"	2	5/8"	7/16"
Fractional	7/16"	2	5/8"	7/16"
Fractional	7/16"	2	5/8"	7/16"
Metric	12mm	2	16mm	12mm
Metric	12mm	2	16mm	12mm
Metric	12mm	2	16mm	12mm
Metric	12mm	2	16mm	12mm

Fractional	1/2"	2	5/8"	1/2"
Fractional	1/2"	2	5/8"	1/2"
Fractional	1/2"	2	5/8"	1/2"
Fractional	1/2"	2	5/8"	1/2"
Metric	14mm	2	18mm	14mm
Fractional	5/8"	2	3/4"	5/8"
Fractional	5/8"	2	3/4"	5/8"
Fractional	5/8"	2	3/4"	5/8"
Fractional	5/8"	2	3/4"	5/8"
Metric	16mm	2	20mm	16mm
Metric	16mm	2	20mm	16mm
Metric	16mm	2	20mm	16mm
Metric	16mm	2	20mm	16mm
Metric	18mm	2	25mm	18mm
Fractional	3/4"	2	1"	3/4"
Fractional	3/4"	2	1"	3/4"
Fractional	3/4"	2	1"	3/4"
Fractional	3/4"	2	1"	3/4"
Metric	20mm	2	25mm	20mm
Metric	20mm	2	25mm	20mm



## FLUTE SOLID CARBIDE END MILLS FOR ALUMINUM

APPLICATIONS aluminium milling to the extreme with chip loads and speeds, definitely designed for extreme productivity.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/2"	1"
Fractional	1"	3	1-1/2"	1"
Fractional	1"	3	1-1/2"	1"

Fractional	1"	3	2"	1"
Fractional	1"	3	2"	1"
Fractional	1"	3	2-1/2"	1"
Fractional	1"	3	2-1/2"	1"
Fractional	1"	3	3"	1"
Fractional	1"	3	3"	1"
Fractional	1"	3	3-1/2"	1"
Fractional	1"	3	3-1/2"	1"
Fractional	1"	3	4"	1"
Fractional	1"	3	4"	1"
Fractional	1"	3	4-1/8"	1"
Fractional	1"	3	4-1/8"	1"
Fractional	1"	3	5-1/2"	1"
Fractional	1"	3	5-1/2"	1"
Metric	3mm	3	8mm	6mm
Metric	3mm	3	8mm	6mm
Fractional	1/8"	3	3/16"	1/8"
Fractional	1/8"	3	3/16"	1/8"
Fractional	1/8"	3	1/4"	1/8"
Fractional	1/8"	3	1/4"	1/8"
Fractional	1/8"	3	5/16"	1/8"

Fractional	1/8"	3	5/16"	1/8"
Fractional	1/8"	3	3/8"	1/8"
Fractional	1/8"	3	3/8"	1/8"
Fractional	1/8"	3	1/2"	1/8"
Fractional	1/8"	3	1/2"	1/8"
Fractional	1/8"	3	5/8"	1/8"
Fractional	1/8"	3	5/8"	1/8"
Fractional	1/8"	3	3/4"	1/8"
Fractional	1/8"	3	3/4"	1/8"
Fractional	1/8"	3	1"	1/8"
Fractional	1/8"	3	1"	1/8"
Metric	4mm	3	11mm	6mm
Metric	4mm	3	11mm	6mm
Fractional	3/16"	3	1/4"	3/16"
Fractional	3/16"	3	1/4"	3/16"
Fractional	3/16"	3	3/8"	3/16"
Fractional	3/16"	3	3/8"	3/16"
Fractional	3/16"	3	1/2"	3/16"
Fractional	3/16"	3	1/2"	3/16"
Fractional	3/16"	3	5/8"	3/16"
Fractional	3/16"	3	5/8"	3/16"

Fractional	3/16"	3	3/4"	3/16"
Fractional	3/16"	3	3/4"	3/16"
Fractional	3/16"	3	1"	3/16"
Fractional	3/16"	3	1"	3/16"
Metric	5mm	3	13mm	6mm
Metric	5mm	3	13mm	6mm
Metric	6mm	3	13mm	6mm
Metric	6mm	3	13mm	6mm
Fractional	1/4"	3	3/8"	1/4"
Fractional	1/4"	3	3/8"	1/4"
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	5/8"	1/4"
Fractional	1/4"	3	5/8"	1/4"
Fractional	1/4"	3	3/4"	1/4"
Fractional	1/4"	3	3/4"	1/4"
Fractional	1/4"	3	1"	1/4"
Fractional	1/4"	3	1"	1/4"
Fractional	1/4"	3	1-1/8"	1/4"

Fractional	1/4"	3	1-1/8"	1/4"
Fractional	1/4"	3	1-1/4"	1/4"
Fractional	1/4"	3	1-1/4"	1/4"
Fractional	1/4"	3	1-1/2"	1/4"
Fractional	1/4"	3	1-1/2"	1/4"
Fractional	1/4"	3	1-3/4"	1/4"
Fractional	1/4"	3	1-3/4"	1/4"
Fractional	1/4"	3	2"	1/4"
Fractional	1/4"	3	2"	1/4"
Fractional	5/16"	3	5/16"	5/16"
Fractional	5/16"	3	3/8"	5/16"
Fractional	5/16"	3	7/16"	5/16"
Fractional	5/16"	3	1/2"	5/16"
Fractional	5/16"	3	5/16"	5/16"
Fractional	5/16"	3	5/16"	5/16"
Fractional	5/16"	3	3/8"	5/16"
Fractional	5/16"	3	3/8"	5/16"
Fractional	5/16"	3	7/16"	5/16"
Fractional	5/16"	3	7/16"	5/16"
Fractional	5/16"	3	1/2"	5/16"
Fractional	5/16"	3	1/2"	5/16"

Fractional	5/16"	3	13/16"	5/16"
Fractional	5/16"	3	13/16"	5/16"
Fractional	5/16"	3	1-1/8"	5/16"
Fractional	5/16"	3	1-1/8"	5/16"
Fractional	5/16"	3	1-3/8"	5/16"

Fractional	5/16"	3	1-3/8"	5/16"
Fractional	5/16"	3	1-1/4"	5/16"
Fractional	5/16"	3	1-1/4"	5/16"
Fractional	5/16"	3	1-1/2"	5/16"
Fractional	5/16"	3	1-1/2"	5/16"
Metric	8mm	3	19mm	8mm
Metric	8mm	3	19mm	8mm
Fractional	3/8"	3	1/2"	3/8"
Fractional	3/8"	3	1/2"	3/8"
Fractional	3/8"	3	9/16"	3/8"
Fractional	3/8"	3	9/16"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	5/8"	3/8"

Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	3/4"	3/8"
Fractional	3/8"	3	3/4"	3/8"
Fractional	3/8"	3	1"	3/8"
Fractional	3/8"	3	1"	3/8"
Fractional	3/8"	3	1-1/4"	3/8"
Fractional	3/8"	3	1-1/4"	3/8"
Fractional	3/8"	3	1-1/2"	3/8"
Fractional	3/8"	3	1-1/2"	3/8"
Fractional	3/8"	3	2"	3/8"
Fractional	3/8"	3	2"	3/8"
Fractional	3/8"	3	2-1/2"	3/8"
Fractional	3/8"	3	2-1/2"	3/8"
Fractional	3/8"	3	9/16"	3/8"
Fractional	3/8"	3	9/16"	3/8"
Fractional	3/8"	3	1"	3/8"
Fractional	3/8"	3	1"	3/8"
Metric	10mm	3	22mm	10mm
Metric	10mm	3	22mm	10mm
Fractional	7/16"	3	9/16"	7/16"
Fractional	7/16"	3	9/16"	7/16"

Fractional	7/16"	3	1"	7/16"
Fractional	7/16"	3	1"	7/16"
Metric	12mm	3	26mm	12mm
Metric	12mm	3	26mm	12mm
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	3/4"	1/2"
Fractional	1/2"	3	3/4"	1/2"
Fractional	1/2"	3	1"	1/2"
Fractional	1/2"	3	1"	1/2"
Fractional	1/2"	3	1-1/4"	1/2"
Fractional	1/2"	3	1-1/4"	1/2"
Fractional	1/2"	3	1-1/2"	1/2"
Fractional	1/2"	3	1-1/2"	1/2"
Fractional	1/2"	3	2"	1/2"
Fractional	1/2"	3	2"	1/2"
Fractional	1/2"	3	2-1/4"	1/2"
Fractional	1/2"	3	2-1/4"	1/2"
Fractional	1/2"	3	2-1/2"	1/2"
Fractional	1/2"	3	2-1/2"	1/2"
Fractional	1/2"	3	3-1/4"	1/2"

Fractional	1/2"	3	3-1/4"	1/2"
Fractional	1/2"	3	4"	1/2"
Fractional	1/2"	3	4"	1/2"
Metric	14mm	3	26mm	14mm
Metric	14mm	3	26mm	14mm
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	7/8"	5/8"
Fractional	5/8"	3	7/8"	5/8"
Fractional	5/8"	3	1-1/4"	5/8"
Fractional	5/8"	3	1-1/4"	5/8"
Fractional	5/8"	3	1-5/8"	5/8"
Fractional	5/8"	3	1-5/8"	5/8"
Fractional	5/8"	3	2"	5/8"
Fractional	5/8"	3	2"	5/8"
Fractional	5/8"	3	2-1/2"	5/8"
Fractional	5/8"	3	2-1/2"	5/8"
Fractional	5/8"	3	3-1/4"	5/8"
Fractional	5/8"	3	3-1/4"	5/8"

Metric	16mm	3	32mm	16mm
Metric	16mm	3	32mm	16mm
Metric	18mm	3	32mm	18mm
Metric	18mm	3	32mm	18mm
Fractional	3/4"	3	3/4"	3/4"
Fractional	3/4"	3	3/4"	3/4"
Fractional	3/4"	3	1"	3/4"
Fractional	3/4"	3	1"	3/4"
Fractional	3/4"	3	1"	3/4"
Fractional	3/4"	3	1"	3/4"
Fractional	3/4"	3	1-1/2"	3/4"
Fractional	3/4"	3	1-1/2"	3/4"
Fractional	3/4"	3	1-5/8"	3/4"
Fractional	3/4"	3	1-5/8"	3/4"
Fractional	3/4"	3	2"	3/4"
Fractional	3/4"	3	2"	3/4"
Fractional	3/4"	3	2-1/4"	3/4"
Fractional	3/4"	3	2-1/4"	3/4"
Fractional	3/4"	3	2-1/2"	3/4"

Fractional	3/4"	3	2-1/2"	3/4"
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Fractional	3/4"	3	3"	3/4"
Fractional	3/4"	3	3"	3/4"
Fractional	3/4"	3	3-1/4"	3/4"
Fractional	3/4"	3	3-1/4"	3/4"
Fractional	3/4"	3	3-1/2"	3/4"
Fractional	3/4"	3	3-1/2"	3/4"
Fractional	3/4"	3	4"	3/4"
Fractional	3/4"	3	4"	3/4"
Fractional	3/4"	3	5"	3/4"
Fractional	3/4"	3	5"	3/4"
Metric	20mm	3	38mm	20mm
Metric	20mm	3	38mm	20mm



## 3 FLUTE SOLID CARBIDE END MILLS FOR NON-FERROUS MATERIALS

Supplied with coating for extreme hardness Hardness that makes it the 3rd hardest material when compared to industrial diamonds.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1"	3	2"	1"
Fractional	1"	3	3"	1"
Fractional	1"	3	3-1/2"	1"
Fractional	1/8"	3	1/4"	1/8"
Fractional	1/8"	3	3/8"	1/8"
Fractional	1/8"	3	1/2"	1/8"
Fractional	1/8"	3	3/4"	1/8"
Fractional	3/16"	3	3/8"	3/16"

Fractional	3/16"	3	1/2"	3/16"
Fractional	3/16"	3	5/8"	3/16"
Fractional	3/16"	3	3/4"	3/16"
Fractional	3/16"	3	1"	3/16"
Metric	6mm	3	13mm	6mm
Fractional	1/4"	3	3/8"	1/4"
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	5/8"	1/4"
Fractional	1/4"	3	3/4"	1/4"
Fractional	1/4"	3	1"	1/4"
Fractional	1/4"	3	1-1/4"	1/4"
Metric	8mm	3	19mm	8mm
Fractional	3/8"	3	1/2"	3/8"
Fractional	3/8"	3	3/4"	3/8"
Fractional	3/8"	3	1"	3/8"
Fractional	3/8"	3	1-1/4"	3/8"
Fractional	3/8"	3	1-1/2"	3/8"
Fractional	3/8"	3	2"	3/8"
Metric	10mm	3	22mm	10mm
Metric	12mm	3	26mm	12mm
Fractional	1/2"	3	5/8"	1/2"

Fractional	1/2"	3	3/4"	1/2"
Fractional	1/2"	3	1"	1/2"
Fractional	1/2"	3	1-1/4"	1/2"
Fractional	1/2"	3	1-1/2"	1/2"
Fractional	1/2"	3	2"	1/2"
Fractional	1/2"	3	2-1/4"	1/2"
Fractional	1/2"	3	2-1/2"	1/2"
Metric	14mm	3	26mm	14mm
Fractional	5/8"	3	1-1/4"	5/8"
Fractional	5/8"	3	1-5/8"	5/8"
Fractional	5/8"	3	2-1/2"	5/8"
Fractional	5/8"	3	3-1/4"	5/8"
Metric	16mm	3	32mm	16mm
Fractional	3/4"	3	1"	3/4"
Fractional	3/4"	3	1-5/8"	3/4"
Fractional	3/4"	3	2"	3/4"
Fractional	3/4"	3	2-1/4"	3/4"
Fractional	3/4"	3	2-1/2"	3/4"
Fractional	3/4"	3	3"	3/4"
Metric	20mm	3	38mm	20mm



## 3 FLUTE SOLID CARBIDE MILLS FOR NON-FERROUS MATERIALS



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"

Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1"	3	1-1/4"	1"
Fractional	1/8"	3	3/16"	1/8"
Fractional	1/8"	3	3/16"	1/8"
Fractional	1/8"	3	3/16"	1/8"
Fractional	1/8"	3	3/16"	1/8"
Fractional	1/8"	3	3/16"	1/8"

Fractional	1/8"	3	3/16"	1/8"
Fractional	3/16"	3	1/4"	3/16"
Fractional	3/16"	3	1/4"	3/16"
Fractional	3/16"	3	1/4"	3/16"
Fractional	3/16"	3	1/4"	3/16"
Fractional	3/16"	3	1/4"	3/16"
Fractional	3/16"	3	1/4"	3/16"
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	1/2"	1/4"
Fractional	5/16"	3	7/16"	5/16"
Fractional	5/16"	3	7/16"	5/16"
Fractional	5/16"	3	7/16"	5/16"
Fractional	5/16"	3	7/16"	5/16"

Fractional	5/16"	3	7/16"	5/16"
Fractional	5/16"	3	7/16"	5/16"
Fractional	5/16"	3	7/16"	5/16"
Fractional	5/16"	3	7/16"	5/16"
Fractional	5/16"	3	7/16"	5/16"
Fractional	5/16"	3	7/16"	5/16"
Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"

Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	3/4"	1/2"
Fractional	1/2"	3	3/4"	1/2"
Fractional	1/2"	3	3/4"	1/2"
Fractional	1/2"	3	3/4"	1/2"
Fractional	1/2"	3	3/4"	1/2"
Fractional	1/2"	3	3/4"	1/2"
Fractional	1/2"	3	3/4"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	3/4"	1/2"

Fractional	1/2"	3	3/4"	1/2"
Fractional	1/2"	3	3/4"	1/2"
Fractional	1/2"	3	3/4"	1/2"
Fractional	1/2"	3	3/4"	1/2"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"

Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"



Fractional	3/4"	3	1"	3/4"
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## 3 FLUTE SOLID CARBIDE END MILL WITH CORNER RADIUS

APPLICATIONS aluminum milling to the extreme with chip loads and speeds,



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1"	3	1-1/2"	1"
Fractional	1"	3	1-1/2"	1"
Fractional	1"	3	1-1/2"	1"
Fractional	1"	3	1-1/2"	1"
Fractional	1"	3	1-1/2"	1"
Fractional	1"	3	1-1/2"	1"
Fractional	1"	3	2-1/2"	1"

Fractional	1"	3	2-1/2"	1"
Fractional	1"	3	2-1/2"	1"
Fractional	1"	3	2-1/2"	1"
Fractional	1"	3	2-1/2"	1"
Fractional	1"	3	2-1/2"	1"
Fractional	1"	3	3-1/2"	1"
Fractional	1"	3	3-1/2"	1"
Fractional	1"	3	3-1/2"	1"
Fractional	1"	3	3-1/2"	1"
Fractional	1"	3	3-1/2"	1"
Fractional	1"	3	3-1/2"	1"
Metric	3mm	3	8mm	6mm
Metric	3mm	3	8mm	6mm
Metric	4mm	3	11mm	6mm
Metric	4mm	3	11mm	6mm
Metric	5mm	3	13mm	6mm
Metric	5mm	3	13mm	6mm
Metric	6mm	3	13mm	6mm
Metric	6mm	3	13mm	6mm
Metric	6mm	3	13mm	6mm
Metric	6mm	3	13mm	6mm

Fractional	1/4"	3	3/8"	1/4"
Fractional	1/4"	3	3/8"	1/4"
Fractional	1/4"	3	3/4"	1/4"
Fractional	1/4"	3	3/4"	1/4"
Fractional	1/4"	3	1-1/4"	1/4"
Fractional	1/4"	3	1-1/4"	1/4"
Metric	8mm	3	19mm	8mm
Metric	8mm	3	19mm	8mm
Metric	8mm	3	19mm	8mm
Metric	8mm	3	19mm	8mm
Metric	8mm	3	19mm	8mm
Fractional	3/8"	3	1/2"	3/8"
Fractional	3/8"	3	1/2"	3/8"
Fractional	3/8"	3	1"	3/8"
Fractional	3/8"	3	1"	3/8"
Fractional	3/8"	3	1-1/2"	3/8"
Fractional	3/8"	3	1-1/2"	3/8"
Metric	10mm	3	22mm	10mm
Metric	10mm	3	22mm	10mm
Metric	10mm	3	22mm	10mm
Metric	10mm	3	22mm	10mm

Metric	10mm	3	22mm	10mm
Metric	12mm	3	26mm	12mm
Metric	12mm	3	26mm	12mm
Metric	12mm	3	26mm	12mm
Metric	12mm	3	26mm	12mm
Metric	12mm	3	26mm	12mm
Metric	12mm	3	26mm	12mm
Metric	12mm	3	26mm	12mm
Metric	12mm	3	26mm	12mm
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	1-1/4"	1/2"
Fractional	1/2"	3	1-1/4"	1/2"
Fractional	1/2"	3	1-1/4"	1/2"
Fractional	1/2"	3	1-1/4"	1/2"
Fractional	1/2"	3	1-1/4"	1/2"
Fractional	1/2"	3	1-1/4"	1/2"
Fractional	1/2"	3	2"	1/2"
Fractional	1/2"	3	2"	1/2"
Fractional	1/2"	3	2"	1/2"

Fractional	1/2"	3	2"	1/2"
Fractional	1/2"	3	2"	1/2"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	1-5/8"	5/8"
Fractional	5/8"	3	1-5/8"	5/8"
Fractional	5/8"	3	1-5/8"	5/8"
Fractional	5/8"	3	1-5/8"	5/8"
Fractional	5/8"	3	2-1/2"	5/8"
Fractional	5/8"	3	2-1/2"	5/8"
Fractional	5/8"	3	2-1/2"	5/8"
Fractional	5/8"	3	2-1/2"	5/8"
Metric	16mm	3	32mm	16mm
Metric	16mm	3	32mm	16mm
Metric	16mm	3	32mm	16mm
Metric	16mm	3	32mm	16mm
Metric	16mm	3	32mm	16mm
Metric	16mm	3	32mm	16mm
Metric	16mm	3	32mm	16mm

Fractional	3/4"	3	1"	3/4"
Fractional	3/4"	3	1"	3/4"
Fractional	3/4"	3	1"	3/4"
Fractional	3/4"	3	1"	3/4"
Fractional	3/4"	3	1"	3/4"

Fractional	3/4"	3	1"	3/4"
Fractional	3/4"	3	1-5/8"	3/4"
Fractional	3/4"	3	1-5/8"	3/4"
Fractional	3/4"	3	1-5/8"	3/4"
Fractional	3/4"	3	1-5/8"	3/4"
Fractional	3/4"	3	1-5/8"	3/4"
Fractional	3/4"	3	1-5/8"	3/4"
Fractional	3/4"	3	2-1/2"	3/4"
Fractional	3/4"	3	2-1/2"	3/4"
Fractional	3/4"	3	2-1/2"	3/4"
Fractional	3/4"	3	2-1/2"	3/4"
Fractional	3/4"	3	2-1/2"	3/4"
Metric	20mm	3	38mm	20mm
Metric	20mm	3	38mm	20mm

Metric	20mm	3	38mm	20mm
Metric	20mm	3	38mm	20mm
Metric	20mm	3	38mm	20mm
Metric	20mm	3	38mm	20mm
Metric	20mm	3	38mm	20mm



## 7 FLUTE SOLID CARBIDE END MILLS WITH CORNER RADIUS

**Extended neck length for longer reach**

APPLICATION Designed specifically for Titanium, Inconel and similar materials



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Metric	12mm	7	30mm	12mm
Metric	12mm	7	30mm	12mm
Metric	12mm	7	30mm	12mm
Metric	12mm	7	30mm	12mm
Metric	16mm	7	40mm	16mm
Metric	16mm	7	40mm	16mm
Metric	16mm	7	40mm	16mm
Metric	16mm	7	40mm	16mm
Metric	20mm	7	50mm	20mm
Metric	20mm	7	50mm	20mm
Metric	20mm	7	50mm	20mm
Metric	20mm	7	50mm	20mm



## **FLUTE SOLID CARBIDE END MILLS**

APPLICATIONS for Titanium, Inconel and similar materials.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1"	7	1"	1"
Fractional	1"	7	1"	1"
Fractional	1"	7	1"	1"
Fractional	1"	7	1"	1"
Fractional	1"	7	1"	1"
Fractional	1"	7	1-1/2"	1"
Fractional	1"	7	1-1/2"	1"
Fractional	1"	7	1-1/2"	1"
Fractional	1"	7	1-1/2"	1"
Fractional	1"	7	1-1/2"	1"
Metric	6mm	7	13mm	6mm

Metric	6mm	7	13mm	6mm
Fractional	1/4"	7	3/8"	1/4"
Fractional	1/4"	7	3/4"	1/4"
Metric	8mm	7	19mm	8mm
Metric	8mm	7	19mm	8mm
Fractional	3/8"	7	1/2"	3/8"
Fractional	3/8"	7	1/2"	3/8"
Fractional	3/8"	7	1"	3/8"
Fractional	3/8"	7	1"	3/8"
Metric	10mm	7	22mm	10mm
Metric	10mm	7	22mm	10mm
Metric	12mm	7	32mm	12mm
Metric	12mm	7	32mm	12mm
Metric	12mm	7	32mm	12mm
Metric	12mm	7	32mm	12mm
Metric	12mm	7	32mm	12mm
Fractional	1/2"	7	5/8"	1/2"
Fractional	1/2"	7	5/8"	1/2"
Fractional	1/2"	7	5/8"	1/2"
Fractional	1/2"	7	1-1/4"	1/2"
Fractional	1/2"	7	1-1/4"	1/2"

Fractional	1/2"	7	1-1/4"	1/2"
Fractional	5/8"	7	3/4"	5/8"
Fractional	5/8"	7	3/4"	5/8"
Fractional	5/8"	7	3/4"	5/8"
Fractional	5/8"	7	1-1/4"	5/8"
Fractional	5/8"	7	1-1/4"	5/8"
Fractional	5/8"	7	1-1/4"	5/8"
Metric	16mm	7	42mm	16mm
Metric	16mm	7	42mm	16mm
Metric	16mm	7	42mm	16mm
Metric	16mm	7	42mm	16mm
Metric	16mm	7	42mm	16mm
Fractional	3/4"	7	1"	3/4"
Fractional	3/4"	7	1"	3/4"
Fractional	3/4"	7	1"	3/4"
Fractional	3/4"	7	1"	3/4"
Fractional	3/4"	7	1"	3/4"
Fractional	3/4"	7	1-1/2"	3/4"
Fractional	3/4"	7	1-1/2"	3/4"
Fractional	3/4"	7	1-1/2"	3/4"
Fractional	3/4"	7	1-1/2"	3/4"

Fractional	3/4"	7	1-1/2"	3/4"
Metric	20mm	7	52mm	20mm
Metric	20mm	7	52mm	20mm
Metric	20mm	7	52mm	20mm
Metric	20mm	7	52mm	20mm
Metric	20mm	7	52mm	20mm
Fractional	1"	7	2-1/4"	1"
Fractional	1/4"	7	1-1/4"	1/4"
Fractional	3/8"	7	1-1/2"	3/8"
Fractional	1/2"	7	2"	1/2"
Fractional	5/8"	7	2-1/4"	5/8"
Fractional	3/4"	7	2-1/4"	3/4"
Fractional	1"	7	3"	1"
Fractional	1/4"	7	1-3/4"	1/4"
Fractional	3/8"	7	2-1/2"	3/8"
Fractional	1/2"	7	3"	1/2"
Fractional	5/8"	7	3"	5/8"
Fractional	3/4"	7	3"	3/4"



## 4 FLUTE SOLID CARBIDE END MILL



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	3/8"	4	1-1/4"	3/8"
Metric	3mm	4	8mm	6mm
Metric	3mm	4	8mm	6mm
Metric	4mm	4	11mm	6mm
Metric	4mm	4	11mm	6mm
Metric	5mm	4	13mm	6mm
Metric	5mm	4	13mm	6mm
Metric	6mm	4	13mm	6mm
Metric	6mm	4	13mm	6mm
Metric	8mm	4	19mm	8mm
Metric	8mm	4	19mm	8mm
Metric	10mm	4	22mm	10mm

Metric	10mm	4	22mm	10mm
Metric	12mm	4	26mm	12mm
Metric	12mm	4	26mm	12mm
Metric	12mm	4	26mm	12mm
Metric	16mm	4	32mm	16mm
Metric	16mm	4	32mm	16mm
Metric	20mm	4	38mm	20mm
Metric	20mm	4	38mm	20mm

Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"

Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1"	4	1-1/2"	1"
Fractional	1/8"	4	1/8"	1/8"
Fractional	1/8"	4	1/8"	1/8"
Fractional	1/8"	4	3/8"	1/8"
Fractional	1/8"	4	3/8"	1/8"
Fractional	3/16"	4	3/16"	3/16"
Fractional	3/16"	4	3/16"	3/16"
Fractional	3/16"	4	3/16"	3/16"
Fractional	3/16"	4	7/16"	3/16"
Fractional	3/16"	4	7/16"	3/16"
Fractional	3/16"	4	7/16"	3/16"
Fractional	1/4"	4	3/8"	1/4"
Fractional	1/4"	4	3/8"	1/4"
Fractional	1/4"	4	3/8"	1/4"
Fractional	1/4"	4	3/4"	1/4"
Fractional	1/4"	4	3/4"	1/4"
Fractional	1/4"	4	3/4"	1/4"
Fractional	5/16"	4	7/16"	5/16"

Fractional	5/16"	4	7/16"	5/16"
Fractional	5/16"	4	7/16"	5/16"
Fractional	5/16"	4	7/16"	5/16"
Fractional	5/16"	4	13/16"	5/16"
Fractional	5/16"	4	13/16"	5/16"
Fractional	5/16"	4	13/16"	5/16"
Fractional	5/16"	4	13/16"	5/16"
Fractional	3/8"	4	1/2"	3/8"
Fractional	3/8"	4	1/2"	3/8"
Fractional	3/8"	4	1/2"	3/8"
Fractional	3/8"	4	1/2"	3/8"
Fractional	3/8"	4	7/8"	3/8"
Fractional	3/8"	4	7/8"	3/8"
Fractional	3/8"	4	7/8"	3/8"
Fractional	3/8"	4	7/8"	3/8"
Fractional	3/8"	4	1-1/4"	3/8"
Fractional	3/8"	4	1-1/4"	3/8"
Fractional	3/8"	4	1-1/4"	3/8"
Fractional	7/16"	4	1/2"	7/16"
Fractional	7/16"	4	1/2"	7/16"
Fractional	7/16"	4	1/2"	7/16"

Fractional	7/16"	4	1"	7/16"
Fractional	7/16"	4	1"	7/16"
Fractional	7/16"	4	1"	7/16"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"

Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"

Fractional	1/2"	4	1-1/4"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	1/2"	4	1-1/4"	1/2"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"

Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"

Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"

Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1-5/8"	3/4"
Fractional	3/4"	4	1-5/8"	3/4"
Fractional	3/4"	4	1-5/8"	3/4"

Fractional	3/4"	4	1-5/8"	3/4"
Fractional	3/4"	4	1-5/8"	3/4"
Fractional	3/4"	4	1-5/8"	3/4"
Fractional	3/4"	4	1-5/8"	3/4"
Fractional	3/4"	4	1-5/8"	3/4"
Fractional	3/4"	4	1-5/8"	3/4"
Fractional	3/4"	4	1-5/8"	3/4"
Fractional	3/4"	4	1-5/8"	3/4"
Fractional	3/4"	4	1-5/8"	3/4"
Fractional	3/4"	4	1-5/8"	3/4"

Fractional	3/4"	4	1-5/8"	3/4"
Fractional	3/4"	4	1-5/8"	3/4"
Fractional	3/4"	4	1-5/8"	3/4"
Fractional	3/4"	4	1-5/8"	3/4"
Fractional	1"	4	2-1/4"	1"
Fractional	1"	4	2-1/4"	1"
Fractional	1"	4	2-1/4"	1"
Fractional	1"	4	2-1/4"	1"
Fractional	1"	4	2-1/4"	1"

Fractional	1"	4	2-1/4"	1"
Fractional	1"	4	2-1/4"	1"
Fractional	1"	4	2-1/4"	1"
Fractional	1/8"	4	1/2"	1/8"
Fractional	1/8"	4	1/2"	1/8"
Fractional	3/16"	4	3/4"	3/16"
Fractional	3/16"	4	3/4"	3/16"
Fractional	3/16"	4	3/4"	3/16"
Fractional	1/4"	4	1-1/4"	1/4"
Fractional	1/4"	4	1-1/4"	1/4"

Fractional	1/4"	4	1-1/4"	1/4"
Fractional	5/16"	4	1-1/4"	5/16"
Fractional	5/16"	4	1-1/4"	5/16"
Fractional	5/16"	4	1-1/4"	5/16"
Fractional	5/16"	4	1-1/4"	5/16"
Fractional	3/8"	4	1-1/2"	3/8"
Fractional	3/8"	4	1-1/2"	3/8"
Fractional	3/8"	4	1-1/2"	3/8"
Fractional	3/8"	4	1-1/2"	3/8"

Fractional	7/16"	4	2"	7/16"
Fractional	7/16"	4	2"	7/16"
Fractional	7/16"	4	2"	7/16"
Fractional	1/2"	4	2"	1/2"
Fractional	1/2"	4	2"	1/2"
Fractional	1/2"	4	2"	1/2"
Fractional	1/2"	4	2"	1/2"
Fractional	1/2"	4	2"	1/2"
Fractional	1/2"	4	2"	1/2"

Fractional	1/2"	4	2"	1/2"
Fractional	1/2"	4	2"	1/2"
Fractional	5/8"	4	2-1/4"	5/8"

Fractional	5/8"	4	2-1/4"	5/8"
Fractional	5/8"	4	2-1/4"	5/8"
Fractional	5/8"	4	2-1/4"	5/8"
Fractional	5/8"	4	2-1/4"	5/8"
Fractional	5/8"	4	2-1/4"	5/8"
Fractional	5/8"	4	2-1/4"	5/8"
Fractional	5/8"	4	2-1/4"	5/8"
Fractional	3/4"	4	2-1/4"	3/4"
Fractional	3/4"	4	2-1/4"	3/4"
Fractional	3/4"	4	2-1/4"	3/4"
Fractional	3/4"	4	2-1/4"	3/4"
Fractional	3/4"	4	2-1/4"	3/4"
Fractional	3/4"	4	2-1/4"	3/4"
Fractional	3/4"	4	2-1/4"	3/4"

Fractional	3/4"	4	2-1/4"	3/4"
Fractional	1"	4	3"	1"
Fractional	1"	4	3"	1"
Fractional	1"	4	3"	1"
Fractional	1"	4	3"	1"
Fractional	1"	4	3"	1"
Fractional	1"	4	3"	1"
Fractional	1"	4	3"	1"
Fractional	1"	4	3"	1"
Fractional	1/4"	4	1-3/4"	1/4"
Fractional	1/4"	4	1-3/4"	1/4"
Fractional	1/4"	4	1-3/4"	1/4"
Fractional	5/16"	4	1-3/4"	5/16"
Fractional	5/16"	4	1-3/4"	5/16"
Fractional	5/16"	4	1-3/4"	5/16"
Fractional	5/16"	4	1-3/4"	5/16"
Fractional	3/8"	4	2-1/2"	3/8"
Fractional	3/8"	4	2-1/2"	3/8"
Fractional	3/8"	4	2-1/2"	3/8"
Fractional	3/8"	4	2-1/2"	3/8"
Fractional	1/2"	4	3"	1/2"

Fractional	1/2"	4	3"	1/2"
Fractional	1/2"	4	3"	1/2"
Fractional	1/2"	4	3"	1/2"
Fractional	1/2"	4	3"	1/2"
Fractional	1/2"	4	3"	1/2"
Fractional	1/2"	4	3"	1/2"
Fractional	1/2"	4	3"	1/2"
Fractional	5/8"	4	3"	5/8"
Fractional	5/8"	4	3"	5/8"
Fractional	5/8"	4	3"	5/8"
Fractional	5/8"	4	3"	5/8"
Fractional	5/8"	4	3"	5/8"
Fractional	5/8"	4	3"	5/8"
Fractional	5/8"	4	3"	5/8"
Fractional	5/8"	4	3"	5/8"
Fractional	5/8"	4	3"	5/8"
Fractional	3/4"	4	3"	3/4"
Fractional	3/4"	4	3"	3/4"
Fractional	3/4"	4	3"	3/4"
Fractional	3/4"	4	3"	3/4"
Fractional	3/4"	4	3"	3/4"
Fractional	3/4"	4	3"	3/4"

Fractional	3/4"	4	3"	3/4"
Fractional	3/4"	4	3"	3/4"
Fractional	1"	4	4-1/8"	1"
Fractional	1"	4	4-1/8"	1"
Fractional	1"	4	4-1/8"	1"
Fractional	1"	4	4-1/8"	1"
Fractional	1"	4	4-1/8"	1"
Fractional	1"	4	4-1/8"	1"
Fractional	3/4"	4	4-1/8"	3/4"
Fractional	3/4"	4	4-1/8"	3/4"
Fractional	3/4"	4	4-1/8"	3/4"
Fractional	3/4"	4	4-1/8"	3/4"
Fractional	3/4"	4	4-1/8"	3/4"
Fractional	3/4"	4	4-1/8"	3/4"



## 4 FLUTE SOLID CARBIDE END MILLS



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"

Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1"	4	1-1/4"	1"
Fractional	1/8"	4	3/16"	1/8"
Fractional	1/8"	4	3/16"	1/8"
Fractional	1/8"	4	3/16"	1/8"
Fractional	1/8"	4	3/16"	1/8"
Fractional	3/16"	4	1/4"	3/16"
Fractional	3/16"	4	1/4"	3/16"
Fractional	3/16"	4	1/4"	3/16"
Fractional	3/16"	4	1/4"	3/16"
Fractional	3/16"	4	1/4"	3/16"
Fractional	3/16"	4	1/4"	3/16"
Fractional	1/4"	4	3/8"	1/4"
Fractional	1/4"	4	3/8"	1/4"
Fractional	1/4"	4	3/8"	1/4"
Fractional	1/4"	4	3/8"	1/4"

Fractional	1/4"	4	3/8"	1/4"
Fractional	1/4"	4	3/8"	1/4"
Fractional	1/4"	4	3/8"	1/4"
Fractional	1/4"	4	3/8"	1/4"
Fractional	5/16"	4	7/16"	5/16"
Fractional	5/16"	4	7/16"	5/16"
Fractional	5/16"	4	7/16"	5/16"
Fractional	3/8"	4	1/2"	3/8"
Fractional	3/8"	4	1/2"	3/8"
Fractional	3/8"	4	1/2"	3/8"
Fractional	3/8"	4	1/2"	3/8"
Fractional	3/8"	4	1/2"	3/8"
Fractional	3/8"	4	1/2"	3/8"
Fractional	3/8"	4	1/2"	3/8"
Fractional	3/8"	4	1/2"	3/8"
Fractional	3/8"	4	1/2"	3/8"
Fractional	3/8"	4	1/2"	3/8"
Fractional	3/8"	4	1/2"	3/8"
Fractional	3/8"	4	1/2"	3/8"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"

Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	1/2"	4	5/8"	1/2"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"

Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	5/8"	4	3/4"	5/8"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"

Fractional	3/4"	4	1"	3/4"
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Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"
Fractional	3/4"	4	1"	3/4"



## 3 FLUTE SOLID CARBIDE ROUGHING SINGLE END MILLS FOR ALUMINUM

**APPLICATIONS** For rapid stock removal in aluminum and aluminum alloys



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1/4"	3/4"	1/4"
Fractional	3/8"	7/8"	3/8"
Fractional	1/2"	1"	1/2"
Fractional	3/4"	1-1/2"	3/4"
Fractional	1"	2"	1"



## 3 FLUTE SOLID CARBIDE AL ROUGHING END MILLS FOR ALUMINUM

**APPLICATIONS** High helix 3 flute design ideal for rapid stock removal in aluminium alloys.



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Metric	6mm	20mm	6mm
Metric	8mm	20mm	8mm
Metric	10mm	25mm	10mm
Metric	14mm	30mm	14mm
Metric	16mm	30mm	16mm
Metric	18mm	35mm	18mm
Metric	20mm	38mm	20mm
Metric	25mm	50mm	25mm



## 4 FLUTE SOLID CARBIDE ROUGHING END MILLS

APPLICATIONS Chipbreaker end mill designed for aggressive milling of most materials. Allows high feed rates, reduce or eliminate chatter



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Metric	3.50mm	12mm	4mm
Metric	4.50mm	14mm	5mm
Metric	5.50mm	20mm	6mm
Metric	7mm	20mm	8mm



## 3 FLUTE SOLID CARBIDE SS END MILLS

Designed for milling stainless steel, titanium, inconel and other similar metals, where high cutting forces are generated



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Metric	3.50mm	3	12mm	4mm
Metric	3.50mm	3	12mm	4mm
Metric	4.50mm	3	14mm	5mm
Metric	4.50mm	3	14mm	5mm
Metric	5.50mm	3	20mm	6mm
Metric	5.50mm	3	20mm	6mm
Metric	7mm	3	20mm	8mm
Metric	7mm	3	20mm	8mm

## 3 FLUTE SOLID CARBIDE END MILLS



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Metric	3mm	3	6mm	3mm
Metric	3mm	3	6mm	3mm
Metric	3mm	3	6mm	3mm
Fractional	1/8"	3	1/4"	1/8"
Fractional	1/8"	3	1/4"	1/8"
Fractional	1/8"	3	1/4"	1/8"
Metric	3.50mm	3	7mm	4mm
Fractional	9/64"	3	5/16"	3/16"

Fractional	5/32"	3	5/16"	3/16"
Metric	4mm	3	8mm	4mm
Metric	4mm	3	8mm	4mm
Metric	4mm	3	8mm	4mm
Fractional	11/64"	3	3/8"	3/16"
Fractional	3/16"	3	3/8"	3/16"
Fractional	3/16"	3	3/8"	3/16"
Fractional	3/16"	3	3/8"	3/16"
Metric	5mm	3	11mm	5mm
Metric	5mm	3	11mm	5mm
Metric	5mm	3	11mm	5mm
Fractional	13/64"	3	1/2"	1/4"
Metric	5.50mm	3	12mm	6mm
Fractional	7/32"	3	1/2"	1/4"
Fractional	15/64"	3	1/2"	1/4"
Metric	6mm	3	13mm	6mm
Metric	6mm	3	13mm	6mm
Metric	6mm	3	13mm	6mm
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	1/2"	1/4"
Fractional	1/4"	3	1/2"	1/4"

Fractional	9/32"	3	1/2"	5/16"
Fractional	9/32"	3	1/2"	5/16"
Fractional	5/16"	3	1/2"	5/16"
Fractional	5/16"	3	1/2"	5/16"
Fractional	5/16"	3	1/2"	5/16"
Metric	8mm	3	13mm	8mm
Metric	8mm	3	13mm	8mm
Metric	8mm	3	13mm	8mm
Fractional	11/32"	3	1/2"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Fractional	3/8"	3	5/8"	3/8"
Metric	10mm	3	14mm	10mm
Metric	10mm	3	14mm	10mm
Metric	10mm	3	14mm	10mm
Fractional	13/32"	3	9/16"	7/16"
Fractional	7/16"	3	5/8"	7/16"
Fractional	7/16"	3	5/8"	7/16"
Fractional	7/16"	3	5/8"	7/16"
Fractional	15/32"	3	1/2"	1/2"
Metric	12mm	3	16mm	12mm

Metric	12mm	3	16mm	12mm
Metric	12mm	3	16mm	12mm
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	1/2"	3	5/8"	1/2"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Fractional	5/8"	3	3/4"	5/8"
Metric	16mm	3	20mm	16mm
Metric	16mm	3	20mm	16mm
Metric	16mm	3	20mm	16mm
Fractional	3/4"	3	1"	3/4"
Fractional	3/4"	3	1"	3/4"
Fractional	3/4"	3	1"	3/4"
Metric	20mm	3	25mm	20mm
Metric	20mm	3	25mm	20mm
Metric	20mm	3	25mm	20mm
Metric	20mm	3	25mm	20mm

## 4 FLUTE CHIPBREAKER MICROGRAIN 10% COBALT SOLID CARBIDE CENTER CUTTING ROUGHING SINGLE END MILLS



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1/8"	4	3/8"	1/8"
Fractional	5/32"	4	1/2"	3/16"
Fractional	3/16"	4	9/16"	3/16"
Fractional	7/32"	4	5/8"	1/4"
Fractional	1/4"	4	3/4"	1/4"
Fractional	9/32"	4	3/4"	5/16"
Fractional	5/16"	4	13/16"	5/16"
Fractional	3/8"	4	7/8"	3/8"
Fractional	7/16"	4	1"	7/16"
Fractional	1/2"	4	1"	1/2"

Fractional	9/16"	4	1-1/8"	9/16"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	3/4"	4	1-1/2"	3/4"
Fractional	7/8"	4	1-1/2"	7/8"
Fractional	1"	4	1-1/2"	1"
Fractional	1/8"	4	3/8"	1/8"
Fractional	3/16"	4	9/16"	3/16"
Fractional	1/4"	4	3/4"	1/4"
Fractional	3/8"	4	7/8"	3/8"
Fractional	7/16"	4	1"	7/16"
Fractional	1/2"	4	1"	1/2"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	3/4"	4	1-1/2"	3/4"



## 2 & 4 FLUTE MICROGRAIN SOLID CARBIDE BALL NOSE SINGLE END MILLS



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1/16"	2	3/16"	1/8"
Fractional	3/32"	2	3/8"	1/8"
Fractional	1/8"	2	1/2"	1/8"
Fractional	5/32"	2	9/16"	3/16"
Fractional	3/16"	2	5/8"	3/16"
Fractional	7/32"	2	5/8"	1/4"
Fractional	1/4"	2	3/4"	1/4"
Fractional	5/16"	2	13/16"	5/16"
Fractional	3/8"	2	7/8"	3/8"
Fractional	7/16"	2	7/8"	7/16"

Fractional	1/2"	2	1"	1/2"
Fractional	1/32"	2	5/64"	1/8"
Fractional	3/64"	2	7/64"	1/8"
Fractional	1/16"	2	3/16"	1/8"
Fractional	5/64"	2	15/64"	1/8"
Fractional	3/32"	2	9/32"	1/8"
Fractional	7/64"	2	21/64"	1/8"
Fractional	1/8"	2	3/8"	1/8"
Fractional	5/32"	2	1/2"	3/16"
Fractional	3/16"	2	9/16"	3/16"
Fractional	7/32"	2	5/8"	1/4"
Fractional	1/4"	2	3/4"	1/4"
Fractional	9/32"	2	3/4"	5/16"
Fractional	5/16"	2	13/16"	5/16"
Fractional	3/8"	2	7/8"	3/8"
Fractional	7/16"	2	1"	7/16"
Fractional	1/2"	2	1"	1/2"
Fractional	5/8"	2	1-1/4"	5/8"
Fractional	3/4"	2	1-1/2"	3/4"
Fractional	7/8"	2	1-1/2"	1"
Fractional	1"	2	1-1/2"	1"

Fractional	1/32"	2	3/32"	1/8"
Fractional	1/16"	2	3/16"	1/8"
Fractional	3/32"	2	3/8"	1/8"
Fractional	1/8"	2	1/2"	1/8"
Fractional	5/32"	2	9/16"	3/16"
Fractional	3/16"	2	5/8"	3/16"
Fractional	1/4"	2	3/4"	1/4"
Fractional	1/8"	2	3/8"	1/8"
Fractional	3/16"	2	9/16"	3/16"
Fractional	1/4"	2	3/4"	1/4"
Fractional	3/8"	2	7/8"	3/8"
Fractional	7/16"	2	1"	7/16"
Fractional	1/2"	2	1"	1/2"
Fractional	5/8"	2	1-1/4"	5/8"
Fractional	3/4"	2	1-1/2"	3/4"
Fractional	1"	2	1-1/2"	1"
Fractional	1/8"	2	3/8"	1/8"
Fractional	3/16"	2	9/16"	3/16"
Fractional	1/4"	2	3/4"	1/4"
Fractional	5/16"	2	13/16"	5/16"
Fractional	3/8"	2	7/8"	3/8"

Fractional	7/16"	2	1"	7/16"
Fractional	1/2"	2	1"	1/2"
Fractional	5/8"	2	1-1/4"	5/8"
Fractional	3/4"	2	1-1/2"	3/4"
Fractional	1"	2	1-1/2"	1"
Fractional	1/32"	2	3/32"	1/8"
Fractional	1/16"	2	3/16"	1/8"
Fractional	3/32"	2	3/8"	1/8"
Fractional	1/8"	2	1/2"	1/8"
Fractional	5/32"	2	9/16"	3/16"
Fractional	3/16"	2	5/8"	3/16"
Fractional	1/4"	2	3/4"	1/4"
Fractional	3/8"	2	1"	3/8"
Fractional	1/2"	2	1"	1/2"
Fractional	1/16"	4	3/16"	1/8"
Fractional	3/32"	4	3/8"	1/8"
Fractional	1/8"	4	1/2"	1/8"
Fractional	5/32"	4	9/16"	3/16"
Fractional	3/16"	4	5/8"	3/16"
Fractional	7/32"	4	5/8"	1/4"
Fractional	1/4"	4	3/4"	1/4"

Fractional	9/32"	4	3/4"	5/16"
Fractional	5/16"	4	13/16"	5/16"
Fractional	3/8"	4	7/8"	3/8"
Fractional	1/2"	4	1"	1/2"
Fractional	1/32"	4	5/64"	1/8"
Fractional	3/64"	4	7/64"	1/8"
Fractional	1/16"	4	3/16"	1/8"
Fractional	5/64"	4	15/64"	1/8"
Fractional	3/32"	4	9/32"	1/8"
Fractional	7/64"	4	21/64"	1/8"
Fractional	1/8"	4	3/8"	1/8"
Fractional	5/32"	4	1/2"	3/16"
Fractional	3/16"	4	9/16"	3/16"
Fractional	7/32"	4	5/8"	1/4"
Fractional	1/4"	4	3/4"	1/4"
Fractional	9/32"	4	3/4"	5/16"
Fractional	5/16"	4	13/16"	5/16"
Fractional	3/8"	4	7/8"	3/8"
Fractional	7/16"	4	1"	7/16"
Fractional	1/2"	4	1"	1/2"
Fractional	9/16"	4	1-1/8"	9/16"

Fractional	5/8"	4	1-1/4"	5/8"
Fractional	3/4"	4	1-1/2"	3/4"



## 4 FLUTE CNC MICROGRAIN SOLID CARBIDE SINGLE END MILLS



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1/16"	4	3/16"	1/8"
Fractional	5/64"	4	15/64"	1/8"
Fractional	3/32"	4	9/32"	1/8"
Fractional	7/64"	4	21/64"	1/8"
Fractional	1/8"	4	3/8"	1/8"
Fractional	5/32"	4	1/2"	3/16"
Fractional	3/16"	4	9/16"	3/16"
Fractional	7/32"	4	5/8"	1/4"
Fractional	1/4"	4	3/4"	1/4"
Fractional	9/32"	4	3/4"	5/16"

Fractional	5/16"	4	13/16"	5/16"
Fractional	3/8"	4	7/8"	3/8"
Fractional	1/2"	4	1"	1/2"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	11/16"	4	1-1/2"	3/4"
Fractional	3/4"	4	1-1/2"	3/4"
Fractional	1"	4	1-1/2"	1"

## 4 FLUTE METRIC MICROGRAIN SOLID CARBIDE SINGLE END MILLS



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Metric	2mm	4	8mm	3mm
Metric	2.50mm	4	9.50mm	3mm
Metric	3mm	4	12mm	3mm
Metric	3.50mm	4	12mm	4mm
Metric	4mm	4	14mm	4mm
Metric	4.50mm	4	16mm	5mm
Metric	5mm	4	16mm	5mm

Metric	6mm	4	19mm	6mm
Metric	7mm	4	19mm	8mm
Metric	8mm	4	20mm	8mm
Metric	9mm	4	22mm	9mm
Metric	10mm	4	22mm	10mm
Metric	11mm	4	25mm	11mm
Metric	12mm	4	25mm	12mm
Metric	14mm	4	32mm	14mm
Metric	18mm	4	38mm	18mm
Metric	20mm	4	38mm	20mm
Metric	2mm	4	9mm	3mm
Metric	2.50mm	4	12mm	3mm
Metric	3mm	4	12mm	3mm
Metric	3.50mm	4	12mm	4mm
Metric	4mm	4	14mm	4mm
Metric	4.50mm	4	14mm	5mm
Metric	5mm	4	20mm	5mm
Metric	6mm	4	20mm	6mm
Metric	7mm	4	20mm	8mm
Metric	8mm	4	20mm	8mm
Metric	9mm	4	20mm	9mm

Metric	10mm	4	25mm	10mm
Metric	12mm	4	25mm	12mm
Metric	14mm	4	30mm	14mm
Metric	16mm	4	30mm	16mm
Metric	18mm	4	35mm	18mm
Metric	20mm	4	38mm	20mm



## 4 FLUTE MICROGRAIN LONG LENGTH SOLID CARBIDE SINGLE END MILLS

APPLICATIONS Deep pocket milling Long length provides access at greater depths



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1/8"	4	1"	1/8"
Fractional	3/16"	4	1-1/8"	3/16"
Fractional	1/4"	4	1-1/4"	1/4"
Fractional	5/16"	4	1-3/8"	5/16"
Fractional	3/8"	4	1-1/2"	3/8"
Fractional	7/16"	4	1-3/4"	7/16"
Fractional	1/2"	4	2"	1/2"
Fractional	5/8"	4	2-1/2"	5/8"
Fractional	3/4"	4	3"	3/4"
Fractional	1"	4	3"	1"

## 4 FLUTE SOLID CARBIDE END MILLS

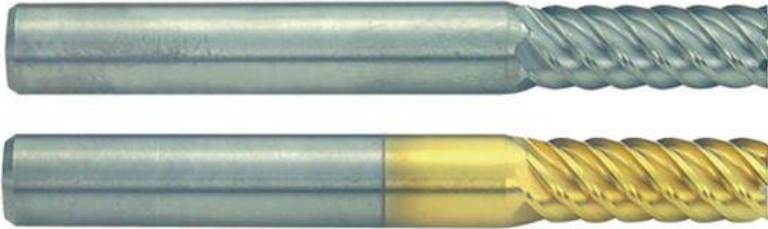


<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1/8"	4	1/4"	1/8"
Fractional	1/8"	4	3/8"	1/8"
Fractional	3/16"	4	3/8"	3/16"
Fractional	3/16"	4	5/8"	3/16"
Fractional	1/4"	4	3/8"	1/4"
Fractional	1/4"	4	3/4"	1/4"
Fractional	5/16"	4	1/2"	5/16"
Fractional	5/16"	4	13/16"	5/16"
Fractional	3/8"	4	1/2"	3/8"
Fractional	3/8"	4	7/8"	3/8"
Fractional	1/2"	4	5/8"	1/2"

Fractional	1/2"	4	1-1/4"	1/2"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	3/4"	4	1-1/2"	3/4"
Metric	2mm	4	8mm	6mm
Metric	4mm	4	11mm	6mm
Metric	5mm	4	13mm	6mm
Metric	6mm	4	13mm	6mm
Metric	8mm	4	19mm	8mm
Metric	10mm	4	22mm	10mm
Metric	12mm	4	26mm	12mm
Metric	16mm	4	32mm	16mm



## 6 FLUTE 60° HIGH HELIX MICROGRAIN SOLID CARBIDE SINGLE END MILLS



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	3/16"	6	9/16"	3/16"
Fractional	7/32"	6	5/8"	1/4"
Fractional	1/4"	6	3/4"	1/4"
Fractional	5/16"	6	13/16"	5/16"
Fractional	1/2"	6	1"	1/2"
Fractional	1/8"	6	3/8"	1/8"
Fractional	5/32"	6	1/2"	3/16"
Fractional	3/16"	6	9/16"	3/16"

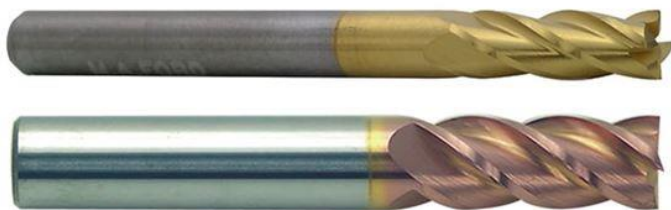
Fractional	7/32"	6	5/8"	1/4"
Fractional	1/4"	6	3/4"	1/4"
Fractional	3/8"	6	7/8"	3/8"
Fractional	7/16"	6	1"	7/16"
Fractional	1/2"	6	1"	1/2"
Fractional	1"	6	1-1/2"	1"
Fractional	1"	6	1-1/2"	1"
Metric	3mm	6	12mm	3mm
Metric	3mm	6	12mm	3mm
Metric	4mm	6	14mm	4mm
Metric	4mm	6	14mm	4mm
Metric	5mm	6	20mm	5mm
Metric	5mm	6	20mm	5mm
Metric	6mm	6	20mm	6mm
Metric	6mm	6	20mm	6mm
Metric	8mm	6	20mm	8mm
Metric	8mm	6	20mm	8mm
Metric	9mm	6	20mm	9mm
Metric	9mm	6	20mm	9mm
Metric	10mm	6	25mm	10mm
Metric	10mm	6	25mm	10mm

Metric	11mm	6	25mm	11mm
Metric	11mm	6	25mm	11mm
Metric	12mm	6	25mm	12mm
Metric	12mm	6	25mm	12mm
Metric	14mm	6	30mm	14mm
Metric	14mm	6	30mm	14mm
Fractional	9/16"	6	1-1/8"	9/16"
Fractional	9/16"	6	1-1/8"	9/16"
Fractional	5/8"	6	1-1/4"	5/8"
Fractional	5/8"	6	1-1/4"	5/8"
Metric	16mm	6	30mm	16mm
Metric	16mm	6	30mm	16mm
Metric	18mm	6	35mm	18mm
Metric	18mm	6	35mm	18mm
Fractional	3/4"	6	1-1/2"	3/4"
Fractional	3/4"	6	1-1/2"	3/4"
Metric	20mm	6	38mm	20mm
Metric	20mm	6	38mm	20mm
Metric	22mm	6	40mm	22mm
Metric	22mm	6	40mm	22mm
Fractional	7/8"	6	1-1/2"	7/8"

Fractional	7/8"	6	1-1/2"	7/8"
Metric	25mm	6	40mm	25mm
Metric	25mm	6	40mm	25mm



## 4 FLUTE MICROGRAIN SOLID CARBIDE COATED SINGLE END MILLS



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1/32"	4	3/32"	1/8"
Fractional	3/64"	4	1/8"	1/8"

Fractional	1/16"	4	3/16"	1/8"
Fractional	5/64"	4	3/16"	1/8"
Fractional	3/32"	4	3/8"	1/8"
Fractional	1/8"	4	1/2"	1/8"
Fractional	9/64"	4	9/16"	3/16"
Fractional	5/32"	4	9/16"	3/16"
Fractional	11/64"	4	9/16"	3/16"
Fractional	3/16"	4	5/8"	3/16"
Fractional	13/64"	4	5/8"	1/4"
Fractional	7/32"	4	5/8"	1/4"
Fractional	15/64"	4	3/4"	1/4"
Fractional	1/4"	4	3/4"	1/4"
Fractional	17/64"	4	3/4"	5/16"
Fractional	9/32"	4	3/4"	5/16"
Fractional	5/16"	4	13/16"	5/16"

Fractional	21/64"	4	7/8"	3/8"
Fractional	11/32"	4	7/8"	3/8"
Fractional	3/8"	4	1"	3/8"
Fractional	13/32"	4	1"	7/16"
Fractional	7/16"	4	1"	7/16"
Fractional	1/2"	4	1"	1/2"
Fractional	9/16"	4	1-1/4"	9/16"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	3/4"	4	1-1/2"	3/4"
Fractional	1"	4	1-1/2"	1"
Fractional	7/8"	4	1-1/2"	7/8"
Fractional	7/8"	4	1-1/2"	7/8"
Fractional	1/8"	4	3/8"	1/8"
Fractional	1/8"	4	3/8"	1/8"
Fractional	3/16"	4	5/8"	3/16"
Fractional	3/16"	4	9/16"	3/16"
Fractional	1/4"	4	3/4"	1/4"

Fractional	1/4"	4	3/4"	1/4"
Fractional	5/16"	4	13/16"	5/16"
Fractional	5/16"	4	13/16"	5/16"
Fractional	3/8"	4	1"	3/8"
Fractional	3/8"	4	1"	3/8"
Fractional	7/16"	4	1"	7/16"
Fractional	7/16"	4	1"	7/16"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	3/4"	4	1-1/2"	3/4"
Fractional	3/4"	4	1-1/2"	3/4"
Fractional	1"	4	1-1/2"	1"
Fractional	1/8"	4	3/8"	1/8"
Fractional	3/16"	4	9/16"	3/16"
Fractional	1/4"	4	3/4"	1/4"
Fractional	5/16"	4	13/16"	5/16"
Fractional	3/8"	4	1"	3/8"
Fractional	7/16"	4	1"	7/16"
Fractional	1/2"	4	1"	1/2"

Fractional	5/8"	4	1-1/4"	5/8"
Fractional	3/4"	4	1-1/2"	3/4"



## METRIC STUB LENGTH MICROGRAIN 10% COBALT SOLID CARBIDE SINGLE END MILLS



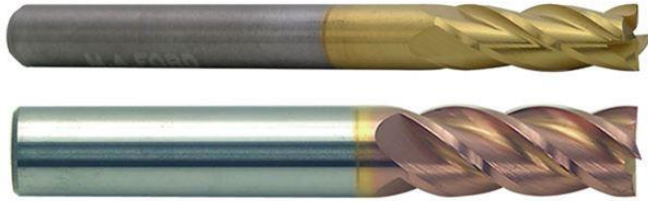
<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Metric	1mm	2	2mm	3mm
Metric	1.50mm	2	3mm	3mm
Metric	2mm	2	4mm	3mm
Metric	2.50mm	2	5mm	3mm
Metric	3mm	2	6mm	3mm
Metric	4mm	2	8mm	4mm
Metric	4.50mm	2	9mm	5mm
Metric	5mm	2	11mm	5mm
Metric	6mm	2	13mm	6mm
Metric	7mm	2	13mm	8mm

Metric	8mm	2	13mm	8mm
Metric	9mm	2	14mm	9mm
Metric	10mm	2	14mm	10mm
Metric	12mm	2	16mm	12mm
Metric	14mm	2	18mm	14mm
Metric	16mm	2	20mm	16mm
Metric	1mm	3	2mm	3mm
Metric	1.50mm	3	3mm	3mm
Metric	2mm	3	4mm	3mm
Metric	2.50mm	3	5mm	3mm
Metric	3mm	3	6mm	3mm
Metric	4mm	3	8mm	4mm
Metric	4.50mm	3	9mm	5mm
Metric	5mm	3	11mm	5mm
Metric	6mm	3	13mm	6mm
Metric	7mm	3	13mm	8mm
Metric	8mm	3	13mm	8mm
Metric	10mm	3	14mm	10mm
Metric	12mm	3	16mm	12mm
Metric	14mm	3	18mm	14mm
Metric	16mm	3	20mm	16mm

Metric	18mm	3	20mm	18mm
Metric	1mm	4	2mm	3mm
Metric	1.50mm	4	3mm	3mm
Metric	2.50mm	4	5mm	3mm
Metric	3mm	4	6mm	3mm
Metric	4mm	4	8mm	4mm
Metric	4.50mm	4	9mm	5mm
Metric	5mm	4	11mm	5mm
Metric	6mm	4	13mm	6mm
Metric	7mm	4	13mm	8mm
Metric	8mm	4	13mm	8mm
Metric	9mm	4	14mm	9mm
Metric	10mm	4	14mm	10mm
Metric	11mm	4	16mm	11mm
Metric	12mm	4	16mm	12mm
Metric	14mm	4	18mm	14mm
Metric	16mm	4	20mm	16mm
Metric	18mm	4	20mm	18mm



## 4 FLUTE MICROGRAIN SOLID CARBIDE COATED SINGLE END MILLS



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1/32"	4	3/32"	1/8"
Fractional	3/64"	4	1/8"	1/8"
Fractional	1/16"	4	3/16"	1/8"
Fractional	5/64"	4	3/16"	1/8"
Fractional	3/32"	4	3/8"	1/8"
Fractional	1/8"	4	1/2"	1/8"
Fractional	9/64"	4	9/16"	3/16"
Fractional	5/32"	4	9/16"	3/16"

Fractional	11/64"	4	9/16"	3/16"
Fractional	3/16"	4	5/8"	3/16"
Fractional	13/64"	4	5/8"	1/4"
Fractional	7/32"	4	5/8"	1/4"
Fractional	15/64"	4	3/4"	1/4"
Fractional	1/4"	4	3/4"	1/4"
Fractional	17/64"	4	3/4"	5/16"
Fractional	9/32"	4	3/4"	5/16"
Fractional	5/16"	4	13/16"	5/16"
Fractional	21/64"	4	7/8"	3/8"
Fractional	11/32"	4	7/8"	3/8"
Fractional	3/8"	4	1"	3/8"
Fractional	13/32"	4	1"	7/16"
Fractional	7/16"	4	1"	7/16"
Fractional	1/2"	4	1"	1/2"

Fractional	9/16"	4	1-1/4"	9/16"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	3/4"	4	1-1/2"	3/4"
Fractional	1"	4	1-1/2"	1"
Fractional	7/8"	4	1-1/2"	7/8"
Fractional	7/8"	4	1-1/2"	7/8"
Fractional	1/8"	4	3/8"	1/8"
Fractional	1/8"	4	3/8"	1/8"
Fractional	3/16"	4	5/8"	3/16"
Fractional	3/16"	4	9/16"	3/16"
Fractional	1/4"	4	3/4"	1/4"
Fractional	1/4"	4	3/4"	1/4"
Fractional	5/16"	4	13/16"	5/16"
Fractional	5/16"	4	13/16"	5/16"
Fractional	3/8"	4	1"	3/8"
Fractional	3/8"	4	1"	3/8"
Fractional	7/16"	4	1"	7/16"
Fractional	7/16"	4	1"	7/16"
Fractional	1/2"	4	1"	1/2"
Fractional	1/2"	4	1"	1/2"

Fractional	5/8"	4	1-1/4"	5/8"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	3/4"	4	1-1/2"	3/4"
Fractional	3/4"	4	1-1/2"	3/4"
Fractional	1"	4	1-1/2"	1"
Fractional	1/8"	4	3/8"	1/8"
Fractional	3/16"	4	9/16"	3/16"
Fractional	1/4"	4	3/4"	1/4"
Fractional	5/16"	4	13/16"	5/16"
Fractional	3/8"	4	1"	3/8"
Fractional	7/16"	4	1"	7/16"
Fractional	1/2"	4	1"	1/2"
Fractional	5/8"	4	1-1/4"	5/8"
Fractional	3/4"	4	1-1/2"	3/4"

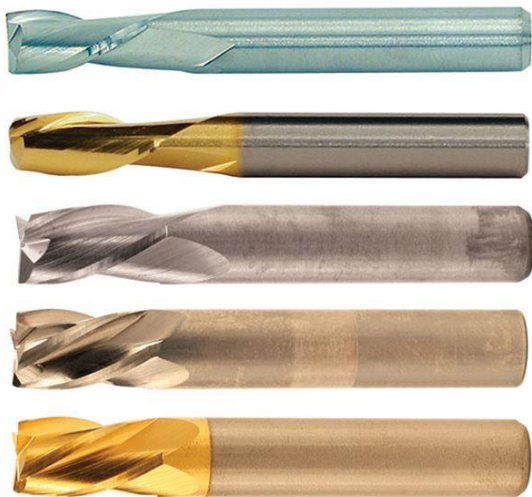


## 2, 3 & 4 FLUTE STUB LENGTH

### SOLID CARBIDE SINGLE

### END MILLS MICROGRAIN

### 10% COBALT



<u>SIZE TYPE</u>	<u>SIZE</u>	<u>NO. OF FLUTES</u>	<u>LENGTH OF CUT</u>	<u>SHANK DIAMETER</u>
Fractional	1/64"	3	.023"	1/8"
Fractional	1/32"	3	1/16"	1/8"
Fractional	1/16"	3	1/8"	1/8"
Fractional	3/32"	3	3/16"	1/8"

Fractional	7/64"	3	7/32"	1/8"
Fractional	1/8"	3	1/4"	1/8"
Fractional	5/32"	3	5/16"	3/16"
Fractional	3/16"	3	3/8"	3/16"
Fractional	7/32"	3	1/2"	1/4"
Fractional	1/4"	3	1/2"	1/4"
Fractional	3/8"	3	9/16"	3/8"
Fractional	7/16"	3	5/8"	7/16"
Fractional	1/2"	3	5/8"	1/2"
Fractional	5/8"	3	3/4"	5/8"
Fractional	1/64"	4	.023"	1/8"
Fractional	1/32"	4	1/16"	1/8"
Fractional	3/64"	4	3/32"	1/8"
Fractional	1/16"	4	1/8"	1/8"
Fractional	5/64"	4	5/32"	1/8"
Fractional	3/32"	4	3/16"	1/8"
Fractional	7/64"	4	7/32"	1/8"
Fractional	1/8"	4	1/4"	1/8"
Fractional	5/32"	4	5/16"	3/16"
Fractional	3/16"	4	3/8"	3/16"
Fractional	7/32"	4	1/2"	1/4"

Fractional	1/4"	4	1/2"	1/4"
Fractional	5/16"	4	1/2"	5/16"
Fractional	3/8"	4	9/16"	3/8"
Fractional	7/16"	4	5/8"	7/16"
Fractional	1/2"	4	5/8"	1/2"
Fractional	5/8"	4	3/4"	5/8"
Fractional	3/4"	4	1"	3/4"
Fractional	1/8"	4	1/4"	1/8"
Fractional	3/16"	4	3/8"	3/16"
Fractional	1/4"	4	1/2"	1/4"
Fractional	5/16"	4	1/2"	5/16"
Fractional	3/8"	4	9/16"	3/8"
Fractional	7/16"	4	5/8"	7/16"
Fractional	1/2"	4	5/8"	1/2"
Fractional	5/8"	4	3/4"	5/8"

## 6 FLUTE HIGH SPEED STEEL COUNTERSINKS



<u>SIZE</u>	<u>INCLUDED ANGLE</u>	<u>SHANK DIAMETER</u>	<u>TOOL MATERIAL</u>
1/8"	60°	1/8"	High Speed Steel
3/16"	60°	3/16"	High Speed Steel
1/4"	60°	1/4"	High Speed Steel
5/16"	60°	1/4"	High Speed Steel
3/8"	60°	1/4"	High Speed Steel
1/2"	60°	3/8"	High Speed Steel
5/8"	60°	3/8"	High Speed Steel

3/4"	60°	1/2"	High Speed Steel
7/8"	60°	1/2"	High Speed Steel
1"	60°	1/2"	High Speed Steel
1-1/4"	60°	1/2"	High Speed Steel
1-1/2"	60°	3/4"	High Speed Steel
2"	60°	3/4"	High Speed Steel
2-1/2"	60°	3/4"	High Speed Steel
3"	60°	3/4"	High Speed Steel
1/8"	82°	1/8"	High Speed Steel
3/16"	82°	3/16"	High Speed Steel
1/4"	82°	1/4"	High Speed Steel
5/16"	82°	1/4"	High Speed Steel
3/8"	82°	1/4"	High Speed Steel
1/2"	82°	3/8"	High Speed Steel
5/8"	82°	3/8"	High Speed Steel

3/4"	82°	1/2"	High Speed Steel
7/8"	82°	1/2"	High Speed Steel
1"	82°	1/2"	High Speed Steel
1-1/4"	82°	1/2"	High Speed Steel
1-1/2"	82°	3/4"	High Speed Steel
2"	82°	3/4"	High Speed Steel
2-1/2"	82°	3/4"	High Speed Steel
3"	82°	3/4"	High Speed Steel
1/8"	90°	1/8"	High Speed Steel
3/16"	90°	3/16"	High Speed Steel
1/4"	90°	1/4"	High Speed Steel
5/16"	90°	1/4"	High Speed Steel
3/8"	90°	1/4"	High Speed Steel
1/2"	90°	3/8"	High Speed Steel
5/8"	90°	3/8"	High Speed Steel

3/4"	90°	1/2"	High Speed Steel
7/8"	90°	1/2"	High Speed Steel
1"	90°	1/2"	High Speed Steel
1-1/4"	90°	1/2"	High Speed Steel
1-1/2"	90°	3/4"	High Speed Steel
2"	90°	3/4"	High Speed Steel
2-1/2"	90°	3/4"	High Speed Steel
3"	90°	3/4"	High Speed Steel
1/8"	100°	1/8"	High Speed Steel
3/16"	100°	3/16"	High Speed Steel
1/4"	100°	1/4"	High Speed Steel
5/16"	100°	1/4"	High Speed Steel
3/8"	100°	1/4"	High Speed Steel
1/2"	100°	3/8"	High Speed Steel
5/8"	100°	3/8"	High Speed Steel

3/4"	100°	1/2"	High Speed Steel
7/8"	100°	1/2"	High Speed Steel
1"	100°	1/2"	High Speed Steel
1-1/4"	100°	1/2"	High Speed Steel
1-1/2"	100°	3/4"	High Speed Steel
2"	100°	3/4"	High Speed Steel
1/8"	120°	1/8"	High Speed Steel
3/16"	120°	3/16"	High Speed Steel
1/4"	120°	1/4"	High Speed Steel
5/16"	120°	1/4"	High Speed Steel
3/8"	120°	1/4"	High Speed Steel
1/2"	120°	3/8"	High Speed Steel
5/8"	120°	3/8"	High Speed Steel
3/4"	120°	1/2"	High Speed Steel
7/8"	120°	1/2"	High Speed Steel

1"	120°	1/2"	High Speed Steel
1-1/4"	120°	1/2"	High Speed Steel
1-1/2"	120°	3/4"	High Speed Steel
2"	120°	3/4"	High Speed Steel

## 6 FLUTE SOLID CARBIDE COUNTERSINKS



<u>SIZE</u>	<u>INCLUDED ANGLE</u>	<u>SHANK DIAMETER</u>
1/8"	60°	1/8"
3/16"	60°	3/16"
1/4"	60°	1/4"
3/8"	60°	1/4"
1/2"	60°	3/8"
5/8"	60°	3/8"
3/4"	60°	1/2"
1"	60°	1/2"
1-1/4"	60°	1/2"
1-1/2"	60°	3/4"
1/8"	82°	1/8"

3/16"	82°	3/16"
1/4"	82°	1/4"
3/8"	82°	1/4"
1/2"	82°	3/8"
5/8"	82°	3/8"
3/4"	82°	1/2"
1"	82°	1/2"
1- 1/4"	82°	1/2"
1- 1/2"	82°	3/4"
1/8"	90°	1/8"
3/16"	90°	3/16"
1/4"	90°	1/4"
3/8"	90°	1/4"
1/2"	90°	3/8"
5/8"	90°	3/8"
3/4"	90°	1/2"
1"	90°	1/2"
1- 1/4"	90°	1/2"
1- 1/2"	90°	3/4"
1/8"	100°	1/8"
3/16"	100°	3/16"

1/4"	100°	1/4"
3/8"	100°	1/4"
1/2"	100°	3/8"
5/8"	100°	3/8"
3/4"	100°	1/2"
1"	100°	1/2"
1/8"	120°	1/8"
3/16"	120°	3/16"
1/4"	120°	1/4"
3/8"	120°	1/4"
1/2"	120°	3/8"
5/8"	120°	3/8"
3/4"	120°	1/2"
1"	120°	1/2"

## SOLID CARBIDE CORNER ROUNDING END MILLS



<u>RADIUS R</u>	<u>LARGEST DIAMETER</u>	<u>NO. OF FLUTES</u>	<u>SHANK DIAMETER</u>
1/32"	3/16"	3	3/16"
1/16"	1/4"	3	1/4"
3/32"	3/8"	3	3/8"
1/8"	1/2"	3	1/2"
5/32"	5/8"	3	5/8"
3/16"	3/4"	3	3/4"
1/4"	1"	3	1"

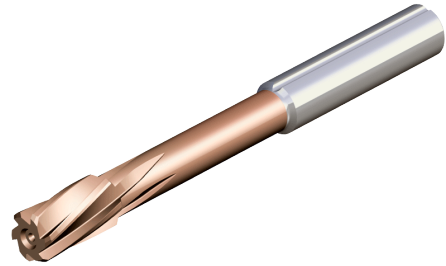
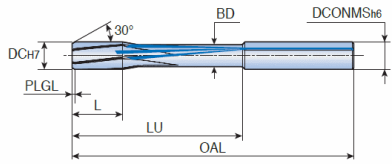
1/32"	3/16"	4	3/16"
1/16"	1/4"	4	1/4"
3/32"	3/8"	4	3/8"
1/8"	1/2"	4	1/2"
5/32"	5/8"	4	5/8"
3/16"	3/4"	4	3/4"
1/4"	1"	4	1"

## SOLID CARBIDE CORNER ROUNDING END MILLS ...Double ended



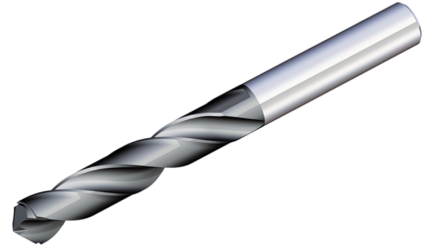
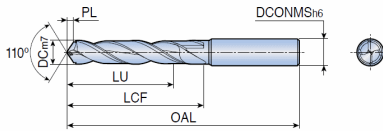
<u>RADIUS R</u>	<u>LARGEST DIAMETER</u>	<u>NO. OF FLUTES</u>	<u>SHANK DIAMETER</u>
.0100"	3/16"	4	3/16"
.0100"	3/16"	4	3/16"
.0100"	3/16"	4	3/16"
.0150"	3/16"	4	3/16"
.0150"	3/16"	4	3/16"
.0150"	3/16"	4	3/16"
.0200"	3/16"	4	3/16"
.0200"	3/16"	4	3/16"
.0200"	3/16"	4	3/16"
.0250"	3/16"	4	3/16"
.0250"	3/16"	4	3/16"

.0250"	3/16"	4	3/16"
1/32"	3/16"	4	3/16"
1/32"	3/16"	4	3/16"
1/32"	3/16"	4	3/16"
.0350"	3/16"	4	3/16"
.0350"	3/16"	4	3/16"
.0350"	3/16"	4	3/16"
.0400"	1/4"	4	1/4"
.0400"	1/4"	4	1/4"



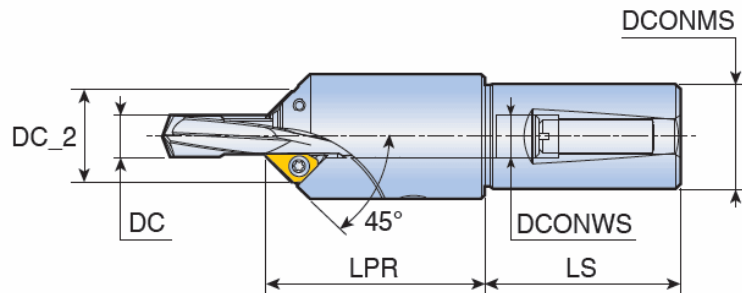
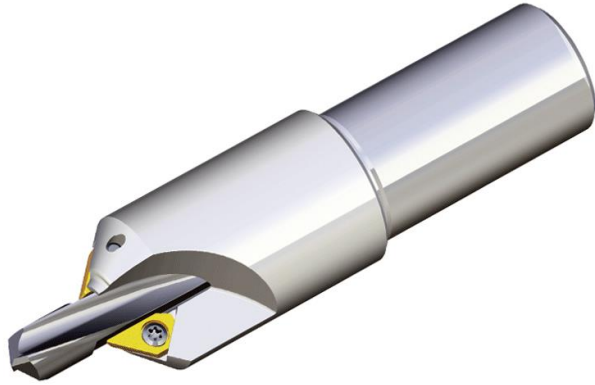
**Solid carbide reamers with left-handed spiral flute for through hole**

DC	L	PLGL	BD	LU	OAL	DCONMS	NOF
3.00	12.00	0.700	2.20	31.0	60.00	4.00	4
4.00	12.00	0.700	3.00	40.0	68.00	6.00	4
5.00	12.00	0.900	3.80	40.0	76.00	6.00	4
6.00	12.00	0.900	4.50	40.0	76.00	6.00	4
7.00	15.00	0.900	5.60	65.0	101.00	8.00	6
8.00	15.00	0.900	6.40	65.0	101.00	8.00	6
9.00	18.00	0.950	7.20	61.0	101.00	10.00	6
10.00	18.00	0.950	8.00	61.0	101.00	10.00	6
10.50	18.00	1.050	8.40	85.0	130.00	12.00	6
11.00	18.00	1.050	8.80	85.0	130.00	12.00	6
11.50	18.00	1.050	9.20	85.0	130.00	12.00	6
12.00	18.00	1.050	9.60	85.0	130.00	12.00	6



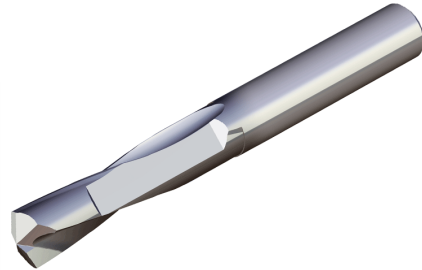
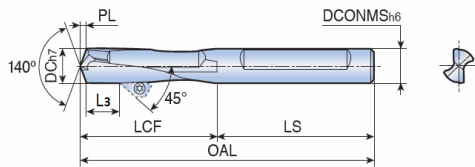
## Solid carbide drills for composite materials

3.00	6.00	72.70	27.7	34.7	0.70
4.00	6.00	73.00	28.0	35.0	1.00
4.76	6.00	81.30	35.3	43.3	1.30
5.00	6.00	81.30	35.3	43.3	1.30
6.00	6.00	81.70	35.7	43.7	1.70
6.35	8.00	89.70	41.7	51.7	1.70
7.00	8.00	89.90	41.9	51.9	1.90
7.94	8.00	90.20	42.2	52.2	2.20
8.00	8.00	90.20	42.2	52.2	2.20
9.00	10.00	101.50	47.5	59.5	2.50
9.52	10.00	101.60	47.6	59.6	2.60
10.00	10.00	101.80	47.8	59.8	2.80
11.00	12.00	117.10	55.1	70.1	3.10
11.11	12.00	117.10	55.1	70.1	3.10



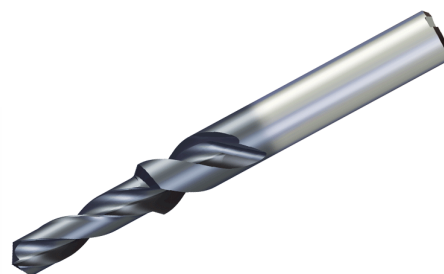
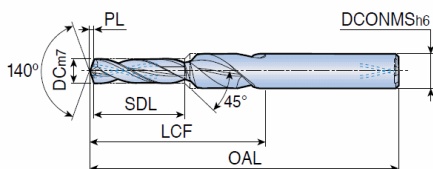
## Drill holders of chamfering and drilling together for solid carbide drills

7.1	8.0	8.00	18.80	20.00	47.4	50.0
8.1	9.0	9.00	19.80	20.00	47.4	50.0
10.1	10.0	10.00	24.90	32.00	67.3	60.0
11.1	11.0	11.00	25.90	32.00	67.3	60.0
12.1	12.0	12.00	26.90	32.00	67.3	60.0
13.1	13.0	13.00	27.90	32.00	67.3	60.0
14.1	14.0	14.00	28.40	32.00	67.3	60.0
15.1	15.0	15.00	29.40	32.00	67.3	60.0
16.1	16.0	16.00	30.40	32.00	67.3	60.0
17.1	17.0	17.00	31.40	32.00	67.3	60.0
18.1	18.0	18.00	32.40	32.00	67.3	60.0
19.1	19.0	19.00	33.40	32.00	75.0	60.0
20.1	20.0	20.00	34.40	32.00	75.0	60.0



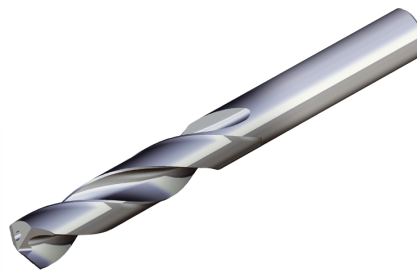
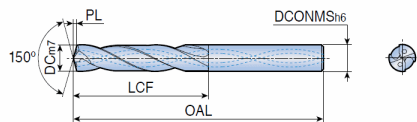
### Solid carbide drills for T-CHAMFER holder

DC	DCONMS	OAL	LCF	LS	L3min	L3max	PL
8.00	8.00	80.30	37.3	43.0	9.50	17.5	1.30
9.00	9.00	85.40	42.4	43.0	13.00	23.5	1.40
10.00	10.00	90.60	47.6	43.0	15.50	25.0	1.60
11.00	11.00	96.80	53.8	43.0	21.50	30.0	1.80
12.00	12.00	103.90	60.9	43.0	25.50	37.0	1.90
13.00	13.00	104.10	61.1	43.0	25.50	35.0	2.10
15.00	15.00	113.40	65.4	48.0	26.50	40.5	2.40
17.00	17.00	121.70	71.7	20.0	24.50	44.0	2.70
18.00	18.00	125.90	75.9	50.0	26.50	48.0	2.90
19.00	19.00	130.00	76.0	54.0	26.50	49.0	3.00



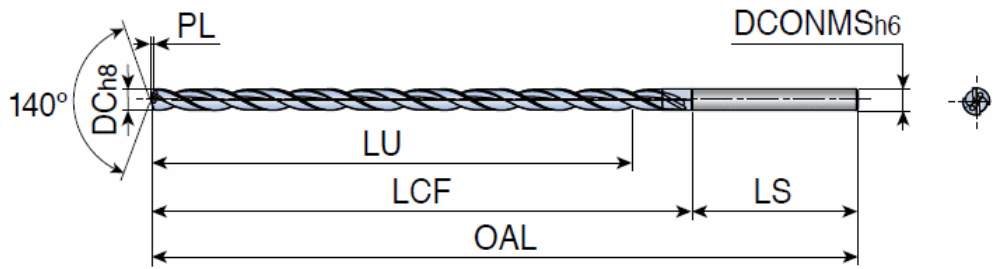
## Solid carbide drills for pre-thread hole (M4-M10) with chamfering & coolant holes

Th	DC	OAL	SDL	LCF	DCONMS	PL
M4	3.30	62.50	12.00	26.5	6.00	0.50
M5	4.20	66.60	15.00	28.6	6.00	0.60
M6	5.00	79.80	18.00	36.8	8.00	0.80
M8	6.80	91.00	24.00	49.0	10.00	1.00
M10	8.50	103.30	30.00	56.3	12.00	1.30



## Solid carbide drills for pilot holes with coolant holes

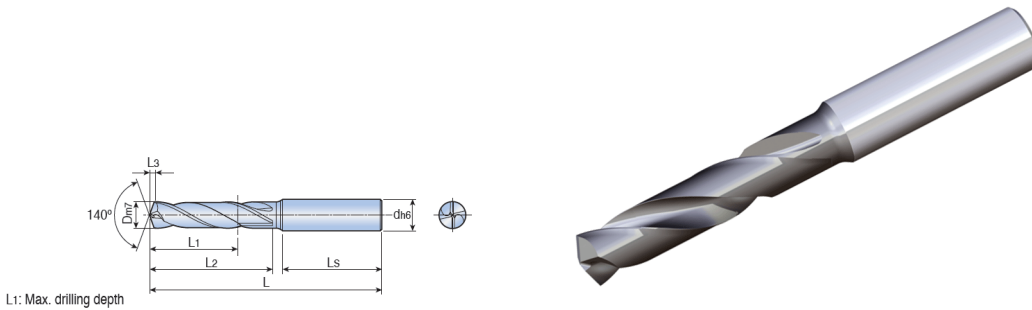
DC	DCONMS	LCF	OAL	PL
4.03	4.00	24.5	66.50	0.50
5.03	5.00	30.6	68.60	0.60
6.03	6.00	30.7	68.70	0.70
7.03	7.00	35.8	73.80	0.80
8.03	8.00	41.9	79.90	0.90
9.03	9.00	49.0	91.00	1.00
10.03	10.00	49.1	91.10	1.10



**Solid long drills with oil holes for M.Q.L. drilling & drilling depth 10/15/20xD**

DC	DCONMS	OAL	LU	LCF	LS	PL
4.00	4.00	105.60	50.0	55.6	50.0	0.60
5.00	5.00	115.80	60.0	65.8	50.0	0.80
6.00	6.00	131.00	76.0	81.0	50.0	1.00
7.00	7.00	141.10	86.0	91.1	50.0	1.10
8.00	8.00	156.30	98.0	106.3	50.0	1.30
9.00	9.00	171.40	108.0	116.4	55.0	1.40
10.00	10.00	191.60	123.0	131.6	60.0	1.60
4.00	4.00	125.60	70.0	75.6	50.0	0.60
5.00	5.00	140.80	85.0	90.8	50.0	0.80
6.00	6.00	161.00	106.0	111.0	50.0	1.00
7.00	7.00	176.10	121.0	126.1	50.0	1.10

8.00	8.00	196.30	138.0	146.3	50.0	1.30
9.00	9.00	221.40	153.0	161.4	60.0	1.40
10.00	10.00	241.60	173.0	181.6	60.0	1.60
4.00	4.00	140.60	85.0	90.6	50.0	0.60
5.00	5.00	165.80	110.0	115.8	50.0	0.80
6.00	6.00	191.00	136.0	141.0	50.0	1.00
7.00	7.00	211.10	156.0	161.1	50.0	1.10
8.00	8.00	231.30	173.0	181.3	50.0	1.30
9.00	9.00	266.40	198.0	206.4	60.0	1.40
10.00	10.00	286.60	218.0	226.6	60.0	1.60

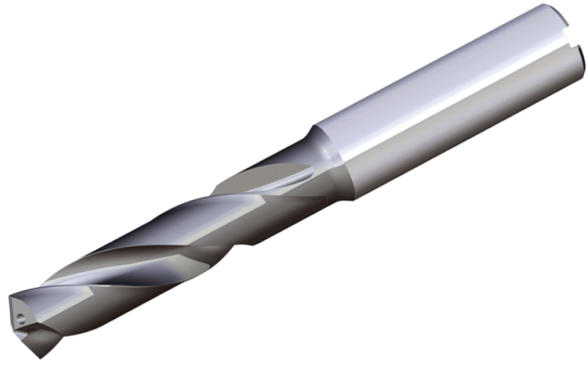
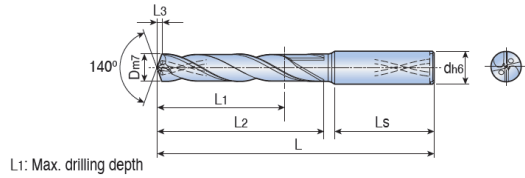


### Solid carbide drills without coolant holes & drilling depth 3xD

D	d	L	L1	L2	Ls	L3
3.00	6.00	62.00	14.0	20.000	34.0	0.5
3.10	6.00	62.00	14.0	20.000	34.0	0.5
3.20	6.00	62.00	14.0	20.000	34.0	0.5
3.30	6.00	62.00	14.0	20.000	34.0	0.5
3.40	6.00	62.00	14.0	20.000	34.0	0.5
3.50	6.00	62.00	14.0	20.000	34.0	0.6
3.60	6.00	62.00	14.0	20.000	34.0	0.6
3.70	6.00	62.00	14.0	20.000	34.0	0.6
3.80	6.00	66.00	17.0	24.000	35.0	0.6
3.90	6.00	66.00	17.0	24.000	35.0	0.6
4.00	6.00	66.00	17.0	24.000	35.0	0.6
4.10	6.00	66.00	17.0	24.000	35.0	0.7
4.20	6.00	66.00	17.0	24.000	35.0	0.7
4.30	6.00	66.00	17.0	24.000	35.0	0.7

4.40	6.00	66.00	17.0	24.000	35.0	0.7
4.50	6.00	66.00	17.0	24.000	35.0	0.7
4.60	6.00	66.00	17.0	24.000	35.0	0.8
4.70	6.00	66.00	17.0	24.000	35.0	0.8
4.80	6.00	66.00	20.0	28.000	36.0	0.8
4.90	6.00	66.00	20.0	28.000	36.0	0.8
5.00	6.00	66.00	20.0	28.000	36.0	0.8
5.10	6.00	66.00	20.0	28.000	36.0	0.8
5.20	6.00	66.00	20.0	28.000	36.0	0.8
5.30	6.00	66.00	20.0	28.000	36.0	0.8
5.40	6.00	66.00	20.0	28.000	36.0	0.8
5.50	6.00	66.00	20.0	28.000	36.0	0.9
5.60	6.00	66.00	20.0	28.000	36.0	0.9
5.70	6.00	66.00	20.0	28.000	36.0	0.9
5.80	6.00	66.00	20.0	28.000	36.0	0.9
5.90	6.00	66.00	20.0	28.000	36.0	0.9
6.00	6.00	66.00	20.0	28.000	36.0	0.9
6.10	8.00	79.00	24.0	34.000	36.0	1.0
6.20	8.00	79.00	24.0	34.000	36.0	1.0
6.30	8.00	79.00	24.0	34.000	36.0	1.0
6.40	8.00	79.00	24.0	34.000	36.0	1.0
6.50	8.00	79.00	24.0	34.000	36.0	1.0
6.60	8.00	79.00	24.0	34.000	36.0	1.0
6.70	8.00	79.00	24.0	34.000	36.0	1.1
6.80	8.00	79.00	24.0	34.000	36.0	1.1
6.90	8.00	79.00	24.0	34.000	36.0	1.1
7.00	8.00	79.00	24.0	34.000	36.0	1.1
7.10	8.00	79.00	29.0	41.000	36.0	1.1
7.20	8.00	79.00	29.0	41.000	36.0	1.1
7.30	8.00	79.00	29.0	41.000	36.0	1.1
7.40	8.00	79.00	29.0	41.000	36.0	1.2
7.50	8.00	79.00	29.0	41.000	36.0	1.2
7.60	8.00	79.00	29.0	41.000	36.0	1.2
7.70	8.00	79.00	29.0	41.000	36.0	1.2
7.80	8.00	79.00	29.0	41.000	36.0	1.2
7.90	8.00	79.00	29.0	41.000	36.0	1.3
8.00	8.00	79.00	29.0	41.000	36.0	1.3
8.10	10.00	89.00	35.0	47.000	40.0	1.3
8.20	10.00	89.00	35.0	47.000	40.0	1.3
8.30	10.00	89.00	35.0	47.000	40.0	1.3
8.40	10.00	89.00	35.0	47.000	40.0	1.3
8.50	10.00	89.00	35.0	47.000	40.0	1.3
8.60	10.00	89.00	35.0	47.000	40.0	1.4
8.70	10.00	89.00	35.0	47.000	40.0	1.4

8.80	10.00	89.00	35.0	47.000	40.0	1.4
8.90	10.00	89.00	35.0	47.000	40.0	1.4
9.00	10.00	89.00	35.0	47.000	40.0	1.4
9.10	10.00	89.00	35.0	47.000	40.0	1.4
9.20	10.00	89.00	35.0	47.000	40.0	1.4
9.30	10.00	89.00	35.0	47.000	40.0	1.5
9.40	10.00	89.00	35.0	47.000	40.0	1.5
9.50	10.00	89.00	35.0	47.000	40.0	1.5
9.60	10.00	89.00	35.0	47.000	40.0	1.5
9.70	10.00	89.00	35.0	47.000	40.0	1.5
9.80	10.00	89.00	35.0	47.000	40.0	1.6
9.90	10.00	89.00	35.0	47.000	40.0	1.6
10.00	10.00	89.00	35.0	47.000	40.0	1.6
10.10	12.00	101.00	40.0	55.000	45.0	1.6
10.20	12.00	101.00	40.0	55.000	45.0	1.6
10.30	12.00	101.00	40.0	55.000	45.0	1.6
10.40	12.00	101.00	40.0	55.000	45.0	1.6
10.50	12.00	101.00	40.0	55.000	45.0	1.6
10.60	12.00	101.00	40.0	55.000	45.0	1.7
10.70	12.00	101.00	40.0	55.000	45.0	1.7
10.80	12.00	101.00	40.0	55.000	45.0	1.7
10.90	12.00	101.00	40.0	55.000	45.0	1.7
11.00	12.00	101.00	40.0	55.000	45.0	1.7
11.10	12.00	101.00	40.0	55.000	45.0	1.7
11.20	12.00	101.00	40.0	55.000	45.0	1.8
11.30	12.00	101.00	40.0	55.000	45.0	1.8
11.40	12.00	101.00	40.0	55.000	45.0	1.8
11.50	12.00	101.00	40.0	55.000	45.0	1.8
11.60	12.00	101.00	40.0	55.000	45.0	1.8
11.70	12.00	101.00	40.0	55.000	45.0	1.9
11.80	12.00	101.00	40.0	55.000	45.0	1.9
11.90	12.00	101.00	40.0	55.000	45.0	1.9
12.00	12.00	101.00	40.0	55.000	45.0	1.9

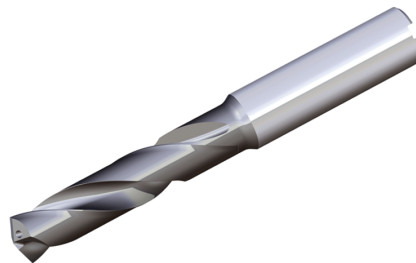
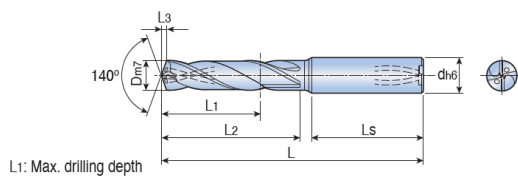


### Solid carbide drills without coolant holes & drilling depth 4-5xD

D	d	L	L1	L2	Ls	L3
3.00	6.00	66.00	23.0	28.000	34.0	0.5
3.10	6.00	66.00	23.0	28.000	34.0	0.5
3.20	6.00	66.00	23.0	28.000	34.0	0.5
3.30	6.00	66.00	23.0	28.000	34.0	0.5
3.40	6.00	66.00	23.0	28.000	34.0	0.5
3.50	6.00	66.00	23.0	28.000	34.0	0.6
3.60	6.00	66.00	23.0	28.000	34.0	0.6
3.70	6.00	66.00	23.0	28.000	34.0	0.6
3.80	6.00	74.00	29.0	36.000	35.0	0.6
3.90	6.00	74.00	29.0	36.000	35.0	0.6
4.00	6.00	74.00	29.0	36.000	35.0	0.6
4.10	6.00	74.00	29.0	36.000	35.0	0.7
4.20	6.00	74.00	29.0	36.000	35.0	0.7
4.30	6.00	74.00	29.0	36.000	35.0	0.7
4.40	6.00	74.00	29.0	36.000	35.0	0.7
4.50	6.00	74.00	29.0	36.000	35.0	0.7
4.60	6.00	74.00	29.0	36.000	35.0	0.7
4.70	6.00	74.00	29.0	36.000	35.0	0.8
4.80	6.00	82.00	35.0	44.000	36.0	0.8
4.90	6.00	82.00	35.0	44.000	36.0	0.8
5.00	6.00	82.00	35.0	44.000	36.0	0.8
5.10	6.00	82.00	35.0	44.000	36.0	0.8
5.20	6.00	82.00	35.0	44.000	36.0	0.8
5.30	6.00	82.00	35.0	44.000	36.0	0.8
5.40	6.00	82.00	35.0	44.000	36.0	0.8
5.50	6.00	82.00	35.0	44.000	36.0	0.9
5.60	6.00	82.00	35.0	44.000	36.0	0.9
5.70	6.00	82.00	35.0	44.000	36.0	0.9
5.80	6.00	82.00	35.0	44.000	36.0	0.9

5.90	6.00	82.00	35.0	44.000	36.0	0.9
6.00	6.00	82.00	35.0	44.000	36.0	0.9
6.10	8.00	91.00	43.0	53.000	36.0	1.0
6.20	8.00	91.00	43.0	53.000	36.0	1.0
6.30	8.00	91.00	43.0	53.000	36.0	1.0
6.40	8.00	91.00	43.0	53.000	36.0	1.0
6.50	8.00	91.00	43.0	53.000	36.0	1.0
6.60	8.00	91.00	43.0	53.000	36.0	1.0
6.70	8.00	91.00	43.0	53.000	36.0	1.1
6.80	8.00	91.00	43.0	53.000	36.0	1.1
6.90	8.00	91.00	43.0	53.000	36.0	1.1
7.00	8.00	91.00	43.0	53.000	36.0	1.1
7.10	8.00	91.00	43.0	53.000	36.0	1.1
7.20	8.00	91.00	43.0	53.000	36.0	1.1
7.30	8.00	91.00	43.0	53.000	36.0	1.1
7.40	8.00	91.00	43.0	53.000	36.0	1.2
7.50	8.00	91.00	43.0	53.000	36.0	1.2
7.60	8.00	91.00	43.0	53.000	36.0	1.2
7.70	8.00	91.00	43.0	53.000	36.0	1.2
7.80	8.00	91.00	43.0	53.000	36.0	1.2
7.90	8.00	91.00	43.0	53.000	36.0	1.3
8.00	8.00	91.00	43.0	53.000	36.0	1.3
8.10	10.00	103.00	49.0	61.000	40.0	1.3
8.20	10.00	103.00	49.0	61.000	40.0	1.3
8.30	10.00	103.00	49.0	61.000	40.0	1.3
8.40	10.00	103.00	49.0	61.000	40.0	1.3
8.50	10.00	103.00	49.0	61.000	40.0	1.3
8.60	10.00	103.00	49.0	61.000	40.0	1.4
8.70	10.00	103.00	49.0	61.000	40.0	1.4
8.80	10.00	103.00	49.0	61.000	40.0	1.4
8.90	10.00	103.00	49.0	61.000	40.0	1.4
9.00	10.00	103.00	49.0	61.000	40.0	1.4
9.10	10.00	103.00	49.0	61.000	40.0	1.4
9.20	10.00	103.00	49.0	61.000	40.0	1.4
9.30	10.00	103.00	49.0	61.000	40.0	1.5
9.40	10.00	103.00	49.0	61.000	40.0	1.5
9.50	10.00	103.00	49.0	61.000	40.0	1.5
9.60	10.00	103.00	49.0	61.000	40.0	1.5
9.70	10.00	103.00	49.0	61.000	40.0	1.5
9.80	10.00	103.00	49.0	61.000	40.0	1.6
9.90	10.00	103.00	49.0	61.000	40.0	1.6
10.00	10.00	103.00	49.0	61.000	40.0	1.6
10.10	12.00	118.00	56.0	71.000	45.0	1.6
10.20	12.00	118.00	56.0	71.000	45.0	1.6

10.30	12.00	118.00	56.0	71.000	45.0	1.6
10.40	12.00	118.00	56.0	71.000	45.0	1.6
10.50	12.00	118.00	56.0	71.000	45.0	1.6
10.60	12.00	118.00	56.0	71.000	45.0	1.7
10.70	12.00	118.00	56.0	71.000	45.0	1.7
10.80	12.00	118.00	56.0	71.000	45.0	1.7
10.90	12.00	118.00	56.0	71.000	45.0	1.7
11.00	12.00	118.00	56.0	71.000	45.0	1.7
11.10	12.00	118.00	56.0	71.000	45.0	1.7
11.20	12.00	118.00	56.0	71.000	45.0	1.8
11.30	12.00	118.00	56.0	71.000	45.0	1.8
11.40	12.00	118.00	56.0	71.000	45.0	1.8
11.50	12.00	118.00	56.0	71.000	45.0	1.8
11.60	12.00	118.00	56.0	71.000	45.0	1.8
11.70	12.00	118.00	56.0	71.000	45.0	1.9
11.80	12.00	118.00	56.0	71.000	45.0	1.9
11.90	12.00	118.00	56.0	71.000	45.0	1.9
12.00	12.00	118.00	56.0	71.000	45.0	1.9

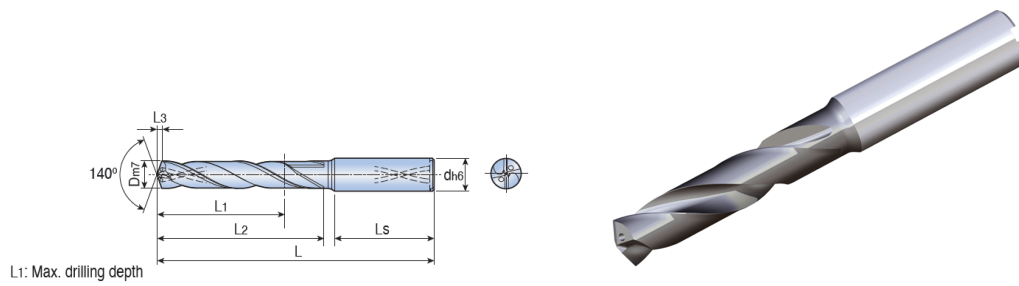


## Solid carbide drills with coolant holes & drilling depth 3xD

D	d	L	L1	L2	Ls	L3
3.00	6.00	62.00	14.0	20.000	34.0	0.5
3.10	6.00	62.00	14.0	20.000	34.0	0.5
3.20	6.00	62.00	14.0	20.000	34.0	0.5
3.30	6.00	62.00	14.0	20.000	34.0	0.5
3.40	6.00	62.00	14.0	20.000	34.0	0.5
3.50	6.00	62.00	14.0	20.000	34.0	0.6
3.60	6.00	62.00	14.0	20.000	34.0	0.6

3.70	6.00	62.00	14.0	20.000	34.0	0.6
3.80	6.00	66.00	17.0	24.000	35.0	0.6
3.90	6.00	66.00	17.0	24.000	35.0	0.6
4.00	6.00	66.00	17.0	24.000	35.0	0.6
4.10	6.00	66.00	17.0	24.000	35.0	0.7
4.20	6.00	66.00	17.0	24.000	35.0	0.7
4.30	6.00	66.00	17.0	24.000	35.0	0.7
4.40	6.00	66.00	17.0	24.000	35.0	0.7
4.50	6.00	66.00	17.0	24.000	35.0	0.7
4.60	6.00	66.00	17.0	24.000	35.0	0.7
4.70	6.00	66.00	17.0	24.000	35.0	0.8
4.80	6.00	66.00	20.0	28.000	36.0	0.8
4.90	6.00	66.00	20.0	28.000	36.0	0.8
5.00	6.00	66.00	20.0	28.000	36.0	0.8
5.10	6.00	66.00	20.0	28.000	36.0	0.8
5.20	6.00	66.00	20.0	28.000	36.0	0.8
5.30	6.00	66.00	20.0	28.000	36.0	0.8
5.40	6.00	66.00	20.0	28.000	36.0	0.8
5.50	6.00	66.00	20.0	28.000	36.0	0.9
5.60	6.00	66.00	20.0	28.000	36.0	0.9
5.70	6.00	66.00	20.0	28.000	36.0	0.9
5.80	6.00	66.00	20.0	28.000	36.0	0.9
5.90	6.00	66.00	20.0	28.000	36.0	0.9
6.00	6.00	66.00	20.0	28.000	36.0	0.9
6.10	8.00	79.00	24.0	34.000	36.0	1.0
6.20	8.00	79.00	24.0	34.000	36.0	1.0
6.30	8.00	79.00	24.0	34.000	36.0	1.0
6.40	8.00	79.00	24.0	34.000	36.0	1.0
6.50	8.00	79.00	24.0	34.000	36.0	1.0
6.60	8.00	79.00	24.0	34.000	36.0	1.0
6.70	8.00	79.00	24.0	34.000	36.0	1.1
6.80	8.00	79.00	24.0	34.000	36.0	1.1
6.90	8.00	79.00	24.0	34.000	36.0	1.1
7.00	8.00	79.00	24.0	34.000	36.0	1.1
7.10	8.00	79.00	29.0	41.000	36.0	1.1
7.20	8.00	79.00	29.0	41.000	36.0	1.1
7.30	8.00	79.00	29.0	41.000	36.0	1.1
7.40	8.00	79.00	29.0	41.000	36.0	1.2
7.50	8.00	79.00	29.0	41.000	36.0	1.2
7.60	8.00	79.00	29.0	41.000	36.0	1.2
7.70	8.00	79.00	29.0	41.000	36.0	1.2
7.80	8.00	79.00	29.0	41.000	36.0	1.2
7.90	8.00	79.00	29.0	41.000	36.0	1.3
8.00	8.00	79.00	29.0	41.000	36.0	1.3

8.10	10.00	89.00	35.0	47.000	40.0	1.3
8.20	10.00	89.00	35.0	47.000	40.0	1.3
8.30	10.00	89.00	35.0	47.000	40.0	1.3
8.40	10.00	89.00	35.0	47.000	40.0	1.3
8.50	10.00	89.00	35.0	47.000	40.0	1.3
8.60	10.00	89.00	35.0	47.000	40.0	1.4
8.70	10.00	89.00	35.0	47.000	40.0	1.4
8.80	10.00	89.00	35.0	47.000	40.0	1.4
8.90	10.00	89.00	35.0	47.000	40.0	1.4
9.00	10.00	89.00	35.0	47.000	40.0	1.4
9.10	10.00	89.00	35.0	47.000	40.0	1.4
9.20	10.00	89.00	35.0	47.000	40.0	1.4
9.30	10.00	89.00	35.0	47.000	40.0	1.5
9.40	10.00	89.00	35.0	47.000	40.0	1.5
9.50	10.00	89.00	35.0	47.000	40.0	1.5
9.60	10.00	89.00	35.0	47.000	40.0	1.5
9.70	10.00	89.00	35.0	47.000	40.0	1.5
9.80	10.00	89.00	35.0	47.000	40.0	1.6
9.90	10.00	89.00	35.0	47.000	40.0	1.6
10.00	10.00	89.00	35.0	47.000	40.0	1.6
10.10	12.00	102.00	40.0	55.000	45.0	1.6
10.20	12.00	102.00	40.0	55.000	45.0	1.6
10.30	12.00	102.00	40.0	55.000	45.0	1.6
10.40	12.00	102.00	40.0	55.000	45.0	1.6
10.50	12.00	102.00	40.0	55.000	45.0	1.6
10.60	12.00	102.00	40.0	55.000	45.0	1.7
10.70	12.00	102.00	40.0	55.000	45.0	1.7
10.80	12.00	102.00	40.0	55.000	45.0	1.7
10.90	12.00	102.00	40.0	55.000	45.0	1.7
11.00	12.00	102.00	40.0	55.000	45.0	1.7
11.10	12.00	102.00	40.0	55.000	45.0	1.7
11.20	12.00	102.00	40.0	55.000	45.0	1.8
11.30	12.00	102.00	40.0	55.000	45.0	1.8
11.40	12.00	102.00	40.0	55.000	45.0	1.8
11.50	12.00	102.00	40.0	55.000	45.0	1.8
11.60	12.00	102.00	40.0	55.000	45.0	1.8
11.70	12.00	102.00	40.0	55.000	45.0	1.9
11.80	12.00	102.00	40.0	55.000	45.0	1.9
11.90	12.00	102.00	40.0	55.000	45.0	1.9
12.00	12.00	102.00	40.0	55.000	45.0	1.9

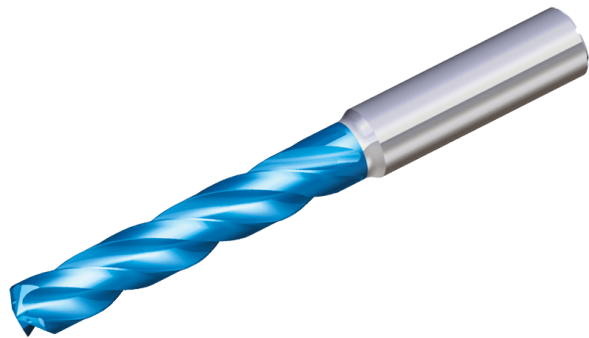
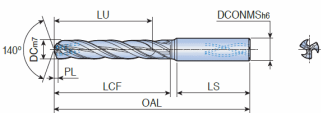


## Solid carbide drills with coolant holes and drilling depth 4-5xD

D	d	L	L1	L2	Ls	L3
3.00	6.00	66.00	23.0	28.000	34.0	0.5
3.10	6.00	66.00	23.0	28.000	34.0	0.5
3.20	6.00	66.00	23.0	28.000	34.0	0.5
3.30	6.00	66.00	23.0	28.000	34.0	0.5
3.40	6.00	66.00	23.0	28.000	34.0	0.5
3.50	6.00	66.00	23.0	28.000	34.0	0.6
3.60	6.00	66.00	23.0	28.000	34.0	0.6
3.70	6.00	66.00	23.0	28.000	34.0	0.6
3.80	6.00	74.00	29.0	36.000	35.0	0.6
3.90	6.00	74.00	29.0	36.000	35.0	0.6
4.00	6.00	74.00	29.0	36.000	35.0	0.6
4.10	6.00	74.00	29.0	36.000	35.0	0.7
4.20	6.00	74.00	29.0	36.000	35.0	0.7
4.30	6.00	74.00	29.0	36.000	35.0	0.7
4.40	6.00	74.00	29.0	36.000	35.0	0.7
4.50	6.00	74.00	29.0	36.000	35.0	0.7
4.60	6.00	74.00	29.0	36.000	35.0	0.7
4.70	6.00	74.00	29.0	36.000	35.0	0.8
4.80	6.00	82.00	35.0	44.000	36.0	0.8
4.90	6.00	82.00	35.0	44.000	36.0	0.8
5.00	6.00	82.00	35.0	44.000	36.0	0.8
5.10	6.00	82.00	35.0	44.000	36.0	0.8
5.20	6.00	82.00	35.0	44.000	36.0	0.8
5.30	6.00	82.00	35.0	44.000	36.0	0.8
5.40	6.00	82.00	35.0	44.000	36.0	0.8
5.50	6.00	82.00	35.0	44.000	36.0	0.9

5.60	6.00	82.00	35.0	44.000	36.0	0.9
5.70	6.00	82.00	35.0	44.000	36.0	0.9
5.80	6.00	82.00	35.0	44.000	36.0	0.9
5.90	6.00	82.00	35.0	44.000	36.0	0.9
6.00	6.00	82.00	35.0	44.000	36.0	0.9
6.10	8.00	91.00	43.0	53.000	36.0	1.0
6.20	8.00	91.00	43.0	53.000	36.0	1.0
6.30	8.00	91.00	43.0	53.000	36.0	1.0
6.40	8.00	91.00	43.0	53.000	36.0	1.0
6.50	8.00	91.00	43.0	53.000	36.0	1.0
6.60	8.00	91.00	43.0	53.000	36.0	1.0
6.70	8.00	91.00	43.0	53.000	36.0	1.1
6.80	8.00	91.00	43.0	53.000	36.0	1.1
6.90	8.00	91.00	43.0	53.000	36.0	1.1
7.00	8.00	91.00	43.0	53.000	36.0	1.1
7.10	8.00	91.00	43.0	53.000	36.0	1.1
7.20	8.00	91.00	43.0	53.000	36.0	1.1
7.30	8.00	91.00	43.0	53.000	36.0	1.1
7.40	8.00	91.00	43.0	53.000	36.0	1.2
7.50	8.00	91.00	43.0	53.000	36.0	1.2
7.60	8.00	91.00	43.0	53.000	36.0	1.2
7.70	8.00	91.00	43.0	53.000	36.0	1.2
7.80	8.00	91.00	43.0	53.000	36.0	1.2
7.90	8.00	91.00	43.0	53.000	36.0	1.3
8.00	8.00	91.00	43.0	53.000	36.0	1.3
8.10	10.00	103.00	49.0	61.000	40.0	1.3
8.20	10.00	103.00	49.0	61.000	40.0	1.3
8.30	10.00	103.00	49.0	61.000	40.0	1.3
8.40	10.00	103.00	49.0	61.000	40.0	1.3
8.50	10.00	103.00	49.0	61.000	40.0	1.3
8.60	10.00	103.00	49.0	61.000	40.0	1.4
8.70	10.00	103.00	49.0	61.000	40.0	1.4
8.80	10.00	103.00	49.0	61.000	40.0	1.4
8.90	10.00	103.00	49.0	61.000	40.0	1.4
9.00	10.00	103.00	49.0	61.000	40.0	1.4
9.10	10.00	103.00	49.0	61.000	40.0	1.4
9.20	10.00	103.00	49.0	61.000	40.0	1.4
9.30	10.00	103.00	49.0	61.000	40.0	1.5
9.40	10.00	103.00	49.0	61.000	40.0	1.5
9.50	10.00	103.00	49.0	61.000	40.0	1.5
9.60	10.00	103.00	49.0	61.000	40.0	1.5
9.70	10.00	103.00	49.0	61.000	40.0	1.5
9.80	10.00	103.00	49.0	61.000	40.0	1.6
9.90	10.00	103.00	49.0	61.000	40.0	1.6

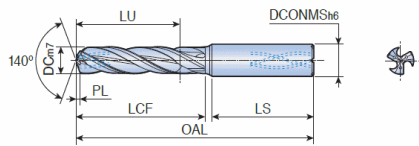
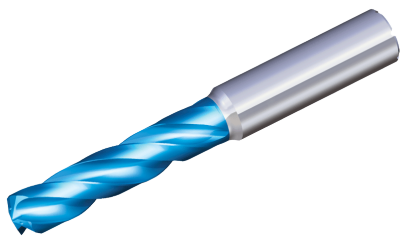
10.00	10.00	103.00	49.0	61.000	40.0	1.6
10.10	12.00	118.00	56.0	71.000	45.0	1.6
10.20	12.00	118.00	56.0	71.000	45.0	1.6
10.30	12.00	118.00	56.0	71.000	45.0	1.6
10.40	12.00	118.00	56.0	71.000	45.0	1.6
10.50	12.00	118.00	56.0	71.000	45.0	1.6
10.60	12.00	118.00	56.0	71.000	45.0	1.7
10.70	12.00	118.00	56.0	71.000	45.0	1.7
10.80	12.00	118.00	56.0	71.000	45.0	1.7
10.90	12.00	118.00	56.0	71.000	45.0	1.7
11.00	12.00	118.00	56.0	71.000	45.0	1.7
11.10	12.00	118.00	56.0	71.000	45.0	1.7
11.20	12.00	118.00	56.0	71.000	45.0	1.8
11.30	12.00	118.00	56.0	71.000	45.0	1.8
11.40	12.00	118.00	56.0	71.000	45.0	1.8
11.50	12.00	118.00	56.0	71.000	45.0	1.8
11.60	12.00	118.00	56.0	71.000	45.0	1.8
11.70	12.00	118.00	56.0	71.000	45.0	1.9
11.80	12.00	118.00	56.0	71.000	45.0	1.9
11.90	12.00	118.00	56.0	71.000	45.0	1.9
12.00	12.00	118.00	56.0	71.000	45.0	1.9



**3 Flute Solid carbide drills with internal coolant holes in drilling depth of 5xD**

DC	DCONMS	OAL	LU	LCF	LS	PL
4.00	6.00	74.00	29.0	37.0	35.0	0.82

4.50	6.00	74.00	29.0	37.0	35.0	0.88
5.00	6.00	82.00	35.0	45.0	36.0	0.96
5.10	6.00	82.00	35.0	45.0	36.0	0.98
5.50	6.00	82.00	35.0	45.0	36.0	1.08
6.00	6.00	82.00	35.0	45.0	36.0	1.17
6.50	8.00	91.00	43.0	54.0	36.0	1.26
6.80	8.00	91.00	43.0	54.0	36.0	1.31
7.00	8.00	91.00	43.0	54.0	36.0	1.35
7.50	8.00	91.00	43.0	54.0	36.0	1.40
8.00	8.00	91.00	43.0	54.0	36.0	1.49
8.50	10.00	103.00	49.0	62.0	40.0	1.63
8.60	10.00	103.00	49.0	62.0	40.0	1.65
9.00	10.00	103.00	49.0	62.0	40.0	1.72
9.50	10.00	103.00	49.0	62.0	40.0	1.75
10.00	10.00	103.00	49.0	62.0	40.0	1.85
10.30	12.00	118.00	56.0	71.0	45.0	1.94
10.50	12.00	118.00	56.0	71.0	45.0	1.98
11.00	12.00	118.00	56.0	71.0	45.0	2.07
11.50	12.00	118.00	56.0	72.0	45.0	2.12
12.00	12.00	118.00	56.0	72.0	45.0	2.21



### 3 Flute Solid carbide drills with internal coolant holes in drilling depth of 3xD

4.00	6.00	66.00	17.0	25.0	35.0	0.82
4.50	6.00	66.00	17.0	25.0	35.0	0.88

5.00	6.00	66.00	20.0	29.0	36.0	0.96
5.10	6.00	66.00	20.0	29.0	36.0	0.98
5.50	6.00	66.00	20.0	29.0	36.0	1.08
6.00	6.00	66.00	20.0	29.0	36.0	1.17
6.50	8.00	79.00	24.0	35.0	36.0	1.26
6.80	8.00	79.00	24.0	35.0	36.0	1.31
7.00	8.00	79.00	24.0	35.0	36.0	1.35
7.50	8.00	79.00	29.0	42.0	36.0	1.40
8.00	8.00	79.00	29.0	42.0	36.0	1.49
8.50	10.00	89.00	35.0	48.0	40.0	1.63
8.60	10.00	89.00	35.0	48.0	40.0	1.65
9.00	10.00	89.00	35.0	48.0	40.0	1.72
9.50	10.00	89.00	35.0	48.0	40.0	1.75
10.00	10.00	89.00	35.0	48.0	40.0	1.85
10.30	12.00	102.00	40.0	55.0	45.0	1.94
10.50	12.00	102.00	40.0	55.0	45.0	1.98
11.00	12.00	102.00	40.0	55.0	45.0	2.07
11.50	12.00	102.00	40.0	56.0	45.0	2.12
12.00	12.00	102.00	40.0	56.0	45.0	2.21

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